

UNITED STATES OF AMERICA
U.S. NUCLEAR REGULATORY COMMISSION

BRIEFING ON BROWNS FERRY UNIT 1

OCTOBER 18, 2011

9:00 A.M.

TRANSCRIPT OF PROCEEDINGS

Public Meeting

Before the U.S. Nuclear Regulatory Commission:

Gregory B. Jaczko, Chairman

Kristine L. Svinicki, Commissioner

George Apostolakis, Commissioner

William D. Magwood, IV, Commissioner

William C. Ostendorff, Commissioner

APPEARANCES

Tennessee Valley Authority (TVA):

Preston D. Swafford
Chief Nuclear Officer and Executive Vice President,
Nuclear Power Group

William R. (Bill) McCollum, Jr.
Chief Operating Officer

Don E. Jernigan
Senior Vice President, Nuclear Operations

Robert J. Whalen
Vice President, Nuclear Engineering

Keith J. Polson
Site Vice President, Browns Ferry Nuclear Plant,
Units 1, 2, and 3

NRC Staff:

Bill Borchardt
Executive Director for Operations

Victor McCree
Regional Administrator, Region II

Rick Croteau
Director, Division of Reactor Projects, Region II

1 PROCEEDINGS

2 CHAIRMAN JACZKO: Good morning, everyone. The Commission
3 meets today to discuss the safety challenges experienced by the Browns Ferry
4 Nuclear Power Plant and the steps being taken to strengthen safety at the plant.
5 In particular, in May 2004, Brown's Ferry Unit 1 was placed in Column IV of the
6 Reactor Oversight Process Action Matrix after it received a "Red" finding when a
7 reactor core cooling valve failed. Under the ROP, the NRC will place a plant in
8 Column IV only after identifying findings with high safety significance. That
9 designation triggers heightened NRC inspections to ensure that the needed
10 remedial measures are taken.

11 This is not the only significant issue the Browns Ferry plant has
12 experienced in recent years. In 2003, all units at Browns Ferry were placed in
13 Column III after receiving a "Yellow" finding for fire protection issues. Given this
14 recent history of issues, I'm sure that we can all agree that we want to see the
15 plant perform more safely. To achieve that, there needs to be a strong
16 commitment from the licensee's entire organization, from its senior leadership to
17 its frontline engineers to do what needs to be done for safety.

18 Less than two weeks ago, I visited the Browns Ferry site with
19 Senator Alexander to assess the plant's progress in addressing its equipment
20 reliability issues and other challenges. As I was doing that visit, it was clear that
21 steps have been taken, and it was clear that there was still an amount of work
22 that needs to be done for the licensee to ultimately, I think, perform as we and as
23 they, I believe, want the plant to. And I had a chance when I was there to talk to
24 employees, and what I got a sense from many of them was a recognition that
25 there were things they wanted to do better and were interested in doing that; and,

1 in my mind, that's always a positive sign is that recognition that there are
2 challenges and the need to address them.

3 So, in the presentations from the staff and the licensees, we'll hear
4 in greater detail about exactly what steps they intend to take. But, it's always
5 important that we stay on top of this issue in order to ensure that this matter's not
6 indicative of broader issues at the plant. So, before we begin, would any of my
7 colleagues like to make any comments? Okay. I'll start with the staff
8 presentation. Bill, if you want to begin.

9 BILL BORCHARDT: Good morning. A plant that enters into
10 Column IV or the multiple, repetitive, degraded corner stone column of the
11 Reactor Oversight Program Action Matrix is of significant regulatory concern to
12 the NRC. The NRC management directive that provides guidance on the reactor
13 oversight program was revised in 2009 to ensure that, within six months of
14 entering Column IV, that the operating company briefs the Commission on their
15 plans to improve safe operation of the facility.

16 Browns Ferry Unit 1 entered Column IV of the Action Matrix in the
17 fourth quarter of 2010. The purpose of today's briefing is to brief the Commission
18 on the performance of Browns Ferry Nuclear Facility in accordance with NRC
19 management directive. Vic McCree will discuss the recent performance at
20 Browns Ferry, the staff's review and assessment of that performance, and then
21 Rick Croteau will discuss Region II's completed, on-going, and planned
22 inspection activities.

23 Slide three is the agenda for the staff's presentation. And, if you
24 could go to slide four, I'll turn the presentation over to Vic.

25 VICTOR MCCREE: Good morning, Mr. Chairman, Commissioners.

1 I plan to provide a brief overview of the performance of the Browns Ferry Nuclear
2 Plant and the results of our performance assessment, and Rick Croteau, as Bill
3 indicated, will then discuss the agency's actions.

4 As you know, Browns Ferry, which is operated by the Tennessee
5 Valley Authority, has three General Electric boiling water reactor units, and is
6 located near Decatur, Alabama, about 30 miles west of Huntsville, Alabama. As
7 Bill indicated, the performance of the plant is being discussed today because the
8 performance of Unit 1 was assessed as being in the multiple repetitive degraded
9 cornerstone, or Column IV, of the Reactor Oversight Process Action Matrix. Unit
10 1 was placed in this cornerstone column due to a "Red" finding in the mitigating
11 systems cornerstone. Next slide, slide five, please.

12 On October 23rd, 2010, operators of Browns Ferry Unit 1 attempted
13 to place Loop II of the residual heat removal low pressure coolant injection, or,
14 RHR LPCI system in service to support refueling activities. Although control
15 room indications show that the RHR LPCI outboard injection valve was open, no
16 flow was measured in Loop II. Shortly after recognizing this condition, operators
17 successfully placed the other loop, Loop I, of RHR LPCI in service to support
18 shut-down cooling.

19 Subsequent visual inspections of Loop II of RHR LPCI, the
20 outboard injection valve, showed that the valve had failed. The valve disc was
21 separated from the disc skirt stem assembly and lodged in the seat. The
22 inspection results also indicated that the disc was likely separated, and the valve
23 was inoperable for an extended period of time.

24 Plant staff repaired and modified the Loop II valve before Unit 1
25 was restarted. TVA also inspected and modified the Loop I valve in Unit 1 and all

1 four similar valves in Units 2 and 3. Based on the staff's assessment of the RHR
2 LPCI Loop II valve failure, and after holding a public meeting, regulatory
3 conference, with the Tennessee Valley Authority, I sent a letter to TVA in early
4 May of this year, identifying a violation of the Unit 1 technical specifications and a
5 "Red" finding due to the inoperable RHR subsystem.

6 Based on our assessment, TVA's performance was deficient in that
7 it failed to implement an in-service testing, or IST program, in accordance with
8 the American Society of Mechanical Engineers, which precluded the timely
9 identification of the failed valve and the inability of the Unit 1 RHR LPCI Loop II
10 subsystem to perform its safety function.

11 In addition to providing a way to cool the reactor during normal
12 shutdown cooling operations, the RHR LPCI system is counted on for core
13 cooling during certain accident scenarios. As a result, when the significance of
14 this performance deficiency was assessed, it was determined to have high safety
15 significance representing a "Red" finding because it could have led to core
16 damage had an accident involving a series of unlikely events occurred.

17 The main contributor to the risk determination for this finding was
18 the core damage frequency contribution due to fire, stemming from Browns
19 Ferry's use of the self-induced station blackout, or SISBO, approach to mitigating
20 fires. The "Red" finding resulted in Unit 1 being placed in Column IV of the NRC
21 Action Matrix. Units 2 and 3 remain in Column I and performance indicators for
22 all three units remain "Green".

23 If you would go to slide seven, please, skipping one slide. In early
24 June, TVA submitted an appeal of the "Red" finding. While acknowledging the
25 safety significance of the failed valve, TVA's letter raised several issues,

1 including that the Browns Ferry in-service testing program was not inadequate,
2 and that there was no performance deficiency.

3 In response, I charted an independent panel that included experts
4 from Regions III and IV, the Office of Nuclear Reactor Regulation, and the Office
5 of New Reactors, to carry out an independent review of the performance
6 deficiency, including the ASME code requirements governing in-service testing to
7 ensure valve to disc failures are detected. Using input from the independent
8 panel, I issued a final letter to TVA in mid-August that sustained the "Red" finding
9 and the violation.

10 In the letter, I informed TVA that NRC regulations require the
11 components that are important to safe operations be treated in a manner that
12 provides assurance of their performance, and that 10 CFR 50.55(a) requires
13 licensees to establish programs to assure that motor-operated valves, or MOV's,
14 can perform their safety functions.

15 In-service testing programs, MOV analyses and testing programs,
16 and corrective action programs are examples of programs that licensees use to
17 assure the operability and functionality of MOV's. We found that the inadequate
18 establishment of such programs at Browns Ferry represented a performance
19 deficiency, and that appropriate implementations of the programs would have
20 enabled TVA to promptly identify and correct the failure of the RHR LPCI Loop II
21 outboard injection valve in Unit 1.

22 If you go back to slide six, please. This slide is a chart that shows
23 the action matrix cornerstone placement of Browns Ferry Units 1 through 3 since
24 the second quarter of 2010. It shows that all three units were in Column III, as
25 the Chairman indicated, due to "Yellow" and "White" findings associated with

1 Appendix R fire protection issues. That condition, or, that placement actually
2 began in the fourth quarter of 2009. Units 2 and 3 transitioned to Column I
3 during the fourth quarter of 2010 following a successful 95002, supplemental
4 inspection for the "Yellow" and "White" findings. The "Red" finding for Browns
5 Ferry Unit 1, as the chart shows, began in the fourth quarter of 2010 due to the
6 identification of the failed RHR LPCI valve in late October of last year.

7 At this point, I'll turn the presentation over to Rick Croteau.

8 RICK CROTEAU: Thank you, Vic. Good morning, Mr. Chairman,
9 Commissioners. I'll provide an overview of the organizational changes in NRC
10 inspection plans to evaluate licensee's actions to address performance issues at
11 Browns Ferry.

12 To provide dedicated inspection oversight for Browns Ferry, we've
13 reorganized within the division of reactor projects in Region II. Gene Guthrie,
14 who is seated over behind Steve Burns there, was the supervisor for all three
15 Tennessee Valley Authority sites of Sequoyah, Watts Bar, and Browns Ferry.
16 Due to the issues at Browns Ferry, we split out Browns Ferry into a special
17 project, and Gene is dedicated to covering the inspection effort for solely Browns
18 Ferry. We are also utilizing experts from NRC headquarters as well as
19 inspectors from Region II and other regional offices to conduct the inspections at
20 Browns Ferry.

21 In addition, we've recently named Jimi Yerokun as a senior
22 executive team manager to oversee and facilitate coordination and execution of
23 the inspections at Browns Ferry. Browns Ferry has been challenged by a
24 number of equipment issues, as was mentioned earlier. Over the last two years,
25 there have been eight reactor scrams, four forced outages, and five significant or

1 urgent down powers, largely due to equipment issues. As a result, our
2 inspections focused on equipment reliability at Browns Ferry in all three units.
3 Slide 10, please.

4 Inspection procedure 95003 describes the supplemental inspection
5 activities for plants in Column IV of the NRC's Reactor Oversight Process Action
6 Matrix. The inspection procedure is publicly available to anyone who would like
7 to look at it. The objective of the inspection is to provide the NRC with
8 information to be used in deciding whether the continued operation of the facility
9 is acceptable, or whether additional regulatory actions are necessary to assure
10 public health and safety.

11 An additional objective is to evaluate the licensee's third-party
12 safety culture assessment that is required as part of the actions for being in
13 Column IV of the Action Matrix. The staff has planned the supplemental
14 inspection in three parts. Part I focused on testing programs, including valve
15 testing, on all three units. The inspection was conducted in September of this
16 year by a four-person team led by Robert Orlinkowski of the NRC's Region III
17 office. Public exit was conducted on October 3rd in the vicinity of the plant.

18 The general conclusions from the inspection were that the
19 governing programmatic test procedures met regulatory requirements and were
20 generally acceptable. However, some issues were identified, and both the NRC
21 staff and the licensee are following up to ensure that the issues are addressed
22 properly.

23 Part II of the inspection will focus on maintenance due to historical
24 issues with equipment reliability. The inspection is being conducted by a five-
25 member team, also headed by our Region III inspector John Jandovitz, through

1 December of this year. The inspection actually started a couple weeks ago and
2 will continue throughout the rest of this year. The team will look at all phases of
3 maintenance on selected safety-related equipment, again, on all three units. We
4 plan to conduct the public exit at the end of the inspection, and that will probably
5 be in the mid-January time frame of 2012.

6 Part III will complete the formal inspection procedure, the 95003
7 inspection, and it will be conducted once the licensee indicates that they are
8 ready for the inspection to ensure that TVA has completed the root cause, the
9 extent of cause, and the extent of condition investigations at Browns Ferry, and
10 also ensure that they've completed their independent safety culture assessment.

11 This inspection will evaluate maintenance, operations, engineering,
12 corrective action, and management oversight decision-making, so it doesn't just
13 focus on the issues that they've had, it goes across the board at the facility. The
14 engineering aspect of this inspection will also include the area of fire protection.
15 The inspection will be more comprehensive than the Part I and Part II inspections
16 on testing and maintenance. Following the inspection, we will make a
17 recommendation to the Regional Administrator, Director of NRR, and EDO, as to
18 whether any additional NRC actions are warranted. We expect this will be in the
19 first half of calendar year 2012.

20 I'd like to note that we did not wait for the licensee to tell us they
21 were ready for the Part I and Part II inspections. We perform these inspections
22 as soon as reasonably achievable to ensure there were not any near-term
23 immediate safety concerns at the facility.

24 Also, programmatically, after each inspection procedure 950003
25 inspection staff evaluates Lessons Learned and incorporates them into

1 improvements in the inspection program. There have been several updates of
2 this nature to inspection procedure 95003. As I mentioned earlier, it calls for an
3 independent safety culture assessment, and the procedure was revised in
4 January 2009 based on Lessons Learned from the inspection at Palo Verde.
5 Specifically, the revision allows the NRC to leverage the results of the licensee's
6 third-party safety culture assessment and root cause evaluation to more
7 efficiently and effectively complete the inspection. In this case, however, the
8 NRC first needs to establish confidence that the third party assessment tools are
9 valid and reliable, and we'll do that as part of our inspection at Browns Ferry.

10 In closing, we believe we have the appropriate staff, resources, and
11 inspection plans to effectively assess TVA's actions in response to the situation
12 at Browns Ferry. Now, I'd like to turn it back to Bill for the closing remarks.

13 BILL BORCHARDT: That completes the staff's presentation, and
14 we're ready to answer any questions.

15 CHAIRMAN JACZKO: Okay. We'll start with Commissioner
16 Svinicki.

17 COMMISSIONER SVINICKI: Thank you for your presentations,
18 and good morning. There are, in my understanding, there are some potential
19 generic aspects of the issues associated with this valve inoperability. Will staff
20 continue to pursue generic resolution of the ASME code testing issues separate
21 from the resolution of this finding? And, if so, what's the status of this effort?

22 BILL BORCHARDT: Yeah. This was an item that was identified
23 early on. NRR has the lead as part of the operating experience. This is one of
24 the normal inputs to the operating experience program, so NRR has this
25 underway, so I think that John --

1 JOHN LUBINSKI: John Lubinski from NRR. We were working with
2 the ASME co-committees, and they formed a working group to relook at the
3 requirements with respect to the inspection of these valves to determine whether
4 or not the requirements are clear and whether or not they need to be modified.
5 This was discussed at the August meeting. They have semi-annual meetings of
6 the ASME code, and the action at that meeting was for the working group to look
7 at this, to make that determination, and they will re-meet in December. NRC
8 does have members of its staff on that working group.

9 COMMISSIONER SVINICKI: Thank you. What is the staff's
10 assessment of how widespread the IST program deficiency that's been found at
11 Browns Ferry, how widespread is that at Browns Ferry? Do you have an
12 assessment of that yet, or will that be an outgrowth of your further inspections?

13 VICTOR MCCREE: I think the short answer, Commissioner, is that
14 we're still looking at it, we're still examining it. There's a recognition based on the
15 first Phase One inspection that we've done. We recognize that TVA understands
16 that it's not an isolated issue. It is a programmatic issue, and their follow-up and
17 causal analysis is treating it in that manner. But, we do have additional
18 inspections ongoing now, and we'll be able to get a better handle on that as, in
19 the Phase Two and certainly the formal 95003 inspection we do next year.

20 COMMISSIONER SVINICKI: Okay. Thank you. On another
21 potentially generic issue, TVA, as I understand it, submitted a Part 21 report on
22 the valve. Have we developed any information regarding the extent to which this
23 valve is used in the operating reactor fleet, or if other similar valves are subject to
24 the same defect?

25 RICK CROTEAU: Rani's got some information on that.

1 RANI FRANOVICH: Rani Franovich, NRR staff. Actually, I don't,
2 but we can get back to the Commission on that. We can find out the status of
3 Part 21 actions.

4 RICK CROTEAU: I don't know specifically about the Part 21 and
5 where NRR is at with that, but there are similar valves in some applications in
6 some other facilities, and I think there had been some previous generic
7 correspondence associated with that at other facilities, but it's not an extreme,
8 widespread item, and we'll follow up with the Part 21.

9 COMMISSIONER SVINICKI: Okay. Thank you.

10 CHAIRMAN JACZKO: And I think, let me add to it, I mean, at
11 Browns Ferry, corrective action was taken with the other valves to weld the plate,
12 the stem and plate together.

13 RICK CROTEAU: Yeah. I mean, the valve was repaired, and all
14 the other valves on the other units were repaired. So, I think it was a total of six
15 valves associated with this, and ensured that immediately that action was taken
16 to ensure that they didn't have similar problems and were corrected.

17 COMMISSIONER SVINICKI: Okay. Thank you. The latest
18 assessment letter stated that there are two substantive cross-cutting issues at
19 Browns Ferry, one pertaining to appropriate and timely corrective actions, and
20 the other to thorough evaluation of identified problems. Does the staff assess
21 that the inoperable RHR valve is a symptom of these substantive cross-cutting
22 issues?

23 RICK CROTEAU: I would say we're going to follow up on those
24 issues as part of the 95003, so it's hard to do the -- you know, exact cause and
25 effect. But, part of the, you know, after the Davis-Besse event, we changed the

1 reactor oversight process to incorporate some standard cross-cutting issues to
2 kind of look at the safety culture to see if there were issues associated with that;
3 and, certainly, in these cases, we think there were. TVA has folded that into their
4 safety culture assessment and their follow-up actions, and we will conduct an
5 assessment of that as part of the 95003 inspection.

6 COMMISSIONER SVINICKI: Okay. Thank you. Thank you. Mr.
7 Chairman?

8 CHAIRMAN JACZKO: Commissioner Apostolakis?

9 COMMISSIONER APOSTOLAKIS: Thank you, Mr. Chairman. The
10 "Red" finding, I think, is primarily due to the fact that they have a self-induced
11 station blackout in case of a fire.

12 So, I saw in the report that there was an estimate of the core
13 damage frequency, something like 7 times 10 to the minus 4, or thereabout. I'm
14 wondering what that number includes. For example, does it include the
15 frequency of fires that would necessitate going to station blackout?

16 RICK CROTEAU: Yes, that's my understanding. Yes.

17 COMMISSIONER APOSTOLAKIS: So, the frequency of fire is
18 there. So, if there is in the 10 to the minus 4 or 7 time 10 to the minus 4. Now,
19 you also stated that in an earlier slide that they, I think it was actually Vic, shortly
20 after recognizing this condition operator successfully placed the other loop of
21 RHR in service. Now, when the "Red" finding was found, was that action
22 included in the calculation? In which case, you don't have a problem?

23 VICTOR MCCREE: No, sir. There were no actual consequences
24 associated with the valve failure. Approximately 90 seconds after opening the
25 outboard injection valve on Loop II, and, of course, with the RHR pump running,

1 the operators noticed no flow. And, after 90 seconds, they placed the other loop
2 in service. The evaluation for -- after identifying the performance deficiency, we
3 evaluated the potential significance of the valve failure, and, in doing so, when
4 you postulate that the initiating event is a fire, and it's in an area that would
5 require use of the SISBO strategy to mitigate the fire, then you would assume
6 that that other train, in this case, that would have been Loop I, that would have
7 been de-energized, and the loss of that system, for some scenarios, you know --

8 COMMISSIONER APOSTOLAKIS: So, that number, then Vic, is
9 kind of artificial. There, 7 times 10 to the minus 4 is not really a, it does not
10 represent the frequency of what might actually happen.

11 RICK CROTEAU: But, then, think there's a fire in the area, you
12 know, that other loop would not be available. It's fires in specific fire zones and
13 fire areas that would have taken out the other loop and the other equipment
14 based on their strategy to do the self-induced station blackout. So, they would
15 be relying solely on that train of low pressure coolant.

16 COMMISSIONER APOSTOLAKIS: And the frequency of fires
17 occurring in those selected areas --

18 RICK CROTEAU: Selected --

19 COMMISSIONER APOSTOLAKIS: -- is part of the calculation?

20 RICK CROTEAU: Yes, sir.

21 VICTOR MCCREE: That's correct.

22 COMMISSIONER APOSTOLAKIS: So, then, it is a realistic
23 assessment?

24 RICK CROTEAU: Yes. Correct.

25 COMMISSIONER APOSTOLAKIS: Okay. Good. One thing that is

1 not very clear to me is, what is it exactly that TVA did not do? Why did they end
2 up in this situation? Was it that they misinterpreted the guidance in the ASME
3 code, or they were negligent? It's not very clear to me what the situation is.

4 RICK CROTEAU: I think that's going to be part of their root cause
5 analysis that we will look at and the broader issues, with the specifics on the
6 valve, it was not in their program to -- and this is part of the generic issue, to look
7 at the stem to ensure on a two-year basis that the valve was actually moving.
8 They would go on other indications. Okay. So, that's kind of, that may be a
9 generic aspect, but the other part of it, it was not in their motor operated valve
10 testing program, which it should have been. We had had previous interaction in
11 years past on that; it was not in the program, should have been in the program,
12 and if it had been in that program, it's likely that it would have been discovered
13 and picked up earlier.

14 So, it was inadequacies with the in-service testing program, and
15 actually, as part of the Part I inspection, we did pick up that several other valves
16 were not in the in-service testing program. To TVA's credit, they had picked up
17 on that also and already had that in their corrective action program as part of the
18 previous deficiencies. So, I would say overall it was inadequacy in the in-service
19 testing program that led to that specific issue. Now, of course, TVA, and we are
20 looking at the broader issues across the plant with the culture and other
21 programs of maintenance and equipment reliability.

22 COMMISSIONER APOSTOLAKIS: So, this is what led to the
23 decision to have them reevaluate or evaluate their safety culture, that there were
24 all these root causes or cost-cutting issues? Is that correct?

25 VICTOR MCCREE: The need for TVA to perform a safety culture

1 assessment is driven by the fact that they are in Column IV of the Action Matrix,
2 and that's one of the requirements for a plant that's in Column IV is to perform a
3 safety culture --

4 COMMISSIONER APOSTOLAKIS: That's how it got there.

5 VICTOR MCCREE: That's correct.

6 COMMISSIONER APOSTOLAKIS: Okay. Okay. Good. Now,
7 there was a period, again, in the report that, it's not clear for how long that
8 condition persisted, and I think there is a statement that the last time that the
9 valve was operable, it was something like March of '09?

10 VICTOR MCCREE: Correct.

11 COMMISSIONER APOSTOLAKIS: And then it was discovered
12 inoperable in June of '10 or something like that. So, we're talking about -- or,
13 October '10.

14 VICTOR MCCREE: In October of 2010.

15 COMMISSIONER APOSTOLAKIS: So, it's roughly a year and a
16 half.

17 VICTOR MCCREE: Correct.

18 COMMISSIONER APOSTOLAKIS: But, we don't really know when
19 the failure occurred. Is that correct? Somewhere in there.

20 VICTOR MCCREE: That's correct. And, of course, in evaluating
21 the significance, we only used one year. The process allows us to use the one
22 year period of exposure time.

23 COMMISSIONER APOSTOLAKIS: Right.

24 VICTOR MCCREE: But, correct. But, the last time the valve was
25 known to have operated successfully in pass/flow was in March 2009.

1 Subsequent surveillance testing was not done in a manner that would have
2 demonstrated that flow actually passed through the valve.

3 COMMISSIONER APOSTOLAKIS: Thank you. Thank you, Mr.
4 Chairman.

5 CHAIRMAN JACZKO: Commissioner Magwood.

6 COMMISSIONER MAGWOOD: Good morning. Thank you for
7 your presentation, and for what, I've been following this for some time, and Vic
8 and I have talked about this. I appreciate the effort the staff's put into responding
9 to this, and I appreciate the work you're doing on this.

10 A couple of questions. One is, I just wanted to react to something
11 that Rick said a few minutes ago, that you found, looking at this, that there were
12 other motor operated valves that were not captured by the, IST program? Why
13 was that? Was there a clear reason as to why some of these were not captured
14 by the program?

15 RICK CROTEAU: I think again we've got to wait. The licensee
16 hasn't finished their root cause, so we've got to let them take a look at it and do
17 their root cause, and then we'll assess the root cause evaluation.

18 COMMISSIONER MAGWOOD: Were these -- I appreciate that,
19 but were these, as a general manner, were these valves where there was a
20 reasonable question as to why they would be, whether or not they would be in an
21 IST, or -

22 RICK CROTEAU: I don't think we've drawn a conclusion on that
23 yet. The team still hasn't issued a report, and they're still kind of assessing that
24 situation.

25 COMMISSIONER MAGWOOD: Okay. And looking in, and going

1 through background on this, I know that part of the back and forth with TVA
2 included an assertion by TVA that, in the event of an actual accident, that the
3 valve plate would have released eventually, and the staff rejected that
4 conclusion. But, could you elaborate on that? What was the theory behind that,
5 and what was the staff, how did the staff evaluate that that was not --

6 RICK CROTEAU: Well, they had done some testing to attempt to
7 demonstrate that it would have lifted. We took a look at the testing, and we
8 weren't convinced. It didn't seem to simulate the actual conditions. And then, in
9 fact, when they ran that and tried to initiate that shut-down cooling, it ran for a
10 period of time and did not lift. And then, also, when they disassembled the valve,
11 there was quite an effort necessary to lift that seat from and remove it from the
12 valve. So, there was some difficulty in removing it there.

13 Based on all the information they provided, we didn't think that it
14 was credible, that it would have passed flow under an actual accident condition.

15 COMMISSIONER MAGWOOD: Okay. Thank you. You've talked
16 about how Browns Ferry has responded to this, but, obviously, TVA operates
17 more reactors than Browns Ferry. Has there been an effort to assess these
18 situations over the entire TVA fleet?

19 VICTOR MCCREE: Commissioner, I would, I'm sure that TVA will
20 be prepared to respond to that question in the sense that they've indicated to us
21 that they're taking this opportunity to not just deal with the specific valve failure or
22 the specific program issues at Browns Ferry, but they're looking at the
23 implications across the TVA fleet and what it may mean, in terms of what they
24 need, changes that they would need to make corporately to address performance
25 issues, and I'd be interested in their response to your question as well.

1 COMMISSIONER MAGWOOD: Okay. I'll make sure I ask them
2 that. Let me stay with you Vic because I'm going to ask you to draw some broad
3 conclusions you're not going to be prepared to draw at this point, but I'm going to
4 ask it anyway. You know, whenever you see multiple equipment failures, and
5 you gave a list of the sorts of events over the last two years, it's been eight
6 scrams, four forced outages, five significant urgent down powers, how much of
7 that do you believe at this stage from what you know is, how much of that -- and
8 this maybe gets a little bit to Commissioner Apostolakis' question, I think, but how
9 much of this is more of a cultural problem and programmatic problem, and how
10 much of this is age of equipment?

11 VICTOR MCCREE: As Rick has indicated several times, TVA's
12 root cause evaluations is ongoing, and we will independently evaluate that. But,
13 the indications that we've obtained thus far and has contributed to the "Red"
14 finding is that there are programmatic program issues associated specifically with
15 the motor operated valve functionality, if you would, and more broadly, as Rick
16 indicated, there have been a number of equipment reliability challenges, with
17 frontline safety systems that have been captured by TVA and its equipment
18 reliability programs. And they've not demonstrated as aggressive an effort to
19 address those issues as they have of late. I believe that's contributed to their
20 being here. And one could argue that there are some cultural aspects of that,
21 and I believe that the safety culture assessment will enable them to see those
22 things a bit more clearly.

23 So, being in Column IV and being subject to a diagnostic inspection
24 of the scope and breadth and depth of a 95003 has, based on our past
25 experience, reveals a number of opportunities to improve performance, and TVA,

1 I think, will have the opportunity to take advantage of that to raise the level of
2 performance at Browns Ferry and perhaps across the fleet.

3 RICK CROTEAU: If I could add on the, one of the things that Part I
4 inspection and Gene has been pointing out, and, I think, even the TVA folks will
5 tell you that it's been kind of a broke/fix mentality with equipment in the past
6 where a piece of equipment breaks, and they just fix it, and they don't go look at
7 why did that fail, and what do we need to do to prevent reoccurrence, so they're
8 back, you know, two years later or some period later, working on the same
9 equipment again, because they don't address the basic issue with the
10 equipment.

11 COMMISSIONER MAGWOOD: I appreciate that. One last
12 question for you. And this, again, asking you to draw broad conclusions you're
13 not going to be prepared to draw, but I'm going to ask it anyway. Browns Ferry is
14 actually, as we all know, a unique plant, and that's it's the first of TVA's rebuilt
15 plants. And I actually had the opportunity to tour during the rebuilding activity
16 years ago. And I remember thinking at the time that, you know, it's interesting,
17 we'll have to see in the future how well this works out as we have this plant that's
18 been idle for so long going through this rebuilding process and will we put back in
19 service; so now it's back in service and now we're seeing issues, and then just --
20 and we have more TVA plants that are on the docket to be rebuilt and put back in
21 service. Should we draw any conclusions about the rebuilding of plants in this
22 context, or is this what we see here, is this isolated from that?

23 VICTOR MCCREE: I don't know that we're in a position to draw
24 any conclusions. I think your question is a very good one, and I'm certainly
25 taking it to heart, and I hope the folks at TVA are taking it to heart as well. In

1 fact, the failure of this valve, the failure mode, if you would, was introduced when
2 the valve was refurbished during the Unit 1 recovery. And so there are lessons
3 to be learned, I believe, in terms of what caused that, would allow that to happen.
4 And so there's opportunity there, again, in the recovery process or completion, if
5 you would, process for Watts Bar Unit 2, as well Bellafonte Unit 1 to learn
6 lessons here.

7 COMMISSIONER MAGWOOD: That was -- actually I should have
8 asked you this first, so it did sound that you did say this valve was the original
9 equipment valve that was rebuilt or refurbished?

10 VICTOR MCCREE: Yes, there was an extensive amount of
11 refurbishment, replacement as Unit 1 was recovered, and this was one of the
12 components that was worked on.

13 COMMISSIONER MAGWOOD: Excellent. Thank you very much.

14 CHAIRMAN JACKO: Commissioner Ostendorff?

15 COMMISSIONER OSTENDORFF: Thank you, Mr. Chairman.
16 Thank you for your presentations this morning. Bill, I want to start out with you,
17 but you can defer to either Vic, or Rick, however you want to handle this, but
18 prior to the "Red" finding, and I'm looking now at the equipment reliability issues
19 that Rick had referred to on slide nine. Prior to this valve issue, had there been
20 early warning signs of declining performance by the licensee in this area?

21 BILL BORCHARDT: Well, there were discrete inspection findings
22 and Vic had the chart that showed the various columns that the individual units
23 were in, but, you know, from a nationwide perspective, I wouldn't say that the
24 Browns Ferry performance drew a lot of attention to itself. You know, we've
25 mentioned the number of scrams, you have to remember there's 3 units there' so

1 the numbers kind of add up a little bit if you compare it to single unit sites. So
2 from my perspective, and from my understanding of, you know, nationwide
3 operating experience, we're not seeing extraordinarily different performance from
4 the Browns Ferry units, compared to the rest of the fleet.

5 VICTOR MCCREE: The only other thing I'd add to that,
6 Commissioner and Rick alluded to it. If we were to go back as far as 2006, or
7 shortly after, when Unit 1 was restarted, there were some performance issues,
8 again, that we saw related to equipment reliability manifesting itself on Units 2
9 and 3. We did identify substantive cross-cutting issues at the time, which under
10 the reactor oversight process are early indicators, if you would, of performance
11 challenges, performance opportunities. And those types of observations
12 continued since that timeframe. As I indicated, all three units were placed in
13 Column III, in the fourth quarter of 2009, and there are and were a number of
14 front-line safety systems that were in A1 -- the maintenance rule A1. Again,
15 additional indicators of equipment challenges and a number of reactor trips and
16 down powers associated with equipment issues. So there was clear opportunity,
17 in our view, for the licensee to recognize that there were issues there that they
18 needed to get ahead of.

19 COMMISSIONER OSTENDORFF: I'm going to follow up Vic with
20 you and Rick on this question, with respect to equipment reliability, the
21 maintenance rule implementation, and so forth; outside of the in-service testing
22 program were there other aspects of the programs that deal with maintenance
23 that concern you with respect to licensing?

24 RICK CROTEAU: I think it's too soon to tell on that.

25 COMMISSIONER OSTENDORFF: We're going to ask the licensee

1 that; now this happened about a year ago, so you must have some initial
2 assessment; we're having the meeting today. And I'm going to pressure you on
3 this a little bit because I think it's part of NRC's job to evaluate how the licensees
4 are doing. And sometimes you need to wait until you have a report complete, but
5 you must have some initial gut feel for that.

6 RICK CROTEAU: We have completed the first week, as I
7 mentioned, of the Part 2 maintenance inspection. There were no significant
8 issues identified during that first week. But again I'll point out that just the
9 approach of the broke/fixed kind of thing, and not addressing root causes on the
10 equipment, that's kind of the early conclusion we've had in an overall
11 assessment, that there needs to be more of a getting to what caused the failure
12 rather than just fixing the individual failures at the facility.

13 COMMISSIONER OSTENDORFF: Okay, with respect to the other
14 licensees you deal with in Region 2, is this -- the comment you're just making
15 there about the broke/fixed, is that -- is this an anomaly for TVA, or do you see
16 these kinds of issues for other licensees?

17 RICK CROTEAU: I would say that most folks attempt to get to the
18 root cause of things to ensure that the conditions don't reoccur.

19 COMMISSIONER OSTENDORFF: Okay.

20 VICTOR MCCREE: And I would certainly agree with that. There
21 are opportunities, I think, that licensees have that there are individual cases
22 where they don't implement their corrective action programs in the manner that
23 they would expect, or that the program would require. What we have seen at
24 Browns Ferry, and it's the reason we're here today, is that there are challenges
25 that we've seen in the corrective action program, certainly in their in-service

1 testing and their maintenance program, all of which are important and part of
2 maintaining an appropriate and healthy safety culture, and in ensuring equipment
3 reliability. And a significant part of that is investing in the plant, investing in these
4 programs and that's been a challenge at Browns Ferry.

5 COMMISSIONER OSTENDORFF: Okay. That's very helpful. Let
6 me ask one last question, and Vic I'll ask both of you and Rick or I'll ask Vic, if
7 you want Rick to also respond, that's fine. Big picture, given everything that's
8 occurred to date, how do you assess the licensee's commitment to improve?

9 VICTOR MCCREE: Mr. Commissioner, I've had several meetings
10 with TVA leadership, both public meetings as well as drop-ins, and my sense is
11 that they accept our assessment of Browns Ferry's performance, and that there's
12 a commitment, both tangible and otherwise, to fixing problems at Browns Ferry.
13 But the proof is what we'll discern independently by verifying activity and action,
14 and progress at Browns Ferry. And this, the inspection that we are implementing
15 is the most probing, the most thorough type of effort we have, and it'll provide the
16 evidence that we'll need to answer that question with finality sometime in the
17 future. But my sense is that the leadership at TVA is aware of our assessment,
18 and is committed to moving forward.

19 COMMISSIONER OSTENDORFF: Thank you. Thank you, Mr.
20 Chairman.

21 CHAIRMAN JACKO: Well, I want to follow up a little bit on some of
22 Commissioner Ostendorff's questions about earlier warning signs, and I think
23 Commissioner Svinicki touched on this as well. One of the open cross-cutting
24 issues, and this is one I think that goes back, I think, four assessment periods, so
25 that would be two -- about two years, six month assessment period, I think that's

1 right, is in the area of our evaluation of identified problems, I think it's in the
2 problem identification resolution area. And this is from our mid-cycle
3 assessment, we were keeping this open, and of course at this point we had
4 identified the valve failure, but we were keeping this open until -- and these were
5 the conditions, a comprehensive range of actions are identified in your corrective
6 action program, your being TVA's, that effectively demonstrate you will address
7 the cross-cutting theme. So significant increase in the number of findings with
8 the cross-cutting aspect of thorough evaluation of identified problems, and
9 increased level of confidence in your ability to deal effectively with operational
10 equipment issues as related to this cross-cutting theme of thorough evaluation of
11 identified problems.

12 So -- and certainly the conditions to close this for things obviously
13 that appear to be related to what happened with the valve failure. And you know,
14 is this telling us anything that -- are we taking enough stock of the substantive
15 cross-cutting issues? Are we doing enough with them when we identify them?
16 And this was one that was open for four cycles. It almost seems like, to some
17 extent, we have them and we know that there's a problem and then we wait until
18 the equipment fails so we can get a finding so we can take some regulatory
19 action. What is this kind of saying to you, Rick or Vic, or whomever?

20 RICK CROTEAU: Well I'd just mention that we do look at that as
21 part of the end cycle, mid-cycle, and when it meets a certain threshold, we look
22 does it constitute a substantial cost-cutting issue. And then we do follow that up
23 with inspections once we think they're ready. So it is part of, you know, built into
24 the program, but we don't slide folks over in a column or anything like that
25 because of these types of issues unless, as you indicated, that they would have

1 a finding that would drive us in that direction. But we do do specialized
2 inspection to follow up and close out substantial cross-cutting issues.

3 VICTOR MCCREE: The ROP does allow, permit, in fact, it requires
4 us to use a graded approach when a substantive cross-cutting issue is identified
5 in any of the areas, whether it's human performance, problem identification
6 resolution, or safety conscious work environment. And you'll have to correct me,
7 John, if I get the timeframe wrong, but after the initial identification of a
8 substantive cross-cutting issue, a licensee is expected to respond, at least in
9 writing, with their plans to deal with the issue. If that substantive cross-cutting
10 issue persists after a cycle, after one year, if you would, we would hold a public
11 meeting to engage the licensee on whether they acknowledge it, and what
12 actions they're taking to deal with it. If it persists after two cycles, then we have
13 the option to consider requiring the licensee to conduct a safety culture
14 assessment to address that.

15 CHAIRMAN JACKO: In this particular case, what was your
16 determination on that?

17 VICTOR MCCREE: This would have been the cycle that we would
18 have had, however they were placed in Column IV. And I can't recall if it was
19 Papa 1 Charlie or Papa 1 Delta, the identification or the resolution, they had
20 actually taken it off and then reinserted it, but replaced the substantive cross-
21 cutting issue. So there's a graded approach, and as Rick alluded to, we also
22 have the opportunity, and I'll usually take advantage of it, to rather than
23 conducting a biannual problem identification resolution inspection under 71152,
24 the procedure, we do that annually; we would move that inspection forward to get
25 additional evidence of the licensee's action and progress in these areas.

1 CHAIRMAN JACKO: So as you did all these things, did you -- what
2 was your gut when looking at all of this? Was the plant where you wanted it to
3 be, and so what could you do about it?

4 VICTOR MCCREE: They were not where we wanted it to be. We
5 recognize that, again, the programmatic, the performance issues, the findings
6 that we were identifying with the cross-cutting aspects and problem identification
7 resolution were indicative of continuing equipment performance issues; that's
8 where it was manifesting itself. And the findings that were identified in 2009, the
9 "Yellow" and the "White" was an opportunity, if you would, for TVA to address
10 even the broader issues associated with equipment reliability. But certainly now
11 that they're in Column IV, there's a requirement that they do so.

12 CHAIRMAN JACKO: And if you go back to Unit 1, and again, in
13 hindsight it's always 20/20 and everything looks crystal clear in hindsight, but if
14 you go back to when we closed out -- we had closed out the 95002, and as soon
15 as the next quarter rolled around they would have cleared all of the "Yellow"
16 findings. So, you know, if you look at the chart, which is a good chart, it gives the
17 impression that there was a continuous, but in reality from our perspective they
18 were "Green" in between, you know, there was almost an infinitesimally narrow
19 "Green" band in between the "Yellow" and the "Red".

20 VICTOR MCCREE: Actually, Mr. Chairman, the 95002 exited on
21 October 22. The event occurred on October 23.

22 CHAIRMAN JACKO: Right, so there was this, as of, you know,
23 October 22 at say 8:00, mentally we thought they were back in Column I; 12
24 hours later, whatever it is, mentally then we're putting them back in Column IV.
25 So, you know, again if I look at this, and I want to look at this skeptically, there is

1 some extent where I would say well somehow, you know, we had to have missed
2 something. Because here clearly was a plant that had cross-cutting issues, that
3 said that we've got some challenges in this equipment reliability. We had it
4 manifest itself in a fairly significant "Yellow" and "White" finding. We did all our
5 inspections and we said everything's fine, and then a day later, everything's not
6 fine again. I mean, what's missing, and what's the problem?

7 VICTOR MCCREE: Mr. Chairman, I wouldn't argue that, I wouldn't
8 submit that anything's missing.

9 CHAIRMAN JACKO: Yeah.

10 VICTOR MCCREE: We know and acknowledge that licensees
11 have the primary responsibility for safety. There were sufficient indicators, I
12 believe, to TVA that an opportunity to deal with the issues at Browns Ferry
13 without having to be placed in Column IV. And what, I believe, we recognize is
14 that the licensees who have a strong safety culture and a commitment to strong
15 and excellent performance take earlier opportunities, they use a substantive
16 cross-cutting issue as a burning platform to make change, and to fix challenges.

17 CHAIRMAN JACKO: Let me ask you -- just let me ask you this for
18 a second though. And I'm not necessarily asking right now -- we'll have a chance
19 to talk to the Licensee about kind of their performance, but I'm asking a little bit
20 about our program. To what extent was there overlap between the root cause or
21 at least what appeared to be some of the causes of the valve failure and the fire
22 protection findings. I mean, was there overlap in the causes?

23 RICK CROTEAU: Could ask Gene to speak to that, I mean, Gene,
24 you are heavily involvement with both of those --

25 CHAIRMAN JACKO: Because my point here is that I'm not so

1 much worried about the licensees, I mean ultimately, yes, they have that
2 responsibility to ensure the safe operations. What I'm worried about is our
3 assessment. We assessed on October 22, that they had done enough corrective
4 action to address those things that led to the "Yellow" finding. That's why we
5 were ready to clear it. It wasn't the situation in which we were still believing that
6 there were problems, and that we believed that they had addressed the
7 problems, otherwise we would not have cleared the "Yellow" finding. So if there
8 are common issues between those two findings, the fire protection findings and
9 then the subsequent valve failure, somehow we said it was okay when it wasn't
10 and we missed something. And that's what I'm trying to understand, what, were
11 there common issues or not? And, it's not to criticize, but this is our chance to
12 learn and figure out next time how we can do better.

13 GENE GUTHRIE: Right, I think, Gene Guthrie, I think when you
14 compare the equipment failure, you know, with the valve failure, and then if you
15 compare the fire protection issues, the fire protection issues were more focused
16 on program, program implementation and meeting the requirements, where,
17 when you look at the valve failure, it's really specific to a component failure, or a
18 piece of equipment failure.

19 CHAIRMAN JACKO: But did it have an element, I mean, their in-
20 service inspection program was not functioning properly, they had not properly
21 placed the valve, the motor operated valve in the inspection program. Those
22 were programmatic challenges, not equipment problems.

23 GENE GUTHRIE: Yes, and I agree with that, but when you look at
24 what we inspected as a result of the fire protection "Yellow" findings, "Yellow"
25 and "White", we were focused -- the 95002 inspection procedure is more narrow.

1 It focuses specifically on what that violation was, and looks at the root cause and
2 corrective actions that the licensee is going to take as a result of that. And so it
3 is -- it does tend to focus the inspection team on specifically those issues. So
4 when that 95002 inspection was performed, that's what they looked at, was the
5 fire protection program, specifically as it related to meeting the requirements of
6 the Appendix R associated with that and then --

7 CHAIRMAN JACKO: Thank you. That's helpful. And of course
8 that's then one of the issues with 95003, we have a much broader expanse. But
9 maybe that's something we need to take a look at, is maybe we should push
10 some of that broader look down toward to a 95002 level, and that may perhaps
11 have identified some of these issues a little bit earlier and given us an opportunity
12 to give the licensee an opportunity to make some improvements. Well, good,
13 well thank you.

14 BILL BORCHARDT: And Mr. Chairman, just that you raised the
15 challenge that we have on cross-cutting issues, and implementation of the
16 reactor oversight program. And not to go into a long history lesson, but before
17 the ROP, we would have, you know, a series of inspection findings; we would
18 generate this general concern. We didn't call it substantive cross-cutting issue
19 back then, but there was this general concern. And the problem we had from a
20 regulatory perspective is that the agency had a very hard time closing the issue.
21 Because, as regulators were very conservative and very cautious, and it's hard to
22 get over the threshold to say everything's okay. So the reactor oversight
23 program got to be much more discrete and specific on individual findings. We
24 retained three substantive cross cutting issues which allow us to raise a level of
25 attention to a general area. I think it's doing that, but you know

1 it's not perfect and that's why we're continuing to revise the reactor oversight
2 program.

3 CHAIRMAN JACZKO: Okay. Great. Commissioner Apostolakis.

4 COMMISSIONER APOSTOLAKIS: Vic, you mentioned that in one
5 quarter of '09, all three units were "Yellow". Right?

6 VICTOR MCCREE: That's correct, actually fourth quarter of
7 calendar 2009.

8 COMMISSIONER APOSTOLAKIS: I'm wondering, clearly the ROP
9 says you have to do certain things because a particular unit is "Yellow", but is
10 there a provision to do something extra, because all three are "Yellow", in other
11 words, is the ROP focus on the unit, not a multi unit site? A very fashionable
12 thing these days, multi units.

13 VICTOR MCCREE: That's a very good question. Unlike the failure
14 of the RHR LPCI outboard injection valve on Unit 1 and that finding being
15 associated with that failure. The fire protection program issues at Brown's Ferry
16 affected all three sites -- all three units; so the findings were applied to all three
17 units. Our action was the same; we conducted a single 95002 supplemental
18 inspection of that finding, which applied to all three units.

19 COMMISSIONER APOSTOLAKIS: This is because, in this
20 particular case, it happened to be the fire protection program.

21 VICTOR MCCREE: That's correct.

22 COMMISSIONER APOSTOLAKIS: Let's say it wasn't and I had
23 three units for different reasons they were all "Yellow". Would that trigger
24 something and say wait a minute; something is wrong with the site?

25 VICTOR MCCREE: No sir and in practice when we conduct

1 supplemental inspection and response to a greater than "Green" finding. The
2 inspection effort is applied to the site, there may be some unit specific issues that
3 the licensee is responding to but the inspection effort is a site wide effort, if you
4 would, just as even though only Unit 1 is in Column IV, our 95003 all phases are
5 affecting all three units at Browns Ferry.

6 COMMISSIONER APOSTOLAKIS: Thank you.

7 CHAIRMAN JACZKO: Any other questions. Thank you, appreciate
8 it.

9 [break]

10 CHAIRMAN JACKKO: We'll now have a presentation from TVA
11 and I'll just note that at the table we have Bill McCollum, who is Chief
12 Operating Officer, Don Jernigan who's-- did I say that right? Jernigan,
13 who is the Senior Vice President of Nuclear Operations; Robert Whalen,
14 who's Vice President for Nuclear Engineering; Keith Polson who is Site
15 Vice President at Browns Ferry and then my understanding is that the
16 presentation will come from Preston Swafford who is the Chief Nuclear
17 Officer.

18 PRESTON SWAFFORD: Yes sir, that's correct. Bill?

19 BILL MCCOLLUM: Mr. Chairman, Commissioners, Bill McCollum,
20 chief operating officer Tennessee Valley Authority, appreciate the opportunity to
21 be here today to talk about our work to improve performance at the Browns Ferry
22 Nuclear Plant. What we'd like to do is begin by talking a little bit about the some
23 of the background and our efforts to improve performance at Browns Ferry and
24 then at the end I'll make some comments about our efforts across the TVA fleet
25 and I'll ask Preston Swafford to open with our remarks.

1 PRESTON SWAFFORD: Thank you Bill. Mr. Chairman,
2 Commissioners. When Unit 1 shut down for a refueling outage last October the
3 operators discovered that they did not give indication of shutdown flow through
4 the Loop II division of RHR heat removal system and immediately, within about a
5 90 second period, aligned to the other loop and began injecting and shutdown
6 cooling for the refueling outage. No time during that period, was the core in
7 jeopardy and in that we did have available systems back up.

8 As a result of this problem, troubleshooting found that the valve in
9 Loop II had failed and that the valve stem specifically had separated from the
10 disc and the disc was found fully in its seat inside the valve. This particular valve
11 serves as one of the injection valves for our emergency core cooling system,
12 specifically through the LPCI injection system; so it obviously has significant
13 safety importance to TVA.

14 Since the last time this valve was successfully tested was in March
15 of 2009; we did a full flow test at that time and part of, I'm going to say, our weak
16 diagnostic issues and some other opportunities is a difference that we've -- I think
17 you've spent time this morning with the NRC is talking about the ISP Program
18 and our belief of how that system work does not necessarily guarantee that the
19 operability of a valve is sustained should you have this separation because the
20 configurations valve specifically has flow up underneath the disc and could, in
21 some occasions, actually open the valve and whatnot.

22 So I think there is a new issue that has to be resolved and has to
23 be looked at how do you verify that the intent of the ISP Program is doing what
24 it's supposed to do.

25 While the valve failure was of low safety significance, relative to the

1 design basis accidents such as a loss of coolant accident, Loop II of the RHR
2 system is specifically relied on for reactor core cooling in the event of a
3 significant fire in certain areas. So, like was also mentioned, we committed to
4 the SISBO or self induced station blackout methodology and what that boils
5 down to is we if we were to have a significant fire we would systematically shut
6 off switch gear to various components leaving this one train as our only available
7 train to inject and should you have a problem like we had in this valve this is the
8 only train you've left available to inject into the vessel. So we believe that
9 originally this was felt to be at least a 20 month period because of the March of
10 '09 period where we did successfully inject, we used that as the period of time for
11 the failure mode. Next slide, Page 3.

12 We do fully acknowledge the high safety significance of this valve
13 failure and the basis for that conclusion. As a result we are taking extensive
14 actions to address this issue that will be described later in this presentation.

15 We're also using this occurrence to focus even more attention on
16 the areas that need improvement at the entire Browns Ferry Plant and accelerate
17 those improvements as well, but not only that like the Regional Administrator,
18 Victor McCree had mentioned, this is an extent of a condition across the fleet, so
19 what we take away from the Browns Ferry finding will be put into our corporate
20 corrective action program and taken systematically across the entire fleet.

21 Although there are maybe some issues to specific Browns Ferry and different
22 leadership teams and different outcomes, the systemic issues that may be found
23 there could be broader in nature and we can't afford to be a myopic view and
24 only attack Browns Ferry.

25 With regard to the failed RHR valve and it's duplicate valve in the

1 other loop at Unit 1, the significant strengthening of the stem to disc modifications
2 were done. So we went to both Unit 2, Unit 3 and the second valve on Unit 1
3 and there was six valves that were mentioned earlier and we did a significant
4 modification to those valves. The Part 21 was a thread issue where the stem
5 was allowed to pull out of the disk and that was determined to be ultimately the
6 component root cause. What we talked about here and root cause, and part of
7 our issue of not being as broad in our root cause determination initially, we kind
8 of looked at this as a component failure and looking at the root cause around
9 that. We did some extensive review there, but the bigger picture of the
10 programmatic issues of why was this not detected earlier and those sorts of
11 issues were not part of our initial root cause. So, what we've been working on
12 now in the last several months has been a broader root cause that gets at the
13 leadership, the programmatic deficiencies, and those sorts of things that could
14 have and should have identified this in an earlier manner.

15 We've also taken a number of steps that significantly reduce the
16 risk posed to the plant as a result of an Appendix R fire that would result from this
17 and other component failures of this type. Specifically a question asked a little bit
18 earlier in terms of the relationship I'm going to say to the 002 and the 003, but
19 our decision to commit to the SISBO logic many years ago is something that's
20 been of significant importance to myself and our team for the last two and a half
21 years, almost from day one on the position we've been looking at the
22 commitment to NFPA 805, how do we build margin back into our models and do
23 the necessary modifications to the plant.

24 On top of that, should we have not had that model, our operator
25 more than likely would have had other tools at their disposal, should this one

1 valve had failed, and we could have easily went to other and multiple different
2 trains to get water into the vessel, but because of our commitment to SISBO, that
3 was removed. So, with the going forward with building the margin back into the
4 plant, we've already done several things that have reduced risk in fire protection
5 arena in our turbine building specifically, our cable trays, and they're faced with
6 them, and etcetera, as well as putting direction in our procedures until we get our
7 full implementation of NFPA 805. We have actions in our procedures should we
8 have to go into our SISBO logic of protecting the plant from a severe fire, that we
9 also have direction to them should that one train not be operable, that we relied
10 on in the model, then we can empower the operators to reenergize different
11 busses, assuming that probably all of them will not be affected by the local fire,
12 and there are actually some other techniques not requiring either of those
13 busses, those safety busses, as well to get water in, but we had not provided that
14 direction nor have we trained to those alternatives and those are all part of our
15 going forward issues. So, if we were to have the same issue today, we will have
16 minimized already that risk with substantial more improvement coming as we
17 move forward with our NFPA 805 commitments.

18 On to Page 4, based on their own assessment of the safety
19 significance of this valve, we found that there was a high likelihood that either the
20 operators would have taken another non-proceduralized action to reestablish
21 core cooling or that the valve in fact itself would have functioned in particularly
22 sequence of events occurred, may have actually opened the valve, but we do
23 completely understand that based on the NRC's evaluation, these factors could
24 not be credited in determining the safety significance of the valve. If we have not
25 trained operators to go reenergize equipment or talk to them, or train them to do

1 these multiple other options nor have procedures to do that, then saying that that
2 is something that you can commit to actually would have happened is not in the
3 best interest of the NRC and we understand that, and concur with that.

4 We also fully agree that the basic issue in this case is that there's a
5 lack of rigor in evaluating information regarding the operation and testing of this
6 valve. This valve was pulled out of the 89-10 program. We did put in an appeal
7 in terms of specifically the IST program, because we believe a lot of the actual
8 IST testing we did was at least at a minimum consistent with how most of the
9 other industry has done it. But through the detailed root cause we're executing,
10 we've not completed it at this time, but it's looking like we had asked to remove
11 this valve from the 89-10 program years ago. And we do believe that if it was left
12 in the program, the detailed analysis, or MOVATS or VOTES type traces are
13 common terms in the industry, that there's a good chance we would have
14 identified that this valve has some issue internal to it much sooner. So, the fact
15 that one is not in our program and two, we removed it, is I think a contributor to
16 this issue.

17 And the next slide, Page 5, the original root cause analysis of the
18 valve failure did not go far enough and that we missed the opportunities; and I've
19 spoke to that. The detailed diagnostics, there is one point on this too is that this
20 may have failed as early as '08 and that part of our analysis that was not
21 accepted out from -- I'm going to say research firms and other companies out in
22 the West Coast that we employed to do analysis for us. We do have a trace, but
23 even though it wasn't fully in the 89-10 program, we actually had a trace like an
24 89-10 that was developed in the '08 timeframe, we actually had one I think in '06
25 and this valve did inject, in '06, did inject in '08. We think there is a total of

1 potentially five times the valve may have injected since this thing failed. That's
2 not a hundred percent concluded, but if you look at the traces, there is some
3 anomaly in it that we're still evaluating right now that kind of led to some of the
4 false beliefs that the valve was going to do what it was supposed to do when in
5 fact it may have been separated even earlier and because we did not do
6 elaborate testing and in that diagnostic analysis we missed an opportunity to
7 have caught that.

8 So, we're taking this opportunity to look beyond those issues
9 associated with the valve to broader issues across Browns Ferry, and as I
10 mentioned, also across the fleet. We are evaluating whether the proper steps
11 are taken to ensure plant equipment will have the required level of reliability, and
12 the reliability question is key in that mentioned before, some of the scrams and
13 other actions and challenges to operations over the last few year.

14 Since the startup of Unit 1, there have been numerous issues with
15 Unit 1 startup. Many of them had to do with balance of plant activity so where in
16 the restoration of the plant we didn't put QA as an example, as an oversight
17 function on some of the craftsmanship in the field, and assuming that because it
18 was not part of the safety related side of it, that that would be acceptable. One of
19 the questions going forward would be how about our Watts Bar or a Bellefonte.
20 Well, those would be an example of having extra oversight on the craft level
21 throughout the whole plant, but we also know that our programs is an issue and
22 I'll speak to that in a little -- in a minute, but specifically the rigor around the
23 program specifically tied to our safety related components, and what not, was
24 also during that time fractionated; it did not have a strong corporate governance
25 and there were other deficiencies tied to that, and I'll speak to that in just a

1 minute. On to Slide 6 with the safety culture.

2 There are currently two substantive cross cutting issues identified
3 by the NRC at Browns Ferry, the first being aspect Papa 1 Charlie, which is
4 thorough evaluation of identified problems and the second being at -- the second
5 aspect be Papa 1 delta, which is appropriate and timely corrective actions.

6 In its mid-cycle assessment letter of August 29, 2011, the NRC
7 expressed a concern with the scope and progress of our efforts to address these
8 issues. Because of the length of time, the Papa 1 delta substantive cross cutting
9 issue has been opened. The NRC requested in its letter that TVA address this
10 SCCI as part of our planned safety culture assessment required by NRC
11 inspection procedure 95003. We have decided to include a review of the actions
12 identified and have already taken to address both SCCIs, not just Papa 1 delta
13 as part of this third party safety culture that we're now conducting. We consider
14 these SCCIs as related to the broader issues that I spoke to earlier, and the
15 issues of getting at the root causes and getting at the effective corrective actions
16 seems to be in line with the SCCIs that were mentioned both in the prior
17 discussion as well as what I'm mentioning now. On Page 7.

18 As stated earlier, we're investigating and analyzing how we do
19 business at Browns Ferry. As part of this, we agree with the NRC's assessment
20 that there is a culture at the plant of taking a minimalist approach to addressing
21 problems related to equipment reliability, the kind of broke-fix comment made
22 earlier. We appear to have a culture at the plant that tends to take a limited
23 approach to equipment problems rather than looking into why the problem
24 occurred and what needs to be done to preclude it from happening again. Now,
25 during the 002 in addition to that inspection, that team did look significantly at our

1 corrective action program and they were to a point of closing that out, but there's
2 issues in terms of depth that would be very difficult I think from even an
3 inspection module to see the completeness and thoroughness, but there's also a
4 time issue and that timeliness -- or excuse me -- that the quality of these
5 products from years ago were substantially weaker than what we're doing today,
6 not to say that we're doing today is still getting at all the root cause issues and
7 thoroughly getting this behind us, but I do believe there's substantial
8 improvement today from what there was several years ago. So, that 002
9 inspection has looked several years back for completeness and I think the going
10 forward one that we're in right now will require even more rigor in terms of our
11 root cause implementation and review.

12 To address the issue, we need to improve teamwork and
13 engagement of the plant staff, and one of the questions that may be is, are we
14 staffed appropriately. We have 1,112 employees onsite. We have a standard
15 organization that we benchmarked heavily and we really -- because there's not
16 too many plants with three units, we came up with a standard Org of 1154; it's
17 not necessarily linear from single to double unit and double unit to triple unit, but
18 we do believe it's adequate and to date we've included an increased staffing in
19 targeted areas as the line has come forward with the need, and we continue to
20 look at that. I've had very strong support from the COO and CEO, to do what it
21 takes to fully staff and coordinate this recovery effort, but also what the steady
22 state staffing would look like for a three unit site.

23 The plan also in 2012 had a capital budget, an O&M budget of
24 \$434 million, so we think there are adequate resources to improve the plant. We
25 know there's a lot of people at the plant and the folks are all committed, and I

1 think one of the most valued comments we heard from your visit the other day is
2 the fact that the people recognize that there's a lot of things to do, but they had
3 all in all energy to actually take it on and from a safety culture standpoint and
4 what it takes to really turn around a troubled plant; it starts right there and if I had
5 that battle ahead of me this could be prolonged and protracted. I currently have
6 no concerns with adequate resources. The board of directors as well as our
7 CEO, and the COO, have essentially supported me with any requests forwarded,
8 and I believe that will be a sustaining action for me as we go forward.

9 I, as the chief nuclear officer, and the rest of the executive team
10 here, decided to use this "Red" finding as an added motivation to accelerate
11 improvements. We've not been sitting back in our laurels for the last couple of
12 years. We've been doing a lot of material condition improvements to the plant,
13 but the extent of the conditions, the detailed root cause as mentioned about why
14 we're getting there, those are still issues that we're still working through and
15 there's a great deal of work that was required a few years ago, and there still is
16 going forward, and though one of the benefits though is through governance
17 model that I'll mention in just a minute, the clarity around what needs to be done
18 is substantially stronger today than it was a few years ago, and from that it's
19 more of a matter of planning and coordinating as opposed to we don't even know
20 what we need to do. And so we're more in the let's go implement phase, and so
21 the ability to accelerate that is a benefit to the site vice president here, Keith, and
22 that he has a green light to even shut a unit down if that's what he needs to do;
23 albeit, we need to make sure our packages are ready to go, shutting plants down
24 with people not having work materials or parts, and those sorts of things is not
25 only not productive, it's a major distraction to safe operations, but on the other

1 hand as we prepare and ready ourselves to do these significant material
2 condition improvements, we will do the execution of those when the time is right
3 for the plant, and the full support of the CEO, and COO to accomplish that. On to
4 Page 9.

5 There are a few improvements already in place. One of the most
6 critical elements to sustainability of this new culture and equipment reliability
7 stands with a strong corporate governance, and oversight. Specifically TVA has
8 had a corporate structure for years. I'm not trying to paint that as non-existent,
9 but the model was not one of central governance. For the most part the sites
10 were allowed to be autonomous, and they kind of ran their own site, and they
11 used corporate as what we call a reference material if you will, or reference
12 players. If they needed us, they called us and if they didn't need us, they made
13 their own decisions. Well, coming from a large fleet, from a -- plant, it recognized
14 immediately that the only way to operate is by heavy benchmarking, the creation
15 of corporate functional area managers, have a central presence in making sure
16 that no single site is allowed to be reduced to the lowest common denominator.
17 So, the corporate functional areas we have are all empowered. They are the
18 decision-makers. They benchmark heavily. They're out and about in the
19 industry substantially and they then create central documents that all other
20 documents tier down from, thus assuring us the biggest question of sustainability.

21 We also have key metrics and processes in place. We do
22 substantial numbers of cross self-assessments from corporate and sister plants
23 coming down, and looking at these programs and processes, all of which to
24 ensure that one, we have the best industry standard in place, and two, that
25 they're actually executing it, and we're seeing some progress in that area, but

1 that is another part of the cultural issue, is it will take more than a quarter or two
2 to really get the behaviors around adopting this central approach. But we are not
3 at a point of just starting. We've actually had some bricks and mortar on the
4 ground in this arena, and we're starting to enjoy some of that benefit.

5 We've also already had in place an equipment reliability program.
6 This was new also and there are many corporate SPPs we call them, or
7 procedures that give guidance to many of the programs and processes that have
8 allowed to decay, or did not exist. So with that, we had already started to
9 uncover a multitude of different program issues, but we did not complete all the
10 self-assessments nor had we identified all the problems, nor have we to this
11 date, but we do have a program. We do have assessment modules in place.
12 We also have plans and calendar dates for executing these, and they go across
13 the fleet. So, it's not just a Browns Ferry issue, but if I ask myself from a
14 sustainability issue, another part with governance also has to be quality
15 programs and procedures, and processes from a central standpoint. Do they
16 exist? Are they of quality? How do you know they're of quality and are you
17 executing them, and that's the part we've been focusing heavily on, and we
18 expect to see traction in that arena.

19 In addition, we spent about \$260 million specifically at Browns
20 Ferry for equipment reliability issues. So, it's not just a total O&M for bodies and
21 mandatory regulatory required issues, and those sorts of things. These are
22 targeted dollars tied to significant material condition improvements. Just a few of
23 the things done as emergency diesel generator heat exchanger, air dryers,
24 batteries, have all been replaced. But we still had turbo chargers and other
25 significant maintenance items still ahead of us on the machines, but they are in

1 the works and we expect to commence those shortly.

2 Significant work in our motor operated valve program.

3 Unfortunately we did wait until kind of the last minute to launch the MOV
4 program, however it is launched and in our last outage, we've had in think an
5 upwards of 19 key valves. These are not small, one inch valves, these are large
6 valves to essentially take them apart and do all the modifications that are tied to
7 the motor operated valve program from the joint owner's group. And then
8 another key program we spent substantial time on is the actual upgrade and
9 getting to within frequency of PMs on major motors. I'd like to say that that's also
10 been a mature program, but frankly it has not. As mentioned, when you toured
11 the other day, we have replaced two recirc motors in our last outage, for
12 example, that were seven years past OEM's recommended PM intervals on
13 those motors.

14 We've changed already six RHR motors, just dropped and
15 swapped. We completely changed them out. We changed three RHR service
16 water pump motors and six core spray motors. So, almost all of the majority of
17 our safety related significant pumps have been upgraded with their motors, and
18 we're going to continue until we get current on all of those motors.

19 We have some other issues with some pumps proper, like our RHR
20 service water pumps that have aged issues with their casings and what not, and
21 we're going to be changing those out systematically as well. So, it's not like
22 we've not done a thing in the last few years. We've been actively improving and
23 that has shown up in what we call equipment related clock resets. I believe we
24 had in '09 around 27 clock resets tied to significant equipment failures and I think
25 we're around 17 or so in 2010, and we're on track. So, if you look at a number of

1 clock resets tied to equipment reliability, we've been gaining on that. The
2 number of trips in the last few years, over the last year or so we did obviously
3 have the tree trips tied to the tornado, but other than that there've been some, I'm
4 going to say, improvement potential in that, but we're a long ways from out of the
5 woods. But we do have the indicators now that really track that overall
6 performance and the commitment from TVA. And our engineering staff is one of
7 excellence in equipment reliability, and that's where our primary focus is. So with
8 that I'm going to turn it over to Bill for final comments.

9 BILL MCCOLLUM: Okay, thanks, Preston. So, Preston has tried
10 to go through and characterize a number of issues, some historical and bringing
11 it up to current time, and I want to put that in perspective. So, our commitment is
12 that we're going to run nuclear right at TVA and that means several aspects of
13 the program have to be top notch. Preston talked a bit about the equipment
14 issues, specifically going back to the root cause of the LPCI valve failure, and
15 you heard discussion of a lot of work that went into the specific equipment failure
16 root cause, because it's extremely important to us if we're going to do this right,
17 that we have to have excellence in engineering. We have to understand exactly
18 when things fail, why they fail and make sure that our engineering is correct and
19 we had a good bit of back and forth with the NRC staff to gain clarity around
20 whether the engineering work that we were doing, the testing we were doing
21 made sense and explained the failure of the valve, or if there was information to
22 the contrary, that we heard that back and had that dialogue to get to clarity on the
23 work that we'd done on equipment failure. Having done that and having gotten
24 the information, and gotten a clear understanding of exactly what went on inside
25 that valve with the thread manufacturing that allowed the stem to pull loose from

1 the disk, we have come to clarity on that. We've moved on from that and so I
2 don't want anyone to take away from the fact that there was a lot of back and
3 forth dialogue about the specific equipment issue that we are continuing to dwell
4 on that. That's something that needed to be brought to clarity. It's been done.
5 The discussion's been had and we've moved forward, and learned from that, but
6 it's important that we do the equipment work and the engineering right.

7 Likewise on the programs, you heard some discussion about
8 Appendix R, a program where we had historically not been as aggressive as we
9 needed to be to upgrade that program and we are moving ahead, not only with
10 taking actions now to reduce our probabilistic risk relative to fires under Appendix
11 R, but also moving forward to NFPA 805, which will implement as aggressively
12 as we can and we will take actions along the way to reduce and improve our risk
13 without waiting for the final resolution of all implementation of an NFPA 805 to do
14 that.

15 We talked about ASME IST, where again there was a lot of back
16 and forth dialogue with staff, and you heard about a generic issue that's been
17 referred to ASME committee, because we believed to do this right, to do these
18 programs right, we need to have clarity around the programs, the requirements,
19 how you interpret them, how you apply it to specific situations in the plant. Have
20 we always done that right? No. So, we're not being defensive about that. We're
21 simply trying to make sure we have clarity about how to apply those programs
22 and make sure we do it right, and that's our commitment going forward.

23 So, we have not done as well as we want to in the program area
24 and Preston outlined a lot of issues or examples of the things that we're putting in
25 place to build stronger governance across the fleet, across all of our plants to

1 ensure that the programs are applied correctly, they're implemented rigorously
2 and there's oversight, and questioning of people in the implementation and
3 execution of this work so that we do the programs right. And then looking at
4 corporate and broader issues beyond just Browns Ferry; Preston talked about
5 resources that are being applied. So, we have a commitment to apply all
6 necessary financial and personnel resources to the resolution of issues at
7 Browns Ferry and across our fleet.

8 As you know, organizationally our efforts in terms of our operating
9 plants and Preston's organization are organizationally separate at TVA from our
10 efforts regarding new plants at Watts Bar 2, Bellefonte, et cetera. So, those
11 resources are not stretched in terms of trying to apply resources of one
12 organization to both sets of those efforts. Preston has the resources that he
13 needs and is free to ask for more resources, and has gotten as he mentioned,
14 substantially more resources at Browns Ferry, in terms of both O&M capital
15 expenditures, funds, personnel, not only for the teams and people who are
16 addressing these specific issues with the 95003, NFPA 805, those sorts of
17 issues, but in general and applying the maintenance resources that we need at
18 Browns Ferry. That is our top priority to improve operation at Browns Ferry and
19 apply the resources that we need, and if we need to pull resources from another
20 effort within another part of the Tennessee Valley authority outside of nuclear,
21 we'll certainly do that and apply those resources whenever needed.

22 So, there's also a commitment to excellence in operation and
23 Preston outlined a structured approach where we have put a management model
24 in place that provides for a rigorous oversight governance and execution and
25 support model that starts with the corporate support and resources, and the

1 program definition, and rigorous application down through the execution of those
2 at the plant, and provides independent benchmarking oversight, and questioning
3 of the execution to make sure that we do that right. Has that all been put into
4 place? Is it mature? Is it where we want it to be? No, but that is the model that's
5 being put in place and we have a commitment to continue to execute that. That
6 comes all the way from the board of directors at the Tennessee Valley Authority
7 and our board Nuclear Oversight Committee, through our chief executive officer,
8 my boss, and from me down to the nuclear operation organization; so we do
9 have efforts in place. We are seeing traction with those efforts. We have a lot of
10 work to continue to do to get to where we need to be, but our commitment is to
11 get there, and to get there rapidly. So, with that we will take any questions.

12 CHAIRMAN JACZKO: Well, thank you for that presentation. We'll
13 start with Commissioner Svinicki.

14 COMMISSIONER SVINICKI: Thank you for your presentations. I'll
15 start in the context of the Part 21 report TVA submitted. What, if any
16 engagement have you had with other nuclear power plant sites, manufacturers,
17 and vendors concerning this valve design and could you describe those
18 interactions?

19 PRESTON SWAFFORD: Rob, would you do that?

20 ROBERT WHALEN: Yes, Commissioner. We have submitted that
21 as mentioned in the licensee event report. We have had direct consultation with
22 General Electric and the crane valve company that is the current owner of the
23 manufacturing company that manufactured this valve, the Walworth Valve
24 Company, back in the 1960s. General Electric has issued at least some
25 documentation to all sites that they believe may have similar products and they

1 are following their General Electric corrective action process to our
2 understanding.

3 COMMISSIONER SVINICKI: Okay.

4 PRESTON SWAFFORD: Questions also about interaction with --

5 ROBERT WHALEN: We have done benchmarking as part of our
6 root cause with several other sites that have similar valves, not necessarily in the
7 same application, but we are working directly with those facilities.

8 COMMISSIONER SVINICKI: Okay, thank you. Could you
9 elaborate on the in-service testing interpretation issue that's being handled more
10 generically, specifically was your interpretation common to other TVA sites and
11 from what you understand, was this interpretation more common in the industry?

12 PRESTON SWAFFORD: Specifically, we do believe it's common
13 in the industry, so there may be this generic issue at other locations. There's two
14 main parts of -- I mean part of it, the testing programs also include 89-10, we've
15 already mentioned, where that was deficient in our program, but the other part of
16 actually demonstrating that the valve operated while there's quarterly
17 requirements that actually go out and ensure that the valve stem moves up and
18 down, and you get the proper light indications, and we were current with that.

19 The other part I think is once I think every two year period you have
20 to demonstrate that the valve would actually operate. Well, that was in '09 when
21 we did that program, when we did a full flow test and the valve opened. Now, it
22 may have and our analysis now says that it was probably broken even before
23 that in '08 and in fact it probably did what our other analysis from California said it
24 probably did, but in any event, we aren't 100 percent sure that's a true statement,
25 yet more analysis has to roll into it. So, we were believing that we were in

1 compliance because we did the full flow test every couple of years and then we
2 did the quarterly operating of the valve stroke indication issue. So, we believe
3 that's what the program required and we believed we were compliant.

4 However, there's other words that I also say, that we have to -- for
5 the whole purpose of this is to assure the valve will do its safety function and
6 that's the part where the normal means in the industry of doing this full flow
7 check and the quarterly stroke test is the typical means of doing that, but I think
8 we've discovered that may not be sufficient.

9 BILL MCCOLLUM: So, in other words doing the normal practice of
10 stroking the valve, verifying that it stroked and that you got flow may in this
11 particular case not have given you the confidence that the valve and disk were
12 not separated or were intact, and that's an issue that needs to be driven through
13 in terms of okay, if in this instance that type of testing doesn't give you the
14 assurance, then what sort of testing or provisions would you need to fulfill the
15 intent?

16 COMMISSIONER SVINICKI: Thank you, I appreciate that
17 elaboration. As Victor McCree described, a safety culture assessment will now
18 be conducted. How effective would a safety culture assessment have been in
19 identifying the underlying issues at the heart of the RHR valve inoperability if a
20 safety culture assessment had been conducted prior to this issue emerging?

21 PRESTON SWAFFORD: That's a great question. I'm not sure I'm
22 smart enough to answer it.

23 BILL MCCOLLUM: Yeah, so I think a couple of things we should
24 talk about, one is that we regularly do synergy surveys, safety culture surveys,
25 not as part of this 003 process, but as a routine that we've put in place and so

1 that work is done and there's opportunities to look at the cultural issues or
2 indicators, and relate those perhaps to execution of work in the plant.

3 Without being -- you know, I don't want to be defensive and say
4 that culture doesn't directly impact equipment operation, but I think in this very
5 specific instance of the failure, this LPCI valve, it's you know, it's difficult for me
6 to take culture and get it down to someone understanding the separation of this
7 disk and stem, because of an original manufacturing defect and the inadequacy
8 of the full flow testing that Preston was just talking about, to show that during an
9 in plant test. So, we're going to continue that work. We're obviously -- as part of
10 the 003, we'll do an extensive safety culture review and draw all the threads that
11 we can from that to see how to improve our operation, but that -- making that
12 specific connection is really tough for me.

13 COMMISSIONER SVINICKI: Okay, well I appreciate that. I do not
14 interpret that as any defensiveness. I think it's cautious to conclude that it would
15 be very difficult to sit here and draw a very firm line that a safety culture
16 assessment would have revealed this when again this is a very specific
17 equipment inoperability issue, and I think I asked the question from the
18 standpoint that the safety culture assessment cannot be expected or over-relied
19 upon to reveal you know, all issues. So, I appreciate your honesty in that
20 answer. I don't interpret it as defensiveness and I think it reflects that there's not
21 an over reliance on a safety culture assessment to reveal these issues. You
22 need to have, as you've described, a multi-pronged improvement approach and I
23 think you've testified to that here today.

24 Mr. Polson, I think that for you as a site vice president and any of
25 your peers, at other TVA stations and certainly your peers at other reactor sites

1 across the country do not want to find themselves sitting at this table, at this kind
2 of meeting. You've heard the NRC senior management presentations. You have
3 heard your own senior leadership describe the issues at heart here and the
4 improvement plan. What would you communicate to the Commission from your
5 perspective as someone who has an undivided attention, day in and day out to
6 Browns Ferry Units 1, 2, and 3?

7 KEITH POLSON: Well, what I'd like to communicate is I mean, we
8 take this very serious, not just myself, the entire site, our whole commitment is to
9 improve the plant. It's not just to get through the inspection and get out of
10 Column I; it's to improve this plant forever in its sustainability. So, it's a huge
11 opportunity, albeit you know, it's not the greatest thing to be at a 95003
12 inspection, but it's getting me the resources and everything that I need to make
13 this you know, one of the best operating plants in this country and in the world.
14 So, that is the commitment that we have for my site.

15 COMMISSIONER SVINICKI: Do you feel that you're fully
16 supported by the senior leadership of TVA and anything you need to make that
17 possible?

18 KEITH POLSON: Absolutely, and I have been in this situation
19 before at other troubled plants in the same position, and it was somewhat of a
20 battle, even though we knew we were in trouble, but to get the funding and the
21 resources. Here at TVA, anything that I need, I get.

22 COMMISSIONER SVINICKI: Okay, thank you, and a final specific
23 question for you or maybe for Preston, would you say that TVA has a clear
24 understanding of what the NRC will require of you in order to close out the
25 substantive cross-cutting issues

1 KEITH POLSON: Yes, I do. I mean if you look at it, it's the
2 timeliness and it's the thoroughness of the evaluations and it's absolutely right.
3 There was a cultural issue that we have to break. I think we're making progress
4 on that right now and so as issues come in and there's multiple issues at nuclear
5 power plants you know, small to large. We're handling even the smallest issue
6 with a huge sense of urgency and I think that the NRC will see what we're doing
7 and then there will be a clear exit from there.

8 COMMISSIONER SVINICKI: Okay, thank you. Preston, did you
9 want to add anything to that?

10 PRESTON SWAFFORD: Well, I'll concur with that. We have a
11 ways to go, but we've also put some programmatic things in place. For example,
12 around thoroughness of root causes and corrective actions. We've got
13 something called CARBS, or Corrective Action Review Boards, but we've also
14 instituted department level corrective action review boards. We're putting more
15 rigor in the actual tracking systems, because that's been a struggle for us and it's
16 currently even a struggle in that corrective actions get illuminated into these root
17 causes and other tools, and then next thing you know we lose track of them or
18 we defer them frequently. So, part of what this is also doing is the sense of
19 urgency to drive to conclusion. So it's one, is getting into the detail, knowing
20 what the root causes are, but then when you put your corrective action in place,
21 get after them and get them behind you, and given the resources necessary so
22 that the targeted part. We have a special team part of, Tim Cleary, sits behind
23 me is the vice president, is a direct report to me. He's specifically heading up the
24 003 inspection, even though Keith has to own it, it'll never work unless the site
25 VP is front and center on it, but I also need him very much to pay attention to

1 three operating units. So, the creation of the position for Tim is to also build the
2 necessary staff around him to ensure the sense of urgency comes through and
3 that we're actually following up on all the corrective actions and the detailed level
4 around our go forward.

5 COMMISSIONER SVINICKI: Okay, thank you. Thank you.

6 CHAIRMAN JACZKO: Commissioner Apostolakis.

7 COMMISSIONER APOSTOLAKIS: I'd like to continue along with
8 some or one of the questions from Commissioner Svinicki. I understand you are
9 doing now a safety cultural assessment, or you have somebody else doing that?

10 PRESTON SWAFFORD: Yes, sir.

11 COMMISSIONER APOSTOLAKIS: Is this the first time you are
12 doing -- such an assessment?

13 PRESTON SWAFFORD: We did one for the 002, but it's not to this
14 scale. We had been using Synergy, which also gives a barometer of the safety
15 culture at the site and so this will be substantially more. There'll be a lot more
16 one on one discussions. The rigor in it will also get input from NRC and their
17 expertise to make sure that we only do this one time and the one time we do it is
18 effective.

19 COMMISSIONER APOSTOLAKIS: Now, this is being done by
20 some outside --

21 PRESTON SWAFFORD: By a third party, independent.

22 COMMISSIONER APOSTOLAKIS: Now what does it entail? I
23 mean do they come and ask your employees or are they looking at data also,
24 past performance? I mean there isn't such a single thing that we call safety
25 culture or a single way of doing it, and how much confidence should we place in

1 it?

2 PRESTON SWAFFORD: There's a questionnaire. It has
3 substantial industry data input, so they believe it to be a highly effective predictor,
4 the third party firm that puts it together, but also for the magnitude of this, there is
5 going to be a fair amount of kind of one on one discussions to add more input to
6 the conclusions of it. I can't -- I'm not the expert. Maybe Rod, I'm not sure if you
7 had -- this is Rod Ketcher, Vice President of Licensing.

8 ROD KETCHER: It will be as Preston said. First, we did the
9 survey, which we've just completed. Then there'll be extensive interviews, and
10 then there'll actually be observations made of plant staff performing their
11 activities.

12 COMMISSIONER APOSTOLAKIS: But presumably -- I mean on
13 Slide 7, you say there was a long standing culture of taking a minimalist
14 approach to problems. If I were to ask an employee are you taking the minimalist
15 approach, he would say, "No." I don't think anybody would agree that they're
16 taking the minimalist approach, so I don't know what the value of surveys is. Is
17 there something I'm missing there?

18 ROD KETCHER: I think that you're right in the sense that you're
19 not going to get the answers just from the survey. A lot of it comes from the
20 interview. So, I just had my interview and during that interview we in fact
21 discussed this issue of a minimalist approach, and so you have now people,
22 newer people who are brought into TVA, who are looking at the situation, seeing
23 it in a different light, and in that way I think they'll be able to get to a broader view
24 of --

25 COMMISSIONER APOSTOLAKIS: So there's more to it than just

1 surveys, yeah -- that's a good point. Now, staying with the same subject, the
2 longstanding culture, why was it longstanding? Nobody figured that there was
3 something -- a problem there or --

4 PRESTON SWAFFORD: Well, I believe it has to do with, I'm going
5 to say, the autonomous site and because if you will, you drop a site vice
6 president in there, you have one person trying to change whatever the culture is
7 and at Browns Ferry because of their history and the different material condition
8 issues, I think you could conclude that that culture isn't to the highest degree and
9 highest standards that we're looking for. Yet you couldn't necessarily draw that
10 same conclusion to the other sites because, again, they were autonomous, and
11 so however they started up the strength of certain vice presidents and duration
12 and those sorts of issues are all parameters. But I do know, going forward, the
13 central approach with a very strong central governance model with programs,
14 processes, and procedures starting from the hub will affect that outcome even at
15 the hardest of plants because of the degree that we do self assessments, probe
16 our morning calls every morning where the plants do more than just talk about
17 status. We talk about human performance and equipment issues, those sorts of
18 things -- are all mechanisms that the central corporate group has to their
19 disposal, if you will, to see if they're aligning with us or if they're drifting to a
20 different direction and I'm strong enough, if you will, and perceptive enough to
21 realize those that are kind of drifting off the reservation and those that are staying
22 fully supportive. So I think the model eventually is going to turn that culture and
23 it'll have it, not completely, but mostly similar to the other two sites and will be
24 one fleet in behavior.

25 COMMISSIONER APOSTOLAKIS: Thank you. On Slide 4, you

1 say that TVA identified a number of factors that mitigated the safety significance,
2 but the NRC did not accept those, which brings me back to my earlier question to
3 the staff. What is the number that they produce -- the significance determination
4 process produces, in this case, 7 times 10 to the minus 4, what does it
5 represent? Does this number allow only the inclusion of events that have been
6 proceduralized, and ad hoc actions are not allowed? Is that the way the SDP is
7 structured?

8 PRESTON SWAFFORD: By and large, I believe that's true.

9 COMMISSIONER APOSTOLAKIS: Now, if you were doing -- I
10 don't know, maybe you have done it already, but if you had included those
11 factors, would that 7 times 10 to the minus 4 be reduced significantly?

12 PRESTON SWAFFORD: No, it would probably have been "Green".

13 COMMISSIONER APOSTOLAKIS: It would still be "Red".

14 PRESTON SWAFFORD: No, it would have probably been "Green".

15 COMMISSIONER APOSTOLAKIS: So it would have been
16 reduced?

17 PRESTON SWAFFORD: Yes.

18 COMMISSIONER APOSTOLAKIS: By ad hoc actions, do you think
19 it would go down by --

20 PRESTON SWAFFORD: Well, I mentioned earlier, for example,
21 operator actions, the NRC could not credit us with the --

22 COMMISSIONER APOSTOLAKIS: I understand that, yeah.

23 PRESTON SWAFFORD: But you would have credited, there were
24 so many other ways to get water into the vessel that, in fact, from a PRA
25 standpoint, that value would have been substantially less risk, let's say.

1 COMMISSIONER APOSTOLAKIS: Rather interesting operation.

2 ROBERT WHALEN: Yes, Commissioner. The NRC significance
3 determination does really center on the operator actions that would be required
4 based on our legacy self-induced station blackout approach. And each of those
5 actions had to be treated. In their review of scenarios, a human error aspect with
6 each of those had to be summed in that process. And that really drove their
7 analysis of the issue.

8 COMMISSIONER APOSTOLAKIS: How much would you have
9 reduced it, an order of magnitude?

10 ROBERT WHALEN: It really hinges on the human error aspects of
11 all those actions and the fact that we had that SISBO approach built into our
12 procedures. And we recognize that that SISBO approach is not appropriate. We
13 are working vigorously to implement NFPA 805 and go away from the SISBO
14 approach. In fact, as Mr. Swafford has mentioned, we have taken interim actions
15 to pull forward modifications from the NFPA 805 work to reduce risk. We have
16 put in alternate pathway options into the procedures. We have also, for the
17 highest risk areas in the NRC Significance Determination being the turbine
18 buildings, we have eliminated the SISBO strategy by installing new fire barriers.
19 We have installed various modifications, circuit modifications, incipient fire
20 modifications and such as well.

21 COMMISSIONER APOSTOLAKIS: So, there are two issues that
22 come to my mind after your response. Clearly, the model one uses for
23 estimating human error probabilities would be very critical in this case.

24 ROBERT WHALEN: Yes, sir.

25 COMMISSIONER APOSTOLAKIS: And, again, there is a number

1 of models out there one can pick and choose. Our staff has been working on
2 trying to come up with EPRI and other organizations, to come up with a single
3 model or maybe one of two models that would be acceptable to everyone. And I
4 think this situation reinforces the point that we really have to do that. The other
5 point is when you switch to -- transition to NFPA 805, then everything I
6 understand from that point on related to fire protection would have to be risk
7 informed. And would that allow you then to use ad hoc operator actions in that
8 case? It would be different from the SDP, the Significance Determination
9 Process?

10 ROBERT WHALEN: For our NFPA 805 transition, we are right now
11 nearing completion of the fire PRA, and we're following that transition process.
12 In parallel with that, we are pulling forward modifications that are indicated by
13 that transition, doing them ahead of time, if you wish, in order to reduce the risk.
14 Because we did not have a fire PRA, the NRC, in doing their significance
15 determination, had to develop a spreadsheet model and develop --

16 COMMISSIONER APOSTOLAKIS: One last question. I've heard
17 over the years complaints that one problem with the ROP is that it is risk
18 informed in many ways but also it is in very significant ways risk-based in the
19 sense that there is a point number, a point value that is produced -- in this case,
20 7×10^{-4} , and the fact that there is uncertainty about that
21 number, it really plays no role. So in that sense -- and 7×10^{-4}
22 clearly is about the threshold of 10^{-4} , but what if it were 1.5 times
23 the 10^{-4} or 2 times 10^{-4} , how much confidence would one have
24 there that it's "Red" versus another color? Do you think that's something that
25 needs to be corrected, that it's too much based or focused on point values?

1 BILL MCCOLLUM: I'll say this example is probably a tough one to
2 deal with for the staff as well as licensees because, as Rob said, if you were to
3 credit some of the other actions that could have been taken, the risk doesn't just
4 change a small amount; it changes dramatically. So, you'd go from "Red" to
5 "Green". And so it's -- you use a -- you can use a point value or you can take
6 some opportunities or look at some opportunities that dramatically change the
7 risk. And that may be a hard one to deal with within the ROP process.

8 COMMISSIONER APOSTOLAKIS: But maybe the dramatic
9 reduction is due to the fact that we're using point values. Maybe with an
10 uncertainty analysis, you wouldn't see such a dramatic shift. I don't know. I don't
11 know. I'm just speculating myself, but it seems to me that's a weak point, not in
12 this particular case. But anyway, thank you, Mr. Chairman.

13 CHAIRMAN JACZKO: Commissioner Magwood?

14 COMMISSIONER MAGWOOD: Good morning. You know, I've
15 participated in a few of these types of meetings, and I've concluded that in large
16 respect, they're pass/fail meetings for the licensee. And it's not that hard to pass.
17 I mean, basically, all you have to do is say "We understand, we get it, we're
18 changing." I mean, that's pretty much all you have to do. Now, of course, you
19 have to mean it, and we have very good staff who will make sure that the
20 commitments you're making at the table today are carried out.

21 In that respect, I do appreciate the detail and the
22 comprehensiveness of your presentation Mr. Swafford. I thought you covered a
23 lot of ground and did it very well. And I appreciate both the details and also the
24 broader perspective. And I also appreciated Bill McCollum's follow-up where you
25 made a reference to, I think you said the back-and-forth between TVA and the

1 staff on a variety of issues, but your point was that, you know, we're moving
2 beyond that. We did it and, in fact, we're going forward.

3 However, I was looking at your June 8, 2011 letter -- June 11,
4 excuse me -- which wasn't that long ago. And I wanted to just sort of read a few
5 things and I just ask you to, with today's perspective that you're bringing to the
6 table, sort of give us your thoughts about what you're -- about where you are
7 today with this. The letter, which I don't think is actually -- I think Mr. Swafford,
8 says, and I'll just quote a few things here. "...the actual cause of the failure was
9 found to be manufacturing deficiency, i.e. undersized threads in the disc skirt
10 which resulted in axial separation of disc from the disc skirt/stem assembly...
11 Because TVA could not have reasonably identified the manufacturing deficiency,
12 no licensee performance deficiency existed...TVA considers that Browns Ferry's
13 IST program and its implementation are in compliance with Section ISTC 4.1 of
14 the O&M code as it's understood by TVA and many others in the industry, and
15 that no licensee performance deficiency related to IST was related to the valve
16 failure." And you've spoken to this a little bit, but let me give you my perspective,
17 I'm going to ask you to get me your current thinking about this.

18 When I first heard about this and the staff briefed me on this,
19 obviously, there was concern, an important issue. But I was actually more
20 concerned with TVA's response to it quite frankly, and this still remains
21 somewhat concerned because, to me, what this says is it wasn't our fault. And I
22 -- I guess in a very broad sense, it's my feeling that if you operate a nuclear
23 power plant, you can never say it's not my fault. And I wanted to hear from you
24 today whether, you know, we're ever going to hear from TVA again, whatever the
25 circumstances are, that it wasn't your fault, it was the manufacturer's fault, it was

1 ASME's fault, it wasn't our fault -- we only operate the plant. So let me give you
2 a chance to respond to that. Because that actually, in this whole instance was
3 the thing that concerned me most.

4 BILL MCCOLLUM: Yeah, so let me start and I'll Preston jump in,
5 too. The letter doesn't say that it's not our fault. It's our responsibility to make
6 sure that the equipment operates correctly, that the programs are implemented
7 correctly, and the letter does not anywhere say that it's not our responsibility or
8 not our fault. The term performance deficiency is a specific term of art in
9 regulatory space, has a particular meaning. And so the -- our intent, again, was
10 to make a choice between simply accepting assertions without enough dialogue
11 to make sure that we had really driven out clarity on how the staff saw the
12 specific failure causes of the LPCI valve and how the staff would see what good
13 implementation or effective implementation of the ASME IST program would look
14 like, a choice between accepting with less dialogue or pushing the envelope to
15 drive more dialogue and more clarity on those issues. And that was the choice
16 that we made. Could we have worded the letter differently and been more clear
17 about the intent and that sort of thing? Certainly we could. But our intent was
18 not to say that we didn't have responsibility. It was to say we owe it to ourselves
19 and the rest of the industry to drive this dialogue further to make sure that we're
20 really clear about how we see this valve failure and how we see the
21 implementation of the testing requirements being played out. Preston?

22 PRESTON SWAFFORD: I want to add a little point is that we did
23 believe that the performance deficiency is tied to the conclusion of a "Red"
24 finding and that needing to get the proper performance deficiency nailed would
25 be critical for our success path even out of the 95003 inspection. And when we

1 reviewed the specific "Red" finding, the IST portion of it, we thought we were in
2 line with the rest of the industry, not that that valve hadn't separated and not that
3 the valve didn't have significant safety significance to it. It's just that before we
4 launch a whole team and move forward, plus the ramifications on the industry,
5 should that not be clarified, was a concern. And I had multiple discussions with
6 the folks around that. So that all combined was the reason that let's get clarity
7 around the performance deficiency so we can fix the right thing and also not
8 ratchet the whole industry into something that may not be germane to them but
9 you need programs like the 89-10 program is an example.

10 COMMISSIONER MAGWOOD: Okay, let me -- I understand what
11 you're saying. I understand what you're saying. But I hope you understand what
12 I'm saying as well, that, you know, that what I do hear you saying however, is
13 that you are taking responsibility.

14 PRESTON SWAFFORD: That's correct.

15 BILL MCCOLLUM: Absolutely.

16 COMMISSIONER MAGWOOD: That it seems to me that for any of
17 the operators, you're going to run into situations where you're going to have
18 manufacturing issues, you're going to have IST issues, but at the end of the day,
19 it's got to be -- it has to be the people at this table that take the final
20 responsibility. And so I -- and I recognize how the process works. You know,
21 you get a letter from NRC, you have to write a letter back. You have to push
22 back. But, you know, I think that, you know, when you think about the people we
23 all serve at this table, the public, I think it would be disturbing for the public to
24 think that the operators of nuclear power plants every had situations where they
25 would sort of simply, you know, sort of pass the buck. You know, I know you're

1 not saying that, but let me just say that's certainly the impression one gets from
2 reading that letter.

3 PRESTON SWAFFORD: We definitely are not -- in fact, the whole
4 team, nuclear professionals don't operate well by passing the dollar. And we
5 have to own it first-person, and the chair -- or the Senator the other day asked
6 who was the head on top of the totem pole, if you will, that owns this, and it was
7 very clear that Preston Swafford does, chief nuclear officer. We don't pass the
8 dollar here.

9 COMMISSIONER MAGWOOD: I appreciate that. Let me ask a
10 more detailed question. I was talking with the staff about why the -- some of the
11 motor operator valves were left out of the IST program. Can you talk a bit about
12 that? Why were some of these valves outside the program?

13 PRESTON SWAFFORD: We -- and what we're, I think, mainly
14 talking about is the 89-10 program specifically. For example, this valve was in
15 the IST program. We did the flows. Checking thee quarterly strokes, but it was
16 not in the 89-10 program. We had removed it and submitted essentially
17 documentation to the staff to get it removed from the program. Since our own
18 internal root cause and evaluation, I think some of the information we submitted
19 was not correct, so the basis for what we were concluding -- this was in 1997 --
20 to have this valve removed from the program was not based on -- I'm going to
21 say quality engineering and development. So, what we're looking at is those
22 valves that got pulled out, what was the justification for that, was there rigor in
23 that or not, and then taking corrective actions appropriately, not just at Browns
24 Ferry, but any potential at the other two sites as well.

25 COMMISSIONER MAGWOOD: Okay, good, so that -- this is a

1 fleet-wide activity.

2 PRESTON SWAFFORD: Yes, it is.

3 COMMISSIONER MAGWOOD: Great. And just finally, I heard
4 your conversation with Commissioner Apostolakis about the SISBO strategy, so
5 my understanding is that you are moving away from that. You're relying on
6 NFPA 805 as the mechanism to get you there.

7 PRESTON SWAFFORD: That's correct. Upon starting up Unit 1,
8 there was substantial dialogue between the Commission and TVA on that. For
9 whatever reasons, we chose not to commit to NFPA 805 within the window, if
10 you will, that in retrospect was not in our best interests. But nonetheless, that's
11 the way that went. But since two and a half years ago when we committed to
12 NFPA 805, we've been diligently working to get out of SISBO. We've been doing
13 the plant mods and like the engineering VP had mentioned, Rob, we've already
14 done substantial enough work in the turbine building such that the SISBO logic
15 for applicability there is no longer required or won't be shortly upon completion.
16 So, the other plants have SISBO but most of them took a little bit different attack
17 in that they did detailed analysis of cabling, cabling routing, and knew the
18 outcomes of it, where we essentially just took the SISBO position and didn't do a
19 lot of that analysis, so our ability to, one, minimize operator manual actions and
20 as well as to be able to, if you will, target the utilization of the SISBO logic to a
21 much narrower band was not accomplished. And therein lies where our goal
22 forward is. And we do expect over the next year to essentially have submitted
23 our LAR and --

24 COMMISSIONER MAGWOOD: What about the other plants in the
25 fleet? Are you expecting to --

1 PRESTON SWAFFORD: Those plants are designed. They're
2 much newer. And when I was talking other SISBO plants, they're not our other
3 two plants. They are, I think, four or five other plants that have a self-induced
4 station blackout as a liable mechanism, but their programs, I'm not trying to indict
5 them. They did many other things through the years that Browns Ferry did not
6 do. But our Sequoyah and Watts Bar are much newer design. They have a lot
7 more Appendix R codes fully implemented at the stations, and their manual
8 actions are substantially less. But we are still looking at NFPA 805 as a potential
9 option or some hardening, if you will, of our Appendix R actions on those plants
10 as well.

11 COMMISSIONER MAGWOOD: Okay, thank you. Thank you very
12 much.

13 CHAIRMAN JACZKO: Commissioner Ostendorff?

14 COMMISSIONER OSTENDORFF: Thank you, Mr. Chairman. I
15 appreciate the candor of your presentations today. And I want to bore down on a
16 topic that Commissioner Apostolakis broached in his questioning. Mr. Swafford,
17 that goes to Slide 7. I'm really struck, I mean, thinking about this -- your slide,
18 and I appreciate the openness of it. It says "long-standing culture of taking a
19 minimalist approach to problems that adversely affect equipment reliability." And
20 we're all creatures of our own experiences and I'm just struck by my experience
21 in the nuclear Navy. Twenty-five years ago when I was engineering an old
22 Westinghouse attack submarine, I had a very similar problem to a separated
23 stem disk assembly and a reactor plant valve. I won't go into details. Those
24 remain classified. But I'm struck by the material issue here but also the broader
25 implications of your statements.

1 So I'm going to shift away a little bit from this particular LPCI valve
2 and talk more about the overall history of the equipment reliability and
3 maintenance practices that Unit 1 or across the entire TVA fleet. And when I go
4 back to the slide, "there's a long-standing culture," I have to say, well, whose
5 responsibility is it. At what level of the organization have decisions been made to
6 not properly maintain or perhaps to -- you know, you acknowledged I think Rick
7 Croteau's comment about broke-fixed, but at some level in the organization,
8 irrespective of how well your program is set up on paper or what kind of
9 resources you provide, it's the execution of that program in day-to-day operations
10 or during an outage, it's the execution on the deck plates that really drives the
11 equipment status of your plant.

12 So can you comment a little bit about, you know, where in the
13 organization is the culpable group or line of management or line of operators or
14 an engineering QA, site VP, I don't know. I'd be interested in your perspective
15 because to me, that's a -- you made a very interesting statement here on Slide 7.

16 PRESTON SWAFFORD: Well, I -- you know, I'll just tell you that it
17 almost always starts at the top. I mean, people emulate their bosses, and you
18 can't necessarily get to that point in three months, but enough time, people will
19 emulate their bosses. They will do what they think their boss needs done. So
20 when you are bypassing excellent equipment reliability standards as terms of
21 how do we get it fixed and keep the plant up at 100 percent power or how do we
22 do whatever, people will read that and then they'll multiply it times 10, so to
23 speak, and that if I -- if the plant was ever denied an activity, we have several
24 components. For example, I mentioned some of these pumps, we've got to
25 procure, some we've already done.

1 But it's more than that. We had traveling screens for example that
2 we send divers down and fix, right. But today the leadership is -- we're tired of
3 that, right. We need to do whole hog, pull the whole screen modules out, try to
4 replace them. So it starts, I think, with the top and that they have to read from
5 me is that we've going to take the hit on this is not about just getting by anymore.
6 We have to fix it and fix it right. And then you put in place people like Don
7 Jernigan and Keith Polson who have completely signed up for that model. Now
8 these plants have been allowed in certain cases to decay. I mean, there's a lot
9 of focus on starting up Unit 1, maybe not as much focus on Unit 2 and 3. Three
10 units by themselves are a unique beast in themselves and takes a lot of extra
11 leadership, attention, and organizational strength to get through it all. But it's
12 also a powerful organization that once it turns the ship and starts moving forward,
13 they can probably accelerate that recovery from that culture.

14 So it starts with the top planting a very clear picture. We're going to
15 have central governance. We're going to have the best standards. We're going
16 to have check and balance organizations in place. We have the key metrics, and
17 then we're going to fully fund and staff. And then from there, we're going to look
18 at performance, check and adjust as we go forward. And eventually, the culture
19 will revive to that of this is the new standard, this is what they mean, and this is
20 what we expect to have happen. So we're a little bit of "trust me." We're kind of
21 early in it so I can't tell you we've arrived, but I do think the foundational things
22 that have been put in place the last few years are starting to see signs.

23 I'll give you one other little tidbit of this strength of the governance
24 model, and there have been several at the station. But the one most notably is
25 these two recirc pump motors I mentioned that were seven years past their O&M

1 minimal. Now, maybe they would have lasted longer. I don't know. But they
2 were scheduled, and the engineering staff wanted them changed out, and the
3 site ended up, for whatever reason, deciding they wanted to defer them. But the
4 governance model went down to the corporate VP of engineering, he came in my
5 office and he says, "That's unacceptable. We cannot go another outage without
6 changing those motors and getting them back in interval." So we changed them
7 out.

8 But we also are blessed with the power service shop in Muscle
9 Shoals, Alabama that does detailed motor overhauls including recirc pump motor
10 site overhauls. And they tore that -- one of the two down for us and found that it
11 was imminent failure, right. So those standards resonating through the whole
12 site that there's a new sheriff in town and that we're not going to live with and
13 tolerate these types of material condition issues has been a big boost for us.

14 COMMISSIONER OSTENDORFF: Now, let me stop you because I
15 want to make sure because you say top, I want to clarify that. Is the top the
16 CNO, is the top the site VP, is the top engineering? Does it depend upon the
17 issue? I'm trying to understand what autonomy does the site have as far as
18 making a decision to defer maintenance or not. Or is this a decision that's kicked
19 up to corporate?

20 PRESTON SWAFFORD: The site can choose to do that, and they
21 have a rigorous process that they go through. But from time to time, they may
22 not make the right call, but we, for example, have a corporate outage planning
23 challenge meeting, for example. And my engineer and his staff from corporate
24 come in and they talk about all material that's in the outage and all the material
25 equipment issues that they have moved out of the outage. And so, we do a

1 detailed list of any work order that's not in the outage and what was their
2 rationale for choosing to push it out. So it is a barrier that we have put in place in
3 the last two years to actually look at this to help the site make the overall right
4 call. Because there's pressures on them, even though we supported them
5 adequately with resources, there's no such thing as unlimited money. So you still
6 have to prioritize. And if they end up making the decision that isn't in the best
7 interest of TVA, I feel good that we've kind of now have a plan --

8 COMMISSIONER OSTENDORFF: I'm going to cut you off there. I
9 want to go to another question. I want to ask this question to Mr. Polson. I just
10 couldn't help this because of time considerations here. I want to talk about
11 monitoring of maintenance to ensure proper maintenance procedures are
12 followed quality assurance practices, proper materials certification of materials
13 that are used. Let's say you're repairing a valve or you're swapping out a circuit
14 breaker or replacing a seal ring on a pump. Can you talk a little about what
15 happens at your site with respect to ensuring that maintenance is monitored by
16 management or by other -- whether it be by your site management or by
17 corporate?

18 KEITH POLSON: Yeah, well, there's several different things that
19 we have. First of all, we have a quality assurance program. And depending on
20 which equipment you're working on, that dictates --

21 COMMISSIONER OSTENDORFF: Oh, let me refrain this real
22 quick because I have limited time. I'm only talking about maintenance monitoring
23 by people who are not directly responsible. You know, usually you have a
24 worker person and then -- I'm using my Navy experience -- and then a quality
25 insurance inspector. So people who are not directly responsible for doing the

1 work but I use the phrase “command monitoring,” or leadership monitoring,
2 however you want to look at it from TVA’s perspective. I’m interested in how do
3 you -- how do you understand as a leader of the organization that your
4 maintenance is being conducted properly?

5 KEITH POLSON: So, we have an observation program. We’re
6 required to do four observations per month. And that’s senior managers all the
7 way down to first-line supervisors. And then what we’ve also implemented over
8 about the past year and a half, we call it “a day in the plant” where I’m required to
9 take a whole day where I’d put on jeans and I go out in the plant, and there’s
10 specific maintenance activities that I monitor that whole day. And then the next
11 day when we have -- we have what we call a “Plant of the Day Meeting.” It’s a
12 senior leadership meeting. And then there’s a report-out. So myself, my direct
13 reports, plant manager, direct reports all participate in that program. And that’s
14 on a daily basis that we do that.

15 COMMISSIONER OSTENDORFF: Okay. And then how about the
16 corporate side now, Mr. Swafford, in the analogous-type process that you guys
17 have to kind of take the pulse of how maintenance is being performed or -- go
18 ahead.

19 ROBERT WHALEN: We now have corporate component
20 engineers in the corporate liability department. If there is a plant issue with a
21 pump, we have a pump component engineer. He gets dispatched to go be
22 hands in the field and make sure the right parts are being used, are we digging
23 into it deeply enough, similar turbine-type activities -- AOVs, MOVs, to be more
24 rigorous on troubleshooting, root cause, corrective action in the field.

25 PRESTON SWAFFORD: An example that I think is pretty powerful

1 here is we did put a pump, a rotating equipment component player in corporate.
2 And I believe he was instrumental in our HPSI system that was mentioned by the
3 group before us, Victor's team, is that we still had some safety system
4 performance issues and we've been gaining on them, but the HPSI has been an
5 issue that we've struggled with at the site for quite some time. During the startup
6 with Unit 1, the craft, if you will, put a bearing in backwards, one-half of a bearing
7 in backwards, and the plant -- and the HPSI system has run. It's always been a
8 little bit in the alert, but with the addition of this new component engineer looking
9 at that pump performance, said something's not right, went down to the station
10 and asked the site vice president to take it out of service because we just needed
11 to find out what was going on. And they discovered that there was an original
12 installation issue wrong with it. So that's one of some of the checks and
13 balances, but it's also real-time engagement with the site and specific component
14 competency.

15 COMMISSIONER OSTENDORFF: Thank you. Thank you, Mr.
16 Chairman.

17 CHAIRMAN JACZKO: Just one comment I'll make and then I did
18 just have a question, but this issue, and I don't mean to belabor this point on the
19 risk significance. But TVA did make a comment that they believed that the risk
20 would be "Green". The staff did do a detailed analysis, and I know maybe, again,
21 at the technical level there may be disagreements, but the staff -- the conclusion
22 of the staff in the final notification on the "Red" finding did indicate that even if
23 they took into consideration the operators taking action, they'd modeled that
24 through -- well, they did sensitivity analysis, and sensitivity analysis showed that
25 the overall risk would be reduced by a factor of eight. And this is not a sufficient

1 enough reduction to have changed the significance of the finding.

2 In addition, they looked at control building fire scenario which had
3 not been evaluated in these -- the phase 3 risk models to get to the phase 3 after
4 they do the initial screening. And that based on that, that the using this risk
5 contributor which was not even in the original -- that would add an additional five
6 times 10 to the minus five to the overall risk impact to the valve failure. So, their
7 conclusion is based on our review and the aforementioned factors are
8 considered either collectively or individually. And those are including the control
9 building fire scenario risk and the potential for operation action to use alternate
10 cooling methods. The lower bound of risk for the valve performance deficiency
11 remained greater than one times ten to the minus four.

12 So, again, I appreciate that your position was that it was "Green",
13 but the factors that you had considered as mitigating the staff did analyze, and
14 based on the staff's analysis, it did not change the outcome nonetheless of the
15 findings. So, that was actually, as I was visiting the facility, was something that
16 was of significance to me, you know, as I recalled that. So, and I mean, this,
17 regardless, I think, was a significant event regardless of how what non-
18 proceduralized actions were taken that we still would have seen something, at
19 least according to the staff's analysis, above the "Red" or at a "Red" finding.

20 The one question I wanted to ask, you know, we've talked a lot
21 about -- and there have been some good questions from my colleagues about,
22 you know, how you're managing this activity, how are you doing all this -- but one
23 of the things we haven't touched on is all the things unrelated to addressing the
24 deficiencies that lead to the valve failure. For instance, there's activities with the
25 power uprates ongoing. I believe we may have finished our reviews on those.

1 I'm not sure where we are. I'm looking for somebody who might know. But I
2 believe at least for one of the units, we've completed our assessment. Have you
3 given any thought to postponing those activities, any mods or that you would
4 need to make in the plant pending kind of the get well program showing some
5 signs of progress? Or will you kind of continue with those activities as well?
6 What's your plan for that?

7 PRESTON SWAFFORD: Two points is like the EPU is an
8 example. One of the things that Bill had mentioned on his opening remarks is
9 how we were organized and that from the beginning that it was recognized that
10 we had a lot of work to do for our fleet, specifically Brown's Ferry. So major
11 projects like the EPU project was taken off of my plate and given to a counterpart
12 of mine who also is responsible for the construction of Watts Bar 2 and the steam
13 generator replacement that's coming up on Sequoyah. So these are very large
14 projects that could be very large distracters to me and have been afforded the
15 staff, if you will, to take that off, and they report directly to Bill. So the EPU is one
16 that I believe, for the most part, we're on hold until the regulatory framework is
17 well enough understood so that we don't waste the energy, if you will, especially
18 the distraction to Keith and his team until that road is really cleared. But maybe
19 Bill?

20 BILL MCCOLLUM: Well, and we make a specific decision too,
21 because there were obviously regulatory issues in the timeline of the EPU was
22 uncertain. We made a decision to essentially break apart two aspects of that.
23 One is regulatory approval of an extended power uprate. The other was all the
24 equipment work that would be associated with an uprate, and we decided that it
25 made sense to proceed with the equipment work at Brown's Ferry because it

1 helped us to deal with some of the issues that we talked about earlier, upgrading
2 pumps, upgrading equipment, gaining more margin on the secondary side of the
3 plant or the balance of the plant, that sort of -- so that seemed to be beneficial to
4 Brown's Ferry in terms of dealing with equipment margin, plant operation; and we
5 funded and proceeded on with that work, independent of the licensing work to
6 raise the license power level. And so that effort is basically on hold until we do
7 more work to improve performance at Brown's Ferry.

8 CHAIRMAN JACZKO: Well, yeah, and I appreciate that. And that
9 was really more my issue. You know, obviously -- well, you can separate the
10 licensing perhaps. You can't separate the plant, so to speak, and those
11 equipment changes and modifications if they weren't necessarily having a direct
12 safety impact could be a distraction to maintenance, could be a distraction to
13 operators as they deal with those different issues. So, it's good to hear that that
14 is a bit on hold then until some of these issues get resolved. I think that seems to
15 be a decision in the best interest of safety, so.

16 Again, I appreciate your presentations. Victor and his team, I think,
17 have done a good job of communicating to you all what our expectations are.
18 They obviously have the primary lead in working to get our kind of inspection and
19 our assessment in a place where we can give you good information and they'll
20 continue to do that as we go forward with their continued 95003. You know, I
21 certainly encourage you to work expeditiously to resolve those issues and to
22 ultimately let us wrap up that in an affirmative way. So, I know they'll continue to
23 ask all the right questions and tell you what you need to hear. And I think as long
24 as everyone's committed to the same goal, which is a safer operation at Brown's
25 Ferry, I think we'll get there. So, thank you very much for being here.

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[Whereupon, the proceedings were concluded]