UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
***
BRIEFING ON
D.C. COOK NUCLEAR POWER PLANT
***
PUBLIC MEETING

Nuclear Regulatory Commission
Commission Hearing Room
11555 Rockville Pike
Rockville, Maryland
Monday, November 30, 1998

The Commission met in open session, pursuant to notice, at 2:06 p.m., the Honorable SHIRLEY A. JACKSON, Chairman of the Commission, presiding.

COMMISSIONERS PRESENT:
SHIRLEY A. JACKSON, Chairman of the Commission
EDWARD McGAFFIGAN, JR., Member of the Commission
GRETA J. DICUS, Member of the Commission
JEFFREY S. MERRIFIELD, Member of the Commission

STAFF AND PRESENTER SEATED AT COMMISSION TABLE:
KAREN D. CYR, General Counsel
ANNETTE L. VIETTI-COOK, Assistant Secretary
WILLIAM D. TRAVERS, NRC
FRANK J. MIRAGLIA, NRC
JAMES L. CALDWELL, NRC
JOHN A. GROBE, NRC
CYNTHIA A. CARPENTER, NRC
E. LINN DRAPER, Chairman, President, and CEO, American Electric Power
ROBERT P. POWERS, Senior Vice President, Nuclear Generation
JOHN R. SAMPSON, Site Vice President
SUSAN TOMASKY, AEP General Counsel

P R O C E E D I N G S

[2:06 p.m.]

CHAIRMAN JACKSON: Good afternoon. Today we're meeting to discuss issues relating to the D.C. Cook Nuclear Power Plant. Both units of the facility have been shut down since September 1997, when as a result of NRC inspections in the engineering area it became unclear whether emergency core cooling systems could perform their intended functions in the event of a design basis accident.

Since that time additional findings by both the

NRC and the licensee have made it clear that deficiencies extended to a broader scope of safety-related systems, structures, and components. Individual items of concern included foreign material in the containment which could have adversely impacted the ability of the unit's emergency core cooling system sumps to operate properly, problems in the unit's ice condensers which called into question the ability to maintain postaccident pressures below design values, and design and maintenance failures that affected the unit's hydrogen mitigation and ignition, residual heat removal, containment spray, containment spray additive, and auxiliary feedwater systems.

The combined effect of these problems led the NRC staff to state that the conditions -- and I'm quoting -- resulted in a lack of reasonable assurance that following a

design basis LOCA, that is, a large-break LOCA, the ECCS and containment would have functioned.

It is rare that NRC makes such a -- the staff makes such a sweeping statement about both the mitigation systems and a barrier to fission product release at an individual facility for a common period of time, and so the conditions uncovered at D.C. Cook underscore the importance of of course implementing, maintaining, and understanding the design bases of the facility. But the real thing is that they illustrate the silent nature, and I think that's what probably surprised all of us, of certain design basis inadequacies.

Now these problems did not affect the facility's ability to produce electricity. In fact, the licensee has been considered a relatively good performer, and they didn't make themselves known through deteriorating performance indicators. In fact, left uncorrected, the impact of the existence of these problems probably would not have been affected unless the facility experienced an accident, and it was performing well, so one has to assume that it would not have experienced an accident. Nonetheless, they're meant to be designed to withstand such a potential situation.

So we're going to hear today from the licensee and the staff on the design basis issues that have been identified thus far, of any additional issues of concern,

but particularly the licensee's corrective action plans and the NRC plans for restart oversight. And I know that there was some feeling that perhaps this may not have been the most opportune time for you to come in, but I am interested in the thoughts of you, the licensee, our staff, as well as my Commission colleagues from the different points of view what might have been done to identify the conditions sooner so they wouldn't have been the surprises they were to everyone.

Certainly we had some opportunity from planned inspections relative to NRC's 50.54(f) letter that were focused on the areas under consideration before the extent of the conditions at Cook were fully known, so we look forward to hearing the presentations of the American Electric Power executives and the NRC staff, and copies of the presentation are available at the entrances to the meeting.

And let me just repeat, we're here to try to understand how we got to where we are. There is a restart plan. The staff is working through that. You're working through your own restart issues both relative to that plan, but your own. And so this is not here having to do with

voting on or determining when D.C. Cook would restart or not, but understand things within the design basis context.

So unless my Commission colleagues have any

opening comments, Dr. Draper, please proceed.

DR. DRAPER: Thank you, Chairman Jackson, and thank you, Commissioners, for taking time with us today.

I'm Linn Draper, chairman of American Electric Power, and with me today are Bob Powers, our chief nuclear officer, John Sampson, our site vice president, Susan Tomasky, our general counsel.

As chairman of AEP and as a nuclear engineer with some three decades of experience in the nuclear industry, I want to emphasize that AEP understands the seriousness of the issues that resulted in our making the difficult decision to shut down the D.C. Cook units last September. Corporately and personally we're pained by the necessity of an extended outage. It was necessary to make major improvements to our systems, components, material condition, processes, personnel training, and organizational behaviors. Upon completion, we'll be ready for restart and for demonstrably safe, reliable, and efficient operation.

D.C. Cook Unit 1 has been operating since 1975, but 1998 was the first time that the plant was the subject of discussion at an NRC senior managers meeting. So as you suggest, it was something of a surprise. Nevertheless the NRC and our own staff assessments have identified deficiencies not only in the material condition of the ice condenser, but also in engineering programs, surveillance

programs, corrective action programs, and design basis control. All of these need to be corrected to ensure a level of management effectiveness that satisfies our own very high standards, as well as those of the Nuclear Regulatory Commission.

It's clear to me that one of the factors that led to our present situation was our many years of successful operation that led us to be insular and somewhat overconfident. The Cook plant had generally received good SALP ratings from the NRC, strong ratings from INPO. With the harsh glare of hindsight we now understand that we did not seek to apply the lessons learned from other industry experiences at D.C. Cook as aggressively as we could have. In retrospect we understand that we did not identify our own problems and were not as aggressive in correcting the problems we did identify as we should have been.

Once we confronted the magnitude and nature of the ice condenser issues we had only one choice. That was to melt the ice, repair the ice condenser to return it to its original design. This became the critical-path item. In parallel, we are revamping surveillance programs, corrective action programs, and other areas in need of improvement.

In particular we are working hard to improve engineering performance, and Bob Powers will describe that effort.

We also made significant changes to the D.C. Cook management team. I promoted John Sampson to site vice president and identified him as a major part of the solution to our problems. I also undertook an extensive search for a chief nuclear officer who could lead us through the restart effort and ensure in the future the highest standards of performance are met. I'm confident that Bob Powers has the

right stuff to provide the leadership needed to accomplish our ultimate objective of turning D.C. Cook into a world-class-performing nuclear plant.

We've also made many changes in line managers at Cook. We've retained the very talented Cook managers and employees who display the right performance to be an integral part of the improvement program, and who retain our institutional memory. I believe that our management team provides the appropriate mix of talent, safety consciousness, and leadership. They have AEP's full corporate support and commitment of the resources necessary to do the job right. Last year we established an independent safety review group at Cook to provide a third-party assessment of site activities to the chief nuclear officer. We are broadening the charter of that group and directing that the chair of the group periodically provide me an independent assessment as well.

The last year has been very expensive for AEP, and

we have lost the entire output of the Cook plant. We have spent considerable additional resources to rebuild the ice condensers and make other material and process changes. We're confident, however, that the investment in D.C. Cook over the lengthy outage will result in a safer, more reliable, and efficient operating plant.

We understand that excellence in nuclear plant performance will return economic dividends to AEP in achieving a higher capacity factor, lower operating and maintenance costs, and shorter refueling and maintenance outages. We look forward to D.C. Cook's resumption of its critical role in meeting the electric supply demand in the Midwest.

AEP is committed to nuclear power, as indicated by the continued investment in D.C. Cook and the acquisition of a 25-percent interest in the South Texas Project with the pending merger with Central and Southwest. After the merger, I look forward to establishing a close, cooperative arrangement with STP for cross-fertilization of ideas, processes, people, and experiences with D.C. Cook. Nuclear power will be a long-term significant component of the AEP generating mix.

If there are not questions, I will ask Bob Powers to discuss his assessment of the problems and progress being made at the Cook plant and his vision for the future. Bob

knows from firsthand experience what it's like to operate a superior-performing nuclear plant, and he's charged with accomplishing superior performance at Cook. I then ask John Sampson to describe the restart plan and the strategies and schedule for resolving all of the 0350 checklist items, ice condenser repair and upgrades, and other restart items. And I've also asked him to share his own perspective on the changes in the Cook organization in behavior over the last 14 months.

But before I turn it to Bob, I'd be certainly happy to respond to questions.

COMMISSIONER McGAFFIGAN: You mentioned getting good SALP scores, good INPO scores, et cetera, but with the benefit of hindsight as opposed to foresight, is there any way that these issues could have been foreseen and dealt with in a less drastic fashion if they had been foreseen or was it inevitable that you were going to have to rebuild the ice condensers once this was discovered and you were inevitably going to have a long outage at that point in any

case and it was just a matter of discovering it?

Do you have any thoughts as to what assessment system or inspection system, either yours or ours or INPO's or whatever, might have allowed this to be less of a crisis?

DR. DRAPER: Well, there was certainly ample opportunity for us at the plant and for NRC and INPO to

address these issues if they had come to the fore. I think the fact is that performance standards are rising, both our own and yours.

We are trying to do things better. It is clear that had these deficiencies in the ice condenser been caught very early one that it could have been repaired on a piecemeal basis, but the fact is that much of the ice condenser had not been examined in detail since the plant started some 20 years ago.

It is clear that some of the deficiencies that were present were present from the construction period, so it certainly was not impossible if people had been smarter and looking more carefully as we now are at all the engineered systems. Things could have been unearthed, but I believe that given where we are in time, there would not have been an opportunity in recent history to do much other than a complete repair of the ice condenser.

CHAIRMAN JACKSON: Dr. Draper, did the NRC's 10 CFR 50.54(f) letter play any role at all in helping you or us to uncover or just begin to think about any of these issues?

DR. DRAPER: If I may, let me ask John to respond to that question.

MR. SAMPSON: There were some items -- when we responded to 50.54(f) --

CHAIRMAN JACKSON: -- 54(f) --

MR. SAMPSON: I can say it -- 54(f).

CHAIRMAN JACKSON: I know it takes practice.

MR. SAMPSON: Especially if you try to say it too fast, but there were some things that we found in response to actions that we were taking in response to the 50.54(f) letter and clearly from an operating experience standpoint and looking with some of the other utilities were doing, we could have, you know, followed up on some of those more aggressively, but, you know, where we are now and looking at our understanding of the design and licensing basis, we have a great opportunity to thoroughly look through the plant and make sure that there aren't deviations from the design basis that lead to operability or functionality concerns.

CHAIRMAN JACKSON: Right -- it's that connection, actually --

MR. SAMPSON: That's correct.

CHAIRMAN JACKSON: -- that is the important one. Right. Okay.

MR. POWERS: Good afternoon.

CHAIRMAN JACKSON: Good afternoon.

MR. POWERS: Let me start with a few personal notes that I think will be helpful in providing some context from my other comments this afternoon.

First of all, I am a relatively new member of the

AEP team. I joined D.C. Cook in August of this past year and prior to that have spent the last 16 or 17 years with Pacific Gas & Electric Company's Diablo Canyon plant, so it's with that perspective that I offer my comments this

afternoon.

I have organized my thoughts this afternoon to four topics. Since I do have a new and relatively fresh perspective, I thought it would be useful to provide my initial assessment of Cook on coming to the site this past August. I will follow that discussion with a more detailed description of what we are going to do to address our need to improve management effectiveness and resolve engineering issues.

These are two key topics that have stood out -- stand out from my assessment of the D.C. Cook plant. These issues, resolving these issues, will be key to our restart and beyond, and then finally I would like to share my vision for operating excellence at D.C. Cook in the years to come.

Following my presentation, I will ask John Sampson to brief you on our restart plan and the progress we have made to date. Let me begin with my assessment of the Cook organization.

This slide provides a snapshot of the Cook organization as I found it when I joined the team in August. The units had been shut down since September of 1997, 11

months. This was having an impact on our people. They were tired. They were frustrated.

I found a plant with a historic cyclic performance. Some cycles went fine, good operating capacity factor. I found other cycles that were not quite so good. There was cyclical performance in the duration of outages. There was cyclical performance in the area of INPO ratings. There was cyclical performance in the area of SALP performance as well -- and there was some cyclical performance in the area of human performance.

I found an organization that had an insular perspective -- either benchmarking that was performed was not applied well, and in some cases I found situations where benchmarking was not looked at as a tool to improve performance.

I found an organization that had a struggling engineering department, particularly with regard to the understanding and maintenance of the design basis.

I found a plant that had a large backlog of drawings, condition reports, and a moderate backlog of maintenance activities.

CHAIRMAN JACKSON: Let me ask you two questions.

The backlog of drawings and condition reports, was that a result of resource limitations or was it an issue related to prioritization?

MR. POWERS: More the latter than the former. What I found was an organization that was very good at doing an initial assessment of impact of an issue and then binning it and then not having the infrastructure in place to make sure that once it was placed in a backlog that there would be results effected to actually work the item off once it was initially assessed.

Initially my concern was had even an initial assessment of potential impact been performed on these backlog items, and I was pleasantly surprised that there was an initial assessment, but the rigor and the discipline to go to work on that backlog and methodically work it down was not in place.

CHAIRMAN JACKSON: So the issue had to do with the follow-through?

MR. POWERS: Follow-up, follow-through, the

scheduling, the disciplines in making sure that -- in fact, putting things in a backlog is fine if it is simply a prioritization effort, but it departs from being fine if it stays there and continues to grow and grow and grow, because then all you are doing is simply not working on the problem.

CHAIRMAN JACKSON: Yes -- Part B -- or is that on Part A?

COMMISSIONER DICUS: No, it's on Part A.

Was that a resource problem then or was it just

not done, the backlogs?

MR. POWERS: What I would say is principally it is not a resource problem and Cook is staffed, putting aside the restart effort, at about 1100 permanent employees, which is a good staffing level for a two-unit PWR, so staffing isn't really the issue here.

It's an issue of discipline and rigor to realize that the job is not complete until the item is taken off the books and that the physical work or the paperwork or the procedure, whatever needs to be done, is complete.

CHAIRMAN JACKSON: Let me defer to my Commission colleague.

COMMISSIONER MERRIFIELD: Thank you.

How much of that was a structural problem? One of the things that the NRC found was obviously the engineering problems which you have pointed out in the last slide.

AEP is its own architect engineer for the facility. Does that structure -- that is somewhat unusual I am told in that many other facilities utilize an outside engineer for many of those activities -- did that play into it at all in terms of your analysis?

MR. POWERS: Well, I can speak with some experience since Pacific Gas & Electric was its own A&E; as well, and I would have to tell you that there are both strengths and challenges to being in that position.

I think one of the strengths is that you can have the best understanding of your design basis possible if your architect-engineer activities were in-house. I think the challenge, however, goes back to what Dr. Draper talked about in that I have found that at both PG&E; and to some extent at AEP that there can be some insularity that results from being your own AE and you tend to -- you have designed it, you have constructed it, and you get comfortable with that perspective and I think you have got to continue to work at breaking down that potential parochialism that comes in --

COMMISSIONER MERRIFIELD: I guess my thought then is, and you will probably go into this a little later on, but I am particularly curious as to how you have gone about changing your structure in order to avoid that in the future?

MR. POWERS: I will go into it in some more detail, but let me answer your question directly at this point by saying in the short term it's by providing a third party perspective to help teach the organization and take advantage of a perspective that comes from outside the organization.

Over time we'll learn discipline, we'll learn the skill set that is required to do that on our own, but in the short term it requires an infusion of outside perspective.

CHAIRMAN JACKSON: How did Cook respond to the NRC

50.54(f) letter on design basis issues?

MR. POWERS: I am probably not in the best position since I have been here -- I would prefer to describe it generally.

CHAIRMAN JACKSON: Okay. You want to describe it generally now?

MR. SAMPSON: In general, we describe the process as programs required to know what the design and licensing basis were -- was -- and what was done to protect them, and our efforts now are focused on making sure that those processes and programs do in fact reflect the actual design and licensing basis and that the processes and programs that we described in that 50.54(f) letter in fact are healthy for us to go forward from where we are today.

CHAIRMAN JACKSON: Okay. Did you feel that it gave you or suggested enough focus on operability issues? Design basis is design basis, but the issue has to do with systems being able to perform their intended functions, et cetera, et cetera.

MR. SAMPSON: That is correct.

We tried to put a lot of effort into looking for specific operability concerns today, and our lessons learned from this AE shutdown period was a lack of understanding of what the complete design and licensing basis was and the

rigor to which we were implementing it in the plant, and that is the great lesson learned for us.

MR. POWERS: I have described some of the items that were in need of repair and improvement at Cook. I also should point out, on the other hand, there were some very good things that I found. I found a core group of capable and dedicated managers and employees who have an obvious pride in their facility and demonstrate that.

I found a comprehensive restart plant that, if executed and implemented appropriately, would allow for the identification of issues and problems and their quick and proper response.

I found a good overall material condition at the plant. Now, this is somewhat enigmatic, and it was enigmatic to me, given the conditions in the ice condenser that have been found, but I would be pleased and proud to have any of the members of the Commission come and tour the Cook facility. It is in good material shape.

And I found a corporate organization in AEP that was very supportive and provided me the commitment, and the employees at the plant the commitment, to do this restart and do it correctly. So, those were some of the good items I found.

CHAIRMAN JACKSON: Did you have to infuse a lot of additional resources, either in terms of bodies -- I won't

even deal with the money -- just in terms of bodies?

MR. POWERS: Yes. The physical work that we are doing in the ice condenser, on its own, represents a need to employ about 500 people.

CHAIRMAN JACKSON: Beyond your normal complement?

MR. POWERS: Above the normal complement. And then, in addition to that, about another 500 people in supporting engineering staff, quality assurance and the like. So there's about a thousand -- an increment of a thousand additional people on site right now.

COMMISSIONER MERRIFIELD: You mentioned you felt that it was a good overall material condition of the plant. How does that -- doesn't that come into conflict to a

certain extent with the debris that was found inside containment? That was a significant problem that it would seem to me would indicate some material problems.

MR. POWERS: As I said, it was enigmatic, from my perspective, as well. But I think there's answers to your question to help explain a sort of differentiated performance. I think -- and the ice condenser is an example -- one of the lessons we have learned is that a lot of work that was done to weigh the ice baskets and repair the ice baskets in the past were done by contract labor.

Now, these folks are very capable of performing good quality work if provided the right training and the

right supervision and the right guidance. And one of the things we learned is that, quite frankly, there was an opportunity to improve that area of oversight of the work force in the ice condenser.

Other portions of the plant have been maintained by the maintenance organization with an attendant increased or higher level of oversight by management. So I think that helps explain some of the enigma.

COMMISSIONER MERRIFIELD: But the debris problem inside containment, was that resulting from outside contractors or from individuals employed by AES?

MR. POWERS: Well, the debris in the ice condenser, again, has accumulated over the years of operation and maintenance of the ice condenser, and, in large measure, the maintenance of the ice condenser was performed by contract workers. So, again, I think the lesson learned for us is the oversight and management of our work regardless of what specific discipline is doing it. It is our plant, it has to be maintained and operated to our standards, and we need to make sure that the management structure is in place to assure that our standards are achieved.

CHAIRMAN JACKSON: Okay.

MR. POWERS: Well, this is a certainly a mixed assessment that I have presented to you, both things that

are in need of improvement and things that I can build on and are working well. But what was important to me, personally, was to use the information from this assessment that I have described to focus my own activities to help improve D.C. Cook, and I have done that.

And, as a result, I have established three key focus areas. First, I am working very hard to change and improve station standards for accountability and the quality of work.

Secondly, I am working very hard to have every Cook employee embrace self-assessment and continuous improvement as part of our work culture. Now, these two items combine to what I call issues needing to improve the area of management effectiveness.

The third area of focus I have established for myself is to apply a specific, concerted effort in reinvigorating and revamping our engineering department.

Now, my basic strategy to enhance management effectiveness to date has included staffing changes in key positions and the establishment of new expectations for the Cook staff, training the staff on those expectations, and reinforcing the expectations.

As I mentioned, there have been staffing changes at Cook. I would like to talk a little bit about two

specifically. I am pleased to report that in the last two

weeks, we have hired Mr. Michael Rencheck as a new VP of nuclear engineering at the Cook plant. Now, Mike not only brings significant engineering experience to Cook, but he also has substantial experience in the restart of the units at both Salem and Crystal River. I look forward to Mike's expertise being applied to the project at Cook as well.

I also had the opportunity to bring in --

CHAIRMAN JACKSON: He left them in bad shape.

MR. POWERS: Excuse me.

CHAIRMAN JACKSON: He left them in bad shape.

MR. POWERS: No, absolutely not.

[Laughter.]

MR. POWERS: And, if I recall, Mr. Rencheck came from other locations before he went to Crystal River.

I have also had the pleasure of bringing in Mr. Rick Eckstein on a reverse loanee assignment from INPO as the acting chief nuclear engineer until I permanently fill the position. Now, Rick brings with him a wealth of information and knowledge on best engineering practices from his experience at INPO. I am also pleased to report that Rick will be able to be with us another year in a key role in the engineering organization to help in our restart and our efforts beyond restart. And there have been other changes in the organization, as well.

Now, with these personnel changes, I have tried to

keep things in balance and not throw the baby out with the bath water. We are retraining and retooling the management talent that I indicated I found to be present at Cook. To help in that retraining and retooling, we have conducted a series of three crossroad workshops to date, and we have exposed the staff to the behaviors needed to achieve superior performance and sustain that. Now, these are skill sets like planning, monitoring and holding themselves and their staffs accountable for results.

We have been successful in passing the message on down to the troops, and I am pleased to say I am seeing some improvement. I can report some improvement in the area of work control, schedule adherence, backlog reduction, and the ability to apply critical self-assessment to improvement in the organization.

Now, I am encouraged by these results, but I am not ready to declare victory yet. I still see, in many cases, more good intention than results, and that needs to change.

Now, the same wisdom of focusing on results holds for me as well. And before I present the plant as being ready for restart to Dr. Draper or to the NRC, I will have made sure that we have completed the activities in our restart plan. I will make sure that the plant is ready to operate safely, reliably and efficiently. I will ensure

that we have the right people, the right processes, and the right procedures. And I will ensure that we will be able to identify our own problems and resolve them quickly.

As John Sampson will describe, we are using our restart plan to do this. We are measuring our results, we are calibrating and checking as we go. In many areas, we are making good progress, and John will speak to that. But I do want to discuss an area of major challenge, and that is in bounding the engineering issues at Cook and strengthening our engineering organization.

Now, this slide visually depicts some of the key engineering issues that have been or will be addressed as part of the Cook shutdown. I won't go over each and every item, but, leave it to say, our 50.59 program is being reviewed. We are looking at our calculation basis for operation of the plant. Plant procedures are being revised and reinvigorated. Our design and licensing basis is being scrubbed. Our FSAR is being updated. We are looking at Generic Letter 89-10 on our motor operated valves, and a variety of other engineering programs are being reviewed and improved.

CHAIRMAN JACKSON: Were there no performance indicators that would have shown up in these -- shown some weaknesses in these areas?

MR. POWERS: That is a good question, and I would

say one of the lessons that we have learned out of the shutdown is that there was not the diversity or breadth of performance indicators at Cook prior to this shutdown to help indicate where there might have been some early detectable signs of performance problems in these areas.

I think, coupled with the observation I made about benchmarking and the organization's need to improve the utilization of benchmarking to improve, I think those two issues were contributors to not detecting things earlier.

Any other questions, Chairman?

CHAIRMAN JACKSON: No.

MR. POWERS: I have no doubt that, in the end, review and scrubbing of these engineering programs will cause the programs to improve. But the key is really to understand the impacts of any weaknesses in the engineering department and programs, and understand how they might apply to operability issues in the plant itself.

Now, from a historical perspective, this is how Cook was going to bound the engineering issues. The program reviews, the work that was done by the engineers prior to plant walkdowns to look at calculations and look at procedures, set the stage for physical walkdowns at 21 risk significant systems in the plant. And the combination of the procedure, calculational design basis review, along with the system walkdowns, was believed would be appropriate to

identify any other operability issues in the plant. These walkdowns, I can report to you, are complete. They were completed, in fact, this past spring.

Now, the question has remained, both in the NRC staff mind, and in our mind, how well were these reviews done? And did they, indeed, find all the pertinent issues of operability in the safety significant systems in the plant?

Well, prudence dictated that we conduct another -- an additional vertical review, SSFI, of another safety system in the plant, and we chose to do that on the auxiliary feedwater system to validate the effectiveness of our review process. This aux feedwater SSFI is completed, it was completed in mid-October by the staff, and it did validate that the implementation of our design control program, the process for controlling modification, was, in fact, well controlled. It did also verify that the material condition of the aux feedwater system proper was in good shape, consistent with my assessment that the plant is in generally good material condition.

However, in some interfacing systems, I can't

report the same results, and we did find some issues that challenged operability of the aux feedwater system, so there is more work to do to bound the engineering issues at the Cook plant.

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To methodically and thoroughly assess our next efforts in this area, I have chartered an independent team with substantial engineering experience to evaluate the results of our aux feedwater SSFI, to look at the results of our architect-engineer inspection from the NRC, to look at our containment spray SSFI, and to look at other assessments that we have conducted prior to the shutdown and during the shutdown.

Now, this engineering review group will advise me of what additional actions and investigation are required to ensure that we have reasonable assurance that the issues that could potentially affect operability in other systems have been discovered and resolved prior to restart. Now, this team is reporting out to me in the week of December the 14th. I will be discussing the results with Mr. Rencheck, and the results and the efforts of this group will certainly benefit from his experience and knowledge, and we will be establishing a course of action. And without prejudicing the results of the team, I am personally certain that addition system review will be necessary to bound the engineering issues at Cook.

Now, while we have been working on restart, we have been setting the stage for the future as well. The vision that has been presented to the Cook team is that we are going to be a world class, accountability-based

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organization. Now, this motto is underpinned by two key behaviors, have a strong sense of accountability where, euphemistically, we do what we say we are going to do, and we have a passion for self-improvement. A sense of accountability preserves what we have in place already. The passion for self-improvement makes sure that we are as efficient and effective as possible in improving our people, our processes and our plant.

I think my definition of world class includes attributes that have become norm for the top-performing plants in the country. For our people, it is clear vision and alignment from top to bottom. For our processes, it is effective and efficient processes and procedures. For our plant, it is low, well-managed backlogs, particularly in the area of maintenance and corrective action. For management, it is conservative decision making with a view to long-term operation of the facility.

Coming back to our plant again, this will result in reliable, safe operation, with well-managed outages and a high capacity factor, providing the right performance needed for a competitive electric market. We will also have a plant with superior material condition. For our people, this will result in higher job satisfaction, improved safety consciousness, because it is an environment and a culture that is based on results and not promises.

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I would be pleased to answer any questions you have anybody my presentation. If not, I will ask John to talk about our restart plan.

MR. SAMPSON: Good afternoon. By way of introduction, I have worked at the Cook plant twice now for a total of 11 years, previously holding the position of Operations Manager. I returned to Cook in 1995 to assume

the role of the Plant Manager in 1996 and began the Site Vice President in 1998.

I previously worked as a Maintenance Production Manager at the Washington Nuclear Project and licensed at the Senior Operator level at both stations. I began my nuclear experience in the Navy's program.

For my presentation today, I am going to spend time on our restart plan and supporting strategies, restart schedule and the ice condenser project and I am covering a number of topics here and so I certainly welcome any interruption along the way to ask questions pertinent to the area that we are on at the time.

We have implemented a formal and comprehensive restart plan and this is a visual depiction with a chart of a number of diamonds and each specific diamond is a written documented strategy for covering an issue or a wide range of issues, for example, programs.

Now the plan describes the controls and the

processes and the management oversight required for us to do a thorough assessment of our people, the plant and the programs, but beyond being this documented process, it is a way for us to practice new organizational behaviors. We are looking for problems, we are documenting them, we are prioritizing them, and then we are finding ways to promptly correct those most significant.

CHAIRMAN JACKSON: What do you mean when you say Level 1, Level 2, and Level 3 systems?

MR. SAMPSON: We divided our systems in terms of risk significance. Level 1 is the highest, Level 2 is the next, and Level 3 is least risk significant.

CHAIRMAN JACKSON: Okay.

MR. SAMPSON: You will see the diamonds are divided into major groupings of strategies, covering each of the major areas for programs, systems, functional areas and the containment and if you will look carefully at your chart, you will note that there's a number of these that are starred and those are the items that came from our 0350 checklist as provided by the 0350 panel.

You will note there's a number of items not starred on the chart and that goes to indicate that we are clearly looking for problems broader than what the 0350 checklist requires us to do and we felt that was significant and important to do to make sure that we find all the

potential areas where issues in the AE shutdown could be found.

The other thing we have done with these -- there's a number of issues here and you have got to ask what's the common cause or the common factors between those diamonds, so we have done common cause or common factor analysis on the factor that contributed to those issues and pull them together in what we are calling top level strategy documents, and those top level strategies are really the basis for how we are going to go beyond restart.

We have the restart plan to get us ready for restart and the top level strategies to take us beyond restart in terms of continuous improvement.

Now before I leave the restart plan and the strategies, I want to talk to two issues, specifically our corrective action program improvements and the use of performance indicators to measure our progress towards restart.

COMMISSIONER MERRIFIELD: Before you do that, I have a question about the 0350 process.

We have had some management changes in Region III in the last year. Have you felt that NRC's 0350 process has been a consistent, predictable measure of the progress you have been making?

MR. SAMPSON: The 0350 process has been working

well for us. It provides a great forum for communication between the NRC and the licensee. It gives us an opportunity to talk about what differences there are between understanding of issues and it's not been, the process itself has not been the target of our focus. We have been focusing on fixing the plant and bounding our engineering issues -- that is what our real obstacles have been, not the process.

So you should be looking at the chart that shows the number of condition reports per month, and this is a reflection of our corrective action program, and it is an indicator that we are using to tell us something about the health of our corrective action program, which we see as a building block for continuous improvement.

Prior to the shutdown, it's our assessment the corrective action program was not fully effective in timely identification or resolution of problems, but you can see here over the years of 1996, 1997, and then a detailed breakdown by month over 1998 that we have had steady and dramatic increase in use of the condition report system for identifying problems and getting them recorded and documented.

Now certainly this one indicator doesn't tell the whole story with respect to the corrective action program, but it does give us an early indication that our workers,

our team members are using the corrective action program. They have confidence that they can raise problems and document those in a meaningful and a productive way.

CHAIRMAN JACKSON: What would a condition report document? Can you give us a --

MR. SAMPSON: A condition report can be as straightforward as for example we're having some problems over lower ice condenser doors right now. That condition, that physical hardware problem, would be documented on a condition report, because it's a piece of safety-related equipment.

A condition report can be a process where we break it down. I wrote a condition report and for some reason that didn't get into the system. It can be a wide range of items and we don't try to restrict in any way what the condition report system is used for, other than we don't want to get the system clogged up with unnecessary issues, but right now that is not the problem.

We want the workers and the team to use the condition report system to identify and document problems.

CHAIRMAN JACKSON: How do you ascribe a level of significance to a condition report, and how many of these are important from a safety --

MR. SAMPSON: That is a great question because one of the lead-ins to our condition report process was not

effective before was because too many problems were classified at too high of a level.

We were trying to do detailed root causes on too many problems and it was prohibiting us from being effective

in resolving the most important problems, so 1997 we had somewhere between 500 and 700 that we called most significant that got detailed root causes.

This year our target is between 100 and 200 of those condition reports, and we are monitoring, as it turns out -- later on I'll speak to root cause quality -- but we are monitoring the effectiveness of root causes now to make sure the problems we do look at we are looking at them right, that we are doing an effective cause analysis on those problems.

CHAIRMAN JACKSON: Okay.

MR. SAMPSON: So we use a standard breakdown though -- significant condition adverse to quality, condition adverse to quality, and not a condition adverse to quality -- to prioritize those thousand condition reports per month or whatever the number might be.

CHAIRMAN JACKSON: Please.

COMMISSIONER DICUS: Looking down the road in the long term, you show this as continuing to trend up, and as an indicator of a corrective action program working, but isn't there a point in time where that needs to start going

down and do you have a target? Do you have a number where over the long-range you can say, okay, we are down at this level -- this shows this corrective action program is still effective, because it's a program that has to continue.

MR. SAMPSON: Right.

COMMISSIONER DICUS: Obviously it has to continue.

MR. SAMPSON: Right.

COMMISSIONER DICUS: You are not there --

MR. SAMPSON: We are not focusing on the numbers now. We are focusing on the behaviors of being --

COMMISSIONER DICUS: The trend.

MR. SAMPSON: Right. We also know that we are in a period of heavy self-assessment. We are in discovery phase while we have been looking for these problems, so that we would expect a large number of condition reports to be written on a long-term basis, but we know that other plants in similar conditions are writing in 5000 to 7000 conditions a year and we are running about that or a little bit more, and so we have a sense that we are in the right ballpark.

CHAIRMAN JACKSON: I guess a kind of background question to the extent the systems in question are covered.

I am always intrigued by data of course and how it is presented, but you know, we have the maintenance rule out there and there have been various questions about it, but that has various SSCs classified in a certain way. The

intent of the program is to have performance monitoring, having feedback, et cetera.

Can you help me there in terms of how this kind of a snapshot or any other plays into that or does that help you at all in terms of what you are trying to accomplish here at the plant?

MR. SAMPSON: We use our corrective action program to document problems important to the maintenance rule, so there is a tie, there is integration between the corrective action process and the maintenance rule.

We have had recent examples where the maintenance rule is identifying and properly categorizing systems or components as needing further attention, so we know that the maintenance rule process and the corrective action program are working hand-in-hand.

CHAIRMAN JACKSON: Is that helpful to you?
MR. SAMPSON: It's helpful to me. The thought I have here though with respect to the corrective action program is that it is a large number of problems, and that requires process changes to make sure that you can trend or look for common problems between what are otherwise analyzed on an individual basis.
We have to look for how these fit together in terms of a trend or common cause standpoint.
CHAIRMAN JACKSON: So you could view this in terms

of condition reports initiated as relating to the robustness of your discovery?
MR. SAMPSON: That's correct.
CHAIRMAN JACKSON: So to speak.
MR. SAMPSON: That's correct.
CHAIRMAN JACKSON: But there is a work off rate as well as a categorization in terms of risk and safety significance that would have to underlie this to completely understand how you have gotten --
MR. SAMPSON: Exactly, and in fact, if you were to go to the next page, we have got a family of about 16 different performance indicators that we are looking at on the overall corrective action program, so you looked at one. This is another example.
We are looking at things like the ratio of self-identification for each department. There are some industry statistics that tell us what percentage we should expect on a department basis that people are identifying their own problems as opposed to those identified outside.
This trend graph tells us the rate of overdues in terms of investigations or commitments, so you can see that even in a period of high identification of problems we are trying to manage the overdues.
We haven't demonstrated sustained performance in this area so consistent management oversight is going to be

required to achieve the desired long-term result, but we think that we should be less than 1 percent of overdues in terms of investigations and commitments on a long-term basis, and we are not there yet.
CHAIRMAN JACKSON: What is your definition of overdue?
MR. SAMPSON: Well, we assign due dates consistent with the significance, but if it is not done on the due date, it's overdue.
Now we also have to monitor extensions, right? -- and so we monitor the rate of conditions or commitments that are being extended to make sure we are not just managing the backlog for the backlog's sake.
CHAIRMAN JACKSON: And these are person-hour loaded? Because in principle a given corrective action can be trivial to fix.
MR. SAMPSON: That's correct.
CHAIRMAN JACKSON: And some of them can be quite complex.
MR. SAMPSON: That's correct, and that is one of the things that we are working on in terms of planning and scheduling our work. I would say we are making progress in both areas, but we have made more progress in terms of scheduling physical work and having resource loading be meaningful.

It is more difficult for us now because we are

trying to up the standard with respect to quality so there is a high rejection rate in terms of quality results now while the organization is trying to learn the higher standard.

CHAIRMAN JACKSON: Okay.

MR. SAMPSON: Let's see. Before I leave -- again, we talked a little bit about the corrective action program.

I wanted to point out the use of restart metrics or performance indicators to measure or progress towards restart. This indicator -- well, let me say in general with respect to these restart metrics, we selected them based on problems that are applicable to Cook specifically, but we have also looked at other plants and their experience and selected a family of a number of indicators to monitor.

This work-down curve is for the corrective maintenance backlog that we are working on, and you can see the green line is the target performance. It shows a schedule for completing and working down the backlog. The red is the actual achieved and again the great thing about this is that you can focus on the delta between the planned and the actual results achieved, and then we can work with the line managers to hold them accountable for understanding the cause or the difference between the two and what they are doing to correct them.

CHAIRMAN JACKSON: How do you set your goals, through benchmarking or in terms of some metric in terms of how much work you think is prudent to have?

MR. SAMPSON: We did benchmarking with other plants to get ourself in the range. Now we are openly committing not to be world class at startup but we clearly want to be good enough for startup and go to world class later, but we are looking at other plants and how they did their goals.

CHAIRMAN JACKSON: Okay.

MR. POWERS: I'd take world class at startup, by the way.

[Laughter.]

CHAIRMAN JACKSON: So you'll take that?

MR. POWERS: I'll take world class.

CHAIRMAN JACKSON: Actually, that is an interesting statement, and I appreciate your saying it. You want me to tell you why?

MR. POWERS: Yes, ma'am.

CHAIRMAN JACKSON: Because so many people come in and tell us how they are aiming to be world class, and the real issue is, you know, just get the plant where it needs to be, and so that is an interesting statement.

MR. POWERS: Thank you.

CHAIRMAN JACKSON: Thank you.

MR. SAMPSON: The next page, another indicator, we are looking at the quality of root causes performed each month.

What we are doing in this area, we are using industry experience. We've got some selected criteria that's being used at other plants and grading all the root causes done, assigning a numerical grade, and then trending them, and then of course this is -- we are a work in progress on this effort of using indicator and quality areas, so we are using outsiders to objectively critique how we are doing this measuring process.

CHAIRMAN JACKSON: So it is higher better or lower

better?
MR. SAMPSON: The trend is conveniently indicating in the right direction now, but we know we are going to have to make some adjustments to this indicator because we are --
CHAIRMAN JACKSON: So higher is better?
MR. SAMPSON: Higher is better.
Okay, if we could turn our attention now quickly to the restart schedule on the next page, you will see in this curve we are tracking the work-down. This is what we call a work-down curve for all of the restart issues that have been identified to date out of our discovery effort and it clearly shows both a plan to work down the curve, but it also shows the impact of our discovery phases, and again the

same principle involved here with your green curve is the plan, the red curve is the actual, and we hold line managers for accounting for the difference between the plan and the actual results achieved.
Now our shutdown period has been largely defined by the ice condenser and it has been the controlling critical path to date, and is still so today. We -- on the next slide you will see a schedule that shows a critical path laid out for the ice condenser. The first major milestone shown there was November 15th for completion of all of our ice basket work, and that was done on schedule with the requisite attention to quality.
Last week we started chilling down the ice condenser and we will probably delay that briefly for some work on the lower ice condenser doors and we would expect some emergent issues along the way, and we are fully planning to respond to those appropriately.
We understand that there may be some schedule impact based on our effort to bound engineering issues, but it is simply the right thing to do.
Now I would like to spend a little more time --
CHAIRMAN JACKSON: Let me just ask, the mode ascension that you are showing in the February-March timeframe, is that for heatup and surveillance?
MR. SAMPSON: That's correct.

CHAIRMAN JACKSON: Okay.
MR. SAMPSON: I would like to spend now some more time on the ice condenser project. That was obviously a major decision for us and we have devoted a lot of time and attention to correcting those conditions.
To date we have inspected all of the 1944 ice baskets on Unit 1 and the results that we have achieved so far is that we have repaired or replaced about 85 percent of the ice basket components. That amounts to about 20,000 basket sections and a replacement of approximately 490,000 screws.
We have made and stored in a local facility 4.8 million pounds of pristine ice. It's ready for ice load. We installed brand new top deck doors, refurbished our lower inlet doors and adopted a new design for the shock absorbers, which is consistent with other industry practices, and we have accomplished a number of material condition upgrades to the air handling units and the glycol refrigeration systems.
CHAIRMAN JACKSON: Can you give us a succinct statement -- you know, not being techies here?
MR. POWERS: Be careful --
[Laughter.]
CHAIRMAN JACKSON: What major condition or

conditions led to the conclusion that the ice condenser

performance would be severely degraded?

MR. SAMPSON: That the conditions that we were looking at were the foreign material that we had identified and also there's some damage to ice baskets previously identified in our corrective maintenance and our condition reporting system that there was not a very clear design basis when we started this project, and so there was some thorough and thoughtful questions about whether the conditions of the baskets were within the design basis, and after doing a thorough inspection we determined the right thing to do is to melt it out and we can do a complete -- the biggest thing was to be able to do a complete inspection, look for how extensive the problem was with the foreign material and get right to the bottom of that.

CHAIRMAN JACKSON: How long does it take to melt that?

MR. SAMPSON: We took -- I am going to look backwards here for the number of days to melt. It was about two weeks, if I recall correctly, and that is on one ice condenser.

The harder part though is the plant was not really designed to do a thorough meltout so we had to do some modifications under our 50.59 process to make the plant able to handle the ice melt, and so the prep work actually took longer than the actual melt itself.

Let's take a closer look at ice baskets, and you can see the picture in your handout shows a slight dent in this basket, and that basket if inspected during our inspection activities would have either been repaired or replaced prior to installation. We have established a formal detrimental damage criteria, and we have done thorough inspections to make sure that anything that was put back in the ice condenser does not encroach on that detrimental damage criteria.

CHAIRMAN JACKSON: And so is there any implication in this case of having a dented basket?

MR. SAMPSON: Well, the implications in a dented basket is that our criteria is less than one-eighth of an inch damage, and if it encroaches on the one-eighth of an inch, then we analyze it and make sure that there aren't any torn ligaments in the area.

CHAIRMAN JACKSON: I see.

MR. SAMPSON: And because we remove so many of the basket components, our craft worker determined that it was far better to correct any dents identified so that we minimized any baskets we put back that were in any kind of a degraded condition. It's always better firsthand to look -- this is the real thing. This is an actual ice condenser basket section. They come in two-foot, three-foot six, and twelve-foot sections.

CHAIRMAN JACKSON: 1,944.

MR. SAMPSON: 1,944 baskets. When a basket is fully assembled, it's 48 feet long, and all, you know, there's a lot of discussion about things on ice baskets. The important things that you could look at here are these screws. A lot of discussion on screws. These are the actual screws. There's a top ring insulation here. It's important that we modify to allow us to do better maintenance and surveillance activities in the future. We

have a bottom coupling ring. And also you can see where we have done some lift tests here, and you can see some damaged ligaments that we, because of our changed maintenance practices, we will not allow that to happen in the future.

You're welcome to look at this when we get done.

Questions or comments?

On the next page is a takeaway picture of a torn ligament, and you'll see that the rounded nature here goes to the lifting device used to actually lift and weigh the baskets, and it's an intrusive process where you have to apply a great deal of force to lift the basket.

Well, the previous lifting device was designed with a rounder cylindrical lug, and that concentrated all the weight, which causes the damage in the basket. We have now redesigned our lifting devices, and a picture of that is shown on the next page, to allow for a flat, even surface to

prevent future damage. We've done a number of things based on experiences from other plants. There's a lot of great experience in sharing going on between us and the other ice condenser plants to make sure that we never allow this to happen to our ice condenser again.

And in terms of concluding remarks, the ice condenser itself, just doing the physical work has been an impressive task and a testimony to our team, but more importantly it's the organizational behaviors that have been practiced through this.

I've been at the Cook plant long enough and have come back recently after an experience at another plant which -- the blessing in that is that you get coldly objective of your performance when you go see another plant's performance. So I come back being able to see that the organization has grown and learned tremendously through their shutdown period, and to see the team work together now, their attention to detail, there's no question in my mind that they are a markedly improved organization as we get ourselves ready for restart.

Thank you.

CHAIRMAN JACKSON: Thank you very much.

Commissioner Dicus.

COMMISSIONER DICUS: Yes. Let me ask a couple or bring up a couple of points maybe. And this feeds off a

little bit on the question that Commissioner McGaffigan asked about the INPO and SALP reviews, plant evaluations, and this didn't seem to surface as an issue. It wasn't identified.

And also I think the Chairman asked Mr. Powers about the kind of indicators you use in the plant, would they not have shown this, and I think your response was probably not a broad enough number of indicators. So perhaps you could identify what indicator you really or indicators you really thought were needed to identify this. Because it kind of goes -- to carry this a little bit farther, I think you know that we are in the process of redoing how we do plant evaluations and looking at the kind of indicators and how you evaluate them, so forth. So I'd appreciate some feedback from you on where you think -- what might have been done differently.

MR. POWERS: Well, you've asked a very good question, and one we could spend a lot of time on. We all are looking for I understand -- we're all looking for that set of indicators that can give us a heads-up advance warning of do we have a plant that's suffering some problems

that need to be remedied. I think that the movement that the Commission is making towards a set of performance-based indicators is good, and I encourage the pursuit of that system as a replacement for SALP.

I do think specifically in the area of design that doesn't perhaps lend itself as much as other areas of operations and maintenance to some objective performance indicators, and if I were looking, and I do have to look, as the chief nuclear officer, I've been looking to see whether or not my engineering department and my quality assurance organization were performing some SSFI-like activities, and continually going back and revisiting the design basis and looking to see whether it departs as designs are implemented and the like. So in the design area specifically I've been looking for activity that would be SSFI-like, looking at operations, maintenance, and design of the system.

COMMISSIONER DICUS: And another thing real quick, and I may have to have help with my memory on this, but I think you might have mentioned, one of you mentioned that the ice condenser system was not a system that had been given much attention over time, and that perhaps there -- I guess my question is, and I think there was some discussion of this, but I wasn't clear on it, are there other systems that you've identified that maybe have not been given the attention over time that need to be given attention, and how are you -- well, not so much doing this, but how are you communicating this to the industry? Because that was one of your early comments, that perhaps you hadn't paid enough attention to other issues even with ice condensers that had

happened in other plants.

MR. POWERS: I specifically talked about the need to provide the right level of oversight for whatever work force is employed at your facility, both the proprietary work force, AEP personnel, or contractors. And we're taking a real hard look at that.

Specifically in the ice condenser we're establishing rigorous training programs that people are going to have to have taken the class work before you even enter the ice condenser, and understand the unique aspect of its design and the unique aspect of the work. We're also taking a look at the training provided for our contractors that might perform other work in the plant and making sure that it's consistent and the level of oversight provided is appropriate there as well.

COMMISSIONER DICUS: But have you identified other systems in the plant that maybe have not the attention over time?

MR. POWERS: I think that really gets to the issue that I spoke of, how to bound the engineering issues, and one of the unique aspects of the ice condenser was the fact that you can't test the system under design basis conditions. We feel not entirely comfortable but somewhat more comfortable with other systems in that there is a go test so to speak where you can provide a flow test or you

can measure amps to a motor or stroke a valve. But I think in those other systems that's where we're going to have to go to take a look at our engineering programs, where there are other issues like macrobiological fouling, or the 8910 program and see how the administration and implementation of those programs may have affected themselves elsewhere in the

plant.

COMMISSIONER DICUS: Thank you.

CHAIRMAN JACKSON: Commissioner McGaffigan.

COMMISSIONER McGAFFIGAN: On your restart schedule there is an awful lot of focus on the ice condensers, and I'm just trying to figure out, have you worked out with the staff when they're going to do whatever inspecting needs to be done? The physical work is complete on the 15th of January, you believe that it'll be operable on the 9th of February, then you're looking for 11th of February a restart authorization.

And I'm a little concerned, Mr. Powers talked about that there may well be additional engineering issues that come up and how things -- how all this fits together, and with some of the other plants that have been down a long time that we've dealt with, you know, they're getting the operators back in an operating mode and all that, it is nontrivial, and I'm sure that there is more -- you're focused on the ice condensers here. I'm sure there's more

to your restart effort. But is this all going to come together that rapidly, and are the inspections built in, whatever they are?

MR. SAMPSON: Well, there's two aspects we've been working very closely with the region and with NRR on, and that's licensing actions required to support restart, and then also the inspection activities, and the 0350 panel has been very cooperative in terms of assigning resources as necessary for the inspection activities.

The effort that we're working on right now, perhaps more challenging than the physical work, is the bounding of the engineering issues, and an important inspection activity would be the engineering and corrective action team inspection that will need to be done to affirm our readiness from the NRC's view on restart, and we simply have an agreement with the 0350 panel to provide them notification when we have finally determined that we believe we're ready for restart. Then the inspection at resources will be assigned to support that, and the discussions have been very productive and cooperative so far to accomplish that.

COMMISSIONER McGAFFIGAN: But where would that fit, that inspection? Would that be in the January time frame?

MR. SAMPSON: Well, there are inspections laid out

for January and February. At our request the NRC deferred the engineering and corrective action team inspection until we can do our own third-party and self-verifications. We previously had discussed having the NRC inspections immediately following our own verifications, and felt that allowed no ample opportunity for line managers to respond to problems found during those verifications. So we've gotten a revised notification or communication plan with the 0350 panel, and the 0350 panel chairman, that when we're ready, we'll notify them, and then they will schedule the resources required to do that.

There are some inspections ongoing right now. There's portions of the restart readiness inspection have started on operator training, and I think we're looking at the corrective action program inspection in the December time frame.

COMMISSIONER McGAFFIGAN: On licensing actions, are any of these complicated licensing actions that -- my

recollection on Crystal River was that licensing actions were the pacing item and restart at the end -- in fact, one particular licensing action was the focus, and I guess your new head of engineering will know all about that, but how -- are any of these likely to be pacing items?

MR. SAMPSON: We have a number of licensing actions. For example, we're working one on containment

spray right now. But there may be some engineering resolutions that allow us to not have to ask for that licensing action. But there are some tech spec changes that have already been processed, and again we've been working very productively with the NRR staff. We understand that there's processing time associated with each one. In fact we spent time at Crystal River trying to understand the implications of those licensing actions.

COMMISSIONER McGAFFIGAN: Okay.

CHAIRMAN JACKSON: Are you basically saying that at this point there's not an issue in terms of the licensing actions? I mean, it's not -- I mean, it may be on your critical path, but there's nothing to indicate that there's a problem?

MR. SAMPSON: There certainly is work to do, but we're not in a position to say that any of them are specific problems at this point.

CHAIRMAN JACKSON: Okay.

Commissioner Merrifield?

COMMISSIONER MERRIFIELD: I have no other questions.

CHAIRMAN JACKSON: Okay. I'll leave my comments for the end.

Thank you very much, and I think we'll hear from the NRC staff very briefly.

MR. POWERS: Thank you.

CHAIRMAN JACKSON: Thank you. Thank you for coming.

Dr. Travers.

DR. TRAVERS: Good afternoon, Chairman and Commissioners. As you know, the corrective actions at Cook are being very carefully evaluated by the NRC staff, and this afternoon we plan to provide you with our perspective on a number of the issues, including the status of the licensee's corrective actions and the conduct of our own Manual Chapter 0350 restart assessment process.

Joining me at the table this afternoon are Jim Caldwell, who is the Acting Regional Administrator, Region III; Jack Grobe, who is the Director of the Division of Reactor Safety; Frank Miraglia, who you know today as the Director -- Deputy Director of NRR.

CHAIRMAN JACKSON: We don't know Frank.

DR. TRAVERS: Tomorrow, he will be my deputy. Cindy Carpenter is the Director of Project Directorate 3-1 in NRR. And without further ado, what I would like to do is turn it over to Jim Caldwell, who is going to make the bulk of the presentation, followed by Cindy Carpenter.

CHAIRMAN JACKSON: Okay. Thank you.

MR. CALDWELL: Good afternoon, Chairman Jackson. Commissioner Dicus, welcome back.

COMMISSIONER DICUS: Thank you.

MR. CALDWELL: Commissioner McGaffigan, and welcome to Commissioner Merrifield.

As Bill Travers indicated, I am Jim Caldwell, the Acting Regional Administrator, Region III. He also indicated that with me today is Jack Grobe, who is the Director of Division of Reactor Safety in Region III. He also the SES Oversight Manager and Chairman of the Manual Chapter 0350 Restart Panel for D.C. Cook.

Cindy Carpenter, who was also introduced, is the Director -- Project Director of 3-1 in NRR, but she is also the Vice Chairman of the Manual Chapter 3050 Restart Panel. And later in the presentation, she will address the activities that are associated with the ice condenser at other facilities besides D.C. Cook.

Also with me today from Region III are Bruce Bartlett. He is the Senior Resident Inspector for D.C. Cook. I think Bruce is right behind me. And Mel Holmberg, he is the Lead Inspector, Engineering Inspector for D.C. Cook. Mel is primarily responsible for the inspection of the ice condenser, and which resulted in the licensee reconstituting their ice condensers. Next slide.

In brief, I intend to discuss the activities leading up to the identification of the design concerns at D.C. Cook, and I will talk about the results of the

inspections and assessments by both the NRC and the licensee following the dual unit shutdown in September. Then I will discuss the NRC oversight of the corrective actions initiated by the licensee, and then, finally, talk about current status and restart issues. Next slide.

As you heard from the licensee, D.C. Cook was shut down in September of '97 to address operability concerns raised by architect-engineering inspection in August of 1997, and remains shut down today.

Before discussing further the status of D.C. Cook and the NRC restart oversight activities, I would like to spend a few minutes putting D.C. Cook's past performance in perspective. In the early '90s, and as Chairman Jackson indicated in her opening remarks, the NRC's assessment techniques and the performance indicators characterized D.C. Cook's overall performance as good to excellent.

In the mid-1990s several plant transients, due to operational issues and equipment problems, reflected a slight decline in performance and operations and maintenance. As a result, the region increased their focus on D.C. Cook in these areas.

Additionally, both of the SALP reports during those periods also identified continued concerns in engineering, however, performance in engineering was still considered good overall. These engineering concerns

involved the use, retrieveability, awareness and understanding of the plant design and licensing basis.

To gather additional insights into the performance in operations, maintenance and engineering at D.C. Cook, the region elected to conduct two regional initiative team inspections, a safety system functional inspection completed in December of 1996, and an operational team inspection completed in May of 1997, in addition to the routine resident inspection program and regional basis program.

Both inspections confirmed that operational performance had improved, however, both inspections continued to find weaknesses in engineering processes. This brings us to the current issues that led to the facility shutdown.

Based on the concerns, the continued concerns in

the engineering area, the region decided to reschedule the performance of the architect-engineering inspection from another site to D.C. Cook and move it up from late 1997 to August of '97. This narrowly focused, vertical slice inspection, utilizing industry experts, went into further depth evaluating the licensee's control of the design basis than the normal inspection process. As a result, the architect-engineering inspection identified operability concerns associated with the emergency core cooling and containment systems.

The licensee could not resolve the operability questions raised by the architect-engineering team on a timely basis and chose to declare the emergency core cooling systems inoperable. Consequently, the licensee shut down both D.C. Cook units in September 1997. In addition, in September of 1997, a Region III inspector identified fibrous insulation material in containment, which raised further questions as to whether the emergency core cooling system and containment spray system could perform their design basis functions.

As a result of the architect-engineering and containment inspection findings, the licensee initiated several corrective actions that Region III documented in a Confirmatory Action Letter. The licensee's actions addressed specific technical issues and attempted to address the need in the short term to determine the depth of the engineering problems and their impact on operability of other safety systems at Cook.

Following the issuance of the Confirmatory Action Letter, the region conducted three public meetings between December 1997 and January '98 to discuss the licensee's responses to and understanding of the issues identified in the Confirmatory Action Letter. These meetings were primarily focused on the extent of the impact of the engineering problems. Next slide.

CHAIRMAN JACKSON: Let me ask you a couple of questions before you go.

MR. CALDWELL: Okay.

CHAIRMAN JACKSON: How old were the major issues when NRC came upon them?

MR. CALDWELL: The AE inspection issues?

CHAIRMAN JACKSON: Right. All of the ones that you have just discussed.

MR. CALDWELL: They were a number of years old, differing times. Some -- well, when we talk about ice condenser, I believe went back to initial construction. But others were due to modifications made to the plant over the years. Fibrous material was backing material that was installed in the cable trays as support, putting in the fire protection material, and it was supposed to be removed, but the design mod that put that material in did not require it to be removed as it should have. So some of these were quite old, numbers of years, all the way back to initial construction.

CHAIRMAN JACKSON: Let me just ask you this question, I mean it is kind of the question on the table. You know, not to take anything away, because I think in this particular instance, in recent times, you know, the staff has done a good job, actually, in ferreting out the issues. But I guess the pregnant question is, what does it say about

our inspection programs' focus in the past? In addition, a number of the areas, the issues fall within the engineering area, and I note that we had rated the engineering as good for two SALP cycles before these issues broke.

MR. CALDWELL: Right.

CHAIRMAN JACKSON: And so what does that say about, you know, what we were focusing on, particularly vis-a-vis engineering? Can you give us some sense?

And then the third question is, because it always comes up, why a CAL versus an order or some other mechanism, given what came out of our inspections? One, because we get accused of piling things on licensees, you know, once they have already shut their plants down. Secondly, if the issues were significant, you have to tell us. I mean, presumably, they were, and the language in the correspondence to the licensee suggests that they were viewed that way by the staff. Can you tell me kind of the process here in terms of, you know, issuing the CAL after we have come through all this versus some other step? But, first, I guess, I am interested in the question about the focus of the inspection program in the process, and then what we were doing vis-a-vis SALP in the previous -- I mean engineering in the previous SALP cycles.

MR. MIRAGLIA: Madame Chairman, may I address the inspection program issue? If the Commission may recall, as

a result of Millstone, and looking at 50.59, it resulted in a Generic 50.54(f) letter to licensees regarding the configuration control of the design basis information.

In a number of meetings with the Commission at the time, the staff indicated that the focus of the SALP program and the inspection program was engineering support to operation, and that a weakness in our program was perhaps looking at the design basis and configuration control issues. At that time the staff indicated that we were modifying the engineering modules within the inspection program, and that is being done, and has been done, and is looking at the issue of design. So the weakness is one that existed and the lessons learned from the Millstone experience and the materials that we gained, and the information we gained through the Generic Letter on design basis configuration, which had a long history, as the Commission is well aware, on that issue has led to correction, hopefully, of that weakness.

In terms of the SALP area, as I said, the Commission was briefed on a number of times that the focus in engineering functional area was engineering support to operations and didn't have the element of the design configuration, and that as being looked at in the context of our performance assessment process.

The Commission has been briefed recently on our

activities with respect to the overall reassessment of performance assessment. We have laid a number of cornerstones. And one of the issues that has come out of the workshops, and ongoing dialogue with the industry and other stakeholders, is that when one looks for a performance indicator that addresses design, there seems to be paucity of a crisp indicator in that area, and that in order to buttress the assessment process, that we have to do some more focused type of inspection activities. And so the risk-informed baseline inspection program that we are looking at is developing those kinds of engineering kinds of modules to amplify and augment the information relative to

this area. So it is a weakness that we identified a while back. It has manifested itself here in a number of areas, as you heard. In addition to the design basis issue here, there were other issues, as the licensee has indicated, that it had to be not only an engineering, in terms of the design basis and configuration control, but the implementation of a number of programs in terms of surveillances and other activities.

CHAIRMAN JACKSON: Were you going to say something, Dr Travers?

DR. TRAVERS: Well, I was more or less going to echo what Frank said, and actually what Mr. Powers said in response to your question as well, and that is that design

basis issues don't really lend themselves well to performance indicators. So, and we are still working on the assessment process, but we have recognized that going in, and the expectation at this point, at least, is that the risk-informed baseline inspection activities have to account in some fashion, and we are still working out just how extensive that ought to be to bolster the performance indicators, inspection program and safety culture issues, the three sort of fundamental elements of what we today are driving towards in the new assessment process that we will briefing the Commission on in the very near term.

CHAIRMAN JACKSON: And you were going to speak -- go ahead -- to the CAL issue.

MR. GROBE: Could I, before you call to the CAL, could I add a little Cook-specific perspective? I was involved in the Point Beach restart effort also and the engineering inspection program is retrospective, unlike our resident inspection program, which -- wherein we observe many activities in an ongoing nature.

Engineering, by definition, is retrospective. We are looking at work product that has been completed. And when you have an organization, I think the words Bob Powers used was insular, less receptive to criticism from outside. We had been identifying some weaknesses in engineering for a period of time, and I don't believe the organization had

taken them -- I don't know if "to heart" is the right word, but the combination of that insular perspective, plus a corrective action program weakness where they weren't getting to root cause of issues, contributed to the lack of timely identification of this.

The design type inspections that we have been doing over the last couple of years takes a bit of different resources than what we normally have available, and Frank has been quite generous with contract dollars to perform inspections like the architect-engineering inspection and the SALP inspections. I feel badly that we didn't identify this earlier, but I believe there is a combination of the retrospective nature and the organization that existed at Cook, which was not as receptive to outside criticism, that prolonged the delay -- or prolonged ratification of the issues at Cook.

MR. CALDWELL: I was just going to say, plus, if you look at the systems that were identified by this in-depth engineering inspection, they were mostly the passive systems, the systems that aren't necessary for operating the facility. In looking at engineering support, you look at typically the systems that support operation of the facility, so these other systems don't get quite the

same --
CHAIRMAN JACKSON: Heretofore.

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MR. CALDWELL: Heretofore, yes.
MR. MIRAGLIA: May I add to that, if the Commission may recall, that one of the cornerstones within the performance assessment process is mitigation systems, and one of the issues there is how does one verify the design, so the Chairman's comment about heretofore is certainly a fair one. It is an issue that is receiving focus at this time.
COMMISSIONER MERRIFIELD: Before Mr. Caldwell goes into the CAL issue, I do have a followup question I wanted to ask.
You know, the significant issue here with the ice condenser was found as a result of the architect-engineering study, and we're going into a mode here at the Agency where we're winding that program down, we're not going to be following that up, so my question is, how in terms of planning for the future in our inspection program, how do we build it such that we're able to identify these types of problems that only came out as a result of a program that --
MR. MIRAGLIA: I think the region could add that the ice condenser issue didn't really result as a direct result from the architect-engineering inspection.
CHAIRMAN JACKSON: But there are a number of other --
MR. MIRAGLIA: But engineering issues did, and

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there was other information brought to the Commission that led to looking at engineering issues associated with other systems. And so certainly the extent, the condition issue is the one that the license is dealing with and we're dealing with with respect to the restart of the Cook facility.
But generically the way we've looked at this issue in terms that I think the sensitivity to configuration control of the design basis is clearly an issue that has been identified to the industry, and there are a number of initiatives that we have ongoing that are addressing that in terms of the performance assessment process, the changes to the inspection process as well.
Moreover, I think another area that we focused on, and that the key word that was used at the table today was follow through. We've talked in terms of corrective actions.
Corrective action programs have essentially three elements to them, identification of problems -- and the licensee has indicated they're doing a better job at identifying the problems. That's only one part of the issue.
The second part of that issue is root cause: Do we understand what that problem is and have identified the root cause of that issue and that problem.

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And the third is to have a mechanism for effective follow-through. Is that an issue that we've really fixed? And that's another area that the programs that we're looking at are going to pay more attention to corrective action programs, because we're looking for licensees to do more self-assessments, identify their own problems. So as a result, since we're going to be depending more upon those, then we have to do a better job of assessing the adequacy of the correction action program. So these things in

combination we're hopeful the Commission would address those kinds of concerns in large measure.

COMMISSIONER McGAFFIGAN: Can I just -- in the corrective action program are you going to have performance indicators of the sort that D.C. Cook used in their presentation, or is that going to be outside the performance indicator program, something that we're doing through these additional inspections?

MR. MIRAGLIA: I think the short answer to that is probably yes. The other answer that I would take, it's a work in progress. We're looking at corrective action programs and performance indicators for those, and there will be probably a mix of performance indicators as well as inspection activities as well in terms of the program. But exactly what those are, Commissioner, I don't -- I haven't identified them at this point in time, and the staff is

still working --

COMMISSIONER McGAFFIGAN: You're briefing us so shortly that I'm just -- I always wonder --

CHAIRMAN JACKSON: He has a whole --

COMMISSIONER McGAFFIGAN: It's almost six weeks away. It's in January.

DR. TRAVERS: But you may recall in the context of the proposal we had before the Commission on Surry Level 4 enforcement actions, we've proposed to emphasize the programmatic nature of corrective action, and that would probably result in a more extensive evaluation of the programmatic aspects of corrective action programs than currently exist. We have inspection procedures that address corrective action programs. They are used occasionally, but my guess is --.

CHAIRMAN JACKSON: But programs are as programs do.

DR. TRAVERS: That's exactly right, and we have to develop mechanisms to assess the results.

CHAIRMAN JACKSON: Results, results, results.

DR. TRAVERS: Right.

CHAIRMAN JACKSON: Okay.

I know they were trying to sit here and --

MR. CALDWELL: I was hoping we would skip the -- because the licensee shut down both their units, and it was

due to engineering design operability related issues. There were a number of things that they were going to have to do in order to satisfy those, to answer the questions and determine not only the operability of those systems but to look at the root cause and come up with some corrective actions.

We used as a tool, a regulatory tool, the CAL process, confirmatory action letter, to document the commitments that the licensee had made towards restart. I would have to say that in hindsight an order might have been more appropriate, but just I guess going from my experience where in the past you used the CAL as the process for documenting commitments that the licensee is, you know, voluntarily making to resolve specific issues, either technical issues or human factors issues.

So in this case what we did -- we wanted to have a regulatory tool. We wanted to put a high hat on this. We wanted to make sure that it was, you know, in clear in the public domain that these were the things that were necessary to be done prior to at least a discussion with us about

restart. So that's the tool we used.

MR. GROBE: At the time the CAL was issued, it was certainly not anticipated the plant would be down this long. It wasn't until the ice condenser issues were identified in January and February that the commitment, which was a five

or six-month commitment, shutdown commitment, was made to repair the ice condenser. So it was clearly anticipated the plant would be back on short order. Once it appeared to be a longer-term process, we began the 0350 process.

MR. MIRAGLIA: Madam Chairman, the tasking memo that we have before the Commission, one of the items within that context of that is the issuance of CALs. We have a number of initiatives under way. One of those initiatives was to look at the guidance that's out there in the use of that tool. Can that guidance be improved and clarified?

There is some inference in there it should be shorter-term duration, and in this case we sort of moved across the windows, and so we're looking not only at the guidance and what improvements can be made in that guidance to make its use more specific and to handle these transitory-type things that go along the time to look at different and more formal regulatory tools.

So that is an element within the task action plan which the Commission is being informed on on our progress today.

COMMISSIONER McGAFFIGAN: Could I just ask a --

CHAIRMAN JACKSON: Yes, please.

COMMISSIONER McGAFFIGAN: Clarifying question?

If you go to an order, what are the legal implications of an order? Does that bring in -- is lifting

an order more complicated?

MR. MIRAGLIA: Well, I'll defer to Karen, but there's, you know, confirmatory orders are a potential aspect.

COMMISSIONER McGAFFIGAN: A confirmatory order is between a CAL and an order.

MS. CYR: All a confirmatory order means is that the licensee has chosen not to exercise its opportunity to request a hearing in that context, and basically you know -- they essentially know what up front is going to be required of them as told you in advance, based on that knowledge that they are not going to choose or at that point do not believe they want to choose an opportunity to exercise their hearings rights in that context.

The --

COMMISSIONER McGAFFIGAN: Does the public have hearing rights at that point?

MS. CYR: It's very difficult. If they've agreed to undertake those activities, the standard under which others can have an opportunity for hearing are much more severe in that context.

CHAIRMAN JACKSON: There was a question of whether it's more difficult to lift an order than --

MS. CYR: The standards of what they have -- you have to -- not particularly. There's really again no

opportunity for review of that. It's a question of since you're restoring the plant to the -- assuming -- it's the nature since there was a difficulty there and you're restoring them to whatever the underlying conditions were that the plant was licensed to operate before that there's -- in terms of making those findings -- and there's

no more difficulty.

CHAIRMAN JACKSON: The only reason I asked the question is that, you know, we have focused a lot, but there was the issue of foreign material in containment that Commissioner Merrifield was talking about that could have impacted the ability of the ECS sumps to operate properly, the ice condensers, hydrogen mitigation and ignition, residual heat removal, containment spray, containment spray additive, and aux feedwater systems, among other things. And so it seems that there's a panoply of engineering/design issues that are quite extensive that all play into essential safety capabilities of the plant. And so it does raise the question, and I'm not arguing it one way or the other, you know, of the right regulatory tool at the right point, given the magnitude of what was discovered.

And so -- and it forces a certain discipline on us in terms of, you know, how such a -- if there were an order, how it would have to be structured and the case that has to be made vis-a-vis safety. And so on the one hand, you know,

it's more formal, and I think may appear more onerous, but at the same time it's one that enforces a certain discipline that makes one go through the issues and the safety significance of those issues, and in the process addresses the question of whether one is post-facto inappropriately using an informal regulatory tool. So, you know, I just think that one in this particular case is on the table.

MR. CALDWELL: But you understood based on Jack's comments that a lot of these things that we found have evolved over about a six-month period, and we do have in the CAL the opportunity that if we ever come to disagreement on some issues, then we could issue an order to accomplish that action.

As a result of the issues raised by the NRC inspections, the Union of Concerned Scientists filed a 2.206 petition in October of 1997 and an addendum in January of 1998 requesting NRC maintain D.C. Cook in a shutdown condition until there's reasonable assurance that all the significant deficiencies in safety-related systems have been identified and corrected.

The issues in the 2.206 petition paralleled and provide additional useful information regarding the issues being followed by the NRC. The petition resulted in the NRC requesting additional information from the licensee at an informal public hearing in August of 1998. These issues are

being considered in the overall review of the licensee's readiness for restart.

Region III conducted several inspections within the first part of 1998 indicating that the licensee had made significant progress in addressing the specific technical issues in the confirmatory action letter. They documented that questions still remained involving the adequate maintenance of the design and licensing basis.

As the licensee indicated earlier today, to help bound these engineering and design questions, they contracted with an engineering firm to conduct an independent safety system functional inspection, SSFI, of the containment spray system in January or February of '98. This SSFI raised questions that resulted in the containment spray system being declared inoperable.

Also during the same period the region initiated an inspection of the ice condenser. The inspection

identified significant questions as to the ability of the ice condenser to function as designed due to breakdowns in surveillance testing, corrective actions, and maintenance of the design basis. These concerns eventually led to D.C. Cook declaring the ice condensers inoperable and significantly extending their outage to support the refurbishment of the ice condensers.

And as a result of these findings from the

architect-engineering inspection, the containment fibrous material inspection, the ice condenser inspection, and the followup inspection for the confirmatory action letter, the NRC issued a severe Level 2 enforcement action with a proposed $500,000 civil penalty.

In March of '98, based on the results of these inspections and the concerns identified, the licensee developed a comprehensive restart plan and the Agency initiated an NRC manual chapter 0350 oversight panel. Both of these actions were initiated to provide a structured process to ensure that all the questions associated with systems and processes necessary to support a safe return to operation were adequately addressed prior to restart.

CHAIRMAN JACKSON: Let me take you back to your previous slide.

MR. CALDWELL: Okay.

CHAIRMAN JACKSON: Let me ask you a couple questions.

What does the 2.206 petition request that we have not already done or put into place? And what did it request that we had not done at that point but we've subsequently put into place?

MR. CALDWELL: The initial 2.206 just followed the items that we'd already identified in our inspections and the confirmatory action letter and the architect-engineering

inspections and the fibrous material inspections to date. The addendum identified six specific issues, all of which I believe --

MR. GROBE: I think your question was what did the petition request us to do? It requested we issue an order modifying, suspending, or revoking the standard language --

CHAIRMAN JACKSON: No, but I meant in terms of the issues --

MR. GROBE: Right. Okay.

MR. CALDWELL: Right. I believe the majority, if not all the issues, are the same issue that the NRC has identified and continued to identify at the facility. It did put them in perspective and provide this additional information associated with issues, but it paralleled the findings that had been identified to date.

MR. MIRAGLIA: It raised the issues with respect to design basis in saying there's lots of findings and so you need to address the design basis issues. The other thing that it did which we've subsequently done is it requested an informal --

MS. CARPENTER: An informal public hearing which will be held in August of this year.

CHAIRMAN JACKSON: I note that the petition references NRC's 50.54(f) letter on design basis issues, and the question is did we review the response to that letter

for D.C. Cook?

MR. GROBE: Yes.

CHAIRMAN JACKSON: And so what did we conclude?

MR. GROBE: The context of the reviews of the letters was in an office review of the substance of the letter and whether it responded to the questions. The Cook letter was viewed as a good response, not a superior response or an inferior response. In hindsight the letter predicated its success, as most of them did, on the robustness of its programs, which are now viewed as being good programs but poorly implemented in many cases. And also on a number of prior detailed engineering activities that the licensee had conducted themselves as well as responses to industry activities, for example, SSFIs that they had conducted, responses to generic letters like the motor-operated valve generic letter. Those assertions were intended to provide confidence that the design basis had been at that time maintained adequate.

CHAIRMAN JACKSON: I mean so was the focus then on a programmatic review and not on implementation necessarily?

MR. GROBE: Yes.

CHAIRMAN JACKSON: And not necessarily with respect to the specific design basis issues, not on the ability of certain systems to perform their intended -- we did not really focus on those.

MR. MIRAGLIA: No. The question was -- in the 50.54(f) letter on design basis -- to the utility was why did they have confidence that the systems would. And they described programs. The review of that letter was done in an office review, as Jack has indicated, but it was also to be supplemented by our knowledge of information from independent inspection knowledge.

We did provide the Commission a paper or memorandum that indicated the aspects that we looked at and identified candidates for architect-engineering evaluations, and as you heard from Jim, there was engineering concerns. And this plant was identified as a candidate for an architect-engineering inspection because we did have some indications of engineering issues. We weren't sure of the depth of that. And so that was another test of the robustness of the programs. The indication from the licensee here today is that the programs are robust, it's the implementation and again the follow-through on those kinds of programs and corrective actions.

CHAIRMAN JACKSON: Okay. So let me make sure I understand again. There was an in-office review. It looked at the "robustness" of the programs, but not specifically on the implementation per se, and not specifically on the ability of key systems to perform their intended functions. But it did ID candidates for the architect-engineering

inspections, and there were engineering concerns with respect to this particular licensee. And then is your argument then that the AE inspections then began to peel the layers off the onion?

MR. MIRAGLIA: In this case that certainly seems to be the case, Madam Chairman. In addition it was more than a programmatic. It was to take the inspection results and findings and information that we did have and do an orthogonal check of the programs, and did we have information that would say that this appears to be a valid response, or did we have some additional concerns. Besides AE inspections there were candidates for the modified SSFI inspections and the engineering inspections as well, as well as normal follow-through on design basis kinds of issues.

CHAIRMAN JACKSON: I think Commissioner McGaffigan --

COMMISSIONER McGAFFIGAN: It's on the same point. I think the presentation was that in December of '96, which is about the time the 50.54(f) responses were coming in, you did an SSFI, a safety system functional inspection, on a system at D.C. Cook. Which one was it?

MR. CALDWELL: We did a safety system operational performance inspection. It was a --

COMMISSIONER McGAFFIGAN: It's different from --

MR. CALDWELL: Yes, it's a Region III initiative

to look at operations, maintenance, and engineering, but --

COMMISSIONER McGAFFIGAN: It wasn't a deep inspection on a system.

MR. CALDWELL: Not as deep. It did look at a system, I believe it was RHR --

MR. GROBE: It was RHR and high head safety injection.

MR. CALDWELL: High head safety injection. We did find some issues on the charging pumps, some design issues on charging pumps, but not to the extent that the AE found in the systems they looked into.

MR. GROBE: We utilized contract design engineers to assist us in those inspections, and they were deeper than our routine inspections, but they weren't like an SSFI.

MR. CALDWELL: Right.

COMMISSIONER McGAFFIGAN: But they didn't rise to the level -- the findings were -- did you do others of that sort in the region?

MR. GROBE: Yes.

COMMISSIONER McGAFFIGAN: And were these typical findings? Or are they worse than normal?

MR. GROBE: Actually there were more substantive findings at some of the other facilities.

COMMISSIONER McGAFFIGAN: Based on -- more substantive at other facilities?

MR. GROBE: Yes.

COMMISSIONER McGAFFIGAN: From the SOFI inspections.

MR. CALDWELL: We continued to have an edge in the engineering area, but the SOFI did not define it like the AE did.

MR. GROBE: To scratch that itch we reprogrammed the AE from another facility with a different architect-engineering firm to Cook.

COMMISSIONER McGAFFIGAN: So, if I could, it sounds like you had some suspicions, but you weren't finding things using the tools that you had readily available --

MR. CALDWELL: Right.

COMMISSIONER McGAFFIGAN: This other tool came along.

MR. CALDWELL: Yes.

COMMISSIONER McGAFFIGAN: And you used it.

MR. CALDWELL: Yes.

CHAIRMAN JACKSON: Okay.

MR. CALDWELL: Both of the actions, the 0350 and the licensee's restart plan which is initiated to provide a structured process to ensure that all the systems and processes necessary to support return to operation were adequately addressed prior to restart.

CHAIRMAN JACKSON: Let me ask you one more

question.
MR. CALDWELL: Okay.
CHAIRMAN JACKSON: Where was the licensee's quality assurance organization in all of this?
MR. CALDWELL: I don't believe that -- I guess let me put it this way. I believe this licensee was -- Commissioner Diaz will probably get me for this, but they didn't have --
CHAIRMAN JACKSON: I might.
MR. CALDWELL: You might get me, too. They weren't that self-critical. They didn't have an organization that was set up to go look out and find problems. They were more focused on looking at what they had and justifying why it was acceptable the way it was, not necessarily bad, just looking at the things that they had and justifying them, so they didn't have a strong quality organization looking for problems, identifying issues. They didn't have a strong corrective action program.
CHAIRMAN JACKSON: So how many of the problems being grappled with today reflect on, you know, on inadequate QA?
MR. CALDWELL: Well, inadequate QA or inadequate observation by operations, maintenance, the risks -- like the fibrous material. That was an inspector who was in containment walked up and looked at a cable tray and

identified the issue, happening to be someone who was familiar with the fibrous material issue.
The licensee had done a number of containment close-outs and had never identified this issue.
There was peeling paint in containment. There were a number of things that had they been very critical looking at and looking for problems they could have identified these things.
CHAIRMAN JACKSON: Now what about us?
MR. CALDWELL: Same.
MR. GROBE: Good question. We have inspection procedures to examine quality assurance, corrective actions, and we were not effective at identifying the weaknesses in Cook's program.
QA doesn't prevent problems. I mean QA didn't cause any of the problems. It contributed to them not being identified on a timely basis. Significant deficiencies in the surveillance testing program also contributed to not identifying these issues on a timely basis.
Just to use a very simplistic example, the screws which John Sampson showed you on the ice basket, there were occasions when a crew would go to lift an ice basket and pull out half of the ice basket or a portion of the ice basket because the screws had all failed, and there were during those same outages occasions when in a system called

the ice melt system there is a tank and a screen, and there were situations where screw heads and portions of screws would be identified in that tank, but nobody ever thought to go back and look and see the breadth and depth of that problem.
In hindsight, it's clear that there was a problem with the connections between the various segments of the basket. It was not QA nor the surveillance testing program that didn't identify and resolve it on a timely basis.
CHAIRMAN JACKSON: Well, it strikes me that there are two issues here. One has to do with what you have just

delineated in terms of some weaknesses and vulnerabilities in the licensee's approach, the licensee's organization, the licensee's program.

The other has to do with attestations that we make based on what we look at as to the efficacy in these very same areas, and so, you know, are there lessons learned --

MR. GROBE: Absolutely.

CHAIRMAN JACKSON: -- for us in this regard?

MR. CALDWELL: Right. We are in the process -- we have already initiated a lessons learned in Region III and we haven't evaluated the results of that yet, and then we will continue to work with that process depending on what we find.

MR. GROBE: We actually are doing an independent

third party lessons learned.

MR. CALDWELL: Right.

CHAIRMAN JACKSON: Well, that is good for Region III, but if in fact the program, our program, is not structured or implemented appropriately --

MR. MIRAGLIA: Madam Chairman --

CHAIRMAN JACKSON: Yes?

MR. MIRAGLIA: -- I think many of the lessons learned that we have looked at from other stations are addressing similar issues.

The design basis issue, certainly the corrective action program and the effectiveness of the corrective action program is an issue that certainly needs consideration, and that is in a test of either quality assurance, quality control, or self-assessments.

It's the rigor that one applies to that process, and I think the key word is to follow through on those actions. You have do more than identify your problems and find the root cause. You need to make sure they are effective fixes and follow through.

CHAIRMAN JACKSON: Well, I guess really that the issue is are we also, likewise, focusing on the follow-through.

MR. MIRAGLIA: I believe so, Madam Chairman, in terms of looking at the corrective action program and the

design basis issues and not only in our inspection program but also in the performance assessment process.

MR. CALDWELL: I just want to interject here. I don't want you to think that we had a weak inspection program, especially at the site. We had a pretty strong program. I mean we had identified operational concerns with this licensee. They had addressed those concerns. The plants were operating well, so we were focused on a lot of the issues associated with operating the facility.

We didn't focus as much on these type of issues that have been identified by the AE and subsequent inspections and that's what we'll get out of our lessons learned on this process.

CHAIRMAN JACKSON: So the real statement is that the program was effective for what it looked at?

MR. CALDWELL: Yes, I would say so.

MR. MIRAGLIA: And this is the same thing that we have indicated to the Commission with respect to our focus on and support of engineering to operations and didn't look at the design, so that focus has been ongoing for the past couple of years.

MR. GROBE: It is part of the improvement in the enforcement program and our -- we have an additional focus

on the quality of the corrective action system and I have staff working with Frank's staff to re-evaluate what we

refer to as the 4500 program, which is our inspection module for looking at corrective action --

CHAIRMAN JACKSON: Okay.

MR. GROBE: -- and improve that inspection procedure.

MR. CALDWELL: Included in the licensee's restart plan are system readiness reviews. These -- to look at design and material condition problems and I think John Sampson mentioned that they were doing these reviews on the 21 most risk-significant systems.

These reviews form the foundation in the restart plan for bounding the engineering and design issues but to further -- to bound the extent of the engineering problems the region elected to conduct an SSFI on the aux feedwater system and when we communicated that with the licensee, communicated to the licensee, they indicated that they would like to conduct that inspection with our oversight, and they were going to use a third party engineering group to do it, and that is consistent with the program that we have in place.

That third party review raised additional operability concerns. We are still -- our portion of the oversight is still ongoing, but it again raised further the question of the extent of condition and brought into question the 21 -- the system readiness reviews for the 21

risk-significant systems, because those systems had not, although they had been completed, the reviews had not identified operability issues so to date the systems that independent parties including the NRC, the systems that have been reviewed by independent parties have found operability concerns, but the ones that we have done internally have not, so that is why we still have the really significant question of the extent of condition of all those systems that haven't been independently reviewed.

As a result, I think Mr. Powers indicated that they have contracted with a group of industry experts. They chartered an Engineering Issues Review Group to conduct an independent review of all the engineering inspections reviews and evaluations conducted to date. The purpose of this review is to provide recommendations on what further activities may need to be done to bound the extent of the engineering problems, and the region stands ready to review the results, recommendations and further actions stemming from this independent review.

I believe it is due to be completed in mid-December. Next slide.

Currently the first unit is not expected to start before March of '99, as they indicated on their schedule. We continue with our manual chapter 0350 process. We conduct internal meetings on a weekly basis and public

meetings with the licensee on a monthly basis to discuss the status of their issues and any disagreements that we may have where they believe they are and where we think they are.

As I said, our objectives are in agreement with the licensee's restart plan. The 0350 restart panel has established 16 technical and programmatic issues to be resolved prior to plant restart, and we have scheduled a

number of team inspections to review the licensee's progress toward restart as Commissioner McGaffigan asked whether we are in their schedule or not. We are not shown on their schedule but we are in the schedule and we have been coordinating with them through the 0350 process on when to conduct those inspections. Next slide.

The specific NRC restart issues are grouped into three broad categories -- programmatic issues, system and hardware issues, and licensing issues.

The programmatic issues that will be reviewed are in the corrective action, surveillance testing, and engineering areas. As stated earlier, the region believes that the greatest challenge currently facing the licensee is understanding and bounding the extent of the engineering problems.

The licensee's initiative to conduct an independent engineering review should significantly

contribute to re-establishing confidence in the design and reliability of the safety systems.

Specific system and hardware issues will be reviewed to ensure that the systems are operable prior to restart including issues associated with the ice condenser, as we discussed.

The region continues to conduct a detailed review of D.C. Cook's corrective actions associated with the ice condenser and continues to coordinate with NRR and Region II in the review and evaluation of ice condenser issues at Westinghouse and Region II facilities.

Following my presentation, as I said earlier, Cindy Carpenter will present broader actions that the NRC is taking to address ice condenser operability at the nuclear plants.

I would like to reiterate that the region stands prepared to review the readiness of D.C. Cook for restart in a timely and objective manner. They have established strong lines of communication with Mr. Powers and his staff through the restart panel and the region and NRR are working closely to resolve the 2.206 petition concerns and licensing issues.

COMMISSIONER McGAFFIGAN: The licensing issues, are any of those pacing items? You heard me ask earlier, are they particularly complicated licensing issues or are they straightforward?

MS. CARPENTER: There are about five licensing issues right now that we do not have in-house right now. We do not have any restart issues in-house, but we are working to talk the utility. We know what licensing issues have been identified and which ones we need, and at this point in time we don't see any show-stoppers. We will be able to support them.

MR. GROBE: We're not critical path today, but to make sure that licensing didn't become critical path, Cindy has a weekly call with the licensee's regulatory assurance organization and meet monthly to go over all the licensing issue.

The licensee is currently behind schedule. They have two or three licensing actions that should have been in to us that are not, and we are in regular communication with them. We don't see any critical path issues today.

MS. CARPENTER: And there also we have made them aware of what our processing is and the time it takes for us to process, and our technical staff has been made aware of each issue and we are working with them also.

MR. CALDWELL: That is an issue that we discuss every public meeting. We go over the specific licensing issues and if they are late and if it were to be that we weren't going to be able to make it, then we would discuss that and they would know. Cindy?

MS. CARPENTER: As noted previously in these discussions, deficiencies were identified in the D.C. Cook ice condenser containment.

Shortly following this, the Staff initiated a program for corresponding inspections for these issues at the plants in Region II.

It should be noted that in addition to the D.C. Cook ice condenser containment plant in Region III the remaining ice condenser plants in the U.S. nuclear industry are located in Region II. Those are McGuire and Catawba, both operated by Duke Power Company and Watts Bar and Sequoyah, both operated by the Tennessee Valley Authority.

These inspections of Region II ice condenser containments were consistent with the major programmatic areas of weaknesses identified at D.C. Cook. The inspections included the ice condenser surveillance test program which includes onsite witness of surveillances such as weighing of the ice baskets, visual inspection of the flow passages, and ice basket damage.

The ice condenser corrective action program, which includes inspection of the ice baskets and inspection for foreign material, and also the licensee's practices in maintaining its ice condenser design basis as described in the FSAR and other design basis documents. This includes onsite inspection of modifications of the hardware against

the design basis.

The inspections in Region II are being conducted over the period from May of this year to March of 1999. The inspections consist of portions that can be done with the plant on line and the portion that is done with plant in an outage. To date, inspections have been completed at Catawba, McGuire, and the Sequoyah plants.

The last of the plants to have an outage during this period is Watts Bar, which plans to have its next refueling and maintenance outage in the February to March, 1999, timeframe.

Although issues identified during these inspections of Region II plants were similar to those encountered at D.C. Cook, it is important to note that these issues were not to the extent as those found at D.C. Cook. These issues, filed at the Region II plants included ice basket flow channel blockage, to bring in the ice baskets and dented baskets, but again to a lesser extent than those found at D.C. Cook.

The extent of the problems at these other facilities did not raise operability issues with the exception of Catawba. The Catawba licensee shut down Unit 1 due to emergent material condition concerns with ice blockage in one of the 24 bays.

The licensee was subsequently able to remedy the

problem and restart the unit.

Our experience with these inspections has highlighted several ice condenser containment technical specification and interpretation concerns and potential ambiguities. The NRC's Staff's Technical Specification

Branch has addressed this concern with the joint NRC Technical Specifications Task Force Owners Group.

The Technical Specifications Task Force is the mechanism that is in place to propose modifications to the improved standard tech specs. We understand that the three ice condenser containment utilities and Westinghouse are each contributing to this initiative and that the Westinghouse Owners Group is planning to submit to the Technical Specifications Task Force proposed changes to the improved standard tech specs in the near future.

The NRR staff is prepared to review their submittal. We expect to consider pursuit of these issues with the industry group in the forthcoming months.

That concludes my remarks.

DR. TRAVERS: That concludes the staff's presentation.

CHAIRMAN JACKSON: Okay. Thank you. Since we have referred to the 2.206 petition and the Union of Concerned Scientists is the petitioner in that regard, and I know he was not prepared to speak, but I would like to offer

Mr. Lochbaum an opportunity to make any comments that he wishes to make.

MR. LOCHBAUM: I don't have any. Thank you.

CHAIRMAN JACKSON: You have none. Okay. Well, thank you very much. Commissioner Dicus.

COMMISSIONER DICUS: Let me just make a quick comment. We are aware, of course, as you noted, that part of the reason some of the issues were not found by us sooner is that the emphasis had been on operations and only on the engineering aspects that supported operations, and that we are now focusing attention on design basis and configuration control, et cetera. But my caution is, and I have said this before, I hope, not at the total expense of looking at operations, that we are becoming balance in how we look at the plants. Just that word of caution.

CHAIRMAN JACKSON: Commissioner McGaffigan.

COMMISSIONER McGAFFIGAN: No.

CHAIRMAN JACKSON: Commissioner Merrifield.

COMMISSIONER MERRIFIELD: No.

CHAIRMAN JACKSON: Well, thank you very much. The Commission thanks both American Electric Power and the NRC staff for a very informative briefing. It is my hope that both the licensee and the regulator can learn from the experiences at D.C. Cook. In particular, and we have all spoken to it in one way or another, it would appear that

current activities to improve the NRC assessment and inspection programs may benefit from determining and considering the lessons learned at D.C. Cook, focusing on what could have been done to identify the sorts of problems we have been discussing sooner.

You know, from my perspective, the issues that we have heard today highlight the fact that performance indicators, at least as envisioned today, or as discussed to this point, will not cover the waterfront, and I think Mr. Miraglia spoke to that. And so it would appear that performance of some areas of endeavor, such as engineering, certainly can not be based -- or inferred based on macroscopic metrics, and, so, inspection, perhaps with some focus, heightened focus in certain areas, appears to remain a necessary burden in an effort to ensure that adequate protection is maintained. And I think the questions relate to engineering efficacy and strength where design basis

issues fit into a risk-informed baseline inspection program, and how do we determine the efficacy of licensees' corrective action programs as we are moving to having more dependence on those, not just in terms of problem identification and, as you would say, Mr. Miraglia, root cause, or program reviews, but, in fact, on the efficacy of those.

Obviously, the caution that Commissioner Dicus has

introduced is well placed, but we have a tendency to run completely one way or the other. But in the end, I always like to use the analogy of driving a car, and that is that, you know, we all can drive a car, we have a license, you know, we wear corrective lenses as we need it. We watch out for the other guy. Presumably, we don't drive under the influence. But in the end, we are operating machinery. And, therefore, operational safety and whether the machine does what you expect and want it to do, go hand in glove. And so I think that kind of balances what we are seeking to achieve as we re-normalize our regulatory approach.

We obviously will continue to monitor the progress made at D.C. Cook. It would appear that both the licensee and the staff have well established plans for restart action, and so we would encourage you to go forward, each with a questioning attitude, focusing on results, because the fundamental goal is to find and correct conditions, as necessary, to restore reasonable assurance that the systems will perform as designed when called upon to do so, particularly in the event of an accident.

Questioning that which you see and promptly correcting the problems you encounter is one way to reestablish and maintain that assurance, and I think that is as much a message for the licensee as for us. And, so, unless my colleagues have any closing comments, we stand

adjourned. Thank you.

[Whereupon, at 4:12 p.m., the meeting concluded.]