BEFORE THE UNITED STATES
NUCLEAR REGULATORY COMMISSION

IN RE THE MATTER OF: )
)
Public Meeting Between the U.S. ) Docket #50-346
Nuclear Regulatory Commission )
and FirstEnergy Regarding the )
Davis-Besse Nuclear Power Station )

NUCLEAR REGULATORY COMMISSION PUBLIC MEETING
August 15, 2002
1:00 o'clock P.M.

PROCEEDINGS HAD before the UNITED STATES NUCLEAR REGULATORY COMMISSION, taken at the United States Nuclear Regulatory Commission, Region III, 801 Warrenville Road, Lisle, Illinois, before Marlane K. Marshall, C.S.R., License #084-001134, a Notary Public qualified and commissioned for the State of Illinois.

PRESENT FOR THE NUCLEAR REGULATORY COMMISSION:

MR. JACK GROBE, Director, IMC 0350
Oversight Panel;

MR. JAMES DYER, Regional Administrator,
Region III;

PRESENT FOR THE NUCLEAR REGULATORY COMMISSION: (continued)

MS. CHRISTINE LIPA, Chief, Branch 4, Division of Reactor Projects;

MR. GEOFFREY WRIGHT, Project Engineer, Branch 2 Division of Reactor Projects;

MS. LAURA COLLINS, Project Engineer;

MR. JOHN JACOBSON, Team Member;

MR. SCOTT THOMAS, Senior Resident Inspector;

MR. DOUGLAS SIMPKINS, Resident Inspector.

PRESENT FOR THE LICENSEE:

MR. LEW W. MYERS, CEO, FENOC;

MR. STEVEN A. LOEHLEIN, P.E., Principal Staff Consultant, FirstEnergy;

MR. MARIO P. DeSTEFANO, QA Supervisor, FENOC;

MR. BOBBY G. VILLINES, Senior Nuclear Engineer, FENOC;

MR. KEVIN A. SPENCER, Licensing Specialist, FirstEnergy;

MR. STEVEN P. FRANTZ, Morgan Lewis;

MR. GERALD M. WOLF, Engineer - Licensing, FENOC.

PRESENT FOR THE LICENSEE: (continued)

MR. WILLIAM MUGGE, Manager, Nuclear Training

MR. TODD SCHNEIDER, Manager of Communications, FENOC.

CHAIRMAN GROBE: Good afternoon. My name is Jack Grobe. I am the chairman of the NRC's oversight panel for the Davis-Besse facility. This is a meeting of the NRC's oversight panel and FirstEnergy Nuclear Operating Company regarding activities at Davis-Besse. We particularly are focusing on today a discussion of the organizational management and human performance issues that resulted in the degradation in the reactor pressure vessel head at Davis-Besse. I would like to emphasize the importance of this meeting and this discussion. Davis-Besse has undertaken a restart activity that has many components to it, and we're going to be talking about that a bit later. One of the components is improving the organizational effect of this area. Metals crack, boric acid is corrosive. These are not new concepts in the nuclear power industry. They're activities that need to be identified, managed and resolved. In fact, what caused the head degradation at Davis-Besse was not corrosion or boric acid and cracking materials. It was the fact that it was allowed to

go unfettered for years. And we're looking forward to hearing the results of FirstEnergy's evaluation as to why that occurred.

I am going to turn the beginning of the meeting over to Christine Lipa. And Christine is the chief of the Division of Reactor Projects, Branch 4 in our Division of Reactor Projects here in Region III. Christine is going to provide some logistical discussion about how this meeting is going to be set up and run today as well as she and Scott Thomas, the senior resident inspector, will provide some background information on the Davis-Besse activities. So Christine?

MS. LIPA: Thank you, Jack. First of all welcome to FirstEnergy and to members of the public. And I am the branch chief here in Region III, and I have overall responsibility for the NRC's inspection program at Davis-Besse. We'll go through the rest of the introductions in a few minutes. I want to refer to the agenda that we have up on the screen here, and it discusses the purpose of the meeting and the first few items. Right now we are in

introduction and opening remarks. I wanted to talk a little bit about protocol before we get started. This meeting is open to the public, and the public will have an opportunity before the end of the meeting to ask questions of the NRC. This is considered a Category 1 meeting in accordance with the NRC's policy on conducting public meetings. In addition to public access here in the Region III office in Lisle, Illinois, we are also video conferencing this meeting to our headquarters office in Rockville, Maryland. At headquarters the video conference is also open to the public. Also we have arranged for one hundred phone lines for participants to call in and listen to the meeting. Before the meeting is adjourned, there will be opportunities for members of the public at all three spots, here in Lisle and headquarters and on the phone lines, to ask questions. Due to the various means of communication we're using today through phone lines and video conferencing, it'll be really important that all speakers use the microphone when talking so that people can parti-

cipate on the phone lines. We're also having this meeting transcribed today to maintain a record of what we will be discussing, and the transcription will be available on the web page several weeks after today's meeting.

Also on the NRC's web page today and the Davis-Besse web page we have the agendas and the handouts. The NRC agenda that you see on the screen here and then the handouts that the licensee brought with them today, those are already available on the NRC's web site for people who are calling in by phone. Also at the back of the room and here are the meeting feedback forms that you can fill out to provide feedback to us on how the meeting goes with respect to format or content or any other aspects of the meeting because we would like to improve the quality of our meetings if we can.

Let's start off with introductions. We will start off at the table here, and then we will go around the rest of the tables.

MR. THOMAS: This is Doug Simpkins. He is the resident at Davis-Besse. I am Scott Thomas, senior

resident inspector.
MR. DYER: Jim Dyer, regional administrator, Region III.
MR. JACOBSON: John Jacobson, panel member.
MS. COLLINS: Laura Collins, project engineer for Davis-Besse.
MR. WRIGHT: Geoffrey Wright, team leader for evaluating this particular area for the NRC.
MS. LIPA: Would you introduce yourselves?
MR. VILLINES: Bobby Villines.
MR. DeSTEFANO: Mario DeStefano.
MR. LOEHLEIN: Steve Loehlein.
MR. MYERS: Lew Myers, chief operating officer.
MR. SPENCER: Kevin Spencer.
MR. MUGGE: Bill Mugge.
MS. LIPA: Thank you.
MR. MYERS: We also have some staff here in the back. Todd Schneider, manager of communications for FENOC; Steve Frantz from Morgan Lewis; and Jerry Wolf, Regulatory Affairs.
MS. LIPA: We also have a transcriber today, Marlane Marshall. Welcome, Marlane. And also do

we have any representatives of public officials? I know I saw Gere Witt.

MR. GERE WITT: Gere Witt, county administrator, Ottawa County.

MS. LIPA: Welcome. Any other representatives of public officials? Okay.

Now, next we will talk about a brief summary of the major NRC activities related to Davis-Besse since March, 2002. And if you will go to slide 1, please? Okay. For background, this is a summary of some of the major milestones beginning with the March 6th date when the degradation was first identified, and over the next few days following March 6th the severity of the corrosion was realized. On March 12th Region III sent an AIT, which is an augmented inspection team, to the site. That was a five-person team of inspectors from the region, resident inspector and person from NRC's Office of Research. On March 13 Region III issued a confirmatory action letter to the licensee describing our understanding of the specific actions the licensee intended to take prior to restart.

And then on April 29th, 2002, the agency decided to use an IMC 0350 oversight panel. We have been having monthly public meetings with the licensee in Oak Harbor, Ohio, and we will continue to do so approximately once a month. Just for reference -- we discussed this in detail at the May public meeting -- this supplies an overview of the goals of the Manual Chapter 0350 panel. We will go through them all in detail. Go to the next slide.

And this is a continuation of the goals of our panel. And this is a listing of the NRC members that comprise the IMC 0350 oversight panel. You can see we have managers and staff from Region III and from NRR on the panel.

Next I will turn it over to Scott Thomas. He's the NRC senior resident inspector at Davis-Besse, and he will summarize the degradation issue for you.

MR. THOMAS: Acknowledging the fact that there may be members in the audience that have varying levels of understanding of the issue, this is kind of just a general description of power plant operations and reactor vessel head construction.

A power plant is composed of a primary loop and a secondary loop. The primary loop contains high pressure, high temperature water which transfers heat generated in the reactor to the steam generators. This transfer of heat in the steam generator causes feed water in the steam generator to boil and produce steam. This steam drives a turbine generator which generates electricity. The steam that has passed through the turbine is condensed and recycled back to the steam generator as feed water to begin the cycle anew.

The containment structure basically contains the primary loops in the reactor. It's composed of an outer shield building which is approximately two and a half feet of concrete -- excuse me -- rebar reinforced concrete, and the containment itself which is an inch and a half thick steel vessel that's within the shield building. Next slide.

This is a diagram of the top of the reactor. It shows the closure head itself which is the domed part. It shows the nozzles which

penetrate the head. It shows the lower support assembly which on top of the lower support assembly is the insulation, the head insulation, and above that is the service structure itself. Now, on the lower support structure are the weep holes, which I will go more into that in just a moment. Go to the next slide.

This is a typical diagram of a control rod drive nozzle. As you can see it penetrates the reactor vessel head. In the upper portion is a compression fitting, and down at the bottom is a J weld which secures the nozzle to the head. Go to the next one.

This is a picture of the top of the reactor vessel head in the 2000 outage. A couple things I would like to point out in this slide are the bolts that hold the head to the vessel itself, and you can also see the weep holes that I described earlier. These are approximately 5 x 7-inch rect- angles. And this was the area where the licensee did their inspections and their cleaning. There are a number of them around the periphery of the

head. What you see in red is a combination of boric acid and baric oxide that originated from the top of the vessel head. And that's all I have. Oh, one more slide. I am sorry.

This is a depiction of the drawing of the vessel head. You can see two nozzles and what's left of a penetration. The area that Doug is point- ing to right now is a depiction of the cavity itself that was found on top of the reactor vessel head. Basically that area right there is void; I mean there is nothing there. And all that was left at the bottom was the cladding on the inside of the reactor vessel head. And I believe that's all.

MS. LIPA: Okay. Thank you, Scott. We're ready next for Lew Myers if you would go ahead with your presentation.

MR. MYERS: Thank you, Christine. My name is Lew Myers. I am the FirstEnergy Nuclear Operating Company chief operating officer. We're here today to discuss the management and human performance root causes and how we arrived at these root causes if you will.

I guess the thought that I would have is that as we discuss these issues and come to an understanding of the management and its performance issues, as an organization we are very humbled and, in fact, embarrassed. I am personally embarrassed about where we're at today, and I think the depictions that are ahead indicate it all.

Our desired outcomes are we will talk about the root causes. And let me summarize those. They deal with management oversight. And what we will tell you today is if you look back in the history of our Davis-Besse plant, there has been some very good performance and there has been some good rigor. There has been some good management oversight. And we can clearly document where that started to deteriorate away.

The corrective action program is another major issue. That's the lifeline of a management program, to find and fix problems. And we identified several performance problems in the corrective action program where our corrective actions did not elevate to the proper level. We

classify our CRs as we get them, and we did not classify CRs properly nor did we perform the proper safety analysis of CRs we discovered.

From a technical rigor standpoint over the years we appeared to lose the processes or programs or thought processes that drive you into the 50.59 review or safety review process. So from a technical rigor standpoint you see that we often jump to the first conclusion, a conclusion that was in many cases production orientated. And that rigor of finding and fixing problems and not addressing the hard issues that once again deteriorated away over time well demonstrates from a program compliance standpoint we did not implement our program effectively. We did not have good ownership nor was our program technically adequate. It wasn't adequate to find and fix this problem, let's understand that. It did meet the regulatory requirements, and if used properly it should have been able to fix this problem.

And finally the most important thing that we want to talk about today is some of our key

corrective actions that we have been undertaking to ensure that we can return the plant to service in good material condition, and even then we can operate the plant safely and reliably for the long-term in a consistent manner.

I would like to take a moment to talk about the original root cause. When we had the event, we had the augmented inspection team come in. And Steve Loehlein next to me chaired the group of people that addressed a technical root cause that indicated that we had not as management effectively implemented our process and thus failed to address plant problems as opportunities arose. We had many opportunities to identify and fix this problem over the years and failed to recognize them. It was obvious that our processes if you will were somewhat broken and that we had not only -- when we had addressed problems we had not addressed the root cause early at the very beginning. So from a management standpoint we recognize that we need to make some changes in our management.

At that time my boss, Bob Saunders, the chief operating officer, and Gary Leidich, executive officer of FENOC, was our oversight organization. And we promoted Bill Pearce to the vice-president of Nuclear Oversight. And he meets regularly with our board now, and that will strengthen our oversight process. We completed the technical root cause because we knew that in the past we had overlooked issues that should have found and fixed this problem. So we couldn't depend on that same process solving the problem again. So we waited. We addressed the technical root cause. And then later on in the May timeframe I was assigned as basically a full-time employee of the Davis-Besse team for recovery. In the May timeframe I appointed a root cause team that was independent to go look at the management aspects of this event, and that's what we're discussing now. And that's the reason we waited so long. Really the reason we didn't do both at the same time is we knew that we couldn't depend on the management organization getting at the root cause because they

hadn't in the past.

So we chaired that team. We asked ourselves what kind of people we want on the team, the competition if you will. We found that we used the same leaders, Steve Loehlein next to me. Steve is from our Beaver Valley plant trained in root cause analysis who participated in a lot of the root causes we have done there in a very good manner. We wanted to get some people from our other plants, the FENOC plants, to provide input so that we could not only have an independent study, but we could take these issues that we were finding back to our other plants and make sure the same issues don't exist. We have some oversight support on the team to look at how our oversight failed. And then we wanted to bring in some process people that are recognized as industry experts. So we hired Conger & Elsea who use a root cause method called MORT which we will talk about later on. Then we wanted to involve some of the Davis-Besse management and people to ensure that we got good buy-in on these issues that we would come up with. That's how we

formed the team that reported directly to me to develop this root cause.

We also wanted to make sure we went down the right track. So during the middle of the root cause process we asked the Institute of Nuclear Power Operation to have some other utilities come in and evaluate the process that we were taking and make sure that we were looking at things from a broad perspective and the right depth. So we brought people in from several other utilities. Then at the end of the evaluation, the root cause evaluation if you will, we brought in an organizational effectiveness expert to help us decide some of the corrective actions that we might take as we moved forward. And then we staffed from the Lincoln Company two full-time people that have helped us develop and make sure that our corrective actions are effective. And they're organizational development consultants. They're on my staff now.

The team consisted of some really pretty good people. We had Steve Loehlein once again from Beaver Valley who was on the team. Bill Babiak

from Perry. He is a long-term root cause type person from our Perry plant. Mario DeStefano is on our team from Perry. Mario came to us -- He is a root cause person from our quality group and was a previous maintenance manager at one of our plants. Randy Rossomme from our Beaver Valley plant, the oversight agents. Lesley Wildfong was from the management oversight process group, the MORT group if you will. This is the group I was talking about. They do instant investigations on all kinds of industry events. So we wanted to bring in some very high level technical experts, and we did that there. Bill Mugge is from our Davis-Besse plant. He's spent some time at INPO recently and came back as their training manager. He is an employee there. Joe Sturdavant is at our Davis-Besse plant also. Bobby Villines is from Davis-Besse in the plant engineering area. They're both more than qualified. Dick Smith came in. Dick is a manager with Conger & Elsea and has been involved with some major events. And he came in and worked with the team for a couple weeks. Then Dorian Conger and Ken

Elsea came in. They own the company. What they did was make sure that we were analyzing things correctly, putting them in the right baskets in the trees, and just provide some general management oversight to the team. And then Spyros Traiforos who is a Ph.D. that we used to help us was an experienced root cause Ph.D. in materials. A lot of experience there. So we brought him in also. So we think the team was a very credible team. And it was the best team we could find to put together, and we're very pleased with the qualifications of people on the team.

That concludes my introduction. What I would like to do now is turn it over to Steve Loehlein. Steve is going to talk through the process if you will that we went through. For people that are not familiar -- and many people here I know are -- we will go through the process, and then we're going to go through the various root causes and how we concluded the root causes were valid, the basis for that. I will turn it over to Steve.

MR. LOEHLEIN: Thank you. I want to make sure that I have this -- Can everyone hear me fine with the microphone?

MR. DYER: If you have got the bright green light, you should be good to go.

MR. LOEHLEIN: How is that? I will be going through a number of slides. I want to make sure --

AUDIENCE MEMBERS: If all the speakers could do that, we'd appreciate it.

MR. LOEHLEIN: Okay. Again thank you, Lew. And I would like to say a few things up front. First on behalf of the team I want to recognize them for the very difficult job this was for them. We painstakingly reviewed many documents, a lot of interviews to form the conclusions that we'll be sharing with you today. We believe in the results and we believe in the product, and we'd like to share them with you. I think it would probably be very positive for us if as I go through this presentation that unless there is a point that I am making that needs clarification, there's a few areas in here where it'll be appropriate for me to stop

and ask for questions, but there's a certain flow to this I would like to maintain. So if that's agreeable with everyone, I will pause when I think is a good place to interject questions. There will be certain conclusionary points.

CHAIRMAN GROBE: Thanks, Steve.

MR. LOEHLEIN: We're now on slide number 9 for whoever might be looking at this from a computer or whatever. What we have shown on this slide is the initial statement that was used in our team's charter to focus our thoughts to. What we wanted to know is we wanted to understand why over a period of years Davis-Besse personnel failed to identify corrosion of the reactor pressure vessel head base metal. Now, this focused objective resulted in an investigation that led to very broad understandings of the issues, and that's what we'll be sharing with you today.

Slide number 10. We thought we would share with you right up front the overriding management oversight root cause statement. As stated there, there was a less than adequate

nuclear safety focus at the station. The focus was on production established by management that which combined with taking minimum actions to meet regulatory requirements resulted in the acceptance of degraded conditions. Now, before we get started into all the supporting conclusions -- and there are a number of them -- I think it's really important that we understand the context of this root cause statement.

First, a production focus has to be understood as it relates to nuclear power. The station is a production facility, and its desire to produce power is an assumed priority for the business. However, in nuclear power nuclear safety is the primary objective of everyone involved with nuclear power, and this takes precedence over the desire to produce electricity. Now, in the past Davis-Besse had -- We will show you in the late '80s and early 1990s the station had good production numbers and still displayed the proper concern for nuclear safety. But what our presentation is intended to share with you is our conclusions regarding what

changed and when at the plant that allowed this loss of safety focus.

Slide 11 is just a header slide. I will tell you what we're going to be doing in terms of presenting the process. I will be first discussing how we developed our scope, how we obtained data, how we performed our data analysis and then finally formed our conclusions in each of the areas.

First in terms of scope development, we had before us the results of the technical root cause that were completed in April, and it provided us with some very clear clues. One was that we had errors that occurred over several years, that program effectiveness in a couple of key areas needed to be assessed, and that the potential for boric acid to cause damage had been an issue for this station in 1998 and 1999, the pressurizer spray valve in particular, yet that event did not result in corrective action that allowed the station to identify this corrosion sooner.

Next slide please. We're now on slide 13. The techniques we used are recognized root

cause analysis techniques. We used causal factors charting, we used hazard barrier analysis techniques and also, as Lew mentioned before, the management oversight and risk tree technique. This is a very effective tool in evaluating management performance in particular. Then the sections we used from there are listed there. And these result in recommendations for corrective actions.

In terms of data sources the technical root cause analysis report was useful from a couple of perspectives. One, it summarized lots of information on the subject up until that point. It also had a lot of reference information that was readily available to us. The total number of inter-views from which we were able to extract information was over one hundred and twenty. Over the course of the investigation we examined approximately seven hundred documents. The data we examined took us across more than twenty years. The event and causal factors chart contains nearly a thousand discrete items of information, and in full scale on a CAD machine it prints out to 126 feet long. All

the references that were used and tied to the facts are numbered and filed so we can tie -- from our conclusions we can go back to the facts that supported them and back to a file that shows us where we got those facts.

The next slide, 15, is a cover sheet. What I want to say is on slide 16 which talks about the sequence that I will go through in our actual data analysis.

CHAIRMAN GROBE: Steve, would this be an appropriate time? It seems like a break where you talked more about process and now you're --

MR. LOEHLEIN: Okay.

CHAIRMAN GROBE: I had two questions, actually one question and then a request that you go into a little bit more detail on one item. On page 10 you said there was less than an adequate nuclear safety focus and the focus was on production.

MR. LOEHLEIN: Yes.

CHAIRMAN GROBE: If you could include in your dialogue that you're going to go through also your thoughts on whether there was an inordinate focus

on dose minimization, I would appreciate that in addition to nuclear production.

MR. LOEHLEIN: Yes, I can comment on that. Surely.

CHAIRMAN GROBE: And the second thing if you could do now, if you would talk just a bit more about MORT and the MORT analysis approach? Folks on this side of the table are quite familiar, but many folks in the audience probably aren't.

MR. LOEHLEIN: Okay. The MORT technique -- And I am personally not an expert in it. I am an expert in root cause. Not expert, but I am more qualified in root cause techniques. MORT is specifically geared toward management-type investigations. We had four or five members on the team that are qualified in it. But what it does is it exams or it asks questions in a tree analysis type of arrangement that takes you through a process of asking questions about how is the process put together, how does the organization use it. So it takes you from cradle to grave, infancy to implementation on processes and personnel performance. So

there are areas that are dedicated to process, there are areas that are dedicated to how people make errors, and there are areas dedicated to how management assesses risk. And those are the kinds of areas that we targeted in this investigation. And that's what I will be going through. Is that an acceptable upper level discussion of how it's arranged?

CHAIRMAN GROBE: Yes, that's fine. Are there any other questions before Steve continues?

MR. DYER: Yes.

MR. LOEHLEIN: It's a tree and branch type of thing. There's upper level questions. It'll ask -- For example, there's one on management policy where it says management policy, the first thing is it written, then how is it communicated and so forth. So it goes down the branches and gets more detailed. If you get through the process of answering these questions that are on the branches of this tree, it's like formulating where the breaks in these branches are and, therefore, there is a failure in the process.

MR. DYER: I have one question. In the scope in your -- On page 12 you talk about the scope development map. And you talk about -- the last subject bullet or star there talks about the potential boric acid that caused damage in 1998-'99 which is the timeframe with the spray valve RC 2 which we had some enforcement action on. Also earlier in the year -- Earlier in the life -- I think in the early '90s there was a boric acid corrosion problem with the -- I believe it was the high point vent to the steam generators. Did you look at corrective actions from that also?

MR. LOEHLEIN: We took a look at how the organization responded in several ways back in that timeframe. I think it was 1992 the containment air coolers had issues with boric acid accumulation. And we will be talking about that contrasting with how the organization reacted to that situation as compared to how it reacted to situations in the late '90s. We will be talking about that later in the presentation.

MR. DYER: Okay. So that's sort of the before

and after then? Is that what you are telling me?

MR. LOEHLEIN: By comparison it shows how the organization had an awareness and supported with technical analyses and a sense for safety focus and so forth at that time period in response to what the plant indicated as compared to the difference in how it was approached in the late '90s. So if we don't answer that adequately at that time, then we will talk to it more then.

MR. JACOBSON: I am curious. Touching on the same thing that Jim just mentioned, there were indications in documents that Davis-Besse was aware of the potential for corrosion on the head weld before 1998 and '99. I am wondering why you picked that date here in your slide to say that, you know, it was a potential from there.

MR. LOEHLEIN: The reason why it appears on the slide -- And you will see when we get to the timeline discussion. '98-'99 is only relevant to the pressurizer spray valve RC 2. And the reason it's relevant and the reason why we thought it was so key here is because that event led to

enforcement actions and numerous corrective actions on the part of this site. Yet immediately after it occurred and after these corrective actions had taken place, 12RFO occurred. And we saw the slide with the boric acid on the head. So we said the obvious question is how could the site have an experience like this spray valve event and not have made the connection to what was going on on the reactor head. So that made that particular event really important to understand why that was not effective.

MR. DeSTEFANO: Plus we were using the pressurizer spray valve event as a benchmark for ourselves as a team. Because as you mentioned you read that report, it's very obvious that that could have -- the actions from that should have prevented anything else and did not. So we used -- we made sure we read that, understood it, found out why it wasn't effective. So that we know we couldn't do the same thing as far as actions go; we had to go much further than that. So we also used that document internally with a full understanding -- so

we had a full understanding of what happened there.

MR. JACOBSON: There is no implication here then that you all were unaware that there was this potential before '98.

MR. LOEHLEIN: That's correct.

MR. DeSTEFANO: That's correct.

MR. LOEHLEIN: That's a correct interpretation.

MR. MYERS: If you look at the report there is a list, a couple pages of all the documents and documents back out from the '80s to now.

MR. JACOBSON: Right.

CHAIRMAN GROBE: Okay, Steve.

MR. LOEHLEIN: Thank you. Going to now the data analysis and end result section, we have got this broken into five parts. And we decided to present it this way because this is pretty much the way the team evaluated these. It wasn't exactly in this sequence -- there was some overlap -- but pretty much this way. It started with the boric acid corrosion control and in-service inspection programs and assessment of those, went to how the site handled technical information, the corrective

action program effectiveness, hazard assessment -- which in this case we'll talk about that 50.59 safety evaluation type of hazard assessment process -- and then the management oversight and risk assessment process.

So on slide 17 I think we're on now, the way we evaluated the boric acid and in-service inspection programs was to apply the hazard-barrier-target analysis. We applied it to two refueling outages, the 11RFO outage and the 12RFO one. So that's 1998 and the year 2000. In it the model assumed that the boric acid was the hazard and that the reactor head was the target. And for those that maybe aren't real familiar with how this is done, you identify these barriers, and many of them are procedure steps and things like that. But the key ones that I think were worth mentioning here are the design of the system, training that people get, inspection for leaks and corrosion, cleaning, and corrective actions. We looked at nearly fifty in all barriers in the boric acid in-service inspection programs.

For those two outages the conclusions appear on the next slide which is 18. The first statement I would like to make is that the boric acid and ISI programs did not meet expected standards. However, the process, we concluded, was adequate to have prevented the damage to the head. The key failed barrier was the failure to clean the head. That failed barrier prevented us even from analyzing what our behaviors would have been like at the station if the head had been cleaned and we would have been able to evaluate whether the nozzle inspections were adequate and so forth. But a number of barriers beyond there could not be evaluated.

Another thing that we concluded was that the reactor head was not a focus in the process as we would have expected in response or in the aftermath of the issuance of Generic Letter 97-01. Nonetheless, in closing we concluded that the programs, had they been followed as required, they would have been adequate to have prevented this serious head damage. And I will say at this point as we go through these conclusions on programs and

processes is that the processes themselves even if they were not state of the art at that time were adequate to have prevented the damage, but implementation of them was less than adequate.

MR. MYERS: Again we are not saying that the program or process met the requirements. We are not saying that at all.

MR. LOEHLEIN: That's probably a good clarifier here. As far as a rigorous root cause analysis technique, the real measure for adequacy is not whether it meets all requirements; it's whether it would have succeeded in preventing the unintended outcome, which in this case was the damage to the head. And so if you purely apply the process, that's the definition of adequacy and that's the one we used. So you will see us comment today in two ways. One, we will recognize that our processes in some ways were not everything they should be, but we may still have concluded had they been followed as required they would have been adequate to have prevented the event. If you don't have any questions on this at this point, I will

move on to handling tech information.

Handling technical information is on slide 19. We evaluated using the MORT technique. Now, what this really examined is how is information received and how is it processed and ultimately incorporated into the site processes. And in this case what we looked at was how the station performed through the history of industry knowledge with boric acid. So this took us back into the 1980s. And really it was the reason why our earliest date points on our causal factors chart went to the 1980s when issues on boric acid were first being communicated of relevance.

The next slide shows our conclusions in that regard. In this case also we concluded the process itself for disseminating and incorporating technical information was adequate; personnel failed to correctly apply key industry information. By way of example, really what we found is only certain elements of the information would be incorporated in the process. As an example, the fact that dry boric acid on a hot component like a

reactor pressure vessel head would not by itself cause corrosion was understood by the organization. But the associated potential concern for corrosion if boric acid was wetted from beneath was not adequately captured. That concept was not captured by the site.

Another key item was the heavy reliance by the site on the fact that nozzle leakage was a low probability for them as a reason to not be concerned was also another key ingredient. Low probability meant low concern.

The next thing we looked at was the corrective action program. Again in this case a primary evaluation tool was the MORT technique. And we did use some change analysis with it as well. In this case what we chose to do is break the process up into steps that are clear. In a corrective action program process what you have is an initiation step by the person who identifies it, there is an initial operability review done by the control room, and then after that there is a review by management for categorization. It's given an

initial category and gets another review for categorization. From there it goes to someone who works on it, determines the cause and corrective actions to be taken for it. And then on the back end of the thing is the process should provide a means for trending and determining effectiveness.

Now, our primary focus for quite a few condition reports, some of them are referred to as potential conditions adverse to quality which is a term that was used at the site before the MORT. Now, the common term condition report is used generically really for both types of forms. We looked at the issues of boric acid on the head, the containment air cooler cleaning frequency issues, the plugging of the radiation monitor filters. We looked at the panel handling of the pressurizer spray valve, RC 2, and we looked at the reactor coolant system unidentified leakage, those five major areas for condition reports.

Slide 22. Once again the process was found to be adequate to find and fix problems. In all these cases there was an adequate number of

condition reports generated to have resolved these issues. They were adequately identified and documented as nonconforming conditions. However, implementation was less than adequate. Personnel at all levels did not effectively implement the corrective action process. It started off at the front end in which operability impact was under-estimated. Categorization did not recognize the significance adequately. The low categorization lent support to shallow cause analyses. And the corrective actions, therefore, tended to focus on symptoms, cleaning, for example, of containment air coolers rather than trying to eliminate the cause. And trending of recurrent equipment problems was not effective either.

MR. JACOBSON: Steve, before you go on to the next evaluation, you mentioned that there was a sense that this was a low probability. And I am curious as to what did you find as the basis for that feeling on site?

MR. LOEHLEIN: It was a reliance on analytical support that the probability of a leak was low. In

our interviews and so forth that is the feedback that was received. And the interview record is that the probability of a leak was low because of the plant's relative age.

MR. DeSTEFANO: More specifically it was known and well documented -- I am including by Commission documents -- that cracking will occur at some point in time. So the industry documents specifically done by the owners group for these design plants went ahead and tried to specifically analyze when cracking would occur, under what conditions, and who was most susceptible to it. When the station heard the good news piece being this is an age-related item -- believed to be at the time -- and the station is one of the younger ones, we will see it elsewhere first. So the pressure on keeping the attention on that was backed off waiting for other folks to find it first.

MR. JACOBSON: This is a B&W report?

MR. DeSTEFANO: Correct.

MR. LOEHLEIN: Thank you, Mario, for that clarification.

CHAIRMAN GROBE: I am not sure that completely answers the question. The probability of most untoward issues to occur is very low. I mean the plants are designed well, they're maintained well. So the probability of unlikely things that occur, unacceptable things to happen, all unacceptable things, is very low. There's got to be another piece to that. It went beyond a recognition that the probability is low to a level of it can't happen, a complete denial because the evidence was clear that there was something going on. And I think you indicated that the corrective actions from your RC 2 should have allowed the people to be in a position to recognize that evidence and they didn't. So they didn't have a recognition that it was low. It seems like there was something more, like a recognition that it's not going to happen, it's zero.

MR. DeSTEFANO: We had evidence of both at the station, Jack. From most interview data the pervasive attitude was that it's not going to happen here.

CHAIRMAN GROBE: Okay.

MR. DeSTEFANO: However, the folks who were responsible for responding to condition reports understood what was going on in the industry, and they realized that the possibility of cracking is there. However, it's okay for now to leave the boric acid on the head because that's the context where we were talking about the leakage underneath the boric acid. And that was where the failure was. They decided it was acceptable to leave the boric acid there without proving that there was no leakage at the time, instead relying on, well, it's still early in this issue and we probably don't have any leakage yet. So that's the context of how that was justified.

MR. LOEHLEIN: I think the other piece of it was this selective understanding of the technical information that the hot head was going to mean it would not result in corrosion anyway. That was the other piece of it, I believe, Mario.

MR. JACOBSON: Was this consciously used then to arrive at the position that you didn't have to

look, that you didn't have to look at the head, you
didn't have to inspect under the head? Was that a
key to concluding that?
MR. LOEHLEIN: You use the term consciously.
I mean in our type of investigation we really are never in a position to judge peoples' motivations. We certainly can tell by the end of this investigation that -- and that's what we're leading up to -- that the organization had a mind set of supporting this production focus and what nuclear safety meant to them in their minds. And if I was going to characterize it collectively, it just was a -- it was a culmination of factors. We see a less than adequate rigor in assessing the technical issue and so many other pieces that fit together with not having the right nuclear safety focus. Jack pointed out, sure, a lot of the nuclear safety issues are low probability. That doesn't mean they can't -- they aren't treated as real possibilities. That's our job to do that. Anything you can add to that, Mario?
MR. MYERS: I also think we wrote the safety

evaluation back in, I think, '88. Then 97-01 came out. If you look at the documents that were signed off, this is not a nonconformance or stuff like that. It was never a recognition that there was a commitment to 97-01 and the items in 97-01. It was like it was not a regulatory requirement. And we got to the point -- Meeting the regulatory requirements is okay. We got to the point where they were justifying meeting the regulatory requirements not realizing that it was a regulatory requirement. These are things that -- I don't think we ever recognized 97-01 as a regulatory requirement, something we committed to and internalized. Is that fair?

MR. LOEHLEIN: Yes.

MR. DeSTEFANO: It's also true with 88-05 also.

MR. DYER: Steve, I am having a problem. I don't know if it's terminology or what. I don't know that I really understand what you mean by hazard assessment process.

MR. LOEHLEIN: We didn't get on that slide

very much yet. It's been up there, but we have been kind of backpedaling here.

MR. DYER: I didn't know if you had gone to that.

MR. LOEHLEIN: That will be our next slide. I am doing a mental check. What slide are we on? We're on 23, the hazard assessment process. I will talk about that next.

CHAIRMAN GROBE: Any other questions? Okay. Go ahead, Steve.

MR. LOEHLEIN: Okay. Now, the hazard assessment process within MORT can be looked at from personnel safety, and it can also be looked at from other ways as we did in this case which is nuclear safety. And our focus was really treatment, 10CFR50.59, a safety evaluation process which all of us in the industry are aware of. This is what we do to examine nuclear safety from the perspective of how risks are analyzed for their significance. So again in this case our focus was on the 50.59 process in two ways. And that is the process itself, and the other thing is how do you

know when you're supposed to begin that process.

MR. MYERS: I call this decisionmaking, you know. When you have a problem and you get in the 50.59 process, are you meeting your licensing basis, your design basis? You have to ask all these questions to determine if you are. And it seemed like we didn't even go to that process, you know. We're not asking these questions. Rather than doing that we were justifying why something was operable. Is it nonconforming? We still are meeting our license basis. Why is it operable instead, you know? That's what this does, decisionmaking. Is that fair?

MR. LOEHLEIN: Yes. What we did here we looked back in time all the way back to the '80s timeframe up until the late '90s and into the current process. And we concluded that once again the hazard analysis process itself, 50.59 if you will, contained the necessary elements to ensure that the design licensing basis was maintained. What changed over time was the process described and required for entering that evaluation process

became less restrictive over time. And Mario is going to be able to expand on this some because he investigated this, he and another guy in quite some detail. But what we found was in the late '80s and early '90s the recognition of the applicability of the safety evaluation to issues like boric acid on the head and so forth were recognized and the process was entered, and these types of things were treated as potential nuclear safety issues. Whereas by the late 1990s -- and we will go into the areas later, the issues with the containment air coolers and radiation monitor filters and the boric acid on the head -- the concept that the safety evaluation process needed to be entered wasn't even considered by the organization. Mario, you want to say some things about that change in time?

MR. DeSTEFANO: Yes. Basically the process and the structure for performing safety analysis has been present at the station constantly. And then again it's one of those processes that if applied would work. What we saw in our investi-

gation were several times -- One, for instance, in 1987 when after having some leakage of steam generator penetrations -- I am sorry, pressurizer penetrations, the plant manager specifically requested an independent safety engineering group to perform analysis of the effects of that kind of leakage. So they went off and applied safety analysis techniques to that issue. And there is a good example of did the station understand that boric acid issues were there early? Yes, because they extensively referred to information known as 86-108 in that report and said basically they didn't find any problems with the current conditions. However, under even very hot metal conditions boric acid -- severe boric acid corrosion could occur if there is also an active leak underneath it or a leak of sufficient quantity to where it cools the base metal to the state where it becomes a very aggressive corrosion rate.

Another example would be in 1991 there was boric acid found on a reactor vessel head due to control rod drive flange leakage. That was

identified using the corrective action process at that time. They were the potential conditions adverse to quality. That process had a waiting factor system in it to where the analysis of the issue itself was applied a rating based on its significance right up front, and the higher the rating the more stringent the evaluation and analysis techniques that would be applied. And that full condition report was, in our view, done the way they all should be done. A 10CFR50.59 applicability review was performed, all questions were no, so a safety analysis was not performed. The item was determined to be rework. They removed all the acid from the head, fixed the flange leaks and started the unit back up leak free without any boric acid or any conditions that hadn't been evaluated.

Now, what happened, though, in the later years, in the mid-'90s and 2000, you don't see that occurring any more when a condition report identifies leakage on a reactor vessel head. So that was the stark contrast. And what we found is that even

though the base procedure for performing analysis was still there, the procedures that fed into that were no longer as explicit as they used to be. The older procedures gave examples on when you would go into safety analysis review. They didn't always give you a list. They just gave you the types of situations you might be in where you want to go verify that your design analysis is still adequate, that you are not giving someone an answer that's contrary to your design basis. And in the later years the procedures became less explicit, didn't have examples, didn't have discussion on when you would go out into the safety analysis base. And then, interestingly enough, those other procedures also had less review and approval signatures associated with their processes. So less people had the chance to be another barrier and ask folks to go off and do more thorough analysis. So there definitely were examples where the station understood what was going on in the industry, they were very active and interfacing with the owners group associated with the concerns with both

primary water stress corrosion cracking and the boric acid corrosion. However, when it came time to analyze their own problems, that's when they fell short.

MR. MYERS: Haven't we also found some cases where -- At our Davis-Besse plant don't we have some guidelines that are different than our other plants?

MR. LOEHLEIN: There's an implementation guide for that kind of a process, right. Bobby can probably answer that more specifically coming from Davis-Besse. But it's the guidelines talking about implementing the corrective action program.

MR. VILLINES: Right. We do have a guideline which implements the FENOC common process in general, general portions of that. We're taking some of the industry guidance and expanding upon what's in the guideline to a large degree.

MR. LOEHLEIN: I think that's where we had the concern about the categorization levels and so forth. Particularly, I think, in effectiveness reviews and in the equipment trending is where we

had issues with the guidance.

MR. VILLINES: Yes.

MR. MYERS: So we see issues that we think we'd classify as more significant at our other plants that were classified as conditions not adverse to quality at our Davis-Besse plant.

CHAIRMAN GROBE: I am still struggling with the connection between the safety evaluation process and the 50.59, what you said, Lew, a few minutes ago; and that is routine day-to-day decisionmaking and how you approached that. Could you help me understand the connection between 50.59 and decisionmaking on a day-to-day basis?

MR. DeSTEFANO: Well, you're going through the same struggle that we did applying the MORT process. Since the MORT process is very rigorous, we really wanted to use its rigor to help us analyze as many of these situations as we could. So the hazards analysis branch of MORT was the closest technique that we could find to really pushing the safety review portion of this. And that's why, as Jim pointed out, the terminology is a little rough.

But we’re basically using some of the terminology from MORT; however, rather than its original intention which appears to me to be if you had an industry accident, you are trying to figure out what is the hazard. Maybe it’s an oxygen deficient atmosphere. The MORT wording fits perfectly to that. In our case, though, the questions were perfect for taking us down the road of safety evaluation. So we utilized that branch of the system. So that’s why we’re calling it hazard analysis synonymous with safety analysis in 50.59.

MR. DYER: I guess in the way I understand it, the way you are saying that it sounds to me like this is understanding and using your licensing and safety basis for your plant.

MR. MYERS: Yes.

MR. LOEHLEIN: Yes.

MR. DeSTEFANO: That’s it.

MR. MYERS: That’s it.

MR. DYER: The age old question we wrestled with in the ’90s was do licensees fully understand what the licensing basis is for their plant.

MR. MYERS: What you see is we spent a great deal of time where it appeared we really understood that and you can see it in the quality of documents that you reviewed. And then in the mid-’90s the quality of those documents go from let’s do a safety evaluation to see if this is a problem to justifying why the thing is operable. So you see it’s a very significant change in the level of detail and understanding and your decisionmaking process to get there.

MR. DeSTEFANO: I guess one of the most direct examples is the -- I am trying to get my timing correct here. I believe it was after Bulletin 97-01 when the -- No, it was earlier than that. I can’t remember the date. However, there was a safety evaluation presented to the Commission on behalf of the B&W owners group that the station adopted. And basically it said in that safety evaluation that the issue of cracking is not a short-term issue and the visual inspection that is required by Bulletin 88-05 would identify a cracking if it did occur. Then when the station

found leakage and had boric acid on the vessel head, a condition report response justified operating with boric acid on the head and acid on the head without performing an examination of surfaces below it. That was obviously contrary to the safety evaluation that had been submitted previously. And no analysis or justification was performed in the 50.59 space. It was just a discussion in the condition report response that said because of the high temperature it's okay to leave the boric acid there. So that's an example.

MR. JACOBSON: This was a 1993 safety evaluation, B&W?

MR. DeSTEFANO: I believe so. I think it was early '90s.

MR. LOEHLEIN: And I think the condition report you're referring to is a '96 timeframe.

MR. DeSTEFANO: Correct. 551, yes.

MR. JACOBSON: I think I heard you say that you found a deterioration of your 50.59 process in the mid-'90s. Did I hear you say that?

MR. LOEHLEIN: Not the process itself.

MR. DeSTEFANO: No, it was the procedures -- say the condition reporting procedures that would tell you to go perform a 50.59 review. The deterioration was in the condition reporting procedure.

MR. LOEHLEIN: The entry dates to the process that you rely on to apply. Once you were in the process that was not really the problem.

MR. DYER: I guess following that same line of reasoning I had a question regarding the overlap if you would between handling the technical infor- mation and then the hazard assessment process as it would relate, say, to the 50.59 issue. And the question I have is -- one is are you also saying that you aren't -- that once you make a response to, say, a piece of technical information or evaluate a generic letter or an info notice or bulletin or some sort of generic industry communication that you don't keep track of it as to what you said originally or whether or not you later on crossed the threshold of the area of concern that's raised in that technical information?

MR. DeSTEFANO: We found both cases. Obviously the station has a tracking system for commitments, and it's used. But we found some cases where commitments were not entered into that system after responding to bulletins. So yes, the information that was documented previously was not bounced off of what the current line of thinking would be.

MR. MYERS: We have a document we use at two of our other plants called Tech 19. When we get into if we classify a CR correctly to high level, we go through a decisionmaking process that kicks us out all these issues. The same document was not used at Davis-Besse. And it drove us into doing a more stringent safety analysis when we found this problem. First, we would have had to classify it properly. Second, we would have had to go through the right questions and answers. It's just a check sheet we use to make sure we go down the right path, you know. We went just the opposite here.

CHAIRMAN GROBE: So you are not actually talking about formally entering 50.59. What you're talking about is in making decisions and evaluating

hazards, considering the types of issues that 50.59 would require of you?

MR. MYERS: Right.

MR. LOEHLEIN: That's it.

MR. MYERS: That's it.

CHAIRMAN GROBE: On all of these CRs or most of them I would think the answers to the screening questions for 50.59 would be no and that you wouldn't do a safety evaluation.

MR. LOEHLEIN: Right.

CHAIRMAN GROBE: What you are saying is using those concepts, whether or not the staff uses those concepts in decisionmaking.

MR. MYERS: Right.

MR. LOEHLEIN: That's correct.

MS. LIPA: I guess I was thinking of it differently. For that one example, the '96 CR, are you saying that that B&W owners group became part of your licensing basis and you later had a condition that was different; it may have really needed 50.59?

MR. DeSTEFANO: Well, let's see. It was not

directly referenced in the safety analysis report, that response. It also wasn't placed in the commitment tracking system. So it would not have been considered design or licensing basis by the reviewer. What we're saying is it certainly should take the person down the path of evaluating what the previous stance on these items are.

MS. LIPA: Okay. Thank you.

MR. LOEHLEIN: Okay? Now, Jack, I don't know what you and your staff had in mind in terms of potential break. But my sense is from putting this together that going through the management oversight and risk assessment part of this is going to take a little bit of time. I would say my guess is twenty minutes or so. And so if you want to take a break, this might be the time if that's the kind of timeframe we're talking about.

CHAIRMAN GROBE: Okay. Let's do that. Let's take a break. Let's make it very short. Five minutes?

(Following an interruption the meeting was continued as follows:)

CHAIRMAN GROBE: Why don't we get started. Okay, Steve, go ahead.

MR. LOEHLEIN: For everybody's interest we're on slide 25. And we'll talk about data analysis. We will take a minute to express the process we used to ultimately understand the reason for the errors in management oversight. And the way we began our understanding of evaluating or understanding this started from the technical root cause report. And that report identified plant conditions that should have been signed as potential larger problems. We have got them listed there. In that original or technical root cause report -- it was figure 26 -- it talked about reactor coolant system unidentified leak rate, containment radiation monitor filter plugging, frequency of containment air cooler cleanings, and boric acid accumulations on the head. And it showed in the timeline which went from about 1995 to 2002 how those things were going on. And what we did from that initial understanding, we saw some patterns and we decided to look at along with other things the pressurizer

spray valve we talked about, how that was handled by the station prior to the time that the corrosion of the fasteners was found and turned into an event. We examined these issues as missed opportunities from the perspective that they were performance -- human performance errors but at the management level. We first started to examine these as task performance errors.

Slide 26. Originally I put this slide in ahead of the figure that was next. And having thought about it, I really think it would be better if we look at this after we look at the figure which is on sheet number 27. In the room here we have a large poster-sized hard copy of this. The staff has 11 x 17s, and I think there were probably some extra copies available to those in the room. This will appear as part of the report on a small sheet on 8 1/2 x 11. What I am going to do with this, I am going to take a little bit of time and describe to everyone how this is laid out. It's a variation of that figure 26 that was in the technical root cause report but in this case

provides some differences in information.

I would like to start with -- I have got a pointer here. You won't be able to see it real well on the overhead it looks like. But what this is here for those that are looking at the camera -- because I don't think we can see this paper in the corner here -- this is the timeline. These blue lines come from the refueling or the operating cycles at the bottom. At the top we have these kind of blue-colored or turquoise-colored bars. That is the time period. And then going back here, this is about 1995 where it starts. And those are quarters you see, you know, three months to a quarter type of thing. And they're showing you the RCS unidentified leak rate right there over that time period. And you will see right here in the 1998 timeframe there was an increasing rate of the unidentified leak rate. At that time -- you can't read it there too well -- but there was a pressurizer code safety valve that had a seat leak. And we'll talk about what happened with that. The plant took a midcycle out of its year, and thereafter the

unidentified leak rate did reduce significantly but, as you can see, did not diminish to the point of the low levels that were seen prior to that. As we know now from the technical root cause, it was in this timeframe that we now understand the significant corrosion of the head was starting which would have been consistent with an increasing leak rate as well.

As you proceed down here these blocks present information on how the station was dealing with the unidentified leak rate. The yellow bands there represent information that's again repeated from a technical root cause. It talks about how frequently we were changing the filters on the radiation monitors to deal with the plugging from boric acid and iron oxide. Below it right here are blocks to describe what the station was doing in response to it. Down here is the frequency of containment air cooler cleanings that was occurring mostly in 1999 and since. One of the patterns you can pick up here is the frequency tends to just disappear toward the end of the fuel cycle when

boric acid in the system is significantly diminish-
ing in concentration. And here's the blocks that provide information on that. The green down here did not in any way appear this way on the technical root cause analysis of cause. It describes the station's response to the pressurizer spray valve problems. And then in these blocks here there's a description of what was found on the reactor head in each of the refueling nozzles. I will try to add some understanding to this. These colored bars down here, you will see the blocks up here for the rad water filters have red bands around them, and then the containment air coolers have blue or purple. I don't know how you see it where you are looking. And then the green down here, that shows the time period over which the station was dealing with these. And from this or this kind of combination, this timeline, the thing that really becomes clear is in this timeframe, the 1998, '99, 2000 timeframe, the unidentified leak rate was really unexplainably high. We had these other three things happening at the same time, and we had

12RFO, we had the significant buildup of boric acid on the head that was inconsistent with the amount of flange leakage that was experienced at the plant. The CRDM flange leakage that was reported was very minor, yet the amount of boric acid on the head was significant. So it was at this point in this evaluation that the team decided that evaluating this as a task performance error on the part of the organization was not going to be fruitful by itself. Because really the question to be asked here is in light of all of these concurrent circumstances, why didn't the organization recognize the significance.

And now if we can back up just a minute to slide 26, the thing we picked up from this pattern-wise is now we listed twenty-two condition reports. But it was twenty-two just from boric acid on the head, containment air coolers and rad monitor filters, just from those three things. We actually had added to those the unidentified leak rate issue and the RC 2 pressurizer spray valve. In all of those this pattern is repeated. It's the

same one that we talked about in the corrective action program. Operability and operational impacts were underestimated, the categorization of the condition reports was low, there were no root causes really called for to be performed on these issues and no collective significance recognized. Some of the corrective actions were deferred or they just treated the symptoms. And except for the unidentified leak rate, there was no visible senior management sponsorship of resolving it here. So where this really sent us, what we said that we really need to evaluate here is not peoples' errors in performing tasks. This is really a question of -- and now we will go to slide 28 -- it's a question of risk management. This is a case where the organization did not recognize the significance of the plant condition.

So the concern here was why didn't we recognize it. And the way we approached that is we took the conclusions from the other sections that you have heard about today, the technical information, the way we used 50.59, corrective action program

and all those, fed that information into this, added to it some additional MORT analysis that we did in assessing management policies and incentives and numerous interview insights that we got. We put that all together and evaluated it under the MORT section that's called risk assessment and formed the following conclusions: At the beginning of the mid-1990s the management focus became one of production concerns. What we found was there was a -- First of all, it was a single unit utility. There was a belief that it was fighting for its survival. Cost control became a big concern. At this same time the rigor in assessing issues for their potential impact on nuclear safety diminished. There was a management team -- senior management team in place at the time which developed a philosophy that compliance meant safety. Head issues, for example, were never resolved because they were interpreted as not to be compliance issues. Containment air coolers, the rad monitor filters, the pressurizer spray valve, these equipment problems were all managed rather than

resolved because requirements for operation could be met by managing them rather than resolving them. We had a management style in place that was less directly involved and really relied on subordinates to escalate concerns.

I guess I would like to take some time now and describe some contrasts. In 1992 -- we talked about this briefly earlier -- containment air coolers were flooding. At that time one of the issues that was identified was a leak on a head vent line. There was extensive root cause done on that, a good one. There were engineering reviews done at the time that the containment air coolers were flooding that went into significant detail about the current conditions of lake temperature and all the factors important for operations to understand how to ensure that that system was operable, how to keep it operable, and how to deal with the situation so it could be fixed. When the containment air cooler plugging situation occurred in 1998, six years later, there was no new engineering work applied to that. In fact, a

criteria that talked about what plenum pressure would keep the system operable was just directly applied with no question as to its applicability. We also had interview information that told us how differently the situation was handled in terms of the approach to issues. We got a lot of anecdotal stories from people saying that senior management at the time in the early '90s if they heard about boric acid on the head wouldn't talk about it, just insisted it be cleaned off and done so immediately. Contrast that to how this station dealt with it in the late '90s. There was a question about dose and how does dose factor into this. What we found was this dose -- and I will ask for help from my colleagues here if I don't recall this correctly -- but the real -- the thing that was unique about how dose, dose almost became a production-related type of thing. Dose was viewed as owned by the health physics department. Health physics would allocate the amount of time to do a certain job based on the goals for dose. And it ended up being a situation where dose was another

indicator being managed. In fact, the containment air coolers and the fact that they were plugging were treated as an issue for this station from the health physics perspective because the containment entries and the cleaning was causing people to take dose. And that was, we could tell, the most important concern. We had to clean the coolers so much so that the equipment was bought that would allow them to clean it more quickly. I don't know if that answers your questions about dose, but dose itself was not -- beyond that kind of understanding was not a player in the root cause for this event. I forget who on the NRC -- Jack, you had a question about dose?

MR. GROBE: Yes.

MR. LOEHLEIN: That was a perspective on dose. You want us to comment beyond that?

CHAIRMAN GROBE: Let me just ask a question. You indicated that dose became somewhat of a production -- became a production-oriented concept.

MR. LOEHLEIN: For the people involved it was their performance indicator. Mario says he can

help me out on that too.

MR. DeSTEFANO: That was definitely another performance indicator. So that was our correlation to production. The folks during an outage had a goal, incentive goal that was associated with minimizing their dose. So the RP tech in the field can control the dose of the station by how much time they allowed a person to be on the job. And interviews that were conducted asked okay, if there wasn't enough dose allowable to perform a function, what happened next? Did the workers leave the area, go and set up a recovery plan and reenter with a new plan? And the answer that we received was no, RP didn't hear about it. Nothing was escalated through their chain of command to help resolve any issues between what work had to get done and how much dose was going to be -- how much dose it would take to perform those functions. So unfortunately control of dose became simply associated with meeting a goal rather than performing in the ALARA fashion to accomplish performing a task that had to get done.

CHAIRMAN GROBE: So, in fact, dose became a criteria for not completing a job.

MR. DeSTEFANO: Exactly.

MR. LOEHLEIN: It became a force where workers needed to overcome it. Like in 12RFO, ultimately a significant amount of dose was used in attempts to clean the head. I think it was 1600 milligram was the number and 280 or so man-hours involved in attempting to clean the head. So when ultimately the decision was made to do all that could be done, dose was expended. But whoever had that job had to overcome that barrier. What we saw was there wasn't -- managing dose didn't appear to be a team effort in trying to get the job done and minimize dose at the same time. It was more a case where dose was kind of a more direct goal and could to some jobs represent a restriction to getting it done. Is that clear?

MR. DeSTEFANO: A fair characterization.

MR. MYERS: At our other plants, you know, the two I have been at, if you look at our dose during an outage, we all have dose goals. But when we get

to 9% of, say, an estimated goal, we'll stop and figure out if we didn't improve the dose some way or reallocate dose somewhat, let's not do the job. That's a little different mentality.

MR. DYER: Did you have the same mentality also, say, with the outage schedule? If you had a job that said clean the vessel head and it was allotted, I don't know, 48 hours in the slot, at the end of 48 hours if it wasn't done, was it --

MR. DeSTEFANO: We found that specific case in one outage. And that was the outage where the attempts were being made to clean the vessel head. However, one of the major factors was it was time to reinstall the vessel head, and also the folks involved with the activity believed that they could not successfully accomplish it with the equipment they had on hand and had done enough for that particular time period.

MR. LOEHLEIN: Yes. I really think that it was two-fold.

MR. DeSTEFANO: It was a combination.

MR. LOEHLEIN: It wasn't just simply the dose

aspect. If you talk to people you will find there was really no way else to do it at this point to make it any better anyway. So in terms of their preparation -- Some of these issues of outage pressure may reflect more on outage preparation, were the right contingencies in place to have taken care of it rather than just at the time say well, I am not getting enough time. So that type of issue came up. People felt it from time to time. But in terms of a direct impact, we found as much infor- mation that told us that what preparations we made and the tools that we had had been used to the extent they could be, and so that was as far as it went, that outage.

MR. MYERS: What we did find in the situation at the beginning was we found the boron, went to clean the head, we gave them some extra dose and some extra time.

MR. LOEHLEIN: It was certainly in 12RFO. It happened a number of times in 12.

MR. DYER: When a decision is made to leave work undone -- this goes back to your hazard

analysis -- are the potential consequences of the
as-left condition evaluated whether or not it's
acceptable?

MR. LOEHLEIN: That was not done in this case. No, that was not done.

MR. MYERS: That was not done.

MR. LOEHLEIN: The other thing we did in evaluating this conclusion here was we took a look at the management team in place at the time in the late '90s and patterns in their beliefs about what represented safety. And that's where we got a clear message that things like the head issue would have been dealt with from a mod perspective and so forth had it been identified as a compliance issue. And we see that pattern in the belief structure of the management team that, you know, compliance equals safety. And it was compliance as they understood it. And that's part of the loss of safety focus. Nuclear safety goes beyond just what the picture is of compliance. I think all of us in the industry know that.

MR. MYERS: We have some fans. They are for

containment. They didn't work. So we did an engineering evaluation to find out why we didn't need it rather than repair it, you know? So you're just eating up your margin. We repair it today and put a new motor on them and put them back in service. It was like can we justify we don't need them. And the analysis, we do an analysis, that's fine. So we lost margin there. We met the requirements.

MR. LOEHLEIN: So the results of this pattern or this change in focus show on slide 30. We found cases where the plant was restarted to run for extended periods with some degraded components. The ones that are obvious are the pressurizer spray valve RC 2 which the plant decided to run it, manage that leak, do a little repair. Then the containment air coolers were plugging. That was tolerated until they had been cleaned seventeen times at the same time that a high unidentified leak rate was tolerated and turned out to be near the tech spec limit, .8 gallons per minute. So plant behaviors represent this production focus and this loss of safety focus.

We also found through a lot of interviews that personnel performed with the philosophy that issues were not considered serious unless they were proven to be serious. That really wasn't the standard for getting a high category assigned to a condition report. Just the concern alone was not enough to get a high category. People felt that you had to demonstrate a direct impact to plant safety, and this contributed to the low categorization.

And finally while this was going on -- And the rigor I have described earlier, rigor in some of the important processes was declining at the same time. While all this was going on the threat of a crack, a nozzle leak and potential for corrosion to the reactor head itself was increasing. The plant was aging, the nozzles were becoming from a probability standpoint more and more likely to have this problem. So those things crossed in time. We see the end result is the corrosion to the reactor head.

So that really completes the data analysis

and the conclusions from the data that I was to present today. What I was going to move on to now, Jack, is the actual root cause and contributing cause statements that we developed.

MR. DYER: Steve, I guess that last bullet that you talked about, rigor in processes decline at the same time that the threat of head damage increased, are you referring to the -- I mean physically the age of the plant was getting worse. Also there's becoming a greater and greater body of industry information that's saying it's a problem.

MR. LOEHLEIN: That's true. But as we pointed out, the failings here were that information was selectively interpreted. So the threats were not incorporated in a way that the organization was able to use them. The rigor in processes declined we talked about were varying types. In some cases we talked about recognizing the entry in the processes that are to evaluate nuclear safety declined. But it was also true that the plant's own rigor in implementing processes was declining, weaknesses in following processes as they were

written was declining. And it came back to the station taking on a less than adequate focus on nuclear safety and doing what's necessary apparently to run the plant.

MR. MYERS: So the piece of equipment was degraded. As long as it met the minimum operability requirements and didn't affect production, it was okay. Is that fair?

MR. LOEHLEIN: I am sorry?

MR. MYERS: The piece of equipment was degraded. As long as it met the operability requirement we could justify that and didn't affect production.

MR. LOEHLEIN: If it could be kept operable within how compliance was interpreted and it could be managed from a maintenance standpoint, it was accepted. That's the fact here.

CHAIRMAN GROBE: Back on slide 29 you have a comment rigor in assessing issues for their potential impact on nuclear safety diminished and then taking minimum actions to meet regulatory requirements was interpreted to be adequate for

nuclear safety. But you said earlier that had you implemented -- even though the boric acid corrosion control procedure could have been better, had you implemented it the way it was written, it would have been sufficient.

MR. LOEHLEIN: Right.

CHAIRMAN GROBE: So you didn't comply with the regulatory requirements to implement your procedures. I think I heard, Lew, you just said that you were taking the minimum actions to meet operability requirements.

MR. MYERS: Right.

CHAIRMAN GROBE: But that didn't include necessarily complying with your station procedures.

MR. MYERS: All of these are true.

MR. LOEHLEIN: Right. And taking the minimum actions -- and I think I used the words earlier -- as that was believed or interpreted. For example, it was believed that boric acid on the head was not a compliance issue. Yet if you look at the actual process that was in place, it required that boric acid be removed and understanding the source of

leakage had to be determined. So once again it wasn't viewed as a compliance issue, but certainly compliance with the process should have been an issue.

CHAIRMAN GROBE: And why wasn't it viewed as a compliance issue?

MR. LOEHLEIN: Focus was wrong is what we concluded. In other words, they did not recognize it because their focus was on compliance just meant that it was operable because we understand why it's not a threat. So there's a real loss in understanding how to apply those processes that are designed to keep you on the straight and narrow.

MR. MYERS: For example, we documented that the boron on the head since it was not -- it was dry, it wouldn't deteriorate the head was not a nonconformance.

MR. LOEHLEIN: Correct.

MR. MYERS: It was not a nonconformance. Clearly if you go back and look at 97-01, you haven't met the requirements.

MR. LOEHLEIN: That was the misstep. The

misstep is we stated it was not a nonconforming issue, yet it was not recognized as that and it was accepted. The condition should have been supported by an evaluation as to why that still met the requirements, and it wasn't done. And that goes back to what I said earlier. We found we really couldn't evaluate task performance errors because it wasn't so much people were doing tasks wrong as they weren't recognizing what was in front of them. They weren't recognizing the risk. It goes back to the focus, the loss of a safety focus. And we did find that as evidenced by the site participating in the corrective action program that that pattern, that lack of recognition extended to all levels of the organization. So it was a site approach thing.

MS. LIPA: I have a question on that. I was thinking about if there was less emphasis on repair- ing items if you could justify operability. I would think this might show up in this increasing maintenance backlog or closing CRs too early. Did you see any trends there?

MR. LOEHLEIN: Well, you know, this was a pretty big investigation. Some of the trails we couldn't expand on maybe to the extent that you're questioning. But we did see some of that. We saw cases where condition reports were counting on other condition reports to answer a piece of the puzzle. But when we went there, the other condition report really wasn't covering that issue. So some deadends there. So going back to cause analysis, there were things, sometimes just facts stated that there must be a leak in containment somewhere and that's the cause for this, and then that's all that was said about it. So we did see cases of superficial review. As far as backlogs go and the impact to backlogs, we didn't attempt to assess that.

MR. DYER: Let me ask on page 29 and on page 30 also in connecting the dots if you would or the bullets. In particular it talks about -- the one subbullet where it talks about taking minimum actions to meet regulatory requirements was determined to be adequate for nuclear safety adding that at that time -- second bullet -- where

personnel performed with a philosophy that issues were not serious unless they were proven to be. If I connect the dots on that I come up with a solution or a conclusion that says that your safety threshold was geared towards unless the NRC drives the issue, it's not going to be addressed by the plant. I would like a comment on that.

MR. LOEHLEIN: Well, I would say that there were a few times -- in the information we have a few times where that perspective was seen by certain people is that that's the way they looked at it in some cases. They didn't believe that it was a real technical issue. Their understanding of it was flawed. Their opinion was well, if it becomes regulatory driven we'll have to deal with it, otherwise we won't. There was some of that. But the real issue in terms of the philosophy of proving the category was this became important even from a standpoint of the performance indicators for the station that looks at the effectiveness of the corrective action program.

The corrective action program performance

indicators look at a couple things. One is it looks at initiation. And it found, I think, the same thing we found. Despite what some people think about initiation, we saw plenty of condition reports initiated. So we didn't see problems with the organization identifying the issue. But the rest of the things are looked at and the indicators rely on the categorization being correct. Because it talks about looking at the upper level condition reports and seeing that they're handled properly. So if they're categorized too low, the performance indicator won't see them. And that's one of the things we're recommending come out of this, that the performance indicators, the things we measure need to look at that to be able to tell whether the organization is properly interpreting the potential for a nuclear safety issue, not just a proven nuclear safety issue.

CHAIRMAN GROBE: Okay.

MR. LOEHLEIN: So slide 31 is a restatement of the management oversight root cause statement made at the beginning when we talked about less than

adequate nuclear safety focus. The important thing here is this combination of it wasn't just the production focus. Production we understand. If anything is assumed in the power business is people would like to produce power. So the desire to produce power is not an issue by itself. What is important is combined with trying to meet minimum actions for nuclear safety is a root cause here.

The root cause under the corrective action program has a number of subbullets. The overall root cause is that there was inadequate implementation of the corrective action program. The corrective action program required higher categorization in some of these cases because they were repeat events and so forth and that did not happen, and some of the other things that are listed there, addressing symptoms rather than causes, categorization we talked about, we had less than adequate cause determinations, less than adequate corrective actions and poor equipment trending.

Under technical rigor -- And, by the

way, these are under the four areas we mentioned at the very beginning.

CHAIRMAN GROBE: Steve, part of the corrective action program is identifying issues.

MR. LOEHLEIN: Right.

CHAIRMAN GROBE: After the 2000 outage, was it identified that there were corrosion products in a CR flowing out of the weep holes?

MR. LOEHLEIN: When you say after --

CHAIRMAN GROBE: During the outage?

MR. MUGGE: Yes.

MR. LOEHLEIN: Yes, there were condition reports.

MR. MUGGE: 00-1037 documented that.

MR. LOEHLEIN: What didn't happen with that is there was no evaluation or any follow-up evaluation saying anything about the acceptability of that or resolving it. I think the only plant response, Bill, was that, right?

MR. MUGGE: Right.

MR. LOEHLEIN: It was identified on a condition report.

MR. MYERS: As a matter of fact, there it is.

MR. LOEHLEIN: It's even on this chart here if you go back to whatever figure that was. What sheet is it?

MR. DeSTEFANO: 27.

MR. LOEHLEIN: 27? In this light I can't see it on this small one.

MR. MYERS: It's this one here.

MR. LOEHLEIN: CR 00-1037.

CHAIRMAN GROBE: Okay.

MR. LOEHLEIN: We're on slide 33, root cause, technical rigor. Here the root cause was failure to integrate and apply key industry information specifically as it relates to the boric acid corrosion control program and to compare new information to baseline information that came in. This is a reference to examples like Generic Letter 97-01.

The root cause under program compliance, some steps in the boric acid corrosion control procedure were not followed. Some specific important examples were that we did not remove the

boric acid from the head. The station did not inspect the areas under the boric acid and did not perform technical analysis or safety evaluations to support decisions to leave boric acid on the head.

We had two contributing causes that we show on slide 35. Some decisions were made without considering the need for a safety analysis. Really throughout the development of the conditions as we talked about them there were no safety evaluations conducted or even considered necessary except there were those done for the temporary modifications that were done in supporting treating symptoms that appear on sheet 27. That's when we brought high efficiency air filters in the containment. That was an attempt to deal with the iron oxide in the atmosphere. That temporary modification is also the one that bypassed the iodine cartridges because of the problems with boric acid containment in the atmosphere. Those both did receive treatment under the 50.59 process.

The other contributing cause is the corrective action program, we stated here, was not

state of the art. It really doesn't meet, in our minds, industry standards particularly on the back end in terms of equipment trending or repeat equipment problems.

MS. LIPA: I have a question for you. You will probably get into this later in corrective actions. If your corrective action program is common for all three plants, have you done an assessment of the Davis-Besse implementation?

MR. LOEHLEIN: Yes, there is a nuclear operating procedure FENOC-level procedure that requires effectiveness in that area. It does right now provide a lot of leeway for each individual site to decide how it's going to do that. And at Davis-Besse it does appear as though it's largely nonexistent. Right, Bobby, the equipment trending?

MR. VILLINES: Yes.

MR. LOEHLEIN: And that's not the case at the other stations. But yes, we are as part of this considering under all common processes those things that may affect the other stations. You want to comment on that?

MR. DeSTEFANO: As part of the program evaluations that are occurring right now the corrective action program evaluation was performed by all three stations at the same time. So the knowledge level, the current status of the program and where it should be has already been obtained by all three stations.

MR. MYERS: Let me tell you this too: I believe as I sit here today there's going to be some enhancements that we will make to the function of that process at all three sites. We already are using that model. You have probably seen that before at two of our sites. We will start using it at Davis-Besse as well. But in our corrective action process we will probably go back and do enhancements to our programs.

CHAIRMAN GROBE: I think, Steve, at this point that you have got some other key observations you're going to go into. But you have summarized the process that you have gone through, the conclusions in each of the areas that you came to, and then on pages 31 through 35 summarized what you

believe are the root causes and contributing causes. Quite frankly, you have presented an extraordinary amount of information. And I am sitting here in my mind trying to walk through all of the various performance deficiencies that I am aware of and trying to see where they fit into these root causes and whether this is complete. And that's the kind of analysis we're not going to be able to do today but we're going to have to do over the next several weeks to be able to evaluate this and conclude, in fact, that your root cause is comprehensive and adequate.

MR. LOEHLEIN: And in the report we do the best job we could at trying to lay this picture out so that it can be interpreted in exactly the way you're stating, Jack, so that there are a lot more of the facts presented. And we try to do it in such a way that the conclusions can be followed clearly. And we do expect that's exactly what you will do is you will examine this.

CHAIRMAN GROBE: Has this report been submitted on the docket?

MR. LOEHLEIN: It's approved on site.

MR. MYERS: It's approved on site, but we sent it to you by letter.

MR. LOEHLEIN: Yesterday we were preparing the letter.

CHAIRMAN GROBE: So we can expect that next week?

MR. MYERS: Right. We can give you a copy of it today if you want it.

CHAIRMAN GROBE: That would be great. Okay. Any other questions on the root cause or contributing cause before Steve goes on to other key observations?

MR. LOEHLEIN: The next two slides provide observations. Observations are things that we felt were important to mention in the report, but they did not tie directly to the damage occurring to the head and it going unnoticed.

There are some design aspects. Certainly alloy 600 is something that deserves mention. And the gasket design in the CRDM flanges which has been a problem for this plant historically now has

apparently been resolved. One of the items was training was not provided to individuals performing inspections for boric acid. It was not considered a contributing cause because, once again, the knowledge of the personnel involved in our judgment was adequate to recognize the significance of the boric acid that was found. Another observation was inspection activities and corrective actions were not coordinated through the boric acid corrosion control coordinator. This was really just another failing of the process, was not critical in the outcome but is an observation. The boric acid corrosion control procedure did not specifically reference the nozzles as one of the probable locations of leakage. And that has been captured as part of our response to the Generic Letter 97-01.

Slide 37. The condition reports associated with the boric acid issue tended to stay unresolved until significant degradation occurred. That's the pattern that was observed with the pressurizer spray valve and again with the head.

The next bullet mentions we found there was little evidence of quality assurance's involvement and that their documented findings were mixed quality. What happened here is that the company decided a while back now to do a separate root cause investigation of quality assurance's lack of effective impact on the outcome. And that root cause is ongoing right now. I think it is nearing completion.

The next two bullets talk about things we found in terms of the monetary incentive program and the way it rewards senior levels and written policies and their treatment of safety. We really didn't find a tie-in with these to the way and the reasons why people made decisions. Particularly in the monetary incentive program the changes to that had been pretty recent. But in order for the plant to move toward a proper safety focus, we felt the need to point these out because they need to deliver the right safety message both in terms of incentive and in terms of policy. So we put them in the report as something that needs to be looked

at.

CHAIRMAN GROBE: Steve, when you say fairly recent, what timeframe are you talking about?

MR. LOEHLEIN: In the mid-'90s the incentive program was -- A consistent level of safety got treatment that was pretty consistent through the organization up in terms of management. And then as we went to the late '90s two shifts occurred. Top level management started to get rewarded more for production. And not only that but that became more askew with lower levels. I believe even to this day for the lower levels of the organization the majority of the incentive still is based on safety but not at the top level of the organization. So that disconnect there does not support good alignment in the organization going forward. So the report recommends that the company look at that.

MR. MYERS: And that was not, you know, a deliberate management change. What happened is the companies changed during that time. And when the companies change, incentive programs change, right?

I mean it's just a different incentive program than we used to have. I don't think it changed my behavior whatsoever. But the factors are a little different. They're very strong at the bottom, probably not as strong at the top. That's something we will go look at. But, you know, I have been involved in that program now for several years, and I don't think it's had anything to do with my decisionmaking. But you contend -- you think it's okay at the the bottom levels, though, right?

MR. LOEHLEIN: Right.

MR. DYER: At what time did this change? When it was turned over to FENOC or when FENOC was formed?

MR. MYERS: We went to FirstEnergy probably in '97. The incentive programs are a little different. Never really thought much about it to be real honest with you. So, you know, I don't think it's a contributor, but it might be something that we can do to help. We're going to go back and look at that.

CHAIRMAN GROBE: The top level management

incentive programs are consistent across the three sites?

MR. MYERS: Yes.

MR. LOEHLEIN: Yes, they are.

Another thing that struck the team as we went through this was that operations had minimal involvement in resolution of these issues. Their participation is pretty much evident on the condition report process when they do an assessment on the impact to the station, and then pretty much we didn't find them visible. There is a condition report that is separately considering this as a root cause being done on that particular thing in the station as well, the lack of operations' involvement.

And finally in terms of observations we had management had minimal entries into the containment. We looked at 1998, the 11RFO. It had improved some in 2000, 12RFO. But we do believe that the management involvement in the containment during outages is something that should be improved.

CHAIRMAN GROBE: Within this context you use

the word management. Are you referring to first line supervisors?

MR. LOEHLEIN: We're talking really managers and above.

CHAIRMAN GROBE: So that would be director level in your organization?

MR. LOEHLEIN: We have managers and directors and VP. I mean I work for Lew at Beaver Valley, and I can tell you what the expectation has been there. As manager over there I am in containment several times at least myself. And our job is to force standards and to make sure that we don't have people unaware of where they are in containment and a whole host of other things that we do.

MR. MYERS: I just believe that if we would have had a little bit more management involvement, if we would have seen the pictures of the head that you showed a while ago or reviewed the videotapes, that our decisions would have been the same as they were in many cases on these corrective actions.

MR. DYER: I would like to go back to slide 37. You kind of brushed over the QA role in this.

And said you have a separate recall looking at the value added by QA. On a broader scale what about independent oversight in general? And I mean you have got the line management, and certainly that's where your focus has been. Did you look at -- When you have got -- I think somebody brought it up earlier -- ISIs, obviously I would say the role of QA, the off-site review committees, anybody in the industry, peer reviews things like that, were there indications coming in from them?

MR. MYERS: We have gone back and we have looked at the QA process. You know, I have personally reviewed some of the documents that QA had produced on the corrective action process. They told us that our root causes were not very good -- in 1999 I believe it was -- and that we had a lot of repeat situations and we weren't trending. As a senior team we didn't do much with that. They also indicated that the head was cleaned and thorough in 2000. It was obvious that the QA person never really went down at the head. So there are some issues there we're dealing with.

Same kind of thing, involvement and really validation and oversight. So there's some issues in the quality area that we have had to address, and Bill's addressing those now.

MR. LOEHLEIN: I think you're talking about the company's nuclear review board. You did look at that too.

MR. MYERS: We had Darrell Eisenhut come in and perform an assessment of that board. We will probably make some changes there. What's really interesting there is the board meets routinely. This is not uncommon. But typically we don't have the board meet at the plant or involved at the plant when you're using certain programs; for example, boron inspection programs. All these programs you don't bring the board in because you're too busy with outage, right? What we're thinking about is that would probably be a good time to bring some of the board members in and let them perform an assessment of the implementation of some of our programs. And I don't think too many people probably are doing that. That's

something we're evaluating now.

MR. DYER: How about ISEG and their role in looking at trends?

MR. MYERS: We don't have an ISEG.

MR. DYER: I thought earlier you did.

MR. LOEHLEIN: That was in 1987, I think. In years gone by there was an ISEG. There is not one currently.

MR. DeSTEFANO: Also basically ISEG really had a few shots from what we saw during this time period on these specific subjects. They had a few chances to have an impact on what was going on. And again in the earlier years they did that. And in the mid-'90s to late '90s actually their reviews concurred with what the station was doing. So it was not effective.

Just prior to 12RFO fueling outages, one example specifically, ISEG was asked about delaying, whether or not the decision to delay modification to the service structure was acceptable. At the time the proposal was to delay it to 14RFO. And they came back and asked -- You could tell they

felt uneasy about it. They asked are you sure you can't get it in 12 or 13 but ended up concurring with the fact that the modification didn't have to be done right now.

CHAIRMAN GROBE: So even ISEG had a production focus.

MR. DeSTEFANO: With the instance that we saw, yes. But they didn't pop up in our documents too often.

CHAIRMAN GROBE: I apologize. We're using an acronym here. ISEG is the independent safety engineering group. And the key word there is independent.

MR. MYERS: Right.

CHAIRMAN GROBE: I guess the next key word is safety.

MR. MYERS: Yes. One of the things that as ISEG went away at our other plant, what we did to improve that we thought was even better was the engineering oversight review board. Documents coming out of engineering, make sure they were very good. So when we were making the improvements in

the '96 timeframe at our other plants, that board was a real strong part of those improvements and the quality of our documents coming out of engineering. But that board was never implemented over there at the Davis-Besse plant until recently. We have it at both our Perry and our Beaver Valley plant now. This was the first time we installed it over there.

CHAIRMAN GROBE: Any other questions before we go on? Okay.

MR. LOEHLEIN: At this point I would like to conclude and turn it over now to Lew Myers who will talk about the corrective actions.

MR. MYERS: Thank you. When we had this event initially, somewhere in the May timeframe we decided to look at the events that are broad based, and we created the building blocks for a return of service plan to address systems, programs and organizations to support safe and reliable operations. Specifically we created a system health assurance plan that looks at a rigorous approach to system review similar to what has improved our performance at our

Beaver Valley station and late issue reviews and system reviews. We have implemented that now at our Davis-Besse plant, and we're walking down systems with operators, SROs, we're walking down with system mechanics, engineers and managers, you know? And what we're seeing is good teamwork beginning to develop there. And we're finding things, basic things. What I will tell you again later on is that program will probably -- that program will become part of our normal process. It's something we should be doing routinely all the time. And we didn't have the procedure in place or a process in place to ensure that we were getting consistent engineering reviews of our system, so we will put that into our normal processes as we go forward.

The management and human performance excellence plan was put in place to ensure a sustained safety focus. The first thing that we have done there is we created a new FENOC organization with more oversight and created my job as chief operating officer. Bill Pearce has

tremendous operational experience. And some of these issues that we're seeing with corrective actions quality were probably not fully implemented. That would be at a higher level now. So we will see that they get implemented. We're rebaselining our standards and scheduling management observations now to make sure there are managers in the field looking at stuff, activities that are going on.

The program compliance plan ensures programs that we have meet industry standards, that they have good procedures, we have got good ownership and we have got good implementation. Guess what? That's another program that we're using as part of the building blocks that we'll continue to use in the future. In fact, we will probably take that program -- the system program at our Beaver Valley and Perry plant, we're going to take that over to all three of our plants now. So that turned out to be a very good program. So these building blocks have been key, I think, already in returning the health and safety focus of our programs and systems at our Davis-Besse plant.

One of the things if you recall we did early on -- We have six building blocks: Reactor head resolution plan, program compliance plan, the containment health assurance plan, system health assurance plan, restart test plan and the management and human performance excellence plan. All that reports up to an independent restart overview panel that reports to Bob Saunders, Gary Leidich and myself. That panel consists of industry experts, the chairman, Buzz Cairns, Lou Storz who was there in the early '90s, Joe Callan, Chris Bakken from the D.C. Cook plant, and then Gere Witt from the community and Jack Martin are all on that panel. So we think that's a really top-notch panel.

What I want to tell this group here is it's our intention -- we will not -- until we feel these knowledge blocks are all in place to give us sustained performance, we won't even recommend to you that we be allowed to start up. So we are looking for this team to tell us that they're comfortable. That's what we're using them for.

The first area we talked about is a nuclear safety focus. We have already taken some pretty -- We didn't sit back and wait for this we saw some of these indications up front. We created this new senior management team at the upper levels, I myself and Bill Pearce, to give us more corporate oversight. But we also brought in a new senior team at the plant, proven aggressive managers, good performance. Randy Fast, our previous plant manager, has been the plant manager now at Davis-Besse. He came from Beaver Valley and before that South Texas. Good, strong leadership qualities. Bob Schrauder from our Perry plant, we brought him in. So we believe that this management team that we have in place now will drive the high standards we're looking for.

Implement the management and human performance excellence plan. We talked about supervisors and managers at Davis-Besse a while ago. We have a program called leadership in action that we use to develop for succession planning of our future supervisors and leaders. We are going

back and looking at that program. Are there some key elements missing? Maybe we will make some changes to that. Like in decisionmaking but in general, you know, it appears to me more than anything that that plan has not really been involved in our Davis-Besse plant -- that program hasn't. We have a bunch of people qualified but -- For instance, at our Perry plant we just completed a recall of all the supervisors. We were talking about five classes at our Beaver Valley plant. Last year at our Davis-Besse plant we didn't teach any. So we have got a bunch of people through initially but just sort of put on the shelf, it appears.

One of the things we're getting ready to do is a case study. When you talk about case studies you think we're going to come out and tell everybody what happened. That is not the intent of this program. The intent of this program is we're going to go through the timeline that we have on this event with each group, okay, and then we're going to go through the root causes and how that

group could have affected the root causes. So we're customizing it to a particular group. Then we're going back and looking at the standards. Each group has standards, you know, at our plants. We're finding those standards are really fairly good and consistent, but we have lost them. So we're going to rebaseline those standards. At the end of that training session -- that case study we're going to give a test. We're going to make sure that you understand the requirements, and then we will move forward from there. That's where we are heading on this case study. Not only that you understand this event but you understand the requirements. And we will move forward. We already have new standards of implementation in our engineering group that we're pleased with.

CHAIRMAN GROBE: Before you go on -- I apologize for interrupting -- but you can do this case study and rebaseline standards and do a test and people can answer the test correctly and successfully. But until you assess people to those standards, I am very concerned about this incentive

program and the disconnect between the various levels in the organization.

MR. MYERS: We understand that. If you look at all the standards, we have some management models that we use very similar to Exelon. We are looking at some of the Exelon and other utilities. Right now we are looking at the attributes that we have versus the attributes they have. In some cases we find ours are better; other cases not as good. We will baseline every one of our supervisors and managers to the right standards. That's what ownership, for instance, is supposed to do. So once we establish that you understand, we will be monitoring how effectively you implement those standards through the ownership for excellence program and a management observation program. You caused me to lose my place. Let me keep going.

After we do that, Jack, we have a program that I think Christine knows about that we use both at Perry and at Beaver Valley. It's the management observation program, a computerized program where

you can trend observations. And we don't use that program at Davis-Besse. We're bringing it over to Davis-Besse now. It's got these key attributes built into it. If we schedule management observations with supervisors like we're going to and we collect this data, we can tell how effective the supervisors are being at implementing the standards that we expect in the field, you know. And we're going to implement that program more strongly here than we have at any of our other plants. We're going to schedule managers here. So that's the intention at the Davis-Besse plant.

We have already completed the safety conscious work environment survey and assessment. You know, as you might expect how the plant is, this was a very proud bunch of people. I meet with them. And I'm going to talk about my four Cs. I do four Cs meetings. I have a contractor talk. The organizational effectiveness person brings in a group of people. And what we do is about twenty at a time. The idea is there the contractor -- they can talk to this person in confidence. So when I

see the question I don't know who it came from. Then we go in and -- I get all the questions, and we go in and try to answer the questions and then feed that back in our newsletters and stuff. We have started that meeting now. And it just amazes me the people at Davis-Besse, they will tell you they know the standards, they know that the management hasn't been as strong as it used to be. I am not even going to tell you some of the things they tell me here. But it's really interesting the feedback that I get there. And I do believe that we're beginning to see some good ownership of this problem. And they're also beginning to see those management walk-downs and management in the field and system walk-downs being effective. So we will continue those things.

And then finally I told you earlier the ownership for excellence program evaluates our managers and directors. And we will get all this done, and then we will have them evaluate the first line supervisors using the management observation program.

The next thing we talk about here is corrective action. I told you that we just finished -- we're finishing as we speak review of the corrective action program. We have been very proud at all of our plants of our corrective action program. In fact, we think that -- my belief is at our other two plants we have really taken that on and made a lot of progress fixing problems through corrective action. We have seen some real enhance- ments now that we can make to that program, and we will go back and look at this review and try to make some changes to the program. Overall, though, I go back and say again a lot of problems we saw at Davis-Besse are just implementation problems, the right criteria for a CR that's written by an employee and then taking that CR seriously and doing root causes or apparent causes or quality reviews.

How do you measure the effectiveness of a corrective action program? What I am accustomed to is we have a corrective action review board. And right now we have that being chaired by the plant

manager. It should always be chaired by a director. That was not the case before. It didn't have performance indicators, and we were not looking at anything except higher level root causes. We weren't looking at apparent causes. One of the things we will do is we will go down and we will get this board to start looking at lower level stuff to make sure that that's properly classified. So I think we do that at Beaver Valley already, don't we?

MR. LOEHLEIN: Of course. I haven't been on it for a while. I used to be on it. I have been at Davis-Besse for six months. Lew, you know where I have been for six months. But when I participated in a corrective action review board at Beaver Valley, our standard was to look at a lot of lower level condition reports for determination, not just high level stuff.

MR. MYERS: In our engineering reports we're going to improve our trending of equipment failures. And then finally we're going to be performing -- Bill Pearce is going to be performing routine

assessments now to make sure that we're properly classified, CRs as they're written, and doing the right type of assessment.

CHAIRMAN GROBE: What you just described, Steve, is that proceduralized either in a self-assessment procedure or in the corrective action review board charter?

MR. LOEHLEIN: I think it goes back to the fact that we have upper level standards in the sites. What we need to work on and what we have in this program compliance plan is each site has taken what you might call a different level of rigor in how they're going to approach the corrective action review board. I know when I was on it at Beaver Valley and in my maintenance superintendent role that we met every week, and we went over quite a number of condition reports and at what level we looked at them. When I got to look at this at Davis-Besse, I found out their pattern really was to meet once a -- I think once a month and look at primarily higher level things. So the company or the FENOC-level common process

procedure allowed probably too much flexibility in how that board operated at each plant because we had different standards for what we looked at. And that's the point of getting all three sites together in reviewing this and getting us all on the same page.

MR. MYERS: Now that I am chief operating officer I can fix some of these inconsistencies. What I am accustomed to more is that our senior management team reviews all the Category 1 CRs and all the corrective actions. That's done at a much lower level at Davis-Besse. And since that's done on a lower level, the apparent causes stuff aren't getting reviewed at all. We're going to strengthen those types of things.

MR. WRIGHT: May I ask one question? When you say you're rebaselining and going to go back and look at what the practices are at the different facilities and implementing the program where there was a lot of a flexibility within the program, is the result coming out of that going to be a consensus of where we should be, or is that going

to be looking at what is the most conservative approach that one of our three sites have taken and go with that until shown otherwise that that is too conservative or you don't need to be that way?

MR. MYERS: We're a little better than that. This team we brought in, this latent issues review, is a very broad-based team, and they're making specific recommendations and improvements to our corrective action program. We'll probably take a lot of those improvements -- maybe not every one -- and make them a part. So I think the approach we're taking is a little stronger than that. We have really got a good team looking at the corrective action programs at Davis-Besse. I have already seen some very eye-opening flexibilities, you know. So we will take those issues and tackle them. Does that answer your question?

MR. WRIGHT: It says that you are looking at it in a different way. We'll have to wait to see what the results are.

MR. MYERS: Okay. Where was I? Page 43. Another thing that we have to make sure that we

address is that repeat conditions are treated as significant conditions. If we see repeat conditions, we're going to strengthen our program and make sure we elevate those. That's not as clear as it should be now. We're going back now as we go through the system and the program reviews and looking at some longstanding problems that we had at the plants and seeing if they should be elevated to significant issues. We're quality reviewing that and doing our system reviews and program reviews. That's ongoing.

One of the things that we don't do is we don't require -- we haven't required root cause type training for apparent causes. And we could probably really improve our program a lot if we did that. We're going to do some type of root cause training for those people that are doing apparent causes. It has not been a requirement at all in our program. That came out of these reviews I was telling you about, the latent issues reviews. That's better than reviewing any of our sites. I would call that improvement overall.

We're going to define and implement the required training. We're going to develop a training program that defines and implements the training consistently across our sites for root cause. That's not very clear either. So we have got some people that use Kepnor-Trego and we use MORT. We're going to have maybe a variety of techniques to make sure we have that variety of techniques at each one of our sites.

And then finally -- I pretty well talked about everything -- implement an effective site-wide equipment trending program. I think there's some real improvements we can do. We have a quarterly report from engineering on the trending of our systems. But because we haven't done a good job at saying here's how we walk-down our system, here are system health reports, I think we're getting not consistent messages from our system engineers. We're going to go back and strengthen the way that we look at our systems making sure that we're looking at trending, for instance -- that might be an issue we're looking at -- and make

sure we have specific criteria for the systems engineers to use. They don't have that criteria. Remember I told you a while ago we did not have a walk-down procedure for systems? We need to strengthen those things. We will do that.

Under technical rigor, you know, I talked about rebaseline the standards and expectations for each FENOC group. We're doing that as we speak. Establish an engineering assessment board to reinforce standards. We have established a very good engineering assessment board. We're figuring out how to make that a permanent part of the way we do business as we speak. So that we have got some ideas in mind of putting a permanent manager there that's just in charge of the engineer assessment board. So we're going to really strengthen that board and bring it over to the Davis-Besse plant and probably make it better than the ones that we have at the other two plants as a matter of fact. So I am looking forward to that.

We have already approved a procedure -- What we found at Davis-Besse is we have a business

plan that talks about the hierarchy of documents and our priorities. And our priorities at FENOC -- and you need to listen to this clearly -- is safety first, people second, reliability third and cost fourth. That's our priorities. And that's been pretty consistent over the years since I have been at FENOC. And what we find at Davis-Besse that I am not used to is a bunch of policies and documents that are not in line with the way we do business. It's almost like they figured out a way to maintain status quo over the years. So I am going back and revisiting those policies and documents. And what we did the other day is we approved a new nuclear operating procedure that -- We never had anything that clearly defined the hierarchy of documents. And what you will see now is we have a policy at one of our plants different than our FENOC policy, and it's going to have to come to the senior teams at FENOC to get approved. So we have got to make sure that we don't have these documents out there that don't get the same priorities that we have as an organization. We found some of that. It's

there and alive, some older documents, sending the wrong message to our employees.

I told you that we're going to make permanent in our processes the system walk-downs. That program has been -- Through experience we found out we didn't really even understand the bounds of the program for the system engineers. We have got that all scoped out. And we're not walking down systems. And what we're finding is that we're not using it at any of our plants. We're walking down systems with multi-discipline teams of SROs, maintenance, managers and the system engineer, and we're finding some really interesting things. And we don't have that at any of our plants, and we probably -- we're going to go fix this process so it's consistent across all of our plants.

And then the program reviews I talked about a while ago you will find very enlightening also.

Procedure compliance. Procedure compliance is something that I have been talking

about since I have been in nuclear power it seems like. You know, we're going to come out of this -- we're committed to coming out of this restart with what we think is the best boric acid program in the country. We should have that after this. And we have gone back now and taken our procedures and turned them into nuclear operating systems at our two sites that use boron. We have a nuclear operating standard now, and it fully meets 99-0701 I guarantee because I reviewed it myself.

We're going to go back and reinforce the standards and expectations for procedure compliance throughout the sites and the need for proper work-practice rigor. Some of the things we have seen here and some of the work orders we have signed off and the amount of information that's in those work orders we need to improve more at our Davis-Besse plant. This was the same problem we had at our other PWR a few years ago where we didn't have much rigor in our work orders and rigor in our process. And we have improved that. We need to strengthen it here also.

I told you about the management observation program. We're going to implement the same observation program we have at our other plants. It's a computerized program. Was the prejob brief good, were the parts there, was the contingency planning good, was the right safety culture there. There's attributes for all those things. And was the procedure usage proper too. We're going to implement that program at our Davis-Besse plant where we already have it at our other two. I have gone back and reviewed based on this event all the stuff in the program, and the program looks pretty healthy to me from what I have seen. I did that a couple weeks ago. And then we're going to start scheduling with a weekly schedule managers to be in the field with the supervisor and document our performance. We think that will help our safety culture. Once again I believe if we had had more management involvement in the field and higher standards, we wouldn't be here today. Somewhere we lost that, and we're regaining it now.

And once again at our morning meetings

we're stressing procedure compliance pretty much daily and weekly, and we're looking for CRs as an indication of procedure compliance issues every day. We're trying to focus on that.

CHAIRMAN GROBE: Before you go on -- I apologize for interrupting. Before you go on to 46, you say reinforce standards and expectations for procedure compliance and the need for work-practice rigor. The root cause focus on page 34 focuses only on boric acid control. What is your sense of the extent or condition of this procedural compliance question?

MR. MYERS: Widespread.

CHAIRMAN GROBE: Operations, health physics, maintenance?

MR. MYERS: Yes.

CHAIRMAN GROBE: Okay.

MR. MYERS: We have seen our operability reviews have been a little lax. That's the reason I brought Mike Ross in at the system right now to really focus on operations, make sure we have the high standards. When we saw this in root cause, we

started looking across the board. We see it elsewhere also.

CHAIRMAN GROBE: Okay.

MR. MYERS: Once again we talked about the hazard analysis. I had trouble with this too, Jack. But what I call it is decisionmaking. And we use this document called Tech 19 that incorporates some of the INPO philosophy, industry philosophy on decisionmaking. It also is a tool we use when we have equipment problems to sit down and -- The first thing before we go to work is we sit down and we go through this to make sure we're asking all the tough questions. Do we meet our licensing basis? Do we need to go into 50.59? That process is not in effect here. That program is not in effect at our Davis-Besse plant. That's another item right now that we haven't yet turned into nuclear operating procedure. We need to implement that program at Davis-Besse.

And once again I put here that we're doing corrective action benchmarking. I think the benchmarking we have got is we have got a ton of

people in the plant right now from other utilities that are pretty much industry experts that are doing that latent issues review of our correction action process. That's really been an eye-opening experience. And we will continue to go out there to Morgan Price and some other plants after that. We will be making some changes to our corrective action program. I could give you some specific changes if you want them, but we need to make some changes there.

I told you a while ago that the new reactor pressure vessel head is on site. We're looking at the design -- that's one of the corrective actions -- and making sure that that head is ready to be installed. A boric acid corrosion control program is being designed to include control of our drive nozzles like they should. We developed a training program already on the boric acid monitoring. You know, if we would have used our -- We found out as we were going through the inspections that we were qualifying people as VT-2 exam. What we should have been doing is what

do we want them to be able to do and developing a training program for that specific talent. And we have developed that program now, and it looks pretty good. We have got people out doing walk-downs, and training appears to be very thorough. So we're happy with that. But making sure people are properly trained on the boric acid procedures is very important. And once again our intention is to come out of this issue being one of the industry leads in boric acid.

Some of the problems that we found as we were going through this issue too is you find corrective actions in the boric acid group that were left for a couple years without resolving. So timely corrective action is something we're going to address also.

And then we talked about the realignment of the incentive program. We'll talk to FirstEnergy about that. We're going to look at possibly some changes there.

And then finally I told you a while ago that we found the policies that were different

somewhat at Davis-Besse that we have at FirstEnergy. Well, we're going to strengthen those policies, you know. Operations' involvement is very important and a management presence in the field is very important. And we're going to -- Bob Saunders, I know, right now is looking at a policy for FENOC that he's going to put out addressing his expectations for a nuclear safety culture. So that's something we didn't have in place. We're going to make that very clear to make sure nothing disagrees with that. I don't think it was as clear as it could have been.

I told you a while ago we made several changes across the site already. We created Bill Pearce's job, the ex-plant manager from Beaver Valley station. Strong operational focus. He's now the vice-president of oversight. He reports to the president, and he also reports directly to the board. The chief operating officer. They made me the chief operating officer. Then we brought in Gary Leidich. Those were all, I think, positive moves that allow us to have more oversight. We

brought in Mike Ross to strengthen our operations group on operability concerns. There were a lot of issues here that we saw in this event where ops was really not very existent in asking hard questions when we wrote the CRs. So we're going to fix that. We have a new plant manager, Randy Fast. We think he has a strong maintenance and operations background, and we think he'll add the right safety focus to the plant. Mike Stevens now is the director of maintenance. Mike came to us from -- he worked in energy at Exelon, and he's been with us a couple years as a maintenance director there. Bob Schrauder we brought over from Perry. He used to be the plant manager at Perry and is a proven leader with our organization. And finally Jim Powers was the engineering director at Perry, and he's over with us at Davis-Besse now as the engineering director. We think that he has the right standards and will help us drive this new safety culture in the plant. So we have made a lot of changes already, I guess, is the message.

CHAIRMAN GROBE: Lew, you have Randy Fast as a

light blue. When did he come to the organization?

MR. MUGGE: He started in January of this year. I think the graphic is wrong.

CHAIRMAN GROBE: Just prior to the outage?

MR. MYERS: Just prior to the outage, yes.

CHAIRMAN GROBE: So he's a dark blue.

MR. MYERS: Randy Fast experienced some of the South Texas plant. That was a pretty interesting turnaround. And also he went to the Beaver Valley plant and performed well down there. He was our maintenance director there, so we brought him over as plant manager here. We believe that's a good move for us.

MR. THOMAS: Before you do your summary, can I ask a question?

MR. MYERS: Yes, sir.

MR. THOMAS: First is will all people who are tasked with classifying reports and apparent cause evaluations be trained?

MR. MYERS: That's our intent.

MR. THOMAS: Second question is two of the root causes you presented require significant

process changes by your staff; namely, addressing symptoms rather than causes and lack of adequate technical rigor. Could you comment briefly on specifically what's being done to accomplish this process?

CHAIRMAN GROBE: Let me broaden that just a little bit. I really appreciate that. You embarked on a multifaceted program -- return to service program.

MR. MYERS: Right.

CHAIRMAN GROBE: And you embarked on that program with a variety of people, some from your organization, some from outside your organization. One of the first areas that we inspected was activities that you were accomplishing in the containment area and found some inadequacies in the qualification of the people doing inspections, inadequacies in the training of the people and your training programs, and then went into the field and found some observations that we were able to make that your staff had looked at the same equipment and did not make. And I think that goes right to

the question that was just asked a moment ago. Since then you have completely redone the training program, brought in a bushel basket of new inspectors, and trained them to your standards and you are reperforming those inspections in containment. What are you doing to make sure that all of the people that are implementing this restart program -- and they have been working on this for a couple months now -- have the standards and expectations that you expect and are not continuing to operate with the same focus of technical rigor and standards that existed prior to the outage? Is this the same question you asked?

MR. THOMAS: Pretty much.

MR. MYERS: I will tell you we don't have that fixed. We're working on that, but we don't have it fixed. I think the first thing that's helping drive that as we speak now is the engineering assessment board looking at the products coming out of engineering. That's a very strong board. And once again we intend to keep that as a permanent part of our process. That ensures that the documents coming

out of engineering have got the right rigor. And we'll monitor -- We have got performance indicators and things that are rejected, things that we're having to add a few comments to and stuff like that so we can monitor the quality of the information coming out of there.

Another key element that I think is good management has been our corrective action review board. The corrective action review board at our other plants looks at a lot of lower level items, conditions with apparent causes. And we give feedback directly to the managers and directors, and we monitor how many are rejected by that board. So we're driving the right standards down to the group by name. And we have strengthened that here already.

There are some things that we need to do yet in understanding the ownership for excellence program as part of our leadership in action. It doesn't appear to be effectively used at our Davis-Besse plant. And also I would tell you that there is some -- probably some new sections we need

to add to that training to make sure that our supervisors and managers are meeting the right standards of quality, you know. So I don't think there is an easy answer to what you just asked, but once again our leadership in action program is designed to develop the right type of supervisors and managers to produce the quality that we're looking for. And I don't think that's been implemented over there at Davis-Besse. I don't know if I answered your question or not.

CHAIRMAN GROBE: I think you have answered my question it's a work in progress. The problem is that we are going to need to be able to make a decision, and you're going to need to be able to make a decision that the plant is in a condition that's adequate for restart at whatever point in time you get to that decision point.

At our last public meeting at Oak Harbor, one of the items I asked -- I asked two items I hope we're going to be covering next Tuesday at our next public meeting at Oak Harbor. One of those was to get greater clarity on these various boards

that you have, independent assessment boards, and what influence they have from people that are not part of the old Davis-Besse culture and what kind of things they're finding. And then secondly the exact same question with Bill Pearce's organization.

MR. MYERS: Bill will be speaking at that meeting.

CHAIRMAN GROBE: Okay.

MR. MYERS: And I can tell you our rejection rate right now in our board's pretty high. Pretty high.

CHAIRMAN GROBE: Okay. On this graphic I think we have established if you make Randy dark blue that everybody from the director level up is new to their position. And I think four of those people -- three of them are new to FirstEnergy. Mike Ross is new to FirstEnergy, Randy and Mike Stevens are new to FirstEnergy. Is that correct?

MR. MYERS: No, I don't think that's correct. Randy has been with FirstEnergy for about two to three years.

CHAIRMAN GROBE: Who has?

MR. MYERS: Randy. He was at Beaver Valley before.

CHAIRMAN GROBE: Oh, okay.

MR. MYERS: Mike Stevens we hired at Perry initially. They have been here for a while.

CHAIRMAN GROBE: So everybody above that line is new to Davis-Besse, and one of them, Mike Ross, is new to FirstEnergy.

MR. MYERS: And the maintenance manager also is new to FirstEnergy.

CHAIRMAN GROBE: Okay.

MR. MUGGE: Peter Roberts.

CHAIRMAN GROBE: I wanted to get a better understanding of new to position below that line. How many of those folks below that line that are new to their position came from outside of the Davis-Besse organization?

MR. MYERS: Bob Peters came from Salem. Pete Roberts -- I am sorry -- he came from Salem. Robert Pell, he came up from South Texas as the ops manager, and we combined chemistry and HP. He was

the chemistry and HP manager at South Texas. He is now the chemistry and HP manager. He has been here for a year or so. But he's from outside our organization. And then I can't read the others.

MR. MUGGE: Dave Nelson came from Tennessee Valley.

MR. MYERS: Okay, yes. Pat McCloskey was from the organization. John Grabnar was from Perry.

MR. DeSTEFANO: Roder is from Davis-Besse.

MR. MYERS: Roder is from Davis-Besse.

CHAIRMAN GROBE: Okay. So only a couple of the dark blue below the director line are actually reassignments within Davis-Besse.

MR. MYERS: That's right.

CHAIRMAN GROBE: Okay. And the ones that aren't new to their position, did you do some sort of evaluation to determine that that's an adequate alignment?

MR. MYERS: We haven't done that yet. We will. One of the things I said is we're going to reassess -- we're going to assess the directors and managers to their position, each and every one of them.

CHAIRMAN GROBE: And that'll be done prior to restart?

MR. MYERS: Yes.

CHAIRMAN GROBE: Other questions?

MS. LIPA: Yes, I had a question. We talked earlier that you were planning to submit your report this week or next week.

MR. MYERS: Right.

MS. LIPA: One of the things that I was wondering is whether there will be in that submittal a correlation between the root causes you have described here and the corrective actions so we could see how it matches up.

MR. MYERS: Yes.

MS. LIPA: Also if it's clear from the submittal which ones will be corrected before restart.

MR. MYERS: No. First answer is yes, second answer is no.

MS. LIPA: How do we determine your plans before restart?

MR. MYERS: The corrective actions we will take before restart will feed into our 0350 process

and be identified in the restart.

MS. LIPA: Restart action plan?

MR. MYERS: If you look back and look at our drawing with the 0350 process, there are some items that are management items, some will be part of 0350, and some will not be part of 0350. And we identify those as just restart items. So they will be documented as a corrective action for restart.

MS. LIPA: Okay.

CHAIRMAN GROBE: You're talking about the center building block, the restart action plan?

MR. MYERS: Right.

CHAIRMAN GROBE: So they'll get screened through the criteria in that?

MR. MYERS: Yes.

MS. LIPA: So we'll have to look at that separately after this report is sent to us.

MR. MYERS: Yes.

MS. LIPA: Okay.

MR. MYERS: It should be pretty easy.

MR. WRIGHT: Following on with that thought, the effectiveness, you know. What criteria you're

going to use to judge that it's effective enough at some point to say that you can restart, is that part of in some way a trending or looking at that? That's part of the restart action plan assessment?

MR. MYERS: You know, we just finished this report this week, but we have already developed some performance indicators that we're using. And we have sent those to you to look at the health of our products and our programs. So, for example, as we go through the program reviews, if we find something in our level one screening that we're doing that doesn't have good ownership and doesn't meet the requirements or that implementation looks for, then that program will require latent issues review. And we would either make a determination through that restart review it's something that we can change now and fix it or is it something that we have to do before start-up. So each one of the programs will get that type of screening. So we're trying to use that process we're talking about in everything we do so it's consistent. Did I answer your question there?

MR. WRIGHT: Partly anyways. I guess I am looking at it saying that works well for things that you identify that you have to do, you know, change this, fix this, do this. I guess the second half -- and maybe you answered it and I didn't understand -- was once you fix this and do that and adjust this, how do you know that that now is giving you back what you want?

MR. MYERS: For example, let's talk about our engineering assessment board. We have got like four performance indicators where everything on there we look at, we grade it and we monitor that. In our 0350 process we would expect to have some criteria that says that we feel that the perform- ance -- the engineering product we're seeing is adequate before we'd recommend restart. And that would be part of that process. So for every item that goes in there, we monitor it. So if ten items come in, three of them are set, you know, four of them require minor adjustments and five of them or something may be rejected. So we'll know all that. So when we get to the performance, looks like it's

good, of the engineering products coming out, then
we'll be able to tell you we're ready to restart.
That would be a criteria in our building blocks.
MR. DYER: Lew, what is your criteria to make sure the engineering oversight board has the right set of values and thresholds in the conduct of their business?
MR. MYERS: What we did for that criteria is we gave them a charter they're using, and the charter is pretty specific. And we brought in the people we brought in from outside, looked at their resumes and qualifications extremely well. Most of them if I gave the list of names I think you would probably know them. Good strong people on that board.
With that, in summary I would like to finish by saying our CEO of FirstEnergy is Pete Berg, and he sort of set the standards in every meeting we have been in so far in returning Davis-Besse back to service in a safe and reliable manner and doing the job right the first time. I guess what I would say again today is we think this

root cause is pretty thorough, we worked hard on it, we're proud of it. And we know we have got a lot of work to do, but we're committed to meeting that challenge. Thank you.

CHAIRMAN GROBE: Any others? Anybody? I have some thoughts I would like to share. Before I do that, the NRC staff in headquarters, I would be interested in whether or not there are any questions from the NRC staff in our headquarters offices.

MR. RICHARD JURGAN: There's one. I am Rich Jurgan, NRC inspector with fuel cycles. I just wanted to know -- One of the possible contributing causes to a situation like this could be lack of communications either between departments or up and down the management chain. I am dealing with a plant that has a safety-conscious work environment issue, so I am kind of attuned to those communica- tions issues. In this analysis did you specifically look at that, or were you able to come up with conclusions as to the state of interdepartmental and vertical communications at the plant if there

were any weaknesses or maybe strengths?

MR. LOEHLEIN: I will answer that based on my understanding, and I will get some help from the other members of the team that are here if I need it. I think that I would say about our investigation that we were able to assess certain things real well from what was there in the way of the record both in interviews and in things like condition reports. Some of the things we couldn't assess as well are in areas like communication, and it's because of the way the organization failed in other ways. The condition report process told us that every level of the organization was involved. There were lots of them. Different levels of the organization, different departments all had a crack at a number of these issues. So in terms of communication among them we have seen those cases. Whether or not that was a factor or not would be less critical because they all had a part in it. We make a point in the report of how many supervisors, how many individuals, how many people in different management were involved in these

different condition reports. So from that perspective we knew lots of people were involved. But the communication links themselves, I don't think we really have a lot to say about it. Mario, do you have anything to add in the way of clarity?

MR. DeSTEFANO: I would echo that up and down the organization the right people got involved and were participants in the decisionmaking. The weaknesses that we did see in the few instances that we got a chance to see it was between departments. That's the only place we saw weaknesses with communication.

MR. LOEHLEIN: Right. Maybe really along with that where you would expect a department to seek help from someone else. Because it goes back to the safety culture. If you are in an area that you don't think you know everything about this, you want people to question well, can I answer this, do I understand it enough to write what the cause analysis is or should I seek help from others. We didn't see that tendency in the people that participated in these issues.

MR. JURGAN: Thank you.

MR. MYERS: I can tell you more information. The employees will tell you that over the years the teamwork between departments has diminished and they have become somewhat isolated.

MR. LOEHLEIN: Silo.

MR. MYERS: Silo is a good word. You hear that from some of the feedbacks you are getting on walk-downs and the four C meetings I have.

CHAIRMAN GROBE: Bill, do you or any of the staff at headquarters have a question?

MR. WILLIAM DEAN: Yes, this is Bill Dean and Anthony Mendiola here at headquarters. I had one question. And that relates back to an earlier slide where you talked about a safety-conscious work environment survey. And then the discussion took us somewhere else and we never really came back to that. Are there any results or observations regarding what that survey told you?

MR. MYERS: Yes. Okay. We looked at the survey. And if you look we did a survey in 2000, early 2000 and, I think, one in 1999, I think, was

the time. And the survey from 1999 to 2000 showed improved performance in all areas. The survey we recently did shows declining performance in all areas back to the 1999 timeframe. And so, you know, it's at a level that, you know, I would say I would call a concern. So we're really trying to address that survey in many of our meetings and to our employees, that they have the right to come forward with issues and not be fearful. The survey we just did, we just got the results back this past week. But we had an all hands meeting yesterday where we specifically talked about the results of it to all of our employees, about that survey and their rights as employees. So with the site being shut down, I would say that our employees are, you know -- The employees there are very educated, they have had good performance in the past at the plant, the plant ran well for a long time. And they're somewhat in shock since this happened. And whenever the plant is shut down and all the stuff that's going on, morale tends to decrease. So what we've got to do is try to keep that morale up and

as an organization open up an open door type policy. We're really stressing that as we sit here today. We have seen some decline in performance back to the 1999 timeframe.

CHAIRMAN GROBE: Bill, other questions?

MR. DEAN: Yes. Thanks, Lew. I just have one comment and I think Tony has a question. And certainly we'll be interested in hearing -- I know some of the questions that came from some of the regional staff and managers there at the end, I think, kind of got around this issue, but the recognition that it takes time to inculcate, enhance standards and expectations of the organization. And certainly we're going to be interested as to the 0350 panel getting a good sense in terms of how you attempt to assess and monitor progress. We heard some discussion about performance indicators and other things. But I think there are some ways you need to measure that and also a sense of what is the threshold that you expect to reach that tells you when you are where you want to be. So those are things that we will want to discuss at

the 0350 panel next week, not necessarily here today.

MR. MYERS: Okay.

MR. ANTHONY MENDIOLA: My question probably is a little more of a comment. But it regards the earlier part of your presentation which talked about your root causes and your conclusions which rather simplistically stated that your procedures and your processes for dealing with certain aspects of this were adequate or were functional but for whatever reason did not give you the proper response or certain aspects failed and led eventually to the situation that you're in now. The only quick conclusion that I can make from that is the human side of that in that the staff that was responsible for carrying out that process or carrying out that procedure was either inadequate either in resources, staffing or training in order to complete these processes that you discussed. Taking it a little further along to your corrective action program, my concern then becomes whether or not your resources, your staff resources are adequate enough to implement

the, I guess, two dozen or so new programs and new procedures that you have outlined to accomplish, if you will, the higher standards that you're setting for yourselves. And I guess my question quite simply then is if you could address whether you believe you have enough staff resources and training and expertise at the staff level in order to accomplish all those plans that you have.

MR. MYERS: You know, we benchmark our resources consistently across the industry. All of our plants are high on resources. So we have quite a bit of resources at our sites, all three sites. With all this going on right now no one could have enough resources, so we have supplemented with contractors. And at the present time there's about 1600 people on site. So there's a lot of resources on site now that's helping us get through this.

The head issue, we had contracted the head inspection out to a contractor, Framatome, and we had an engineer assigned to it. We had the resources that we needed to do a head inspection. That is not the problem. In fact, at one of our

other plants we had done two recent head inspections and, I think, done those fairly adequately. So I don't think it was a resource concern; I think it was more of a standards concern and a compliance concern.

MR. LOEHLEIN: I feel compelled to comment too on the resource issue because I think some people think it's self-evident. Yet in all of our investigation the resource issue almost never came up in any kind of direct sense. And we talked about it as a team when we were making our -- concluding and doing our conclusions. If resources had been the issue we would have expected the condition reports and so forth to have had the right categorizations, the right priorities and so forth, and the organization would not have gotten to them meantime because of a resource issue. Yet that's not what we saw. What we saw from the outset was an undertreatment if you will of the conditions which means that even before maybe resources are even considered the things are not approached from the standpoint that they may be concerns. So that's

why you will see nothing in the report concerning resources because there just are no facts in anything we found that could tie resources as an issue to what happened with the reactor head.

CHAIRMAN GROBE: Okay, thanks. Bill or Tony, any other questions? I will take that as a no.

I have a couple of thoughts to share with you just from the standpoint of -- I am sorry, Bill or Tony, did you have another question?

MR. DEAN: No, we're done. It's just the challenge of moving electrons through 1,000 miles or so causes some delay. Thank you.

CHAIRMAN GROBE: Okay. Thank you. I am confident you're up to it, Bill. I wanted to share with you where we are and what my expectation is for the activities that are under the direction of the panel. Obviously we can't inspect until you move along with completion of activities. And with the completion of this root cause report we have just begun our activities to inspect this in this case. Geoff Wright is here today at the table. He's the team leader for this area of inspection,

and he was on site last week beginning to under-stand the landscape and the details and the data that's available and plan his inspection. My expectation is that our inspection in each of the building block areas will have a number of phases to it. The first phase is evaluation of what caused the problem at Davis-Besse and then a look in that building block area as to whether the building block plan addresses those root causes, evaluation of the adequacy of the building block, observation of your staff implementation of the activities under that building block, and then conduct of independent inspection by NRC staff to confirm the quality and depth of the work that your staff is performing. We have already, as I said, begun that in the containment health area because you're well along in that area. You've had some problems. You're reperforming those inspections, and we will be following you in that regard. And we're just beginning in the other areas, systems health, program health and various other areas. This component will also contain a different ent

piece because here we're dealing with organizational effectiveness of human performance. It's difficult to take measurements. I am not aware of a tool to measure safety focus, engineering tools. So it's going to involve also some structure, interview of staff at various levels in the organization to get a sense of the effectiveness of your corrective actions as well as a key focus on the validity of your performance indicators in this area and monitoring of those performance indicators. My experience in the past with situations like this is this is the most complicated and difficult area to get your arms around. And that probably explains why this root cause is coming in in August and the other one came in in April. And secondly that it's one of the most challenging to make movement in the organization onto the new standards that you expect. And this is the most important aspect of root cause inspection. So it's going to be a very strong focus of the panel and the inspection activities that the panel is directing, and I expect it to be

a significant challenge for your organization. So with that, Jim, do you have any comments that you wanted to make?

MR. DYER: Yes, I do. You know, I guess I am struck by the presentation today and certainly look forward to getting the written report. But I started back as Scott Thomas, senior resident inspector, went through the -- took us back to when this all started with the AIT and that. And it reminded me, you know, the outcome of this was an unacceptable reduction in the margin of safety of one of your principal safety barriers. Just absolutely unacceptable. And the goal of the restart efforts that you are doing now and the goal of our oversight is this cannot happen again; not with the vessel, not with any of the systems. And I was thinking back. And, Lew, you used a couple terms that struck me, you know, in terms of the site has a lot of pride, you know. And it struck me that in this case it may be that the pride went beyond pride; it went into arrogance --

MR. MYERS: Yes.

MR. DYER: -- and isolationism. I think you used the term a silo effect. Then you used the term -- I think you said that you were humble, and that struck me. I think you might be beyond humble. I think it's into a humiliation type timeframe right now. Being humble in this business isn't bad, you know. It's that humility to go out and listen to the input from the rest of FENOC, to listen to the input from the industry, from the NRC and, you know, really focus on trying to find the problems before they find you that is critical to good performance. And so maintaining that humble outlook, I think we're going to be critical going forward.

But that isolationism, as I look through it the way you describe it here today, you know, in not only line management but all your independent oversight plus the outside QA oversight and the industry, you know, it just didn't take. All these problems -- This problem on the vessel head bypassed all those. And it also struck me, you know, as I connected the dots, the thing that

appears to me was that the NRC seemed to be driving, you know, the Davis-Besse response to a lot of issues, what your perceived regulatory risk was as opposed to an independent set of values and that. And, you know, we're also doing our own lessons learned review. And certainly one of the things that you wind up with is from a period of about 1997 to 2000 Davis-Besse was not that inspected. With the other issues that we had in Region III and the plants that we were focused on, you know, we did not provide the -- we provided the minimal amount of inspection that was allowed by our program at the Davis-Besse facility. And, you know, as a result of that I think the quality degraded, the effort there. And now you are in a position where you have got to have these building blocks and go back and reboot your program if you would and essentially rebuild it as it comes up.

And, you know, the one thing that strikes me in your presentation -- You talked around it. You know, the building blocks are one thing. But I think you need a good foundation and having the

right safety values and where you're bringing in a lot of new people and starting to listen to the industry and that. And you can't ever let yourself get into the position where you're relying on us and the amount of inspection that we do to set those values. When that happens you end up in a corrective action program like you're in right now under 0350. And that's particularly tough because we are going to focus on going back to the fundamentals, back to the basics. We're going to inspect in detail every one of your building blocks and your corrective action programs. And Jack and the team have put together a restart inspection plan. As you heard, Geoff Wright's one of the team leaders and that we're starting to put together our strategies. But we are going to focus on making sure that you have implemented your building blocks to get the expected results that you are looking for and that we expect. And you cannot be basing your get well program on what you expect the NRC to inspect. Because if that happens it's going to be a long, painful restart process. Because

historically I can tell you having been through about a half dozen of these restarts is the utility needs to get out ahead of us and needs to set their own standards, and those standards need to be higher than our expectations when we go in to inspect.

I think it's going to be quite a challenging period for both you and us in achieving inspections. And I just think that we need to keep the communication -- I think the 0350 process has laid good groundwork for your start-up activities and our inspection plans. And this is a key. This root cause assessment you did is a key component of that. And as Jack said, it's the one that's going to need to be corrected to make sure you stay on an improving trend after restart too.

CHAIRMAN GROBE: Okay. With that the business portion of the meeting is adjourned.

MR. MYERS: Could I ask one other question?

CHAIRMAN GROBE: Sure.

MR. MYERS: We have got some employees here from Davis-Besse. Do you have any comments

concerning the statements?

MR. MUGGE: Yes, I would say just one. And that is regarding the comments that you just made, when we shifted focus down to doing the minimum that was required, we gave away that margin; we gave away the margin to safety. And we didn't have an appreciation for that, and that's unacceptable. So I agree with your comment. And I think the ramification is that we need to turn that around much earlier than coming down where we have been with the enforcement.

MR. MYERS: Do you have anything?

MR. SPENCER: No.

MR. MYERS: Okay. Thank you.

CHAIRMAN GROBE: Okay. Anything else, sir?

MR. MYERS: No.

CHAIRMAN GROBE: Okay. Thank you. The agenda has a break at this point in time. But recognizing that it's already 5:20 and we probably have a number of people from the eastern time zone -- it's 6:20 in their time zone -- I would suggest that we just go ahead and move right into questions from the

public. This portion of the meeting is intended to provide the opportunity to members of the public who are attending this meeting to ask questions of the NRC staff and provide input to the NRC staff. So what I propose we do is -- We have three sort of venues of questions, opportunities for questions. Do we need to set something up?

MS. LIPA: A microphone.

CHAIRMAN GROBE: Don't anybody move. Don't get out of your chairs. We're going to do a couple of logistical things making sure the microphones are turned on and things of that nature. Go ahead and take care of that. While Cheryl's doing that, why don't I just describe how I want to proceed with the questioning process. As I mentioned we have three venues for questions. We have folks here in the Lisle, Illinois office; we have folks in the headquarters offices in Rockville, Maryland; and then we have folks that are on a telephone bridge link who may also have questions. What I would like to do is proceed in that order. Anyone that has -- a member of the public who wants to ask

a question here in Lisle could go first. And approach the microphone and ask your question, and we will answer it as best we can. And then we will proceed to headquarters and then to the telephone bridge. And before folks leave I would also like to remind you once again of our feedback forms. We're always looking for feedback on the quality of our meetings. So please make sure that you take the opportunity to fill out that form. It doesn't require a stamp. You can mail it back. It can be anonymous. You can provide us constructive feedback, and if you feel so inclined you can also compliment various aspects of these meetings. That would also be appreciated. But please anybody here in Region III if you have a question or a comment, please approach the microphone. I think we have one representative of public officials here and that was Gere Witt. Gere just stepped out? He had a plane. I know that. Unfortunately he is not here. Members of the public here in the Chicago area, if you have any comments please approach the microphone or questions. Please, sir. Identify

yourself and go ahead.

MR. ROBERT ZAMENSKI: Bob Zamenski, and I live in close proximity to the plant. But I also work at a nuclear facility across the way. And I am here mostly for lessons learned so I can carry them back to our organization. 90% or maybe 100% of what we talked about today transcends boric acid and goes into stuff that applies to PWRs. I was wondering if the NRC is planning on -- after their reviews are completed and Davis-Besse is back on line if you are going to plan on issuing a bulletin or information notice on the soft issues that we talked about today.

CHAIRMAN GROBE: That's an excellent question. I don't believe anything of that nature was contemplated right now. All of the documents that we have are available on our web site, and there's a very well-organized set of links to various documents. And when we receive this document, that will likewise be available to anybody in the industry or the public on our web site. We'll take that under consideration that that could be a

possibility. We appreciate the comment.

MR. MYERS: I can add some information if you would like. This is strictly from an industry standpoint. We met with Institute of Nuclear Power Operations a couple weeks ago. It is our intention to have a group of utility meetings, not public meetings, utility meetings to talk about this event in great detail and the lessons learned for all the utilities. So we talked to them about having four different meetings in different parts of the United States to ensure that, you know, every lesson learned we can give you we do give you. So that's our intent right now.

CHAIRMAN GROBE: Okay. Very good. I appreciate that. Another question?

MR. ZAMENSKI: One other question, Jack. I was wondering why the '92 event where we had base metal wastage at the steam metal generator at Davis-Besse was not included in any correspondence from the NRC. I went back to 1980 and reviewed all your bulletins and information notices and generic letters and couldn't find anything on that

particular event.

CHAIRMAN GROBE: I don't know that all occurrences of boric acid corrosion at every nuclear power plant in the United States have been captured in an info notice. I would suspect it certainly hasn't. But I believe that if you go back and review Davis-Besse inspection reports, you will find that that issue was discussed in inspection reports for Davis-Besse.

MR. ZAMENSKI: Okay. Thank you.

CHAIRMAN GROBE: Okay. Thank you. Any other members of the public here in Lisle have a question or comment?

THE OPERATOR: This is the IO operator. Would it be possible to repeat the questions being asked for the audio participants?

CHAIRMAN GROBE: Okay, I will do that. Thank you. Good suggestion. Bill, why don't we go to Rockville, Maryland and see if any members of the public there would like to approach the microphone and ask a question.

MR. DAVID LOCHBAUM: Dave Lochbaum of the

Union of Concerned Scientists. I have a couple of observations on the observations that the root cause team put out.

On slide 36 of the presentation one of the key observations was training was not provided to individuals performing inspections for boric acid, end quote. In our June letter to the lessons learned task force and the 0350 panel we had pointed out that the NRC's September of 1989 inspection following up the bulletin on the boric acid corrosion program identified the lack of training, and it designated it as unacceptable in the report that was sent out to FirstEnergy in early 1990. So it looks like that was a problem both on the company's and the NRC's side of the house in not having corrected that problem even though it was identified quite some time ago.

The second comment is an observation on the following slide, slide 37, that's been discussed at some length today. It's the monetary incentive program rewards production more than safety at senior levels. With that in mind -- And

we're not by any means suggesting advocating those programs are bad or inherently evil or anything like that. But it looks like the NRC should learn from this and look at when they do AITs or possibly do the inspection manual verification of the performance indicators that they be aware of bonus plans or incentives to see if there might be a potential bias or potential bias in the decision-making process. Again hopefully that would always verify that there wasn't one, but it looks like we know that some plants have gone to providing incentives linked directly to performance indicators. So it looks like the NRC needs to be in awareness of that and factors that go into the incentive program.

CHAIRMAN GROBE: Jim, David raised two questions. And the first one had to do with the feedback that was provided from a team of folks from the NRC that went out and examined -- after Generic Letter 88-05 examined the program put in place at Davis-Besse. One correction I think to Mr. Lochbaum's characterization, the team concluded

there were some weaknesses in the area of training and that is correct. And I think it's a correct observation that that condition was also an observation here in the root cause. Does Davis-Besse have any appreciation of whether there was a corrective action taken back in the early '90s and then it atrophied, or was that something that was never responded to?

MR. DeSTEFANO: The audit report that Mr. Lochbaum is referring to had those two recommendations in it, and they were geared towards operations staff and the engineering staff who performed boric acid inspections. And what we found in our investigation was that no follow-up action for those two recommendations had been taken and there were no action items in the tracking system for that. So during our recent investigation a condition report has been issued to follow up on that exact issue.

CHAIRMAN GROBE: Okay. Very good. Thank you. And the second comment that David made concerned performance indicators and the structure of the

reactor oversight process. And we will make sure that the Division of Inspection Program Management gets that information. Okay. Jim Riccio, do you have a comment?

MR. JAMES RICCIO: Just a couple of comments. I guess more directed towards the NRC. NRC has placed significant staff effort into several programs over the last several years that seem not to have had an effect at Davis-Besse, the 50.59 RF letters that went out in regards to understanding that your design basis is maintained. NRC also put a lot of effort into ensuring that the the industry understood the process for 50.59 evaluations. Both instances seem at Davis-Besse not to have really sunken in. And it's a question both to the industry and the licensee. What needs to be done to assure that the design basis is maintained and understood, and what's to give the public any confidence that not only the industry but also the licensee has taken steps to improve its processes to ensure that it doesn't get caught with its pants down again?

CHAIRMAN GROBE: Thanks, Jim. The focus of the discussion here today, I believe, on 50.59 and safety evaluations was primarily focused on the kinds of questions that are considered in the context of decisionmaking. You make a decision not within the context of a loss of control of the design basis or the licensing basis of the plant. But I understand your question and appreciate it, and I will consider it in how we structure the inspections we do at Davis-Besse.

Any other questions from headquarters?

MR. DEAN: Nothing else from here, Jack.

CHAIRMAN GROBE: Okay. Operator on the telephone bridge, could you facilitate questions from folks that are on the telephone lines?

THE OPERATOR: Our first question comes from Paul Gunter. You may ask your question.

MR. PAUL GUNTER: Hi, Jack. This is Paul Gunter with Nuclear Information and Resource Service. Can you hear me?

CHAIRMAN GROBE: Absolutely.

MR. GUNTER: My comment has to do with the

remark that opened the presentation. And I too was struck by FirstEnergy's humbled position. Recognizing their devotion to production as part of the root cause, I was struck by something a little more fundamental and as disturbing if not more. And it has to do with slide 22 where in the root cause conclusion, the first bullet, Davis-Besse adequately identified and documented nonconforming conditions. I have to take issue with that. And there are numerous examples, but I would like to follow one thread that begins with a condition -- actually with a work order that was issued on April 25th, 2000, with regard to the large boron accumulation noted on top of the reactor vessel head.

The work order clearly identifies that the program is required due to degradation of the control rod drive mechanism nozzle caused by primary water stress corrosion. And in order to perform the required inspections, it says here the the nozzles as well as the penetrations must be free of boron deposits. Once the head is free from

boron, new boron deposits may be easily noted and remedial actions taken. The work order then goes on to provide a handwritten note that says work performed without deviations, and it's signed and dated. That was in April of 2000. Then on October 3rd in a telcon with staff, FENOC identifies that 100% inspection of the head was conducted. Then on October 11th, 2001, in a briefing by senior manage- ment of -- well, a management team from FirstEnergy in briefing the Commission's technical assistants provided testimony that all CRDM decipher were verified to be free from characteristic boron deposits using video recordings from the previous two refueling outages. So, you know, clearly the most fundamental and most disturbing question about this is the veracity of the document trail here provided by FirstEnergy. And I don't see that identified in the root cause analysis. Actually it contravenes what Davis-Besse has identified as adequately identifying and documenting noncon- forming conditions.

More specifically the concern is with

the accuracy of the analysis and the document trail here. And it seems to raise the question about FirstEnergy's devotion to telling the truth. And I don't see that as addressed in this root cause. But it seems to be much more fundamental in light of the admissions of the devotion to production that we need to address the devotion to tell the -- to accurately tell the condition of the plant particularly in reports to the Commission. And I think that this is a piece that is not provided in this root cause and that must be brought about to some degree to be addressed in order for there to be any public confidence in both FirstEnergy's past, present and future reporting and the NRC's ability to decipher that the company's reporting to it is either accurate or a truthful admission to the actual condition of the plant. And I am wondering how we can -- how the NRC plans to identify this very fundamental problem that's currently not identified in the root cause.

CHAIRMAN GROBE: Paul, that's an excellent question. And it's an area that I had intended to

focus on and had not. I appreciate your question. Steve, during the AIT inspection as well as during the AIT follow-up inspection which was just exited last Friday, we identified some questions regarding the accuracy of information contained in internal documents as well as documents to the NRC. And did you evaluate during your root cause evaluation what role that may have played in the effectiveness of the organization?

MR. LOEHLEIN: Well, I think I would like to probably straighten a few things out in terms of accuracy and how they're portrayed as well as root cause goes. For example, the condition report that's identified from the year 2000, in terms of root cause we know quite clearly damage to the head was well underway by the year 2000. And we established that back in April already that this is a 4- to 6-year issue. In terms of root cause the failures had already occurred.

In terms of truthfulness in the root cause investigations, how this happened and how the organi- zation failed to recognize the significance of

issues, we investigate records and we look at information as regards interviews. If during that investigation we find facts that can't line up or whatever, we discount them. And if at any time we believe somebody may be not truthful, it's our job to turn that over to security. We do not have the right to investigate whether we think somebody is truthful or is not truthful. That's not the kind of thing we investigate.

CHAIRMAN GROBE: I wasn't focusing on motive; I was simply focusing on accuracy of records. Let me put it in a more specific context. For example, during the year 2000 after the outage there was a continuation of air cooler cleanings and rad element filter replacements. Did the information which indicated that the head had been cleaned, inspected and no anomalies noted, did that factor into the follow-up to the containment air cooler cleanings and the rad element filter replacements in a sense that it may have led people to different outcomes in their thinking about those issues? Did you look at the impact of inaccurate information?

MR. LOEHLEIN: I don't know if I am following your question correctly. I won't put words in your mouth, but it sounds like you're asking that in light of what was said or documented, did that cause the organization to respond.

CHAIRMAN GROBE: Differently.

MR. LOEHLEIN: Differently. You could ask the other members of the team. I personally -- From the information we had discussed as a team, I don't think so. The mind set that was in place prior to 12RFO continued to be in place after 12RFO. The leakage was coming from the flange both before and after the outage. As a matter of fact, there was a lot of -- among the staff they felt strongly it was coming from a particular flange, D11 it would have been. Because as it turned out, they weren't so sure that had been assembled adequately and maybe that was a source of the leak.

CHAIRMAN GROBE: Okay.

MR. LOEHLEIN: So that while that piece of evidence is there that asks the question as to whether that accurately reflected things and

whether people may have been misled, I didn't see any change in the pattern of the thinking before and after 12RFO and before and after those documents were in place. Mario, do you have any other insight?

MR. DeSTEFANO: At no time did we see any indication that the troubleshooting associated with the rad elements or the containment air coolers had taken the path they did because of assumptions on the reactor vessel head other than the leakage is coming from flanges. No, we did not see any indications that they stopped short because of inaccurate information. Additionally, we did during our very interviews probe any areas where we felt that documentation had not lined up or we saw a conflict between documents of the same author and included those type of responses in our conclusions or, like Steve said, disregarded information that we had. Because we had plenty of sources. This investigation did not rely on any small number of documents or personnel. It was that deep. And we had so many documented cases where there wasn't one

that would break the back of this investigation.

MR. MYERS: We did have another investigation, a different type of investigation or look at some of the documents on the legal side of the house that had been submitted. You brought some of those issues up, the AIT exit. We know about the work order that was signed out. We know about some of the conflicts in the presentation that we have seen. Some of them indicate that the head wasn't fully inspected; some of them indicate that it was. So we know about some of those conflicts. And we have separate investigations going on just for that purpose. So it's not something we're ignoring either.

CHAIRMAN GROBE: Okay. I think I understand the answer to the question. Jim, did you have something?

MR. DYER: Yes. This is Jim Dyer. And I guess let me understand -- I am asking Jack Grobe as much as anybody. And this gets closer to Paul Gunter's question as to where we are in the process of addressing these issues.

First of all we did an AIT follow-up inspection which really went to characterize our fact-finding from the AIT in regulatory space, and we had an exit last week at the site and we're going to plan to review that. Is that this Tuesday, or is that going to be discussed at the 0350 meeting?

CHAIRMAN GROBE: Yes.

MR. DYER: Now, that particular exit identifies potential violations.

MR. MYERS: That's correct.

MR. DYER: And Paul's question got to whether or not you're telling the truth, I guess was the term that he used, in that. And at this stage of our inspection process we identified some instances of inaccurate information.

MR. MYERS: Correct.

MR. DYER: At this stage by the NRC we have not characterized whether there was any kind of motive to it if you would. It's more just the fact it is an inaccurate statement, and that is a violation of regulations. Whether or not it's

truthful or not really gets to the nature of the violations and things that we have to look at, and I am sure we'll dialogue some more.

As far as the intent and that we do have ongoing investigations from our side of the house that are ongoing that will look into other allegations that we have or possibilities that there was a deliberate or willful violation of the regulations. At this stage what we have done is identified a number of violations of regulations. And those -- Again I don't want to get ahead of ourselves, but those will be discussed, I believe, next week.

CHAIRMAN GROBE: Yes, that's correct. We will provide a broad discussion of the results of the AIT follow-up inspection at the public 0350 meeting next Tuesday. And I appreciate Paul's question also. And we'll evaluate and we have heard the licensee's position that inaccurate information didn't play a role in this issue. And that will be part of what we evaluate during our inspection in this building block area.

Are there any other questions from the

phone lines, Operator?

THE OPERATOR: The next question is from Michael Keegan. You may ask your question.

MR. MICHAEL KEEGAN: Michael Keegan, Coalition For A Nuclear-Free Great Lakes. I heard the folks from FirstEnergy, especially the culture of production over safety, and then they went on to discuss that they have done some walk-downs of other systems. The hole in the reactor was beyond the maximum credible accident scenario, was never considered. With all the other systems I am very concerned about the status of those systems. And I am very interested in what kind of oversight the NRC is going to provide to those systems prior to allowing a restart.

CHAIRMAN GROBE: I think I can answer that, the licensee has developed a restart program that includes an evaluation of systems, evaluation of all equipment inside containment. Pursuant to our reaction letter they're evaluating the remainder of the primary coolant system pressure boundary. So the licensee has undertaken a fairly comprehensive

evaluation of hardware at the plant. And we are structuring our inspections focusing in the same way the licensee is focusing their activities. And we will have an inspection of the systems reviews that they're doing as well as we already have an ongoing inspection of the equipment inside containment. And those inspections will be documented and the results of those inspections will be considered by the oversight panel, the NRC's oversight panel for Davis-Besse. And the oversight panel when it feels that issues have been sufficiently evaluated will make a recommendation to senior NRC management with respect to restart. Are there other questions on the phone lines, Operator?

THE OPERATOR: Our last question comes from Karen Schafer. You may ask your question.

MS. KAREN SCHAFER: Can you hear me?

MR. GROBE: Could you speak up, please?

MS. SCHAFER: Sure. Hope you can hear me.

CHAIRMAN GROBE: That's fine.

MS. SCHAFER: I had a couple of quick questions.

I heard from the discussion today this will take some time for the NRC to accept all of the information on the management performance root cause analysis as done by the company. But I wonder if we could hear a little bit of initial response. Is the NRC oversight team satisfied with the sufficient provingness of the analysis so far?

CHAIRMAN GROBE: I can't speak for all the members of the panel. I will ask them to provide any additional insight. The report I see that is sitting over next to Lew Myers is well over an inch thick. And we have already gone through in two and a half hours or three hours an extraordinary amount of detail. The presentation appears to cover many of the areas that I was focusing on. But the details of the assessment and the alignment of the root causes with the specific issues that we have identified during our inspections is yet to be completed. So I would hesitate to make any broad statements on adequacy or confidence, I think, was the word you used. But it appears that the plan once we receive it and have an opportunity to

evaluate it covers all of the areas that I was focusing on. Are there other members of the panel that have comments?

MS. LIPA: I agree.

CHAIRMAN GROBE: Bill Dean, do you have any thought or comment from headquarters? Did you have any comment? Bill, I can see your mouth moving. Bill, we can't hear you. We still can't hear you. How are you at sign language?

MR. DEAN: Okay. Obviously we're having technical difficulties here.

CHAIRMAN GROBE: We have you now.

MR. DEAN: Okay. No, the only point I was going to make, Jack, was I thought what the licensee presented was fairly candid and fairly broad reaching in a lot of areas. I am really looking forward to actually getting through the report and getting into some of the details to, you know, have a full -- I guess a full understanding of the breadth of how extensive it is.

CHAIRMAN GROBE: Okay. Very good. Thank you.

MS. SCHAFER: Thank you. Could I ask my other

question?

MS. LIPA: Yes, go ahead.

MS. SCHAFER: Thank you. The other question I have is simply this: Mr. Myers alluded to a management incentive program that came in sometime in the '90s that may have had something to do with the abandonment of safety over a culture of power. I wonder if the NRC plans to ask more questions about that or we'll hear about that at future meetings.

MR. MYERS: That's not what I said.

CHAIRMAN GROBE: Go ahead, Lew.

MR. MYERS: That's not what I indicated, I don't think. You know, we managers have always had incentive programs. A new company was formed in the '97 timeframe, and the incentives changed somewhat. I can't really sit here today and tell you exactly what changed. But it's a bigger company and there's some more corporate goals that we didn't have before probably. I have been an executive with Centerior Energy since '96 and then with FirstEnergy since they were formed. And I can

tell you from my perspective the decisionmaking process that I have made over the years when it comes to nuclear safety has not been affected by the incentive program. It gets down to an integrity issue. As I commented again, this is just -- where we're at today is a technical embarrassment. I don't know if people heard that or not. But it's just a technical embarrassment and just not a place we want to be or I ever want to be again.

MS. SCHAFER: Thank you for the clarification.

CHAIRMAN GROBE: Are there any other questions on the phone lines, Operator?

THE OPERATOR: We do have one more question from John Mengles. You may ask your question.

MR. JOHN MENGLES: Hi, Jack. This question is really more for Jim Dyer. Jim, I think you mentioned that there was something going on with the NRC regional office between 1997 and 2000 that affected the amount of inspection or the quality of inspection maybe that you were able to do at Davis-Besse. Could you elaborate on that, please?

MR. DYER: Certainly. From 1997 through actually about 2001 there were a number of plants which we characterized as problem plants or watch list plants here in the region. Davis-Besse was not one of them. This was a time period where we had a number of -- I can think of, I think, Point Beach was a plant that we were following under the 0350 process. The Clinton power station was one we were following under the 0350 process. LaSalle, Quad Cities, Dresden were all plants that we were following under the Manual Chapter 0350 process. As a result those plants were receiving an extraordinary amount of our attention. Also D.C. Cook. And because we were focusing on them, a lot of the other plants within the region were getting what I would call the minimum program. Davis-Besse was one of those plants. And as a result we did the minimum inspection program at that time -- that was referred to as the core inspection program -- at the Davis-Besse facility in order to support a lot of the inspection activities at these other sites that I referred to. And so that's the nature

of my comment earlier.

MS. SCHAFER: Thank you.

CHAIRMAN GROBE: Operator, any other questions on the phones?

THE OPERATOR: At this time there are no further questions.

CHAIRMAN GROBE: Okay. With that we are adjourned. A couple of reminders. Folks that picked up visitor badges to be up here, make sure you turn those badges in. Please pick up a copy of our feedback form and fill it out and provide us any of your thoughts on how we can improve our meetings. And finally thank you very much to FirstEnergy for your comprehensive presentation. We're already passed the operator leaving the switchboard downstairs. So if you have a badge, turn it in to Christine, and we'll make sure it's taken care of. Thank you very much.

(Which were all the proceedings had at the public meeting of the above-entitled cause.)

STATE OF ILLINOIS )
) SS.
COUNTY OF C O O K )

I, MARLANE K. MARSHALL, C.S.R., a Notary Public duly qualified and commissioned for the State of Illinois, County of Cook, do hereby certify that I reported in shorthand the proceedings had and testimony taken at the hearing of the above-entitled cause, and that the foregoing transcript is a true, correct, and complete report of the entire testimony so taken at the time and place hereinabove set forth.

MARLANE K. MARSHALL
Notary Public
CSR License #084-001134

My commission expires:
February 23, 2004.