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NRC STAFF/CPSSES MANAGEMENT MEETING

JANUARY 7, 1987

GLEN ROSE, TEXAS

Taken by: Carmen Gooden, CSR, RPR

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P R O C E E D I N G S

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3 MR. COUNCIL: May I have your attention. We're  
4 ready to go ahead and start. Members of the public and the  
5 media and as well as NRC, we're -- NRC, welcome to Texas;  
6 media, welcome to NRC; NRC, welcome to Comanche Peak and our  
7 new engineering building.

8 Before going into the agenda or opening remarks  
9 by NRC, what I'd like to do is go around the table, if we  
10 could, for the benefit of the stenographer and introduce  
11 ourselves and what we are or do.

12 I'm Bill Council, Executive Vice President of  
13 nuclear engineering and operations for Texas Utilities  
14 Electric.

15 I'm Larry Nace, Vice President, engineering  
16 construction, for Texas Utilities.

17 I'm Mike Spence. I'm Vice President of the  
18 generating division of TU Electric Company.

19 John Beck, Vice President, nuclear engineering,  
20 TUGCO.

21 Hubert Miller. I'm the Deputy Director of the  
22 division of quality assurance and vendor programs, NRC.

23 I'm Dick Vollmer. I'm Deputy Director of the  
24 office of nuclear reactor regulations, NRC.

25 Vince Noonan, Project Director for Comanche Peak.

1 I'm Charlie Trammell, one of the project managers,  
2 NRC project managers, on Comanche Peak.

3 Larry Chandler, special litigation counsel in the  
4 office of general counsel, NRC.

5 I'm Dick Camp, project manager of Unit 1.

6 Don Reynerson. I'm project manager of Unit 2.

7 Richard Calder, manager of engineering projects.

8 I'm Owen Lowe, manager of civil, structural and  
9 mechanical engineering for Texas Utilities.

10 Jimmy Barker. I'm the manager of engineering  
11 assurance, Texas Utilities.

12 I'm Ted Jenkins, manager of operations support,  
13 TUGCO.

14 Terry Tyler, CPRT program director, Texas Utilities.

15 John Krechting, Director of Engineering, Texas  
16 Utilities.

17 Peter Stevens, manager of electrical engineering  
18 for Texas Utilities.

19 Bob Grubb. I'm site manager for Impell Corporation.

20 Steve Stamm. I'm project engineering manager for  
21 Stone and Webster.

22 I'm R. Ackley, project manager for Stone and Webster.

23 Ed Siskin, Vice President, Stone and Webster.

24 Bob Iotti, project manager, Ebasco.

25 Gil Keeley, manager, TUGCO licensing.

1 Ian Barnes, NRC Region 4, Comanche Peak group.  
2 Eric Johnson, NRC Region 4.  
3 Bob Cloud. I'm a consultant.  
4 Jack Redding, TU Electric.  
5 Vincent Everett, Impell project manager for  
6 equipment qualirications fire protection.  
7 Walter Fenoglio, TUGCO.  
8 David Fiorelli, Texas Utilities.  
9 Steve Karpyak, TUGCO.  
10 John Guibert, BRT.  
11 Bob Wooldridge, Worsham Forsythe.  
12 Tom Gosdin, TUGCO.  
13 Lance Terry, TUGCO.  
14 David Garlington, GDS Associates.  
15 David Boltz, CASE.  
16 Joe Riley, law offices of Joe Riley, Waco.  
17 Carolyn Holmberg, attorney in Waco.  
18 David Real, Dallas Morning News.  
19 Gayle Reaves, Fort Worth Star-Telegram.  
20 MR. COUNCIL: With that, what I'd like to do now  
21 is turn it over to Mr. Vollmer for any opening remarks and,  
22 in particular, if he could, any comments he may have on the  
23 announced reorganization of NRC.  
24 MR. VOLLMER: Thank you, Bill. Going back, we had  
25 a meeting in early December, as you recall, and we agreed

1 to set up a bi-monthly management meeting, of which this is  
2 the first; and I guess because of the reorganization of NRC  
3 and the changing of players in the equation, this will be  
4 even more important. I look forward -- since I will not be  
5 with the headquarters indefinitely, probably leaving in  
6 April, I expect, I'd like to set up another meeting like  
7 this, like in mid-March, down here, at which time I would  
8 plan on bringing in Tom Early to try to make sure that we  
9 have a common understanding of where we stand with the  
10 new alignment of NRR.

11 As far as the reorganization goes, at this point  
12 in time what you see is what you've got. There are a lot of  
13 places currently vacant, and that's simply because decisions  
14 have not been made for some of those positions. The announce-  
15 ments that have been made were made very promptly after  
16 Commission actions, so the last line-up was -- for example,  
17 inside NRC -- was the result of a press release and a letter  
18 to all employees put out by the chairman of the Commission  
19 had made decisions on those names. Right now, that's where  
20 it stands.

21 Our plans are to try to have the organization staff  
22 at the senior levels identified by the end of this month  
23 for Commission action. Until the Commission does take that  
24 action, those names and locations will not be made public.

25 There may be exceptions to that. For example,

1 somebody may have been identified earlier as a firm position  
2 in a certain area. The thrust of the Commission is to try  
3 to make as quickly as possible, for our own sake as well as  
4 industry, the names known as soon as possible.

5           What I'd like to do is run over a couple of things  
6 which I feel I would like to get out of the meeting, and  
7 certainly one is status. We have a lot going on, both from  
8 the project's side as well as the NRC's side. I think it's  
9 important that we hear what you're doing and important that  
10 you get the feedback and understand what we're doing also.  
11 In doing that, we need a good technical understanding as  
12 well as a procedural understanding or process understanding  
13 of where the project stands, and I think one of the main  
14 reasons for that is to assure that our resources are lined  
15 up to give a review to what you do and what you're coming  
16 out with in the following few months so that we do an  
17 appropriate review for our process so we can carry out our  
18 SER functions and prepare our testimony to the extent that  
19 we need to.

20           I think these meetings also should focus more on --  
21 as time goes on, and I know we had a little bit of that this  
22 morning, or this afternoon -- focus a little bit more on  
23 your plans for assuring that when the construction process  
24 is all wrapped up that the plant fully meets licensing  
25 requirements, but also looking ahead to meeting the operational

1 staffing requirements. This is an area where we've come down  
2 to the wire on a few plants, and we're taking more and more  
3 the posture that plants that are coming in for licensing at  
4 this point in time have to be squeaky clean and meet all our  
5 requirements. And we don't think there should be excuses  
6 for not meeting experience requirements, training requirements  
7 and all that.

8           So that's something that I would like to look  
9 forward to, in meeting those.

10           Another thing I think is important is to try to  
11 get an early jump on any problem areas that you see coming  
12 up with the project; also any problem areas that you see in  
13 terms of NRC response to your initiatives.

14           Again, I think that type of communication will help  
15 to minimize the staff resources that we're having. As you  
16 know, our staff resources are pretty scarce, and we will need  
17 to carefully look at how we spread them around to all projects.

18           Our aim, of course, is to do a high quality review  
19 with this project and prepare quality SERs and quality  
20 testimony, because we know that it's going to be given a  
21 thorough review by the Board and intervenors and so on.  
22 It's part of our job. We need quality input from TUGCO  
23 to do that job.

24           I guess that's about all that I have to say. It  
25 sort of fits the framework for where I see these meetings

1 leading.

2 MR. COUNCIL: One item of business before we get  
3 into the agenda and so forth is that each speaker, whether  
4 you're asking a question or giving your presentation, for  
5 the benefit of the stenographer please give your name when  
6 you first address whoever you're addressing.

7 I'd like to keep this somewhat informal also,  
8 although it probably looks like a heck of a lot more formal  
9 than one would think. There's coffee in the back and there's  
10 coffee on the table. Please feel free at any time to get  
11 coffee or wander around or whatever.

12 What we thought we would do in getting into the  
13 meeting is, number one, to give you the CPRT status on what's  
14 been happening with the CPRT results reports and so forth,  
15 and then we'll go into our own engineering construction and  
16 corrective action type programs screening off CPRTs.

17 So with that, I'd like to turn it over to Terry  
18 Tyler to go ahead on CPRT.

19 MR. TYLER: Good morning. Terry Tyler, CPRT  
20 Program Director.

21 For the purpose of the briefing this morning, I'll  
22 status where CPRT is with regard to our last progress report  
23 that was submitted to all the parties in December, early  
24 December 1986. In that status report we were projecting six  
25 results reports to be approved by the SRT during the month



1 of December. In reality, we approved seven. Those action  
2 plan results reports that were approved are as follows --  
3 and, Carmen, for your sake, the first number that I call out  
4 will be Roman.

5 Action Plan I.A.1 on heat shrinkable insulation  
6 sleeves on cable.

7 Action Plan Results Report I.B.1 on flexible  
8 conduit, flexible conduit separation.

9 Action Plan I.B.2, flexible conduit cable separation.

10 Action Plan I.B.4 on burial removal.

11 Action Plan II.C on the maintenance of air gaps  
12 between concrete structures.

13 Results Report V.D. on plug wells.

14 And, finally, VII.A.3 on document control.

15 This brings the total number of results reports  
16 approved to date to 27 out of a projected 51 reports. We  
17 still anticipate an additional 12 results reports to be  
18 approved by the senior review team during the period between  
19 now and ending March 1987.

20 For anyone that's interested in that, I have the  
21 numbers and we'll be glad to share those with you at any time  
22 during the meeting.

23 MR. VOLLMER: One thing you might indicate, if  
24 anything, since our December meeting when we went over a  
25 number of these things, if there have been any significant

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1 slips since then, could you identify them?

2 MR. TYLER: That's what I'm getting to. We were  
3 projecting 13 results reports approved during the period  
4 between January and March. One of those was approved in  
5 December. We still anticipate the 12 remaining that we called  
6 for to be approved during the time frame between now and  
7 March 31st, and we still anticipate the remainder of the  
8 action plans, discipline specific action plans and collective  
9 evaluations to be issued by mid-1987 in accordance with the  
10 program plan, with the status report itself.

11 With the exception of Action Plan VII.A.9, which  
12 deals with the adequacy of purchased safety-related material  
13 and equipment, investigations are essentially complete. We're  
14 in the process of evaluating the results, performing root  
15 calls where required, safety significance evaluations,  
16 deviations identified and preparing the results reports.

17 With regard to Action Plan VII.A.9, the inspections  
18 are now under way, and we anticipate approval of that results  
19 report and closure of that work by late April, early May of  
20 1987.

21 With regard to Action Plan VII.C, which is the  
22 hardware reinspection document review action plan, the  
23 inspection documentation reviews are complete. We're in the  
24 process of finalizing population reports and the final  
25 summary report for that action plan, and it looks like that

1 will be approved by the SRT sometime in March.

2 The last major action item within the CPRT program  
3 is the design adequacy program. The status on that is that  
4 base scope reviews are complete, and based upon the design  
5 adequacy findings and other findings, based on project reviews  
6 of the design, TUGCO has initiated the corrective action  
7 program, which you're going to be hearing a lot more about  
8 in the balance of this presentation today.

9 If there are no questions, that pretty much brings  
10 everyone up to date with where CPRT is.

11 MR. TRAMMELL: I'm Charlie Trammell, NRC. Collective  
12 significance reports: Could you refresh my memory on those,  
13 when we can expect them and what day we're going to be -- I  
14 remember generally there was going to be one on construction,  
15 VII.C, plus the other Series VIIs and Is. Was there going  
16 to be a collective significance on that group?

17 MR. TYLER: There's going to be one collective  
18 significance, Charlie. That's the end. What it all means,  
19 collective evaluations program plan requires one on hardware,  
20 one on the QA/QC program and one on testing and one on  
21 design. So there will be four reports that will summarize  
22 the CPRT findings in those areas.

23 MR. TRAMMELL: When would we expect to see the one  
24 on VII.C and its daughters?

25 MR. TYLER: Mid-'87 is the current anticipation

1 for that collective evaluation report.

2 MR. COUNCIL: Any other questions of Terry?

3 MR. NACE: Larry Nace, Vice President, engineering  
4 construction for TU Electric. I'm going to give a brief  
5 introduction into the Corrective Action Plan and nature  
6 and contents thereof, and then let the members of my staff  
7 give you a more detailed briefing on what each plan consists  
8 of, what the key issues are and what it is we're trying to do.

9 To set the stage for the Corrective Action Plan  
10 development, I need to really go back to about spring of 1986  
11 on the project, between spring and summer of 1986.

12 At that point the investigative phase of the  
13 design adequacy program was drawing to a conclusion, and  
14 following general type of conditions existing.

15 First and probably most important, the project was  
16 faced with a large number of potential issues, many of which  
17 were highly interrelated with respect to a common piece of  
18 hardware, and many others which had potentially broader  
19 implications to many pieces of similar hardware.

20 The original CPRT concept of individual specific  
21 Corrective Action Plans, as you know, was that you could  
22 solve each problem by itself. Because of the numbers and  
23 because of the interrelationships, we had to step back and  
24 do some additional thinking on that subject.

25 The first thing -- and this is important to

1 understand -- the first thing we did is step back and say,  
2 Let's assume all of the issues are valid. We need to  
3 develop a programmatic approach to resolving all the issues  
4 and not only determining their validity or not but properly  
5 resolving them within the design and within the hardware in  
6 a programmatic fashion.

7 In addition to that, it became apparent to us that  
8 we needed someone new to resolve these issues, someone who  
9 had not been previously associated with the Comanche Peak  
10 design, in order to restore credibility in the Comanche Peak  
11 design itself. We needed more on-project technical leader-  
12 ship and we needed to take firm action to demonstrate the  
13 credibility of TUGCO's ability to maintain the design after  
14 the corrective action programs are completed and to safely  
15 operate the plant when an operating license was given.

16 To accomplish this, we evolved the Comanche Peak  
17 engineering organization from what previously existed, which  
18 was an integrated TUGCO production engineering organization,  
19 into a project organization composed of separate architect  
20 engineer-led organizations with specific scope of work  
21 assigned to each of the architect engineers and a very  
22 elaborate, complex set of architect engineer interface  
23 procedures.

24 TUGCO engineering itself withdrew from production  
25 engineering tasks and assumed the role of a traditional

1 utility engineering organization which exercises design  
2 control and which was responsible for coordinating and  
3 controlling those design interfaces.

4 We transitioned design responsibility from the  
5 original general architect engineer to a new architect  
6 engineer not previously associated with the design. We  
7 organized or otherwise cataloged the many potential design  
8 issues into 11 packages which could be programmatically  
9 validated, and these packages are what we call the Corrective  
10 Action Plans that we're going to hear more about today.

11 The first slide I'm going to show -- and inciden-  
12 tally, there will be several slides shown today, and copies  
13 of those will be available at the end of the meeting and  
14 will be appended to the minutes of the meeting.

15 This slide summarizes the 11 corrective action  
16 programs, identifies the responsible lead contractor or  
17 architect engineer. It identifies key milestones associated  
18 with each plan. As I said earlier, more details of each of  
19 the plans will be discussed by later speakers.

20 This slide provides some of the information you  
21 originally asked for, Vince, and the rest of that information  
22 will be provided by the end of the month.

23 Now, there are two key products associated with  
24 each Corrective Action Plan that have been causing some  
25 confusion, perhaps, to figure out how they relate to the

1 formal results reports issued by the CPRT. These reports  
2 are strictly project reports.

3 The first product is what we have been calling a  
4 generic issues report, and this is basically a summary of  
5 the issues that relate to that specific design activity.  
6 And remember, I said we're assuming that everything is  
7 accurate, whether it is or not. And then based on that  
8 assumption, the GIR then also contains a plan of how we're  
9 going to resolve those issues. The GIR is a summary of the  
10 issues as we see them at the time we go to press and the  
11 plan for resolving those issues.

12 As you see from the slide, nine of the eleven  
13 planned GIRs are, in fact, issued. The remaining two we  
14 expect to get out this month.

15 The second key product is what we have called a  
16 final report. This is a management report, if you will.  
17 It says, Okay, we have executed the plan far enough that we  
18 can summarize these findings. These are the conclusions  
19 developed from executing that plan.

20 I should point out that we do expect over the  
21 course of the project that probably both of those reports  
22 will be revised from time to time. As procedures change,  
23 for example, in the generic issues report, we will provide  
24 the updated copies of those, such that it has current  
25 procedures.

1 I'd like to point out that there is a typo in the  
2 slide: Large bore and small bore pipe supports, not spools.  
3 My quality control --

4 MR. BECK: We caught it.

5 MR. NACE: Also, I would expect the final report,  
6 like I said -- I would expect logically that would probably  
7 be revised on occasion also because we want to get the final  
8 report on the street as soon as we have a clear enough  
9 understanding of what the issues really are, and rather than  
10 waiting until everything is absolutely finished and set in  
11 concrete, so we should expect those reports to be subject  
12 to revision. But the GIR is the plan, and the final report  
13 is the result of executing that plan at the time it is  
14 issued.

15 As you'll see later on, each of those CIRs have  
16 several key objectives, and what we're really trying to do  
17 is three-fold in the GIRs. Number one, we're trying to  
18 qualify existing hardware. Number two, where necessary,  
19 we will modify existing hardware so that it can be qualified.  
20 In all cases we're essentially using today's standards in  
21 that qualification.

22 The third objective of the GIR, the plan inherent  
23 in the GIR, is to improve our basic procedures and specifica-  
24 tions such that past problems, whatever they were, are not  
25 repeated during the remaining Unit 1 and Unit 2 construction.



1 But over and above that, we're also developing  
2 a more comprehensive preventative action, if you will, lessons  
3 learned applications designed to restore confidence in the  
4 credibility and integrity of TUGCO to maintain and operate  
5 Comanche Peak units.

6 Our longer-term actions include improving our  
7 basic engineering organization, staffing the organization  
8 with more experienced personnel, a general upgrading of the  
9 TUGCO nuclear engineering operations procedures.

10 It also involves improved design control, records  
11 management, configurations management, training, new design  
12 procedures and the development of the internal engineering  
13 assurance program.

14 Now, with respect to this longer-term TUGCO  
15 engineering construction organization, we now number 218  
16 personnel, which is really up from about 50 eight months ago.  
17 We expect to reach a total of approximately 450, close to  
18 500 people.

19 In addition to that 218 TUGCO personnel right now,  
20 it is also important to understand on this job right now  
21 executing the Corrective Action Plans themselves we have a  
22 contractor engineering staff on site of about 2400 personnel;  
23 off site, about 2,000 personnel; about 1900 craft; and  
24 an additional 1300 on-site support personnel. It's a very  
25 massive effort to undertake these corrective action programs.

1           Inherent in four of the corrective action programs  
2 listed up there, which are the more broader discipline-oriented  
3 corrective programs, the civil structural, mechanical,  
4 electrical and I&C plans, we have developed a feature which  
5 we have submitted a document to you on describing our design  
6 basis consolidation program.

7           This is our plan for executing the 100 percent  
8 validation of the basic discipline design, and it's not  
9 covered by the other Corrective Action Plans, and to  
10 essentially bring that design documentation up to current-  
11 day standards.

12           What I'd like to do now, unless there are any  
13 questions at this point, is turn to -- let me cover testing  
14 also. I want to do that under -- part of this design basis  
15 consolidation plan is to not only gather up and validate  
16 all the key design documentation but also to review past  
17 testing on this plan and to validate the past testing versus  
18 the current design, if you will. That will either confirm  
19 that the testing which has been done thus far is satisfactory  
20 to still demonstrate the current-day intent of the designer,  
21 or it will identify additional testing that has to be done.  
22 There are some areas we already know need additional testing,  
23 such as thermal expansion testing, due to the pipe support  
24 work. The penetration replacement will require a lot of  
25 electrical and control retesting, but the benchmarking of

1 past test programs with the current validated design is  
2 part of that design basis consolidation program.

3 Any other questions?

4 MR. NOONAN: Given this schedule to maintain, when  
5 do you see, as far as resumption of hot function -- what  
6 time frame?

7 MR. NACE: I would expect to see a plant heat-up  
8 in the fourth quarter of 1987.

9 MR. VOLLMER: Larry, you indicated certain areas  
10 that were not covered by this GIR. It seems to cover a lot  
11 of the -- most of the areas that we've had any problems in.  
12 What are some of the areas that are covered differently?

13 MR. NACE: That covers virtually everything except  
14 what I call the general site environmental geotechnic, areas  
15 where there have been no issues on, and our review of what  
16 existed at that time didn't reveal any questions either.  
17 But virtually everything else in the plant that you can  
18 think of is covered by those plans.

19 MR. VOLLMER: The second question is: In the  
20 Generic Issues Report which talks about what issues have been  
21 raised in these particular areas, how broad and comprehensive  
22 a look was taken at bringing the issues together? In other  
23 words, what did you use as your reference data to identify  
24 the issues that were included as issues in these reports?

25 MR. NACE: We have -- third party have a very

1 comprehensive library, if you will, on a computer of external  
2 and internal issues that have been generated from Tera, ERC,  
3 TRT and Cygna allegations. We have that complete library,  
4 and that has been factored into each of the respective plans.

5           You see that's what I meant about the complexity  
6 of what we were faced with this summer because -- let me give  
7 you a hypothetical case -- this is for the press -- hypotheti-  
8 cal only. You might be in a position where you're standing  
9 in the plant looking at a relief valve, and you have a Tera-  
10 generated issue that questions the sizing of that relief  
11 valve. You have an ERC issue that questions a piece of  
12 quality control paper associated with that relief valve.  
13 You have a Cygna issue that questions the adequacy of the  
14 support that hangs that valve off the wall. And you may  
15 have a TRT issue itself that questions the adequacy of the  
16 wall. When you multiply that out by the numbers of the  
17 potential issues we were faced with, it became excruciatingly  
18 difficult to solve them on a piece-by-piece basis. Rather,  
19 you'd have to step back and treat it as if it almost was  
20 an initial design process where you were eliminating  
21 uncertainties and nailing things down in a more programmatic,  
22 systematic way.

23           So to answer your question, a very, very hard look  
24 at all the internal and external issues relative to the  
25 design in the plant.

1 MR. CHANDLER: Two questions on the same point.  
2 One, given the extent to which results reports have already  
3 come out and the status of Tera's work and design, did you  
4 find any areas where you may have had some inconsistent kind  
5 of findings between, say, Tera's work and the ERC's work?

6 MR. NACE: Not to my knowledge, no. Now, both of  
7 those programs were statistical-based programs of investi-  
8 gating. I haven't found anything that I could call inconsis-  
9 tent.

10 MR. CHANDLER: Well, inconsistent, possibly, in  
11 having, say, ERC find hardware-kind of activities acceptable  
12 and Tera finding design-related areas unacceptable, or --  
13 The other --

14 MR. NACE: Nothing that would conflict.

15 MR. CHANDLER: -- issue: To what extent has Tera  
16 taken a look at the Generic Issues Report?

17 MR. NACE: Good question. I should have brought  
18 that up earlier. At the time we submit those two reports  
19 to the staff, third party has reviewed and concurred in those  
20 reports.

21 MR. CHANDLER: So they're at least satisfied that  
22 the issues identified in the Generic Issues Report capture  
23 the issues that have been raised of their activities.

24 MR. NACE: Yes.

25 MR. CHANDLER: And that they also would be saying

1 that the plan, if executed, will resolve their concerns.  
2 The corrective action is the appropriate course of action  
3 to be taken, in other words.

4 MR. MILLER: When you talk -- when the presentations  
5 are made on the various program areas here, I'd be interested  
6 in hearing in the general reviews that are being done in the  
7 civil structural and mechanical and I&C areas how those  
8 reviews go beyond the reviews that were already done by the  
9 third party. To what extent are you going beyond that?

10 MR. NACE: The third party review, Tera review,  
11 was basically a 10 percent -- 20 percent?

12 MR. TYLER: Less than 10 percent.

13 MR. NACE: Less than 10 percent out of the design  
14 on a very scientific sampling basis, a very sound basis.  
15 The Corrective Action Plans will be a hundred percent valida-  
16 tion of that design, so whereas you might look at a given  
17 area, if mechanical civil/structural has 750 safety-related  
18 calculations, Tera probably looked at about 75. The  
19 Corrective Action Plan contractor is going to have to look  
20 at 750 to be able to stand behind those 750 calculations  
21 or revise them to a point where he can stand behind them  
22 or replace them.

23 MR. MILLER: I assume to some extent there will  
24 be a sampling of approach taken, even within this hundred  
25 percent where you're sampling less than all of the attributes

1 of all the calcs, in other words, line by line, calc by  
2 calc kind of review.

3 MR. NACE: It is a calc by calc, line by line review  
4 to determine whether the calculation satisfies the objective.

5 Now, conceivably, it is possible to take a look  
6 at a calc, and let's say the objective of the calculation  
7 was to determine whether a given force was less than six  
8 kips, and some place in the calc he may have added two  
9 components of a force, two plus two and got five, and  
10 decided it was satisfactory. In the review of the calculation  
11 that review could also decide that even though two plus  
12 two is four, the results are still satisfactory. Just put  
13 a cover sheet on the calculation rather than revise it. But  
14 he is going to look at 100 percent of the calculations.

15 MR. TRAMMELL: I was reading your response to  
16 Board concerns just recently, which was in a paper addressing  
17 a number of items they brought up about six months ago, and  
18 in that paper you described that the scope of the Design  
19 Adequacy Program is 100 percent -- the scope was 100 percent --  
20 and I read that footnote, I think, or some place in that  
21 paper several times to try and make sure I understood it.  
22 So maybe I could give you an example to see what your  
23 response would be.

24 Let's say that Stone and Webster or whatever is  
25 reviewing a design and they get into an area which is

1 absolutely unassailable, they know who did the work, they've  
2 seen his work. They've gone through his work. And so far  
3 they haven't found anything. Would there be a point where  
4 you would lay that aside and stop, or would you go through  
5 a hundred percent of that? I'm sure you're going to find  
6 areas that are unassailable.

7 MR. NACE: There may be areas like that. We have  
8 not yet set any boundaries as such, but the principal thing  
9 we're trying to strive for here to restore that credibility  
10 in the design is to be able to get a new organization in  
11 here who can say, Yes, I am confident that that design will  
12 perform its intended function. So he has to at least test  
13 the water on that situation you've described. He may very  
14 well reach the point to where he makes the decision you  
15 described and can document that decision and stand behind it,  
16 and we encourage him to do that; but we want him first and  
17 foremost to be able to stand behind the design.

18 MR. TRAMMELL: One other point, if I could --

19 MR. COUNCIL: Vince has, over the last 18 months  
20 or so, admonished us to improve communications, not only with  
21 the NRC but obviously with the intervenors, on this docket,  
22 and we have in the last year been striving very much to do  
23 that. In each of these reports the day I sent out the letter  
24 to Vince transmitting that report, we attempt that very same  
25 day to hand deliver copies of the report and so forth and



1 all procedures associated with that report how we're going  
2 to carry out such reviews, and within that same few days,  
3 as we get them packaged up, we service the entire service  
4 list to try to hopefully improve the communications so  
5 everybody knows exactly what we're doing.

6 MR. TRAMMELL: Very worthwhile.

7 MR. NOONAN: I think I'll comment a little bit  
8 about that. We did get a lot of complaints early on from  
9 the intervenors about that problem, and I know recently,  
10 speaking to Ms. Ellis, I believe that has improved signifi-  
11 cantly. That has really helped.

12 MR. COUNCIL: We're trying.

13 MR. NOONAN: She now feels that it will come to  
14 very quickly.

15 MR. NACE: I'd like to proceed next to more detailed  
16 discussion of each of the Corrective Action Plans and John  
17 Krechting, our Director of Engineering, will discuss  
18 mechanical and the HVAC Corrective Action Plans.

19 MR. KRECHTING: I'll start off talking about the  
20 mechanical plan. I'll talk a little bit about over the  
21 source of the issues, the issues that we're going to be  
22 evaluating as part of the mechanical Corrective Action Plan,  
23 sources of issues that came from the Design Adequacy Program  
24 that was operated by Tera and by the Construction Adequacy  
25 Program that was run by ERC.

1 I'd like to just briefly give you an idea here  
2 by title of the major issues that have been identified in  
3 the GIR that you talked about that have been identified by  
4 either Tera or ERC, and I'm going to indicate here in  
5 parentheses who the contracting organizations or architect  
6 engineer is who is responsible for resolving this issue as  
7 part of this mechanical Corrective Action Plan.

8 Now, this particular plan, mechanical one, is  
9 probably the most complicated from the standpoint of the  
10 number of people that are involved, so I think it's important  
11 that we understand that up front and that you have an under-  
12 standing of who's involved resolving the various issues.

13 The issues, as you can see, Seismic Qualification  
14 of Seismic Category 1 Equipment. That's Impell's responsi-  
15 bility. Here again, I'd like to emphasize what Larry said.  
16 In putting together this Corrective Action Plan, we have made  
17 the assumption that the issues identified by the third party  
18 are valid, okay? We will, as part of this corrective action  
19 program, determine whether, in fact, they are valid from the  
20 standpoint of are the licensing commitments met and is there  
21 any safety significance. Obviously, if the licensing  
22 commitments are not met, we will take the appropriate  
23 corrective action within the program itself.

24 High Energy Line Break issues. That's being  
25 addressed by Ebasco.

1 Overpressure Protection of Safety-Related Piping  
2 and Equipment, Stone and Webster.

3 Specification of Mechanical Components as Related  
4 to Pressure Boundary Integrity, Stone and Webster.

5 Determination of Heat Loads for HVAC Equipment  
6 Sizing is Ebasco.

7 Control of Welding Process, Stone and Webster.

8 Internal and Turbine Missile Evaluation, Ebasco.

9 Fire Protection issues, Impell.

10 System Design, SWEC.

11 Piping and Configuration, SWEC.

12 I'd like to point out that the bottom three items  
13 are ERC issues. All the ones above are identified as part  
14 of the DAP, or Design Adequacy Program. The three bottom  
15 issues are issues that have been identified as part of the  
16 Construction Adequacy Program of ERC.

17 MR. NOONAN: Those piping issues: Are those ones  
18 that ERC defined and they were not included in the Stone and  
19 Webster pipe and piping support stuff?

20 MR. KRECHTING: Yes, they are. They're not related  
21 to pipe stress and pipe analysis directly, okay? This  
22 particular one is an issue where they found a full element  
23 that had the arrow -- it was installed in the reverse  
24 direction from the flow diagram. And also some questions  
25 were raised as to whether certain valves were installed

1 in the proper flow direction.

2 This issue here is somewhat related to the pipe  
3 stress. There was a question of during the bending process  
4 of piping, had you exceeded the minimum wall criteria that  
5 was in the specification for the bending. There is certain  
6 thinning allowed during the bending process, and there was  
7 a question as to whether the allowable thinning was exceeded.  
8 So we're addressing that as a specific issue; one, to  
9 determine whether there was any -- if we did not exceed  
10 the allowable bending or the wall thinning, then obviously  
11 it's not a stress issue because the stress is based on a  
12 given wall thickness.

13 MR. CHANDLER: While you're on that subject, John,  
14 could you just briefly define the first issue, seismic  
15 qualification?

16 MR. KRECHTING: Yes. Seismic qualification is  
17 essentially an issue of documentation. Is there adequate  
18 documentation to justify that we have the seismic qualification  
19 as required by the licensing commitment. You know, there are  
20 issues in there, but it's basically a documentation issue.  
21 So we are doing a review -- Impell in this case is doing a  
22 review of all the seismic qualification documentation to  
23 ensure that, in fact, the documentation is adequate to  
24 support the design.

25 MR. VOLLMER: Some of the issues up there have

1 raised in my mind a generic question. When a generic  
2 communication comes out of the Commission, let's say, for  
3 example, information dealing with some of these areas, how  
4 is that handled in the process?

5 MR. NACE: We have a formal procedure within NEO,  
6 first of all, of logging the receipt of those, tracking the  
7 action and determining the action necessary as a result of  
8 a bulletin, circular, notice, and feeding that into the  
9 design process. In addition, our contractors also have  
10 separate company programs of tracking that, so we really  
11 cover those in two different ways.

12 MR. VOLLMER: And you get some sort of feedback  
13 on that?

14 MR. NACE: Yes, we do. On that same line, you  
15 know, we're also running in parallel -- with all of the  
16 reports we've talked about thus far, we're running in  
17 parallel with 5055.E reporting requirements. The collection  
18 of 5055.E preventative action is also included within  
19 this programmatic approach to discipline.

20 MR. NOONAN: What do you do about the information  
21 that comes out of the Commission? You said circulars or  
22 bulletins.

23 MR. NACE: Information notices --

24 MR. NOONAN: Included in that.

25 MR. KRECHTING: There's not a question these are

1 the issues that have come out of the third party review.

2 I'd like to go on. We need to talk now about what  
3 are our program objectives? What do we want to do with this  
4 corrective action program?

5 As Larry talked about, it really characterizes two  
6 parts of the corrective action program. There are specific  
7 issues that we just saw that come out of the third party,  
8 and there is also a hundred percent validation effort that  
9 is being performed by the various contractors in the area  
10 to, in fact, ensure that the licensing commitments at  
11 Comanche Peak are met.

12 And how that validation is basically being done  
13 is the lead contractor, whoever is responsible, identifies  
14 the licensing commitments. What are the commitments? What  
15 do we have to meet to meet our licensing commitments? We  
16 then identify the key design parameters, if you will, that  
17 support or ensure that we meet those licensing commitments.  
18 Once he's identified those key parameters, he will then  
19 review, as necessary, the calculations, the design specs,  
20 the drawings, to ensure that, in fact, the plant, the design  
21 of the plant, okay? The documentation supports the design  
22 criteria which, in fact, then supports the licensing  
23 commitments.

24 He will then go one step farther and he will  
25 assure that what is built out there, what is actually in

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1 the plant, is also representative of the design so, in fact,  
2 we have out there the design to back it up all meets our  
3 licensing commitments.

4 Now, someone asked a question as to what is the  
5 detail? Do you have to review every calculation necessarily  
6 to do that? Not necessarily. You have to look at the  
7 calculation, but maybe I can give you another example.  
8 Let's say there was a calculation that was done to allow us  
9 to specify, to purchase a pump, and it had a certain head  
10 requirement and flow requirement as part of the design. Now,  
11 as part of the testing program, once it's installed out there  
12 and the plant has completed its testing program, we can go  
13 back and we can determine whether, in fact, that pump in  
14 that actual system, in fact, delivered the design flow and  
15 head that was required. If it did, that's better than any  
16 calculation. So one would look at that calculation and say,  
17 I don't have to look at it line by line, annotate it, put  
18 a piece of paper on it, whatever, and say it is verified  
19 by test procedure such-and-such.

20 So that, in fact, gives you a hundred percent,  
21 if you will, in this particular area of validation, but the  
22 man may not have necessarily had to do a line-by-line review  
23 of the calculation.

24 So that is the judgment and the decisions to ensure  
25 that we have this hundred percent evaluation that the

1 contractors are doing and are, in fact, documenting. So  
2 there will be documented proof that all these key design  
3 parameters to meet the licensing commitments are, in fact,  
4 satisfied.

5 So that is really the essence of the program.

6 Now, we have identified the concerns, or at least  
7 we have some concerns, about a third party. Again, we assume  
8 that they are valid. We will do exactly that same review.  
9 We will identify what is the commitment?, what is the design  
10 criteria?, and we will decide whether that is a valid concern  
11 as identified by the third party or not. If it is, we will  
12 correct it. We will identify the concerns. We will identify  
13 the corrective action. We will obviously implement the  
14 corrective action to make sure the hardware out there either  
15 needs to be modified or replaced to ensure that it does,  
16 in fact, meet licensing criteria and the design criteria.

17 MR. MILLER: John, let me interrupt. I don't  
18 imagine that the second step you mentioned, which is identify-  
19 ing key design parameters, is identified in your Corrective  
20 Action Plans. That's something that is documented as you go  
21 through the reviews. So for us doing inspections, for  
22 example, we would go and look at your process records, if  
23 you will, to see what you have identified as key parameters --

24 MR. KRECHTING: Right. You --

25 MR. NACE: Let me try to answer that, John. This



1 project was started, basically, in the early to mid-seventies.  
2 As was the practice at that time, generally the design  
3 criteria is reflected in the drawings, specifications and  
4 project documents. What we're doing is -- I forget the  
5 number -- but every design area we are pulling key design  
6 criteria out and identifying it in a controlled design  
7 criteria document, and we will control that from this point  
8 forward as configuration control. That's part of the effort.

9 MR. MILLER: And that documentation is being  
10 developed and would be support for your final results reports,  
11 I assume.

12 MR. NACE: Yes. It's also the key link to the  
13 past test records that I talked about earlier. We're  
14 relatively far along at this point in time in formalizing  
15 those design criteria documents. That's one of the first  
16 things we want to formalize.

17 MR. KRECHTING: Another real key to this program  
18 is to now identify the preventative action, and if, in fact,  
19 we have a problem, we want to know why we had that problem,  
20 we want to correct it so, in fact, it will not happen again.  
21 So we want to identify the preventative action. That could  
22 be, as Larry mentioned, procedural changes of how we do  
23 business. It could, in fact, be specification changes for  
24 installation specifications to ensure that the appropriate  
25 inspection criteria and inspection attributes are part of

1 that specification. But whatever it is, whatever the concern  
2 was or the cause, we will identify that, identify a preventa-  
3 tive action and, of course, implement that preventative  
4 action.

5 That's really key here in my mind because we want  
6 to make sure that, like I said, if there are problems out  
7 there and we do identify them, that, in fact, they will not  
8 happen again and that we have assurance of that.

9 That rolls into, really, what is our long-term  
10 plan as part of the corrective action program, and really  
11 is part of what we, TUGCO, want to do so that we are assured,  
12 once this plan is done and we have this plant licensed, that  
13 we have within our house programs and procedures to ensure  
14 that we continue to maintain the plant. So we want to  
15 implement a preventative action plan into our own engineering  
16 procedures as required to assure the same or similar problems  
17 do not occur again.

18 We also want to develop -- and, in fact, are in  
19 the process of doing that -- developing a strong management  
20 team and a staff of qualified engineers trained to all the  
21 applicable procedures to take advantage of the lessons learned  
22 and to prevent reoccurrence.

23 Larry mentioned numbers in the engineering and  
24 construction area of 213. A hundred and ninety-four of those  
25 people are now in the TUGCO engineering organization. We

1 are actively recruiting. We are recruiting experienced,  
2 knowledgeable engineering people. In the last eight months  
3 or so we have hired approximately 100 people. Now, some of  
4 those people are clerical, but 50 or 60 experienced engineers  
5 into our staff. We have allocations for 350 people, and as  
6 I said, we are actively in the process of hiring experienced  
7 people.

8 So we feel that all this wrapped together, the  
9 identifying of the issues, if we have problems we will, in  
10 fact, correct them and we will identify why they happened.  
11 We will establish preventative action programs, and we are  
12 developing experienced staff here so that the lessons we do  
13 learn from this will, in fact, not happen again.

14 And that's the mechanical Corrective Action Plan.  
15 Does anybody have any questions?

16 I'd like to then talk about the HVAC Corrective  
17 Action Plan. The sources of the issues in the HVAC area  
18 come essentially from the Design Adequacy Program Tera-  
19 sponsored effort.

20 Now, what you saw in the last slide is, you saw  
21 something that was called HVAC heat load calculations, and  
22 we said it was going to be done by Ebasco. Well, it's  
23 going to be done within this program. There are two issues  
24 here. There is the issue of duct support and duct design.  
25 These issues, again, are essentially focused on analysis and

1 the design assumptions and methodologies used in the  
2 analysis, control of design documents and differences between  
3 the as-designed and as-built duct systems. This effort is  
4 the responsibility of Ebasco. Ebasco is, in fact, the  
5 organization that is addressing these issues.

6 The second part of it is HVAC system functional  
7 design. This would be the functional design of the HVAC  
8 systems, be they required flow rate, heat load, heat removal  
9 capacity of the equipment. And for this particular issue,  
10 the issues again that have been raised by the third party  
11 are centered along the assumptions used within the calculations,  
12 improper or incorrect use of inputs, incomplete inventory  
13 of heat load sources, inaccurate implementation of calculation  
14 results into equipment specs.

15 Again, I emphasize that we have assumed that these  
16 are correct within our corrective action program. So these  
17 are the issues that have been raised by the third party. We  
18 will, in fact, determine whether they are valid in relation-  
19 ship to the design criteria and the licensing commitments  
20 at Comanche Peak.

21 MR. CHANDLER: When you say you're assuming they're  
22 correct and then you're going to investigate whether they are  
23 correct, I assume you're saying you're taking it as a given  
24 that someone has raised an issue. Whether or not it's valid  
25 or not is something you will determine.

1 MR. KRECHTING: Yes, that's correct. Of course,  
2 the third party issues, they have to concur with the final  
3 resolution and agree that, in fact, it is or is not an issue.

4 Similar to what we talked about in the mechanical  
5 corrective action program, really two parts. There are  
6 the issues. We're going to look at those. And there is,  
7 again, the hundred percent validation, if you will, of the  
8 design to, in fact, convince ourselves and assure ourselves  
9 that there are no areas out there where we do not meet our  
10 licensing commitments.

11 Now, for the ducts and the duct supports, right  
12 now we are in a hundred percent verification of the seismic  
13 Category 1 HVAC ducts and duct supports for Unit One to  
14 ensure that, in fact, we meet the licensing commitments.  
15 That is in process. Every support is being reviewed in this  
16 particular case by Ebasco. We will, in fact, assure ourselves  
17 that the supports do meet the licensing commitments.

18 We will then also perform the hundred percent --  
19 also, we are performing a hundred percent as-built heat load  
20 calculations for all HVAC systems that provide cooling for  
21 safety-related equipment. Now, this is part of the overall  
22 hundred percent validation of the HVAC functional aspects.  
23 They are looking at all the heat load calculations based  
24 on the as-built equipment that is out there in the plant,  
25 calculating the heat loads and verifying the functional design

1 of the systems.

2 Again, as we talked about in the mechanical  
3 corrective action program, once we identify any concerns --  
4 a concern here, again, being, Is there a situation where,  
5 in fact, the licensing commitments are not met? -- we will  
6 identify the corrective action, we will implement that  
7 corrective action and, again, identify any preventative  
8 action and implement that preventative action so, in fact,  
9 if there are problems, they will not occur again.

10 Long term plan. Here again, it is very similar.  
11 You'll see it in all these corrective action programs; we  
12 talk about it. The long term plan is, again, just to assure  
13 through the procedures, specifications, training and staffing  
14 with trained and experienced people that, in fact, we will  
15 not have -- in fact, if we identify any problems, that they  
16 will not happen again.

17 Any questions in the HVAC area?

18 MR. NACE: John, I'd like to take a break at this  
19 point in time. We'll take a 15-minute break and come back  
20 and assume the agenda.

21 (A break was taken.)

22 MR. NACE: I'd like to resume. We'll return to  
23 the agenda. There was an omission on the agenda that we  
24 passed out. It will be corrected on the record copy of the  
25 agenda.

1           The next item to discuss is the civil/structural  
2 Corrective Action Plan, and that will be done by Mr. Owen  
3 Lowe. Mr. Lowe is the manager of civil and manager of  
4 mechanical engineering.

5           MR. LOWE: The civil/structural program is the  
6 first one I'll address. The sources of the civil/structural  
7 issues are primarily the Design Adequacy Program, with some  
8 contribution from the Construction Adequacy Program and the  
9 TRT exercises, as well.

10           I won't read off this whole list, but the way we  
11 structured the plan provides 100 percent validation of all  
12 of the civil/structural design issues packaged in this way  
13 for purposes of consolidating and making sure that we cover  
14 all of the individual issues in a comprehensive way.

15           The approach to the program is very similar to  
16 what was described for the mechanical Corrective Action Plan  
17 in that Stone and Webster is providing a review of all of  
18 the existing Category 1 calculations -- and there are about  
19 2500 of those calculations -- on a systematic basis, and  
20 will either endorse, amend or replace those calculations.

21           MR. CHANDLER: When you use terms such as validation  
22 and review, can you define those terms?

23           MR. LOWE: I'm not trying to use those in a specific  
24 way. Validation is, in my mind, a review of a calculation  
25 and taking whatever necessary steps there are to understand

1 the content of it and feel comfortable with it or, in fact,  
2 create a new calculation, if that's necessary.

3 MR. CHANDLER: Before we were talking, you mentioned  
4 a hundred percent validation, and now with your understanding  
5 of that term, does that mean, then, that you're going to be  
6 going back and reviewing a hundred percent of all calculations?

7 MR. LOWE: Yes.

8 MR. TRAMMELL: Another question, just to be clear  
9 on this point: You used the phrase just a moment ago,  
10 "hundred percent validation of design issues," and I want to  
11 make sure I'm clear in my mind that we're not talking about  
12 just the issues but a hundred percent of the design.

13 MR. LOWE: I should have stopped before "issues";  
14 hundred percent of the design.

15 MR. TRAMMELL: Thank you.

16 MR. VOLLMER: I have another generic question here  
17 which perhaps Larry will want to answer. The question is:  
18 As we go through this process and you raise or find an  
19 issue which may have some real significance, how do we get --  
20 how does that get fed into our process?

21 MR. NACE: First of all, we're obliged under 5055.E --

22 MR. VOLLMER: I understand that.

23 MR. NACE: -- to keep you informed on those issues  
24 which relate to those types of deficiencies. We have been  
25 using a rather liberal policy of keeping you informed. That



1 is the only prescribed way that we have thus far.

2 MR. VOLLMER: How does that happen? Can you give  
3 me an example? If you find something which you think has  
4 some significance since, again, our process, we're using  
5 resources instead of planning for the review process, so  
6 there may be some specific project -- problems. There may  
7 be some more generic problems. How quickly do we get on  
8 board for those?

9 MR. NACE: The potential 5055.2s we are keeping  
10 you informed as they develop, within essentially a two-week  
11 period. And I think Vince will confirm the record that we  
12 have a substantial number of open potential reportable  
13 items that we have not yet put to bed with respect to are  
14 or are not really reportable. So that's what I meant by  
15 liberal reporting. We're trying to keep you informed as the  
16 issues develop; those that could conceivably have safety  
17 significance in the plant.

18 MR. COUNCIL: Jimmy Barker has the number that we  
19 submitted in 1986.

20 MR. BARKER: Yes, Dick. We submitted during 1986  
21 83 items that we categorized as potentially reportable under  
22 5055.E, and of those 83 we evaluated 21 to be reportable  
23 under the Regulation 5055.E. We've evaluated 25 not to be  
24 reportable under 5055.E, and we're still evaluating 40 more.

25 MR. VOLLMER: Were these 30 or so -- these were

1 submitted to us as potential?

2 MR. BARKER: Yes.

3 MR. VOLLMER: That really answers my question about --

4 MR. NOONAN: I was going to maybe ask Ian to talk  
5 to us about how the 5055.Es are handled on our side of the  
6 fence, how you keep track of them.

7 MR. BARNES: We have our own tracking system put on  
8 a computer. We hand them out for follow-up inspection and  
9 track the items separately by applicable unit. We also  
10 notify NRC staff by putting them in our daily reports.

11 MR. NOONAN: We get copies of all the 5055.Es that  
12 come in our office.

13 MR. MILLER: Essentially, the way you're describing  
14 the SWEC review constitutes another third-party review,  
15 if you will. In other words, Tera has passed through this,  
16 through the design, on a 10-percent basis, and what you're  
17 saying is that SWEC is going through it again.

18 MR. NACE: Well, yes. The third party -- there's  
19 been third, fourth, fifth and sixth parties and --

20 MR. MILLER: But it's another --

21 MR. NACE: -- there are a lot of people reviewing  
22 design or reviewing the plant and raising questions. This  
23 is an exercise to assume anything that's been raised in the  
24 past is valid, systematically resolved that issue, and  
25 meanwhile look at the rest of it and fix it. This is

1 different than a reviewer.

2 MR. MILLER: My next question is: I know you're  
3 only part way through this now, but have you found significant  
4 things -- has SWEC in this expanded review, if you will,  
5 found additional things of significance? Tera found many  
6 things that documented them in the DIRs, and the question  
7 is: Are you finding anything new, or is it repetition of  
8 things that were already identified on a general basis in  
9 the reviews by Tera?

10 MR. NACE: There has been nothing new discovered  
11 as a result of kicking off the corrective action programs  
12 that we have not already known about as an issue at this  
13 point in time. I would caution you that the effort has  
14 really only been a hundred percent of it, if you will, for  
15 about two months now. There has been no new 5055.E potentials,  
16 if you will, identified thus far in the Corrective Action Plan  
17 program reviews.

18 We have got to take some confidence that because  
19 of the multitude of people who have been reviewing the designs  
20 in the past -- whether it's Tera, ERC through the hardware,  
21 Cygna, whatever -- we've got to take a fair degree of  
22 confidence that the vast majority of the issues in the plant  
23 are already on the table.

24 Now we have to resolve them. We want to resolve  
25 them in a manner in which our credibility and our integrity

1 are --

2 MR. NOONAN: I might add, looking at your schedule,  
3 the way things are progressing right now -- in fact, schedules  
4 are really being maintained pretty well. By spring of this  
5 year you should have a pretty good handle on any new issues --

6 MR. NACE: Yes.

7 MR. NOONAN: -- I would think, just looking at what  
8 I see on my side.

9 MR. NACE: Yes.

10 MR. TRAMMELL: Owen, let me interrupt just a second  
11 before you leave that. Even though you're showing me an  
12 identification of issues here that came from some source,  
13 that is not all you're looking at in your civil/structural.  
14 That's the impression you get when you look at these little  
15 slides. These are the issues and what you're going to do,  
16 but you're going to do a lot more than that.

17 MR. OWEN: What you can characterize this list as  
18 is a convenient packaging of all the issues, and any issues  
19 that we find will fit into one of these slides. The  
20 Corrective Action Plan is comprehensive. With a couple of  
21 exceptions that Larry mentioned earlier, this is a very  
22 comprehensive review of the civil/structural arena.

23 MR. NACE: And if in the process of review we find  
24 something that won't fit into one of those buckets, we will  
25 create another bucket.

1 MR. LOWE: The objectives of the program, similar  
2 to the mechanical in particular and other programs as well,  
3 the key is the identification of the concerns and establish-  
4 ment of the corrective action in the short term. Corrective  
5 actions in my mind already matured, both hardware and  
6 procedures, make immediate changes to make corrections of  
7 the discrepancies we find, and then to go on ahead and develop  
8 and refine our procedures in the short term, such that we  
9 will not make the same errors that we have found that prevent  
10 any further development or promulgation of the situations  
11 that we find.

12 MR. CHANDLER: Excuse me just a moment. Both you  
13 and John before you have on the Program Objectives in the  
14 second sub-bullet there, Identify Corrective Action. Am I  
15 correct, though, in understanding that as part of that you  
16 will be doing a safety significance evaluation of the concern  
17 identified under the first bullet?

18 MR. LOWE: Yes.

19 MR. CHANDLER: And that you could --

20 MR. NACE: If I could interrupt. By law, under  
21 5055.E we're required to do it, and that's exactly what we'll  
22 do.

23 MR. CHANDLER: Right. When you come down to the  
24 corrective action under the second sub-bullet, you could, if  
25 you decide that there is no safety significance, determine

1 not to initiate corrective action. He said with a question  
2 mark.

3 MR. NACE: I find it very difficult to find an  
4 example of identifying the need to fix something and not doing  
5 it.

6 MR. CHANDLER: You first have to pass the 5055.E  
7 threshold then?

8 MR. COUNCIL: There are instances where we have  
9 not had a reportable incident, let's say, as far as a weld  
10 as an example. It was not safety significant; however, in  
11 our internal reviews with our contractors and so forth, there  
12 were better ways in which to express the specification of that  
13 weld, such that any remaining question in the future could  
14 be eliminated. And we have, in fact, done that, and we are  
15 doing that in numerous areas where we are specifying a change  
16 to a spec, or whatever, even though there was nothing safety  
17 significant.

18 MR. CHANDLER: Let me turn it around a little bit  
19 differently. The first major bullet says Meets the Licensing  
20 Commitments. If you found something that did not meet a  
21 licensing commitment but was not safety significant --

22 MR. COUNCIL: I don't think there's any such guy.  
23 I'd be hard pressed to find an example of that.

24 MR. CHANDLER: Well, the example that Larry Nace  
25 gave earlier, which was if somebody processed from two and

1 two and came up with five, you could still possibly slap  
2 a cover sheet, I think was the way you put it, on the package  
3 and say, "For the following reasons, this is nonetheless  
4 acceptable."

5 MR. NACE: That's true. But at that point you're  
6 not into a safety-significant situation. I prefaced it. I  
7 said the objective of the calc was to prove that the combina-  
8 tion of two loads was less than six. We added two and two  
9 and got five and said, yeah, it's okay. It should have been  
10 four, but it's still okay. So that would not be -- it would  
11 not have safety significance. That act by itself would not  
12 be a 5055.E reportable deficiency, but it's part of the  
13 necessary exercise of restoring the design documentation  
14 to validate, if you will, the physical plant.

15 MR. CHANDLER: So my misuse of the term safety  
16 significance, really. I understand.

17 MR. TRAMMELL: So what I heard from this is when  
18 we're all through with this process, the FSAR and the plant  
19 are going to agree with each other.

20 MR. NACE: And the design documentation, yes, sir.

21 MR. COUNCIL: And you will have assurance that we  
22 will continue to do that for the next 40 years with the  
23 configuration management that we are developing as a result  
24 of this entire process.

25 MR. OWEN: And for our other programs, as John

1 described, our long-term plan is to ensure that we have  
2 implemented preventative action into TUGCO's engineering  
3 procedures and to develop those new procedures or enhance  
4 procedures that exist to ensure that we don't have recurrence  
5 of problems that have been found and corrected, and also to  
6 develop a qualified staff, as we have discussed in the  
7 previous subjects.

8 MR. TRAMMELL: One question. You have issued your  
9 final report on large bore pipe supports, your company has,  
10 and yet you're doing a civil/structural review. Should I  
11 hold my breath while you're doing your work, or what should I  
12 do with that final report on large bore pipe supports?

13 MR. LOWE: You should proceed with confidence to  
14 review the reports on large bore pipe supports on the  
15 assumption that we have done some up-front work in the  
16 civil/structural arena to assure ourselves that we are  
17 proceeding properly in the pipe stress and pipe support arena.

18 MR. NACE: Can you put that in the category of  
19 high confidence?

20 MR. TRAMMELL: I think that's in the report to some  
21 degree. I haven't reviewed it that thoroughly.

22 MR. LOWE: Speaking of pipe and pipe supports,  
23 let's talk about the Corrective Action Plan there. Sources  
24 of the issues for the pipe stress and pipe supports are  
25 external, including NRC and Cygna, and the Design Adequacy



1 Program and Construction Adequacy Program.

2 You can categorize the issues really in general  
3 terms as affecting pipe stress calculations, pipe support  
4 design and pipe support installations. An example of the  
5 pipe stress calculation would be the question of whether  
6 proper damping was used and also several issues on assumptions  
7 and methods used during the analysis. Pipe support design,  
8 correct use of a pipe support component, is an example of the  
9 kind of issue raised. And an installation question might be  
10 raised in terms of a welding configuration or the question of  
11 an as-built versus as-designed pipe support.

12 The objectives as for the other programs are to  
13 identify the concerns, implement corrective action to qualify  
14 the hardware by review of the hardware. In pipe stress and  
15 pipe supports, in particular, we're talking 100 percent review.  
16 If the hardware can be qualified by review and rework of the  
17 calculation, it is. If it can't be qualified under the  
18 expanded rule that we're working with, it will be replaced.

19 The preventative action is similar to previous  
20 programs in that we will identify and change procedures as  
21 necessary to avoid repetition of previous problems found.

22 Long Term: We intend to make full use of SWEC's  
23 good work in developing procedures for pipe stress and pipe  
24 supports and to roll many of the detailed procedures that  
25 Stone and Webster has developed into our TUGCO program for

1 long-term use, and also to develop our own staff capable  
2 of carrying on and supporting the plant in the area of pipe  
3 stress and pipe supports.

4 If there are no questions on pipe stress and pipe  
5 supports, I'll go on to cable tray supports.

6 MR. VOLLMER: In that area do we -- this work is  
7 proceeding under the original licensing commitment, i.e.,  
8 damping, things like that. You've not found the need to try  
9 to utilize some of the more recent code cases and damping  
10 and inspecting the rods and things like that? It's just a  
11 question.

12 MR. NACE: Let me refer that question to Ed Siskin  
13 of Stone and Webster. Generally we're using and have been  
14 using the original requirements. We have requested and  
15 TUGCO has gotten NRC approval to make a number of changes  
16 to reflect more recent requirements. One of the changes that  
17 was approved was the use of some more recent code cases.  
18 Another requirement was levied upon TUGCO unless we identified  
19 those cases where they are used. There is another example  
20 where we are using a more recent code case, as well, and NRC  
21 is aware of it as are third party and so on. There were  
22 some ambiguities in the original codes where techniques to  
23 be used were not specified where there was a subsequent  
24 code change or code case where an acceptable link was defined,  
25 we've used that one to avoid any potential confusion or

1 concern. But as we said originally and as Mr. Council has  
2 continued to detail, we're doing it to the original approved  
3 FSAR. Where there is any variation, we are requesting and  
4 getting an approval before we proceed.

5 MR. MILLER: Is there any way to briefly characterize  
6 the degree to which you will have to make hardware changes  
7 in this area? If not, you can say so.

8 MR. NACE: Just talking about the large bore pipe  
9 supports on Unit No. 1, there are on the order of magnitude  
10 of 10,000 supports in that population. The current projection  
11 is to make approximately 4100 design changes to that population  
12 of 10,000.

13 There is an additional issue relative to shimming  
14 of the box frames, which we are maintaining the original  
15 criteria and we are reinspecting and reshimming as necessary  
16 the box frame supports. I can't remember how many of those  
17 are large bore in Unit 1.

18 Dick, do you remember?

19 MR. CAMP: I can't recall the number.

20 MR. NACE: On the order of magnitude of 1500? Is  
21 that reasonably close?

22 MR. CAMP: Yes.

23 MR. NACE: 1700 box springs in Unit 1. Those are  
24 being reinspected and reworked as necessary to conform to  
25 the original criteria.

1 MR. LOWE: We should point out, Larry, that some  
2 of those changes are not as a result of design deficiencies  
3 but are to provide more efficient supporting systems for us  
4 over the life of the plant.

5 MR. MILLER: Did you have some numbers on the small  
6 bore?

7 MR. NACE: I don't have them with me. If you would  
8 refer to the most recent update of the 5055.E, it has a  
9 current status on it. I don't have them with me.

10 MR. LOWE: The next subject I'd like to address  
11 is cable tray supports. The source of issues here are  
12 External (Cygnar, NRC, Audits), and the CPRT and the Design  
13 and Construction Adequacy Programs.

14 The issues here involve the cable trays themselves,  
15 generic supports, unique or special support designs and  
16 some specific technical issues.

17 I can characterize the issues in terms of application  
18 of loads, interpretation of how loads should be applied,  
19 questions on specific use of cable tray components and methods  
20 of analysis and design.

21 Program objectives, similar to the other programs,  
22 are to identify any of the concerns in hardware deficiencies,  
23 to implement corrective action to make those hardware  
24 deficiencies right and to ensure that in the future similar  
25 hardware installations will be done properly. That is the

1 short term preventative action.

2 Cable Tray Supports. Following our civil/structural  
3 arena, as far as TUGCO goes, we are enhancing our TUGCO  
4 procedures in the civil/structural area to put ourselves in  
5 the position of preventing future problems. And we are  
6 also staffing up in the civil/structural area to have a  
7 capability in-house in our engineering department to continue  
8 in support of the plant.

9 Moving on to conduit supports, sources are similar:  
10 Cygna external is the primary source of the external issues.  
11 We have also developed some issues from our internal review  
12 and also third party in the form of the Construction Adequacy  
13 Program and Design Adequacy Program. The kinds of issues  
14 involved here are conduit spans, the qualification and  
15 application of the general support designs and also the  
16 supports that have unique one-time applications.

17 Examples of specific technical issues are those  
18 typical of the civil/structural arena, application of loads,  
19 interpretation of load combinations, use of catalog components,  
20 and for the spans themselves, the proper application of span  
21 lengths.

22 This program can be characterized, I think, as a  
23 validation of the existing criteria, a complete and thorough  
24 review of the criteria documents used to do the original  
25 installations and a very careful review of exceptions to those

1 original design criteria such that we know completely what  
2 the impact of any change to those criteria might have been.

3 The supports in particular that are affected by  
4 changes to the criteria resulting from our review are looked  
5 at on an individual basis, and the as-installed configuration  
6 is compared to whatever revised design rules we may have  
7 developed.

8 MR. MILLER: Your design basis consolidation  
9 program calls, I think, for the creation of these design  
10 validation packages, I guess. These are complete; is that  
11 right? These are -- as I read the plan, unless I didn't read  
12 it right -- it sounded as if that was the first step in the --

13 MR. NACE: Let me answer that. This is a separate  
14 Corrective Action Plan. It got under way before the discipline  
15 plans. This plan results in the packages of design information  
16 relative to each of the supports and systems. It would be  
17 an adjunct to the design validation packages you're talking  
18 about, but not necessarily an integral part of it. It's a  
19 supporting set of documentation that qualifies the hardware  
20 in the plant.

21 MR. MILLER: So that would apply to the mechanical,  
22 the civil/structural and the electrical I&C discipline reviews  
23 that you're doing.

24 And the timing of that would be when? Those would  
25 be completed as the first step in the review of those areas?

1 MR. NACE: In the DVPs?

2 MR. MILLER: Right.

3 MR. NACE: The packages are created in the process  
4 of the review, such that at the time you've finished the  
5 review you're given a system, if you will. You have a  
6 package.

7 MR. MILLER: I see, and they come together at that  
8 point.

9 MR. NACE: That process is described in the  
10 enclosure to the civil/structural Corrective Action Plan  
11 involving the design basis consolidation program. That  
12 program applies to civil/structural, mechanical, electrical  
13 and I&C. The other programs are more specific in nature  
14 but do produce the package of the design information that  
15 qualifies the final hardware configuration in the plant,  
16 and it is all used as a basis of configuration control and  
17 design control from that point forward.

18 MR. LOWE: Similar to the other programs, short-term  
19 goals are to identify any of the concerns and initiate  
20 immediate corrective action, and also short term to revise  
21 whatever procedures are necessary to ensure that the installa-  
22 tions as they are continuing do not repeat past deviations.

23 In particular, in the conduit support program,  
24 conduit installation program, many of the lessons learned  
25 on Unit 1 have been applied to the Unit 2 program.

1           The long term plan is similar to that of other  
2 programs, as well, in that we are working the revised procedures  
3 into our discipline specific procedures within TUGCO engineering,  
4 and that we are staffing up with qualified people to address  
5 conduits and conduit supports.

6           If there are no further questions, we will go on  
7 to electrical.

8           MR. COUNCIL: Before you start, I would like to  
9 just acknowledge one thing that we did not put on the slide.  
10 The slides obviously are very limited, but up front where we  
11 say where the issues were identified, so on and so forth,  
12 we have only listed those that gave the most issues, if you  
13 will, and I would like to acknowledge that CASE has given  
14 us a number of issues and they're all listed in the generic  
15 technical issues report. Whether it came from Mrs. Ellis,  
16 CASE, Walsh-Doyle or whomever, they are referenced and  
17 what transcript it came from, so on and so forth. We're  
18 going to cover them and answer them all.

19           Mr. Boltz, I wanted to make sure you understood  
20 that.

21           MR. NOONAN: I guess I have one question before  
22 you leave. One thing at NRC we felt is very important is  
23 for the Walsh-Doyle people to sit with the Utility and the  
24 Stone and Webster people, and I guess I'd like to know what  
25 the latest status on that is.



1 MR. COUNCIL: I'll take that. As a matter of  
2 fact, I just talked a little bit about it on the break.  
3 We have made such an offer. It's difficult, because I  
4 understand both Mr. Walsh and Mr. Doyle are working and  
5 they're in the New England states. We have offered at any  
6 time to meet any day except on Christmas Day. That includes  
7 holidays, weekends, any time. And we have also offered to  
8 pay for their transport here. And Stone and Webster, Ebasco,  
9 so forth, and us, we are standing by, and hopefully at some  
10 future date, we will be able to hopefully resolve many of  
11 these issues before going to the ASLP for resolution.

12 MR. TRAMMELL: One other point of clarification,  
13 since something Owen said brought this to mind. Does a  
14 Corrective Action Plan apply equally to both units?

15 MR. NACE: Yes.

16 MR. TRAMMELL: So it's not a good look at Unit 1  
17 and see what you need to do to Unit 2. You're looking at  
18 both units.

19 MR. COUNCIL: We're looking at both units, right.

20 MR. CHANDLER: Is there a process, a formal listed  
21 process, in place to assure that what needs to be carried  
22 from Unit 1 to Unit 2 and vice versa is accomplished?

23 MR. NACE: Part of the corrective action program  
24 is to do the necessary reviews of Unit 1 and to carry those  
25 lessons learned into Unit 2. There is a -- defined activities

1 in Unit 2's schedule to confirm that all the necessary  
2 preventative actions in Unit 2 programs have been initiated  
3 and implemented.

4 So the answer is yes.

5 MR. CHANDLER: Does it account for differences in  
6 Unit 2 from Unit 1?

7 MR. NACE: Yes, it does, and there are some key  
8 differences. An example being -- I guess the best example  
9 being in the conduit program. Unit 1 was originally a field  
10 run program, and Unit 2 was engineered from the start. So  
11 in implementing the plan, we deal with those differences,  
12 but the end result is you apply the plan to both programs  
13 and end up with qualified hardware.

14 MR. CHANDLER: And when the CPRT signs off on the  
15 corrective action program, those matters are accounted for.

16 MR. NACE: Yes.

17 MR. TRAMMELL: Owen, I have one more question.  
18 Can I take one more? As I was leaving the office yesterday,  
19 I saw on my desk a paper which I didn't bring with me and  
20 haven't read having to do with factors of safety or something  
21 like that on concrete expansion anchor bolts. I don't know  
22 what it is. Is this something that you'd like to highlight  
23 as something we need to direct our attention to, or something  
24 that -- I don't know what it is. Is it something that you'd  
25 like to discuss?

1 MR. NACE: Do you know what the paper was, Charlie?

2 MR. TRAMMELL: It had something to do with concrete  
3 expansion anchor bolts.

4 MR. CHANDLER: Was it Comanche Peak?

5 MR. TRAMMELL: If you don't know what it is, forget  
6 it. It must not be very important, but I'll read it when I  
7 get back.

8 MR. LOWE: Let me just make a general statement  
9 on concrete expansion anchor bolts. As you know, there has  
10 been considerable activity in the industry on expansion  
11 anchor bolts. What you saw may have been part of that  
12 activity.

13 MR. COUNCIL: You asked how we're addressing others,  
14 so -- there was a review done on the Susquehanah plant on  
15 Hilti bolts where I believe Susquehanah had done some  
16 testing on Hilti bolts and found out the factors of safety  
17 as specified by Hilti are different than the actual con-  
18 figurations. We are addressing that, and I believe that was  
19 submitted as a 5055.E in reference to Part 1 from Susquehanah.

20 MR. NACE: It is a potential 5055.E on our docket  
21 right now.

22 Mr. Peter Stevens, manager of electrical engineering,  
23 will address the remaining Corrective Action Plans.

24 MR. STEVENS: I'd like to start with the electrical  
25 Corrective Action Plan and the sources of those issues.

1           The sources of the issues are much like all of  
2 those other programs you've previously heard about: The  
3 Design Adequacy Program by Tera, the Construction Adequacy  
4 Program by ERC and such external sources as the NRC, the TBT,  
5 Cygna, INPO, which is an industry organization that has  
6 helped us find some, and we have also found some ourselves.  
7 In identifying an issue, we might expand that review to  
8 encompass other areas that we're wondering whether we're  
9 comfortable with those, and we've identified some of those  
10 other issues.

11           The issues: There is a list of them there. I have  
12 tried to categorize them and put them in certain areas so  
13 they can -- that is not the number of times we saw something  
14 come up. It's not the specific issue. It's the general  
15 area. There's calculations adequacy that deals with  
16 assumptions and references, inputs, criteria, methodology,  
17 and the accuracy and verification of those calculations  
18 at the end.

19           Electrical Separation: That whole area deals with  
20 the adequacy of the criteria, and it's not necessarily  
21 whether the criteria itself is adequate but how we displayed  
22 that in a design document, and I think that's shown in  
23 Bulletin 3 under the adequacy criteria design details and  
24 the design and/or as-built discrepancies. That's those in-  
25 spection discrepancies we find do not meet the criteria that

1 we previously set out. Those are ERC hardware-type related  
2 issues.

3 The installation specification: We've taken a look  
4 at the specification, and we're trying to make sure that it  
5 really deals with all of those areas that we need to deal  
6 with presently, and that is that we have the proper design,  
7 we have the inspection criteria and we have those attributes  
8 that they need to inspect.

9 The heat shrinkable tubing: That was mentioned  
10 earlier. That's one of the ISAPs, both in documentation  
11 and physical inspection.

12 The electrical butt splices adequacy: That is one  
13 of the ISAPs also.

5 14 Class 1E lighting: We are doing -- presently we  
15 need to look at the fault analysis classification of the  
16 Class 1E lighting and installation and workmanship, and that  
17 comes out of ERC.

18 Just so we're clear on this, some of those issues  
19 go beyond just ERC ISAPs. They may have come up from the --

20 MR. CHANDLER: Yes, ISAP is ERC. TRC is hardware-  
21 related Construction Adequacy Program, and the design adequacy  
22 is the remainder of those issues, or self-initiated or from  
23 one of those other external sources.

24 MR. MILLER: Was the heat shrinking -- is that  
25 Raychem splices or --

1 MR. STEVENS: Yes.

2 MR. MILLER: And this is the issue that's been  
3 raised in one of the informational notices that came out  
4 recently? Or is this something beyond that --

5 MR. STEVENS: No, that was out of the --

6 MR. MILLER: -- that was self-initiated or self-  
7 identified?

8 MR. STEVENS: No, it was a TRT issue.

9 The program objectives: You've seen this slide  
10 on all the other previous ones. I'd just like to highlight  
11 it. It is important. We do intend to demonstrate that the  
12 plant design meets the licensing commitments. We also want  
13 to make sure it's going to work the way it is supposed to  
14 and we can keep it going for a long time for reliable power.

15 During this program we hope to identify any concern,  
16 whether it be on the table on the previous slide, presently,  
17 or whether it exists out there anywhere else. We are looking  
18 for the -- once we find any concerns, we will identify a  
19 corrective action and implement that corrective action, and  
20 then hopefully, through out inputs from out different contrac-  
21 tors, we'll put some of the preventative action into TUGCO  
22 procedures for the long run, which is the next slide.

23 The long term plan is, once we're operating, that  
24 we'll have a preventative action plan implemented into the  
25 TUGCO engineering procedures to ensure that the same problems

1 that we've had, or any similar problems, don't exist at that  
2 time. And we're going to develop a strong management team,  
3 a good staff of qualified engineers. And on that point, I'd  
4 like to say that we've been recruiting. That was previously  
5 mentioned, but we have made some pretty good strides. In our  
6 area we had three to start off with in this area, and we are  
7 now up to 14 good, qualified people. That's eight months  
8 and 14 people. That may not sound like great strides to those  
9 of you in the audience, but it's pretty good strides for us.  
10 We feel pretty comfortable with that. And they will be  
11 trained to all the applicable procedures to take advantage  
12 of the lessons learned to prevent reoccurrence.

13 On to I&C.

14 I didn't mention on the electrical, and I might  
15 ought to mention now on the I&C, as well. On the electrical  
16 the corrective action, as you saw on the slide that Larry put  
17 up earlier, is being handled by the Stone and Webster effort.  
18 Most of the corrective action review and validation under  
19 the design basic consolidation program is being done in the  
20 Boston office, but the installation and implementation work  
21 here on the site will be done here on the site by Stone and  
22 Webster engineers. The same is true of the I&C plant.

23 The source of the issues: Again, it's Design  
24 Adequacy Program with Tera, Construction Adequacy Program  
25 with ERC. There are some external sources: NRC, TRT, Cygna,

1 INPO. And then, again, internal sources -- inspections,  
2 evaluations, reviews -- that we have done internally.

3 The identification of issues: They are both design  
4 and hardware related. ERC helped us uncover several concerns  
5 or issues. The instrument installation/inspection requirements,  
6 the tubing and instrument support designs, the post-accident  
7 elevated temperature effects on tubing configuration -- that  
8 one originally came out of a review that we were working  
9 with INPO on, when INPO came in and helped us -- torquing  
10 of support fixtures and hardened washers. Hardened washers  
11 actually folds over into another corrective action, which was  
12 the civil/structural area, which was Owen Lowe.

13 The DOP instrument setpoints: This came out of  
14 Tera. The documented basis for the process setpoints, the  
15 compliance with Reg. Guide 1.105 and the ISA standards, and  
16 a concern for inaccurate vendor data and calculated errors.

17 MR. VOLLMER: The post-accident issue: How is that  
18 different from your equipment qualification cap?

19 MR. STEVENS: This is relating to the tubing  
20 configuration and expansion where the piping is done in the  
21 pipe stress analysis, but the tubing is handled through the  
22 instrumentation. It is very similar to the pipe support  
23 pipe stress expansion.

24 The program objectives, again, are to demonstrate  
25 that the plant meets the licensing commitments, and that's



1 through an identification of any concerns, identify corrective  
2 action, implement corrective action, identify preventative  
3 action so that when we're operating we can keep anything from  
4 happening again, and implement that preventative action.

5 The long term plan, again, is just like everyone  
6 else's. I'd like to reiterate it one more time. It's to  
7 implement the preventative action plan into the TUGCO  
8 engineering procedures so that when we're operating, TUGCO  
9 can ensure that the same or similar problems do not occur  
10 again.

11 We intend to develop a strong management team and  
12 qualified engineers. In this area I believe we have one  
13 engineer and supervisor in this area, and we now are up to  
14 16, so we've made even better progress in that area.

15 MR. TRAMMELL: I have a question on that one. I'd  
16 be interested in knowing how it was that Hansel brought you  
17 some issues in the design area. I mean, I know he can, but  
18 his basic charge, as I understand it, was to see if or  
19 confirm that the plant had been built the way the specifications  
20 said, irrespective of design, didn't really get into that.  
21 He just took the construction drawings and went out in the  
22 field to see if you built it like they were told to build it.  
23 So how did he get in and bring you design issues in the I&C  
24 area? Are these out of scope-observations or something any  
25 smart person would see as he went through the plant? How

1 did that happen, do you remember?

2 MR. STEVENS: I'm not sure it would be either one  
3 of those categorizations you just mentioned, but when you find  
4 a discrepancy between a design document and a hardware con-  
5 figuration, you initiate right at that time a problem report.  
6 Now, he's identified for us that the hardware doesn't meet  
7 the design, but it's very possible the issue is really design  
8 related and the design is not what we want; the hardware is.

9 Am I answering your question? I see a troubled  
10 look there.

11 MR. NACE: Let me try it. It's likely to come up  
12 in probably two principal ways. Principal way number one is  
13 through the direction process controls that were in existence.  
14 The hardware system item got installed, say, the way it really  
15 should have been, but the design documentation was not kept  
16 current. So ERC, in their efforts, would look at the hardware  
17 and say, Hey, it's really right, it just doesn't happen to  
18 be what the drawing is, and your paper trail of how you got  
19 from Version A of the drawing to what's installed is not  
20 what it should be.

21 Another way in which that type of feedback can  
22 generally occur is in the event of, let's say, an ambiguity  
23 in specification requirements, you can maybe stand in the  
24 field and see two or three different ways in which something  
25 is installed and convince yourself that with the direction

1 given it is logical to get to these two or three different  
2 ways of installing it; however, what you really should do  
3 is decide which of the ways is best and give that right type  
4 of direction to the craft.

5 Those are two general ways in which that cross talk  
6 can occur.

7 Terry, you might have some other feedback on that.

8 MR. TYLER: Well, the only other area that comes  
9 to mind as to how you can get back into the design is to look  
10 at how it happened, which could be direction or an imprecise  
11 criteria in a direction spec or something like that that  
12 allowed the construction error to occur. So the identification  
13 of a problem in the field as non-complying hardware, you've  
14 really got to look at what caused it, which nine times out of  
15 ten gets back into the design-type documentation itself.

16 It's in the evaluation of those findings that you  
17 are able to come out with what the true cause is. That's how  
18 the cross talk is taking place. All ERC did was identify  
19 the physical non-complying hardware. It's been our evaluation  
20 on the project site that has led back to what the causing  
21 factors have been, the dialogues back and forth with ERC on  
22 what the possible root causes of those that were safety  
23 significant could have been.

24 MR. NACE: I might point out that that dialo,  
25 and feedback is part of the CPRT program plan attempt.

1 MR. TRAMMELL: Thank you.

2 MR. STEVENS: The Equipment Qualification Corrective  
3 Action Plan actually predated some of the other ones. We  
4 undertook it to ensure that the evolution of the plant design  
5 requirements and the industry criteria through the years  
6 are clearly reflected in the documentation.

7 Equipment qualification: The real purpose is to  
8 make sure that we have the documentation that provides that  
9 reasonable assurance that when a part is called on to do  
10 its job, safety function, it will do it.

11 So that's really what we're doing. Impell is the  
12 contractor for the equipment qualification Corrective Action  
13 Plan, and most of that work is being done here at the site.

14 Source of issues: Design Adequacy Program, Tera;  
15 some external sources, NRC, TRT; the 10CFR50.49 audits of  
16 other utilities. We've been lucky to take advantage of  
17 an invitation to go up and see some of those audits at other  
18 utilities and see what is really being audited so we can  
19 develop a true auditable documentation package for Comanche  
20 Peak equipment qualification.

21 And another source is internal, and that's inspec-  
22 tions and evaluations.

23 The identification of the issues is identification  
24 and classification of requirements, such as an EQ master  
25 list, sub-component tagging.

1 Environmental conditions and requirements, a  
2 central document file for those.

3 Environmental -- it should have a slash in there --  
4 environmental/seismic documentation. It's both of those.  
5 Design changes, design basis documents, installed configuration  
6 versus testing configuration.

7 Generic regulatory concerns. I think we can deal  
8 with some of those issues you brought up earlier. We want  
9 to make sure the equipment qualification documentation  
10 package identifies that we considered the information in the  
11 bulletin or circular and how we resolved the issue that was  
12 presented to us.

13 MR. MILLER: Is this an area that was previously  
14 addressed and now you're reviewing it, or is the EQ area  
15 an area where you're doing the work the first time right now?  
16 You're generating the master list now, you're going through  
17 the full process.

18 MR. NOONAN: Let me respond to that. The staff has  
19 a safety evaluation written, completed a number of years ago,  
20 on the EQ area. The staff had approved the program and had  
21 written off on the program, so this is not that initial phase.  
22 That work is all done. It was done back in the '82 time  
23 frame.

24 MR. NACE: A better way to characterize this  
25 program is, as you know, that the standards of expectation

1 on EQ have been escalating over the past years. What we  
2 were concerned about is that we had a 1982 certification,  
3 if you will, and we wanted to make sure that when y'all came  
4 in here we had a 1986-'87 documentation trail.

5 MR. MILLER: So you've seen the inspection reports  
6 of recent vintage; gone to school on those.

7 MR. NACE: Yes, we have. Now, there are also some  
8 Tera issues and other issues, as Peter has identified, that  
9 were factored into this program, as well.

10 MR. VOLLMER: Comanche Peak originally was the first  
11 Category 1 plant on the EQ. Category 1 plants now in operation?

12 MR. NOONAN: This is the first plant. Back in '77  
13 we decided Comanche Peak would be the leading plant for  
14 Category 1.

15 MR. VOLLMER: My question is: Has that created  
16 a problem in the EQ area, and are there Category 1 plants  
17 now operating?

18 MR. NOONAN: I'll answer that, and I'll say no.

19 I guess one clarification that I need here: Since  
20 the staff has really completed the review on this work and  
21 we have closed it out with an NCR and now you're doing this  
22 additional work, from my point of view I'm looking at the  
23 staff only doing -- just kind of looking at what you're doing  
24 and saying whether or not it has an impact on our safety  
25 evaluation or not. I'm not looking at this as something we

1 go back to square one and re-do all the work we've done  
2 previously.

3 MR. NACE: We have found no reason to do that.  
4 What you'll find in the proof of the pudding here is this  
5 is very largely a documentation upgrading to the current  
6 standards of expectation.

7 MR. VOLLMER: Also through Category 1?

8 MR. COUNCIL: Dick, I'd like to say it was. I  
9 think it was.

10 MR. STEVENS: Under the information notices  
11 bulletin and circulars, it's not that they haven't been  
12 dealt with in the equipment qualification area, but one of  
13 the documentation problems that we found other plants to have  
14 was ready access to how you close that out so that it's  
15 documented in the package so that it shows that what actions  
16 you took as a result of that bulletin right there in the  
17 package. Now, that's a documentation enhancement, but it  
18 sure does help the engineer a lot, too.

19 The last one is maintenance and surveillance  
20 requirements in order to maintain the qualification for the  
21 prescribed qualification life, certain maintenance require-  
22 ments and failure analysis and trending. To maintain -- the  
23 qualification is normally a tested program, but to maintain  
24 that confidence in that testing program, should you have  
25 infantile failures or failures during the life, you can trend

1 those and analyze those to determine whether you need to go  
2 back and requalify.

3 Again, the program objectives are the same as those  
4 other programs. It's to identify the concerns, identify  
5 corrective action, implement that corrective action, identify  
6 a preventative action and implement that preventative action.

7 For the long term, when we're operating we hope to  
8 implement that preventative action into the TUGCO engineering  
9 procedures as required to ensure the same or similar problems  
10 do not occur again, and to develop a strong management team  
11 and a staff of qualified engineers trained in all those  
12 applicable procedures to take advantage of lessons learned.

13 Presently, in the equipment qualification area we  
14 have one TUGCO engineer, and we are presently projecting  
15 we need a staff of 11. We have not made very good progress.  
16 These people are specialists, so they are a lot tougher  
17 to get, but we're trying to find them anyway.

18 MR. NACE: And if we don't find them, we'll grow  
19 them and train them.

20 MR. STEVENS: That's correct. We'll develop them.

21 MR. COUNCIL: One other item before we take a break.  
22 We have been concentrating on engineering and engineering  
23 procedures and construction procedures here today; however,  
24 I want you to all understand that there are certain specifica-  
25 tions and ways of doing things and so forth that are being



1 translated into the operating and maintenance procedures in  
2 addition to that, as a result of specification changes or  
3 whatever. So it is going into the maintenance procedures  
4 and the instrument control procedures and in the training  
5 programs for those technicians in the plant in addition.  
6 After the break Austin will want to confirm it for you that  
7 he's been a little busy, too.

8 MR. TRAMMELL: Peter, there was a mechanical slide  
9 earlier which talked about seismic qualification, and I see  
10 you have seismic here, as well. Is this the same thing?

11 MR. STEVENS: Yes. The seismic qualification is --  
12 as it was encompassed, it's an interface, I guess you'd call  
13 it, in the mechanical Corrective Action Plan, as well as the  
14 Impell equipment qualification.

15 MR. JOHNSON: Eric Johnson. Before we leave, I'd  
16 like to get one commitment, that as you go through this  
17 program you're going to be coming upon the necessity to do  
18 some rework. We know the pipe supports -- we're going to be  
19 inspecting that. We have already made our plans for that.  
20 We need somehow to be informed as you do this other rework  
21 so that we're not reading a report at the end that said,  
22 you know, we had these things and we had this rework, because  
23 there is an awful lot going on and we want to be able to  
24 pin down what is the rework that's coming out of these  
25 programs specifically as different from the ISAPs and different

1 from the normal maintenance that we can plug ourselves into  
2 to do our inspections.

3 MR. NACE: I guess that falls on me now. I think  
4 perhaps what I'm hearing from two different questions is  
5 perhaps the assumption that we've been making, that by our  
6 liberal use of the 5055.E circuit, we would keep you informed  
7 of key things that had to be done, but Ian, he lives here,  
8 and we will keep him informed. One of the things --

9 MR. JOHNSON: Yeah, 5055.E is a notification, but  
10 when you, you know, actually start the work. Next week we're  
11 going to be replacing X pipe supports. We can plug ourselves  
12 into that and observe that going on and make resource adjust-  
13 ments so --

14 MR. NACE: I guess that's a matter of coordination  
15 that Ian and I have to work on, but, for example, on the  
16 containment penetration work relative to an earlier 5055.E,  
17 that work is ongoing right now.

18 MR. JOHNSON: We know that, but as you start other  
19 things so we can make sure that we have the right --

20 MR. COUNCIL: We should be able to work that through  
21 our engineering construction fragments. We've been holding  
22 work out for the last two months and fragmented all key work  
23 that we know of today, when it's scheduled to begin and end.  
24 So we can make that available to you.

25 MR. NACE: If there are no other questions, I'd

1 like to take another 15-minute break, and then we'll come  
2 back and finish the presentation agenda.

3 I'd like to remind everybody that we will have  
4 lunch available in our cafeteria at 12:30.

5 (A break was taken.)

6 MR. NACE: The final item on the agenda relates to  
7 operator training status and qualification maintenance, and  
8 that will be presented by Austin Scott, our Vice President,  
9 nuclear operations.

10 MR. SCOTT: In trying to put this together to make  
11 some sense, I worked it all into a sheet, and I was going to  
12 speak from those notes; but once I got the notes prepared,  
13 it occurred to me that if I started speaking from them, I  
14 would leave you a lot more confused as the numbers started  
15 to pile on top of one another. So I made a copy of my notes,  
16 and I'm going to use those as a transparency. I wanted to  
17 get them done up in some fancy shape like my engineering  
18 colleagues, but I didn't have enough money.

19 Here in glorious print is the operation status.  
20 We've got about 93 operators on what we call on-shift that  
21 are assigned to the Operations Department. Thirty-seven  
22 seniors carrying licenses, twenty-four reactor operator  
23 licenses.

24 It breaks down this way: Shift supervisors; there  
25 are six in place now. Twelve assistant shift supervisors.

1 They have their license qualification status. Twenty reactor  
2 operators. And 55 auxiliary operators, of whom four carry  
3 current RO licenses.

4 In the support outside, on-shift -- this is in the  
5 training and engineering business -- we've got this many  
6 (indicating). Ops managers: This is the management of the  
7 Operations Department. Engineers. Shift technical advisors:  
8 Those are degreed individuals, five carrying current SRO  
9 licenses, and three in training, which I'm coming to. And  
10 in the training department seven seniors and one reactor  
11 operator with current licenses.

12 Current license class in progress to be examined  
13 in July '87: Six operators, four staff and three shift  
14 technical advisors. We are going to continue to upgrade  
15 our licensed participation on-shift beyond where we are now.

16 Requalification training has been fully implemented  
17 since 1983. Each person is on a training shift every six  
18 weeks. I'll tell you in just a few minutes -- I've just  
19 changed that, and we've dropped and gone from six shifts to  
20 five. That's going to make our training syllabus a little  
21 more rigorous there. Actually, that's the next bullet.  
22 Five shift rotation starts this month. We'll be putting in  
23 a training shift each week. That rolls each shift out into  
24 the schoolhouse in the simulator for one full week out of  
25 five -- out of six, excuse me.

1           Our program has been reviewed. We had to do some  
2 recent tweeking of our requalification program. The NRC  
3 requalification exam results have not been what we wanted.  
4 We figured out what we did wrong, and we're going to wrench  
5 that around where we can stay current.

6           Any questions on that before I move on?

7           MR. VOLLMER: As far as qualifications, what about  
8 operations experience?

9           MR. SCOTT: That's the next slide.

10          MR. CHANDLER: Let me try your numbers one more  
11 time. The number of shifts you said you had cut from six  
12 to five?

13          MR. SCOTT: Yes.

14          MR. CHANDLER: You then said you're going to have  
15 training one week out of six?

16          MR. SCOTT: Well, let's see. If I've got five  
17 shifts, that means that four are doing something and one is  
18 training. I'm going to be sure I get this right. It was  
19 one out of five. I was right the first time. No mumbo-jumbo.  
20 I was going too fast there in figuring out whether that's  
21 one in four or one in five.

22          MR. VOLLMER: And these will be eight-hour shifts?

23          MR. SCOTT: Yes, I'm sorry.

24          MR. VOLLMER: Your schedule would be --

25          MR. SCOTT: Yes, we're still with eight. We're

1 looking at 12, but we have not made a decision yet.

2 Now, operating plant experience is another issue.  
3 The commitment that we've made is to have at least one senior  
4 reactor operator licensed individual on each shift at the  
5 time of fuel load who has six months of hot operating experience  
6 on a similar or same type of plant. Beyond that, each shift  
7 supervisor and assistant shift supervisor will have at least  
8 six weeks of hot operating experience at greater than 20  
9 percent power in a plant similar to this one. And each  
10 shift supervisor will have startup and shutdown experience.

11 Now -- forgive me -- I've used these individuals  
12 there -- this may get a little bit confusing as we go down  
13 the line. But these are the shift supervisors, and they're  
14 in a matrix as to how I stand in getting their training.  
15 Here's the six-month column. Have you done the six-month  
16 training hot on a plant similar? Have you been six weeks  
17 above 20-percent power? And have you had a startup or a  
18 shutdown?

19 Now, we committed to this in a letter to you in  
20 March of last year and are continuing to work our way through  
21 it. We are essentially there with about two weeks to spare.  
22 With our five shifts, with our six-month problem, that's  
23 not very hard to get. That's easy to get. As a matter of  
24 fact, it's just a matter of freeing up these individuals  
25 to get them out to the plants to do it.

1           The six weeks above 20-percent power is also  
2 relatively easy to get, and we have had very good cooperation  
3 from the plants that are similar to ours. I've written  
4 several letters to my colleagues at the other plants. They  
5 have really given us an excellent background, our people an  
6 excellent background, and let them participate to a greater  
7 extent than we might have expected during that period. So  
8 I'm very pleased with how the hot operating experience is  
9 rolling out, when you see we're starting to fill in those  
10 blocks.

11           Startups also not all that much of a problem, but  
12 shutdowns are. Trying to find a shutdown is like -- it's  
13 hard to catch. I've got commitments for four this year, but  
14 that one is one that caught me by surprise. I didn't think  
15 it would be that hard to figure out a shutdown. It turns out  
16 we know when we're going to start them up; and we ain't sure  
17 when we're going to shut them down and that sort of thing.  
18 That's a little bit of a problem.

19           The commitment is to, before fuel load, we'll  
20 continue on this. I'm going to -- I've cleared it with Bill  
21 Council. We'll just keep on going and do as much as we can;  
22 keep this program in effect all the way to fuel load. We  
23 won't stop once we make some minimal commitment. We'll keep  
24 going.

25           Now, additionally, this is above and beyond these

1 (indicating). We've gotten 58 operators out to 12 plants  
2 in '86 for a total of 526 operator weeks of experience.  
3 These are reactor operators and so forth that are not shift  
4 supervisory people. We've had very good cooperation from  
5 our colleagues in the region and other areas in allowing us  
6 to put our people into their plants to observe there.

7 By the end of '87 we'll -- as I said, we'll be  
8 there, I think, by the end of '87 -- I'll be able to make  
9 the minimum NUMARC commitment, but we'll continue to go right  
10 on.

11 As I said, we have commitments for shutdown  
12 experience at four plants.

13 In addition to that, we were able to make a deal  
14 with the Braidwood plant, Commonwealth Edison, and on Monday  
15 of this week 18 people -- four reactor operators and 14  
16 auxiliary operators -- showed up for work at Braidwood to  
17 assist them in their hot functional test program in Unit 2.  
18 They came up short of operators, and we were able to fill in.  
19 They needed 40. We were able to get pretty close to 20, and  
20 those people will be up there about eight months, we think.  
21 In other words, what they've decided to do is use their  
22 operators in their low power testing and ours, among others,  
23 that they've gotten from their own system to do the hot  
24 functional testings. It's an excellent chance to get some  
25 hands-on auxiliary operator training, which is one that was



1 an area that has given me some heartburn in trying to figure  
2 out how to let our folks do more than just sort of watch  
3 things happen.

4 I hope to be able to embellish on that a little bit  
5 and get some more experience as this program unwraps.

6 The other thing we've been heavily participating in  
7 is radiation protection technicians and supervisors at other  
8 plants. You can see we started modestly with five techs  
9 and one supervisor in '83. We worked up to where we  
10 participated in outages at Farley and Calloway this year  
11 with 22 techs and three supervisors for eight and ten weeks,  
12 respectively, on an outage. We're getting very good at this.  
13 I'm about ready to go into the rent-a-tech business and  
14 start charging money for this instead of just using it to  
15 pick up the operator experience.

16 In '87 we expect to participate at Farley and  
17 Calloway again to about the same amount of participation we  
18 had last year.

19 That pretty much in a nutshell is what I have going  
20 for me in operator training, but I will be happy to respond  
21 to any questions.

22 MR. VOLLMER: The numbers look correct, but there  
23 was a general letter -- I think it's August or something of  
24 '84 -- which outlines what the Commission requirements are  
25 in terms of staffing and operation experience and so on.

1 These numbers, I guess, fill that particular --

2 MR. SCOTT: I believe that to be the case.

3 MR. VOLLMER: And NUMARC commitment, I think, is  
4 along the same lines, as I recall.

5 MR. COUNCIL: It went further than that, as Austin  
6 indicated. Our STAs are also SROs.

7 MR. SCOTT: That's right.

8 MR. VOLLMER: I understand that. You said you meet  
9 the minimum NUMARC commitment. Are you trying to get more  
10 than the minimum in case --

11 MR. SCOTT: I'm going to go as long as I can, just  
12 keep on going. In other words, I don't intend, unless I get --  
13 and I can't imagine why we would totally stop the program.  
14 I'm going to continue this thing until we get ready to -- we  
15 have to bring them all home and start testing our own plant  
16 or operate our own plant.

17 MR. VOLLMER: We're about to license this one plant  
18 which, by sickness and other problems, lost a couple of people  
19 with this type of experience, and it's going to be a difficult  
20 period for them to develop the qualifications.

21 MR. SCOTT: This is enough to operate two plants  
22 right now.

23 MR. VOLLMER: I understand.

24 MR. SCOTT: So I feel like I've got my bets hedged  
25 on that pretty well.

1 MR. COUNCIL: Are you saying there's somebody out  
2 there that might need our help?

3 MR. SCOTT: Well, they better get me quick because  
4 the price is going up, as I said.

5 MR. VOLLMER: Well, there has been a caveat, as  
6 you probably know, in some of the -- I think in the generic  
7 letter -- that says if there is something beyond the licensee's  
8 control, that some consultant help can come in, but it's sort  
9 of our position that that plant, as well as yours, has been  
10 around for long enough that there should be enough margin --  
11 and I think you're developing that margin -- if something  
12 happens.

13 MR. SCOTT: Well, I think so too, but it's something  
14 we're going to continue to watch. I have to keep my finger  
15 on the pulse of my folks up there and see what's on their --  
16 you know, that they don't all walk off and leave me.

17 MR. VOLLMER: Another question in terms of qualifica-  
18 tions are INPO accreditation. What sort of programs --

19 MR. SCOTT: We're working towards INPO accreditation,  
20 and all of the processes are in place. It's a little hard  
21 to do before fuel load. We're committed to be fully  
22 accredited within six months after fuel load, and we'll make  
23 that. But we took a look at what would happen if we tried  
24 to get accredited before that, and it turned out that would  
25 be a problem. So we're continuing to -- we've got consultants

1 in a task development -- in that stage, and --

2 MR. VOLLMER: That would be for all 10 programs --

3 MR. SCOTT: All 10 programs, that's right.

4 MR. VOLLMER: Six months after fuel load?

5 MR. SCOTT: That's right. We're committed for six  
6 months after fuel load.

7 MR. COUNCIL: We've committed that to INPO even  
8 though the requirement is 18 months after.

9 MR. NOONAN: Austin, I'd like to change the subject  
10 a little bit and have you kind of talk to the staff a little  
11 bit about what you're doing to maintain your equipment in the  
12 plant. I know you're doing some work on the steam generators.  
13 Just briefly, for Mr. Vollmer's benefit, maybe you could  
14 talk about the things you're doing out there to make sure  
15 it's ready to go.

16 MR. SCOTT: We opened up the Unit 1 primary system  
17 last summer to clear some items that we had in there, and it's  
18 now -- the nuclear steam supply system, the primary side,  
19 is dry, with forced air through it. We had it all wiped down  
20 completely. The head on the Unit 1 is on, but not bolted.

21 The secondary side, the steam generators are in  
22 cold, wet layup.

23 The auxiliary steam is dry and -- let's see if I  
24 can -- I've got water running wherever we can run water and  
25 dry where we can't, in general, in the secondary systems.

1 Condensate we've been fooling with in order to test the  
2 main condensers after their changeout. The feed and conden-  
3 sate is a partially wet-partially dry-type of thing, and all  
4 the cooling water systems, with the exception of service  
5 water Train B, are up and running -- I mean, Train A; excuse  
6 me. We've been up and working on those.

7 The safety-related systems -- SI, CVCS, RHR and  
8 so forth -- are essentially all in dry layup. Containment  
9 spray happens to be full and vented, but most of the rest  
10 of them are dry, with CCW running in the RHR heat exchanger.

11 That pretty well is it. Almost all of the cooling  
12 water systems are running. And I guess that's about it.  
13 Search water is running -- it's not running. It's shut down.  
14 We're doing the maintenance work. I'm sorry.

15 We've used this time productively to do a lot of  
16 inspecting and maintenance. We've got problems we're trying  
17 to sort out on the secondary side with the main condenser  
18 vacuum system. The critters got to us very badly in those  
19 closed-loop systems and about ate the whole pump. We're  
20 working on that.

21 We're working very hard to solve some issues with  
22 the cooling water systems. We're finding we live next door  
23 to a very unfriendly lake. Some of the stuff in there is  
24 really giving us fits, and the microbiologically-induced  
25 corrosion and some of the other -- the clams -- critters.

1 We're trying to find a satisfactory additive to our systems  
2 to make sure that we are adequately coated or protected for  
3 the long haul.

4 We're using this time very productively. In some  
5 of those systems, other than not being at operating temperature,  
6 we are getting a flow and we are getting the coating that we  
7 will see under normal operations, and I think we can learn  
8 from that and hopefully take some precautions now.

9 Turbines are getting rolled once a week, and in  
10 layup I had a problem with the stator rotor cooling water  
11 system in the Unit 1 unit, which we're having to work on now.  
12 That's being dried, put in dry layup.

13 Instrumentation and control: We are on essentially  
14 a normal surveillance program, operation and checking and  
15 surveillances. We're pretty much up to speed on that.

16 We're working on -- most of our I&C work is being  
17 readied to support the Unit 2 testing.

18 That's about it unless you can think of something  
19 that --

20 MR. TRAMMELL: I have a question about tech specs.  
21 There's been a problem from time to time on the accuracy  
22 of tech specs, which has been an issue on some other plants.  
23 It looks to me like this is a place where you can probably  
24 eliminate that kind of problem because -- for example, you  
25 could try the tech specs that you have, and you've got time

1 to go through these things and look for these bugs that have  
2 cropped up. Are you doing that?

3 MR. SCOTT: Absolutely.

4 MR. TRAMMELL: Have you created a let's pretend  
5 type of thing and gone through your tech specs to see if they  
6 work, and surveillances and such as that?

7 MR. SCOTT: Most of the I&C stuff we've done. Some  
8 of the others we haven't done, but I'm very anxious to get  
9 to that. I'm a little bit in a quandry about where to start.  
10 We started with the basic tech specs with 21 proposed changes  
11 to it now, so our book is a little bit -- I'm not really sure  
12 what the status of it is.

13 MR. COUNCIL: It's in your hands as far as the --

14 MR. SCOTT: I couldn't get my tech specs quick  
15 enough to suit me. I'll be happy to do that. That's exactly  
16 what I intend to do, is to have done -- I mean, if there's  
17 time for it -- to have done our surveillances 100 percent  
18 before we get started so there's nothing left --

19 MR. TRAMMELL: I'd be happy to have you make that  
20 pitch because we certainly want to have them as squeaky clean  
21 as possible.

22 MR. COUNCIL: We put licensing on the lead. All  
23 right. The composite team -- there will be a composite team  
24 of SRO licensed operators plus engineering to re-initiate a  
25 re-review of what we submitted to you some, I think it was,

1 two and a half years ago after the initial review. We have  
2 had no comment or discourse on what was submitted, so we're  
3 doing it again, and that will be updated and sent to you in  
4 addition. At that point we must start that dialogue, and --

5 MR. SCOTT: I support that.

6 MR. TRAMMELL: But things are changing now, too.  
7 The content is changing. Those initiatives, fire protection  
8 matters, are coming out and going in the SSAR. I think these  
9 are all improvements, but nevertheless, we do need to --

10 MR. SCOTT: I think that would be an excellent  
11 initiative.

12 MR. VOLLMER: To get back to what you said about  
13 the condensing. You said you had some problems with pumps  
14 in that system, microbiological. What about condenser tubing?  
15 Any problems there?

16 MR. SCOTT: All brand new. We just knocked it all  
17 out, and it's sitting over there across the road in the --  
18 the copper nickel is all out. We have titanium in there now.

19 MR. COUNCIL: We're on a program starting in 1985  
20 to eliminate all copper from the secondary systems at  
21 Comanche Peak. It had nothing to do with anything else. It  
22 was the elimination of copper to prevent denting of steam  
23 generator tubes in the future. So, consequently, we have  
24 gone to welded, integrally welded, titanium tube sheets  
25 and tubes in the condensers, the auxiliary condensers. The



1 moisture separator reheaters are stainless steel.

2 MR. SCOTT: To answer your question, no, neither  
3 side of the main condensers, the tubeness that we took out,  
4 looked bad. They looked fine. We have most problem with  
5 the dead lakes, as you might have guessed. Where you can't  
6 flush is generally where the critters find and give us the  
7 most trouble. So that's what we're fighting now.

8 MR. COUNCIL: Just to embellish a little bit, Austin,  
9 on the engineering side of the house, approximately 14 months  
10 ago we brought in a Stone and Webster environmental division.  
11 They have a great deal of experience in these little critters  
12 that grow and die in the systems. Consequently, we are putting  
13 in a treated water system here for many of the, like, fire  
14 protection, things of that -- two fire protection 500,000-  
15 gallon tanks treated. Also we're looking at all the other  
16 systems as to what in addition will remove these things from  
17 the water pipe systems, water systems.

18 So they're on board. That's not listed as a  
19 corrective action.

20 MR. VOLLMER: I understand.

21 MR. COUNCIL: It's a different issue entirely.

22 MR. NACE: I'm just wondering how it will show up  
23 in the tech specs. Critter surveillance, probably.

24 MR. SCOTT: Let me caution everybody. We very  
25 sloppily throw everything in the critter bin. There's more

1 to it than that. There's some chemical problems, some  
2 oxygen problems, some pH problems, and other things. I don't  
3 want to leave you with the impression that it's all just the  
4 little guys. We've had the best luck so far, it appears,  
5 with Hydrazine. We had Hydrazine everywhere. The pH and  
6 oxygen scavenging from Hydrazine looks very promising to us.  
7 So we've got it everywhere you can imagine so far.

8 As Bill said, there's a lot of folks working on  
9 this. It gets a little bit difficult because you get four  
10 people and you get five answers as to what is best, and then  
11 you get the inter-disciplinary strife between the chemist  
12 and the metallurgist. I didn't realize they were all that  
13 much at each other's throats, but they are. So then it's  
14 really hard to figure out who to believe. We hopefully will  
15 get an injection system into the service water intake structure  
16 for our bio side-slimo slide -- if you're ready for that.  
17 That's a good word. It sounds terrible. That way we can --  
18 if we try one and it doesn't look like it's the right one,  
19 we can go to another one, that sort of thing. Once we get  
20 the injection system in. John Krechting is trying to put  
21 a bypass around the cooling water condenser to keep that --  
22 so we can keep flow through the thing.

23 We're using time very productively to learn about  
24 the plant. I feel like what we're learning now is going to  
25 be almost a one-to-one correspondence into the ease of

1 operation. That's something that we're looking very hard at  
2 in Operations, looking into that first year, because once we  
3 get going, we want to stay going. So we're looking very hard  
4 at what we can do to insure that now that we have a little bit  
5 of time.

6 MR. TRAMMELL: Is the fire protection system still  
7 looming, as it was thought to be quite a problem for a while,  
8 a year ago? Is the fire protection system problem being  
9 resolved? I think you're replacing some pipe and --

10 MR. SCOTT: We're replacing it and trying to stay  
11 ahead of the game. Sometimes that's hard.

12 MR. VOLLMER: This is the fire protection system.

13 MR. TRAMMELL: It's a materials problem with the  
14 piping.

15 MR. SCOTT: The critters ate the pipe. Then the  
16 guy brings the pipe down and he starts to put it in, and  
17 it's already got critters in it, so we have to stop and  
18 figure out how to do that. These are tenacious little things.

19 No, the fire protection system, we're right in  
20 the middle of trying to work our way through that. It's very  
21 difficult, very difficult to step your way through that  
22 thing, and you'll see this afternoon hose jumpers running  
23 back and forth if you go back and look at the plant. We  
24 have to work very closely with the project manager to make  
25 sure we've got hose stations chargeable while we cut out

1 sections of pipe over here. And that's a nightmare. That's  
2 hard on both of us.

3 MR. TRAMMELL: Is this a maintenance activity being  
4 done by the operating staff?

5 MR. SCOTT: No, Grinell is in doing it. Dick can  
6 talk to that better than I can.

7 MR. CAMP: The original construction company.

8 MR. SCOTT: We're in the business right now of  
9 sort of lining stuff up, lining it up for the constructors  
10 and doing a little bit of maintenance on our own, and that's  
11 about it.

12 A lot of preventative maintenance. Our preventative  
13 maintenance is all in place. We're just working our way  
14 through it. It's slow.

15 That's all I can do there, Larry, unless I break  
16 into songs, jokes and snappy patter.

17 MR. NACE: I'm in a very embarrassed position  
18 right now. We laid out an agenda, and yesterday Bill Council  
19 said that we'll never get through that today. I picked a  
20 convenient time to break for lunch called 12:30, at which  
21 time there will be a caterer for lunch for everybody, and  
22 lo and behold, I'm told we're done ahead of schedule.

23 MR. TRAMMELL: I have some questions.

24 MR. NACE: Charlie Trammell is going to save me.

25 MR. TRAMMELL: I just have one remark. In line

1 with what Dick Vollmer said earlier when we started this  
2 meeting, I'd like to make a pitch for some items which we  
3 have not discussed. We've only touched on tech specs and  
4 what we probably need to do on those, and I'd like to touch  
5 on some other items to give you the feeling of NRC on these  
6 matters. That concerns open items which are in the SER which  
7 we would like to see closed, and unresolved items that we  
8 would like to see resolved, and confirmatory items which  
9 we would like to see confirmed. And, most particularly,  
10 license conditions, where we see no reason at this point  
11 in the newer plants that are being born today and next year  
12 why there should be any license conditions at all. The  
13 license should be clean as a whistle, and absent some  
14 extraordinary circumstance, which I don't know of now, we  
15 would like to see all license conditions taken care of.

16 So as a matter of -- we don't have to deal with  
17 it now, but I don't see why -- we're going to turn to these  
18 soon -- and I don't see why they aren't capable of being  
19 resolved. And as Dick Vollmer said, the license should be  
20 squeaky clean, particularly at Comanche Peak, when the  
21 licensing time arrives.

22 MR. NACE: We might comment that open items, in  
23 general, are a little bit broader than what you listed there,  
24 Charlie, because we have a rather lengthy list of open items  
25 which are past NRC inspection findings or past 5055.E types,

1 which we think are ready to be closed right now. We have  
2 put together a team of people to pull together the documenta-  
3 tion, proof of the pudding, on those issues so we can work  
4 within in starting that closing process.

5 John Beck wants to talk about the licensing issues,  
6 but we do have all those items scheduled on our equipment  
7 follow-up program, and we are working to presently close  
8 those. As you might expect, some of that is impacted by  
9 our corrective action business because we don't want to close  
10 a particular SER item or open unresolved items on the licensing  
11 docket before we have done enough up-front work on our basic  
12 SAR conformance reviews.

13 John, I don't know if you want to add anything else.

14 MR. NOONAN: Let me just interject this point. I  
15 agree with what you said, but I think also what's needed is  
16 dialogue between Staff and your people on all the issues to  
17 make sure that we both tackle every issue. Right now that  
18 hasn't happened. We don't have that dialogue going. I'd like  
19 to initiate that, at least for this part of the year, to '87.  
20 When we get later on into the process, we are starting to  
21 worry about closing them. Let's make sure we know exactly  
22 we both have the same list.

23 MR. KEELEY: Could I qualify that? TUGCO licensing.  
24 We have had some conversations with Annette and we have had  
25 a couple of meetings and compared our list, and Annette also

1 has the list and is updating that. We intend to continue  
2 that, as you say, this year.

3 MR. NOONAN: But I would like to see that and make  
4 sure, at least from my perspective, I know what we have -- I  
5 understand what you're saying, but I think I need to make  
6 sure that develops.

7 MR. COUNCIL: Some of them, you know, that's also  
8 probably slipped memory, as time is marching on. We have  
9 closed some during the period of last year. For instance,  
10 to give an environmentally qualified wide range integration  
11 for accident conditions, that was one of the open SERs.  
12 Shift advisors is gone away. There are many of them that  
13 have been resolved, and we've just got to look through the  
14 list and make sure our list matches your list. But I believe  
15 a great deal have gone, except in the Region IV area where  
16 we have open pipe issues, and we're working on them.

17 MR. VOLLMER: How about, for example, TMI action  
18 items?

19 MR. NACE: TMI is gone, signed off a long time ago.

20 MR. NOONAN: I think we need to go back and make  
21 sure of that. I don't want to find out at the end of the  
22 year that we missed something.

23 MR. VOLLMER: There's always one that puffs up  
24 their head at the last minute. Since we do have the time to  
25 do it now, it should be done.

1 MR. COUNCIL: I don't disagree. The other thing,  
2 too, is -- we've requested this in the past, too -- if any  
3 types of inspections that you desire to repeat or partially  
4 repeat, through audit or whatever, like environmental qualifi-  
5 cations, we would like to know that, too, wherever that list  
6 happens to be, so we can get it in schedule.

7 Are there any other questions or comments?

8 There are two other things that we'd like to do  
9 before --

10 MR. NOONAN: I was going to -- what I'd like to do  
11 is -- maybe the CASE representative --

12 MR. COUNCIL: That was one of the items I was just  
13 going to do, is offer Mr. Boltz, if he would like to make  
14 any comments as CASE representative in the meeting.

15 MR. BOLTZ: I'm sorry, but Austin is just too hard  
16 an act to follow, so --

17 MR. COUNCIL: The other is, I'd like to see, so we  
18 can make arrangements right after lunch, how many people would  
19 like to go on the tour of the plant.

20 MR. VOLLMER: As far as the tour is concerned, I  
21 would like to take a look at some of the areas that have been  
22 problems and changes have been made. I think that would  
23 be helpful to me. I don't know about the rest of the folks;  
24 maybe they've seen those.

25 And the second thing I was going to mention is,



1 if it's appropriate, if there's any feedback you have on  
2 whether or not the process seems to be working from your  
3 standpoint vis-a-vis the coordination with NRC, if there  
4 are any things that you think we're falling short on, need  
5 to be done, resource-wise or whatever.

6 MR. COUNCIL: I have a concern.

7 MR. VOLLMER: I suspected you had one concern.

8 MR. COUNCIL: Really, it's just a concern. The  
9 concern is this: There have been at least two -- when I  
10 started off the meeting we announced the reorganization of  
11 NRC, and there have been at least two reorganizations  
12 announced in the last several months, and judging from the  
13 organization as I see it, and who's in line and so forth,  
14 and going where, we're losing a lot of continuity on the  
15 project. In fact, just about everybody that has had anything  
16 to do with Comanche Peak, with the singular exception, I  
17 believe, of Mr. Sniezek, and we don't know what's happening  
18 to Mr. Noonan, and Sniezek having been involved in, I guess,  
19 the HITS Panel way back in --

20 MR. VOLLMER: Contingent 55 Panel.

21 MR. COUNCIL: -- it looks like we've lost all  
22 continuity on the project as to what has transpired in the  
23 early years on through, straight on through. But, you know,  
24 I have no complaints about NRC and NRC reviews or anything.

25 MR. VOLLMER: The two organizational announcements

1 that were made -- I think there was only one change made  
2 between the first and the second. The second was a little  
3 bit more in detail than the first, and the one change in the  
4 second was that Mr. Sniezek was not going to be Director of  
5 the Office of AEOD but would take my job and I would leave  
6 NRR. Otherwise, I think all the names are the same in the  
7 second announcement.

8 As far as the second comment you have, we feel that  
9 it's important for us to try to provide whatever continuity  
10 we can. We will do that. We're not --

11 MR. COUNCIL: I think you're --

12 MR. VOLIMER: History here is not something we want  
13 to lose, and we will capture all that we possibly can. All  
14 I can say here is that we're concerned about it, too, and  
15 will try to make sure that the project doesn't lose because  
16 of it.

17 MR. COUNCIL: I think you're wanting to have  
18 another meeting like this, say, in March, perhaps longer,  
19 and that will help if we can get Mr. Early and Mr. Sniezek  
20 here and whoever else is going to have something to do with  
21 Comanche Peak, and perhaps get a more detailed presentation  
22 on everything that is going on. That would help.

23 And I think it behooves us, as members of the  
24 management team of Texas Utilities, that we're going to have  
25 to get to Washington also to assist in that transition, too.

1                   Gil, any concerns? Everything's going well?

2                   MR. NACE: A couple of administrative items. There  
3 are copies of the overheads used. They're in two piles here;  
4 one is the high-cost engineering pile, and the other is  
5 Austin's low-cost, hand-produced pile. There will be a copy  
6 appended to the record.

7                   I would suggest for those people going on the plant  
8 tour that we meet briefly back in this room at 1:15 and then  
9 proceed to the site.

10                   The meeting is adjourned.

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STATE OF TEXAS       X  
                          X  
COUNTY OF TARRANT  X

I, Carmen Gooden, Certified Shorthand Reporter of the State of Texas, certify that the foregoing proceedings of the NRC Staff/CPSES Management Meeting January 7, 1987, was reported stenographically by me, and that it is a true record of the proceedings.

Given under my hand and seal of office on this the 13th day of January, 1987.



Carmen Gooden, Notary Public and  
Certified Shorthand Reporter in  
and for the State of Texas.

Certificate No.: 2353  
Expiration Date: 12-31-87  
Notary Expires: 08-10-87

NRC Mtg.  
1-7-87

Attendees

DAVID GARLINGTON  
DAVID BOLTZ  
Joe R. Riley  
Carolyn M. Holmberg  
DAVID REAL  
LANCE TERRY  
Tom Gosdin  
Bob Woolridge  
John Guibert  
STEVEN KAKYAK  
David Fiorelli  
WALTER FENOGLIO  
Vincent Everett  
JACK REDDING  
R. L. CLOUD  
Gil Keeley  
Robert C. Iotti  
E. J. SISKIN  
R. Ackley  
SL Stamm  
R. L. Grubb  
E. H. Johnson  
I. BARNES  
L. CHANDLER  
C. Trammell

CO.

GAS Associates  
C. A. S. E.  
BRAZOS Electric Coop.  
Attorney  
Dallas Morning News  
TUGCO  
TUGCO  
Worsham, Forsythe, et al  
TELA CART/SRT  
TUGCO  
Texas Utilities  
TUGCO  
Impell  
TU Elect  
RLCA  
TUGCO Licensing  
EBASCO  
STONE & WEBSTER  
Stone & Webster  
Stone & Webster  
Impell  
USNRC, RIV  
USNRC, RIV  
NRC/O&C  
NRC



NRC STAFF/CPSES  
MANAGEMENT MEETING  
JANUARY 7, 1987  
GLEN ROSE, TEXAS

PURPOSE

1. To update NRC Staff on CPSES CPRT status.
2. To inform NRC Staff on CPSES Corrective Action Programs and Schedules.
3. To update NRC Staff on CPSES Operator Training status.

AGENDA

- |  |                 |
|--|-----------------|
| 1. Opening Remarks   | W. G. Council   |
| 2. CPRT Status   | T. G. Tyler     |
| 3. Corrective Action Plan (CAP)<br>Introduction                | L. D. Nace      |
| 4. Mechanical CAP  | J. E. Krechting |
| 5. HVAC CAP  | J. E. Krechting |
| 6. Civil-Structural CAP  | O. W. Lowe      |
| 7. Large & Small Bore Pipe Supports CAP                        | O. W. Lowe      |
| 8. Cable Tray Hangers CAP                                      | O. W. Lowe      |
| 9. Conduit Supports CAPs                                       | O. W. Lowe      |
| 10. Electrical CAP   | P. B. Stevens   |
| 11. Instrument & Control CAP                                   | P. B. Stevens   |
| 12. Equipment Qualification CAP                                | P. B. Stevens   |
| 13. Operator Training Status and<br>Qualifications Maintenance | A. B. Scott     |

NOTE: 1) Lunch will be available in the cafeteria at 12:30.

- 2) A plant tour will be conducted for interested personnel after the meeting.

**CORRECTIVE ACTION PLAN  
RESPONSIBLE CONTRACTOR  
AND KEY REPORT MILESTONES**

CAP	LEAD CONTRACTOR	GENERIC ISSUES REPORT	FINAL REPORT
CIVIL STRUCTURAL	SWEC	ISSUED	6/15/87
MECHANICAL	SWEC IMPELL EBASCO	1/20/87	7/1/87
ELECTRICAL	SWEC	ISSUED	7/15/87
INSTRUMENT & CONTROLS	SWEC	1/15/87	8/1/87
LARGE BORE PIPE SUPPORTS	SWEC	ISSUED	ISSUED
SMALL BORE PIPE SUPPORTS	SWEC	ISSUED	7/15/87
CABLE TRAY HANGERS	EBASCO IMPELL	ISSUED	2/1/87
HVAC	EBASCO	ISSUED	5/1/87
CONDUIT SUPPORTS TRAIN A, B, C > 2"	EBASCO	ISSUED	3/1/87
CONDUIT SUPPORTS TRAIN C < 2"	IMPELL	ISSUED	6/1/87
EQUIPMENT QUALIFICATION	IMPELL	ISSUED	5/1/87



**MECHANICAL**

**CORRECTIVE**

**ACTION**

**PLAN**

**SOURCE OF ISSUES**

- **DESIGN ADEQUACY PROGRAM (TERA)**
- **CONSTRUCTION ADEQUACY PROGRAM (ERC)**

## IDENTIFICATION OF ISSUES

- SEISMIC QUALIFICATION OF SEISMIC CATEGORY I EQUIPMENT (IMPELL)
- HIGH ENERGY LINE BREAK (EBASCO)
- OVERPRESSURE PROTECTION OF SAFETY-RELATED PIPING AND EQUIPMENT (SWEC)
- SPECIFICATION OF MECHANICAL COMPONENTS PRESSURE BOUNDARY INTEGRITY (SWEC)
- DETERMINATION OF HEAT LOADS FOR HVAC EQUIPMENT SIZING (EBASCO)
- CONTROL OF WELDING PROCESS (SWEC)
- INTERNAL AND TURBINE MISSILE EVALUATION (EBASCO)
- FIRE PROTECTION (IMPELL)
- SYSTEM DESIGN (SWEC)
- PIPING AND CONFIGURATION (SWEC)
- PIPING AND BEND FABRICATION (SWEC)
- TANK LINER RUST (SWEC)

## PROGRAM OBJECTIVES

- DEMONSTRATE THAT THE PLANT DESIGN MEETS THE LICENSING COMMITMENTS BY:
  - IDENTIFICATION OF ANY CONCERNS
  - IDENTIFY CORRECTIVE ACTION
  - IMPLEMENT CORRECTIVE ACTION
  - IDENTIFY PREVENTATIVE ACTION
  - IMPLEMENT PREVENTATIVE ACTION

**LONG TERM PLAN**

- **IMPLEMENT PREVENTATIVE ACTION PLAN INTO TUGCO ENGINEERING PROCEDURES AS REQUIRED TO ASSURE SAME OR SIMILAR PROBLEMS DO NOT OCCUR AGAIN.**
- **DEVELOP A STRONG MANAGEMENT TEAM AND A STAFF OF QUALIFIED ENGINEERS TRAINED TO ALL APPLICABLE PROCEDURES AND TAKE ADVANTAGE OF LESSONS LEARNED TO PREVENT REOCCURRENCE.**



**HVAC**

**CORRECTIVE**

**ACTION**

**PLAN**

**SOURCE OF ISSUES**

- **DESIGN ADEQUACY PROGRAM (TERA)**

## IDENTIFICATION OF ISSUES

- DUCTS & SUPPORT DESIGN
  - ISSUES ARE FOCUSED ON ANALYSIS AND DESIGN ASSUMPTIONS AND METHODS, CONTROL OF DESIGN DOCUMENTS, AND DIFFERENCES BETWEEN AS-DESIGNED AND AS-BUILT DUCT SYSTEMS.
- HVAC SYSTEM FUNCTIONAL DESIGN
  - ASSUMPTIONS
  - IMPROPER OR INCORRECT USE OF INPUTS
  - INCOMPLETE INVENTORY OF HEAT LOAD SOURCES
  - INACCURATE IMPLEMENTATION OF CALCULATION RESULTS INTO EQUIPMENT SPECS

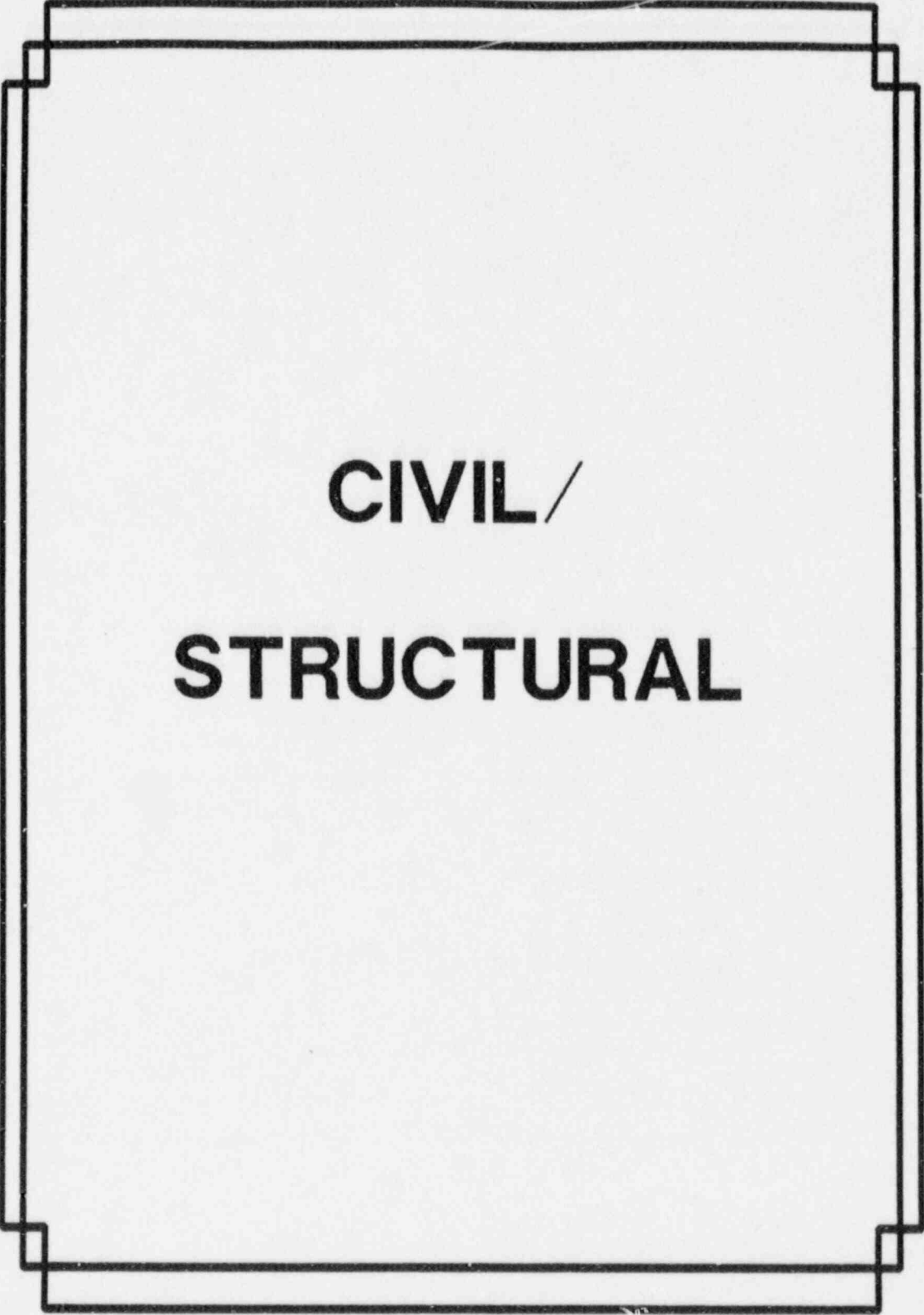


### **PROGRAM OBJECTIVES**

- **100% VERIFICATION OF SEISMIC CATEGORY I HVAC DUCTS AND SUPPORTS FOR UNIT 1 TO THE LICENSING COMMITMENT**
- **PERFORM 100% AS-BUILT HEAT LOAD CALCULATIONS FOR ALL HVAC SYSTEMS THAT PROVIDE COOLING FOR SAFETY-RELATED EQUIPMENT**
- **IDENTIFICATION OF ANY CONCERNS**
- **IDENTIFY CORRECTIVE ACTION**
- **IMPLEMENT CORRECTIVE ACTION**
- **IDENTIFY PREVENTATIVE ACTION**
- **IMPLEMENT PREVENTATIVE ACTION**

## **LONG TERM PLAN**

- **IMPLEMENT PREVENTATIVE ACTION PLAN INTO TUGCO ENGINEERING PROCEDURES AS REQUIRED TO ASSURE SAME OR SIMILAR PROBLEMS DO NOT OCCUR AGAIN.**
- **DEVELOP A STRONG MANAGEMENT TEAM AND A STAFF OF QUALIFIED ENGINEERS TRAINED TO ALL APPLICABLE PROCEDURES AND TAKE ADVANTAGE OF LESSONS LEARNED TO PREVENT REOCCURRENCE.**



**CIVIL /**  
**STRUCTURAL**

**SOURCE OF ISSUES**

- **DESIGN ADEQUACY PROGRAM**
- **CONSTRUCTION ADEQUACY PROGRAM**
- **TRT**

## IDENTIFICATION OF ISSUES

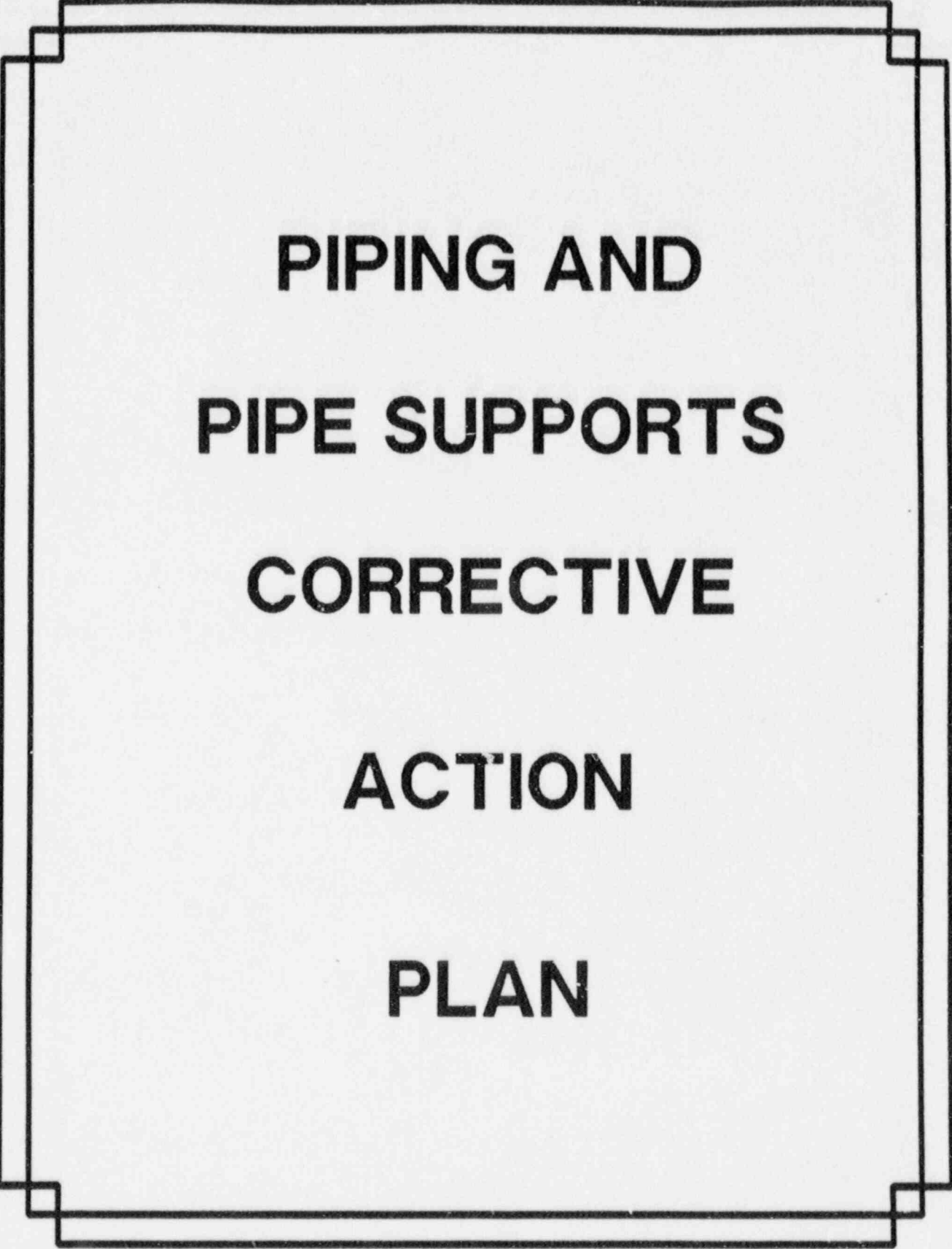
- REACTOR CONTAINMENT CONCRETE DESIGN
- REACTOR CONTAINMENT CONCRETE INTERNALS
- OTHER SEISMIC CATEGORY I CONCRETE STRUCTURES
- SEISMIC CATEGORY I STRUCTURAL STEEL
- PIPE WHIP RESTRAINTS & JET IMPINGEMENT SHIELDS
- REACTOR CONTAINMENT LINER
- FUEL TRANSFER TUBE SUPPORT AND OTHER LINERS
- MISCELLANEOUS SUPPORTS
- PENETRATIONS SLEEVES AND ANCHORAGE
- CONNECTIONS AND ANCHORAGES
- COMPUTER CODE BENCHMARKING
- TESTING PROGRAMS
- TORNADO DESIGN
- HEAVY LOAD DROPS
- GENERIC TECHNICAL CONCERNS
- SEISMIC ANALYSIS

**PROGRAM OBJECTIVES**

- **DEMONSTRATE THAT THE PLANT DESIGN MEETS THE LICENSING COMMITMENTS BY:**
  - **IDENTIFICATION OF ANY CONCERNS**
  - **IDENTIFY CORRECTIVE ACTION**
  - **IMPLEMENT CORRECTIVE ACTION**
  - **IDENTIFY PREVENTATIVE ACTION**
  - **IMPLEMENT PREVENTATIVE ACTION**

## **LONG TERM PLAN**

- **IMPLEMENT PREVENTATIVE ACTION PLAN INTO TUGCO ENGINEERING PROCEDURES AS REQUIRED TO ASSURE SAME OR SIMILAR PROBLEMS DO NOT OCCUR AGAIN.**
- **DEVELOP A STRONG MANAGEMENT TEAM AND A STAFF OF QUALIFIED ENGINEERS TRAINED TO ALL APPLICABLE PROCEDURES AND TAKE ADVANTAGE OF LESSONS LEARNED TO PREVENT REOCCURRENCE.**



**PIPING AND  
PIPE SUPPORTS  
CORRECTIVE  
ACTION  
PLAN**



**SOURCE OF ISSUES**

- **EXTERNAL**
- **DESIGN ADEQUACY PROGRAM**
- **CONSTRUCTION ADEQUACY PROGRAM**

## IDENTIFICATION OF ISSUES

- PIPE STRESS CALCULATION
- PIPE SUPPORT DESIGN
- PIPE SUPPORT INSTALLATION

## **PROGRAM OBJECTIVES**

- **DEMONSTRATE THAT THE PLANT DESIGN MEETS THE LICENSING COMMITMENTS BY:**
  - **IDENTIFICATION OF ANY CONCERNS**
  - **IDENTIFY CORRECTIVE ACTION**
  - **IMPLEMENT CORRECTIVE ACTION**
  - **IDENTIFY PREVENTATIVE ACTION**
  - **IMPLEMENT PREVENTATIVE ACTION**

## **LONG TERM PLAN**

- **IMPLEMENT PREVENTATIVE ACTION PLAN INTO TUGCO ENGINEERING PROCEDURES AS REQUIRED TO ASSURE SAME OR SIMILAR PROBLEMS DO NOT OCCUR AGAIN.**
- **DEVELOP A STRONG MANAGEMENT TEAM AND A STAFF OF QUALIFIED ENGINEERS TRAINED TO ALL APPLICABLE PROCEDURES AND TAKE ADVANTAGE OF LESSONS LEARNED TO PREVENT REOCCURRENCE.**

**CABLE TRAY**

**SUPPORTS**

**CORRECTIVE**

**ACTION**

**PLAN**

**SOURCE OF ISSUES**

- **EXTERNAL (CYGNA, NRC, AUDITS)**
- **CPRT (DESIGN ADEQUACY PROGRAM,  
CONSTRUCTION ADEQUACY PROGRAM)**

## IDENTIFICATION OF ISSUES

- CABLE TRAYS
- GENERIC SUPPORT DESIGNS
- UNIQUE SUPPORT DESIGNS
- SPECIFIC TECHNICAL ACTIONS

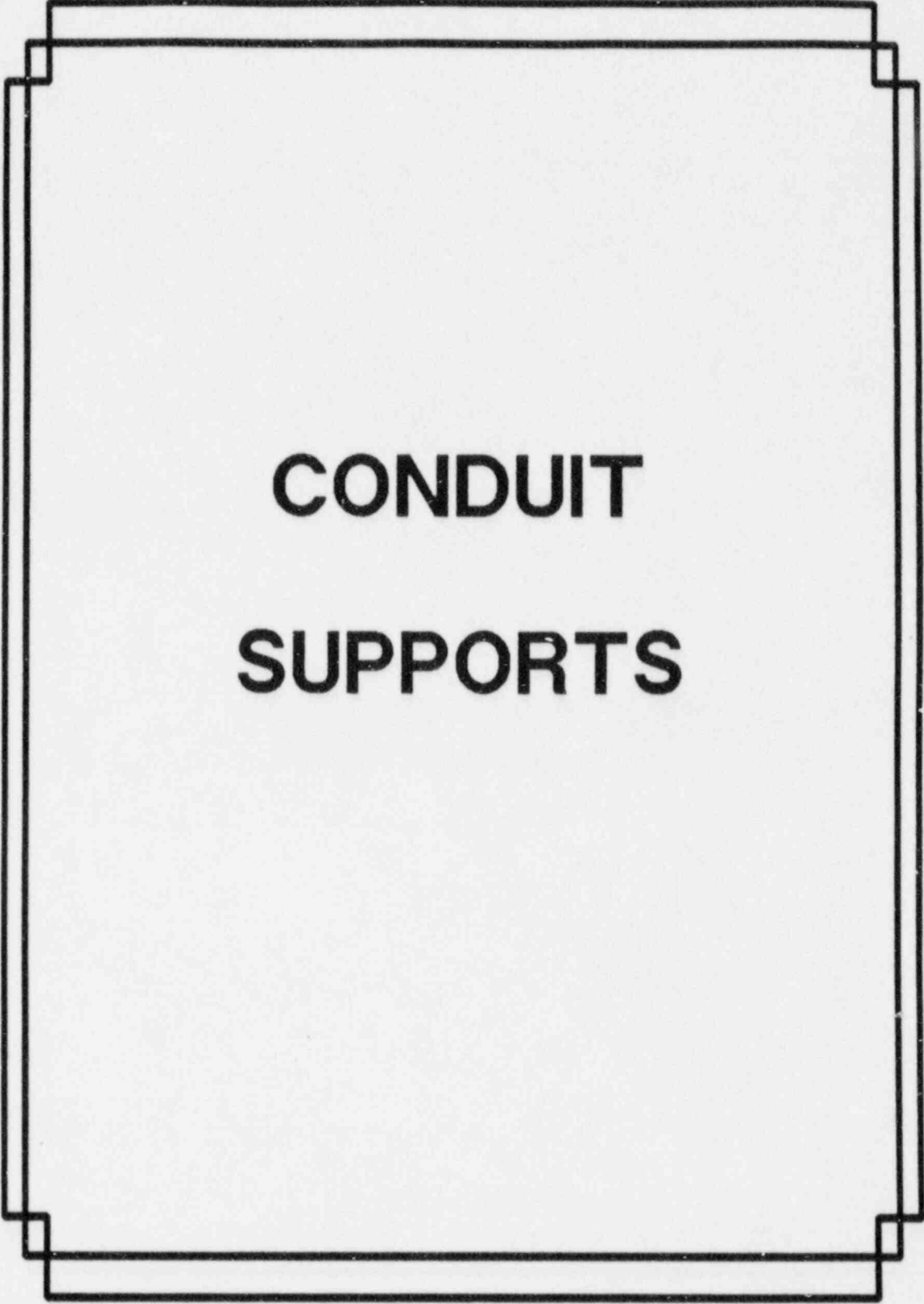
## PROGRAM OBJECTIVES

- DEMONSTRATE THAT THE PLANT DESIGN MEETS THE LICENSING COMMITMENTS BY:
  - IDENTIFICATION OF ANY CONCERNS
  - IDENTIFY CORRECTIVE ACTION
  - IMPLEMENT CORRECTIVE ACTION
  - IDENTIFY PREVENTATIVE ACTION
  - IMPLEMENT PREVENTATIVE ACTION



## **LONG TERM PLAN**

- **IMPLEMENT PREVENTATIVE ACTION PLAN INTO TUGCO ENGINEERING PROCEDURES AS REQUIRED TO ASSURE SAME OR SIMILAR PROBLEMS DO NOT OCCUR AGAIN.**
- **DEVELOP A STRONG MANAGEMENT TEAM AND A STAFF OF QUALIFIED ENGINEERS TRAINED TO ALL APPLICABLE PROCEDURES AND TAKE ADVANTAGE OF LESSONS LEARNED TO PREVENT REOCCURRENCE.**



**CONDUIT  
SUPPORTS**

**SOURCE OF ISSUES**

- **EXTERNAL (CYGNA, TRT)**
- **INTERNAL**
- **THIRD PARTY REVIEW**

**IDENTIFICATION OF ISSUES**

- SPANS
- GENERIC SUPPORTS
- UNIQUE SUPPORTS
- SPECIFIC TECHNICAL ISSUES

**PROGRAM OBJECTIVES**

- **DEMONSTRATE THAT THE PLANT DESIGN MEETS THE LICENSING COMMITMENTS BY:**
  - **IDENTIFICATION OF ANY CONCERNS**
  - **IDENTIFY CORRECTIVE ACTION**
  - **IMPLEMENT CORRECTIVE ACTION**
  - **IDENTIFY PREVENTATIVE ACTION**
  - **IMPLEMENT PREVENTATIVE ACTION**

## **LONG TERM PLAN**

- **IMPLEMENT PREVENTATIVE ACTION PLAN INTO TUGCO ENGINEERING PROCEDURES AS REQUIRED TO ASSURE SAME OR SIMILAR PROBLEMS DO NOT OCCUR AGAIN.**
- **DEVELOP A STRONG MANAGEMENT TEAM AND A STAFF OF QUALIFIED ENGINEERS TRAINED TO ALL APPLICABLE PROCEDURES AND TAKE ADVANTAGE OF LESSONS LEARNED TO PREVENT REOCCURRENCE.**



**ELECTRICAL**

**CORRECTIVE**

**ACTION**

**PLAN**

**SOURCE OF ISSUES**

- **DESIGN ADEQUACY PROGRAM (TERA)**
- **CONSTRUCTION ADEQUACY PROGRAM (ERC)**
- **EXTERNAL SOURCES, E.G., NRC, TRT, CYGNA, INPO, & INTERNALLY**



## IDENTIFICATION OF ISSUES

- CALCULATIONS ADEQUACY
  - ASSUMPTIONS & REFERENCES
  - INPUTS & OUTPUTS
  - ACCEPTANCE CRITERIA
  - METHODOLOGY ADEQUACY
  - ACCURACY & VERIFICATION
  
- ELECTRICAL SEPARATION
  - ADEQUACY OF CRITERIA
    - REGULATORY REQUIREMENTS
    - LICENSING COMMITMENTS
    - DESIGN DETAILS
  - DESIGN AND/OR AS-BUILT DISCREPANCIES
  
- INSTALLATION SPECIFICATION
  
- HEAT SHRINKABLE TUBING
  - DOCUMENTATION
  - PHYSICAL INSPECTION
  
- ELECTRICAL BUTT SPLICES ADEQUACY
  
- CLASS 1E LIGHTING
  - LIGHTING CIRCUIT FAULT ANALYSIS
  - CLASSIFICATION
  - INSTALLATION/WORKMANSHIP

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**I&C**

**CORRECTIVE**

**ACTION**

**PLAN**

**SOURCE OF ISSUES**

- **DESIGN ADEQUACY PROGRAM (TERA)**
- **CONSTRUCTION ADEQUACY PROGRAM (ERC)**
- **EXTERNAL SOURCES E.G. NRC, TRT,  
CYGNA, INPO.**
- **INTERNAL SOURCES E.G. INSPECTIONS,  
EVALUATIONS, REVIEWS, ETC.**

## IDENTIFICATION OF ISSUES

- INSTRUMENT INSTALLATION/INSPECTION REQUIREMENTS
  - TUBING AND INSTRUMENT SUPPORT DESIGNS
  - POST-ACCIDENT ELEVATED TEMPERATURE EFFECTS ON TUBING CONFIGURATION
  - TORQUING OF SUPPORT FIXTURES
  - HARDENED WASHERS
- BOP INSTRUMENT SETPOINTS
  - DOCUMENTED BASIS FOR PROCESS SETPOINTS
  - COMPLIANCE WITH REG. GUIDE 1.105 AND ISA-S67-04
  - INACCURATE VENDOR DATA AND CALCULATED ERRORS

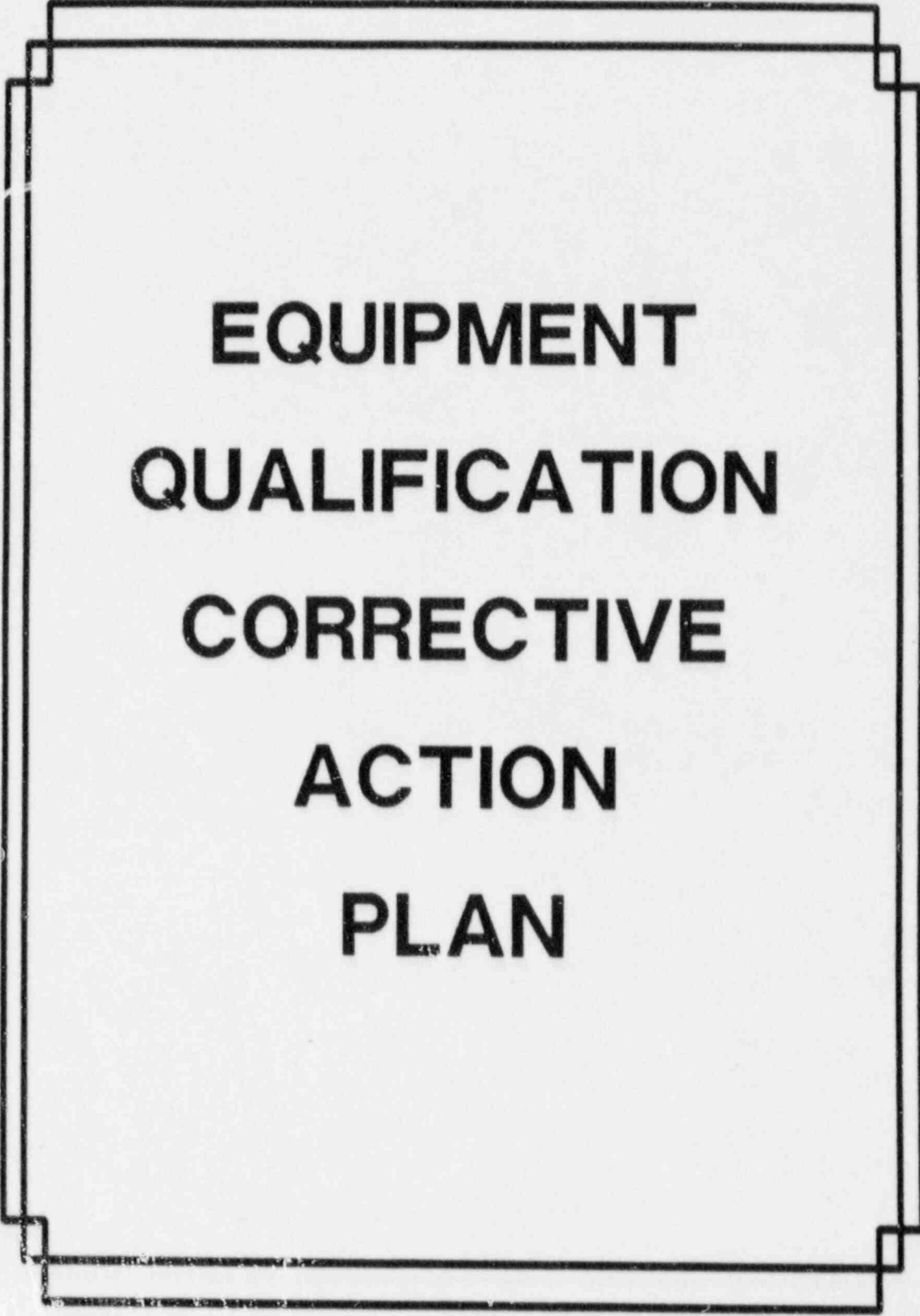
## **PROGRAM OBJECTIVES**

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**EQUIPMENT  
QUALIFICATION  
CORRECTIVE  
ACTION  
PLAN**

**SOURCE OF ISSUES**

- **DESIGN ADEQUACY PROGRAM (TERA)**
- **EXTERNAL SOURCES, E.G., NRC, TRT  
10CFR50.49 AUDITS OF OTHER  
UTILITIES**
- **INTERNAL SOURCES, E.G., INSPECTIONS**

## IDENTIFICATION OF ISSUES

- IDENTIFICATION AND CLASSIFICATION REQUIREMENTS
  - EQ MASTER LIST
  - SUB-COMPONENT TAGGING
- ENVIRONMENTAL CONDITIONS AND REQUIREMENTS
  - CENTRAL DOCUMENT FILE
- ENVIRONMENTAL SEISMIC DOCUMENTATION
  - DESIGN CHANGES
  - DESIGN BASIS DOCUMENTS
  - INSTALLED CONFIGURATION VS TESTED CONFIGURATION
- GENERIC REGULATORY CONCERNS
  - IEN, IEB, AND IE CIRCULARS FROM 1979
- MAINTENANCE AND SURVEILLANCE
  - EQ REQUIRED MAINTENANCE
  - FAILURE ANALYSIS AND TRENDING

**PROGRAM OBJECTIVES**

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CURRENT STAFF:

37 SENIOR REACTOR OPERATOR LICENSES

24 REACTOR OPERATOR LICENSES

DISTRIBUTION:

ON-SHIFT	6	SHIFT SUPERVISORS	(SRs)
	12	ASST SHIFT SUPERVISORS	(10-SR0 / 2-R0)
	20	REACTOR OPERATORS	(3-SR0 / 17-R0)
	55	AUXILIARY OPERATORS	(4-R0 / 51-NON LIC)
SUPPORT	3	OPS MANAGEMENT	(SRs) (INCLUDES SIDFL)
	3	OPS ENGINEERS	(SRs)
	5	STA'S	(SRs)
	9	TRAINING	(7-SR0 / 1-R0)

CURRENT REPLACEMENT TRAINING:

6 OPERATORS	}	Expect examination in July 1987
4 STAFF		
3 STA'S		

REQUALIFICATION TRAINING

Has been ongoing since September 1983  
Each person is on training shift every 6<sup>th</sup> week  
Starting January 1987, 5-shift rotation puts each person on training shift every 5<sup>th</sup> week.  
Program has been reviewed by NRR.



Currently, 4 Reactor Operators and 14 Auxiliary Operators are at Braidwood to assist in startup testing. This experience is scheduled to continue for up to 10 months.

RADIATION PROTECTION

RP Technicians and Supervisors have participated at other plants as follows:

<u>1986</u>		
Farley	22 Techs / 3 Supv.	8 weeks (Outage)
Calloway	23 Techs / 3 Supv.	10 weeks (Outage)
<u>1985</u>		
Farley	10 Techs / 2 Supv.	7 weeks (Outage)
Wolf Creek	13 Techs / 2 Supv.	7 weeks (Startup)
<u>1984</u>		
Farley	5 Techs / 1 Supv.	6 weeks (Outage)
<u>1983</u>		
Farley	5 Techs / 1 Supv.	6 weeks (Outage)

Plans for 1987 include participation at Farley and Calloway for 23 Techs and 4 Supervisors for 8-10 weeks.



## OPERATING PLANT EXPERIENCE

Commitment is to have at least one S20 licensed individual on each shift at time of fuel load who has 6 months hot operating experience on a same type plant.

Each shift supervisor and assistant shift supervisor to have at least 6 weeks hot operating experience at > 20% power.

Each shift supervisor will have startup & shutdown experience.

### Progress:

	<u>6 mo.</u>	<u>6 wk.</u>	<u>S/U</u>	<u>S/D</u>
Shift Supervisors:				
Bain		5.2		
Braudin		7		
Daskam	5.1	N/A	4	
Deen	6	N/A	1	
Gossett	Previous License - Farley			
Lytle		6		
Asst. Shift Supervisors:				
Apple	5.4		1	1
Broughton	6	N/A	7	
Bryant	1.2		1	1
Colton		0.8		
Davis		0.9		
Eggemeier	Previous License - Arkansas			
Harvey	5.6	N/A	4	
Jank				
Marsh		9.6	2	
Miller	5.5	N/A	1	
B.J. Smith		0.9		
M.Z. Smith		5.4	1	

### Additional Operating Experience:

59 operators have ~~participated~~ obtained operating experience at 12 plants for a total of 526 operator-weeks

### Expectation:

By the end of 1987, all Shift Supervisors and Assistant Shift Supervisors should be able to meet the HUMARC commitment.

Commitments have been obtained for shutdown experience at 4 plants.