ORIGINAL

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of:

COMMISSION MEETING

Commission Briefing Davis-Besse
Restart from June 9, 1985 Event

(Public Meeting)

Docket No.

Location: Washington, D. C.
Date: Wednesday, December 18, 1985 Pages: 1 - 102

ANN RILEY & ASSOCIATES
Court Reporters
1625 I St., N.W.
Suite 921
Washington, D.C. 20006
(202) 293-3950

D I S C L A I M E R

This is an unofficial transcript of a meeting of the United States Nuclear Regulatory Commission held on 12/18/85 . in the Commission's office at 1717 H Street, N.W., Washington, D.C. The meeting was open to public attendance and observation. This transcript has not been reviewed, corrected, or edited, and it may contain inaccuracies.

The transcript is intended solely for general informational purposes. As provided by 10 CFR 9.103, it is not part of the formal or informal record of decision of the matters discussed. Expressions of opinion in this transcript do not necessarily reflect final determination or beliefs. No pleading or other paper may be filed with the Commission in any proceeding as the result of or addressed to any statement or argument contained herein, except as the Commission may authorize.

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

- - -

COMMISSION BRIEFING DAVIS-BESSE

RESTART FROM JUNE 9, 1985 EVENT

- - -

PUBLIC MEETING

Room 1130

1717 H Street, N.W.

Washington, D.C.

Wednesday, 18 December 1985

The Commission met, pursuant to notice, at 9:45 a.m.

NUNZIO PALLADINO, Chairman of the Commission, presiding.

COMMISSIONERS PRESENT:

NUNZIO PALLADINO, Chairman of the Commission

THOMAS ROBERTS, Commissioner

JAMES ASSELSTINE, Commissioner

LANDO ZECH, Commissioner

PRESENT VIA TELEPHONE CONFERENCE CALL:

FREDERICK BERNTHAL, Commissioner

STAFF AND PRESENTERS SEATED AT COMMISSION TABLE:

S. CHILK

H. DENTON

F. MIRAGLIA

J. KEPPLER

C. MC CRACKEN

H. PLAINE

P. CRANE

R. FRALEY

J. P. WILLIAMSON

J. WILLIAMS, JR.

S. SMITH

J. WOOD

J. LINGENFELTER

P. HILDEBRANDT

B. O'CONNOR

S. JAIN

P R O C E E D I N G S

CHAIRMAN PALLADINO. Good morning ladies and gentlemen.

The purpose for today's meeting is for the Commission to receive briefings by the NRC Staff and the Toledo Edison Company on the status of the Davis-Besse nuclear power plant.

On June 9, 1985, the Davis-Besse plant experienced a complete loss of all feedwater which led to a turbine and reactor trip. Although there were other malfunctions and human errors, plant operators were successful in bringing the plant to a stable shutdown and preventing any abnormal releases of radioactivity or any apparent major damage to the plant.

Our last meetings with the Staff and Toledo Edison were on September 17th and 18th of this year.

The NRC Incident Response Team evaluated the Davis-Besse event and briefed the Commission on July 24th. Since then the Staff has established licensee requirements and by letter dated August 4th, 1985, requested information from Toledo Edison.

The Licensee's response was received in early September of this year, and I understand that the Licensee subsequent proposed revisions to the plan.

We will hear from the Staff and from the Licensee. The Staff will speak first. I understand that the Staff intends to make a brief presentation. The time remaining

after the Staff's presentation will be allowed to the Licensee for his presentation.

I understand that Commissioner Bernthal is ill and unable to be with us today. However, Commissioner Bernthal will be listening in over the telephone on today's presentations, and I understand that the hookup is a two-way communication. Is that right?

MR. CHILK: It is a two-way communication. However, we are having trouble. Commissioner Bernthal's line is busy right now.

[Laughter.]

CHAIRMAN PALLADINO: I was going to ask if he can hear us.

MR. CHILK: Not yet.

CHAIRMAN PALLADINO: Do any of my fellow Commissioners have any opening comments at this time?

COMMISSIONER ASSELSTINE: No.

COMMISSIONER ZECH: No.

COMMISSIONER ROBERTS: No.

CHAIRMAN PALLADINO: If not, let me turn the meeting over then to Mr. Denton.

MR. DENTON: Thank you, Mr. Chairman. I thought it would be valuable to give you a status briefing at this time.

The plan is probably at least six weeks away from having all the actions that we have discussed with you, having

all those completed. It may be somewhat longer than that, but in order to be sure we are going in the right direction, I wanted to have this briefing.

Considerable progress has been made on all the actions that we described to you at the last meeting. There are modifications that have been made to the plant, to the procedures, to the personnel at the plant. I don't think there are any major outstanding unresolved differences between the Staff and the utility.

There is still a lot of work going on and a lot of work being done by the utility and a lot of review and inspections being done by the Staff.

I would like to have Frank Miraglia, assisted by Conrad McCracken tell you about what is going on with regard to the review of these modifications, and Jim Keppler to describe what the field is doing in the way of monitoring these kinds of changes.

One area that you might like to inquire of the company about would be the forthcoming formation of a holding company that involves Toledo Edison and Cleveland Electric. We met yesterday with Cleveland Electric to get their impressions of how it might affect them. We have no formal submittal from Toledo Edison but it seems it would introduce additional management complexity in that organization. Maybe add a few more levels between the Vice President for Nuclear

and the person that holds the purse strings.

CHAIRMAN FALLADINO: Could I interrupt for a moment.

Let me check and see if Commissioner Bernthal is on the line. Fred, can you hear us?

COMMISSIONER BERNTHAL: Yes, I can. Thank you.

CHAIRMAN FALLADINO: Thank you.

Go ahead.

MR. DENTON: It might introduce dual reporting also, so that there would be reporting to not only the Toledo Edison Company but maybe to the holding company.

So, it seems while the Staff thinks that holding companies in general do have a lot of promise in combining resources, it might be something you would like to explore because it does go to management control, management issues that we have not gotten into before with this review.

With that introduction, Frank, why don't you give us not more than a 15-minute summary of our evaluation.

MR. MIRAGLIA: Fine. Thank you, Harold.

May I have the first slide, please.

[Slide.]

As you indicated, Mr. Chairman, the utility did respond to our 50.54(f) letter. The concerns in the 50.54(f) letter were based upon the investigation team's report and Mr. Dircks' letter on the action plan to the officers to respond to the Davis-Besse event.

The Commission was briefed in September by the utility and by the Staff as to what the course of action was and what the Staff was doing in response to that course of action.

There have been a number of supplements and revisions to that course of action plan since October, and our present schedule is right now to complete SER in January on the restart. We have been keeping the ACRS informed of the review activities engaged by the Staff. We have a Subcommittee briefing in January of the ACRS, and we will continue to keep the ACRS informed with a full Committee briefing in February.

With respect to the programmatic actions.

Next slide, please.

[Slide.]

COMMISSIONER ASSELSTINE: Frank, as you got through the items, could you highlight the ones that are the pacing factors?

MR. MIRAGLIA: Yes, sir.

COMMISSIONER ASSELSTINE: Great. Thank you.

MR. MIRAGLIA: With respect to the organizational changes, there has been many organizational changes that are providing more focused resource of management attention on the Nuclear Mission within Toledo Edison. Senior Vice President, Mr. Williams, has been appointed, reporting to the Chairman.

The Nuclear Mission staff has been increased from on

the order of 640 at the time, or shortly after the event, to approximately 990 within the staff. That is a considerable increase in the staff. Most of that staff is being moved to the site, to directly support the activities at Davis-Besse.

New personnel have been added in terms of a new plant manager, assistant plant manager for operations, assistant plant manager for maintenance. There is a new planning function that has been added to the organization. And an engineering department and also materials program manager, engineering to support the maintenance activities.

They have reevaluated their salary structure to assure that they can get the individuals with experience and maintain them within the facility. It is a two-step process with 60 percent of the salary increase being granted this coming calendar year. The remainder of the increase the following calendar year based upon performance of those individuals in the job.

They have elevated the status of the training department, which now -- to a director status and reporting directly to the Vice President.

So, many, many enhancements have been made and the training staff has been more than doubled since the time of the event.

Significant change has been made within the management of the maintenance function within the facility.

They do now have, as I said, an assistant plant manager for maintenance; many, many new procedures; and most significantly is that additional first-line maintenance supervisors have been added to the structure, which has improved the ratio of supervisor to employee from 1 to 25, to 1 in 10 or less.

They have also minimized the amount of paperwork that these supervisors would have to be involved in by providing aides to the supervisors, and they are requiring that 75 percent of the supervisors' time would be at the job site where the maintenance functions are being performed.

This activity is an ongoing one and is a pacing item, in that there is a large number of maintenance activities and work orders that have been identified since the event in order to make the modifications and changes, and this is something that the Staff is monitoring right now.

Engineering support on the site has been provided. It is directly looking at issues and problems and trying to identify the root causes of the problems to assure that they understand what the significance of the events are. Be sure that the understand the design of the equipment and operations personnel are involved with the engineering. Operations personnel have been transferred to the engineering department to get that interface between engineering and operations and a similar type of interface has been instituted with respect to the maintenance activities.

In the longer term, there is a very ambitious plan to institute configuration management within the Davis-Besse organization. This is a cradle-to-grave approach with dedicated engineers assigned to specific systems to understand the design of the system, the changes to the system, the appropriate maintenance and cared feeding of those systems to assure that they perform their designed functions.

The utility has indicated that this is about a 120 man-year effort. Its first phase is underway with four pilot systems to be reviewed. And I think it is early this summer where the first system, pilot systems will be developed. And from these pilot systems they will expand it to all major safety systems within the facility.

COMMISSIONER ASSELSTINE: Frank, is that effort progressed to the point where you could say, or the Staff could say that they now have configuration control of the plant, they know what they have and have control of it?

MR. MIRAGLIA: I think if one looks at the systems reviews that I will be talking about, that is a necessary adjunct that they are doing right now.

One thing that they are doing right now is, they recognize they have to understand the system is a containment, and during this outage they have had teams walk down the systems within the containment. So, even subsequent to restart they can get on with the configuration management.

COMMISSIONER ASSELSTINE: Okay.

MR. MIRAGLIA: The program is one that will span at least the next two years, sir. But they have certainly taken a very large step in getting the program started.

COMMISSIONER ASSELSTINE: Okay. But at least prior to restart when they complete the ongoing effort leading to there, you will have confidence that they have configuration control of what they have now, and understand what they have now?

MR. MIRAGLIA: Well, configuration control, having all the documents and that kind of thing, probably not. But, an understanding of the systems and assurance that those systems are functioning, yes.

COMMISSIONER ASSELSTINE: Okay.

MR. MIRAGLIA: May I have the next slide, please.

[Slide.]

This slide summarizes the review status to date from the perspective of the Staff. As a point of reference, the NRR staff has expended almost 5500 man hours since the event. Regional staff has expended on the order of 7500 man hours either in direct inspection or engaged in other activities related to Davis-Besse. These numbers are exclusive of any activities and manpower related to the IIT efforts that were expended directly after the event.

In addition, we have about $250- to $300,000 worth

of contractual support have gone into the review of the Davis-Besse activities.

With respect to the event-specific corrective actions, the utility has filed root cause reports on all of the equipment failures. They have identified the root causes, the potential wider-spread concerns that that may mean to Davis-Besse; have identified corrective actions. And those reports have been received by the Staff.

The review of those reports -- nine of them have been completed and we find acceptable. The remaining three are under review. And it appeared we are going to find those to be acceptable as well.

Thermal transient analysis and evaluations were done by the utility and have been reviewed by the Staff with respect to the transient behavior of the effect of design on the reactor vessel as well as the steam generators. And it appears that the thermal transient was within the design basis of those pieces of equipment.

They have also taken steps with respect to the shift technical advisor in putting him on a 12-hour shift, and he is now two minutes from the control room in response to what was experienced June 9th, 1985.

CHAIRMAN PALLADINO: Will he always be within two minutes?

MR. MIRAGLIA: Right now I think in the longer-term

plan -- and the utility will speak to this a little bit later -- I think the longer term plan is actually to get the STA as part of the rotating shift.

There have also been major improvements in the equipment and area locking valves and controls. If you recall that, they have already made changes to substantially improve access to important systems and valves.

The most significant effort that is underway, and that is a pacing item, Commissioner Asselstine, in response to your question, is a systems review. The utility had identified 31 systems initially, important to safety that would require to be functionally tested prior to restart.

That 31 initial systems has expanded to 33 systems and the utility has completed their systems review to identify the functions that are important within these systems that are to be tested and the Staff is reviewing those activities.

The Staff has been conducting its review in parallel with the utility. We have a team, Staff people comprised of Region III personnel, NRR, I&E, as well as contractors. And we have at least two people available seven days a week to follow the activities, to witness important tests, attend meetings of the systems review committees and the like.

MR. DENTON: A key point here is the review was not just on those systems that failed, but because there were so many systems we wanted to be sure that all safety systems were

properly operable before restart. So, we have looked at the generic complications and this review then encompasses any system that might be called upon to prevent accidents.

CHAIRMAN PALLADINO: Does it include plans for testing these systems?

MR. MIRAGLIA: Yes, sir. Right now, the first step to identify the functions that must be tested. From the functions they are developing the tests that would be necessary. And that looks at the consideration, would the normal surveillance tests provide the testing we need? Do they have to develop special tests? Are they special tests of a one-time nature, or are they special tests that should be repeated?

And, all of this is part of this systems review and test program. And that is probably the most pacing item right now within the context of restart.

COMMISSIONER ASSELSTINE: I take it by proceeding with your review in parallel, you are able to feed back any questions or concerns that you have about what they are doing right away, so that you are not waiting until the end to --

MR. MIRAGLIA: That's correct, sir.

In fact, the 31 systems were initially proposed. The utility has set up an independent review group and we have been working in parallel. And based upon that parallel relationship the systems did expand to 31 as a result of our

comments.

COMMISSIONER ASSELSTINE: That's good.

MR. MIRAGLIA: So we are working hand in glove.

MR. KEPPLER: We have got a lot of interaction with the team, and I think it is going very well.

COMMISSIONER ASSELSTINE: Good.

MR. MIRAGLIA: There have been substantial improvements to the decay heat removal reliability at Davis-Besse.

That includes the addition of a third electrically-driven pump. The pump has been installed, and is capable of being powered by emergency diesels.

They have the modifications to the steam rupture control system and there are also longer-term plans for longer-term improvements of the system.

COMMISSIONER ZECH: Has the third pump been fully tested?

MR. MIRAGLIA: I think there have been some surveillance tests on the pumps.

MR. KEPPLER: I don't know whether it has been fully tested, but it will have been by the time --

MR. MIRAGLIA: Prior to restart, it will be.

COMMISSIONER ZECH: All right. Thank you.

MR. DENTON: And there are also plans for the fourth pump. So that the original pump that it replaced will be

operable at some time also.

CHAIRMAN PALLADINO: You say a fourth pump?

MR. MIRAGLIA: I'll get to that a little later.

The maintenance backlog reduction plan is needed for restart. As I indicated, a number of maintenance work orders have been produced as a result of all of these ongoing reviews. The utility has committed that all outstanding preventative maintenance work orders will be completed to restart and they are coming up with a prioritization scheme as to those maintenance activities that are required prior to restart, which could be deferred to later, and a schedule for those.

That is an item that the Staff is dialoguing with the utility at this time. And the Staff will make a second team visit in January to assess the progress from October through January with respect to the organizational operation.

As has been indicated, the regional review for readiness for restart has been an ongoing activity and will continue right through restart and power ascension.

We have been following the systems review activities. They have been looking at the root cause investigations and the testing that went on to determine the root cause investigations.

I mention feed and bleed capability. The utility has provided analysis to show that the capability to feed and

bleed at Davis-Besse is adequate. The Staff has reviewed that and we agree that the feed and bleed capability is adequate capability at Davis-Besse.

CHAIRMAN PALLADINO: Are you taking credit for feed and bleed and ECCS?

MR. MIRAGLIA: No, sir. But it is there and it is in their operating procedures, and we did want to determine that there was adequate capability to indeed remove decay heat by that mechanism.

The Licensee has committed to provide additional safety grade capability in this area by adding additional valves that would allow more rapid depressurization of that system, and that is a longer term improvement that the utility has committed to.

CHAIRMAN PALLADINO: Is that a PORV?

MR. MIRAGLIA: It would be --

CHAIRMAN PALLADINO: You said "valves."

MR. MIRAGLIA: It would be safety-related valves. Whether they call it a PORV or a pressure relief type valve of safety grade on the pressurizers.

CHAIRMAN PALLADINO: You said "valves," plural, is that right?

MR. MIRAGLIA: Yes.

MR. MC CRACKEN: Hopefully not a PORV because PORVs do have a failure problem. If they were to put two ball

valves, safety grade in line on both steam generators, which is what they are looking at.

MR. MIRAGLIA: This is what they are looking at for the long term.

In addition, as Harold indicated, they are all --

CHAIRMAN PALLADINO: Steam generator did you say?

MR. MC CRACKEN: At the high point on the steam generator.

CHAIRMAN PALLADINO: On the secondary side?

MR. MC CRACKEN: Primary side.

CHAIRMAN PALLADINO: Primary side.

MR. MC CRACKEN: That, in this case, happens to be the high point on the loop.

MR. MIRAGLIA: In addition, as Harold indicated, the utility has committed to reinstallation of the electric startup feed pump in the longer term. So, from an auxiliary feedwater point of view they will have two steam driven and two electrical driven aux feed pumps.

CHAIRMAN PALLADINO: When are they going to add the fourth one?

MR. MIRAGLIA: This would be post startup, sir, in the longer term.

CHAIRMAN PALLADINO: Do you feel it is okay to wait for that?

MR. MIRAGLIA: Yes, sir, because there will be the

third 100 percent capacity electrical driven pump installed and operational prior to restart.

COMMISSIONER ASSELSTINE: Is the fourth one going to be 100 percent capacity as well?

MR. MIRAGLIA: I think the rated capacity would be less than, but I think it is fairly close to providing. One would say maybe it is not quite 100, but it is very close to being 100 percent.

COMMISSIONER ASSELSTINE: On the depressurization capability, is that essentially an expanded high point vent capability?

MR. MIRAGLIA: That would be one way of looking at it.

MR. MC CRACKEN: Only it's not a vent. It actually would be large enough to cause depressurization.

CHAIRMAN PALLADINO: Would they be automatic, pressure sensitive or manually or electrically controlled?

MR. MC CRACKEN: They have not completed their analysis yet. I would hope it is an automatic.

[Laughter.]

MR. DENTON: The intent would be to make it fully compatible with the design of similar Westinghouse plants. For example, have the same related capacity, have the same sort of HPCI capacity. So that those differences that we talked about so often would no longer exist.

CHAIRMAN PALLADINO: Okay. By asking my question, I was trying to make sure we weren't talking about a relief valve or safety valve type.

MR. MC CRACKEN: No. They haven't completed design on it yet, but they are talking about putting safety grade valves in. One on relief capability on each loop at the high point, which is the top of the steam generator on the primary side.

MR. MIRAGLIA: In addition, we looked at any licensing actions that were outstanding at the time of the event to assure that there is nothing there that would affect restart.

The utility has also engaged, in this time period, of reevaluating his fire protection program and has accelerated and come up with a phased schedule response to the Appendix R reviews.

I think in summary it is clear that the utility has laid down an ambitious program, and has aggressively pursued that program. A lot has been accomplished. And, while some things still need to be done and followed up, we are very pleased with the progress to date.

Jim, is there anything else that you would like to add?

MR. KEPPLER: Yes. I might add a couple of points.

I do think Frank gave you a pretty good summary of

where it stands and you will get more detail from the utility.

But from my perspective, I would have to say that the changes that we have seen since both you were out there, Commissioner Asselstine and you, Commissioner Zech, have been monumental.

There is a very effective team at the site right now. You would see a lot of clear changes. And I think Admiral Williams has done a good job of assembling and defining the work load to be done out there.

They are taking a very orderly and disciplined approach to completing the work. We don't see any shortcuts being taken. And I think the point I would make is there still is a lot of work left to be done for that in here, telling you that the plant will be ready shortly sometime in the first quarter of '86. Probably more toward the end of that time frame.

But the pacing item that I see is the testing work. The assessment of the operability of systems. But the program that the utility has put in place, if carried out, will clearly lead to a determination that the safety related systems are operable.

And would have to say we are very comfortable with the progress, to date.

COMMISSIONER ASSELSTINE: I take it that view is shared by the residents?

MR. KEPPLER: Yes. Absolutely.

I think that you know we don't take Licensee performance lightly to make that statement.

COMMISSIONER ASSELSTINE: Right.

CHAIRMAN PALLADINO: Does that conclude your presentation?

MR. DENTON: Yes it does, Mr. Chairman.

CHAIRMAN PALLADINO: Thank you.

I have two questions. One, you have identified a number of issues to be reviewed and resolved between now and restart. Are there any others that we should know about, major technical issues, particularly?

MR. DENTON: I don't think we see any, what I would call hard spots. There is a considerable work remaining, but there is every indication that those problems that are encountered in testing will be resolved. And I think we feel very good about the progress that has been made to date.

So, I don't know of any outstanding differences of opinion between us and the utilities at the moment.

I mentioned this one about the holding company, which is sort of an unusual issue. And we haven't really explored the implications of that with the company yet.

Let me ask the Staff to be sure if there are any other issues we would like to bring to your attention?

MR. KEPPLER: No.

MR. MIRAGLIA: No, I think we highlighted them.

CHAIRMAN PALLADINO: Let me ask you, are you aware of any areas of concern by the ACRS?

Could you review the status of your consultation with the ACRS?

MR. DENTON: We asked the ACRS to meet with us to be sure if they had any concerns they would express them. They are not on the critical path in the sense that we are not waiting for a letter from the ACRS, we are just keeping them fully informed as we move down the review program.

I notice Ray Fraley is in the audience. Perhaps he might know of some that we don't. But, I don't recall that they have brought any to our attention that have not been resolved.

CHAIRMAN PALLADINO: Ray Fraley?

MR. FRALEY: Yes, sir.

CHAIRMAN PALLADINO: Identify yourself for the record.

MR. FRALEY: Ray Fraley from the ACRS office.

We are planning to invite the Staff in to our January meeting for an update on where the progress stands. I presume if the Committee has anything that is specifically of concern to it, it would identify it at that meeting.

CHAIRMAN PALLADINO: In January?

MR. FRALEY: Yes, in January.

And then have the Staff in for a final round in the February meeting.

CHAIRMAN PALLADINO: Does the Committee plan a letter on the restart issue?

MR. FRALEY: I don't think they have made up their mind yet. I presume that they will decide whether a letter is needed after they have looked at what is being done.

CHAIRMAN PALLADINO: And that might come in January?

MR. FRALEY: February -- well, they will have some indication during the January meeting. But I think we really won't know until the February meeting whether a letter is necessary with any recommendations or not.

MR. MIRAGLIA: The Staff has met with the ACRS in October, and where the outline of the course of action plan by the utility was made, and the indication of what the Staff's activities were to follow the Licensee's efforts were discussed with the ACRS in October, I believe.

MR. FRALEY: Yes. There has been nothing specific identified so far. But, I would guess at our January meeting if there is anything of particular concern it would come up at that meeting.

MR. DENTON: We have also met with the Committee on the feed and bleed and auxiliary feedwater issues in separate meetings. So, I am not aware of any issues that they have raised with us.

It was more an intent to keep them fully informed about the actions because they were so extensive in this area.

CHAIRMAN PALLADINO: Well, if the Committee has any areas of concern that relate to startup, getting them early would, I think, help resolve the issues.

MR. FRALEY: Yes, sir.

CHAIRMAN PALLADINO: Thank you, Ray.

Any other Commissioner questions?

COMMISSIONER ASSELSTINE: No.

COMMISSIONER ZECH: No.

COMMISSIONER ROBERTS: No.

CHAIRMAN PALLADINO: All right. Well, thank you very much.

Let me now ask the representatives of Toledo Edison to join us at the table.

If you would, Mr. Williamson, identify yourself and your colleagues.

MR. WILLIAMSON: I'm John P. Williamson, Chairman and Chief Executive Officer of Toledo Edison Company.

Gentlemen, Mr. Chairman, Commissioners, thank you for your time today. We appreciate this opportunity for our staff to come in and brief you on the tremendous program we have had going at Davis-Besse and to bring you up to date on not only what we have done, but our restart plans overall.

Let me say that we have been going through a

tremendous program, that we have accomplished a tremendous amount, really in the last few months. We had many things underway a year ago; authorized the third pump, that type of thing. So, we were able to get a running start at the program.

As I indicated before, when I stepped in directly to take direct responsibility over our nuclear program last January, I felt we had an improvement program going, but it wasn't going fast enough. The result of that was that I did hire Admiral Williams to come in and head that effort. I wanted a good, hardnosed, driving perfectionist to head the effort, and I found the right man to do it.

The program is going ahead. We have accomplished a lot. We have a lot to do, particularly in the testing program.

We are looking forward to restart in the first quarter next year. But naturally that depends on the testing program. We think we will have a good program. I am delighted with the improvements I see in the plant, and we are going the right way.

Let me make one other point. When I inspected the nuclear plants in Japan last March, one thing that impressed me very much was their maintenance program and their maintenance training facilities. I think that in many ways is one of the very key items to preventing the type of problems we had on the June 9th incident. And we have given that

particular attention, as you will hear, so that we are going to have a very outstanding maintenance program with very fine facilities for our people to work with.

Rather than take any more time from my staff, I would like to turn this over to Admiral Williams and let him and his very fine people carry on from here.

Joe?

MR. WILLIAMS: Thank you, John.

[Slide.]

You know I was hoping to be back here to see you gentlemen along about the latter part of October for a November start. But it turned out there was more out there to do than we had anticipated.

I think we see light at the end of the tunnel now and my fear is that it is a locomotive coming down with its headlight on and I haven't recognized it yet, you know.

As I go through what we have done and tell you some of the things that we have done that I did not tell you about during the first meeting, and then a couple of things that I told you I was going to do that I have not done precisely the way that I told you at that time that I would do it. I will be repeating some of the things that Frank and others have said, but we will skip over those very quickly and move right on.

Let's have the next slide, please.

[Slide.]

Let me introduce my people. Mr. Bill O'Connor is assistant plant manager for operations; Mr. John Wood is our new manager of systems engineering; and on my right is Mr. Smith who is the assistant plant manager for maintenance.

This is the organization as it exists today. The nuclear engineering group director was the new position that I put in to head up the expanded engineering organization group.

The one in red over there is one that was not on the slides you saw the first time. That is our information management director. We have moved some functions out from corporate, and I will show you an expanded slide on that. And that was not presented to you at the first one.

Next please.

[Slide.]

This is the major part of our expansion, or at least it is equal to maintenance. It is the nuclear engineering, nuclear engineering group director, nuclear engineering general manager in there who is secunded in from Stone & Webster. He has been of great help in bringing this organization into being.

The nuclear plant systems director on the left is Mr. John Wood. That was an addition and that is where our cognizant engineers are located.

We brought up the operations engineering from the

plant and expanded it. That is the lower left. And left the plant with a small cadre of engineers which do liaison between the plant and this organization.

Then we expanded our engineering service organization. We will have a cad capability computer aided design when we are through with our configuration management. That will be a good system.

The remaining one over there was the engineering organization that you saw in being to begin with, the nuclear facility engineering director. All the people have been moved out from downtown except for three who are involved in nuclear fuel management, and I don't need them out there. They are better off downtown with the bean counters.

[Laughter.]

Next slide.

[Slide.]

COMMISSIONER ASSELSTINE: You got them all out at the site?

MR. WILLIAMS: Yes, sir.

COMMISSIONER ASSELSTINE: They are getting out into the plant?

MR. WILLIAMS: Yes, sir.

An engineer that doesn't system check his FCR is --

Okay. We instituted a planning department under the plant manager immediately -- in last July.

The computer systems manager portion of that, I put that in there because the gentleman that I made the head of the planning was the one that had the most talent in that area. And it really didn't belong there.

Since that time I have replaced Mr. Scheiers as planning superintendent with an equally qualified gentleman, Mr. Salowitz, who used to work with me at Electric Boat and later down at GPU, and he is out there. Mr. Scheiers has moved up to be the director of that information management system, and I have moved the computer systems out of there.

Next, please.

[Slide.]

The nuclear projects director -- I show this -- he is the gentleman that takes care of construction. The things that maintenance does do. All the FCRs, the buildings, this type of thing and uses the outside skills. We added the materials manager to him.

And at that time I told you I was going to bring all the material function from corporate and put it in the station. It turned out that he didn't want that. He wanted part of it, but left part of it with corporate and it has just worked out extremely well. It is really a fine functioning operation and we did not need to move everything under the station.

Next, please.

[Slide.]

We had a study done. It was ongoing at the time that we briefed you of the quality assurance department. At the time we moved out there it was not one of the critical issues, and so I proceeded a little slowly on it. But when the study came out there were obviously some things that needed to be done.

So, we have expanded the operation and we have hired a new quality assurance director. It is Mr. Ramsey. He used to be vice president of quality assurance at Marble Hill in Indiana before it shut down. And so he is extremely well qualified and the gentleman that was director has been moved into a new branch which is quality engineering manager. And so we have got that organization the way we need it.

Next, please.

[Slide.]

This is the new information management director. We have brought the records out to the Nuclear Mission. Corporate was doing that.

The document control function and correspondence control has come out and the computer systems manager -- of course, he will have all the computers on the site, the care and the feeding of them. But the thing that he will really be engaged in is handling the data flow for the configuration management program. It will be a real-time system and it is

his responsibility to make certain that all the data gets in and that it is put in under quality assurince conditions such that we do have an audit trail on everything.

I will speak more to configuration management in a minute, sir.

Next, please.

[Slide.]

So, just to summarize, we have a new centralized planning department. It is working. It has had growing pains, because we threw it into the breach and we said, you are new and here is the -- now start planning these 2000 functions. And so there they were without ever having got off the ground. But, they picked up speed and they are doing well. And they are essential, because we have an awful lot of work and an awful lot of testing to get scheduled.

The previous plant manager has assumed the duties of the expanding engineering division. And as I said before, that is great because he takes an operational flavor to the engineering department, which has certainly proven to be a valuable move.

Nuclear division has been enlarged and is being staffed. And the staffing is moving along as you will see. And the position, nuclear plant systems director has been filled by Mr. Wood.

Next, please.

[Slide.]

We have a new plant manager in place. And he has his feet firmly on the ground and that is going well.

System plant manager operations was established. Mr. O'Connor was elevated to that position and that is going well. He has produced quite a few new operators here in the last -- and SROs in the last two months.

Position system plant manager maintenance, Mr. Smith on my right has got that organization going pretty well, or well.

The maintenance department has been reorganized, enlarged and expanded, and I will show you that.

And then the position of materials manager has bee established.

Next, please.

[Slide.]

Position description for all management positions in the Nuclear Mission were completed on October 15th. All of the mission responsibilities, department responsibilities that were ennunciated in the PDs were made out for all of the people so that they know what it is that is expected of them.

Now we are having to fine-tune that. That was a voluminous, tremendous quantity of paperwork to produce.

I think one of the things that ought to be recognized is the same people that were producing all of this paper and

doing this are the same people that were directing the task force of contract engineers we brought in to look at all the systems and do those things and do their own jobs. And, you know, it has just been an 18-hour day, 7-day a week. And it has been a long time since July. And they have done a marvelous job.

All the Nuclear Mission personnel, except the fuel department, has been moved to the site. New QA director. We talked about that.

Next slide, please.

[Slide.]

New organization structure approved. The staffing increases from 690 to 930, and that was approved by Mr. Williamson. The further increase is related to moving records and document control and all out from corporate and putting it under the Nuclear Mission.

We really won't grow to 990 because as I was -- this is a fluid thing as to what we take under it. Some of the things we will be doing, we mentioned the holding company. They have a computer outfit, so probably some of that that I have envisioned of being an in-house capability will probably use them because it will be cheaper. But, we don't know all of that yet.

As John said, we can't really talk about those things. But, I am holding that in abeyance until that is

resolved.

60 percent of the increase of the salaries is being provided on January 1st, 1986, and 40 percent on January 1st, 1987. We are competitive with anybody now. We can hire people, good people.

We have raised the SRO license bonus from 550 to 800 a month. And on-shift RO license bonus has been increased from 485 to 550 a month. And we are competitive there with anybody, too.

COMMISSIONER ASSELSTINE: Do you find now that you are in a position where you can both retain good people and attract those where you need them?

MR. WILLIAMS: We can attract. I don't know -- not enough time has passed yet to measure, really, the retention. But we have not lost anybody. Well, we have. We lost one chap that wanted to go to school -- two that wanted to go to college to get a degree. One of them is coming back.

[Slide.]

The recruiting got underway, really, in October. And we have had three career days where we bring people in, their wives if they want to bring them. We put them in two days and our managers go down and interview them at the hotel. We give them tours of the site, and sell them. And we have had 125 -- 46 offers, 28 acceptances, 3 offers pending, 22 future offers being developed. And they should have gone

out yesterday.

And, we have two career days planned in December for 35 applicants.

The manning status was 644 on July 1st right after I talked to you. 688 on December 1st. 244 vacancies. We put 88 contracts into the seats.

Now, the jobs are being done that is required of those positions that are not yet filled. But, they are not the type -- we don't have the type of contractor on site that the boys want to really sit in that seat in a line capacity. So, he is task driven, you know, he is not in there on his own.

So, we will meet our goal of staffing the entire plant up in '86.

Next, please.

[Slide.]

Configuration management plan is, as I said, an ambitious program. We know a lot about what we have in the plant. There have been configuration management programs going on out there before. It was not on the scale that this one is, because we intend when we get through to have complete data on every thing and every system out there collected under quality assurance conditions, put the data in it. This gives us the information that we need to then keep the plans updated. Gives us the information we need then to know what

it is when we are redesigning something, or it gives us the base for a spare parts inventory. We can manage it.

The vendor manuals had to be reviewed and brought up to date to make sure that they agree with the components that we have out there. This provides us then a good basis for the preventative maintenance program and also enables us to do repairs in a professional manner, know what we are doing.

So, we will get that started.

[Commissioner Asselstine left the room.]

We were going to do the four -- I told you before that I was going to put an RFP on the street. At that time we planned to go out with a prime contractor and let him come in and do. And the more we worked on the RFP and the more I sent it back, it became apparent that that was one way that we could be had very easily.

So, we set up our own in-house project manager. But we have him backed by very professional people from Mandel, Panoff and Rockwell. And we are going to manage the people we bring in instead of giving it to a contractor just to do.

And the organization is set up and it is staffed, and the plan is out. And we are collecting the data in containment now, because when we close that door we don't open it for a long time. And then we will attack the other four systems that we said were prototype.

Our object, of course, is to develop system

description and really give our people design basis. They are easy to read, easy to refer to with the PIDs that reflect the systems. You know, good, readable PIDs.

Next please.

[Slide.]

Fire protection program. As I said, they were pursued in compliance with Appendix R, phase 1. 30 technical programmatic issues related to fire protection compliance assigned and prioritized. We know where we are going.

We developed a detailed plan. We will have the assessment for Appendix R in to you by March 6 of '86.

We have updated the fire hazards analysis report. Our update will be available March 6 of '86.

We will revise the tech specs June 1st, 1986.

[Slide.]

Going on with the fire protection program, the engineering design package development -- to show you the magnitude of it -- we have identified 64 FCRs to date. We will complete 24 of them by the fifth refueling, which will be some time in '87.

The engineering scheduled to be completed by the end of this year.

And there are such things as -- there are 17 barrier modifications, for example, upgrading walls, installing new dampers. 6 safe shutdown modifications. So, it is a

well-disciplined program and we are going to do it right.

And then the Phase 4 will go from February to August of 1986 and that will be the finalization of the fire protection organization identification of staffing requirements.

Right now I have an organization in place, but I don't have permanent people. I have had to second people in it, because it is hard to find engineers in this area that are of the type you want. So, when I say we will finalize the fire protection organization, it means at that time it will be permanent Toledo Edison people rather than seconded contractor people.

CHAIRMAN PALLADINO: When do you feel you are going to be in compliance with fire protection requirements?

MR. WILLIAMS: Resolution of remaining technical issues will be August 1986. Just a minute.

John, Mr. Wood, do you have an appreciation for that.

MR. WOOD: I don't have an appreciation beyond the August '86 date.

VOICE: Sixth refueling outage.

MR. WILLIAMS: The sixth refueling outage. Okay. That then will be in '88 -- late '88.

CHAIRMAN PALLADINO: So, by late '88 you expect to be in compliance with the fire protection requirements.

MR. WILLIAMS: Full compliance with Appendix R, yes, sir.

Next, please.

[Slide.]

Another ambitious project there is to provide the mission with the procedures that it needs. And, if you look down that left-hand column you will see that I need 365 that must be completely done by restart.

On the second we had 28 completed and 201 in process.

We have quite a battery of people that are drafting procedures and reviewing procedures and a lot of the work that Mr. Smith is doing in maintenance is controlled -- the time of starting is controlled by whether we can get a procedure on the street with which to --

CHAIRMAN PALLADINO: Are these people or --

MR. WILLIAMS: No, sir, those are procedures.

CHAIRMAN PALLADINO: Procedures?

MR. WILLIAMS: Yes, sir. And I require -- as you notice there, Mr. Chairman, 365 in the left-hand column at the bottom there, for restart.

But then after restart we still have 1765 that we have identified that we must write. And we are having to do that without conflicting with the existing procedures that may be on the street.

So, it is a complex operation.

CHAIRMAN PALLADINO: Now, are we clear why you don't have to have the additional procedures done before restart?

MR. WILLIAMS: Yes, sir. They have been reviewed. They ar things -- if you take the 801 maintenance procedures that Mr. Smith has that he wants to do after restart, those are things that he doesn't need now to do work, but he knows that he needs in place to do work that he sees that are upcoming.

He wants to be able to better control the testing, the surveillance testing, this type of thing.

The 229 for operations are the ones that Mr. O'Connor -- Bill, do you want to tell them what they are?

MR. O'CONNOR: Yes, sir.

As an example, in the operations area we have say a monthly surveillance test on a component cooling water pump, which has four phases. There is three different pumps which require the pump to be operated for a specified length of time and a specific discharge pressure and flow rate. And then a valve lineup to be performed.

And it is one procedure now which is, you know, 100 pages thick. To human factor this it will turn into about four procedures, so that we can give the operator, when he is doing pump number one, we give him just that procedure.

So, in my particular area a single procedure for a

component coolant water monthly test will turn into four procedures. And that is what these numbers reflect for the operations area. An expansion of our current procedures into smaller --

CHAIRMAN PALLADINO: They are replacing existing procedures?

MR. O'CONNOR: Yes, sir.

MR. WILLIAMS: Right.

CHAIRMAN PALLADINO: And are the existing procedures wrong, misleading, difficult?

MR. O'CONNOR: No, sir.

MR. WILLIAMS: No, sir. They are just -- we are going to make them more readable, more easy to use.

And in the maintenance procedures, you know we have always done work out there by skill of craft. And we are moving from the skill of the trade concept to procedures. And wherein we need procedures to get the work done for restart, we are writing them. But, where we don't have jobs, we are going to get them written so we don't have to wait on them the next time. We will have them in place.

Next, please.

[Slide.]

We have had the training program enhancements that Frank referred to, and I want --

CHAIRMAN PALLADINO: Just one other question on the

previous slide.

MR. WILLIAMS: Back up that slide.

[Slide.]

CHAIRMAN PALLADINO: You say you have 365 going to be completed for restart?

MR. WILLIAMS: Yes, sir.

CHAIRMAN PALLADINO: 1765 -- are these all going to be done in '86, do you expect?

MR. WILLIAMS: Yes, sir.

CHAIRMAN PALLADINO: All right. Thank you.

MR. WILLIAMS: Next, please.

[Slide.]

In the training area, we have improved the staffing of the training. We are now up to 44 of the 54 approved positions, and we have 10 contract instructors.

We are on schedule for the NUMARC commitments.

[Commissioner Asselstine returned to the room.]

And the facilities, the dedicated training labs are about ready for use. They are really extremely well equipped. The new training offices and classrooms are as good as I have ever seen. And we are going to have a plant-specific simulator on site and operable by December of '88.

Next slide on that, please.

[Slide.]

Here is laboratory facilities. We have mechanical

maintenance lab, 1440 square feet. Well equipped machine shop, air conditioning and refrigeration equipment, vibration analysis equipment.

Electrical maintenance lab has all of the major equipment that anybody could want to work with.

The instrumentation and control lab includes a lab-volt process control simulator and a control rod drive part task trainer.

Then the chemistry and health physics lab is similarly well equipped.

It is a really nice installation.

CHAIRMAN PALLADINO: Where do your people get simulator training now?

MR. WILLIAMS: Lynchburg, B&W.

MR. WILLIAMSON: Mr. Chairman, may I say that I think this area is very important. I think that thorough training, the detailed procedures to do maintenance is one of the keys to the operations. And our people have a sign in the maintenance facility that I insisted on, saying "Do it right the first time."

And that is the philosophy we are really adopting on this thing.

CHAIRMAN PALLADINO: In addition to procedures on management, do you have any mockups on particularly difficult areas that require maintenance?

MR. SMITH: Yes, sir, we do. We have several different mockups and several different sets of training devices that are both in the labs and in the shops.

One of the programs that we have implemented is the pre-job briefing program which will include maintenance technician input, new mockups that we need in the future for other detailed pieces of work.

COMMISSIONER ASSELSTINE: Are these labs part of the new expanded maintenance shop facility, or is that separate from this?

MR. SMITH: They are in our training facility.

[Commissioner Roberts left the room.]

CHAIRMAN PALLADINO: Having been to Japan and having seen what they do in maintenance, do you think you are approaching the kind of facilities they have? Or, would you comment on how you think your facilities would compare.

MR. WILLIAMSON: I think we have a good start in going in their direction. Certainly we do not have the partial mockup of the reactor itself, or the head, or the steam generator tubes, that type of thing.

But the facilities I see going in are the type of components I saw over there where the men can really get in and get hands-on training in working with things, and working with things that have deliberately been modified a little bit so that they can really find where the problems are, that type

of thing.

We have a good start on it.

CHAIRMAN PALLADINO: We probably can overemphasize maintenance, but I don't think I could possibly do that.

MR. WILLIAMSON: No.

CHAIRMAN PALLADINO: I read such things -- I read one last night where in doing functions, maintenance f ctions on a panel, they bumped something because it was so crowded, and that led to the SCRAM of the reactor and other follow-on events.

Are you giving attention to the fact that sometimes maintenance has to be done under less than ideal condition?

MR. SMITH: Yes, sir.

One of the things that we have currently done, we have started a program of sending our instrument control technicians to Lynchburg also for a week on the simulators so they can better understand the overall intricacy of the control board in little functions. Just like you say, the man was working on replacing a light bulb and SCRAM'd the reactor.

We are developing a better awareness. We have all of our people now scheduled into a three-week plant systems program to give them a more in-depth understanding of how the plant functions and how the systems interrelate so that the pump mechanic working on the pump will have a better feel for his impact on the operability of the system once he has

completed his work. We are getting very good results out of those programs.

MR. O'CONNOR: Along the same lines with the licensed operators this year at their requal, we sent them to the maintenance technician training on Limitorque valves, where they went through all the circuit analysis and disassembly and reassembly of the valves.

So, they are getting a better appreciation for what the maintenance guys do when we call them up and say, hey, this Limitorque isn't functioning exactly right.

COMMISSIONER ASSELSTINE: Good. Good.

CHAIRMAN PALLADINO: Just one more minute on maintenance.

A number of the things one reads about are people working on the wrong train. I presume you are giving attention so that is less likely to happen?

They pull the fuse on the wrong set of equipment that they are going to do maintenance on.

[Commissioner Roberts returned to the room.]

MR. WILLIAMSON: I think that comes down to the ratio of supervisors to workers that Mr. Smith has gone into.

And you know, when you reduce the foreman from one to twenty down to one to six, then that gent can do a lot to control what his people do in the field.

CHAIRMAN PALLADINO: I think to the extent you can,

you might just look over the experiences that come in almost daily, because they tell you a lot about where to look for problems in maintenance.

MR. SMITH: Yes, sir. Part of what we have done in that area also is a required reading program for first line supervision where I can input those experiences to the individuals. So, they do review those things and understand them.

Also, keep in mind the three-week plant familiarization program for the maintenance personnel also is a big aid in helping him to understand you have got to get on this train, and where this train is at.

CHAIRMAN PALLADINO: Okay. Fine.

MR. WILLIAMS: Next, please.

[Slide.]

MR. WILLIAMSON: Joe, if I can just add, I think one of the other things that I learned on the Japanese visit was that they are putting their engineers through the similar maintenance training facility they have, and this is the way I would like to see us go, too, because I think we have to get away from the theoretical and blend the practical on in.

But, it is very, very interesting to go into a plant and have your people open up some of the cabinets and show you some of their problems on maintaining things.

So, long range, I think we in the industry have to

take a closer look at how we can make things easier to maintain, that in the original designs and all, were well designed but not with sufficient maintenance space in mind.

COMMISSIONER ASSELSTINE: Yes.

COMMISSIONER ZECH: Glad to hear your emphasis on maintenance. And, referring to the Japanese plants, is your goal to get the Davis-Besse plant as clean as the Japanese plants?

MR. WILLIAMSON: Our goal is to get the Japanese plants as clean as Davis-Besse will be.

[Laughter.]

COMMISSIONER ZECH: Well, I'd suggest your first goal should be to try to get your plant as clean as theirs.

MR. WILLIAMSON: It was very interesting to go through those.

But, I did notice the turbine that I did not inspect was not as clean as the one I went by in one of the plants over there, too.

But, if you could see what we have accomplished so far, I would say that it is very comparable to what I was seeing in Japan. Very comparable.

COMMISSIONER ZECH: I'll be back to take a look one of these days.

MR. WILLIAMS: We are going to show you some photographs in just a minute.

I'm going to turn the maintenance improvement program discussion over now to Mr. Smith who is system plant manager for maintenance.

MR. SMITH: Since our last meeting there have been several improvements in the following areas.

[Slide.]

Organization and staffing; training, maintenance administrative and technical procedures, our maintenance activities, spare parts and material control, our engineering interface and support, plant cleanliness and material readiness and our new maintenance facilities.

Next slide.

[Slide.]

Our new organization has been established. We brought in new maintenance personnel, we have increased the supervisory personnel for each discipline, first line supervision are now in much better ratios to crafts -- mechanical area one to ten, electrical one to six, I&C area one to seven. We have scheduled regular meetings for improved departmental communications, and we have established a permanent position of training foreman in each of the areas.

[Slide.]

This is a look at our new staff organization chart. The current maintenance organization is 199 people. The training foremen positions have just been recently established

as permanent, full-time positions rather than a collateral duty.

Next slide.

[Slide.]

In the area of training, each discipline does have its training foreman.

We do have the training shift concept. I recently reviewed and approved three-year training schedules for all the disciplines.

We do have the training councils in place. They have a very big hand in developing the training schedules and establishing the course curriculums for those schedules. They have also helped to do the first-stage progression of our INPO accreditation program which is to review the job analysis and derive the course curriculums from the job analysis.

We are still, to some extent, using outside organizations or facilities to help support us. Our new training labs will be in full operation in December. They look to supplant most of our outside training use.

[Slide.]

In the area of plant cleanliness and material readiness, we have --

COMMISSIONER ZECH: Excuse me. If I might interrupt for a second. That is a very important initiative as far as I am concerned. When you integrate your training with your

people who are doing the maintenance -- that is what you are telling us, I guess?

MR. SMITH: Yes, sir.

COMMISSIONER ZECH: That really is important, because you can have a training program that is pretty good off in isolation by itself. But, when you integrate it with the people that are actually doing the maintenance work on the plant, that is very important. And I think that is something that I appreciate the effort that goes into it.

Also, it means your maintenance people, your senior people, have a real daily involvement in the training program. And again, that is to me, a very important initiative.

MR. SMITH: Yes, sir.

Currently the training council is composed of craft personnel, a ratio of one for every ten craft personnel in the discipline. Our largest training council is for the mechanical shop. There are seven members on that training council.

Their charter has a required meeting monthly, but they are currently meeting about once a week because of the amount of work they do.

The training department manager and myself have to formally answer any concerns in the meeting minutes.

COMMISSIONER ZECH: It is a new initiative, I presume?

MR. SMITH: Yes, sir.

COMMISSIONER ZECH: Good. Very good.

MR. SMITH: In the area of plant cleanliness and material readiness.

[Slide.]

We have currently devoted some 26,000 manhours to the area of plant cleanliness. There are some pictures coming around. We have some slides to show in that area.

[Slide.]

This is a picture of our auxiliary feedwater pump. Something we are not very proud of. We have not gotten down to that level to work on it yet. We have had many other activities and modifications in progress down there.

[Slide.]

This is the general area around it. As you can see, the insulation is --

MR. WILLIAMS: This is the before, understand.

MR. SMITH: This is the before.

[Slide.]

The next set of slides -- this is our circulating water pump. As you can see it is considerably different shape than that which was before.

[Slide.]

This is our water treatment facility. This area we started on first. We currently have it just about completed.

As you can see we have to recoat the clarifier well there, but that is the last piece of work we have to do there.

[Slide.]

This is the training ground for our plant station services folks where we instill in them what we require for the rest of the plant to look like.

[Slide.]

MR. WILLIAMS: We started that because we thought there was no work going on this area. The rest of the plant we are so busy working, you couldn't get in and do any cleaning.

He is moving into the turbine building now. But, that is the way it will look when we get through.

[Slide.]

MR. SMITH: We have some area spare parts and materials control. Mr. Tom Childs, our new materials manager --

COMMISSIONER ZECH: Good start, I'll say that.

COMMISSIONER ASSELSTINE: Sure looks like it, yes.

MR. SMITH: In the area of spare parts and materials control, Mr. Tom Childs, our new materials manager has assumed responsibility for the overall coordination of the spare parts program and, of course, materials control is his responsibility.

We do have an ongoing spare parts identification

program that involves system engineers, planning organization, maintenance organization and materials control.

Mr. Childs and his organization have reviewed inventory to all the surplus material on site, have removed from site that material which was not applicable to the plant, have reidentified those things that got lost, if you will, in the paperwork shuffle, and they are reusing those in the plant where possible.

We are very pleased with the results that Mr. Childs has been able to accomplish in the last three months.

[Slide.]

These are pictures of our site warehouse.

[Slide.]

Had you been there before, you would be literally amazed at the amount of organization that he has been able to bring to bear in just the last few months.

MR. WILLIAMS: He has pulled everything out of the rest of the site, he has inventoried it, put it in there. We found hundreds of thousands of dollars of parts that we didn't know we had, and we found a lot of things that go back to construction and we are surplusing that, and going through it.

It is really magnificent. We don't hear this business any more of, I have a shortage of material, I can't do the job, except for new jobs that have come up.

MR. SMITH: In the area of maintenance procedures

[Slide.]

We really already covered that area. We will skip that one real quick.

[Slide.]

Corrective maintenance and modification work backlogs. As you can see, of the 1339 that existed on June 9th, we have closed 907 of those.

Of the remaining 400 and some, approximately 37 are preventative maintenance items. All but one of those preventative maintenance items will be completed before we enter mode 4. The last remaining item is a PM that has to be done during mode 4.

So it will be accomplished as part of the restart.

In the current area, 3547. We have closed 1822. The delta is right now being reviewed by an independent organization as to which ones are to be prioritized to be done before restart.

MR. WILLIAMS: Let me speak to that a minute.

Those figures there show you that of the current ones that are generated, there are 1700 that are not accomplished and about 400 of the backlog which is 2100. We will probably end up with about 3000 before we are through now, because we are still --

CHAIRMAN PALLADINO: The work order load is still growing?

MR. WILLIAMS: Yes, sir. It is growing. But ,we will work that done.

This is because our system review, our 32 or 33 system review has generated corrective actions. And so -- and we have the FCRs, the field change requests. You may have one workorder associated with those, or you may have six that are generated with the FCRs. And we have a lot of FCRs to do.

But, we have the independent review committee, which was the very professional group charged with reviewing the work that the engineers did in group reviews of the system. That group has now been put into the process of reviewing these maintenance workorders to see which ones had to be done prior to restart, and which ones back.

And that is what Frank was talking about in the previous briefing that that is the plan of action. We won't do all of these, nor need they be done. But we will have it -- we will know precisely which ones have to be done, and we will get the rest of them done after we get the plant up and operating. But, we will have a plant for doing them.

The important thing, I think, is that out of that backlog on June 9th, we worked off three fourths of those already.

Next slide, please.

[Slide.]

Preventive maintenance, PMs. 405 on June 9th. We

worked off 369. Currently we have generated since June 9th, 1029. We have worked off 663, and they will all be gone before restart. No PMs will be outstanding at restart.

Next, please.

[Slide.]

And this is our new five-story building that is being constructed. It will have our machine shops, electrical shops, control and instrumentation shops and space for the craft and quality control people right down next to the plant itself.

And then, of course, we have bought MOVATS for testing Limitorque valves, and we will talk more about those later.

Next, please?

[Slide.]

There is the plant under construction. Steel is up, going up. That is a five-story building that will contain our shops.

Mr. O'Connor, would you take this one, please?

MR. O'CONNOR: Yes, sir.

[Slide.]

These four major areas in the operational and procedural changes.

The first one is training and administrative. While the operators always were very careful in their adherence to

procedures, we are emphasizing more that especially in emergency procedures, there is no room for interpretation.

When they get to one of the action steps, these have been well thought out ahead of time, and that trigger point is the point at which the action is taken, not the fact that you have five more minutes or two more minutes.

So, when we say increased emphasis on procedures, it is primarily in this area.

We have some very specific training on what we call high priority-infrequent operator actions such as the trip for autovalve. This training has begun for the equipment operators and licensed operators in the plant. We have about 20 to 25 other items that will be trained upon before we restart.

Manual versus automatic safety system actuation, the philosophy on this, the reactor operators are required to state their intentions for manual actuator safety system to the control room SRO before performing this act, so that the control room SRO can essentially grant this permission and state that it is all right to manually actuate the steam feed rupture control system or whatever it might be.

The pre-startup training on these areas began on Monday for the licensed operators and will continue through December and January and into February. We are on a rotating training cycle for each of the shifts.

We have had significant changes to our emergency operating procedures, especially what we call EP1202.01, which is our major reactor shutdown procedure.

This includes all of the new modifications for the motor-driven feed pump, the criteria for actuation of PORV cooling or feed and bleed cooling based upon a temperature rather than a rather ambiguous steam generator level and decreasing pressures.

The SRO is required to remain in the control room any time this procedure is in effect, unless he is properly relieved by another SRO.

We have provided manual pressure temperature plotting capabilities for the operators mounted right on his console, should the safety parameter display system not function correctly.

By the way, since the system was repaired with the new fiberoptic cable, we have not had any outages on the SPDS since that time.

COMMISSIONER ASSELSTINE: Great.

MR. O'CONNOR: We have a new notification checklist provided for the reactor operators and the shift supervisor and SCA in the control room. It is essentially the one provided by the NRC, the most recent revision to this so that the control room operators and the shift supervisor can go through this checklist, have all the data prepared before the

emergency notification phone is picked up, so that the information provided is very timely and accurate to the duty officer.

As previously mentioned, the shift technical advisor shifts have been established on a 12-hour rotation. They will begin this rotation on January 2nd of this year, to support our restart testing. They are going to be one of the key coordinators for the testing activity and operations.

The STA office was moved in August over to the fifth floor of the administration building on site, which is right adjacent to the turbine building, so they can be out of their office into the control room in just a matter of a minutes or so.

CHAIRMAN PALLADINO: Do you have enough STAs to handle every shift?

MR. O'CONNOR: Yes, we do, sir. And we have seven of them --

CHAIRMAN PALLADINO: Do they have enough background regarding the plant so they feel confident in their capability?

MR. O'CONNOR: Yes, sir.

COMMISSIONER ZECH: Do they all have degrees?

MR. O'CONNOR: Yes, sir. They all have engineering degrees.

COMMISSIONER ZECH: Okay.

COMMISSIONER ASSELSTINE: It looks like you are

going to license them.

MR. O'CONNOR: Yes. The new class that is in training currently, that began their training last year, is in an SRO training program and they will receive their senior licenses in December of 1986 is the current schedule, before they take their duties in 1987.

MR. WILLIAMS: And when we get to that point we will be in to the Commission with a proposal that we be allowed to institute a plant shift to plant manager concept with the licensed SRO/STA degree engineer as the shift manager.

Then the shift supervisor would report to him. In any emergency then he is the one that takes charge and the SRO then backs him up, because then you have got the better talent.

CHAIRMAN PALLADINO: Now when will you have STAs on shift?

MR. O'CONNOR: The STAs will be on shift prior to startup. They are essentially starting their shift rotation on January 2nd to support the restart testing activities and coordinating this testing for operations.

I also have three licensed operators assigned to the restart test group to coordinate all the prerequisites for the tests and ensure that the plant is in the right configuration for the test that is going on. Even as we speak the tests that are going on today.

We have also completed training of the shift technical advisors as interim emergency duty officers to assist the shift supervisor in like off-site dose calculations, protective action guidelines.

The overall responsibility still remains with the shift supervisor, but the shift technical advisor will be the one doing the actual assistance and going through all of the action levels and checking the criteria.

MR. WILLIAMS: Next slide, please.

[Slide.]

CHAIRMAN PALLADINO: Does the emergency duty officer have to be an SRO?

MR. O'CONNOR: No, sir. The emergency duty officer does not.

COMMISSIONER ZECH: But this means, I presume, from now on all your STAs are going to be SRO qualified, is that right?

MR. O'CONNOR: Yes, sir.

MR. WILLIAMS: That's correct.

COMMISSIONER ZECH: Good.

MR. WILLIAMS: Now, the existing ones will not be.

COMMISSIONER ZECH: understand.

MR. WILLIAMS: We are saying to the ones who are now STAs, if you wish to go back and get an SRO license, we will

fund that. We will put you through that training program.

Some are accepting, some aren't. But when we get enough graduated that are SROs, then those that are not SROs will no longer be STAs. You know, they can go and do something else.

COMMISSIONER ZECH: From now on they all will be SRO qualified?

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

Of course equipment investigation, from the June 9th event is under the purview of Mr. John Wood.

John, move right along now.

MR. WOOD: Okay. You recall from the June 9 event that we had a number of equipment that malfunctioned during the event.

We, of course, had to do a detailed equipment investigation that we went over with you in September. The purpose of that was to determine the root cause so that we could take appropriate and effective corrective actions.

The scope here is for a refresher. Covered 13 different areas of equipment concerns. Seven systems were impacted. The big one there, of course, is the number one, auxiliary feedwater, which had, perhaps five different specific equipment malfunctions.

[Slide]

In summary, on the next slide here, the findings

covered the whole gamut of the operation; design, maintenance, testing, procedures and training. And, of course the corrective actions then would entail some fifteen design modifications, a number of maintenance or replacement activities and procedures and training issues as well.

[Slide.]

Just to highlight some of the major issues, here we have the auxiliary feed pump turbines. As a result of those findings, we are installing new steam emission valves so we don't have long cold inlet lines.

We have to, of course, design those for high-energy line breaks, installing a new governor on the number one pump, and improving our trip/throttle valve reset capabilities by giving the operators more information right at the equipment. Give them hands-on training so they can do the job that has to be done.

The Staff touched upon the pilot operated relief valve. You recall that we had no specific root cause here. That is we didn't have any broken parts or improper wiring. It could have been from foreign material in the pilot area that caused it to stick open.

We did some testing on the valve. The sum total is that we need to design the plant so that we can accept the pilot operated relief valve not closing properly. So, we made some control panel changes to give the operator the information

he needs to take the action that is appropriate, such as closing the blocked valve and giving him clear, unambiguous information.

We are also rebuilding our PORV with new parts.

Sushil Jain will be talking more about the findings of the decay heat removal task force.

And you heard earlier that we are making plans to put additional blowdown capability for our primary system.

COMMISSIONER ASSELSTINE: On PORVs, does that mean you basically reached the conclusion that despite what you do in rebuilding and maintaining and those kinds of things, that these PORVs are just going to stick open from time to time, that they are subjected differently to a mixed flow?

MR. WOOD: We can show pilot operated relief valve operates reliably a good share of the time. But there is going to be occasions where you cannot assure that it won't stick open. Therefore, you have to have the plant ready to accept that possibility.

CHAIRMAN PALLADINO: Yes. They seem to have difficulty after they cycled a few times.

COMMISSIONER ASSELSTINE: Particularly if water goes through them.

CHAIRMAN PALLADINO: Yes.

MR. WILLIAMS: We still don't know for sure that this one would not have closed by itself if the operator had

not taken the action he took to close the blocked valve.

COMMISSIONER ASSELSTINE. That's correct. We just don't know.

MR. WOOD: One of the major issues that we found was motor operated valves -- you recall that we had a few valves that did not open properly.

We found limit switch/torque switch problems. We employed the use of MOVATS test equipment to help us set up our valves. We are performing some differential pressure tests to make sure that after we have them set up that they will function under the design conditions necessary.

And while we were going through this effort, we are also correcting and checking a number of other features like pre- and post-LOCA leak rate tests for containment isolation valves, some environmental T-drains that are needed in the housing, space heaters, wiring checks.

We also found some jumper wires in the motor housings and could not substantiate that they are environmentally qualified. So, we are replacing those as necessary.

We are taking stem checks to make sure that our calculations in regards to thrust and torque are correct; doing lubrication checks and relubing them as needed; current signatures so we know where the motors stand as far as how much current they are pulling; doing parts check and also checking with the valve vendors and Limitorque to understand

and to have substantiated all the design information we need so that we can stay right on top of our motor operated valves.

MR. WILLIAMS: I want to add something.

What we started into with the motor operated valves, we thought, was just the limit and the torque switches.

COMMISSIONER ASSELSTINE: Yes.

MR. WILLIAMS: And when we got in there, instead of those two operations, we found all of these engineering problems.

One, the dimensions in the valve were not those that were as advertised, so we had to take the dimensions, do an engineering analysis to make sure that they would do the job that they were set up to do.

That EQ wiring check, we got in and we found that the wiring was not in accordance with the diagram. The valves worked okay. The diagram had not been updated. But then the engineers said, hey, that does look like qualified wiring that will stand high temperatures. We took the shirt off, it was not, so we have had to replace this.

So, you know, it has been a real boar's nest. And we have now gotten it to where we are getting two a day. But you appreciate we have put eight man years of work into these valves so far.

MR. WOOD: I might mention that this is 167 motor operated valves that we are dealing with on safety-related --

MR. WILLIAMS: It is probably the controlling work item. You know, just to get the work done.

COMMISSIONER ASSELSTINE: Let me ask one quick question on the valves. In particular -- maybe broader as well -- are you feeding back some of the results of your program to other parts of the industry?

It would be very interesting, for example, to go into another plant and take a look at their motor operated valves and see whether some of these same --

MR. WILLIAMS: There is a bulletin out on it now that I gave our people last week and said, for goodness sakes, look at this that has come out and make sure they are not going to require more than what we are already doing on these valves. But, you have a bulletin out on it, and it is a comprehensive one.

MR. WILLIAMSON: This is probably the most thorough and comprehensive review of valves that has ever occurred in the industry. It is a good one.

MR. WILLIAMS: Next?

[Slide.]

MR. WOOD: Okay. In addition to the equipment investigation, we have other engineering assessment activities that are ongoing. The Admiral mentioned fire protection earlier. I would also like to talk to a couple. First, being piping supports.

Prior to June 9 we had concerns with our piping supports on our aux feed pump turbine steam supply lines we had some difficulty with. We expanded that effort into inspecting and evaluating some 920 supports dealing with seven systems; some of them completely, others only the containment portion.

We gave very specific directions to our QC people not to leave any stone unturned, and to write up each and every discrepancy that they found, and not to make judgment as to whether they thought it was a minor discrepancy or not.

As a result, we had a number of nonconformances generated. We have evaluated those, we have completed the inspection.

Approximately 80 percent were acceptable in the as-found condition; some 20 percent require minor rework. That will be done and completed prior to restart.

We are also, while we have access to containment, looking at all other piping supports in containment. We have done that inspection, we have done a cursory review to make sure that there is not new information coming from that particular set of piping supports that we should be concerned with.

We will be writing this up into a justification as to why we feel we are in a condition for restart for piping hangers.

After restart, we are going to complete inspection evaluation of all our safety-related piping supports, which will add about 2500 additional supports to the effort. That effort will be completed prior to the end of the next refueling outage.

[Slide.]

We have environmental qualification concerns.

Going to the bottom of the slide first, on the outage related EQ activities, because we changed the alignment of our aux feed pump turbine steam supply lines, brought them closer to the turbines, that induced additional high energy line considerations throughout the plant.

As we looked at that consideration for the environmental qualification impact, we were concerned about some of the other elements of our environmental qualification program. We, therefore, went back and under our EQ program we are reviewing and upgrading the qualification files to make them auditable not only from the NRC point of view, but from our own point of view.

We are updating the EQ equipment master list so that we have a good handle on all of the environmental qualification requirements in the plant.

We are doing preparation of the necessary procedures to keep the program on track so that once we are there we don't lose the effort.

We have done a walkdown of the as-installed plant EQ equipment. This covers 600 plus items, taking all the data that is necessary there and evaluating it to make sure that it is proper.

We have found some discrepancies there that will be taken care of prior to restart.

MR. WILLIAMS: That goes into our configuration management hopper, also.

CHAIRMAN PALLADINO: Will you be in compliance with the EQ requirements before you restart?

MR. WOOD: Yes, sir.

MR. WILLIAMS: Yes, sir.

MR. WOOD: We are also reviewing the documentation and the to-date maintenance done on that EQ equipment to make sure if we had it qualified at one point in time, that we didn't unquality it through our activities.

Also, there is periods of time needed to replace certain components or seals or whatever, to make sure that we have the right replacement program in place to take care of that equipment.

MR. WILLIAMS: We are also taking care of the spare parts in the spare parts inventory to make sure that they are maintained qualified.

CHAIRMAN PALLADINO: Okay.

MR. WILLIAMS: Mr. Sushil Jain will take us rapidly

through the decay heat removal reliability, which includes those new PORVs, or the new valves, Mr. Chairman.

[Slide.]

MR. JAIN: Following the June 9th event, Toledo Edison took a very comprehensive and very systematic effort to evaluate what could be done to improve the reliability of removal of decay heat systems at Davis-Besse. This included the main feedwater, main steam systems, the startup feedwater -- excuse me -- the steam and feed rupture control system and the feed and bleed capability as well as installation of the diverse means of putting feedwater into the steam generators.

The task force had broad membership consisting of high level people from within as well as outside the Toledo Edison Company.

[Slide.]

The objectives were to reduce potential for common mode failures and also to reduce the frequency of demands for auxiliary feedwater and to evaluate diverse and redundant means of feed water addition into the steam generator.

The eventual goal thereby was to come up with a system, the reliability of which will be commensurate with the NRC's Standard Review Plan criteria.

[Slide.]

The methodology used by the task force was very systematic. Deterministic, scoping analysis, utilizing

judgments as well as utilization of existing risk assessment models where they were available.

Documentations as available were reviewed and also the cognizant people within the company were interviewed to identify system problems.

[Slide.]

To improve the reliability of the system in terms of improving the challenges, or reducing the number of challenges to the system, the SFRCS signals have been provided with a filter to prevent recurrences of situations similar to June 9th where a turbine stop valve closure caused a low-level signal to be sensed by the SFRCS and caused an inadvertent isolation of the main steam isolation valves and thereby resulting in a challenge to the auxiliary feedwater system.

Also to improve the performance of the steam and feed reactor control system itself, power supply performance is being improved by provision of additional cooling within the cabinets.

The logic of the SFRCS has been revised to preclude isolation of the main steam and main feedwater systems on a low-level condition which thereby preserves the primary means of decay heat removal which is the main feedwater system.

[Slide.]

Further, to improve the reliability once the system is challenged, as Mr. Wood explained earlier, we are providing

hot and pressurized steam lines, the provision of steam emission valves next to the aux feed pump turbines.

This improves the reliability by minimizing the condensation that could occur that could result in overspeeding of the turbines similar to the June 9th event.

The motor operated valves, as discussed earlier, the reliability of them has also been improved by MOVATS.

Other testing further to minimize the valves that have to be exercised or could contribute to the unavailability of the system we are depowering the valves from the condensate storage tank to the auxiliary feedwater pumps.

One of the common mode failures that was identified earlier was the common path from the derater, which is a hot water source, to the auxiliary feedwater pumps. This path is being eliminated to prevent that particular common mode failure.

On the SFRCS side the isolation of the second generator to sense a low pressure is being eliminated to preclude complete isolation of auxiliary feedwater from both steam generators.

Also, the manual initiation buttons which I will describe in a little bit, are being relocated and rearranged and protective covers being installed to prevent inadvertent operator actions as occurred during the June 9th event.

Also to minimize the challenges to the SFRCS, the

engineered control system low level limit setpoint is being raised to improve the margin between the SFRCS initiation setpoint.

[Slide.]

To further ensure that once the auxiliary feedwater system comes on it does continue to run, we are replacing the governor on number one turbine with an improved PGG governor. The existing model has a PGPL governor.

The number two turbine was replaced with a PGG governor in the last refueling outage and before restart from the present outage we will be putting the same governor, which is demonstrated to be more reliable per testing done by Woodward Governor Company.

This will be done before restart on the number one turbine.

The SFRCS -- to improve the awareness of the operator in the control room, a dedicated button will be provided for the operators for him to know that a momentary SFRCS, if it has come and gone he would know that a situation had come and gone and he would verify the status of pertinent equipment in the control room.

On the suction side, there are several modifications to the strainer as well as the transfer logic which I won't go into detail on.

Also, John Wood mentioned the trip throttle valve

indication to facilitate local operator control of the turbines.

[Slide.]

This is the manual initiation buttons of the SFRCS. The rearrangement here essentially precludes isolation of auxiliary feedwater from the control room. There are protective guards as well as doors being provided to minimize the operator's probability to push the wrong two buttons as he did in the June 9th event.

CHAIRMAN PALLADINO: Have the control room people been involved in this reswitching design?

MR. JAIN: Okay. We have consulted the human engineering people, our consultants the Essex Corporation, as well as the shift supervisors and control room operators with the revised layout, as well as the guard arrangements.

COMMISSIONER ZECH: Has our NRC Staff been involved in these modifications so they know exactly what you are doing?

MR. JAIN: They have been told as of last week, about this modification.

MR. JAIN: As far as you know, there is no problems in that respect?

MR. JAIN: We haven't heard of any problems.

COMMISSIONER ZECH: Okay. Thank you.

[Slide.]

MR. JAIN: Now one of the major trends we talked of earlier was installation of the motor driven feedwater pump, and I have a picture here which shows the new pump as installed.

[Slide.]

As we discussed earlier, it is 100 percent capacity auxiliary feedwater pump and could be supplied from the emergency diesel generators. I think we have talked about it too much, so I will go to the next slide.

MR. WILLIAMS: Let me interrupt just a second. that is a gold-plated pump you see Mr. Chairman.

[Laughter.]

MR. WILLIAMSON: If you saw me visibly jump when I saw the slide, you know why.

MR. WILLIAMS: Next slide.

[Slide.]

MR. JAIN: Okay. To further improve the reliability of decay heat removal at Davis-Besse we will be taking numerous actions after restart.

The very first one is to provide improved capability for primary system blowdown. And this will be done by provision of blowdown valves at the top of the steam generators as was discussed earlier. This will provide depressurization capability so as to go to the HPI pump setpoint and possibly take the use of those pumps.

The existing startup feedwater pump which was instrumental in the June 9th event will be resurrected in the long term so as to restore its capability of being started and put in operation from the control room.

Additionally for the motor driven feed pump itself, the valves that align the discharge to the auxiliary feedwater headers will be motorized and be operable from the control room in the long term.

Furthermore, we will minimize our valve operations because MOVs are significant contributors to system unreliability. We will be looking at minimizing such valves that could be challenged during an auxiliary feedwater initiation.

The level control which is a governor turbine speed control system will be validated and improved in great detail to improve its performance.

Also to further minimize the challenges to the auxiliary feedwater system itself, we will be lowering the SFRCS initiation setpoint to provide more margin to prevent spurious actuations.

The SFRCS logic itself will be totally revamped to further minimize isolation of main feed as well as auxiliary feedwater.

And also to further improve the control room operator awareness of the status of the SFRCS as well as the valves and

the pumps and the turbines and the auxiliary feedwater system, a comprehensive new panel will be provided in the control room for him to verify and make sure that the system is working correctly.

MR. WILLIAMS: Let me interject here that that pump that they were talking about resurrecting, the fourth pump, is I believe, a 300 gallon-per-minute pump. Full capacity would be 800 gallons a minute.

But, we will be able to operate that pump remotely and operate the valves remotely, so -- that is the pump that pulled us out of the woods on June 9th. And so we will have three full-capacity pumps, two steam driven, one electric, and one electric-driven 300-gallon-per-minute, which provides quite a bit of cooling.

COMMISSIONER ASSELSTINE: So it is that startup pump that is going to be that fourth pump?

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

Now, on June 9th, when it then happened -- it really was on June the 10th, then, and everybody recovered enough to talk, we said, you know, probably the things that happened on June 9th are kind of mechanistic and we ar going to fix those things. But, what about the rest of the systems?

And at that time we sat down and came up with 31 systems that we felt we had to go review in depth and determine what the operability of those systems were before we could

advertise that we were safe to get back on the line. And that was a utility initiative, which I think was really forward looking.

It has also been the most difficult part of this entire process. And I obtained Mr. Hildebrandt from MPR to head up that effort for us and the task force, and I would like for him to address that system review.

Now, part of that system review turns into the test program that goes with it, so it is part and parcel. He will speak to the system review part, and then Mr. Lingenfelter will speak to the test part which you are very interested in.

MR. HILDEBRANDT: Thank you, Admiral.

[Slide.]

For those systems that are important to safe plant operations, the 33 systems the Admiral just mentioned, we are identifying the important and recurring design, maintenance and operations problems, and determining what corrective actions are required both prior to restart and over the longer term.

In evaluating the scope of the existing periodic testing to identify where new or additional testing for functions and operability of the systems need to be defined.

And then conducting the test program to assure operability and functionality of these systems prior to restart.

As indicated, this will all be completed prior to restart of the plant.

[Slide.]

The review does encompass originally 31 systems, as we mentioned, and now has been expanded to two other additional systems. And the attributes that were considered in selecting the systems included:

That it performs an active safety function, the more classical definition of a safety-related system.

Malfunctions could lead to challenges to safety systems in the plant.

Malfunctions could result in an abnormal plant transient.

The system itself, the equipment is important to preventing or detecting, controlling or mitigating plant transients.

That system had a history of unreliable performance, or was specifically associated with the June 9th event.

[Slide.]

The approach to this review effort was a team for each of the systems. And that team was headed by a Toledo Edison engineer and supported by one or more qualified industry personnel from several different organizations, Babcock & Wilcox, Stone & Webster, Bechtel and other organizations.

The review effort focused on interviews of operations, maintenance and engineering personnel to find where the problems existed.

And that was complemented by a review of selected records for Davis-Besse, such as Licensee event reports, NPRDS data, et cetera.

And out of that review effort, the corrective actions were then recommended and as to whether they belonged in the prior-to-restart category or could be addressed over the longer term.

Reports were then put together by the review effort.

[Slide.]

The next effort on that was the periodic test review. And the test review for each system was focused on:

Are the functions that were identified in the first part of the review, adequately demonstrated and confirmed and periodically reconfirmed?

The outlines resulting from that review -- and procedures are being prepared for specific post-modification testing as a result of modifications that have been made in the plant, a new periodic testing or revised periodic testing as a result of the review, or any one-time test that may be required to show the function and operability of these systems.

And again, a report is being put together and each of these reports are being provided to Region III for their

specific review, as Mr. Keppler mentioned earlier.

[Slide.]

Now the review process for the work by each of these teams is overseen by the Independent Process Review Committee. And the major objective of that committee is to ensure that this effort, this system review and corrective action process, in combination with the testing, will adequately demonstrate the operational readiness of the systems and equipment important to safe operation of Davis-Besse.

The committee membership includes a broad background of nuclear industry experience. And it mixes that with a specific knowledge of Davis-Besse plant design.

And the members of that Independent Process Review Committee are on the next page of your handout.

[Slide.]

The team then provides -- the committee, rather, provides concurrence with the scope and depth of the review by each of the teams; the systems' function specifically; the corrective actions that are required prior to restart and over the long term; the periodic test review; the test requirements to support restart; and then reviews the results of that testing to assure the functionality and the operability of the systems have been adequately demonstrated.

[Slide.]

In addition, as the Admiral mentioned earlier, we are also performing a review of each of the work items that need to be completed prior to restart and putting them in a category of needed-to-be-completed-prior-to-restart, or can-be-completed-over-the-longer-term.

The method by which we determine what corrective actions are required prior to restart is basically those actions necessary to ensure the safe and reliable plant operation. And this is based primarily on the collective experience and judgment of the committee. Committee with a mixture of experience from 20 to 30 to 35 years of experience in the nuclear industry.

And considerations in that determination are the plant design basis, which is described in the updated Safety Analysis Report for Davis-Besse; technical specification requirements for Davis-Besse. Those that contribute to reliable plant operation, protection of personnel, systems, and equipment and prudent engineering practice.

So, it is the judgment and experience of these people in the final review and concurrence for this work.

[Slide.]

The current status of the system review and test program, the specific equipment and system problems requiring resolution prior to restart is complete.

A system review report summarizing the system

functions, problems and the corrective actions have been completed and have been provided to Region III for review.

The review of the periodic testing for system operability and functionality and the testing performed prior to restart is about halfway done.

[Slide.]

To give you an idea of what has been found in the process of this review, for the -- it shows 31, but let's call it 33 systems, approximately 140 problem areas requiring resolution prior to restart.

There are approximately 200 problem areas which require resolution over the longer term.

This resolution ranges from specific engineering evaluation to hardware changes in the plant.

The necessary facility change requests and other forms of paper and actions to get that work done have all been put in motion.

[Slide.]

Now, some examples -- and I won't dwell on these, but some examples of some important problem areas that have been uncovered -- and I won't go through each one in detail nor try to go through the 120 items -- is such things as control room emergency ventilation system, which, in many conditions would have been inoperable.

The auxiliary feedwater discharge piping which was

overpressurized on June 9th.

Potential flooding in the pit which contains some decay heat removal valves.

Inadequate ventilation in the service water pump room.

Widespread station and instrument air system leaks in the plant.

COMMISSIONER ASSELSTINE: I'm glad to see you got that last one one the list.

MR. HILDEBRANDT: Yes, sir.

[Slide.]

The next slide shows some recurring problem areas. And as a result of these recurring problem areas, we found that a corrective action in each of these areas on a generic basis is important and has been put in place.

Such areas as inattention to heating/ventilation/air conditioning requirements; inoperable nitrogen regulators; inadequate maintenance for hydromotor actuators, which actuate dampers for ventilation; tracking and replacement of limited life components; valve packing leakage; steam trap maintenance; and preventative maintenance and calibration of instrumentation and control functions in the plant.

At this point I will turn it over to Jack, who will discuss the testing aspects of the program.

MR. LINGENFELTER: Thank you.

[Slide.]

The test program that we are conducting at Davis-Besse consists of two major parts. The first phase of this, of course, is to identify the testing that is to be performed. We call that the test review that we are referring to.

This slide discusses three major aspects, or three major outcomes of the review.

The key to this particular program is a very carefully established list of system functions that were again developed as a part of the system review activity.

We are very carefully looking at and arriving at an agreed-upon list of system functions which we will analyze. In fact, some of the NRC Staff and their contractors are working with other people today to iron out some of the discrepancies we have on those particular lists.

We will review each of those system functions for each of the systems we are dealing with, and we will arrive at one of the following three activities as a result of that review.

We will first identify that existing periodic testing which adequately demonstrates the function, exists.

Or, two, we will prepare outlines for new or revised tests which will adequately demonstrate that function.

The third option is to provide justification that

that function cannot or should not be tested prior to restart. And there are some of those.

This activity then, specifically items 1 and 2, will generate the list of tests that are to be performed to demonstrate that the systems will perform their design functions prior to restart. This is the effort that we are undertaking.

The results of this review will be prepared into a report which is reviewed by the Independent Process Review Committee. They will concur with all the scope of testing to be performed.

Next slide.

[Slide.]

To give you an idea of what the scope of the testing program looks like at this point, while we are still in the phases of completing the reviews, the preliminary evaluations have shown 54 existing periodic tests that we plan to run; 89 new tests on individual systems; and 7 integrated tests that we consider integrated because they involve multiple systems, for a total of 150 tests that we have identified at this point.

On the average, we consider that those will take approximately 12 hours apiece to run, which does not include setup time.

And, we are talking about a total of an eleven-week

program, give or take a little bit, to start hopefully in the next week.

We have already completed some of the preliminary testing. We are about ten tests completed at this point.

MR. WILLIAMS: Fourteen.

MR. LINGENFELTER: Fourteen.

[Slide.]

The next slide shows one of the unique aspects of the conduct of test program, if you will, and that is the organizational structure I would like to address.

This slide presents an overview of the system review and test program in its entirety. It is headed by the system review and test program manager, who is also the general manager of engineering, Mr. O. J. Mavro. He helps define the overall program and has approved all the program procedures.

As system review and test program coordinator I report to Mr. Mavro in this respect, and coordinate the remaining group activities.

We show the Independent Process Review Committee off to the left, with no associated lines. They truly are independent. Believe that.

We have an advisory group of Bechtel, Stone & Webster, and B&W personnel who are helping establish the program plans and procedures.

At the working level we first have a joint test

group which we have established. This joint test group consists of Toledo Edison personnel with a lot of background in operations, and contract personnel with a lot of background in testing. Their function is to perform detailed reviews, technical reviews of all the test procedures to be performed during the outage.

The next box is a system review group. This is the group of individuals that perform the system review that Phil alked about, and are performing the test review to define the te.ting to be performed.

Finally, there is a restart test organization which I will address in a second.

We also have quality control and quality assurance providing input to this program. QA is signing off on all of our procedures. QC is supporting the conduct of test activities.

Next slide, please.

[Slide.]

This shows our restart test organization, which is headed by a test manager whose responsibilities are to prepare the test procedures from the identified outlines. He qualifies test personnel that will perform the test. He is responsible for scheduling and implementation of the test program and the summarization of the test results.

He is supported indirectly again, by the Independent

Process Review Committee, who approves the test outlines and will also approve all the test summary results.

He is also supported by the Joint Test Group, who approves test procedures, approves test results. They also maintain test index and will provide him with some input to the schedule.

Supporting the test manager are assistant test manager, administrative assistants. He has a group of dedicated planning and scheduling people working with the remainder of the plant; a large staff of procedure writers and test leaders brought in to prepare the test and conduct the test specifically; and finally a group of shift test coordinators, who are working with the -- directly on shift with the shift supervisors, the STA, as Bill O'Connor mentioned in coordinating operations and maintenance activities to assure that the tests are completed expeditiously.

MR. WILLIAMS: How many people all told, Jack, about 100?

MR. LINGENFELTER. In the overall program we have a little over 100 people working on this system review and test program.

MR. WILLIAMS: I'd like to say something about the system test review just to finish up.

Those teams that we formed were headed up by Toledo Edison engineers. And you know, they had never done anything

like this before. As a matter of fact, it was difficult to find people in industry that had done anything like it before. But we got some experienced people.

What a learning ground it was for our young people. And it was a very painful exercise, because they would take their reviews up to this Independent Test Review Committee and they would go right back down again. After a lengthy discussion, you know, three four hours of presenting it, they would be back down. They would be back up the next week with the same thing and right back down they would go again.

So, the first few systems to get through the wickets were a real learning curve. You know, they reviewed 18,000 MWOs, for example, related to these systems.

But, the most valuable information they got was in sitting the operators and the maintenance people down and saying, tell me what has happened in this system over the past seven years? And there are a lot of people who have been there since time one.

Tell me what it is that hasn't worked well for you? What are the pains in the neck to you? And, what have you observed?

And boy, what a wealth of information they got.

CHAIRMAN PALLADINO: I wonder if I could make a housekeeping inquiry.

We are 35 minutes over the allotted time. We are

now rapidly approaching the loss of flexibility.

[Laughter.]

I was wondering if you might have any other comments?

MR. WILLIAMS: No, sir.

CHAIRMAN PALLADINO: Mr. Williamson?

We do have an interest in a couple of minutes on the holding company and what you see, how that might impact on health and safety matters that we in the Commission have to address.

MR. WILLIAMSON: Yes. Thank you, Mr. Chairman.

On the holding company, one of the reasons for forming the holding company was to strengthen the nuclear program overall. These are very difficult plants to run and maintain and operate, and it was my strong feeling that the industry had to move in that particular direction.

In setting up the holding company, I realized that my retirement was coming on fairly fast and that we needed continuity. Therefore, I asked Robert Ginn, the head of Cleveland Electric to assume the Chief Executive Officer position in the holding company. And he is presently in the process of finalizing the organization concept for the holding company, including where the nuclear part will fit in.

I understand that as part of the Perry proceedings, that they will be making a presentation to you, a formal one as to the proposed organization of the holding company and the

way it will affect both Perry and then Davis-Besse, of course.

CHAIRMAN PALLADINO: Who is going to operate, for example, Davis-Besse? Will it still be Toledo Edison, will it be the holding company?

MR. WILLIAMSON: That is what is being finalized right now. I apologize, I don't have an answer on that right at this moment.

CHAIRMAN PALLADINO: You say we are going to get a briefing on this?

MR. WILLIAMSON: You will get a formal briefing from them, a statement from them outlining the way they are proposing to do that.

CHAIRMAN PALLADINO: I presume this is something going to the Staff in writing?

MR. WILLIAMSON: Yes.

CHAIRMAN PALLADINO: And we can get copied.

MR. WILLIAMSON: Yes.

CHAIRMAN PALLADINO: It is possible the Commission may have more interest, and we will have to see it we want to follow up.

MR. WILLIAMSON: As long as I am chief executive of Toledo Edison -- and keep in mind in the holding company in my position I have chosen to be more of an advisor in the chairmanship role -- but, as long as I am still chief executive at Toledo Edison, Joe Williams is going to report to me.

That is a commitment I made and intend to keep. I felt that I had to get very close to our program in view of where we were, and want to see that on through.

CHAIRMAN PALLADINO: When do you retire? You said your forthcoming retirement?

MR. WILLIAMSON: Well, I will step aside as CEO when the holding company is consummated. We are hoping to do that about the end of the year. But that is all dependent on when we get our clearance from the Securities and Exchange Commission.

COMMISSIONER ASSELSTINE: At the end of this year?

MR. WILLIAMSON: This year, yes.

COMMISSIONER ZECH: 1985?

MR. WILLIAMSON: Yes. We have been moving very, very fast putting this together with a lot of task forces looking at many areas, of which one is nuclear.

MR. WILLIAMS: And I will assure you that when John steps aside as CEO, that I will end up reporting to whoever is the CEO.

CHAIRMAN PALLADINO: Well, I think it is important for us to know who is going to operate the plant, at least in the institutional sense as well as the detail sense.

COMMISSIONER ASSELSTINE: I agree very much with that, Joe. And I think we would want to stay on top of how this develops, particularly if it is happening very quickly.

MR. WILLIAMSON: I can understand your concern, and I know you will have an answer forthcoming on that.

There are a lot of angles to look at and they are trying to pin those down right now.

COMMISSIONER ASSELSTINE: It does seem to me a very important element of your efforts over the past several months, and indeed, I would say a measure of their success is due to the kind of personal management attention that you have been able to give the project and that you have been able to put together in terms of a senior corporate management team.

And I guess my preference, my hope would be that that kind of continued personal effort and involvement would continue regardless of the particular structure that is chosen both for this plant as well as for whatever other nuclear plants fall under the umbrella of the holding company.

MR. WILLIAMSON: Whatever the setup, I know that in the case of both the Cleveland Board and our own Board of Directors, they have committees that monitor these plants very closely and their interests will continue. And that is one of the very key areas.

CHAIRMAN PALLADINO: Let me say I have been impressed with the amount of work that you have accomplished, and I hope that you can proceed successfully to bring the resolution of problems to fruition.

We will be interested in further reports from the

Staff. We will undoubtedly have a meeting where the Commission will consider restart as it does other immediate effectiveness matters.

Do other Commissioners have burning questions?

COMMISSIONER ZECH: I don't have any, but we might ask Fred, who has been listening to all this, if he has anything to say.

CHAIRMAN PALLADINO: Oh, yes.

Fred, do you hear us?

COMMISSIONER BERNTHAL: Yes, I do. Behind a barrier, however.

MR. WILLIAMS: I wonder if I could make one other statement.

I would hope the reactions of the Reactor Safeguards Committee are timely. You know, our mission with your Staff and where we happen to be in this process.

CHAIRMAN PALLADINO: That's why I raised the questions on the ACRS. I think we are going to have to work carefully to assure that we do dovetail our activities appropriately.

COMMISSIONER ASSELSTINE: Just one quick question, Joe, maybe a quick comment.

The question was, I get a certain sense from the presentation today, but I would be interested in your perception of the attitudes and morale and spirit of your

people.

MR. WILLIAMSON: The morale, obviously, went down on June 9th and June 10th, when it became known. And, there was a considerable period of uncertainty as Admiral Williams came in and started to reorganize the Nuclear Mission in our company.

But, what I have seen is that our people now have become a team; that the people are very comfortable in their positions as I talked to them. They feel they are getting outstanding leadership, that they appreciate very much, and they feel that they are growing in the job, which is very pleasing to me overall. That the morale will be impacted mainly by one event, and that is when we go back on line.

Obviously everybody is just dying to get that plant going again. But, dedicated to getting the plant done in the meantime. So, the morale is coming.

CHAIRMAN PALLADINO: I hope they are livingfor it.

[Laughter.]

MR. WILLIAMSON: At times I think they are dying for it, sir. With the hours they are working, weekends and all, it is very hard on the wives and families. But, the people are dedicated.

COMMISSIONER ASSELSTINE: Joe, I would just say the comment I would make -- a couple of them.

One, I think the quality of the presentation was

excellent. One of the things I liked best about it, this one as well as the previous one we had, is the way you bring in the managers of each individual area so we get a chance to see and hear from each one. I think that is outstanding, and I have been very impressed with the quality of the presentation.

As Joe said, I think you have accomplished an awful lot in the time since we last met with you. You have still got a fair amount of work to do and you shouldn't slack off on that. I don't think there is too much chance of that given what I have heard today.

I am particularly impressed with the fairly deliberate pace, the fact that you didn't rush things, and took more time. You seemed to devote the time to it.

I guess my perception is while we still have some things to sort through and there is still a fair amount of work to be done, it looks to me like this is a model of corrective program. In fact, I would like to see this kind of program and the kind of presentation we heard today from some other areas.

I am very impressed, and I think you are to be commended, your people are, for what you have accomplished.

MR. WILLIAMSON: Commissioner, if I could comment, and maybe this is a strange comment, but in some ways this has been a very fortunate event for us, because it has given us

the opportunity to take the time to get in and do things that we were going to have to do sooner or later. The installation of the third pump was planned.

And, by taking the time to do all of these and do them thoroughly now, we are going to save time that we would have had to take in maintenance outages later on to get all these things done. And we will be able to defer, for example, maintenance outage out of next year.

So, it is a net process rather than completely lost time. But, it has been a luxury that you normally can't quite take to step back and really go into something as thoroughly as the Admiral and his staff has done.

Yes, we have a lot of PR problems with it; but it is the right way to go.

COMMISSIONER ASSELSTINE: I remember at one of my visits to the plant in the darker days, you mentioned that one of your goals and objectives was to make this plant one of the best. And, if you keep on the way you are going now, I don't see any reason why you can't do that.

MR. WILLIAMSON: With the Admiral on board, it is now my goal to make it the best.

CHAIRMAN PALLADINO: Any other comments?

COMMISSIONER ASSELSTINE: No.

COMMISSIONER ROBERTS: No.

COMMISSIONER ZECH: No.

CHAIRMAN FALLADINO: Thank you very much, gentlemen.

I would like the indulgence of all the people in the room for another three minutes. We have what we call an affirmation session. I am going to close this meeting by banging the gavel and I am going to open the affirmation meeting. It should not take us longer than three minutes, and then we will adjourn and you can leave.

So, if you will all stay seated, we will appreciate it.

Our thanks, and again the commendation of the whole Commission. We adjourn this meeting.

[Whereupon, at 11:45 a.m., the meeting of the Commission was adjourned.]

CERTIFICATE OF OFFICIAL REPORTER

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of: COMMISSION MEETING

Name of Proceeding: Commission Briefing Davis-Besse Restart from June 9, 1985 Event (Public Meeting)

Docket No.:

Place: Washington, D. C.

Date: Wednesday, December 18, 1985

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

(Signature) _____

(Typed Name of Reporter) Mimie Meltzer

Ann Riley & Associates, Ltd.

COMMISSION BRIEFING

DAVIS-BESSE

RESTART FROM 6/9/85 EVENT

DECEMBER 1985

CONTACT:
C. McCRACKEN
X28595

SLIDE 1

BACKGROUND

- o SEPTEMBER 10, 1985 - LICENSEE RESPONDS TO 50.54(F) LETTER
- o SEPTEMBER 17, 18, 1985 - BRIEFING TO COMMISSION ON FOLLOWUP ACTIONS
- o OCTOBER 1, 1985 - NOVEMBER 16, 1985 - FOUR REVISIONS TO LICENSEE'S PLAN SUBMITTED
- o ESTIMATED SCHEDULE FOR REMAINING ACTIONS,
  - FEBRUARY 1 TO MARCH 31, 1986, LICENSEE'S ESTIMATE FOR PLANT READINESS
  - JANUARY 1986, ISSUE SER ON RESTART
  - JANUARY 1986, ACRS SUBCOMMITTEE
  - FEBRUARY 1986, ACRS FULL COMMITTEE

CONTACT:
C. McCRACKEN
X28595

SLIDE 2

PROGRAMMATIC REVIEW STATUS

- ORGANIZATIONAL CHANGES PROVIDE FOCUSED RESOURCES AND MANAGEMENT ATTENTION ON NUCLEAR MISSION

- NEW PERSONNEL AND COMPETITIVE SALARIES AND TRAINING ORGANIZATION PROVIDE BASIS FOR LONG TERM IMPROVEMENT

- ADDITIONAL FIRST LINE MAINTENANCE SUPERVISION TO PROVIDE CLOSER CONTROL OF WORK

- ENGINEERING SUPPORT ON SITE TO PROVIDE IMPROVED CAPABILITY TO CORRECTLY DETERMINE ROOT CAUSE OF PROBLEMS

- CONFIGURATION MANAGEMENT TO PROVIDE FOR LONG TERM IMPROVEMENTS IN RELIABILITY

CONTACT:
C. McCRACKEN
X28595

SLIDE 3

PLANT REVIEW STATUS

- o EVENT SPECIFIC CORRECTIVE ACTIONS: ACCEPTABLE
- o STAFF ON SITE TEAM TO ENSURE ALL SYSTEMS IMPORTANT TO SAFETY ARE FUNCTIONAL: IN PROGRESS
- o IMPROVED DECAY HEAT REMOVAL RELIABILITY INCLUDES THIRD AFW PUMP: UNDER REVIEW
- o MAINTENANCE BACKLOG REDUCTION PLAN NEEDED FOR RESTART: SECOND SITE VISIT SCHEDULED
- o REGIONAL REVIEW OF READINESS FOR RESTART: IN PROGRESS
- o BLEED AND FEED CAPABILITY: ADEQUATE; PLANNED IMPROVEMENTS PROVIDE ADDITIONAL LONG TERM ASSURANCES
- o LICENSING ACTIONS NOT RELATED TO EVENT DO NOT AFFECT RESTART

CONTACT:
C. McCRACKEN
X28595

101-Davis

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

SECRETARIAT RECORD COPY

DEC 17 1985

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

FROM: William J. Dircks
Executive Director for Operations

SUBJECT: DAVIS-BESSE RESTART STATUS BRIEFING

This is in response to the Commission's request for the staff to present a status briefing for Davis-Besse prior to authorizing restart. This memorandum encloses the briefing materials to support the Commission meeting which is currently scheduled from 9:30 am until 11:30 am on December 18, 1985.

The ACRS has been briefed on the June 9, 1985 event and on licensee and staff actions associated with restart of Davis-Besse. An ACRS subcommittee meeting and plant tour was conducted at the site in early October, followed by a presentation to the full ACRS committee on October 10, 1985. The staff will continue to keep the ACRS informed.

William J. Dircks
Executive Director for Operations

Enclosures:
As Stated

cc: SECY
OPE
OGC

Contact:
C. McCracken, NRR
X28595

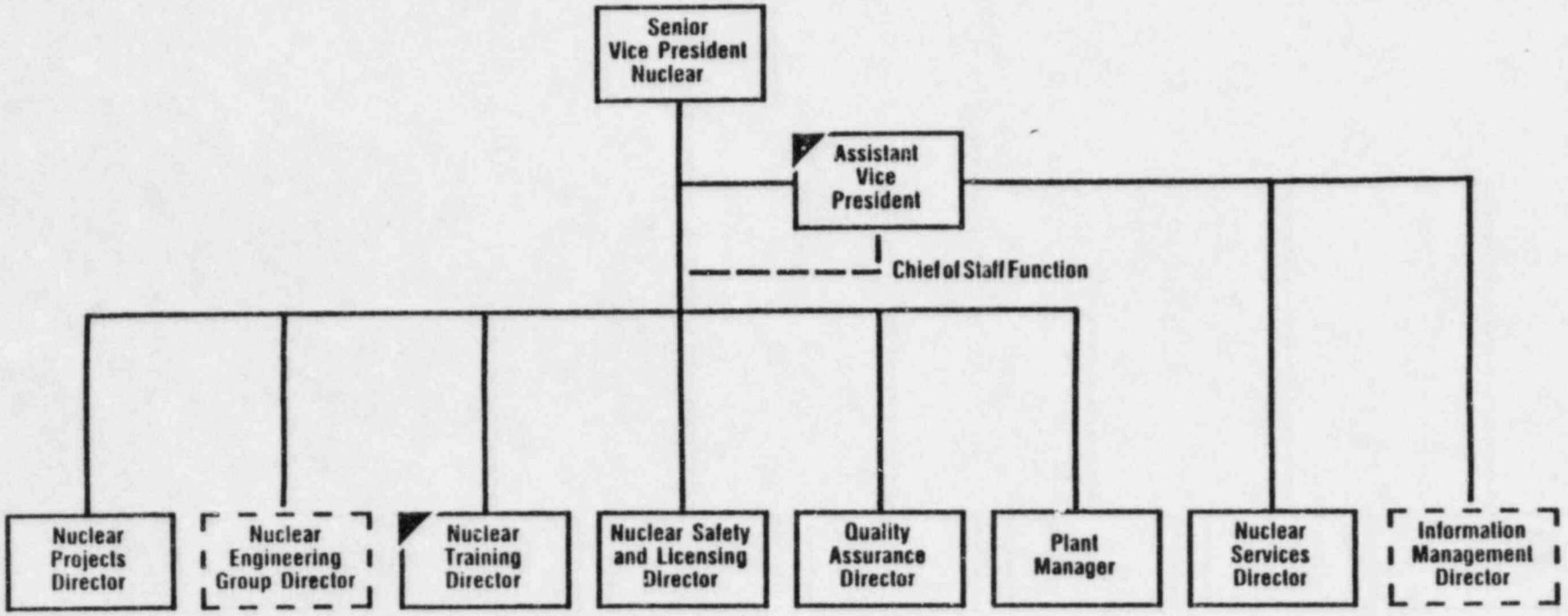
12-17-85

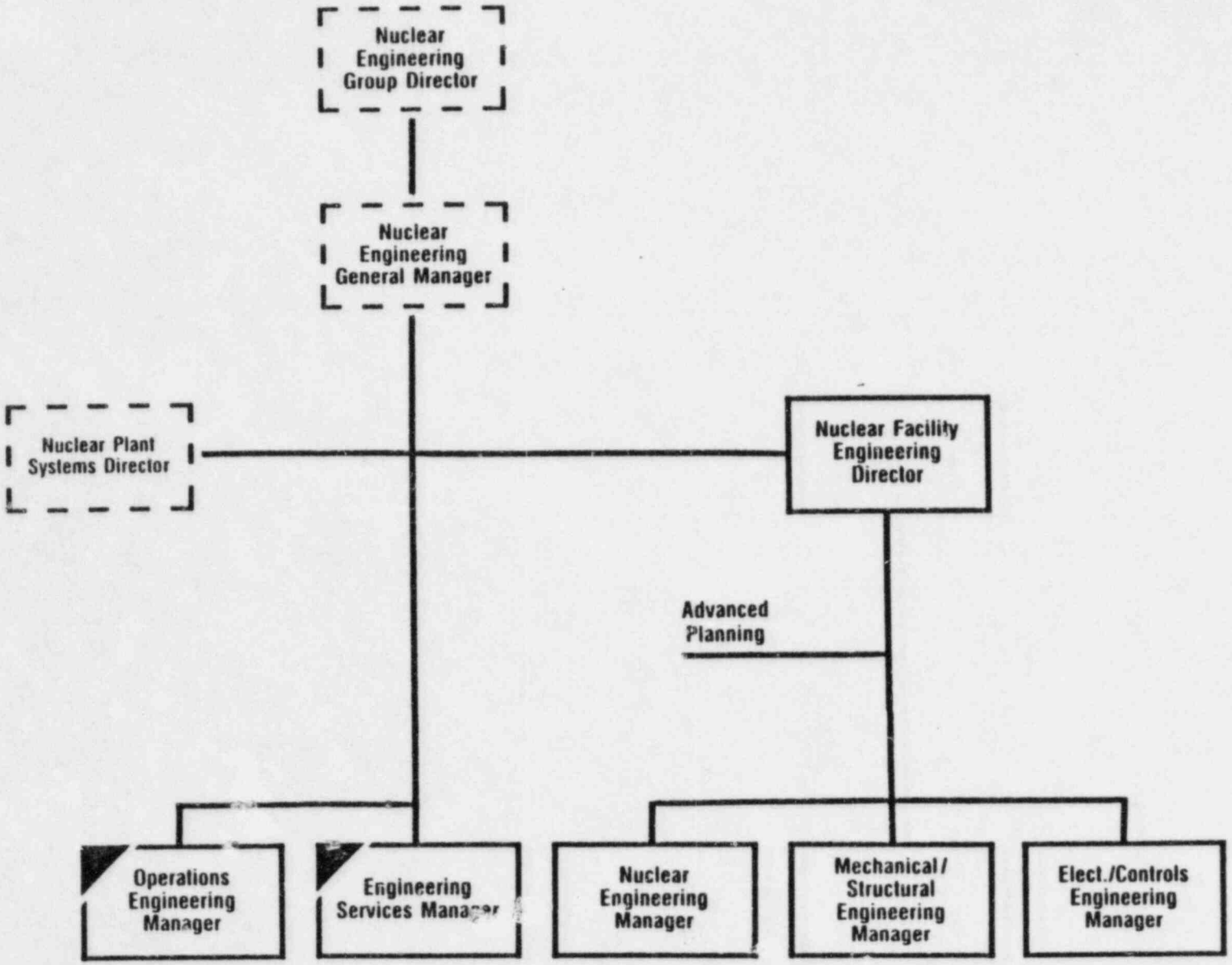
NRC Commissioners/Toledo Edison Meeting Agenda

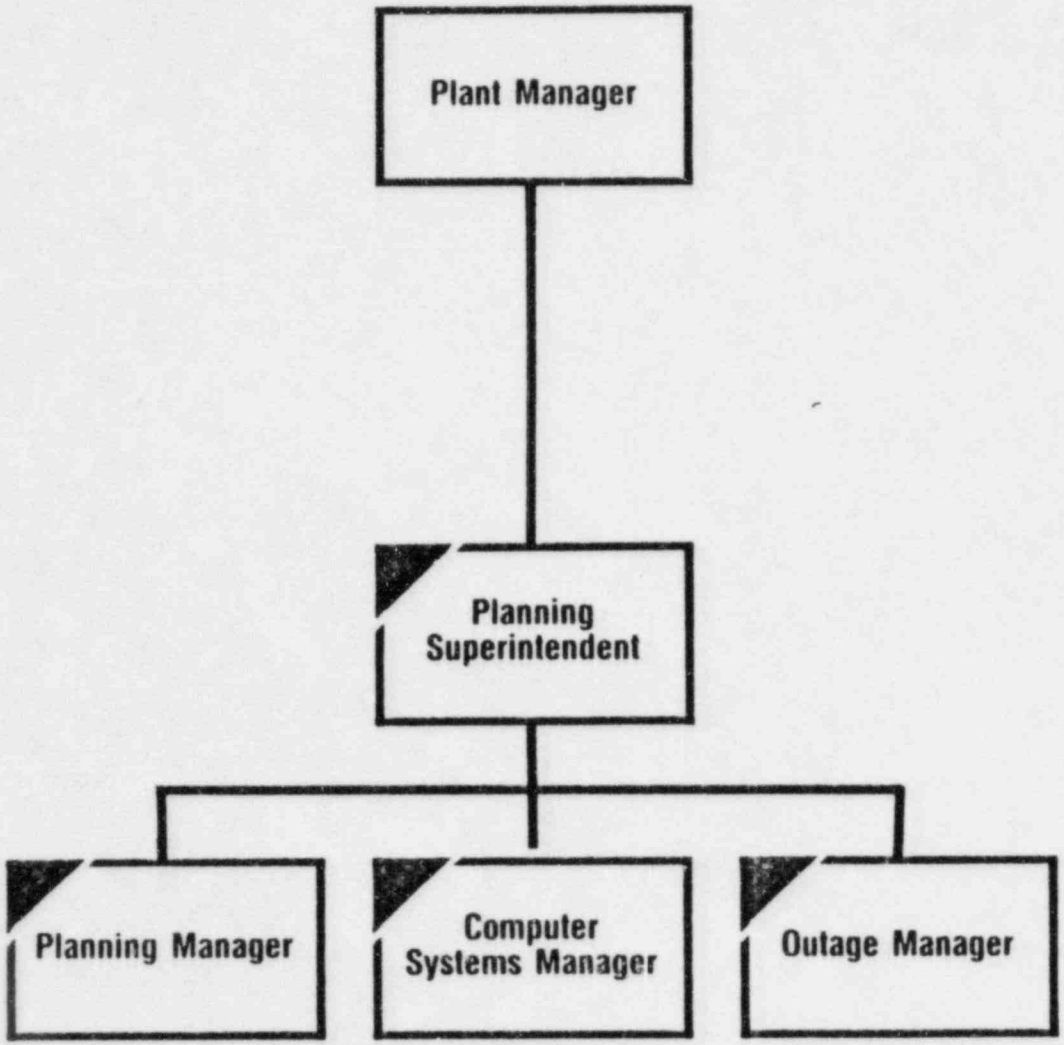
December 18, 1985

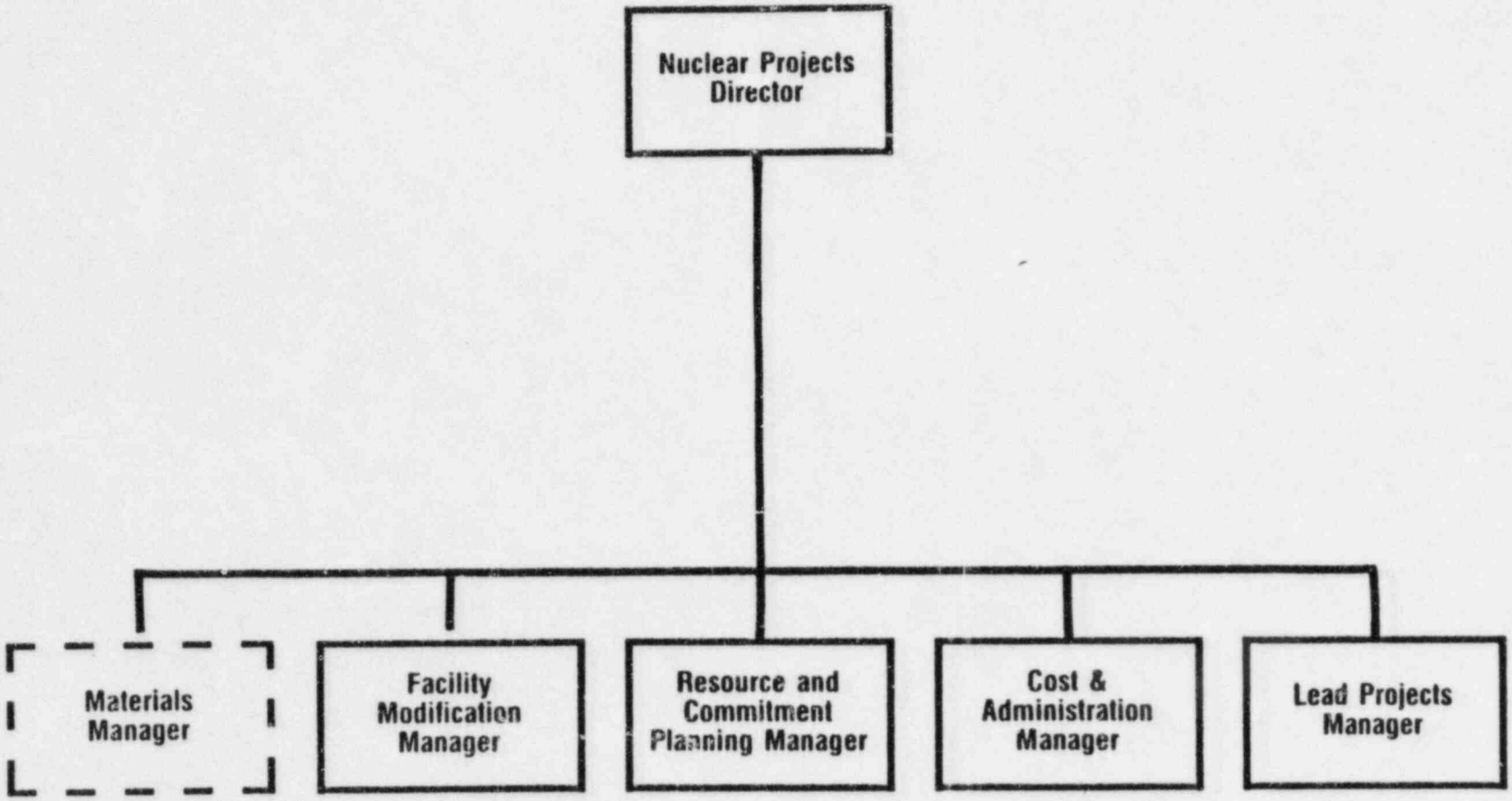
John P. Williamson *Chairman*	Introduction
Joe Williams, Jr. *Senior Vice President, Nuclear*	An Update: Mission Management Changes Maintenance Organization Activities Operational and Procedural Changes Event Investigation (Equipment Investigation) Auxiliary Feedwater System Modifications and Decay Heat Removal Independent Process Review Committee System Review and Test Program Closing Remarks

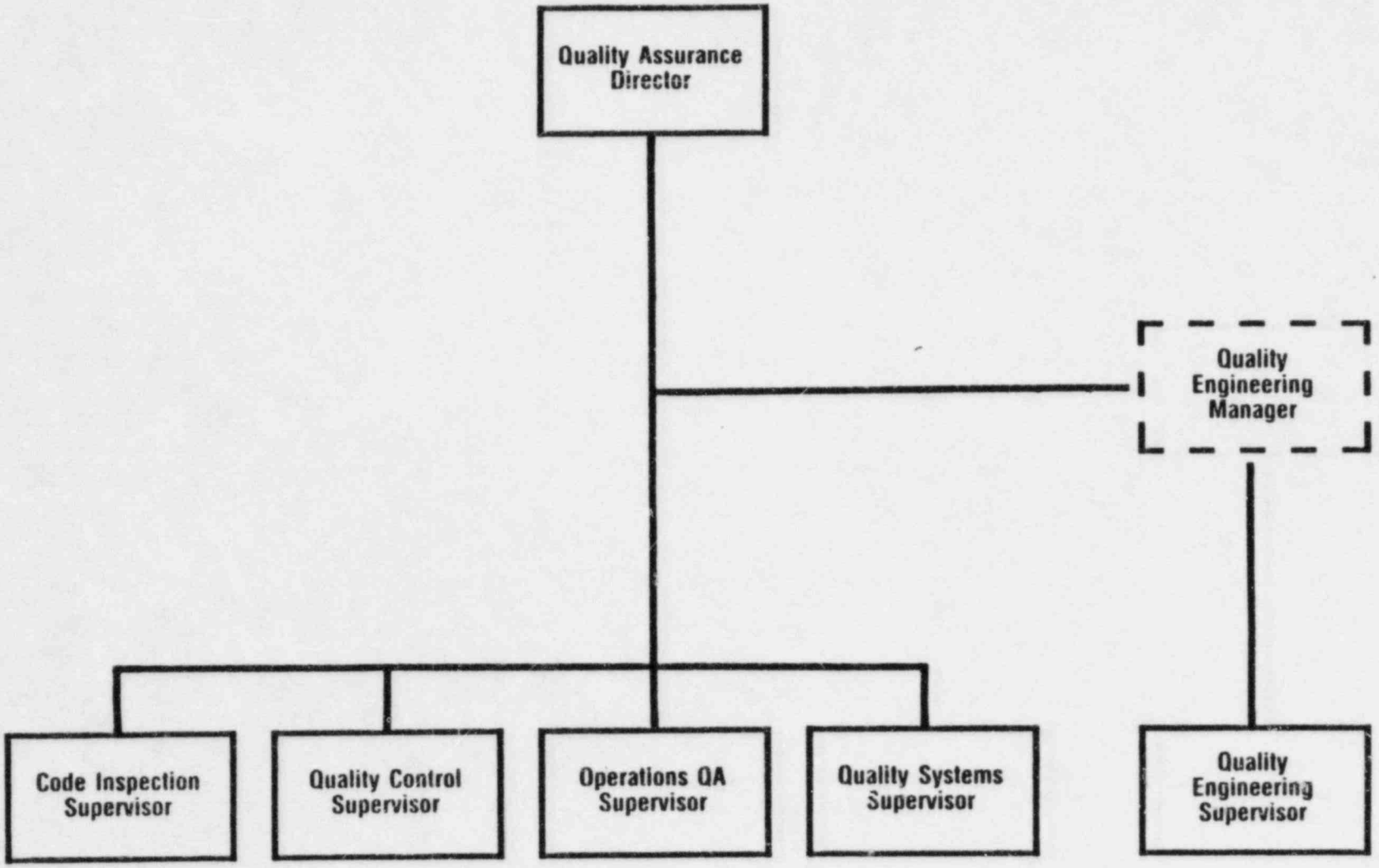
Nuclear Mission Organization

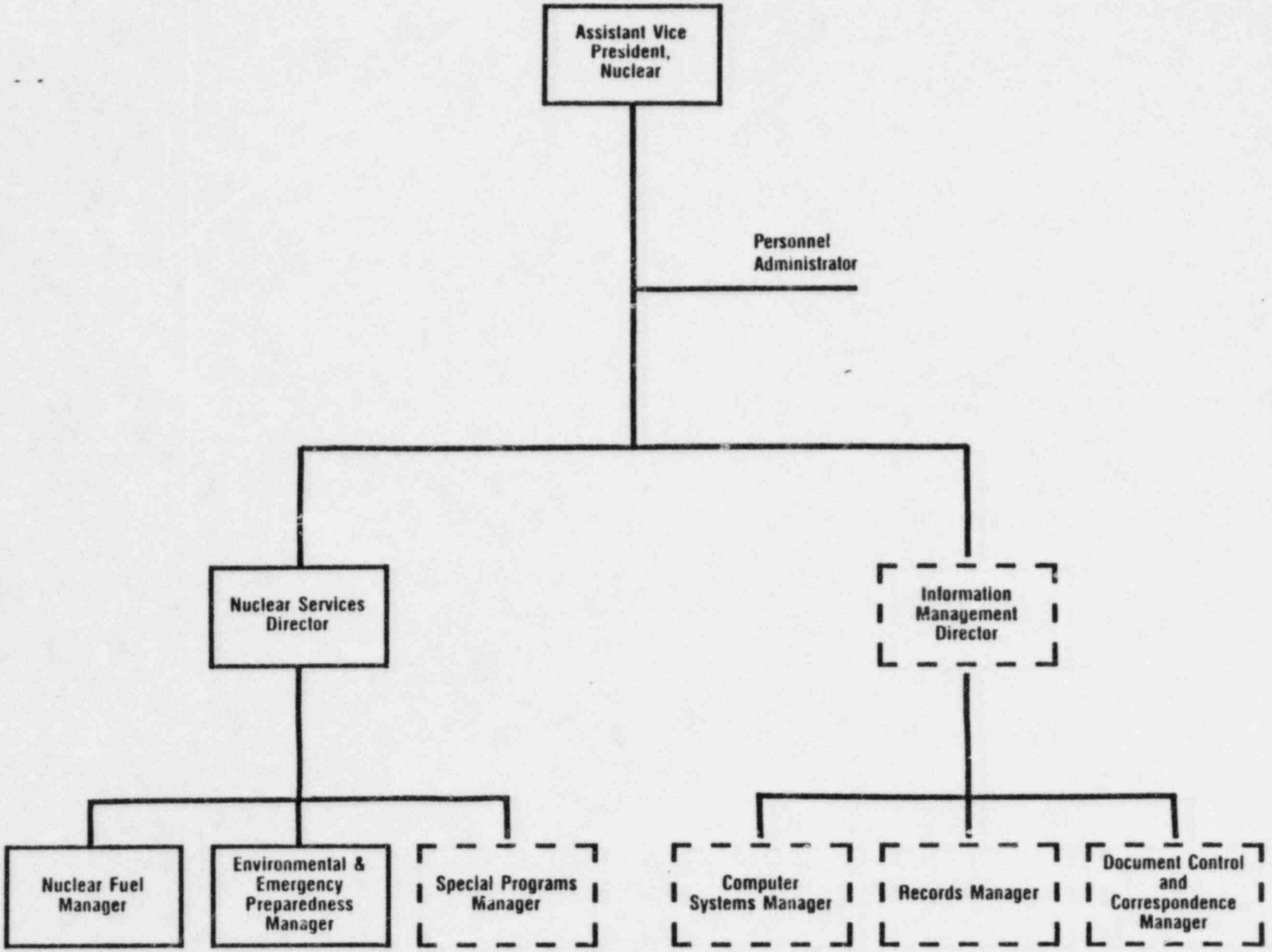



Nuclear Engineering Group Director
Nuclear Engineering General Manager
Nuclear Plant Systems Director
Nuclear Facility Engineering Director
Advanced Planning
Operations Engineering Manager
Engineering Services Manager
Nuclear Engineering Manager
Mechanical/ Structural Engineering Manager
Elect./Controls Engineering Manager


Plant Manager
Planning Superintendent
Planning Manager
Computer Systems Manager
Outage Manager
Salowitz


Nuclear Projects Director
Materials Manager
Facility Modification Manager
Resource and Commitment Planning Manager
Cost & Administration Manager
Lead Projects Manager


Quality Assurance Director
Quality Engineering Manager
Code Inspection Supervisor
Quality Control Supervisor
Operations QA Supervisor
Quality Systems Supervisor
Quality Engineering Supervisor


Assistant Vice President, Nuclear
Personnel Administrator
Nuclear Services Director
Information Management Director
Nuclear Fuel Manager
Environmental & Emergency Preparedness Manager
Special Programs Manager
Computer Systems Manager
Records Manager
Document Control and Correspondence Manager

Summary of Major Changes Within The Nuclear Mission

- A new centralized Planning Department, reporting to the Plant Manager, has been established and an experienced manager has been hired as Superintendent.
- The previous Plant manager has assumed the duties as head of the expanding Engineering Division.
- The Nuclear Engineering Division has been substantially enlarged and is being staffed.
- The position of Nuclear Plant Systems Director has been filled by the former Manager of Mechanical/ Structural Engineering.

Summary of Major Changes Within The Nuclear Mission

- A new Plant Manager is in place.
- The position of Assistant Plant Manager, Operations has been established and filled.
- The position of Assistant Plant Manager, Maintenance has been established and an experienced maintenance manager has been hired for that position.
- The Maintenance Department has been reorganized, enlarged, and experienced personnel have been hired for all positions.
- The position of Materials Manager has been established. An experienced manager has been hired. Organization is functioning smoothly.

Summary of Major Changes Within The Nuclear Mission

- Position descriptions for all management positions in the Nuclear Mission were completed October 15, 1985.
- All Nuclear Mission personnel, except the Nuclear Fuel Department, have been moved to the site.
- A new Quality Assurance Director has been hired.
- The previous Quality Assurance Director has assumed the position of Manager of the expanding Quality Engineering organization.
- A new Information Management Division has been formed to provide better management of data processing, records, documents and correspondence.

Summary of Major Changes Completed

- New organization structure approved. Staffing increases from 690 to 930 to more than 990 with Records Management/Document Control, Procedures and reorganization of QA/QC.
- Salary increases approved. 60% of increase on January 1, 1986 and 40% on January 1, 1987, depending on performance.
- On-shift SRO license bonus increased from $550 to $800/month; on-shift RO license bonus increased from $485 to $550/month.

Recruiting

Three Career Days

125 Applicants
46 Offers
28 Acceptances
3 Offers Pending
22 Future Offers Being Developed

Two Career Days Planned in December

35 Applicants

Manning Status

644 July 1
686 December 1
244 Vacancies (1985 and 1986 positions)
88 Contractors secunded
56 Of those contractors secunded are engineers

Configuration Management Plan

- Establish the as-built configuration of the plant.
- Develop an on-line computerized equipment data base.
- Use as-built information to validate design documents.
  - Vendor drawings and technical manuals
  - Piping & Instrument Drawings
  - Updated Safety Analysis Report (USAR)
- Develop system descriptions which include the following on both a system and component level:
  - System design bases
  - Limiting Conditions for Operation
  - Technical Specifications requirements
- Establish procedures to ensure that all controlled information stays current throughout plant modifications and maintenance.
  - Equipment data base
  - Vendor documentation
  - System descriptions
  - P & IDs and electrical elementaries
  - Other design documents
- Program will be implemented on a system basis. After the prototype phase is complete (approximately 7/1/86), groups of systems will progress through the program.

Fire Protection Program

- Interim Fire Protection Compliance Assurance Manager assigned.
- Two phase program developed, action plans drafted November, 1985.

  PHASE 1 Regulatory Improvement (October 1985 - February, 1986).

  - 30 technical and programmatic issues related to Fire Protection compliance assigned and prioritized.
  - Development of detailed action plans underway.
  - Final Appendix R assessment (compliance assessment report) with revised exemption requests to be submitted to NRC - March 6, 1986.
  - Updated Fire Hazards Analysis Report to be submitted March 6, 1986.
  - Revised Technical Specifications to be submitted June 1, 1986.

Fire Protection Program

- Engineering design package development.

  FCR's identified to date: 64

  FCR's to be completed by 5th refueling: 24

  (Engineering scheduled to be completed by 12/31/85)

  17 Barrier Modifications (upgrade walls, install new dampers, etc.)

  6 Safe Shutdown Modifications (reroute/protect cable; electrical isolation)

  FCR's to be completed by 6th refueling: 40

  (Engineering scheduled to be completed by 12/1/86)

  FCR schedule based on a PRA Risk Assessment

PHASE 2 Program development and ongoing implementation (February - August, 1986).

- Finalization of the Fire Protection organization and identification of staffing requirements - January 1, 1986.
- Fire Protection responsibility and commitment document, draft, April, 1986.
- Resolution of remaining technical issues (August, 1986) with follow up action plans as necessary.

Davis-Besse Procedures Effort

	Required For Restart	Additional in 1986
Nuclear Mission Procedures	18	55
Division Procedures		
Station		
Administrative	5	90
Maintenance	112	801
Operations	75	229
Other	0	318
Sub-Total	192	1,438
Engineering		
Environmental Qualification	40	0
Test	95	
Other	7	63
Sub-Total	142	63
Quality Assurance	13	17
Nuclear Training		32
Nuclear Services		90
Nuclear Projects		20
Nuclear Safety & Licensing		15
Other Divisions		35
Total	365	1,765
Complete 12/2/85	28	—
In Process 12/2/85	201	—

Training Program Enhancements

- Staffing

	8/84	8/85	12/85
Approved Positions	24	41	54
Toledo Edison Staff	17	35	44
Contract Instructors	2	10	10

3 new employees will report by 2/86.

Additional staff is being added to support the simulator and expanded maintenance training.

- Program Improvements

INPO Accreditation—All programs ready by 12/86.

Operator Programs—Self Evaluation Reports to INPO by 12/31/85.

Remaining programs (Mechanical, Electrical, I&C, Chemistry, Health Physics, Shift Technical Advisor, Technical Staff and Managers) prior to 12/86.

Clarification of responsibilities for training functions using Nuclear Mission Procedure to be completed prior to restart.

- Facilities

Dedicated training labs.

New training offices and classrooms.

Plant specific simulator

On site and operable by 12/88.

Laboratory Facilities

Mechanical Maintenance Lab

Area—1440 square feet

Major equipment includes - fully equipped machine shop, air conditioning and refrigeration equipment, vibration analysis equipment, valve test stand, wide variety of plant specific items.

Electrical Maintenance Lab

Area—850 square feet

Major equipment includes - motor control center, numerous circuit breakers, soldering stations, motor generator trainer, electrical test equipment.

Instrument and Control Lab

Area—1300 square feet

Major equipment includes - sophisticated Lab-Volt process control simulator, control rod drive part task trainer, functional Reactor Protection System channel, electronic test equipment.

Chemistry and Health Physics Labs

Area—1120 square feet total

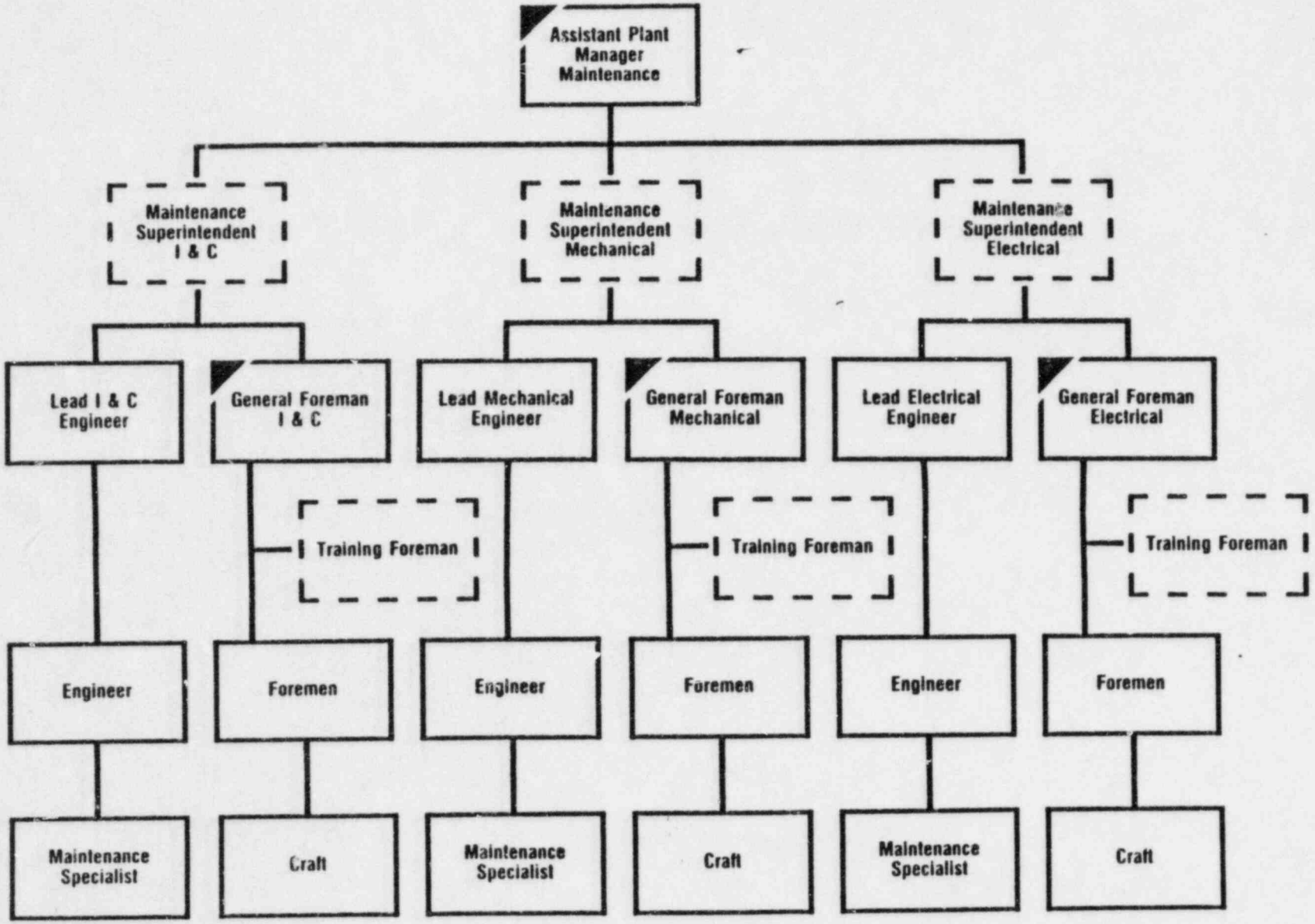
Major equipment includes - spectrophotometers, gas chromatograph, gamma ray spectroscopy systems, counting and survey equipment.

Maintenance Improvement Program

Changes have been implemented in these broad areas:

- Organization and Staffing.
- Training.
- Maintenance Administrative and Technical Procedures.
- Maintenance Activities.
- Spare Parts and Material Control.
- Engineering Interface and Support.
- Plant Cleanliness and Material Readiness.
- Facilities.

Plant Maintenance



Organization

- New management personnel.
- Increased supervisory personnel for each discipline.
- Improved supervisor/craftsman ratios.
- Improved department communications.
- Training Foreman.

Training

- Each discipline has a designated Training Foreman.
- Training shift concept has been adopted.
- Training Councils formed in each discipline.
- Outside organizations or facilities are utilized to provide training.

Plant Cleanliness and Material Readiness

- Continuing program in place.
- General improvement accomplished.

  26,000 manhours in 3½ months.
- Significant improvements in specific areas.

  Water treatment plant.

  Service water tunnel.

  Turbine Building 658 and 643 elevations.

Spare Parts and Materials Control

- Responsibility transferred to Materials Manager.

  New position in Nuclear Projects Division.

  Onsite with Warehouse office.

- Program developed and implemented.
- Spare parts adequacy and inventory control implemented.
- Surplus identified and inventoried and being evaluated for disposition.

Maintenance Procedures

Administrative

4 procedures required for restart.
3 approved.
1 in the review cycle.

Technical

112 procedures required for restart.
27 approved.
40 in the review cycle.
801 will be completed after restart.

Corrective and Modification Work Orders

Backlog:

1339 Corrective work orders open on June 9.
907 Of those closed as of December 12.
111 Facility Change Requests open on June 9.
41 Of those closed as of December 12.

Current:

3547 Corrective work orders issued since June 9.
1822 Of those closed as of December 12.
607 FCR's issued since June 9.
199 Of those closed as of December 12.

V

Preventive Maintenance

Backlog:

405 Work orders open on June 9.
369 Of those closed as of December 12.
All will be closed prior to restart.

Current:

1029 Work orders opened since June 9.
663 Of those closed as of December 12.
At restart - no backlog PM work orders will be outstanding.

New Maintenance Facilities

Five-story structure being constructed.

- Adds 100,000 square feet of shop and office space.
- On schedule for occupancy—November, 1986.

Adding additional test and support equipment.

- MOVATS for testing of Limitorque Valve Actuators.
- Test system for Hydromotor Damper Actuators.
- New Metrology Laboratory with new reference standards.

Operational and Procedural Changes

- Training/Administrative
  - Emphasis on adherence to procedures.
  - Training on high priority-infrequent operator actions.
  - Manual vs. automatic safety system actuation.
  - Pre-startup training began 12/16.
- Emergency and Abnormal Procedures
  - Modifications to:
    - Emergency Procedure EP1202.01 on RPS, SFAS, SFRCS Trip or Steam Generator Tube Rupture.
    - Auxiliary Feed Pump operating procedure.
  - SRO required to remain in Control Room if EP1202.01 implemented.
  - Manual pressure-temperature plotting.
- NRC Notification
  - Checklist provided in the Control Room to ensure information provided to the NRC Duty Officer is timely and accurate.
- Shift Technical Advisor (STA)
  - Schedule change-shifts.
  - STA office.
  - Trained as Interim Emergency Duty Officer.
  - New class will be SRO's.

Equipment Investigation

Purpose: Determine root cause of equipment malfunctions in order that appropriate and effective corrective actions are implemented.

Scope: Thirteen (13) areas of equipment concern were identified for investigation.

Seven (7) systems were impacted:

1. Auxiliary Feedwater
2. Main Feedwater
3. Steam Feedwater Rupture Control System
4. Main Steam
5. Reactor Coolant System (pilot operated relief valve only)
6. Nuclear Source Range Instrumentation
7. Safety Parameter Display System

Equipment Investigation

Major Issues:

A. Auxiliary Feedpump Turbines

- Installing new steam admission valves.
- Designing for high energy line breaks.
- Installing new governor on AFPT #1.
- Improving trip/throttle valve reset capability.

B. Pilot Operated Relief Valve (PORV)

- No specific root cause identified.
- Performing control panel changes.
- Rebuilding PORV with new parts.
- Testing program performed/planned.

C. Motor—Operated Valves

- Resetting limit switches/torque switches.
- Using MOVATS test equipment.
- Performing differential pressure tests.
- Correcting/Checking other features

Pre-LLRT	Stem checks
Post-LLRT	Lubrication checks
T-Drains	Current signatures
Space heaters	Parts check
Wiring checks	Valve design data
EQ wire checks	Operator design data

Equipment Investigation

Findings:	Detailed in reports generated for each of the 13 areas of concerns.
	Root causes identified in the areas of:
	Design
	Maintenance
	Testing
	Procedures
	Training
Corrective Actions:	Root cause corrective actions to be done prior to restart.
	Include:
	15 Design modifications
	13 Maintenance/replacement activities
	5 Procedural and/or training issues

Piping Supports Walkdown

Phase I-Prior to Restart

A. Inspect and complete evaluation of 921 supports.

Three complete systems—Auxiliary Feedwater, High Pressure Injection, Low Pressure Injection.

Four systems, containment portion only—Core Flood, Containment Spray, Hydrogen Dilution, Pressurizer Relief.

Results: Inspection complete—861 NCRs

80% acceptable as-found

20% minor rework

B. Inspect and preliminarily evaluate 1444 supports.

Addresses balance of in-containment piping supports.

Results: Inspection complete.

No major problems noted.

Phase II—After Restart

Complete inspection/evaluation of all safety-related piping supports prior to end of next refueling outage. Adds approximately 2500 supports.

Environmental Qualification

Environmental Qualification (EQ) program assures that safety-related electrical equipment will perform their important functions under accident environmental conditions (e.g., temperature, pressure, radiation).

EQ Program Activities Include:

- Review and upgrade of the Qualification Files.
- Review and reissue of the EQ Equipment Master List.
- Preparation of programmatic and implementing procedures.
- Walkdown (baseline survey) of "as-installed" plant EQ equipment.
- Review and documentation of to-date maintenance and surveillance of EQ equipment.

Outage Related EQ Activities:

- Evaluation of the reconfigured auxiliary feedwater system and the newly installed motor driven feedwater pump for high energy line break and EQ impacts.
- Modification or replacement of non-qualified EQ equipment.

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

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.

Task Force Methodology

- Multiple "techniques" used.
  - Deterministic
  - Preliminary Scoping Analysis
  - Engineering Judgment
  - Assessment of existing PRA's
- Reviewed Documentation.
- Evaluated past operating experience.
- Interviewed Toledo Edison personnel.

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:

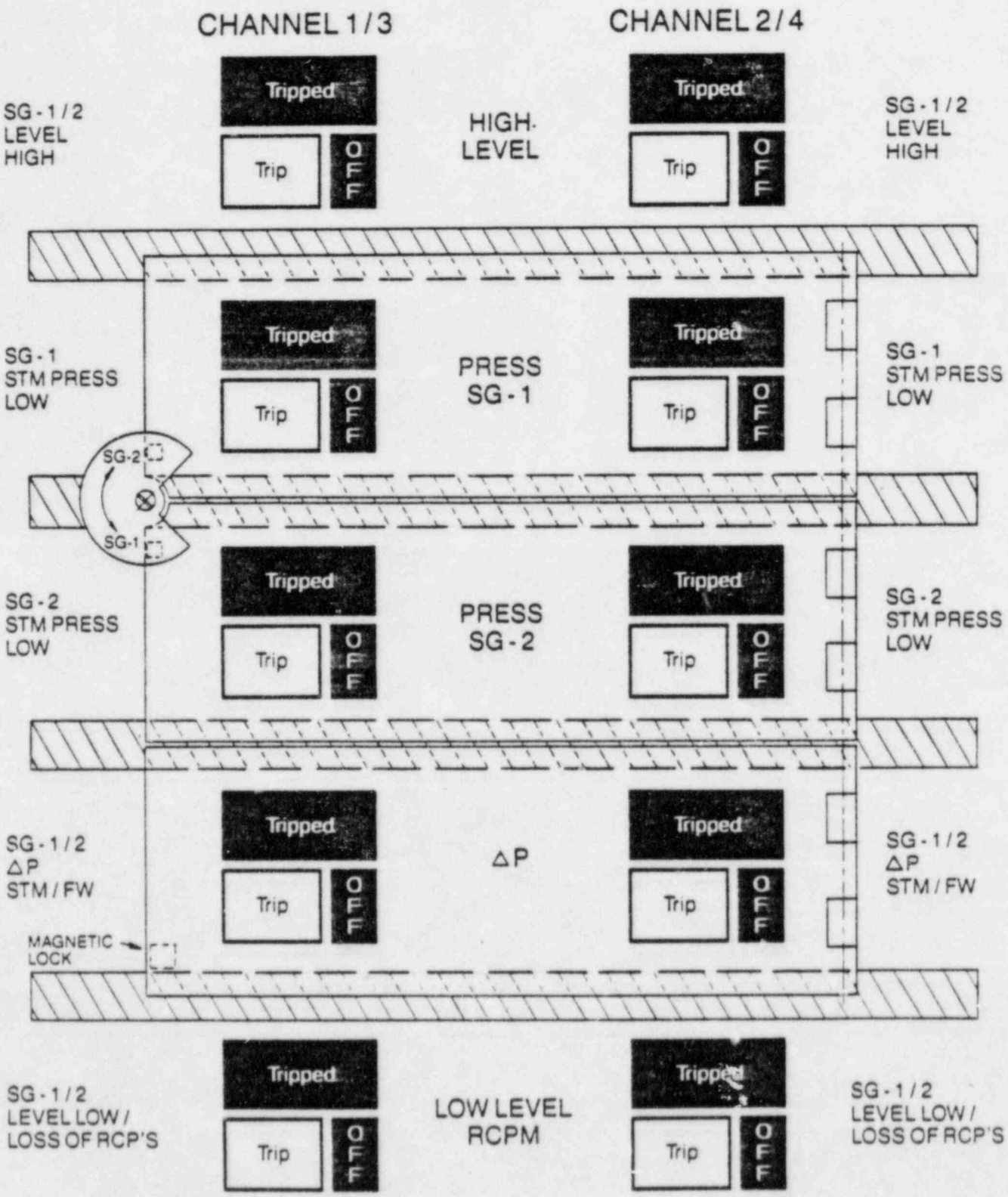
- Provide hot steam lines to AFW pumps.
- Valve motor operator improvements.
- Depower CST to AFWPT suction valves.
- Eliminate deaerator suction paths.
- Disable feed isolation to last steam generator depressurized.
- SFRCS manual initiation improvements.
- Raise ICS low level limit.

AFW/SFRCS Reliability

AFW continuation improvements:

- Install PGG governor on AFPT-1.
- Provide seal-in manual reset for SFRCS full trip alarm.
- Remove AFW pump suction strainers.
- Resize strainer from CST.
- Revise AFP suction transfer scheme.
- Install local AFPT trip throttle valve indication.

SFRCS
Manual Initiation Switches



Installation of Motor Driven Feedwater Pump

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.
- Can be manually realigned to feed the Main Feedwater System. This will be the normal alignment during low power operation. Pump suction in this alignment will be from the Deaerator Storage Tank.
- Eliminates high energy line break concerns associated with existing start up feedpump.
- Resolves some fire protection compliance items.

Longer Term Decay Heat Removal Reliability Improvements

- Provision of primary system blowdown valves for enhancement of feed and bleed capability.
- Restoration of existing startup feedwater pump and provison of Control Room capability for associated valves.
- Provision of Control Room capability for the motor driven feedwater pump discharge valves to the AFW header.
- Further AFW valve flowpath reductions.
- Improve AFW level control.
- Improve margin between SFRCS and ICS low level setpoints.
- SFRCS logic revision to further minimize isolation.
- Control Room "mimic" panel for finalized AFW/SFRCS.

System Review and Test Program Objectives

For systems important to safe plant operation:

- Identify important and recurring design, maintenance and operations problems and determine whether corrective actions are required prior to restart or can be taken over long term.
- Evaluate scope of existing periodic testing to identify any additional testing needed to ensure required functions will be performed.
- Conduct test program to assure these systems are functional. Testing will also be performed to verify adequacy of system modifications completed during outage.

This program will be completed prior to restart of Davis-Besse.

System Review and Test Program Scope

Review encompasses 31 systems judged important to safe operation of Davis-Besse. Attributes considered in system selection included:

- Performs an active safety function.
- Malfunction could lead to challenges to safety systems.
- Malfunction could result in abnormal plant transients.
- Important to preventing, detecting, controlling or mitigating plant transients.
- History of unreliable performance.
- Associated with June 9, 1985 event.

The 31 systems are listed on the following two pages. Two additional systems were identified to have a limited review (gaseous radwaste and post accident sampling system).

System Review and Test Program Approach

- "Team" for each system.

  Headed by Toledo Edison engineer.

  Supported by highly-qualified industry personnel.

- Focused interviews of operations, maintenance and engineering personnel.

- Review of selected records for Davis-Besse experience (E.G., Licensee Event Reports, NPRDS Data, Maintenance Work Orders, Transient Assessment Program Reports, Deviation Reports).

- Identify corrective actions for problems.

  Prior to restart.

  Long term.

- Prepare report including summary of system functions, problems and corrective actions.

System Review and Test Program Test Review

- Review periodic test requirements for each system to ensure required functions are adequately demonstrated and confirmed.
- Prepare report summarizing results of test review and identifying test changes required.
- Prepare test outlines and procedures for:

  Post-modification testing.

  New periodic testing.

  Revised periodic testing.

  One-time tests supporting restart.

- Review results of test program and prepare test summary.

Independent Process Review Committee

- Overall review of system review and test program.
- Ensure system review and corrective action process in combinaton with system and equipment testing will adequately demonstrate the operational readiness of the systems and equipment important to safe operation of Davis-Besse.
- Committee membership combines a broad background of nuclear industry experience with specific knowledge of the Davis-Besse plant design.
- Concurrence with:

  Scope and depth of review by "Teams".

  System functions.

  Corrective actions required prior to restart and over long term.

  Periodic test review.

  Test requirements to support restart.

  Test results.

Independent Process Review Committee Membership

P.C. Hildebrandt
Chairman
(MPR Associates)

R.S. Brodsky
(BETA)

J.D. Carlton
(B&W)

E.C. Novak
(TED Engineering)

J.P. O'Hanlon
(UESC)

L.P. Simon
(TED Operations)

J.G. Walker
(Bechtel)

C.A. Hengge
Secretary
(TED Nuclear Safety)

Determination of Corrective Actions Required Prior to Restart

- Corrective actions necessary to ensure safe and reliable plant operation.
- Based on collective experience and judgment of Independent Process Review Committee considering
  - Plant design basis described in the Updated Safety Analysis Report.
  - Technical Specification requirements.
  - Reliable plant operation.
  - Protection of personnel, systems and equipment.
  - Prudent engineering practice.

Current Status of System Review and Test Program

- Identification of specific system and equipment problems requiring resolution prior to restart is complete.
- System review reports summarizing system functions, problems, and required corrective actions complete.
- Review of periodic tests for system operability

Problem Areas Identified During System Reviews

- For the 31 systems
  - Approximately 140 problem areas require resolution prior to restart.
  - Approximately 200 problem areas require resolution over long term.
- Resolution ranges from engineering evaluation to hardware changes in plant.
- Facility Change Requests, Maintenance Work Requests or Requests for Engineering Evaluation have been prepared to address all problems that must be resolved prior to restart.

Examples of Important Problem Areas

- Control Room Emergency Ventilation System.
- Auxiliary feedwater discharge piping overpressurization.
- Potential flooding of pit containing decay heat removal valves (DH-11 and 12 motor operated valves).
- Inadequate ventilation in service water pump room.
- Widespread station and instrument air system leaks and dependence on temporary diesel air compressor.

Recurring Problem Areas

- Inattention to heating/ventilation/air conditioning requirements.
- Inoperable nitrogen regulators.
- Inadequate maintenance for hydromotor actuators.
- Tracking and replacement of limited life components (e.g., seals, elastomers, electrical components).
- Valve packing leakage.
- Steam trap maintenance.
- I&C preventive maintenance/calibration.

System Review and Test Program Test Review

- Evaluate each system important to safe plant operation considering the effects of modifications made during the outage.
- For each system function important to safe plant operation:

  1. Identify existing periodic tests which adequately demonstrate the function

     or

  2. Prepare outlines for new or revised test which will adequately demonstrate the function

     or

  3. Provide justification that the function cannot or should not be tested prior to restart.

- Document the results of this evaluation for review by the Independent Process Review Committee.
- Independent Process Review Committee concurs with scope of testing to be performed.

Restart Tests To Be Conducted

Preliminary results of the test review have identified:

54 Existing periodic tests to be performed prior to restart to demonstrate system functions.

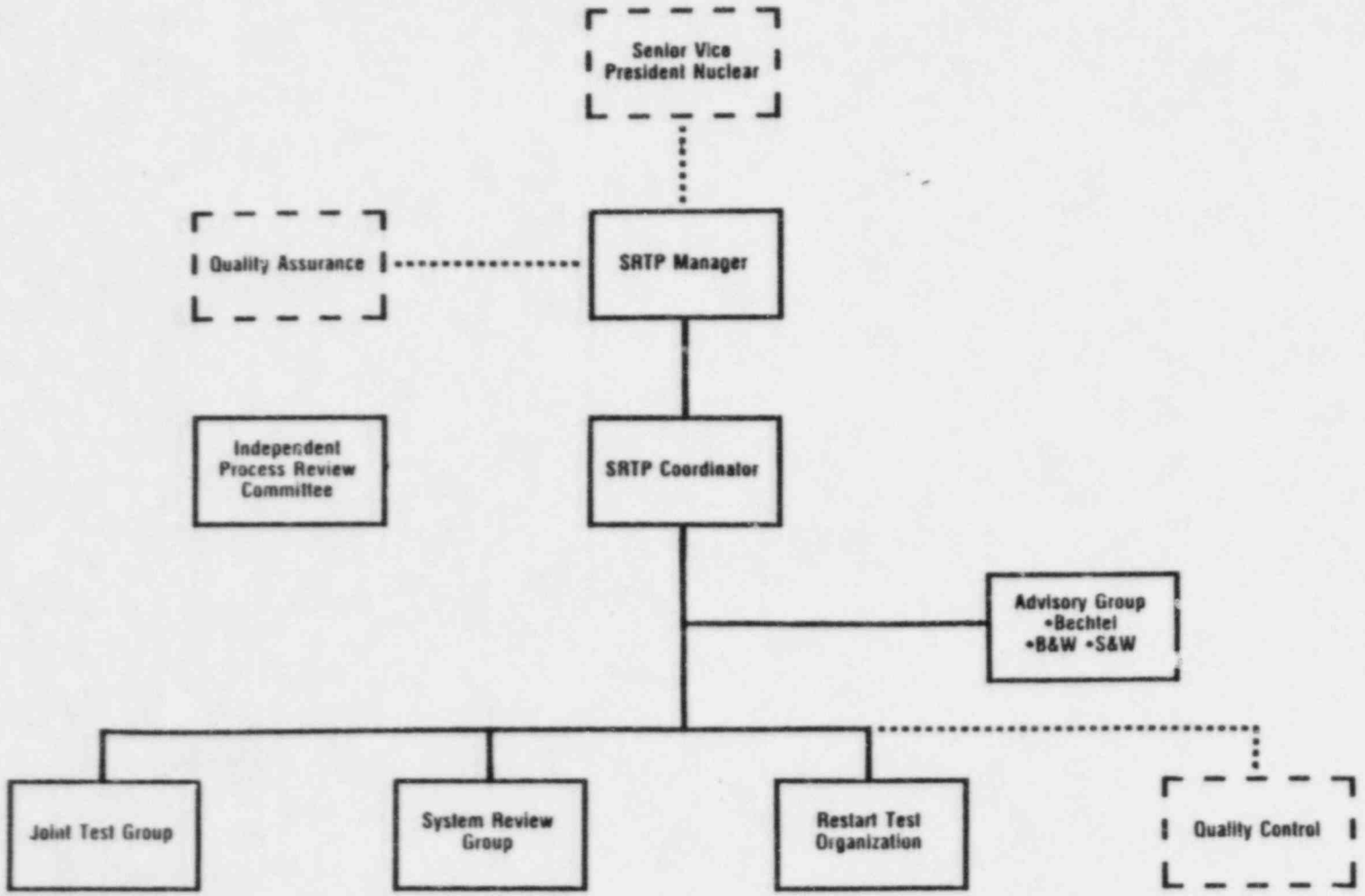
89 New or modified periodic tests or one time tests necessary to demonstrate functions including tests required as a result of modifications.

7 Integrated tests to demonstrate system functions involving multiple systems.

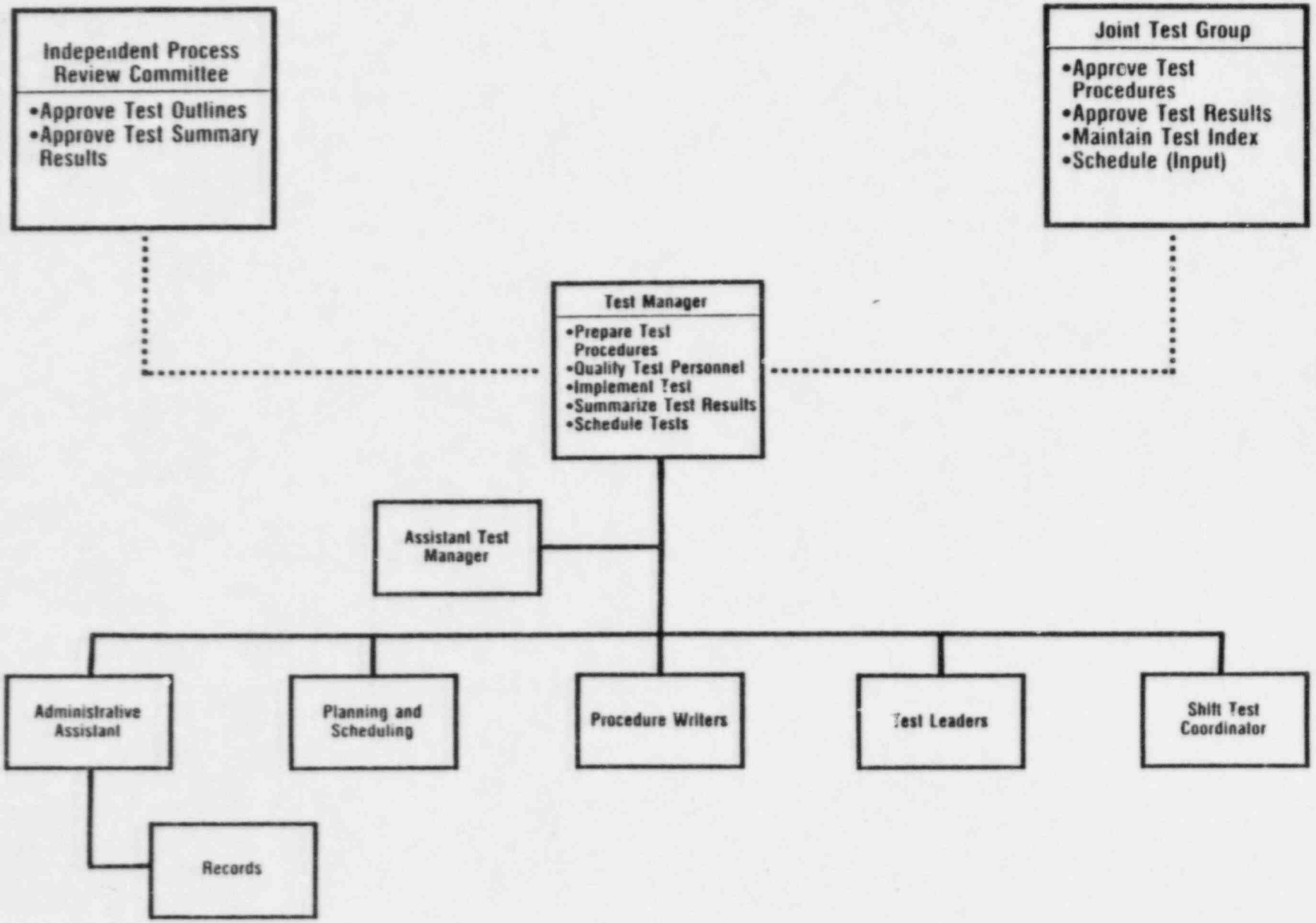
150 *Total Tests*

- Average test duration is approximately 12 hours excluding test setup time.
- Total test program will require approximately 11 weeks including power escalation testing.

System Review and Test Program (SRTP) Organization



Restart Test Organization



System Review and Test Program

Summary of Corrective Action Items

For Davis-Besse

Reactor Coolant System

Prior To Restart

- Improve stroke time on containment isolation valve.
- Repair leakage from RCS to nitrogen system.
- Repair / replace and calibrate PORV discharge line temperature element.
- Install PORV loop seal drain line.
- Modify PORV status indications.
- Realign hot leg Rosemount RTDs to TSAT meter.

Long Term

- Repair end plugs on out-of-service pressurizer heater elements.
- Improve maintenance capability for RC drain tank.
- Repair / replace nitrogen regulator for RC drain tank.
- Repair / replace Tave digital readout.
- Evaluate RC pump seal or motor parameters to be used for securing pumps.
- Calibrate RC pump vibration instrumentation.
- Improve core exit temperature measurement capability.
- Modify pressurizer heat bank operation to handle larger heat losses.

High Pressure Injection System

Prior To Restart

- Confirm HPI pump capability at high flow, low head conditions.
- Confirm HPI pump capability at high suction temperature.
- Investigate standing water from unidentified sources in several areas (e.g., ECCS room #1; containment vessel annulus floor).
- Remove startup strainers from HPI pump suctions.
- Modify HPI pump suction check valves (HP10 and HP11) to facilitate proper disk seating.
- Verify proper operation of several HPI pump component cooling water stop check valves.
- Revise plant documentation to reflect higher design pressure capability of section of piping downstream of discharge check valve HP23.
- Investigate increasing trend in inboard bearing vibration for HPI pump 1-1.

High Pressure Injection System (Cont'd)

Long Term

- Evaluate need for design modification to HPI pump component cooling water stop check valves to preclude "sticking".
- Calibrate HPI pump motor temperature instrumentation.
- Eliminate low flow nuisance alarm on HPI pumps.
- Replace improper flow measurement orifice in HPI pump 1-1 minimum recirculation line.
- Relocate control cable for AC lube oil pump for HPI pump 1-1 per Appendix R requirements.
- Improve communications capability between ECCS rooms and Control Room.
- Resolve means of leak testing for back-to-back check valves in HPI discharge valves.
- Evaluate cyclic life of ¾ inch elbowlets attached to HPI discharge line.

Core Flood System

Prior To Restart

- Confirm location of level taps on Core Flood tanks.
- Inspect/repair nitrogen regulator for Core Flood tanks.

Long Term

- Prepare calibration procedure for Core Flood tank level instrumentation.
- Evaluate required purge time for sampling of Core Flood tanks.
- Calibrate sampling purge flow meter.

Decay Heat Removal System

Prior To Restart

- Install level indicating capability for DH11 & DH12 valve pit.
- Install modified packing in DH11 & DH12.
- Modify procedures to preclude overpressurization of decay heat pump suction.
- Improve cold weather operation of BWST level instruments.
- Reinstall mis-assembled studs on decay heat pump.
- Calibrate boron dilution flow transmitter instrument strings.

Decay Heat Removal System (cont'd)

Long Term

- Evaluate means of eliminating sealed pit design for valves DH11 & DH12.
- Evaluate possible system modifications to preclude decay heat pump suction overpressurization.
- Ensure spare parts availability for BWST recirculating pump and heater.
- Add temperature alarm on BWST; evaluate improved temperature control.
- Evaluate alternative means of precluding over-ranging of low range decay heat pump suction pressure gauges.
- Evaluate more easily read oil level indicators for decay heat pumps.
- Evaluate means of reducing leakage from cyclone separators on decay heat pumps.
- Improve preventive maintenance for pneumatic valves DH13A & B.
- Investigate means of improving disk seating for check valves DH76 & DH77.

Containment Spray System

Prior To Restart

- Verify torque switch and torque switch bypass settings for two Containment Spray System valves (CS1530 and CS1531)
- Determine specific operator response required when containment emergency sump level indicator lights are illuminated.

Long Term

- Evaluate adequacy of oil level sight glasses for containment spray pumps.
- Evaluate need for containment spray pump discharge pressure indication in Control Room.

Containment Emergency Ventilation System

Prior To Restart

- Provide weather shield for EVS fan controller sensing line to ensuring operability.
- Replace seals on hydromotor actuator for ventilation damper.

Long Term

- Provide protection for instumentation controls for fans.

Containment Air Cooling System and Hydrogen Control System

Prior To Restart

- Repair backdraft dampers for Containment Air Cooling System fans.
- Confirm proper operation of fans when shifted from high to low speed (overload indication is being received).
- Bench test hydrogen dilution system relief valve.

Long Term

- Confirm flow balancing of Containment Air Cooling System.
- Replace failed return bend on cooler C1-1.
- Evaluate installation of flow meter in purge test line to facilitate performing surveillance tests.
- Install soft seat for valve CV210 (containment isolation check valve.
- Confirm hydrogen recombiner is compatible with Davis-Besse system and can be made operable within required time.

Makeup and Purification System

Prior To Restart

- Repair or replace failed containment isolation valve MU33.
- Remove any startup strainers in system.
- Confirm correct valve trim in MU32.
- Repair or replace leaking reactor coolant letdown pressure reducing valve (MU6) and controls.
- Provide indicator of makeup flow for use during feed and bleed operations.
- Remove inoperable and unused reactor coolant pump (RCP) seal leakage indication.

Makeup and Purification System (Cont'd)

Long Term

- Repair/replace leaking reactor coolant batch makeup flow control valve, MU39 (currently isolated).
- Repair/replace batch controller.
- Repair minor oil leaks on makeup pumps.
- Evaluate and repair leaking valves MU19 (RCP seal injection valve) and MU216 (RCP seal injection bypass valve).
- Evaluate and repair boronmeter.
- Perform review of problems with hydrogen system (for maintaining makeup tank overpressure).
- Repair MU1903 (Cation demineralizer inlet isolation valve).
- Repair/replace seal injection stop check valves.
- Replace letdown block orifice.
- Improve communications capability between makeup pump room and control room.
- Evaluate intended function of boron permissive light.
- Perform review of failure modes of makeup system equipment (e.g., power supplies) and ability of operators to recognize problem and take corrective action.

250/125 Volt DC System

Prior To Restart

- None

Long Term

- Improve temperature control in battery room.
- Improve ground fault detection and location.
- Evaluate design change for low voltage relays to reduce failures.

4160 Volt AC System

Prior To Restart

- Confirm operability of several breakers with original levering-in device.
- Replace CVE synchrocheck relay with different design.
- Resolve tap setting for 4160/480 Volt transformers and reset alarm accordingly.

Long Term

- Review consequence of paralleling bus tie transformers out-of-phase.
- Visually inspect all 4160 Volt breakers in "Q" cubicles for "E"-ring damage.
- Control non-"Q" 4160 Volt breakers to ensure they are not utilized in essential applications.
- Provide improved control of circuit breaker and relay setting records.

480 Volt AC Distribution System

Prior To Restart

- Confirm operability of switchgear cabinet door and stab withdrawal interlocks to ensure 480 VAC breaker operability.

Long Term

- Evaluate removal of stab withdrawal interlock feature.
- Evaluate alternative means of providing ground fault protection for 480 Volt AC motor control centers.
- Establish program for tracking limited life components in motor control centers.
- Improve preventive maintenance on switchgear cabinet door hardware and gasketing.

13.8 KV System

Prior To Restart

- Investigate cause of fast transfer breaker failures and calibrate relay timing.

Long Term

- Improve method for racking in/out of 13.8 KV breakers.
- Repair small oil leak in Auxiliary Transformer.

Emergency Diesel Generators

Prior To Restart

- Eliminate electrical noise problems associated with diesel governor to improve stability.
- Improve temperature control for diesel generator room by changes to control/alarm system and maintaining ventilation damper actuators.
- Improve reliability of lubricating oil soak back pumps.
  - Replace set.
  - Check condition of filters and strainers.
- Test multiple air start capability of diesel generator.
- Calibrate low cooling water flow alarm switch.
- Investigate cause of SCR diode failure nuisance alarm.
- Minimize ice buildup on diesel generator air intake.

Emergency Diesel Generators (Cont'd)

Long Term

- Evaluate improvements to diesel generator air start system and improve reliability of air compressors.
- Implement improvements for emergency diesel fuel oil system.
- Replace cooling water flow gauge.
- Perform evaluation of overall improvements to diesel generator air intake configuration.
- Improve diesel generator speed and electrical frequency control capability.
- Correct erratic bearing temperature indications for diesel generators.
- Improve Control Room/diesel generator room communications capability.

120 Volt Instrument AC Power

Prior To Restart

- Install larger power rating resistors in essential inverters YV1, YV2, YV3 and YV4.

Long Term

- Install ventilation fans for inverters.
- Evaluate installation of static transfer switches and/or tank circuits to reduce potential for losing an inverter when a ground fault occurs.

Anticipatory Reactor Trip System

Prior To Restart

- Evaluate adequacy of no actuation of annunciator alarms when ARTS cabinet door is open.

Long Term

- Modify lamp test circuit.
- Provide labeling to minimize problems in correlating channel and breaker designations.
- Evaluate separating ARTS channel signal inputs to computer to facilitate determining which parameter initiated an ARTS trip.
- Review main turbine stop valve testing as potential source of spurious low pressure ARTS trips.

Control Rod Drive Control System

Prior To Restart

- Determine improved power supply fuse size and design; perform inrush current and current waveform test.
- Improve cleanliness of CRDCS cabinets to reduce contact fouling problems.
- Ensure adequate forced air cooling of reactor service structure.

Control Rod Drive Control System (Cont'd)

Long Term

- Evaluate alternate control rod direction error circuit design.
- Evaluate control rod motion momentary interrupt circuit.
- Review overall service structure cooling design.
- Improve power cable mating and handling procedures.
- Evaluate use of higher temperature silicon power cables.
- Inspect all control rod leaf spring anti-rotation devices at each refueling outage.
- Evaluate improved control rod drop time test techniques.
- To preclude low voltage problems, check voltage output of CRD transformers frequently; clean and inspect Inductrol voltage regulator and lubricate motor-generator set every refueling outage.
- Determine long-term resolution of CRDM nozzle flange leaks.
- Evaluate means of minimizing occurrence of low insulation resistance in CRD stators.

Incore Monitoring System

Prior To Restart

- Determine proper correction factors for neutron detectors.

Long Term

- Improve reliability of incore neutron detectors for 15% to 30% reactor power.
- Evaluate need for two incore instrumentation multipoint recorders.

Reactor Protection System

Prior To Restart

- Repair/replace defective components in NI Source Range string contributing to erratic noise and loss of signal problems.
- Install electronic filters on reactor coolant flow transmitters to reduce flow turbulence noise.

Long Term

- Evaluate Technical Specification change to permit placing a defective channel in manual bypass.
- Evaluate providing more reliable power range signal to Integrated Control System.
- Eliminate noise spikes in NI Source Range channels apparently due to door alarm switches on RPS cabinets.

Steam and Feedwater Rupture Control System (SFRCS)

Prior To Restart

- Provide filtering of steam generator level transmitter signal.
- Modify SFRCS to preclude isolation of main feedwater and main steam on low water level in steam generator.
- Modify SFRCS to isolate only first steam generator for which low pressure is detected.
- Modify SFRCS such that atmospheric vent valves are closed by a full SFRCS trip (actuation) rather than ½ trip.
- Modify SFRCS to provide open signals to MS106A and MS107A for all SFRCS actuation conditions.
- Rearrange manual SFRCS actuation switches and provide protection against inadvertent actuation.
- Improve Control Room annunciator indication of which steam generator has been source of SFRCS actuation.

Steam and Feedwater Rupture Control System (SFRCS)

Prior To Restart (Cont'd)

- Relocate reset buttons for startup feedwater valves to the control board.
- Improve temperature control of SFRCS steam generator pressure switch sensing lines.
- Revise labels on manual resets for indicating lights associated with steam generator level instrumentation.
- Provide separate manual reset for "SFRCS Full Trip" alarm.
- Improve SFRCS power supply operation.
  - Install forced cooling to cabinets.
  - Measure power supply loading and estimate useable service life.
- Perform engineering evaluation of and measure response time for replacement amplifier/calibration boards for steam generator level transmitters.

Steam and Feedwater Rupture Control System (SFRCS) (Cont'd)

Long Term

- Remove automatic close signals to AF599 and AF608 and leave valves open to improve overall reliability of AFW System.
- Modify SFRCS to preclude isolating both steam generators if coincident low pressure signals are received for both steam generators.
- Evaluate modifying control circuitry for main steam isolation valves to improve reliability.
- Evaluate several additional changes to SFRCS to improve system reliability and improve decay heat removal capability
- Evaluate additional improvements of Control Room annunciator indication of SFRCS actuation.
- Evaluate removing SFRCS close signals to atmospheric vent valves.
- Establish improved record keeping for SFRCS power supplies and trend to better determine expected service life.
- Monitor, periodically, the 125 Volt DC bus to ensure noise is at acceptably low level.
- Modify steam generator level instrument monitors.

Safety Features Actuation System

Prior To Restart

- Modify SFAS to avoid ungrounded power supply common problems by installing separate sensor channel power supplies.
- Confirm AC and DC contact current in SFAS output relays in within design capability.
- Repair/replace surveillance light cards having damaged components or electrical connections.

Long Term

- Evaluate alternate surveillance card design.
- Evaluate elimination of SFAS closure of main steam isolation valves.
- Investigate spurious SFAS incident level 1 trips due to spiking of radiation monitor strings.
- Improve human engineering considerations associated with (1) relative location of SFAS manual trips and associated reset pushbuttons, (2) location of reactor coolant pump seal injection, and (3) seal return valve control switches.

Integrated Control System

Prior To Restart

- Improve main feedwater pump runback control upon unit trip (rapid feedwater reduction circuitry).
- Replace inoperable fuse holders.
- Calibrate selected control modules.
- Perform action plan 16 requirements.
- Modify load balance control for turbine bypass valves.
- Upgrade selected control modules.

Long Term

- Evaluate alternatives to rapid feedwater reduction control scheme.
- Improve preventive maintenance system.
- Improve proportional and integrating module reponse.
- Provide additional cooling for ICS cabinets.
- Provide monitoring capability for selected ICS parameters (diagnostic).
- Replace power selector switches.
- Improve transfer capability for pressure inputs to ICS for turbine bypass valves.

Security System

Prior To Restart

- Evaluate/modify security requirements to improve operator access.
- Review electrical loads on uninterruptible power supply.
- Revise procedures in event of loss of ventilation to Central Alarm Station.

Long Term

- Perform evaluation of several operational/reliability improvements for security system.

Control Room Normal and Emergency Ventilation Systems

Prior To Restart

- Modify overall control scheme for water-cooled and air-cooled condensing modes of Emergency Ventilation System (EVS).
- Manually adjust Service Water System cooling flow to water-cooled EVS condenser to accommodate seasonal changes.
- Replace refrigerant solenoid control valves and install additional stop and check valves to facilitate refrigerant control for EVS.
- Increase cooling capacity of EVS.
- Improve air distribution across cooling coils.
- Install/repair gaskets on Control Room door and security room door to limit air leakage.
- Calibrate control and indicating instrumentation.

Control Room Normal and Emergency Ventilation Systems

Long Term

- Install flow modulating control valve in service water cooling path for EVS.
- Further increase cooling capacity of EVS.
- Limit use of manual switches on local control panels associated with EVS.
- Perform air flow balance of normal ventilation system.
- Review overall adequacy of normal ventilation system.
- Develop improved preventive maintenance procedures for entire system including dampers and actuators.
- Inspect and refurbish air handling duct work and associated insulation, filters and differential pressure units to improve cleanliness conditions in control room.
- Improve operator indications and control regarding normal and EVS operation.
- Clean and repair humidification system. Evaluate alternate designs.
- Evaluate causes of failures of chlorine detectors and station vent air particulate monitors.

Station Air and Instrument Air Systems

Prior To Restart

- Isolate and repair leakage in Station Air and Instrument Air systems to maximum practical extent.
- Perform required station air compressor preventive maintenance.
- Test setpoints of control valves used to maintain instrument air header pressure in the event of station air system failure.
- Revise procedures and testing to identify the temporary diesel air compressor as the backup air supply.
- Provide improved reliability of diesel air compressor during inclement weather.
- Procedurally blow down drains from SA28 to remove accumulated moisture in station air system.
- Provide filtering of air supply through SA2010 to minimize debris accumulation.

Station Air and Instrument Air Systems (Cont'd)

Long Term

- Perform engineering study of Station Air and Instrument Air systems to evaluate several areas for improving overall reliability (e.g., required emergency air compressor size; isolable vs. non-isolable loads; need for 100/100 psig regulators; leak isolation flexibility).
- Install moisture trap on SA28 to improve draining.
- Segregate air intake and diesel exhaust for diesel air compressor.
- Modify Station Air and Instrument Air systems to prevent dumping system air to atmosphere when the dryers are bypassed.
- Increase frequency of dewpoint check on instrument air receiver to detect unacceptable moisture leakage from station air headers to instrument air headers; install permanent air dryer around IA408.
- Evaluate providing capability to start station air compressor 1-2 from Control Room.
- Install flow meter to permit trending of air system degradation.

Station Fire Protection

Prior To Restart

- Provide audible fire alarm in Control Room.

Long Term

- Maintain fire alarm location backup on security computers.
- Revise circuitry for ionization smoke detectors to avoid spurious alarms.
- Evaluate improving testing and maintenance accessibility of several smoke detectors and temperature switches.
- Resolve operational problem with ionization smoke detector installed above control rod drive breakers.
- Complete fire protection enhancement program on schedule consistent with Appendix R commitments.
- Provide time delay for diesel fire pump start to minimize unnecessary starts while the electric fire pump brings up system pressure.
- Resolve power supply problems with Viking fire panels.
- Modify fire alarm display in Control Room so that both panel number and zone number are provided.

Component Cooling Water System

Prior To Restart

- Functionally test CCW pump room ventilation fans.
- Repair or replace nitrogen regulator for CCW surge tank.

Long Term

- Add CCW room ventilation fan periodic test.
- Implement alternate pressure control for CCW surge tank.
- Fix small oil leaks on CCW pumps.

Service Water System

Prior To Restart

- Modify ventilation for service water pump rooms.
- Perform ultrasonic test of selected portions of piping and fittings.
- Resolve service water flow through containment air coolers.

Long Term

- Periodically ultrasonically test selected portions of Service Water System.
- Review service water pump shaft performance post-modification.
- Evaluate apparent increased head and flow on service water pump 3-1.
- Evaluate tube corrosion / erosion performance in ECCS room coolers.
- Modify containment air cooler valves to improve stroke time.
- Inspect tubes in component cooling water heat exchangers.
- Improve temperature control for Component Cooling Water System.

Auxiliary Feedwater System

Prior To Restart

- Install air operated steam admission valve near each auxiliary feedwater pump turbine (AFPT); resolve associated high energy line break items.
- Ensure operability of steam traps on AFPT steam supply lines and periodically reconfirm operability.
- Revise AFW pump automatic suction transfer setpoints for switching from condensate storage tank to service water.
- Resolve overpressurization problem for discharge piping from AFW pumps.
- Install PGG governor on AFPT #1, as currently on AFPT #2; revise low speed stops to accommodate changes in governor operation time.
- Evaluate coincident AFW and MFP feed to steam generators.
- Confirm AFW pump discharge valves will open for maximum credible differential pressure.

Auxiliary Feedwater System

Prior To Restart (Cont'd)

- Remove individual suction strainers to AFW pumps and enlarge mesh on common strainer from condensate storage tank.
- Remove control power from suction valves FW786 and FW790 to preclude spurious closure.
- Increase time delay on suction pressure switch actuation which isolates steam supply to AFPTs.
- Implement improvements to AFPT overspeed trip mechanism.
- Calibrate AFW pump flow instrumentation.
- Implement controls to preclude steam binding of AFW pumps (NRC IE Bulletin 85-01)
- Install pressure switches to detect main steam line breaks upstream of MS106, MS106A, MS107, MS107A.

Auxiliary Feedwater System (Cont'd)

Long Term

- Investigate means of monitoring for condensate in AFPT steam supply lines.
- Improve steam generator level control capability when using AFW pumps.
- Evaluate leaving AF3870 and AF3872 open during plant operation to further improve AFW System reliability.
- Evaluate potential for contamination from Service Water System to AFW pump suction.
- Improve operability of manual mechanical overspeed trip on AFPTs.
- Improve access to AFW pump #1 room.
- Inspect internals of AFW pump and turbine during next refueling outage.
- Provide accurate means of monitoring AFW pump recirculation flow.
- Improve AFW pump rooms ventilation control.
- Improve Control Room board control, indication and reset layout.

Main Steam System

Prior To Restart

- Refurbish and check setpoints for all main steam safety valves (MSSV's).
- Install lift stop collars on "R" orifice MSSV's.
- Install lateral snubber on "A" main steam header.
- Recalibrate atmospheric vent valve controls.
- Administratively require plant shutdown if both 1050 psig setpoint MSSV's on a header are inoperable.
- Test smaller inlet bore size for MSSV's.
- Establish leak rate for testing of main steam non-return valves.

Long Term

- Install MSSV monitoring system.
- Improve mechanical design of main steam isolation valve position switches.
- Investigate increased noise and general vibration with full arc admission to main turbine.

Steam Generator System

Prior To Restart

- Provide engineering analysis regarding acceptability of having exceeded procedural pressure/temperature limits during testing.

Long Term

- Improve reliability and accuracy of steam generator shell thermocouple temperature readings.
- Evaluate modifications to condenser steam jet air ejector radiation monitors.

Main Feedwater System

Prior To Restart

- Investigate and correct cause of power suply failures for main feedwater pump turbine (MFPT) control system.
- Improve reliability of MFPT low pressure drainage header pumps.
- Evaluate via testing ability for automatic vs. manual control of main feedwater pumps between 15% and 45% plant power.
- Minimize potential for overfeeding steam generators after reactor trip by modifying interlocks between startup valve and main feedwater block valve.
- Improve reliability of MFPT oil system by installing accumuiator.
- Resolve apparent vibration problem on MFPT 1-1 pump end bearing (instrument problem).

Main Feedwater System (Cont'd)

Long Term

- Perform overall reliability study of main feedwater system and associated support systems.
- Evaluate modifications to high pressure drain system to minimize flashing and vibration.
- Repair or replace level indicating sight glasses on high pressure feedwater heaters.
- Correct variance among MFPT turbine speed indicators.
- Improve reliability of MFPT turning gear system.
- Improve flow control during feedwater cleanup operations performed prior to each reactor plant startup.

Reassignment of PEP and SALP Improvement Program Activities

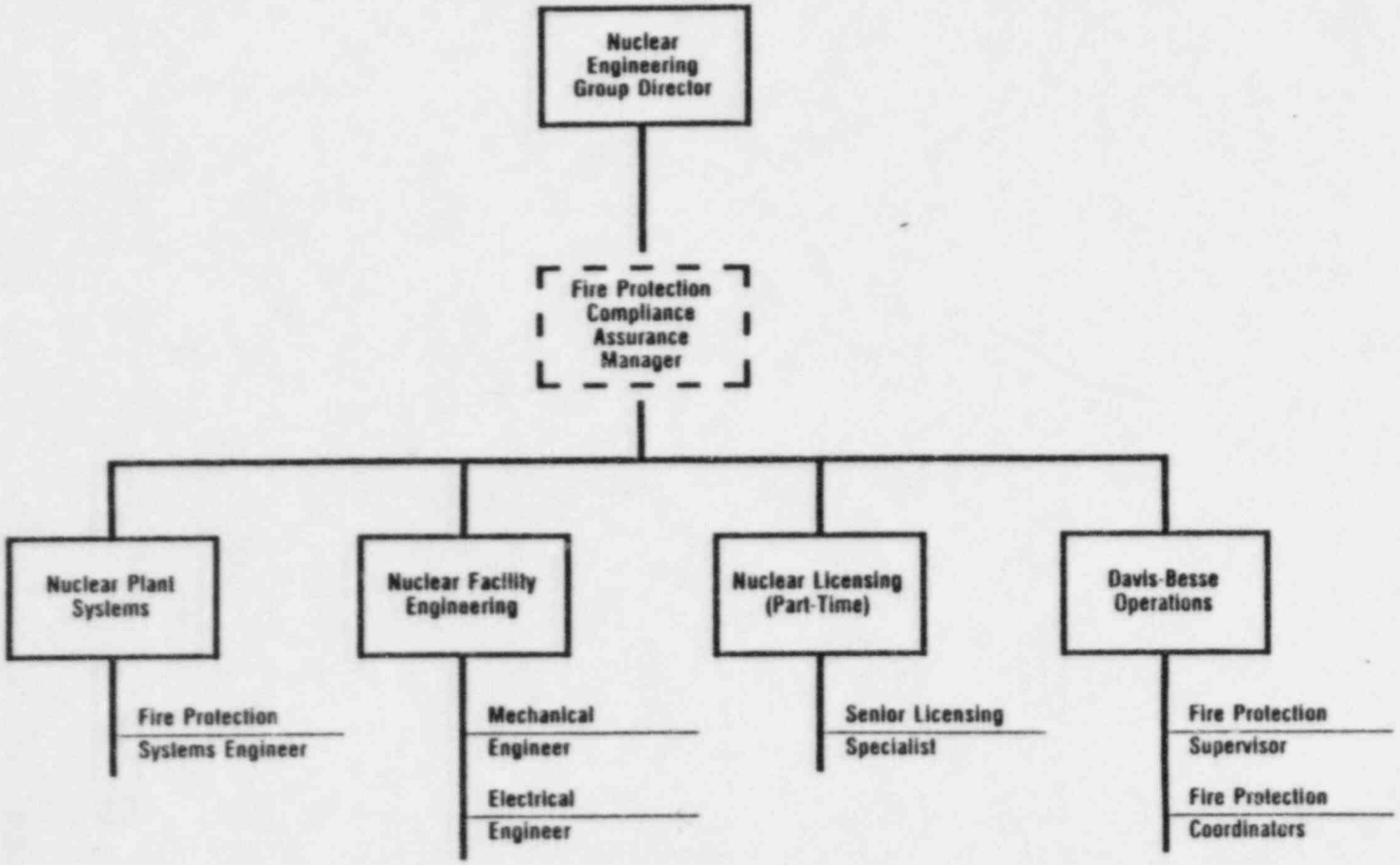
High priority—will receive commensurate emphasis and resources:

- Prepare detailed position descriptions for new organization (completed)
- Merit Review and Salary Administration Program (completed)
- Configuration Management (in process)
- Management Training (in process)
- Management By Objectives (resume after restart)
- Fire Protection (in process)
- Nuclear Mission Procedures (in process)
- QA Awareness Program (in process)
- Non-outage Work Prioritization (resume after restart)
- STA Assume Interim EDO Function (completed)

Configuration Management (in process)

- Program Manager established — Toledo Edison/MPR.
- Program Basis:
  - Component/system data base.
  - System descriptions/design basis.
  - Validated vendor manuals.
  - Control of drawing and manuals.
  - Accurate spare parts allowance.
- Plan to be issued
- Schedule — completion by December, 1987.
  - 120 man-years of work.
- Prototype program — Four Systems
  - High pressure injection.
  - 4.16 KV electrical system.
  - Instrument air.
  - SFRCS.
- Containment equipment information walkdowns
  - 12 teams; 25 people.

Interim Fire Protection Functional Organization



Davis-Besse Procedures

- Nuclear mission procedures (NMPs) are being prepared to:
  - Implement commitments and Corporate/Mission policies.
  - Control interfaces between Nuclear Mission Divisions.
  - Provide basis for review and upgrade of Division procedures.
  - Establish consistency throughout Nuclear mission.

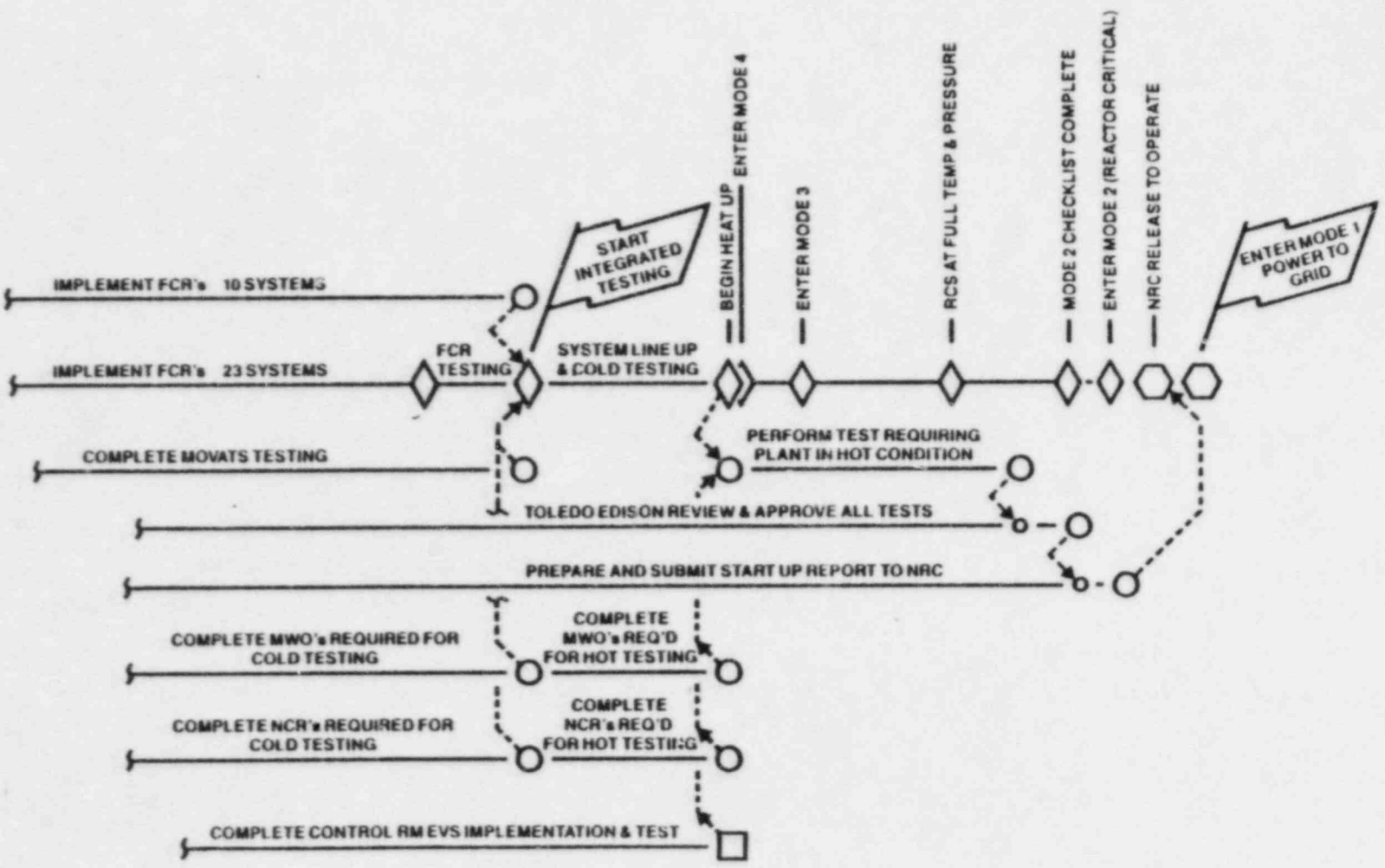
  NMP Project Team is planning, scoping and scheduling all procedure efforts.

  20 Toledo Edison personnel directly supporting NMP effort supplemented by 20 contract writers.
- Division procedures are being revised or prepared to:
  - Implement applicable NMP requirements.
  - Upgrade selected maintenance, operations, test procedures and environmental qualification procedures.

  20 Toledo Edison personnel preparing or revising Division procedures supplemented by about 35 contract writers.
- Procedure Integration

  NMP and Division procedures coordinated by NMP Project Team to ensure continuity of programs during procedure implementation by:
  - Monitoring cross-referenced procedures.
  - Ensuring cross-functional reviews.

Davis-Besse Restart Schedule

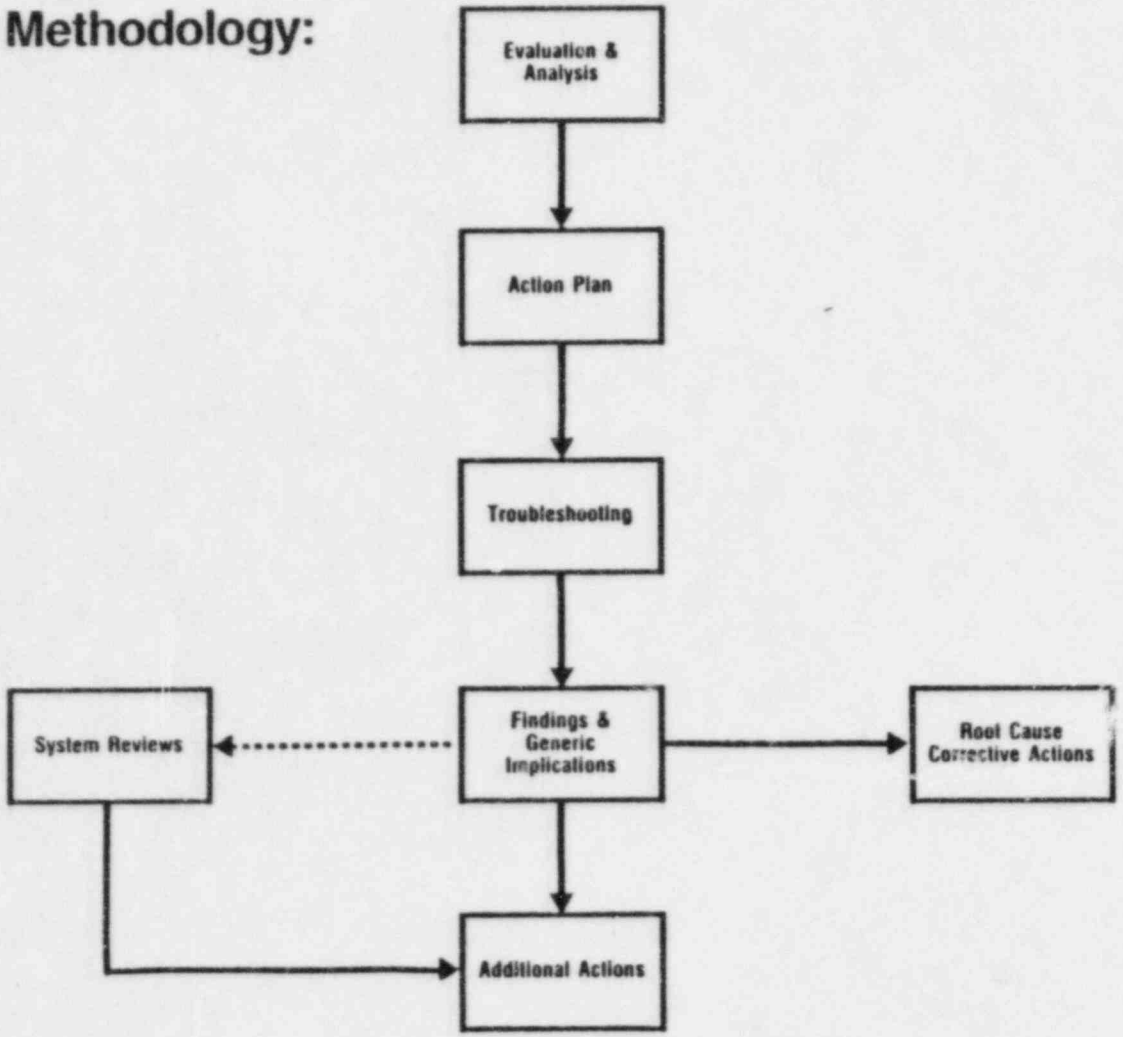


Engineering Interface and Support

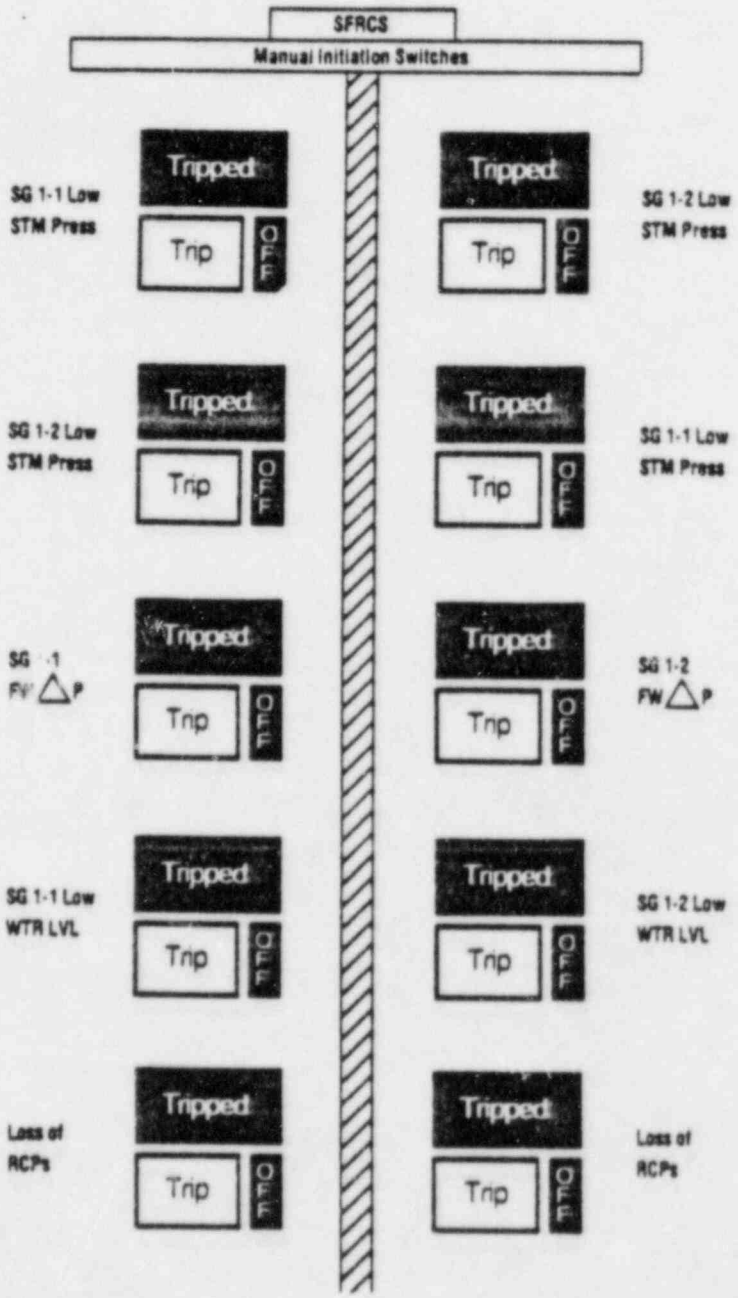
- Engineering attendance at Plan of the Day meeting.
- Duty Manager Roster System.
- Station Technical Support Section.
- Request for Engineering Assistance Process.

Equipment Investigation

Methodology:



Original Layout



Summary of AFWS Reliability Analysis

- Analysis conducted in accordance with the scope and methodology provided in NUREG-0611.
- Events modelled

  Loss of main feedwater (LMFW)
  LMFW with loss of offsite power
  LMFW with loss of onsite AC power
- Three configurations analyzed

  June 9, 1985 AFWS (two pump)
  AFWS at restart (two pump configuration)
  AFWS at restart with motor driven feed pump (three pump configuration)
- Results

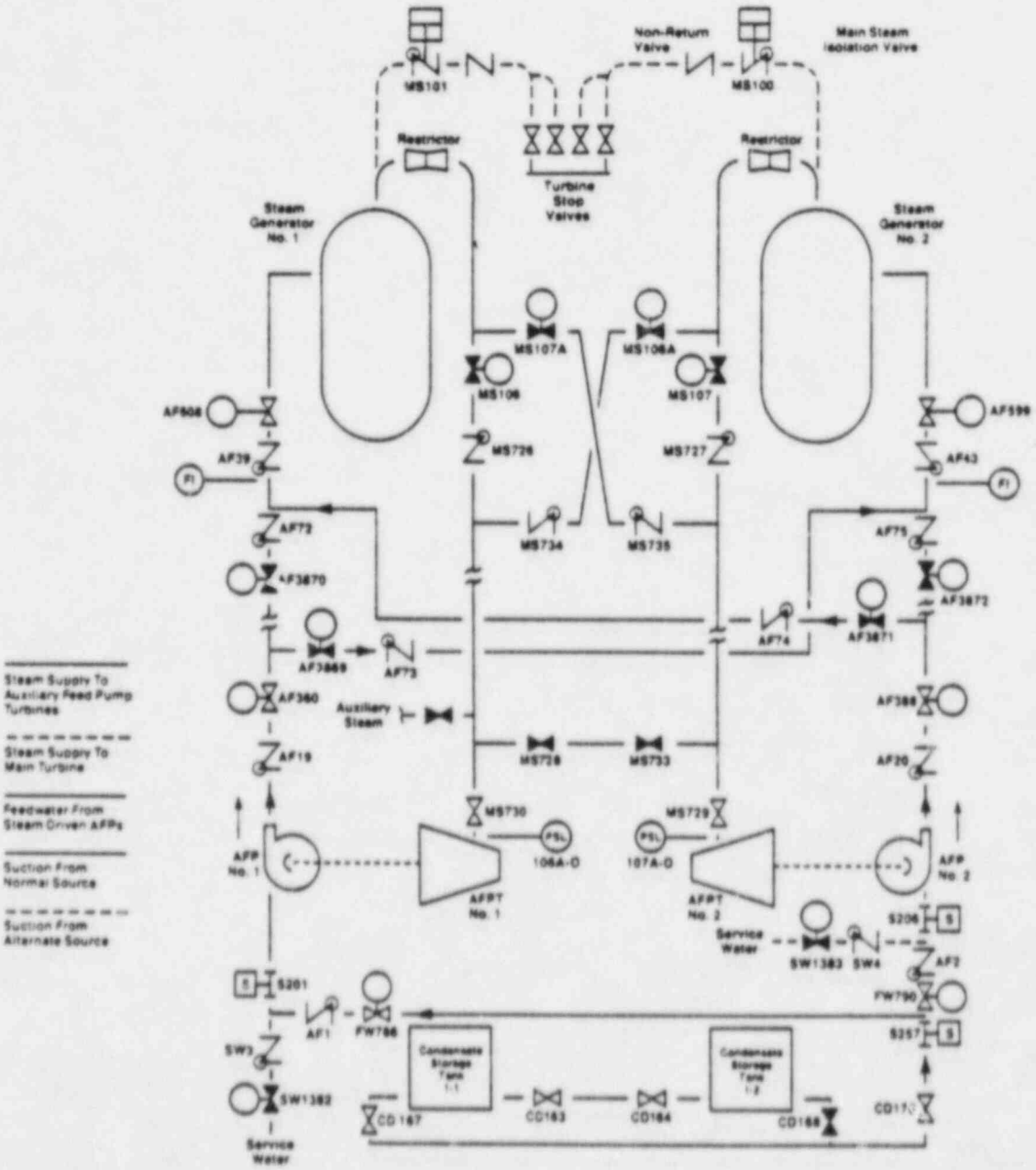
  Unavailability of the Davis-Besse AFWS (at restart) with the motor driven feed pump is within the SRP 10.4.9 acceptance criteria.

Chronology of PORV Flowrate Data

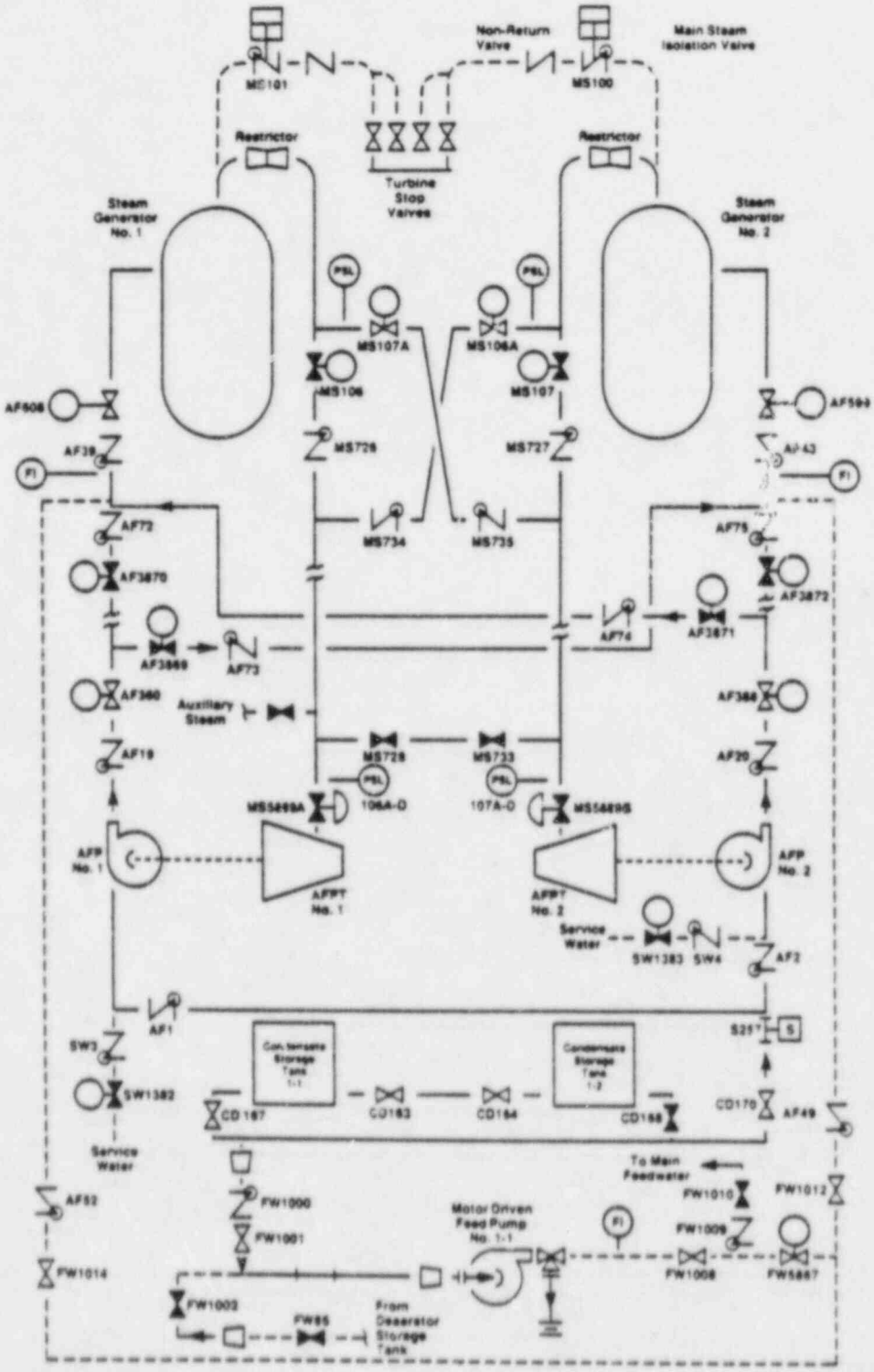
September, 1977	PORV nameplate flowrate. 112,000 lb_m/hr. at 2300 psig
February, 1983	EPRI Test Flowrate Extrapolation 245,000 lb_m/hr.
August, 1985	Initial Feed and Bleed analysis with 10 min. operator action at 610°F RCS hot leg temperature. Results - acceptable. 226,000 lb_m/hr.
October, 1985	"Preliminary" Marshall Station test results. 174,000 lb_m/hr.
November, 1985	Error discovered in Marshall flow device data application.
November, 1985	Corrected Marshall test results. 213,000 lb_m/hr.
November, 1985	Modified PORV nozzle and seat. Low pressure test extrapolation. 229,000 lb_m/hr. Marshall test—232,000 lb_m/hr.
December, 1985	Feed and Bleed analysis with 10 min.operator action at 600°F RCS hot leg temperature. Results - acceptable. 211,000 lb_m/hr. (including inlet pipe losses)

All flowrate data at 2500 psig, unless otherwise noted.

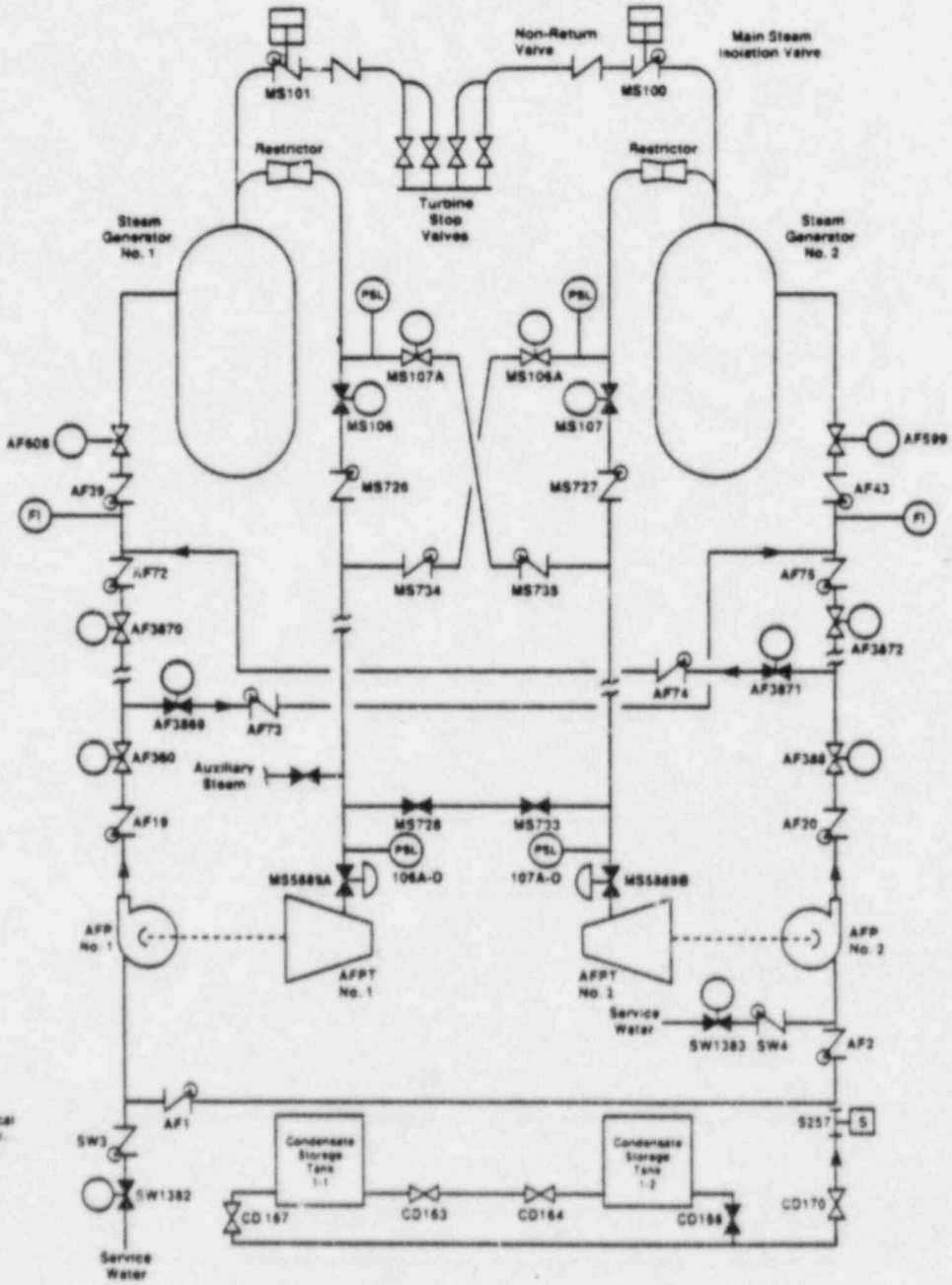
Davis-Besse
Auxiliary Feedwater System
June 9, 1985



Davis-Besse
Auxiliary and Motor Driven Feedwater Systems
Start-Up Configuration



Davis-Besse
Auxiliary Feedwater System
Long Term Configuration*



*Subject to acceptable analytical verification and NRC approval.

System Review and Test Program Systems Selected

Reactor Coolant System

High Pressure Injection System

Core Flooding System

Decay Heat Removal and Low Pressure Injection System

Containment Spray System

Containment Emergency Ventilation System

Containment Air Cooling and Hydrogen Control System

Makeup and Purification System

Electrical 125/250 VDC System (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 System (includes inverters and required transformers)

System Review and Test Program Systems Selected

Anticipatory Reactor Trip System

Control Rod Drive Control System

Incore Monitoring (Includes core exit thermocouples)

Reactor Protection System

Steam and Feedwater Rupture Control System

Safety Features Actuation System

Integrated Control System

Security System

Control Room Normal and Emergency H&V Systems

Station and Instrument Air

Station Fire Protection

Component Cooling Water System

Service Water System

Auxiliary Feedwater System

Main Steam System

Steam Generator System

Main Feedwater System

INDEPENDENT PROCESS REVIEW COMMITTEE

ROBERT S. BRODSKY

Bob Brodsky is a principal managing partner of Basic Energy Technology Associates, Inc. (BETA), a consulting firm serving clients in the nuclear industry and at all levels of government. He has over 25 years of experience in the naval nuclear program. As Assistant Director for Reactor Safety and Computation in the Naval Reactors Division at the Department of Energy, he was responsible for design and operational safety of the Navy's shipboard nuclear propulsion plants, the Department of Energy's naval nuclear prototypes, and the Shippingport Atomic Power Plant.

JAMES D. CARLTON

Jim Carlton is currently manager of Performance Analysis in B&W's Nuclear Engineering Department. He is responsible for the performance, safety, ECCS, radiation and reliability analysis of B&W and competitor NSS's. Prior to his current position, Mr. Carlton managed integrated organizations for B&W and B&W's licensee in Germany. His responsibilities in this integration function included overview of the design, specification, and analyses of B&W's scope of supply in the NSS. Mr. Carlton was also a systems and components design engineer at B&W for several years. His activities included design and operating experience on the NSS Savannah. He participated in the design of B&W's 177 and 205 FA NSS by activities such as the reactor coolant system design, the once-through steam-generator design and prototype testing, and development and prototype testing of the Integrated Control System.

CRAIG A. HENGGE, SECRETARY

Craig A. Hengge is a Senior Assistant Engineer in the Nuclear Safety Department at Toledo Edison Company. He began full-time employment with Toledo Edison as an Assistant Engineer in 1981. Mr Hengge has been involved in probabilistic risk assessment and system reliability activities at Davis-Besse. Most recently, he participated as a member of the Decay Heat Removal Group which conducted an in-depth review of various systems utilized for reactor decay heat removal at Davis-Besse and identified specific improvements to those systems. Mr. Hengge also serves as Secretary of the Company Nuclear Review Board. He holds a B.S. degree in Nuclear Engineering from the University of Cincinnati and was employed at Toledo Edison from 1978 through 1980 as a Co-op Student.

PHILIP C. HILDEBRANDT, CHAIRMAN

Phil Hildebrandt is a consulting engineer with MPR Associates, Inc. of Washington, D. C. He has been with MPR Associates since 1979 involved with a wide range of engineering tasks for both nuclear and fossil-fired power plants. Prior to joining MPR he was a design engineer with Duke Power Company, responsible for resolution of nuclear steam generator related problems and design for specific fluid systems. Mr. Hildebrandt was with the Naval Nuclear Propulsion Program for ten years. He was on Admiral Rickover's staff and was responsible for nuclear steam generator operation, maintenance and design, and earlier, involved with the design of fluid and mechanical systems for submarine propulsion plants. He is a registered professional engineer in the Commonwealth of Virginia.

EUGENE C. NOVAK

Eugene C. Novak is Director of Fossil Facilities Engineering and Construction at Toledo Edison Company. In that capacity he is responsible for all capital improvements projects and offsite engineering support activities for the Company's non-nuclear electric generating facilities. Mr. Novak is also chairman of the Company Nuclear Review Board. Mr. Novak began full-time employment with Toledo Edison as Assistant Engineer in 1959. For ten years he held various engineering positions at the Company's fossil fueled generating facilities. From 1970 through 1980 Mr. Novak was directly involved in the Davis-Besse project holding various engineering positions including Project Engineer and Director of Power Engineering and Construction. Mr. Novak holds a B.S. degree in Mechanical Engineering and an M.S. degree in Industrial Engineering from the University of Toledo, and an M.S. Degree in Nuclear Engineering from the University of Michigan. He is a registered professional engineer in the State of Ohio.

JAMES P. O'HANLON

James P. O'Hanlon is the manager of the operations service division for United Energy Service Corporation in Atlanta, Georgia. Mr. O'Hanlon has over 20 years supervisory and management experience in the nuclear industry. His experience includes that of a general manager of a multi-unit operating nuclear station responsible for all onsite activities. It also includes experience as Assistant Director of Evaluation and Assistance at the Institute of Nuclear Power Operations with responsibility for direction of evaluations of all nuclear utilities in the U.S.

LOUIS P. SIMON

Louis Simon maintains an Senior Reactor Operator's license for Toledo Edison's Davis-Besse Nuclear Power Station. He is Operational Projects Supervisor in the Operations Engineering Department. Mr. Simon has over 27 years steam plant operating experience, naval, industrial, and utility. Mr. Simon joined Toledo Edison in Fossil Operations in 1962. He participated in the Davis-Besse cold licensing program and was a Shift Supervisor through startup and commercial operation. Mr. Simon became Operations Supervisor in January 1979 and held this position until December 1985.

JOHN G. WALKER

John Walker is manager of operating plant services for Bechtel Power Corporation in Ann Arbor, Michigan. He has been with Bechtel since 1966 involved with the startup of numerous nuclear and fossil power plants in the U.S. and foreign countries. He served as chief startup engineer for eight years and was a project manager for three years prior to becoming manager of operating plant services. Prior to joining Bechtel, Mr. Walker was a plant operations supervisor for Texas Electric Service Company. He graduated from Texas A&M with a B.S. degree in Mechanical Engineering and is a licensed professional engineer in California and Texas.

System Review and Test Program Objectives

For systems important to safe plant operation:

- Identify important and recurring design, maintenance and operations problems and determine whether corrective actions are required prior to restart or can be taken over long term.
- Evaluate scope of existing periodic testing to identify any additional testing needed to ensure required functions will be performed.
- Conduct test program to assure these systems are functional. Testing will also be performed to verify adequacy of system modifications completed during outage.

This program will be completed prior to restart of Davis-Besse.

Restart Test Program Approach

- Use existing station administrative procedures to implement and control the restart test program to the extent possible.
- New procedures developed to control activities unique to the restart test program include:

  Organization structure, functions, and responsiblities of the various groups and committees supporting the system review and test program.

  Development of test procedures for new or modified tests:

  Independent Process Review Committee concurs with scope.

  Joint Test Group approves test procedures.

  Station Review Board and Plant Manager approve test as usual.

  Conduct of new or modified test by special test organization.

  Results of all test conducted to demonstrate functions important to safe plant operation to be reviewed by Joint Test Group and Independent Process Review Committee.

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.

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. Increase steam trap capability. 3. 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.

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.

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 and refurbishment of main steam safety valves. 3. Refurbishment of ICS modules for AVV circuitry.
Generic Implications:	Switch contacts being evaluated and refurbished 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. Revise strainer arrangement. 2. Revise transfer switch setpoints. 3. Provide time delay.
Generic Implications:	Other pump suction transfer systems.

Main Steam Valve MS-106

Concern:	Valve position 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, inspect, and test valve.
Generic Implications:	Other motor operated valves.

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—replacing penetration/module. 3. Replacing/refurbishing connectors as required.
Generic Implications:	Preventative maintenance program needed for source range,intermediate range, and power range connectors.

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.

9/35

TRANSMITTAL TO: [X] Document Control Desk, 016 Phillips

ADVANCED COPY TO: [ ] The Public Document Room

DATE: 12/20/85

FROM: SECY OPS BRANCH

cc: C&R w/attachs. (w/o SECY papers)

Attached are copies of a Commission meeting transcript(s) and related meeting document(s). They are being forwarded for entry on the Daily Accession List and placement in the Public Document Room. No other distribution is requested or required. Existing DCS identification numbers are listed on the individual documents wherever known.

Meeting Title: Commission Briefing Davis-Besse Restart From June 9, 1985 event

Meeting Date: 12/18/85 Open X Closed ____

Item Description:	Copies Advanced To PDR	*	DCS Copies (1 of each checked) Original Document	May be Dup*	Duplicate Copy*
1. TRANSCRIPT ___ When checked, DCS should send a copy of this transcript to the LPDR for: _____ w/ Agenda, Viewgraphs	1	*	1	___	___
2. _____	___	*	___	___	___
3. _____	___	*	___	___	___
4. _____	___	*	___	___	___

(PDR is advanced one copy of each document, two of each SECY paper.)

*Verify if in DCS, and Change to "PDR Available."