ORIGINAL ACRS-1458

UNITED STATES
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF: DOCKET NO:

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

306TH GENERAL MEETING

LOCATION: WASHINGTON, D. C. PAGES: 1 - 150

DATE: THURSDAY, OCTOBER 10, 1985

ACE-FEDERAL REPORTERS, INC.

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

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

306TH GENERAL MEETING

Nuclear Regulatory Commission
Room 1046
1717 H Street, N.W.
Washington, D. C.

Thursday, October 10, 1985

The 306th General Meeting convened at 11:45 a.m., Mr. David Ward, Chairman, presiding.

ACRS MEMBERS PRESENT:

MR. DAVID WARD :
DR. ROBERT AXTMANN
DR. MAX W. CARBON
MR. JESSE EBERSOLE
MR. HAROLD ETHERINGTON
DR. WILLIAM KERR
DR. HAROLD W. LEWIS
DR. CARSON MARK
MR. CARLYLE MICHELSON
DR. DADE W. MOELLER
DR. DAVID OKRENT
MR. GLENN A. REED
DR. FORREST J. REMICK
DR. PAUL G. SHEWMON
DR. CHESTER P. SIESS
MR. CHARLES J. WYLIE

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UNITED STATES NUCLEAR REGULATORY COMMISSIONERS'

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

THURSDAY, OCTOBER 10, 1985

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PROCEEDINGS

(11:45 a.m.)

MR. WARD: Gentlemen, our next topic is a discussion of the TVA organizational changes, and I think we'll have a presentation first from the representatives of the Tennessee Valley Authority. Then, following that, we will have a statement from staff.

I believe Mr. Jim Huffam is going to take the lead in the TVA presentation. Mr. Huffam...

MR. HUFHAM: Is it all right to stand here? Can you hear me?

Before I start, I'd like to introduce myself. I'm James W. Huffam, Manager of Licensing and Risk Protection for the Tennessee Valley Authority. With me is Dick Parker, who is our Assistant Director of Quality Assurance, and Kermit Witt, who is the Director on our Nuclear Safety Review Staff.

I want to thank you all for asking us here today to discuss the TVA organization. We have had a considerable amount of change in the organization over the last few months, and especially over the last few years. And I feel like when I get through, you will have a better understanding of where we are today.

I'm sure there are people in this room that question where the organization is and how it functions.

DAV/bc

And for that reason, we're glad to be here today to discuss it with you. In the time that you allowed us to speak before you, we felt like the way we should cover this topic is to very briefly go back and express to you where we were in 1984, around the timeframe of January of that year.

Then I would like to discuss with you in more detail where we were this July 9, 1985 and the changes we have made since July 9, 1985. I realize there's nothing more boring than merely sitting and looking through organizational charts. But I think, if you will let me walk you through them, you'll have that understanding at the end.

Before I start with the first chart, I really want to say one thing to the committee and to the staff that's here. Probably most of the members in this room are not aware of all that's gone on since July the 9th. Changing and organizational structure and changing philosophies in an organization as large as TVA is not an easy task to do. I know we'd like to move at a faster pace and I feel like some of the members of the NRC and staff would like us to move faster, but when we look back at what we've done since July 9th, we've come a long way.

We've defined the problems we have with our programs and we have reorganized the organizational relationships. I will discuss those in this presentation.

DAV/bc

TVA has reorganized several times over the past years, but this is the first time we have reorganized relationships. This is the first time we've done that in 20-30 years.

And the third thing that we feel like we've done in the last three weeks is we have been able to recruit and hire experienced and talented managers from outside of TVA and we've been able to do this in the period of time where we thought we would not be successful, and we feel like we've been very successful at it. So, during the presentation, I will cover these in more depth.

Dick, do you want to put up slide one?

MR. MICHELSON: While you're doing that, could you give me a little idea of your past association with TVA? What part of TVA did you work in? And how many years have you worked there, and so forth? In other words, where's your perspective coming from?

MR. HUFHAM: Yes, sir.

(Slide.)

I've been manager of Nuclear Licensing for less than a year now. Before that, I came to TVA from the Region II NRC office in Atlanta; prior to becoming Licensing Manager for TVA, I was the manager of what is now the Risk Protection Branch. That is a very diversified branch within the TVA nuclear power organization. It covers everything

DAV/bc

from liability and property insurance to emergency planning, to some phases of health physics to nuclear security to fire protection. Industrial safety. It cuts across a broad spectrum of TVA nuclear activities.

Then, prior to coming to TVA in '79, I've already stated I was with the Region II in Atlanta, first, as an inspector, and then as a section chief in the Region II office.

MR. MICHELSON: How long did you work for Region II?

MR. HUFHAM: I was with the Region II office from 1974 until 1979. Any more questions?

(No response.)

MR. HUFHAM: Part of curing any problem is identifying it. You have asked me to come here. You have asked TVA to come here today and talk about organizations and we definitely feel that that is one of our major problems that we have to face in order to turn the TVA nuclear program around.

I'd like to start even before this slide. You can't see it, but it says "Effective prior to July 9th". Well, if you'll back up from that, let's say 10 years or so before July the 9th. Let's just say through the sixties and the seventies, TVA was really two massive organizations -- one dedicated to an engineering and construction function,

DAV/bc

and the other dedicated to operations. That really was the way it operated and was structured. It really had no central focus that led all of these activities down the road to a common goal.

So, in 1984, January of 1984, we reassigned an organization to pull all power function under Hugh Parris. Many of you know now, as you've heard, Hugh Parris is our manager of Power and Engineering, but in January 1984, we established Hugh Parris as the manager of the Power and Engineering organization. I wouldn't dare go through all of these functions with you, but I'd like to just briefly go through.

Hugh had three executive assistants that covered from Nuclear to Fossil. He had the Office of Quality Assurance under him, and he had a staff under the Assistant Manager of Power Engineering. Basically, this was the comptroller of the financing part.

Then he had an Office of Engineering. I mean, an Office of Engineering Use, excuse me. This was the solar application, the distributor relations. Some of the test programs that we have. He had an Office of Power Operations, which was Fossil and Hydro, and all the support projects that go along with the nuclear and fossil. The transmission line planning, he had the complete Office of Engineering, which covered fossil and hydro and nuclear.

DAV/bc

He had the Office of Construction, that built all of our plants. Then, an Office of Nuclear Power, and then Project Management as he desired.

MR. MICHELSON: How long prior to July of '85 was this structure in effect?

MR. HUFHAM: This was placed in effect early 1984.

MR. WARD: Jim, the Office of Nuclear Power, does that mean nuclear power operations?

MR. HUFHAM: That's right. This was the way we thought we could pull everything under one person. But, really, as we worked with it from January of '84 until January of '85, as we look back at it, there was really no one person in charge. And as I've gone through it, you can probably see that.

Hugh had approximately 26,000 people he was trying to manage under this organization. Like I've said, everything from energy use and solar applications to nuclear power operations. So the effort of pulling nuclear together really under one person was there but not as neatly as it should be, and as we have it today. There was really not a head of nuclear responsibilites wherein defined functions were not readily identifiable. And I'll say in front of the group today, accountability, if you tried to find someone to hold accountable, it was very difficult.

DAV/bc

And also under this organization, we still had no overall focus or corporate entity to lead this group down to a common goal. I'd like to summarize it by just saying Hugh had everything to do with fossil, hydro, nuclear, even engineering construction, and even to a degree, some of the appropriated funding projects.

MR. MICHELSON: I'm having a little difficulty tracking your rationale here though. This was an organizational structure for about a year and a half?

MR. HUFHAM: That's right.

MR. MICHELSON: The problems that TVA has, if they have problems, didn't generate in that year and a half, during which this structure was in place; it must have generated earlier. So what does this structure have to do with basically the problems that TVA has?

You know, how did whatever you're going to show us next correct the problem that was created before this structure ever went in place?

MR. HUFHAM: You're right. The TVA problems have been long in coming and almost evolutionary. Factors that have long-term effects have been in effect a long time. This was our first effort to try to correct those problems. Maybe I could clear it up as we move to the next slide. This program did not do it.

MR. PARKER: Dick Parker of TVA.

DAV/bc

Prior to this organization, we had the Office of Engineering and Construction and the Office of Power. Each reported to the general manager. The problem was there was a communication problem between engineering, construction and power. This organization effort was to try to pull power and engineering construction together under one manager in TVA.

I think probably the problem that we had and the scope that was pulled under Mr. Parris here was still too big for one person to manage. We were trying to do fossil, hydro and nuclear energy use, conservation altogether.

I think this organization was the first attempt to pull engineering, construction and power together under one management.

(Slide.)

MR. EBERSOLE: May I ask a question, again, for clarification of some of the blocks that are rather ambiguous up there?

Office of Nuclear Power. I can interpret that in the context of conceptual design, design, construction, operation, the whole bit. Or I could just say it's operational. What is it?

MR. HUFHAM: It's the latter. It's just operations.

MR. EBERSOLE: I think it should be so described

DAV/bc

so it could be understandable on the block diagram. Then, when I come to Office of Engineering, that could be everything except Nuclear Engineering, or whatever.

MR. HUFHAM: No, sir. That is all of the engineering function, nuclear engineering function. Everything except for a nuclear engineering group in the Office of Nuclear Power Operations.

MR. EBERSOLE: You see, it's hard to interpret what I see here. What about the Office of Power Operations?

MR. HUFHAM: In that block is the Division of Fossil and Hydro, Transmission Planning. I don't have a complete breakdown, but in that block there's really nothing that has to do with nuclear other than transmission lines.

MR. EBERSOLE: Okay, it's nonnuclear. And Office of Construction, that's everything?

MR. HUFHAM: That would be construction of fossil and hydro as well as nuclear.

MR. EBERSOLE: Well, you see the block diagram by no means translates into some understandable configuration.

MR. HUFHAM: I'll be glad to submit that to you. That's quite a busy slide. Once it goes all the way down, I'll be glad to submit it for the record.

MR. EBERSOLE: It's just that unless you remember what you say, you won't know where you are. Thank you.

MR. HUFHAM: The comments I've made and Dick has

DAV/bc

made, that really that organization did not do the effort we thought it would and start correcting our problems, because of that, effective this past July, we really separated everything out from everything that didn't have anything to do with nuclear. We separated it.

Hugh Parris still reported to the general manager. He still had his staffs. This is Personnel, part of our budget planning staffs. But then he had the Office of Engineering, the Office of Construction, the Division of Nuclear Services, the Division of Quality Assurance, Brown's Ferry, Sequoyah, Watts Bar, the Watts Bar Project Manager, and the Bellefonte Project Manager.

MR. MICHELSON: Hold this a moment. You said you separated out everything that didn't have to do with nuclear. Doesn't the Office of Nuclear Engineering still have both nuclear and nonnuclear? Doesn't the Office of Construction still have both?

MR. HUFHAM: I made a comment on that. Both of those functions, the Office of Engineering and the Office of Construction, most of their activities are about 85 percent nuclear. We left the whole office under Hugh Parris, but the 15 percent of engineering and construction support for other than nuclear is handled through an Assistant Director in this office under a service contract.

MR. MICHELSON: The service contract means it's

DAV/bc

an outsider?

MR. HUFHAM: The service contract would be our fossil and hydro office can either contract with the Office of Engineering for that function, or they can go to the outside now under this arrangement.

MR. MICHELSON: Service contract normally meant to me "outsider". And this is still inside?

MR. HUFHAM: Yes, sir.

MR. WARD: So the span of control for Mr. Parris has gone from eight to 10 here, which is not an improvement.

MR. HUFHAM: We'll move on quickly through the slides. His span of control will reduce. What this did do though was reduce 26,000 people reporting to Mr. Parris to somewhere in the neighborhood of something like 14,000. So he has reduced his overall responsibilities at this point.

MR. EBERSOLE: Are you just showing us an evolutionary process here?

MR. HUFHAM: Yes, sir, and I'm going to get to the one we have today.

(Slide.)

Some of you have had questions asked, what really became -- this may help somewhat. We really split the two. Mr. Parris did handle the slide that we just saw, and then Mr. Bob Steffy handles really everything having to do with

DAV/bc

nonnuclear operations except that small group that's in the Engineering and Construction block.

MR. EBERSOLE: Mr. Willis' attributes in nuclear engineering with its various complexities, and so forth, what is his background?

MR. HUFHAM: I'm not sure I know. Do you, Kermit?

MR. WITT: Mr. Willis came up through TVA in the area of construction.

MR. EBERSOLE: So he's a construction engineer basically?

MR. WITT: Yes, sir.

MR. EBERSOLE: Thank you.

(Slide.)

MR. HUFHAM: I'd like to briefly just go over the site organizations have not really changed since 1984 up until the present. We have a site director that we put -- I'm using Sequoyah just as an example. We have a site director who is supported by the plant manager, the design services manager, the modifications manager, the site services manager. I'll be glad to explain any of the functions in these blocks, but basically that has been in place since '84 and it has not changed.

MR. REED: You have a training facility at Sequoyah. Where does that fall in those blocks?

DAV/bc

MR. HUFHAM: That function is still under the Division of Nuclear Services.

(Slide.)

MR. REED: Since it functions for other plants, you're saying it's not under Sequoyah's organization?

MR. HUFHAM: No, sir.

DAVbur

(Slide.)

MR. HUFHAM: It will show up in our present slide. We have a Division of Nuclear Services that is right here. That is support services for all the plants, and the training branch is located in that division.

MR. MICHELSON: If you are leaving the Sequoyah site, let me ask a question before you leave.

It was my impression that you have decentralized to some extent engineering services. Where does that show? Is that the design services manager who has the engineering crew?

MR. HUFHAM: Yes, sir. We have onsite -- the contingency of design services within the site is under this design services manager.

Really, this manager, like I have shown, reports to the site director. He is responsible for all design projects on that site.

MR. MICHELSON: How large a crew are we speaking of?

MR. HUFHAM: At Browns Ferry? Dick, do you know? At Sequoyah specifically?

MR. PARKER: 150.

MR. MICHELSON: And those came from Knoxville?

MR. HUFHAM: Most of them.

MR. WARD: Jim, I think I missed something.

DAVbur

Where does this fit in with the previous chart? To whom does the Sequoyah site director report? Are you going to show us that?

MR. HUFHAM: I think what we need to do is move right on to the organization that we have implemented just very recently.

MR. WARD: All right.

(Slide.)

MR. HUFHAM: If you will follow along in your handouts, I have just been over a July 9th organization, July the 9th. This is where we put Parris in charge. We put all the resources we thought he needed to have under him, and we established these four long-term objectives, or these four objectives.

It was to consolidate our nuclear resources under a tightly focused umbrella, acquire, retain, and train management talent to effectively manage our nuclear activities, establish priorities so that we limit our activities to those that we have the capability to execute in an excellent manner, and develop a team of experienced and qualified key personnel to provide leadership and direction to our nuclear program.

In order to clarify where we are in this presentation, I want to go down each of these because it has led us to a further refinement of the organization that was

DAVbur

put into plac July the 9th.

We have taken these objectives. We have worked with them, with the July 9th organizational structure, but we have further refined our organization and I have two remaining slides in your package that I really would like to concentrate on for this ACRS presentation.

With the organization as of July the 9th, we felt that we had consolidated tightly most everything that had to do with our nuclear resources under one program.

I would like to go back and put a word up here, "evaluate," in front of "acquire" because we have evaluated all of our management positions and are evaluating all of our management positions in the TVA nuclear program, and with the July 9th organization and through this evaluation program, this was the step that we took to eliminate three managers at Browns Ferry.

Most of you know we took out the plant manager, we took out the assistant manager for maintenance, and our operations supervisor. But it was with a word in front of this, called "evaluate," where we are evaluating all managers in our program and making sure their management capability fits the position they hold.

Now, I would like to go to "acquire."

MR. REED: That word "evaluate," when you said it the first time, you said "evaluate the positions." Now,

DAVbur

you are saying you are evaluating the people.

Which was it?

MR. HUFHAM: It is a combination of both. It is an evaluation of that person, his attitude, his management capabilities, and also --

MR. REED: So you start to apply a selection process to these people; is that what you are saying?

MR. HUFHAM: Absolutely.

MR. REED: An evaluation and selection process.

Could you tell me just a little bit, what kind of process did you use? Was it subjective, an interview, testing, or what?

MR. HUFHAM: We have a formal program we have developed, and are developing in more detail since then, for these initial evaluation period positions when we started this on July the 9th. It is really an evaluation of a past management performance history.

MR. MICHELSON: Did you have some kind of outside assistance in performing this evaluation, or did you do it totally internally?

MR. HUFHAM: No, sir, it was done internally.

MR. MICHELSON: Of course, then I have to ask, I guess, what is different now? These same people were evaluating performance five years ago. What is new?

It says they now know how to do it differently.

DAVbur

MR. HUFHAM: Could I delay that question?

MR. MICHELSON: You may not even want to answer it.

MR. HUFHAM: No, I do want to answer it under training.

I move to the second word because this chart will lead us to the organization we are using now.

We have been evaluating managers, acquiring management. I am not going to use this date again, but after July the 9th or since July the 9th, which has just been a couple of weeks, eight or 10 weeks, we have acquired a nuclear manager of operations, and I have it on your back slide.

We have acquired a nuclear manager of operations from Kansas City Gas & Electric. We have acquired an assistant to him, an assistant project man for him who comes to us from Region 4, a division director in Region 4 of NRC.

We are actively recruiting a site director for Browns Ferry. I will comment on that when I get to the next slide.

We are actively recruiting a manager for our office. We are combining our Office of Engineering and Office of Construction into one major office, and we are actively -- I will use that again -- we are actively

DAVbur

recruiting a manager for that, someone from outside of TVA, experienced, a needed position.

We are also looking at INPO, at other utilities, and are very pleased at the progress we are being able to make on acquiring outside managers.

In-house, to retrain and train managers, we have taken -- to answer your question more directly -- we have taken our Office of Personnel Director -- she is Ms. Marilyn Taylor. She has been with the Tennessee Valley Authority since, I think, five years or so. She is a proven manager, especially of personnel relations. She has voluntarily stepped down from the Office of Personnel and is now assisting Mr. Parris in training managers.

This is our program she is developing on management training versus the positions they hold. I can't go into the details of her program. We will be presenting this in late October in writing to the NRC.

But the main thing she is doing is evaluating managers' relationships with their employees. Of course, this is a needed area, since our employee concern program --

MR. REED: You realize, of course, there are such things as formalized tests to evaluate management potential.

Are you perhaps using these?

Another thing you are talking about is

DAVbur

recruitment, and I wonder if in your recruitment you are using selection testing, validated selection testing, that leads you to recruit real desirable people.

Going back in history, at one time I heard a manager level person at TVA saying that all that he needed was warm bodies coming through the front door and he could train those people to be real professionals.

Sometime after that, I heard one of -- Mr. Freemans -- he put this in the newspaper. He was interviewed, and he said that he was going to implement an IQ testing activity with respect to recruiting people in the staffing of TVA's nuclear activities.

Where do you stand in this with respect to real evaluation of your new recruits and your managers that you are changing around?

MR. WARD: Jim, if you could give him a fairly quick answer to that. I think we had better let Mr. Hufham try to answer that quickly, but then we had better let Mr. Hufham step through his program.

MR. HUFHAM: I really cannot answer you on IQ. Kermit, can you?

MR. WITT: No.

MR. HUFHAM: I really can't.

Before the staff meeting today, I was prepared to go into how we established the priorities and activities

DAVbur

that we carry forth in that. I would like to defer that and go on to the Item No. 4 because that is what really leads us to our present organization.

One comment on this. We received a 5054(f) letter from the staff on September the 15th. I think the new way that TVA will be doing business, setting priorities, and establishing standards of excellence will be reflected in the way our response is handled or our program for responding to that 5054(f) letter.

If I have one statement to make today on this item and the letter we received, it is that we certainly have treated it with seriousness and to get to the root cause. To help us answer that letter and help us solve our problems rests in No. 4.

That is to develop a team of experienced and qualified key personnel to provide leadership and direction to our nuclear program. That is something we have not had in any of these organization charts that I have shown you up until now.

We have had a bureaucracy of managers, but we have not had a cooperative team of managers that worked together toward a common goal.

To address the problems we do have, we can't address them piecemeal, band-aid fixes. We have to start here.

DAVbur

With that comment, I would like to go on to the next slide.

MR. MICHELSON: I just want a clarification on that comment. This kind of infers to me that you are talking about different people in these positions than were shown in the past.

Is that the idea, or is it just the same people shuffled around to different positions?

MR. HUFHAM: Some of them are old, some of them are new.

MR. MICHELSON: Can you give me a fractional idea?

MR. HUFHAM: The last slide will have the names in them.

DR. KERR: It sounds to me like they have got religion.

(Laughter.)

MR. HUFHAM: I wish I had a magic marker. I would go up here and mark --

MR. WARD: I am sure we can get you one. Does staff have a magic marker?

I am sorry, we can't even do that.

MR. HUFHAM: Effective now, you can now switch from July 9th to October the 10th, whatever it be. It is effective as of Monday of this week.

DAVbur

Hugh Parris has a team. It is himself, it is the manager of quality assurance, it is the manager of licensing. We still have our personnel money comptrollers, the manager of the Office of Engineering/Office of Construction, manager of nuclear operations, project manager, Watts Bar and Bellefonte.

But contrary to the other slide, this is the line organization where all the sites report to Chuck Mason, our new manager of nuclear operations. We have made even a further refinement to that this week to make it more of a team than we have right here.

This will be the final one that I will go through the names with.

(Slide.)

Hugh Parris will have approximately four, five, six people reporting to him directly. The quality assurance manager used to be in the Office of Nuclear Power, if you go way back. I have no way of making it clear to you. It has been part of that first block, the Operations block of Nuclear Power. It is now elevated and reports directly to Hugh Parris.

Licensing has been buried in the Division of Nuclear Services. The licensing section, even though it has been a joy to work with some of the people and handle some of the responsibilities, it has been buried with the

DAVbur

responsibilities other than licensing. It has been elevated to work with Mr. Parris on licensing issues, our relations with the NRC as well as relations with Congress.

We now have Chuck Mason, who, like I have said, heads up the four sites. Bill Cottle is filling the position that Mr. Mason will assume the first part of next week. After Mr. Mason arrives, Bill will probably return to Watts Bar as the site director, but only after this team is finalized and is functioning well.

Mr. Herb Abercrombie is still the site director at Sequoyah.

I will go through the slide. Then I will come back and answer your question on who is old and who is new.

There is no change at the Sequoyah site director position.

Mr. Coffey, Jim Coffey, is presently the site director at Browns Ferry. He will be leaving Browns Ferry October the 18th, next Friday. We have an offer out to the new site director. We are in the final stages of completing the offer package. We are in negotiation with him. We have very good reason to think he will accept. I am not in any position to go much further on that today. But we are working on it. Mr. Coffey will come out next Friday. Bill Cottle will act in that position until a new site director is announced. He will not be going to the site. He will

DAVbur

work from Chattanooga with Bob Lewis, who is the plant manager down there at the present time.

John Hutton is old -- I don't mean that as a negative -- he is an old TVA person, and he still heads up the manager of nuclear services.

And your earlier question on the training branch, it still sits within this organization. This is the position we have created that is certainly necessary to keep the team together, to keep it effective and marching toward a common goal. This is the guy who we are going to the outside for, also.

We have a vice president from the outside for nuclear operations.

We will recruit, and are -- and I want to say won't be satisfied until we have got the right person for a manager to head up both the Office of Engineering and the Office of Construction.

DAV/bc

MR. EBERSOLE: I wonder if you could straighten out a problem. Office of Engineering and Construction, I understood you had project ties to these functions under the site directors, and you sent a bunch of people to the sites for each project, leaving only a vestigial apparatus in Knoxville that you now put under this block, which you call Engineering and Construction.

Would you tell me by that to what extent you're projectized and to what extent the central control, if any, is exercised from Knoxville? You know, for common standards?

MR. HUFHAM: I'm going to let Dick -- he's worked with it closer than I have.

MR. PARKER: Basically, in the old Office of Engineering there's a Brown's Ferry project that dealt primarily with Brown's Ferry design, that dealt with Brown's Ferry design problems, and the Sequoyah Project, which dealt with Sequoyah design problems.

There are also some design projects that aren't dedicated to particular sites. In other words, civil and architectural, and some specialized functions that are dedicated to a particular site.

So there's a core engineering function that remains in the Office of Engineering that is not site specific.

DAV/bc

The site specific design functions have been moved to the site that directly support the site and is directly involved in the activities of the site.

MR. EBERSOLE: So you're really super-regionalized in that you projectized; the basic, critical, technical decisions are made by the site director at each project, not in Knoxville?

MR. PARKER: Yes, sir.

MR. EBERSOLE: The Knoxville office, I assume, is secondarily aware of these?

MR. PARKER: Yes, sir. In fact, to reinforce that basically, the site director has been designated as the owner-operator of that site. They actually establish a contract relationship with the Office of Engineering for those services.

MR. EBERSOLE: He's an owner-operator-designer and constructor, isn't he? The whole bit?

MR. PARKER: Yes, he's the whole bit. And, basically, the engineering function is a service function to him.

MR. EBERSOLE: You mean the one in Knoxville?

MR. PARKER: The engineering project on site is a service function to the site director.

MR. EBERSOLE: He goes to Knoxville to ask for things. Nothing comes to Knoxville unasked for by him?

DAV/bc

MR. PARKER: That's correct. Yes, sir.

MR. EBERSOLE: Okay.

DR. AXTMANN: Watt's Bar is there, but Bellefonte is missing. Did they go independent?

MR. WARD: On the previous slide, you had a box for project manager, Bellefonte and Watt's Bar. Where are these?

MR. HUFHAM: These have been combined. Jim Darling is project manager for Bellefonte. William Graham for Watt's Bar.

MR. PARKER: They have not decentralized the engineering function for the plants under construction. I don't know whether that's your question or not. In other words, they've got an engineering project on site at Sequoyah and Brown's Ferry and at Watt's Bar, but not at Bellefonte. And they're in the transition phase at Watt's Bar.

MR. EBERSOLE: I wonder if you could give us a brief reflection on what the operational background of Coffey, Abercrombie and Cottle are. Do you know whether they're construction, operation, design, whatever? What's their background, and so forth?

I gather this is an operationally-oriented structure.

MR. PARKER: Yes, sir, that's correct. Mr.

DAV/bc

Cottle was in the Nuclear Navy. He went to Farley plant, and when he left there, he worked there as operations supervisor. He left Farley, went to NRC, worked at NRC, Region II, was a resident inspector.

TVA hired him as, I believe, Operations Manager of Sequoyah, and he went to Plant Manager at Watt's Bar.

MR. EBERSOLE: So he comes from an inspection background, among other things?

MR. PARKER: He comes from Navy Nuclear. He went through startup at Farley. He went through startup at Sequoyah, so he's got an operational background.

MR. EBERSOLE: What about Abercrombie?

MR. PARKER: Mr. Abercrombie came up through the operator ranks. He was originally an operator and he's come up through the operations ranks. He was operations supervisor at Sequoyah and, at one time, asisstant plant manager at Brown's Ferry; then plant manager at Brown's Ferry, assistant production manager in the whole office of Nuclear Power and an operational type.

Then he was Nuclear Services Division Director. Then he went to Sequoyah as the site director.

MR. EBERSOLE: And, finally, Cottle, to get a general flavor.

MR. PARKER: Cottle I just went over.

MR. WARD: Coffey, you mean.

DAV/bc

MR. PARKER: Coffey? Coffey, I believe, came to work for TVA right out of college and has worked...he started in fossil and power. He worked in Fossil Power plants. When TVA first got into nuclear, Mr. Coffey went to ETCR and a nucleus was formed of the TVA nuclear program. He was results supervisor at Brown's Ferry. Then has predominantly worked in the nuclear power central office, up until about two years ago; he served as acting plant manager of Brown's Ferry for something less than a year. He's been site director there for about a year and a half.

MR. EBERSOLE: These folks used to be called superintendants, I believe. What's the difference between a director and a superintendant?

MR. PARKER: The superintendant basically did the function of the plant manager on this site. His scope of responsibilities primarily related to operation of the plant. The design and construction activities, and so forth, were handled by the old Office of Engineering and Construction and the superintendant focused strictly on operations.

Engineering kind of came in and did what they thought was right.

MR. EBERSOLE: So you've handed the design and other things to the superintendant and raised his title level to director?

MR. PARKER: Yes, sir. We put a man in charge of the site that is responsible for the engineering and operations, and then the plant manager, basically, does what we traditionally think of as the plant superintendant.

MR. EBERSOLE: Thank you.

MR. WARD: Let's see. Mr. Hufham, I gather that everything you've got shown up there is nuclear except under Mr. Cantrell and Bon, there's some nonnuclear activity. Is that right?

MR. HUFHAM: There's a small portion that is nonnuclear, that's right.

MR. WARD: But everything else is for your nuclear plants?

MR. HUFHAM: That's right.

DR. CARBON: What's Mr. Mason's background and qualifications?

MR. HUFHAM: He was with TVA. I don't know when he came to TVA. He was with the corporate office.

MR. PARKER: Mr. Mason is ex-Navy Nuclear. He came to TVA at Sequoyah, worked as the results supervisor, engineering supervisor at Sequoyah, came up through the ranks to plant manager. He left TVA something over a year ago and went out as vice president of Nuclear Operations with Kansas Gas and Electric. So he's Nuclear Navy and has spent time operating at TVA, operating nuclear plants,

DAV/bc

preoperational and final stages of construction. I can't recall whether he was at Sequoyah during the startup or not. He was plant manager at Watt's Bar for a while in the construction phase activities at Watt's Bar, and at Sequoyah.

MR. HUFHAM: I realize the time.

MR. WARD: How about just one more question?

MR. MICHELSEN: I think, if you went back and looked at organizational structures in TVA like in 198-83, you'll find you have now made the full circle on things like engineering and construction. It was just like you had shown here several years ago. And then you broke it down into one, and now you're back to the way it was.

I think almost the same is true over on the lefthand side of your chart, at the lower levels there. I don't think that's really a new arrangement. It's an arrangement that was broken up for a while and has been rearranged the same way.

So, okay, now I look for people. Most of these people are old-time TVA people. Not all, but most of them. Maybe one has left for a year and come back. But I'm looking for what's new. What's to say that the problems generated in the period of say 1980-83 or '84 and the people who were in responsible charge at that time, how's that changed? What's new?

DAV/bc

MR. HUFHAM: First, I'd like to comment on the structure itself. It does look very similar to the way we started before. We came full circle, but there was a space difference involved. If you have an operations group and the engineering and construction group were physically separated by 100 miles -- one was in Knoxville, one was in Chattanooga -- this group is a roundtable under the direction of Hugh Parris.

This is the central core. It is not as separated as it used to be.

MR. MICHELSEN: I thought, physically, it was all still in Knoxville and Chattanooga separately.

MR. HUFHAM: The offices will remain in Knoxville. The managers, the manager or possibly the managers, will move to Chattanooga. So you have got then this team sits around the table and identifies the problems--what's wrong, why is it wrong and how do we go about fixing it?

If you have that concept on every project at TVA, every problem at TVA, you certainly have the resources there to handle it. You don't have two groups going in a different direction.

MR. MICHELSON: I'm kind of a believer at the working level that that's where you need the coordination and the closeness. The working groups are still 100 miles

apart.

MR. HUFHAM: Well...

MR. PARKER: If I could address that just a second. The big, dramatic difference is that if you went back to 1980, nuclear power was the Division of Nuclear Power. They reported to the manager of Power Operations, who reported to the manager of Power, who reported to the general manager, and then the Office of Engineering and Design and Construction reported to the general manager. And the line of communication between nuclear power and the engineering and construction was so long that you couldn't get any differences resolved during that time period.

If the Office of Engineering designed a $100 million post-accident sampling system for Brown's Ferry and Operations didn't want it, you had to go through four levels of management to find it. And that was a real problem in the communications between power and engineering.

Another thing is the division director of Nuclear Power, I described before, went through four levels of management, none of which had nuclear backgrounds, before to get up to the general manager of the board.

Now, Mr. Parris reports directly to the general manager. So I think it's put the proper perspective on nuclear power and proper management attention rather than burying it way down deep in the TVA organization. And it's

shortened the communication lines so that engineering, construction and operation problems can be resolved in a realistic type way.

And there's somebody they report to that can resolve differences, where, before, if you went to the general manager --

DR. SHEWMON: Mr. Chairman, I assume we've proved this point sufficiently to go on to the next one.

MR. WARD: Let's let Mr. Hufham wrap up now. I want to go on to hear what the staff has to say.

(Slide.)

MR. HUFHAM: Let me basically summarize what I've presented here today. We feel with this organization, I've just shown you, we do have a single manager in charge of nuclear power. We have to build on the team or a structure. There's a structure established to provide this overall direction. We've consolidated all responsibilites of operations under this single manager, the manager of nuclear operations.

We've consolidated responsibilites for engineering and construction under a single manager. We have elevated quality assurance. We've elevated the manager of licensing. There's a corporate entity established to set policy and guide the total nuclear program toward a goal.

And, again, as I stated, we've established and

DAV/bc

filled the manager of nuclear operations. We have a special assistant to him. We're recruiting for the manager of Office of Engineering and Construction, site director at Brown's Ferry, and others.

I don't think I answered this gentleman's question about who was old and who was new.

MR. WARD: I think you've done it well enough.

MR. HUFHAM: The team is the most important thing we have to develop in order to turn this utility around. And I feel this team, as of today, it's implemented. We have it in place, and the team should begin to function to straighten out our problems. I'd have to say again, in addition to this team, most of you know that it's been in the papers that the board is looking at an independent nuclear advisor. I don't know exactly the status of that, but it would be a person that would report directly to the board, advise the board on policy, safety issues.

To my knowledge, the board is to act on the recommendation of the independent nuclear advisor sometimes within the next few weeks -- the next four weeks. I think the position of inspector general is in about the same timeframe.

And then, in addition to those two, we have Kermit Witt, who is the nuclear safety review staff, who reports to the board already.

Kermit, do you have any quick comments on the NSRS?

MR. WITT: No comments. I'll answer any questions.

DR. WARD: Thank you very much.

DR. REMICK: Dave, could I just ask one quick question?

DR. WARD: A couple of quick ones.

DR. REMICK: Before this reorganization, I believe you were planning to simulate it at your training center and putting them at the sites. Is that type of a decentralization still planned?

MR. HUFHAM: Yes, sir, it's still going on. Construction is underway at Brown's Ferry.

DR. WARD: Okay. I think he got the answer. That's fine.

Charlie?

MR. WYLIE: Let me see if I understand this. The Office of Engineering and Office of Construction, basically, they use contractors now and the sites are autonomous in contracting those services?

MR. HUFHAM: That's right.

MR. WYLIE: They can go outside or they can go within. And the sites then have complete control over operations, maintenance, engineering and construction? The

DAV/bc

quality of engineering and construction?

MR. HUFHAM: At the site, that's right.

MR. WYLIE: Each site independently?

MR. HUFHAM: That's right.

MR. WYLIE: I understand it. I had a little difficulty understanding how you're going to coordinate the requirements and standards and responsibilites.

MR. HUFHAM: There'll be a small group downtown that's still remaining that is basically responsible for defining requirements, consistency between sites and overview functions.

Under the old organization, we had implementation from downtown thoroughly mixed up with operations on site. So there will be a corporate overview that does remain downtown in the corporate office for that very purpose.

DAVbw

MR. WYLIE: Are they held accountable for problems that occur at the site?

MR. HUFHAM: If you think of accountability being that their responsibility is to know what's going on at the site, if they don't provide the right overview, they have the responsibility for the overview.

MR. WYLIE: Let's say, for example, the new regulations for the construction of a system, the systematic equipment and qualificatiosn, are they responsible for that, or is that a site responsibility?

MR. HUFHAM: That's a site responsibility.

MR. WARD: Okay. Unless there's a very urgent question, I'd like to move --

MR. REED: This is just a comment. It think what I detect is an improvement going to a nuclear team, a better coupled organizational structure, but in the final analysis, people to build those blocks, and the way in which they are selected and the abilities that they have in that selection will make or break the improvement.

So I didn't get much as a answer for the selection basis.

MR. EBERSOLE: One critical question. When the next serious thing happens like a fire, whose head rolls?

DR. KERR: Anyone who has his head in the oven.

MR. EBERSOLE: I would guess the site director.

DAVbw

MR. HUFHAM: It has to be the site director.

MR. WARD: I think that's a good answer.

Before I ask Mr. Thompson to address us, let me say a couple of words to the Committee.

I'm not sure that we have successfully designed these presentations today to do what we wanted to do. I think the Committee has a need to hear about what seems to be a serious problem, this licensee, which was formerly regarded as sort of a flagship of the nation's nuclear programs, has come on rather difficult times. It's not related to hardware design or source term analysis, but by their own self identification, and I presume what the Staff has to tell us is related to their internal ability to organize and manage the operations of a nuclear plant.

We wanted to hear about that, and I think the Committee will have to decide whether it wants to insert itself to some extent into the process of seeing whether the problems are appropriately resolved over the coming months.

I'd like you to keep that sort of task for the Committee in mind when you listen to Mr. Thompson's presentation.

So, Hugh, if you'd go ahead.

MR. THOMPSON: Thanks, Dave.

Can you hear me all right?

(Slide.)

DAVbw

As you heard it earlier, the Staff and the Commission has been concerned about the TVA management. It is an issue that they have no unique designs of operating plants. They're rather standard designs, and the construction aspects are similar, and we have noticed this decline in performance over the past five or six years or so, which has been identified to the Commission in SECY 85-231. I think you all received copies of that.

I won't try to go back over that paper, but in essence, it identified some of the operational activities, some of the enforcement aspects, but it also highlighted the concerns that we had with the management structure, their aspects of accountability and their communication difficulties that we were seeing, both because of their locations at the different sites and, in fact, we saw some clear differences in performance between the various TVA sites, as they were.

In addition, we were getting employees coming to the Commission, coming to Harold Denton expressing concerns about the activities that were ongoing, particularly as they related to the licensing of the Watts Bar facility.

We also had individuals express concerns about harrassment and other activities that they were facing at some of the operating plants.

Based on that, we went forward and identified

DAVbw

these concerns to the Commission and made a recommendation to the Commission that this is one in which they needed to get more involved in, and identified this, I believe, as the first time that we had made such a recommendation along these lines.

At that time, Mr. Dirks identified his concerns in an effort to try to increase the overall NRC attention and had established a super SALP board, consisting of Harold Denton as the chairman, Jim Taylor, the Director of the Office of I&E, as one member, and the third member was Dr. Nelson Grace, the Region 2 regional administrator.

We went through our process with developing our SALP evaluation to identify our particular concerns. And we had a meeting with the SALP board on September 10, in which we, at that time, felt it was appropriate in a regulatory sense to issue a 5054 F letter identifying the major deficiencies we identified as part of the SALP process, as well as to identify some management concerns, which Mr. Hufham talked about earlier, that they were addressing in a very serious approach to respond to these concerns.

As everybody mentioned and noticed earlier, the key is going to the individuals. The key is going to be able establish an approach that has accountability, that has people communicating and working together to resolve problems and working together in an environment that will

DAVbw

address not only licensing concerns but the operational concerns that TVA has. TVA, in their presentation to the NRC on September 6, identified kind of three general areas, which I think have been addressed by Mr. Hufham, in what was kind of part of the root cause.

They had established -- I guess not established, but kind of an atmosphere had evolved there where TVA has let more people be the solution to the problem without having increased accountability.

They identified that there was a lack of interest in the individual people who are the mainstay of any organization, being able to listen to their ideas, listen to their concerns and take a clear and develop, I guess, a working relationship at the working level, at the first line supervisory letter that's needed to have an effective organization, and previously had an emphasis on the short term fixes, as opposed to looking at the longer term.

MR. REED: I know this is a real dirty comment, but is "more people" synonymous with "warm bodies?"

MR. THOMPSON: One of the things, I guess, in our evaluation is the fact that TVA does have a lot of resources. They do have a lot of "warm bodies." They do, I think, have some very capable individuals. It is that we saw that the loss of some key managers and the need for a fresh look at their organization and management structure

DAVbw

was important.

DR. SHEWMON: I wanted sooner or later to bring up the question -- one has heard that they did lose a variety, a goodly number of key people and that part of this had to do with the pay scale that they had.

Do you know if that is going to be a problem and no -- recruiting and holding people?

MR. THOMPSON: The way I look at it, it's two-phased. Obviously, having no salary cap would be a real tool in selecting and recruiting other people to come work with them. They're not the only people who face this. There are other public utilities out there who are facing salary caps with respect to management. As you can see, they are taking some steps, I think, to make relocation bonuses, to ease some of the financial difficulties of recruiting people.

Their ability to recruit Mr. Mason back, I guess, is indicating that they're having some success. But the ability to have a very high salary would be a very high incentive to bring in a lot of people, even with Davis-Besse. Admiral Williams says the one place he's hurting in making the chairman feel the issues is in his pocketbook. They brought in a lot of people, and they brought them in very fast.

I don't think TVA's been able to demonstrate that

DAVbw

success of bringing outside people in as fast Davis-Besse has. And getting a new management philosophy is not something that's done easily. We've seen other utilities try to make these changes. Some have been successful. Some have had starts, stumbles and some are still, along with TVA, we think, there are others that need to take some action.

So it's not an easy fix. You just don't go order a mock 1, mod 0, first-class manager from the shelf. If they did, I'm sure TVA would find the resources to buy that.

MR. EBERSOLE: May I ask a question? What's the function of the TVA Board? You know, they're political appointees. They come and go. I haven't heard they're doing anything in this context.

We start with, you know --

MR. THOMPSON: The buck stops at the top.

MR. EBERSOLE: Hugh Willis, as far as I've heard.

MR. THOMPSON: If you noticed in our 5054-F letter, we identified a number of items with respect to that issue. One of those is, what steps the TVA Board were going to take to make sure there were more aware of the nuclear activities, and maybe Mr. Hufham can give you some response to that.

We have not yet heard from TVA on their response

DAVbw

to the 5054 letter. Specifically, we requested that we hear, unless agreed to on a schedule otherwise by the Staff, 60 days prior to startup or of any licensing activity associated with Watts Bar, that they respond to that letter, so that we will have sufficient time to review it, interact with TVA on any particular concerns.

MR. EBERSOLE: The Board is involved somewhere here.

MR. THOMPSON: The Board is involved. Oviously, Mr. Willis -- I don't want to be the proponent of the TVA organizational structure, but he does report to the Board.

I think Mr. Witt also reports to Mr. Willis and reports to the Board.

So they're involved.

My understanding is, they do not have a personal staff. They are fairly limited in their nuclear background. I don't think these individuals have a particularly strong nuclear background. I do know they have been called down to testify before Congress, at least to the TVA caucus on the Hill, anyway, for the Congress to express their concerns about accountability of the TVA Board.

MR. HUFHAM: Let me make just brief comment.

MR. WARD: If it can be very brief, please.

MR. HUFHAM: The Board has been very helpful to us, establishing this team. We feel like in our submittal

DAVbw

here in mid-October, we'd be able to describe the team, the details of the functioning and how it all then relates.

MR. EBERSOLE: But there's no innovation on the part of the Board. You carry things to them, and then they approve or disapprove.

MR. HUFHAM: That's basically right.

MR. THOMPSON: I guess I would comment on one area, where we did. I know there's been more interaction by the Commissioners, as well as Mr. Dirks, that the TVA Board, particularly with the employee concern program, there were actions taken by the Board to clearly support that effort, and I think they did it very promptly, when it was brought to their attention.

Certainly, there may be some concerns about what role the Board will play, and we're waiting for a response from the TVA on precisely what that will be.

But to pretty much wrap it up, we hear good things. We think they've made a really significant effort to identify some of their management weaknesses. Again, it's the implementation of that and identification of the right people with all of these people whom they're searching for, and that we will review, in accordance with the 5054 letter, those responses to our issues and our concerns, when we receive them.

Again, we don't anticipate any startup of any

DAVbw

facility or the licensing of any facility before we have that opportunity to review it.

DR. CARBON: Does TVA receive input from INPO, like an ordinary utility?

MR. THOMPSON: As far as I know, they do.

In addition, one of the things TVA did was to obtain some almost full-time help for Hugh Parris during the early stages of evaluating some management difficulties.

I think they had an individual who had been working with some of the early utilities in looking at management issues. At that time, he may have completed his evaluation, but in addition, I believe Mr. Parris has indicated he intends to have an overview group, kind of a readiness review group prior to starting up, particularly the Browns Ferry.

MR. HUFHAM: And to a degree, Sequoyah.

MR. THOMPSON: Right.

They have indicated their intent to use kind of an industry review group. Once the site director has indicated that he is ready to start up, Mr. Parris will have this industry review group come in and assist him in evaluating the readiness. At that time, they'll go to the Board. Then we will become involved at that time. Obviously, we'll be involved with additional inspection activities. We have inspectors at each of these facilities

DAVbw

monitoring the activities, but again, as we see it, there's still enough, I guess, signals of issues that are ongoing. We think that there are still transitions. Obviously, there's this major effort on the employee response team that his being done under Mr. Wood's direction. We don't know the details, what's going to be coming out of that, what recommendations they have. There may be changes that would come out of some recommendations in that area.

So I think this is, again, as we see it, a step in the right direction, and we want to just see that they have the confidence, that they select the right people and implement the program.

MR. WARD: Hugh, let me ask you a couple of questions.

One, what criteria do you have, does the Staff have, for judging whether the changes in organization and the management approach are adequate? In the past, we've heard -- in OL reviews of plants, we've heard that the Staff looks at the management and organization of a plant, and it approves it, if it gets a warm feeling.

Have you progressed at all beyond the warm feeling criteria?

MR. THOMPSON: Obviously, that is a difficult area for us to have hard-and-fast criteria.

DAVbw

MR. WARD: Other than hard and fast even?

MR. THOMPSON: I'm sorry?

DAVbur

MR. WARD: They don't necessarily have to be hard and fast.

Do you have any criteria?

MR. THOMPSON: One of the things we are looking for is operating experience. We are looking at the individuals who have been put in management positions with operating experience. These are key individuals who understand what problems are going to be faced at the operating plants.

TVA's policy in the past has been not to train lots of their engineering type degree people who went up to management in their SR training program, and I don't think they have a very strong base for those types of individuals in the organization. That is one of the reasons they are looking outside for a large number of that type of individual.

We are also looking at people with good communications skills, being able -- and I would say good listening skills, such that you are able to identify your concerns and be able to communicate that all the way down to the first line supervisors.

TVA is a large, large organization, and there are lots of first line supervisors down there that really have to implement whatever the team at Chattanooga says. One of the key elements is how well they are able to get that

DAVbur

message across, and one of the ways we are able to monitor that is through our resident inspectors and through our audit programs, and we go onsite and interview people as to what they see as the process of where they are going.

DR. LEWIS: Make sure they do as well as NRC.

(Laughter.)

MR. MICHELSON: Just a quick comment. I heard a lot about management per se this morning. I haven't heard much about the organizational philosophy and the psychology that has developed over a period of years and perhaps was a contributor to this problem.

What is being done to change the organizational philosophy, and so forth? Since that still permeates the organization even though you have changed a few places, it is hard to change it.

MR. THOMPSON: I certainly agree with you. I think TVA has made that presentation. I will yield to Mr. Hufham if you want to hear that story, but I think it has been identified.

MR. HUFHAM: And is being implemented.

MR. THOMPSON: And TVA says it is being implemented.

MR. MICHELSON: You didn't tell us how you are doing that part of it, I guess. I don't think we have the time, but I am at least assured that it is being done.

DAVbur

MR. THOMPSON: It is an issue. We have been requested, as Mr. Hufham said, to meet sometime in the latter part of October to get, I guess, a briefing on the proposal to sponsor the 5054(f) letter, at which time I think shortly thereafter they would plan to submit that. I believe we are trying to schedule that briefing sometime in the week of October 21 or the following week.

MR. WARD: Thank you very much.

Let me turn now to the committee. I would like to hear some thoughts from members on whether you think that we should retain some sort of interest in this issue, and if so, how we should go about it.

Does anybody have any comments?

Glenn?

MR. REED: It seems to me that the Advisory Committee ought to lead in the endorsement, creation, and pronouncing and presenting good principles and that as far as review or getting involved in the details and going out to the sites or doing any personal activity, personal committee activity, I don't think that is in order. You all know my feeling.

I feel that a substantial, important area with respect to successful activities in nuclear power plants has to do with selection of people for aptitude.

All right, that is the kind of thing I think we

DAVbur

ought to be interested in and pursuing those kind of things, which then go out through the system to influence, or otherwise, the organizations, the utilities to try to do the job.

MR. WARD: Any others?

DR. REMICK: Dave, my initial reaction is that it seems to me it is something of vital interest. I would see the ACRS much as Glenn does.

Since TVA has not yet responded to the show-cause letter, the 5054(f) letter, we might consider -- I wouldn't want to say that I would want it now, but it is possible that we might want TVA to come in and, when they have finally formulated their response, to give that to us as an information item. I think it would be educational to us to see how a large company like this is responding to problems.

But I would see it as more informational. There might be things we would want to pursue as normal ACRS activities. I don't know if there's other interest on the committee to have that type of presentation in the TVA response or not.

DR. KERR: Mr. Chairman, you commented earlier that you thought this meeting was not going in the direction we had planned.

What direction had we planned?

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MR. WARD: Well, I had hoped to get enough understanding of whatever the safety related issue is at TVA so we could get some feeling of confidence that there is a program by both TVA and by the staff to get the situation corrected, and if we felt there was a need for some modification of the program, I hoped we would get enough information so that the committee could decide whether it wanted to hear more or maybe hear some different angles on it, and so forth, to keep abreast of it.

MR. EBERSOLE: Mr. Chairman, we just came back from Davis-Besse, which is one unit. They are going through some convulsions, I must say, to recover their reputation and maybe get the plant in some sort of state that it can get going again.

It seems now that with TVA we should not really be much interested in filtered information coming from central headquarters, and so forth, but we would rather do business with the individual projects and have some presentations and other exposures of what in fact is going on with the horse.

Is it running the race rather than what has always been rather highly filtered and sometimes ambiguous generalizations from the central point? Everything has been projectized, and I gather that if we want to hear what in fact is going on at the plants we had better get down to

DAVbur

these site directors.

DR. KERR: I get the feeling to some extent from this meeting that eventually we expect TVA to look to us to tell them how to manage their plant. If that is the case, I must plead complete ineptness because I certainly don't know how to manage a nuclear power plant.

It seems to me that if we are to make a meaningful contribution here we need to try to establish ourselves or to encourage some other organization to establish criteria by which the performance of the plant is judged, with some sort of objective criteria.

But to tell TVA or any other organization just what sort of people they employ and what selection process they use to get them and how they train them I think is a job much too large for this committee, and if we try to do it, I think we are just going to make ourselves look sort of silly, not to mention that we won't accomplish anything as far as TVA is concerned.

MR. EBERSOLE: Would you extend that to the staff?

DR. KERR: I can't be responsible for what the staff does, but I do feel a bit of responsibility for what this committee does.

MR. WARD: Bill, I certainly agree with you. I think TVA didn't look to this committee -- again

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thankfully -- to tell them how to design their plants either. But in the course of CP and OL reviews, the committee had a lot of comments on the design of the plant, some of which may even have been useful.

DR. KERR: That is true. I think we have a right to comment on the way the plants are being operated if serious safety concerns arise. Then I think we ought to say to the Commission we think that plant ought to be shut down, period.

Now, how does the plant come back into operation? Well, if it shuts down for a period of three months or six months and at that point it starts up again and we look at them again, if they are doing the same thing it shuts down again for six months.

But I don't see how we can expect, assuming we have criteria by which we can judge plant performance -- that might be an "if" -- but I don't see how we can get involved in the business. I mean, we are really treating some symptoms, but we aren't quite sure how to treat them, and we have really no criteria by which we can judge when we get through if we have cured the disease.

MR. WARD: I agree, and maybe that is the most important goal that the committee can take.

As Forrest pointed out and as I think you are saying, it can serve perhaps as an education for us. I

DAVbur

think the point of whether or not there can be some sort of explicit criteria developed for judging the effectiveness of an organization is a good question. I think it is a question this committee has raised with the NRC research staff several times over the last few years. It hasn't been dealt with yet.

MR. REED: I think I disagree with what Dr. Kerr has said. I think I agree with what I thought Forrest Remick was saying.

I believe the purpose of the ACRS -- and I am very new here, I recognize -- is to wisely select good fundamentals with respect to the operation and design aspects of the nuclear business, the safety business.

I think personally -- and this hasn't come up, and I don't think we should address it very much -- but I think personally, I believe that the nuclear team or project team basis is a more successful, more coupled and better way to organize and structure for a nuclear plant safety of operation, and I can go back in my own history and reflect on the Indian Point experience, which was not done that way, and the Yankee Rowe experience, a very successful project in 25 years of operation, which was done on a project team basis.

We are not going to address project team. They brought it in. They said they are on what they call a

DAVbur

nuclear team basis.

I do think there are other fundamentals that don't belong to organizational structure. The other fundamental I think that is pertinent here is the issue of selection of people for aptitude.

MR. WARD: Dr. Lewis had a comment.

DR. LEWIS: Just a couple of comments. No questions.

I certainly agree that we are in no position to judge the management efforts at a plant, although we do it all the time. We judge whether we would buy a used car from that man or not. In that sense we do it, but in terms of the organizational charts, only a few of us have some expertise.

I have a lot of sympathy when Dave asked whether NRC has any criteria for judging the management competence of a plant because, of course, NRC doesn't either, and the ability of NRC top management to get its policies implemented at lower levels can be reasonably questioned from time to time.

But I am afraid that we are going to have to grope for these things in spite of the difficulties. As we see operational events developing, they are all coming not from the hardware; they are coming from some kind of mismanagement or failures in maintenance control or failures

DAVbur

of one kind or another and have their roots perhaps -- I think so -- in these very, very difficult and hard to evaluate organizations.

But I think there is a deep and important safety problem here that is probably getting worse, and I don't know quite how to come to grips with it without getting into this dirty business of how well people are running their plants.

End of comment.

MR. WARD: Carl was next and then Max.

MR. MICHELSON: Just a couple of comments.

I think I agree with what Dr. Lewis said, but one of the things that concerns me is that for one reason or another we have gotten to this point. TVA has had difficulties for whatever reason. It is presumably presently attributed to organizational structure and management, so I would have to look to see what they have done that is new or different. What have they done to correct the problem, if that is what they thought the problem was?

So I think the ACRS is certainly competent to look at past structures and future structures and make a judgment as to whether or not, in their judgment at least, they think this is heading in the direction of correcting the problem.

DAVbur

I have a little difficulty with Glenn Reed's suggestion that there is some kind of a test that can be given to select managers. I am not aware of such tests in terms of any kind of reasonable validation.

I think at the electrician and mechanic level there are a lot of tests that can be given that have some validation. I am not sure there is any way of doing this at the manager level yet.

I will stand corrected if somebody can tell me that there is some nice test that you can give. If it is, then I would ask why isn't TVA using that test.

DR. LEWIS: There was one developed.

MR. MICHELSON: Theoretically, there have been a lot of people --

DR. LEWIS: There is one that works. It was developed by Larry Peter.

When you find the level at where the manager is at, the previous level is the one at which he is competent.

(Laughter.)

MR. WARD: Max.

DR. CARBON: I share much of Hal's views. I thought he expressed them well. I think this is an important safety problem. I think that we should be concerned. I don't know how to proceed.

MR. WARD: Any other comments?

DAVbur

(No response.)

MR. WARD: Let's break for lunch and come back at 2:15.

(Whereupon, at 1:15 p.m., the meeting was recessed, to reconvene at 2:15 p.m., this same day.)

DAVbw

AFTERNOON SESSION (2:15 p.m.)

MR. WARD: We'll reconvene.

The next topic is a discussion of the Davis-Besse plant restart plan.

First I'd like to apologize to our folks from Toledo Edison and the Staff for making them wait 30 minutes. I can only describe it as a management failure this morning.

Let's go ahead. I'd like to ask Dr. Remick to lead off this discussion.

DR. REMICK: Thank you, Mr. Chairman.

The purpose of our meeting this afternoon is to review the status of the startup plan of the Davis-Besse plant following the loss of main and auxiliary feedwater event on June 9th. The meeting was requested by the NRC Staff.

I'd like us to focus our attention on that, and that is the restart plan. This is not a review of the NRC incident investigation report and it's not a discussion of Commissioner Asselstine's request per se. Those are things that we still have to resolve.

For the benefit of the Committee I'd like to just briefly recapitulate the event of June 9th. On the midnight shift, the people on shift were two experienced SROs, a shift supervisor and an assistant shift supervisor. Two

DAVbw

ROs, one following the primary side and one the secondary side of the event, four unlicensed operators called equipment operators, an auxiliary operator, and administrative assistant and an SDA.

You'll recall the SDA was not in the control room but in the administration building, which I would estimate is about a quarter of a mile or less away from the control room.

The plant was at 90 percent power. The number one feedwater pump was on automatic. The number two feedwater pump was on manual. Both of those were turbine driven feedwater pumps. The reason number two was on manual is because they had had some control problems, and they wanted it to be on manual, so it would not spuriously trip.

Sure enough, at 1.35 a.m., the number one feedwater pump tripped. The secondary side RO increased the speed at the secondary side RO to make up for that loss. The primary side RO reactor operator began to immediately depressurize the spray, trying to control the primary pressure, because he know the temperature would be going up from loss of feedwater. The out of control system began to insert control rods, and sure enough, the reactor tripped and primary pressure with a set point of 2300 psig.

The immediate system response appeared okay to everybody in the control room and the assistant shift

DAVbw

supervisor began calling out emergency procedures; however, both MSIVs closed, apparently from a spurious failure of what is called SFRCS.

This starved the number two water pump, which began to wind down, as the main feedwater supply had been lost from both pumps. Steam generator level began to decrease as a result. There is a steam feedwater rupture control system, the so-called SFRCS system, which is supposed to automatically initiate auxiliary feedwater on one level. The operator, either in anticipation of that signal or to confirm it trips SFRCS, but he pushed the wrong two buttons. As a result he isolated the two steam generators from the auxiliary feedwater pumps.

Earlier when the auxiliar feedwater pumps came on, they both tripped out on overspeed.

Once again, the auxiliary feedwater pumps ar also turbine-driven. The shift supervisor realized the operator error and properly tripped the SFRCS system. He did that within a minute, but the isolation valves that had been closed, stuck closed.

At this point, which was about seven minutes into the event, the two main feedwater pumps were down, the MSIVs were closed. Thus the main feedwater pumps could not be restarted. Two auxiliary feedwater pumps had tripped out, and they could not be reset from the control room.

DAVbw

Both steam generators were isolated from the auxilary feedwater by stuck valves. There was an electric startup feedwater pump that was valved out and the fuses removed, because of what I call the Potomac River concern over high energy line breaks.

They went into the plant and manually opened the stuck isolation valves, which were stuck because of the incorrect limitorque setting, reset the trip throttle valves on the auxiliary feedwater pumps. They had considerable difficulty initially. The valve started the startup water pump, which reinitiated the first water into the steam generators.

I want to say they performed admirably, but they were hindered by locked doors throughout the plant and by some obvious insufficient training.

During this time the steam generators had essentially boiled dry. The primary PRV had opened three times and stuck open on the third time.

The operator closed the block valve. That valve then closed with the insertion of the startup feedwater and then the auxiliary feedwater. The event was over.

Today in response to requests from the Staff, we're going to hear from Toledo Edison. What changes they are making as part of their restart plan, and we'll hear from the Staff on the status of the review of the plant

DAVbw

restart.

First I'll ask the Licensee to discuss the restart plan. They are making a number of administrative and procedural changes, and they're making some hardware fixes. I've asked them to concentrate more on the hardware fixes, but you'll here a little bit about the administrative procedure changes.

Mr. Joe Williams, who is the newly appointed senior vice president will lead the Toledo Edison people.

Because we're a half hour late, Mr. Williams had planned to leave a little bit before 3:00. So I urge the Committee, if you have general organizational types of questions after his presentations, we should probably ask them.

I'll ask the Committee to give the speakers an opportunity to make their presentations. Toledo Edison has planned about a 40-minute presentation out of a one hour and ten minute time span. So we should have approximately 30 minutes for questions.

I would ask you, try to keep your questions to those of understanding what we're being told and the more general questions till later, with the exception of Mr. Williams, who has ot leave.

With that, Mr. Williams, would you like to lead off?

DAVbw

DR. MARk: I hope that during the presentation, your multiple locked doors, you will specify how many.

DR. REMICK: We traced out the operator's steps. In one case, there were three locked doors, if I recall, and a locked equipment locker. They had a lot of concerns with flimsy magnetic cards that they slipped in to open the doors. They are worried about those. They are flimsy and can break. They worried about whether they had the proper keys to open the doors. In a lot of cases they did not.

I think in one case they had to go through three locked doors. Another group of operators had to go through two locked doors.

MR. WILLIAMS: Thank you, sir.

Mr. Chairman, it's a pleasure to see you again, and I think from looking at your agenda, the fact that you're only 30 minutes behind is a problem of management, not a fault of management.

I don't intend any long-winded discussion on organization and management, but I do want to touch on some programmatic aspects, because it's the programmatic aspects of these operations that if not properly attended to, lead us to problems such as the June 9th event and others that happen in the industry.

(Slide.)

The programmatic issues that I am going to speak

DAVbw

here are not knee-jerk reactions to the June 9th event. I discussed them with Mr. Williamson before. I planned to go to Davis-Besse before. I agreed to do that, and I was tidying up other business elsewhere, when the June 9th event happened.

So I just happened to get there.

In the first place, what you need to run one of these organizations, as all you gentlemen know, is a functional organization that lends itself to communications between the people. You need enough people with talent, and you need to do as much of this in-house, as you can, because in that manner, you can hold people accountable. The organization, when I got there, was not of the type that I felt you needed in this operation. I found that the system vice president that was in charge of three or four of the people in the direct organizations and then training and other things was submerged under the directors.

I talked it over with seven or eight people reporting to me, and this happens to be seven. The yellow hatches on the side show you the positions that were there that I moved from wherever they were before. But the occupant was there, and he was performing some function.

I took the system vice president and put him in charge of administration of personnel and security, because that has been provided to us from outside the mission by the

DAVbw

rest of corporate.

When you're doing that, it takes a lot of attention.

Then I had the nuclear projects directors reporting to me in Nuclear Engineering. You will find that I have markedly changed that organization. It was a small engineering group that relied primarily on consultants. And I'll talk a little bit more about that directly.

I moved the Nuclear Training Director up to reporting to me, and as you can see, the nuclear license reocrd, the quality assurance record and plant manager, nuclear services director, I believe these plants should be supported by an in-house engineering organization to the greatest extent possible, relying as little as possible on outside help.

So I have restructured the engineering.

(Slide.)

We have increased the allowance of people for the station from 690 to 930, and the great bulk of them will go into engineering. The nuclear engineering group director is a new position. I found when I got there that the plant manager had excellent engineering credentials. He had an SRO license. He was a super operator and knew the plant.

It was the first time I've had an opportunity to put at the head of engineering, somebody who knows the

DAVbw

operations and can give it the operational flavor I believe it needs.

While we were getting the new organization in place, I brought in a new nuclear engineering manager from Stone & Webster because he, in my opinion, knows as much as anybody does about testing these plants.

I knew that was going to be a problem after the June 9th event of doing adequate testing of the safety systems and components that failed. So they are those two green boxes.

This was the old engineering organization over here. Of course, we always have the old engineering services manager. This is kind of the guts of the system.

I'd like to have engineers that are responsible from cradle to grave, and that's that organization. We're going to go out and get our own in-house talent. I am going to go with the best engineers I can get from Stone & Webster and the Bechtels and Burns & Rowe, wherever I can get a good man, we'll be there. If I can hire him permanently, that's fine. If not, we're recruiting our own, and we're setting about to do that.

The organization has been approved. The increase in organization.

(Slide.)

We found also that you are not competitive on

DAVbw

wages, and we increased those.

I'll talk about those a little bit later.

One of the programmatic aspects is very apparent that we had to correct also for startup was the maintenance organization. It was a weak organization, not headed by sufficient talent. It did not have sufficient talent throughout the organization.

I created a maintenance organization almost out of full cloth, elevated to assistant plant manager, maintenance level. I went out and I got the best maintenance man I could get in the United States. He will be in there on about July 20th, I think. We elevated the then operations superintendent to assistant plant manager of operations. He's called the operations superintendent, and we put that organization into place.

These are all new position. We didn't have any superintendents in mechanical, electrical and I&C. They do now. They're extremely well-qualified people.

The technical support manager is the small group of engineers that are left in the plant. They're not the only ones, because you'll find that there are some engineering ones in here. That's a small group supporting the plant manager, ones that if they can't solve the problems there, they quickly get them to the engineering group, which is located at the site.

DAVbw

(Slide.)

We've also established a planning and scheduling group under the plant manager. We're going to make these plants run, get them out of outages and get good availability out of all of them.

You can have the best maintenance and best outage implementation in the world, but if you don't have somebody who's planning it and scheduling it and getting that work out, you can't keep them on the line.

I brought in a good maintenance plant and scheduling manager, who is doing the same thing for the plant in AEP up at Stevensville, Michigan.

We've established that organization. It's having a few growing pains, but it going there.

(Slide.)

Planning maintenance. These are the three superintendents under the assistant plant manager for maintenance. We established another general foreman, but lead I&C engineers. The foreman -- when we got there, ther was a foreman ratio of 23 to 1, to 26 to 1, workers to foremen. We've cut that ratio down. I'll show you what it is, down to 6 to 1 to 10 to 1. We've also established a training shift in the maintenance department that is much similar to what we have in operations. It would be one shift. There'll be a trained foreman, who will be in

DAVbw

training at all times.

(Slide.)

There are a lot of things that they had planned to do at Davis-Besse in the performance enhancement program and the SALP improvement program. There must have been some 149 items. I pulled out the ones that I felt were of highest priority, and we restructured the organization. We have prepared detailed position descriptions for the new organization, so our people know what it is we expect them to do.

That's almost completed. We had a merit review and salary administration program, and we're raising the salaries out there on the average of 14 percent across-the-board, independent of the annual reviews. We will be competitive. Some of the salaries will be adjusted up as much as 25 percent. In some cases, it was really an imbalance, and we were not competitive with the industry.

(Slide.)

Configuration management is one of our big issues. We need a good component system data base. We need system descriptions that give our operations the design basis of the systems. We need validated vendor manuals, establish control of drawings and manuals that would enable us to get an accurate spare parts allowance. We had to some interim things in there, because our material support is

DAVbw

not adequate the way it is.

So we'll make some false starts.

We'll probably get some material in there that we don't need, but when we get in through the configuration management program and we'll have the request for proposal on the street I hope within the next two weeks.

(Slide.)

Management training.

We'll put that in place. Management by objectives.

Fire protection. All I can say about fire protection is that we're in hot pursuit of Appendix B or Appendix R. The plan was to do a lot of this by the end of '89. We putting the majority of that back, all of that back. In '88, we'll accelerate it, with a lot of the issues being addressed in 1987. We're establishing sitewide procedures, so that there's not any conflict between the procedures of one department to the other. That's a big item.

QA awareness program. We need to pursue that throughout the organization.

Nonoutage work prioritization will be done by the scheduling groups. So if we do have an unscheduled outage, we can hit the deck knowing what it is we need to work on. And we're training the STAs to assume the intermedial

DAVbw

function.

(Slide.)

That's the major programmatic issues. I don't want to dwell on them any long, unless you have questions. But I'll be glad to address any of them.

MR. REED: I was a little surprised by your saying you're moving up to 900 people for a single unit plant. I don't know what your split between the plant organization and what we'll call the project office organization.

What's the plant number? What you really call the plant organization an its internal support?

MR. WILLIAMS: A little over 400, Glenn.

MR. REED: That's not too bad, I guess, but I was shocked by that 900.

MR. WILLIAMS: If you look at the 630 that they have, then look at the consultants that they're hiring, and you add those in, you get up around 850, but you're not getting the work done, and you realize the fact that you're paying every consultant twice what you have to have for a good mechanic.

I've got a string of backlog FCRs. Really, they should have twice the engineering effort on them.

I'm bringing the engineering effort in-house.

Every plant I've looked at lately, if you really

DAVbw

want to pull the thread about their in-house allowance versus what they're using from the AEs and the NSSS suppliers, and you figure that in their allowance, you'll find they're getting right on there.

MR. REED: Another question. You used the word "talent" two or three times. What are you using as a basis to judge talent? We call it aptitude. Are you using validated testing, or selection, or selection processes?

MR. WILLIAMS: You're using selection processes by people in whom we have a great deal of content. Mr. Wegner from Beta, Mr. Brodsky from Beta. I'm bringing in people that I think are high quality and engineers that I have confidence in in helping to select those people.

MR. REED: I know Admiral Wegner from the documents he's written. He wrote 10 CFR 1280.

MR. WILLIAMS: That's a different Wegner. Bill Wegner happened to be a major domo for Rickover for 25 years, a civilian.

MR. REED: Are you going to use EEI tests?

MR. WILLIAMS: No. I'm using the classification tests to determine what the stability of the guy is, but what I'm set on doing, Glen, is to bringing in people whom I know have selected that type of people for other organizations through the years. These are the types of people that I want to interview for candidates for jobs.

DR. REMICK: Other questions?

MR. WARD: I have one.

Mr. Williams, at our subcommittee meeting, you had some comments on the use of the STA and your views about

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engineering expertise on shift, which I'd like you to share with the committee, if you would.

MR. WILLIAMS: Where I intend to go with the STA's, when I got there, I was really pleased to find that the class of STA's that are going through training now will come out with an SRO license. I think that's essential, because STA really has no credibility or control, in my opinion, without a license.

But where I think they ought to be, I think you ought to bring in really the best talent in that area that you can obtain. Give them an SRO license, and establish the position of shift plant manager who is in charge of that plant; because, today, we have all of the talent there from 8-4, or generally form 7-6, depending on what the problems are. And they all go home and for two-thirds of the day, you have the chiefs responsible for the plant.

I don't think that makes much sense, so I think we ought to have highly-qualified people with engineering degrees who are plant shift managers. And that's where I intend to go.

MR. WARD: Dave?

DR. OKRENT: In the past, where, in your organization, did the responsibility lie for review, evaluation and decision-making concerning the adequacy of different systems, nonsafety systems and safety systems?

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The adequacy of your feedwater system, or whatever, where did it lie?

MR. WILLIAMS: That lies in the facilities engineering group as far as I can determine. I'll let Mr. Guido speak to that. Either Bechtel, B&W or somebody else were brought in especially to do those types of evaluations. The problem is we didn't have engineers inhouse that were capable of judging the results. We had some, Mr. Wood and a few others. But, in general, we weren't populated with the talent that could judge when those analyses came back as to what the adequacy of them was.

DR. OKRENT: Where will it lie in this new orientation in the current organization?

MR. WILLIAMS: It will be in engineering with heavy operation participation. The systems engineering group is the one that I look to to do the resolution of any systems engineering that needs to be done.

DR. OKRENT: Have these people been hired?

MR. WILLIAMS: My goodness, no. I got disapproved. Yes, the organization exists. We've just selected the head of it. He's sitting right behind you, Mr. John Wood. It is his job to go fill all the chairs. Understand, all my engineers right now are engaged. In normal events, we would have had this structure well

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underway by now. But they are engaged in the review activities that you'll hear described that relate to the June 9th event, because that just controls all the people out there and all the people I can get throughout the United States to come and give me a hand.

We had our first job affair out there on October the 17th and 18th, in which we are bringing in the candidates and their wives to Toledo Edison for our managers to review. We have another one in November and another one in December, and I hope that by the end of '86, we'll have those people filled.

Now, Stone and Webster and Bechtel, from whom I get the people, if those people want to stay and work for Toledo Edison, and I find out that they're qualified to do that, then we'd be glad to hire them, too.

So maybe I can short-cut it a little bit. Yes, sir?

MR. EBERSOLE: Mr. Williams, may I ask you this, just trying to learn something about this complex business myself? You have a plant manager, and you have a nuclear facilities engineering director, which is where your engineering work goes on?

MR. WILLIAMS: That's right.

MR. EBERSOLE: You have an engineering director?

MR. WILLIAMS: I have a group engineering

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director, Mr. Guido, right here.

MR. EBERSOLE: And that's where your engineering functions take place?

MR. WILLIAMS: All in that group.

MR. EBERSOLE: What would be, would you say, the pros and cons if you had those engineering functions put right under the plant manager?

MR. WILLIAMS: I think it would be too much of a load for the plant manager. I don't think you'd always get objective treatment. I don't think you'd get the true inputs that you need in the technical decisions that are made. I have myself, being basically an operator, a lot of times, when I decided from an operational viewpoint that, my God, this was a good idea, and I finally got it down through engineering analysis and it wasn't such a good idea at all. I want to make sure I've got that balance.

MR. EBERSOLE: The reason I ask that is we heard another organization put everything under the plant manager.

MR. WILLIAMS: Well, I don't agree with that.

MR. WARD: Dave?

DR. OKRENT: Where in your group will there exist something called, well, men who would have what I'd call a good knowledge of severe accident phenomenology, the course of severe accidents, the likelihood of different sequences,

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containment behavior under different kinds of events, and so forth?

MR. WILLIAMS: That will be a combination, I believe, in the nuclear plant system group and also over in the nuclear facility engineering. And those position restrictions and the responsibilities of those departments are being formalized now.

Steve, that's your balliwick. Where are you going to put that?

MR. GUIDO: We have a nuclear engineering department who has a group of engineers dedicated to analysis type efforts. Also, nuclear safety and licensing. We have a group that will be assigned responsibility for that.

DR. OKRENT: Well, I must say, I could look at my last 10 graduate students and say that I was meeting the things I just heard and still not have anybody who really understood what went on in the course of severe accidents unless I picked one or two of them.

MR. WILLIAMS: You know, now we're talking about talent in part.

DR. OKRENT: It's not only talent. In fact, it is a basic decision by the top management that this is a subject that we need people who are very knowledgeable, I would say.

DAV/bc

MR. WILLIAMS: I agree with that. It has to be a decision of the top management and, again, of engineering to say. I have resident in my organization the talent to understand this to a degree and to recognize that the problem transcends his capabilities. That's when you really go get the people from outside from B&W, or wherever you get them for your plant, Bechtel, Stone and Webster, that you need on a case by case basis. But you don't want resident in your organization all the time, because there's not that requirement for that talent.

DR. OKRENT: That's an interesting comment. A little while ago, you said that there was not resident in your organization. You'd have to rely on consultants to make judgments concerning whether a system design in terms of reliability and availability was adequate. I must say, were I running such a facility, and I couldn't handle the problem myself, I would have my own people worrying about something so vital. It affects your on line ability.

MR. WILLIAMS: I don't mean to say you abdicate your responsibility, but you may well not have in your organization the talent that can do the analysis and resolution that you want. But what you want is the talent that can manage that effort.

You're never going to do away with consultants. Let me give you an example. In '85, this plant had under

contract $12.5 million for consultants, $13.4 million as a matter of fact, because of pulling the FSAR's back and the fact I can't get the talent inhouse and I've got the June 9th event things to follow up, that's going to jump to $43 million in '86.

I'm going to bring my people in and I'm going to be doubling up on them, and that will drop to about 22 in '87. I'll go down to about 12 in '88. In '89, I should be down to around 6. Now, out of those consultants come the specialized type of work that I see you're talking about. Maybe we're talking from two different wavelengths. That you're talking about that my people don't have the capability to handle, but have the capability to understand and to know it needs to be done. That's the way I would approach that.

DR. OKRENT: We may be talking on two different wavelengths, but my understanding leads me to wonder whether, even after you staff up, you will have what I call sufficiently deep knowledge of behavior of your plant under things beyond the FSAR to deal with then should they occur. It's too late to call the consultants then.

MR. WILLIAMS: I'll tell you one thing I'll do. Any resumes you've got in that area that you want to share with me, I'll be glad to consider because I'm in business and I'm out for talent. If you've got some talent in that

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field concerning me, by golly, I'll hire them.

DR. REMICK: I suggest we proceed. Is there one final question for Mr. Williams? He'll have to leave very shortly.

(No response.)

DR. REMICK: If not, I suggest that you introduce your people.

MR. WILLIAMS: Mr. Ken Meyer will take over from Licensing, will take over on the next part. Mr. John Wood is the manager of the Structural and Mechanical Section, is taking over the Systems Engineering. Mr. Steve Guido is the group director of Engineering. Mr. Hildebrand, his primary job right now is chairman of the Senior Review Group through which all of the reviews of the safety systems are being forced, up-back down, up-back down, to determine what needs to be done.

Then, Mr. Sushi Jain is the head of the Task Force I started up to determine what we need to do on short term/long term decay heat removal. And Mr. Jacque Lingenfelter is the head of the group handling the testing.

The first presenter is Mr. John Wood, who is charged with resolving the root causes of all the specific occurrences related to the June 9th systems.

DR. KERR: Mr. Williams, you indicated that you're in hot pursuit of this task. Do you have some

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feeling that you're going to catch up to it?

MR. WILLIAMS: On Appendix R?

DR. KERR: No.

MR. WILLIAMS: I was in hot pursuit of Appendix R. Yes, sir, we're going to catch up with this whole thing.

DR. REMICK: Please proceed, Mr. Wood.

I remind you that we have about 45 minutes for the next presentations and the questions.

MR. WOOD: Thank you. I'm going to cover today equipment concerns specific to the June 9 event. You have listed here, as Dr. Remick expressed, there were a number of equipment anomylies or problems that surfaced during the 6/9 sequence of event. You see here there are two groups listed, Group A and Group B. And, at the suggestion of the subcommittee, we tried to pare our presentation down. You will find that the Group A presentation is at the end of your handout for your review. And I am going to discuss specifically the Group B categories.

(Slide.)

Now, in the Group A, there are some such as the steam feedwater rupture control system and auxilliary feedwater, but I'm sure you're interested I have eliminated those from my discussion. They will be discussed in part by Sushil Jain, the next speaker, so we don't duplicate effort

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here.

So we'll now go through my presentation on the equipment concerns.

(Slide.)

We have shown on this chart the basic process that we used to resolve the issues at hand, to resolve the 6/9 sequence of events. We submitted this list of equipment to an investigation and trouble-shooting methodology whereby we developed, with the help of the NRC, factfinding team detailed action plans that first looked at what was the history behind the problem, what was the history during the 6/9 event, and what kind of hypothesis should be investigated in the trouble-shooting phase.

We then subjected the equipment to that trouble-shooting and came up with the appropriate findings based on our action plans. These then led directly to corrective actions and generic implications.

Now, the generic implications can fall in a couple of areas. They can fall into the specific Davis-Besse equipment, which I am going to discuss. There's also generic implications such as maintenance, training and operator actions that fall on more of a programmatic point of view, that I will not be discussing.

There's also industry generic implications, which I am not addressing at this time.

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Okay, all that, of course, then rolls together into the final resolution.

(Slide.)

The first issue that I will address is the main feedpump turbine. As you heard, there was an overspeed tripping of our number one main feedpump turbine. This was initiated early in the event. It initiated the plant runback and eventually led to a reactor trip on high pressure because of the lack of adequate heat transfer.

Here, in our action plan trouble-shooting, we found that we had a failed circuit board capacitor in our General Electric controlled system. This control system was an MDT-20 system that had been installed in our last refueling outage, which ended at the end of the 1984 calendar year.

As I indicated, we found a failed capacitor. This capacitor was in circuitry, called our F to V converter, or our frequency to voltage convertor. And this device essentially told the controls team that there was no speed on the turbine. Therefore, to increase the speed, increased speed led to an overtrip situation.

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Our corrective actions are very simple for this. We need to replace this faulted board, and since we had prior problems with the main feed pump turbines, we are testing the control circuits and making some additional modifications, such as in our circuitry for rapid feedwater reduction and also in our oil control scheme for the main feed pump turbine.

DR. LEWIS: Before you leave that slide, I wonder if in terms of generic implications -- you say there are none -- do you have any idea how long that capacitor was bad?

MR. WOOD: That capacitor would have failed just prior to the event because without that signal the control scheme would have no ability to control properly the turbine speed. So it was not a precursor problem that we had seen prior to the event that we just finally caught up to. It was a random failure that occurred at the 6-9 event timeframe.

DR. LEWIS: You are reasonably sure that it happened at the event?

MR. WOOD: That is correct.

DR. LEWIS: Was the capacitor underrated?

MR. WOOD: We have gone back to both General Electric and the people who made the module, which was Teledyne. We had subjected the module -- it is not an

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integrated circuit chip but it is a collection of components that is put into a resin and held in place. We had them destructively examine that portion of the module, and it was found to fail, and they have gone back to their records as far as the failure tests on that module and have attributed it merely to a random electronic failure.

They also looked at other components on the module to understand whether there is a common problem there, and they found other modules, for instance, that if you would subject it to a high voltage spike would also see damage, and found no other damage.

DR. LEWIS: I am just pressing for generic implications because I don't believe there is ever such a thing as a random failure.

You are telling me that that capacitor was either at the low end of the spec and really wasn't designed for the stress that it experienced in this event, in which case that is a generic problem?

You know, it is not an act of God when a capacitor fails during the event. I just wonder if we are not going too quickly by avoiding looking for generic implications.

DR. OKRENT: What is the life of such a capacitor?

MR. WOOD: I have no detail as far as the

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individual capacitors.

DR. OKRENT: The time to failure.

DR. LEWIS: It should last forever. It depends on what it is. If it is electrolytic, you know, they do fail but not usually at the event. Presumably it wasn't electrolytic because you say it was potted and you don't usually pot electrolytics, in which case I have trouble with the word "random."

There may be a generic implication.

DR. SHEWMON: Pilot error. You don't know what caused it. The pilot must have screwed up.

DR. LEWIS: Well, pilots do. Capacitors aren't as smart as pilots, so they don't know how to do it.

DR. REMICK: Proceed.

MR. WOOD: Okay.

(Slide.)

The next issue had to do with our auxiliary feedwater valves, AF-599 and AF-608. These valves failed to open on demand after closing earlier. Now, they had closed when the operator incorrectly pushed the wrong buttons to initiate the aux feedwater system. However, when that operator or the operating staff corrected that problem, approximately a minute later those valves should have come open automatically. They did not.

What they have found here is that the motor

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operators on the valves were not properly adjusted. By this, we mean that the limit switches allowed the torque switch to be placed into the circuit prior to the valve coming fully off its seat.

Thus, the high torque that is required to bring the valve off its seat had not dissipated and the torque switch was set such that under the delta P conditions that existed the valve torqued out.

And this has very far reaching generic implications for Davis-Besse and applies to all our motor-operated valves. We found that the methodology and procedures that we were using to adjust our limit switches and our torque switches was not satisfactory.

We have contracted with the MOVATS, the Motor Operated Valve Analysis Test System, to readjust all our motor-operated valves. We have in fact purchased a unit from MOVATS and have MOVATS working side by side with us in order that we can properly adjust our valves to the design conditions that are required for our systems.

(Slide.)

The next item in your handout is the pilot-operated relief valve.

As you heard, during the transient the PORV failed to close properly after its third opening. The operator, in assessing his panel, had seen a decrease in

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primary pressure. The symptom then was translated by the operator into his action, which included closing the blocked valve. After he had secured, he then saw the reaction to it, and then a couple of minutes later he had reopened the blocked valve as his procedures would indicate and the PORV remain closed and remained closed through the rest of the transient.

Now, here we have found actually no physical evidence to suggest why the valve improperly closed on its third actuation, which we have reviewed with the vendor and other people who are expert in this area and have found that we cannot rule out that perhaps foreign material became lodged in the pilot and prevented the closing of the valve.

We also found that our experience is similar to the industry experience. We have had, I believe, three cases where the valve had not fully closed. That was out of 111 actuations of that valve that we have had at Davis-Besse. The industry average I believe is about .02 in this area.

MR. REED: Interesting, though, this is an internal pilot-operated relief valve, correct, and it is on a borated-hydrogenated system off the top of the pressurizer. It can be impacted by the effects of hydrogen and by the effects of boron scum or crystals.

Quite frankly, I don't think it is a proper

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application to have an internal pilot-operated relief valve off the top of a pressurizer on a borated PWR.

Now, I can agree if you cool the machine down and go in and look at it you are not going to find it because these things are very difficult. You are going to find them in the operating condition. You have got to have left them in that operating condition for a long period of time.

So I don't know where you are going to come out with your pursuit.

MR. WOOD: As you mentioned, the PORV can be subject to failure, and I believe we learned that lesson at TMI as well. As a result of TMI, there was additional emphasis placed on the PORVs and what is needed in order to alert the operator to problems with the PORV.

We have acoustic monitor flow indications, such that we are able to then tell when there is flow out of the tailpipe of the PORV.

Unfortunately, at Davis-Besse that indication wasn't in direct line sight of the operator working his panel, and though he reacted properly to close the block valve, which is designed to mitigate problems with the PORV, that acoustic information wasn't available in his line of sight. We are going to correct that by providing that indication at his board, where it would do him the most good.

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We are also improving the labeling and the annunciators so that he has a clear, unambiguous indication when there are problems in that area.

MR. REED: What is that going to do with respect to the maloperation of this particular type of valve on this particular system.

MR. WOOD: As far as addressing the maloperation and that operation as a failure to close, we have provided the operator with the indication that he needs to use his equipment, such as the block valve, in order to mitigate that.

MR. REED: I would much rather have the valve function properly.

MR. WOOD: We would, also. We are trying to put together as reliable a system as we can in this area.

We are also working with the valve vendors. We are contracting with Duke Power Company to run tests at the Marshall test facility. We are going to continue on.

MR. REED: Is the Marshall test facility a borated-hydrogenated compartmental facility?

MR. WOOD: No, it is not.

MR. REED: We have got generic implications here, and we have got a valve we are working on. I think we made some progress this week.

(Slide.)

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MR. WOOD: The last item I will talk specifically on is the nuclear instrumentation neutron source range detectors.

During this event, we had -- prior to it actually -- we had one source range detector inoperable, and during the event a second source range detector failed. Now, this didn't cause any direct parameter concerns at the plant; however, this added to the confusion of the operators in an already confusing situation.

These have also been somewhat nagging problems, if you will, at Davis-Besse. Therefore, it was important that we get these resolved and behind us.

Now, these have been a very difficult piece of equipment to troubleshoot. They are of course low signal and have some very sophisticated electronics to deal with in order to have them function properly.

What we found in our troubleshootingn was that we had an improper grounding for the shield on the NI-1 circuitry. This was due to a lack of star washers at the preamp, and because of the strain on the preamp box and the lack of star washers we were making an adequate ground.

It took us a long time to ferret that out, but we found it and have corrected it, and it has functioned since we have corrected that situation.

On NI-2 we had a failure of containment

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penetration. This was an intermittent failure of containment penetration which gave us periodic low signals on this source range detector.

We also found triax cable connectors in a somewhat degraded mode.

All that leads us to the corrective action that was shown here to make sure that both these trains have been refurbished and restored to operating conditions, and this is an example of a problem that has nagged Davis-Besse that we feel we now have corrected and hope to continue that philosophy as we go along.

DR. AXTMANN: When those symptoms have shown up under normal operations?

MR. WOOD: Under normal operations. The neutron source detectors are turned off when you go to your power range. In fact, that led to part of the prolonging of the problem, is that it only become important during period of time, and so once we are out of that timeframe maybe people didn't place so much importance on it. That is why it was important to get it.

DR. LEWIS: Are you comfortable that your preventive maintenance program won't do more harm than good?

In other plants a lot of the electronic failures have come from too much maintenance. Are you comfortable about that?

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MR. WOOD: That is a very good point. In fact, we mentioned here that the degraded connectors were found. We believe that some of that degrading was because of prior attempts to troubleshoot these systems. So we had to balance that on the intermediate and power range detectors.

We don't want to just go in and wholesale take a look at everything because you know there is a certain that if it is not broke, don't fix it. They had to balance that as to, okay, what is the normal lifespan, what type of things do I have to be doing on a periodic basis so that I don't have to go in and troubleshoot something.

DR. LEWIS: I know that is what you have to do, but have you done it; that is to say, balanced the expected lifetime against the maintenance intervals and see if the maintenance does more good than harm?

MR. WOOD: That is the intent of our preventive maintenance porgram. We have not, I guess, had that philosophy necessarily prior to June 9, in all events. We are looking specifically at these, and that is our intent, is to put together that preventive maintenance program that will draw that balance in.

That balance is not easily drawn, and we will just have to use the best help we can to make the best effort we know how.

DR. OKRENT: I would like to go back to the

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auxiliary feedwater valves.

I am trying to understand, are you now going to rely on good maintenance procedures to prevent the problem that occurred here? Is that the understanding?

MR. WOOD: Not only good maintenance procedures, but a better look at the design aspects as to where the torque switches need to be placed, where the limit switch needs to be placed relative to the opening, and also by doing diagnostic work in which we have that capability with a unit such as the MOVATS unit, where you can periodically take a signature of what the motor operator and the limit switches and the torque switches are doing and you can do comparison and trending.

DR. REMICK: Thank you, Mr. Wood.

Mr. Wood coined a new word for me. Those who work on Star Wars research are star washers.

Who is next?

MR. WOOD: Sushil Jain will be next.

DR. REMICK: We have just about 25 minutes now.

MR. JAIN: I am Sushil Jain. I will be talking about a very important and comprehensive activity undertaken by Toledo Edison Company in light of the June 9th event.

Most of the systems involved in the June 9th event related to the removal of decay heat from the reactor core and to maintain the startup systems and also the

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feedwater system, also the steam and feedwater used for initiation of the auxiliary feedwater system.

To that end a task force was formed, which included people from Toledo Edison as well as high level people from NPR and B&W, with special objectives to reduce the frequency of demand for emergency decay heat removal, also reduce the automatic responses that are required for initiation of auxiliary feedwater, further to improve the reliability of the system by reducing the potential for common mode failures in the system, and also to evaluate what other diverse and redundant means could be available or could be installed to improve the overall reliability.

The overall goal then was to provide equipment systems at Davis-Besse which would bring about the amount of improvement commensurate with the NRC's specified standard review plan.

MR. EBERSOLE: I wonder if you could refresh my memory. I don't think that you ever said you ever really calculated on a PRA basis the estimated reliability of the feedwater system prior to this event.

MR. JAIN: Prior to this event, we had calculated, we had prepared rigorous PRA models, specifically from the auxiliary feedwater system, also as part of the June 9th event, and coming after the recommendations of the task force.

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These specific improvements or modifications were evaluated based on reliability models, seeing which ones would be most beneficial.

MR. EBERSOLE: Part of it is the reliability of the main feedwater system and the aux feedwater system respectively?

MR. JAIN: We had didn't have a PRA model for the main feedwater system. However, we did have a detailed model for the auxilliary feedwater system.

MR. EBERSOLE: That was on a per challenge basis?

MR. JAIN: Yes, a per demand basis.

The numbers, if you want to talk about it, if you were to use the plant specific data base, the two train auxilliary feedwater system, these were the numbers just before June 9th that were calculated on the order of 10 to the minus 3 per demand. I will talk about the improvements and also the installation of the other pump and what improvements those modifications will bring about.

I'll get to that shortly.

MR. WARD: Excuse me. Is that per system or failure of the whole system, the 10 to the minus 3 per demand?

MR. JAIN: That's for the auxilliary feedwater system for both trains.

(Slide.)

Our recommendations were based on two areas of decay heat removal. One was to minimize the challenges to the system. The second was to maximize the reliability once

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the system is challenged in order to reduce the number of initiators. The existing steam generator level signals to the SFRCS, which initiates the auxilliary feedwater system, that is being provided to minimize oscillations that occur following a sudden closure of the turbine stop valves on the main steamlines, similar to the one experienced on the June 9th event.

This will prevent such level oscillations seen by the load transmitters, and then minimize the SFRCS trips.

MR. EBERSOLE: With the addition of the new electric pump, will the SFRCS system still dominate whether the feedwater systems will run or not?

You're going to put in an electric pump now. Will it be subject to the same interception of flow as was the two turbine trips and pumps by this SFRCS?

MR. JAIN: The auxilliary feedpump, which I'll be talking about shortly, does not have an interface with the SFRCS.

MR. EBERSOLE: Thank you.

MR. JAIN: The second part in improving the performance is to improve the SFRCS power supply, failures of which contributed to spurious actuation of the system, thereby resulting in challenges to the aux feedwater system.

Finally, the SFRCS logic itself will be modified

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so that isolation of main feedwater and main steam lines will not automatically occur because of isolation of those two systems, it essentially robs you of the primary means of decay heat removal, which is the main feedwater system.

(Slide.)

Secondly, in terms of improving the performance of the system itself once it is challenged, as Mr. Wood described, we have undertaken a major improvement program for the motor-operated valves. Furthermore, to minimize the number of valves that have to reposition in the auxilliary feedwater system, several changes are underway to either leave the valves open or repower the valves. So the probability of spurious mispositioning is eliminated.

Furthermore, the cause of the overspeed trip during the June 9th event, which is believed to be the condensation of the steam lines because of the steam hitting the cold steam lines all the way to the turbine, we are proceeding along putting the steam revision valves right next to the turbine. This would minimize the condensation on the line and therefore minimize the overspeed trips.

MR. REED: I'm a little surprised to see that bullet. I didn't realize that anyone would have anything other than hot steamlines right up to the emission valve.

Do you mean to tell me that you had cold lines, long runs on cold lines leading to the turbines?

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MR. JAIN: That was a realization for us. Yes, that was true.

Furthermore, one of the leading things in the June 9th event was the operator error of misactuating the SFRCS. Revisions to the SFRCS panel here, rearrangements and relocations on the manual activations, which is to minimize such possibilities in the future.

The governor on the number one aux feedpump turbine is an older design and failure prone. We will be changing the governor on that turbine with a design similar to what the number two turbine has, which has been proven to be much more reliable, as evidenced by the development.

The last two bullets here relate to the reliability of aux feed systems on the section side. There are redundant strainers on the suction side on the aux feedpumps which unnecessarily cause large defection pressures and then result in the transfer of suction to the service water system.

The result of these modifications is to remove the baskets from two of the strainers and enlarge the holes in one of the strainers, which is the common strainer from the condensate storage tank to the feedpump section; and also to provide the device at set point, which provides for the transfer of service water and add a time delay so as to minimize spurious transfers which again involve positioning

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of valves.

(Slide.)

DR. OKRENT: There's no downside to any of those?

MR. JAIN: The pump clearances have been evaluated to see what kind of debris goes through them and the overall reliability of the pump that has been observed by this change. We talked just a few minutes ago about the new motor-driven feedpump would be installed at Davis-Besse. The capacity of the pump will be 100 percent of one auxilliary feedwater pump. The discharge in a normal power operation will be aligned to the auxilliary feedwater headers, but the suction would be aligned to the condensate storage tank.

The pump will be capable of being started from the control room and during a loss of offsite power could be fed from either diesel generator.

(Slide.)

DR. REMICK: Are you going to mention the existing startup pump?

MR. JAIN: Yes. Here, we realize that the systems evolved here are important to any nuclear power plant, concerning decay heat removal. It's important. It cannot be overemphasized. To that end, we are investigating improvements in the Davis-Besse feed and bleed capabilities. The very first part of it is to investigate what else could

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be done to increase the bleeding capability so as to depressurize. Further, to investigate what else could be done to maximize the additional high pressure injection capability.

MR. REED: In other words, you're going to change those words around there on your slide to bleed and feed rather than to feed and bleed some day?

MR. JAIN: That is true.

MR. REED: I don't have anything against intermediate pressure injection as long as you're getting the heat out and getting the pressure down.

MR. JAIN: Yes. That's related to the auxilliary feedwater and the SFRCS; the pump which is located next to the auxilliary feed pump will be reconnected in the longer term.

The switching for this pump is being used for the newly installed motor-driven feedpump. In that regard, new switch gear will be installed so that the existing startup feedpump will be powered from 4160 buses.

Most of our actuations on the SFRCS have been on the low level trip of the system, and that has been because of the close proximity of the ICS low level limit, which is where you will be after a unit run back at low power levels.

The intent here is to increase the margin between

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the two set points and, thus, further minimize the challenges.

MR. EBERSOLE: Pardon me. For the record, are you going to look at the environmental capability of the PORV and its associated block valve? You remember, we talked about it?

MR. JAIN: The PORV and the solenoid valve and the PORV and the controls are being looked at preliminarily.

MR. EBERSOLE: I think you mentioned another thing the committee would be interested in. You said you had a qualified secondary blowdown system up to atmosphere, and you exercised that, you could get water into the secondaries from a host of sources.

Is this right?

MR. JAIN: We have the atmospheric vent valves, which could be used to depressurize the primary side.

MR. EBERSOLE: Then you could vent in feedwater from lots of places. Is that correct?

I think I heard service water.

MR. JAIN: Service water is a very low head pump.

MR. EBERSOLE: I don't know how far down you're going to go when you depressurize.

MR. MEYER: We haven't analyzed any of those

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conditions yet.

MR. REED: While you're recouping, what I think you've told me here is that there are a number of design inadequacies to the original auxilliary boiler feed, main boiler feed, everything being steam-driven; that you had cold lines up to the turbines on auxilliary feed, that you didn't have the electric pump option.

These, to me, are all design inadequacies. Would you be willing to tell me who designed this auxilliary boiler feed system and where you have a reactor concept that has very low inventory of steam anyway?

MR. JAIN: The auxilliary feedwater system was designed as part of the original design of the plant and, obviously, with input from Toledo Edison, the architect-engineer.

MR. REED: So the creators were Toledo Edison and the architect-engineer?

MR. EBERSOLE: Dedicated steam mechanical engineers, electricians.

MR. JAIN: In relation to the auxilliary feedwater level control, the present on/off level control system is intended to be modified significantly to minimize challenges to the governors. The SFRCS logic, we realize it's a unique type of system at Davis-Besse and it isolates auxilliary feedwater. It isolates mainsteam and main

feedwater when it may not supposed to be. The intent here is to totally revamp the logic so as to minimize all those inadvertent isolations.

Furthermore, to enhance the human engineering effects, the control room will be provided with a comprehensive SFRCS aux feedwater panel for the operator to know where exactly he is in relation to the auxilliary feedwater and the SFRCS actuation status.

I believe that's the end of the presentation.

DR. REMICK: Dave?

DR. OKRENT: Are you familiar with the paper that was given at the most recent conference in Brussels by Carl Fleming, Ali Moshi and R. Kenneth Gallagher, called The Systematic Procedure for the Incorporation of Common Cause Events in the Risk and Reliability Models?

MR. JAIN: I know those names. I haven't looked at the paper myself, but we are looking at the common cause failures for auxilliary feedwater systems on a systematic basis.

DR. OKRENT: Is the staff familiar with the paper?

DR. REMICK: What's the point, Dave?

DR. OKRENT: I have a point to make. One of the conclusions that was reached with this paper is that for a typical free train auxilliary feedwater system, as would be

found in several existing U.S. power plants, a realistic failure frequency per challenge, with all support systems available, is about 1 times 10 to the minus 3 per demand.

Now, the staff calculates, you know, 10 to the minus 4 or better, I believe, by their recipe. I would highly recommend that both Toledo Edison and the staff review this paper and advise us at some future time if they agree or why they disagree. If they don't disagree, what they expect to do with their SRP story. There's a lot of plants that claim to have 10 to the minus 4 or better.

MR. JAIN: May I get the name of the conference?

DR. OKRENT: The most recent SMRC conference.

DR. KERR: Is there some reason to believe that the conclusions reached by this paper are valid? I don't think we ought to send these people on a wild goose chase.

DR. OKRENT: These, Fleming is among the principal contributors to common cause. And, in fact, it was prepared for what's called the Post Conference Seminar. And you have a xerox.

DR. KERR: Does he use the Beta method for estimating common cause failues?

DR. OKRENT: No. They look at a variety of different models.

DR. REMICK: Gentlemen, I think we must proceed.

DR. OKRENT: All members of the committee we'll

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send an extract of this paper.

MR. MEYER: The next speaker is Jacque Lingenfelter, who is going to discuss the test program and system review programs. We'll cover those as rapidly as we may.

MR. LINGENFELTER: I'm getting kind of used to this pace.

(Slide.)

The system review and test program again is designed to address two of the major issues raised by the June 9th events, specifically the concern over the effect of inadequate maintenance on other systems and those which were directly involved with the June 9th event.

And, secondly, the concern that the test program at Davis Besse was not necessarily adequate in all cases to prove all functions of safety systems.

The objectives of our program simply stated are to identify significant or recurring maintenance and operations problems, identify testing required to assure that systems will perform their specified functions and conduct test program to assure that the systems are fully functional.

(Slide.)

The systems that we're reviewing, we've selected a total of 31 systems to perform this review in detail on.

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They are broken into five groups. The systems include the majority of all safety-related systems. There's a few that are not included, and there are several nonsafety related systems that were included as probable precursors to events, such things as the integrated control system, the main feedwater system and station instrument air are included in this group.

The first group are primary systems. The second group is electrical systems. These are in the handout you have. You want to take a look at it.

(Slide.)

The third grouping is instrument control. Group 4, support systems; and group 5 is the secondary systems.

(Slide.)

DR. AXTMANN: What fraction of that list had been in your program before the event?

MR. LINGENFELTER: This program was really newly created.

DR. AXTMANN: None of those 30 odd items were periodically tested?

MR. LINGENFELTER: Oh, no, they were all periodically tested in accordance with tech specs or other test requirements. Surveillance testing is conducted in accordance with tech specs. Most of the other systems were tested in accordance through our own internal periodic test

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program.

The testing was performed before. What we were concerned with and what the special review was for, again, was to try to find where problems that may have occurred in the past were inappropriately corrected by our maintenance program and our root cause determination problems.

And then to assure when we reexamine our test programs, to assure that all our functioning systems were or had been appropriately tested.

Does that answer your question?

DR. AXTMANN: I guess.

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MR. LINGENFELTER: This is a very special review of a test program to assure that everything was there. The testing has always gone on. We had an outstanding test program.

MR. EBERSOLE: There was a letter that came through about longstanding instabilities on the pumps on the aux feedwater system.

Was that ever resolved?

I can't point to the letter right now, but pump instabilities were due to pump performance when it was being throttled.

MR. MEYER: Mr. Hildebrand can talk to that.

MR. HILDEBRAND: Yes. That was put together by Toledo Edison.

Associated with that particular letter, I believe that was with Mr. Stolz.

The conclusion is that there were not any instabilities that resulted in improper operation of the pumps. It looks very specifically at the reference, evaluating the pumps to those criteria and stating that there should not be any instability if there is proper operation.

MR. EBERSOLE: This long wet line, the core blind, gave you the most trouble, is that right?

MR. HILDEBRAND: Yes, sir.

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MR. LINGENFELTER: A very quick description of the program we are pursuing. The first portion of the program again is aimed at looking at outstanding problems we call the system review.

This activity is being performed by about 50 to 55 people, 30 of which are Toledo Edison engineering personnel that are going to form the basis of the new systems engineering organization. The remainder are consultants experienced in various aspects of design, testing, operations, and maintenance.

The review they are performing is based on an examination of historical documentation, such things as licensee event reports, NPRDS data, maintenance work orders, facility change requests, our own internal modification mechanisms, and transient assessment works.

We also included human engineering discrepancies, but a power design review is a topic for review. They take that information, formulate information about questions on their systems, and they performed interviews with operations and maintenance personnel to find a better indication of some of the problems, operating and maintenance problems, associated with our systems.

From that they developed a list of problem reports. They evaluated those particular problems as to whether or not they should be modified or rectified in the

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short term or whether they can be dealt with in the long term, and proposed corrective actions for those problems.

Those problem reports are being reviewed at the moment by the independent system review group, which Phil Hildebrand is the chairman.

Based on that review, certain changes are being made. Certain modifications and repairs are being made as a result. Additionally, the results of the action plans, those particular activities that concern themselves with equipment failures on the June 9th event and other work are resulting in modifications and repairs being made to the station. Those modifications will be tested by the acceptance test program.

The second portion of our program is the test program review that is being performed by the system review groups. It is an evaluation of all the past testing we have been performing. Our surveillance testing, our periodic testing, preventive maintenance testing are all being examined to determine whether or not that test program did adequately test all the functions of the systems.

Based on that review, the systems review groups are preparing test outlines for new and revised tests that will be required to be conducted prior to startup. All the testing outlines are being fed into the independent system review group for reviewing all the outlines to develop and

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maintain a consistent scope of testing that is to be performed prior to startup.

Once the independent system review group has reviewed and agreed to the scope of testing to be performed, the outlines are turned over to the joint test group, which is conducting -- comparing the procedures, the test procedures specifically, and conducting the test program.

The test group is composed of station personnel, primarily operations, maintenance and other outside testing consultants.

That is a very brief overview of the program.

DR. REMICK: Any questions of Mr. Lingenfelter?

(No response.)

DR. REMICK: Do you have any closing remarks?

MR. MEYER: That completes our presentation.

I do remind the subcommittee -- or the full committee that there are additional documents in the back that can be covered if there are questions on any portions of the program.

DR. REMICK: There is one matter. Dr. Mark is not here, but he raised the question on the security issue.

Is there anything Toledo Edison wants to add to my remarks about the three doors, and so forth, for the record?

MR. MEYER: I think all we would like to address

is that we are taking action to see if we can improve the access capability of both the operators. However, we are not significantly altering the normal access requirements, the security requirements that are in place.

We would prefer not to address that for security reasons.

DR. REMICK: I remind the committee -- excuse me, Glenn.

MR. REED: I think having heard these design issues and the PORV story and noting that the licensee intends to have a very infrequent exercising program for his single PORV train, I have to take the position that with this concept of reactors that I am concerned for the longer term that it has adequate diversity in decay heat removal and that there ought to be thinking further along the line for additional primary blowdown capability beyond the single train PORV and that it should come from the top of the candy canes.

DR. REMICK: Do you want to respond to that?

MR. MEYER: I would like to respond to that. It wasn't specifically covered, but Sushil Jain indicated we are in the longer term looking at additional blowdown capability. It is intended to be redundant. It is also intended to be from each loop. The exact location and arrangement for that is under review at this time.

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DR. REMICK: I remind the committee, what we have heard is a summary of basically what was in the Toledo Edison response to the Commission's 5054(f) letter. That was in a two-volume, three-ring binder set which each of you have received. The staff has received that not too long ago. They are undertaking a review.

We are now about to hear from the staff on where they stand in the review of that reply from Toledo Edison.

I believe John Stolz is going to handle that.

Do you want to proceed?

MR. STOLZ: I would like to introduce what we are going to say this afternoon. We are going to do it in two parts.

Mr. de Grazio is going to present the outline of the restart evaluation lines. That will be followed by the NRC developed generic issues that have been developed following the June 9th event. That will be handled by Dick Westman.

We have both of these items currently under staff review. We have, in addition to Mr. Westman and Mr. de Grazio, other members of the NRC staff who will be here to answer some of the committee's questions.

Recall that the restart evaluation items that we are talking about would derive from staff concerns expressed in the 5054(f) letter, which was given to the licensee on

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August the 14th, and that 5054(f) letter was in turn derived from the NRC team findings that were expressed in NUREG-1154 and other NRC concerns.

Toledo Edison, as the subcommittee chairman told you, responded to our 5054(f) letter on September 12th. That is a two-ring binder. They call that the Davis-Besse Course of Action regarding our schedule.

We expect -- we have a target at least that we can issue the safety evaluation plan to prepare on this matter by early December. We expect to get some returns from reviewers in about a week or so. It will probably be in the form of questions and information and, in some cases, SER inputs.

Following the issuance of our SER, we are committed to give the Commission a briefing for their evaluation prior to the restart.

Unless there are some general questions, I was going to ask Mr. de Grazio to make his presentation.

DR. REMICK: Thank you very much. I will remind you, you have about 40 minutes, and that includes questions.

(Slide.)

MR. de GRAZIO: Thank you.

As John Stolz indicated, the restart evaluation derived from the 5054(f) letter. That letter in turn had

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been responsive to a memorandum that the Executive Director for Operations had prepared simultaneously with the issuance of NUREG-1154.

The letter picked up a number of the items that the EDO had indicated that the staff should consider, and that letter, that memorandum, indicated that the staff should also include any additional concerns that it has.

The EDO's memorandum was based largely upon the findings report from the investigation team. The concerns that were expressed in that 5054(f) letter can be broken broadly into three categories.

First of all, we did request that the licensee continue with troubleshooting and investigation of the events surrounding the event of June 9, report upon the specific plant findings, and address the programmatic and management issues which contributed to the event and the performance at the plant.

John indicated that the response was provided in mid-September. Because of the short turnaround and the large amount of work that had to be done to respond to the submittal on the part of Toledo Edison it was a partial submittal. There still is material that is outstanding and is being worked on and will be submitted at a later time.

Necessarily, our review is still underway, and as John indicated, we are starting to get results, and we will

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be indicating a need for additional information.

DR. KERR: How is it that you are sure that you will need additional information? Is that just a requirement that you always have to ask for additional information no matter what the response is?

MR. de GRAZIO: No, that is not automatic. Some of the reviewers have already indicated the need for additional information.

DR. KERR: So one could have anticipated the situation where the same sort of thing wouldn't occur?

MR. de GRAZIO: I am sorry, I didn't understand.

DR. KERR: One could have anticipated the possibility that additional information would be required?

MR. de GRAZIO: I think that is always something you can anticipate, yes.

(Slide.)

With regard to the completion of the event investigation, Toledo Edison has been submitting a number of reports they refer to as finding reports. These reports detail the troubleshooting effort that Toledo Edison had gone through to identify the fundamental cause for the equipment failures that did occur during the event and to outline the corrective actions that are to be taken.

To date, we have received all but one of the 13 reports that are to be submitted, and we have completed the

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review on six of those reports and have found no substantial disagreement. I should say we have found no disagreement with the findings as far as the fundamental causes of failure.

The remaining reports that we have in hand are under review now.

DR. KERR: What is the required reliability of the systems which mitigate the loss of main feedwater?

MR. de GRAZIO: I am not sure that I can answer that.

MR. STOLZ: Dr. Kerr, I believe the staff is targeting an order of magnitude improvement over what was cited earlier today by the licensee in reliability of the aux feed system.

DR. KERR: Is there one for Toledo Edison which is different than other plants?

MR. STOLZ: I am sorry?

DR. KERR: I see up here corrective actions needed to assure the reliability of systems which mitigate loss of main feedwater events.

To me, that says that you must have a requirement for such reliability. I am simply asking what it is.

MR. STOLZ: I am saying the target we have is 10 to the minus 4.

DR. KERR: 10 to the minus 4 per demand. Is that

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a requirement or a target?

MR. RUBINSTEIN: Excuse me. We have a predecisional -- Les Rubinstein of the staff -- we have a predecisional request for a CRGR to clearly state that all PWRs would have to meet 10 to the minus 4, 10 to the minus 4 per demand reliability range. That requirement doesn't exist, but I rather think Davis-Besse will be working towards it.

MR. EBERSOLE: Pardon me. If that is true, where does that put Palo Verde, which can't do a bleed-feed.

MR. RUBINSTEIN: We do not include bleed and feed in that reliability analysis.

MR. EBERSOLE: So you don't even give credit to the possibility?

MR. RUBINSTEIN: We do not.

DR. OKRENT: Excuse me. One problem with that particular part of the SRP is that it doesn't distinguish among plants, and while it is not a bad idea for them all to have reliable, exemplary feedwater systems, if it didn't have any bleed and feed capability you might in fact want more than they are asking.

MR. RUBINSTEIN: I would only say that our SRP requirement as it is now is limited to pretransients.

DR. REMICK: Before somebody suggests that the standard review plan is not a requirement, I think we should proceed.

(Slide.)

MR. DE GRAZIO: In the interest of time, I'm not going to go through all of these items because, obviously, since our review is still underway, I can't comment on many of these items. I will only touch upon those that I have anything specific to say at this point; or I'll take any questions that you have.

With regard to item one, what we're concerned with there was to have the licensee identify with his analysis the time margins that were available in the various alternative sequences for keeping the core cooled in the event of a loss of feedwater.

Specifically, what is the capability of the system for feeding and bleeding, bleeding and feeding operations?

The staff also had previously made some independent calculations, I believe, that that had been reported -- was that an ACRS subcommittee? They had been previously reported to an ACRS subcommittee, that those calculations, I believe, indicated that the PORV makeup and

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high pressure injection combinations can, if action is taken in the appropriate time span, maintain core cooling.

MR. REED: With a single, unreliable PORV?

MR. DE GRAZIO: I was looking at the equipment that was in at the time, yes, sir.

MR. WARD: Also, that was with a nonsafety grade single failure vulnerable feed system.

MR. DE GRAZIO: With the feed system which is nonsafety grade, but it's a high quality feedwater. You're referring to makeup, I'm sure.

MR. WARD: Yes, the makeup pumps. It may be high quality but it's still vulnerable to a single failure, as I recall from the system description. It's a single valve failing to open. It would have cut off all flow.

DR. REMICK: Is this startup or auxilliary feedwater? I thought that was auxilliary.

MR. WARD: No. The makeup pumps subsystem.

MR. DE GRAZIO: With regard to item two, what we were concerned with there was the so-called spurious actuation of the steam feedwater rupture control system, which was the main steam isolation valves which provided information to the operator so that he could readily tell that the MSRV's had closed, the potential single failure issue that the investigative team had identified as a concern.

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With regard to items 5 and 7, they are related. We are in the process of reviewing information that the licensee is submitting and continuing to submit with regard to estimating the reliability of the feedwater system, both the auxilliary feedwater system before and after the event. But that existed at the time of startup.

DR. REMICK: You skipped over three. Is there anything you can say there about how extensive an effort is going to be directed at physical security and plant operations?

MR. DE GRAZIO: Dick, you planned to have some comments about the physical security as a generic issue, don't you?

MR. WESTMAN: My name is Dick Westman, from the Division of Licensing of the staff. One of the short-term generic issues that has been identified as a result of this event is to take a look at the constraints that may be imposed by virtue of either administrative controls or physical security requirements.

This is an item for consideration by the staff. A decision has not been made whether this is truly a generic issue that will be fully pursued because the staff has not yet completed the prioritization effort which has to be done before we commit resources to work on the generic issue.

I think this issue here is identified

specifically for the Davis-Besse facility.

DR. REMICK: Please proceed.

MR. DE GRAZIO: Unless anyone has any questions on this slide.

MR. REED: I don't think I was happy with hearing that the staff is going to be satisfied with the single PORV train and the upgrading of the auxilliary feed system. The auxilliary feed system added electrical pump or pumps. I don't think, first of all, they're not safety grade. Second of all, I don't think they're in a security area anyway.

It seems to me the staff ought to be holding out, certainly in the longer term, for redundancy and diversity in the alternate technique for decay heat removal, such as two or three PORV's appropriately located, able to blow down and allow the bleed and feed operation to go forward as an alternate means of decay heat removal.

MR. WESTMAN: This is Dick Westman from staff again. Perhaps I can respond to that on a generic basis because this is one of the areas of concern for longer term generic issues that we've identified from this event. I believe, as you're aware, USI-845, dealing with decay heat removal, is expected to look at some of the aspects that you just mentioned.

DR. REED: Yes, I'm well aware.

DR. REMICK: Please proceed.

MR. DE GRAZIO: The only thing I had planned to say on this slide, but I'm sure I'll get a question on 8, is No. 10. The staff had asked Toledo Edison to address the inability to place the startup feedwater pump into service; I think that question is largely moot.

Installation of the new electrically driven startup feedwater pump Toledo Edison is considering in the long-term the possibility of putting that existing feedwater pump back into service. At that time, I think we'd have to look at the high energy line considerations. There's no reason why that pump was not immediately available in the event, but I think that's a long-term issue.

Item 10, really, from the standpoint of restart, is not of great concern.

MR. WARD: Could I ask you a question? I should remember but that new feedwater pump, that is going to be outside of the security area?

MR. DE GRAZIO: That pump is going into an area. I can't remember.

DR. KERR: Is the staff convinced that keeping that startup pump unavailable rather than having it available was really a risk-reducing requirement? If the applicant decides to make it available, then you'll have to look at the regulation or practice which kept it from being available initially? Has the staff looked at that, and has

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concluded that that requirement makes sense in terms of risk reduction?

MR. WARD: Do you think there's a generic implication, Bill?

DR. KERR: I just wonder if, generic or not, if it was the right thing to do in this case. It seems to me one ought to ask that question.

MR. RUBINSTEIN: Let me try that out. Les Rubinstein again. As I understand it, Toledo Edison, when they made the choice to add an electrically-driven pump, they had to use some of the lines from the original, small-sized feedwater pump. So, at this time, those lines are in use and not available.

I think, as I said in our presentation earlier, they're considering in the long run perhaps going to a three and a half pump system, the half being capacity. And the staff certainly would not exclude this. We've encouraged them strongly to put in a third train, and to do that on a timely basis. They had to appropriate some of the lines and connections that were originally part of the startup.

DR. KERR: That isn't a response to my question, but let's not pursue it further.

MR. WARD: You don't want to pursue it further? I think there's a generic implication in staff requirements. Is that what you're saying?

DR. KERR: The thing that occurs to me is that there was a staff requirement I think that kept the pump from being available. The staff requirement was based upon the assumption that there was risk from break a high pressure line.

Apparently, there was also risk from not having a pump available, and I wonder if the staff had looked at a balancing of those two risks, which, in the future, might make the relaxation of that high energy line requirement a possibility under some situation like this, or whatever.

I read that the staff is going to go over all of its regulations and do a risk-based evaluation. It seems to me this is one that one might want to look at.

MR. RUBINSTEIN: I agree. Let me only add very briefly that we did not exclude the original startup feedwater pump because of medium or high energy line break considerations. The emergency feedwater system docketed by Toledo Edison many years ago was a two-train system. And the staff analyzed that system as it was given to us. We did not require an additional pump in that timeframe.

DR. KERR: But you did require that this particular pump be unavailable, didn't you? Unless I'm misunderstanding.

MR. RUBINSTEIN: Yes, we did.

MR. EBERSOLE: In fact, at this moment, you don't

require a third train, do you?

MR. RUBINSTEIN: No. We are working hard on expressing our requirement in terms of reliability which, for four or five or six plants, could only be satisfied probably by the addition of a third train.

MR. EBERSOLE: Of course, that can be massaged into place by numerical analysis with two trains.

MR. RUBINSTEIN: One or two plants have done that.

DR. REMICK: Now where do we stand on this slide?

MR. DI GRAZIO: On item 13, Toledo Edison reported on their test program. With regard to that, the NFC has put together a joint effort between Region I&E and NRR to review the scope of that program. The test program, the details of the test program that we're providing, a rigorous inspection program during the implementation phase of that program.

The program will include -- that's about all I had planned to say on that. Conrad McCracken, who is following the test program for NRR, may have some additional comments.

DR. REMICK: Further questions at this point?

(No response.)

DR. REMICK: Excuse me, Al. Are you finished?

MR. DI GRAZIO: Maybe I can even skip some of

this. We did have a review team at Davis Besse several weeks ago to look into how they're progressing with the self-accreditation program with regard to the nonlicensed training. The results of that review are not available yet, but the appropriate results from that will be factored into our evaluation.

DR. REMICK: Does that have anything to do with the new training program?

MR. DI GRAZIO: Some of the new maintenance programs might relate to training. Some of the emergency responses, the EMS might relate to training. That survey, by the way, had been planned prior to the event in that timeframe.

(Slide.)

I'll just touch on one last item here. That's the adequacy of the management practices. I'm going to bring that around to maintenance. There was a special inspection that had been conducted again several weeks ago by a team from Human Factors from Region III and Battelle, who contracted with them. And they're looking into the past maintenance practices at Davis-Besse, and also trying to evaluate the new organization that's been put together -- since the new organization really hasn't been in place for very long. In fact, some of it's not in place. They're really not in the position to comment much on that. They

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will probably want to go back there at some future date to evaluate how well that program has been working.

Again, we don't have their report yet, so we can't say very much about it at this time.

DR. REMICK: Questions of Mr. di Grazio.

(No response.)

DR. REMICK: If not, Dick, are you next? You've been scheduled for 15 minutes, including questions.

(Slide.)

MR. WESTMAN: My name is Dick Westman, from the Division of Licensing, from the staff. I want to take just a few minutes and tell you just a little bit about the generic actions that we had under our review and consideration for commitment of resources as a result of the Davis-Besse event.

I should say a few words about the process of identifying generic actions before we talk specifically on some of the technical issues. Immediately after the event occurred back in June, the staff looked at what they knew about the event at that time and with very little written documentation as a basis attempted to make a determination of whether there were any immediate actions requiring very prompt action by the staff that might affect other licensees.

At that time, we determined that there were none.

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Again, once NUREG 1154 was issued by the investigative team in mid-July, we asked ourselves the same question throughout the various divisions in NRR. We sought to examine the event and determine whether there was anything requiring immediate staff action for all the licensees.

We concluded that, at that time, there were no immediate actions. However, during that review, we identified a number of issues that we considered short-term generic issues. We also are in the process of identifying and have identified some issues that we might classify as longer-term generic issues.

DR. LEWIS: It would help me to listen to you if I were sure I knew what you mean by "generic". Do you mean applies to all licensees, or to all PWR licensees, or to all B&W licensees?

What do you mean by the word "generic"?

MR. WESTMAN: I think we mean generic any time it applies to a group of plants. It may be as much as all licensees, or it may be to the B&W.

DR. LEWIS: Two or more plants.

MR. WESTMAN: Clearly, more than to just Davis-Besse.

DR. LEWIS: Two or more plants is what you mean by generic. I just needed to be clear.

MR. WESTMAN: Let me just point out the short-

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term generic issues that we've identified. These issues are currently under examination by our Division of Safety Technology to determine the cost-benefit considerations. And to determine reliability improvements that might be brought by them. And to determine the ranking of these issues as one of either high priority, medium priority or low priority.

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Prioritization of these issues is still in progress, so we have not committed Staff resources specifically to the resolution of the issue.

The first deal with the inability to remove decay heat, because of problems with the auxiliary feedwater system.

This is really built around three subparts that have emerged from the Davis-Besse event. First of all, the difficulties with AFW valves, where they go closed, are unable to be reopened when they are needed.

Secondly, this issue concerns the difficulties in restoring steam turbine auxiliary feedwater pumps to operation, should they trip for whatever the reason may be.

Thirdly, we're looking at failures that would be in the steam and feed rupture break mitigation systems to see if there are difficulties somewhat like the SFCRS that might give us a reliability problem on an overall basis.

The second major issue is the one dealing with emergency procedures, operator training and plant systems that could be appropriate for determining when feed and bleed should be initiated.

The third issue relates to the physical security system, constraints that may make it more difficult to get access to equipment, should it be necessary. I believe we've talked on that earlier.

DAVbw

Could I have the next slide, please.

(Slide.)

As I said, prioritization on these issues is nearly complete, and at that point we'll be able to make a decision on the commitment of staff resources.

Let me turn to the long-term generic actions.

There are about a dozen of them that we have identified so far. Most of what you see on this slide, I believe the first five are primarily derived from the incident investigation effort itself, and then the later half of the list is derived from concerns that have been identified by members of the technical staff to us and NRR,

I think because they primarily are self-explanatory, I don't want to dwell on any particular one. We have talked to some degree already about the PORV and its block valve that is being considered as part of Generic Issue 70, the aspect of the PORV concerning its environmental qualification or its ability to stay open in the event that it's passing water, is being considered as part of USIA 45.

MR. ETHERINGTON: Is your generic consideration of the PORV confined to PWRs?

MR. WESTMAN: I don't think it is, but I'm not sure.

If I could have the next slide, please.

DAVbw

MR. REED: On Item 4, the need for a plant-specific simulator, does Davis-Besse have a plant-specific simulator?

MR. WESTMAN: My understanding from the Davis-Besse meeting that we had with them in Subcommittee last week, was that they are in the process of purchasing and installing one, but it won't be available for another year or so.

MR. GUIDO: Yes.

MR. REED: Quite frankly, I don't see how it relates to all this good operator action to simulate the valves and down around the auxilary feed system.

MR. WARD: Well, it relates, at least in one place, to the action of the SFCRS panel.

MR. REED: Which related to design of switch location?

MR. WARD: I guess, but whatever the design is, that would be on the simulator. As I recall, one of the problems was this particular operator had never taken that action before.

DR. REMICK: They currently use this in the B&W simulator, which comes close.

MR. REED: I hate to continue the argument, but it seems to me the operators improvised or simulators never would have tripped, and it didn't save the unit.

DAVbw

MR. WARD: That's right. But there was one control room action by that operator which was incorrect and might or might not have occurred if it had a simulator to practice on.

DR. REMICK: Please continue.

(Slide.)

MR. WESTMAN: This is the second half of the list of potential long-term generic actions, and these have been identified by various members of the Staff. At least a couple of these, we believe, Items 10 and 11, we believe these are at least for Davis-Besse in the design basis, based upon the transient that occurred at Davis-Besse, that the plant is capable of withholding the type of transient that it had, and it is analyzed for this type of condition.

Our SER will look more fully at this on a plant-specific basis.

Where we are on these longer-term issues is that these issues have been identified as a list of nominees, and we are soliciting input from the NRR staff for additional issues that might be included in this list. At that point, then, we'll ask the Division of Safety Technology to evaluate them and prioritize prior to making a commitment as to Staff resources.

MR. REED: I'm surprised that Item 10 doesn't say reactor vessel instead of generator, based on reintroduction

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of cold feedwater.

MR. WESTMAN: I think that's an oversight of the slide, because, in fact, both matters have been raised to the Staff.

MR. REED: To me, it would be a very challenging decision to reintroduce feedwater after you've essentially dried out the steam generator.

DR. SHEWMON: It's nice and hot. Then it won't be brittle anyway.

MR. WESTMAN: I believe the B&W generator is analyzed for a certain number of reinitiation of cold feedwater transients from a dry condition.

Before I leave the stand or the podium, I would comment briefly on a couple of the generic issues that are under way by other offices of the NRC.

I&E has been working on a bulletin dealing with potential failures of limitorque valves similar to the 599 608 valves in the AFW system at Davis-Besse. The bulletin is under Staff review and has recently been transmitted to the "Cooger" for CRGR review.

I believe a copy was transmitted to the ACRS several days ago. I&E is also considering the issuances of several I&E notices dealing with classification of emergencies and timely notification to the NRC concerning planned emergencies.

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They are also considering, based upon the completion of the Licensee's true cause evaluations, whether it may be appropriate to issue notices dealing with some of the specific equipment failures or problems that were identifed at Davis-Besse.

I might add also that AEOD has under consideration two long-term generic studies, one of them dealing with the assessment of safety-related motor-operated valve failures and failure modes affecting valve performance under design basis conditions.

Secondly, they're going to conduct a study of steam turbine driven performance, as related to overspeed trips of the turbine.

That's all I have, Forrest, unless you have additional questions.

DR. REMICK: Questions? Yes.

MR. MICHELSON: In the case of boiling water reactors, where in the RCIC system, when it is deemed to be safety-related, then GE provided an overspeed trip reset from the control room. If it wasn't deemed to be safety-related, then you had to go locally to reset.

In the case of auxiliary feedwater, when it's deemed to be safety-related, why doesn't it have an overspeed trip reset in the control room?

MR. WESTMAN: You may recall we discussed this a

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week or so ago.

MR. MICHELSON: I just want to get this on the record here.

MR. WESTMAN: This is one of the matters included in our evaluation of the short-term generic issues regarding A&W system reliability, how to deal with the turbine once it has tripped.

MR. MICHELSON: There do seem to be differences in the requirements from the two different vendors.

DR. REMICK: Any other questions?

(No response.)

If not, we have about three minutes. I know the staff of the Licensee would be receptive to any general comments anyone has.

MR. EBERSOLE: One more question. I wonder if you would elaborate a little bit more on this protective system you have against the cooling transient which, of course, intercepted feedwater. It's designed to prevent buckling damage, as I understand it, to the tubes and the straightener tube system.

MR. WESTMAN: I'm sorry. I don't understand your question.

MR. EBERSOLE: You're protected against thermal transients. One of your concerns is that you don't want the buckling load on the tubes due to shrinkage of the shell

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while the tubes are still hot.

Is that right?

MR. WESTMAN: Yes, I believe on the B&W plant, there are limits on the tube to shell differential temperature.

MR. EBERSOLE: And that's the mode in which most of the damage is done, is that correct, when you put the shell down on top of the tubes?

MR. WESTMAN: That's correct.

MR. EBERSOLE: So what if you have the most severe transient, which is a burst from the main feedwater pumps to fill the superheated section of the boiler, and then you really chill the shell, because you now bring the water up against the chilled side, which is nominally at superheated temperature. Is that the worst cold water transient?

MR. WESTMAN: I see a hand to my left, so I will defer to that, because that's not a question I can answer.

MR. MC CRACKEN: Conrad McCracken, of the Staff.

The analysis done on the steam generator of this particular unit can take 30 cold feedwater events, where you basically refill a dry generator to operating level with cold feedwater.

MR. EBERSOLE: From the main feedwater system?.

MR. MC CRACKEN: From whatever feedwater source

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you choose, based on the delta T and the stress you put into that nice hot metal, as Dr. Shewmon indiated a little while ago. There isn't really much effect on the tubes in this particular condition, because the shell itself is still hot. When you put in the spray water, you start cooling the tubes down, and you really don't cool down the entire thickness of the shell fast enough to cause that compresson you're talking about.

MR. EBERSOLE: Okay. So in any case, it just leads them to the longevity.

MR. MC CRACKEN: The number, you have already analyzed, leads to a total of 30. It means that when you get to that, you have to reanalyze.

MR. MICHELSON: You say cold feedwater. How cold are you referring to?

MR. MC CRACKEN: I believe, but don't quote me on it, the design basis on the B&W unit is 40 degrees, but it may be 70. It's one of the other.

MR. MICHELSON: For the feedwater?

MR. MC CRACKEN: For the fill waer.

MR. MICHELSON: For the normal feedwater, that's what Jesse was talking about.

MR. MC CRACKEN: When you start refilling with the normal feedwater, with the water temperature is your concern.

DAVbw

MR. MICHELSON: It's not coming from the hot well.

MR. MC CRACKEN: Right.

MR. MICHELSON: And that's the transient you have and that's the answer. Thank you.

MR. REED: I'm a little bit surprised by your saying that the steam generators can take 30 of these transients. I agree with you that the shell is hot. It's not contracted. The tubes, however, at the initiation point of a dry steam generator and the cold feedwater being injected, the tubes would be in compression. It's like compression. They will immediately change or should change from compression to tension, when you throw in 40 degree of 70 degree feedwater.

MR. MC CRACKEN: That's not correct. When you put in the feedwater, you're only impacting at an initial short portion, which is about three to four to five feet of the tube with the cold water. The remainder of the 60 foot long tube is still at the original temperature. So the overall expansion length of the tube doesn't change significantly, when you hit it with that cold feedwater.

MR. REED: You're saying that that feedwater will get heated up as it drizzles down the tube bank?

So that when it arrives at the bottom, it's off the temperature?

DAVbw

MR. MC CRACKEN: Yes. You're reaching saturation by the time you get there.

MR. MICHELSON: Is that a flooding feedwater from the bottom, or is it being sprayed in like normal feedwater?

MR. MC CRACKEN: We've got two separate questions.

One was using main feedwater, which would come up from the bottom.

The other was aux feedwater, which would be spraying it.

DR. REMICK: Gentlemen, I think the time has come to ring the curtain down.

I want to thank the Toledo Edison people for coming to make their presentation and the Staff.

And Mr. Chairman, I turn the meeting back to you.

MR. WARD: Let's take a 10-minute break.

(Recess.)

Whereupon, at 4:15 p.m., the meeting was adjourned, to reconvene at 8:30 a.m., Friday, October 11, 1985.)

CERTIFICATE OF OFFICIAL REPORTER

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

NAME OF PROCEEDING: ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
306TH GENERAL MEETING

DOCKET NO.:

PLACE: WASHINGTON, D. C.

DATE: THURSDAY, OCTOBER 10, 1985

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

(sigt) David L. Hoffman

(TYPED)
DAVID L. HOFFMAN

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

ACRS BRIEFING
October 10, 1985

Followup Actions Resulting From
The Davis-Besse June 9, 1985 Event

INTRODUCTION

- Review of Restart Evaluation Items; and NRC Generic Technical Actions Following June 9, 1985 Event (Currently being Evaluated by NRC Staff)

- Restart Evaluation Items Derived from Staff Concerns in 50.54(f) Letter Issued 8/14/85
  - 50.54(f) Letter Based in NRC Team Findings in NUREG-1154 and Other NRC Concerns

- TED Response to 50.54(f) Letter Received 9/12/85

- Staff Will Issue Restart Safety Evaluation
  - Current Schedule Target - Dec. 1985
  - Commission Briefing

RESTART EVALUATION ITEMS

- Derived from Staff Concerns in 50.54(f) Letter
  - Response to the EDO Memorandum of 8/5/85
  - Based Largely upon the Findings of the Incident Investigation Team
- Concerns to be Addressed by Toledo Edison Co. Response
  - Completion of Event Investigation
  - Plant Specific Findings
  - Programmatic and Management Issues

RESTART EVALUATION ITEMS

- Completion of Event Investigation
  - Completion of the Investigation of Equipment Malfunctions and Operator Errors
  - Determination of Root Causes of the Malfunctions and Errors and Implications to the Restart of the Plant
  - Corrective Actions Needed to Assure the Reliability of Systems Which Mitigate Loss of Main Feedwater Events

RESTART EVALUATION ITEMS (CONTINUED)

- Concerns Directly Related to June 9, 1985 Event

  Evaluate Licensee's Response to Concerns Identified in NUREG-1154:

  (1) Adequacy of Loss of Feedwater Analysis
  (2) Adequacy of Design/Operation of SFRCS
  (3) Physical Security and Administrative Features
  (4) Role of STA
  (5) Reliability of AFW Containment Isolation Valves and Other Safety-Related Valves
  (6) Adequacy of ENS Reporting
  (7) Reliability of AFW System, Pumps, and Need for Diverse Pump

RESTART EVALUATION ITEMS (CONTINUED)

(8) Reliability of PORV
(9) Adequacy of Control Room Instrumentation and Controls
(10) Inability to Place Startup FW Pump in Service from Control Room
(11) Resolution of Other Equipment Deficiencies
(12) Adequacy of Procedures for "Drastic" Action
(13) Adequacy of Safety System Testing

RESTART EVALUATION ITEMS (CONTINUED)

- Evaluate Licensee's Response to Additional NRC Concerns
  - Adequacy of Procedures, Equipment and Training for Restoring Equipment for LOF Mitigation
  - Adequacy of Programs to Resolve Likelihood of Inadvertent Isolation of AFW to Both Steam Generators
  - Installation of Diverse Drive AFW Pump
  - Other ESF Systems Adequacy in Light of Single Failure Vulnerabilities Identified in SFRCS and AFW Systems

RESTART EVALUATION ITEMS (CONTINUED)

- Evaluate Licensee's Response to Management and Programmatic Concerns
  - Adequacy of Management Practices
  - Adequacy of Maintenance Program Improvements
  - Adequacy of the Implementation of the Performance Enhancement Program
  - Adequacy of the Resources Committed to the Davis-Besse Facility for the Investigation of the Event, Resolution of Findings and Conclusions, and Longer Term Actions
- May Be Additional Restart Issues as a Results of Continuing Staff Review

NRC GENERIC TECHNICAL ACTIONS

- Immediate Generic Issues - None
- Short Term Generic Issues
  - Potential Inability to Remove Decay Heat Because of Questionable Reliability of AFWS
  - Adequacy of Emergency Procedures, Operator Training and Available Plant Monitoring Systems for Determining Need to Initiate Feed and Bleed Cooling
  - Physical Security System Constraints which could
  - Deny Timely Access to Vital Equipment
  - Prioritization of Short Term Issues is Nearly Complete

NRC GENERIC TECHNICAL ACTIONS (CONTINUED)

- Potential Long Term Generic Issues

  (1) Availability and Role of STA
  (2) Actions to Improve Reliability of PORV, and Need for Failure Mitigation
  (3) Adequacy of Requirements for SPDS Availability
  (4) Need for Plant-Specific Simulator
  (5) Adequacy of Safety System Testing
  (6) Re-Evaluate NUREG-0737 Item II.E.1.1 (AFW System Reliability)

NRC GENERIC TECHNICAL ACTIONS (CONTINUED)

(7) Adequacy of Maintenance Requirements

(8) Adequacy of Single-Failure Aspects of Steam Line/Feed Line Break Mitigation Systems

(9) Effects of Loss of Feedwater On OTSG

(10) Thermal-Hydraulic Aspects of Loss of Feedwater Event on Reactor Vessel

(11) Re-Examine PRA-Based Estimates of Core Damage Resulting from Loss of Feedwater

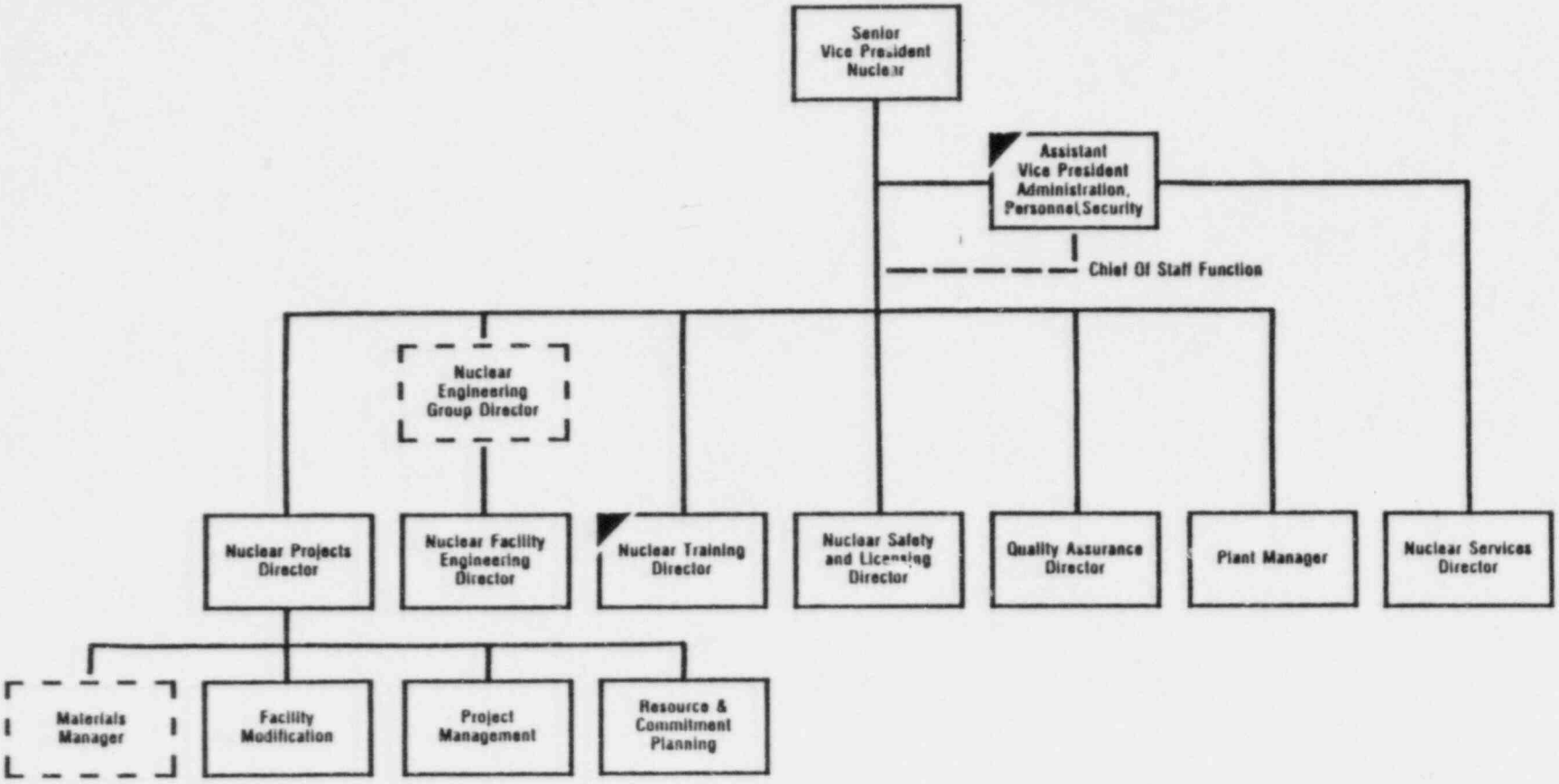
— Other Additional Issues, as Identified

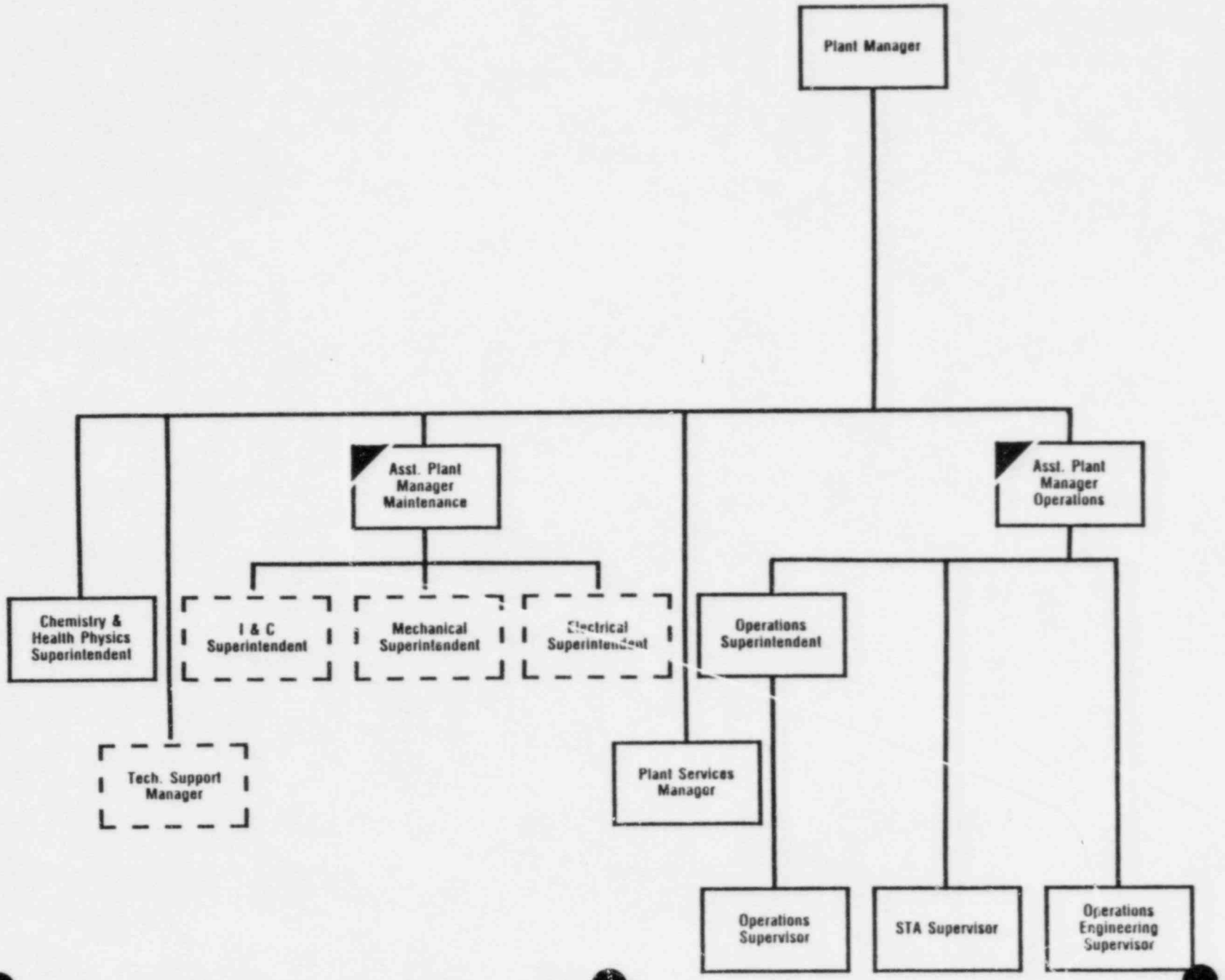
Toledo Edison Presentation to ACRS

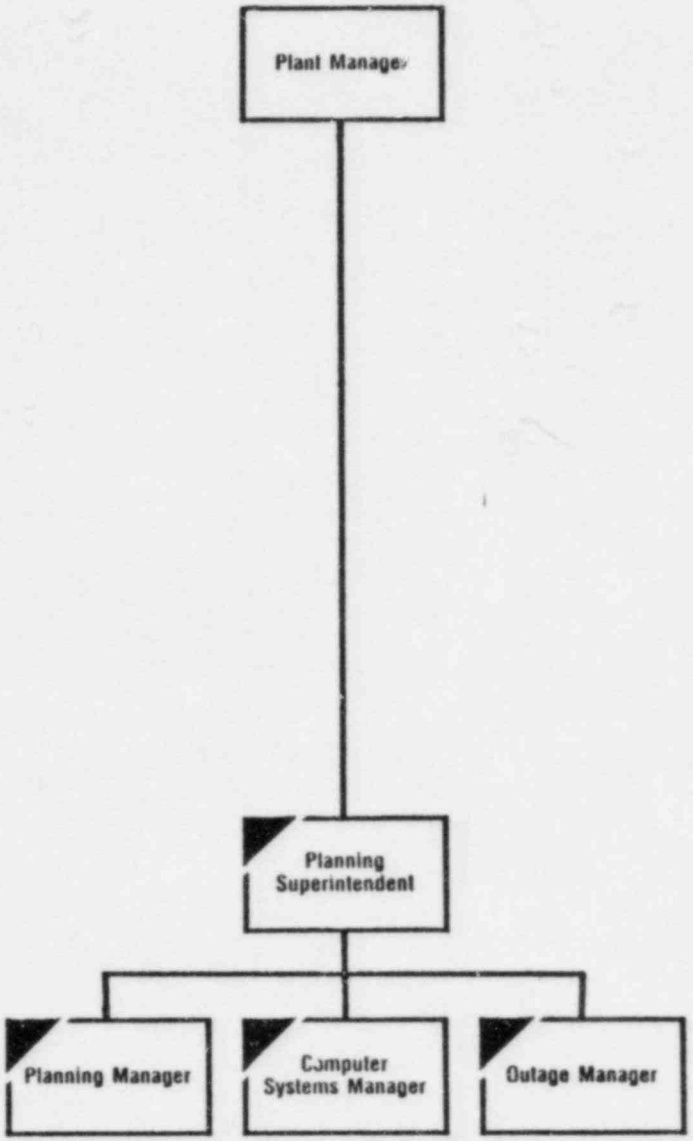
October 10, 1985

Joe Williams, Jr. *Senior Vice President Nuclear*	Introduction
John Wood *Mechanical/Structural Engineering Manager*	Event Investigation (Equipment Investigation)
Sushil Jain *Senior Nuclear Engineer*	De[illegible]eat Removal
Jacque Lingenfelter *Operations Engineering Manager*	Safety Review and Restart Test Program
Joe Williams, Jr.	Closing Remarks

Nuclear Mission Organization




Plant Manager
Asst. Plant Manager Maintenance
Asst. Plant Manager Operations
Chemistry & Health Physics Superintendent
I & C Superintendent
Mechanical Superintendent
Electrical Superintendent
Operations Superintendent
Tech. Support Manager
Plant Services Manager
Operations Supervisor
STA Supervisor
Operations Engineering Supervisor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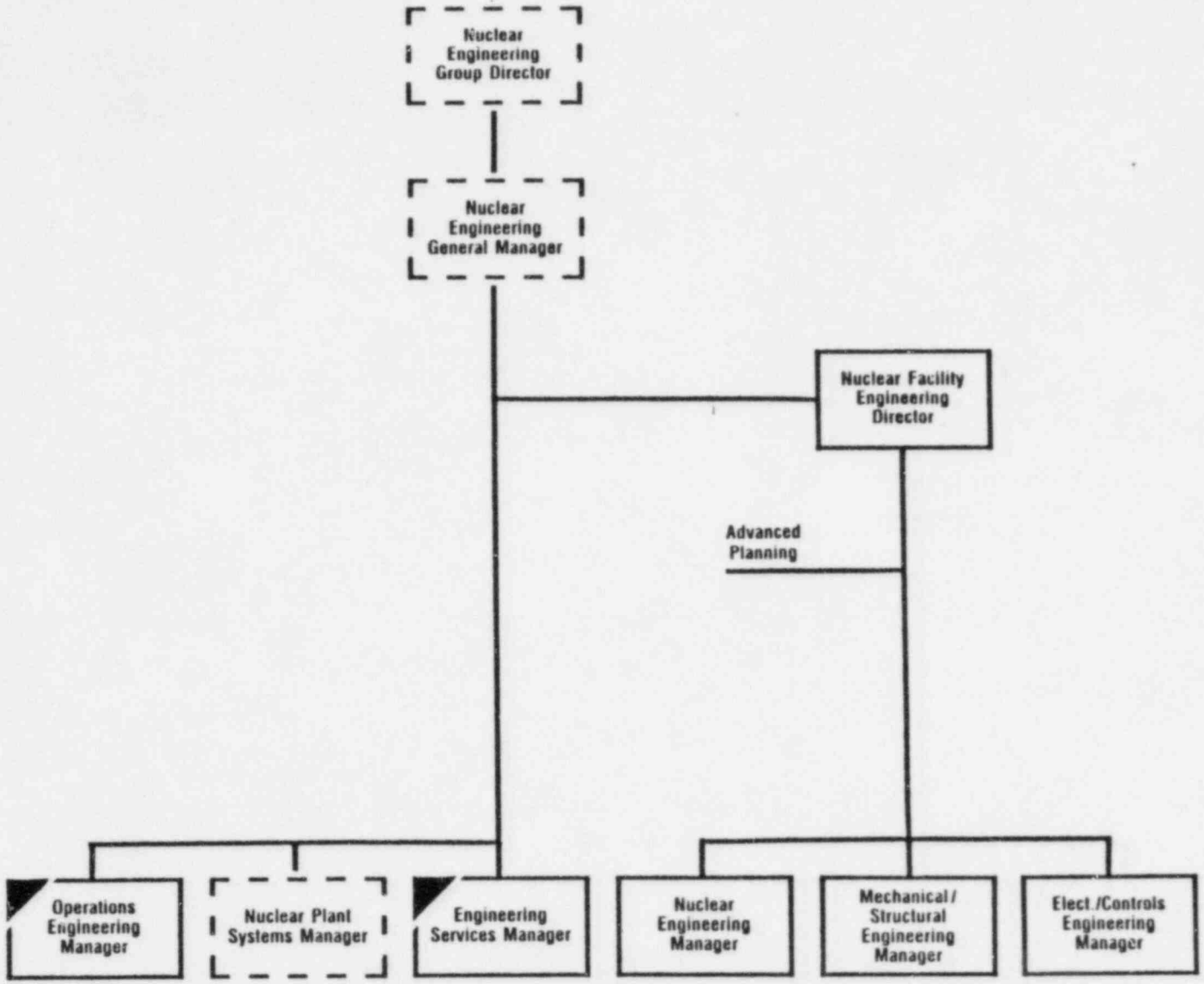
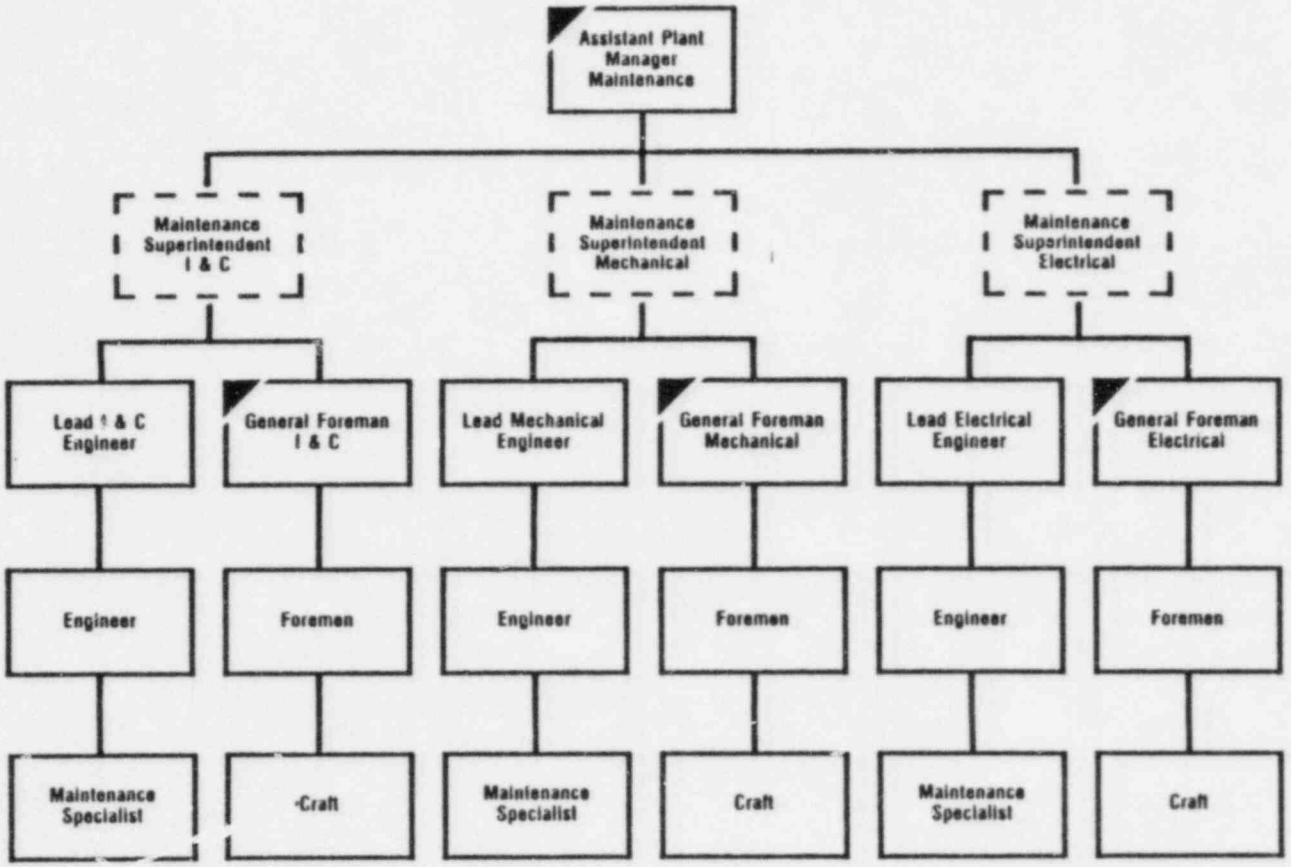
Planning Superintendent
Planning Manager
Computer Systems Manager
Outage Manager


Nuclear Engineering Group Director
Nuclear Engineering General Manager
Nuclear Facility Engineering Director
Advanced Planning
Operations Engineering Manager
Nuclear Plant Systems Manager
Engineering Services Manager
Nuclear Engineering Manager
Mechanical / Structural Engineering Manager
Elect./Controls Engineering Manager

Plant Maintenance



Reassignment of PEP and SALP Improvement Program Activities

High Priority—Will Receive Commensurate Emphasis and Resources:

- Prepare Detailed Position Descriptions for New Organization
- Merit Review and Salary Administration Program
- Configuration Management
- Management Training
- Management By Objectives
- Fire Protection
- Nuclear Mission Procedures
- QA Awareness Program
- Non-outage Work Prioritization
- STA Assume Interim EDO Function

Configuration Management

- Component/System data base
- System descriptions/design basis
- Validated vendor manuals
- Control of drawings and manuals
- Accurate spare parts allowance

Equipment Concerns

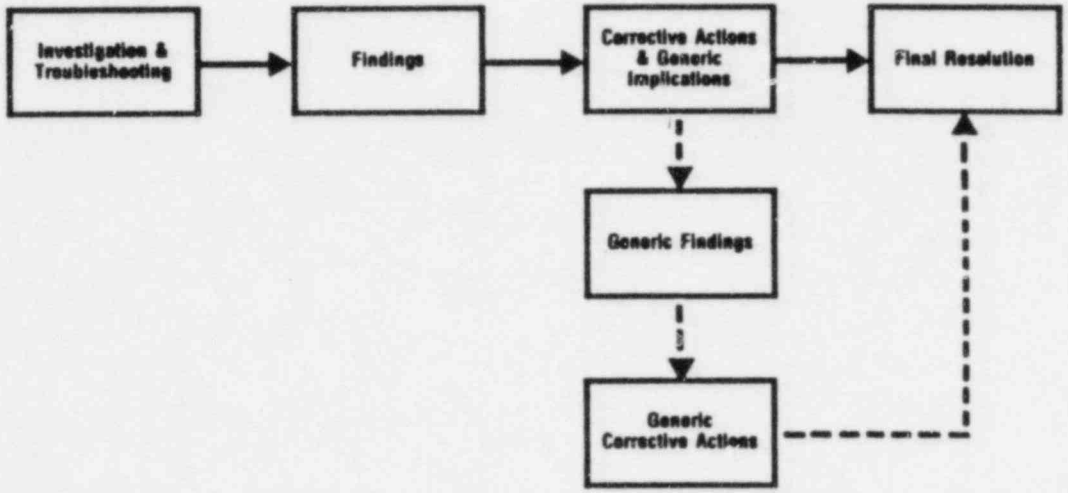
Group A

- Steam Feedwater Rupture Control System
- Auxiliary Feedpump Turbines
- Auxiliary Feedwater Turbine Trip & Throttle Valves
- Main Steam Headers
- Main Feedwater Startup Control Valve
- Auxiliary Feedwater Pump # 1 Suction Supply
- Main Steam Valve MS-106
- Turbine Bypass Valve
- Safety Parameter Display System

Group B

- Main Feedpump Turbine
- Auxiliary Feedwater Valves AF 599 and AF 608
- Pilot Operated Relief Valve
- Nuclear Instrumentation Neutron Source Range Detectors

Issue/Concern Resolution Flow Chart



Main Feedpump Turbine (MFPT)

Concern:	Overspeed tripping of MFPT 1-1 initiated a plant runback.
Findings:	Failed circuit board capacitor in General Electric control system.
Corrective Actions:	1. Replace faulted board. 2. Check and test control circuits for both MFPT 1-1 & 1-2.
Generic Implications:	None-problem is specific to MFPT control circuits.

Auxiliary Feedwater Valves AF 599 and AF 608

Concern:	Valves failed to open on demand after closing earlier - would have prevented auxiliary feedwater flow.
Findings:	Motor operators on valves were not properly adjusted allowing valves to "torque out".
Corrective Actions:	1. Readjust AF 599 and AF 608. 2. Evaluate and readjust other motor operated valves. 3. Test valve operations. 4. Provide new maintenance procedures.
Generic Implications:	Applicable to other motor operated valves

Pilot Operated Relief Valve (PORV)

Concern:	During transient PORV failed to close properly after third opening - closure of the block valve isolated the PORV and it reseated.
Findings:	No physical evidence found to explain improper closure - foreign material in pilot cannot be ruled out - performance similar to industry experience.
Corrective Actions:	1. Testing of valve - old/new. 2. Add acoustic monitor flow indication light on PORV control panel. 3. Change PORV annunciator light from white to red. 4. Improve panel labeling of solenoid open/close switch. 5. Provide for PORV exercising during shutdowns.
Generic Implications:	None-no valves of similar design.

Nuclear Instrumentation Neutron Source Range Detectors

Concern:	Prior to event NI-1 was inoperable and NI-2 failed during transient - previous problems had been experienced.
Findings:	NI-1—inadequate grounding of shield found at preamp due to paint and lack of star washers. NI-2—intermittent failure of containment penetration cable center conductor. Triax cable connectors also found degraded in each detector string.
Corrective Action:	1. NI-1—proper ground established 2. NI-2—using spare penetration. 3.Replacing/refurbishing connectors as required.
Generic Implications:	Preventative maintenance program needed for source range, intermediate range, and power range connectors.

Decay Heat Removal Reliability Improvement Program

Task Force Effort

- Chartered to review all systems used for decay heat removal.
  - Main Feed and Steam
  - AFW
  - SUFP
  - SFRCS
  - Feed and Bleed
- Identified changes to improve operational reliability and to reduce complexity of SFRCS.
- Broad Membership
  - Experience in design, engineering, operations.
  - Included outside expertise:
    - MPR Associates
    - Babcock and Wilcox
    - Cygna

Decay Heat Removal Reliability Task Force

Objectives:

- Reduce frequency of demand for emergency decay heat removal.
- Reduce number of automatic system responses required to initiate auxiliary feedwater.
- Reduce potential for common mode failure.
- Evaluate diverse and redundant means of decay heat removal.

Goal:

- Provide equipment recommendation that would improve reliability of systems used for decay heat removal. Specific improvements for the AFW should eventually achieve SRP reliability criteria.

AFW/SFRCS Reliability

Reduction of spurious initiators:

- Filter existing steam generator level signals.
- Improve SFRCS power supply performance.
- Remove main steam and main feedwater isolation on SG low level.

AFW/SFRCS Reliability

AFW initiation to SG—improvements:

- Valve motor operator improvements.
- Main flowpath valve reductions.
- Provide hot steam lines to AFW pumps.
- SFRCS panel revision.
- PGG governor
- Remove/resize pump suction strainers.
- Suction transfer

Actions Concerning Motor Driven Feed Pump Pre-Start Up

Install new motor driven feed pump prior to startup.

New pump design features:

- Provides 100% capacity auxiliary feedwater flow.
- Pump discharge aligned to the auxiliary feedwater headers during normal full power operation.
- Pump suction normally from the condensate storage tank.
- Pump capable of being started from the Control Room.
- Pump motor can be supplied from either emergency diesel generator following a loss of offsite power.

Longer Term Decay Heat Removal Reliability Improvements

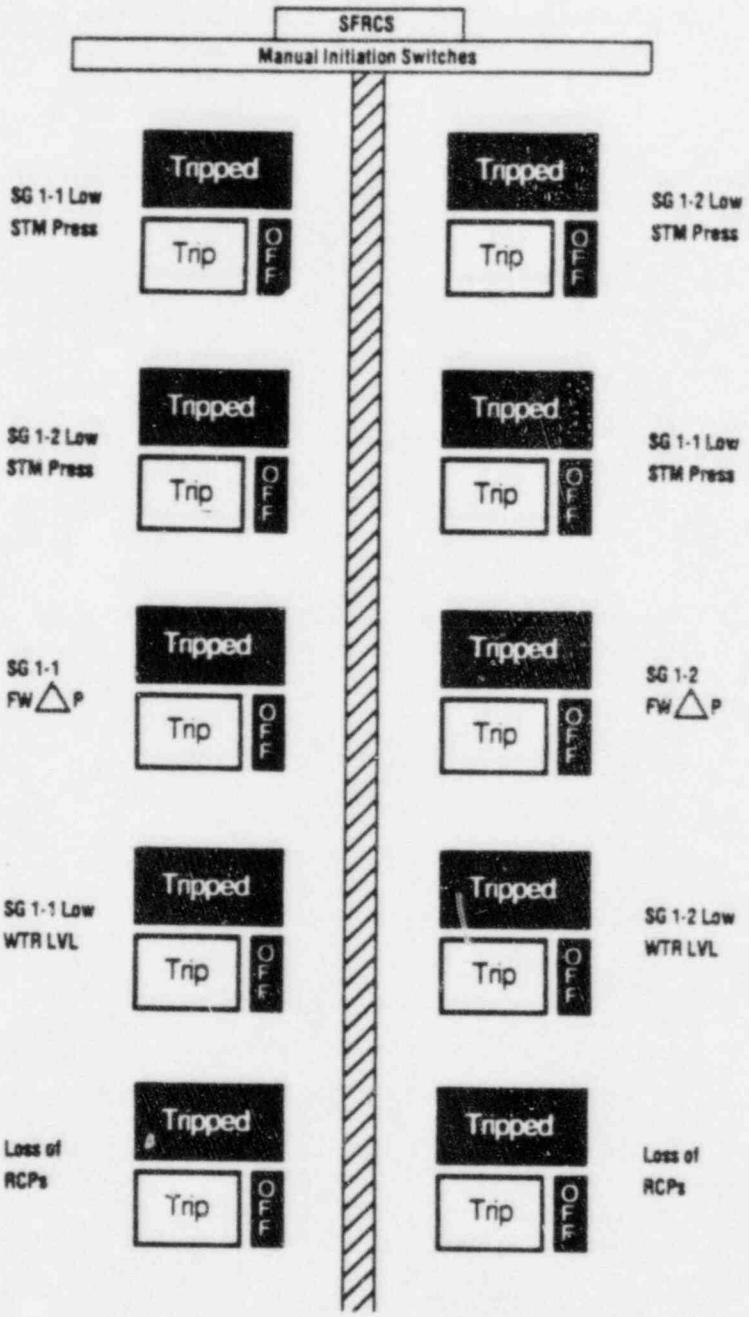
Feed and Bleed:

- Primary system depressurization improvements.
- Additional high pressure injection capability.

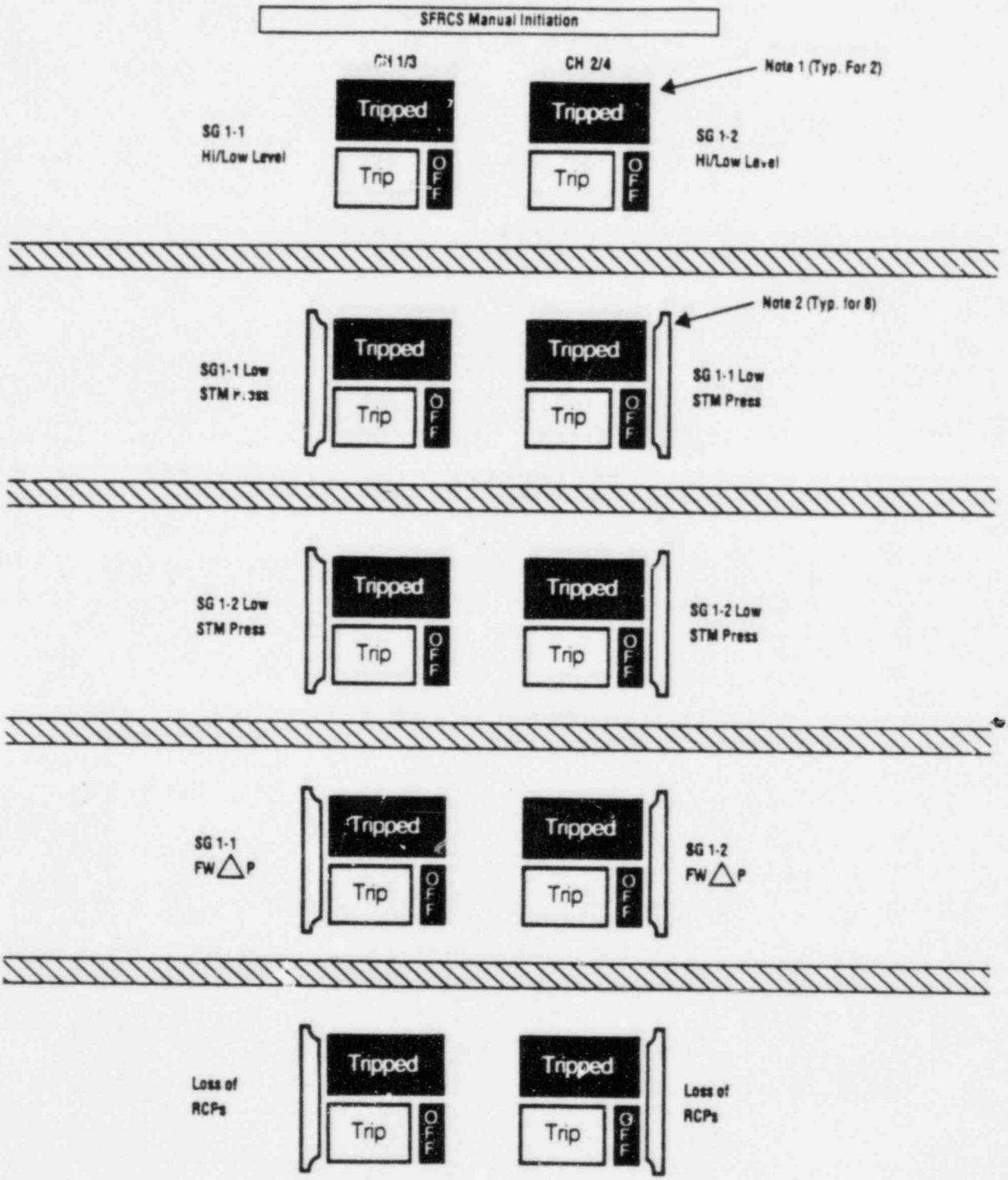
AFW/SFRCS:

- Reconnect replaced startup feed pump.
- Increase margin between SFRCS trip and ICS low level limit.
- Improved AFW level control.
- SFRCS logic revision to further minimize isolation.
- Control Room "mimic" panel for finalized AFW/SFRCS.

Original Layout



Revised Layout



Notes:
1) Cutler Hammer Full Shroud (No Window) Cat # E30KT6 (Gray)
2) Cutler Hammer Guard With Clear Plastic Sliding Window, Cat # E30kR32 (Red)

System Review and Restart Test Program Program Objectives

For systems important to safe operation the objectives included:

- Identify significant or recurring maintenance and operations problems.
- Identify testing required to assure that systems will perform their specified functions.
- Conduct a test program to assure that the systems are fully functional.

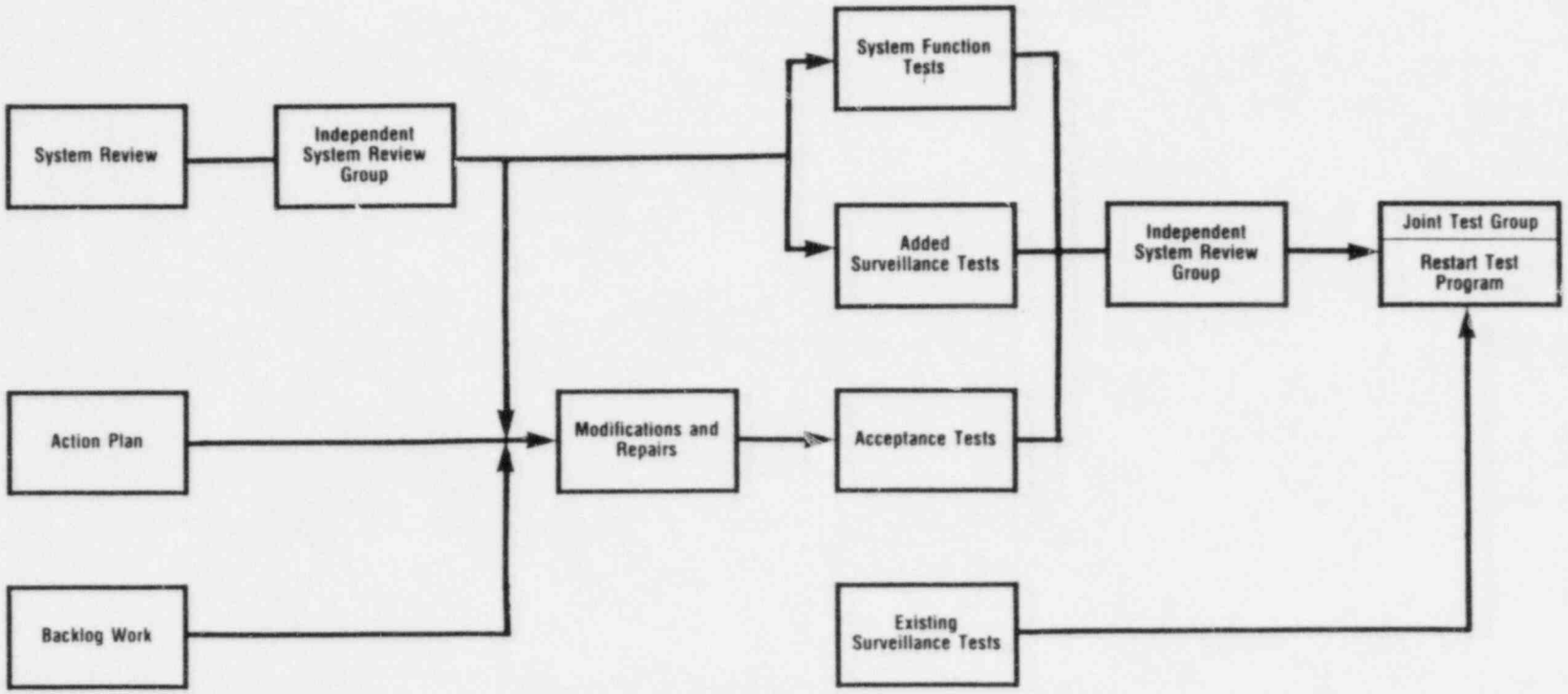
System Review Program
Specific Systems Included

Group 1	Reactor Coolant System
	High Pressure Injection
	Core Flooding System
	Decay Heat Removal and Low Pressure Injection
	Containment Spray System
	Containment Emergency Ventilation
	Containment Air Cooling and Hydrogen Control
	Makeup and Purification System
Group 2	Electrical 125/250 VDC (Includes Battery Room H&V)
	Electrical 4.16 KV System (13.8/4.16 KV Transformers)
	Electrical 480 V Distribution (Includes Inverters and Required Transformers)
	Electrical 13.8 KV System (Includes Startup and Auxiliary Transformers)
	Emergency Diesel Generators (Includes "Q" Fuel Oil Tanks and Diesel Room Ventilation)
	Instrument AC Power (Includes Inverters and Required Transformers)

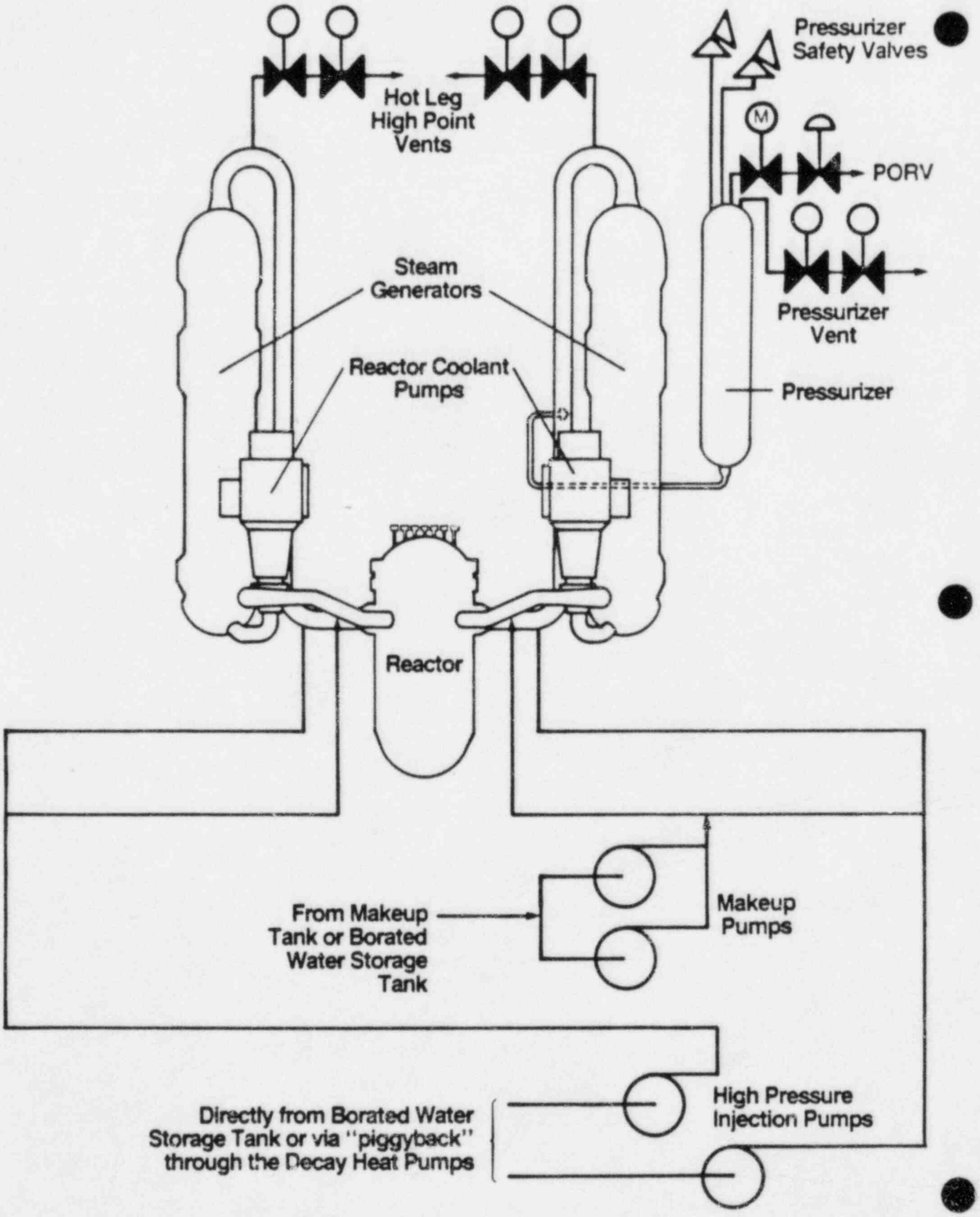
System Review Program Specific Systems Included (Cont'd)

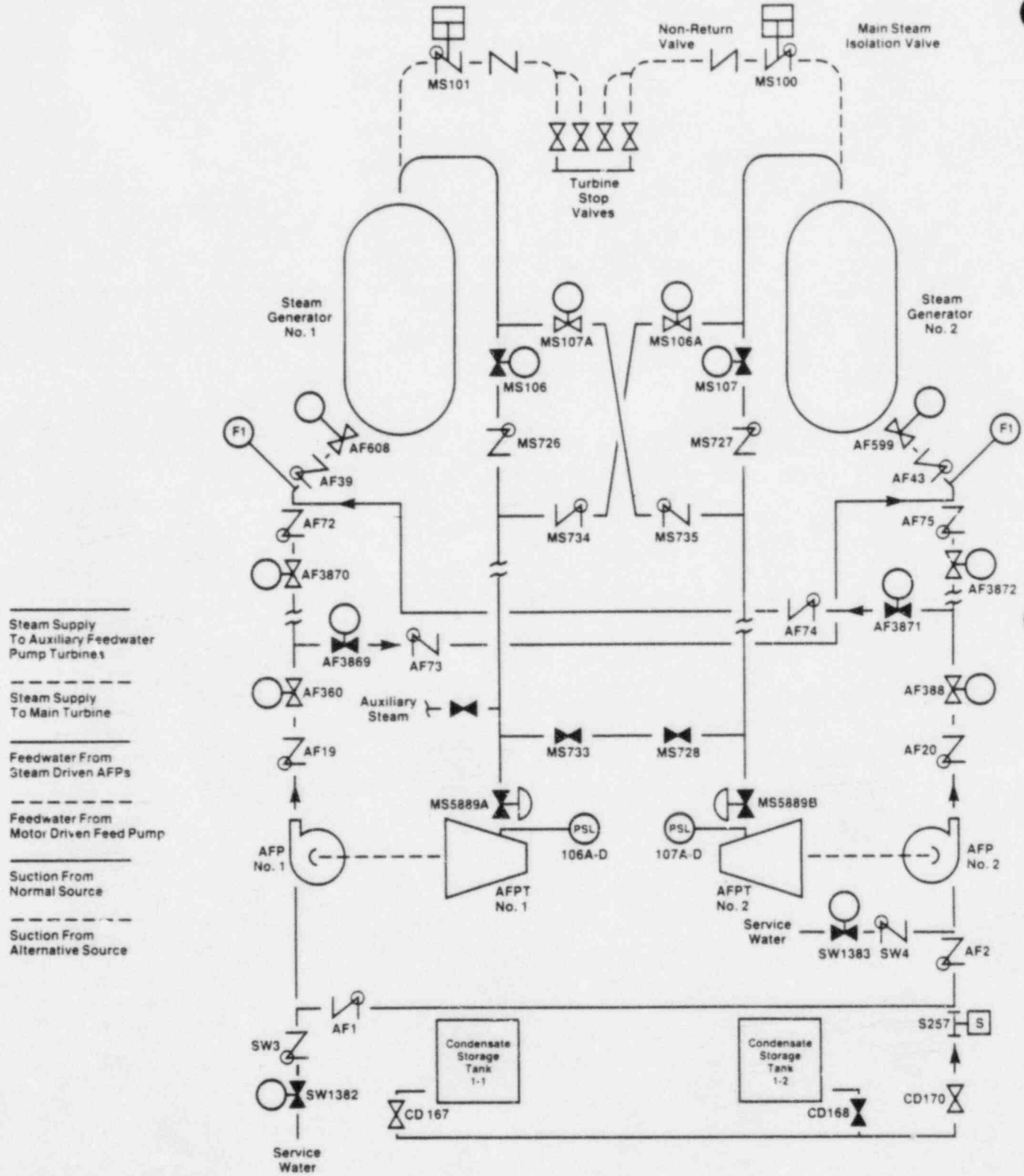
Group 3	Anticipatory Reactor Trip System
	Control Rod Drive Control System
	Incore Monitoring (Includes Core Exit TC)
	Reactor Protection System
	Steam and Feedwater Rupture Control System
	Safety Features Actuation System
	Integrated Control System
	Security System
Group 4	Control Room Normal and Emergency H&V Systems
	Station and Instrument Air
	Station Fire Protection
	Component Cooling Water System
	Service Water System
Group 5	Auxiliary Feedwater System
	Main Steam
	Steam Generator System
	Main Feedwater System

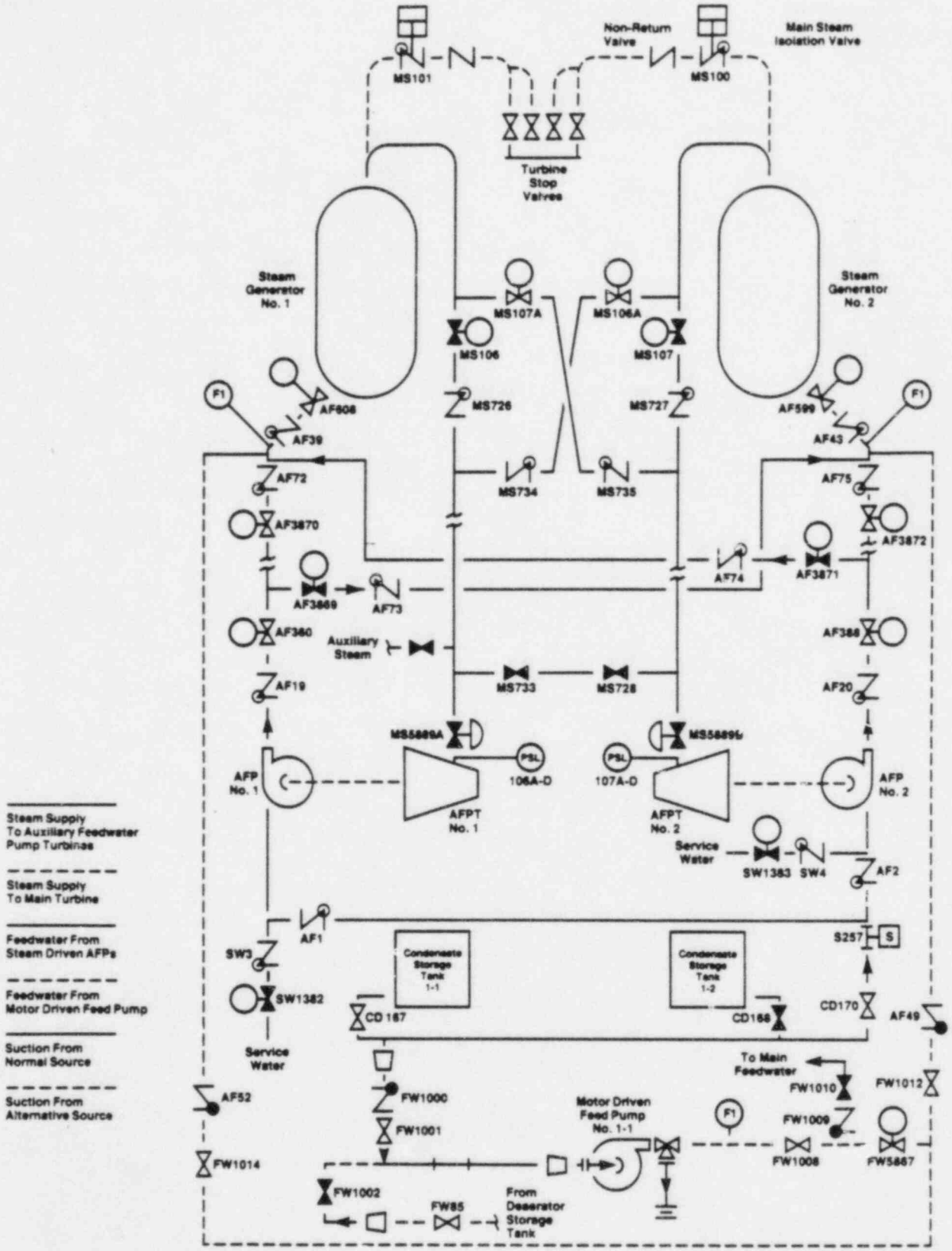
System Review And Restart Test Program



Decay Heat Removal by Makeup/HPI Cooling




Non-Return Valve
Main Steam Isolation Valve
MS101
MS100
Turbine Stop Valves
Steam Generator No. 1
Steam Generator No. 2
MS107A
MS106A
MS106
MS107
MS726
MS727
F1
AF608
AF599
AF39
AF43
AF72
AF75
MS734
MS735
AF3870
AF3872
AF74
AF3871
AF3869
AF73
AF360
AF388
Auxiliary Steam
MS733
MS728
AF19
AF20
MS5889A
MS5889B
PSL
106A-D
107A-D
AFP No. 1
AFP No. 2
AFPT No. 1
AFPT No. 2
Service Water
SW1383
SW4
AF2
AF1
S257
S
SW3
Condensate Storage Tank 1-1
Condensate Storage Tank 1-2
SW1382
CD 167
CD168
CD170
Service Water
Steam Supply To Auxiliary Feedwater Pump Turbines
Steam Supply To Main Turbine
Feedwater From Steam Driven AFPs
Feedwater From Motor Driven Feed Pump
Suction From Normal Source
Suction From Alternative Source


Non-Return Valve
Main Steam Isolation Valve
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MS107A
MS106A
MS106
MS107
MS726
MS727
MS734
MS735
AF608
AF599
AF39
AF43
AF72
AF75
AF3870
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AF74
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AF388
Auxiliary Steam
MS733
MS728
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AF20
MS5889A
MS5889B
PSL
106A-D
107A-D
AFP No. 1
AFP No. 2
AFPT No. 1
AFPT No. 2
Service Water
SW1383
SW4
AF2
AF1
SW3
S257
Condensate Storage Tank 1-1
Condensate Storage Tank 1-2
SW1382
CD 167
CD168
CD170
AF49
Service Water
To Main Feedwater
AF52
FW1000
FW1010
FW1012
Motor Driven Feed Pump No. 1-1
FW1001
FW1009
FW1014
FW1008
FW5867
FW1002
FW85
From Deaerator Storage Tank
Steam Supply To Auxiliary Feedwater Pump Turbines
Steam Supply To Main Turbine
Feedwater From Steam Driven AFPs
Feedwater From Motor Driven Feed Pump
Suction From Normal Source
Suction From Alternative Source

SELECTED ADDITIONAL

MATERIAL NOT INCLUDED IN

FORMAL TOLEDO EDISON PRESENTATION

Steam Feedwater Rupture Control System (SFRCS)

Concern:	Spurious SFRCS actuation closed both main steam isolation valves and isolated steam to main feedpump turbines.
Findings:	Turbine trip caused pressure oscillations which SFRCS detected as low steam generator level. Level pressure tap was made more sensitive due to transmitter changeouts.
Corrective Action:	Add electronic filtering to signals.
Generic Implications:	Increase in sensitivity/response can result due to transmitter changeouts. Installing filtering in Reactor Protection System flow transmitter circuitry.

Auxiliary Feedpump Turbines

Concern:	Both auxiliary feedpump turbines tripped on overspeed - this prevented supply of water to steam generators.
Findings:	Condensation in long steam inlet lines disrupts proper turbine control.
Corrective Actions:	1. Keep lines hot with steam to greatly reduce water formation. 2. Improve governor controls.
Generic Implications:	None-no other quick start steam driven turbines.

Auxiliary Feedpump Turbine Trip and Throttle Valves

Concern:	Operators experienced problems resetting the valves - delayed initiation of auxiliary feedwater to steam generators.
Findings:	Procedures and prior training not sufficient.
Corrective Actions:	1. Provide improved hands-on training. 2. Provide placards and local indicators on T&TV to help operators. 3. Enhance communications between pump rooms and from pump rooms to Control Room.
Generic Implications:	Other crucial operator actions performed locally. Covered by Operator Actions review.

Main Steam Headers

Concern:	After closure of main steam isolation valves, pressure control problems were experienced in the main steam headers.
Findings:	Manual actuation of atmospheric vents valves (AVV) caused large pressure drop in header # 1 - AVV control circuitry on header # 2 is a lesser concern. Switch contacts corroded on ICS module.
Corrective Actions:	1. Full check-out and adjustment of AVV control circuitry. 2. Testing of main steam safety valves and refurbish as needed.
Generic Implications:	Switch contacts being evaluated on other ICS modules.

Main Feedwater Startup Control Valve

Concern:	Operators were uncertain of status of control valve SP-7A due to blown light bulb.
Findings:	Valve operated properly - technician inserted incorrect voltage lamp during event.
Corrective Action:	Provide additional information to operators.
Generic Implications:	None-no significant findings.

Auxiliary Feedwater Pump # 1 Suction Supply

Concern:	Pump suction transferred from normal to backup water supply about 20 minutes after reactor trip.
Findings:	No impact to steam generator - transient low suction pressure caused transfer.
Corrective Actions:	1. Remove/replace strainers. 2. Revise transfer switch setpoints. 3. Provide time delay.
Generic Implications:	Other pump suction transfer systems.

Main Steam Valve MS-106

Concern:	Valve positon indication recorded as closed to not closed to closed in about one-third the expected time - this valve is used to admit steam from steam generator # 1 to auxiliary feedpump turbine # 1.
Findings:	Motor operator on valve was not properly adjusted.
Corrective Action:	Readjust and test valve.
Generic Implications:	Other motor operated valves.

Turbine Bypass Valve

Concern:	Pneumatic actuator assembly cracked and failed during cooldown operations several hours following reactor trip.
Findings:	Internal valve components became disengaged and caused hammer blow forces which damaged actuator.
Corrective Action:	1. Repair damaged valve. 2. Repair steam traps and drains. 3. Refurbish other turbine bypass valves. 4. Revised operating procedure to assure proper drainage of headers.
Generic Implications:	Applies to both turbine bypass valve headers.

Safety Parameter Display System (SPDS)

Concern:	Both SPDS Control Room display devices were inoperative during event - they are intended to be used by the operators during transients.
Findings:	Bad fiber optic cable and faulty terminations on data transmission cable.
Corrective Action:	1. Use spare cable. 2. Correct terminations. 3. Replace obsolete terminal.
Generic Implications:	None-no other fiber optic systems.

System Review and Restart Test Program System Review Methodology

Five system review groups.

- Headed by Toledo Edison engineering personnel.
- Supported by highly-qualified industry representatives.

Selected documentation review

- LER's, DVR's
  NPRDS Data
  MWO's
  FCR's
  HED's
  TAP Reports
- Focused interviews of operations and maintenance personnel.
- Evaluation/decision making guided by consistent, specific criteria/review process.
- Preparation of suggested corrective actions.
- Overview and decision by a designated independent system review group.

System Review and Restart Test Program Test Program Review

- Each group will review their respective system design functions to assure that each function has been appropriately tested by the existing test program.
- Identified concerns will be documented and recommended test outlines developed.
- Independent system review group will provide oversight and will approve the test outlines.
- As appropriate, new or revised tests will be developed, approved and conducted under the direction of a joint test group in accordance with existing procedure and test programs.
- System review group and the Independent System Review Group will review tests performed and will assume responsibility for rectifying problems.

TENNESSEE VALLEY AUTHORITY

PRESENTATION TO

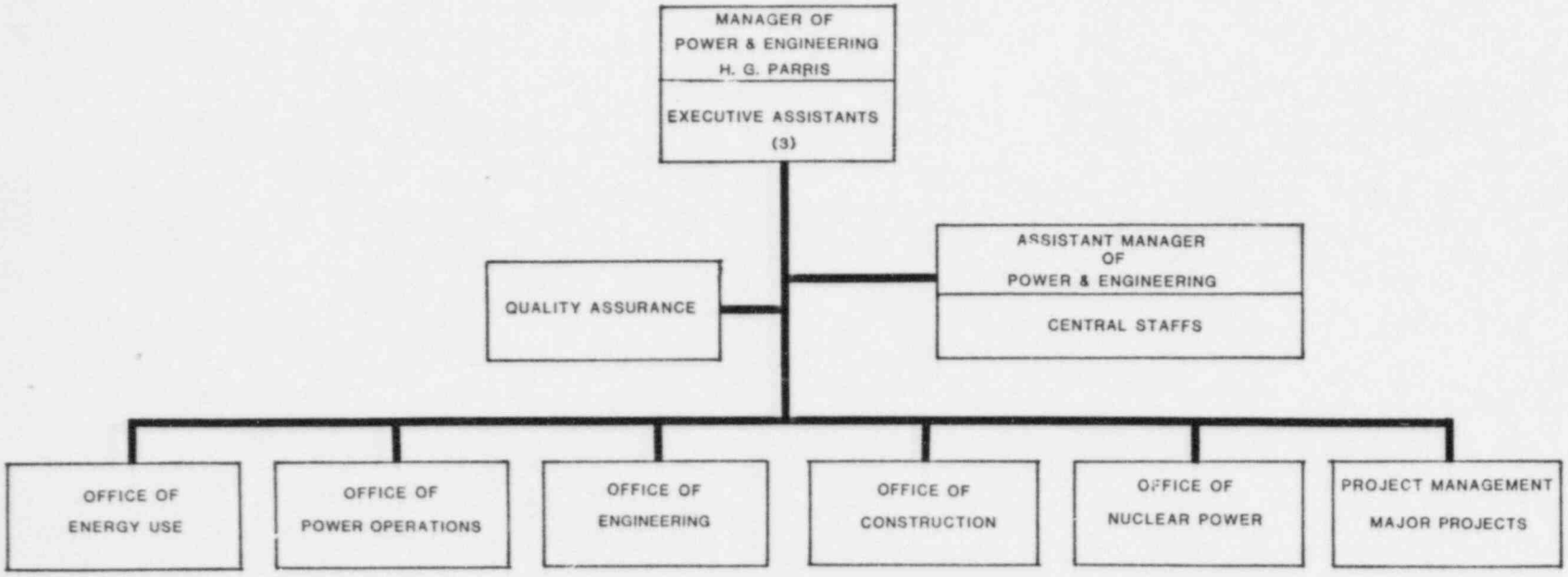
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

ON

CHANGES TO THE TVA NUCLEAR ORGANIZATION

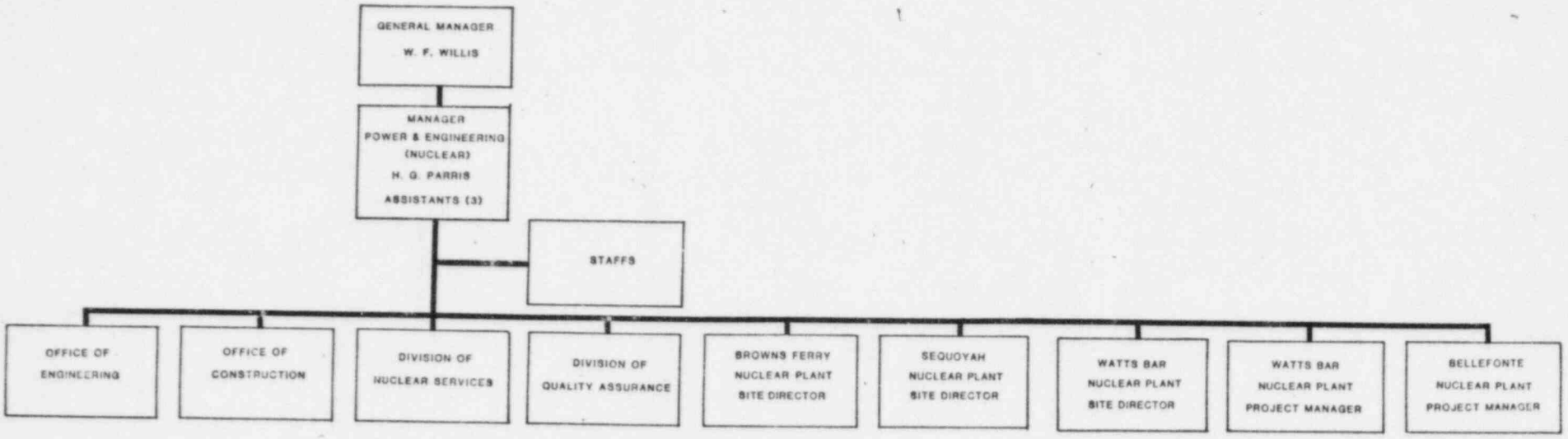
OCTOBER 10, 1985

POWER AND ENGINEERING ORGANIZATION



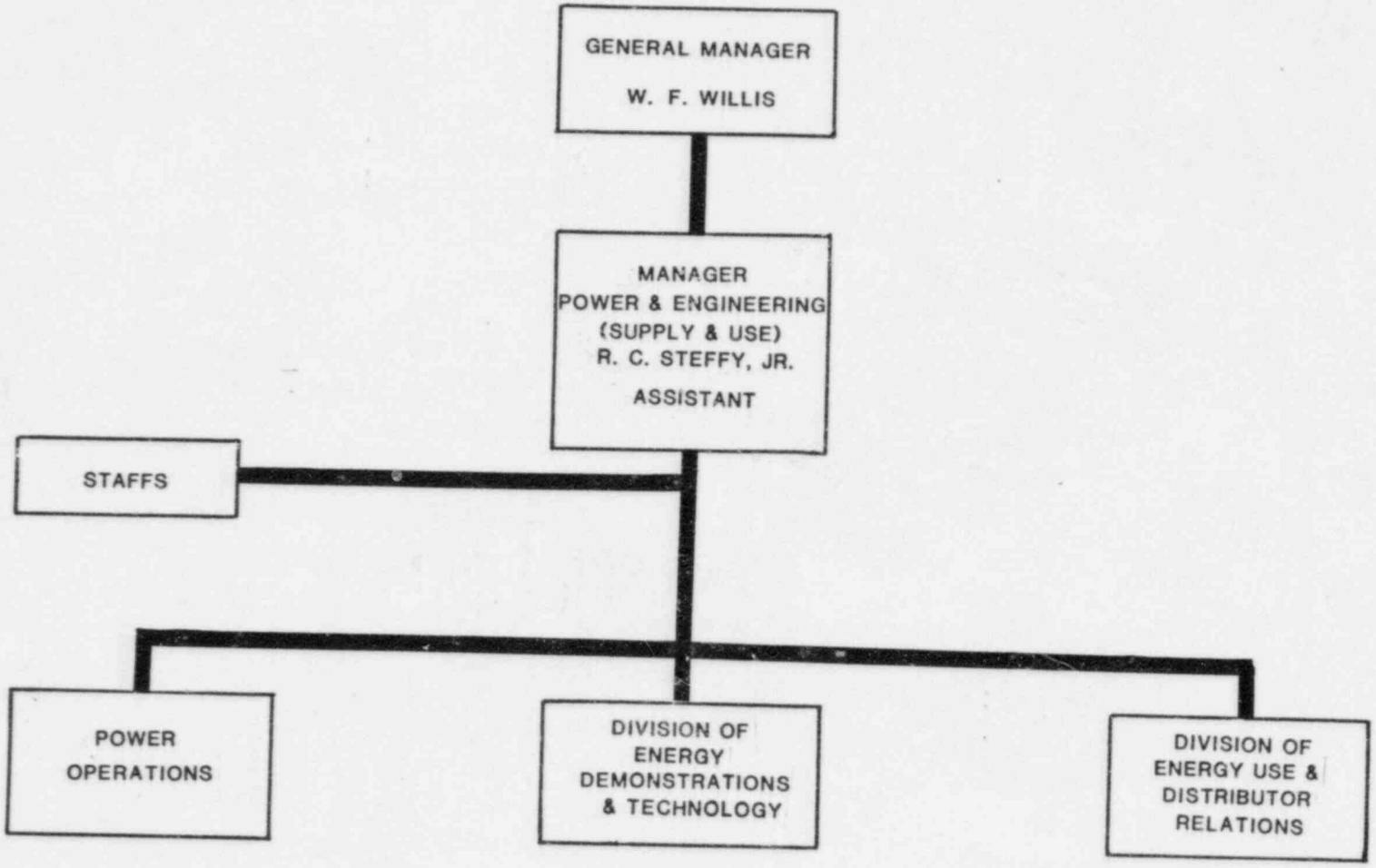
Effective Prior to July 9, 1985

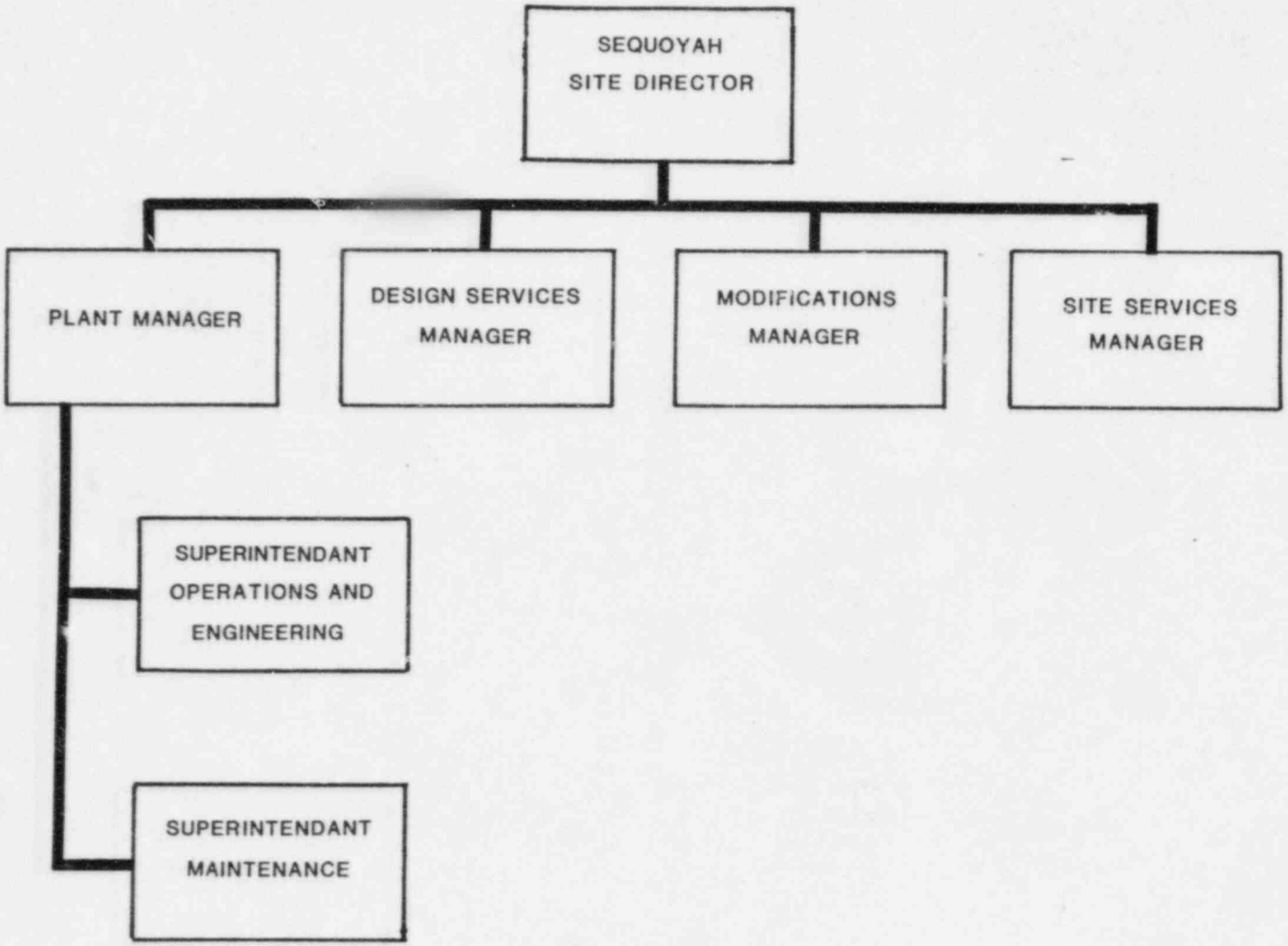
POWER AND ENGINEERING ORGANIZATION (NUCLEAR)



Effective July 9, 1985

POWER AND ENGINEERING ORGANIZATION (SUPPLY AND USE)




SEQUOYAH
SITE DIRECTOR
PLANT MANAGER
DESIGN SERVICES
MANAGER
MODIFICATIONS
MANAGER
SITE SERVICES
MANAGER
SUPERINTENDANT
OPERATIONS AND
ENGINEERING
SUPERINTENDANT
MAINTENANCE

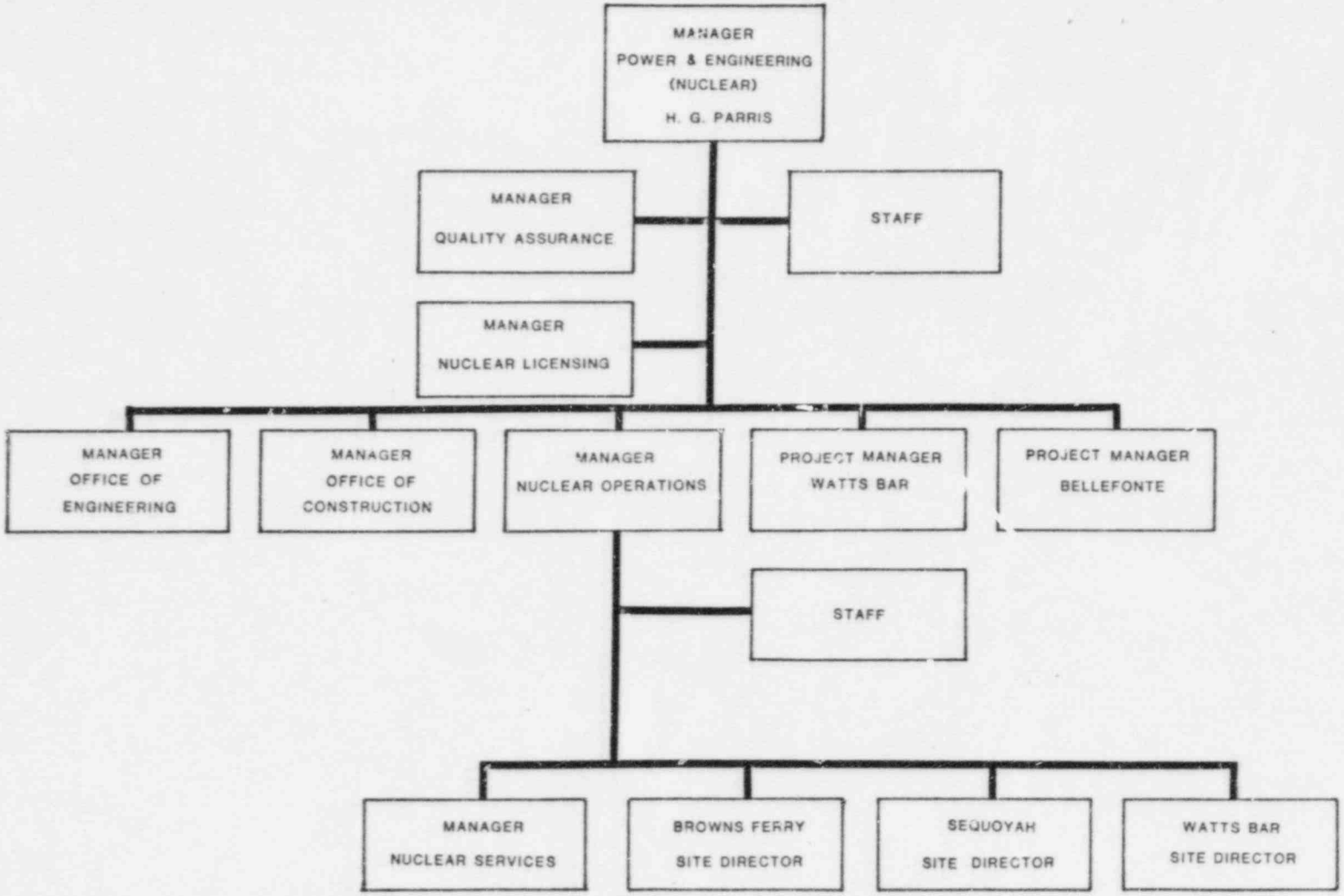
OBJECTIVES FOR THE TENNESSEE VALLEY AUTHORITY NUCLEAR PROGRAM

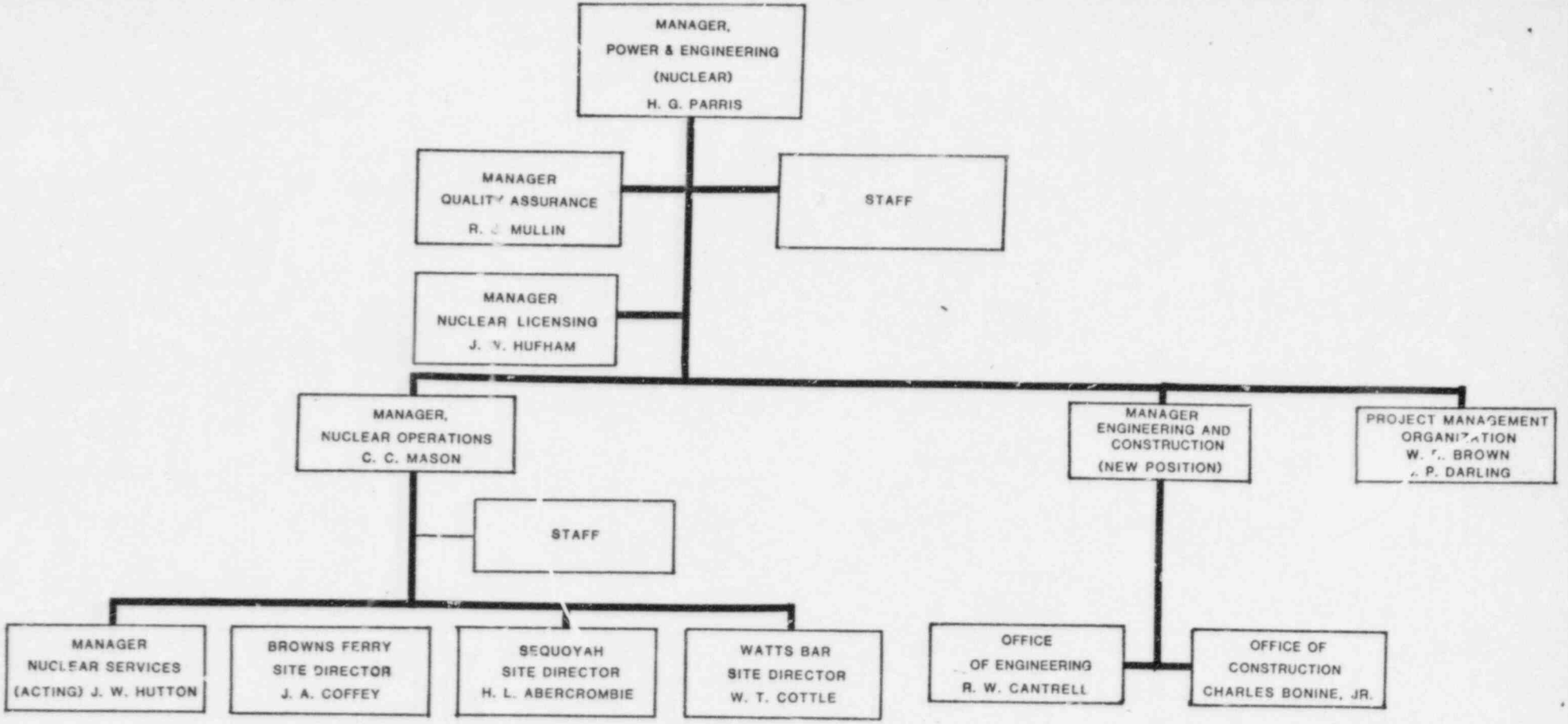
- CONSOLIDATE OUR NUCLEAR RESOURCES UNDER A TIGHTLY FOCUSED UMBRELLA.

- ACQUIRE RETAIN, AND TRAIN MANAGEMENT TALENT TO EFFECTIVELY MANAGE OUR N AR ACTIVITIES.

- ESTABLISH PRIORITIES SO THAT WE LIMIT OUR ACTIVITIES TO THOSE THAT WE HAVE THE CAPABILITY TO EXECUTE IN AN EXCELLENT MANNER.

- DEVELOP A TEAM OF EXPERIENCED AND QUALIFIED KEY PERSONNEL TO PROVIDE LEADERSHIP AND DIRECTION TO OUR NUCLEAR PROGRAM.


MANAGER
POWER & ENGINEERING
(NUCLEAR)
H. G. PARRIS
MANAGER
QUALITY ASSURANCE
STAFF
MANAGER
NUCLEAR LICENSING
MANAGER
OFFICE OF
ENGINEERING
MANAGER
OFFICE OF
CONSTRUCTION
MANAGER
NUCLEAR OPERATIONS
PROJECT MANAGER
WATTS BAR
PROJECT MANAGER
BELLEFONTE
STAFF
MANAGER
NUCLEAR SERVICES
BROWNS FERRY
SITE DIRECTOR
SEQUOYAH
SITE DIRECTOR
WATTS BAR
SITE DIRECTOR


MANAGER,
POWER & ENGINEERING
(NUCLEAR)
H. G. PARRIS
MANAGER
QUALITY ASSURANCE
R. J. MULLIN
STAFF
MANAGER
NUCLEAR LICENSING
J. W. HUFHAM
MANAGER,
NUCLEAR OPERATIONS
C. C. MASON
STAFF
MANAGER
ENGINEERING AND
CONSTRUCTION
(NEW POSITION)
PROJECT MANAGEMENT
ORGANIZATION
W. F. BROWN
J. P. DARLING
MANAGER
NUCLEAR SERVICES
(ACTING) J. W. HUTTON
BROWNS FERRY
SITE DIRECTOR
J. A. COFFEY
SEQUOYAH
SITE DIRECTOR
H. L. ABERCROMBIE
WATTS BAR
SITE DIRECTOR
W. T. COTTLE
OFFICE
OF ENGINEERING
R. W. CANTRELL
OFFICE OF
CONSTRUCTION
CHARLES BONINE, JR.

SUMMARY OF MAJOR CHANGES TO THE TENNESSEE VALLEY AUTHORITY NUCLEAR POWER PROGRAM

- SINGLE MANAGER PLACED IN CHARGE OF NUCLEAR PROGRAM

- MANAGEMENT TEAM ESTABLISHED TO PROVIDE OVERALL DIRECTION TO PROGRAM
  - CONSOLIDATED RESPONSIBILITIES FOR OPERATIONS UNDER A SINGLE MANAGER
  - CONSOLIDATED RESPONSIBILITIES FOR ENGINEERING/CONSTRUCTION UNDER SINGLE MANAGER
  - ELEVATED THE MANAGER OF QUALITY ASSURANCE
  - ELEVATED THE MANAGER OF NUCLEAR LICENSING AND ELIMINATED RESPONSIBILITIES NOT DIRECTLY RELATED TO LICENSING
  - CORPORATE ENTITY ESTABLISHED TO SET POLICY AND GUIDE TOTAL NUCLEAR PROGRAM TO A COMMON GOAL

- OBTAINED (OBTAINING) ADDITIONAL TALENT TO PROVIDE EXPERIENCE/LEADERSHIP TO THE PROGRAM
  - ESTABLISHED AND FILLED MANAGER, NUCLEAR OPERATIONS
  - ESTABLISHED AND FILLED SPECIAL ASSISTANT TO THE MANAGER, NUCLEAR OPERATIONS
  - RECRUITING FOR THE POSITIONS OF:
    MANAGER, OFFICE OF ENGINEERING AND CONSTRUCTION
    SITE DIRECTOR, BROWNS FERRY NUCLEAR PLANT
    OTHERS

NRC ACTIVITIES REGARDING
TVA MANAGEMENT

° SECY 85-231 IDENTIFIED CONCERNS	(06/28/85)
° TVA PROVIDED DRAFT ORGANIZATIONAL CHANGES	(08/29/85)
° TVA PRESENTATION ON MANAGEMENT CHANGES	(09/06/85)
° SALP MEETING WITH SENIOR NRC EXECUTIVE BOARD	(09/10/85)
° COMMISSION MEETING ON TVA	(09/12/85)
° 50.54(F) LETTER ADDRESSED CORPORATE ACTIVITIES	(09/17/85)
° TVA REQUESTED MEETING TO ADDRESS RESPONSES	(MID OCTOBER)