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IN THE MATTER OF: DOCKET NO:

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE ON SOUTH TEXAS UNITS 1 & 2

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

In the Matter of :

HOUSTON LIGHTING & POWER :

COMPANY, ET AL., :

(South Texas Project Units 1 & 2) :

Best Western Hotel

Bay City, Texas

Friday, 30 May 1986

The hearing in the above-entitled matter was convened, pursuant to notice, at 8:30 a.m.,

BEFORE:

MR. CHARLES WYLIE
DR. CHESTER SEISS
DR. CARSON MARK
MR. JESSE EBERSOLE
MR. MEDHAT M. EL-ZEFTAWY

PROCEEDINGS

MR. MARK: Good morning. The meeting will now come to order. This is a continuation of the meeting of the Advisory Committee on Reactor Safeguard Subcommittee from South Texas Units 1 and 2.

I'm Carson Mark, Subcommittee chairman. Unless there are things which people want to raise at this moment, I'll call on Mr. Wisenburg to -- for a presentation.

MR. WISENBURG: Thank you, sir.

I have only very brief remarks to make relative to the open items remaining to be resolved for the South Texas Project license.

As the SER shows, there are seventeen open items. They break down into two categories, those which are open awaiting completion of NRC staff review and those which HL&P owes additional information to the NRC prior to providing NRC the basis to complete their review.

None of these seventeen open items involved any areas of controversy between NRC Staff and HL&P. We would expect to be able to support NRC Staff review of eight of those items in sufficient time to include their resolution in supplemental a SER to be issued approximately in August of this year.

Unless the Committee has any specific questions of HL&P on the open items, I know the NRC project manger is

going to summarize them all for you and I don't want to go through that twice. I really don't have any further remarks to make on the open items.

DR. MARK: I guess -- Charlie, should I suggest we just wait for the Staff to go down the list and report the status, then, from their point of view; at which point, it would seem appropriate if Mr. Wisenburg wanted to elaborate on some item or another as it is called out.

MR. WISENBURG: We'd be happy to do that, sir.

DR. MARK: Thank you. As you say, you didn't propose a very long discussion. And in that case, is there anything else the Applicant would like at this particular point to add any comments on? I'm not aware of anything to call for.

MR. WISENBURG: We do have some responses to questions raised yesterday that we weren't able to provide you with --

DR. MARK: Would this be a good time to check those off?

MR. WISENBURG: Yes, it would, sir.

DR. MARK: Let's do that.

MR. WISENBURG: Mr. Dotson will present the answers to several of the questions from yesterday's discussion.

MR. DOTSON: My name is Erroll Dotson, manger of

engineering. One question was on the pressurizer power operated relief valves.

On the qualifications, they are Class 1-E fully qualified under IEEE 323-1974, they're Westinghouse manufactured, supplied and tested valves.

MR. EBERSOLE: Does this include all the circuitry and wiring that goes to them to maintain them open under --

MR. DOTSON: Yes, sir --

MR. EBERSOLE: Okay.

MR. DOTSON: -- fully qualified.

There was another question regarding the component cooling water system, the surge tank operation particularly regarding leakage and it has a fairly complicated circuitry that I'd like to describe.

The tank itself has several alarms. But above the baffles there is a level make-up controled by local make-up switches which actuate on a higher low level alarm. And since this level is made up before an alarm condition is reached, the only way to determine leakage is through the QDPS or the Quality Display Processing System trending displays in the control room, which shows the surge tank level over a time period, which I think you saw on the tour.

However, if the tank level continues to drop and

the make-up cannot stay up with that leakage, there are further alarms. For example, at low level, if the level continues to drop, the nonsafety portions of the component cooling water system are isolated.

If it continues to drop, then the headers are isolated and the alarm -- now the tank levels are below the baffles and you've actually formed three tanks and there are low and low level alarms for each of the three tanks then and the operator has to take action from there.

MR. EBERSOLE: Uh-huh. Is there any way to inject water from the raw service system into the component cooling in the event you loose the central point of vulnerability of the whole system which is that tank?

MR. DOTSON: Not from the well water system, no. You can make up to the --

MR. EBERSOLE: There are many plants that don't even have component cooling as a requirement as an intermediate loop, you know, they just use raw water. And then they get past that three or four stainless failure problem one way or another with -- against raw water.

And it, you know, suggest dependence on a focal point to maintain that coupling. And one tank is some what more deserving of some critical attention.

MR. DOTSON: Well, as the level drops, like we say, we actually form three tanks --

MR. EBERSOLE: Yeah.

MR. DOTSON: -- and the systems are isolated so that three systems --

MR. EBERSOLE: Three tanks and one shell, isn't it?

MR. DOTSON: That's correct, sir, yes, sir.

MR. EBERSOLE: So if I want to turn it over with an earthquake or something, I'm in trouble. So the margines of safety on that tank have got to be pretty good because that's the -- that in fact it's a vital coupling linked to the outer world, isn't it?

MR. DOTSON: Yes, sir, it is.

MR. EBERSOLE: And it's one of the very few, in fact. I can't find another offhand. Are there others?

MR. DOTSON: That's probably one of the more vital ones.

MR. EBERSOLE: You know, I'm just saying that tank design now is at a new level of importance since it is a focus point of thermal coupling to the ultimate heat sink.

I can't find any specific argument other than it better not turn over or --

MR. DOTSON: That's right, yes, sir.

Another question in that same -- somewhat similar vein was the -- along the lines of the refueling

water storage tank.

MR. EBERSOLE: Yeah, but you don't need that to shut down.

MR. DOTSON: That's correct. We may have researched the wrong tank a little bit. But we did do some research last night on the recooling water storage tank and have looked at it in this vein, seismic margins and the seismic capacity are defined using different analytical techniques.

But in the detail review for South Texas Project, we haven't performed this frigility (phonetic) analyses but a preliminary review indicates that the median seismic capacity for the recooling water storage tank is in the range of about 0.5 to 0.7 G's. So, considerable margin there.

MR. EBERSOLE: What about -- have you looked at the component cooling surge tank in that context?

MR. DOTSON: No, we didn't, sir.

MR. EBERSOLE: I think maybe that would be worth your review.

MR. DOTSON: Yes, sir.

MR. EBERSOLE: By the way, I think it might be nice if you had a big fire hose at the top of that tank just in case.

MR. DOTSON: Fourth item, there was a question

on the reactor coolant pump seal bypass line. We have the model 100A, which does not have the seal bypass line. The older model 93A did.

For this plant we have a seal injection filter, two micron filter, and the flow divides above the bearing rather than below, as the old model did. And on low pressure, the seal return line is closed and so we don't have seal flow. So I think there is a considerable difference in the design between the two pumps.

MR. EBERSOLE: Fine.

MR. DOTSON: That's all.

MR. EBERSOLE: I might make a point of clarification about my earlier arguments about the RHR pump being inside. I admit that's just professional preference. I think you have alternative answers to what happens if you can't use the RHR pumps involving the invoking of the ECCS pumping system and rejection of heat to the secondaries.

MR. DOTSON: Yes, sir.

MR. EBERSOLE: And so, correct me if I'm wrong, you have an anser to every question I might raise about, failure, say, the RHR pump?

MR. DOTSON: Yes, sir.

MR. EBERSOLE: Although the recourse might be complicated.

MR. DOTSON: We can maintain the plant safe

without recourse.

MR. EBERSOLE: So it's just a matter, you know, of engineering preference, I think.

MR. DOTSON: Yes, sir. And getting the plant to cold shutdown on a closed loop.

DR. MARK: Are there other questions at this point?

I'm afraid this is expressing ignorance of my own, might be easy to comment on, though. You are using the Westinghouse steam generators type E, I believe. Has there been experience with those troubles or successes or anything that makes one happy to have the E on board?

I know I should know the answer to that question myself, but I don't today.

MR. POOLE: My name is Bruce Poole, I'm the lead engineer of Houston Lighting & Power and I follwed some model E steam generators for about five, six years now and I would say that we're happy with the generator as it is, particularly after we made modifications to the preheater with the tube expansion to avoid the vibration problems.

DR. MARK: It was something of that sort that I was remembering needed attention or had given some concern at least in previous experience and I'd forgotten where.

You say you're aware of that and you have had a modification made which you think looks relevant?

MR. POOLE: Yes, sir, we did. We were part of the owners' review group that for about a year and a half went in detail with several other utilities who have D4 and D5 equipment which is very similar to the model E and we -- also in the group was the people from Belgium at the Bell Four and Gohonish III units, and we -- I'm sorry?

DR. MARK: You really answered the question that I had. And maybe it was covered yesterday and I just slipped by.

MR. POOLE: And just as an added assurance, Bell Four just finished their run and part of that they did full scale testing in the generator with accelerometers to show they had no tube vibration problems after the fix was made an we're quite happy with that.

DR. MARK: Thank you. And I guess I have one other offbeat question. The machine here is -- perhaps not identical, but very much like the -- what -- RESAR 41, which I think has not got a companion in this country but does have in Paluel, I think --

MR. DOTSON: And Belgium.

DR. MARK: -- and Belgium. Are there important differences that it would be easy to mention between the European versions and your version?

MR. DOTSON: The version in Belgium, I believe is essentially identical to ours. And as I mentioned

yesterday, we have a man stationed over there. And as Bruce just indicated, we're keeping close tabs on those steam generators.

DR. MARK: Well, I think there is more than a steam generator, there's --

MR. DOTSON: Well, on the rest of the plant --

DR. MARK: -- and the whole plant. And Paluel, is it running yet?

MR. DOTSON: Paluel units are running, yes, sir; three of the four are.

DR. MARK: And you're follwing the experience they have and it's relevant to what you might expect to --

MR. DOTSON: Yes. Our man is also visited Paluel already and he makes periodic visits down there.

DR. MARK: I think, although this isn't the time to go into it, it might not be out of order to call attention to the fact that you do have and are getting data or information or confirmation from those machines and mention whatever differences seem important for our disccusion next week.

Very brief, but just -- because there aren't any in this country doesn't mean that you aren't getting a chance to observe what's happening.

I have nothing else for this phase of things. In which case, I'll call on Mr. Kadambi of the NRC staff.

MR. KADAMBI: Thank you, Mr. Chairman. I'd like to have Mr. Noonan, who's the project director, begin the Staff presentation.

MR. NOONAN: Good morning, gentlemen. Just as a matter of introduction for the NRC staff, my name is Vince Noonan, the NRC project directer for the South Texas. With us this morning we have Mr. Rossi, who's the assistant directer for technical support and Mr. Carl Burlinger, the branch chief of reactor system branch. Mr. Les Constable, the Region IV representative will be making a presentation to the committee, as will Mr. Kadambi, who's the project manager for South Texas.

In support of the Staff, we have Mr. Steve Long, who's the backup project manger for South Texas; Mr. Jerry Wilson the reactor systems branch representative; Jerry Mock, the electrical instrumentation control system branch representative and Mr. Art Boling, who's the consultant for EG&G Idaho.

We'll try to respond to your questions as you ask them. We'll start off the presentation with Mr. Kadambi and he'll go through to the Staff presentation.

DR. MARK: Thank you.

MR. KADAMBI: Good morning. My name is Prasad Kadambi. I'm the project manger for NRR on the South Texas Project. I was responsible for the issuance of the Safety

Evaluation Report, which was issued in April. I think that's enough time for everybody to have gone over it cover to cover by now.

My presentation will be primarily on the open items and the confirmatory items, which are traditionally listed in the SER.

I'd like to begin by informing you what my perception of open items and confirmatory items are. This is to indicate what differentiates perhaps an open item from a confirmatory item.

As I see it, an open item is something which, if not adequately resolved with the Applicant, could lead to a range of possibilities. On one end of the range would be that we could withhold the license from the Applicants, perhaps. On the other range -- on the other end would be the possibility that we could impose a license condition of some sort on the Applicant.

Open items are generally quite serious; they have some significance.

Now, there are seventeen open items listed in the SER as Mark pointed out. He pointed out the number which requires Staff action first. I would begin by pointing out the number which has Applicant action first.

DR. MARK: You didn't mention the possibility that an open item might, after further discussion, be

resolved by the Applicant changing the procedure or you changing your point of view or something of that kind.

MR. KADAMBI: Yes, I -- when I refer to resolution with the Applicant, the process of resolution includes either the Staff compromising on some aspect of the standard review plan requirements, perhaps, or the interpretation of the regulation or the Applicant changing design or providing some more information about the design which you didn't have.

DR. MARK: I was merely concerned that you left -- that there were only two options.

MR. KADAMBI: I defined the end of the spectrum of options. Usually what happens is something in between. By the time the license is issued most of these --

DR. MARK: No problem.

MR. KADAMBI: -- resolved.

Of the seventeen open items, we feel fourteen require some significant action on the part of the Applicant. And five require significant action on the part of the Staff. And the overlapping is because on some issues, we both have to work on it and get it resolved.

The confirmatory items, on the other hand, are those which I see as issues which have substantially been resolved on the technical basis; the technical issues have been resolved but there may be items of documentation where

the Staff has not seen the final documents in order to say that we are confident that it meets the regulation.

Now the SER lists thirty-four confirmatory items. By the way, I would like to point out that the seventeen open items are about normal for a plant. Generally I believe the range is fifteen to twenty. So the seventeen open items are okay, I think.

The thirty-four confirmatory items I believe based on an examination of previous SER's is below average, But of course to some extent this number is open to question.

As I go through my presentation I will be pointing out two corrections, two errors that I think should be made in the table and perhaps if you look closely at each confirmatory item there may be some adjustments which I will address when I get to that point.

In addition to these that are listed in the SER, license conditions. At this point we have, the Staff has found three license conditions that we will -- we are considering putting into the license when it is issued. Of these, two I believe are relatively standard ones which the Staff generally looks -- or in the past has used as conditions on other licenses. One of them is rather unique to South Texas and I will be addressing that in more detail.

The next is a tabulation of the TMI action plan items. The SER itself shows where these TMI action plan items are addressed in the body of the report. There are some on which I have shown asterisks to indicate that we haven't fully completed the review or we have not addressed it in the SER.

On these, I guess, there are eleven asterisks in that table. The resolution of these I see as occurring when the Staff review is completed or when the Applicant sumbits the required information in some cases or, in some of these, if one looks at the item itself closely, they are covered by either an open item or a confirmatory item and there is a considerable overlap in the technical issues involved in these.

Or in some cases, they could be put in as technical specification items.

The SER in addition has a tabulation of the technical specification items in Chapter 16 which we are now considering. And as we go through the review of the propsed technical specification, it's possibly that the table will change.

The first supplement to this SER is due out in August of 1986. And in this first supplement I see resolution of quite a few of the confirmatory items and updating the review to cover the more recent submittals

from the Applicant. Because of the relatively long period of time that goes into the total review of the FSAR, we are not always up to date in addressing all the Applicant submittals in an SER.

Now, moving the actual issues. What I'd like to do is cover what I think are the more important of the open items and the confirmatory items. I chose not to cover all of them because many of them I think you're quite familiar with from other projects and they're not much different on South Texas.

Now, the first one I'd like to address is the license condition we have listed as No. 2 on the qualification of the RHR system, which Mr. Ebersole expressed considerable interest on.

When the design was first presented to the Staff, we noted that the RHR system was within containment and the first question we asked was, "Will it survive an accident?"

And the Applicant at that point provided justification in terms of using other means for cooling the core which the Staff was unwilling to accept. And at that point, they agreed to actually qualify the RHR or provide other means if they are not able to qualify the RHR by the time the license is issued, the proposed other means to tide them over until the time when they will be able to

qualify the system. And they agreed to do this because the Staff interpretated this to be a requirement for 10 CFR 1546.

MR. EBERSOLE: Well, has the Staff envisioned any condition if they lose the RHR pumps while they're in service that the Applicant cannot turn around and back up and use ECCS pumps and the secondaries to get the heat up? Are there any lockouts that you know of?

MR. KADAMBI: I'm not aware of any.

MR. EBERSOLE: I'm not aware of any either, it's just that kind of a preferred --

MR. KADAMBI: Yes.

MR. EBERSOLE: All right.

MR. KADAMBI: We've had many detailed discussions on the design options and how they meet the regulations, and we were satisfied with the time schedule that they proposd to qualify the RHR system.

So at this point, we are awaiting a submittal in the third quarter of 1986 which will allow the details of the design and also update the schedule. And if I understand correctly, perhaps we can look forward to a qualified system in time for fuel load.

Now to deal with some of the open items, I don't know if everybody has access to the table I'm looking at. Each of these numbers refers to the Table 1.4 in the open

items list.

Number 3 has to do with jet impingement consideration, higher and NG line grades. This requires action on both sides, with the current action primarily being on the part of the Staff because we are considering in-house a change to the standard review plan requirement in this area, which would probably -- if the Staff acts favorably on this, it would result in approval of the system as it currently exists with no additional analysis required.

We are looking for submittals in the area of flooding and a detail jet impingement analysis which is something that usually happens I believe later on in the licensing process as they walk the systems down.

The next item is No. 6, and it has to do with QDPS, which I think you got a good look at yesterday. It is a microprocesser based system in which both the software and the hardware need to be reviewed together. And it has required rather specialized attention from the Staff because we have not done this kind of a review before.

And we have chosen to conduct a review through audits, interim audits. We are expecting, if all goes on as schedule, the audits and the Applicants' activities, a final report in October of 1986.

The next item is -- has to do with conformance

to Regulatory Guide 1.97. And based on the discussions we've had, it appears that the Staff has, you know, conformance was demonstrated except in these three cases listed: The pressurizer heater current monitoring; containment atmosphere temperature and containment sump water temperature.

In these cases, we have had discussions with the Applicant and we're awaiting a submittal which will detail the justifications they propose their current design. I don't expect that this will be a major hurdle.

The next item is the safe and alternate shutdown systems. This is related to the fire protection review. The Staff had relatively long and detailed discussions on fire protection with the Applicant because initially the Applicant proposed an approach to fire protection which was unusual from the Staff's point of view.

And as we went through the details of it and we understood better where the Applicant proposed essentially sprinkler systems which will protect against spread of fires, we were able to resolve our concerns in all the areas with respect to the fire protection aspect itself.

MR. EBERSOLE: I'd like to ask a few questions. I have some notes here to ask about this fire protection business at large. For one, do they use carbon dioxide in this plant anywhere?

MR. KADAMBI: I don't believe they do. Somebody correct me if I'm wrong.

MR. WISENBURG: We do not use carbon dioxide.

MR. EBERSOLE: Nowhere. So you use wet pipe or dry pipe or foam or whatever, Halon?

MR. KADAMBI: Halon, I believe. I'm not aware of aware of any foam either.

MR. DOTSON: There is some Halon in --

MR. EBERSOLE: Is the Halon -- does it come from tank farms that are then prorated according to the cubical volume that's being served? We've had a few cases where a large tank farm has blown up the protected space, you know, where you have a large tank farm and you then prorate with timed discharges, the designers have neglected to make the time discharge safety grade and this has resulted in blow out of doors and walls.

MR. DOTSON: I don't believe we have that condition.

MR. EBERSOLE: You have a --

MR. DOTSON: At the present, we have smaller tanks and we have them in very few areas.

MR. EBERSOLE: Yeah. Better to have a fixed fixed volume serving a fixed volume. So that's the kind you have.

I see that you --

MR. DOTSON: Yes, sir.

MR. EBERSOLE: You have automatic wet pipes that look at the cables. But then you have automatic dry closed head sprinklers that looked at switch gear. Was the object there to deny seismic activation and damge switch gear over the place concurrently.

MR. KADAMBI: Mr. Ebersole, I can not address the detail review. I --

MR. EBERSOLE: Let me ask the owner then.

You know, there's a particular degree of selectivity here --

MR. DOTSON: Not particularly seismic, but any inadvertant actuation.

MR. EBERSOLE: Well, that's just the one I could think of.

MR. DOTSON: That would be one in particular.

MR. EBERSOLE: Do you invoke the thesis because you have wet pipes, that you can wet all the cables at one time?

MR. DOTSON: Well, the thesis is twofold. One, yes, that's one and the other is there is no consequences in inadvertant actuation.

MR. EBERSOLE: Of all the critical cables?

MR. DOTSON: All the heavily concentrated cable areas.

MR. EBERSOLE: No, matter what channel you're looking, at you're willing to wet them all down after they're thirty years old or forty; is that right?

MR. DOTSON: Yes, we're willing, we don't prefer it but we're willing.

MR. EBERSOLE: And that implies a degree of surveillance on the cables to be assured they aren't cracked and depreciated and et cetera. You know, the aging problem, you carry that burden.

I don't know, Charlie, can you say anything about this notion or not of wetting all the cables down after forty years?

MR. WYLIE: Certainly the program the NRC is engaged in the research program is to confirm the ability of the cables to withstand that type of environment at the end of forty years, if that be what the license of the plant is, or they got to replace cable. So there is no consequence of what comes out of it.

MR. EBERSOLE: But you do protect the swith gear by being selective and where you want them; is that correct?

MR. DOTSON: That's correct, sir.

MR. EBERSOLE: There was a somewhat disturbing statement in here on Page 9.46 of the SER. It says, "However," this is the Staff's words, "because all cables

are IEEE 383 qualified, the Staff expects any fire involving the cable to devlope slowly and with low heat release rates."

I think that's in contradiction to the findings by Sandia Laboratory of a comparatively recent date, that if you get a fire at sufficiently high temperature and with sufficient volumes of cable, it propagates quite gleefully. Are you aware of those findings and can you contradict that statement?

MR. KADAMBI: I'd like to request Jerry Wilson to address the question.

MR. EBERSOLE: They had some particular test of the so called qualified -- IEEE has always said "fire resistant," but that's a very muddy word.

MR. WILSON: Jerry Wilson, NRC Staff. We're going to get our fire protection engineer to answer that question and so if we could defer that to the Full Committee meeting.

MR. EBERSOLE: Okay. You might investigate Sandia's findings, because I don't think have been published yet. In fact, the new cable burns quite well if you get a big enough fire.

They use as initiating source, once quart of Acetone in the corner of the control cubical. And once you -- you know, it's like a reactor, once you get it

critical, it goes supercritical.

The other thing is, you mention that you were unhappy about unprotected cable in HVAC penetration into the supposedly separated three trains of safety-related switch gears. All right --

MR. DADAMBI: That's right.

MR. EBERSOLE: They were presumably separated, yet they were penetrated by common, potentially common sources of influence, namely the duct work and the unprotected cable.

They're separated other than that by three-hour fire barriers except for these penatrations. Do you have any -- it seems that you rested your case on this thesis of 383 cable wouldn't burn. But it will.

MR. KADAMBI: I'm afraid I'm going to have to refer to our fire protection --

MR. EBERSOLE: Okay.

MR. WILSON: Can I address that for just a minute, sir? The issue wasn't on the cable burning, it was issued of separating fire areas within one train of making the switch gear room a separate fire area from the cable spread area and so forth. So it's not -- that was the issue not whether the cable could burn or not.

MR. EBERSOLE: I see.

The next point -- there was an old -- a very old

issue September 19, 1975, this is a Staff statement that they were unhappy about the position and capacity and nature of the diesel storage tanks above the diesels.

It says here that -- well, the Committee wants to be kept informed and the Staff is looking into the diesel engine building design and location of the storage tanks.

You've got some, three 70,000 gallon tanks located above the diesels. Those are big tanks. And they've got, of course, foam fire protection and they have got the works.

But nevertheless, they're big tanks and they at least bring up the hypothosis that maybe sometime during the filling of such a tank or whatever, when there is combustible vapors above the consumed fuel, I don't know whether you sweep it out or you inert it or what you do, that you don't get just a placid burning you can put out, you get a soft explosion that invalidates your thesis of separation and you have a fire like you see in the news of a petroleum based fire that involves a much larger complex than you had hoped would be the case.

What are your arguments that you can't by virtue of presence of these tanks, blow down the separation between these hypothetical three independent channels of power which would not be important unless you carried away

the shutdown circuits from offsite power?

Are you protected if you blow away your diesels by having the shutdown boards at a sufficiently distant and protected point where you still have offsite power?

MR. DOTSON: The answer is yes to the later part of that question, but we believe we're also protected from not having the event occur. We are constantly venting that area -- there is the foam systems that you mention.

MR. EBERSOLE: You mean the sweep the air space above the --

MR. DOTSON: Yes, sir.

MR. EBERSOLE: -- above the fuel in the tanks?

MR. DOTSON: Yes, sir.

MR. EBERSOLE: And you monitor that process like you do the battery emissions and so forth?

MR. DOTSON: It's a Class 1-E fan.

MR. EBERSOLE: One fan? How do you know when it quits?

MR. DOTSON: I'll have to get back to you on the details of that.

MR. EBERSOLE: You know, it sounds a little bit like the battery room problem, where you have to sweep out hydrogen.

MR. DOTSON: Similar to that, yes, sir.

MR. EBERSOLE: Why don't you just give us a

little explanation in defense of your tank location against what I'll call "soft explosions."

DR. SEISS: Let me ask if either of the Applicant or the Staff recalls what the issue was at the construction permit stage? This was a Staff issue at the CP stage on the diesel engine building design and location of storage tanks for the diesel fuel.

This is eleven years ago, but somebody ought to remember what the issue was and what the resolution was.

I don't now why Vince is turning around, he's been around here longer than the guys behind him.

MR. NOONAN: I don't have the answer to that, but I would check into it and find out what the Staff concern was and get back to the Committee.

DR. SEISS: There were two items of concern at that time that the ACRS said they wanted to be kept informed of. And I suspect we were probably a couple of years later, but if we were I've forgotten.

The other one, incidentally is ECCS evaluation and I don't think we need to be updated on that one.

MR. EBERSOLE: Well, that can be taken up at the full Committee, as far as I'm concerned.

MR. KADAMBI: I will make sure that you get answers to these questions from the Staff perspective at the full Committee meeting next week.

The next item is Open Item No. 12 and has to do with the aux feedwater reliability study. This is an item in which the main action is on the Staff's part. We have a contractor conducting the review and it is scheduled, due to be completed in June, this coming month.

In the evaluation that we have documented in the SER we have included the new information which came out of some design problems that the Applicant identified as recently as February of 1986 when they had to change their posture from -- well, for a brief while anyway they had to change their posture from saying that they could bring the plant down to cold shutdown using one steam generator to saying that they might need two steam generators to cool the plant down.

After further study, they decided that operator action, which the Staff found to be acceptable, with the operator interceding, the plant could be brought down with one steam generator.

DR. MARK: Was the operator action which the Staff found to be acceptable -- what does the Staff find to be acceptable providing it is okay to have it done in 20 minutes or 30 minutes or --

MR. KADAMBI: I believe it's 20 minutes.

DR. MARK: It's acceptable if it's 20 or more minutes?

MR. KADAMBI: That's right. Am I correct, Jerry?

MR. EBERSOLE: In that sense, do you have any operator emergency response criteria you could lay out in front of us? I mentioned in the tour, I have yet to hear from anybody the recipe at which point you deside operator action can be taken adequately or you must automate. And we need that. And maybe you can contribute to the general cause by deciding when something should be automated or manually responded. But I didn't hear anything, but we'll -- we'll leave that for an open discussion on it.

MR. KADAMBI: From a regulatory point of view, I don't believe we have a consistent regulatory approach.

MR. EBERSOLE: There are no organized thought processes that I know of that have been put on paper about when you automate and when you don't, but yet we face it all the time. And I find it astonishing that there isn't a sort of general philosophy about when you do and when you don't.

Let me ask about this AFP water reliability in the light of San Onefre and its check valve failures.

Is that the right project?

It is, below all the safeties, not long ago.

Of course, the reverse flow checks on main feedwater are a vital part of the aux feedwater system,

aren't they?

When the main feedwater system quits, the checks are supposed to close and then you have a closed environment to inject aux feedwater.

Do you consider the reverse flow checks on the main feedwater system as a vital part of the aux feed system? Therefore, they're safety related and they must close and yet at that plant they all fall apart. And do you have criteria that say if I have a spectacular upstream accident in the main feedwater system and an extremely abrupt closure of these valves takes place and they're just swing checks, that they don't commonly fail under impact loads? Are you with me?

MR. KADAMBI: I understand your question, but I don't know enough to provide an answer. I'd like to ask if anybody --

MR. EBERSOLE: This has been pumped to the surface by the San Onefre valve failures which occurred when they came to part load and they started flapping and they wore out.

MR. ROSSI: This is Ernie Rossi of the Staff. You know, that issue on the check valve is being looked at generically --

MR. EBERSOLE: Yes, I take it you didn't point the problem here.

MR. ROSSI: -- the San Onefre event. Also the later plant designs have considerably more in the way of feedwater isolation and that kind of thing and separation and so forth then did the older San Onefre Unit 1.

MR. EBERSOLE: Can this plant tolerate the hypothetical loss of reverse flow checks and still maintain aux feedwater in the boilers? All four, or any one of them, all four.

MR. ROSSI: This plant, I believe, and the Applicant can verify this, has a separate auxiliary feed water nozzle in the steam generators, do you not --

MR. EBERSOLE: Yeah, but it doesn't do any good if you got an open hole in the steam generator.

MR. WISENBURG: Also recall our auxiliary feedwater system is not normally cross connected. That is, we've got four trains --

MR. EBERSOLE: But isn't the main feedwater cross connected always?

MR. WISENBURG: Main feedwater is connected.

MR. EBERSOLE: So if becomes an open system, then you are cross connected to discharge?

MR. ROSSI: Well, clearly the failure of all the lines isn't the design basis of --

MR. EBERSOLE: You know, for this failed main feedwater header, if I can't close it I'm in trouble, am I

not?

MR. WISENBURG: I might comment that we do have motorized stop check valves instead of plain check valves, which would enable us to --

MR. EBERSOLE: Okay. Then you motorize to close?

MR. WISENBURG: Yes, sir.

MR. EBERSOLE: And then you do so slowly under the presence of a hypothetical full reverse flow feedwater? See, if I want to cause trouble by invoking pipe breaks, I'll do it upstream with these check valves, not out in the primary cooling system where I've got a system to protect me.

So tell me what happens if I blow a main feedwater line and these check valves attempt to close against the reverse pressure of 1100 PSI, reverse full pressure. That's a lot of water coming out. Are you prepared for the dyanamic loads and the rapid closure on the seams?

All I'm trying to do is protect the individuality of the steam generators.

MR. DOTSON: That's what those valves are designed to do, sir, and they are trying to protect the closing valves.

MR. EBERSOLE: Are they modulated to close slowly under this tremendous assist load to close?

MR. DOTSON: Semi-modulated in the sense they do close in five seconds.

MR EBERSOLE: I guess I'd like to have you, maybe for the benefit of the business at large, explain the dynamic performance of these valves -- maybe at the Full Committee -- under these hypothetical conditions.

You can invoke, if you wish, the control valves as an assist in the process although they're not safety-related, and any other ways of stopping the flow. But I'm only trying to, you know, look at the roots of individuality of the steam generators and the aux feed system. And with that, I'm done on that topic.

MR. KADAMBI: Moving along to the next open item I'd like to address, it's No. 15. The boron dilution event. This is one in which the Applicant has to provide an analysis for the Staff to review and consider the consequences of boron dilution under the modes 4 and 5. The criterion over here that the Staff uses is that the operator have a minimum of 15 minutes for action. We expect the Applicants' analysis in the third quarter of '86.

The next item is No. 16, and has to do with the adequacy of predicting the small grade LOCA accident. The Applicant has used a code which the Staff has not reviewed for this purpose. And the Staff has reviewed and approved

for Westinghouse plants a code called NOTRUMP.

The Applicant is planning to use NOTRUMP for the first hour of the accident and then this code called TREAT for subsequent operator actions. And the Staff is awaiting information on which to base approval or otherwise of the code.

And this primarily has to do with fulfilling the environment of the II.K.3.30, & 31 of the PMI.

DR. MARK: Where did the -- do I understand this, the Applicant has, up until now, been relying on the answers they got from the TREAT code, I suppose. Where did the TREAT code come from?

MR. KADAMBI: TREAT is, I believe, a Westinghouse code, and they have used it as my understanding goes, for their emergency response diagrams for operators. I'm speculating a little bit, but I believe it was developed for that purpose.

MR. WISENBURG: We can help you out there. We have a Westinghouse engineer who can speak in detail about TREAT.

MR. MONTY: Bruce Monty for Westinghouse. I won't speak in detail, but the TREAT code is a code that was derived from the NOTRUMP code which the Staff mentioned is the approved small grade code. And we used in the development of emergency operator actions because it is

interactive and it runs in real time.

And we are studying for South Texas a very small break scenario which we will rely on some operator actions to recover and it's going to be a long transient so that is why we recommend using the TREAT code versus the code the Staff is familiar with, which is the NOTRUMP code.

DR. MARK: TREAT has not yet been submitted for approval; is that the situation?

MR. MONTY: That's correct. At the same time we submit the analysis that we are doing, we will submit the TREAT code.

DR. MARK: And you would expect that -- at least there some reason to expect that it would be approved when it can be looked at and considered?

MR. MONTY: Right

MR. KADAMBI: Thank you.

Moving on to the list of confirmatory items, I would like to make some important corrections to the table 1.5, which is a table of confirmatory items.

In my listing of these, I failed to recognize that Items 14 and 15 really cover the same technical issue. And they should be included as one confirmatory item. And it has to do with either justification for operator actions or the automatic operations of safety injection in case of certain breaks.

There should be added a confirmatory item on the reactor coolant pump trip issue, which in 15.6.5.1 we have described the review that the Staff conducted and described information that we are looking for to confirm the acceptability of the Applicants' response to this generic letter, 85-12.

The first supplemant will close out some of these items and some of the items in the confirmatory item table should really be included with open items. For example, Item No. 13, which has to do with the analyses of nonisolable small grade LOCA's, that's really part of the open item No. -- that's No. 16.

So some adjustments like this will probably alter the confirmatory items table. But after going through all the positives and negatives, I believe that the next number will still remain roughly the same.

I'd just like to briefly touch upon some of the confirmatory items. No. 2, in which the Staff is doing and independent analysis of the performance of the essential cooling pond as required by the standard review plan, the Staff expects to complete the analysis in time for the first supplement.

No. 3, having to do with the geotechnical monitoring program, the Staff is looking for documentation on the subsidence monitoring program that the Applicant has

said that they would have.

No. 4, the Staff had to do a relatively detailed review on the main coolant reservoir because of concerns we had regarding meeting Regulatory Guide 1.59, Revision 2. And we found that the design is accaptable. But the only residual concern we had was, we don't really have the data to base our conclusions once the reservoir is filled to the level of 49 feet, which is what the Applicant had told us would be the ultimate level on it.

MR. EBERSOLE: I don't recall what Reg Guide 1.59 is. Could you explain briefly what the safety issue is here?

MR. KADAMBI: The issue has to do with scour and erosion situations in case of a breach in the dike.

MR. EBERSOLE: Erosion of what?

MR. KADAMBI: Of --

MR. EBERSOLE: This is flooding, the question was --

MR. KADAMBI: The area that is flooded.

MR. EBERSOLE: This is a failure of the dike from the cooling reservoir that would flood the plant?

MR. KADAMBI: Right, and it has to do with a postulated breach in a section of the reservoir which could cause the soil to erode and thereby lead to a safety problem.

MR. EBERSOLE: And the safety problem would be not related to the reservoir, which isn't a safety --

MR. KADAMBI: No, it has to do with the structure.

MR. EBERSOLE: So it would come into the structure and you have structures or door closures that prevent against an ingress into the building? You have to invoke some emergency messures, don't you, to close up the house?

MR. KADAMBI: That's right, the emergency messures relating to flooding we found to be acceptable.

MR. EBERSOLE: You have to close up the house, then, to protect against how many feet of water above the threshhold of the doors?

MR. KADAMBI: My understanding is that the design basis flood -- let's see, I can't remember the height --

MR. WISENBURG: I'd like to make some comment if I could maybe clear up some confusion. The design basis flood level and the hydrostatic and hydrodynamic forces on the safety-related structures which face the main cooling reservoir are based on a breach of the reservoir embankment.

At the time that that work was done, the applicable Staff regulatory guide did not require any consideration other than those effects associated with the

design basis flood.

Subsequently, the regulatory guide was revised to include consideration of the scour and erosion effects which would be associated with a design business is flood.

For the south sections of the plant, those that are you facing the reservoir, scouring erosion would involve undercut of the foundations to some degree, by water which would be released from a reservoir breach.

We determined that analyzing that degree of undercut was a very complex and difficult task and chose as an alternative to demonstrate the margin which existed in the reservoir embankment that faces the plant.

MR. EBERSOLE: There's a preferential.

MR. WISENBURG: Yes, sir.

MR. EBERSOLE: So you invoke that it won't fail there; they'll fail somewhere else?

MR. WISENBURG: That's correct, sir.

MR. EBERSOLE: Okay. But you still have to face the static oil load.

MR. WISENBURG: That is correct. The flood levels remain the same; the flood protection previsions relative to closing of various water-tight doors or maintaining closed all the time are existant in the procedure.

MR. EBERSOLE: How high does the water get above

the threshhold of those doors in feet, more or less?

You know, it must be some feet like four feet, eight feet, whatever?

MR. WISENBURG: Grade level is about twenty-six feet. The flood level is about fifty feet. So there are some doors that would be under water completely.

MR. EBERSOLE: So you have a potential twenty-five foot grade cover?

MR. WISENBURG: Yes, sir.

MR. EBERSOLE: Would that be persistant or would it go away pretty quick?

MR. WISENBURG: It would go away very quickly.

MR. EBERSOLE: What's the standing ground water level against these subterranean walls; anything? Right at the top of the water? I'm getting at whether you know whether your structual seals are effective below but more importantly above grade which are not doors. Normally you wouldn't put seals above grade unless you've thought of this longer than that. I'm talking about copper seals like you have between floors.

MR. WISENBURG: That's correct, but the flood levels that we're dealing with here are nothing new. They were set relatively early on in the design.

MR. EBERSOLE: Therefore did you build a superstructure as though it were subterranean in context

with seals? I doubt it.

MR. EBERSOLE: We do have water joints in the -- or water seals in the construction joint.

MR. EBERSOLE: Above grade?

MR. WISENBURG: Above grade, yes, sir.

MR. EBERSOLE: So you were prepared to build a boat from day one?

MR. WISENBURG: That's correct, sir.

MR. EBERSOLE: Can you stand the uplift?

MR. WISENBURG: Yes, sir.

MR. EBERSOLE: It's a very big boat.

DR. SEISS: Let me pursue this a little bit. I didn't quite understand it. It's not a question of the water getting out of the reservoir but it's a question of where it gets out and how fast it flows?

MR. WISENBURG: That is correct, sir.

DR. SEISS: Now, your resolution is it's going to come out somewhere else or that the scour will not endanger the structures?

MR. WISENBURG: The resolution was to demonstrate the margin which existed in the embankment. which, if it were to fail, would cause scour and erosion of concern; that is it would undercut any safety-related structures, assuming that if we could demonstrate the margin there, even if it didn't exist anywhere else in the reservoir

embankment, that we would satisfy the safety objective.

DR. SEISS: And you're going to assume some sort of an opening in the dike, let the water flow through at some velocity in the worse possible place and show that the scour will not affect the stability of the structures; is that correct?

MR. KADAMBI: I believe the analysis they chose not to do. And in place of that, they chose to demonstrate that the breach will not happen in that particular postulated location.

DR. SEISS: Well, that's what I asked you. That's not the answer I got. You're going to show that the dike is stronger opposite the plant then it is somewhere else?

MR. WISENBURG: We did very detailed analysis of the dike where, if it failed, it would cause the safety concern. We did no detailed analysis of the other sections of the dike. So I can't answer your question straight out, that it's stronger in one place than the other. We know it's strong enough where it's of concern, sir.

DR. SEISS: Strong enough not to break or strong enough --

MR. WISENBURG: To provide sufficient margin over --

DR. SEISS: I mean if you could take a dike and

wipe it out as we have done some dams in flood analyses, that's probably the best possible condition you've got; you've got the water spread all over South Texas. But if I break the dike opposite the plant, it comes out with a fairly high volocity, that could scour.

MR. WISENBURG: Yes, sir, that's the concern.

DR. SEISS: Now, you must be assuming the dike will fail or you wouldn't be providing the flooding protection. But you're saying that -- what I'm hearing you say is that you're trying to prove it won't fail in that location.

Now to prove it won't fail in one location, you've got to prove it will fail somewhere else. If you prove it won't fail anywhere, we don't need to worry about flooding, so I'm sort of confused.

MR. WYLIE: I thought you had preferentially said it's going to fail somewhere else?

DR. SEISS: I know there's such a thing as steel plugged. I guess you could put it on a dike.

MR. WISENBURG: The flood levels were set very early on in the design process. We chose to maintain that following the analysis that I've just spoken about.

We don't assume the embankment fails, but the flood level remain the same, that design basis did not change. So in effect what we're doing is providing against

the contingency of that flood in hydrodynamic/hydrostatic and water height, and also have done the analysis to provide extra assurance that the failure would not occur in the most critical location.

DR. SEISS: Okay. So your argument now is that it's really not going to fail.

MR. WISENBURG: That is correct, sir.

DR. SEISS: But if it does fail, even if it fails in the best possible manner, you're protected against the static effects and you're not protected against the scour effects or you don't know whether you're protected against scour effects because nobody knows how to calculate them, I guess; it's easy to ask the question rather than answer it, certainly.

MR. WISENBURG: That's correct, sir.

DR. SEISS: Is this a probabilistic basis or you're saying there is no change of failure or you're trying to establish a probability of not failing?

MR. WISENBURG: This -- the analyses that we did were to look at what margin we had against liquefaction in a seismic event, what the static stability of the reservoir was, et cetera.

DR. SEISS: I think I understand your question.

MR. EBERSOLE: Let me take up the static effects again, which you knew long in advance. I think I heard

something like twenty-five feet of water above grade. Is that right?

MR. WISENBURG: That's approximately right.

MR. EBERSOLE: So you're going to close some doors and they will be totally inundated. I take it this phenomenon is going to be one of these fast local neurological problems with ice and rain and whatever pretty much dumped on top of the general plant area without any real interval of forecastable -- any really knowledge of knowing that's is coming a number of hours in the future, is there? There's no predictability to amount to anything for this sort of thing. How many hours have you got to gear up to this, and get closed?

MR. WISENBURG: The plant remains in a condition which would provide maximum protection. Those doors are closed, sir.

MR. EBERSOLE: You're always sealed against twenty-five feet of water?

MR. WISENBURG: That's correct.

MR. EBERSOLE: And the -- what's the normal -- what's the ground water level normally? It's at the top of the ground, pretty much.

MR. WISENBURG: Very, very close.

MR. EBERSOLE: So you know you've got working seals below grade?

MR. WISENBURG: That's correct.

MR. EBERSOLE: You don't know whether you've got working seals below grade. I believe you came from Browns Ferry, didn't you?

MR. WISENBURG: I did, sir.

MR. EBERSOLE: You remeber they kept the ground water sucked down and then found they didn't have seals when they lost the subground pumps? I'm asking you that question --

MR. WISENBURG: I recall that, sir.

MR. EBERSOLE: -- about the above grade seals. You know you had a QA program on above grade seals so your walls don't leak?

MR. WISENBURG: If you recall yesterday, we had a discussion of construction quality assurance yesterday. The design is there and the quality assurance was provided to ensure that the --

MR. EBERSOLE: So you did build a boat?

MR. WISENBURG: We built a boat.

MR. EBERSOLE: And what about the influx from drains that normally have to be -- well, you don't have any gravity drains, there's no place to drain. Is that correct?

MR. WISENBURG: We have specifically evaluated each an every drain.

MR. EBERSOLE: Okay.

MR. WISENBURG: As a matter of fact, in response to a Staff question, we found that there were some that we missed and added the appropriate protection.

MR. EBERSOLE: But in essence, you're sitting in water all the time?

MR. WISENBURG: Yes, sir.

DR. SEISS: But if the bank breaks, how long does the water stay at that flood level?

MR. WISENBURG: Several hours, sir.

DR. SEISS: Several hours.

MR. EBERSOLE: That would get your switch yard, wouldn't it, and you would depend on the diesels. Am I correct?

MR. WISENBURG: That's correct, sir.

MR. EBERSOLE: So your diesels have been a special point of interest under these circumstances?

MR. WISENBURG: And they are also protected against that water.

MR. EBERSOLE: I was assuming that the only hole outdoors.

MR. KADAMBI: I'd just like to point out that one of the open items in the open item list has to do with internal flooding analysis and it's there where we will look at the adequacy of the drain.

Moing on, the next confirmatory item I'd like to point to is No. 11, and it has to do with capability for natural circulation. The Staff considers that South Texas is in the same situation as the others which have reference to Diablo Canyon test.

MR. EBERSOLE: Is it typically true that these plants get natural circulation on one steam generator?

MR. KADAMBI: What cirulation, sir?

MR. EBERSOLE: Natural circulation for cool down on one steam generator.

MR. KADAMBI: I believe the South Texas Project concern is as that's all they need.

MR. EBERSOLE: Well, we said that earlier.

MR. KADAMBI: Yes.

Confirmatory Items No. 14 and 15. What the Staff is looking for as confirmation that either certain automatic actions will occur or if operator actions are required that they are properly justified.

No. 17, this is sort of a unique one for South Texas. We found during the review that the design as presented in the FSAR provided for closure of the main steam isolation valves upon any safety injection signals.

And the Staff was concerned about this and as a result of discussions, I guess we were able to convince them that they ought to perhaps consider going back to the

standard Westinghouse design in this case and they have committed to altering their design to be consistent with or the same as other Westinghouse plants.

They have not yet, however, provided us the details of the instrumentation and we would look for confirmation that South Texas will in fact perform as we expect.

MR. EBERSOLE: About the main stream isolation valves, if I could go back to a another Westinghouse set of plants of which there are four, these were the Sequoyah I floor plans.

When one exam the hypothosis of main steam line failure at the header or some place, it was found in detailed examination of the reverse flow checks to preclude blow down on more than one boiler into the containment if not anywhere else, that the repetitive closure under these reverse flow loadings were such that they had to completely modify the valves to keep them from shattering.

How about your valves? Have you looked at them against the dynamic flows of a hypothetical full steam line break?

MR. WISENBURG: Main steam isolation valves are not -- did I hear you say "check valves"?

MR. EBERSOLE: Whatever the valves are that lock out blow down for more than one steam generator.

MR. WISENBURG: Main steam isolation valves have been analyzed against the blow down forces --

MR. EBERSOLE: From a hypothetical full cross section failure of the steam line?

MR. WISENBURG: Yes, sir.

MR. EBERSOLE: I think there's a following orafice some place, isn't it, in those lines, that holds the flow down from a full --

MR. WISENBURG: Yes, sir.

MR. DOTSON: There is at Diablo steam generator, but they're anyalyzed for flow in both directions.

MR. EBERSOLE: Does the flow serve the valve to close or to -- it's either way. Depends on where the break is. It either assists the close or fights the closing, one or the other depending on where the break is, am I correct? But it will serve to close at a moderate and adequate rate in any case, am I correct? I don't want to put words in your mouth.

MR. WISENBURG: No, you are correct, sir.

MR. DOTSON: It's a five second closing valve.

MR. EBERSOLE: In spite of whatever flow --

MR. DOTSON: Yes, sir.

MR. EBERSOLE: -- it's encountered. Okay, thank you.

MR. KADAMBI: Moving along, the next confirmatory

item has to do with conformance to the ATWS rule and the Staff has not completed the review on the details of this design yet and I believe we are going to review this as part of the generic defense against ATWS for Westinghouse --

MR. EBERSOLE: Well, in this case, you know, our classic event was the Salem 1, in which the finding the DV50 failed, and then I thought a more interesting aspect of that when the operator tried to trip them manually, the handle came off the switch. That was an interesting subsequent event.

Are you -- this plant will certainly start with shunt trips?

MR. KADAMBI: I believe they are going to install the shunt trips.

MR. EBERSOLE: And does the Applicant consider looking any further into guaranteeing automatic scram, like going to the ex station circuitry or whatever. Or is he letting the Staff drive him to a conclusion here?

MR. KADAMBI: I'd like to have the Staff or the Applicant respond to that.

MR. EBERSOLE: Does the Applicant have any plans in his own right to look at this scram reliability business, or are they going to follow the Staff's, moderate Staff requirements; minimum Staff requirement?

MR. WISENBURG: There are so many ways that one can start to reply to this question.

MR. EBERSOLE: I know. I'm waiting for you to pick the best way.

MR. WISENBURG: The switch gear that we have at South Texas is of course different from the Salem. It will have the appropriate shunt trip feature installed.

MR. EBERSOLE: Will you know when the breaker trips whether it was the shunt or the UV?

MR. WISENBURG: Not immediately. But upon test, you can find out.

MR. EBERSOLE: And you are going to periodically exam?

MR. WISENBURG: And you do periodically test both of those trip features with a --

MR. EBERSOLE: Okay. So that's an evolving matter, I take it from what the Staff says, as to what will ultimately be done, am I correct or has it been fixed in your view? It's just going to be a shunt trip?

MR. WISENBURG: I think the shunt trip goes a long way towards fixing the problem. But that's not the end of it. The testing programs for preventive maintenance will provide additional assurance for indications of any further problems.

MR. EBERSOLE: Well, there's a lot of comfort to

be derived in prompt operator response to get the switches on the MG sets or whatever. How fast can you do that on an ATWS case? Five seconds?

MR. WISENBURG: The trips are in the control room on the distribution panel. Procedure is already written to handle that contingency.

MR. EBERSOLE: And the set screws are tight on the pistol grip switches?

MR. WISENBURG: They were yesterday, yes, sir.

MR. EBERSOLE: Okay.

MR. WYLIE: Could I ask a question? These are what, DS416 breakers?

MR. WISENBURG: They are DS416's, yes, sir.

MR. WYLIE: And they have been here quite a while, I suppose?

MR. WISENBURG: They have been here for some time, yes, sir.

MR. WYLIE: And the undervoltage device has been refurbished?

MR. WISENBURG: They have been, sir.

MR. WYLIE: You found deficiencies in those?

MR. WISENBURG: There were some deficiencies, but all the devices were refurbished irregardless.

MR. EBERSOLE: Is there rigid control of the lubricants and maintenance and set points and calibrations,

et cetera. You know, these are sensitive things and they deserve an unusual amount of personal maintenance considerations, which is unfortunate.

MR. WISENBURG: Yes, the preventive maintenance procedures --

MR. EBERSOLE: Well --

MR. WISENBURG: -- to provide extremely rigid control of the --

MR. EBERSOLE: I recently read a report where they put a grease on the contact, which decided to stay where it was and never move into the point of needed use and in short just ran dry. Although there was a lot of grease around where -- he thought he was doing it good, but there was none at the point of use.

So I take it these matters are tightly controled with the fluidity of the lubricants and so forth is under control and --

MR. WISENBURG: Well, we're also aware of that situation and have attempted to provide appropriate lubricating procedures to prevent it. The continual testing or periodic testing does provide some degree of assurance that you're going to detect those problems early on.

MR. EBERSOLE: You're going to maintain a written record of the margins of force to get the function done; am

I correct?

MR. WISENBURG: That is correct.

MR. EBERSOLE: Okay.

MR. KADAMBI: I'd like to move along so we can get the Region IV staff also to present their perspective proposal before we run out of my time.

The last item on here has to do with the South Texas approach to the independent design verification program that NRC has used or has seen on other projects.

The Staff has been involved in this engineering assurance program of the South Texas Project for some time now and we expect -- the progress has been satisfactory and the completion is expected sometime in early 1987.

So that concludes the NRR part of the Staff presentation. I'd like to invite Les Constable from the Region IV staff next.

MR. CONSTABLE: Good morning. Is the mike working?

My name is Les Constable and I'm Chief Reactor Projects Section in NRC Region IV. I am responsible for the overall inspection activity at the South Texas Project.

This morning I thought I'd describe to you my inspection staff; talk about our inspection program status in terms of where we are with respect to completion of the programs, just generally some of the inspection results

including the recent Staff results the past few years.

I'd briefly mention the allegation status and then give some final overall observations and of course answer any questions you might have.

I have reporting to me seven full-time inspectors who are spending all their time on the South Texas Project. In addition to that, there is approximately ten other inspectors inspecting various areas that assist us from time to time.

I have four positions on the South Texas site. Two senior inspector positions, one for construction and one for operations. We're in the process of filling the senior inspector positions for operations now.

I have with me today Claude Johnson, the Senior Resident Inspector for construction at the South Texas Project and Don Garrisen the Resident Inspector for construction of the South Texas Project.

The resident inspector cooperation who has been on site for a couple of years is presently on vacation and not here today.

In part, because of the, shall I say colorful regulatory past with South Texas Project, we have put in quite a lot of inspection hours compared to what we would normally put in at another facility.

As you can see, we already have in the order of

over 20,000 hours of inspections. Just to give you a comparison of a facility like the River Bend Project, between beginning of construction up through licensing would take only approximately 10,000 hours.

I would estimate that probably this year we may put in almost 10,000 hours just during this one year in part because we have a high interest in this project.

To give you an idea of how this has progressed over the past few years: In 1984, we put in approximately 2,000 hours inspection. In '85, the Region put in approximately 4,000, doubling what we did in '84. And in addition the CAT team had their resident put in another 2,000 hours. And so far in 1986 we have approximately 4,500 hours already of inspection efforts going into the facility.

As you can see, there is a number of other items. Most of those are old investigations that we spent quite a lot of hours. Of course, we're increasing our effort in the startup operations area. And I've shown a breakdown on how much time has gone into Unit 1, Unit 2 and in general our program status, as we indicate, is roughly 70 to 80 percent complete on Unit 1 and 40 to 50 percent on Unit 2. we have quite a few major inspection efforts up and coming.

In the preoperational area, we are just getting started is probably the best description of where we are.

We have principally been reviewing test procedures for the system testing and we call that approximately 15 percent complete. It's only been very few tests actually completed.

With regard to the future operation of the plant, we have begun looking at the operating procedures, emergency procedures, maintenance procedures and such as that.

We've began reviewing technical specification and the organization staffing and training is all in progress at this time.

MR. EBERSOLE: Inspection by and large connotes the comparison of the plant in reality versus the drawings that says what it's supposed to be and the procurement specs, et cetera; just a comparing proposition.

For a long time now we have been asking the inspection be extropolated to include engineering design assessment, spacial arrangements, lots of things that never show on critical feature drawings because we don't make composit feature drawings. You make models, and this plant has got a good model.

In your inspection program, did you look at the engineering design aspects not just the paper comparison problems. Now I'll take as a model one of my fovorite topics, the battery rooms.

I note here in the paper work it says that you all were bothered by the fact that the battery rooms interfaced on balance of plant although they were individually isolated from each other. You with me?

MR. CONSTABLE: Yes, sir.

MR. EBERSOLE: Now, this says that however you say, you've got four battery rooms isolated from each other. Apparently they're subjected to the common influence from balance of plant. And I don't know what degree of hostility that implies in common to all four batteries. As you well know, if there is anything in the plant that's critical, it's the batteries.

MR. CONSTABLE: Yes, sir, I'm aware of that.

MR. EBERSOLE: So could you give me kind of an expose' of what how you think, you rationalize this exposure to balance of plant hostility, whatever they may be; fire, explosion, steam, turbine, whatever, and rationalize that you did not find necessary fire proof electrical penetrations and presumably duct work or whatever else you've got that makes a commonality out of what you thought were individual cells of the batteries? That's a large question.

MR. CONSTABLE: It certainly is and I'm not sure I'm prepared to answer. But let me try an over all approach which I think is appropriate here.

What we do in Region IV is the inspection process. But we work very closely with NRR who review many of the design aspects of the facility. We work hand in hand. We do not tell our inspectors who shut their eyes to design issues, in fact, they are constantly questioning design issues and calling up our counterparts in NRR and discussing with them what they see to make sure that the ultimate outcome of all of this is a safe plant.

MR. EBERSOLE: I waited for you to appear on the scene to pick up my battery topic as a model for your discussion. So go ahead.

MR. CONSTABLE: I have a high interest in batteries and such because of my electrical background. But I can't really answer the details of your question right now.

MR. EBERSOLE: I'm really looking for commonality and influence for batteries which negates the thesis that they in fact are really compartmentalized or separated. And I find that possible with our earlier discussion on duct work for ventilation in fact here you in fact say that you don't have fire proof penetrations and that you interface with balance of plant in a commonality context.

All I'm trying to do is find out to what degree in fact they are separated? I invite anyone to answer that question, you or whoever you can find.

MR. CONSTABLE: I was going to ask for plead assistance, but I'm not sure we have that expertise today.

MR. EBERSOLE: If necessary we can leave that as a topic for the full committee. I'm sure there are many who would be interested in it. Maybe that's the best thing to do.

MR. NOONAN: Mr. Ebersole, I don't believe the Staff was prepared to go into any kind of detail for you, however, maybe the Applicant can address it.

MR. EBERSOLE: Well, it might be a topic to discuss anyway.

MR. CONSTABLE: I need to -- whatever --

MR EBERSOLE: Does the Applicant want to talk about compromising what is said to be the individuality of the battery rooms? I guess I made that in a not to favorable way, observation.

You know, when you say you're separated, there is a host of meanings to that and a host of degrees of meanings.

MR. ROSSI: Well, you know, the philosophical answer to your question, I think, as we have a number of reg guides on things like equipment qualification and when you have to consider adverse environments and how much physical separation you have to have. And I think the philosophical answer is that that those reg guides are

intended to cover the kind of thing that you're asking about.

MR. EBERSOLE: Are you familiar with this thing?

MR. ROSSI: I'm not familiar with this particular issue. I'm giving you the more general --

MR. EBERSOLE: Well, see I find this duct work problem to be a little bit of a problem with the tin dampers that are supposed to fall down to achieve a separation which is generally described as that of concrete walls.

MR. ROSSI: Yeah, of course, the other part of your question is the fact that they are taking credit for things like dampers that they're assuming work the way they're supposed to work and I think the answer to your question is that if it's found that the dampers don't work the way they're supposed to work and the solution is to make them work like they're supposed to work.

MR. EBERSOLE: Yeah, or get rid of them.

MR. ROSSI: That's the regulatory thing that would be done first. If you can't make them work the way they're supposed to work, then you have to have another solution.

But as of now, the regulation would say, you know, if you can take credit for that sort of thing then make them work the way they're supposed to work and you

depend on your QA program and testing to do that.

MR. EBERSOLE: But here it is said that these battery face a potentially hostile environment in common against which they're not protected, but they're protected from each other.

MR. ROSSI: I'm not familiar specifcally with the details --

MR. EBERSOLE: I'm just --

MR. ROSSI: -- of the hostile environment that they're all possibly exposed to.

MR. EBERSOLE: They interface with balance of plant, whatever that means. But they don't interface with each other except in the context that the penetrations, the electrical ones, are not fire protective, fire related. All I'm trying to find out is the argument that they are separate environments and in fact true and adequate degree.

MR. ROSSI: Again, the specific details on this one, I don't know whether the Applicant has anyone here to answer or whether we can look into it more between now and the full committee meeting.

MR. EBERSOLE: You don't have fire rated seals in these walls.

MR. DOTSON: Maybe I can -- excuse me.

DR. MARK: I think maybe someone could give thought to this and pick up next week, I suppose. I don't

believe we can push it further here.

MR. DOTSON: As I understand the question, you're interested, sir, in the systems interaction. I want to get a little bit more of idea of addressing it next week.

We've explained the separation electrically and so forth. I know you don't have a lot of confidence in dampers. But perhaps next week if I get gist of the question right, we'll explain that in more detail and our ventilation systems in more detail. Would that be all right, sir?

MR. EBERSOLE: I'm bothered by the Staff's language here that says the Staff concludes that installation of fire rated penetration seals in the perimeter rooms is not necessary and yet they also say that the battery rooms face not only each other but they face a common balance of plant environment. So it sounds to me like you've got something like a sieve around these --

MR. DOTSON: No, that's just not correct.

MR. EBERSOLE: Well, anyway that's a discouraging --

MR. DOTOSN: Not, that's not correct. They are in separate fire areas, they're separated electrically.

MR. EBERSOLE: Well, it's the penetrations that counts.

MR. DOTSON: And the penetrations as well.

MR. EBERSOLE: I take it you don't have fire rated seals?

MR. DOTSON: I think that we do.

MR. EBERSOLE: Then this report is wrong. Let me see here.

I'll read it to you. "On the basis of its evaluation, the Staff concludes that the installation of fire rated penetration seals in the battery room perimeter walls would not significantly increase the level of fire safety."

MR. DOTSON: Okay, that's the same issue I mentioned earlier where there was separation from other epuipment in the same train, same safety related train, not with balance of plant or other trains. That's what that statements deals with.

MR. EBERSOLE: Oh, within the same train?

MR. DOTSON: Yes, sir.

MR. EBERSOLE: Why didn't you come up in the first place?

MR. DOTSON: We lost track of the question.

MR. EBERSOLE: Well, it might be worthwhile to emphasise the independece of these critical battery rooms because if there is a point on which the plant rests, it's the adequacy of batteries. I don't think we need to pursue

this any further here. Might make a topic out of it.

MR. CONSTABLE: If you have any questions.

Insofar as inspection findings, I'll present to you the SALP results for the past few years. We are at the end of that SALP rating period now at the end of June and we will have a new SALP for the past year out on the streat probably late August or early September.

The peformance of the utility overall as you can see has been pretty good. I have to say quite candidly though that this past year with the CAT inspection effort and our own inspection effort we were somewhat disappointed in what we found.

I can say from their actions the utility was too because they have taken very prompt and aggressive corrective actions with regard to the CAT inspection findings and those of our own.

They took the lead and responded to our inspection effort even before we got our inspection report out and then after the CAT inspection report was out with was a prelimary inspection findings, they responded to that. And we are presently evaluating their response and our findings to determine what force of action is appropriate.

We are considering whether escalated enforcement action is appropriate based on these findings because the

CAT findings appeared to indicate a step backward.

I don't want to speak to the details of those findings yet since they are somewhat predecisional but I can say that the areas of concern involved the control of the design itself and the inspection activities involving individual inspectors inspecting as they go along, QC inspections.

MR. EBERSOLE: Could you refresh my memory on this grading system you've got out here.

MR. CONSTABLE: The 3 is considered the lowest rating, a 1 is considered the highest. And 2 somewhere in the middle.

Do you have any questions on the SALP results of the past two years. We expect these to change somewhat during this next period that we'll be evaluating. I can't really predict for you now how much an what direction on each of the individual basis. We have an to hold the board for that.

With regard to allegations, as you know as the construction winds down, very often there are quite a lot of allegations at a facility. There was described to you earlier about the safe team the South Texas Project has, and I think they've taken the brunt of the allegations.

We have a number of them that are open and working and just to give you an example of how many the NRC

received during the one year period, we received approximately twenty-four new allegations.

DR. SEISS: These are over and above safe team?

MR. CONSTABLE: These are over and above safe team. Sometimes we -- depending on the confidentuality of the issue and whether or not it's potentially a wrongdoing issue or something like that, we may turn back to the safe team and then inspect what they do.

DR. SEISS: Is this 19 open now? What's your total?

MR CONSTABLE: The total is not 19, it's the total number that are open right now. We have closed out quite a large number over the years.

DR. SEISS: You don't know how many?

MR. CONSTABLE: I don't know that I could give you a rough number.

DR. SEISS: Okay.

MR. EBERSOLE: The allegations I think tends to be more of a function of nature of the regional population then anything else with California being the worse.

But that's very few, is it not, in a relative context.

MR. CONSTABLE: This is the number of individuals who have come forward to us. And each of them would come for two or three perhaps allegations.

This is somewhat different then my experience perhaps of the Waterford Facility where a few people came forward with hundreds of allegations, and we do not see that here. We see individual isolated cases of people raising problems and we look into the resolutions.

MR. EBERSOLE: Is this plant in contest --

DR. SEISS: Is OL contested? It is?

MR. GOLDBERG: Yes.

DR. SEISS: What are the issues?

MR. GOLDBERG: At this point, there may not be any further issues. We did have a hearing last summer. You may recall I spoke of the Phase II OL hearing. And the issue there was how Houston Power & Lighting Compan handled the Quadrex report. We're awaiting the decision from the Licensing Board.

There may or may not be a Phase III hearing. The intervenor has not introduced any new issue. The Board my introduce some sua sponte issues.

MR. CONSTABLE: In conclusion, from a regional perspective based on our inspection effort, I can say that overall we're very impressed the the HL&P organization.

They seem to have all of the right elements. They are certainly dedicated to the task of completing the project in a quality manner and we're very impressed with that in all regards.

We do have so some concern with regard to our recent inspection findings and the CAT findings. We want to reserve judgment until our enforcement action is taken and we've had a chance to follow up.

We're very interested. We will be very interested in the completion of their corrective actions and we want to verify the effectiveness of those corrective actions.

DR. SEISS: What is your concern? I didn't hear it?

MR. CONSTABLE: With regard to the CAT team findings.

DR. SEISS: Oh, the CAT team?

MR. CONSTABLE: That's right. That's the dark cloud on the horizon that we have to see the results of before we're going to be satisfied.

And that's all I have unless you have any further questions.

DR. SEISS: I have a question to the Applicant. Since we just heard about the NRC's inspection efforts, I wondered if you had time to count the QA people.

MR. GOLDBERG: With respect to that question, the total number of QA personnel on the project which compares against the total number you saw yesterday of 10,100 something is 539 and of that 539, 370 are QC inspection

personnel.

DR. SEISS: Thank you very much.

DR. MARK: You have used the expression "enforcement action" or something a couple of times. Of what is that likly to consist? You're going to look at responses to the CAT inspection findings.

MR. CONSTABLE: The CAT team identifies potential enforcement actions which is basically a listing of their findings.

We evaluate those and put them into the format of violations and determine what severity level those violations are.

In part, we're trying to determine are these isloated or are they representative of an overall problem and that's the process that's going on right now.

I mentioned that it could lead to escalated enforcement action but that's another way of saying there is possiblity of civil penalty being involved, but again I don't want to preclude management judgment on the matter. It's something that has to be decided yet whether that's the appropriate enforcement action.

DR. MARK: I guess this is a sort of philosophical question that needn't be discussed in the context of the particular instance, whether the exercise of civil penalties should not be deferred until the plant's

actually completed.

You can say we won't give you a license until you do it. That's the civil penalty that might be most appropriate.

MR. CONSTABLE: It's probably the most effective, that's true, but we follow our group policies.

DR. MARK: But as I say, that deserves to be discussed in a broad ssense and not in a particular case.

Does that complete the NRC Staff's presentation?

MR. NOONAN: Yes, sir that completes the NRC presentation.

DR. MARK: In that case, we'll take 15 minutes and resume with some presentations from the Applicant.

(Recess.)

DR. MARK: The meeting will continue.

I believe we'll now hear from Mr. Dewease of HL&P.

MR. DEWEASE: Yes, sir. Thank, sir.

Gentlemen, I'm Jerrold Dewease, Vice President of Nuclear Operations. I would like to welcome you to the readiness for operations portion of the presentation today.

Before I begin, I will describe my background. I have a Bachelor of Science degree in electrical engineering and 26 years of power plant experience of which 18 are nuclear.

Prior to joining HL&P in 1981, I was director of operations for TVA's nuclear program, and previous to that was plant manager of the Browns Ferry Nuclear Plant.

I am HL&P's executive representative to NUMARC, a member of the Nuclear Power Division Committee in EPRI, and have been the industry advisor to INPO's plant evaluation teams for five plants.

In my presentation this morning I will describe the organization that is planned to be in place for Unit 1 and then Unit 2.

First, I would like to re-emphasize Mr. Goldberg's management philosophy as it pertains to the operations.

The mission statement that we have selected has established for operations is as follows:

Manage power generation and outages of the South Texas Project to achieve high reliabilty and efficiency consistent with good practice and prudent judgement, and in compliance with of course regulatory requirements.

This management shall include actions to: Ensure the general health and safety of the public and employees, and the protection of the property and the environment; to document and implement a quality assurance program which demonstrates compliance with regulatory requirements and also management direction, and requires

each employee to perform work right the first time.

Of course, we're going to plan for, develop and retain qualified personnel.

We're going to determine root causes of our problems and take the necessary steps to preclude recurrences.

Of course we're going to utilize, where appropriate, industry experience.

And last but not least, we're going to report in a timely and complete manner all matters necessary to satisfy the requirements of the Nuclear Regulatory Commission.

My presentation will address only the operations phase, organization and its activities. Please recall, Mr. Goldberg discussed the project organization yesterday.

The planning for the organization has been based on our experience, guidelines from NRC, INPO and NUMARC and recommendations from outside consultants.

We continue to evaluate the organization in this manner to ensure its completeness and effectiveness as we move towards commercial operations.

It is anticipated that the organization will remain essentially the same for one unit and then two unit operation.

The reporting relationship shown on the slide

will continue for the operating phase; that is, Mr. Goldberg will report directly to Mr. Jordan, the CEO for HL&P.

The nuclear group for operations will be organized as shown. I want to just say, amplify that a little bit. When I say "operations," we're talking about the operations phase and not just pure operations, in other words, that this is a total nuclear group under Mr. Goldberg.

The nuclear group for operatons will be organized as shown. Please note that it will consist of: Plant operations; licensing; nuclear assurance; engineering and construction; a special assignments group; of course, a Nuclear Safety Review Board, NSRB; and of course corporate services as needed.

As seen on this slide, the nuclear operations organization reports to me and consists of three major departments; the nuclear training, nuclear plant operations department and nuclear security department.

Mr. Kinsey the plant manager, Mr. Cody the training manager will provide details in their programs and organizations later on in the presentaton.

I will briefly discuss the security organization.

The department consists of two major functions:

Physical protection services and the safeguards services. Physical protection services provides supervision of the site security force and also training for the nuclear security department.

The safeguards services is responsible for preparation and maintenance of the security plans, maintenance of safeguard materials, the access authorization program, and drug and alcohol screening process.

Mr. Andrew Hill is the nuclear security Manager, and has 15 years experience in the area of security of which the last six has been in the nuclear security area.

The department will have a staff of approximately 36 persons for two unit operations; expected to have approximately a 120 person force security guards on site when we have two unit operations. Those will be at this time a contract organization.

The next department is Nuclear Licensing which is headed by Mr. Mark Wisenburg. Mr. Wisenburg is an experienced licensing manager with over 23 years in nuclear, of which 11 have been in nuclear licensing area.

Mr. Wisenburg is responsible for interface with the NRC and the State of Texas. He is also responsible, as Mr. Goldberg said yesterday, for the license commitment tracking system, the operational experience review program,

and the typical licensing functions discussed by Mr. Goldberg yesterday.

The Nuclear Licensing organization will consist of approximately ten persons for one unit operation and approximately twenty people for a two unit operation.

The Nuclear Assurance Department is managed by Mr. Geiger, as you heard from yesterday, who reports directly to Mr. Goldberg.

Mr. Geiger's organization consists of three major functions: The operations quality assurance part, the safe team part that you heard about yesterday, and also another area of function called the independent safety engineering group, or the ISEG.

Nuclear assurance will consist of approximately 60 persons for one unit operation and approximately 80 for two unit operation.

Mr. Geiger will provide you additional details of this operation -- his organization and operation later on in the presentation.

The nuclear engineering and construction organization is and will continue to be a composite of project and engineering functions. However, it is anticipated that its orgainization will be firmly established by Unit 1 initial fuel load.

The organization will consist of four major

departments: Administration, Engineering & Construction Management, Records Management/Document Control and Nuclear Engineering.

We anticipate that the nuclear engineering and construction organization will be headed by a Vice President. Currently that position is vacant.

The Administration Department is responsible for the administrative activities of the nuclear engineering and construction organization and will consist of approximately 36 persons for two unit operation.

The Engineering & Construction Management Department will consist of an engineering design group, a site operations support group and a construction management group.

The engineering design group will be responsible for the design of the plant. It will consist of approximately 50 persons to support a one unit and approximately 100 people to support a two unit operation, and currently is planned to be located in Houston.

The site operations support group is responsible for providing direct engineering support to the nuclear operations group and other functions such as as-built drawings and in-service inspection. The group will consist of approximately 30 persons and will be located onsite.

The construction management group is responsible

for the installation of modifications to the plant. I just want to add a little bit here that they will be under the direction, overall direction of the management organization, this is the people that actually do the direct supervision of the modifications to the plant. It will consist of approximately 16 people for a two unit operation.

The Records Management/Document Control Department provides day-to-day support for engineering and construction management in such areas as record retention and processing, and library support. It is estimated approximately 44 people will be needed for that function for the two unit operation.

Mr. Goldberg discussed the Nuclear Engineering Department yesterday and will remain essentially the same by doing the operations phase as you know it today. Approximately 13 people will be assigned to the nuclear fuel function of that group and approximately 35 people for the analysis function of that group.

This slide depicts the qualifications or some of the qualifications of the project personnel who will eventually become the nuclear engineering and construction Organization. There are 105 persons with a total of 985 years of nuclear experience; 102 have bachelors degrees, 42 have master's degrees and one has a Ph.D.

This function called special assignments, Mr. Goldberg discussed yesterday, and it will continue during operations phase very much as it is today.

The next group is the nuclear group function the Nuclear Safety Review Board, the NSRB. The Safety Review Board will be functional in early 1987, about five months before fuel up and it will consist of a full time director and a membership composed of senior nuclear management and/or consultants, as necessary, to meet the expertise and independence requirements identified in the FSAR. Of course, Mr. Goldberg can add whoever he likes to to provide additional expertise and independence as he sees fit.

Finally, the overall support provided by other corporate organizations is shown as a single entity on the organization chart under corporate support and services.

Basically those organizations that support us outside of nuclear but dedicated to nuclear are: Purchasing, stores, accounting, and human resources.

It is anticipated that approximately 80 persons from these corporate services will be dedicated to nuclear.

Staffing for operations phase activities continues essentially on schedule. This slide illustrates the planned staffing for Unit 1 and then also goes on to Unit 2.

After Unit 1 is operational, personnel to

support the operation and maintenance of the plant will come primarily from three sources: Project personnel re-assigned after completion of their project duties, trainees recruited from the local area, and craft personnel from the construction area.

The planned staffing level projected for Unit 1 is about 950 persons, and of course this is included as you can see, the corporate support and as if STP was set aside and you have an accounting of those persons that will support, will be about 950, and about 1400 for Units 1 and 2.

Notice, as Mr. Goldberg said earlier, most of the resources required to operate the nuclear program is located in the Nuclear Group, the top shaded area is the only outside support we have from the corporation.

We have planned for an organization that can successfully operate the South Texas Project. To ensure a smooth transition from today's environment to a two unit operating environment, we have established a plan that describes the functions, staffing and organizations that needs to be in place each year from 1986 through 1989. We want to carry it out until we've got both units commercial.

Further, we have compared our programs and staffing against other similar plants and industry guidelines such as those that NUMARC and INPO have provided

for us.

We also looked at ourself internally with the experience we had when we used outside consultants. All of those things ensure that we have in place or have planned for those factors that will result in a successful operating plant.

Again I want to reiterate the fact that the manager philosophy stated by Mr. Goldberg and later by myself, are the foundational elements of which we are establishing and planning our programs and organizations.

I think you will hear evidence of this in the ensuing presentation.

This concludes my part. Are there any questions? Yes, sir?

MR. EBERSOLE: Let me just ask one question. To pick a particular point in the organizational structure, I to have you say something about the man or men that have a parental interest in your diesel engines.

MR. DEWEASE: In the what, sir?

MR. EBERSOLE: Your diesel generators, your diesel generators.

MR. DEWEASE: Oh, deisel generators?

MR. EBERSOLE: Yes. I want to find out --

MR. DEWEASE: You mean from a maintenance and testing standpoint?

MR. EBERSOLE: I want to find out if you in fact have real experts in these diesel engines who maybe you even send to Japan where they never have diesel failures and learn the essence of exellence in diesel engine operability. Because you're out here in tornado country and you may need those diesels more than many plants. And they ought not to ever fail.

At least the Japanese tell us they don't have any record on a statistical basis of failures to start and run. They just don't have any numbers.

I'd invite that to be a challenge to you, you know, offered to your parental interest-type maintenance people. You've given them the very best.

MR. DEWEASE: Yes, sir. If you will, Mr. Kinsey is going to talk details about the nuclear plant operations and I think you will see that he can add to it. But he has a very good discription of a maintenance program which I think the diesel maintenance program and test program is only part of the overall program that has to be in place to ensure the excellence of operations.

You know as well as -- you and I both know and I think many people in this room know that maintenance has been overlooked in the past years generically. And we've made a tripled effort to bring the maintenance organization and the programs up to the level that will provide the

excellence or assurance and authorization that you speak of.

MR. EBERSOLE: Well, I think we know how to get the plant shut down.

MR. DEWEASE: I hope so.

MR. EBERSOLE: Now the problem is, do we know how the keep the after heat coming out of them and being pumped away and at the bottom of that is the fuel plant.

MR. DEWEASE: Yes, sir.

MR. EBERSOLE: Well --

MR. DEWEASE: Below that's the batteries.

MR. EBERSOLE: So I picked the diesels in particular to talk about operating and maintenance and not just generally mixing it with the other maintenance but saying it's probably one of the most critical parts.

MR. DEWEASE: Yes, I agree with that. And Mr. Kinsey will address that in his presentation concerning that specific area.

But I just want to reiterate and emphasize again that we haven't taken any maintenance lightly as we have not in any part of the organization. But maintenance seems like it's always been in the past the lower priority.

We have put it up to the priority with the rest of it and we feel very strongly because the training program we have is comfortable with all our people and also

for the maintenance organization that we will have indeed a good operating plant as well ability to shut it down in the proper fashion. Is there any other questions, sir?

MR. EBERSOLE: No, question.

DR. MARK: Thank you.

MR. DEWEASE: Mr. Geiger will now present the operations quality assurance portion of the presentation.

MR. GEIGER: Good morning, gentlemen.

My purpose this morning is to review with you the activities of the Nuclear Assurance Department during the operations stage at South Texas.

First, I'm going to discuss the operations QA organization. Then I'm going to complete the description of the nuclear assurance organization so that you'll have a full picture of our activities during the operations phase.

The reporting arrangement that's been described to you several times is also depicted again here. That is, I report directly to Mr. Goldberg, who -- and turn the operations QA manager reports to me.

The operations QA Division is divided into two major parts, quality engineering and quality control or inspection.

The quality engineering group has the responsibility for all those activities associated with procedures. They are accountable for executing our audit

and surveillance program during the operations phase; as well as assisting in trend analysis activities.

I'd point out that included in the operations audit program will be a number of the reviess that are currently being conducted by engineering staff.

MR. EBERSOLE: May I ask you, does this system include what I'd call detailed individual accountability with signatures and individuals that can be held to the fire if things go wrong?

MR. GEIGER: Yes, sir, they certainly do.

MR. EBERSOLE: Is there no ambiguity as I am more often than not used to in this system. You get down to the individual, I guess eventually?

MR. GEIGER: Let me make sure I understand the question.

MR. EBERSOLE: I want to see an accountability system which goes to the individual who did the good job or the bad job.

MR. GEIGER: Yes, sir, we have that.

MR. EBERSOLE: You have that?

MR. GEIGER: Not only within our own organization, but as I'm sure you will here from Mr. Kinsey, within his.

The quality conrol or inspection group is responsible for performing all those various inspections

that are required, including, for example, those defined by any"hold" or "witness" points.

The interface and coordination line that's depicted here between the operations QA manager and the plant manager is the same line I discussed yesterday during the discussion of the construction quality organization and that is that it's that line that represents a clear channel of communication between those two individuals to assure consistent interpretation and implementatin of our quality philosophy.

The operations QA division is dedicated to performing those day-to-day activities which are directly related to the day-to-day operation of the plant. The technical services division performs those other necessary and important tasks to implement a comprehensive QA program, but which are not in the general scheme of things in the nature of day-to-day direct support.

The activites that tech services performs include planning for major modifications and outages, performing the quality engineering and inspection work for those major mods and outages, performing design office and procurement quality assurance as necessary and appropriate as well as our vendor control activities such as vendor evaluation and source inspection.

I'd like to stress that the group that's

reporting directly to the operations QA manager is fully staffed now and they've had the opportunity, that is certainly the bulk of them, to participate in the startup and the pre-operational testing programs at South Texas.

They have had the benefit then of obtaining familiarity with the physical layout of the plant as well as detailed knowledge of the procedures that are and which will be in place during operations.

This slide is a recap of the experience levels and education of that operations QA staff. The operations QA manager has over twenty years of experience in nuclear quality assurance including ten years in operations.

In addition, he's a professional engineer in the quality engineering discipline. He has 32 professionals on his staff, that have a total in excess of 100 years of operations experience.

That 100 years represents both military as well as some commercial experience. Sixteen, or one half of the thirty-two, have been either been military or commercial reactor operators.

The six supervisors have in excess of five years operations experience each. Four of them are degreed in either a technical discipline or engineering; and four of the six were military plant operators.

This staff, in my judgment, represents a solid

core of experienced people, the kind or caliber of people we need to be successful during operations.

These next slides are going to complete the description of the Nuclear Assurance Department during the operations phase.

I have discussed the operations QA division and the technical services or the duties performed by technical sevices. And as you remember from yesterday, I'm sure, described our safe team program.

Finally, we will be adding in early '87 the independent safety engineering group. That group is going to be staffed by five senior operators, by five senior level engineers with operations experience. Their responsibilities will include providing continuing systematic and independent assessments of plant activities, including maintenance and modifications.

Additionally, that group will perform observations of plant operations and maintenance activities to provide some additional verification that such activities are conducted properly.

The way in which I would choose to characterize the ISEG, is that I look to them to provide some additional insight which may lead to improvements in methods or techniques that are being employed during the operations phase.

DR. SEISS: Let me ask a question. Will it also be the function of this group to look and analyze systems for say possible system interactions or precursors to instances --

MR. GEIGER: It will be one of their functions. I don't want to mislead you and say that that's going to be number one on their menu, however.

DR. SEISS: That is a charge to this group.

MR. GEIGER: Yes, sir.

MR. EBERSOLE: I'm certain there will be some questions from the full committee about this topic because we've been working on it for the last month or so, the system interaction aspects which we found to be rather weakly represented by the utilitiy evaluated groups.

We'd be interested in the full commmittee to hear your approach to system interactive considerations which are not normally part of the channelized or dedicated or compartmentalized engineering evaluation process including the PRA's.

MR. GEIGER: That's correct.

MR. EBERSOLE: So we would like to hear how you are going to overcome the standing deficiencies in our --

MR. GEIGER: We'd be glad to address those for you at the full committee.

MR. EBERSOLE: Great.

DR. MARK: Let me ask you one other question. Is it the -- maybe this another group or this group is charged with analyzing the events reports and what have you to see how it affects this plant?

MR. GEIGER: The primary responsibility for that is a different group, that's licensing. But certainly on a selective basis, I think we participate, yes.

MR. EBERSOLE: How are you interfaced with INPO, as yet? Not much.

MR. GEIGER: I think the fairly normal channels. We're a member -- they changed the name of that thing a couple of times. It used to be The Notepad, now --

MR. EBERSOLE: Is that --

MR. GEIGER: We receive correspondence consistently from them.

MR. EBERSOLE: Okay. Thank you.

MR. GEIGER: Gentlemen, before I leave the podium, I'd like to take the opportunity, if I might, to ask the Chairman -- oh, I'm sorry, I have a summary.

As I said, the operations QA staff is full and in place; technical services is in the nature of support to that organization in order to implement or assure we implement a comprehensive QA program.

The safe team is certainly in place. The plans for our independent safety evaluation group have been

formulated and are currently scheduled.

An that concludes the discussion of nuclear assurance.

I'd like to ask the Chairman, if I might have about five minutes of the subcommittee's time to briefly discuss the methods we've used in arriving at the number of QC inspectors that will are on the project

DR. MARK: Before you -- yes, prepare to do that.

MR. GEIGER: Thank you.

DR. MARK: Have you had occassion, without naming any names, to separate some vendor, subcontractor, supplier and say his stuff, his work isn't good enough, we want a better one?

MR. GEIGER: Yes, sir.

DR. MARK: Please go ahead with your remark.

MR. GEIGER: Thank you.

The number of QC inspectors, 370 -- I wanted to briefly explain at least the thinking process that we used in arriving at that number. And I think in general I'd characterize the analysis that went into it in two parts.

First we wanted to address the issue of quantity at the other was the issue of quality.

In terms of the first issue, quantity, how many, We looked at it a couple of different ways, and I'm talking

now of efforts that essentially began early '81 or '82 which of course has been updated as we've gone along.

We looked at other projects and we talked among our members of the our staff who were from other projects as well and talked in terms of ratios, how many to the craftsmen.

We pretty much determined that that was kind of interesting but not necessarily decisive.

The second approach which we think was much more effective was to look at it by discipline. It struck us and I believe experience at other places as well, led us to the conclusion that there was more inspection support, if you will, required some disciplines than others, because there is simply more inspections to be accomplished. We looked at that.

Finally, we looked at the necessity for inspection timeliness. We did not want, under any conditions, to have our inspection force accummulate a significant backlog of completed construction work in any discipline that had not yet been inspected.

We don't want to be forced and we're not going to be in the process of having to conduct a significant number of inspections at the end of the job. We want to stay current, in other words.

All of those factors were used. I think, the

emphasis was placed on the last two and that's how we got the number, and it hasn't changed.

The second issue, which we had to address I think clearly is quality of the inspection. Assuming you had the right number and the right discipline doing the right stuff, you had to figure out a way to assess whether what they were doing was correct. And we've done two things.

One of the pitfalls of other projects have fallen into and in fact was a problem here in the '70's, was qualification and certification of inspectors.

We have thoroughly reviewed the qualifications and certifications of everyone who's in an inspection position on this job before they go to work and we feel really confident that these people are qualified and certified.

Secondly, we talked briefly -- or I talked briefly yesterday about inspection effectiveness. I don't claim that's a panacea, but it is a way by reinspecting work to assess the effectiveness of that front line effort. On the whole, we found that front line effort is being done properly.

MR. EBERSOLE: I have heard, and I guess I believe part of it, that qualification and certification of craft people sometimes is simply bought from the union

system.

MR. GEIGER: I have heard the same thing.

MR. EBERSOLE: And I wonder how you cope with that and what your views are on it, because it certainly -- it leaves a smell about the quality program if it's true.

Do you have your own system and investigative -- of competence?

MR. GEIGER: Not that I'm aware of, sir.

Let me make this point certainly. In some disciplines and perhaps the easiest one to point out would be welding, we at the project test and qualify each of the welders before they're allowed to go to work. So if someone came to the project with bogus certification --

MR. EBERSOLE: But beyond the craft steward or whoever it is that certifies that, you have an overview of what the quality of the work is, by proffesionals I guess?

MR. GEIGER: I'm not sure I heard your question.

MR. EBERSOLE: I say, you know, in reviewing the adequacy of work and the quality level of it, you go beyond the steward level level and to proffesional evaluators, the workd "quality" I presume. Your QA program doesn't stop at the union level.

MR. GEIGER: No, sir, it does not. We have, as we discussed yesterday, we have spent, our own staff as well as independent contractors, spent a lot of time

reviewing the technical adequacy of the design, for example.

MR. EBERSOLE: All right. Thank you.

MR. GEIGER: Thank very much.

MR. WISENBURG: Mr. Geiger, I do recall a question yesterday relative to safe team concerns and I think you may be in a possession to provide the answer to that question.

MR. GEIGER: I wish I was. My staff is still trying to find those numbers. Hopefully I will have them by noon.

MR. WISENBURG: Thank you, sir

DR. MARK: Thank you, Mr. Geiger.

Mr. Cody, I believe.

MR. CODY: Good morning. My name is Dennis Cody and I am manager of the Nuclear Training Department.

Today, I would like to discuss four areas of our nuclear training effort: The organization, including qualifications of key staff members; the nuclear training facility; the full-scope STP simulator; and an overview of our training programs.

I will start my presentation with an overview of the Nuclear Training Department organization.

Nuclear group training activities were centralized under the department in December 1983, with a

charter to develop and implement required training for the nuclear group.

It is headquarted in the nuclear training facility located on the STP site, approximately one half mile from the plant.

The department reports to the vice president nuclear operaticns and is composed of two divisions and a staff group. Department strength is 44 people including instructors, administrative, and simulator support personnel.

The operations training division is responsible for the development and implementation of the licensed and nonlicensed operator training programs; the shift technical advisor, the operator requalification and all simulator training programs.

The division is also responsible for the maintenance and modification of the full-scope STP simulator.

The staff training division is responsible for the development and implementation of the general, technician and engineering training programs.

The program design and evaluation section is a staff group of doctoral and masters level professionals responsible for the design, evaluation and academic soundness of the NTD training programs.

The section is responsible for the INPO accreditation effort, coordination of site-delivered corporate HRD programs, as well as the development and implementation of the instructor certification program.

The section also provides programmatic direction for the NTF library, the examination bank, and administrative support activities.

Prior to summarizing the qualifications of my staff, I will provide you with a quick sketch of my background.

I have a total of 18 years of nuclear power plant experience. For four years prior to joining HL&P in 1982, I was manager of nuclear training for a nuclear training engineering consulting firm.

Before joining the consulting firm, I was training coordinator for a period of five years at a mid-west nuclear power plant which was under construction. I certified as a senior reactor operator while at that facility.

Although I served in the Navy, I attended the Army nuclear power program. I have served as a shift supervisor on the MH-1A, an Army floating nuclear power plant that provided electric service to the Pan Canal System in Panama and as a shift supervisor on the PM-3A, a Navy nuclear power plant that provided electric power to

McMurdo Station in Antarctica. I wintered over on Operation Deep Freeze in 1972.

The key to the success of our organization is the quality of our personnel and, as I indicated, I would like to briefly summarize the qualifications of my key staff.

Mr. Jerry R. Walker is manager of the operations training division. He has over sixteen years of nuclear experience of which twelve years has been at operating commercial nuclear power plants. He is a previously licensed senior rector operator.

He has a bachelor of science degree in industrial technology and engineering from Florida International University in Miami, Florida.

Mr. Bruce A. Franta is manager of the staff training division. He, too, has over sixteen years of nuclear experience of which six years has been at a commercial operating nuclear power plant where he was general training supervisor.

He has an associate degree in business from the State University of New York and will receive his BS in business from that same institution in the fall of this year.

The program design and evaluation section is headed by Dr. Douglas A. Tomas. Dr. Tomas is a Ph.D. in curriculum and instruction from the University of Texas.

He has over fifteen yers of experience in the fields of education and training, five of which are directly applicable to the electric utility industry.

Dr. Tomas serves as a peer evaluator for the INPO accreditation effort and has been involved in the accreditation of nuclear training programs for four operating nuclear power plants.

He has also served as a faculty member at the University of Houston where he conducted graduate and undergraduate instruction in curriculum design and evaluation, and competency-based training.

NTD leadership possesses significant academic and utility experience in the design, implementation, and evaluation of training programs necessary to support an operating nuclear power plant.

DR. MARK: Within this department, are you responsible or is the department responsible for selecting personnel, that is you have a need for some maintenance men or --

MR. CODY: No, sir, we are not. The selection of personnel is through the nuclear operations department, headed by Mr. Kinsey, the plant manager.

DR. MARK: Now, for various jobs, you have various things laid down; he should have gotten out of high school in less than half a dozen years, and things like

that, or else he needs to have an engineering qualification or degree. And so these people are interviewed by the operations department and apart from the paper backing up his claims that he's got a high school degree or whatever else, they're interviewed, and in what way do you decide if this is a good man to hire or not, or in what way do they decide.

MR. CODY: If you don't mind, I'd like to pass that question to Mr. Kinsey.

DR. MARK: Oh, well, if it's going to come up later, that's perfectly fine.

MR. CODY: I don't think that's a part of your presentation.

DR. MARK: I don't want much on it.

MR. KINSEY: My name is Warren Kinsey, I'm plant manager for the South Texas Project. Very directly, all of the craft people, technician level people, are all pretested before they come into our program.

For example, the HP technicians have to pass an examination in order to be hired, and each one of them -- those examinations are to test their skills as well as their knowledge level. In addition to that, they're all interviewed by at least two people and I personally approve the hiring after reviewing the credentials of each individual that's hired in the Operations Department.

DR. MARK: These testings you referred to are things devised by you?

MR. KINSEY: They are devised by us and they are in some areas, for example, equivalent to the EPRI approved test. For example -- and there's also another testing series that we use to test those people. We also give them phychological tests which test their natural ability skills.

DR. MARK: You want -- oh, wait a minute, you just used the word I was looking for, maybe. Do you have anything you would classify as aptitude testing?

MR. KINSEY: Yes, sir, we do. Those tests we do give are -- in addition to the phychological tests are aptitude tests to the crafts people and while the people are working for us, after they've been brought on board, we also monitor their performance and give them a yearly performance evaluation as well as on an individual basis.

DR. MARK: What fraction of the people who present themselves are let's say screened out by this process?

MR. KINSEY: We are seeing about 75 percent of them are being screened out; 75 percent are screened out or in other words 25 percent make it through the process in the area -- and I'm speaking strictly now in the area of technical and crafts.

DR. MARK: Well, that's a very complete answer to my question. Thank you.

MR. EBERSOLE: Well, let me ask a follow up there. You addressed that to craft and technical personnel. What about operating personnel?

MR. KINSEY: The operating personnel, the operators are also tested using the EPRI "pos" test.

MR. EBERSOLE: Thank you.

MR. CODY: Thank you, Mr. Kinsey.

To continue, the training department, as a whole, has many professionals with academic degrees. There are seven persons with Associate degrees, ten persons who have earned Bachelor degrees, five with Masters degrees and two individuals who have obtained their Ph.D's.

Although academic qualifications are important, so is nuclear experience. NTD personnel have over 115 years of commercial nuclear power plant experience; 174 years of military nuclear experience, and 214 years of other nuclear related experience.

Further, the department has thirteen instructors who are NRC instructor certified or who have been previously licensed on commercial nuclear power plants. Eleven of the instructors are alsoo scheduled to take the NRC licensing exams in July and November of 1986. These eleven licensed instructors will be available to support

plant operations, if necessary.

In summary, the academic and experience background of Nuclear Training Department personnel is both significant and sound.

MR. EBERSOLE: Let me ask you a little question about military nuclear, going back to Admiral Rickover. I think if he had his way, he would disautomate everything in a plant and have a man, a live man, standing at a helm. And that philosophy must have been pervasive in all the people that you inherited from the military. They don't like automatics, the don't like complications, they like to do things by hand. Am I wrong in that belief that, that's so and do you have any counter agent thinking to that effect?

MR. CODY: I think the personnel that we have obtained from the Navy nuclear program have all been very dynamic people.

MR. EBERSOLE: Yes, they have to things by hand.

MR. CODY: That's correct. They think about their particular task, they execute that task in most cases in accordance with the procedures.

MR. EBERSOLE: Yes. Discipline.

MR. CODY: Excuse me?

MR. EBERSOLE: Discipline.

MR. CODY: Discipline yes, sir.

MR. EBERSOLE: But do they take and dim view about all the automation and complications at your plants at large.

MR. CODY: From a personal standpoint, I don't see that. I do see that there has been a large number of procedures since -- that they're probably not used to from years ago. We have seen a proliferation of new procedures that we train to. There has been very little resistance to those increased procedures. I think in most cases they have seen the value of the procedures and value of the quality in those particular procedures. Also --

MR. EBERSOLE: What sort of general comment can you make about the relative complications of the running of a submarine and the running of a station in the operating context?

MR. CODY: I'd have a difficult time with submarines. I was a shore based sailor. You know, I think there is a large difference between operation of a submarine and operation of a large commercial nuclear plant.

There are some things that we in fact do take as baseline knowledge that ex-Navy people bring to a program. They bring a very dynamic personality; they bring a very solid knowledge of theoretical concepts; they bring a very dextrous kinds of hand controls that he we use in a

procedure plants. There are easy to teach. They want to learn and they in fact are very quick to learn.

So based on what they bring to the program, they fit in to our program and they're very active learners.

MR. EBERSOLE: Thank you.

MR. CODY: HL&P has made a significant and major commitment to job specific, performance-based training. This commitment is reflected not only in the staff which has been assembled, but also in the nuclear training facility, the plant-specific simulator, and the training programs themselves.

You visited the training facility during your tour of the plant site yesterday, so I will only briefly review the important features of the building during my presentation today.

It was completed in mid-1985. It is approximately 40,000 square feet and is located about half mile from the plant proper. The building houses a full-scope, plant specific simulator, classrooms and laboratories, as well as a lunchroom, staff offices and necessary storage areas and reproduction equipment.

The ten classrooms are equipped to accommodate up to 120 full-time students at any given time. Each classroom provides students an environment conducive to learning and contains the latest in audio-visual equipment.

As you saw from your tour, the facility houses four fully functional training laboratories: A chemistrty and counting lab that contains plant testing and analysis equipment which is identical to that used by the technicians in the plant; an instrumentation and control laboratory that contains equipment that is used to train both apprentices and journeymen on the specifics of the complicated instrumentation systems; an electrical laboratory which is used to train electrical apprentices on the principles and processes of electricity; and finally, a mechanical lab that is currently in the development stage, but is still being used very effectively to train mechanical apprentices.

The STP control room simulator is also housed in the training facility.

The simulator is by far the most sophisticated laboratory and training tool in our array of training equipment.

It is a plant specific simulator that replicates the 1250 megawatt Westhinghouse four loop PWR. The simulator was delivered to HL&P in January of 1985.

An extenseve modification project was begun in February of that year as a result of control room design review recommendations and to bring the simulator hardware and software to a status more reflective of the actual

plant, which had undergone significant changes since the freeze of the original simulator design database in October of 1981.

This modification project was completed in December of 1985 and the simulator was delcared ready for training in that same month.

A phase two modification project was started in January 1986 to incorporate the emergency response facility data acquisition display system, plant computer system and qualifified display processing system simulation capabilities into the machine. The phase two effort should be completed in December 1f 1986.

A phase three modification project is already planned for 1987 to incorporate changes that are now occuring in the actual plant's design.

MR. EBERSOLE: May I ask you, with your QDPS system, I was almost convincing myself you didn't need this controversial thing called an SPDS. But you say no, you want it. So how are you going to go about getting the right thing that you want? Do you have an organized approach to getting SPDS now? Are you going to design it yourself; are you going to have it contracted? How are you going to get it?

MR. CODY: The simulation capability?

MR. EBERSOLE: No, no, no, the safety paramater

display system; what's the status of that and what's your views of what it will show and what it will look like?

MR. CODY: I'd like to ask that question to --

MR. BALCOM: Excuse me, Dick Balcom, ops manager for South Texas.

MR. EBERSOLE: I think it's part of the, you know, it's certainly tightly related to the simulator.

MR. BALCOM: The SPDS system is included in the emergency response facility data acquisition system, which has been designed and is presently being installed in the plant.

MR. EBERSOLE: Oh, it is.

MR. BALCOM: Yes, sir.

MR. EBERSOLE: And it is a product of your own design effort; is that right? Who built it; who designed it?

MR. BALCOM: The system was procured from Energy Incorporated but all of the actual display development and listing of equipment is a product of the control room design review effort which is a combination of engineering and operations.

MR. EBERSOLE: Now, it's recognized it's not a 1-E system.

MR. BALCOM: That's correct.

MR. EBERSOLE: So when you look at it and it

looks funny, what do you do to back up your conclusion of what it says?

MR. BALCOM: The system is not 1-E, however the 1-E variables are contained in the qualified display processing system, QDPS.

MR. EBERSOLE: Yes.

MR. BALCOM: The system has built-in, self-checking features. It tells you questionable data. It indicates that by a question mark after the paramater and includes a "B" after the parameter to say this is bad, do not use it.

MR. EBERSOLE: It has some internal intelligence that says it's not reasonable?

MR. BALCOM: That's correct, it has its own self-checking features built into it to tell you if the data is questionable or bad.

MR. EBERSOLE: Well, you know, in an emergency, which is the only time it's supposed to be used, but it will used for contingency all the time, that's the most likely time it's going to go out of whack, because it's not safety grade, independent and all those good things. Will this system of qualifying response of SPDS in your view be adequately backed up the qualified information systems?

MR. BALCOM: In my opinion, it is very adequate. The self-checking feature allows the operator to say, "I

shouln't rely on this parameter, I should go to QDPS or my control board indications." The procedures are designed to provide backup indications for them.

MR. EBERSOLE: Thank you.

MR. CODY: I would like to take this opportunity right at this point to attempt to address a question Mr. Ebersole asked yesterday during the tour of the simulator. And let's make sure I get the right question. You asked how far the simulator acutally simulates an event, how far it takes that particular event. I'd like to try to address, that if I could.

MR. EBERSOLE: Okay.

MR. CODY: The simulator of course is designed to ANSI 3.5 standards. Therefore, by design, the machine will simulate an ANSI 3.5 identified event from the initiation of the event to safe shutdown of the plant or to cold shutdown of the plant. There are some 75 required simulations by ANSI 3.5. We have over 200 more simulations, malfunctions, in the machine.

We have, in the course of performance testing of the simulator, verified that design of those 75 malfunctions. However other events that take a long time to evolve, that is from initiation of the event, to their end point, have not been verified at this time simply because of the time involved in doing that.

In these cases, the operator is required by procedure to take action at a given point in the event such as when an indication reaches a particular value or an annunciator sounds. Thus the event is terminated by operator action before it can proceed to its conclusion.

MR. EBERSOLE: Well, let me take the case of a let's say service system failure, like component cooling or service water. What I had in mind was, this was not the classical event when you just shift to system B, which was the old notion that system B was always going to be there.

In the Browns Ferry fire, the operators were confounded by the fact that system B wasn't there and the complained that was not in the scope of their training, which they were right.

However, now it would be in the scope of your training to take some action, if component cooling simply disappeared or service water. And I think what I'm asking is do you have a knowledge of the sequence of events that occur after a hypothetical component cooling or service water failure, in order to know in advance what's going to go first, what failure is irreversible and you've got to take other action, what's reversible and you can recover, like the diesels haven't burned up yet?

Do you have a degrading procession of events in your simulator which will faithfully show how bad you're

getting and which way to go from one point in time?

By the way, this goes back 25, 30 years to a gas-cooler reactor, where we knew on a chronological basis what was going to go first, what was irreversible because it had ruined itself, what you could start up again. And I think it's critically necessary to know the process of degradation and whether you can come back again.

MR. BALCOM: Dick Balcom, again, reactor operations manager. I think I may be able to answer your question without going into specific details of an incident.

During the training process on the EOP's, the EOP's are designed to handle contingencies whereby the plant does not perform as designed. And as an example, one of the training scenarios I requested that they run was a small break LOCA and I asked them to disable all the high head SI pumps. That gave us a change to step through the EOP's.

The simulator performed very well during that scenario. We were able to follow it all the way to the conclusion of getting the plant cooled down to the point where the accumulators would inject, we could get on low head SI, to proove out our procedures. And it did do that.

MR. EBERSOLE: In that simulation, you operated the PORV's, didn't you, or did you let them operate

themselves?

MR. BALCOM: In that particular case, the procedures do not lead you to the PORV's to operate. The guidelines lead you to operate the steam generator PORV's, if that's what you meant. And that's correct, we cooled down on the PORV's. That's the secondary choice. Also if the condensor is available and the MISV's were open, you could cool down via the steam --

MR. EBERSOLE: Wasn't that a fairly slow process since the pressurizer is an outboard pressure vessel, it doesn't cool down with the main stream. Didn't that take quite a while to get any depressurization? Do you recall

MR. BALCOM: I think we lasted on that scenario for approximately about an hour and fifteen minutes, was what we actually ran through for that process.

MR. EBERSOLE: Thank you.

MR. CODY: Thank you, Dick.

Thre is a bottom line to where I was going. Over the course of time, we will verify that the other events do in fact reach their required end point. But currently, due the heavy usage of the machine, it's very difficult to let the machine run for long time perios just unattended to see what that particular end point will be. I hope that answers your question.

It is projected that cumulative first year usage

of the simulator for training in 1986 will approach a full 52 weeks if normalized to an eight hour per day schedule.

The simulator is an excellent training tool and its use is incorporated into seven of our formal training programs. It addition to these seven programs, it is also used to familiarize I&C apprentices with nuclear instrumentation components.

HL&P is currently committed to the NRC to bring the simulator to Reg Guide 1.149 standards by July of 1988. Given past modification performance, we see no reason why that commitment should not be met.

DR. MARK: You acquired the simulator from someone or other. I suppose you didn't build it yourself.

MR. CODY: No, sir, we didn't.

DR. MARK: Does it then require servicemen from XYZ Company to come in and get it working again? Or are you prepared to now service the simulator?

MR. CODY: We are completely prepared to service that simulator. The phase one modification project was done in house with an in house project team supplemented by software personnel from contract folks. It was totally managed with in house; we used our own software and hardware people for the effort. Currently we have in house expertise that is in excess of the manufacturer's expertise on that machine.

DR. MARK: So you're shed of him, practically.

MR. CODY: Yes, sir.

DR. MARK: Thank you.

MR. CODY: The bulk of the nuclear training effort consists of 22 formal training programs. These training programs are being developed to systematic approach to training standards in accordance with our FSAR commitment and NUMARC's commitment to the NRC.

Ten of these programs are, of course, required to be accredited through the Institute of Nuclear Power Operations no later than 18 months after fuel load. We are or track to meet that date.

I will describe the major programs and summarize their content in the following discussion.

I'll begin with the cold license operator training program. It was designed to meet all regulatory requirements and as can be seen from this slide, it has five phases including fundamentals, systems and observation, simulator training, on-site training and a prelicense review series.

To date, three phases of the program have been completed. Phase IV, on-site training is in its final stages. We currently have 44 personnel who have either completed all three phases of the program of possess equivalent experience and training to be eligible for cold

licensing.

Phase four training started in January 1985, and has consisted of the courses/modules as shown on the slide.

The cold license operator training program will end with an audit exam to determine operator readiness to sit for the NRC exams which are scheduled for July and November of 1986.

Development of the majority of the operator based programs shown on this next slide has been completed or is nearing completion. The length of the programs is approximate at this time. They include operator, plant operator, chemical operator, licensed operator and requalification, STA and fire brigade leader training programs.

Of note is that the fire brigade leader training program is classified as an operator program. This is because the fire brigade leaders are chemical operations personnel and as such are provided in-depth training on safety related plant systems.

MR. EBERSOLE: May I ask, with your shift -- with your technical advisor training, you've got 24 weeks up there. What are the prerequisites on which you base those 24 weeks?

MR. CODY: The prerequisites for an STA --

MR. EBERSOLE: Yes.

MR. CODY: -- is a degreed plant staff engineer.

MR. EBERSOLE: Oh, a degreed plant staff engineer?

MR. CODY: Yes.

MR. EBERSOLE: What about plant familiarization, does he have to have that under his belt before he starts?

MR. CODY: There is a 24 week program. Jerry, does it it include the familiarization as part of the 24 weeks or is that separate.

The plant familiarization is inherent in that 24 weeks worth of training. As a general note, there is a a particular step in addition to that and that includes general employee training and some other things required prior to going into the shift technical --

MR. EBERSOLE: But you expect him to know the plant like the back of his hand in 24 weeks?

MR. CODY: That's 24 weeks worth of classroom instruction; doesn't include all the on the job training, all the time on shift training. There is a considerable --

MR. EBERSOLE: It includes what you call walk-down and physical observations of interrelationships?

MR. CODY: Yes, it does.

MR. EBERSOLE: Physical spacing and all that?

MR. CODY: Our intent is to in this 24 weeks is to get To sRO certification point. It is the intent to

license the STA's as SRO's; the training program will take you to an SRO certification point.

MR. EBERSOLE: Thanks.

(No Hiatus.)

DR. SEISS: Thank you.

MR. CODY: All programs, when fully developed, will utilize classroom instruction, simulator instruction -- where appropriate -- and structured on-the-job training to present their content. These combinations allow the material to be presented through the best method of instruction.

In addition to the Operator programs, the training of maintenance personnel is also ongoing. The overall goal of the training for maintenance craft personnel is to ensure that they possess the necessary knowledges and skills to perform assigned duties in a manner that promotes safe and reliable plant operations.

Maintenance craft personnel training is divided into three disiplines: instrumentation and control maintenance, electrical maintenance, and mechancial maintenance.

Each discipline training program is a federally registered apprenticeship program of three years in length, consisting of six, six-month phases.

Each phase, when completely developed, will contain a combination of classroom and laboratory training activities followed by a formal structured on-the-job training program which will be used to reinforce previously learned principles and practices.

I'll briefly describe the curriculum for each of the programs. The I&C technician program includes such courses as fundamentals of math and science, analog, digital and microprocessor electronics.

The electrical maintenance training program curriculum includes such courses as math and science fundamentals, basic electricity and electronics, electrical equipment repair and instruction using the air conditioning and refrigeration trainer.

The mechanical maintenance program includes, again, math and science fundamentals, basic mechanical tools and repair, and basic maintenance practices.

Continuing training is not a formal program at this time. However, we are assisting journeyman craft personnel in maintaining their skills. Training is plant and craft specific in nature and is developed and based on identified needs of the discipline. In addition to the craft training programs, the department also provides training to personnel of other plant groups.

The plant operations department has an excellent chemical analysis program which the training department supports with a very strong chemical analysis training program.

It is approximately 39 weeks in length and includes 25 weeks of classroom instruction and 14 weeks of

laboratory training. The curriculum includes such courses as the principles of primary plant chemistry, steam plant chemistry and nuclear plant chemistry.

The radiation protection technician training program is designed to ensure that radiation protection technicians at all levels have sufficient knowledge of radiation protection theory, principles and techniques to perform their duties.

The curriculum includes an introductory health physics and a radiation protection course as well as a formal OJT program.

The last program is the manager and technical staff training program. It's intended for personnel with a degree in engineering or equivalent. It is approximately 18 weeks in length conducted over a two to three year time period.

The curriculum includes the following major topics: applied fundamentals, which does include thermo and heat transfer; codes, standards and regulations; process controls; plant systems; plant operating procedures; simulator training; supervisory skill training; and any specialized or continuing training that may be necessary.

In summary, HL&P is committed to quality, performance-based training for STP personnel. To achieve

this goal, the company has committed personnel, equipment, and facilities to ensure that fully trained personnel will operate and maintain the plant in the safest and most efficient manner possible.

MR. EBERSOLE: Let me ask you a question. How do you segregate and manage and handle the two types of individuals, one of whom is happy in his work and wanting to stay there forever, and the other is the ambitious type that wants to rush through what he's doing and climb on to higher places?

You have to characterize these folks like that and do something about it. What do you do?

MR. CODY: From a training standpoint, we don't see that. They attend a particular training program and they progress through that phase of it.

They go through the six levels of apprenticeship training to a journeyman level. We don't, in the training organization, necessarily address that particular career path beyond that. I think -- perhaps Mr. Kinsey might want to address that particular question.

MR. EBERSOLE: Well, I think it's a potential problem and I --

MR. KINSEY: Warren Kinsey, plant manger. You're right, it's a potential problem and I'll attempt to tell you what our philosophy is.

In setting up our organization and our work force, what we try to do is establish what would be challenging work for each and every person in the organization. And by challenging work, I mean we want to stretch the individual to his utmost capacity to try to keep those individuals interested in the job and happy in the job.

And through -- in addition to that, our annual performance evaluation. Okay. We try to recognize those individuals who want to rise to the top; we try to provide that for them; we do what a lot of organizations do and that is promote from within the organization first if we have qualified individuals.

We are not porochial about where we put our individuals. We think, for example, we don't let a nuclear engineer just work on nuclear engineering stuff. We try to make a system engineer out of him, put him on diesel generators. That type of effort is made. We don't hold our people back, we're striving to look into other areas for achievement.

MR. EBERSOLE: So you have where, if it's appropriate, vocational training?

MR. CODY: That's correct.

MR. EBERSOLE: If the individuals want it?

MR. CODY: That is correct.

MR. EBERSOLE: Right, okay. Thank you.

MR. KINSEY: I believe there is one more section of training that we perhaps should address today and that was training for sever damage to the core.

The training of operators to respond to conditions which severe damage to the core could occur is contained in the two formal training programs. The first of which is a transit and accurate analysis program which provides training in Chapter 15 analyzed event and includes topics such as: normal transianalysis, abnormal transianalysis, instrumentation and control failure analysis analysis, hot channel, introduction to accident analysis, primary induced reactivity addition accident, increased heat removal accident, decreased heat removal accident, loss of coolant accidents, steam generater tube failure and a loss of coolant flow.

MR. EBERSOLE: In these severe accident states, I find it disturbing that even in the program itself there's been no real identification of the sequences of degredation and what one does as these progress or whatever. And the issue that comes always is, "Do I always try to pour water on the core?" And the answer has to be yes, I guess.

Is that ingrained in your program? Whatever I do I must keep the core covered even though it's been dried and melted.

MR. CODY: I think the -- we teach a second course which may answer some particular question, if the mitigate core damage core which meets the intent of the March 1980 Denton letter requiring mitigating core damage training for operational personnel.

That program includes training in such areas as small break LOCA with no high head safety injection, loss of feedwater and induced LOCA. Anticipated transient loss of all AC power, vital process instrumentation accident and response, accident response at in-core nuclear instrumentation as well as export instrumentation, post-accident core damage methodolgy, radioactive aspects of core damage, and a specialized thermal shock accident.

MR. EBERSOLE: But I never heard you say what you did in a post-core damage context about reintroducing fluid to the cores if you could do it.

MR. CODY: Yes, sir, I'm going to get to that. I guess most importantly of those particular accidents is the program also teachs a philosphy that stresses recognition of a system of the advance, stabilization of the event and then corrective action for that event.

The emergecy operations procedures provides the direction to implement that corrective action. The emergency or EOP are the vehicle by which that action is in fact implemented.

MR. EBERSOLE: Are there anything, has anyone ever told you that you must inhibit restoration of coolant to a core?

MR. CODY: Just a moment. Dick, would you care to answer that?

MR. BALCOM: Dick Balcom, again, operations manager. As our EOP's are developed based on Westinghouse monitored guidelines and they include handling those type of problems.

The mitigating core damage training does talk about cool down with the bubble in the head, the fact that was also nuclear power as well as keep the core covered. But now drawing a bubble in the head may not be a bad thing, re-initiating the water may be a bad thing based on the system and what you're observing, the procedures are developed to take you through and handle those type of problems.

MR. EBERSOLE: There are therefore in place now inhibits on reintroducing water to a core that either has dried out or is approaching dry out; is that correct?

I can't find this in the severe accident program. I mean, but you must find it. I'm in a projection to core damage and maybe I've even proceeded into it, I got half a core melted. I think the root logic is whatever I do I must put water on the core because

that's the only thing I know how to do.

MR. BALCOM: I'm trying to remember in going back and I think throughout the mitigating core damage course, we are presented with that material and that scenario, using as an example the TMI scenario as an example where they got the actual water level down below the top of the core and where they had the potential for actually damaging the core and he talk about the problems with that.

The actual how you handle that situation there is nothing in the procedure that says, "If this happens, don't do this." The procedures are designed to not let that happen. The procedures are designed to, for example, as your core outlet temperature goes up how you handle it then. You -- to keep it up.

MR EBERSOLE: But let me ask you, the program is based on the fact that, nonetheless, it has happened.

MR. BALCOM: That is correct.

MR. EBERSOLE: And I want the back end of that, now what do you do?

MR BALCOM: Part of the outlet of that program was the mitigating core damage course that Dennis is talking about. That course does address those type of concerns as what the operator should be aware of and concerned about, and the people are trained in how to

handle that situation --

MR. EBERSOLE: Are they trained in any respect not to pour water on the core whenever they did?

MR. BALCOM: I would say yes to that, if you get the core that is partially drained.

MR. EBERSOLE: I think that would be a subject to elaborate on in front of the full committee because -- well, if we don't know yet then we have to say we don't know yet.

DR. SEISS: Let me ask you. Are you talking about the severe accident --

MR. EBERSOLE: I'm talking about sever accident in the context of what the operator would do today.

DR. SEISS: Yeah. Well, when you say the severe accident, you're talking about the severe accident research program?

MR. EBERSOLE: Yeah, that and the fact that there is no identified sequential of degredation into the actions taken during the course of it, which I think is a fundamental flaw. And I think you all have to face it. You've got to know what to do and I don't really find that at all queer, but I think you could certainly unilaterally clear it for yourself. What else can you do?

DR. SEISS: I don't think they can unilaterally do very much. A severe accident research program was

completed, I don't think the Staff knows what they wanted to do and I don't think they know what they want to do.

MR. EBERSOLE: But you can't say, in the face of -- and in the plant, "I don't know what to do next." So I'm going to ask you what do you do next?

DR. SEISS: That's --

MR. EBERSOLE: If you have to say, "I don't know," I'll be dismayed.

MR. BALCOM: I wouldn't say that we don't know, I'd say we've been provided training on how to handle those situations and we have gone away with the you have to keep the core --

MR. EBERSOLE: Those are loose words, you've been provided training. I want to know what you're going to do?

MR. BALCOM: We're going to follow the procedures and when read up about them and they don't fit, we're going to --

MR. EBERSOLE: You pass them to somebody else, all right, take them to him.

MR. CODY: That concludes my presentation, I'd be happy to answer any questions you have.

DR. MARK: Are there any questions for Mr. Cody? Thank you very much.

MR. CODY: Excuse me. I'd like to introduce

Mr. Warren Kinsey.

MR KINSEY: Before I begin my presentation on the nuclear plant operations department and it's readiness for operations, let take a few moments to brief you on my experience and education.

I have been in the nuclear power industry for approximately 23 years. I served in the U.S. Navy Nuclear power program as a reactor operator and instructor for seven and one half years. While pursuing a degree in mechanical engineering, I was a senior reactor operator for the University of Missouri Research Reactor.

As an employee of the Tennessee Valley Authority, I was involved in the restart of Browns Ferry Unites 1 and 2 after the 1975 fire, the initial startup of Browns Ferry Unit 3, and the initial startup and operation of Sequoyah Units 1 and 2.

The nuclear plant operations department is responsible for the safe operations, maintenance and testing of the station. The plant manager is responsible for the overall direction of the station and the plant superintendent is responsible for the day-to-day operation of the units.

The department has eight divisions, four of which report to the plant superintendent. The divisions reporting to the plant superintendent are the reactor

operations division, chemical operations and analysis division, technical support division and maintenance division.

The plant superintendent, management services division, facilities services division, outage management division and health and safety services division report to the plant manager.

Mr. James Loesch is plant superintendent for the station. Mr. Loesch has been associated with the power generation business for over sixteen years. He has participated in the startup of two large fossil units, has taken experience trips to operating PWR's and has been associated with the South Texas Project for the past nine years.

Mr. Loesch has successfully passed the 32 week Westinghouse reactor operator's certification course at the SRO level, and is currently attending the cold license training course in preparation for taking the senior reactor operator's license examination in November of 1986.

Mr. Goldberg has given you our philosophy for construction, startup and operation of the South Texas Project. The nuclear plant operations department organization development is highly indicative of the philosophy, "To keep abreast of industry occurences and apply worthwhile experiences to improve programs."

We have studied the organizations of other utilities, and have reviewed studies and reports that address organizational weaknesses and strenghts.

Based on these studies and the collective experience of myself, Mr. Dewease and other key staff members, we have developed the organization as it exists today. We feel that this organizational structure gives us the strength and flexibility to deal with the tremendous responsibility of operating a nuclear power station.

The organization, as you will see, is structured such that one group of employees is responsible for line functions and another group is responsible for support. This philosophy is not only applied to each division within the department, but to the department as a whole.

As you will recall, I stated that certain divisions report directly to the plant superintendent. Those divisions represent what we term the "Production Unit," that is, they are responsible for line functions, operations, maintenance and testing of the units.

The other four divisions in the department support the plant superintendent and are the responsibility of the plant manager.

Mr. Goldberg also mentioned that our philosophy is "to plan for, develop and retain qualified and trained personnel."

Today, the operations department has approximately 504 employees. The Houston Lighting & Power Company recognized the need to develop its operating staff early. Therefore, our staffing plan was developed based on the concept of using our own employees to the maximum extent possible.

Our employees are preparing plant operations and maintenance procedures and are responsible for operating the equipment as it is turned over from construction to the startup organization. We believe this will provide us with the best possible procedures and personnel for operations.

I will begin the division descriptions with the reactor operations division. The division is under the management of Mr. Richard Balcom. Mr. Balcom held an SRO license on the Zion Plant while serving as an instructor for the Westinghouse Corporation.

Mr. Balcom served seven and one-half years in the nuclear navy as a reactor operator and has eleven years in the commercial industry in a combination of operations and support positions.

The reactor operations division is responsible for the operation of the nuclear steam supply system, the safeguards systems and the trubine-generator and its support auxiliaries.

You will note that they are not responsible for

the operation of all plant equipment. In developing the organization we addressed two concerns; first, reactor operations organizations are sometimes given responsibilities for areas which, although important, dilute management resources such that the primary objective is not given proper attention.

Second, we recognize that the primary and secondary water chemistry are key issues in assuring that our plant operates as safely and reliably as possible.

We have spent approximately $20 million per unit in cycle improvements, as pointed out to you earlier by Mr. Dotson. The equipment we have installed, however, is only as good as the operators that use it.

To that end, we have set up a separate organization coupled with the plant chemists under one manager to zero in on the operation of water production and water conditioning systems. I will discuss our organization for handling water chemistry later in my talk.

A prerequisite for a successful operating nuclear plant is having experienced and trained reactor plant operators at fuel load. We have been very successful in developing the reactor operations division staff for the South Texas Project.

We currently have 97 employees in this division. This permits three key activities to occur without the use

of contract employees. The reactor operations division staff is preparing all operating procedures, including emergency operating procedures.

They are operating plant equipment as it is turned over from the construction to the startup organization and they are participating in licensed and nonlicensed operator training activities.

MR. EBERSOLE: Could you comment on the -- go back to that slide on the basis that you have for preparation of operating procedures.

MR KINSEY: I'm sorry, I didn't understand your question.

MR. EBERSOLE: When you start developing an operating procedure, you've got to have some information in front of you and then you write up a procedure and I presume you go back to the design and you close a few loops to materialize operating intent from whoever designed what everyone wanted to operate.

MR. KINSEY: That's correct, sir.

MR. EBERSOLE: So would you give me a brief picture of the cycle of production of operating procedures eventually going back and having the intent of operating confirmed.

MR. KINSEY: Yes, sir, I'd be happy to.

MR. EBERSOLE: Go ahead.

MR. KINSEY: What we do is, I'm going to address later on in my discussion a group of engineers that fall under the technical portion of this and I'll use that in a brief of -- to get your answer.

We take the systems equipment which are prepared by the design organization, in this case the combination of the Bechtel organization as well as our own in-house engineers.

We take the P&ID's, which are part of the design document and any other design document such as the manufacturer's equipment discription.

We then take that information and we also apply experience that we get from proceedures developed by other organizations that have similar systems, for example, other PWR plants, we've gathered their operating proceedures.

We take that and we develop our own draft proceedures in-house with our operators. We have an in-division review of the procedure. Okay. In other words, we have three levels of operators within the reactor division.

The lower level in combination with the other two levels prepared and reviews within that division to procedure. We then take that procedure and we review it, interdepartmentally, okay. Or within my own department and the other divisions; for example, they allow aspects of the

procedure reviewed by and maintain aspects reviewed by the maintenance department, we have our quality assurance department review it.

It goes through this rigorous review cycle and each one of those cycles will have a part in also checking to make sure that the operator who developed the procedures bounced it correctly off the design document.

And then finally in the case of those, the majority of our procedures and all the safety procedures we run into our plant operations review cycle. And the final aspect of the procedure development is a walk-through of the procedure during or actual use of the procedure during the startup testing phase where we don't have to worry about the safety aspect we because we don't have fuel loaded.

MR. EBERSOLE: Well, if you proceed through plant modification and change, do you have a system that maintains appropriate alterations to procedures as the modifications take place?

MR. KINSEY: Absolutely, the modifications procedure that we have is a rigorous procedure that requires a check off to ensure that the procedures themselves, the P&ID's or the drawings are all updated to the modifications and it goest through the same review cycle as the original procedure.

MR. EBERSOLE: Thank you.

MR. KINSEY: The reactor operations division structure is as follows. The division is directed by a manager. Reporting to the division manager are four operations supervisors. Two of the supervisors are responsible for the operation of the units, one assigned to each.

The other two supervisors function in a support capactiy. One supervisor is designated to support unit outages and the other is designated to support division administrative functions. In essence, the division manager has four assistants.

The reactor operations division will operate on six shifts. Each shift will have a complement of nine personnel per unit. The senior manager on shift is the SRO licensed shift supervisor. His assistant, also SRO licensed, is the unit supervisor.

There will be three RO licensed employees assigned to each shift, although only two are required by the regulations.

The third RO will permit us to rotte the RO's off the panel during the shift for breaks, meals and most importantly, plant tours. In addition there are four nonlicensed reacator operators on a shift.

We have implemented our hiring and training

program for nonlicensed operators in 1982. Our nonlicensed operators have successfully passed a three-year training program and because we staffed early, are gaining operating experience during the preoperational testing program.

At Unit 1 fuel load, we will have approximately 55 fully qualified nonlicesned reactor plant operators. One unit operation requires only 24 operators.

The additional nonlicensed operators are a source for selecting reactor operator candidates for Unit 2 and allow us to support startup activities as well as prepare for operation of the units.

We have also planned for success of Unit 2 by hiring twelve unit supervisor candidates. Six of these unit supervisors will be selected for shift supervisor positions for Unit 2.

At this time, the extra supervisors give us the flexibility to support startup testing and prepare for operation simultaneously.

Let me briefly mention some facts regarding the level of experience in the reactor operations division.

We have 281 total years nuclear experience;

73 total years commercial experience;

30 out of 39 licensed reactor operator candidates have navy nuclear experience;

The division manager and operations supervisors

have been previously licensed SRO's on large PWR's;

All shift supervisor candidates have been previously licensed SRO's on large PWR's;

Four of the twelve unit supervisors have been previously licensed RO's;

Three of the twelve unit supervisors have been certified as RO's and one has been certified as SRO. Finally, one was licensed as an SRO on a research reactor.

The next part of the organization I will discuss is one which we believe will help us achieve maximum reliability for our units.

The chemical operations and analysis division is under the management of Mr. Tom Underwood. Mr. Underwood has a Bachelor's degree in engineering and has qualified as an engineeering officeer of the watch at a land-based military prototye.

Mr. Underwood has been at the South Texas Project for over six years, three of which have been in chemical operations and analysis division.

Reporting to Mr. Underwood are supervisors having over 27 years experience in commercial operating nuclear plants and over 225 years total nuclear experience.

The chemical operations and analysis division is responsible fore operation of the water production unit, condensate polishers and regerneration systems, radwaste

processing systems and miscellaneous water production and waste processing support systems. It is also responsible for analyzing and maintaining chemical specifications for all plant systems.

You were briefed earlier by Mr. Cody on the chemical plant operator training program. As you will recall, it is very comprehensive.

In fact, the chemical plant operator foreman and the head chemical plant operator receive training not only on their assigned systems, but also on many of those systems for which the reactor operations division is responsible because they serve as members of the station fire brigade.

The chemical plant operators were chosen for this task to relieve the licensed plant operators of additional training that might weaken their training in reactor operations. This will provide the chemical plant operators with a better understanding of the overall plant and will enhance the interface with reactor operations activities.

MR. EBERSOLE: Is the chemical plant operation, you know, are they conversant with the facts that they don't simultaneously damage active support equipment?

MR. KINSEY: Yes, sir.

MR. EBERSOLE: So they tab a little operator --

MR. KINSEY: I'm sorry, I didn't hear the last part.

MR. EBERSOLE: They have a degree of operating familiarity?

MR. KINSEY: Yes, sir, and in addition to that the equipment operation that they peform is all controlled by the shift supervisor.

MR. EBERSOLE: Okay.

MR. KINSEY: They have to operate very closely with them, when it is possible, for information.

A group within the chemical plant operations section is responsible for the station radwaste program. This group is led by a supervisor who has been given the authority, as well as the resources, to ensure that the station radwaste systems are optimally operated and that station personnel operate other plant systems so as to minimize radioactive contamination and production of radwaste.

We have seen evidence of less than optimal performance at some operating stations in the area of radwaste management. We feel that this organization will allow us to optimize our performance in this area.

Even though the chemical plant operators and reactor plant operators are in different divisions, their philosophy of operations is the same as the result of

common general administrative procedures and because they both report to the plant superintendent. Additionally, the chemical plant operators report to the shift supervisor for direction on shift.

Most of the chemical plant operators have navy nuclear experience or chemical plant experience. All operators receive training on systems. Entry livel operators go through a three-year training program.

As with the reactor plant operators, the chemical plant operators are receiving valuable experience operating the equipment assigned to them during the startup testing phase.

No contract employees are utilized on the chemical operations staff, thus assuring full benefit to the permanent employees. The chemical plant operators are also preparing all of their own operating procedures.

The chemical operations and analysis division analysts are responsible for monitoring the chemistry parameters of all the plant systems and providing recommendations to the reactor plant operators and chemical plant operators on maintaining systems within allowable specifications.

Our analysts are highly trained and are gaining valuable experience by supporting construction and startup activities. Each must pass a three-year training course.

The chemical analysts are also preparing their own procedures and performing tests without aid of contract employees.

The support group within the chemical operations and analysis division consists of a supervisor and three degreed chemists. The group is responsible for supporting the chemical plant operators and chemical analysts in development of their programs, system operations and development of programs for and operations of the radiochemistry counting room. This group is also functioning without aid of contract employees.

One of the activities currently under development by the support organization is a computerized chemistry parameter monitoring and trending program. It will be one of the first of its kind to be put into operation and will help us maintain the very best chemistry possible.

Other responsibilities for the division include the station radioactive and nonradioactive effluent release program, the station hazardous chemical control program and the station spill prevention program.

The technical support organization is responsible for engineering support to the other line organizations that report to the plant superintendent, as well as being responsible for several line functions. This

division consists of four sections staffed by engineers and technicians.

Mr. Gary Parkey is the division manager for the technical support division. Mr. Parkey has a degree in nuclear engineering, is a registered professional engineer and has over eleven years total experience in the nuclear field.

Mr. Parkey spent three years at the Browns Ferry Platn where he was involved in the initial startup testing of Units 2 and 3 and the restart testing of Units 1 and 2 following the 1975 fire.

During his nine years on the South Texas Project he has held various positions in engineering, startup and operations.

The systems performance section of the technical support division is responsible for monitoring plant performance through testing, observation of operating parameters through plant tours and review of plant maintenance work requests.

They are also responsible for monitoring equipment performance and trending plant problems using the nuclear plant reliability data system and our own equipment history programs.

This section is responsible for the plant surveillance testing program and for assisting the

operations and maintenance personnel in the determination of corrective actions for malfunctioning equipment.

This section, as well as the division as a whole, is organized around the concept of a system engineer being responsible for all aspects of the operation of assigned systems. The majority of the mechanical fluid systems are assigned to engineers in the systems performance section.

The reactor peformance section is responsible for routine monitoring of core performance, preparation and performance of special tests and for the Phase III startup testing program, including fuel load and subsequent tests.

The engineers in this section will hold an SRO license and serve as shift technical advisors. We feel that the decision to license the shift technical advisors will help to make them an integral part of the shift crew.

These engineers also serve as the system engineers for systems such as incore, instrumentation, fuel handling and spent fuel pool cooling and cleanup.

The performance support section consists of engineers and technicians. These engineers are responsible for the electrical and HVAC systems. They also manage the station programs for fire protection, snubber testing and vibration monitoring.

The performannce technicians in this section

form the backbone of the testing organization. They will perform the majority of the performance and surveillance testing under the cognizance of the system engineers.

These technicians receive formal training in the principals of testing and test conduct, specific training on tests to be performed and use of test equipment.

MR. EBERSOLE: Let me ask a question. In the context of system interaction, I see here a detailed presentation on system-by-system. Where do you cover the intersystem relationships, their weaknesses and strengths and influences?

MR. KINSEY: We don't specifically cover that, Mr. Ebersole, we consider that part of the attention of the engineer in going about his daily duties to look for those activities.

We are very strong on looking at root causes of problems and I think that's where you are going to find that most of your system interaction problems have done been picked up.

MR. EBERSOLE: Well, the Staff has made the claim and it was contradicted by us, that they can use system engineers who will look for their own interactive problems, you know, at the lower level without a broad scope overview. Are you taking that same position as the Staff?

MR. KINSEY: We're taking the position that the system engineers are responsible for their effective performance and operation of that system including such effects as interaction between other systems.

MR. EBERSOLE: How does he look at the influence of other systems on his systems?

MR. KINSEY: I would say that he looks for the infuence of systems on his own system on his system by looking for the root cause of his problems.

MR. EBERSOLE: After -- well, you're talking about an LER review context of operation.

MR. KINSEY: During the operation phase, these engineers, we're are not talking about --

MR. EBERSOLE: Yeah, but I'm talking about, you know, not just compare the physical consequences but anticipating the that system "X" is going to somehow undo system "Y" and you don't want that to happen because you're system "Y".

I don't see that that can really be accomplished unless there's somewhere an overview function which says, "I want to know systems relationships above the level of my system compared to somebody else."

You follow me? I'm looking at the vulnerability. I'm talking really about a design problem.

MR. WISENBURG: I would remind you that IFEG

that you've heard a little earlier was to perform that overview functions?

Organizationally it's somewhat separate from the group that we're talking about now. But the engineers in ISEG are perhaps a little more high powered than --

MR. EBERSOLE: Well, then they pass on what they do to the system engineers?

MR. WISENBURG: Most definitely, sir.

MR. EBERSOLE: Yeah, okay. Thank you.

DR. MARK: It's a little related to what we're talking about. I'm reading in the SER in the section about missiles, considerations concerning missiles, that the gravity missile was examined and they tried to begin for falling on Class IE equipment or some particularlly high class of equipment.

Now, I can imagine that there must be circumstances where something can fall on a pipe or a duct or so, that wasn't itself thought of as IE but it was tied into one of these systems.

Is there any mechanism by which that could be tracked down?

MR. DOTSON: Yes, sir, that function engineering of Mr. Kinsey's talking about performing the operation project, the engineers in my department and the design engineers and we have a whole slurry of checklists and

walkdowns for system interaction and the modificaton process and certainly in the completion of the design right now.

So, yes, we have looked at interaction of nonsafety system and technically, mechanically and so forth.

DR. MARK: It was Exactly that that I thought was missing in the words which read somewhere, as I say, in the SER.

MR. EBERSOLE: Well, the classical insult is to have the toilet bowel overflow and go down the control cubical.

MR. DOTSON: Yes. And in fact, we picked that similar thing up on an interacation walkdown. We had a portable water line running over a computer --

MR. EBERSOLE: There we go.

MR. DOTSON: -- and so we did, we did catch that error.

MR. EBERSOLE: Okay. Thank you.

MR. DOTSON: But the interaction, we lost it in two places in the description but where the primary responsiblity is in my department's, which is design review.

MR. EBERSOLE: The system man who was looking at the control cubicle would never have known about the toilet

bowel. You had to find it and you have to --

MR. DOTSON: -- water line indicates the concern about the computer.

MR. EBERSOE: Yes, thank you. Mr. Kinsey.

MR. KINSEY: A key function of this section is coordination of the operations department portion of the operating experience review program.

Let me briefly discuss some of the elements of this program. This program is a systematic, proceduralized process whereby we have reviewed operating experience from other plants going back as far as 1972.

We have reviewed approximately 1600 items to date under this program. for each item which is applicable we have developed a specific plan of action which is tracked to completion by a computerized tracking system.

The nuclear plant operations department program is but one part of the overall station operating experience review program. Other departments within the nuclear group have similar programs, all of which are coordinated by our licensing department.

As pointed out by Mr. Goldberg, we are committed to learning from the experience of others. Our operating experience program is an important facet of this committment.

The computer support section is composed of

engineers and technicians having many years of experience in testing and operating power plant computers. This section is responsible for the startup testing and operation of the large programmable plant computers.

At the South Texas Project, as with all present day plants, computers play an important role in plant operation. We have a plant process computer, a radiation monitoring computer and an emergency response facilities data acquisition and display system computer in each unit, as well as a security system computer which serves the whole station.

This requires a large, highly qualified and dedicated staff. We are confident that we have such a staff as well as the organizational structure to support it.

DR. MARK: In connection with your computers, lots of places that use computers depend upon the IBM or Burg or Sperry serviceman to put them back in gear. Do you have a staff of such contractor service men or do you have your own capabilities to --

MR. KINSEY: The staff I was attempting to describe is the staff that would do the service on our computers, okay, to the limit that they can.

We certainly, in some cases, have to bring in the contract people to help us to treat specialized

problems, but these engineers and this computer support section and technicians that is their function, to maintain and operate and keep those computers in good shape.

DR. MARK: Well, now, if you have a major mainline comupter acquired from whatever you call them, how are you fixed for getting an expert on board to fix what has just gone wrong?

MR. KINSEY: We have the capability, as far as I know, through our contract with those people. Okay. We currently are operating those computers under a warrenty contract to bring them in on schedule, you know, a reasonable timeframe to help us fix those computers. Our intentions would be to maintain some type of contingency contract with the manufacuterer of our computers to handle the cases you're speaking of.

DR. MARK: And they would be no further away then Houston, or something?

A VOICE: That's correct.

MR. KINSEY: The answer is that's correct. I think I've got the manager from the area over here.

DR. MARK: Thank you.

MR. KINSEY: Thank you.

The next organization I wish to address is the maintenance division. The maintenance division is directed by Mr. Mark Ludwig.

Mr. Ludwig has a degree in electrical engineering and has successfully passed the 32 week Westinghouse operator certification program at the SRO level.

Mr. Ludwig has five years fossil power plant experience and has been at the South Texas Project for nine years.

Reporting to Mr. Ludwig are supervisors having a total nuclear experience of over 375 years, 131 of which are associated with operating commercial nuclear stations.

This division is responsible for the station preventative and corrective maintenance programs. This is an area which is getting a lot of attention today, due to recent incidents at operating stations.

We are keenly aware of the regulatory interest in maintenance, but more importantly we believe that a key to a reliable operating facility is having a good maintenance program.

Our maintenance philosophy is fairly simple; we believe in a strong preventative maintenance program and close supervision of the work. We estimate that our preventative maintenance program will account for approximately 60% of our expended maintenance man hours.

Regarding close supervision, the maintenance work force is organized to optimize supervision by first

line management. Each craft disciplien is supported by a separate group in the maintenance support section.

The purpose of the maintenance support section is to prepare work documents, purchase materials and plan work such that the line organizations need only supervise the work activities, concentrating on quality and safety.

The traditional craft divisions of mechanical, electrical and instrument and control maintenance are also represented. Each craft has a journeyman to foreman ratio less than or equal to eight, further enhancing the ability for line management to supervise the work.

MR. EBERSOLE: In the instrumentation control area in particular, is there something in place that tells the people there that when they put a screwdriver in their hands they may be just next door to a $1 million dollar outage because they touched the wrong screw?

MR. KINSEY: Yes, sir, we do train these people and are always telling them how important their job is and to be cautious in their work. If they're not sure what they're supposed to be doing to stop and get supervision. All the work that they do goes through the shift supervisor and it's approved before they can actually go out into the plant and do the work at this plant.

Technical supervisor positions are part of each section of the maintenance organization. These positions

are similar to assistant section supervisor positions and give the section supervisors the ability to handle the large amount of administrative work as well as monitor field work. Each section has three to four technical supervisor positions.

The maintenance organization is reponsible for the station measuring and test equipment program with the exception of chemical laboratory equipment and radiation protection equipment.

The meteorology laboratory section calibrates, stores and distributes measuring and test equipment to the construction, startup and operations department organizations.

Overall, we feel that our maintenance organization is strong. Our philosophy was to hire people with commercial nuclear plant experience, down to and including the journeyman craft. We have been fortunate enough to hire several journeymen in each craft with commercial nuclear experience.

The remainder of our staff are local people that we have trained. To give you an idea of our success, let me mention a few numbers. We have 26 electricians with over 190 years of nuclear experience, 35 mechanics with over 206 years of nuclear experience and 36 instrument and control technicians with over 180 years of nuclear

experience.

We do employ several contract people in the maintenance division. They are aiding us in procedure development, procurement of spare parts and meteorology equipment calibrations. Overall, however, the permanent staff is gaining the experience of this period in station life.

Before closing on the maintenance area let me mention a few other facts:

We utilize prepared procedures for major maintenance. Approximately 1400 procedures will be prepared for Unit 1 operation;

Corrective maintenance work requests for all maintenance activities are prepared by a dedicated staff. All safety related work is reviewed by our Quality Assurance Department;

We have a broad based preventative maintenance program which includes 7500 indentified activities for Unit 1;

Our program includes a root cause determination for equipment deficiencies. All work is reviewed by our technical staff. Work activities are trended to minimize recurring failures;

We have an effective material control program. It includes: Control of replacement parts, control of

consumable parts and control of work area housekeeping;

Our maintenance program is being implemented prior to licensing. We have implemented preventative and corrective maintenance programs during the startup testing phase. And we implemented our operations QA program during the startup testing;

Finally, we believe in and stress thorough work quality, close supervision of work by line managers, feedback to employees on quality of their work on a continuing basis including annual performance review.

And let me digress here just a minute from my prepared talk to address Mr. Ebersoles question earlier about the diesel generators and what type of program we've got planned for those diesel generators.

We're very proud of the program, I think, that we have prepared for those diesels our maintaining and operating diesel generators.

Some specific items. We will give our engineers as well as our technicians our craft specific training in those diesel generators for authorization as well as maintenance by the diesel generater contract personnel. That's upcoming, by the way.

We have detailed procedures for authorization as well as maintenance on those diesel generators. To give you an idea of what I'm talking aboaut our mentioned our

strong suit is preventative maintenance.

We have at least 189 preventative maintenance check plans for those diesel generators. That includes 51 mechancial-type items 87 electrical and 51 INC.

It includes such things as inspections, calibrations, checks and lubrication standards. We have an OER program. I mentioned that earlier in my talk.

That OER program enhances our ability to operate those diesel generators and maintain them by learning from the experiences of other utilities.

We have recently sent one of our system engineers out to Polo Verde Plant which has the same type of diesel generators that we have.

I guess our philosophy is on authorated diesel generators is not to be average, not to be minimum, but to be the best and we would like to say that we're going beat the Japanese that you mention that have the best program.

DR. SEISS: Would I be correct in assuming that this maintenance program is run by a computer?

MR. KINSEY: We have a computerized maintenance scheduling program; we have a computerized history data base for the maintenance program.

MR. EBERSOLE: In the tech spec area, do you have an indexing or a maxtrix system to be sure that you don't have common disablment of function?

MR. KINSEY: Yes, sir, and I'm going to mention something a little bit later on. I'll repeat it here if you'll forgive me, but we're go to have for this station a computerized technical specification system that we have purchased and that will aid the operator in ensuring that we don't have overlap.

MR. EBERSOLE: Right.

The remainder of the nuclear department organization reports to the plant manager and provides support to the previously described divisions.

Mr. Donald Smith is responsible for the direction of the management services division. Mr. Smith has a Bachelors degree in mechancial engineering and a Masters degree in computer science.

He is a retirednaval officer and served as an enlisted man in the naver nuclear power program. Mr. Smith's staff is a highly qualified gropu of people with many years of experience in their related fields.

The management services division is responsible for provided personnel services, budget and cost control, word processing, document control and library services and data processing services.

Management services is a good example of one of the areas where we are striving to be well prepared for station operation. In the realm of data processing, we are

developing an integrated data base program utilizing three interconnected prime computers.

Some examaples of programs we have already developed are: A license commitment tracking system, preventative maintenance scheduling system, measuring and test equipment scheduling system, radiation work permit tracking system and a personnel and training data base.

In all, we have plans to develop some 56 programs to support station operations.

While I am on the subject of computers, I might add that we have purchased a computerized technical specification program to aid the operator in making decisions about plant status.

One of the functions of this program will perform will be to keep track of equipment out of service for repair or test and alert the operator if the allowable out of service time is approached or if a limiting condition for operation will be violated. It is a program that will promote safe operation of the station.

The next two organizations I would like to briefly discuss are the facilities services division and the outage management division. Both of these groups have been recently formed and have only their managers in place. They will be further staffed prior to Unit 1 fuel load.

Mr. R.L. Hawkins will be responsible for the

facilities services division. Mr. Hawkins has many years service in the nuclear industry in construction and operations support. The facilities services division will perform maintenance on nonpower block buildings utilizing HL&P craft personnel. It will also manage station janitorial and laundry services, decontaminations services and grounds maintenance utilizing contract personnel.

The outage management organization will be responsible for coordinating activities during unit outages. Mr. Marion Smith will be the manager of this division.

Mr. Smith has several years service in the navy nuclear program, has participated in the startup programs for two of the Commonwealth Edison Plants and is currently serving as test group supervisor in our startup organization.

This organization will plan, schedule and monitor plant modifications, maintenance, operation and testing and testing activities.

MR. EBERSOLE: Let me ask this, are you looking in an independent way at the Staff's motions of limiting conditions for operations?

MR. KINSEY: Mr. Wisenberg, can you help me out there?

MR. EBE SOLE: There is sort of a re-evaulation

going on about limited conditions of operations. One of the old issues used to be as you progress down the degradation say for AC power you proceed with shutdown.

Well, at the end of the line, if your unit represents a substantial fraction of your group capacity, that was a good thing to do, because you were then faced with of totality of loss of AC power.

I wonder if you're looking at your own notions of what to do with limited conditions of operation at your plant.

Did you follow me? I'm saying, for instance, as your diesels progressively degraded eventually you had to shut down. But that might have been the worse thing to do.

MR. WISENBURG: Marcus Burnett is the engineer in charge of our technical specification program and will describe for you some of the activites which we have underway to optimize --

MR. EBERSOLE: I don't want a lengthy -- just kind of a brief, how you look at this matter independently.

MR. BURNETT: We have looked at matters like that for interaction on this plant as to how the -- as to what actions we should be taking in response to the conditions occurring in the plant and are we actually degrading things further by following the recommended actions statement for the standard technical

specifications.

A good example of this is the technical specificatoin on auxiliary feedwater on which once you've lost all trains of auxiliary feedwater the actual statement is not to shut down the plant. And we are participating in all of the industry and NRC incentives technical specification --

MR. EBERSOLE: That would be a case in point. Thank you, I just wanted to know whether you were looking at it more or less independently.

MR. WISENBURG: I might add, sir, that our three train design here has sort of forced us to look very hard at the Westinghouse standards, which is of course a two train --

MR. EBERSOLE: Right.

MR. WISENBURG: -- to make those type of decisions which you're talking about.

MR. EBERSOLE: Thank you .

MR. KINSEY: Mr. Gene Jarvela is the health and safety services division manager and has over 28 years experience in the nuclear industry.

He is retired from the naval nuclear power program and was the radiation protection manager for the startup of Kewannee Nuclear Station.

He has been at the South Texas Project since

1980. The health and safety services division is responsible for the station emergency plan, the industrial safety program, the radiological environmental sampling program and the radiation protection program.

The station emergency plan is the responsibility of the emergency planning section. The plan has been developed and reviewed by the NRC Staff and a revision, answering NRC round one questions has been submitted for review. Emergency procedures are essentially complete and training has commenced for onsite and offsite personnel.

By now you are probably aware that the site is situated in an ideal location relative to emergency planning. Our ten mile zone is located solely within Matagorda County and the population within the zone is currently less than 2,500 people.

Our prompt notification sirens systems -- excuse me. Our prompt notification system sirens have been installed and are operational. The sirens will be supplemented by tone alert radios tuned to FM radio station KMKS in Bay City, Texas.

In addition to our ideal location, we are fortunate to have state, county and city officials eager to support our programs. Our emergency plan for the county is but part of an overall plan developed by the county to handle industrial as well as natural disasters.

The state plan is in excellent shape, having been developed earlier to support the anticipated startup of the Comanche Peak Station.

Your tour of the station has shown you that the emergency operation center is nearly complete. The technical support center will be complete in the near future and the operations support center is, of course, complete as it is the administrative office building currently in use by the operations organization.

Our station drill is scheduled for February 1987. To date we have had a medical emergency drill administered by our outside consultant and are planning for several exercises and practice drills in the remainder of the year. We also intend to have the personel from another nuclear station audit our program prior to the NRC audit.

The emergency planning section is also responsible for the station industrial safety program. We currently have two degreed industrial safety engineers assigned to the operations department, increasing to three as the operations work load increases.

This staff prepares safety procedures, review procedures from other divisions for safety concerns, issues permits for confined spaces and scaffolding, instructs employees in good safety practices and monitors work activities.

After construction is complete on the units and the construction medical organization is no longer available, our staff will included licensed nurses. The licensed nurses will be supplemented by health physics technicians who will be trained emergency care attendants.

The radiological laboratory section is headed by Dr. Darrel Sherwood and is staffed by three health physicists and four technicians. The radiological environmental monitoring program and the dose assessment monitoring program are this section's responsibility.

The environmental sampling program has been successfully performed by the station staff for the past two years and was performed for approximately eighteen months by a contractor prior to that.

The program includes split sample agreements with state and federal agencies and with other utilities and it has been audited by an outside consultant in preparation for operation.

We have written our offsite dose calculation manual and have submitted it to the NRC for review. Our laboratory and dosimetry program has been certified by the national voluntary laboratory accreditation program

MR. EBERSOLE: -- critically determined on immediate meteorology.

MR. KINSEY: As to what would occur?

MR. EBEROSLE: Yes, sir, how do you track the meteorlogical condition as it changes from minute to minute and hour to hour.

MR. KINSEY: I'd like to address that question by having Mr. Jarvela.

MR. JARVELA: Gene Jarvela, heath and safety services manager.

Our meteorological conditions are tracked through two LEP towers that are currently placed on site, to the primary power and also to the backup tower.

Our conditions are monitored at 10 meter and also 60 meter level.

MR. EBERSOLE: Yes. I wanted to ask, because I've heard this story before, that you can take a meteorological tower and by calculational methods go out about a hundred miles in all directions through cities and mountains and everything and determine the concentration level no matter whether the wind changes or whatever. I don't really believe that.

What do you have in the context of direct measuring techniques that you would contemplate using after and accident?

MR. JARVELA: We have an environmental program which we are currently undergoing right now, that gives a good firm baseline. And I could follow this up in the case

of an incident. We do have auxiliary vehicles to be ran by the health physics technicians to go out into the field.

One of these vehicles will be totally dedicated environmental van which will also include intrinsic and Canadian detectors, multi-channel analyzers, totally self-sufficient so we can do detailed analysis in conjuction with the gross --

MR. EBERSOLE: That's one vehicle.

MR. JARVELA: One totally dedicated. We have two other vehicles gross countings, capability of doing gross countings.

MR. EBERSOLE: Are you using the aircraft or contemplate the use of any, temporary?

MR. JARVELA: I think aircraft would be available if it was needed, sir.

MR. EBERSOLE: Okay. Thank you.

DR. MARK: Are you well surrounded with meteorlogical data gathering stations so that you'll know if the wind has changed down a Matagorda and therefore you should prepare for the fact that it's about to change up at your tower?

MR. JARVELA: Yes, sir. We have two other supplementary stations manned by the National Weather Service, one at Victoria, Texas, and the other down in Alvin, Texas, which places them basically to the east and

to the west of us, so to speak.

MR. EBERSOLE: I've had real difficulty, you know, believing that a single meteorological tower can be used as a base for calculaton around a hundred mile radius or so. Do you share that lack of confidence with me?

MR. JARVELA: Personal opinion, yes, sir, I do.

MR. EBERSOLE: Okay.

MR. KINSEY: The laboratory and staff are mentioned above and they are responsible for the development of the offsite gross calculation manual are located in Houston at our Energy Development Complex.

This arrangement ensures that we can achieve the background radiation levels required for counting the low level activities expected in environmental monitoring program during normal operations.

The radiological protection section is responsible for implementing corporate and station policies regarding radiation protection. Mr. Roy Craft is in charge of the radiological protection staff and has over 31 years experience in the radiation protection field.

Mr. Craft will have approximately 43 technicians reporting to him at the time we load fuel on Unit 1. This section will implement the whole body counting and respiratory protection programs, issue radiation work permits, perform surveys and calibrate portable monitoring

instrumentation.

The technicians that form the nucleus of this group receive three and one half years of training and are sent to operating nuclear plants for experience.

Entry-level technicians, as well as technicians from other utilities must successfully pass an entrance examination as part of our hiring practice. Our training program has been used by other utilities in the past to train their technicians. The training program is administered entirely in-house using senior technicians and health physicists.

Our commitment to the concept of as low as reasonably achievable, ALARA, is reflected throughout the organization, including corporate management.

Mr. Goldberg has a set limit of five REM per year as the maximum dose any individual will receive while working at the South Texas Project.

MR. EBERSOLE: Let me ask in this connection. If I go back now to the running activity level in your primary coolant, you know, specified curies per cc. and so forth, is that much of a variable infuence of the dose level in maintenance or activity releases, are you fiddling with that to try to optomize it?

MR. KINSEY: If you're asking if we are going to try to maintain the dose level of the -- the activity in

the reactor coolant system as low as we can, the answer is yes.

MR. EBERSOLE: Yeah, well, I'm just saying, you know, where is the optimum point. There must be some and what are the bases for determining that? I would say would be accident release would be one and maybe maintenance -- maintenance might be another?

MR. KINSEY: What are the other factors?

MR. EBERSOLE: You tell me. You must have some basis for setting that activity level beyond your taking for granted one of them --

MR. KINSEY: I think you took the two biggest ones away from me.

MR. EBERSOLE: Well, maybe that's all there is, I don't know.

MR. KINSEY: Can I have some help? Is there anything else that we consider important there?

MR. DEWEASE: I guess, you know, any maintenance activities proportional to the activities are in there. I think the velocity other than the accident situation is simply, you know, that we're commited to lowest reasonable material and in doing so I think we will do everything we can to keep the fuel in good shape and keep -- and I think that's our goal rather than saying there's some particular level. We're going to try to get as low as we possibly can

in all circumstances because the dividends -- we know the dividends faced many times over from exposure to personnel plus if you have a situation like this familiar incident where you dump some of that stuff out, if they have a clean core, their situation would have been a lot worse and we all know that. But from an accident standpoint, it's as necessary as it is from a day-by-day exposure to the individual is necessary. So we want to keep it as low as possible. Now I don't know what that threshhold is --

MR. EBERSOLE: Well, I guess I was just, you know, trying to determine if you have a really active and organized program to look at those matters.

That's all, thank you.

MR. KINSEY: Going back to the five REM per year limit as set by Mr. Goldberg, administratively we're going maintain four or less. As you are aware, this is significantly more conservative than the regulatory requirement.

We will accomplish this goal through review of engineering design and effective work practices. Our health and safety support organization is responsible for reviewing the plant design for features that will reduce doses to the workers.

As the plant is constructed, this staff is performing walk-downs to verify that the design is carried

out properly in construction and to find ways to minimize system interrelatons that would increase dose level.

Effective work practices including pre-job planning, exposure reduction, exposure usage accountability and post-job review.

The overall station ALARA program is monitored by an ALARA Committee, chaired by the Health and Safety Services Organization with members from each of the operations divisions.

Some pertinent facts about the health and safety organization are shown on the following slide. I won't go through all of them with you now, but let me just highlight a few of them.

A division will have a total compliment of 56 personnel at fuel load of Unit 1. We currently have 35 employees in the division.

The staffs' educational experience consists of one Doctors degree, three Masters, twelve Bachelors and seven Associate Degrees.

Two health physicists are certified by the American Board of Health Physics and two technicians are registered with the National Registry of Radiation Protection Technicians.

Before I close, I would like to give you some general information about the operations organization.

The organization has 97 personnel with Bachelors degrees. Forty-four of these are engineering and 26 are technical or science related.

The department has 1,282 years cumulative nuclear experience. This includes only years associated with some type of operating facility. If credit were taken for the years many of our employees have spent at the South Texas Project or other facilities under construction, these numbers would be substantially higher.

Managers and supervisors have 648 cumulative years nuclear experience.

The licensed operators will be on a six-shift rotation. This gives us the flexibility to have a strong requalification program and ensures that there are enough operators available to take care of peak work demands, vacation and sick leave without overstressing our employees.

Other critical positions, such as chemical plant operators and chemical analyst also have allowance for re-training and peak work demands by establishment of five shifts.

We plan to perform the majority of our maintenance on two shifts, five days a week. We will have maintenance coverage on the third shift and on weekends to handle priorities and to perform equipment and system

testing.

Chemical analyst coverage will be 24 hours a day, seven days a week, continuing our commitment to excellence in chemistry control.

In summary, the nuclear plant operatons organization is staffed with trained and experienced personnel dedicated foremost to the safe operation of the South Texas Project. The Department, myself and our corporate organization are ready to operate the station.

Are there any questions?

DR. MARK: A site question. An item in the radiological protection, which I believe has a considerable effect, is housekeeping; that is, if there is a place that's going to leak that the leak can't run all over the floor or anything has leaked that they can be scrubbed up immediately, not tracked around.

That, perhaps, is implied in what you have been saying but it isn't spelled out.

MR. KINSEY: Sir, we have got a dedicated staff in the chemical operations and analysis division whose job is to do exactly what you're talking about. They are dedicated to minimizing radwaste to getting it cleaned up when we have a problem right away to training our personnel, all the other safety personnel --

DR. MARK: I remember hearing INPO was -- has a

task force on this subject and they were going around the country with words on that item as well as the ones you have mentioned?

MR. KINSEY: Well, we're going to have a policy as well to dictate from corporate management and myself, okay, what our philosophy is and what we expect out of station personnel.

DR. MARK: Just fine. Other questions for Mr. Kinsey?

MR. EBERSOLE: We're at the end of 11, aren't we? We're at the end of the whole thing aren't we?

I just noticed a security question which I certainly wouldn't recommend we take up here. But maybe --

DR. MARK: Well, I did want to ask -- I think we've covered everything else that's listed on the agenda as I have it except the security.

We have heard, I believe, what's necessary about the physical protection. Obviously the security includes safeguards and that was on at least one of the slides but it wasn't discussed specifically. And as Ebersole said, we don't want to go into your anti-sabotage activities here and now or in public, I think.

Have you had any incidents at the plant which you have decided did constitute a small attempt at industrial sabotage?

MR. KINSEY: Yes, sir, we have and I'd like to introduce Mr. Andy Hill, our security manager who might want to --

DR. MARK: I don't think we want details, but they have happened and you've given it thought. Now what about the more broad subject of serious sabotage as let's say the plant -- like when the plant is operating. And again, I don't want to know what provisions you've made, but what level of thought has there been given to it?

MR. EBERSOLE: May I add something to this. I never much trusted in fences and pistols and things, it's the interior intruder, the fellow who gets inside.

MR. HILL: A.O. Hill, manager of nuclear security. Yes, sir, we have given consideralbe thought to the sabotage scenario. What we do, we utilitze computer monitoring based on the instrument of adversary sequence interruptions philosophy that Sandia Laboratories has presented and what we do is take the formabilities (sic) at all areas of the plant from outside protective areas from protected areas inside for the vital equipment of the plant and we estimate particular scenarios involved there.

DR. MARK: Now, in that connection, we've heard in connection fitness for duty something about the alcohol and drug abuse possibilities, there was also a program, I'm not sure at what stage it is just now of background

investigation of employees. Is that in effect?

MR. HILL: Yes, sir, it is. Currently we are, have implemented what we call the access authorization program which includes background investigation and phsycological studies.

Additionally we tie in fitness for duties program -- we have a linkage there for the continual and behavoral observation program. We started that training in February --

DR. MARK: There was a program of that sort, I think, outlined within the last year by NUMARC.

MR. HILL: That is correct, sir. And we are following both guidelines -- have commited to follow both guidelines for specific this organization.

DR. MARK: I think unless -- I don't have any further questions I was just going to drop it about there.

MR. EBERSOLE: As a security man, your function has been vastly extended to include our guests. Well, let me ask you this: Are you acquainted with mult ple and point vulnerabilities in the plant to which you must address varying degrees of security considerations?

MR. HILL: Yes, sir. As I -- I'll reiterate --

MR. EBERSOLE: I heard you say about Sandia.

MR. HILL: Yes, sir. We utilizing the estimate of average sequence interruptions models. We are able to

do that. We've had several print-outs that we've done that actually give us a time.

MR. EBERSOLE: Are they oriented to your plant as a unique plant? Sandia's was a general plant.

MR. Hill: Yes, sir, that's correct. We have to because those times of course are varying an consistant depending on the physical size of our plant so we have had to specify --

MR EBERSOLE: You then have a listing or knowledge, cognizant of various levels of suseptability.

MR. HILL: That's correct, sir.

MR. EBERSOLE: Yeah, okay. Thank you.

DR. MARK: Is there anything else that we call for? I think not. I don't know -- Mr. Goldberg did you have some additional message?

MR. GOLDBERG: I'll keep my closing remarks brief.

I would like to hope that your visit to the plant and discusses with my staff in the last two days have conveyed at least the following.

That Houston Lighting & Power Company is fully committed tc completing the design construction and to go on to operate South Texas in a quality manner.

The Nuclear Regulatory Commission has the full attention of Houston Lighting & Power. And I mean one

hundred percent.

I believe our swift aggresive corrective action to address the CAT findings which were discussed by Mr. Constable is but one example that testifies to that particular thing.

In my view, talk of esculating enforcement action regarding the CAT is inappropriate in that it serves to punish one after he has reformed. It's a matter of interest on a number of indications. This project has undertaken to solve problems by investigation determining their underlying cause, putting in place corrective action to preclude reoccurence before the NRC has even written the problem down.

We have filed reports of what corrective actions we've taken before notices of vitalation have been issued. In affect, I think we have kind of fowled up the administraative system because we are solving many problems before they do get written down. And we're going to keep up that pace so there won't be any threat for Region 4.

We believe that the many obvious plant features which have been incorporated in South Texas to ensure safe and reliable plant operation is living proof to our commitment of excellence. We put a lot of money where our mouth is, as the expression goes.

We look forward to operating the station which

will serve the electric power needs of an estimated 500,000 Texans and hopefully set the stage for the owners to recover an enourmous investment.

I would like to thank the Subcommittee for has proved to be a very stimulating visit. We look forward to meeting the Full Committee next week.

DR. MARK: Thank you, Mr. Goldberg. I think we've felt we've had a very interesting visit also and very informative.

I'm sure there are likely to be sequels or discussions, I don't quite known for sure what they are at this moment.

Unless my collegues have something else they would like to have comment on.

MR. EBERSOLE: No, I can just say, I think I've been impressed by the quality and character.

DR. MARK: I believe that will terminate the meeting that we're having. There is a little post-session I'd like to call for, but we will terminate the recorded session of this meeting now.

(Recess at 1:05 p.m.)

CERTIFICATE OF OFFICIAL REPORTER

this is to certify that the attached proceedings before the ADVISORY COMMITTEE ON REACTOR SAFEGUARDS in the matter of:

NAME OF PROCEEDING: HOUSTON LIGHTING & POWER COMPANY, et al.
(South Texas Project, Units 1 and 2)

PLACE: BAY CITY, TEXAS

DATE: FRIDAY, MAY 30, 1986

were held as herein appears, and that this is the original transcript thereof for the file of the Advisory Committee on Reactor Safeguards.

Linda Tate

Official Reporter

Tate Reporting Service