<!--NRC Commission Meeting Transcript>

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
***
BRIEFING ON SALEM
***
PUBLIC MEETING
***

Nuclear Regulatory Commission
Commission Hearing Room
11555 Rockville Pike
Rockville, Maryland

Wednesday, June 25, 1997

The Commission met in open session, pursuant to notice, at 2:00 p.m., the Honorable SHIRLEY A. JACKSON, Chairman of the Commission, presiding.

COMMISSIONERS PRESENT:
SHIRLEY A. JACKSON, Chairman of the Commission
KENNETH C. ROGERS, Member of the Commission
EDWARD McGAFFIGAN, JR., Member of the Commission
NILS J. DIAZ, Member of the Commission

STAFF AND PRESENTERS SEATED AT COMMISSION TABLE:
KAREN CYR, General Counsel, NRC Staff
E. JAMES FERLAND, Chairman of the Board and CEO, Public Service Electric and Gas Company (PSE&G)
LEON R. ELIASON, Chief Nuclear Officer, Pres., Nuclear Ops., PSE&G
LOUIS F. STORZ, Senior Vice President, Nuclear Operations, PSE&G
ELBERT C. SIMPSON, Sr. Vice President, Nuclear Engineering, PSE&G
DAVID F. GARCHOW, General Manager, Salem Operations, PSE&G
JEROME F. McMAHON, Director, Quality Assurance/Nuclear Safety, PSE&G
JILL LIPOTI, Ph.D., Assistant Director, Radiation Protection, State of New Jersey
DENNIS ZANNONI, Bureau of Nuclear Engineering, State of New Jersey

P R O C E E D I N G S

[2:00 p.m.]

CHAIRMAN JACKSON: Good afternoon, ladies and gentlemen.

The purpose of this meeting is for the Commission

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to be briefed on the status of activities at Public Service Electric & Gas Company's Salem Station, with particular emphasis on the readiness of Salem Unit 2 for restart.

The afternoon, we will hear from the licensee, followed by representatives from the State of New Jersey and ending with the NRC staff.

I should say up front that there is no subtle message being conveyed by holding this Commission meeting on the same day of the Commission briefing on operating reactors and fuel facilities, in which we announced the watch list plants. It was a convenient scheduling plan that placed these meetings on the same day.

As discussed during this morning's Commission meeting, however, both Salem units have remained on the list of reactor sites warranting increased regulatory attention.

Both Salem units have been shut down for approximately two years, addressing longstanding equipment deficiencies, poor material condition, weak management oversight, and ineffective corrective actions. An NRC restart panel has been closely monitoring the licensee's

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progress since July 1995.

This Commission meeting is not intended to determine the acceptability of Salem Unit 2 to restart, or either of the Salem units. That responsibility lies with the regional administrator following NRC staff guidelines for restart approval.

The Commission is interested in the licensee's summary of the nature and extent of their improvement initiatives and is very interesting in the licensee's results -- what measurement criteria they have used and how related performance indicators have been trending over the period of the shutdown.

The Commission is aware the utility must satisfy the requirements of the existing confirmatory action letter prior to restart of the units. The Commission is interested in the staff's assessment of the licensee's actions to date and the plans the staff has in place to monitor effectively the Salem units through power ascension testing and beyond, as appropriate.

I understand that copies of the presentation material are available at the entrances to the meeting.

I would also like to note that members of our Region I staff will be viewing this commission meeting on video conferencing equipment. This is the first use of this technology for an NRC commission meeting, of which I hope to

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make the use of much more routine.

So, if none of my fellow commissioners have any opening comments, we will proceed, hearing first from PSE&G, then the State of New Jersey, and ending with the Commission staff.

Mr. Ferland?

MR. FERLAND: Thank you, Chairman Jackson, and thank you, Commissioners, for taking this time with us today.

I'm Jim Ferland, the Chief Executive Officer of Public Service Electric & Gas Company and also the CEO of its parent company, Public Service Enterprise Group.

I have looked forward for some time to the day when we could come here and go other places and tell you that the Salem Station is ready to return to service as both a safe and a reliable provider of electricity.

Could I have slide three, please?

[Slide.]

MR. FERLAND: I'm accompanied today, here at the table, by Leon Eliason, our Chief Nuclear Officer and President of our Nuclear Business Unit.

Lou Storz, on my left, is our Senior Vice President of Nuclear Operations; Bert Simpson, our Senior Vice President of Engineering; David Garchow, our General Manager of Salem Operations; and Jerry McMahon, who is the

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Director of Quality Assurance.

I think probably a significant majority of the people behind me are additional Salem staff that are here to be responsive to detailed questions you might have.

Although we've got prepared remarks, we did that to structure our presentation, to stay within the time constraints you've got. I'm assuming you're just going to interrupt with questions anytime you want.

CHAIRMAN JACKSON: Never fear.

MR. FERLAND: We're expecting that. All right. Slide four, please.

[Slide.]

MR. FERLAND: Two years ago, we made the decision to shut down the Salem units, and we did so so we could make changes necessary to improve their performance. We had deficiencies much as the Chairman has identified.

Safety, both nuclear and industrial, is foremost in our minds in the operation of our nuclear units.

We're committed to providing the resources required for safety and for achieving operational excellence, and by resources, this goes beyond just providing money. We also feel that should include experienced personnel to know how and where to allocate these resources effectively and folks who know how to manage the complexity of a nuclear operation in a controlled and

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predictable fashion.

You're going to find today, as the discussion goes on, that our remarks are going to focus on three things -- people, plant, and processes.

In the presentation that follows, we'll describe the method we used and, I think more importantly, the results that we have achieved to ensure Salem's readiness for restart.

It really is a combination of the people who operate our facilities, the processes they use to do so, and the material condition of our physical plant that ultimately determine the quality of our operations.

Special strengths in any of these three areas can offset but even can hide weaknesses in the other two areas, and conversely, weaknesses in one area can place unreasonable demands on the other two.

Our presentation explains how we have improved and integrated these three cornerstones of a successful nuclear operation. We will present quantifiable evidence demonstrating that improvements have been made in each of these areas.

Could I have slide five, please?

[Slide.]

MR. FERLAND: Two years ago, when we made the decision to keep Salem off-line for an extended outage, we

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emphasized the units would only be restarted when we were certain that each was ready for safe and reliable operation over the long term.

Since making that decision, we have fully evaluated our deficiencies and implemented comprehensive

corrective actions. What I find particularly important are the following factors.

We have a new management team. This is a new which has demonstrated to me its competence and dedication, and we have assessed and retrained key personnel in operations, maintenance, and engineering, and we'll provide evidence of that.

We have achieved the goals that were set forth in our restart plan, and as a result, today, NBU personnel are exhibiting effective leadership, teamwork, accountability, and ownership.

The plant's material condition has been greatly improved, and plant processes are now effective.

We've been very deliberate and thorough in our efforts to prepare Salem 2 to be a safe and reliable performer. We believe strongly that improved reliability is synonymous with improved safety margins.

The resources and efforts we have expended over the past two years will pay for themselves many times over in the future in terms of safe and reliable operation, and

going forward, we have established and will be developing additional performance measures to provide early indications of matters that require attention to assist us in sustaining a high level of safety and performance.

I, along with the company's Board of Directors and that board's nuclear committee, will continue to monitor closely our nuclear organization's progress toward nuclear excellence at both Salem and at Hope Creek.

Nuclear and industrial safety will remain foremost in our minds in the operation of each of our nuclear units, as I hope our efforts over the past couple of years have made clear.

We will make conservative operational decisions, we will provide required resources, and we will make management changes as required to support safe, reliable, and event-free operation of our nuclear facilities.

I am fully confident that Salem 2 is ready to return to service.

At this point, I'd like for a period of time to turn the presentation over to Leon.

MR. ELIASON: Thank you, Jim.

Good afternoon, Chairman and Commissioners.

I am Leon Eliason, the Chief Nuclear Officer and President of the Nuclear Business Unit for PSE&G.

I am confident today that Salem 2 is ready to

return to service.

To place our recovery into perspective, I will summarize where we came from, how we accomplished the changes at Salem, and where we are today.

Details regarding the results for improvement initiatives will be covered by Lou Storz and Bert Simpson in their presentations. Even more details are contained in the restart briefing papers that we docketed with you in late May.

May I have slide seven, please?

[Slide.]

MR. ELIASON: This slide illustrates the phases of our recovery effort.

The three key focus areas on the left -- people, plant, and process. Prior to shutting down the two units, these elements did not work effectively together.

While public health and safety was not in jeopardy, I made a conservative decision to shut down both

units. Further, we committed not to seek to restart until we could assure safe, reliable, and eventless plant operation.

Following the shutdown, I restructured the management team by bringing in proven performers from successful nuclear plants. I also replaced the majority of our senior and middle-level managers.

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The new management team thoroughly analyzed the causes underlying the decline in performance and developed our restart plan, which is depicted by the central arrow on this slide.

Slide eight, please.

[Slide.]

MR. ELIASON: On the right side is our restart process, which consists of five steps -- issue discovery, corrective actions, assessment and affirmations, restart recommendations from the line organization, including engineering, and the independent oversight recommendation, and finally, after that review, my concurrence as the Chief Nuclear Officer.

This process is systematic, thorough, and self-critical. It entails retraining personnel, improving the self-assessment and corrective action areas, and enhancing human performance in the areas of leadership, teamwork, and accountability.

In addition, senior management is actively involved in guiding the recovery process. The process has been and continues to be the subject of substantial independent oversight by my quality assessment organization, as well as external review.

For example, during the first quarter of this year, the quality assessment organization logged over 2,000

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hours directly observing operations activities and made over 400 field observations of our maintenance activities.

In addition, our own employees, over 1,500 people, have initiated action requests during this past six months as part of our self-assessment.

When I arrived at Salem in the fall of 1994, while the units were still running, I began to make major changes in two areas requiring immediate management attention. The first was quality assessment, and the second was an employee concerns program.

CHAIRMAN JACKSON: Mr. Eliason, let me ask you a question.

MR. ELIASON: Yes.

CHAIRMAN JACKSON: In your May 28th letter, you state that you'd accomplished over 650 major and minor mods. I assume a major mod was unifying your control room.

MR. ELIASON: That's correct.

CHAIRMAN JACKSON: What prompted you to do that, and what benefits either have you derived or do you expect?

MR. ELIASON: We're going to talk a little bit more about that later on, Chairman, buy our view was that, if you looked at the old control room, the command and control operations was very limited, and the shift -- what I call the shift management did not have direct access to its operators.

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The second part of it was the control room was really not in very good shape, and we wanted to take a step back, make sure that we had good command and control and we had a good solid operating environment in the control room. So, we decided to make that major modification.

I talked about the quality assessment and employee concerns program, and they're shown on the left side of this slide. Improving them early on was consistent with my management philosophy of finding and fixing our own problems.

I want to take a moment now to explain what I did to establish the groundwork in both of these areas prior to implementing the restart plan.

In the quality assessment area, we revised the procedures governing the corrective action program. We lowered the threshold for identifying problems and raised our standards and then streamlined our processes for addressing identified deficiencies.

We brought in an experienced outside manager to head the quality assessment organization and revitalized it with experienced personnel from inside and outside of the company.

We defined expectations and communicated them through required training.

We improved our management oversight of the

quality assessment function by forming a nuclear review board which reports directly to me. It is comprised primarily of individuals who have senior nuclear management experience from both inside and outside of the company.

A nuclear review board member who is not a company employee acts as an independent liaison with the nuclear committee of the corporate Board of Directors and will provide them with an independent insight on what we're doing down at the site.

I recognized early on the need to establish an environment that is open and where employees feel that they can raise safety concerns, and in setting up the employee concerns program, we bench-marked ourselves against other utilities and used the best practices we could find.

We staffed the organization with experienced nuclear professionals, incorporated employee concerns into our training programs, and aggressively communicated the existence and nature of the program to our employees and contractors.

To date, we have trained over 500 PSE&G and contract managers and supervisors in how to effectively deal with employee concerns.

After enhancing the quality assessment of employee concerns areas, we finalized our restart plan and submitted it to the Nuclear Regulatory Commission in November of 1995.

We have stayed the course with this plan and its implementation and have taken many actions over the past two years to improve our performance.

The actions set forth in our restart plan, we believe, are the right thing to do, not things that we have been told to do.

We know, through our own experience, what it takes to be an excellent performer in this industry, and we have incorporated this philosophy into our restart plan.

May I have slide nine, please

[Slide.]

CHAIRMAN JACKSON: Before you go --

MR. ELIASON: Yes.

CHAIRMAN JACKSON: Since you're talking about assessment and issue discovery and corrective actions --

MR. ELIASON: Yes.

CHAIRMAN JACKSON: You know, the submittal, again, that you made indicated that the quality assurance

organization has provided important findings to the line organization. Do you track the timeliness of corrective actions?

MR. ELIASON: Yes, Chairman. I get a monthly report directly from our own quality assurance organization that provides me with a pretty detailed review of the findings and the trends that are going on within the

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organization.

I use that monthly report and the performance indicators in that report to track the response from the organization.

The importance of these accomplishments is summed up by the icon on the right side of this slide. I believe we've taken a workforce, a plant, and a collection of processes that do not function effectively and brought them together in the corporation for the restart of Unit 2.

We've created a revitalized organization, one which is very different than when I arrived at PSE&G. We are now focused on the quality of our operation, and trained people, effective process, and a reliable strong plant are the cornerstones of this quality.

From a broad perspective, we have set a course of action for restart, and we have followed it. Having completed our restart initiatives, we are now poised to pursue the long-term excellence of operations.

That concludes my opening remarks. I'd like to turn it over to Lou and Bert now to discuss the results of our restart initiatives.

CHAIRMAN JACKSON: Commissioner McGaffigan.

COMMISSIONER McGAFFIGAN: I just want to ask one question of definition.

You both have used the word "eventless," and when

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I was there with the regional administrator visiting the plant back -- I guess it was March or April -- we talked about just the massive rework that you've done and it's almost going to be like a new plant starting up, and aside from Watts Bar, there haven't been very many eventless startups.

Are you setting the bar -- the core of my question is are you setting the bar too high for yourself? "Eventless" means zero events as you try to make this large number of changes that you've made to improve the safety and reliability all work.

What should be the expectation of us and the public with regard to whatever start-up issues -- once you get the authority for startup from the regional administrator, what should we expect in the way of operations?

CHAIRMAN JACKSON: Actually, let me flesh out that question, and I know Commissioner Diaz also has a comment or a question.

I guess I'm interested in how many post-modification tests still have to be accomplished during your power assumption phase. That's number one. And number two, do you have a trigger for postponing startup if a significant number of test failures occur?

And so, if you can sort of wrap that into your

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response to Commissioner McGaffigan's question --

MR. ELIASON: I'll try to wrap it into one response.

CHAIRMAN JACKSON: -- and then I'll defer to my colleague.

MR. ELIASON: Let me go back and address what I call "eventless operation."

We have set the threshold fairly low to deal with problems, and we'll talk about that a little bit later in our detailed discussion.

When we're talking about eventless operation, meaning that we want to be in a position where we can deal with our problems early, and if you were at the site, you would say that we have a -- I know, Commissioner, you've seen our event board.

Those events that we mark on that board are really what we call precursors to what I would call more major problems.

Our issue on eventless operation is to make sure that, as we're starting up our plant and running our plants, that it will continue to keep a conservative decision and anticipate areas where we do believe there is a possibility of entering into a problem or there may be a issue that may take us out of what we call our desired state of operation and could put us into some kind of an action statement that

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we didn't anticipate or have an event. So, we don't want to end up with that.

So, that's really what we're talking about as far as eventless operation, to make sure that we're dealing with these issues very early.

We know that, on any power plant, you're always going to have to deal with problems, and we want to deal with them as problems and not as some more significant event.

The second area you wanted to talk about is what we're going to do as far as our post-restart testing, and we are going to get into that in some detail.

CHAIRMAN JACKSON: Yes, I noticed that Mr. Storz is going to be talking about system readiness.

MR. ELIASON: May I could let Lou address that, and then we step back and talk about how we're going to stop things if they look like they're getting out of hand.

CHAIRMAN JACKSON: Yes, I'd appreciate that.

Commissioner Diaz?

COMMISSIONER DIAZ: I just think it's the same comment. Maybe you want to really define what "event" means, maybe reportable events or some kind of definition.

MR. STORZ: We have an event board coming int.

Our operators are particularly pleased with the information now available in the state-of-the-industry plant computer that we installed.

To improve safety system reliability, we upgraded the service water system, resolved longstanding diesel

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generator vibration problems, improved the reliability of the diesel generator air-start and lube-oil systems, and refurbished the safety injection pumps and valves.

To improve plant performance and efficiency, we made extensive modifications to our circulating water system, and we improved the secondary side of the plant to assure safe, reliable, and eventless operation.

For example, the turbine rotary placement was a big example in feedwater pump and turbine overhauls.

Currently, we have completed component and system testing. We are now performing integrated functional testing.

The test process is deliberate and systematic, and operations personnel are demonstrating good command and control. Identified deficiencies are promptly corrected,

and lessons learned are used to refine testing process accordingly.

Plant restart required items are being worked off in accordance with our restart plan. Post-restart items are scheduled and will be worked off consistent with our on-line work-week management program. Our current schedule projects Unit 2 restart in early July.

May I have slide 12?

[Slide.]

MR. STORZ: I just gave you some idea of the plant

improvements. Now we'll focus on people and process.

CHAIRMAN JACKSON: Before that, could you answer the question about how many post-modification tests you plan to accomplish during the actual power ascension phase?

MR. STORZ: I have brought Dave along, he can give us some details, but we have about 25 major integrated tests that we plan to accomplish.

I believe we're about at test 10 currently, and as we continue to raise temperature and pressure of the plant and change modes, we will then begin the integration tests for these other large tests that we have planned.

We've tested thousands of components and have turned over 85 of our 88 selected systems that we did to operations.

Now, we have three systems remaining in this last part of the integration test program to turn over.

So, I would say we are well along in our program. We've learned a lot of lessons along the way. In particular, we learned some valuable lessons in developing the test and program for our ventilation equipment.

I guess we had to go to school on that system. It was a system that needed a tremendous amount of study, and as a result of the control room modification, we, additionally, affected that system, and it took us a while to get through that, but I think, in the end, we learned

very valuable lessons, and we found weaknesses that we corrected in our test engineer program and training programs.

So, the bottom on that was it was a contributor and helped set the stage for these more complicated tests that we're running on our integrated feedwater systems.

CHAIRMAN JACKSON: Let me just follow up with that.

You yourself have stated that the test program philosophy is to demonstrate the proper functioning of more controlled design change and associated processes, and so that takes me back to my question of whether -- you know, because these perhaps have been problems that you've been trying to address net-net.

Do you have triggers for postponing the startup if a significant number of failures occur?

MR. STORZ: Each one of the tests has a criteria that we're going to use to certify the test.

We will write action requests to evaluate failure, and our normal process, which is a collegial process of engineering, operations, maintenance, and quality, would meet and discuss each one of those failures, and if we determined that it was a significant issue, we would make a recommendation, which I feel would be supported, to put a hold on our program until we were ready to proceed.

CHAIRMAN JACKSON: But you're prepared to do that.

MR. STORZ: Yes, ma'am.

CHAIRMAN JACKSON: Okay.

MR. STORZ: Now I will focus on people and process. These two elements are closely linked and are key factors in our nuclear business unit culture.

From a cultural perspective, safe, reliable, eventless plant operations is assured through improvement in three areas -- self-assessment, corrective action, and human performance. They are the foundation for change within our organization.

We are seeing the vast majority of our employees participating with management to achieve improvement in each of these area.

May I have slide 13, please?

[Slide.]

MR. STORZ: In the self-assessment area, we implemented a program to send a clear message that self-assessment is an important and permanent part of our culture.

This program includes planned functional assessments, management observations, peer observations, and individual assessments. The plan is to use and improve the program for the future operation of our activities.

As the slide shows, our line organization made a

prompt jump in the number of self-identified problems. Since implementation of our self-assessment program, we have identified a greater number of less significant problems as we continue to lower the problem identification threshold.

Over the same timeframe, we have completed almost 9,900 corrective actions.

May I have slide 14, please?

[Slide.]

CHAIRMAN JACKSON: Are you seeing any change in the significance of the items being identified?

MR. STORZ: Yes, ma'am. We have much improved the material condition of the plant, and the kinds of problems that are now being written up are visible, because we have been able to improve the material condition, so that smaller and smaller items are being identified, and the operations people, in particular, and our system engineers are coached to go out and dig to the lowest level possible in finding these problems.

In the corrective action area, we have made improvements. We lowered our problem reporting threshold and completely revised our corrective action procedure, which centralizes the reporting, analysis, and resolution of identified problems.

We enhanced our trending capability and placed greater emphasis on involving the line in the corrective

action process.

For example, we formed a corrective action review board and staffed it with line managers and supervisors.

We also improved root cause analysis and provided training to about 180 employees. We trained approximately 600 personnel in the human error reduction techniques.

In parallel with these initiatives, management has continuously communicated and reinforced the expectation that personnel find and fix problems before they become issues or events.

Communicating this expectation has helped to create a more welcoming environment for problem identification.

To better foster this environment, we are conducting employee open forum feedback meetings.

For example, Leon hosts periodic lunches with personnel, Bert Simpson conducts similar breakfast meetings, and for my part, I have talked with hundreds of employees during what we call 4-C's meetings.

The key result of these corrective action program initiatives is shown on this slide. That is, our organizations are more willing to report problems.

Before implementing the revised correction program, employees were reluctant to report problems. Since then, problem identification increased.

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CHAIRMAN JACKSON: Let me ask you a question. I hate to keep interrupting you, but you indicated that -- I'm looking at your submittal -- that you had seen a significant rise in the initiation of condition reports, and you cite that as an example of a cultural change.

Is it a cultural change, or is it that you have a new process with lower thresholds, or do the two play against each other?

MR. STORZ: We found very early in this process that communicating it was okay to write up a problem hadn't been done very well in the past, and the process itself does not cause people to write these actions requests, and we did a study in preparation for our meeting, and we found that 1,500 or the 2,200 PS employees have submitted an action request in the last six months, which we found to be very encouraging. There's a large percentage of the population willing to actually write up a request.

Now, we're overcoming some resistance from the beginning, and part of it was just transferring the information down to the employee that it was not okay to write the problem, and I think that's the cultural transition that we're beginning to see, and we're getting everybody participating.

CHAIRMAN JACKSON: Commissioner Diaz?

COMMISSIONER DIAZ: Yes. Looking at the graph, it

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appears that you have settled down at about 600. Is this per month?

MR. STORZ: Per month.

COMMISSIONER DIAZ: That's new ones identified.

MR. STORZ: Yes, sir.

COMMISSIONER DIAZ: And you keep going at that level.

MR. STORZ: My experience has been -- from dealing with -- putting these kind of systems in at other facilities -- is that this level -- we can sustain this level. We have a lot of equipment, and we've got to keep close eye on it. We can keep finding issues and improving the material condition of the plant probably the rest of the life of the plant at this level.

COMMISSIONER DIAZ: Okay. So, it is an addressable level.

MR. STORZ: Yes, sir.

CHAIRMAN JACKSON: And that tracks back to my question about the significance of what's being reported, because you can track things by numbers, number of reports, but buried in a report, there is a level of significance, which also implies a level of effort to address it, and so, when you're talking about this being a handle-able number, you mean relative to the -- both the risk significance of them as well as what it would take to, in fact, work them

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off in terms of the work that would have to be done.

MR. STORZ: Yes, Chairman. I have an experience

that I had where I went to a regional administrator meeting in my past and I was told I wasn't bring intrusive enough. So, we came back, had a very similar program to this.

We were proud that we had seen the numbers tapering off, and I was recalibrated to be told that you haven't raised your standard.

So, I think this staff and many of our staff has experienced that feedback, and as the plant material condition gets better, we're going to look for smaller problems. They will be less significant, and they will have probably no safety significance.

CHAIRMAN JACKSON: Okay.

MR. ELIASON: I want to add, Chairman, on this corrective action program, is that we really have three levels that we deal with.

Level one, which is in the forefront, is really what we call safety significant issues. So, those are brought very high priority very early on.

The second level is what we would call significant impact or personnel safety. So, that's the second level.

And then the third level is what I call adverse to quality of areas that we can really start to improve the effort on the organization.

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So, we not only handle what I would call the pile, but we also prioritize the pile so we're focused on the right issues, but I think these are issues we can deal with.

CHAIRMAN JACKSON: Okay.

MR. STORZ: We are leveling off. This is due to the current stage of improved plant material condition.

May I have slide 15, please?

[Slide.]

MR. STORZ: Another indicator of improvement in the corrective action area is the quality of root cause analysis packages submitted to our corrective action review board. This slide shows that the approval rate has steadily improved over time.

Again, this data supports the effectiveness of our corrective action initiatives. These results are very encouraging. However, we will continue to carefully monitor the timeliness and effectiveness of the corrective actions at Salem and make adjustments in our process, as appropriate.

Human performance, the third element of our culture -- may I have slide 16, please?

[Slide.]

MR. STORZ: Human performance, the third element of our culture, is clearly the most important. It is the driving force behind our culture change.

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In order to enhance as well as to sustain positive human performance, we as leaders understand that we must clearly define our expectations, communicate them to employees, hold ourselves accountable, and measure performance on a continuous basis.

Our management team has identified a regularly communicated four key expectations which drive our human performance improvement initiatives -- effective leadership, productive teamwork, corrective action, and effective training.

Together, these expectations define the cornerstones of a healthy culture and serve as our standard for accountability for all of us at Public Service.

Slide 17, please.

[Slide.]

COMMISSIONER DIAZ: Excuse me. Again, on the issue of some definition or quantification, there is something that is attached to each one of these keys, so you can actually track them. I mean it's effective leadership. It sounds very good, but where do you track it?

MR. STORZ: We're going to discuss some of those as I go through the presentation, and I'll come back to that question if I haven't answered it.

CHAIRMAN JACKSON: Let me ask you something, since you brought up training.

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There was an audit of your training program back in January that said that continued management attention is needed to ensure adequate implementation of industry standards. Has that been accomplished, and what improvements have been noted as a consequence?

MR. STORZ: We have recently reaccredited all of our maintenance and technical training programs this past May, and our own self-assessment pointed out some errors of issues that we are dealing with.

I have met with both plant managers, and I've met with our quality group, and as a result of that weakness that was identified, now all of those audits will be read out directly to the nuclear training oversight committee; there won't be any delay in reporting.

We're very concerned about maintaining our new training program, and I have some details in the presentation that I think will cover that question.

CHAIRMAN JACKSON: Also, there have been a number of sites where there has been a focus on emergency operating procedures at the expense of a focus on abnormal and routine operations procedures. Have you given any attention to this?

MR. STORZ: Yes, we have.

We've had an integrated effort of looking at our safety procedures, both our abnormals and emergency

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procedures, and there's been a focused attention on working those out at the simulator and communicating with operators on the relationship to those procedures, and we feel like we have done a lot of additional practicing at the simulator and improvement in those procedures.

CHAIRMAN JACKSON: Okay.

MR. STORZ: With regard to the training cornerstone, we've invested tremendous time and resources in this area.

In the training department itself, we recruited new personnel with industry experience. They brought a new mindset of professionalism and accountability, as well as new ways of performing training.

The new training department management team developed higher performance standards based on industry best practices.

Working with our union leadership, we raised the minimum passing grade from 70 to 80 percent for all of our department training programs.

Even though the standard was increased, our goal is to be better than the minimum. Our expectation is to be as good as you can be and strive for excellence.

Concerning the program itself, we realigned it with line functions, improved our training materials and configuration of our simulator, and strengthened line

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ownership of the training process.

Line managers now chair the training review groups

of their respective disciplines, and I chair the nuclear training oversight committee.

Bottom line, we have seen substantial improvement, and this has been confirmed through reaccreditation of our training programs by the National Academy of Nuclear Training.

Even with these accomplishments, the journey toward excellence has not been easy. Making accountability a core value and enforcing it has changed our staff composition and our culture.

Since June of 1995, 466 Public Service employees have left the nuclear business unit, about half because they could not or chose not to meet our new standards.

Where appropriate, we have replaced these people with proven industry performers and top performers within our own organization.

This turnover in personnel is not a surprise to us nor should it be a surprise to the Nuclear Regulatory Commission.

In fact, in 1995, when we met with the NRC Region I administrator to discuss our recovery plans, he stated that people would be our greatest challenge. We agreed then, and we still agree today.

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May I have slide 18?

[Slide.]

MR. STORZ: This slide shows the results of a culture survey which is widely used in our industry. We use the survey results to baseline ourselves against human performance at our nuclear utilities.

Knowing that improving our people and, thus, our culture is our greatest challenge, we continuously monitor performance in this area. Seeking feedback from our employees, as you can see on this slide, we are showing an improving trend during a difficult period.

Employee surveys, however, are only one tool we use to help gauge the attitude and commitment of our workforce. We use other measures like the ones I already mentioned.

CHAIRMAN JACKSON: What do the numbers represent precisely?

MR. STORZ: It's a technique that's been developed by a company called Failure Prevention International, and they have surveyed many plants, and they have surveyed plants with excellence performance and with poor performance, and they have normalized a set of numbers, and the range of 14 and above is top-performing plants, and near 10 and below would be poor performing plants.

When we first did this survey in September of '95,

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our performance came out as an 11, as a normalized --

CHAIRMAN JACKSON: So, it's like these heart attack surveys, where you answer the question this way, you get a certain number; you answer it another way, you get another number. Then you sum the numbers up.

MR. STORZ: Right.

CHAIRMAN JACKSON: I see.

MR. STORZ: There's about five key human performance areas that they look at -- organization, mission, and goals; levels of knowledge and skills; teamwork; simple work process and procedures; and self-improvement programs. So, it's a tool; it's not the final answer.

CHAIRMAN JACKSON: Is this part of the information you provided to our staff?

MR. STORZ: Yes. I believe we've shared some detailed results, but I don't know if we have turned that report over.

MR. ELIASON: It's at the site survey, if they'd like it.

CHAIRMAN JACKSON: Okay.

MR. STORZ: We're not finished in this area, and we will continue to aggressively monitor it.

As Unit 2 returns to service, with expected improved performance, we expect to see continued improvement

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in employee morale.

May I have slide 19?

[Slide.]

MR. STORZ: I will now turn to specific improvement results in operations and maintenance.

We looked hard at the knowledge and skill and attitudes of our operators. We found that passing grade for our equipment operator training program was 70. This slide shows that the as-found average grade of our operators were at or below minimum acceptable standards.

Based on these results, we created a comprehensive operations training intervention that required 18 months for the entire Salem operations staff to complete.

Working with IBEW, the passing grade standard was raised to 80 percent for all of our training programs, as I mentioned before. This brought our program in line with industry norms.

Operator skills, knowledge, and leadership qualities have improved, as shown by the post-intervention test scores.

CHAIRMAN JACKSON: Given the amount of time you've been shut down and given the personnel changes that have been made in terms of the number of people who have left --and you didn't break that down into job categories -- what percentage today of your operators have not had actual

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operating experience in the plant?

MR. STORZ: I have a slide here that shows our staffing. It's coming up later.

CHAIRMAN JACKSON: It's coming up?

MR. STORZ: Yes.

CHAIRMAN JACKSON: Okay. I'll wait.

MR. STORZ: I'll address that question at that time.

CHAIRMAN JACKSON: It's the next slide. Okay. Thank you.

MR. STORZ: Slide 20, please.

[Slide.]

MR. STORZ: I'll read my text.

CHAIRMAN JACKSON: Okay.

MR. STORZ: Management continually reinforces superior standards and higher expectations through observations in the simulators and classrooms and during plant performance activities.

Most important, the operations staff became willing participants in this activity by taking control of their training program.

Maintaining and improving our shift complement with well-trained individuals is very important to our future success.

This slide shows we have sufficient licensed

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operators and other shift members to meet our technical specification requirements.

Additionally, we have 12 people who will be licensed as soon as they complete their reactivity manipulation requirements and time in the control room during power-ups.

Our training center is currently operating at or near capacity, with classes of future licensed and equipment operators who will further increase the depth of our operating organization for the next 18 months.

Our long-term goal for shift staffing ensures that our operating crews lead the organization in safe, reliable, and eventless operation.

In direct answer to your question, all of these people that are current staff have had previous operating experience, and the six individuals awaiting senior reactor operator and SRO reactivity manipulations also have significant operating experience from other stations, and so, we're going to be in what I'd call pretty good shape, and with the pipeline being full now, we've recruited -- and some of those are younger, inexperienced people -- we expect, by the end of another 18 months, to have a significantly improved shift manning level that allow us more flexibility than we have today.

My experience is telling me that -- and I was

discussing this with Leon -- that I have started up two brand new plants with practically no experience.

We have here many operators with 10 or 12 years experience. We have developed a new set of standards for them. We have given them specific direction.

We have brought out their leadership skills, and we believe they are responding to the current challenge of an eventless startup with ownership and accountability for not only their own actions but the actions of their teammates -- maintenance, engineering, and quality.

So, I don't know if that's satisfying your answer, but I can find out very specifically the total number of years of experience if you would like to hear that.

May I have slide 21, please?

[Slide.]

MR. STORZ: The operations organization established expectations concerning operational burdens.

As this slide shows, operability determinations, operator work-arounds, control room deficiencies, and temporary modifications have been reduced to levels that allow us to safely return to power. By maintaining them at or below these levels, they contribute to unit reliable performance.

Our operational philosophy and procedures direct management to operate the plant in the desired state and to

perform observations during steady-state periods with increased oversight observations during transient activities.

CHAIRMAN JACKSON: What impact do you expect the 45 remaining control room deficiencies to have on your startup?

MR. STORZ: We have about 17 -- actually, today there's 37. Seventeen of those we're awaiting tests, and I believe 11 more are work in progress, we have four in planning, and I think there's about five awaiting some material or work order details to be work in progress.

Our expectation is that number is going to continue to decline as we achieve normal operating temperature and pressure and we get conditions to sign off those tests. That would bring us down to about 20.

The standard for the business right now, I think, is somewhere less than 15 for a top-quartile plant on an ongoing basis. These things come in, you work them off, you try to get to zero. That's our goal.

CHAIRMAN JACKSON: So, you think you could start up at 20.

MR. STORZ: That's where I think we're going to be, something less than 20.

MR. GARCHOW: Chairman Jackson, our test procedures require us to define what we need for minimal

equipment. So, if we get into a test where maybe one of those particular 20 was critical to the test, we would not do the test till we got that instrument back.

So, our procedures require us to look at what's available for indication and controls prior to running the test, and we would delay till we got that particular one back if the wrong one maybe was in that 20.

CHAIRMAN JACKSON: Okay.

MR. STORZ: All of our processes, Chairman, require us to do an impact on the plant, either operability, an operability determination, review the tech specs, whether or not we're in compliance with procedures. So, that is driving the prioritizing of these activities.

CHAIRMAN JACKSON: Have the three remaining operability determinations been reviewed by the NRC staff?

MR. STORZ: I'll defer to Dave, but my understanding is that those have been reviewed several times and were recently reviewed by the inspection team.

CHAIRMAN JACKSON: Okay.

COMMISSIONER McGAFFIGAN: You used a number a moment ago for what the top quartile standard is for control room deficiencies. What is it for the other areas here, if you happen to know, in terms of operator determinations or work-arounds or whatever?

MR. GARCHOW: For the operator burdens and what we

call work-arounds, down in the five to seven range is certainly typical. Different people count the indicators different, and we've determined that around 20 is about it for the industry.

MR. STORZ: The operations organization establishes expectations concerning operational burdens.

As this slide shows, operability determinations, work-arounds, control room deficiencies, and temporary mods have been reduced to levels that allow us to safely return to power. By maintaining them at or below these levels, they contribute to reliable unit performance.

Our operational philosophy and procedures direct management to operate the plant in the desired state and to perform observations during steady-state periods, with increased oversight, observations during transient activities, we are witnessing adherence to high standards of performance and acceptance of accountability by our operations operators in the control room and in the field.

While these indicators and our management observations provide confidence in the progress of the operations organization, they alone are not the reasons why we are ready to operate Salem Unit 2.

We see examples of daily teamwork and conservative decision-making within the various work groups. Observations of plant manipulations and system restorations

confirm skillful and safety-conscious performance. Three-point communications and repeat-backs in the control

room exhibit a high degree of professionalism.

The operators have taken responsibility for safe, reliable, eventless operations. They now own the results of activities performed by their support teams.

Combining these results with the changes we have made to the operations management, I conclude that the operations staff is not only qualified but also operationally ready to bring Salem Unit 2 on-line.

My conclusion has been strengthened by the direct feedback I have gotten from interviews with operators and observations provided by independent experts who have monitored crew development and actual plant performance.

Slide 22, please.

[Slide.]

MR. STORZ: Turning to the maintenance, I will address two topics, the training intervention and improvements to control of work.

By June of 1996, following the initiation of component and system testing for Unit 2 and based on trends established by our corrective action program, we determined that the maintenance department was not effectively fixing equipment. Their work was of poor quality, and rework was high.

Seventy percent of the maintenance department was removed from the plant work and put through a rigorous 8-to-10-week intervention. This intervention baselined and restored the organization's knowledge and skills. It changed their behaviors to instill the philosophy that quality starts with me and the job must be done right the first time. The intervention offered management the opportunity to reestablish higher standards by using actual mock-up demonstrations in our training laboratories.

This slide summarizes the baseline and remediation results. Qualitative assessment, testing, and equipment performance indicate there was a step change in the maintenance department's technical performance and cultural behaviors as a result of this intervention.

While this slide indicates improvements, our oversight of the maintenance activities shows this area as one continuing close management attention.

May I have slide 23, please?

[Slide.]

MR. STORZ: Rework on large equipment and modifications has declined, but improvements can still be made.

We imposed tougher standards regarding rework in the second quarter of 1997 and established this as an area for closer management attention. We will continue to raise

the bar in this area as we go forward.

Other indications that maintenance is improving are, first, strong on-the-job self-assessment has been initiated using our maintenance assessment program. We call them MAP cards. We have brought some today, Chairman, if you'd like to look at one.

CHAIRMAN JACKSON: We've already filled them out.

MR. STORZ: This process provides direct observation of work, with immediate feedback to individuals and followup to our training programs, thereby providing improvement in personnel skills.

Second, since January 1997, Unit 2 has reduced its reliance on contractor support to near zero for scheduled maintenance activities, and third, we have seen improved teamwork, as demonstrated by completion of three large

projects in the last four months. Those are cable separation walkdown and repair, completion of ventilation balancing, and the design, installation, and testing of the containment fan coil accumulator project which was associated with Generic Letter 96-06. That's the water hammer on service water issue.

May I have slide 24?

[Slide.]

CHAIRMAN JACKSON: Before you go, if you look at your rework, you know, it looks like it's been rising, and

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you indicate that that's perhaps because of tougher standards. What changed and what does that say relative to your consistent use of the INPO definitions?

MR. STORZ: We have revised our program and procedures to review how we categorize work, and just using the INPO standard, we would have very good numbers.

CHAIRMAN JACKSON: Okay.

MR. STORZ: We believe our program is helping us solve problems and bringing attention to the issue with our employees.

CHAIRMAN JACKSON: So, you're saying you have a more rigorous definition of rework than the INPO definition.

MR. STORZ: Yes.

CHAIRMAN JACKSON: Let me ask you the other question. This has to do with not what's on this graph but in your overall submittal.

It seems that your safety-related, non-outage corrective maintenance backlog has been either steady or it has increased for four out of the five categories tracked except for items that are in the three-to-six-month aging category. Why is that?

MR. STORZ: We have had most of the safety equipment operating since December, since we loaded fuel, and once we had the head on, we made a concerted attempt to get the unit into mode four earlier this year. We wanted to

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demonstrate that that equipment was performing well.

So, we had all that equipment in service for five months, and since we haven't started our work-week management process which periodically takes those systems in a quarterly basis and turns over the accumulated work, the items being identified are not significant, they're not contributing to in any way degrading performance of that equipment, and once we get on-line and start our work-week management program, those numbers will come down, and the age of those items will -- we cycle that equipment through a major maintenance review once a quarter when we do the testing.

So, we would expect the age of the item to be about a quarter in length, and we would try to clean up most of those items each time we did a test period. We do this as-found testing, do a maintenance outage, do the as-left testing, and put the equipment back in service.

Now, that's fundamentally, very simply, how our system works.

CHAIRMAN JACKSON: So, this work-week management program is specifically geared to addressing this kind of a maintenance backlog in safety-related systems?

MR. STORZ: In all systems. We will have other periodic maintenance on all the systems that will address it the same way, along with indicators being provided by the

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maintenance rule.

Those indicators also determine -- maybe we would

have an unscheduled or a scheduled maintenance outage to deal with something significant. We would make that determination based on those trends and where our cut-off levels are for making those kind of decisions, and that's all in our process.

May I have slide 24, please?

[Slide.]

MR. STORZ: We developed and are implementing a work-week management program. This program clarifies lines of authority and improves communications amongst our departments. It provides a comprehensive approach to managing the identification, validation, screening, planning, scheduling, and implementation of work activities.

While the work-week control process will not be fully implemented until Salem Unit 2 comes on-line, we already have experienced the positive impact of these various initiatives.

For example, this slide shows improvements in schedule adherence. This is the result of process changes and is directly related to the improved abilities of our maintenance workforce and the teamwork developing among maintenance, operations, and engineering.

To be successful, control of work requires

management attention.

We have addressed a similar challenge at Hope Creek through the work-week management process. Since coming out of its outage last year, Hope Creek has effectively used this new process and is now operating efficiently.

This acquired knowledge will allow a smooth transition when we begin final implementation at Salem following startup.

The improvements achieved to date provide us with confidence that the maintenance can support a return to power operations.

With the implementation of the work-week management program, we will continue to improve maintenance of our Unit 2 material condition while beginning a deliberate reduction in the remaining maintenance backlog.

Slide 25, please.

[Slide.]

MR. STORZ: As you can see on this slide, when Hope Creek came out of its outage in March of 1996, the post-outage backlog was just over 1,800 items. It has been steadily reduced by two-thirds to about 600 items.

If you look at Salem's post-restart backlog, starting at the first quarter of '97 to present, you see that the work-off rates are similar. We expect a similar

reduction going forward in the future.

This concludes my initial remarks.

CHAIRMAN JACKSON: Mr. Diaz.

COMMISSIONER DIAZ: Your slide number 24 used to deal with frequency of things. I kind of forgot about that, but this seems to be like there is a cyclic problem in there. Will you tell me what that is?

MR. STORZ: We can spend an hour talking about the slide, but this represents what we would like to describe -- if take the load dips and visualize the load dips through this, that's the real change in our performance.

When you're working in an environment where you're testing -- and we're doing fundamental construction testing on these 88 systems -- discoveries affect your schedule adherence.

So, you have emergent work, and there's also other periods which help us to define when we need to do the maintenance intervention.

The large dip right after we shifted over to the Unit 2 work -- we had a large backlog of planned work, but we began testing, and we found that the work that maintenance had done effective.

COMMISSIONER DIAZ: That's not the one I'm worried about. It's the next dip, the one in 1997 and the one that seems to be repeating itself now.

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MR. STORZ: Towards the end of 1996, we began integrated testing prior to loading fuel on some of the systems, and we loaded fuel, we addressed those issues, again work planning issues. We made adjustments to the programs, we built up a backlog, we loaded fuel, and we started moving towards mode four.

All these are easily explained, and it takes a lot of detail to go through this, but what we're encouraged about is, each time we hit a low, we can understand our problems, we made adjustments to the program, and now we've set the stage to implement our work-week program, which is a lot more specific, organized, it's not as sensitive -- well, it is sensitive to emergent work, but we believe we've improved the material condition of the plant to the point where we can achieve these kind of numbers, and the reason we're confident is we had a similar graph for Hope Creek, and once we started the work-week program, we went from about a 75-percent schedule adherence, we worked our way to about 85, made some more adjustments, and finally have arrived, after about eight months, at the 90- to 95-percent plateau.

They very, very best plants operate at about 95 percent.

COMMISSIONER DIAZ: Okay.

MR. STORZ: This concludes my initial remarks.

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Bert Simpson will now discuss improvements in the engineering department.

MR. SIMPSON: Thank you, Lou.

I'd like slide 26, please.

[Slide.]

MR. SIMPSON: I'm Bert Simpson, Senior Vice President of Nuclear Engineering. As Leon indicated, I'm here today to provide with an overview of the actions we've taken and the results we've achieved within the engineering organization to be able to support the restart of Unit 2.

May I have slide 27?

[Slide.]

MR. SIMPSON: In my discussion today, I will talk about three topics -- our assessment of the engineering organization, development of an action plan to address the identified issues, and our results and accomplishments.

Like operations and maintenance, we performed a thorough assessment of the engineering organization to identify areas for improvement. We determined that it was necessary to enhance the leadership, technical skills, and system ownership within engineering.

We initiated comprehensive corrective action to achieve these improvements. We consolidated the engineering organizations within the NBU and made extensive changes by bringing in proven performers from well-run nuclear

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facilities.

We established higher standards and expectations,

better defined roles and responsibilities for this reconstituted organization. These new standards, roles, and responsibilities have been continually communicated to the organization and evaluated by quality assessment.

In November of '95, we assessed the engineers in the following areas of skills, judgement, problem-solving, and technical knowledge. Remedial training was conducted which focused on root cause analysis, 50.59 safety evaluations, and design and licensing bases. Subsequent assessments that we have performed have noted improvement now in each of these areas.

We took steps to assess and enhance the engineering department programs, processes, and practices, as well. We have 54 key programs within the engineering organization. Most of these were functionally acceptable, and those that had identified deficiencies were fixed.

Some examples of our 54 programs that we reviewed was like our in-service testing program. We found it had major problems, and we revamped the entire program from top to bottom. It is now functioning well.

We looked at our environmental program, qualification program, motor-operated valve program, and numerous other programs, and we did thorough

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self-assessments of all of these programs to re-baseline them during this shutdown.

We've also establish clear owners within each engineering organization for each of these programs to make sure that the baseline we have established is maintained as we move forward.

The system readiness review program was put in place that Lou talked about to ensure that plant systems would be thoroughly evaluated, modified, maintained, and tested to support restart.

Part of this was the system index database, or what we calls SIDS. This was a computer database that we used to assure that information that was collected on each system was thoroughly captured and easily retrievable by our system managers.

It's an effective tool for implementing the system readiness review program that Lou spoke of, and also, it retains strong technical corporate memory as we move forward in our plant operation.

So, the integration of these two initiatives has resulted in strong system ownership by our system managers and better support for plant operations.

Slide 28.

[Slide.]

MR. SIMPSON: Have our efforts been effective? We

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believe the answer is yes. We are seeing higher-quality 50.59 safety evaluations.

This slide shows that, following our remediation efforts in 1995, the approval of the safety evaluations by the station operations review committee improved.

However, in the first quarter of 1997, we noted a decrease in the quality of our safety evaluations. So, we took some additional actions to maintain quality and consistency by requiring an additional in-line review by an independent group of engineers prior to taking our 50.59s to our station review committee.

May I have slide 29, please?

[Slide.]

MR. SIMPSON: This slide shows that, over the past year-and-a-half, the corrective action review board approval

rate has steadily improved for engineering.

This improvement has occurred as a result of additional root cause analysis training provided to our engineers. Our engineers are now used to lead or participate in significant root cause analysis.

Could I have slide 30?

CHAIRMAN JACKSON: Before you go --

MR. SIMPSON: Yes.

CHAIRMAN JACKSON: I'm looking at your increased approval rate. What percentage of your organization is

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contractor, and how large are your engineering backlogs, and what's your average work-off rate?

MR. SIMPSON: Right now, I have a permanent staff of about 350 people within the engineering organization, and at the present time, I have about 60 or 70 contractor engineers. This excludes any off-site work.

As far as -- the second part of your question, I believe, was workload?

CHAIRMAN JACKSON: How large are you backlogs in engineering?

MR. SIMPSON: We have two types of backlogs within engineering. One is restart-identified work, and we have been steadily working that off, and it's essentially almost completed, and I'll talk about that a little later, about what we have accomplished in that area.

CHAIRMAN JACKSON: So, you're saying it's essentially zero?

MR. SIMPSON: Almost. We're down to the last few hundred items that we have to close out as we move through the last few system turnover, and we only have like two or three modifications left, and our post-restart backlog that we've identified -- we have about 2,300 items in that particular backlog.

A lot of this backlog in that area is configuration-type documents that we're updating as a result

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of all the modifications we've done. These would be lower-tier documents. All of our level one and two priority drawings and documents are already updated. They have to be done within 15 days. Others we do after we restart the power plant, and we have an effort in place that we're going to work this off in a more aggressive manner.

On slide 30, please --

[Slide.]

MR. SIMPSON: Although these indicators are encouraging, even more encouraging are the successful completion of corrective action activities and plant modifications by the engineering organization. Engineering has completed over 15,000 corrective action items during this shutdown and 550 plant modifications during the last two years.

While Lou discussed several of the plant modifications during his portion of the presentation, I would like to mention several of the other problems fixed by engineering.

The system readiness review program evaluated plant systems at Salem.

An interesting finding we made was that our evaluation identified that eight systems caused 45 of 54 forced outages since 1988. For those eight systems, we implemented over 273 modifications to thoroughly upgrade

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them.

We then expanded this effort to include an

additional 80 systems and subsequently implemented 550 total modifications to improve system reliability.

Systems that we've turned over to operations have performed reliably to date.

Examples of extensive upgrades include the following -- compression of air compressor overhauls, including specific modifications to improve their reliability; extensive evaluation, walkdown, and remediation to ensure proper cable separation throughout the power plant; extensive modifications over the last six months in response to Generic Letter 96-06; a complete redesign and upgrade of our ventilation systems; and also, we provided assistance in solving an industry problem concerning our 4-KV Mangblast breakers.

These improvements and many others discussed in our briefing papers give me confidence that our systems will perform reliably.

May I have slide 31, please?

[Slide.]

MR. SIMPSON: Another significant initiative completed by engineering was our design and licensing basis review. This used a risk-based approach for system selection similar to that used with our maintenance role.

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We reviewed the final safety analysis report, we validated values and assumptions that were contained in the Chapter 15 safety analysis, we validated the field configurations, we verified as-built drawings, and we have performed several vertical slice reviews of selected systems.

Our results were presented to the NRC staff in a public meeting on March 6th where we indicated that we have reasonable assurance that, upon operation of Salem, we will be in accordance with our design and licensing basis.

Overall, the engineering department performance has substantially improved.

Personnel are demonstrating greater intrusiveness and a more questioning attitude, and they have improved their responsiveness and follow-through on problems. They assumed ownership of the power plant systems and have been accepted as team members by the other members of the plant staff.

While this level of performance is encouraging, we acknowledge that engineering personnel have further to go. We will continue to focus on improving solving problems, including root cause analysis, improving our 50.59 safety evaluations, maintaining effective configuration control, ensuring a safety-conscious focus among the engineering personnel, and enhancing staffing and training.

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This concludes my remarks this morning. I will now turn it over to Lou.

MR. STORZ: Chairman, before we go on, my help has advised me that six SROs that are awaiting reactivity changes did not have previous large nuclear power plant experience. So, I want to make sure that's on the record.

CHAIRMAN JACKSON: Good.

MR. STORZ: Could I have slide 32, please?

[Slide.]

MR. STORZ: Having summarized the last two years' activities, I will now provide an overview of areas requiring continued management focus.

Our challenge is to continue to improve the quality of our maintenance activities. While we have seen performance improvements in the maintenance workforce,

management attention must remain focused to ensure continued progress.

Control of work, utilizing the work-week management process, still remains to be fully implemented. While we have improved performance at Hope Creek using this process and are confident the improvement will continue at Salem, an accurate assessment of implementation must wait until after restart.

We have been working with the Institute of Nuclear Power Operations to develop, assist, and monitor our work

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control process. Two assessments have been completed to date, with additional ones scheduled in 1997.

Backlog reduction in all areas will be a high priority after restart. Each item within our maintenance backlogs has received a review to ensure that working it post-restart is appropriate. An aggregate effect review has been performed and will be periodically re-performed to ensure that the sum of these items will not become a problem.

We know that progress is in this area because we have -- we know what progress is in this area because we have been experiencing it at Hope Creek.

We have reduced the Hope Creek backlog from over 1,800 items to about 600, as shown in the backlog reduction slide discussed earlier. We are confident that the magnitude reduction will be similar at Unit 2 during the next operating cycle.

Sustaining the material condition of our plants will require rigorous adherence to the corrective action and the preventive maintenance programs and a responsiveness and intrusive engineering organization.

Our operations department, as the owner of the plant, will ensure that this remains our top priority. The corrective action program will be used to maximum capability to find root causes and eliminate new or repeat problems.

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We will continue to focus on human performance by reinforcing our standards of personnel accountability through a tough but fair performance appraisal process.

Management training on this process is based on the simple principles contained in the management action review checklist program that we use in our training programs.

These principles are be as gentle as you can be, do right voluntarily, reward good behavior, and counsel poor behavior.

Our goal is simply to reduce to the absolute minimum human performance errors. By doing so, we lower the potential of these errors escalating into events.

Continued management involvement and oversight focusing on human performance will help us to achieve our goal of operational excellence.

Last month, we docketed our plan for resolving the generic issue surrounding fire wrap in Appendix R. Our approach is consistent with the industry approach. Our detailed plan is being finalized and will be available for NRC review in the near future.

Our training programs have been leading our improvement process. In order to keep them healthy, we must meet the needs of our line organization. We will work closely with our employees. They are both the owners of the

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programs as well as the customers.

To quote one of our union stewards, in the past

training was done to us, now it's done for us. Management understands this.

Employee concern is another area for continuing management focus. We are committed to assuring that employees feel free to raise safety concerns.

Some of our recent actions include establishing a new office outside the protected area to provide greater accessibility to employees and extending our training initiatives to all employees and contractor management.

Our ability to support the operation of Unit 2 while completing the return of Unit 1 to operation will not be diminished. We have carefully planned the use of our resources, ensuring that dedicated operations and support staff exist for Unit 2.

In addition, we have established a director of Unit 1 recovery who reports to me. We have a dedicated staff that supports him separate from Unit 2. This has not reduced in any manner the support for Unit 2 operation.

Senior management is committee to safe, reliable, and eventless operation of all of our units. Unit 1 restart will not detract from that commitment.

As we go forward with returning Unit 2 to service, we recognize that effective monitoring tools will help

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ensure our continued performance improvement.

Currently, we have an extensive computerized monitoring program that feeds into our corrective action and trending programs.

These monitoring tools are augmented with self-assessment program and management oversight activities. In addition, we utilize standard industry indicators to track our performance.

Together, these tools give us a comprehensive monitoring capability. We have described much of this in the briefing papers that we provided you in May.

CHAIRMAN JACKSON: I know you're going to say let's go to the next slide, so let me ask you a question.

Now, I understand that you also have problems with fire barrier penetration seals, or you've had problems. You shook your head no. They've been resolved?

MR. STORZ: Yes.

CHAIRMAN JACKSON: What was the root cause of the problems, and what was the resolution?

MR. ELIASON: Let me just offer a few comments on our penetration seals. We did an extensive review back several years of our penetration seal program. We utilized the Dow Chemical foam-type penetration seals.

What we did is we did an extensive validation that we have good configuration control of all of our penetration

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seals, and we know the configuration and tested configuration.

We've gone back and looked at all of our test results to make sure that we have tested information to support each of those configurations, which we do. We rely on a three-hour seal.

So, we have gone back through and revalidated all of our seals, and we are not aware of any -- we are in total compliance with our program. I'm not aware of any open issues.

CHAIRMAN JACKSON: Okay.

MR. STORZ: Among the areas that we will continue to monitor with these tools under development at 50.59 safety evaluations and our root cause analysis capability. In addition, we have developed a prototype summary indicator

to rate the performance of operating shifts for Hope Creek.

The shift summary indicator is intended to identify declining leadership or crew performance issues. Our plan is to implement this prototype first at Hope Creek, then at Salem.

We will encounter problems as we restart, test, and move forward Unit 2's operation, but as I mentioned before, our goal and our operating philosophy is to identify and correct problems at low threshold levels and operate the plants conservatively. This ensures we control problems

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before they escalate into issues or events.

This concludes my remarks.

Leon will now discuss how we will move forward to sustain performance.

MR. ELIASON: Thank you, Lou.

May I have slide 33, please?

[Slide.]

MR. ELIASON: Based on the improvements in our plant, people, and process, our performance has begun not only to meet our expectations but starting to exceed some of our expectations.

I am receiving assurances from Lou Storz, Bert Simpson, and our oversight organization that we believe we are ready to restart Unit 2, and this has also received concurrence by our nuclear review board.

Even with all the improvements you've heard about today, we recognize that we're really only in the beginning of the journey to operational excellence.

We intend to operate Salem in a safe, reliable, and eventless manner while Unit 1 is being put in the recovery mode and then long-term afterwards.

As depicted in this slide, we must continue to strive for excellence. Accountability from the top to the bottom of the nuclear business unit remains the key to our success.

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To ensure that the rest of our journey to operational excellence is successful, senior management has chartered this future course in our nuclear business unit business plan.

We are committed to sustain improvement for Salem Unit 2. A key element to this is making a stable transition from our recovery effort now to an operating plant.

Lou discussed the protocols that we have put into place to maintain the proper focus between operating Unit 2 and our recovery of Unit 1.

We have demonstrated our ability to maintain this focus by eventless operation at Hope Creek over the past 17 months without a trip or a major transient, and this is also while we were engaged in replacing our steam generators on Unit 1 and recovery efforts on both Unit 1 and Unit 2.

I think I speak for our entire organization when I tell you that I am confident Unit 2 is ready for restart.

From the beginning, our primary goal has been to do the right thing. Safety has been and continues to be first and most paramount in our process as we return Salem Unit 2 for service for the long run.

That concludes my remarks. I think Jim Ferland may have some closing comments.

MR. FERLAND: These are closing remarks, which I'm sure you'll be pleased to hear.

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Hopefully, you now have a better picture of what's been accomplished over the past two years at Salem Station.

The extended outage, management changes, plant improvements, including those to greatly reduce operator challenges, which have been a problem in the past, and the processes being used in the plant's restart efforts make Salem a total different place than it was as recently as two years ago.

Going forward, I and everyone on the PSE&G team assures you that the quality of our people, the processes, and the plant will remain at the required high levels of performance to assure the the station operates safely and reliably.

If safety ever becomes a problem, if any one of us is not satisfied with performance, we will do what we have done in the past. That is, we'll take conservative action, and that may include shutting the plant down. We don't expect to have to do that.

Pending the inspection that's going to take place, the exit by the NRC readiness inspection team, we will be formally seeking restart authorization from the Region I administrator.

I want to thank you for your time and attention. I know we've probably over-extended our welcome here. We would be pleased to answer any further questions that you

might have.

CHAIRMAN JACKSON: Thank you.

Commissioner McGaffigan.

COMMISSIONER McGAFFIGAN: The journey to excellence, the last chart, how do you define -- is excellence in the long run -- you've been talking a lot about individual indicators and getting to top quartile.

Is INPO 1, SALP 1, excellence? You're going to try to follow Turkey Point from watch list to INPO 1, SALP 1, status? What is the standard?

MR. ELIASON: I'll try to address that.

In my previous experience, I had plants that were rated both INPO 1 and SALP 1 when I worked for Northern States Power. My attitude then, as it is now, is we're now going to manage to those scores.

What those scores really are is a report card of how well you operate and how well your peers, whether it's the NRC or INPO, rate you in the way you're doing your operation.

Our focus now is to look, as I pointed out in our business plan, and to focus on those issues that we believe we need to do right.

As we're getting those ratings, I fully expect that we will become INPO 1 and SALP 1 plants. That may take us a while, because we know we've still got a lot of work to

do, but I believe that's the way we're going to go at it.

COMMISSIONER McGAFFIGAN: The second question I have, having visited the plant, the one striking thing about it is the lack of a roof over the turbine building, and it was attributed to, I guess, some accountant or tax attorney in the deep dark past saying you're going to save money that way.

How much of a challenge is it to the operators --this is in the balance of plant, obviously -- to work out in the open, and is there a chance of getting a roof somebody if all goes well?

MR. STORZ: I've had experience at operating plants without roofs over the turbine building, and obviously, in foul weather, it adds an additional burden to us, but the equipment associated out there on the roof

typically is the least of our -- what I call on-line maintenance problems, because if they're having trouble up there, you usually bring the unit off-line.

So, it does pose some outage maintenance issues for us, but I don't believe we have any near-term plans to put on a roof on it.

COMMISSIONER McGAFFIGAN: Okay. Thank you.

CHAIRMAN JACKSON: My only final comment is the one I use with all licensees. You speak of the power of commitment, and my statement is simply that performance is

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as performance does.

Thank you.

We will hear now from representatives from the New Jersey Department of Environmental Protection, Dr. Jill Lipoti and Mr. Dennis Zannoni.

Welcome.

DR. LIPOTI: Thank you very much. I appreciate the opportunity to be here and to address you.

As you are aware, there's various approaches that a state might choose to interface with the Nuclear Regulatory Commission, and the approach that New Jersey took in this case was for extensive involvement at a technical level.

First, we acknowledged that Salem 2 restart was a priority for our organization, and that allowed me to use the resources to really work on this issue.

We began by developing a list of the issues, so that we could focus our resources, and to enhance our communication both with the Nuclear Regulatory Commission and with the utility, and the NRC encouraged our involvement.

We reviewed 20 technical and programmatic issues. We observed 18 NRC inspections. We attended 10 Salem Assessment Panel meetings. We attended 25 PSE&G management meetings.

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We formally met with PSE&G four times and with the Nuclear Regulatory Commission six times, and we have observed the readiness assessment team inspection.

So, you see that we really did devote a lot of resources to this issue.

It was our substantial involvement that gave us the ability to make some judgements regarding Salem Unit 2. We believe that PSE&G has changed for the better, that the plant has improved its processes, its management, and its equipment.

We believe there's a good program now for identifying problems and for correcting them.

We think that the new management has improved the culture. It promotes a questioning attitude, it addresses problems directly, and it is determined to fix broken equipment, and so, we do not have any reason to oppose the restart of Salem Unit 2.

However, we believe that it is prudent to have continued vigilance.

Culture changes, we think, take about five years to become engrained in the organization. We've only had two years to watch the change occur. We want to see openness engrained in the entire workforce, and we want to see them reach a stable workforce, as well.

We would like vigilance on island-wide attention

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to problem identification, root cause, corrective action, and followup, and we intend to track a few generic issues

like the Appendix R fire protection to assure that the 50.54(f) issues are resolved and that the plant operates within its design basis.

So, we intend to remain involved during Salem 2 operations and Salem 2 restart.

I would like to offer a compliment to the Nuclear Regulatory Commission. In our judgement, the regulatory attention to Salem 2 was effective.

There was a very substantial level of attention, and the quality and the number of staff and the use of the contractors down there despite your budgetary constraints was commendable. We think the right staff reviewed the critical issues.

We think the Salem Assessment Panel process was comprehensive, effective, and well-supported. The NRR involvement was very effective, and there was good communication between New Jersey and the Nuclear Regulatory Commission at all levels.

So, I appreciate the opportunity to brief you, and I would answer any questions that you may have.

CHAIRMAN JACKSON: Well, I thank you. It's always good to receive kudos about our staff, in particular, and about the NRC in general, and we thank you for taking the

time to travel here to share your perspectives with us, and of course, we are pleased that you have not seen any difficulties in the process to date, but we, too, are well aware of the fact that vigilance is ever required, and we'll take note, in particular, of the areas that you have identified.

DR. LIPOTI: Thank you.

CHAIRMAN JACKSON: Commissioner Rogers?

COMMISSIONER ROGERS: As a former New Jersian, I'm very pleased to see this kind of capability in the State Government and to see it used so effectively to monitor, to draw conclusions, and to be willing to speak in a forthright fashion as to what you found, and I'm very pleased to hear it.

DR. LIPOTI: Thank you.

CHAIRMAN JACKSON: Commissioner Diaz.

COMMISSIONER DIAZ: Ditto.

CHAIRMAN JACKSON: Thank you very much.

We'll now hear from the NRC staff.

MR. CALLAN: Good afternoon, Chairman Jackson and Commissioners.

We are here this afternoon to review the status with you in greater detail of one of the plants that we discussed at this morning's briefing, Salem Generating Station, and with me this morning are the Regional

Administrator for Region I, Hub Miller, and two of his key staff members that have been very involved in the oversight of Salem, Charlie Marshall, who is a Senior Resident Inspector, and Jim Linville, the Chairman of the Salem Assessment Panel, and also at the table with me today are NRR's Associate Director for Projects, Roy Zimmerman, and the Deputy Director for the Division of Reactor Projects in NRR responsible for oversight of Salem, John Zwolinski.

As you heard this morning during the briefing on the senior management meeting results and also in the presentation just completed by PSE&G, there has been a considerable amount of work accomplished at the Salem Generating Station to improve both the material condition and the processes that had caused the performance decline at Salem, though there are still some issues that remain to be

resolved.

I will now turn the briefing over to Hub Miller, who will discuss the NRC's assessment of the progress Salem has made in preparing for restart.

Hub?

MR. MILLER: With the Commission's indulgence, I would like to just introduce a few other people who are with us here today from the region who played significant roles in this large effort.

Larry Nicholson is the current Deputy Director of

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the Division of Reactor Safety in Region I, and he was the Branch Chief through most of this effort.

Scott Barber is the Project Engineer, who was a significant contributor to the restart effort, and Michelle Evans will be the new Senior Resident Inspector upon Charlie Marshall's departure in a few months.

What I'd like to do is just briefly describe the process for judging readiness for restart, the inspections, the activities that we undertook to monitor this whole effort from the period of two years ago, when the plants were shut down, until now.

I will describe very briefly our findings and our observations and, finally, talk about where we are in the process -- we're not done yet -- and I will talk about where we are.

If I could go to the first slide --

[Slide.]

MR. MILLER: I don't think we need to spend more time talking about the problems that existed two years ago. We talked about it this morning, and there's been much discussion this afternoon.

Upon the decision to shut the plants down in mid-1995, the Commission took two actions.

First of all, we issued a confirmatory action letter which confirmed several important things -- first of

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all, that the licensee would conduct a vigorous review of the problems that existed and would come to some determination of root cause; secondly, that they would develop a plan and get NRC approval or acceptance of the plan, which would outline the things that would be accomplished during the outage to address the problems that were identified; and thirdly, committed the licensee to the performance of an operational readiness review prior to restart.

The second thing that the Commission did was to invoke the procedures and the guidelines of our manual chapter 0350, and I'll talk at some length about that in a moment, but that decision was made upon the heels of the shutdown in mid-'95.

And then as, again, we discussed this morning in the way of background, at the January meeting of the senior managers, a determination was made that Salem should be considered a watch list category two facility.

If I could have the next slide --

[Slide.]

MR. MILLER: The 0350 process, if I could just describe it very generally, is intended to assure that the activities of the Commission are well-coordinated.

The issues in this case were complex and involved many people, not just people in the region but people in

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headquarters, and the process is intended to assure that there is an integrated, coordinated approach among the

offices; secondly, that there is a systematic development of what we consider the issues to be; and thirdly, a structured process and a plan for overseeing activities of the licensee during the outage.

The first step in doing this was the formation of what we have termed the Salem Assessment Panel. It is currently headed up by Jim Linville.

It is comprised of managers from the headquarters office and the region, senior resident and others, and its purpose was initially to develop that plan that I talked about and to -- throughout the process, to monitor progress, to take -- to assess -- as things go along and new issues emerge -- and they did emerge during this long process -- to make adjustments to assure that resources were properly targeted.

Important at the outset was an effort to go back -- and this was in the fall of '95 -- independent of the licensee and before receiving the licensee's first report of their issues, the staff went back through more than two years of inspection reports, assessments, event reports, and the like, to develop our own list of issues that we felt were important to resolve or vital to resolve before restart, and they were put in two bins.

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First of all, we identified equipment and system performance issues -- hardware issues, if you will. These included things like the Hagen modules, the diesel generator loading issue, issues with the power-operated relief valve, a number of very specific issues.

And secondly, we identified a number of human performance issues relating to station processes, and these had to do with procedures, the corrective action process, and the like.

It was after completing this that we reviewed the initial restart plan of the licensee to -- among other things, to make judgements about the scope of that activity, to assure that it was comprehensive and complete.

We also, in December of 1995, conducted a public meeting to get public input and, importantly, to work with the states, which we did in the January timeframe of '96, working with the State of Delaware and New Jersey.

There were any number of meetings with the State of New Jersey, and we, I think, were successful in incorporating the comments that the State had.

The initial plans from the licensee were not sufficient in the view of the staff, and it was through a process of five-and-take and discussion with the licensee that the ultimate plan was submitted by the licensee and accepted by the staff in February of '96.

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If I can go to the next slide --

[Slide.]

CHAIRMAN JACKSON: Did you focus on the effectiveness of the corrective action program?

MR. MILLER: Very much. I'll talk on this slide and then the next slide about that.

CHAIRMAN JACKSON: Okay.

MR. MILLER: We did several things.

We, first of all, expanded the inspection team on-site.

This is a two-unit plant, so you would expect to have and we did have three resident inspectors, but we also stationed on staff several technical people from the Division of Reactor Safety, and over the past year, we supplemented that further with three specialists, contractor

specialists, to provide ongoing oversight and to be reviewing progress against the specific issues in our restart plan.

We conducted a number of specialist inspections, and these were focusing on specific issues -- the test program, the in-service test program, motor-operated valves, a number of issues like that.

Corrective actions were something that we assessed through the specialist inspections, as well as it was the major focus, really, I would say, of the expanded site team.

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And then a third kind of inspection effort were special team inspections that we conducted.

There was discussion in the licensee's presentation of efforts that they've made in the area of design control. That effort followed an inspection that was conducted at the beginning of 1996 with the staff observing or knowing of events that had occurred at other plants and problems that had surfaced at many plants in the area of design control.

An inspection was conducted, and we found problems that led to an initiative undertaken by the licensee, and at the end of that, at the end of the licensee's efforts, we conducted a so-called safety system functional inspection, which is perhaps the most comprehensive of the design inspections that we conduct from the staff.

And then the last of the inspections to talk about is the inspection that is, as we speak, still underway, and that is the assessment being -- or the inspection being conducted by our so-called readiness assessment team.

Now, I should say at this point that, for all of the inspections that have been done -- and there were 17,000 hours of direct inspection over the past two years, which equates to about 12 1/2 full-time equivalents, and that doesn't count the three additional contractors that we had on-site, and we had 175 discrete inspection activities, with

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52 different inspectors, and with all of that, there is still the concern that you can miss something, and so, the inspection that is going on now is an inspection being conducted by a team of 14 people who have been -- who have not been substantially involved in Salem in the past.

It includes people from other regions, from the Technical Training Center, and from headquarters, and the purpose of that team is to take one last look in the broad areas of operations, maintenance, engineering, employee concerns, quality assurance, corrective actions.

CHAIRMAN JACKSON: Let me ask you a question. You did one SSFI?

MR. MILLER: Yes, ma'am.

CHAIRMAN JACKSON: And that was on component cooling water?

MR. MILLER: That was on component cooling water and portions of other interfacing systems. We chose component cooling water for two reasons.

First of all, it's high on the PRA/IPE scale -- and then I'll talk more about risk in a moment and how we brought risk into all of our inspections, but it was high on that scale.

Secondly, it has a lot of interfaces, and we wanted to test those interfaces, and so, yes, that's the system that we looked at.

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CHAIRMAN JACKSON: You're going to talk some more about that?

MR. MILLER: I'm going to talk about the results when I get to the next page, but I should say that, throughout this, in laying out the plan, for example, of the integrated test program inspections that we did, we selected systems by considering the IPE -- we selected eight systems in that case.

We have on the team -- the readiness assessment team -- one of our senior reactor analysts, who, as you know, is one of the staff-level specialists in the probabilistic risk assessment area throughout, and also the oversight that was provided by the Salem Assessment Panel was consistently looking to assure that our inspections were risk-informed.

Also, I should just briefly mention that, with an outage of this scale and with the number of modifications and the changes that have occurred at the station, there is a heavy load on the licensing office. NRR applied 13,000 hours over this past two years.

CHAIRMAN JACKSON: This is separate than this other team.

MR. MILLER: Separate and beyond.

There were 15 reviewers who made the trips to the site of significant periods, of a week or more, for example,

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looking at issues such as fire protection and the like; 35 amendments were issued to support the resolution of the issues that the licensee talked about.

And then, in a category that I will call ongoing assessments, there have been the activities of the Salem Assessment Panel. There is a meeting about once a month.

Management meetings -- there were some 20 or so management meetings over this period focused on specific issues but also broad reviews of progress, and this involved regional administrators and people like Roy Zimmerman and others from the headquarters office, and then numerous management visits to the site, well over 100 visits to the site by managers of all level in the agency.

I'm going to skip over the next slide just for a moment. I will come back to it, but I'd like to go directly to what our observations are.

I think I can confirm much of what you have heard here today. We have seen the team. It has been in place pretty much since the beginning of the outage as a strong team, as evidenced by the conservative decision-making that has gone on.

There has been an establishment of high standards.

We see that managers are involved. Managers are in the field.

I think the decisions that have been made

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ultimately on the scope of the outage speaks significantly to the strength of the team, the training initiatives, and the like, and very importantly, reaction to problems.

Every plant has problems. When you have a plant like Salem that has had, you know, widespread problems and they're pervasive, the issue is never will problems occur but, rather, what does management do when they arise, and I think that has been a strength.

We've looked very hard at the corrective action processes. I think, by and large, we see a low threshold for problem reporting.

That's not to say that we can't go out in the field -- in fact, the readiness assessment team in some of its preliminary briefings to me have noted some problems that haven't been picked up, but they're not serious

problems.

We have seen over the past two years a steady increase. I think the one slide that was shown by the licensee that talks about the number of issues that are licensee-identified -- I think that fits with what we observe.

I won't go into the retraining efforts. The information provided by the licensee, I think, is something we have verified. We have looked at training. It's one of our issues in restart, in our restart plan, and we've seen

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good results there.

We have observed much greater ownership by operations, and this includes in the day-to-day control and the pace of activities but also, I think, the functional silos that existed at the beginning of this outage have been broken.

I think operators have also played a strong role in problem identification.

I won't go into the significant equipment improvements. Those have been talked about a length.

The test program has been comprehensive. We did find problems in some of our inspections.

Mr. Storz mentioned the problems with the control room ventilation system testing, and we did identify problems with that testing.

I think we've caught those problems early enough that they could be dealt with, and our impression is that those issues were addressed broadly, so that we can have confidence that the final program, once completed, is comprehensive.

We looked at the scope of the testing, we looked at the procedures and the controls that were in place, we looked at the implementation of it, and very importantly, we looked at the results to assure that, when anomalies occur, that they're properly, you know, resolved, and so, we've

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taken it, really, from the beginning to the end.

There's much to be done, of course, as they go to the power ascension phase, but to this point it has been good.

I think, as issues have arisen, the licensee has been effective at going broadly to look at underlying issues and not just addressing the instant problem. I've talked about a number of those things -- the issues we raised with respect to the licensing and design basis.

You asked a question about what did we find in our SSFI. We found a situation that was very much like plants of this vintage.

There were problems of disconnects between the FSAR and the plant and the like, but most of them were in the -- I think what -- in line with what we see at other plants.

There were several issues that impacted on operability.

One involved head positive suction, head for component cooling water pump. We raised questions. The licensee performed an actual test of the pump, running it all the way to its max flow to assure that there was not a performance problem, and so that was demonstrated by test.

The other issue we found was a single failure problem or a vulnerability in one of the ventilation

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systems.

It turns out that the licensee had previously

planned to conduct a single failure vulnerability study on their ventilation systems, and so, they had that one covered, as well.

I should say that it is our impression that Salem, having implemented this initiative last year, following our first inspection, that they are probably ahead of most plants in the same -- of the same vintage when it comes to the ongoing efforts that they still have ahead of them to complete the types of reviews that we're expecting under our 50.54(f) letter.

The backlogs that we've talked about at length have been a concern of the staff from the very beginning.

From the first, the issue was is there anything in the backlog that is important and required for restart, and that has been a continuing question. It has been a major issue of the readiness assessment team that's underway now.

We believe that the backlog, while the numbers are large in some respects, that there is nothing in the backlog that individually can impact on operability of equipment or that, in our judgement, from a cumulative point of view, would call into question the licensee's ability to manage that backlog.

The backlog is, from my -- and I've looked a lot

at backlogs at plants -- I have to say that it's well-categories, it's understood, it's prioritized, and we'll have to watch it, of course, but I think, at this point, our judgement is that there's nothing in it that would prevent restart.

We did look at employee concerns. I will talk about enforcement. There was enforcement this past year, two enforcement actions this past year, which was really playing catch-up on issues that occurred in the 1994 timeframe.

With that kind of background, we were especially sensitive about employee concerns. There are human factors experts on our readiness assessment team, and to this point, we view that program to be strong.

If I can go to the next slide --

[Slide.]

MR. MILLER: This addresses the processes the licensee has talked about, their submittal of May 28, which describes the results of their operational readiness review. We still have that under review.

The next step is for the readiness assessment team to complete its work. There is an exit meeting with the licensee on Friday. I will attend that exit meeting.

Following that, the Salem Assessment Panel first will take the results of that meeting and go back again and

review all of the inspections that have been done by the line in the region and the NRR to confirm that all of the items that are in our restart plan have been closed out.

After that, the 0350 process calls for us to coordinate, of course, with the other offices within the Commission and with other agencies, as appropriate, to assure that there are no issues outstanding, and following the concurrence of the other offices, we will notify the Commission, states, and the Congressional offices to -- before the final decision and letter is issued releasing the licensee from the confirmatory action letter and authorizing startup.

We expect to continue the Salem Assessment Panel process.

Salem Unit 1 is still undergoing replacement of

steam generators, and throughout the power ascension program, because it is not until you start up the plant and bring steam into the turbine building that you will be able to fully test many of the systems -- the feedwater control systems, for example, cannot be tested without full steam, and so, we expect that, in our letter authorizing restart, we will place several holds on -- or define several hold points in the process of power ascension where we will review the progress -- I expect that the Salem Assessment Panel will be involved in that; I will be involved in others

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-- to have confidence that the test program is being conducted in a very deliberate and controlled way.

Of course, we will continue our oversight on an ongoing basis. We will be covering virtually all shifts through the startup and for some period of time.

But even after the power ascension testing, I think for some period I expect that we will continue to have oversight by our Salem Assessment Panel.

CHAIRMAN JACKSON: Are there significant restart issues that require resolution other than ones that will be resolved along the way as part of power ascension?

MR. MILLER: At this point, Chairman, there are no issues that I know of that are restart issues.

I have to hear the results of our readiness assessment team, of course, and we have to complete documentation on these issues, and of course, we have to see the licensee complete the tests that are required before criticality.

CHAIRMAN JACKSON: You're going to have a team exit on Friday?

MR. MILLER: Yes, Chairman.

CHAIRMAN JACKSON: Okay.

MR. MILLER: That goes, really, to the next slide, if I can, just for a moment, talk a bit about public involvement.

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[Slide.]

MR. MILLER: I mentioned at the beginning that, in 1995, when we were trying to scope what we thought should be in the restart plan, we had a public meeting.

We have had two public meetings in the past several months, meetings that have been attended by John Zwolinski and Larry Nicholson and other senior managers, as well as the staff involved, Charlie Marshall and Jim Linville, to seek comment, and those have been well attended.

We have also continued very close coordination with both states. The State of New Jersey has a special capability that Ms. Lipoti talked about. We have attempted to do a lot of that, honestly, through the inspector accompaniments that have occurred by the State.

They're involved, for example, in this readiness assessment team as observers, and then we have attempted to keep the Congressional -- the interested Congressional staffs and Congressmen informed. I toured the plant with Congressman LoBiondo several weeks ago, and I think we've attempted to be active on the front.

Lastly --

CHAIRMAN JACKSON: Before you do that, since you're talking about public involvement, when you've had the public meetings, what have been the issues of greatest

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concern that have come up in those meetings?

MR. MILLER: There have been a number of issues.

John was at the meetings, and I think, John, maybe you can --

MR. ZWOLINSKI: At both meetings, the number one thing was related to employee concerns. Individuals would raise issues affecting either themselves or an awareness of other individuals in which they felt the company continued to have problems in this area.

They did raise concerns related to penetration seals, something you asked a question earlier on, and other technical issues more related to original siting of the facility.

We have followed up from both meetings, especially in the employee concerns area, by addressing additional inspection effort in the employee concerns program area, and that led to modification to the RATI itself, its team composition, in which we put human factors people on the team.

CHAIRMAN JACKSON: Speaking of the RATI, what areas cause the team the greatest challenge?

MR. MILLER: Are you talking in terms of problems that they found?

CHAIRMAN JACKSON: Right.

MR. MILLER: They've found a number of issues. I

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mentioned the problem reporting. They went out into the plant. They found some things that weren't tagged that were deficiencies. They found a few problems with procedures.

Looking at the backlog, they've had to go through that process of, when you look at that large number, what does it mean? That's been a huge challenge. I spent several hours with the team last week, and we went around and around on that.

So, those are, I think, illustrative of what they have faced.

CHAIRMAN JACKSON: You were going to talk about enforcement.

MR. MILLER: Enforcement.

Two years ago or a year ago, we issued a $600,000 civil penalty to address the problems that existed before the shutdown, the significant event that occurred, having a trip in transient, but also, more broadly, the breakdowns in the corrective action process.

This past year, we issued several civil penalties associated with intimidation and harassment.

Our judgement -- and we've been very sensitive to this -- is that those were issues that really had origins in problems several years ago. It was a matter more of catching up with investigations and the like to complete that work.

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We did issue a security violation last year. Security was -- problems in security crept up last year, and we added that, in fact, to our restart list.

But I think also important to mention here is that we have several items that are pending enforcement matters as we speak, and I suspect that, again, with the lag time that exists with enforcement, these are matters, in fact, that may be the subject of enforcement conferences following startup.

But we have been very careful, and they involve two issues -- one on fire protection, one having to do with a problem with the suction shift when you go from the injection phase of a postulated accident to the recirculation phase.

We have asked ourselves very carefully the

question of, does this reflect upon current performance, is there something here that would impact on startup, and we have made the determination at this point, at least, that these do not include things that would impact on startup, but it's important for you to know that, at some later time, there will be some press and there will be discussion on these enforcement matters.

CHAIRMAN JACKSON: Mr. Zimmerman, since your people spent 13,000 hours, I'm interested in what you have to say.

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MR. ZIMMERMAN: We have worked very closely with Region I and shared the thoughts that Hub indicated. The licensing actions, the amendments that were submitted to us, the quality, we've found to be acceptable, and we continue to work closely with Region I.

We're interested, similarly, in reviewing the findings from the RATI prior to working with Hub in terms of a final determination, but there has been considerable effort that NRR has spent.

As Hub indicated, John Zwolinski personally has been devoted primarily to Salem and Maine Yankee over the last year, and our conclusions are in lock-step with Region I.

MR. MILLER: If I could just say one last thing, what Ms. Lipoti said is exactly right.

They have come a long way, but much remains to be done to strengthen and reinforce the kinds of improvements that have been made, and it's much the kind of discussion we had this morning, and we need to continue to watch these efforts as they go forward.

CHAIRMAN JACKSON: Are there any lessons learned for the staff coming out of this whole episode?

MR. MILLER: Well, I gave a talk at the recent regulatory information conference.

I talked for six pages about -- six pages worth of

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lessons learned, but I think, for me, at least, it's another lesson in the need to be vigilant and to go after problems at an early stage and not let the mount and to do a good job of integrating the pieces, also, so that rather than handling problems in piecemeal, looking at them collectively, and of course, you know, much of that is what we are talking about, the improvements to the senior management meeting process and all of the other things that we talked about this morning.

CHAIRMAN JACKSON: Mr. Zimmerman.

MR. ZIMMERMAN: I would add that I think it's important for us to recognize the fact that we need to see results and promises and best intentions that a licensee may have with a new organization and new action plans.

We need to make sure that we see the results, the fruits of that labor, before we turn our attention elsewhere.

MR. CALLAN: Chairman, I would like to reinforce a point that was made by Commissioner McGaffigan, as well as you, that plant startup after the length of time of being shut down, with the kinds of pervasive problems that led to the shutdown, will necessarily, in my view, based upon the experience that we have had with other similar situations, results in discovery of problems as the plant goes through the power ascension program.

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In fact, Hub didn't dwell on the power ascension program, but it's a measured program with hold points,

plateaus, and at each hold point -- and there are several as the plant progresses to 100-percent power -- self-assessments are done, lessons are learned, both from the perspective of the utility, as well as from the perspective of the NRC.

We compare notes, we compare our assessments with the licensee's assessments, and both the licensee, as well as the NRC, need to be comfortable before the plant proceeds to the next hold point.

So, the start-up process is actually designed to accommodate problems and to learn as the ascension goes.

MR. MILLER: If the plant experiences problems that involve complicated trips and the like, of course that's another matter, and we make that distinction.

There are certain problems that you can say are within which you would expect and then there are others that are not, and we will be very alert in making that distinction.

CHAIRMAN JACKSON: Okay. Thank you.

Commissioner Rogers.

COMMISSIONER ROGERS: Well, just the general observation that I think we have heard an enormous amount about the plant today, and it's been, I think, very

important that the Commission have a chance to hear that at this level.

Even though we're not acting as a Commission on a restart decision, I think it's been very important for us to hear the progress that's been made, the approaches that have been taken, to actually see the people who -- from the licensee who are responsible and to hear them.

I think one begins to get a sense that this is, indeed, a different organization, and one has some confidence that there ought to be different results accompanying that.

I would say I found this a very encouraging set of presentations because of the candor and the detail that was evident in them, and I'm very glad we've had this meeting while I'm still around.

CHAIRMAN JACKSON: And it's part of the public record.

Commissioner Diaz.

COMMISSIONER DIAZ: Yes. I also think it's been a very worthwhile meeting. I am very impressed with the detail and the precise details in the areas that we needed to know.

I'm just going to make one observation that a very wise statement made by a wise commissioner not too long ago that actually said that it's very important to have an error

signal. You don't have an error signal, you cannot control anything at all.

And so, I'm not surprised to find error signals. It is the magnitude of the error that becomes an issue. We hope there are always many error signals that will lead us in controlling the process. It's when the error signal deviates too much from standard that we have concern.

But overall, I think there's been a very, very good effort.

Thank you.

CHAIRMAN JACKSON: Was the wise commissioner Commissioner Diaz?

COMMISSIONER DIAZ: No.

CHAIRMAN JACKSON: Commissioner Rogers.

COMMISSIONER DIAZ: I wish I would have thought

about it, but the senior commissioner --
CHAIRMAN JACKSON: The dean of the commissioners. Commissioner McGaffigan.
COMMISSIONER McGAFFIGAN: I also want to echo the comments of Commissioner Rogers and compliment the staff and the licensee.
I think the May 28th submittal that the licensee made was very useful to prepare for the meeting, and the way they went through the performance indicators that they have and gave us the detail on it I think was very useful and

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probably useful to the staff, as well.
The one question I was going to ask is, on these pending enforcement actions, I understand the lags that we have in our system -- or enforcement items.
In harassment/intimidation cases, we have to coordinate with the Department of Labor oftentimes or whatever.
These that are mentioned here -- how long ago are they? They sound like areas that are sort of in our exclusive control, so you don't end up with these coordination issues.
MR. MILLER: These are issues -- as you can appreciate, many of the design issues that exist are buried in the past and the sins were committed in the past and they've recently come to light, and I think that's what we're talking about in these instances.
COMMISSIONER McGAFFIGAN: So, these came out of the design inspections.
MR. MILLER: Yes, out of our inspection involving the swap-over is an issue that came out of one of our inspections. It had roots in the period of about two years ago, a year-and-a-half ago.
COMMISSIONER McGAFFIGAN: Okay.
CHAIRMAN JACKSON: The question is when they occurred versus when they were covered.

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COMMISSIONER McGAFFIGAN: Right.
CHAIRMAN JACKSON: I think that's the point.
On behalf of the Commission, I would like to thank the licensee and the NRC staff for briefing the Commission on the status of actions regarding the two Salem units and, in particular, the readiness of Salem Unit 2 for restart, and in addition, I'd like to state for the record that the Commission does value the time and effort and input of the State of New Jersey Department of Environmental Protection, and we appreciate the time and effort that you have put in to giving us your perspectives on the Salem Station as well as your involvement with our own staff.
For the record, Units 1 and 2 -- Salem Units 1 and 2 are shut down, and under the licensee's restart action plan and NRC confirmatory action letter and the NRC's manual chapter 0350 process entitled "Staff Guidelines for Restart Approvals," certain corrective actions are required prior to restart.
The Commission has been presented with summaries of the corrective action plans and progress against those plans relating to the various deficiencies that have existed at the Salem Station, and this has helped to clarify the picture for the Commission on the extensive path to restart once a facility has declined to the performance level of this licensee two years ago, and the Commission will

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continue to follow closely the regulatory actions regarding Salem Station, and unless any of my fellow commissioners

have any closing comments, I would like to make one additional comment for the record, unrelated to the topic of this meeting, and that is that, during this, his last public Commission meeting, I would like to publicly thank Commissioner Rogers, Kenneth C. Rogers, for his 10 years of outstanding and faithful service to the U.S. Nuclear Regulatory Commission and the contributions you've made both to the Commission deliberations as well as our interactions with the staff, with licensees, and members of the public have been truly seminal and very helpful, and you know that I even knew you before you got here, and so, that reinforces everything I have to say, and so, I'll give you the opportunity to --

[Applause.]

CHAIRMAN JACKSON: -- to make any final, final comments.

COMMISSIONER ROGERS: No, it's all been said.

CHAIRMAN JACKSON: We're adjourned.

Thank you.

[Whereupon, at 4:18 p.m., the public meeting was concluded.]