

**UNITED STATES OF AMERICA**  
**NUCLEAR REGULATORY COMMISSION**

**Title:           BRIEFING ON SALEM**

**Location:       Rockville, Maryland**

**Date:           Wednesday, June 25, 1997**

**Pages:         1 - 106**

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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BRIEFING ON SALEM

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PUBLIC MEETING

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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

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1 STAFF AND PRESENTERS SEATED AT COMMISSION TABLE:

2 KAREN CYR, General Counsel, NRC Staff

3 E. JAMES FERLAND, Chairman of the Board and CEO,  
4 Public Service Electric and Gas Company (PSE&G)

5 LEON R. ELIASON, Chief Nuclear Officer, Pres.,  
6 Nuclear Ops., PSE&G

7 LOUIS F. STORZ, Senior Vice President, Nuclear  
8 Operations, PSE&G

9 ELBERT C. SIMPSON, Sr. Vice President, Nuclear  
10 Engineering, PSE&G

11 DAVID F. GARCHOW, General Manager, Salem  
12 Operations, PSE&G

13 JEROME F. McMAHON, Director, Quality  
14 Assurance/Nuclear Safety, PSE&G

15 JILL LIPOTI, Ph.D., Assistant Director, Radiation  
16 Protection, State of New Jersey

17 DENNIS ZANNONI, Bureau of Nuclear Engineering,  
18 State of New Jersey

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## P R O C E E D I N G S

[2:00 p.m.]

1  
2  
3 CHAIRMAN JACKSON: Good afternoon, ladies and  
4 gentlemen.

5 The purpose of this meeting is for the Commission  
6 to be briefed on the status of activities at Public Service  
7 Electric & Gas Company's Salem Station, with particular  
8 emphasis on the readiness of Salem Unit 2 for restart.

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

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

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

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

1 progress since July 1995.

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

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

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

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

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

1 make the use of much more routine.

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

6 Mr. Ferland?

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

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

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

17 Could I have slide three, please?

18 [Slide.]

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

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

1 Director of Quality Assurance.

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

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

9 CHAIRMAN JACKSON: Never fear.

10 MR. FERLAND: We're expecting that. All right.

11 Slide four, please.

12 [Slide.]

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

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

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

1 predictable fashion.

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

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

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

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

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

22           Could I have slide five, please?

23           [Slide.]

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

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

4           Since making that decision, we have fully  
5 evaluated our deficiencies and implemented comprehensive  
6 corrective actions. What I find particularly important are  
7 the following factors.

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

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

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

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

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

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

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

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

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

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

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

21 MR. ELIASON: Thank you, Jim.

22 Good afternoon, Chairman and Commissioners.

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

25 I am confident today that Salem 2 is ready to

1 return to service.

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

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

10 May I have slide seven, please?

11 [Slide.]

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

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

17 While public health and safety was not in  
18 jeopardy, I made a conservative decision to shut down both  
19 units. Further, we committed not to seek to restart until  
20 we could assure safe, reliable, and eventless plant  
21 operation.

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

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

5           Slide eight, please.

6           [Slide.]

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

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

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

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

1 hours directly observing operations activities and made over  
2 400 field observations of our maintenance activities.

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

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

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

13 MR. ELIASON: Yes.

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

17 MR. ELIASON: That's correct.

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

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

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

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

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

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

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

23           We defined expectations and communicated them  
24 through required training.

25           We improved our management oversight of the

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

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

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

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

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

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

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

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

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

10 May I have slide nine, please

11 [Slide.]

12 CHAIRMAN JACKSON: Before you go --

13 MR. ELIASON: Yes.

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

16 MR. ELIASON: Yes.

17 CHAIRMAN JACKSON: You know, the submittal, again,  
18 that you made indicated that the quality assurance  
19 organization has provided important findings to the line  
20 organization. Do you track the timeliness of corrective  
21 actions?

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

1 organization.

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

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

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

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

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

22 CHAIRMAN JACKSON: Commissioner McGaffigan.

23 COMMISSIONER MCGAFFIGAN: I just want to ask one  
24 question of definition.

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

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

7 Are you setting the bar -- the core of my question  
8 is are you setting the bar too high for yourself?

9 "Eventless" means zero events as you try to make this large  
10 number of changes that you've made to improve the safety and  
11 reliability all work.

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

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

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

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

1 response to Commissioner McGaffigan's question --

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

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

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

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

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

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

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

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

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

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

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

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

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

18 CHAIRMAN JACKSON: Yes, I'd appreciate that.  
19 Commissioner Diaz?

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

23 MR. STORZ: We have an event board coming into our  
24 plant, and it's our great communications tool with our  
25 employees. We're trying to instill in each employee that

1 even small things that they do we look at as a potential  
2 event initiator.

3 So, the purpose of talking about eventless  
4 operation is to drill down to each employee that their  
5 contribution to the problem that may occur in the plant that  
6 start with I didn't follow my procedure, I didn't do  
7 self-check, I didn't check with the planning department, and  
8 those kinds of things.

9 So, it is a very strong communications tool for  
10 us.

11 There's all kinds of definitions for eventless  
12 performance, and what we're really trying to do with our  
13 plant is to avoid the kind that gets you notoriety, press  
14 coverage, and certainly situations that jeopardize the  
15 plant, and we're working at a very low threshold on this.

16 MR. FERLAND: Getting back to the original  
17 question, there's probably a modifier or something that  
18 ought to go in front of that word. The problem is we're not  
19 sure exactly what it should be.

20 We have put a lot of new equipment in. We've got  
21 new digital feedwater control systems. If anybody thinks  
22 that we have no probability of having a plant trip or  
23 something, we left the wrong message, because those kind of  
24 things can happen.

25 But we expect that they would not turn into

1 complicated events, or we have not been successful at what  
2 we're trying to do.

3 CHAIRMAN JACKSON: Commissioner?

4 COMMISSIONER McGAFFIGAN: My only comment is I  
5 think this may be a very useful tool, the word, in terms of  
6 communicating a conservative philosophy down to the plant  
7 employees, but you also have to worry about what it's  
8 communicating externally, if it is taken to mean zero  
9 problems.

10 So, something that is a very useful communication  
11 mechanism one way may need to be modified or thought about  
12 vis a vis the external public. Although if it's been  
13 communicated properly, as you have just done, it's fine.

14 MR. STORZ: Thank you.

15 Thanks, Leon.

16 Could I have slide 10, please?

17 [Slide.]

18 MR. STORZ: Good afternoon. I'm Lou Storz, Senior  
19 Vice President, Nuclear Operations. We have briefed the NRC  
20 staff several times before on our recovery efforts. Today  
21 I'm going to discuss results of our efforts.

22 May I have slide 11, please?

23 [Slide.]

24 MR. STORZ: The primary objective of our system  
25 readiness process was to systematically find and fix our

1 problems. We started with a comprehensive walkdown of the  
2 plants. We reviewed applicable documents and then developed  
3 readiness plans for 88 major systems.

4 We screened work items into two category, restart  
5 required and post-restart, using risk-base criteria.

6 Teams headed by the system manager owned the  
7 review and remediation process from beginning through formal  
8 system turnover to operations. Before turnover, the  
9 management review committee reviewed and approved the team's  
10 efforts.

11 The accomplishments of our recovery efforts are  
12 too many to mention today. However, mentioning a few will  
13 put our efforts in perspective.

14 For example, to enhance command and control for  
15 our operators, we approved the Salem Unit 1 and Unit 2  
16 control rooms from a human factors standpoint.

17 We upgraded the plant annunciator system,  
18 refurbished the electronics and our reactor protection  
19 system, and installed an advanced digital feedwater control  
20 system.

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

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

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

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

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

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

13 The test process is deliberate and systematic, and  
14 operations personnel are demonstrating good command and  
15 control. Identified deficiencies are promptly corrected,  
16 and lessons learned are used to refine testing process  
17 accordingly.

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

23 May I have slide 12?

24 [Slide.]

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

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

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

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

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

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

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

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

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

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

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

7 CHAIRMAN JACKSON: Let me just follow up with  
8 that.

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

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

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

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

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

2 MR. STORZ: Yes, ma'am.

3 CHAIRMAN JACKSON: Okay.

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

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

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

15 May I have slide 13, please?

16 [Slide.]

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

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

25 As the slide shows, our line organization made a

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

5 Over the same timeframe, we have completed almost  
6 9,900 corrective actions.

7 May I have slide 14, please?

8 [Slide.]

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

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

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

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

1 action process.

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

4 We also improved root cause analysis and provided  
5 training to about 180 employees. We trained approximately  
6 600 personnel in the human error reduction techniques.

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

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

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

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

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

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

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

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

9           MR. STORZ: We found very early in this process  
10 that communicating it was okay to write up a problem hadn't  
11 been done very well in the past, and the process itself does  
12 not cause people to write these actions requests, and we did  
13 a study in preparation for our meeting, and we found that  
14 1,500 or the 2,200 PS employees have submitted an action  
15 request in the last six months, which we found to be very  
16 encouraging. There's a large percentage of the population  
17 willing to actually write up a request.

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

24           CHAIRMAN JACKSON: Commissioner Diaz?

25           COMMISSIONER DIAZ: Yes. Looking at the graph, it

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

3 MR. STORZ: Per month.

4 COMMISSIONER DIAZ: That's new ones identified.

5 MR. STORZ: Yes, sir.

6 COMMISSIONER DIAZ: And you keep going at that  
7 level.

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

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

17 MR. STORZ: Yes, sir.

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

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

2 MR. STORZ: Yes, Chairman. I have an experience  
3 that I had where I went to a regional administrator meeting  
4 in my past and I was told I wasn't bring intrusive enough.  
5 So, we came back, had a very similar program to this.

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

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

14 CHAIRMAN JACKSON: Okay.

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

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

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

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

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

4           CHAIRMAN JACKSON: Okay.

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

7           May I have slide 15, please?

8           [Slide.]

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

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

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

22           [Slide.]

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

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

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

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

14           Slide 17, please.

15           [Slide.]

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

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

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

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

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

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

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

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

23           MR. STORZ: Yes, we have.

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

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

6 CHAIRMAN JACKSON: Okay.

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

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

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

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

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

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

1 ownership of the training process.

2 Line managers now chair the training review groups  
3 of their respective disciplines, and I chair the nuclear  
4 training oversight committee.

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

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

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

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

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

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

1           May I have slide 18?

2           [Slide.]

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

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

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

16           CHAIRMAN JACKSON: What do the numbers represent  
17 precisely?

18           MR. STORZ: It's a technique that's been developed  
19 by a company called Failure Prevention International, and  
20 they have surveyed many plants, and they have surveyed  
21 plants with excellence performance and with poor  
22 performance, and they have normalized a set of numbers, and  
23 the range of 14 and above is top-performing plants, and near  
24 10 and below would be poor performing plants.

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

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

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

6 MR. STORZ: Right.

7 CHAIRMAN JACKSON: I see.

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

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

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

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

21 CHAIRMAN JACKSON: Okay.

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

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

1 in employee morale.

2 May I have slide 19?

3 [Slide.]

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

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

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

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

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

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

1 operating experience in the plant?

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

4 CHAIRMAN JACKSON: It's coming up?

5 MR. STORZ: Yes.

6 CHAIRMAN JACKSON: Okay. I'll wait.

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

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

11 MR. STORZ: Slide 20, please.

12 [Slide.]

13 MR. STORZ: I'll read my text.

14 CHAIRMAN JACKSON: Okay.

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

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

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

25 This slide shows we have sufficient licensed

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

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

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

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

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

25           My experience is telling me that -- and I was

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

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

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

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

14 May I have slide 21, please?

15 [Slide.]

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

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

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

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

4 CHAIRMAN JACKSON: What impact do you expect the  
5 45 remaining control room deficiencies to have on your  
6 startup?

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

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

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

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

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

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

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

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

8 CHAIRMAN JACKSON: Okay.

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

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

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

19 CHAIRMAN JACKSON: Okay.

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

25 MR. GARCHOW: For the operator burdens and what we

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

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

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

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

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

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

1 confirm skillful and safety-conscious performance.

2 Three-point communications and repeat-backs in the control  
3 room exhibit a high degree of professionalism.

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

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

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

15 Slide 22, please.

16 [Slide.]

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

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

1           Seventy percent of the maintenance department was  
2 removed from the plant work and put through a rigorous  
3 8-to-10-week intervention. This intervention baselined and  
4 restored the organization's knowledge and skills. It  
5 changed their behaviors to instill the philosophy that  
6 quality starts with me and the job must be done right the  
7 first time. The intervention offered management the  
8 opportunity to reestablish higher standards by using actual  
9 mock-up demonstrations in our training laboratories.

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

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

18           May I have slide 23, please?

19           [Slide.]

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

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

1 the bar in this area as we go forward.

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

7 CHAIRMAN JACKSON: We've already filled them out.

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

12 Second, since January 1997, Unit 2 has reduced its  
13 reliance on contractor support to near zero for scheduled  
14 maintenance activities, and third, we have seen improved  
15 teamwork, as demonstrated by completion of three large  
16 projects in the last four months. Those are cable  
17 separation walkdown and repair, completion of ventilation  
18 balancing, and the design, installation, and testing of the  
19 containment fan coil accumulator project which was  
20 associated with Generic Letter 96-06. That's the water  
21 hammer on service water issue.

22 May I have slide 24?

23 [Slide.]

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

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

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

7 CHAIRMAN JACKSON: Okay.

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

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

13 MR. STORZ: Yes.

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

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

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

1 demonstrate that that equipment was performing well.

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

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

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

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

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

1 maintenance rule.

2           Those indicators also determine -- maybe we would  
3 have an unscheduled or a scheduled maintenance outage to  
4 deal with something significant. We would make that  
5 determination based on those trends and where our cut-off  
6 levels are for making those kind of decisions, and that's  
7 all in our process.

8           May I have slide 24, please?

9           [Slide.]

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

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

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

25           To be successful, control of work requires

1 management attention.

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

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

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

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

17 Slide 25, please.

18 [Slide.]

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

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

1 reduction going forward in the future.

2 This concludes my initial remarks.

3 CHAIRMAN JACKSON: Mr. Diaz.

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

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

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

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

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

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

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

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

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

24           COMMISSIONER DIAZ: Okay.

25           MR. STORZ: This concludes my initial remarks.

1 Bert Simpson will now discuss improvements in the  
2 engineering department.

3 MR. SIMPSON: Thank you, Lou.

4 I'd like slide 26, please.

5 [Slide.]

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

11 May I have slide 27?

12 [Slide.]

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

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

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

1 facilities.

2 We established higher standards and expectations,  
3 better defined roles and responsibilities for this  
4 reconstituted organization. These new standards, roles, and  
5 responsibilities have been continually communicated to the  
6 organization and evaluated by quality assessment.

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

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

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

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

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

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

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

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

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

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

23 Slide 28.

24 [Slide.]

25 MR. SIMPSON: Have our efforts been effective? We

1 believe the answer is yes. We are seeing higher-quality  
2 50.59 safety evaluations.

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

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

12 May I have slide 29, please?

13 [Slide.]

14 MR. SIMPSON: This slide shows that, over the past  
15 year-and-a-half, the corrective action review board approval  
16 rate has steadily improved for engineering.

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

21 Could I have slide 30?

22 CHAIRMAN JACKSON: Before you go --

23 MR. SIMPSON: Yes.

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

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

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

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

9 CHAIRMAN JACKSON: How large are you backlogs in  
10 engineering?

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

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

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

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

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

7 On slide 30, please --

8 [Slide.]

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

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

20 The system readiness review program evaluated  
21 plant systems at Salem.

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

1       them.

2                       We then expanded this effort to include an  
3 additional 80 systems and subsequently implemented 550 total  
4 modifications to improve system reliability.

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

7                       Examples of extensive upgrades include the  
8 following -- compression of air compressor overhauls,  
9 including specific modifications to improve their  
10 reliability; extensive evaluation, walkdown, and remediation  
11 to ensure proper cable separation throughout the power  
12 plant; extensive modifications over the last six months in  
13 response to Generic Letter 96-06; a complete redesign and  
14 upgrade of our ventilation systems; and also, we provided  
15 assistance in solving an industry problem concerning our  
16 4-KV Mangblast breakers.

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

20                      May I have slide 31, please?

21                      [Slide.]

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

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

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

11          Overall, the engineering department performance  
12          has substantially improved.

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

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

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

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

7           CHAIRMAN JACKSON: Good.

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

9           [Slide.]

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

13          Our challenge is to continue to improve the  
14 quality of our maintenance activities. While we have seen  
15 performance improvements in the maintenance workforce,  
16 management attention must remain focused to ensure continued  
17 progress.

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

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

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

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

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

13 We have reduced the Hope Creek backlog from over  
14 1,800 items to about 600, as shown in the backlog reduction  
15 slide discussed earlier. We are confident that the  
16 magnitude reduction will be similar at Unit 2 during the  
17 next operating cycle.

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

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

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

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

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

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

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

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

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

1 programs as well as the customers.

2 To quote one of our union stewards, in the past  
3 training was done to us, now it's done for us. Management  
4 understands this.

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

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

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

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

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

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

1 ensure our continued performance improvement.

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

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

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

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

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

17           MR. STORZ: Yes.

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

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

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

1 seals, and we know the configuration and tested  
2 configuration.

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

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

11 CHAIRMAN JACKSON: Okay.

12 MR. STORZ: Among the areas that we will continue  
13 to monitor with these tools under development at 50.59  
14 safety evaluations and our root cause analysis capability.  
15 In addition, we have developed a prototype summary indicator  
16 to rate the performance of operating shifts for Hope Creek.

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

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

1 before they escalate into issues or events.

2 This concludes my remarks.

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

5 MR. ELIASON: Thank you, Lou.

6 May I have slide 33, please?

7 [Slide.]

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1 might have.

2 CHAIRMAN JACKSON: Thank you.

3 Commissioner McGaffigan.

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

8 Is INPO 1, SALP 1, excellence? You're going to  
9 try to follow Turkey Point from watch list to INPO 1, SALP  
10 1, status? What is the standard?

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

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

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

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

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

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

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

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

12 MR. STORZ: I've had experience at operating  
13 plants without roofs over the turbine building, and  
14 obviously, in foul weather, it adds an additional burden to  
15 us, but the equipment associated out there on the roof  
16 typically is the least of our -- what I call on-line  
17 maintenance problems, because if they're having trouble up  
18 there, you usually bring the unit off-line.

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

22 COMMISSIONER MCGAFFIGAN: Okay. Thank you.

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

1 as performance does.

2 Thank you.

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

6 Welcome.

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

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

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

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

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

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

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

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

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

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

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

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

25           We would like vigilance on island-wide attention

1 to problem identification, root cause, corrective action,  
2 and followup, and we intend to track a few generic issues  
3 like the Appendix R fire protection to assure that the  
4 50.54(f) issues are resolved and that the plant operates  
5 within its design basis.

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

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

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

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

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

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

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

7 DR. LIPOTI: Thank you.

8 CHAIRMAN JACKSON: Commissioner Rogers?

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

15 DR. LIPOTI: Thank you.

16 CHAIRMAN JACKSON: Commissioner Diaz.

17 COMMISSIONER DIAZ: Ditto.

18 CHAIRMAN JACKSON: Thank you very much.

19 We'll now hear from the NRC staff.

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

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

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

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

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

20 Hub?

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

25 Larry Nicholson is the current Deputy Director of

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

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

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

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

16 If I could go to the first slide --

17 [Slide.]

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

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

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

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

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

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

19 If I could have the next slide --

20 [Slide.]

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

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

1 headquarters, and the process is intended to assure that  
2 there is an integrated, coordinated approach among the  
3 offices; secondly, that there is a systematic development of  
4 what we consider the issues to be; and thirdly, a structured  
5 process and a plan for overseeing activities of the licensee  
6 during the outage.

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

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

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

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

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

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

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

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

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

1 If I can go to the next slide --

2 [Slide.]

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

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

7 CHAIRMAN JACKSON: Okay.

8 MR. MILLER: We did several things.

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

11 This is a two-unit plant, so you would expect to  
12 have and we did have three resident inspectors, but we also  
13 stationed on staff several technical people from the  
14 Division of Reactor Safety, and over the past year, we  
15 supplemented that further with three specialists, contractor  
16 specialists, to provide ongoing oversight and to be  
17 reviewing progress against the specific issues in our  
18 restart plan.

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

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

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

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

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

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

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

1 52 different inspectors, and with all of that, there is  
2 still the concern that you can miss something, and so, the  
3 inspection that is going on now is an inspection being  
4 conducted by a team of 14 people who have been -- who have  
5 not been substantially involved in Salem in the past.

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

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

13 MR. MILLER: Yes, ma'am.

14 CHAIRMAN JACKSON: And that was on component  
15 cooling water?

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

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

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

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

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

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

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

21           CHAIRMAN JACKSON: This is separate than this  
22 other team.

23           MR. MILLER: Separate and beyond.

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

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

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

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

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

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

22 There has been an establishment of high standards.

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

25 I think the decisions that have been made

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

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

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

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

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

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

1 good results there.

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

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

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

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

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

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

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

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

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

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

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

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

17 There were several issues that impacted on  
18 operability.

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

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

1 systems.

2           It turns out that the licensee had previously  
3 planned to conduct a single failure vulnerability study on  
4 their ventilation systems, and so, they had that one  
5 covered, as well.

6           I should say that it is our impression that Salem,  
7 having implemented this initiative last year, following our  
8 first inspection, that they are probably ahead of most  
9 plants in the same -- of the same vintage when it comes to  
10 the ongoing efforts that they still have ahead of them to  
11 complete the types of reviews that we're expecting under our  
12 50.54(f) letter.

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

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

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

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

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

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

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

15 If I can go to the next slide --

16 [Slide.]

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

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

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

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

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

13 We expect to continue the Salem Assessment Panel  
14 process.

15 Salem Unit 1 is still undergoing replacement of  
16 steam generators, and throughout the power ascension  
17 program, because it is not until you start up the plant and  
18 bring steam into the turbine building that you will be able  
19 to fully test many of the systems -- the feedwater control  
20 systems, for example, cannot be tested without full steam,  
21 and so, we expect that, in our letter authorizing restart,  
22 we will place several holds on -- or define several hold  
23 points in the process of power ascension where we will  
24 review the progress -- I expect that the Salem Assessment  
25 Panel will be involved in that; I will be involved in others

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

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

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

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

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

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

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

21 MR. MILLER: Yes, Chairman.

22 CHAIRMAN JACKSON: Okay.

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

1 [Slide.]

2 MR. MILLER: I mentioned at the beginning that, in  
3 1995, when we were trying to scope what we thought should be  
4 in the restart plan, we had a public meeting.

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

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

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

22 Lastly --

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

1 concern that have come up in those meetings?

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

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

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

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

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

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

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

24 CHAIRMAN JACKSON: Right.

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

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

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

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

11 CHAIRMAN JACKSON: You were going to talk about  
12 enforcement.

13 MR. MILLER: Enforcement.

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

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

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

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

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

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

15           We have asked ourselves very carefully the  
16       question of, does this reflect upon current performance, is  
17       there something here that would impact on startup, and we  
18       have made the determination at this point, at least, that  
19       these do not include things that would impact on startup,  
20       but it's important for you to know that, at some later time,  
21       there will be some press and there will be discussion on  
22       these enforcement matters.

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

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

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

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

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

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

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

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

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

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

10 CHAIRMAN JACKSON: Mr. Zimmerman.

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

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

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

1           In fact, Hub didn't dwell on the power ascension  
2 program, but it's a measured program with hold points,  
3 plateaus, and at each hold point -- and there are several as  
4 the plant progresses to 100-percent power --  
5 self-assessments are done, lessons are learned, both from  
6 the perspective of the utility, as well as from the  
7 perspective of the NRC.

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

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

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

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

21           CHAIRMAN JACKSON: Okay. Thank you.

22           Commissioner Rogers.

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

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

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

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

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

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

18 Commissioner Diaz.

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

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

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

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

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

10 Thank you.

11 CHAIRMAN JACKSON: Was the wise commissioner  
12 Commissioner Diaz?

13 COMMISSIONER DIAZ: No.

14 CHAIRMAN JACKSON: Commissioner Rogers.

15 COMMISSIONER DIAZ: I wish I would have thought  
16 about it, but the senior commissioner --

17 CHAIRMAN JACKSON: The dean of the commissioners.  
18 Commissioner McGaffigan.

19 COMMISSIONER MCGAFFIGAN: I also want to echo the  
20 comments of Commissioner Rogers and compliment the staff and  
21 the licensee.

22 I think the May 28th submittal that the licensee  
23 made was very useful to prepare for the meeting, and the way  
24 they went through the performance indicators that they have  
25 and gave us the detail on it I think was very useful and

1 probably useful to the staff, as well.

2           The one question I was going to ask is, on these  
3 pending enforcement actions, I understand the lags that we  
4 have in our system -- or enforcement items.

5           In harassment/intimidation cases, we have to  
6 coordinate with the Department of Labor oftentimes or  
7 whatever.

8           These that are mentioned here -- how long ago are  
9 they? They sound like areas that are sort of in our  
10 exclusive control, so you don't end up with these  
11 coordination issues.

12           MR. MILLER: These are issues -- as you can  
13 appreciate, many of the design issues that exist are buried  
14 in the past and the sins were committed in the past and  
15 they've recently come to light, and I think that's what  
16 we're talking about in these instances.

17           COMMISSIONER MCGAFFIGAN: So, these came out of  
18 the design inspections.

19           MR. MILLER: Yes, out of our inspection involving  
20 the swap-over is an issue that came out of one of our  
21 inspections. It had roots in the period of about two years  
22 ago, a year-and-a-half ago.

23           COMMISSIONER MCGAFFIGAN: Okay.

24           CHAIRMAN JACKSON: The question is when they  
25 occurred versus when they were covered.

1 COMMISSIONER MCGAFFIGAN: Right.

2 CHAIRMAN JACKSON: I think that's the point.

3 On behalf of the Commission, I would like to thank  
4 the licensee and the NRC staff for briefing the Commission  
5 on the status of actions regarding the two Salem units and,  
6 in particular, the readiness of Salem Unit 2 for restart,  
7 and in addition, I'd like to state for the record that the  
8 Commission does value the time and effort and input of the  
9 State of New Jersey Department of Environmental Protection,  
10 and we appreciate the time and effort that you have put in  
11 to giving us your perspectives on the Salem Station as well  
12 as your involvement with our own staff.

13 For the record, Units 1 and 2 -- Salem Units 1 and  
14 2 are shut down, and under the licensee's restart action  
15 plan and NRC confirmatory action letter and the NRC's manual  
16 chapter 0350 process entitled "Staff Guidelines for Restart  
17 Approvals," certain corrective actions are required prior to  
18 restart.

19 The Commission has been presented with summaries  
20 of the corrective action plans and progress against those  
21 plans relating to the various deficiencies that have existed  
22 at the Salem Station, and this has helped to clarify the  
23 picture for the Commission on the extensive path to restart  
24 once a facility has declined to the performance level of  
25 this licensee two years ago, and the Commission will

1 continue to follow closely the regulatory actions regarding  
2 Salem Station, and unless any of my fellow commissioners  
3 have any closing comments, I would like to make one  
4 additional comment for the record, unrelated to the topic of  
5 this meeting, and that is that, during this, his last public  
6 Commission meeting, I would like to publicly thank  
7 Commissioner Rogers, Kenneth C. Rogers, for his 10 years of  
8 outstanding and faithful service to the U.S. Nuclear  
9 Regulatory Commission and the contributions you've made both  
10 to the Commission deliberations as well as our interactions  
11 with the staff, with licensees, and members of the public  
12 have been truly seminal and very helpful, and you know that  
13 I even knew you before you got here, and so, that reinforces  
14 everything I have to say, and so, I'll give you the  
15 opportunity to --

16 [Applause.]

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

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

20 CHAIRMAN JACKSON: We're adjourned.

21 Thank you.

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

24

25

CERTIFICATE

This is to certify that the attached description of a meeting of the U.S. Nuclear Regulatory Commission entitled:

TITLE OF MEETING: BRIEFING ON SALEM

PLACE OF MEETING: Rockville, Maryland

DATE OF MEETING: Wednesday, June 25, 1997

was held as herein appears, is a true and accurate record of the meeting, and that this is the original transcript thereof taken stenographically by me, thereafter reduced to typewriting by me or under the direction of the court reporting company.

Transcriber: Lamara Shipp

Reporter: Christopher B. Cutchall



**SALEM UNIT 2 RESTART**

**HUBERT J. MILLER**  
**Regional Administrator**

**June 25, 1997**

## **BACKGROUND**

- **Performance before the Dual Unit Shutdown**

- **Four AITs in 4 years**

- **Two Major Enforcement Actions - Grass intrusion event and significant corrective actions violations**

- **Senior Management Full Discussion Plant since 1990**

- **Confirmatory Action Letter Issuance - June 9, 1995**

- **Initiated NRC Manual Chapter 0350 Restart Process**

- **Watchlist Plant - Category 2 Facility - January 1997**

**MANUAL CHAPTER 0350 PROCESS -  
RESTART ACTION  
PLAN DEVELOPMENT**

- **Salem Assessment Panel**
  
- **Review of past NRC inspections and assessments**
  
- **Identification of key restart issues**
  - **Equipment and system performance**
  - **Human performance and station processes**
  
- **Review of PSE&G Restart Plan**
  
- **Solicitation of input from public and states**

# **NRC INSPECTIONS AND OVERSIGHT**

- **NRC Inspections**

- Expanded site inspection team
- Specialist inspections - staff and contractors, e.g., Integrated Test Program
- Special team inspections - FSAR Review, SSFI, RATI

- **Licensing Issues and Activities**

- Significant activity associated with modifications
- Onsite reviews and inspection support

- **Ongoing Assessments**

- Salem Assessment Panel discussions per IMC 0350
- Management meetings
- NRC management site visits

## ENFORCEMENT

- **Past Enforcement Action**

- **Pending Enforcement**

- **Fire Protection**
- **ECCS Swapover**

## CURRENT ASSESSMENT

- **Strong management team and conservative decision making**
- **Improved processes, e.g., Corrective Action Program and low threshold problem reporting**
- **Strong retraining efforts**
- **Human performance improvement - operations ownership**
- **Significant equipment improvements**
- **Comprehensive test program**
- **NRC inspection issues addressed as they have been identified**
- **FSAR Review**
- **Remaining backlogs appropriately prioritized**
- **Other improvement efforts continue**

**MANUAL CHAPTER 0350  
RESTART DECISION PROCESS**

- **Final licensee readiness certification**
  
- **CAL Modification for Salem Unit 2 Restart - After all restart issues are resolved and verified by inspection**
  - RATI results evaluation
  - Salem Assessment Panel review and recommendation
  
- **Power Ascension Program**
  - Licensee review at predetermined hold points
  - NRC assessment at predetermined hold points
  - Integrated test program continuation
  - Inspection coverage of each shift during startup
  
- **Continuation of SAP (through Salem Unit 1 restart)**

# PUBLIC INVOLVEMENT

- **Public**

- NRC-Licensee meetings open to public observation
- Public Meetings

- **State**

- Meetings with state officials
- Significant State Involvement

- **Congressional**

- Briefings of Congressional staff

The Power of Commitment



**Presentation To The  
Nuclear Regulatory Commission**

**June 25, 1997**

The Power of Commitment



**E. James Ferland**

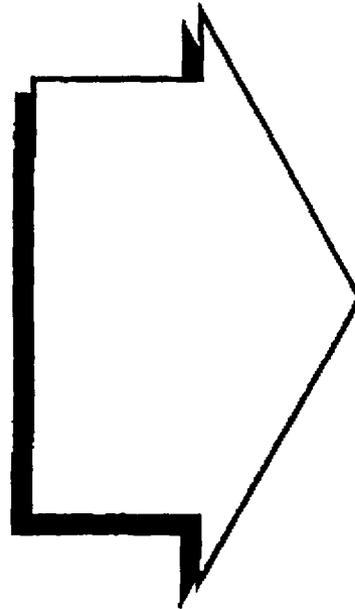
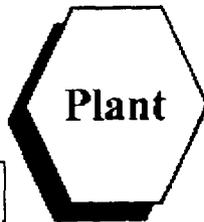
**Chairman of the Board &  
Chief Executive Officer  
Public Service Electric & Gas  
Company**

# Agenda

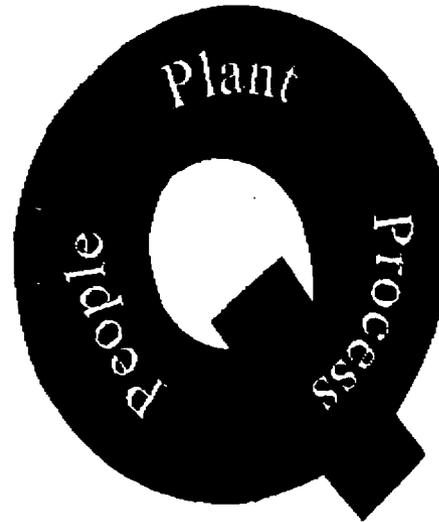
<b>Opening Remarks</b>	<b>Jim Ferland</b>
<b>Overview</b>	<b>Leon Eliason</b>
<b>Results/Challenges</b>	<b>Lou Storz</b> <b>Bert Simpson</b>
<b>Sustaining Performance</b>	<b>Leon Eliason</b>
<b>Closing Comments</b>	<b>Jim Ferland</b>

# Improving Plant Performance

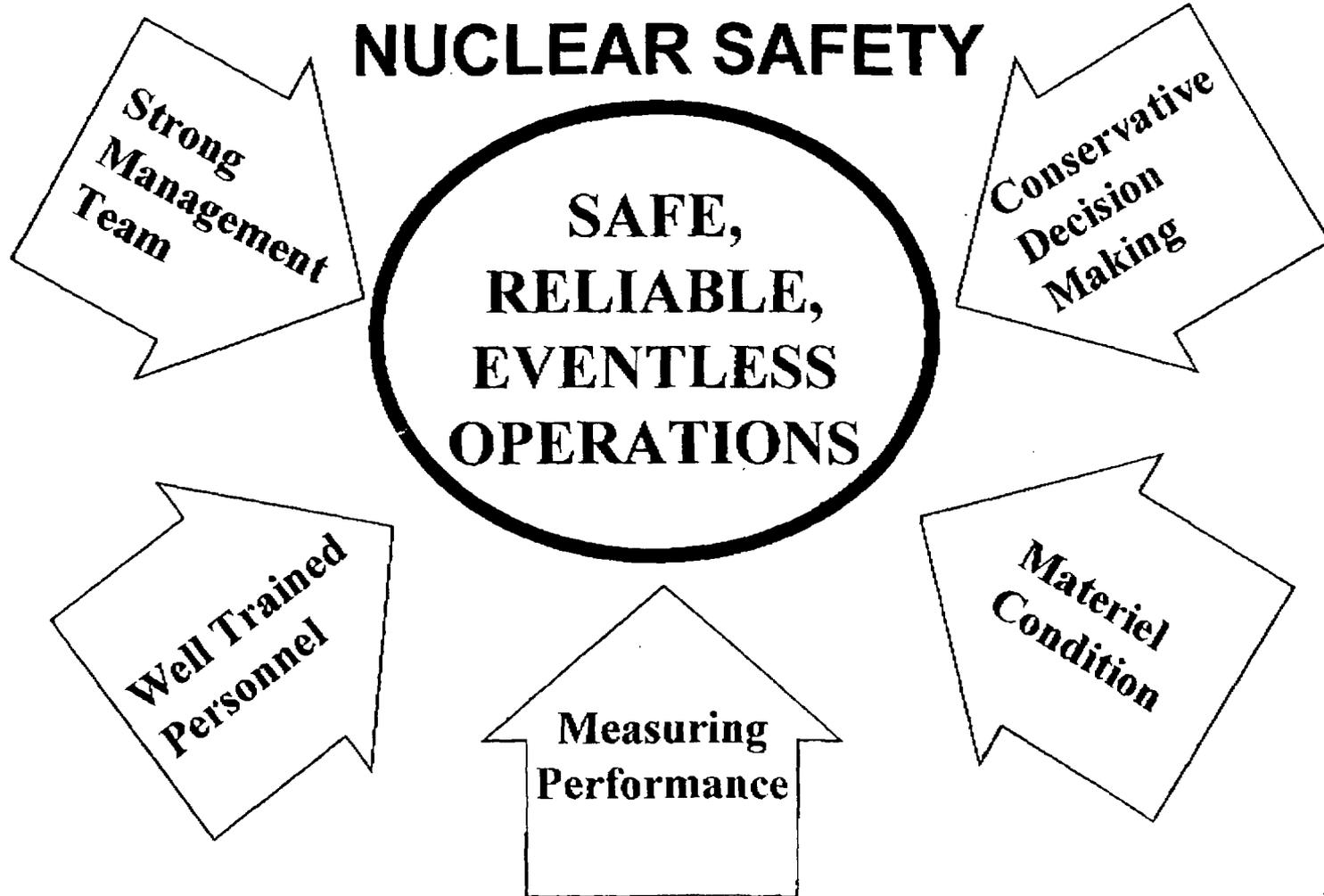
Pre-Shutdown



Today



# **PSE&G COMMITMENT TO NUCLEAR SAFETY**



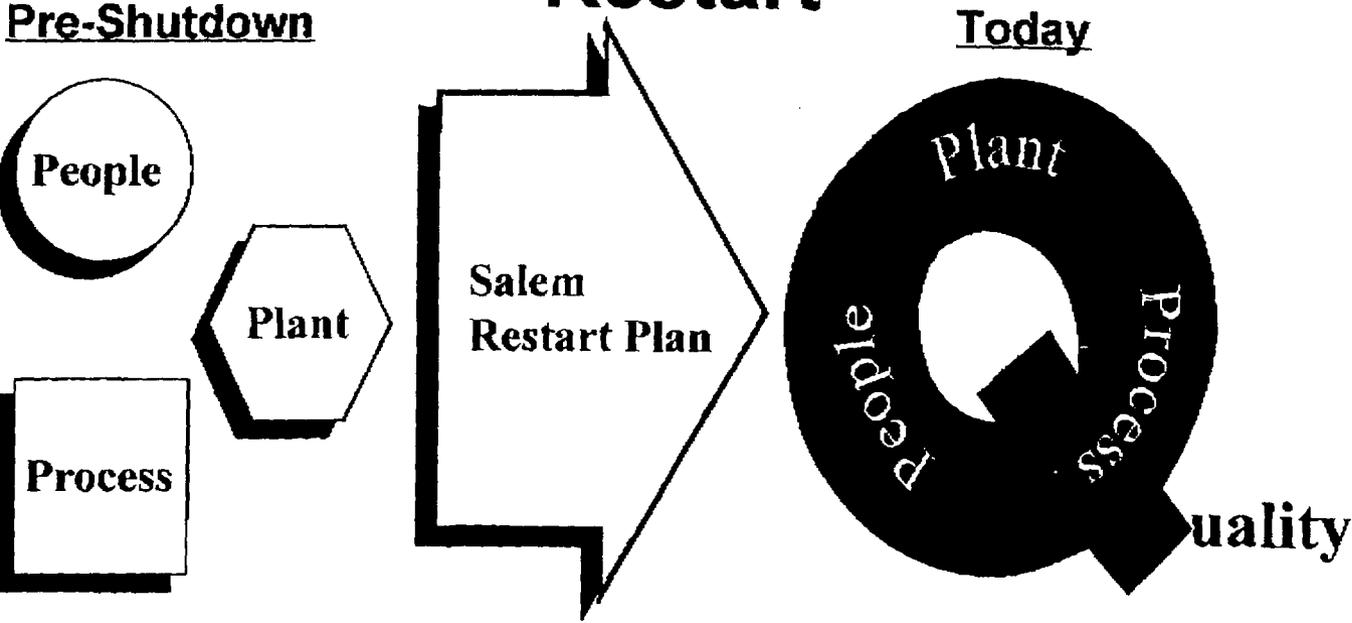
The Power of Commitment



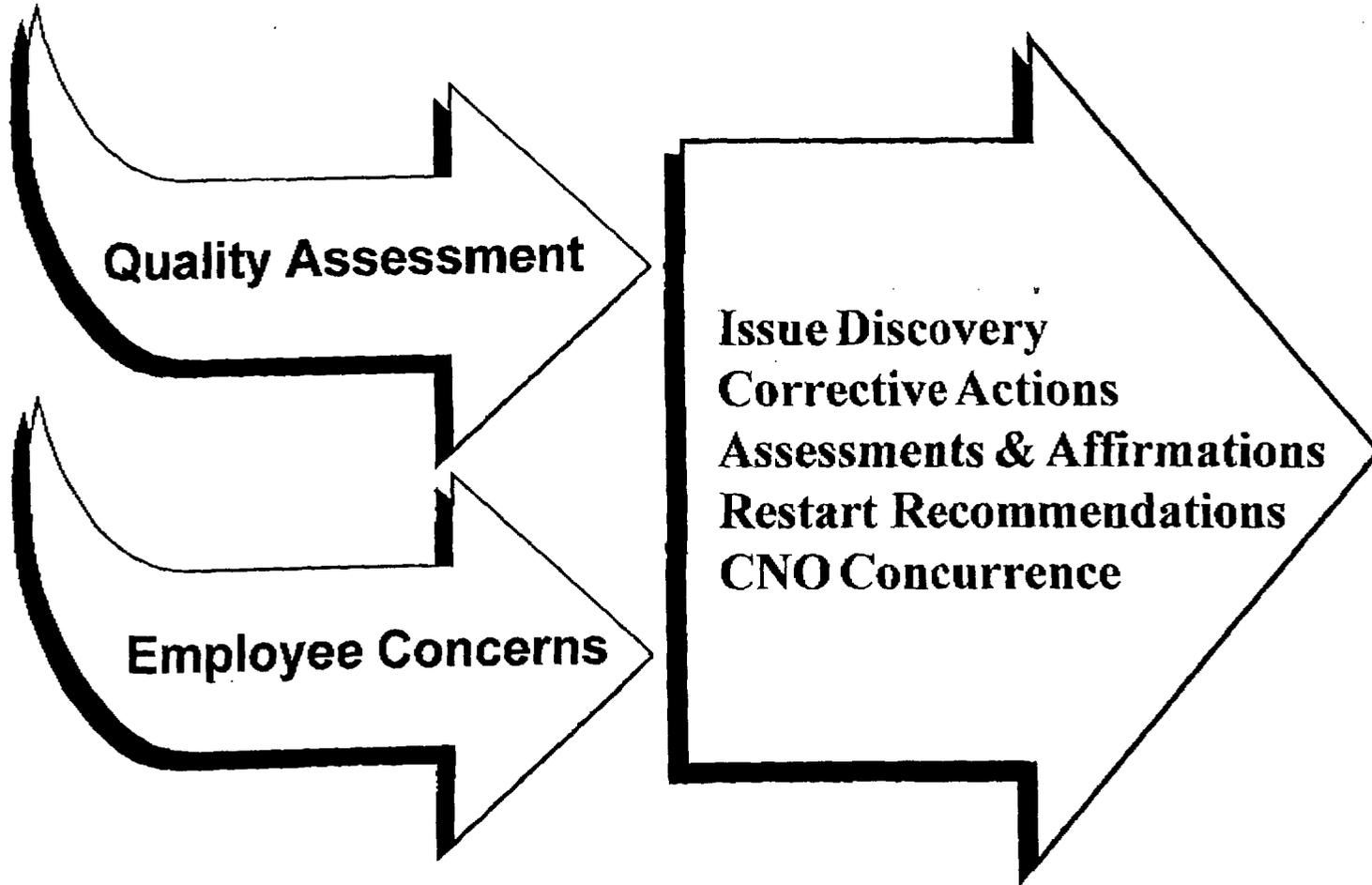
**Leon Eliason**

**Chief Nuclear Officer  
and President  
Nuclear Business Unit**

# Approach For Achieving Restart

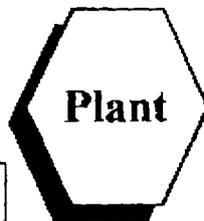


# Restart Process

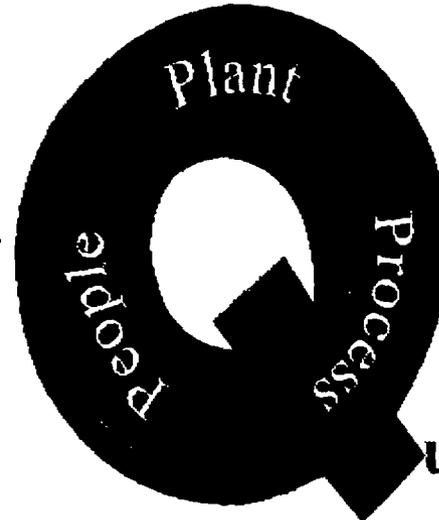


# Approach For Achieving Restart

Pre-Shutdown



Today



Quality

**Quality = Safe, Reliable, Eventless Operation**

The Power of Commitment



**Lou Storz**

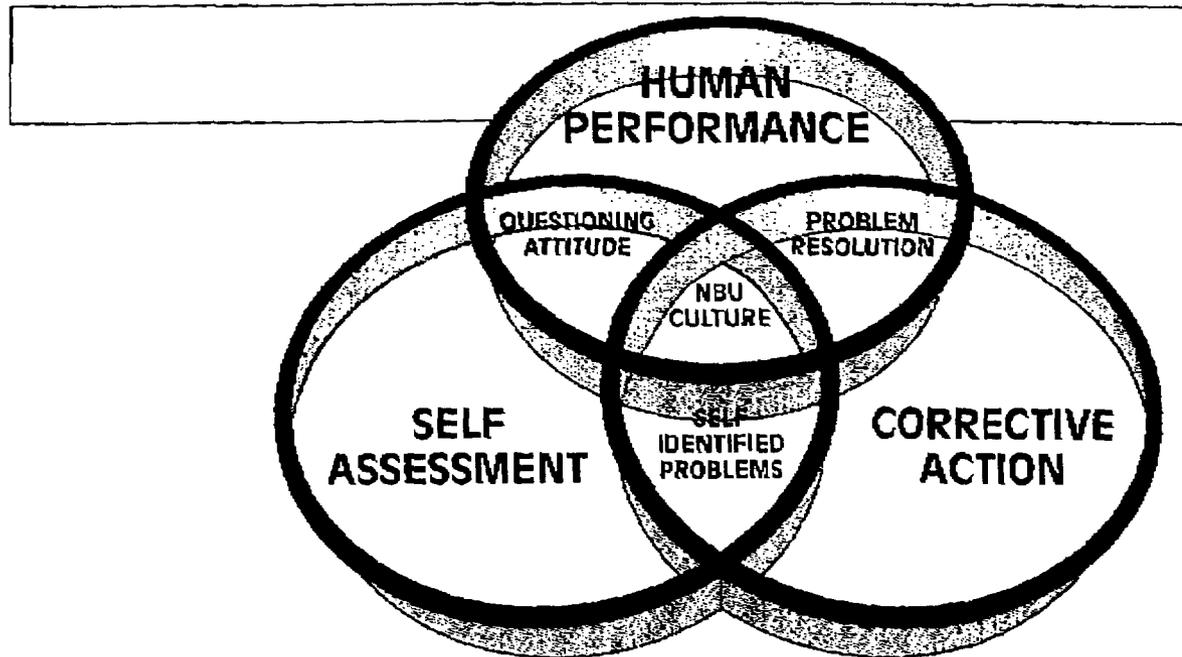
**Senior Vice President  
Nuclear Operations  
Nuclear Business Unit**

## **Recovery Actions To Date**

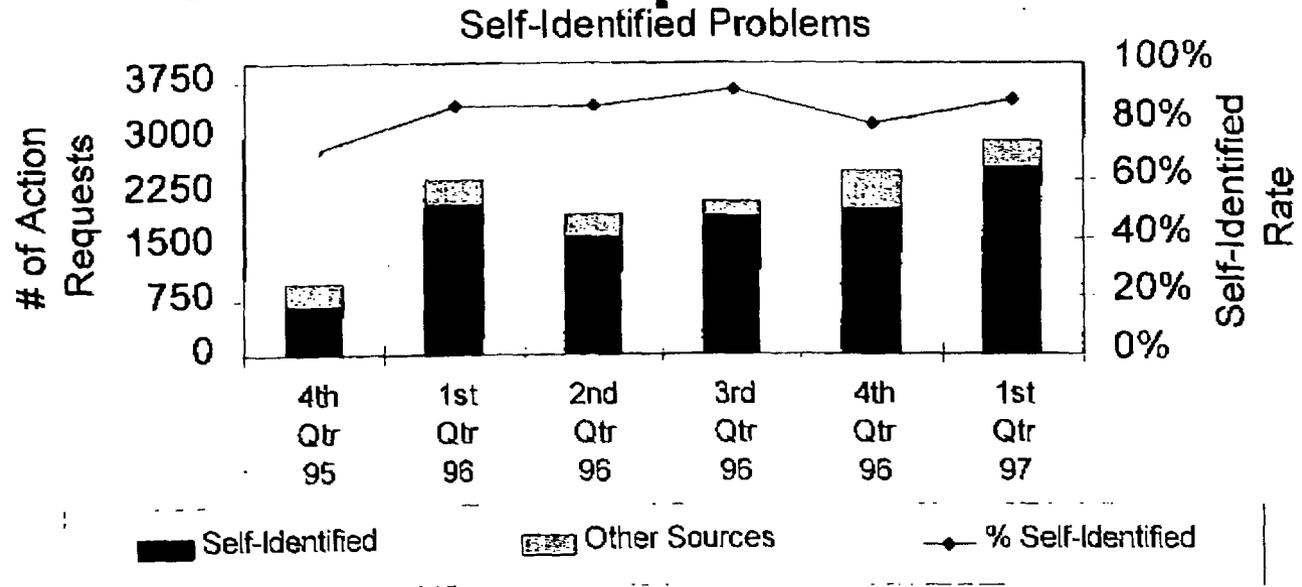
- **Overview of System Readiness**
- **Plant Improved To Assure Safe, Reliable, Eventless Operations**
- **Status of Startup and Power Ascension Testing**

# Employee Accountability

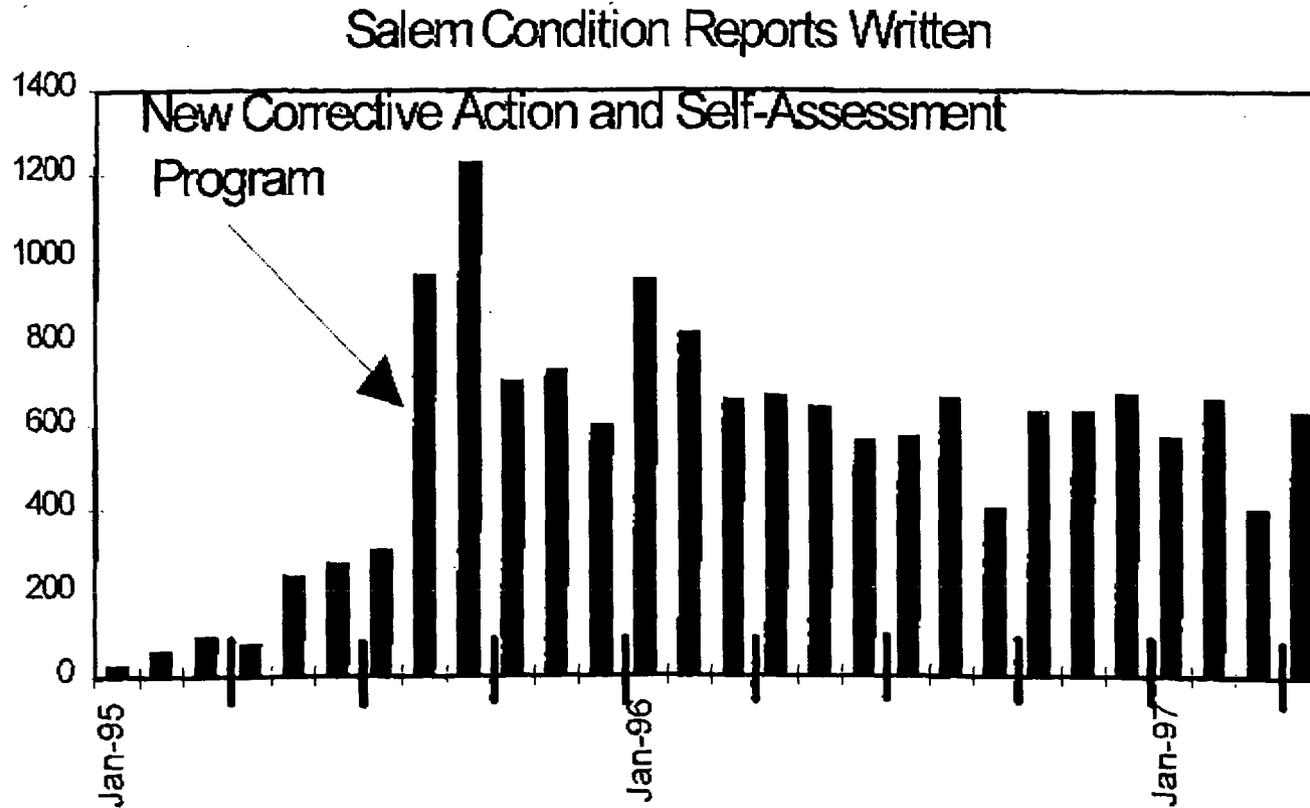
*You are the difference! the new NBU*



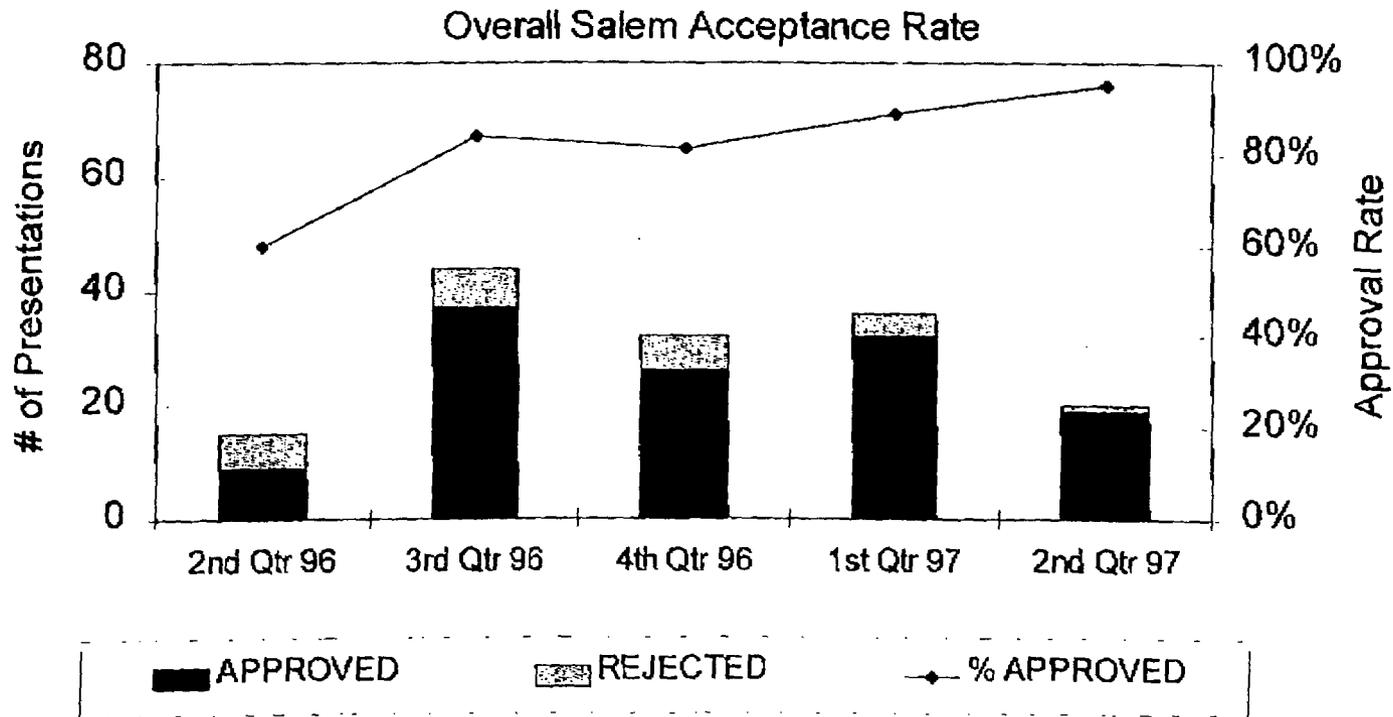
# Self-Critical Behavior Means: Continual Improvement



# Improved Problem Identification



# Corrective Action Review Board Standards = Accountability



# Keys to Success

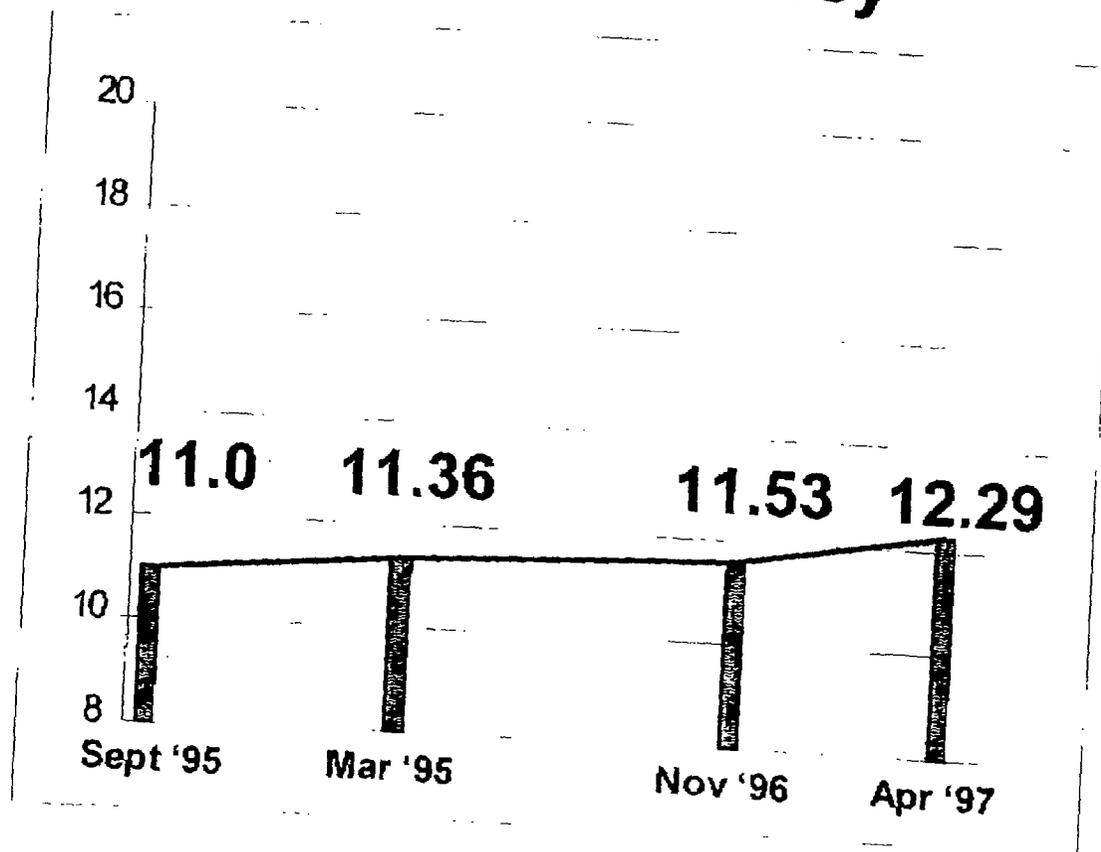
- **Effective Leadership**
- **Productive Teamwork**
- **Corrective Action**
- **Effective Training**

**= Accountability**

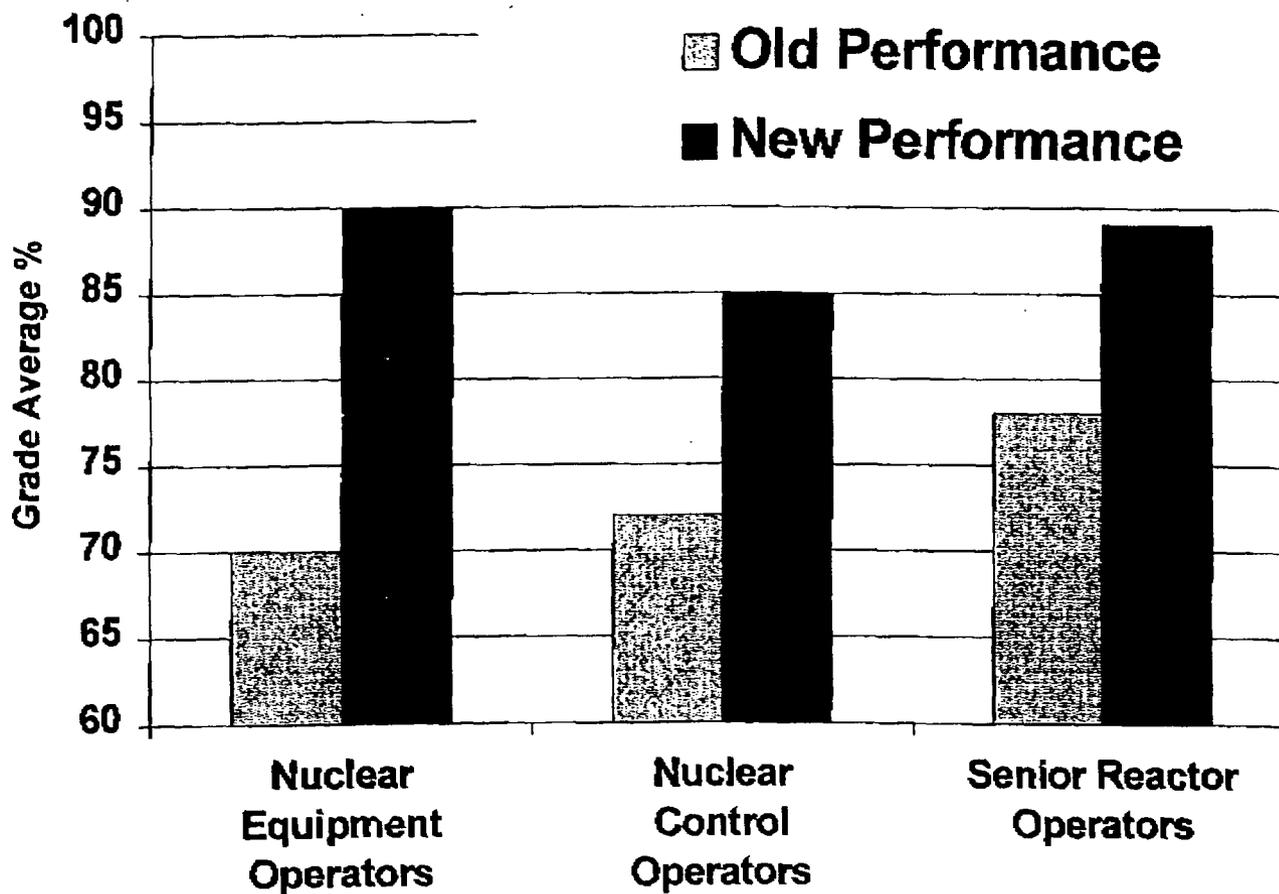
# **Improved Skills and Knowledge**

- **Enhanced Training Department**
- **Upgraded Training Program**
- **Developing Partnership in a Changing Environment**

# Tracking Our Improvement Culture Survey



# Operations Intervention Test Results

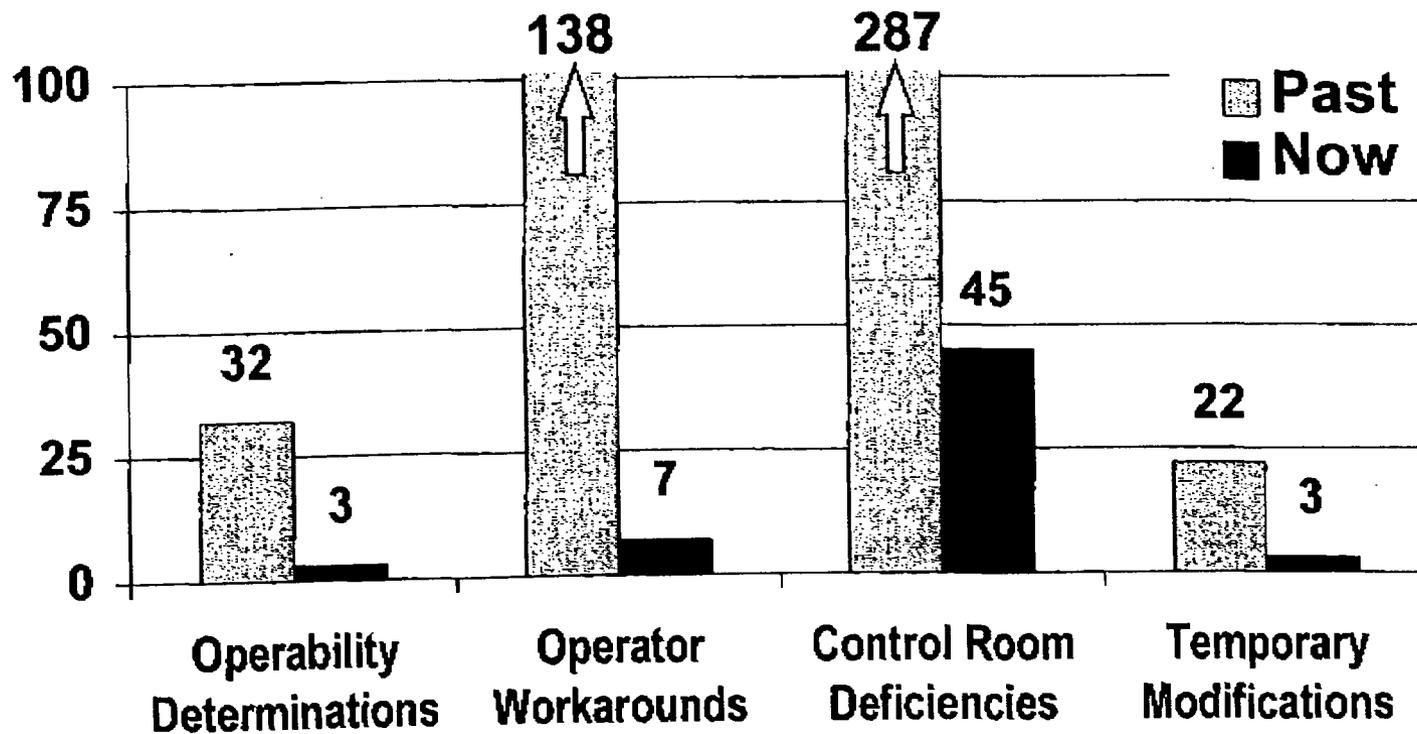


## Crew Make-up

<b>5 Shifts</b>	<b>Technical Specification Requirements</b>	<b>Current Staff Level</b>	<b>Additional Qualified Staff*</b>	<b>Long-Term Shift Staffing</b>
<b>Senior Reactor Operators</b>	<b>15</b>	<b>17</b>	<b>6</b>	<b>30</b>
<b>Reactor Operators</b>	<b>20</b>	<b>20</b>	<b>6</b>	<b>30</b>
<b>Equipment Operators</b>	<b>25</b>	<b>45</b>		<b>45</b>
<b>Shift Technical Advisors</b>	<b>5</b>	<b>5</b>		<b>(SRO)</b>
<b>Total</b>	<b>65</b>	<b>88</b>	<b>12</b>	<b>105</b>

\* = Awaiting Reactivity Changes to Complete License Requirements.

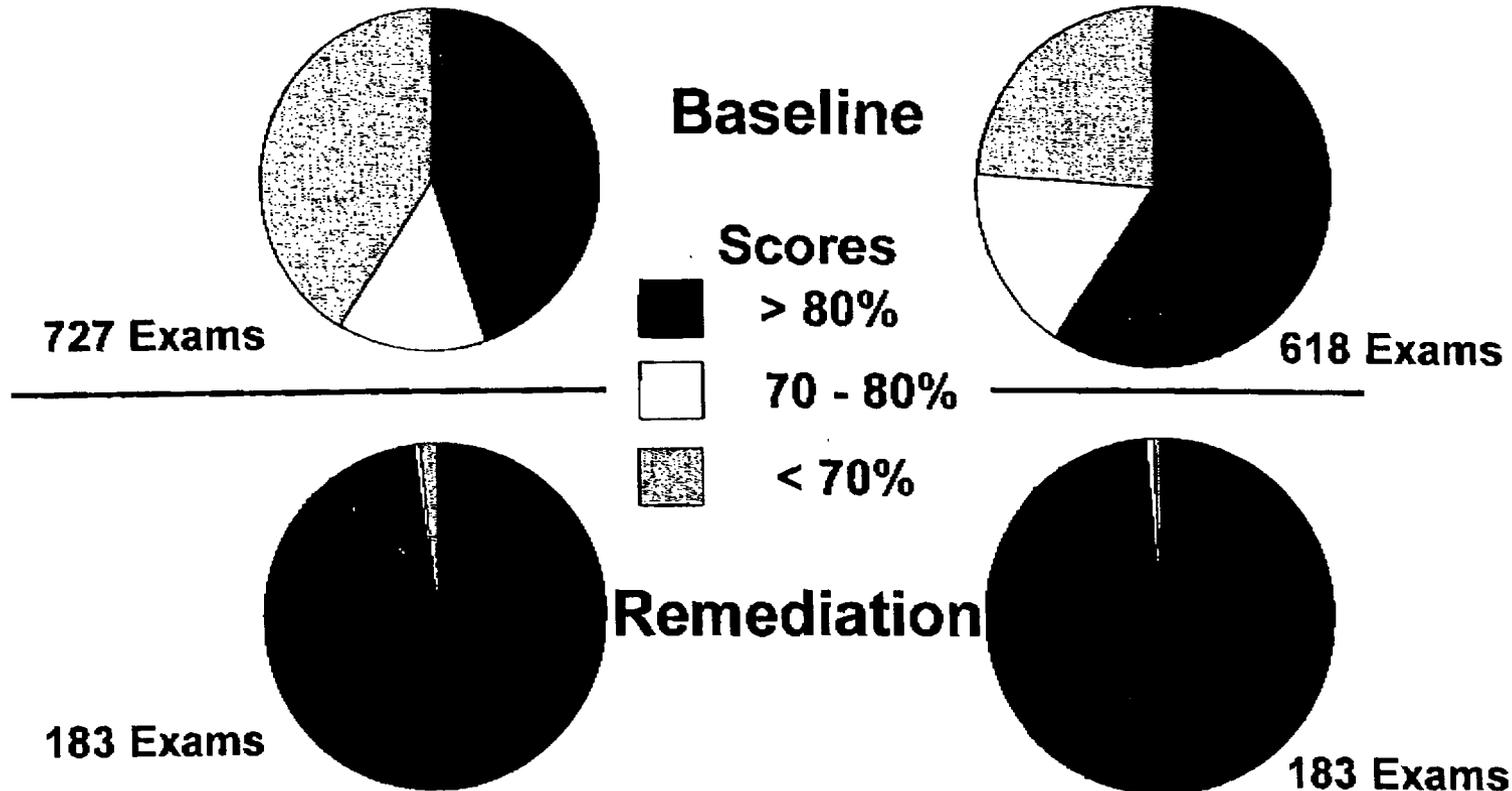
# Operations Leadership Has Reduced Operator Burdens



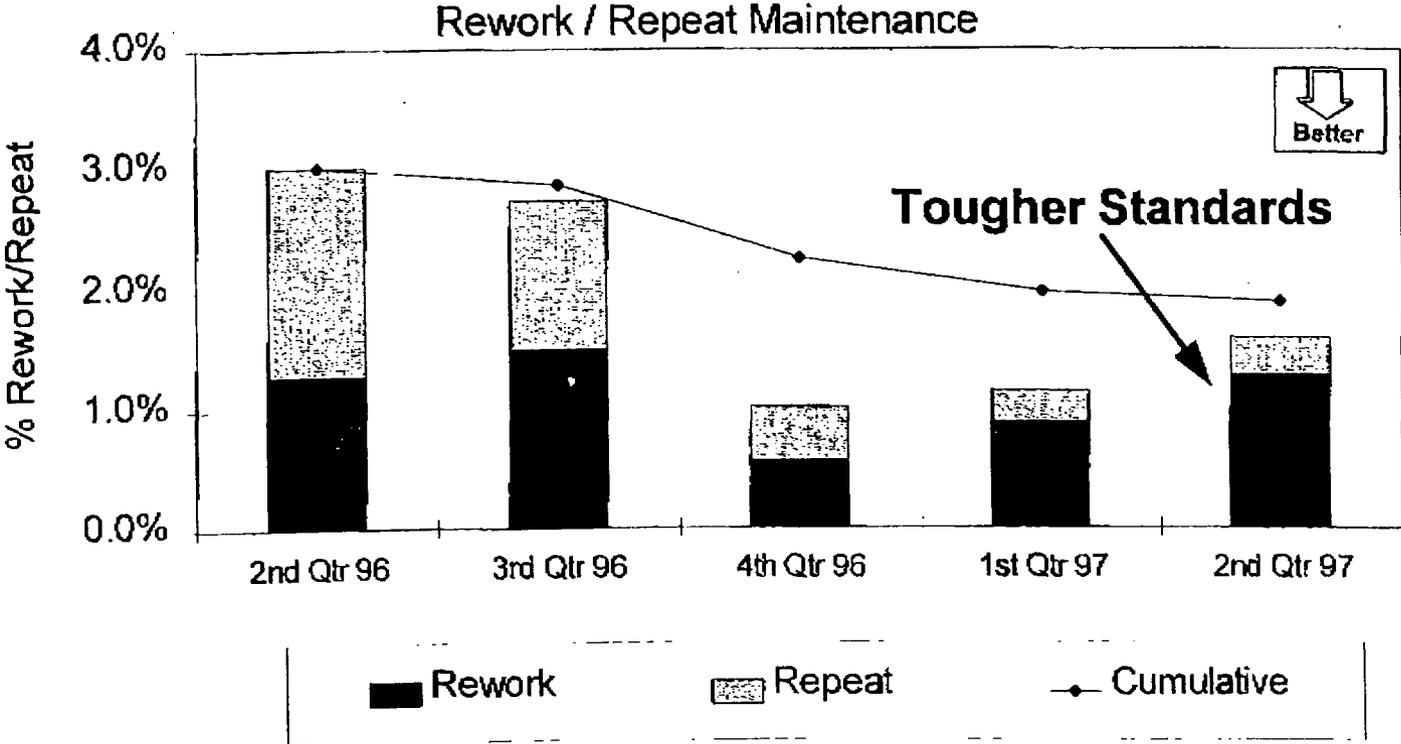
# Maintenance Intervention Results

## Cultural Exams

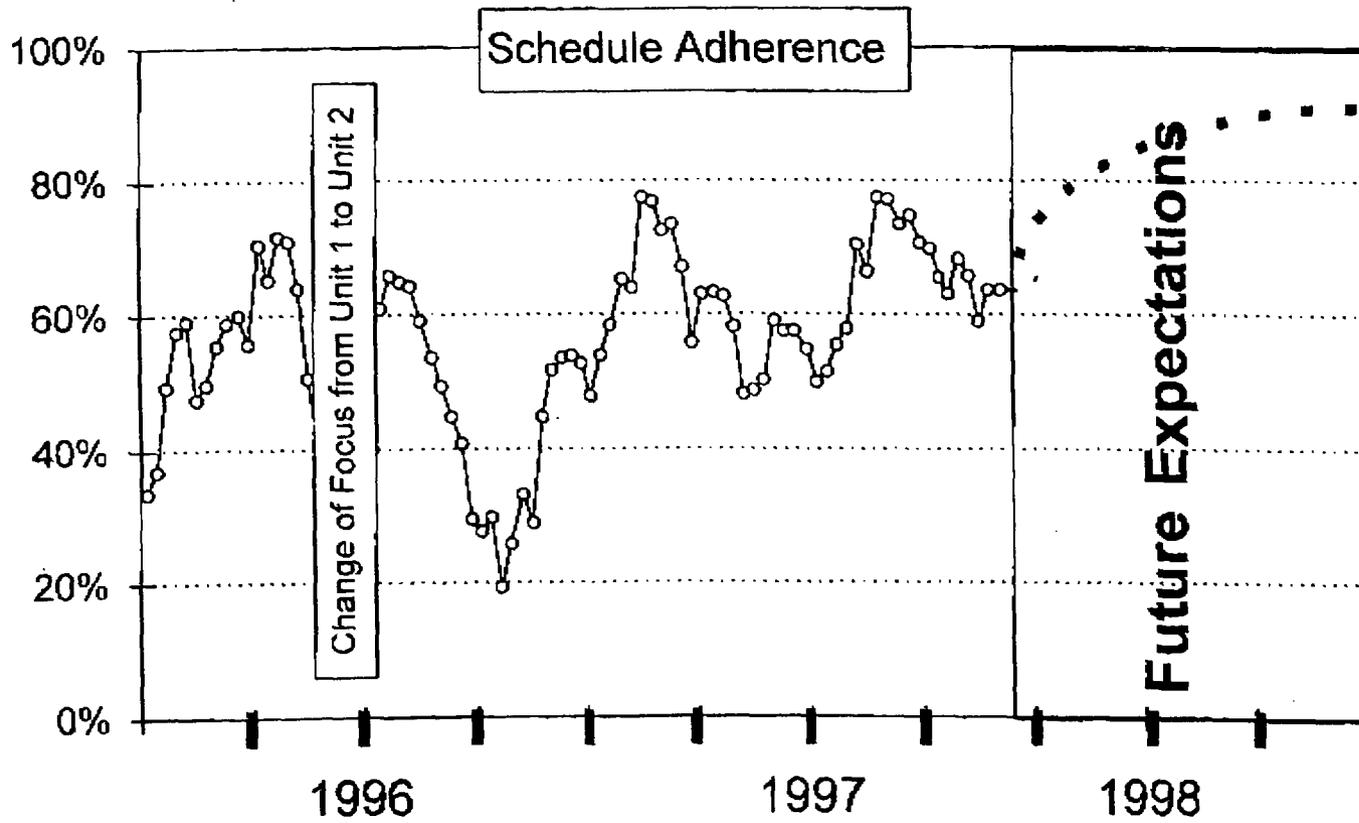
## Technical Exams



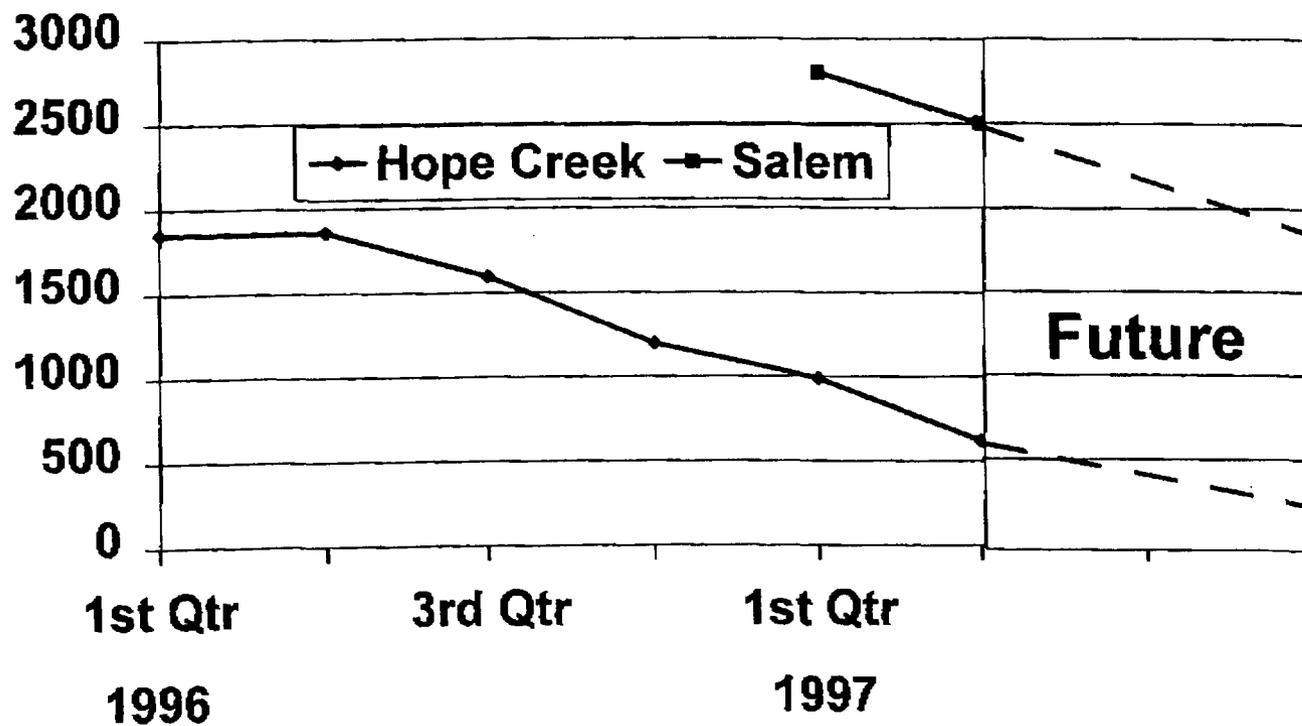
# Maintenance Quality



# Improving Teamwork



# Backlog Reduction Post-Startup Items



The Power of Commitment



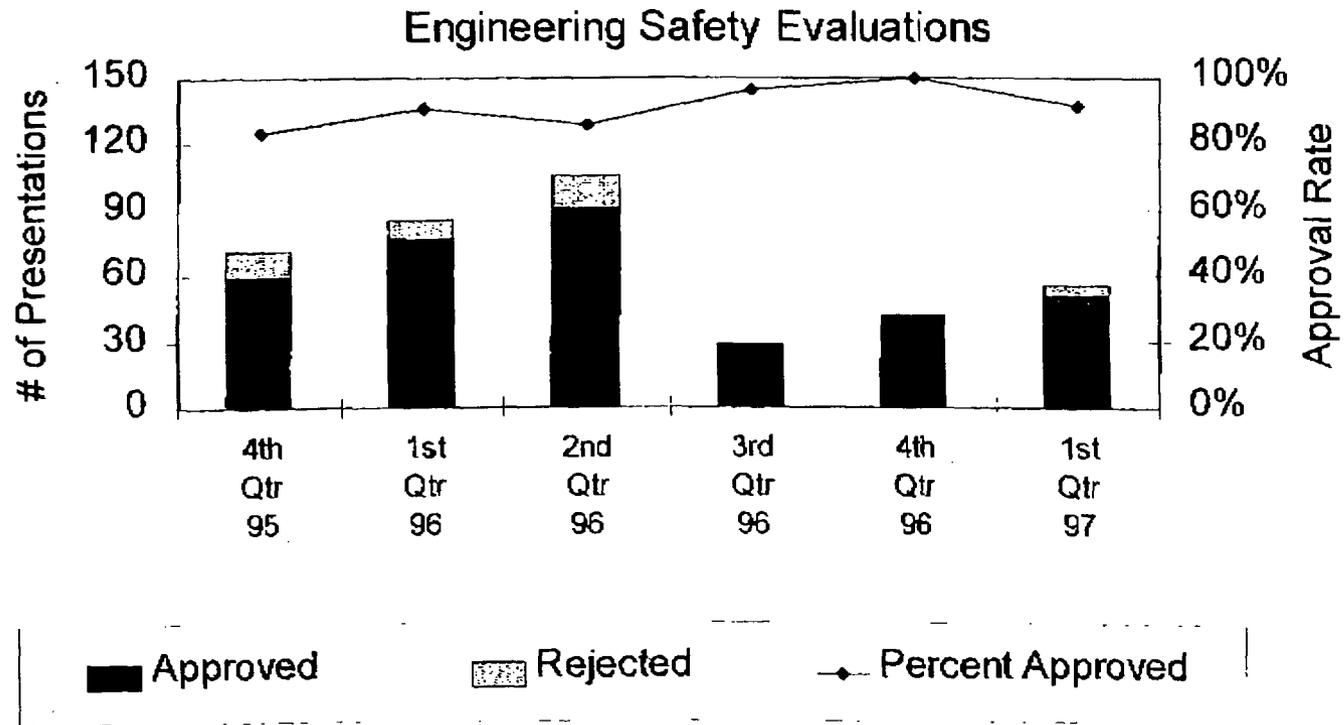
**Bert Simpson**

**Senior Vice President  
Nuclear Engineering  
Nuclear Business Unit**

# **Improving Engineering Capabilities**

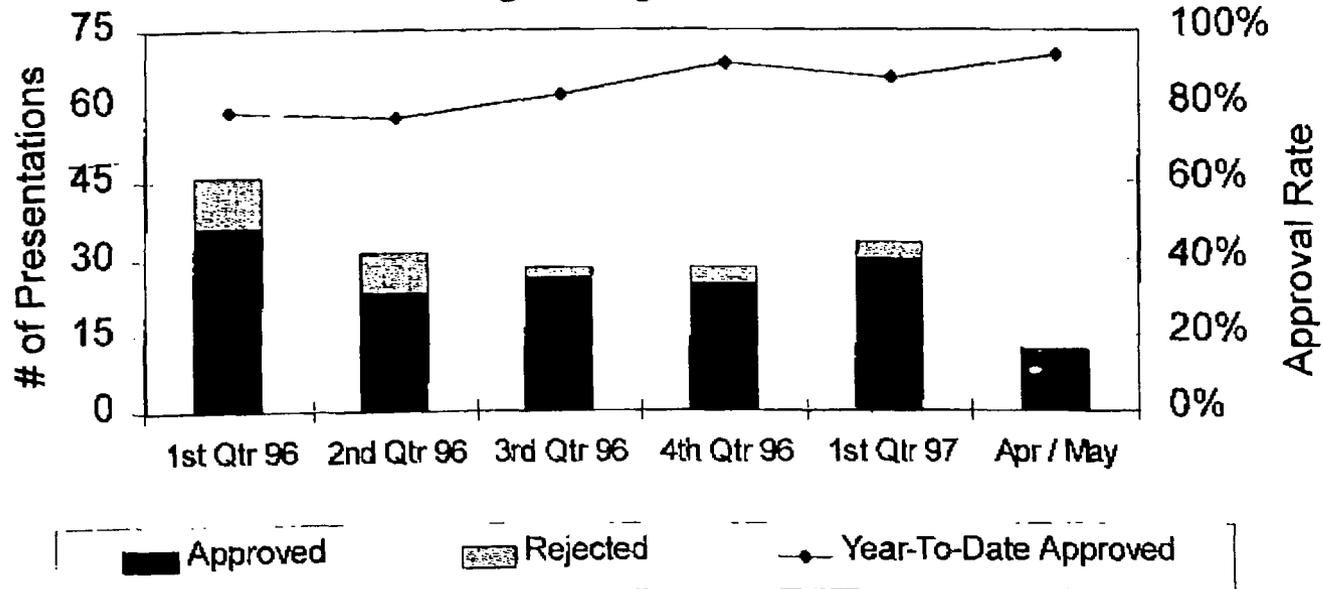
- **Assessment of the Engineering Organization**
- **Action Plan to Address Identified Issues**
- **Results and Accomplishments**

# Station Operations Review Committee Acceptance



# Corrective Action Review Board Approval

Engineering Presentations



# **System Readiness Review**

- **8 Systems Caused 45 of 54 Forced Outages Since 1988**
  - **273 Modifications**
- **Expanded to 88 Systems**
  - **550 Modifications**

# **Design and Licensing Basis Review**

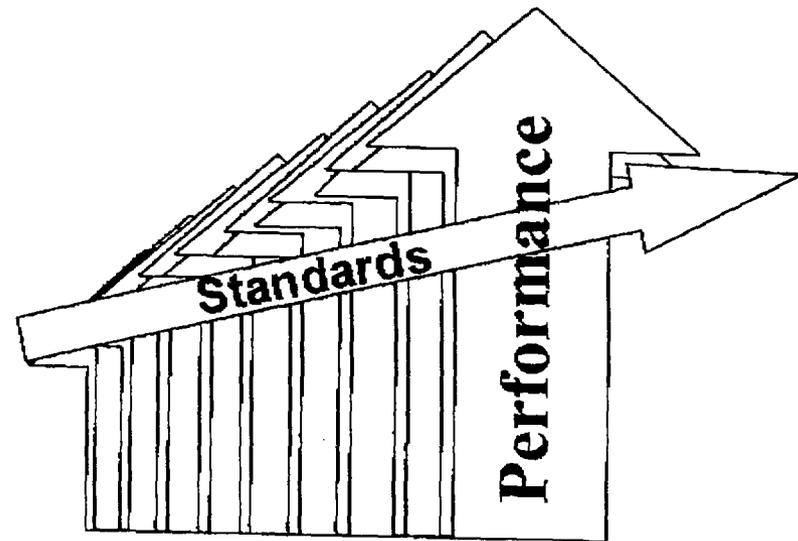
- **Risk-Based Approach to 46 Systems**
- **Final Safety Analysis Report Review**
- **Chapter 15 Values/Assumptions Validated**
- **Configuration Walkdowns**
- **Verified As-Built Drawings**
- **Vertical Slice Review of Selected Systems**

# **Focus Areas for Management Attention**

- **Control of Work**
- **Backlogs**
- **Sustaining Materiel Condition**
- **Human Performance**
- **Fire Protection**
- **Continuing Training**
- **Employee Concerns**
- **Unit 1 / Unit 2**
- **Monitoring**

# Our Journey To Excellence Continues

- **Plant, People, and  
Process Integrated**
- **Accountability Is  
Key To Excellence**
- **Commitment To  
Sustained  
Improvement**



The Power of Commitment

