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

MAR 11 1985

Docket Nos.: 50-445
and 50-446

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

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

SUBJECT: BOARD NOTIFICATION - SUMMARY OF MEETING BETWEEN NRC STAFF AND TEXAS UTILITIES GENERATING COMPANY CONCERNING THE DESIGN OF PIPING AND PIPE SUPPORTS AT COMANCHE PEAK (BOARD NOTIFICATION NO. 85-026)

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

On February 26 and 27, 1985, a meeting was held between the NRC staff and Texas Utilities Generating Company (TUGCO) to provide an opportunity for the staff to discuss its review and need for additional information relating to the design of piping and pipe supports at Comanche Peak. A copy of the Summary of Meeting with enclosed transcripts is provided for your information.

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

Frank L. Miraglia for

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

cc: P. Bloch, ASLB
W. Jordan, ASLB
K. McCollom, ASLB
E. Johnson, ASLB
H. Grossman, ASLB
SECY (2)
EDO (4)
OGC
OPE
ACRS (10)
Parties to the Proceeding
See next page

N 605

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

MAR 0 6 1985

Docket Nos.: 50-445
and 50-446

APPLICANT: Texas Utilities Generating Company (TUGCO)

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

SUBJECT: SUMMARY OF MEETING BETWEEN NRC STAFF AND TEXAS UTILITIES GENERATING COMPANY CONCERNING THE DESIGN OF PIPING AND PIPE SUPPORTS AT COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2

A meeting between the NRC staff and Texas Utilities Generating Company (TUGCO) was held on Tuesday and Wednesday, February 26 and 27, 1985. The meeting was held at the Comanche Peak Nuclear Operations Support Facility near Glen Rose, Texas. The purpose of the meeting was to provide an opportunity for the staff and TUGCO to discuss the staff's review relating to the design of piping and pipe supports at Comanche Peak and the applicant's program for resolution. The meeting was transcribed and transcripts for each day are enclosed. Attendance on each day of the meeting is included in the transcripts.

Distributed at this meeting was a draft report prepared by Mr. Donald F. Landers, an NRC staff consultant. The draft report identifies many of the unresolved matters in the staff review as they relate to the design of piping and pipe supports at Comanche Peak. A copy of the draft report was bound into the transcript.

S. B. Burwell

S. B. Burwell, Project Manager
Licensing Branch No. 1
Division of Licensing

Enclosures: As stated

cc: See next page

8503190459 3pp.

MAR 0 6 1985

COMANCHE PEAK

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

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

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

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

Mr. Robert E. Ballard, Jr.
Director of Projects
Gibbs and Hill, Inc.
11 Penn Plaza
New York, New York 10001

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

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

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

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

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

Regional Administrator
U. S. NRC, Region IV
611 Ryan Plaza Drive
Suite 1000
Arlington, Texas 76011

Lanny A. Sinkin, Executive Director
Nuclear Information and
Resource Service
1346 Connecticut Ave., N.W. 4th Floor
Washington, D. C. 20036

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

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

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

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

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

Mr. Dennis Kelley
Resident Inspector - Comanche Peak
c/o U. S. NRC
P. O. Box 1029
Granbury, Texas 76048

Mr. John W. Beck
Manager - Licensing
Texas Utilities Electric Company
Skyway Tower
400 N. Olive Street
L. B. 81
Dallas, Texas 75201

Mr. Jack Redding
Licensing
Texas Utilities Generating Company
4901 Fairmont Avenue
Bethesda, Maryland 20814

ORIGINAL

UNITED STATES
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF: DOCKET NO:

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

LOCATION: GLEN ROSE, TEXAS PAGES: 1 - 136

DATE: TUESDAY, FEBRUARY 26, 1985

ACE-FEDERAL REPORTERS, INC.

Official Reporters
444 North Capitol Street
Washington, D.C. 20001
(202) 347-3700

NATIONWIDE COVERAGE

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

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

February 26, 1985

PURSUANT TO NOTICE, the above-entitled matter commenced at 8:45 a.m.

PRESENT:

VINCENT S. NOONAN	NRC/Comanche Peak Director
JOHN BECK	TUGCO
HOWARD LEVIN	TERA
FRANK A. DOUGHERTY	TERA
JOHN GUIBERT	TERA
W. J. HALL	TERA Consultant

FRANK CHERNY	NRC/NRR
W. PAUL CHEN	ETGC
JOHN R. FAIR	NRC/IE
BERNARD F. SAFFELL	Battelle Columbus Lab.
GOUTAM BAGCHI	NRC/NRR/FOB
SPOTTSWOOD B. BURWELL	NRC/NRR/DL/LB#1
BARBARA BOLTZ	CASE
JERRY LEE ELLIS	CASE
JUANITA ELLIS	CASE
DAVID TERAO	NRC/DE/MEB
DONALD LANDERS	Teledyne
ROBERT BOSNAK	NRC/DE/MEB
JACK BOOTH	Dallas Times Herald
BOB MILLER	Fort Worth Star-Telegram
DAVID REAL	Dallas Morning News
NANCY H. WILLIAMS	Cygna

1-2

meeting over to you, John, and to have you talk to us about your plan on the piping and pipe support issues, and basically where you are at at this point in time and what you see to where you are going right now.

I have scheduled this meeting for basically two days. This morning and this afternoon's sessions will basically be for us to address concerns.

I am going to enter into the record a report that I received from Mr. Don Landers, who is the NRC consultant. It's a draft report. I would like to emphasize that. This report has not been reviewed by the Staff in any detail.

We have read it. We are in basic agreement with this report, but it has not been adopted by the Staff.

It is strictly here for us to address some of the concerns that the NRC has and basically this report kind of covers them all.

(Whereupon, the Draft Report of Teledyne Engineering Services, Donald F. Landers to Vincent S. Noonan, February 21, 1985, follows.)

///

///

TELEDYNE
ENGINEERING SERVICES

130 SECOND AVENUE

WALTHAM, MASSACHUSETTS 02254

(617) 890-3350 TWX (710) 324-7508

February 21, 1985
6216-7

DRAFT

Mr. Vincent S. Noonan, Director
Comanche Peak Project
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20814

Subject: Preliminary Consulting Report on Comanche Peak Steam Electric Station - Piping and Support Design

Dear Mr. Noonan:

Attached is a copy of the subject report. Provided is a discussion on the Design Process in general as well as some detailed concerns (Concerns 1 through 5). In addition, there is discussion on four other specific items (Concern 6) which can be construed to be a result of the existing Design Process. All of the items in Concern 6 have been raised by others and I have merely provided my own opinion in these areas. There are currently a number of other issues that are still a concern to the staff (i.e., U-bolts, Richmond inserts, etc.). However, it is important to recognize that the majority of these concerns are interdependent and cannot be addressed as stand-alone issues. That is, the various outstanding issues (not only limited to those discussed in the attached report) must be addressed in combination so that the overall effect on the adequacy of piping and supports can be determined.

If you have any questions, please do not hesitate to contact me.

Very truly yours,

TELEDYNE ENGINEERING SERVICES

Donald F. Landers

Donald F. Landers
Executive Vice President

DFL:jej
attachment

In determining the acceptability of Design QA(1), two important issues need to be reviewed. The first is to determine whether a Design Process is in place and functioning.(2) The second is to determine whether the existing Design Process is structured so that, if followed, reasonable assurance exists that the licensing commitments for a plant are complied with.(3) The second issue above is the primary purpose of developing a process to control the design. Control is intended to channel the efforts of the design groups to the goal of fulfilling licensing commitments. This, in fact, may require some members of the design staff to do things differently than they are used to. Also it may require approaches, techniques, analyses, etc., which are significantly different than the last nuclear power plant project completed by the design agent simply because the licensing commitments are different. It is important to recognize that both issues must be acceptable or questions with respect to adequacy of the design may exist.

For example, a Design Process may be in place, supported by procedures, subject to meaningful audits and verification and yet be flawed because it does not address the licensing commitments. Similarly a Design Process which addresses the licensing commitments may be in place but it is not functioning properly and required audits and verifications are not being performed to demonstrate inadequate implementation and to provide corrective action.

---

(1) Note that this terminology has been used in these proceedings. The author does not endorse its use in the context of the concern at Comanche Peak but will comply with current terminology.

(2) This is essentially a review of paper. For example, proper sign-offs exist, audits were performed appropriately, check lists were complete, etc.

(3) This is essentially a review of technical adequacy. For example, does the process assure implementation of a design that complies with applicable Regulatory Guides and Codes.

reviewing the piping layout with all of its supports.(4) This is particularly important when addressing an issue such as support stability since the interaction between the support and the pipe is usually critical in making this determintion. For example, for a pin-pin connection, the displacement of the piping at the support location due to operating conditions (thermal expansion) can result in a reduction in the ability of the support to carry a load along its axis. Also, the concern of the author with respect to support stability is directed towards anticipated water and/or steam hammer events which usually result in higher loads and displacements on the piping system than does a seismic event. To accomplish the kind of review discussed above it is necessary to have an established and functioning link between the group responsible for piping design and analysis and the group responsible for support design and analysis.

In the majority of cases a utility constructing a nuclear power plant contracts with a design firm (usually one of the major AE's) to provide design services in the areas of piping and pipe supports (along with a number of other areas not relevant to this discussion). The AE is responsible for the design process interface controls and procedures required to develop construction drawings for piping and pipe supports. The AE may elect to subcontract a portion or all of this work to a third party; however, responsibility for, and control of, the design of both piping and supports rests with the AE. This responsibility and control exists even when the third party uses its own Design QA Process and Procedures. The AE will review and approve the process and perform audits to determine acceptability of implementation. The above does not eliminate the requirement that the utility is ultimately responsible.

---

(4) Your attention is called to Welding Research Council Bulletin 300, "Technical Discussion on Industry Practice," Section 1.7, page 26, December 1984.

(6) Design and analysis was completed and supports were fabricated and shipped to the site. Review of the support details at G&H was not required at this time in the design process.

(7) Modifications to supports required by field conditions were made by field engineering (Texas Utilities responsibility) and a Component Modification Card (CMC) was executed.

(8) The CMC was forwarded to the responsible support design agent (ITT Grinnell or NPSI) for review and approval.

(9) A third pipe support group (PSE) was formed which was under the technical direction of TUGCO. This group functioned just as ITT Grinnel and NPSI did although the engineering and administrative procedures differed between the three organizations.

(10) Also in this time frame, ITT Grinnell and NPSI sent support designers and analysts to the site to perform design, analysis, modifications, and review of CMC's. These ITT Grinnell and NPSI personnel were administratively controlled by TUGCO but utilized their own procedures in performing their required tasks. For ITT Grinnell these procedures were the same as those for the home office. NPSI developed specific procedures to be used by their personnel at the site.

(11) Any of the three organizations who had concerns with a CMC informed the initiating field engineer of that concern in a Technical Services Design Review (TSDR) memo.

(12) At a point in time when the pipe was installed and Brown and Root (B&R) felt confident that the support as designed or

not necessarily result in a conclusion that the process or implementation is sufficiently flawed to result in a design that is not in compliance with NRC safety criteria or the licensing commitments of TUGCO for Comanche Peak. The concerns are as follows:

Concern 1

The failure of the Design Process to require G&H to review designs (and modifications) of pipe supports prior to fabrication and installation can result in a situation that is of concern. Piping is not a "stand-alone" commodity.(6) A basic premise in designing a piping system includes (but is not limited to) the fact that support designs will reflect the assumptions made in the analysis of that piping. This is of particular concern to the author as it relates to anticipated steam and water hammer resulting from plant operating transients. Since G&H was not required to (and therefore did not) review support designs prior to their fabrication and installation they are always dealing with an installed or "ready for installation" situation. This could impact the judgement of a reviewing individual. One may be more willing to accept as installed situations rather than as designed situations. This is not to be construed as a judgement that this occurred at Comanche Peak nor is it to be construed as a judgement on the adequacy (safety significance) of the design that exists at Comanche Peak.

Again, my major concern is related to anticipated transients such as steam hammer resulting from a turbine trip or water hammer resulting from pump switching and rapidly closing check valves. With respect to seismic loading it is my current opinion (based on the data available to

(6) G&H agrees with this in footnote 13, page 17, of summary disposition.

stability.(8) TUGCO has performed seismic analysis with the supports in place and with the supports removed and the resulting stresses are acceptable in both cases. However, the supports are still in place and, according to Cygna, will not function. My concern is that the seismic analysis does not bound the real situation which could be that the support has become "tilted" or unstable and then a dynamic load is applied to the system. Does the tilted support provide restraint in a direction that was not intended? Once tilted does the support restrain thermal expansion? To assume that a support is acceptable because it is analytically not required may not "bound the problem" in every case. This would also apply to a support that was overstressed. To perform a piping analysis without the support in place and demonstrate acceptable stresses in the pipe and other supports is not always the worst case unless support failure is complete (or the support is physically removed) and does not impose a restraint on the system that was not accounted for.

Concern 4

A design process must provide a controlled communication between construction activities and design. TUGCO is right in pointing out that a Nonconformance Report (NCR) is not the only document for accomplishing this. Examples of other techniques used in the past are a Field Change Request (FCR) and a Drawing Change Notice (DCN). TUGCO used a Component Modification Card (CMC) to provide this interface. However, some concerns exist with the implementation of this interface. The design process underwent an evolution as plant construction activity increased. The following discussion addresses the process from its initial to its final stage as now understood.

---

(8) January 10, 1985 Transcript, pp. 72 and 73.

When ITPG, NPSI and PSE reviewed a CMC and found an unacceptable condition (i.e., stresses too high) they generated a handwritten memo(TSDR) noting the condition. This TSDR was sent to the field engineer responsible for generating the original CMC. The field engineer would reply back to the originator of the TSDR (on the original TSDR in a section set aside for a reply) noting the changes now recommended for the support can be found in the next revision of the CMC.(10) The support design organization was now responsible for reviewing the next revision of the appropriate CMC.

One area of concern with respect to QA control is that CMC's were handled by the site document control center and those individuals on the effected drawing distribution list received a copy of the CMC. Copies of the TSDR's were not controlled. There does not appear to be a definitive link between QA and design in the area of CMC's and absolutely none with the TSDR's. Therefore QA could only determine that changes to design were occurring if they performed audits (which they did) and reviewed both the CMC's and the TSDR's. This need not be a real area of concern in the initial design stages where construction was not underway, however, once a construction drawing is issued it is important that QA be aware of changes that are planned to that drawing. This is particularly important when those changes are already being built. QA can be effective in recognizing repetitive design changes and developing trends and then modifying their audit plan and schedule to focus on the affected areas. TUGCO (Chapman) states:(11)

> "Applicants have established a procedure, CP-QP-17.0, "Corrective Action," to review documented conditions adverse to quality for the purpose of providing corrective action to preclude repetition of significant conditions adverse to quality. This procedure provides for Quality Engineering Staff to review design changes documented on CMCs. The

(10) January 15, 1985 Transcript, p. 46 and Motion for Summary Disposition, July 3, 1984, p. 53.

(11) Motion for Summary Disposition, July 3, 1984, p. 54.

> in accordance with CPSES Engineering Instruction CP-EI-4.6-9, Rev. 1, entitled "Performance Instruction for Piping Analysis by SSAG" and Gibbs & Hill Applied Mechanics procedures previously cited. These documents have been established to assure that the SSAG activities are accomplished in a manner commensurate with the original as-design analyses."

The concern here is related to the fact that SSAG performed their function "as requested by site engineering groups." It is understandable that a modification to a pipe routing of considerable magnitude would have been routed through the SSAG. It is assumed that this was accomplished through the use of CMC's as discussed for supports in Concern 4. However, a major modification to a support which could have an impact on pipe stresses may not be routed to the SSAG since the individual responsible for generating the CMC may not have considered (or recognized) the change would effect pipe stresses.

Concern 6

The following are discussions of those items which are specific in nature and yet tell us something about the design process.

6.1 Mass participation

This issue is addressed in introductory remarks (see page 2) and is important from a design process standpoint and a support/pipe adequacy standpoint. Based on the Cygna review it appears that the average mass participation of piping systems analyzed by G&H is in the order of 40%.(13) One could expect that a seismic analysis cut-off at

(13) January 10, 1985 Transcript, p. 70.

application. That is, the use of struts or snubbers supporting a pipe from the bottom of the pipe to a floor or platform below the pipe. Since these supports are pinned they are unstable vertically as soon as horizontal displacement of the pipe occurs and system stability is provided only by the end conditions of the piping system or any horizontal restraints that exist. It has been pointed out that piping must be considered in conjunction with the existing supports and therefore the presence of pinned supports applied in the manner described above must be judged based on the overall support system.

6.3 As-built reconciliation

The as-built reconciliation process has two functions. The first, and most obvious, is to take dimensions, etc., of the actual as-built configuration of piping and supports and reconcile those with the as-designed documentation. The second is to have a qualified piping designer walk the system to develop an understanding of the overall geometry and to determine if the installation generally reflects the analysis. The importance of this second step is obvious, the overall configuration is there to see and one is not dealing with a number of different drawings trying to piece together a system.

The existing design process at CPSES required as-built information to be gathered by TUGCO technical services personnel and forwarded to G&H applied mechanics personnel. Already the ideal situation where the G&H analyst or members of the SSAG walked the system did not exist. However, this is not a fatal problem nor is it uncommon in the industry to have "others" gather as-built data. It merely makes the problem of system acceptance and analysis reconciliation more difficult.

The as-built reconciliation program was started at the time that the piping was installed and Brown & Root determined that the

opinion that this is the responsibility of the piping designer and G&H accepts that responsibility.(16)

6.4 Support mass

Many of the support designs at CPSES result in considerable mass which is not acting at the outside diameter of the piping. It is common practice to add support mass to the piping analysis and this is usually done at the centerline of the pipe since it normally involves a clamp. In the case of a box beam rigidly connected to the building structure the mass is not applied to the pipe and therefore need not be considered. In the case of a box beam pinned to the building structure the mass acting 90 degrees to the direction of restraint should be applied to the pipe centerline.

A specific geometry that cannot have the mass applied to pipe centerline and be representative of the as-built condition is a support restraint that is pinned to the building structure and has a beam some distance from the pipe ℄ and the pipe O.D. The beam is attached to the pipe by welding a trunnion to the pipe and the beam.(17) The effect of the offset mass rigidly connected to the pipe results in forces and moments on the pipe which will not be represented properly by modelling the mass at the pipe centerline. TUGCO apparently accounted for this effect on the main steam system only.(18) However, there are some concerns with the approach used in that instance.

---

(16) January 15, 1984 Transcript, pp. 11, 49 and 50.

(17) This would normally be called a trapeze restraint but if used as a horizontal restraint on a vertical pipe that could be a misleading statement since a trapeze support is normally considered to be a vertical support on a horizontal pipe.

(18) Applicants Motion for Summary Position Regarding Allegations Concerning Consideration of Force Distributions in Axial Restraints, dated July 9, 1984.

Of greater concern is the water/steam hammer loading which can result in loadings higher than that for the earthquake. For the main steam system it is quite probable that an earthquake of the magnitude of the OBE would result in a turbine trip. A turbine trip generates dynamic loads in the main steam system due to the pressure wave generated by closing the turbine stop valves traveling down the pipe. The loads due to this condition should be combined with the earthquake loading. No evaluation has been presented to demonstrate the adequacy of these type supports for either water/steam hammer loading or a combination of seismic plus water/steam hammer loading.

With respect to lug type supports the same concerns expressed above exist. In attachment 1, Pipe Lug Elastic-Plastic Analysis[18] the applicant states:

> "As stresses exceed the yield strain, the stress-strain is no longer linear but changes with the increasing strain level. In a load-unload-reload loading pattern, it is observed that the new yield points occur at different stress levels. This behavior is called strain hardening."

Here again the applicant has ignored the dynamic load associated with steam/water hammer which does not follow the load-unload-reload pattern. Strains of the magnitude specified result in stresses which exceed the allowable requirements of NB, NC, ND-3600 or ANSI B31.1. It should be noted that in Paragraph 121.3.2.B of B31.1 the allowable stress in welds attaching lugs or trunnions to pipe is limited to 80 percent of the allowable for the remainder of the support. For NB, NC, ND-3600, the stresses in the pipe should comply with the requirements for piping as defined in Code Case N-318-2, N-391 and N-392.

approach used by the applicant in addressing concerns, either in the form of Summary Dispositions or study-type analyses. In most of these cases the applicant has provided analyses which are well beyond that used in the normal design process. A typical example is that discussed in Concern 6.4 related to trunnions and lugs. Having performed these "state-of-the-art analyses" has not resolved the issue in some cases (i.e., trunnions and lugs, Richmond inserts and support stability).

With respect to the Design Process, any flaws appear to be limited to interfaces with the exception of G&H. The design process in place at ITTG, PSI and PSE was acceptable if external interfaces are not considered. The checking and verification of designs and analyses are commensurate with that generally utilized in the industry. The only exceptions to this that exist to my knowledge are those related to mass participation and node point spacing at G&H. In the first case the process did not address the issue (mass participation), in the second case checking and verifiction did not catch the failure to follow the procedure required by the process (node point spacing). It is not an essential requirement that each step in the computer modeling or interpretation of results be delineated in a procedure. For example, individuals experienced in piping dynamics should have recognized the mass participation and node point spacing problems without a procedure.

With respect to ITTG, NPSI and PSE, the fact that the list of items of concern contains five items that are support related requires evaluation. Many of the support designs for CPSES are not commonly found in commercial nuclear power plants. This is not in itself reason for concern but leads one to review the design and the supporting analysis critically since industry standards or experience cannot be totally relied on.

Based on the above a decision concerning the adequacy of the design at CPSES cannot be reached. It would be necessary to review a set of

1-3

In addition, we have some of the people that have been working on the summary disposition, and they will be bringing up concerns as this progresses.

Around 3:00 o'clock this afternoon, I would like to bring the meeting to a halt for today, and I plan to meet with the Staff and sit with them to address anything that we might have overlooked today and we will plan to bring up for tomorrow's sessions.

I might briefly talk about the summary dispositions that have been submitted by the Applicant and which the Staff is working on. I don't think it should come as any surprise to you that we are having some difficulty with these summary dispositions.

Now that you have brought in some independent authorities, and I understand Mr. Howard Levin here will be basically addressing these areas, I would encourage you to go back and revisit your summaries and look at them.

Not only does the Staff have some very strong technical concerns about the summaries, the way they have been presented, but also there's some what I would call discrepancies that need to be corrected. These are minor items, but they do raise questions in our minds on some of the things.

One other thing that I would like to

1-4

address at this point in time would be basically -- John would be basically talking about -- maybe briefly sometime today you could talk about the action plan that you would be submitting to us some time in the future.

I would like to make it clear that this action plan that we now expect from the Applicant would be a total action plan, in that it will cover all licensing issues, not just strictly the TRT issues.

I look at this action plan that should be submitted to the NRC are things that you say need to get done in order for this plant to get licensed and go down that licensing path, and TRT only being a subset of those things, we think.

After basically your discussion here this morning, Howard, I'm going to turn it over to Don Landers, who is our consultant, and who is the author of this consulting report.

I'll let basically Don talk about the report and some of the concerns that he has, and then we have Dave Terao and John Fair and Paul Chen here, also, who will be talking of concerns, I think.

I do not expect you to have answers for all these things. It's just the first time that we actually sat with you in this kind of meeting to talk

1-6

TRT concern, and that is the question of design adequacy or design QA.

We announced at that time that Howard Levin would be serving as the issue team leader for that question, which is what brings us here today.

Our response over all that will be filed in April, as our schedule would have it today, will be an all-inclusive response.

It will treat all issues needed to be resolved to license Comanche Peak, TRT being a subset, albeit a major subset, of that particular question.

So the answer is a positive one, yes, we hear you and that's precisely what we'll do.

With regard to summary disposition documents that may be in front of the ASLB, that are in front of the ASLB today, obviously, as the development of our response to these particular concerns in the design adequacy area evolves, we will have to revisit positions that may have been taken in those documents, and that is in process today.

Today's meeting is going to be somewhat different from our perspective, certainly, than those that are scheduled from this Thursday and next week, in that we are merely in the early stages of developing a response to this question of design adequacy and in

1-8

yet in that regard, but it is one towards which you are leaning; and we will certainly take that into complete consideration.

I want to reiterate, also, TUGCO's overall commitment to resolving these questions. That's the course we are clearly on, steadfastly on, and look forward to the exchange today.

Howard has the bulk of the presentation.

Before he starts, I would like to introduce John Guibert, who is in the audience. John is a member of the Senior Review Team in our TRT response effort, and serves with me on that Senior Review Team, which I chair.

Howard, would you take the podium.

MR. LEVIN: I have four viewgraphs and Vincent, you passed out copies. I will be using those in a moment.

As John has just indicated, TUGCO management recently made a commitment to consider the issue of the design adequacy.

This was presented at a recent Contention 5 briefing, along with other details of the Comanche Peak Response Team Program.

I was selected to coordinate the effort, along with other related issues under my responsibility

1-10

and supports, and he will be assisted by Paul Streeter, who will be assisting us in analytical help that we may need for this part of this program.

With us today, we have three consultants. One hasn't quite made it today. Dr. Bob Cloud, Dr. Bill Hall from the University of Illinois, and I understand that Sam Orr from Oak Ridge National Lab will be arriving shortly.

I expect these individuals to contribute both in the program development phase which should initiate immediately after this meeting, as well as other meetings that we have planned in the next couple of weeks, and I will get to that in a moment, as well as the execution later.

The specific roles of the individuals I just mentioned, other than assisting in the program development phase at this time, is undefined, but it will become clear as to what their responsibilities will be as our program evolves, and as we develop a schedule for the program.

Also here today, representing a third party, as John indicated, Mr. John Guibert is representing the CPRT Senior Review Team, and Mr. Don Davis, who has been a source of guidance for our entire CPRT effort and expect him to contribute to

1-12

that time.

We plan to develop initiatives that are sufficiently broad to identify and deal with the generic implications, both to similar hardware that may be in question and beyond that, other disciplines and other types of hardware as required.

In certain areas where weaknesses are identified, where potential deficiencies are identified, I think at the same time it will be comprehensive in those areas.

Our efforts will include a combination of initiatives, including confirmatory analysis, testing and review of existing material.

We don't plan to start from scratch. There have been a variety of efforts undertaken, and we believe to start with that, we will conduct a third-party review of that, verify its adequacy and use it if it is verified to be adequate, and as necessary, supplement.

I want to make it clear that there are no restrictions on our program. We will recommend practical solutions.

If this requires rework, then it will be recommended.

With those introductory comments, what I

issues.

In the audience today, we also have Geary Mizuno, who is from our legal staff.

Later on today, Mr. Larry Shelby will be coming down here around noontime. Larry will be also involved in this issue.

So we are kind of bringing all of the summary disposition issues under what has been called the TRT.

I don't necessarily call it that any more, because of the broader scope of what we're doing here; but it's basically under my direction.

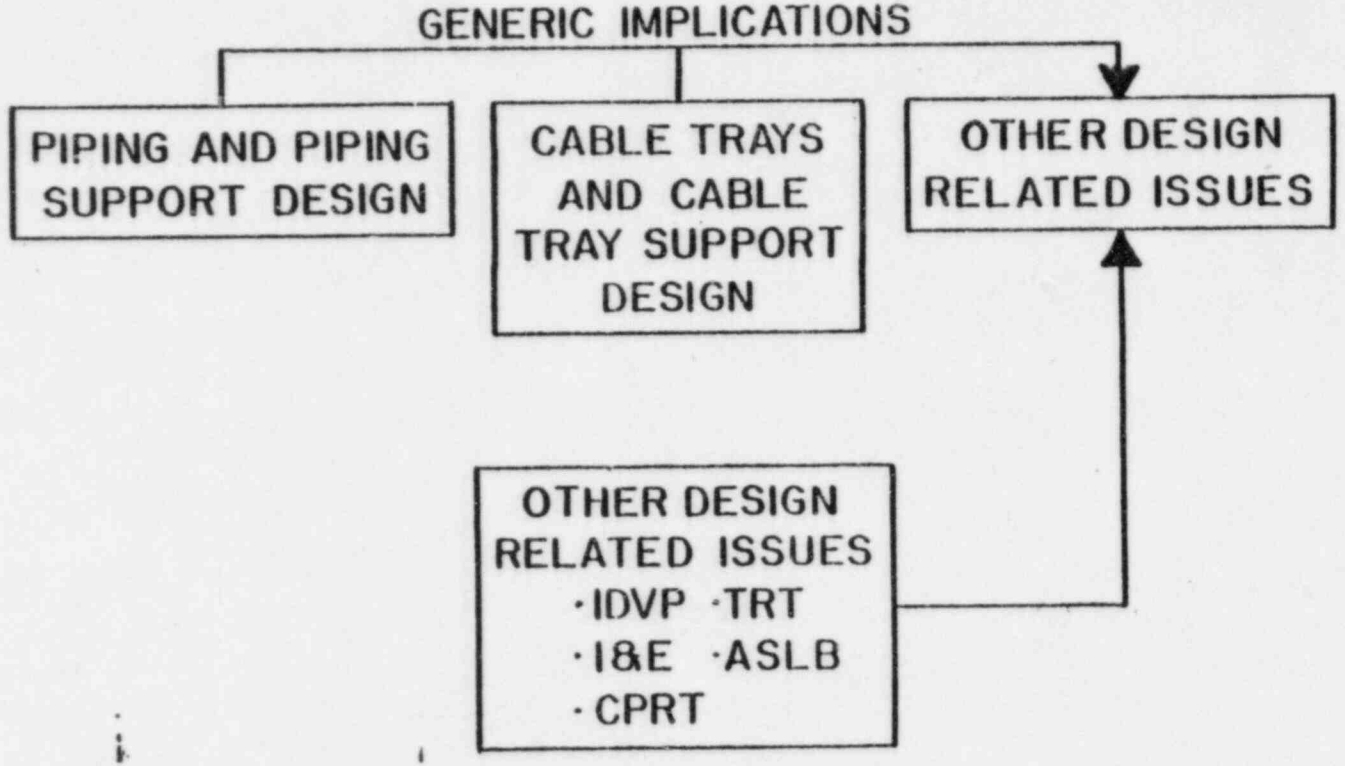
MR. LEVIN: (Slide 1.) This is a very simple schematic of the scope of review as we understand it today.

(Whereupon, Slide 1 follows.)

///

///

CPRT DESIGN ADEQUACY EVALUATION
SCOPE OF REVIEW



Slide 1

2-2

MR. LEVIN: Certainly.

MR. NOONAN: You say "TRT" here. Are you talking about reset to CAT, regional stuff, regional inspections? Is that all part of TRT, or how do you plan to look at those things?

MR. LEVIN: Region IV would fall under the I&E Category, but any source of concern that is relevant, that is viewed to have safety significance to the issues that we're talking about, would be included.

MR. NOONAN: That's sort of what you plan here with what you call "Other Design-Related Issues"?

MR. LEVIN: That's right, but by other, we mean that it's in areas other than piping and cable trays and supports.

Just at this point in time, Vince, I think we want to have an opportunity to take a step back, assimilate that information, understand what it may mean, and make a judgment as to what additional initiatives may be necessary to deal with design-related issues, other than those two areas that we know about.

We know that we are going to have to take a fairly comprehensive stance and look at those two

Slide 21

CPRT DESIGN ADEQUACY EVALUATION METHODOLOGY

(PRELIMINARY)

1. IDENTIFICATION OF ISSUES
   - SOURCES
   - CATEGORIZATION
   - PRELIMINARY REVIEW OF HISTORY, DOCUMENTATION AND WALKDOWN

2. DEFINITION OF ISSUES
   - DETAILED REVIEW OF AVAILABLE DOCUMENTATION
   - PRELIMINARY DETERMINATION OF SCOPE
   - STATEMENT OF TECHNICAL/PROGRAMMATIC ISSUE REQUIRING RESOLUTION

3. DEVELOPMENT OF ACTION PLANS
   - TECHNICAL ISSUES: DIRECT OR INTEGRATED SOLUTION PATH
   - PROGRAMMATIC ISSUES: LOCAL OR GLOBAL APPLICABILITY
   - IDENTIFICATION OF POTENTIAL ROOT CAUSE
   - DEVELOPMENT OF INITIATIVES

2-4

MR. LEVIN: There are six major elements to the program, and they are indicated by the major bullets on this slide as well as the next slide.

I'll be presenting an overview here, and then getting into as much detail as necessary in the following slide, which is a logic diagram for how we go through this process.

The process basically is a sorting process, leading to the definition of issues, the identification of initiatives, action plans for their resolution, implementation, and as I indicated, the possible modifications either to hardware or even licensing commitments, as necessary.

I want to make it clear that our focus in this effort is on the end product, and the adequacy of the design as represented on the drawings and the specs.

However, I need to amplify that by indicating that there will be a review of certain programmatic areas and the processes; and where there are weaknesses identified, I think we'll attempt to utilize that information in an effort to focus our efforts in terms of root-cause determiantion and our evaluation of generic implications.

However, the process is not an end unto

2-6

that it would enable us to take an initial shot at the statement of the issue, the issue falling into one of two categories.

I want to make it clear that the hopper accepts issues that could fall into technical areas, as well as programmatic areas.

The methodology that I will describe will show how we deal with that and how ultimately, whether it's a programmatic action plan or a technical action plan, it ultimately gets down to the adequacy of the hardware.

The next step is the development of the action plan itself. In the two primary areas that I just mentioned, technical issues and programmatic issues, we contemplate things falling in each area into two boxes.

For technical issues, we believe that the initiatives will be directed at either a direct solution path or an integrated solution path.

What I mean by that is that based upon our very preliminary knowledge of what the issues are, certainly some of them have to be considered collectively, and the cumulative significance of these things needs to be weighed in a systematic way.

One example of that might be in the area

2-8

An example of a local issue may be a concern of a very, very specific interface, possibly, between the architect/engineer and vendors that have been working for that architect/engineer.

On the other hand, an issue that may be broader could be one such as the availability of change paper to inspectors and things like that.

So a major part of this process is to get the issues that we hear from you, as well as some of the other sources, and get them into hoppers like that, and develop plans that can deal with them in these categories.

I made a few comments earlier about where root cause fits into the equation in terms of evaluating the adequacy of the end product.

That's a very important part of the action plans. Initiatives will be included which will get at that, but primarily focused to the areas I mentioned earlier.

MR. NOONAN: At this point in your plan, it seems to me that there ought to be -- Maybe you are already saying this and I'm just not hearing right.

There are certain designs that might not even be worth talking about. If you look at this design, you might even wonder why it's there in the

2-10

design here, but just to verify that in fact it meets the Code requirements and other commitments that have been made.

If it is practical to do that and that is a solution path, I guess my direct answer to your question is yes, from the standpoint of adequacy, but not from the standpoint of optimizing the system.

We want to just verify that we've met commitments and Code requirements.

At this point I have an open mind as to what paths would be required. It's clear to me from just my, at this point, superficial knowledge of the issues, that that may be the most practical solution, either eliminating certain pieces of hardware or modifying certain pieces of hardware, as opposed to taking analytical or testing investigations that could take a significant amount of time and resources.

So we are just going to have to weigh those things. I guess at this point I can't be any more specific.

MR. NOONAN: I was more or less wondering where that appears in your plan. Where would that decision path be made?

MR. LEVIN: That decision path would be made in the next-to-the-last bullet where we talk about

2-12

the significance to hardware; and all of these things focusing towards trying to get the issue down to its lowest common denominator, identifying those limited factors that allow us to understand the boundaries of the issue, the root cause and its generic implications, because it's through an understanding and evaluation of those items that we are going to be sure that we fully bounded the scope of these concerns.

I think most importantly, we are undoubtedly going to get to a point where our initial action plan will have to be modified.

Part of the initial process in going through this, putting these issues into these hoppers, involves making hypotheses as to what the problems could potentially be, based upon our experience, and initiating actions which will be oriented at confirming or not confirming those hypotheses.

In certain cases we may be right and the path will go directly through an action plan to completion.

In other cases, I think you are going to see a series of decision paths and possibly even new action plans that would evolve in process as you learn, as you decide where the design adequacy effort takes you.

2-14

think it's worth it so that when you get back and you are ready to make your corrective action, at least you've heard from all the parties involved.

MR. LEVIN: Yes. The important thing is that will confirm the boundaries of what's on the table. I agree.

MR. BAGCHI: May I ask one clarification?

MR. LEVIN: Sure.

MR. BAGCHI: I am Goutam Bagchi of the NRC Staff.

You laid out here a very methodical and deliberate process of identifying the problems and making sure that you have a problem before you go over to the corrective action plan.

But haven't we spent enough time in discussing technical issues for so long that some issues ought to jump out at you and make their presence known?

And I would like to understand how you are addressing those issues.

MR. LEVIN: I think the answer is obviously yes, Goutam. What we have developed here and what we have portrayed, if we could put this up. It might be good for the Staff to maybe take it back and look at it and we could discuss it in more detail, if necessary.

3-1

identify all relevant questions that may not be on the table yet.

We don't want to do this but one time and we want to be darn certain that this exercise is a comprehensive one that doesn't leave anything unanswered.

So that's why we're taking very careful pains in what may seem to be, with regard to some of the specific technical questions that are on the table, superfluous activity.

It's structured so that there's nothing left unanswered as far as the safe design and construction and operation at Comanche Peak. It's been perhaps excruciatingly boring at this juncture, but we want to have everybody assured that that's the case.

You are right. Some of them go very quickly to the bottom line.

MR. LEVIN: I think my colleagues have made me aware of an example, in our existing CPRT efforts, that falls into that category.

That was the issue having to do with the improper shortening of the steam generator upper lateral support bolts, okay?

There we had a situation where there was

3-3

In other words, I think in some cases that we have dealt with, people have felt that it would be a loss of face to make a hardware fix where that would really be the appropriate way out.

After many months of discussions about analytical solutions, the analytical solution was found to be acceptable; but still, all I'm trying to say is don't have a mindset, if you will, when you approach the solution of the problems.

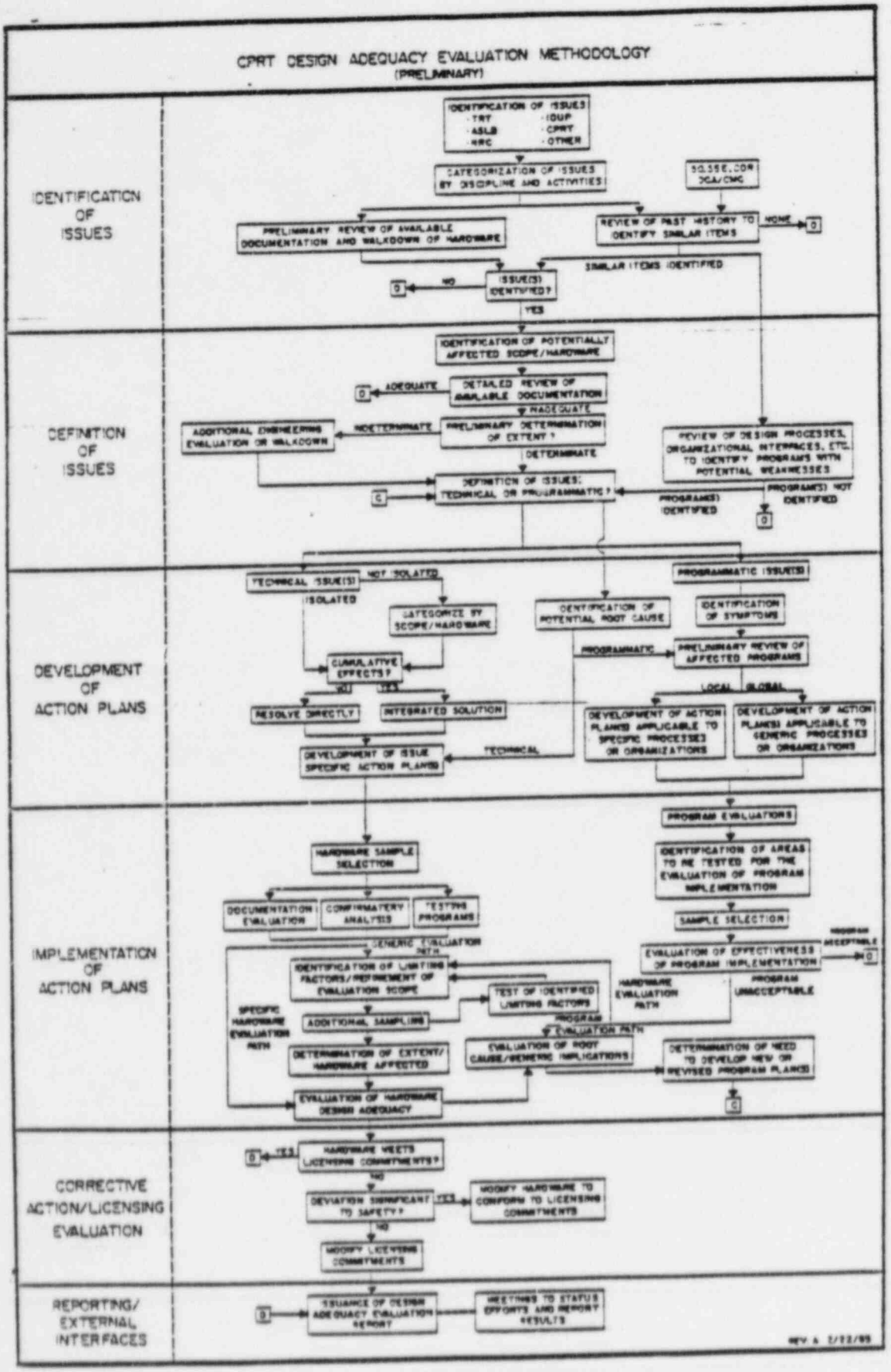
MR. NOONAN: One other comment at this point in time.

As you go down this path and as you decide to do certain things, if you feel it necessary to sit with the Staff and receive their concurrence on certain things you want to do, particularly like criteria, you know, do it.

I don't have to be there. John Beck doesn't have to be there for you and the Staff to sit down and talk and get the Staff's acceptance so we don't have to wait until the very end and then we find out that we don't like some of your program or there's something we're not happy with. Get that early on.

MR. LEVIN: Hopefully, Vince, we'll be able to do 90 percent of that in our formulation of our plan; but as we go through this, undoubtedly, issues

Slide 4


CPRT DESIGN ADEQUACY EVALUATION METHODOLOGY
(PRELIMINARY)
IDENTIFICATION OF ISSUES
DEFINITION OF ISSUES
DEVELOPMENT OF ACTION PLANS
IMPLEMENTATION OF ACTION PLANS
CORRECTIVE ACTION/LICENSING EVALUATION
REPORTING/ EXTERNAL INTERFACES
IDENTIFICATION OF ISSUES
· TRT · IDVP
· ASLB · CPRT
· NRC · OTHER
CATEGORIZATION OF ISSUES BY DISCIPLINE AND ACTIVITIES
SQUG/EQE.COM DCA/CMC
PRELIMINARY REVIEW OF AVAILABLE DOCUMENTATION AND WALKDOWN OF HARDWARE
REVIEW OF PAST HISTORY TO IDENTIFY SIMILAR ITEMS
NONE
SIMILAR ITEMS IDENTIFIED
ISSUE(S) IDENTIFIED?
NO
YES
IDENTIFICATION OF POTENTIALLY AFFECTED SCOPE/HARDWARE
DETAILED REVIEW OF AVAILABLE DOCUMENTATION
ADEQUATE
INADEQUATE
PRELIMINARY DETERMINATION OF EXTENT?
INDETERMINATE
DETERMINATE
ADDITIONAL ENGINEERING EVALUATION OR WALKDOWN
REVIEW OF DESIGN PROCESSES, ORGANIZATIONAL INTERFACES, ETC. TO IDENTIFY PROGRAMS WITH POTENTIAL WEAKNESSES
DEFINITION OF ISSUES: TECHNICAL OR PROGRAMMATIC?
PROGRAM(S) IDENTIFIED
PROGRAM(S) NOT IDENTIFIED
TECHNICAL ISSUE(S)
NOT ISOLATED
ISOLATED
CATEGORIZE BY SCOPE/HARDWARE
CUMULATIVE EFFECTS?
NO
YES
RESOLVE DIRECTLY
INTEGRATED SOLUTION
DEVELOPMENT OF ISSUE SPECIFIC ACTION PLAN(S)
TECHNICAL
PROGRAMMATIC ISSUE(S)
IDENTIFICATION OF POTENTIAL ROOT CAUSE
IDENTIFICATION OF SYMPTOMS
PROGRAMMATIC
PRELIMINARY REVIEW OF AFFECTED PROGRAMS
LOCAL
GLOBAL
DEVELOPMENT OF ACTION PLAN(S) APPLICABLE TO SPECIFIC PROCESSES OR ORGANIZATIONS
DEVELOPMENT OF ACTION PLAN(S) APPLICABLE TO GENERIC PROCESSES OR ORGANIZATIONS
PROGRAM EVALUATIONS
HARDWARE SAMPLE SELECTION
DOCUMENTATION EVALUATION
CONFIRMATORY ANALYSIS
TESTING PROGRAMS
GENERIC EVALUATION PATH
IDENTIFICATION OF AREAS TO BE TESTED FOR THE EVALUATION OF PROGRAM IMPLEMENTATION
SAMPLE SELECTION
EVALUATION OF EFFECTIVENESS OF PROGRAM IMPLEMENTATION
PROGRAM ACCEPTABLE
PROGRAM UNACCEPTABLE
HARDWARE EVALUATION PATH
IDENTIFICATION OF LIMITING FACTORS/REFINEMENT OF EVALUATION SCOPE
TEST OF IDENTIFIED LIMITING FACTORS
ADDITIONAL SAMPLING
SPECIFIC HARDWARE EVALUATION PATH
PROGRAM EVALUATION PATH
DETERMINATION OF EXTENT/ HARDWARE AFFECTED
EVALUATION OF ROOT CAUSE/GENERIC IMPLICATIONS
DETERMINATION OF NEED TO DEVELOP NEW OR REVISED PROGRAM PLAN(S)
EVALUATION OF HARDWARE DESIGN ADEQUACY
HARDWARE MEETS LICENSING COMMITMENTS?
YES
NO
DEVIATION SIGNIFICANT TO SAFETY?
YES
NO
MODIFY HARDWARE TO CONFORM TO LICENSING COMMITMENTS
MODIFY LICENSING COMMITMENTS
ISSUANCE OF DESIGN ADEQUACY EVALUATION REPORT
MEETINGS TO STATUS EFFORTS AND REPORT RESULTS
REV. 6 2/22/89

3-5

MR. LEVIN: It might be appropriate to address this tomorrow or a later date, but fundamentally, it shows you the flow.

As Goutam appropriately pointed out, I believe it deals with issues that, you know, have a range of levels of significance, as well as can deal with issues that have had different histories, and get them into the right solution path.

I think it may be appropriate to discuss this possibly in early April, along with the rest of our plan.

I want to make it very clear that this is very preliminary. It's something that is as recent as the Rev. date; it's draft indicates the 22nd.

I believe that it will evolve and mature, and I expect to have a lot of help in that regard from my colleagues and consultants that are here today.

MR. NOONAN: I think what I would like to do maybe is offer that tomorrow morning we make this a part of the agenda.

I will ask the Staff to take a look at it between now and tomorrow and give us some comments back to you. They won't be very detailed, but at least give you a flavor of what we see on the plan.

MR. LEVIN: Vince, right now, at least as

3-7

We need to get those things resolved.

Some of the things that Mr. Bagchi raised to you is maybe of frustration, because Goutam is on this project a very short time, too, and we are wondering, you know, why are we sitting here two years later talking about piping and pipe support design. It should have been done a long time ago and finished.

With that, I think we'll go ahead and let Don start and talk about the report and then the rest of the people can join in.

MR. LANDERS: To begin, as you can see, the report was submitted February 21st. It is draft.

The Staff really has not had time to sit down and review it and to comment on it. So I would assume that I will be getting questions from them today, also.

Secondly, I found out last night I was going to talk about it today.

Basically, the first six pages are a discussion of design process, design QA, as I see them in a global sense within the industry, and then the design process, as I understand it -- I want to make that clear. This report is as I understand things.

The design process that's described here is

3-9

In the second case, there was a procedure at Gibbs & Hill that addressed mass point spacing.

So what we have really is a paper trail problem and a technical problem, the paper trail problem being the fact that there was a procedure in place, the procedure wasn't followed, and in fact the verification process did not pick that up, the mass point spacing.

With respect to mass participation, no procedure. However, I would expect individuals experienced in dynamic analysis of piping to recognize that there was a problem in doing that.

So I wouldn't really expect that one would require a procedure for that kind of thing.

However, it's apparent that in this case that probably was required.

Another issue that I think is important to me, and I think, in listening to the short presentation from Howard, that you are going to address, and that is that I don't think you can separate pipe supports and piping, that in fact they constitute a system. To look at one separate from the other is almost impossible.

I think all of the issues that at least are on the table today are interrelated; most of them,

and as I go through other concerns later on, in fact it may not have.

Another concern I have, since I've been involved, when we are talking about the issues, we are always talking about seismic and its relationship to the issues.

I have a gut feeling that I don't have any problem with that plan with respect to piping and supports when one talks about seismic events.

I have a real problem when we want to talk about steam and water hammer and normal operating events, and I don't have anyone addressing those issues, as we go through trying to resolve the outstanding issues.

So I would like very much, as we talk about these things, to not forget the normal operating water and steam hammer transients that are going to be imposed on the system.

I think that with very few exceptions, to show adequacy of the piping and supports for the seismic event at Comanche Peak will be relatively simple to do; but I think we have to show it just as you proposed here, in a programmatic way and in a combined way, rather than looking at individual issues.

A concern, too, is really more of a

need the restraint, then I think that it's my opinion that the restraint should be removed.

Concern four is probably the first area of design process that I really was supposed to be involved in, and I see nothing wrong with the use of Component Modification Card or in fact whatever TUGCO wanted to call it.

Different utilities use different techniques: Field change requests, drawing change notices, whatever.

So the label, "Component Modification Card," is not a problem to me.

One of the problems I do have with that is not with the use of Component Modification Card, but perhaps with the fact that they weren't reacted to very quickly in the initial process of the design, that at least based on meetings and comments from the Applicant and his agents, that CMC's would be filed and would be worked on when the system was looked at.

I think that that may have resulted in designs being installed that were not at the time approved by the hanger supplier, and then later on there is, I think, always some -- I won't say that.

As we look at the design process, we can recognize that the process changed over the life of

a CMC by the hanger supplier was a memo, and that was a TSDR, and at this point I've forgotten what a TSDR is.

MR. DAVIS: Technical Services Design Review.

MR. LANDERS: Technical Services Design Review.

The Technical Services Design Review was not controlled as the CMC was, and the field engineer would make a change with a CMC. A TSDR would be written by ITT, Grinnel saying, "Gee, that's no good. That's not what we want. We need something else."

There was a space in the TSDR for the field engineer to say, "Okay, understand, and look at the next revision of the CMC that comes out."

Now, with respect to the design, the process was covered and the loop was closed. The CMC was sent, the TSDR was sent back, it was responded to, and the hanger supplier responsible for that support knew that another CMC was going to be coming in.

My concern was and is that there was no QA hook in there with respect to the field engineer making changes to supports and perhaps trending of the fact that, "Hey, this field engineer is making changes

were not automatically on the list, so that this big issue that's been raised about trending -- you know, we had a QA program that developed trending.

Well, in one case here the QA program that looked at trends really couldn't look at it, if we had a field engineer, again, making recommendations that were always being rejected.

MR. LEVIN: But as far as that QA individual, he would -- I mean, presumably, the CMC's and information on a particular line were kept in a central file. He would have had to go to that file, and then he could be sure that he had a complete set of drawings, CMC's and TSDR's?

MR. LANDERS: I'm not sure about the TSDR's.

MR. LEVIN: Okay.

MR. LANDERS: That's my point. He would have the drawing and have the CMC He may not have the TSDR.

What I don't know is if the CMC says, "Revision 2 in accordance with TSDR No. 7." I don't know that and I haven't had an opportunity to resource it to follow that trail.

If that's the case, then fine, that's beautiful.

expected or I would have guessed that they were involved whenever there was a modification to pipe routing or modification to piping systems or modification, say, to a different type of branch connection.

However, it doesn't appear that they were very involved in the modifications of the supports, and again, that is because the process as set up dealt with modifications to supports being dealt with by the supports supplier, and the support manufacturer, and that interface between piping and support not really as strong as I think it should be.

So modification to support would not go through the Site Stress Analysis Group, would not, therefore, get reviewed by Gibbs & Hill, as I see the process.

MR. LEVIN: So Don, the function of the SSAG is parallel to the original function of the Gibbs & Hill New York Office in that they are primarily reacting to changes in location, types of supports; is that correct?

MR. LANDERS: No, that's my point. I don't think the Site Stress Analysis Group was getting involved in support modifications, as I feel they should have been.

MR. LEVIN: But when their system got

look at the stability issue is, again, we can't take a support and look at a support, particularly with respect to stability.

The interaction between where that pipe is moving, where the building is moving and what's happened to the support are so interrelated that you just can't take a support out and address its stability alone.

Just as I talk about here in Page 15, when you look at a piping system that is supported in an area with pin supports from the bottom, I mean, you immediately say, "That's unstable."

However, if I look and I find some horizontal restraints, then in a system sense, it's not unstable.

So we have to be very careful when we talk about stability with respect to pulling a support out.

We have to look at stability and the system together.

With respect to as-built reconciliation, it's my understanding that when that process began, that Gibbs & Hill would be given a system in which the number of installed supports on a given problem could vary from 20 percent to 80 percent.

reconciliation is that situation where we have more than one piping system supported off a frame, and it's my understanding, based on meeting with the Applicant and answers that I was given, that in performing the analysis of the piping system and, therefore, accepting the system, that Gibbs & Hill did do the analysis of each system, assuming individual supports.

Loads were then put together on the support and the support frame was reviewed by the support manufacturer; but again, no one was looking at this interaction effect.

We've got six piping systems on a frame. Certainly, the support manufacturer has all the loads from those six piping systems, and he can look at the structure adequacy.

The analyst is dealing with them as individual supports, and that doesn't look at the interaction effects.

So I think that wherever you've got these gang supports, that we have that problem to take care of.

Support mass, this is a situation in which we're talking about massive supports that are not box beams around the pipe, but are offset from the pipe, either with a stanchion or some other thing.

really should be concentrating on steam and water hammer and operating loads.

Basically, my recommendations to the Staff are that there's a whole lot of issues, and on Page 20 I just list some of them, none of which I generated myself. They've all been generated by other people.

If we only had one of those issues up there, we probably wouldn't be here meeting. I mean, we could resolve it very easily.

And even if we had two or three of them, we could resolve them very easily.

My concern is that when you look at this list as a whole -- and again, I don't have all the issues here that are related to supports and piping -- that you recognize they are interdependent. You really can't answer one of them without answering the other one.

You can't answer a Richmond insert question without knowing what the loads are on the Richmond insert, and you don't know what the loads are until you get mass participation, node point spacing, support stiffness, everything else put together.

So I cannot reach any conclusions on what's going on out there in respect to the piping and supports, and I think that the only way that I can

an individual support with a free-ended pipe attached to it. That, you know, is not going to get us anywhere.

I hope that maybe as we go on further today, we can maybe even arrive at what we believe are safety significant attributes relative to stability questions to strive far, because it's apparent to me, and maybe it's just my understanding, for example, of Cygna's recent letter, that it may not be consistent with what I heard you saying.

I don't know. You are probably in a better position -- I don't know if you've read their letter.

MR. LANDERS: Last night.

MR. LEVIN: Okay. -- to judge whether or not --

MR. LANDERS: I'm in no better position than you are.

MR. LEVIN: Well, it wasn't clear to me whether or not they were advocating looking at it as a system or as individual supports or whatever, and I think that's something we all need to talk about and decide.

MR. LANDERS: Yeah. Well, I agree with that, but what I would like -- what I first would like to see is the results of this with respect to licensing

do it with respect to the way one would normally design a nuclear power plant piping system, which is to preclude at this point, in my opinion, the use of non-linear, inelastic analysis, for example.

That's not how we would design a nuclear power plant. Let's go in and do the kind of analysis we would do with respect to designing that plant and see where we sit, and then we can make some judgments.

But if we have to deal with non-linear, inelastic analysis, then I don't know what judgments we could make.

MR. LEVIN: Well, let me ask you this, Don.

At certain points we are going to get to a situation where we have a certain physical situation that we are going to want to model, and there are limitations in the context of the type of analytical approach that you just talked about that we can make.

We can make a -- There's limits to the amount of boundary conditions and assumptions that we can make. So you have to oftentimes make judgments, you know.

Is it closer to append; is it closer to fix? You know, how do you want to represent it? Okay.

And then there are certain non-linearities,

at something, one of the issues that's still outstanding has an impact on this, and so I can't reach a judgment on that.

So if I could just have one system in which all the issues are addressed and the Applicant has said, "This is how I'm going to address them," then one can look at that.

That's really what I'm saying, and I think that certainly with the people that you have on the CPRT, that you know what the industry approach to issues are, and we can deal with those.

I'm certainly not one that's going to ask you to do analysis that is outside of common industry practice.

I think that's what's been done and I think that's what the problem is. I think we ought to stay within the industry practice as much as we can.

Now, when we get to a situation that we don't meet the criteria doing that, the criteria always allows us to do something different; but I would like to begin with knowing what doesn't meet the criteria and why, and why we're going to plastic analysis, for example, which the criteria allows us to do.

But I don't know that at this point, and

procedure on that.

MR. LEVIN: By a "procedure," do you mean an implementing document?

MR. LANDERS: Yes.

MR. LEVIN: Because, certainly, there was an FSAR commitment in that regard.

MR. LANDERS: Yes.

MR. LEVIN: You mean something that describes how you implement that?

MR. LANDERS: Yeah, a procedure in the design process that says if we do this, we are going to comply with the licensing commitments.

So the lack of review of support designs prior to fabrication and installation, and as I understand it, in fact, of the initial designs, some of them from ITT, Grinnel were box beams.

It was my understanding originally when I got involved that that was not the case, that everybody came out with pipe clamps and they were all modified out here.

That's not true, that in fact original designs -- and the Applicant sent me copies of drawings from ITT, Grinnel were box beams with pin struts or snubbers.

To me, that's an unusual design. I have

worked before. I'm used to seeing that," and, therefore, we become very critical about those things and become concerned about whether they are going to work or not.

That may be the biggest single issue, but I can't tell you why that happened.

MR. LEVIN: Don, you indicated in another area with respect to steam and water hammer concerns that -- you cited some examples. For example, offset mass and how that may be exacerbated by those transients versus the seismic event.

I guess I'm interested in -- not knowing, but were those events considered in the analyses at all, or is your concern in how they were treated, or is it just simply the fact that when it was treated, offset mass wasn't --

MR. LANDERS: No, I keep hearing that they were considered in the analysis. I am not suggesting that they weren't considered in the original design.

I have never seen, I have never reviewed any analysis.

MR. LEVIN: Okay.

MR. LANDERS: And I don't want to, you know, really, at this point.

However, when we have been addressing these

about the seismic problem. You know, at this point, I'm not that concerned about the seismic problem at Comanche Peak.

MR. LEVIN: One other thing: I concur in your recommendation as far as -- we want to create an integrator, and that may be an analysis that considers properly mass participation, mass point spacing, actual stiffness, and those things are straightforward, whether you are talking about a more typical type of analysis as compared to a more sophisticated non-linear one as you've discussed.

But I'm still interested in discussing, particularly with regard to stability, whether or not you believe that -- I think because we are trying to integrate so many things, we need to have some means of doing that. I concur that we want to do that as simple a model as possible.

Can we -- I'm saying this in part out of ignorance of all the configurations in the pie. Will we be able, using those methods, to include that as one of the variables into that equation?

I suspect -- The reason I say that is I suspect that we'll have to make certain assumptions, and we'll have to balance out maybe the uncertainties with those assumptions versus the positive benefits of

need it?

MR. LEVIN: Okay. That's something you could verify with a simple model.

MR. LANDERS: My gut feeling is that there's a lot of supports out there you don't need, and hopefully, those would be those supports that have stability questions.

Do you need it or don't you need it? There are a couple of supports that are stability questions in the main steam that bumpers were put in that Cygna's not happy with. Analysis has been done that says remove them -- I mean, you don't need them.

My concern is remove them. If we don't know whether they are stable or not, if we don't know where they are going to be, let's get them out of there.

MR. LEVIN: Your concern is that they may interfere with normal operations?

MR. LANDERS: Normal operations, absolutely. I mean, everything may be fine. It may get a turbine trip that may cock the restraint. Now what do I have during normal operations?

So let's get the support out, and that question disappears.

So where those issues are real issues and

problem, or some set. We could develop those attributes based upon a list of variables.

Do you have any thoughts on that? I think there's benefits to both ways. I believe that we'll be able to, from an engineering -- We could probably get -- One analysis gives us a feeling for how representative the systems are, how they would respond in a representative sense.

Another one would give us a feeling for a lower bound response.

MR. LANDERS: I quickly learn, sitting on this side of the table, the best thing to do is to respond to the Applicant's submittal.

(Laughter.)

MR. LANDERS: I didn't know that a month ago.

I think that the Applicant should decide the approach and the Staff should review that, and they should comment and approve or disapprove.

I think that's really a situation that you people should address. You understand the issues as well as the Staff does.

MR. LEVIN: Those are two choices. We've got to pick one.

MR. NOONAN: Mr. Beck, I wonder if we could

assumption in the analysis of pipe supports for the case of friction force calculations, which is the pipe sliding across the support, putting a force on the support in a direction that the support generally isn't intended to take a force.

This assumption was to neglect these forces for pipe motions that were less than one-sixteenth of an inch, the Applicants figuring that one-sixteenth of an inch is a very small amount of movement and such forces would be negligible.

Now, there was two main arguments in your motion.

The first was that these friction forces would be a fairly insignificant load, coupled with the fact that you did have ASME Code provisions that allowed you to bump up stress allowables for primary plus secondary type loading conditions.

Now, in order to address this first argument, we asked you to summarize the results of some of your analysis, and you chose a sample of six pipe supports for analysis, just looking at the friction forces alone.

When you did this analysis with just the friction forces, it turned out that on a couple of cases the results of your analysis showed that these

stress in the fillet weld.

I can find nothing to support this assumption in the ASME or the AISE Codes; and, therefore, I have no basis to accept that calculation.

If I don't accept that calculation, as the Intervenors pointed out, this will result in an overstress in the fillet weld; and, therefore, you have not even proven for this sample of six pipe supports that you can meet applicable allowables.

As a side issue to this, the Intervenors made some arguments as to what the appropriate Codes and standards were for doing this analysis.

One of the issues had to do with whether Reg. Guide 124 was applicable. Now, Reg. Guide 124 simply imposes some conditions on Subsection NF of the ASME Code, which does not allow you to use in general some of the higher allowables unless you take a look at some specific cases; and one of these has to do with shear stresses.

You have come back and made an argument that what you were analyzing was a Class II -- or a Class III support, not a Class I, which the Reg. Guide is applicable to.

However, putting aside the legal arguments of whether the Reg. Guide is applicable to this specific

make sure that we have a set of criteria that we agree to to cover these various issues before you get into a plan and you start doing analysis and so forth.

I think what John's saying here, I think this is something that could have been done a long time ago, could have been agreed to, but it didn't seem to happen.

I'd like to know how to fix that kind of a problem.

MR. LEVIN: I think, Vince, that listening to what John has to say, that our starting point may be a little bit different.

The general issue here is the impact of these friction forces on support qualification, and I think I'd like to approach that issue with an open mind, looking at the merits of the design basis that exists, but not necessarily -- approach it independently, as opposed to historically.

That's the way I'd like to enter the problem. I'd like to be aware of it, yes, there is some concern. In fact, address your question, John, your last question, is how I would start.

We would be addressing the adequacy of the design criteria, the verification that it's been met, but focus towards the significance of friction forces,

normally send to any other Applicant if we were doing this.

We would give that question to you on a piece of paper and we would send it down here, and there would be a meeting and we would resolve the differences of opinion, if there were any. You know, we would come to some agreement as to what the answer to that was.

My point is that hasn't happened yet. I want to make that happen now.

But he's posing the question to you. I don't think we fully expect you to answer it or get into detail.

MR. LEVIN: Yeah. We couldn't attempt to.

MR. NOONAN: Clearly, what he's given you, he's given you a question that says, "Here's something for you to consider. Here's a question that needed to be asked and never was asked, and now here it is."

If you do things that maybe makes the question go away, that's fine, too; but whatever it is, you ought to at least recognize that here's the kind of problems John had in going through these summaries.

MR. LEVIN: But our view of it and the way we approach it is going to be much the same as yours

inadequate, we'll have to do other things.

So I guess we're not in a position to defend those things one way or another. We'll take a look at the merits, just as you did.

MR. NOONAN: Okay. John, go ahead.

MR. FAIR: Do you want me to continue with asking questions that I think are relevant?

MR. NOONAN: I think you can bring out things you had problems with, things of substance that need to be discussed.

MR. FAIR: Okay. The second one I had was one I mentioned in the introduction, and that was that two of the supports, when you evaluated them for friction factors by themselves, and I understand your argument that friction does not occur alone, that you have to have a thermal force to create it.

However, we were looking for the significance of the actual force from friction.

I would like to know the basis of why you can still say that the forces are insignificant, based on the results of two supports showing that these stresses or loads were as much as 50 percent of the normal allowables.

And the third issue is I would like an explanation, if there is any, for assuming uniform

In addressing this, the Applicants have sent in an analysis, part of the analysis of that particular problem, which is stress problem 141, along with the appropriate spectra and some evidence in the computer sheets of what damping was used.

However, what was sent in was not the analysis run which raised the concern in the first place; therefore, at this point in time I am unable to conclude whether or not the damping mentioned in the original SIT Report was used or whether correct damping factors were used.

My understanding is that the Applicants have been looking at this, have been gathering together all the documents associated with this particular stress problem, and will eventually show us a detailed history of this stress problem analysis.

MR. LEVIN: John, whose scope is this stress problem in?

MR. FAIR: I believe this is a Westinghouse problem.

MR. LEVIN: Westinghouse.

MR. CLOUD: John, do you know what the system was?

MR. FAIR: No, I can't recall what that was.

motion, I was going on the assumption that this issue had been resolved, had been submitted to the Board, and I was reviewing only the property values themselves.

And the motion had not even addressed the issue of weld throat thickness.

However, fairly recently, in reviewing some of the things that were going on by Cygna, I came across a question from Cygna to the Applicants asking about weld throat area.

Apparently, based on this response from the Applicants to Cygna, their criteria for calculating weld throat area had changed from the time that Mr. Tapia had done his initial review.

Therefore, this area now has not been resolved by the NRC, since we did not review this change in criteria.

My question on this area now would be I'd like to see the design criteria used by all pipe support groups at Comanche Peak in evaluating weld throat area for flare bevel welds.

I'd like to also see all revisions of all design criteria for all three pipe design groups at Comanche Peak that are still the basis for the design.

For any criteria which is picked up from

we would undertake for any issue.

So I think that we most definitely would be asking the same questions.

MR. NOONAN: I just visualize that it seems to me that we could sit one whole day and just talk criteria. We could, in getting an agreement on what the criteria is, and do we agree with that, et cetera, asking these kinds of questions again, if we have problems, and coming to some kind of resolution.

MR. LEVIN: Yeah, but our first step as an independent party is much the same as yours, okay, what was it, and we kind of have to get there.

And then take a step back and look at it, its adequacy, its conformance with commitments, as well as how it interrelates with other criteria, its consistency with other criteria.

Yeah, and we'll make those judgments. That's part of our evaluation. At that step in time, depending upon our input and input that may come from your staff, there may be changes.

The project may -- or if it's unclear, they may tend to clarify it. But I think it will come from our third-party review, questions that are out on the table, because it's apparent to me there's a couple of issues.

the actual support evaluations?

Just for clarity, since you evaluated everything except for the small-bore Class II and III supports in this effort, I'd like to know exactly what the definition in the context of this motion is of Class II and III small-bore supports? What pipe size does that constitute?

The next issue I would like to cover is generic stiffness. As it stands right now, the Applicants are doing an additional study to support the motion.

I have seen the criteria presented for selecting systems for this study and I have no further comments on that criteria.

I'd like to know what the status of this re-analysis effort is, when it's going to be completed.

MR. LEVIN: John, just to make a philosophical point of how we would deal with a study like that, I think we would start with it and evaluate its merits and the degree to which it addresses the issue at hand ourselves, and determine what, if any, other initiatives would be required to address this issue, both as a specific issue and in the context of some of the points that Don Landers was making in terms of adding other variables to the equation.

and, therefore, you went back and retested those supports.

I would like to see the actual test data for both the initial test and the retest of those supports, and the actual calculations for the support stiffness that you compared these tested values to.

The next issue has to do with U-bolts that were intended to be one-way restraints which could act as two-way restraints.

At the last meeting we had here at the site, I stated I went out and took a sample of some of these supports that were in the motion to measure gaps in the direction that the support wasn't intended to be in, and that these gaps were not uniform and did not meet that one-sixteenth of an inch that was stated in the motion.

Because of this, the Applicants re-analyzed these systems and included a thermal run on some of them that were not included in the first motion.

Now, the reason the thermal run was not included in the first motion was the assumption that there was a gap in there that exceeded the thermal motion.

It appeared to me from reviewing the results of this analysis that there was a U-bolt in

discrepancy and whether -- which data is correct.

MR. NOONAN: Howard, do you have any idea when John says "the analyses," how many there are at this point in time? Do you have any idea at all?

MR. LEVIN: Are you talking about piping problems or what?

MR. FAIR: If you are referring specifically to the first set of questions, there were three examples of piping analyses performed with these U-bolts.

There's a limited number of these U-bolts at the facility. In order to support their motion, they did it by a sampling basis.

The sampling basis was intended to include the U-bolts that existed at points where the piping motion was the largest.

MR. NOONAN: I'm looking for volume, John. How many are you talking about?

MR. FAIR: Three piping analyses.

MR. NOONAN: All right.

MR. LEVIN: That was the sampling, John.

MR. FAIR: That was the sampling.

MR. LEVIN: Okay.

MR. FAIR: The final motion which I will discuss is on the Richmond inserts.

interested in understanding what that could be attributed to?

MR. FAIR: That's correct.

Another issue raised by the Intervenor had to do with how these bolts are actually installed in the field.

I'd like to know very clearly what the field installation criteria for angularity of Richmond inserts is at Comanche Peak.

I'd also like to see the calculations for Support CC1-028-024-S33R that was provided by CASE in Attachment N of their response to the motion.

Another part of this particular motion, there was an issue on torsional loads creating some bending loads on these A-36 threaded rods.

In order to evaluate this, the Applicants selected a sample where the bending torsional loads were the most significant.

I'd like a more detailed discussion of exactly how these supports were selected and what exactly was looked at in order to pull these supports out for evaluation.

MR. LEVIN: John, just for our benefit, what is the configuration and how are they applying these torsional loads to the threaded rod?

have problems that the whole thing made sense when it's talking about just torsion, and this discussion is in Pages, I believe, 35 to 39 of the affidavit.

I would like a discussion of the relevance of the evaluations performed in Table G, Page 38 of the affidavit, if this entire discussion is indeed talking about torsion.

Also, since the discussion in where it was up to the analyst to model as fixed or pin, happened to be the torsional load case, I don't think sufficient basis exists in the motion to justify that that assumption may not lead to a problem with stresses or flexibilities in any of these supports.

Therefore, I'd like to have some further basis to justify that the assumption of fixed would not result in any problems for these frames where the torsional moment was judged to be fixed by the analyst.

A final major issue of discussion on the Richmond inserts has to do with how do you handle this bending that's induced into the bolt.

It's already been discussed that this bending is not normally considered by AISE or Subsection NF and, therefore, there is no direct criteria from these sections.

The Applicants have developed their own

understanding for this hardware criteria, we'll be taking a look at your presentation and possibly even getting back with you, you know, to help amplify when it means more to us.

I guess one question I had is: Are these six areas the general focus of the message that you would like to give us that we should concentrate on? Are there any others, I guess, is my question?

MR. FAIR: Well, the message I'm giving you is the areas that I'm having difficulty accepting the Applicants' motions as they stand.

MR. LEVIN: Okay.

MR. NOONAN: I think what we are trying to do here is basically give you a flavor for some of the problems Staff is having with the motions.

I recognize there's probably no need to go into all this kind of detail as far as you are concerned right now, because you can't answer the questions; but at least you can maybe hear the kinds of things that John is having problems with when he tries to respond to the motions.

Those are typical for other Staff members, those kinds of things are typical for other Staff members.

John is basically finished right now. I

are typical.

We will go ahead and come back at 1:00 o'clock.

(Whereupon, at 11:30 a.m., the meeting was recessed, to reconvene at 1:00 p.m., the same day.)

///

///

the summaries.

I felt those kinds of questions ought to be answered in these kinds of meetings, rather than have us respond to your things formally and add to the paper trail.

It's on the record. We can send this to Judge Bloch and the Board, which I will do when we are finished here.

But it's on the record and basically these are the types of things you hear from the Staff.

This afternoon we are not going to basically go into that kind of level of detail. I think what we want to do here is to cover other areas that have really been enveloped in Don Landers' report, about the stability questions and so forth.

I'd like to have Dave and Paul Chen basically address concerns that they have in this area, but they won't go into the kind of specifics you heard this morning.

It will be basically things -- at least so you can identify the kinds of concerns the Staff has at this point in time.

One thing that was said to me when we met right after we left here, and I think it needs to be re-said again: The Staff feels very strongly that

Then tomorrow morning I'll come back. I want to talk about the slides you gave us today a little bit, and if there's any other concerns the Staff wants to bring forth at that point in time, we'll hear them in the morning.

I guess I don't see this thing going much past noon tomorrow, the way we're set up right now.

MR. LEVIN: As part of Dave's presentation, Vince, for the benefit of my colleagues here who may not be familiar with all the physical geometries, Dave, if you could kind of give us an intro as you introduce the subjects, particularly with regard to stability, it would help people visualize things better.

So I would appreciate that, if you could, just a short description of the --

MR. TERAO: Well, before I even get into the stability issue, I just want to reiterate the situation the Staff is in and try to put into perspective why we are having this meeting and why we are discussing these concerns with piping and pipe support designs.

Today, what you heard with John Fair's affidavits -- or John Fair's comments on summary disposition motions, the Staff had quite a few questions,

that I -- in my scope of responsibility.

One of them was the AWS and ASME weld design. That, I believe, is the only summary disposition motion formally filed by the Staff.

I won't go into any detail on that, because it is on the record now. I would just suggest that you read our comments in there. It's there in the record.

With respect to stability, this was one area where the Staff had some of our major concerns. Don Landers talked this morning, and I thought gave a very good overview of the Staff concerns.

I could go into some of the details. I don't know that it's necessary to go into all the details.

The one point I do want to mention is that Cygna recently filed their letter, a February 19, 1985, letter, stating their position on stability.

One thing that I would like to at least clarify is that there seemed to be a very high percentage of supports identified in that letter with respect to being potentially unstable.

I do want to clarify for the record that we have to understand the Cygna definition was a very broad definition, and by broad I mean that it's not

more feasible to ascertain whether a system is stable by actually reviewing the pipe configuration and the support drawings; and because of the complex pipe supports at Comanche Peak, because it's difficult to review a piping configuration in the field, we felt that there is some need to look again more closely at system instability by using not only the pipe support people, but also the piping people.

In other words, possibly reviewing out in the field both the pipe support designs and also the isometrics to be sure that you have a stable system.

Also, Don Landers' comments this morning about reviewing these systems, not only for seismic, but also for normal loadings, such as water and steam hammer.

With respect to pipe support instability, we had several concerns that have been expressed already at meetings with Texas Utilities. We had meetings August 8th and 9th, August 23rd, where we expressed some of our concerns with the specific unstable pipe support designs.

I'm not sure exactly how you are going to go back, whether or not you are going to review the record for our comments there; but at this point Staff

the modifications themselves did not use what I would call standard industry practice, but maybe they were adding more steel that we don't completely agree with.

For example, the stability bumpers that were identified by Cygna was one of those modifications.

The use of the cinched U-bolts on a boxed frame was another such modification.

So in many cases these modifications may or may not have cured, let's say, the unstable concerns, but it's very difficult to tell. Because they are so unique, it's difficult to predict exactly how these modifications are even going to perform.

Now, Cygna, also, in their definition of instability, broke it down into a force requirement and a geometric requirement.

I admit it was a very complicated definition. I think what I'd like to do is at least present the Staff's understanding of what Cygna meant by a force requirement and geometric requirement.

By the force requirement, I believe the Staff would tend to believe that the support can be unstable if the load path is not predictable or calculatable. In other words, if there are elements within the support design, there are hardware elements whose ability to resist that load is uncertain, I

to add more struts to prevent the frame from rotating around the pipe.

Since our August 23rd meeting, we did have a submittal by the Applicant, I believe it was a September 24th, 1984, submittal, where the Applicant provided us with 44 different double-strutted supports.

In reviewing those supports, we did find other effects in there that raised questions, such as some of these supports have gaps on the sides of the -- between the pipe and the frame itself.

In other words, it was not a zero clearance gap on all four sides. Two of the sides had zero clearance and two of the sides did have gaps.

Those supports would then exhibit the same type of potential instability that Cygna identified where the support can then rotate in the axis perpendicular to the pipe axis itself. It can actually cock itself.

Another question that has never really been satisfactorily addressed is whether or not there is adequate friction within these box frames to prevent these box frame supports from sliding along the axis of the pipe.

Again, we felt this was a unique design. Instead of using standard pipe clamps where the friction

the index lugs, at one of the meetings -- I don't recall if it was the 8th and 9th of August or on the 23rd -- we asked the Applicant whether or not there is a potential for the support to disengage from the lugs themselves.

I don't believe that's ever been addressed.

MR. LEVIN: That would be along the longitudinal axis?

MR. TERAO: That's correct.

///

///

8-2bb

Also, in your September 24th submittal there was some main steam supports identified which were described as trapeze-type, utilizing a U-bolt pipe attachment with a clearance gap, but no support drawings were given. We don't know exactly which supports those were.

But what we need, really, is the basis for the summary disposition motion concluding that snugging the U-bolt during the U-bolt torquing program will eliminate any concern for instability.

It sounded to the Staff to be the same support that Cygna had identified, but we aren't really sure.

And, finally, and I believe Don Landers mentioned this this morning, in order to prepare an adequate design of piping systems and piping supports, the final as-built condition of a support must be carefully examined, specifically with respect to the factors that affect the functionality of the support.

We recognize that an as-built check was done, but it appeared to be more in line with checking orientation and support locations, and assuring that the support design is in conformance with what is installed.

In light of all the factors that we have

8-4bb

supports should all be reviewed for any potential instability concerns.

That, basically, completes my broad overview of the stability issue. If you have any specific questions, I could answer those now.

MR. LEVIN: Well, you've indicated examples, Dave, particularly some original designs as well as modifications, modifications which may have exacerbated the situation.

I'm curious, some of those modifications included cinching U-bolts, and I'm curious as to your views, you know, under what, you know, other circumstances where that is a piece of a solution to the stability problem, what things that you may have -- you know, I understand that there may be significant information on the record that try to deal with that, but what pieces of it in particular you may have had difficulties with, if there's any further focus you can give us in that area.

MR. TERAO: The actual cinching of the U-bolt falls under Paul Chen's review.

MR. LEVIN: If he's going to address that, fine.

MR. TERAO: So, actually, we still have, I won't say -- Well, I think I'll just leave it at

18
lmb

MR. CHEN: Before I begin, I would just like to make a few comments. I heard several times this morning a question of what a definition of what these problems are, the Walsh-Doyle concerns.

I think for you to really understand what these concerns are you have to go all the way back to the depositions that were filed by Messrs. Walsh and Doyle. You've got to go back through the ASLB record. You've got to read the proposed findings that were submitted by CASE, by Staff. You've got to go back and read the Board's memorandum and orders on QA and design.

And you've got to read all the CASE and NRC comments that have been submitted on these summary dispositions.

I think reference to the four boxes of information that I carry around, which have been mentioned a few times, that's no understatement.

MR. NOONAN: It's actually six, isn't it?

MR. CHEN: It's close to that now.

I think some of the things you've got to bear in this group program that you're coming up with --

MR. NOONAN: Paul, speak up a little louder.

MR. CHEN: Okay.

-- is to be aware of some of the Board's

cinched-down U-bolts were not in compliance with the requirements of INE Bulletin 7902, and PAC Guidelines Section 2.

There was a concern that cinched-down U-bolts were not in compliance with NF 3137, 3272.1, and 2271.3 of Appendix 17.

Local deflections and extra-long U-bolts and U-bolt cross-pieces, especially where the cross-pieces are made of flexible plates or flanges, or white flange members, were not addressed.

Yielding at the U-bolt pipe interface due to point load contact was not also addressed.

Effects due to multiple cinched-down U-bolts were not also addressed.

And the next one I'm going to cite I think has been mentioned before, but this is the effects due to support masses, which are offset from the pipe centerline and rely on friction to prevent the rotation of the pipe was also not considered.

Regarding the inspection program to determine the range of torque in installed U-bolts, I think that is an ongoing thing at this point. I'm not going to say very much about it, except to point out that if such inspections are carried out in the future you should be sensitive to requirements of Appendix B.

push load I think was considered, but I can think of other configurations in which that would not be the governing case, particularly if you've got a cinched U-bolt on a cold line which attaches to a hot line, you get movements of hot line, and if the element is not a rigid strut, but it is limber, you can actually get a less severe condition than was analyzed.

It was observed during the normal vibration simulation tests that some pumping had taken place, and this was not addressed in the analysis. In fact, I'm not exactly sure what this pumping is. The test report does not really describe it fully.

I have a concern regarding the axial walking during the vibration tests and potential interferences on binding in clevises.

Elastic plastic analysis was performed at a maximum stress intensity of 40.5 ksi, yet the analysis shows that there were more severe cases; some to 3.4 and some to 4.2 ksi. But the analysis was done to show the amount of yielding that would occur would be highly localized. But you've got higher stress intensities which were not looked at.

The calculation of stress intensities ignored the radial stresses on the inside and outside surface of the pipe, and circumferential shearing

MR. LEVIN: No.

MR. CHEN: Okay. I'l take the course distribution in axial restraints. I have a concern here basically that the proposed criteria of treating rotations of these kinds of axial restraints as being secondary. I don't believe that that argument has been justified thoroughly.

Basically, I think the loads and these axial restraints increase by a factor of two or three, and then if you propose an allowable of three times the old allowable, we don't have a problem. But if you do not accept the proposed new allowable of three times the old allowable, then you will have a problem.

In fact, I notice that the feedwater line, when the results of that was given, the loads I think jump up by a factor of around forty or so percent. So, based on the old allowable you would have a problem. And this would be a line that would be involved in the kinds of plant transients, I think, that Don was talking about this morning.

I mention this one just in passing, but if you add the total number of various kinds of supports, this is Type I, II and III that are mentioned in various parts of the affidavit, and compare them against numbers in all of the places, you'll find that things don't add

were installed, could be a problem. That although the displacements that are calculated are very small, these could give rise to very large stresses.

Treating seismic, thermal, and treating effects separately is incorrect. All of these effects should be combined, the cumulative effects should be addressed.

CASE is also concerned that treating wall-to-floor, floor-to-ceiling, the wall-to-ceiling supports as they are usually treated in buildings, that is as building supports, could be a problem. And this was not done here.

Local stresses and displacements, I guess there are a few topics here. Zero clearance box frames. I will try to put this in perspective.

Calculations have been performed to determine forces and stress for differential growths on the order of one times ten to the minus three.

Free play in the supports, I think, was not considered. The validity of doing linear elastic analyses based on this kind of displacements, I think, were not looked at.

I think we pointed out some problems regarding the ability of the analyses for supports SI-1-325-002, S-32-R, and CC-1-020-001, E-33-K to bound

bit early. This is kind of the picture as we see it at this point in time.

I guess what I would like to do, if I could just talk a little bit about tomorrow. I'd like to come back and talk about your program plan, and give you at least some preliminary feedback on that. And if the Staff comes back with any others things tonight, then I'll bring those up to you.

I guess the next meeting, John, is yours.

///

///

13mor

opportunity to present later on this week and next the results of activitites that have taken place on the other technical issues.

MR. NOONAN: Okay. Let me kind of touch on this a little bit here.

Thursday we have the electrical meeting. Next week we have the --

MR. BECK: QA/QC.

MR. NOONAN: QA/QC to structures, testing and mechanical.

I guess from my point of view we'll be listening to you talk.

MR. BECK: Yes.

MR. NOONAN: And tell us where you are at. And the Staff will give you feedback on what they hear at that meeting.

A lot of the Staff have not heard what the Contention Five Panel heard, and I need to bring them up to speed, because they are the one to make the final decision as to acceptability of any program.

MR. BECK: I understand. We'll have comprehensive presentations on each of those days, and I would anticipate the days will be long and in full detail, so bring your mattress pads. We look forward to it.

CERTIFICATE OF OFFICIAL REPORTER

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

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

DOCKET NO.:

PLACE: GLEN ROSE, TEXAS

DATE: TUESDAY, FEBRUARY 26, 1985

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

(sign)

(TYPED)

MARY BAGBY/RJM

Official Reporter

ACE-FEDERAL REPORTERS, INC.

Reporter's Affiliation

ORIGINAL

UNITED STATES
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF: DOCKET NO:

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

LOCATION: GLEN ROSE, TEXAS PAGES: 137 - 185

DATE: WEDNESDAY, FEBRUARY 27, 1985

ACE-FEDERAL REPORTERS, INC.

Official Reporters
444 North Capitol Street
Washington, D.C. 20001
(202) 347-3700

NATIONWIDE COVERAGE

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

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

February 27, 1985

PURSUANT TO ADJOURNMENT, the above-entitled matter commenced at 8:52 a.m.

PRESENT:

VINCENT S. NOONAN	NRC/Comanche Peak Director
JOHN BECK	TUGCO
HOWARD LEVIN	TERA
FRANK A. DOUGHERTY	TERA
JOHN GUIBERT	TERA
W. J. HALL	TERA Consultant

VOLUME II

HANSON LOEY	RLCA
R. L. CLOUD	RLCA
D. K. DAVIS	TERA
JACK REDDING	TUGCO
D. C. PURDY	Gibbs & Hill
MARK MANROE	TUGCO
L. F. FIKAR	TUGCO
JOHN FINNERAN	TUGCO
ROBERT C. IOTTI	Ebasco (RUGCO)
BILL HORIN	Bishop, Liberman, Cook, Purcell & Reynolds
DAVID H. WADE	TUGCO
DAVID C. MICHENER	TUGCO
DENNIS L. KELLEY	NRC/SRRI(O)
WARD F. SMITH	NRC/RRI(O)
R. E. CAMP	Iarpell
T. G. TYLER	Enerex/TUGCO CPRT
TOM GOSDIN	TUGCO
DICK RAMSEY	TUSI
DAVID FIORELLI	TUSI
J. MINICHIELLO	Cygna
DOYLE M. HUNNICUTT	NRC/Region IV
H. SHANNON PHILLIPS	NRC/Region IV
DARWIN P. HUNTER	NRC/Region IV
GEARY S. MIZUNO	NRC/OFLD

FRANK CHERNY	NRC/NRR
W. PAUL CHEN	ETGC
JOHN R. FAIR	NRC/IE
BERNARD F. SAFFELL	Battelle Columbus Lab.
GOUTAM BAGCHI	NRC/NRR/FOB
SPOTTSWOOD B. BURWELL	NRC/NRR/DL/LB#1
BARBARA BOLTZ	CASE
JERRY LEE ELLIS	CASE
JUANITA ELLIS	CASE
DAVID TERAO	NRC/DE/MEB
DONALD LANDERS	Teledyne
ROBERT BOSNAK	NRC/DE/MEB
JACK BOOTH	Dallas Times Herald
BOB MILLER	Fort Worth Star-Telegram
DAVID REAL	Dallas Morning News
NANCY H. WILLIAMS	Cygna
LARRY SHAO	NRC

P R O C E E D I N G S

8:52 a.m.

MR. NOONAN: Good morning, ladies and gentlemen.

I guess I would like to continue on with the discussion that we had yesterday.

My name is Vince Noonan. I'm the Director of the Comanche Peak Project for NRC.

John Beck, yesterday we met with you, and we said we would come back and we would talk about some things that we have.

I guess I'm going to basically talk about some of the concerns we still have with why we're here.

Yesterday we communicated with you to let you hear what the NRC felt were a sample of the piping and pipe support concerns that we have, the Walsh-Doyle allegations, and how the utility is responding to these things.

Clearly, at this point in time, I think it should be obvious to you that the Staff has some serious problems with the summary dispositions.

We can proceed in a number of ways, but I think now I have to let you tell me what you want to do with those things.

You know, if they are okay, then I'll

respond to that. I'll do that officially. If they are not okay, if you need to send us more data, if you need to give us different inputs, that's fine, too.

I'm just going to have to wait until you tell me where you are at. There's a need, though, to not wait too long, and I think you have to make a decision as to what you plan to do in that area.

Some of the things regarding maybe the organizational part of this thing. We need to see, the NRC needs to see, and not strictly the NRC, but other people need to see: Who is this team that you are going to put together to handle all these issues?

Who are the people involved? Are they fully qualified people? What has been their involvement on Comanche Peak from before?

Where is the organizational chart? We need to see an organizational chart. We need to see who the people are that are responsible for this activity; not only this piece of it, but probably the comment goes to the whole licensing process that you are now involved with.

Who are the people that are in charge? Who are the ones that are responding? And who are the people that are going to be doing the actual work behind Howard? We know Howard Levin now. Who is

working for him? Who are the people that are going to be doing some of the work? What are their qualifications? That type of labor.

Is there going to be one person in charge of Unit 1? Is there going to be one person in charge of Unit 2? If that's the case, then who is in charge of both, both of those? It's still not clear to us.

It's not clear to us at this point in time what's happening in that area.

Has the utility given a clear mandate to your independent people here, your third-party people that are looking at this?

Is there a clear mandate to evaluate and resolve all the issues? I don't see that yet. I don't see that mandate being made.

I hear words about it, but it's not obvious to me that this mandate is there for this team of people to go and resolve and fix issues.

Maybe specifically, where is the charter for the Comanche Peak Review Team? Where is their charter? Do they have one?

The team, what we refer to as the independent fresh perspective, that's not clear at all, where we are at on that thing.

Howard, you talked about your flow chart

there. You mentioned the program for issue resolution and the method for implementation.

Where is the continuity between the Applicant and the NRC? Are you going to make decisions? Are you going to develop your criteria and then tell us -- and go do everything and then come back and tell us what's happening?

Are you going to have a series of meetings to keep the NRC informed, uptodate on what this criteria is and what you're doing, so you can get input to us?

That's not clear, particularly on that chart, Howard. I don't see any interaction between the NRC and the utility, and I don't see any interaction between the Intervenors.

CASE, there should be discussions here.

Again, how do you plan to -- I know we're talking Unit 1. Where is Unit 2 in this thing? Where does it fit?

One statement you've made on the bottom of your chart, you talk about modifying license commitments. That could mean a number of things. That's not clear to us.

It means every time you find something that doesn't work for you, you are going to all of a

sudden run back and change your FSAR? Clearly, that's not acceptable.

That has to be better defined. That role has to be better brought out.

From the Staff's point of view, not my point of view, the Staff's point of view, these questions are not answered yet, and it's a little disappointing that we are sitting here still talking about these things.

I'm going to ask a couple of my people sitting next to me here, Larry Shao and Bob Bosnak, to also give you their points of view, which are reflective not just of us.. We are talking about the Staff's, the NRC Staff's points of view.

Maybe, Larry, you can pick up at this point in time.

MR. SHAO: I am Larry Shao. I am the Team Leader of the Civil Structure and Mechanical Piping Team.

This team has about 17 or 18 people working on this for the last few months. In addition, about three or four people work on the pipe support.

Altogether, we have about 20 people working on the civil structure and mechanical piping area.

I think TERA identifies about quite a few

mechanical issues and structural issues that we feel your people should work on, and we are going to have a meeting next week.

In the pipe support area, it's my view that I think you should have a team of experts working on this area, not only the people who are familiar in analysis, but also in fabrications, who have worked on other plants and know how this support design goes.

For the few minutes I heard yesterday, I haven't seen a thing yet. I think it's very important you get the right people to work on it.

I think you have to revisit all the issues that you worked on before and make sure you resolve it right.

In the civil structure area, I think you need some different people. I mean, Howard has already started working on some of the problems, but maybe he also needs some help.

In other mechanical areas, mostly it relates to fabrications and some seismic issues.

Even though it's only civil structure and mechanical piping, you still need different type people working on various issues.

I really would like to see what kind of people will be working on these issues.

MR. NOONAN: Bob.

MR. BOSNAK: My name is Bob Bosnak. I'm the Acting Assistant Director for Components and Structures Engineering.

I don't want to repeat some of the things that Vince and Larry have said, but it's very important, extremely important that you have a person who knows what he is doing in the support area and can recognize problems when he sees them by looking at a support in the plant.

I can't emphasize that enough.

Your program, and we've used the term third-party or the independent evaluation program must -- and I again emphasize that word "must" -- include intensive plant walkdown. I would say support-by-support.

The group or persons that are doing this really has to look at the support to question whether it will function under the anticipated transients that we talked about yesterday, talking of things like pump startup, shutdown, turbine trip, those kinds of things.

The Staff is convinced that you can't do this solely by looking at the plant documents, the drawings. You've got to get out and you've got to look

at the supports and question them.

As you find questionable supports, as you identify them, your team needs to revisit, if you want to call it that, the design process to identify why that process with its reviews and checks accepted that questionable support.

So I think that's, as I see it in the support area, really the meat of the issue.

Then in the development of your plant evaluation program by this independent third-party team, we want to have frequent interaction with the Staff.

In other words, don't come in with a program and say, "Here it is." There needs to be that frequent interaction in the development of the program.

I've got some comments. We looked at the chart that Howard handed out yesterday, and that's this diagram here.

Perhaps these are not all complete, but we've got a few things, a few suggestions for you, at least from our study yesterday evening.

In the "Identification of Issues" block, that's the first one that appears horizontally, be sure that you include the identification of the pertinent licensing commitments that you've identified

already in the FSAR and other documents; and that needs to include a definition of adequate support function.

Also, you want to be sure that you cover the ASLB concerns and the Walsh-Doyle concerns in this identification of issues.

The "Implementation of Action Plans" box, it's the third one down, we believe should include provision for a Staff audit of specific hardware evaluation bases. What are your bases for deciding whether or not a particular component support is good or bad?

We want to look over your shoulder and audit that process while you are doing it.

The next one in the "Implementation of Action Plans," that block again, it's the next one down, that, as Vince has mentioned here, should include provisions for modifying inadequate. If you find inadequate Unit 1 programmatic procedures, make them adequate for Unit 2, if you are still doing work under those procedures.

In the "Corrective Action Licensing Evaluation" block, be sure that the licensing commitments that you are talking about are as identified in the first block. You've got them all down and they should be done early on in the process.

In the "Corrective Action" block, Vince mentioned this, but we really don't understand what you are saying.

You say if hardware deviation is not significant to safety, then you are going to modify licensing commitments.

We just don't understand that, that whole area there.

And lastly, in the "Corrective Action" block, we need to have a provision for Staff audit of the hardware being modified to be sure that in fact the modification makes that piece of hardware conform to the licensing commitments.

That's all I have.

MR. NOONAN: Just one other comment. There's a few things of what we're doing here.

The structural and miscellaneous SER has gone to the printers and it is done. As soon as I have copies available to me, I will release them to all parties.

We have also -- The Staff part of the work on the other SER's is all completed, also. I am looking at it myself personally, and also my legal Staff is looking at it.

So basically everything is ready. It's now

putting it into the proper format that we need to put it into and make sure that all the bases are there for whatever we say.

These are not Staff positions SER's. They are not really that. Maybe we shouldn't even call them SER's, looking back on things, but these are basically -- it gives you all of the actions. It gives you all the concerns we have.

I guess my point is the NRC is going to stop talking here, and the next thing is up to you. The next meeting you have is your meeting.

You tell me when you're ready and we will be here to support it.

MR. BECK: Vince, I'd like to respond to some of the things you said today.

Prior to doing that, I'd also like to express our appreciation for this interaction, which is vitally important to resolving all the issues.

Let me go to the organizational aspects of our response effort and, in fact, the licensing effort as a whole for Comanche Peak, and specifically and unequivocally make clear to you how this is being handled in TUGCO today.

Mr. Spence, President of the company, has ordered and clearly given me the direct responsibility

for licensing Comanche Peak. He has unequivocally committed all resources, both within TUGCO and outside the company, necessary to accomplish that task.

The burden is solely and exclusively mine to achieve.

The CPRT effort, as originally conceived, was set up to respond to the Technical Review Team activities on the part of the Staff.

As he announced on February 7th, and as I delineated further yesterday, we have expanded the responsibilities of the Comanche Peak Response Team, these third-party, outside, previously uninvolved experts from around the industry, to include the question of design adequacy, as it became clear in evaluating those issues that we had been looking at under TRT in our earlier program plan and issue-specific action plans, that there were design questions that were intimately woven within the specifics that the TRT had come up with earlier.

Insofar as our position with other proceedings, such as the ASLB and summary disposition filings before that body, it's also clear that those issues as specified in the summary disposition documents will have to be revisited.

Whether that revisitation will include

modification or withdrawal is yet to be determined.

As I pointed out yesterday, Mr. Levin and others who have been looking at this are in the early stages, and it's clear that that's where they are.

They have the responsibility for addressing those questions, as all other technical issues that the Staff has expressed; and once again, I would thank you very much for the clear exposition of the issues that we heard yesterday and the Staff positions.

It would be foolish to say that there's not a dramatic impact on our position, and it's going to be taken fully into account.

We are relying heavily on the judgment and the input that comes from these third-party folks in that regard.

There is no limitation on resource requirements, as I indicated earlier, either within the company or without, to resolve these questions.

That comes directly from the President of the company.

We will be seeking a meeting with you in the very near future, as we have absorbed the comments we've heard yesterday and particularly this morning with regard to being certain that the organizational structure, there's no question.

We'll provide hard copy charts that show precisely who is involved, the roles they play, the responsibilities they have within Mr. Levin's organization in responding to design adequacy questions; and, of course, later this week, tomorrow, and next, you will be hearing much, much detail about the other specific questions.

I would submit that that will be a very responsive process, and one that will be illustrative of the detail with which we'll approach the design adequacy questions as well.

Howard has some more meat with regard to his particular sphere of activity, unless you have further questions about the over-all corporate posture with regard to these issues that I could respond to right now.

MR. NOONAN: I don't think I have any additional questions, other than one thing I failed to mention is that we have a Hearing Board on Comanche Peak. Right now the Hearing Board is basically waiting for us collectively, the utility and the NRC, to get things done here.

The way I'm going to keep this Hearing Board informed will be basically by these transcripts. So things have to be said on the record. We need to

make sure that we communicate.

We need to communicate not only with the NRC, but you need to communicate in such a way that the Hearing Board and the Intervenors both see what's happening here.

That's all.

MR. LEVIN: Thanks, Vince.

I had a few remarks here that I have prepared. In addition, I would like the opportunity to respond to several of the questions that I can respond to now that have been brought up by Bob Bosnak and Larry Shao.

First of all, I'd like to reiterate my appreciation for the opportunity we had yesterday to hear the valuable information presented by the Staff.

I know many of the individuals that presented that information and can identify with where they were coming, and can tell you that I understand the actions that TUGCO, as well as we and the CPRT are going to have to take.

It's clear, particularly from some of the comments, Bob, you made, and Don Landers made yesterday, that we will be taking some action, particularly with regard to several of these unique support configurations; and I guess I'd like to say that I believe that

that is probably the most practical path, particularly with regard to those situations that would require complex or sophisticated analyses to justify their behavior.

While our initiatives and action plans are in the early stages of development, as John has indicated, and we indicated yesterday, one of my first directions has been for our staff -- and I'll be talking more today about the staff and their qualifications -- to investigate this potential.

It's my belief that by taking that kind of action, removing or modifying certain supports in the front end of the process, that that's going to make our job easier and more direct, and that's the most practical solution in that case.

I have had an opportunity since yesterday to have read Don Landers' Draft Report. I believe there are many valid issues in there, just on my reading of that evidence by itself, and several of the observations he has made with regard to particular support configurations I think are valid, and we'll be taking a very careful look at those.

And I think, particularly with regard to those things identified there, those supports will probably fall under that category where we will in the

front end of the process make the decisions that I just alluded to.

I think it's appropriate, in view of your comments today, to give you at least an outline of how we expect to get the job completed, some of the principal leaders in this effort.

As you know, in my presentation yesterday, I described three principal areas of review in this design adequacy effort as being piping and pipe supports, cable trays and supports and what I might call other areas.

We will have managers directing each of those activities.

Frank Dougherty, here on my right, will have over-all responsibility for the design adequacy evaluation. This will include program development, implementation and direction of the third-party verification effort.

In the way of background, to introduce Frank to those of you who don't already know him, he has had sixteen years of nuclear industry experience, five years at a major architect/engineering firm and eleven years in consulting practice.

A specialty in his consulting experience has been in the areas of design control and project

management.

We worked together on the Midland Project, where I served as Project Manager of the Independent Design and Construction Verification Program, where Frank worked with me leading a similar activity that we have asked him to pursue here, the design verification of the Midland facility.

To work with Frank, to his right, is Doug Witt. Doug brings with him seventeen years of experience in the nuclear industry, several years at a major A/E, and eleven years in consulting practice.

In my view, Doug is especially suited for this assignment. He has been my deputy in the ongoing TRT effort, the civil structural and mechanical action plans that you alluded to earlier, Vince.

Prior to his involvement with our firm, Doug was a Division Manager at EDS with responsibility for piping and support design efforts in the structural design area.

Doug also participated in the Midland design verification effort and managed the design verification of the HVAC System at Midland.

Doug will be assisted by Paul Streeter. Paul, you might raise your hand.

Paul brings with him fifteen years of

experience in the nuclear industry, and he will be managing those areas where analytical efforts will be required.

MR. SHAO: Is he from TERA, too?

MR. LEVIN: Yes.

Also, as we indicated yesterday, we have at this time retained several consultants. I believe the list will grow as our needs are better defined; but in particular, we indicated that we have retained Bob Cloud & Associates.

At this point in time, in addition to assisting us in the development of our initiatives, we anticipate that he will be assisting us in the area of testing.

It's our anticipation at this point in time that a certain amount of testing may be required in several of our initiatives.

I expect and have discussed with Doug the need to retain additional consulting assistants, particularly including individuals with recognized nuclear piping experience, both in the analytical area as well as the hardware area.

MR. SHAO: The people you are mentioning is for working on the piping or working on the pipe supports, or both?

MR. DOUGHERTY: What I think Howard is -- This is Frank Dougherty.

What Howard is saying is we expect to add additional consultants, some of whom will be pipe support specialists and some of whom will be piping analysis specialists.

So we expect both.

MR. SHAO: So you are going to add some more experts?

MR. DOUGHERTY: Yes.

MR. LEVIN: Absolutely, and there are other people that were here yesterday. For example, Dr. Hall, from the University of Illinois, has been providing assistance in our implementation of the TRT action plans, as well as we anticipate significant involvement in this effort.

And as many of you are aware, Bill Hall, through his association with Dr. Newmark, you know, has a recognized reputation in the seismic design area.

MR. SHAO: He works on civil structures or mechanical?

MR. LEVIN: He has been working in both areas.

I anticipate having an opportunity to get together in the future and discuss in more detail some

of -- who are the people that will be working. I think you all will have an opportunity to interact not only with the managers of the effort whom you see here, but people who are actually executing the work.

In some instances, Vince, your staff has already had that opportunity, particularly with regard to the actions and interactions we've had on the TRT action plans; and next week we'll have that opportunity again where I expect to have the issue coordinators for specific issues presenting the initiatives that we've undertaken in those areas and to status you on just where we stand and what progress we've made.

Maybe at this point in time it would be appropriate, just briefly, those things that I can address directly, Larry and Bob, relative to your comments on the flow diagram.

Your first comment on licensing commitments. Our conceptual ideas today have materialized to the point where we believe that there will be a two-pronged approach to the general area of licensing commitments.

Those falling in the first category just being a general tracking of commitments in the piping and pipe support area from FSAR, which is the seed, down to the various subtiers of documents, Codes,

standards, et cetera, to which the project is committed.

There will be a test against that baseline, okay, that you might say is independent from another test in that commitments area, which will be focused primarily in a direction where the issues that are on the table point to us.

So we kind of have the broad, the horizontal spectrum in the commitments area, and then the vertical spectrum where we are tracking commitments as they apply to specific issues.

Part of that, I think, in certain areas, based upon our initial review, we are going to find a variety of things.

We may find areas where commitments haven't been made, commitments where they are not clear. Where that is the case, we're going to have to set a baseline to conduct our evaluation.

In both cases, I think we are going to be coming back to you and talking about what the project's commitments were, the degree of conformance there was and in particular, the criteria that we are going to use to move forward.

I anticipate that that will occur in two areas. We are going to have criteria that we will

discuss together that will be pertinent to our third-party evaluation, and I believe that there will be recommendations that we make to the project for areas where production effort is going to have to occur.

The third party is not going to be in a position of redoing design basis evaluations. We will do a significant enough level of sampling to give us a level of confidence and to verify that the project is in fact implementing their commitments.

But I anticipate that the project will have to do more work, and in that regard we want to make sure that they are working to the right yardstick. So, the general.

It falls into two categories, the criteria that we will be discussing.

If I can get to your comment on the modification of licensing commitments as it shows up on this chart, it's unfortunate that in such a simple diagram it requires some commentary to describe what we mean in each of these blocks, and I hope that we'll have an opportunity to provide that.

I want to make it absolutely clear that I anticipate certain cases where there may be some modification -- I'll give you an example -- but not many.

Don Landers has suggested, for example, in the re-evaludation efforts that we consider the Code case in the PVRC damping. It's not clear to me whether we will actually follow that recommendation, but there's certainly a good chance that we will.

That would require a modification of the licensing commitment. Right now, essentially, the project is committed to Reg. Guide 161.

So it's a circumstance like that that we anticipated there. We don't anticipate that every activity will flow through that box. In fact, we anticipate that very few will.

So if this diagram misled that -- misled you in that regard, I wanted to make sure the record was clear.

It also apparently wasn't clear, as far as our desire to have meetings with the Staff and interact.

It's unfortunately boxed right down in the corner of the page at the bottom. Vince, I think you have already indicated the hold points where that's appropriate in the process, and I concur with that entirely.

With respect to some of the other comments, Bob, I think, as we indicated, we are still in a

process of defining our program, and I believe that we will be in a position in the not-too-distant future to respond in the level of detail that you fellows require.

MR. BOSNAK: Our comments were given in the spirit to help you define your program.

MR. LEVIN: Yes, and they are taken in that spirit, and I appreciate it.

That's all I have to say, unless there are other questions or comments.

MR. NOONAN: Yes, I'd like to -- Go ahead, John.

MR. BECK: I'd like to add something that I didn't comment on earlier, and it has to do with external interfaces and interactions.

Clearly, the CPRT Response Team is going to consider input from all sources; and included in those sources, Mrs. Ellis, is a desire to meet with certainly Messrs. Walsh and Doyle and others that you may see fit or find desirable to provide that input directly to these third-party folks in their evaluation of the concerns that they have expressed and put on the table and that are before the Board and so forth.

I don't want to be remiss in acknowledging that responsibility that clearly falls on these third

party folks' shoulders. So make the record reflect that fact.

MR. LEVIN: John, in that regard, and Vince, as you are aware, I believe we at least have tentatively scheduled a meeting the week of March 11th to sit down with the Cygna IDVP people and have a discussion of the concerns that are flowing out of that program.

I believe, at least in terms of how we see our schedule developing, that it would be appropriate in that time frame or possibly just after that to sit down with Juanita Ellis and her people. Maybe we can get together at a break and identify a mutually agreeable time, but that's the kind of time frame we see as fitting into our over-all schedule.

MR. NOONAN: Okay. I think Mrs. Ellis will probably respond to that real quickly here.

MR. LEVIN: All right.

MR. NOONAN: John, do you have anything else?

MR. BECK: No.

MR. NOONAN: I'd like to ask any of the NRC Staff members if they have anything -- any comments?

(No response.)

MR. NOONAN: Okay. I guess, then, I would like to offer members of the public, and particularly right now I would like to offer Mrs. Ellis, who is the head of CASE, an Intervenor of record, to provide us comments.

MRS. ELLIS: Thank you.

I want to say, first of all, to all of you, the Applicants and the NRC people who are here, that we appreciate very much this opportunity.

I think that had things like this happened early on in this process, we wouldn't be in this situation we are right now. Very possibly, things could have been ironed out much faster and the problems identified much more quickly.

I don't really have a written presentation, per se. I do have just some notes that I want to go through, just as I sort of took at random while we were talking.

One of the things that bothers us very much, and we've mentioned this before, is that it appears right now that we are at a point where we are just starting to do what should have been done some two-and-a-half years ago on the design issues and the design QA issues.

One of the things that has been a very sore

spot with CASE has been the Applicants' reluctance, extreme reluctance to face up to problems and to admit that the problems even exist, and then take steps to promptly correct those problems.

If the Applicants had been more willing to do this, it's very likely that people like Jack Doyle and Mark Walsh would still be working at the plant, and that many of the things that they have identified now which we are having to go through this agonizing process to resolve could have been resolved in-house without having to involve CASE or the NRC Staff and so on.

We would like for the Applicants to think very hard about that and about that attitude and mind set. This is something, I think, that has been one of the most disturbing aspects of the Applicants' response all through the years to CASE.

I do want to mention, too, that both the NRC people have mentioned and the Applicants have mentioned, that we don't want to be doing this one more time. You know, this should be it.

I think that we are in agreement with that, and that it is, therefore, especially important that we must have the oversight and involvement and approval of the Licensing Board in these efforts; and

that needs to be done, I think, immediately.

This is something which has been very disturbing, also. The Licensing Board is involved in trying to decide whether or not Comanche Peak should obtain an operating license. And in that context, they have to be informed as to what's going on.

At this point in time they are pretty much in the dark about many of the things that are going on, and they have bits and pieces, but they don't really have a good oversight of what is happening.

I think that it's time that the NRC and the Applicants make some sort of formal presentation in writing to the Licensing Board to let them know exactly where things stand at this point in time.

There was a pleading filed by CASE in the other side of the hearings, which also carries over, sort of, to this side of the hearings (The intimidation hearings are being handled separately.) regarding a motion which was filed by CASE for a hundred percent reinspection of the construction and hardware.

I want to make very clear, if there's been any misunderstanding regarding this, that the Staff and officials in Washington and the Applicant should not in any way, shape or form construe this as being an attempt by CASE to rush the NRC in what

they are doing at this point in time.

That is definitely not our intention, and if anything in the pleading indicated that, it should not be construed that way.

There needs to be an understanding of where we're coming from with some of the things that we are filing right now.

Most of it goes back to the fact that we think it's imperative that the Licensing Board be kept informed and that they be advised.

CASE had to file answers to motions for summary disposition based on what turned out to be an extremely inaccurate presentation as to what deadlines we had to work under.

We did this. I personally stayed up many nights 1:00, 2:00, 3:00 o'clock in the morning, one night until 5:00 o'clock in the morning, working on getting those pleadings out.

It's time now for the Staff and the Applicants to answer some of those motions for summary disposition.

Now, having said that, I don't mean necessarily answer point by point, but you need to let the Licensing Board know where you stand on these things, if it's nothing more than the NRC Staff saying

to the Licensing Board, "Look, we are at a point in time right now where it's obvious we are not going to be able to have a position on these issues by the end of March," and I think that's very obvious at this point that there's no way you can.

The Applicants need to say to the Licensing Board right now, "There is no way that we are going to be able to answer these motions for summary disposition at this point in time, because we are having to look back at them. There may well be some things we need to change. If so, we'd like an opportunity to do that. We are looking at them and it's going to take us some time," and try to give them an estimate of time.

I think at this point in time there is no need to rush as far as trying to do things that really need to have a good close look taken at them.

At the same time, I think it is imperative that the Licensing Board be informed of your position immediately and that they be involved in this whole process.

It is unfortunate that when things first started out with Cygna, who in all fairness to Cygna, I think has been put at a great disadvantage in many ways, because of the way things have developed.

We have been a severe critic of Cygna in

many ways. There are still some grave concerns we have with the way Cygna has addressed some of the items.

However, I think it must also be recognized that Cygna has contributed a great deal to this entire process, and I think they must be given credit for that.

And as we mentioned at the February 7th meeting between the Applicants and the NRC's Contention Five Panel, we oppose any efforts at this point in time to dump Cygna, and we certainly don't think that is appropriate.

We do believe that it has to be recognized that Cygna cannot come to some conclusions that the plant is safe for a very simple reason, and that is that they do not have all the information they need before them to make that kind of determination.

I think that's got to be recognized.

At the same time, had it not been for this particular set of events where CASE obtained raw data -- for instance, in regard to the cable tray supports, which Jack Doyle and Mark Walsh normally would not have looked at, Mr. Walsh did look at them in the context of the Cygna hearings, and had it not been for that, CASE would not really have been fully

aware at that point that the cable tray supports also are screwed up.

So I think that there are some very definite assets to what Cygna has done, although obviously we won't agree with everything they've said. But I think it's apparent now with the recent filing that Cygna made regarding the stability issues, that as they have looked deeper into these matters, they have found that some of the issues raised by Mr. Walsh and Mr. Doyle have much more substance to them than had been apparent on the surface.

I think that is also happening now with the Staff, and I think that this panel especially is finding that to be true.

I wanted also to mention that in the context of hearings there are other aspects of this besides what's going on here, and you have to realize that we are, after all, in hearings regarding duly-accepted contentions, duly-accepted issues, in an operating license proceeding.

As such, we have some very, very grave and severe concerns about due process rights.

Now, when we got into this, we didn't take the Applicants to raise. This isn't a school for the Applicants to try to see how many times we can

do this over and over again until we get it right.

There's a limit to CASE's patience on this and to our ability to continue to perform adequately.

Having said that, I want to caution the Applicants that they should not take that as any sign of weakness on the part of CASE.

We are definitely in this for the long haul, and we will be here looking over your shoulder one way or another; and I think that's got to be recognized.

But we do have due process rights, and those we think are already being abused, and we can't sit by and have ourselves just walked all over in the hearings process, and we will not do that.

We will be making, as I mentioned before in the February 7th meeting, we will be making a presentation to the Licensing Board in the near future regarding some recommendations and our viewpoint on how things are proceeding, as we see them.

We would urge, as I said, the Staff and the Applicants to also do that.

I'd like also to merely echo what Mr. Noonan said this morning as far as the need to know exactly who and what and what the qualifications are of the people who are on your new team.

I think we'd like to have things like resumes, all the details regarding past experiences, what gives the people on your panel the ability and the background to be able to deal with these Walsh-Doyle issues, for instance, and also with the Technical Review Team issues.

I think that these things need to be provided, not just to us, but I think the Licensing Board needs to also be included in all of this. They need to be included in this whole process.

I am glad to hear that the Applicants are also willing to sit down with CASE and work on these things.

I spoke with Mr. Doyle last night, and he has indicated that he will be able to come down March the 23rd, which is a Saturday. It's a weekend, fortunately.

He will probably be here maybe Saturday afternoon or evening, depending on when his flight would get in, and leave on Sunday.

The reason for this is he is presently working twelve hours a day, six days a week, and he will have to take off work just to come for that.

Later on, it may be that his job would allow him to have more time, but right now that's his

present situation.

And I think one thing that the Applicants need to realize is that unlike all of you who are being paid, and I'm sure quite well, for your services, which is appropriate, Mr. Walsh and Mr. Doyle are volunteers.

They are not being paid by CASE. They do well if they have their expenses reimbursed, and in many cases, unfortunately, haven't even had that done.

So when they come down to a meeting or something during the week, it's at their own expense, and great expense.

So most of the time, as far as meetings and so forth, it would have to be perhaps on weekends or in the evenings at their convenience, because it's just simply impossible for them to do it otherwise.

Any time that they take off from work, they have to reserve for actual hearing time, and they do well to do that.

I just wanted to let you know the background on that so you would understand that it's not that we're trying to be difficult or that we are reluctant to do this; it's just a matter of the feasibility of doing it.

One of the things, too, that we are

concerned about, which Mr. Noonan also mentioned, was what's going to happen with Unit 2 and how it may differ from Unit 1.

In this operating license proceeding, the Applicants' plan was to get an operating license for both Unit 1 and Unit 2 at the same time.

We are becoming more and more concerned about this, because it appears that there may be severe differences between the two units, which may ultimately even have to lead to separate licensing hearings for the two units.

I think that one way to avoid that would be for the Applicants to up front make as much information as possible available as to these differences and as to what's going on with Unit 2.

There was one thing, Mr. Noonan, that you mentioned this morning about the SSER's and these not being Staff positions. That's something, I think, that should be called to the specific attention of the Licensing Board, because it's my understanding, anyway, that normally those would be taken to be official Staff positions. So I think that that's something that should be called to their attention specifically probably.

One thing that Mr. Noonan mentioned was

that he would have the transcript of these meetings provided to the Board, and I would urge that in the cover letter for this, make clear to the Board that this is one way that the Staff and the Applicants would like to be able to take to communicate to the Board what's going on.

In that regard, you might even want to suggest -- This is something you would need to consider with your counsel, I guess, asking that the Board take official notice of some of these transcripts so that they could refer back to them in any decisions or whatever, and they could be used, also, for findings of fact or for arguments, without everyone having to provide copies of specific pages and so forth.

I think it would make it much simpler for everyone in the long run if this were done.

I would also urge that you go back and make certain that the Board has been provided with all of the transcripts of recent meetings in the last few months which have gone on between the Applicants and the Staff and the Staff and Cygna and so on, so that they have the complete view of what's really happening.

I spoke with Mr. Doyle last night and, obviously, I didn't have an opportunity to tell him

everything that went on yesterday, but there were a few comments that he asked that we pass along.

One thing is that throughout all of these discussions, although hopefully that's about to be remedied, no one has asked Mr. Walsh or Mr. Doyle what they meant as a definition of instability.

One of the things that he mentioned specifically just off the top of his head was that double pinned struts supports perpendicular, which would be a lateral constraint, to the axis of the run pipe on a single vertical trunnion resulting in an excentric lateral load path, thus introduce total instability.

This can be found in the system that the Applicants have used to determine the effects of the actual stiffness on a pipe stress run, and we have heard no mention of this particular mode of instability, which is another of his concerns.

However, we have four drawings of it, on one run. This is one specific thing he wanted to be sure we called to your attention.

Another thing is that the Welding Research Council Bulletins (WRC) 107 and 198 for pads on the piping should be considered.

None of the pads has been analyzed, and

they've been accepted only under Charpy criteria under Appendix G and not by Bjillard.

Regarding the U-bolts acting as two-way restraints, in the discussion regarding the re-analyzed supports, it's our understanding that the Applicants have already changed I believe he said eight to rigid frames for conservatism.

However, if it was for conservatism, it would appear that all of them should have been changed.

Also, friction forces should be included in the re-analysis, because this could amount to what in effect is a three-way load.

I'd like to say that generally CASE has been very heartened by the TRT's efforts and by the efforts of this NRC's Walsh-Doyle Panel.

We know that you've had to do a lot of work on all this, and we appreciate your efforts very much.

There are one or two things that I think need to be looked at more closely. One thing is I think that the design QA issue needs to be looked at in far more depth than appears to have been done so far.

There is quite a history in the record already, and perhaps CASE should help to point that out

some for the relatively new people on the panel.

There was one comment in the written information that was handed out yesterday from Teledyne that we want to mention.

There was some comment to the effect about so many of the problems that were identified having been on pipe support runs and pipe support issues; and I think that one of the reasons for this, which some of the people on the panel may not be aware of, is that the only two engineers which CASE has presented, Jack Doyle and Mark Walsh, normally were involved primarily with the pipe supports.

But it needs to be known and understood and the full implications need to be understood, that when they have looked at other things, such as the cable tray supports, they have found that the problems there are just as severe, which caused them to question the design of all the rest of the plant.

This is something obviously that Jack Doyle and Mark Walsh can't be expected to do at all.

I think that the NRC Staff has to look very, very closely and very hard and in depth at the design of the rest of the plant, and not just stop with the particular issues which have been raised here.

One of the things that we are concerned about is that the NRC's efforts must not be allowed to be politicized in this process.

The Staff must be able to say, and I think at this point in time should say to the Licensing Board, "Look, after having reviewed all of these things, we now have to tell the Board that we no longer have reasonable assurance to believe that this plant has been constructed and designed correctly. There are questions in our mind at this point in time."

This in the licensing hearings would represent a change of position on the part of the Staff.

I think the Board needs to know that. I think it's obvious that that's the situation the Staff now finds itself in; but I think that there needs to be an admission of this to the Licensing Board at this time so they'll understand what really is going on.

One of the concerns with the due process problem that we have is that as part of accepted contentions in an operating license hearing, the Staff normally has the position that almost any plant can be licensed, that things are fixable.

It may take a lot of time. It may take a

lot of money, but that they ultimately are fixable.

However, the Atomic Safety and Licensing Board is charged with making the determination of whether or not an operating license could be granted and should be granted, and this, I think, is something that has to be realized.

There has to be a point in time, although as I said, we are not trying to push the Staff. We are not trying to push the Applicants, even, at this point in time, into rushing to do what has to be done. But at the same time, there has to be this recognition of the Licensing Board's role in all this.

Right now what we are seeing is what has been represented to us to be independent third-party individuals which the Applicants have hired, and we have no reason to think that all of you are not operating in good faith and that you don't really think that you would come in here and try to really make this a safe plant to do everything you can.

However, at the same time, we have seen no independence criteria, no protocol, no attempt to comply with the strong suggestions of the Licensing Board in its December 28th, 1983, Board Order.

We would like to strongly urge that the Applicants adopt a cooperative attitude and that they

provide voluntarily to CASE and the the Licensing Board all the memoranda, reports, workpapers and so on.

It might be a little burdensome for the Licensing Board to get all that, but certainly I think CASE needs that information, without our having to go through all the process of filing interrogatories and requests for documents and so forth.

This has proved very helpful, something in the way that Cygna has sent us information over a period of time. It has proved very helpful to us to be provided that on a regular basis, on a routine basis.

I think this definitely needs to be done and that the Applicants should consider taking a cooperative attitude in that.

I think that's about all the comments that I have, other than again, I want to say how much we appreciate this opportunity and how much we appreciate everyone's efforts and to also say again that we realize that the effort made by the NRC, and especially by the particular members of these panels, has been a tremendous one. And we can fully appreciate that, and we do.

Thank you.

MR. NOONAN: Thank you, Mrs. Ellis.

At this point in time, I would also like to ask the Cygna representatives whether they have any desire to make a comment?

MS. WILLIAMS: This is Nancy Williams.

No, not at this time.

MR. NOONAN: Okay, thank you.

Are there any other members of the public that would like to be heard at this point in time?

(No response.)

MR. NOONAN: Okay. I just want to make one more comment, particularly on the -- I heard Mrs. Ellis talk about the SER's.

The SER's right now just can't draw a Staff conclusion because of the open items in the SER's, and we need to wait until the Applicant comes back and responds to all the actions, all the open items in the SER, and then the final conclusions are drawn.

I think the Board is aware of the process we go through and aware that these are SER's in the sense that they identify all the open items. They don't necessarily close them all out.

John, do you have anything?

(No response.)

MR. NOONAN: Okay. With that, I will

thank everybody, and I will just call this meeting adjourned.

(Whereupon, at 9:55 a.m., the meeting in the above-entitled matter 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: MEETING BETWEEN TEXAS UTILITIES AND THE NUCLEAR REGULATORY COMMISSION REGARDING COMANCHE PEAK STEAM ELECTRIC STATION - PIPING AND SUPPORT DESIGN

DOCKET NO.:

PLACE: GLEN ROSE, TEXAS

DATE: WEDNESDAY, FEBRUARY 27, 1985

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

(sign)

(TYPED)
MARY BAGBY/RJM

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