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Plant Operations and Fire Protection  
Subcommittee: Watts Bar Nuclear Plant

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

MEETING OF THE SUBCOMMITTEE ON

PLANT OPERATIONS AND FIRE PROTECTION

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Watts Bar Nuclear Plant Unit 2

Information Briefing

Construction & Operating

License Application

Docket No. 50-391

+ + + + +

Tuesday, July 28, 2009

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Watts Bar Nuclear Plant Training Center

1260 Nuclear Plant Road

Spring City, Tennessee 37381

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APPEARANCES:

Presenters:

MASOUD BAJESTANI, Vice President Watts Bar Unit 2

WILLIAM CROUCH, Engineering Manager Watts Bar Unit 2

EDWIN FREEMAN, Cost & Scheduling Manager

Watts Bar Unit 2

ACRS Members:

HAROLD RAY, Chairman

SAID ABDEL-KHALIK, Vice Chairman

SANJOY BANERJEE

CHARLES H. BROWN, Jr.

OTTO L. MAYNARD

HAROLD RAY

JOHN D. SIEBER

JOHN W. STETKAR

Designated Federal Official:

MAITRI BANERJEE

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

(1:00 p.m.)

CHAIRMAN RAY: I'm Harold Ray, Chairman of the ACRS Plant Operations and Fire Protection Subcommittee for Operating License Review of Watts Bar Nuclear Plant Unit 2. And I want to underscore the words Operating License Review. That's the scope of what we'll be doing here in this process to lead this meeting today.

Other ACRS members in attendance are Jack Sieber, Charles Brown, Otto Maynard, John Stetkar, and Said Abdel-Khalik. Ms. Maitri Banerjee is the Designated Federal Official for this meeting.

Subcommittee had a meeting with TVA and the NRC staff on March 31st in Washington, D.C. area.

We were briefed about the TVA activities related to restart of Watts Bar Unit 2 construction and NRC review of the Operating License Application.

After that meeting the Subcommittee decided to visit Watts Bar to see firsthand the status of construction, material condition, and controls TVA has implemented for quality construction and for avoiding any impact on the safe operation of Unit 1.

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1 We toured the Plant this morning for a few hours, saw  
2 a good deal of things that are relevant to those  
3 considerations and will continue our meeting here, of  
4 course, this afternoon.

5 The purpose of today's meeting is to get  
6 an update from TVA regarding issues related to the  
7 design, licensing, and construction activities,  
8 particularly since our March meeting.

9 We have another Subcommittee meeting on  
10 July 30th at the NRC Region II Office. It will  
11 chaired by my colleague, Jack Sieber. To talk about  
12 the NRC inspections at Watts Bar Unit 2, among other  
13 things not related to Watts Bar.

14 The objective of both meetings is to  
15 gather information, analyze relevant issues and facts,  
16 and formulate proposed positions and future actions as  
17 appropriate for deliberation by the full Committee.  
18 Action is only taken by the full Committee.

19 ON behalf of myself and the ACRS, I want  
20 to want to thank TVA for organizing our Plant tour and  
21 providing a facility to support this meeting today.

22 This briefing is open to the public.  
23 Rules for participation in today's meeting were  
24 announced as part of the notice of this meeting  
25 published in the Federal Register on July 2nd, 2009.

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1 We have a telephone bridge line provided by TVA for  
2 the public to hear the deliberations. I understand  
3 there's no one on the line as yet. We have members of  
4 the public who are with us here in the meeting room.

5 If the phone line is used, to minimize  
6 disturbance, the line will kept in what is called a  
7 listening only mode until the last 15 minutes of this  
8 meeting at which time there will be an opportunity for  
9 members of the public, either here in the meeting room  
10 or on the phone line, to make statements or provide  
11 comments to us.

12 As a transcript of the meeting is being  
13 kept, I request that participants in the meeting use  
14 the microphones located in the meeting room when  
15 addressing the Subcommittee. Participants should  
16 first identify themselves and speak with sufficient  
17 clarity and volume so that they can be readily heard.

18 We will now proceed with the meeting. And  
19 I call upon Mr. Masoud Bajestani of TVA to begin the  
20 presentation.

21 Masoud.

22 MR. BAJESTANI: Thank you very much,  
23 Harold. I hope you guys had a good tour of the Plant.

24 What we want to do today, we want to cover some of  
25 the questions that came up during the tour this

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1 morning and also some of the questions that you guys  
2 had during our March meeting. We want to cover all  
3 those questions. With that I'm going to go through  
4 the introduction of the TVA team first and then we get  
5 into the agenda.

6 Bill.

7 MR. CROUCH: I'm Bill Crouch. I'm the  
8 Engineering Manager for Watts Bar Unit 2.

9 MR. FREEMAN: Ed Freeman, the Cost and  
10 Scheduling Manager for Watts Bar Unit 2.

11 MR. ARENT: I'm Gordon Arent, the  
12 Licensing Manager for Watts Bar Unit 2.

13 MR. OSBORNE: Dave Osborne, the Lead Civil  
14 Engineer.

15 MR. RENQUEWIST: I'm Gordon Renquist  
16 (phonetic), Manager for Watts Bar Unit 2.

17 MR. OSBORNE: I'm Dave Osborne, the Civil  
18 Engineering Manager.

19 MR. COOMBS: Frank Coombs, Engineering  
20 Specialist.

21 UNIDENTIFIED MALE: Mechanical Design  
22 Manager of Watts Bar Unit 2.

23 MR. HILMES: Steve Hilmes, Electrical and  
24 INC Manager for Watts Bar Unit 2.

25 MR. SCHIESSEL: Jerry Schiessel, TVA

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1 Construction Manager Watts Bar Unit 2.

2 MR. BRIODY: Brian Briody, Maintenance and  
3 Modifications Manager.

4 MR. BARON: Raul Baron, Nuclear Assurance  
5 Project Manager for Watts Bar Unit 2.

6 CHAIRMAN RAY: Say that again. Are you  
7 Nuclear Assurance?

8 MR. BARON: Yes.

9 CHAIRMAN RAY: All right, I'll keep my eye  
10 on you.

11 MR. OLSON: Pete Olson, Startup Manager of  
12 Watts Bar Unit 2.

13 MR. BAJESTANI: Thank you. Go to Page 2  
14 of the presentation. We got the agenda here.  
15 Obviously we went through the introduction.

16 The first thing I'm going to cover is  
17 actually organization. When we finished Browns Ferry  
18 Unit 1, we learned a lot of lessons from Browns Ferry.

19 One of the things that we did, TVA decided to do is  
20 separate the nuclear generation versus nuclear  
21 operation. So we have created a new organization  
22 which we call it NGDC. This organization, the Senior  
23 VP of NGDC reports directly to Chief Operating Officer  
24 just like Chief Nuclear Officer that reports directly  
25 to Chief Operating Officer. We did this organization

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1 change based on the fact that we focus on new  
2 generation construction and let the Operating folks  
3 focus on operating the units safe and reliable.

4 If you go look at Page 3, the  
5 organization, like I said, Senior VP of Nuclear  
6 Generation reports directly to Bill McCollum, which is  
7 our Chief Operating Officer. I report to Senior VP of  
8 NGDC. And then if you look at the organization below  
9 me, you see the Safety Manager, Construction Manager,  
10 Modifications, Engineering Manager, Pre-Op Startup,  
11 Cost and Scheduling, Employee Concerns, which actually  
12 dotted line to me and reports actually to outside to  
13 Ashok, which is our Senior VP of Nuclear Generation.

14 Also other organization that support this  
15 project is Procurement Manager. Again Procurement  
16 Manager reports to Senior VP of Procurement, which  
17 reports to Chief Administrative Officer. Same thing  
18 with our QA. QA is actually again dotted line with a  
19 solid line to outside organization through the General  
20 Manager of NGDC to Senior VP of Nuclear Generation.

21 CHAIRMAN RAY: Where now exactly are you  
22 speaking, Masoud? Is it Nuclear Assurance Project  
23 Manager, is that who you're referring to?

24 MR. BAJESTANI: The Nuclear Assurance  
25 Project Manager is Raul Baron, which he's sitting back

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1 there.

2 CHAIRMAN RAY: I forgot. I said I'd keep  
3 my eye on him.

4 MR. BAJESTANI: That's right.

5 CHAIRMAN RAY: All right. But go ahead  
6 because I was curious about the dashed and the solid  
7 line. He has two dash lines and one solid line. Talk  
8 about that just a little bit, please.

9 MR. BAJESTANI: Right now we are going  
10 through the transition actually of Quality Assurance.  
11 Quality Assurance when we started this project it was  
12 reporting to through Nuclear Power group. Now we have  
13 actually -- going again through the transition with  
14 removing the Quality Assurance, We have hired General  
15 Manager of Nuclear Generation oversight which Raul now  
16 reports to him and he reports directly to Senior VP of  
17 Nuclear Generation.

18 CHAIRMAN RAY: Is it Mr. Hellstern?

19 MR. BAJESTANI: That's correct.

20 CHAIRMAN RAY: He would be responsible for  
21 all the nuclear programs?

22 MR. BAJESTANI: For all NGDC, that's  
23 correct.

24 Any other questions on this page?

25 Okay, next page --

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1 CHAIRMAN RAY: So I don't interrupt you  
2 again as I've been doing.

3 MR. BAJESTANI: Sure.

4 CHAIRMAN RAY: We're particularly  
5 interested, I think, or at least I am, in what's  
6 showing on this page as -- we're interested in the  
7 relationship between all these folks here that you  
8 introduced and the blue that's on -- it's blue on my  
9 copy anyway, which is EPC contractors.

10 MR. BAJESTANI: Okay.

11 CHAIRMAN RAY: So if you could talk about  
12 that a little bit. I mean we can see it here on the  
13 page, but to make sure we really understand how it  
14 works.

15 MR. BAJESTANI: Sure, let me go ahead and  
16 explain that. This project actually we got one EPC,  
17 which is Bechtel Engineering, Procurement, and  
18 Construction. We do have three major contractors  
19 actually that are doing work at this site for Watts  
20 Bar Unit 2 completion: Westinghouse and Siemens.  
21 Siemens has got all the turbine generator work and  
22 Westinghouse obviously all the intricate list. What  
23 the all the work that's being done it's done under one  
24 QA plan, under one procedure which is Bechtel  
25 procedures for engineering, construction, and

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1 procurement.

2           What we did essentially we have the TVA  
3 organization and we -- or Bechtel actually -- Bechtel  
4 or us, we basically have a parallel organization. If  
5 I have a Construction Manager at Bechtel, we have  
6 Construction Manager in TVA, which they actually  
7 directly report actually to Construction Manager.  
8 Like if you go to the EPC Construction Manager, okay,  
9 the EPC Construction Manager reports to Construction  
10 Manager at TVA, which is right above it.

11           CHAIRMAN RAY: Which is not shown here,  
12 but you're telling me that's the way it works.

13           MR. BAJESTANI: That's the way it works,  
14 right. The EPC Engineering Manager, which is Bill  
15 Robertson at Bechtel, he actually reports to Bill  
16 Crouch, which is the TVA Engineering Manager right  
17 above him. EPC Procurement Manager at Bechtel, Bill  
18 Goodman actually, again he reports directly to our  
19 Procurement Manager, TVA Procurement Manager, which is  
20 Larry Davenport. The EPC Service Managers, which  
21 really has got the Cost, Scheduling, Project Control  
22 essentially, he reports and works directly with Ed  
23 Freeman, which is our TVA Cost, Schedule, essentially  
24 Project Control.

25           So the Bechtel organization or the TVA

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1 organization essentially we have a parallel  
2 organizations, where each position that Bechtel has,  
3 we have one position for oversight.

4 Did that answer your question?

5 CHAIRMAN RAY: Yes, it isn't the right  
6 spot now. But of course, that leads to a lot of  
7 detail questions maybe later on, particularly in the  
8 area of Engineering, where responsibility needs to be  
9 clear.

10 MR. BAJESTANI: Sure.

11 CHAIRMAN RAY: And the product that  
12 Engineering produces needs to be the responsibility of  
13 someone. But I don't want to pursue that any further  
14 here now. It's too --

15 MR. BAJESTANI: We're going to cover that  
16 when we get to Engineering. Bill can cover actually  
17 how Engineering is set up and what kind of review  
18 process we go through for final product and the  
19 ownership.

20 CHAIRMAN RAY: Thank you.

21 MR. BAJESTANI: Okay, next page is the  
22 Project Staffing. Bechtel at this time they have  
23 about 730 Engineering. And the TVA side of it for the  
24 oversight, we have 55.

25 Construction, we have about 401 manual and

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1 236 non-manual. TVA, we have nine.

2 Project Controls, which is again it's Cost  
3 and Scheduling, Bechtel has got 82; TVA, we have 15.

4 Nuclear Assurance, Bechtel has 42 QA/QC  
5 type people. And TVA, we have six that they work with  
6 Raul.

7 Supply Chain, Procurement, Bechtel has got  
8 33 and TVA has seven.

9 Startup organization, which is all TVA,  
10 that's one thing that we decided based on lessons  
11 learned from Browns Ferry that the Pre-op Startup is  
12 going to be all TVA. And it's going to be run under  
13 TVA and TVA process and procedures. So that's all  
14 TVA. And again the lessons learned was that at the  
15 end of the project at Browns Ferry we start losing  
16 some key people, key contractors. So we decided that  
17 we're going to go ahead and have that done under TVA.

18 Operations, we have again TVA just 16  
19 people.

20 And we're looking at -- when we fully  
21 staffed the craft side of it, we're looking at about  
22 1200 Construction and a little bit over 600  
23 Engineering.

24 The way we set up --

25 CHAIRMAN RAY: What's restraining increase

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1 of staffing right now? Is it the Engineering side  
2 just as --

3 MR. BAJESTANI: The Engineering staff is  
4 pretty much we are where we need to be on the  
5 Engineering staff. What we're going to be staffing up  
6 is really the craft.

7 CHAIRMAN RAY: I understand. But I meant  
8 what's restraining it right now?

9 UNIDENTIFIED MALE: There was no money up  
10 front.

11 MR. BAJESTANI: What's restraining  
12 actually to staff up is we want to make sure in order  
13 for us to do construction efficiently we need to make  
14 sure that we have a sustainable backlog as far as  
15 work. And we don't have enough sustainable backlog.  
16 So we are actually working to build that backlog  
17 before we staff up.

18 CHAIRMAN RAY: Sure.

19 MR. BAJESTANI: Again the way the  
20 organization is set up really this organization  
21 structure is set up for us to be inclusive and  
22 significant oversight over what EPC is doing.

23 Next page. This is essentially from the  
24 time we got this project approved, which we started  
25 with the DSEP, Detail, Scoping, Estimating, and

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1 Planning. We did that first which essentially we came  
2 up with the cost and schedule for this project. Then  
3 after that we went to the Board of Director and we got  
4 the Board of Director approve this project. Then we  
5 went through the Construction Reactivation Letter,  
6 which we have to notify NRC in 120 days before we  
7 actually start the construction.

8 The next activity that we did, we  
9 essentially worked for about six months on Regulatory  
10 Framework. These are all the open items that we  
11 reviewed everything that we thought as open with  
12 respect to regulator. We put that together and  
13 essentially that was sent to NRC sometimes back.

14 Then we developed a Detailed Project  
15 Schedule, which we call our Dread Zero Schedule. And  
16 then we started essentially the construction in July  
17 of 2008. We expect to complete major engineering work  
18 by end of this year, calendar year.

19 Next thing is we're going to be submitting  
20 our FSAR Amendment and Operating License Update, which  
21 we looking at again by March of 2010. One of the  
22 major milestones that we have that we're working, and  
23 we are on schedule on that, is on the Turbine and  
24 Turning Gear. We're looking at October of 2010. And  
25 then next thing is we're going to be doing the Primary

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1 Hydro and then Hot Functional in August of 2011. And  
2 ready for fuel on April of 2012. And then full power  
3 operation, commercial operation essentially, October  
4 of 2012. This is a 60 month schedule that we put  
5 together from the October of 2007.

6 MEMBER STETKAR: Masoud?

7 MR. BAJESTANI: Yes.

8 MEMBER STETKAR: Since your milestones of  
9 completing the major engineering work is now five  
10 months from now, how are you doing?

11 MR. BAJESTANI: On the Engineering side  
12 actually we're doing very good actually. We are on  
13 schedule on all the engineering delivery. And again  
14 Bill is going to cover that aspect of completion where  
15 we are now. But so far we haven't really had issues  
16 as far as getting the right people to do the  
17 engineering work and the product has been --

18 MEMBER STETKAR: So it's where you  
19 expected to be?

20 MR. BAJESTANI: Yes. And again when I say  
21 major engineering, completion is really when we get to  
22 November, December time frame. We have about, like I  
23 said, 700 some engineers right now working on it. And  
24 after that we're actually going to start -- so it's  
25 going to take some time to get to completion of

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1 engineering.

2 MEMBER STETKAR: Whatever that milestone  
3 is?

4 MR. BAJESTANI: Right.

5 MEMBER STETKAR: Good.

6 MR. BAJESTANI: Any other questions on  
7 this page?

8 With that I'm going to turn it over to  
9 Bill.

10 MR. CROUCH: Thank you. When we met with  
11 you guys back in March, we talked to you about the  
12 story of Watts Bar and the condition of Watt Bar. And  
13 you expressed some questions and concerns. And so  
14 part of what we wanted to do today was to delve a  
15 little bit deeper into some of the things that we  
16 talked about.

17 Since some of you and some of the other  
18 people here weren't necessarily here when we did back  
19 in March, I'm going to digress just a few moments and  
20 kind of give a very, very brief history of Watts Bar.

21 Watts Bar was started back in the mid'70s.  
22 Construction was under way with Unit 1 being the lead,  
23 and then Unit 2 was running about six months behind.

24 In 1985, we got to the point that there  
25 were concerns expressed about the quality of

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1 construction, the quality of engineering. And so we  
2 stopped all construction on both Unit 1 and Unit 2 at  
3 that time.

4 From 1985 until 1996 then, we proceeded to  
5 resolve those concerns and place Unit 1 in operation.

6 During that time Unit 2 was basically just sitting  
7 there with no major construction going on. During the  
8 course of that time, in addition to finishing the work  
9 on Unit 1, in some cases it required -- it didn't  
10 require, but we performed removal of some of the  
11 equipment out of Unit 2 in order to supplement the  
12 equipment over in Unit 1 when we found things that  
13 needed to be replaced. So during the period from `85  
14 to `96, and then from `96 on until now, or up until  
15 2007, Unit 2 was basically a parts supply house for  
16 Watts Bar Unit 1 and for Sequoyah.

17 So part of our task during this time is to  
18 assess the condition of the Plant in terms of what's  
19 present and what's not present, make all the systems  
20 complete, and get the Plant back running.

21 During that time we also placed the Plant,  
22 the Unit 2, in a lay-up status which we maintained  
23 until about 2001. The lay-up condition was  
24 accomplished by removing sections of pipe, blowing  
25 dehumidified air in, making sure all the piping

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1 segments were drained. In some cases we went in and  
2 even closed valves. And in order to make sure there  
3 was no leakage from unit to unit, we actually went in  
4 and installed either like rubber gaskets or polymer  
5 seals to completely isolate the two units from each  
6 other. So with that type of a situation, then in  
7 2007, we began to work on Unit 2 again.

8           During the course of the time while Unit 2  
9 was shut down, the Plant did maintain a Removed  
10 Equipment List, but we weren't willing to rely upon  
11 that as the sole source of information for what was  
12 physically out in the Plant. We also needed to ensure  
13 ourselves what the physical condition of the equipment  
14 out there was. So we initiated a series of walk downs  
15 to both go and determine the physical condition of the  
16 various pieces of equipment and also determine what  
17 was out there.

18           We spent approximately nine months walking  
19 down the Plant. And we did it actually several  
20 different times because of different emphasis for the  
21 different walk downs. For example, one time we went  
22 out and we did a walk down of all the mechanical  
23 piping systems, checking what's called the flow  
24 diagrams that show the connectivity of the various  
25 systems. So we checked to make sure that the drawings

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1 actually represented the systems.

2 And when we were doing that, if the people  
3 detected there was equipment missing, it was recorded  
4 on the walk down drawings. Or if they detected that  
5 there was damage or degradation out there, it was  
6 recorded on the walk down drawings.

7 We've also done other walk downs for such  
8 things as to make sure that all of the piping, the  
9 ASME, American Society of Mechanical Engineer, piping  
10 systems -- ASME Section III guides this construction.

11 We needed to make sure that all the piping out there  
12 reflected the ASME records that we had. So we have  
13 done a weld by weld walk down of the entire Plant to  
14 verify that the welds are visibly present, that there  
15 aren't any additional welds out there, and that the  
16 welds that are there are in their as-designed, as-  
17 manufactured type status.

18 We've done other walks, walk downs,  
19 looking --

20 CHAIRMAN RAY: What were the results?  
21 Give us some anecdotal characterizations of what you  
22 found.

23 MR. CROUCH: As expected most of the  
24 piping is out there. The welds are in very good  
25 shape. They found a few cases where there was some

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1 equipment that had been removed that was not on the  
2 Removed Equipment List. But that's all -- we've now  
3 got it recorded and we were able to find the records.

4 Actually you can trace back and find where in the old  
5 work orders where the equipment was removed so that  
6 the work is pretty -- it's well documented as it went  
7 along.

8 CHAIRMAN RAY: You were speaking to ASME  
9 Section III and the weld locations and so on. In  
10 particular did you find any weld joints that weren't  
11 on the drawings or anything that would be inconsistent  
12 with the requirements of ASME Section III?

13 MR. CROUCH: I would imagine in terms of  
14 weld joints and joints that weren't on the drawing, it  
15 was probably less than 10 total. Out of 26,000 --  
16 27,382 welds, it was probably less than 10 previously  
17 undocumented welds. But then we went back and  
18 actually found the paperwork for all those. As it  
19 turns out we were able to find all the paperwork for  
20 everything except 150 out of the 27,382 welds. We  
21 found all the ASME paperwork for everything except  
22 four out of the 2587 components.

23 So the quality of the record keeping, even  
24 though that the Plant was basically stopped and  
25 everybody sent home, the quality of the record keeping

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1 was very good. We were able to find it in the vaults.

2 CHAIRMAN RAY: And may I assume you  
3 dispositioned those very few?

4 MR. CROUCH: Those few that were not  
5 found, they will either be -- in some cases the  
6 records that were not found was a case of like a test  
7 that was not performed. We can go out and perform  
8 those kind of tests now. But other cases if you  
9 couldn't find the weld bottom ration sheets or the  
10 various ASME paperwork, we'll have to go and  
11 physically remove those components and replace them  
12 with the proper ASME component.

13 So as I said, we've been out there and  
14 we've done walk downs of the flow diagram and just  
15 walking down for the ASME weld and walk downs of the  
16 piping and pipe supports for the stress analysis.  
17 We've got out and walked down cables. So we have a  
18 very, very good idea of the condition of the Plant.

19 Any time during these walk downs if we  
20 found degraded conditions, it was recorded in the walk  
21 down and translated into a PER, Problem Evaluation  
22 Report, or a 10 CFR 50 -- I think it's B -- type  
23 program. And you do a work order and go and either  
24 rectify the situation. Or in some cases if the  
25 component is such that it cannot be rectified

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1 directly, you would go replace the component.

2 So overall the process is to go inspect,  
3 walk down/inspect, to evaluate and then either rework  
4 or replace, depending on what you find.

5 As we've gone through the process in doing  
6 this, in addition to just simply completing the plan,  
7 we've also been going through and looking at the Plant  
8 in terms of is the Plant properly designed for two  
9 unit operation. We've found a few instances of  
10 situations where the Plant in its original design  
11 would not have been very conducive to a two unit  
12 operation.

13 For example, down in the intake pumping  
14 station it was made such that there are two large open  
15 bays down there where the pumps take suction from.  
16 You have to go in there periodically and inspect the  
17 suction areas for these pumps, looking for silt,  
18 debris, corrosion on the steel structure, things like  
19 that. And the way the Plant was made with the systems  
20 dividing, you have to always have two pumps running in  
21 each of the two bays if any unit is in operation. So  
22 up until now since it's really been a single unit  
23 Plant, they were able to do these inspections by  
24 simply doing them during refueling outages.

25 But once you start a two unit operation,

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1 you'll always have one unit in service. So we're  
2 having to go in and actually subdivide those two bays  
3 so that you can send divers in to do the inspections  
4 and clean. So that's the type of thing we've been  
5 looking at for a two unit operation to make sure  
6 mechanically, electrically, physically everything  
7 about it will support a two unit operation.

8 We've also gone in and looked at what we  
9 call our five-year plan. The Plant is always looking  
10 down the road as to what needs to be done to upgrade  
11 the Plant. So these are modifications that were  
12 currently planned to be implemented on Unit 1. So for  
13 Unit 2 we've gone in and taken the same list and we're  
14 installing the same modifications in the Unit 2 so  
15 that the two units will be equal as we go along. Keep  
16 them to the point that they are very similar  
17 operationally, maintenance wise, etcetera.

18 We're also replacing all the missing  
19 equipment and we're going in and refurbishing the  
20 equipment that has not been in service for the last 20  
21 years.

22 So during your tour you saw that most of  
23 the Plant was installed back when we stopped  
24 construction. Most of the piping is there. Most of  
25 the cabling is there. The instruments are there.

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1 Everything is there. But we're in the process of  
2 going through now and inspecting these items and going  
3 and doing refurbishments on them.

4 So if you will turn then to Page 8 of your  
5 handout, I've got some pictures here of things that  
6 depending on where your tour group went, you may or  
7 may not have seen some of these things. But at least  
8 I know like the group that we were with, we saw things  
9 that were very similar to these, if you didn't see  
10 these actual instances.

11 This is a case -- this picture on Page 8  
12 is the containment spray piping. And this is a place  
13 where we've gone in back years ago and removed the  
14 section of piping. And you can see the element front  
15 hose there on the left-hand side which is having  
16 dehumidified air blown into the piping. If you look  
17 up into the piping there, it's basically a clean  
18 stainless steel type pipe, no corrosion. It's  
19 basically an intact, pristine pipe. This is  
20 representative of a lot of the piping throughout the  
21 Plant. So we found it to be in very good condition  
22 even though it's been sitting there for 30 years.

23 Turn to Page 9. This is an example of  
24 where we are going in and removing lots of large  
25 pieces of equipment. In this case it happens to be a

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1 centrifugal charging pump in 2 Bravo-Bravo. We  
2 physically have removed the pump. We'll send it back  
3 to a vendor to be refurbished. They'll go and inspect  
4 the insides, replace any material that has been  
5 degraded over the years, and then ship it back to us.

6 You can see there on the right side some  
7 pictures of the piping that were attached to that  
8 pump. Once again the pipe is in extremely good  
9 condition.

10 As we go and remove components like this,  
11 whether it be a pump or a valve or what other piping  
12 component you've got, in addition to just pulling out  
13 the component itself and doing refurbishment, the  
14 other thing we do is look at the pipe in both  
15 directions. We go look at it visually. We run bore  
16 scopes up and down the pipe, looking to see what the  
17 condition of the piping is.

18 Turn on to Page 10. Here's another  
19 instance of where we're showing the craftsmen out  
20 removing the centrifugal charging pump 2 Alpha-Alpha.

21 And it's being removed for refurbishment. And you  
22 can see pictures there.

23 Actually if you look on the picture on the  
24 left, you can actually see a little bit of debris  
25 laying in the pump itself. Stuff like that will be

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1 cleaned out as we go through and the piping will be  
2 returned back in good condition. Picture on the right  
3 there is of the piping to be attached. So once again  
4 the equipment is in very good condition.

5 Page 11 is typical of what we're doing  
6 with dampers. This is an emergency gas treatment  
7 system damper. And for this piece of equipment what  
8 we do is we pull it out of the system and send it back  
9 to the vendor and along the edge of each of the blades  
10 has a rubber sealing surface. So the vendor will go  
11 and replace that rubber seal. They'll clean it.  
12 They'll inspect it and make sure it's operating  
13 properly, and ship it back to us ready to reinstall.

14 So if you turn over to Page 12 then, let  
15 me tell you a little bit more about our Refurb  
16 Program. Our Refurb Program is proceduralized. We  
17 have a procedure. It's Procedure No. -- I believe  
18 that's No. TI216, entitled Watts Bar Unit 2 Completion  
19 Project Refurbishment Program. The program is  
20 basically geared towards looking for any kind of pre-  
21 service degradation.

22 We didn't want to use the term aging  
23 because that's a term that is geared with license  
24 renewal. But it is basically the same kind of  
25 concept. We're looking at the condition of the

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1 equipment that's been out there now for 30 years to  
2 make sure that the equipment will be capable of  
3 performing its design, its licensing, and its vendor  
4 type specified requirements. We're looking at the  
5 entire scope of the Plant, both safety related and  
6 non-safety related.

7 We looked at active and passive  
8 components. Active components are things like valves,  
9 pumps, switches, relays, things that change state.  
10 And in this case we've taken this a step further in  
11 that you can have some components if you do classical  
12 safety analysis where in some cases, like a check  
13 valve if it's always closed, it never has to open to  
14 respond to an accident, from a safety analysis  
15 standpoint, it's classified as passive. But since in  
16 some mode of operation a check valve could open and  
17 close, we have classified anything like this that has  
18 a moving part as an active device. The passive  
19 components are things like pipes, coatings, concrete,  
20 cables, things that just sit there, things that don't  
21 have any moving parts to them.

22 So as we go through and look at these,  
23 we'll be inspecting them, evaluating them, refurbishing  
24 them, and then finally testing them to make sure that  
25 they can meet their licensing requirements, their

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1 design requirements, and meet the vendor  
2 specifications.

3 So in our Refurbishment Program there are  
4 basically five steps to it. The first step we had to  
5 go through and identify all the equipment. The way we  
6 did this was we used our Unit 2 Master Equipment List.

7 The Master Equipment List is a listing of all the  
8 Unit 2 equipment. And we formed that by basically  
9 starting with the Unit 1 MEL, Master Equipment List,  
10 copying it over into Unit 2, and starting to change  
11 the unit designators so that we ensured that we had  
12 the full scope of everything in the Plant.

13 Anything that's in Unit 2 -- there are  
14 some things that are currently in operation supporting  
15 Unit 1. Those types of equipment are the  
16 responsibility of Unit 1 right now and they're  
17 covering them with Unit 1 maintenance rules. However,  
18 we will also be looking at those to make sure that  
19 they're capable of supporting two unit operation.

20 So we went through and identified using  
21 the MEL for all the components with UNIDs. And  
22 there's approximately 66,000 components in the Unit 2  
23 MEL list.

24 We also identified types of commodities,  
25 I'll call them, or things that do not have UNIDs, do

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1 not have unique identifiers. These are the things  
2 like the pipe, the concrete, the coatings, things that  
3 are basically the passive type devices. So we're also  
4 including those in the procedure.

5 We then went through and classified these  
6 66,000 components based upon their function code.  
7 Look in the UNID number for each device. It will have  
8 a number like 2 for Unit 2, dash, and a function code.

9 It's a three or four letter function code. Like FCV  
10 is a flow control valve. So based upon those function  
11 codes, we divided them up into categories so that we  
12 will then address them programmatically on a case by  
13 case basis to make sure that we've addressed all the  
14 different components.

15 Once we've gone through and divided them  
16 up and classified them, then they start into the  
17 process of being inspected, evaluated, and eventually  
18 refurbished. For the inspection and evaluation we  
19 went to the license renewal, generic aging lessons  
20 learned Dahl report and all the various reports  
21 associated with license renewal to find out what are  
22 the various aging mechanisms that could occur. We  
23 looked at situations such as loss of material,  
24 cracking, fouling, physical damage, galvanic action, -  
25 - if the component was wetted.

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1           There were certain things that if you'll  
2 look in these reports that are not applicable to Watts  
3 Bar Unit 2. For example, radiation damage would not  
4 have occurred because the Plant has never been in  
5 operation. Similarly since the Plant has not been in  
6 operation, the equipment would not have experienced  
7 high temperature environments. So we were going  
8 through and looking at all the various aging/pre-  
9 service degradation type mechanisms that could be  
10 occurring to this equipment and then applying an  
11 evaluation process to determine what needs to be done  
12 to make sure the equipment will meet its various  
13 specifications.

14           One of the questions that came up during  
15 our previous meeting was did you have any pipe  
16 sagging. In other words, did you have pipes that were  
17 out there installed in the Plant that didn't have  
18 adequate supports installed so that the piping might  
19 be sagging over the 30 years it's been installed. One  
20 of the early things we did was we went in and did a  
21 walk down of the Plant looking at the basic  
22 configuration and support system. And in no cases did  
23 we find pipes cantilevered out, pipes that were tied  
24 to the loads that didn't have supports under the  
25 loads. So the piping is in good condition both from a

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1 corrosion standpoint and from a dead weight type  
2 standpoint.

3 The electrical equipment -- yes.

4 MEMBER SIEBER: Have you decided yet what  
5 you will do with about the outpacking?

6 MR. CROUCH: Yes, I'm getting to that here  
7 in just a moment.

8 MEMBER SIEBER: Thank you.

9 MR. CROUCH: The electrical equipment was  
10 not energized so you haven't just seen any breakdown  
11 of the equipment. However, we are accounting for the  
12 time that -- these cables were installed back from,  
13 like I said, in the mid-`70s up until the mid-`80s.  
14 They have since been sitting out there. So what we  
15 will do is when we do our aging calculations, we will  
16 apply a period of time to account for that roughly 30  
17 year period at the temperature conditions  
18 representative of what was out in the Plant. That  
19 will go into the aging calculations so that that  
20 period of time, plus the 40 years of operation, plus  
21 the accident conditions will be accounted for.

22 VICE CHAIR ABDEL-KHALIK: Did the  
23 procedure governing this Refurbishment Program, is  
24 this TVA specific?

25 MR. CROUCH: This is a Watts Bar Unit 2

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1 specific. We've written it just for this project.

2 VICE CHAIR ABDEL-KHALIK: What sort of  
3 approval process did that procedure go through?

4 MR. CROUCH: It was approved by the  
5 Bechtel organization and by the TVA organizations.

6 MR. BAJESTANI: That procedure actually  
7 went through Construction, Engineering, Procurement,  
8 and Quality Assurance review. So Both TVA and Bechtel  
9 side.

10 CHAIRMAN RAY: Bill.

11 MEMBER STETKAR: You mentioned cables.  
12 Have you -- are -- see if I can phrase this correctly.

13 Do you have plans or is part of the program to do any  
14 selective testing of cables that might have been in  
15 not fully controlled environments during the last 20  
16 years or so? Selective insulation testing just to  
17 confirm that -- I don't mean they were involved in the  
18 cables and things like that.

19 MR. BAJESTANI: Let me address that. And  
20 then I'm going to turn it over to Steve.

21 We did a lot of testing actually part of  
22 Unit 1 startup of different cables and what's  
23 provided in here. So we have all that test reports.  
24 We've actually had a lot of discussion with NRR on the  
25 cable, the cable aging, the cable issues. So based on

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1 what we did on Unit 1 essentially we were following  
2 the same program on Unit 2.

3 But, Steve, do you want to address any  
4 specific?

5 MR. HILMES: Yes, Steve Hilmes,  
6 Engineering with Watts Bar 2. We will be doing pipe  
7 potential test on all medium voltage cables and they  
8 will be Unit 2 specific. I'm sorry, safety related  
9 cables. We will be using DOM testing. The coaxial  
10 cables that we reviewed will all be replaced - they  
11 will also -- those are the two cable types --

12 MR. BAJESTANI: Okay, good.

13 MEMBER STETKAR: Thank you.

14 MEMBER SIEBER: At either unit at Watts  
15 Bar do you have an issue of submerged area cable,  
16 medium voltage cables?

17 MR. BAJESTANI: Go ahead, Steve.

18 MR. HILMES: Yes, at Watts Bar all the  
19 cable that is buried underground as safety related is  
20 already turned over. However, we have testing on  
21 those cables and the testing results pretty much shows  
22 that they're like new cable. Essentially Watts Bar  
23 has always been able to pretty much maintain the  
24 cables dry so issues --

25 MEMBER SIEBER: Now for Unit 2 cases

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1 probably have not involved controls for those once  
2 they're buried and --

3 MR. HILMES: The only medium voltage cable  
4 that we have buried that are Unit 2 specific are the  
5 surf water pumps and we will actually also be doing  
6 DOM testing on those.

7 MEMBER SIEBER: Those are non-safety?

8 MR. HILMES: They're non-safety, right.

9 MEMBER SIEBER: Okay, thank you.

10 MR. CROUCH: One of the other questions  
11 that was brought up when we met with you back in March  
12 was this. And I think it was Dr. Sieber brought this  
13 up and made a statement that -- I'm not sure. It may  
14 have been somebody else. That we talked about our  
15 lay-up program, the fact that we had one, but it  
16 wasn't a -- wasn't maintained over the years  
17 completely. And the question was brought up -- or the  
18 statement was made that a bad lay-up program could  
19 have been worse than no lay-up program at all.

20 What we're doing to address that is that  
21 we're actually going to go out and perform chemical  
22 swipes to determine if there's any type of substance  
23 that has been introduced into the inside of the piping  
24 system. We will perform swipes on cables. We'll be  
25 looking to see if there's any type of deleterious

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1 chemicals on the surfaces, to see if there's anything  
2 that could be activated once we start operation.

3 So when we start into the process of  
4 refurbishing or replacing, as I said, the list is based  
5 upon the Master Equipment List. And we have a very  
6 voluminous, detailed procedure that goes through  
7 function code by function code for what you do with  
8 each different type of equipment.

9 Do you have a question?

10 MEMBER SIEBER: Yeah. I don't want to  
11 interrupt what you were saying. But when we toured  
12 the Plant, I noticed a lot of foreign material  
13 exclusion covers installed in different places. But  
14 they looked new to me. I take it the insulation of  
15 those covers is recent. They really haven't been on  
16 for the time the construction was suspended. Is that  
17 correct?

18 MR. BAJESTANI: Brian, do you want to  
19 address that?

20 MR. BRIODY: A lot of the covers --

21 MR. BAJESTANI: Use the microphone,  
22 please.

23 MR. BRIODY: Brian Briody, Maintenance and  
24 Mods Manager. I've been at the plant since 1983.  
25 When we laid up Unit 2, or when we discontinued the

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1 lay-up program, a lot of the -- covers that were put  
2 down were plexiglass or wooden covers. And we since  
3 find out that there were the -- covers. As you see,  
4 we've gone over and replaced a lot of the wooden ones  
5 with -- some of them were put down with tape. Some  
6 were put down with strings or put down with padding.  
7 Replacement ones that are recovered --

8 MEMBER SIEBER: Would it be fair for me to  
9 believe that there were no extended periods of time  
10 when some kind of -- exclusion barrier was used? Or  
11 did the old ones fall off or rot away? And you came  
12 back in 10 years and said we ought to do something  
13 about that?

14 MR. BRIODY: I think it would be fair to  
15 say that the vast majority -- there would be  
16 exceptions -- the vast majority had covers on them.  
17 Maybe you noticed some of the instrument panels out  
18 there had sheet metal covers. But it was a very  
19 extensive effort to protect the equipment on Unit 2,  
20 both during the lay-up. And when we stopped laying it  
21 up, just stopped, we didn't go out there and do  
22 anything to prevent the covers we had --

23 MEMBER SIEBER: Thank you.

24 MR. BAJESTANI: Besides obviously the FME  
25 cover that we have is preventive. But the process

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1 that we have, the process and procedures that we have,  
2 we're going to have to flush every one of the system  
3 part to the pre-up startup. So there is another layer  
4 here that we want to make sure that there's a  
5 cleanliness requirement. After we flush we have to  
6 get to certain level to declare the pipe is clean, you  
7 know.

8 MEMBER SIEBER: Thank you.

9 MR. CROUCH: So as we start through the  
10 refurb replacement process, as I said, the list is  
11 based upon MEL as a very large procedure that goes  
12 through the bifunction code and looks at each  
13 particular piece of equipment. It goes in and cleans  
14 it, inspects it. It replaces any type of soft  
15 components: gaskets, seals, diaphragms, etcetera.  
16 It'll lubricate it. It'll verify that it's working  
17 properly. As we pull one of these pieces of equipment  
18 out to do this, as I said, we will boroscope in either  
19 direction to make sure that the piping is in good  
20 condition. So that once a piece of equipment has gone  
21 through the refurbishment type process, it'll be  
22 restored to a like-new condition. It will be fully  
23 functional, fully operational.

24 VICE CHAIR ABDEL-KHALIK: The starting  
25 point is the MIL for Unit 1.

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1 MR. CROUCH: MEL.

2 VICE CHAIR ABDEL-KHALIK: Okay. Is your  
3 expectation that at the end of this process Unit 2  
4 will be identical to Unit 1?

5 MR. CROUCH: It will be very, very close.

6 In a few cases you cannot buy the same pieces of  
7 equipment as what was bought back in the 1970s. But  
8 for the most part you may not be able to buy a brand X  
9 valve, you have to buy a brand Y valve that functions  
10 the same way. So I would not say it is identical.  
11 But from a maintenance standpoint, from an operational  
12 standpoint, it would be as close as we can make it.  
13 That's one of our charters going into this. MR.

14 BAJESTANI: I think is your question is as far as  
15 valve number 599 in Unit 1 is going to be same number  
16 599 in Unit 2? Is that what you're asking or you were  
17 asking actual physical condition?

18 MEMBER SIEBER: Physical.

19 VICE CHAIR ABDEL-KHALIK: Well, I mean if  
20 there is going to be a difference, I'm not sure if  
21 functionally a different piece of hardware will be  
22 identical to what you wanted to have based on the Unit  
23 1 list. And I just wanted to know how you catch these  
24 differences?

25 MR. CROUCH: We have a process. If we run

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1 into a situation where we cannot do an exact like-for-  
2 like replacement, it then has to go through a design  
3 change. The Unit 2 design change process is what  
4 called an EDCR, an Engineering Design Construction  
5 Release. And one of the forms that you have to fill  
6 out is what's called a Unit Difference Form. And it  
7 looks at both maintenance differences and operational  
8 differences.

9 So if you had to install a different type  
10 of component, different brand that had different  
11 maintenance characteristics or operational  
12 characteristics, you have to fill out the form.  
13 Maintenance has to acknowledge it. Operations has to  
14 acknowledge it. That form is then provided to the  
15 those organizations and to the training organizations  
16 through the -- training process.

17 VICE CHAIR ABDEL-KHALIK: Thank you.

18 MR. CROUCH: In addition to doing all the  
19 refurbishment, we are replacing the safety rate  
20 instruments in the plant. We're replacing all the  
21 generic letter 8, 9, 10 operators in the plant. And  
22 we're replacing many of the major control systems in  
23 the plant -- the reactor protection system, the rod  
24 position system. A lot of the major control systems  
25 are being replaced brand new which is presenting a

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1 challenge because they're brand new, but we're  
2 replicating the old designs. So that's been quite a  
3 challenge to get some of the old equipment like that.

4 MEMBER BROWN: So you're not shifting to  
5 digital. You're sticking to analog?

6 MR. CROUCH: Right. Once we get done with  
7 all the inspections, evaluations, refurbishments, and  
8 replacements, then, as Masoud said, we go into a phase  
9 of testing and flushing. Our test program will be a  
10 full REGI 1.68 test program.

11 In addition to that, we'll be pre-op  
12 testing all the non-circulating side of the plant.  
13 We'll be flushing the equipment to make sure that the  
14 cleanliness meets our various standards. We're  
15 actually going to sample the water through the first  
16 flushes and continue sampling until it meets our  
17 required cleanliness factors. And when we get done,  
18 our required objective is that the Plant as a whole  
19 has to be able to meet the design, licensing, and  
20 vendor specifications.

21 So if you'll turn on Page 13, I'll give  
22 you an idea how many components we're talking about in  
23 the refurbishing process. There's some numbers there  
24 -- pumps and motors and breakers and valves, etcetera.  
25 This is just some of the various types of items we

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1 pulled out. Nowhere near all the equipment in the  
2 Plant.

3 MEMBER SIEBER: Actually for a Plant like  
4 that, the number of manual valves is 16,000 or 17,000.  
5 Motors and pumps is 600, 700 range, I guess. Is that  
6 your -- these estimates take into account your current  
7 estimate of what's deteriorated to point that would  
8 require replacement?

9 MR. CROUCH: Right.

10 MR. BAJESTANI: We actually went through  
11 this, like Bill said, Master Equipment List. We have  
12 68,000 items that we have to do something.

13 MR. CROUCH: Right.

14 MR. BAJESTANI: Out of the 68,000, we went  
15 through and we figured out what we need to do on  
16 refurbishment. Which one needs to be replaced. Which  
17 one needs the packing, change out. Just to give you  
18 some idea, this doesn't really list everything.  
19 Probably be a good idea just give you one system. One  
20 page of one system tell you really what we are doing  
21 back on container spread.

22 Jerry, maybe you want to just give  
23 everybody a copy of the container spread. Show them  
24 what are we doing on one system alone. Just one page.

25 MR. SCHIESSEL: Sure.

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1 MR. BAJESTANI: What are we changing out?

2 MR. SCHIESSEL: Jerry Schiessel, TVA  
3 Construction Manager. This page spread is about 441  
4 components on the current Master Equipment List. The  
5 printout that's being distributed is one of the 21  
6 page printouts showing an example of components and  
7 what we're doing to them. You see at the top, you see  
8 some -- Operators. That's an EDCR process -- as and  
9 engineering process.

10 Going on with the page, you'll see that we  
11 did find errors in the system. Those are -- I'm  
12 sorry. You'll see some pipe orifices. Those will be  
13 checked in our testing process. Next group of items  
14 are indicators in the instrumentation process. Those  
15 indicators will be tested, verified to be functioning  
16 properly, and put in service.

17 And towards the bottom of the page, you'll  
18 see the last couple of items are the pumps. You saw  
19 the pictures of the pumps. Those are being reworked  
20 onsite, including rebuilt. Components, all the age  
21 related components, are being replaced. And we went  
22 through every UNID on the system making replacements.

23 Complete the -- replacements, 99 part replacements.  
24 Another 105 change-outs by our engineering change  
25 process. Inspections of 123. Functional checks on

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1 17. Startup check point control items. Only check  
2 the startup page. Everything else was checked on the  
3 ratings -- on equipment how it functions. Then start  
4 talking about areas. Go through and do identify areas  
5 that our equipment - get those things corrected.

6 MEMBER SIEBER: So what you're really  
7 saying is that every -- testing, startup test program.

8 As you identify some that don't meet the  
9 requirements, then in addition to that you have  
10 approximately 10 percent where you already laid out  
11 some of the additional inspection program to determine  
12 whether these refurbished or not. Am I interpreting  
13 what you're doing correctly?

14 MR. SCHIESSEL: The only thing I want to  
15 give you a feedback on is right now this particular  
16 system has everything that's an active component pre-  
17 tested before we start the program.

18 MEMBER SIEBER: Yeah.

19 MR. SCHIESSEL: Only about 10 percent --

20 MEMBER SIEBER: Yeah, that's -- whether  
21 it's delayed or not. Okay.

22 MR. BAJESTANI: Did he answer your  
23 questions? Or do we get to go a little bit further?

24 MEMBER SIEBER: Yeah, I think so. I have  
25 enough understanding now.

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1 MR. BAJESTANI: Okay.

2 MR. CROUCH: So if you'll turn on to Page  
3 14. We just gave you some examples here of what we're  
4 doing. This is a picture of a we call it a diaphragm  
5 valve. We'll be going in and for the items that are  
6 marked there on the right side in orange and blue,  
7 we're replacing the diaphragm. We're replacing the O-  
8 rings. And the rest of the parts in it are metal.  
9 They wouldn't be replaced. But we'll be disassembling  
10 the valve, checking it out to make sure it properly  
11 functions.

12 Turn on Page 15. There's an example of  
13 the bonnet off of an ASME 12-inch swing check valve.  
14 On this particular one, you'll see it's a place where  
15 we found that there are some -- on the right hand  
16 side, there are some gouge marks. We'll be going and  
17 looking at those, evaluating them in terms of  
18 significant gouges. If required, we'll either repair  
19 it or we'll replace the bonnet, whatever it takes to  
20 make a ASME compatible component.

21 MEMBER SIEBER: Yeah, but that's not an  
22 aging effect?

23 MR. CROUCH: No, it's not an aging effect.  
24 That's just physical damage that occurs.

25 MEMBER SIEBER: Could have been an

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1 installation, manufacturing --

2 MR. CROUCH: That's right.

3 MEMBER SIEBER: This could have been  
4 shipping and storage?

5 MR. CROUCH: That's right, exactly. So we  
6 haven't tried to restrict this to just aging type  
7 phenomena. In some cases, like, for example, when  
8 we're out doing the ASME walk down looking for the  
9 weld, we recorded arc strikes, gouges, corrosion,  
10 anything that was off normal we recorded on our sheets  
11 and we'll be addressing that.

12 MEMBER SIEBER: Now that's important to do  
13 that. That's required by the federal --

14 MR. CROUCH: Yeah, that's correct.

15 MEMBER SIEBER: Thank you.

16 MR. CROUCH: Page 16 there is an example  
17 in this -- in Jerry's procedure for doing his  
18 refurbishment. This is just one of his many check  
19 valve -- or one of his many data sheets. This one is  
20 for a check valve. You notice down there about a  
21 third of the way down the page it does an operability  
22 check. Looking to make sure the valve operates  
23 freely.

24 You'll also see down there where it's all  
25 the various things to determine wear checks on the

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1 right-hand side. So they go check for all the loose  
2 parts: things like the cotter pins, the retaining  
3 clips, etcetera. So they go through and make sure  
4 that the valve works properly and that all the small  
5 piece parts associated with are present and working  
6 properly.

7 Turn over to Page 17 then. Picture of an  
8 air operated valve. And the components that are  
9 subject to refurbishment are the diaphragm and the  
10 valve packing.

11 Turn over to Page 18 there. There is a  
12 schematic of the air operated valve. It's not the  
13 very same one reported on the previous page. But it  
14 is a representative type schematic. And you can see  
15 there the items that are marked on the right- hand  
16 side in the colors. We're replacing the diaphragm,  
17 the gaskets, the o-rings and the packing rings.  
18 They'll also be once again cleaning and inspecting the  
19 valves and making sure it operates properly.

20 MEMBER SIEBER: To do all this -- this is  
21 a lot of work.

22 MR. CROUCH: Yes.

23 MEMBER SIEBER: A lot of man hours.

24 MR. CROUCH: Yes.

25 MEMBER SIEBER: Okay, thank you.

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1 MR. CROUCH: Page 19, once again, this is  
2 an example of the procedure for the air operated valve  
3 refurbishment. There on the left-hand side talks  
4 about things that are replaced. The right-hand side  
5 talks about the various adjustments. And you'll see  
6 that each one of these sheets has a sign-off by a  
7 Field Engineer to ensure that in its as-left condition  
8 it meets these requirements.

9 MEMBER BROWN: You got an item listed on  
10 here that says, "Regulator replaced setting verified."

11 And there's a box that's checked. If that's a  
12 quantitative value, the setting has to be verified.  
13 Why isn't the required value specified and a number  
14 that they actually got written down?

15 MR. BAJESTANI: Every one of these  
16 components that is actually specific procedures step  
17 by step, especially on the safety related with QC  
18 verification for all the settings.

19 Jerry, you want to confirm? Okay, yeah,  
20 go ahead.

21 MR. SCHIESSEL: Jerry Schiessel, TVA  
22 Construction. If you note the -- he used actually a  
23 59-page figure; he just took one page to give you an  
24 idea. But just as Masoud pointed out, all those  
25 readings that we inspect are included in this 59-

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1 pages.

2 MEMBER BROWN: Okay, so the actual values  
3 that you expect, the actual quantitative value is  
4 written down so somebody can audit that and see that -  
5 -

6 MR. SCHIESSEL: That's correct.

7 Mr. SIEBER: I don't know how you folks --  
8 a lot of plants use what they call a scaling manual  
9 which has all the set points for everything. And they  
10 don't appear in the calibration procedure,  
11 refurbishment procedures. You have to go to the  
12 scaling manual to get them. That's where that  
13 information was taken.

14 MR. CROUCH: Let Steve answer that.

15 MR. HILMES: Steve Hilmes. What we do  
16 here is on non-safety instruments, we -- the set  
17 points and so forth are actually in our Master  
18 Equipment List.

19 MEMBER SIEBER: Okay.

20 MR. HILMES: Where safety related or tech  
21 spec instruments, we have rather detailed scale in  
22 some of the documents.

23 MR. CROUCH: Those scaling and set point  
24 documents are design output documents that relative to  
25 design change process.

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1                   MEMBER SIEBER:    Yeah, what you did is  
2 similar to what I've seen through most of the  
3 industry.

4                   MEMBER STETKAR:     Bill, just out of  
5 curiosity, this is pretty much out in left field, but  
6 the photograph of the valve back on Page 17, do you  
7 happen to know where that valve -- what system that  
8 valve came out, where it was?

9                   MR. CROUCH:    Jerry.

10                  MR. SCHIESSEL:   Page 17?

11                  MEMBER STETKAR:   Yeah, I mean it's an air  
12 operated valve. I'm just curious.

13                  MR. SCHIESSEL:   Jerry Schiessel. That  
14 particular valve we're looking at is on our heater  
15 drain system.

16                  MEMBER STETKAR:   Heater drain. Okay,  
17 thanks.

18                  MR. SCHIESSEL:   It's a non-safety valve.

19                  MEMBER STETKAR:   Thank you.

20                  MR. CROUCH:     Let's move on to Page 20.  
21 Here's a picture of a manual valve. Once again we  
22 will be replacing the valve packing shown on the  
23 right-hand side of the components shown in pink there.

24                  Flip the page to Page 21. There's once  
25 again an example of a page out of a procedure for

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1 checking valve packing. So our overall process for  
2 doing this refurbishment is a proceduralized process  
3 driven by the upper tier procedure for refurbishment.

4 And then there's lower tier procedures like the page  
5 we're looking at here that actually perform the  
6 refurbishment activities themselves to do the work  
7 orders.

8 Any other questions on this aspect?

9 MEMBER SIEBER: Yeah, you probably have  
10 15,000 or 16,000 valves that have packing in them of  
11 one sort or another. Are you going to do a pressure  
12 test?

13 For example, a valve is just sitting there  
14 at ambient temperature. The packing is sealed by all  
15 the surfaces. So you're aren't going to have  
16 oxidation. You aren't going to have heat as a  
17 problem. Are going to do something to say I've got to  
18 repack that valve and I don't have to repack this one  
19 over here?

20 MR. CROUCH: Yes, we have a criteria.

21 MEMBER SIEBER: What criteria?

22 MR. CROUCH: Yeah, we're going through a  
23 criteria. There's four criteria that we start  
24 through. One of them is see if the valve sees  
25 condenser vacuum. Because you can't tell that valve

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1 is leaking as such.

2 MEMBER SIEBER: Right.

3 MR. CROUCH: If it's contained -- contains  
4 contaminated fluid, you don't want it to leak--

5 MEMBER SIEBER: Okay.

6 MR. CROUCH: -- contaminated stuff.

7 If it's a high energy system greater than  
8 275 psi or greater than 200 degrees, or if it's inside  
9 the polar crown wall, because you can't get to that  
10 during operation.

11 MEMBER SIEBER: Okay, those are the four  
12 criteria?

13 MR. CROUCH: Those are the four criteria.

14 And then you go through and test the systems. And if  
15 you find something else that's leaking.

16 MEMBER SIEBER: You fix it.

17 MR. CROUCH: You observe it; you go fix  
18 it.

19 MEMBER SIEBER: I think that's good  
20 criteria. And I knew that you had to have something  
21 to cut down on the volume.

22 MR. CROUCH: That's right.

23 MEMBER SIEBER: Or you'd be here forever.

24 MR. CROUCH: That's right.

25 MEMBER SIEBER: Okay, thank you very much.

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1 MR. CROUCH: You're welcome. Okay, let's  
2 turn on Page 23 (sic) then. In addition to the  
3 process of refurbishing the equipment that was  
4 installed out there back during the `70s and `80s, we  
5 have also taken upon ourselves several improvement  
6 initiatives. And I've just outlined a few of them  
7 here. And I want to kind of walk you through what's  
8 in this list here.

9 These are things that either are  
10 improvements over the what's in Unit 1 in terms of our  
11 processes, or they're improvements over the timing of  
12 when things were done compared to Unit 1. Or they're  
13 things that we're doing early for such things a dose  
14 reductions.

15 The first one on the list is Reduction of  
16 Appendix R Operator Manual Actions. We're going to do  
17 that. And rather than taking the 160 manual operator  
18 actions that Unit 1 has, we're going to reroute cable  
19 to eliminate some of these actions. In some cases you  
20 cannot eliminate all of them because of the physical  
21 proximity of the end devices. But we're looking at  
22 the devices to see where we can eliminate operator  
23 actions.

24 We will have replace all eight ERCW pumps.  
25 This our essential raw cooling water pumps that

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1 provides the safety related raw cooling water to  
2 plant. The pumps as originally installed did not meet  
3 the original vendor specifications. So we're going in  
4 and replacing them back so that we have adequate  
5 margin for two unit operation.

6 We're taken an approach to go and replace  
7 piping that's susceptible to FAC, flow accelerated  
8 corrosion. Any piping that was replaced in Unit 1  
9 during the first two refueling outages, we're going  
10 ahead and replacing it preemptively so that we don't  
11 have to wait until the Plant is in operation and do it  
12 during an outage.

13 MEMBER STETKAR: Are these check works on  
14 --

15 MR. CROUCH: We use check works and back  
16 manager. Once you get past about the first two  
17 refueling outages, you find that FAC is kind of  
18 geometry dependent. So you can have a situation where  
19 in Unit 1 you had some FAC damage to a certain line.

20 CHAIRMAN RAY: FAC is flow accelerated  
21 corrosion.

22 MR. CROUCH: Flow accelerated corrosion.

23 MEMBER STETKAR: And I recognized the  
24 acronym.

25 MR. CROUCH: So you can have a situation

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1 where you had FAC damage in Unit 1. But just due to  
2 very, very slight geometric differences between the  
3 two units, you may not see that FAC same damage over  
4 in Unit 2. And so if it experienced damage during the  
5 first two refueling outages, it's probably not  
6 geometry dependent. It's probably just system flow  
7 dependent. But we're preemptively going -- we'll  
8 replace that type of piping. We're replacing it with  
9 two and a quarter percent chromoly which should last  
10 the full life of the Plant.

11 The glycol chillers, we're replacing all  
12 10 glycol chillers for two reasons. One, because the  
13 federal regulations on freon. Second one is that the  
14 glycol chillers just do not perform well enough to  
15 support two unit operations. So rather than trying to  
16 upgrade our existing chillers to match to meet the two  
17 unit operations but then still have the freon problem  
18 or vice versa, we're replacing them with the proper  
19 type of coolant and with proper capacity.

20 Now the switchyard, we're installing a  
21 double 500 kV breaker arrangement to increase our  
22 reliability.

23 We're adding the zinc injection system to  
24 pacify the fuel rods and steam generator tubes. This  
25 helps eliminate some of the crud problems in the

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1 various locations.

2 The Plant as it was originally installed  
3 has got two train ERCW system. Each train has got a  
4 strainer in it. Well, the way the piping is  
5 configured, you cannot go work on a strainer with that  
6 train in service. So we are installing bypasses so  
7 that we can jump from train to train to get around it  
8 so we can do on-line maintenance on the strainer and  
9 still be able to get adequate flow to the operating  
10 units.

11 We retubed the main condenser using the C-  
12 Cure stainless steel. That will eliminate copper from  
13 the system to help on the steam generator light.

14 As I talked earlier, we are installing a  
15 barrier inside the intake pumping station.

16 MEMBER SIEBER: Are you going to use C-  
17 Cure in your condensers?

18 MR. CROUCH: Yes.

19 MEMBER SIEBER: And what was originally in  
20 there?

21 MR. CROUCH: Copper.

22 MEMBER SIEBER: C-Cure is pretty flexible  
23 material. Do you expect that your distance between  
24 your tube support plates between the two-sheet tube  
25 support plates going to be such that you're going to

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1 get vibration damage because of the change of tube  
2 material?

3 MR. BAJESTANI: I'm going to explain a  
4 little bit. And then I'm going to turn it over to  
5 Brian.

6 We actually decided the tube supports we  
7 ending up staking every one tubes to make sure we  
8 don't end up getting the vibration.

9 MEMBER SIEBER: You've done this in Unit  
10 1?

11 MR. BAJESTANI: We did that on Unit 1.  
12 And we just completed that on Unit 2. But Brian --

13 MEMBER SIEBER: I was just going to say  
14 you're going to have to stake them.

15 MR. BAJESTANI: We staked them.

16 MEMBER SIEBER: Because the vibration --

17 MR. BAJESTANI: Exactly. We did that --

18 MEMBER SIEBER: Particularly around the  
19 top.

20 MR. BAJESTANI: That's right. That's  
21 exactly what we did.

22 Brian, you want to expand on that?

23 MR. BRIODY: Yes, Brian Briody,  
24 Maintenance and Modification. They are 15-foot long.  
25 We have installed these tubes in Unit 1 --

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1 generators. It went very well. We do have tube  
2 supports -- about two and a half to three feet apart  
3 throughout its length. And then they are staked --

4 MEMBER SIEBER: When did you retube Unit  
5 1's?

6 MR. BRIODY: Spring of 2002 or 2003. And  
7 they're coming out in September on Cycle 9 when they -  
8 -

9 MEMBER SIEBER: Okay. Thank you. So you  
10 were already aware of these conditions. Thank you.

11 MR. CROUCH: On the pressurizer, there are  
12 six dissembler metal welds for the various nozzles  
13 coming in and out of the pressurizer. We're going to  
14 apply the Mechanical Stress Improvement, MSIP,  
15 process to these welds to place the interior surface  
16 of the welds impressive stress. That eliminates the  
17 problem with the IGSCC. We're adding an additional  
18 offsite power source for reliability.

19 We've gone and replaced what's called the  
20 split pins inside the reactor. We're doing this prior  
21 to actual operations so we can do this in a low dose  
22 type environment.

23 As we -- at least with the group that Masoud and I  
24 were with, we talked about reduction of pipe support  
25 snubbers out in the Plant. We eliminated a large

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1 number of snubbers through our analysis that would  
2 improve the maintenance aspects of the Plant.

3 We also are --

4 MEMBER SIEBER: The split pin replacement,  
5 you're able to do that hands on as opposed to all kind  
6 of remote tools.

7 MR. CROUCH: That's correct.

8 MEMBER SIEBER: Is that job done?

9 MR. BAJESTANI: We just completed. We  
10 completed that actually about June. We finished it in  
11 June.

12 MEMBER SIEBER: When you were retracting  
13 the original pins, did any of them break?

14 MR. BAJESTANI: Pete, you want to get that  
15 mic?

16 MR. OLSON: Yeah, I don't recall any  
17 reports of breakages. We had a few minor -- but --  
18 but I don't recall any broken splits.

19 MEMBER SIEBER: The split then --

20 MR. OLSON: That is correct.

21 MEMBER SIEBER: Okay, thank you.

22 MR. CROUCH: In order to address the  
23 generic Safety Issue 191 of containment sumps, we're  
24 installing the new containment sump screens just the  
25 same way as Unit 1 is installed already. Down there

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1 in the lower sump area, the existing sump screen  
2 cover, we removed. And this very large screen will be  
3 installed. We had pictures that we showed you while  
4 we were down there.

5 Initially the things on the page and some  
6 of the other things that we're doing, we're going  
7 ahead and performing the same modifications that Unit  
8 1 has either already performed or is performing this  
9 upcoming outage for the ECCS gas accumulation for the  
10 preventing. As we talked about on the tour, we're  
11 installing the new low pressure model block rotors on  
12 the turbine that will improve the performance of the  
13 turbine. But it will also improve the reliability for  
14 the turvissile (phonetic) analysis.

15 MEMBER SIEBER: What manufacturer in terms  
16 of --

17 MR. CROUCH: Siemens.

18 MEMBER SIEBER: Siemens?

19 MR. CROUCH: Siemens.

20 MEMBER SIEBER: And you say you're changing  
21 the low pressure blades along with the rotors?

22 MR. CROUCH: The rotor, the blades,  
23 everything is being replaced.

24 MEMBER SIEBER: So you end up with a more  
25 efficient --

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1 MR. CROUCH: Yes. The result of changing  
2 out the high pressure turbine, the low pressure  
3 turbines, and the morcha (phonetic) separator  
4 reheaters we'll pick up about 50 megawatts of electric  
5 for the very same reactor from the power.

6 MEMBER SIEBER: You're adding just a  
7 little more efficiency?

8 MR. CROUCH: Right.

9 MR. BAJESTANI: Right.

10 MR. CROUCH: In addition, we're revising  
11 our PSA so that it'll be REGI 1.200 rev one compliant.  
12 We'll also meet the ASME standard. During this  
13 process we're also converting the PSA over from  
14 Brisman to CAPTA, which is the same computer process  
15 that the NRC uses. So it will be easier for us to  
16 converse on it.

17 This is just a few of the things that  
18 we're doing to improve the plant. In order to do  
19 things up front early so that we reduce those improved  
20 performances planned.

21 We'll turn over to Page 24 (sic). Overall  
22 engineering is approximately 46 percent complete. The  
23 design modifications are --

24 MR. BAJESTANI: This is Page 23 by the  
25 way, Bill.

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1 MR. CROUCH: Twenty-three?

2 MR. BAJESTANI: On our copy.

3 MR. CROUCH: Okay, 23. Overall the  
4 engineering is probably 46 percent complete. The  
5 design modifications are 55 percent complete. And  
6 calculations are 76 percent complete.

7 We're also going through what's called the  
8 Corrective Action Program and Special Programs. As I  
9 talked about earlier, that the -- back in the mid '80s  
10 when the plant was shut down over concerns about  
11 construction engineering, this resulted in a document  
12 that was what's called the Nuclear Performance Plan.  
13 And it was a document that applied -- has four volumes  
14 in it. Volume I applies to the Management issues  
15 within TVA. Then Volumes II, III, and IV apply to  
16 Sequoyah, Browns Ferry, and Watts Bar.

17 Within the Volume IV, which applies to  
18 Watts Bar, you will find various types of programs  
19 described. Some of them are the very large programs.

20 They're what's referred to as the Corrective Action  
21 Programs. And others that are just slightly smaller  
22 are what's referred to as Special Programs. These  
23 are things like cable issues, seismic issues, modern  
24 energy line break issues, design based line  
25 verification program. Programs that relate to either

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1 construction or engineering type activities.

2 Overall we are about 40 percent complete  
3 on addressing the actions required to identify the  
4 pieces of equipment that had to be replaced or the  
5 calculations documentation has to be revised.

6 MEMBER STETKAR: Bill, you explained this  
7 in March and I forgot. Is there any other substitutes  
8 between the Corrective Action Programs and the Special  
9 Programs?

10 MR. CROUCH: No.

11 MEMBER STETKAR: Other than --

12 MR. CROUCH: It's just the size.

13 MEMBER STETKAR: Just the size, okay.

14 MR. CROUCH: Right. So we're going  
15 through each one of those programs. We're in  
16 conversations between Watts Bar and with both the  
17 Region and NRR. We're going through and creating  
18 what's called the Implementation Plan that describes  
19 how we're going to go about and solve the issues.

20 As the document progresses, as the work  
21 progresses, the Region is coming in. The NRR is  
22 coming in and looking at what we are doing from both a  
23 paperwork standpoint and a field standpoint to make  
24 sure that they agree with what we're doing. So it's a  
25 process that's going along as we go that basically

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1 everybody agrees. We don't get to the end and then  
2 have a disagreement over it.

3 One of the other things that we've done is  
4 in order to ensure that we have picked up all the  
5 concerns that was created when Watts Bar Unit 1 was  
6 stopped and then eventually construction completed, we  
7 have gone back and what we refer to as our Historical  
8 Document Review. We went into the records and pulled  
9 up any type of document that had to do with -- I'm on  
10 the wrong thing here. Historical Basis Quality  
11 records. This is looking to make sure that our  
12 quality records were in place.

13 Like I referred to on the ASME records how  
14 we've gone back and ensured that we could find all the  
15 paperwork from the various vendors that came with the  
16 components. We've gone back in to prove that we've  
17 got our calculations in place. We've gone back and  
18 proved our drawings are in place. Make sure they're  
19 legible and they're usable.

20 There's been a few things that we have  
21 found that that are not there. So we're having to go  
22 recreate those. But for the most part, we have found  
23 nearly every record either in the vault or on  
24 microfilm. So overall we're on track to complete the  
25 major engineering by December of this year.

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1           You asked earlier about how TVA is  
2 ensuring or interfacing with the contractor. As  
3 Masoud talked about, this is an EPC contract, such as  
4 they are responsible that their products are correct.

5       But on the other hand, we as TVA as the owners, we're  
6 going in and doing an oversight of all the products  
7 that they do. We don't review everything a 100  
8 percent. But we go and review first time type  
9 documents, first time type processes. And then do a  
10 sampling, looking at the products as they go along to  
11 make sure that they're following our design standards  
12 or following the various regulations.

13           As we go through and do a review like  
14 that, if we find a problem, we write monitoring  
15 reports that goes up through the Nuclear Assurance  
16 organization. We also write PERs, Problem Evaluation  
17 Reports, documenting anything we find.

18           So is that --

19           CHAIRMAN RAY: Bill, in most circumstances  
20 where there's not a change in responsibility between  
21 the parties involved and the project, whatever roles  
22 and responsibilities each party has at the beginning,  
23 they execute and deliver on through the course of the  
24 project. The owner has his role. The EPC contractor  
25 has theirs and so on.

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1           So while there's nothing about what you  
2 just said that one could take exception to, the real  
3 underlying question -- and I'm not sure how to grapple  
4 with it -- is the change that has occurred. Because  
5 it's not enough, I don't think, to simply say, "Wow,  
6 we're conducting this oversight." But you're actually  
7 conducting oversight for somebody who's doing work  
8 that you yourself began and now they're carrying on.

9           And it's that change that is, I won't say  
10 unique, but different. Maybe it's happened before.  
11 But how that is carried out, I don't really know how  
12 to pose the question other than trying to put myself  
13 in the place of your EPC contractor and imagine how I  
14 would -- what I would think I was responsible for  
15 coming into the project as is the case here.

16           So anyway, I'm just responding to to your  
17 question. Does that answer -- well, it tells me what  
18 you're doing. And that's reassuring to a degree. But  
19 there's still a need to somehow come to grips with the  
20 fact that there is this transition that has occurred.

21           So that's the answer to your question.

22           Now I'll ask you a question which is, I  
23 take it that the -- it seems to me like what you've  
24 described would eliminate the possibility as best it  
25 can ever be done that there would be any deficiency

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1 remaining in Unit 2 which was a legacy of the problems  
2 that led to the shutdown of both units and then was  
3 presumably corrected in Unit 1, now would be addressed  
4 in Unit 2. There's just nothing I can see here that  
5 would slip through the cracks as you described or at  
6 least as I've understood it stated.

7 MR. CROUCH: And I was actually jumping  
8 the gun. That's discussed a little bit more on the  
9 bottom of the next page.

10 CHAIRMAN RAY: Oh, is it? All right.  
11 Well, it would seem like it fit here. But, okay,  
12 that's all right. But anyway, to answer your  
13 question, at least I hear what you're saying. And I  
14 don't have any problem with what you're saying  
15 personally. I just can't yet figure out how this  
16 rather profound change is taking place. It's as if  
17 you guys still have the same responsibility you always  
18 did have for the design. It's just that somebody else  
19 is executing it now rather than TVA. And yet you're  
20 involved enough to still be responsible, I guess.

21 MR. CROUCH: Ultimately, we are --

22 CHAIRMAN RAY: I don't want to put words  
23 in your mouth. But that's basically what I'm  
24 grappling with.

25 MR. BAJESTANI: Yet, I understand what

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1 he's talking about on the change. You know the EPC  
2 contractor, they're doing the work independently.  
3 They are doing, but I guess we, the TVA side, has the  
4 oversight. We still the owner. We still responsible  
5 for licensing this plant. So we got to make sure what  
6 comes out of the EPC or any other contractor is  
7 accurate and correct. So that's --

8 CHAIRMAN RAY: I know. I've been in that  
9 role too, Masoud. I understand the responsibility  
10 that you feel. And it's very, very important. But  
11 again, what's not really being understood at least  
12 from my part is how something that I myself was doing  
13 before is now going to be carried on and completed by  
14 somebody else under my oversight.

15 It's not that there's any -- inherently  
16 any reason why that can't work. I'm just trying to  
17 figure out where that may lead to any problems. I  
18 don't have any to share with you or I would. But it  
19 is a change. And that's what -- that's worth thinking  
20 about.

21 MR. BAJESTANI: Right, it is a change.  
22 But you know we go back to look at some of the lessons  
23 learned from early '80s when we were building some the  
24 units and we stopped the construction because a lot of  
25 issues. What we have learned is basically we can't

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1 just turn over the key and say we'll go make it  
2 happen.

3 CHAIRMAN RAY: That's right. No, you seem  
4 to be well involved. I'm speaking just for myself.  
5 But I have nothing to suggest in the way of anything,  
6 omissions or any lack of oversight. But you asked a  
7 question, are we satisfied? Well, at least from my  
8 part I'm still pondering what is a very unusual change  
9 in responsibility. And I try to put myself in the  
10 shoes, as I say, of the EPC contractor and ask myself  
11 what am I really responsible for here. And I'm not  
12 sure I have a complete satisfactory answer.

13 VICE CHAIR ABDEL-KHALIK: Let me just try  
14 to understand this. The design engineering function  
15 of TVA is exclusively or primarily oversight; is that  
16 correct?

17 MR. CROUCH: That's correct.

18 VICE CHAIR ABDEL-KHALIK: Now judging by  
19 the number of people involved, roughly seven percent  
20 of the effort is focused on oversight. Is that a  
21 typical percentage time for complex engineering  
22 systems?

23 MR. BAJESTANI: The seven percent that --  
24 you just looking at the number of Bechtel versus TVA --  
25 -

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1 VICE CHAIR ABDEL-KHALIK: Right, right.

2 MR. BAJESTANI: We actually have some data  
3 from other utilities that are looking at building new  
4 units. And they're looking at the organization that  
5 they want to set up. The one that actually actively  
6 involved, we have looked at their number, our number.

7 It's pretty much -- I actually have a table shows  
8 that our number is pretty much what the other  
9 utilities are using.

10 MR. ADBEL-KHALIK: This number seems a  
11 little low to me considering the fact that you're  
12 doing a bit more than just simply oversight.

13 MR. BAJESTANI: Correct.

14 MR. ADBEL-KHALIK: So the question is, how  
15 does that compare with data that pertain to complex  
16 engineering systems in terms of design engineering and  
17 oversight.

18 MR. BAJESTANI: The one thing you got to  
19 remember here for Watts Bar. Really the design of  
20 this Plant, it was done. FSAR was done. So what we  
21 are doing, we are going back and actually verifying  
22 what was done before it's correct. So it's not that  
23 we are starting from scratch to do a new design. So  
24 there's a big difference between when you're looking  
25 at building a new unit versus what we are doing. The

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1 FSAR design of both units were complete. The design  
2 basis are good. What we are doing is confirmation of  
3 going back and verifying what we had is okay.

4 CHAIRMAN RAY: Well, I think that's right.  
5 It is, as you yourself said and as I said, it's  
6 different. And we're trying to just understand what  
7 that difference might any things that would be  
8 unanticipated consequences of that difference, okay.

9 MR. BAJESTANI: I understand. Okay, if  
10 there are no other questions, I guess we're going to  
11 take a 10-minute break. Or however you want to handle  
12 it?

13 (Laughter)

14 CHAIRMAN RAY: I'll take care of that for  
15 you. Let's make sure.

16 MR. BAJESTANI: Let's move on?

17 CHAIRMAN RAY: Let's make sure first of  
18 all. We'll take a break. But let me decide when it's  
19 done.

20 Let's see if there's other members that  
21 have any other questions on this phase of the  
22 discussion. We can be late, but we can't be early.  
23 It's the rule.

24 Anybody else have any?

25 It's a 15-minute break by schedule. But

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1 so one of the members thinks that's a good idea. And  
2 so we'll stick to that. We'll reconvene at 2:45.

3 (Off the record at 2:30 p.m. and  
4 reconvened at 2:45 p.m.)

5 CHAIRMAN RAY: We solved I think -- I  
6 think we've solved our feedback problem. And we can  
7 resume. The agenda will proceed as outlined. Albeit,  
8 it's now running some 17 minutes late. That's not  
9 unusual for us. So Joe or Bill or Masoud, whoever is  
10 going to take a lead here, please.

11 MR. CROUCH: It'll be myself. If you'll  
12 turn the page then to the page that's entitled  
13 Licensing. When we started this project, our  
14 licensing group met very closely and regularly with  
15 both NRR and Region and created what's called the  
16 Regulatory Framework letter.

17 This is a letter that goes through all the  
18 issues related to the startup of Watts Bar Unit 2.  
19 And it addresses the basis for what it's going to take  
20 in order for both TVA and NRC to agree on the issues.

21 It looks at such things as the FSAR sections; generic  
22 communications such as bulletins, generic letters,  
23 etcetera. And it looks at all the Corrective Action  
24 Programs/Special Programs to come up with a plan for  
25 what's going to have to be done for each one of them

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1 in order to close it.

2 This was a follow-up, a fallout, of the  
3 way we did this at Browns Ferry Unit 1. And the  
4 difference is we got the NRR people much more involved  
5 this time than what we did the first time, so that it  
6 should be a better document and a smoother process  
7 that what we even had for Browns Ferry Unit 1.

8 Basically we're following the precedent  
9 set by Watts Bar Unit 1 in terms of its licensing  
10 basis, design basis, etcetera. That we're not  
11 requesting any new exemptions. We're following the  
12 same processes.

13 For the FSAR, as Masoud mentioned, the  
14 FSAR was basically completed for Unit 1 and 2 back in  
15 1995. But we're in the process of updating that FSAR  
16 for Unit 2 to account for all the modifications that  
17 we're doing in Unit 2. We are modifying Unit 2 such  
18 that it won't be the very same Plant that Unit 1 was  
19 at original licensing. Instead we'll be licensing it  
20 as Plant with the original design plus all the various  
21 modifications that Unit 1 has done over the last 11,  
22 12, 13 years. So that at the time of Unit 2  
23 licensing, the two units will be identical as we  
24 described it.

25 So what that means is you have to go in

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1 and take the 1995 Unit 2 FSAR. First of all go  
2 validate that the plant meets that document still.  
3 And then incorporate into it any of these other  
4 modifications that we're performing in order to keep  
5 the two units consistent.

6 There's a process we've gone through of  
7 showing the deltas between the 1995 FSAR and the  
8 current Unit 1 FSAR. And then we're addressing those  
9 in the series of submittals that are planned over the  
10 next -- we've already had one in April. There'll be  
11 another one coming in August, one in November, and  
12 then one in January. So once we get that submitted,  
13 then the -- that will be the basis for the licensing  
14 of the Unit 2.

15 We've also submitted what we call  
16 templates for the tech specs. What these are, we've  
17 taken the Unit 1 tech specs and we've submitted them  
18 and says that our Unit 2 tech specs will look like  
19 this. And we've basically taken the Unit 1 tech spec  
20 and used it. But we blanked out all the unit specific  
21 set points. And so over the course of the next few  
22 months as we complete those calculations, we'll be  
23 supplying those Unit 2 specific set points to you.

24 For the Corrective Action Program, the  
25 Special Programs, we have submitted and gotten

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1 agreement with NRC on 27 out of 29 of the  
2 methodologies for closure. There's two of them that  
3 are with the NRC right now called Quality Records and  
4 Replacement Parts. We've submitted the documents to  
5 you and they're under review for approval.

6 As I started to talk about a few minutes  
7 ago, now we'll talk about what we've done for looking  
8 at what we call Historical Document Review. This is  
9 where we've gone back. And in order to ensure that we  
10 have accounted for all the issues that were brought up  
11 during Unit 1 completion, we've gone back and pulled  
12 records for all of the various concerns that were  
13 expressed, both employee concerns, public concerns.  
14 We've looked for the non-conformances in terms of  
15 PERS, SCARs, FURs, CAQRs, whatever the various  
16 Appendix B reporting terminology was at the time of  
17 the Plant. We've looked for all of our NRC  
18 commitments.

19 All told, there was approximately 37,000  
20 documents that were pulled into this population that  
21 we've gone through. We've done a detailed review of  
22 each one of them to determine is this a subject that  
23 applies to Unit 2 just like it applied to Unit 1. So  
24 we've taken them and addressed them that way. If it  
25 does not apply, we document why it does not apply. If

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1 it does apply, we go through then and assign it to an  
2 organization to ensure that that aspect of the Plant,  
3 that concern is addressed in the applicable aspect of  
4 the Plant. Each item is tracked to closure. And in  
5 the end we'll have a database that demonstrates what  
6 we've done for each one of them.

7 So overall through the engineering process  
8 of calculating, of designing, ensuring the records are  
9 there, ensuring the drawings are there, we're going  
10 through a very detailed process to ensure that the  
11 right actions are taken to ensure safe and reliable  
12 operation.

13 One of the things that Gordon suggested  
14 that I also talk about is a little bit of our ASME  
15 process. That this is a slightly unusual situation  
16 kind of like the issue of how do you review something  
17 that you did before. On the ASME aspects of the  
18 Plant, most of this plant was constructed back during  
19 the '70s and '80s. And all of the ASME piping, all  
20 the ASME components, welds, etcetera were completed by  
21 TVA because TVA held the applicable ASME stamps,  
22 either the NA, NPT, or N stamps that were needed to  
23 construct the plant.

24 After we stopped construction, we released  
25 our NA, NPT, N stamps back to to ASME because at that

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1 point in time we did not have plans at that time to  
2 complete the construction.

3 In order to finish Watts Bar Unit 2, we  
4 have gone back to ASMS and to the NRC and got a code  
5 case issued and approved that basically says that TVA  
6 can go apply for NA and NPT stamps in order for us to  
7 complete the documentation of the work that was  
8 performed back previously. It doesn't allow us to  
9 perform any physical work at all. We can't do any  
10 repairs. We can't do any construction. But it simply  
11 allow us to complete the documentation for what  
12 existed back then.

13 Anything that's not complete, for example,  
14 I talked about doing the walk downs of all the ASME  
15 welds and components. If I through my walk downs  
16 found that a component was missing or I'm missing  
17 documentation of a weld, whatever was incomplete,  
18 either hardware or documentation wise, I turn that  
19 over to a new certificate holder having overall  
20 responsibility. That the entity with that stamp will  
21 be Bechtel. Bechtel is going in and applying for  
22 their stamp so that they can go and complete the  
23 physical work at Watts Bar and complete the paperwork,  
24 the various code data reports that are required.

25 So I will go through and create a ASME N-5

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1 Data Report that will document what was done back  
2 previously. I will give that to Bechtel along with  
3 all the open items. Bechtel will then go and complete  
4 those open items as well as install anything new  
5 that's in that time frame from the '85 to current type  
6 work that's been done. They will then go create a N-5  
7 for the work that they did. And they will combine  
8 those two N-5s together, two partial N-5s together,  
9 into what's called a Final N-5.

10 Then they will provide that back to TVA.  
11 TVA is retaining responsibility as the owner. And so  
12 as that responsibility, we will be writing what's  
13 called the N3 Code Data Report that will list all the  
14 big components that are not on a piping N5. And it  
15 will also list all the N-5 Data Reports themselves.

16 In addition to that, Westinghouse is doing  
17 some of the work as the original and SSS vendor. They  
18 have to provide us the code data reports for the  
19 reactor pumps, for the steam generators, for the  
20 pressurizer.

21 And then I'll talk a little bit separately  
22 about the reactor vessel in a moment.

23 So they will be providing us the N-1 and  
24 N-2 forms for those components that we will also list  
25 on our N-Data Reports.

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1 Westinghouse has conducted some  
2 preliminary walk downs. They will be conducting  
3 additional walk downs to verify the condition of the  
4 components. They'll go in, and if there is any type  
5 of degradation or damage such as arc strikes of  
6 gouges, they will be dispositioning those, doing any  
7 repairs that are required. They will also be doing  
8 any construction work on the reactor vessel, like we  
9 talked about this morning about the removal of the  
10 upper head injection and the removal of the RTD  
11 bypass. Those are being done by Westinghouse under  
12 their N stamps.

13 So once Westinghouse does their work, they  
14 will provide us the N-1 forms that we'll include on  
15 the N-3. Now the reactor vessel itself -- do you have  
16 a question?

17 MEMBER SIEBER: Yes, but finish what  
18 you're saying. Then I'll ask it.

19 MR. CROUCH: Okay. The reactor vessel  
20 itself is a bit of an unusual situation, the same  
21 situation though as what we encountered with Watts Bar  
22 Unit 1. Back at the time the Plant was being  
23 constructed, the ASME code did not allow an ASME  
24 component to be manufactured or worked on outside the  
25 United States. And so these two reactor vessels were

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1 completed in the Rotterdam Works.

2 And so by the ASME code, they could not be  
3 stamped until we received special dispensation in  
4 order to essentially -- if you go and look at the  
5 paperwork, it looks like an N-1 Code Data Report.  
6 Except rather than being signed off by an authorized  
7 nuclear inspector such as Hartford, it was reviewed  
8 and approved and given inspection report by Lloyds of  
9 London. So it received a similar type review.

10 And then we got an N-1 Report that has all  
11 the signatures on it, all the blanks are signed except  
12 the words are struck through where it refers to an  
13 authorized nuclear insurer. And so that code data  
14 that pseudo N-1 Code Data Report is then listed on the  
15 N-3 Data Report.

16 So question?

17 MEMBER SIEBER: The drawings that are  
18 generated either for construction or operation of  
19 plants, somebody has to sign those. Will that be a  
20 TVA person, a Bechtel person, or another person? Who  
21 will that be?

22 MR. CROUCH: Bechtel.

23 MEMBER SIEBER: Bechtel?

24 MR. CROUCH: All of our certified design  
25 specifications are certified by Bechtel registered

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1 professional engineers. All of our stress reports  
2 have to be certified by Bechtel registered  
3 professional engineers. It will eventually roll up to  
4 TVA. The TVA will supply the N-3. But the owner's  
5 responsibilities do not require an RPB stamp.

6 MEMBER SIEBER: If you do a design change  
7 in the Plant that does not involve an architect  
8 engineer, do you have licensed engineers that can sign  
9 the drawings, that can sign drawings out?

10 MR. CROUCH: It's not a requirement here.  
11 We're a federal agency. And so we're exempted from  
12 the requirement to have that.

13 MEMBER SIEBER: Okay. What does a federal  
14 agency use to serve as the qualification to be able to  
15 do that?

16 MR. CROUCH: We have a training program  
17 where we go through and people have to have certain  
18 qualifications in order to do these designs or  
19 calculations.

20 MEMBER SIEBER: But there is no certain --  
21 no recognized certification other than your training  
22 program?

23 MR. CROUCH: That's correct. So when we  
24 get the N-3 Data Report and all the N files, they will  
25 be reviewed by the authorized nuclear inspectors.

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1 They're going through right now reviewing all the  
2 paperwork for the TVA N-5s. The N-5 itself for each  
3 partial system is probably only about 15 to 20 pages  
4 long. But the review file that backs that up is quite  
5 voluminous. Once we get done and we stack up those N-  
6 5 reports and the associated review file, it'll be a  
7 stack of paper about a 115 feet thick. And so they've  
8 got lots and lots of -- about 82,000 documents they  
9 have to go through in order to review all the  
10 components.

11 Anything else?

12 Then I'd like to turn it over to Ed.

13 MR. FREEMAN: Thanks, Bill. I'll be  
14 starting from Slide No. 25. Are the microphones on?

15 CHAIRMAN RAY: If I learned nothing today,  
16 I learned this. Try it now.

17 MR. FREEMAN: Test. Can you hear me?  
18 Good.

19 Again beginning on Slide No. 25. I wanted  
20 to give a quick overview of where we are in the  
21 schedule. We currently stand at just over 15 percent  
22 complete on the project. I think the official number  
23 is 16 point something. And we are on track to  
24 complete the project within the ascribed 60 months.

25 Our current focus there is that we have --

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1 construction area is preparing for the work that we  
2 have to complete in the upcoming Unit 1, Cycle 9,  
3 refueling outage.

4 I know you toured around the Plant. And  
5 Bill has mentioned some of the upgrades that we have  
6 to do. You may recall the vital inverter work where  
7 we're adding a new Unit 2 inverter. Part of the work  
8 in the refueling outage, of course, is to do the final  
9 connections of that inverter to its vital power board,  
10 reconfiguring the spare as a spare, and making sure  
11 that it all works. We can't gain access to the those  
12 boards and panels to do those final connections until  
13 the refueling outage. And so that's one of the jobs  
14 we'll do.

15 Bill mentioned some upgrades on the  
16 essential raw cooling water system, installing the  
17 crosstie for the strainer bypass, and the diver  
18 barrier. We have windows in the outage to do that.  
19 And we're currently doing our pre-outage fabrication  
20 so that those components will be ready to slide in and  
21 weld in and be usable at the conclusion of the outage.

22 We also have some interface valves that we  
23 have to replace. That's the valves that are basically  
24 the dividing point between Unit 1 and Unit 2 on a  
25 common system. They were leak sealed in the past.

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1 And so we basically have to take those valves out, put  
2 in a new valve that we'll be able to open later on  
3 when we're ready to do our testing.

4 Let's see. Other construction focus areas  
5 are -- we are working through that -- the extensive --  
6 I call it extensive. You can appreciate the amount of  
7 work that we've got to do to do the equipment  
8 refurbishment program. So a lot of the activities  
9 going on the field, that is one of our largest number  
10 of man hours that for a single program that we'll have  
11 invested. And we're keeping a focus on that.

12 And as Masoud said, continuing to increase  
13 the construction back load so that we can actually get  
14 the amount of construction activity in the field to be  
15 increased as well. We currently have about a half a  
16 million man hours of backlog in -- available to work.

17 The amount of planning that's going on right now  
18 doesn't sustain. Week to week, we'd like to get maybe  
19 50,000 man hours of work done per week. The last  
20 planning number that we saw was more in line of 12,000  
21 to 15,000 man hours. So we've got some productivity  
22 improvements to make there to where we can actually --  
23 I'll call it -- unleash the construction work force  
24 and start getting some of the bulk construction work  
25 done.

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1           So current critical path is through the  
2 essential raw cooling water system. We have, as Bill  
3 mentioned, we are replacing all eight of those pumps  
4 to increase the margin in that system. That's a  
5 system that is currently in operation. So that  
6 replacement and then later on, of course, the flow  
7 balancing that we'll have to do to start put some flow  
8 through the Unit 2 branches. We'll have to be very  
9 deliberate and careful since it is in operation.

10           It'll ultimately be controlled by the Unit  
11 1 operations work force. And we'll have to work  
12 through them to get as much of it done outside of  
13 refueling outages as possible. And then work through  
14 the rest of it at the next refueling outage if we're  
15 not able to complete it all on-line.

16           Other near critical path, I think we  
17 mentioned -

18           MEMBER STETKAR: Excuse me.

19           MR. FREEMAN: What did I skip?

20           MEMBER STETKAR: PRA.

21           MR. FREEMAN: Oh, I'm not done yet.

22           (Laughter)

23           MEMBER STETKAR: Well, you said you were  
24 going to the near critical path.

25           MR. FREEMAN: Well, actually the RCW is

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1 the critical path. PRA is kind of on its heels in the  
2 last schedule. We are doing a schedule review right  
3 now as we speak. We expect some other systems to kind  
4 of light up that we'll have to go resolve and make the  
5 construction activities try to get into more detail  
6 there.

7 PRA in particular, Bill mentioned that  
8 we're upgrading it to current requirements. It was a  
9 larger endeavor than we had expected. We've got a  
10 recovery plan. That has to -- Westinghouse is  
11 actually officially doing it for us. The folks in  
12 the operating side of the house have to play them.  
13 And they're receiving it. And it is the upgrade to  
14 Unit 1's as well. And of course we have to play in  
15 that review.

16 But we have laid out a time line that  
17 basically all the activity is on a schedule. The  
18 group responsible for them are listed on there. And  
19 we're monitoring every day in a phone call the  
20 progress against that schedule. And we believe that  
21 we can keep it.

22 When we say it's critical path, we want to  
23 be sure that there's a comfortable amount of review  
24 time once that's complete for everybody. I know that  
25 there's public reviews by regulatory bodies after

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1 we're finished with it. That we want to be sure that  
2 is comfortable.

3 So right now it is monitored daily. And  
4 it is on a plan that we believe that we can deliver it  
5 in plenty of time for the reviews in the licensing  
6 schedule.

7 MEMBER STETKAR: I don't want to take up  
8 too much time because I know we're running behind  
9 here. But is the scope of the PRA being extended to  
10 include events that effect both units?

11 MR. FREEMAN: Yes, it is.

12 MEMBER STETKAR: It's going to be an  
13 employee integrated --

14 MR. FREEMAN: Yes, it is. In fact, it's  
15 --

16 MR. BAJESTANI: Be careful of the time.

17 MR. CROUCH: No, no, no. We're good on  
18 time. In fact, we expect to answer some of the  
19 questions that were asked on the tour and have plenty  
20 time to do that as well. Other near critical paths,  
21 the reactor coolant system. And that's largely  
22 because the ERCW system provides a lot of the cooling  
23 water to the oil cooler, the motor coolers, and it's a  
24 supports system and will have to be done.

25 We were concerned for awhile that the pump

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1 delivery -- many of you saw that we're putting in new  
2 pumps. The motors are being refurbished. The  
3 original dates that we got for the delivery put those  
4 near critical path. It wasn't exactly on a critical  
5 path. But now the -- our vendor is improving those  
6 delivery dates. And we don't believe that's going to  
7 be a challenge. We'll have plenty of time to put  
8 those in and get those ready to go. But we'll still  
9 have to wait on the cooling water before we run it.

10 And similarly the reactor protection, the  
11 Eagle 21 system delivery, that's one of the systems  
12 that was mentioned previously that we had to retool  
13 and make again. That delivery was -- because it  
14 touches so many systems, interfaces with so many of  
15 the safety related systems, it was critical to get  
16 that equipment here, delivered, and hooked up and  
17 tested and everything to where it could support the  
18 pre-operational testing of all of those other systems.

19 But again that's another system that the  
20 delivery is looking pretty good to support those  
21 activities. And we are even into the installation  
22 plan details to where we can slide it in and do the  
23 insitu testing and then start hooking up the loops of  
24 the other systems and get those tested.

25 And I'll reemphasize that we are on track

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1 to meet our original project schedule.

2 MEMBER MAYNARD: Your Eagle 21 system, is  
3 that from the original equipment manufacturer or --

4 MR. CROUCH: Yes. We are getting it from  
5 Westinghouse, yes.

6 MEMBER BROWN: Your Eagle 21 is in Unit 1?

7  
8 MR. CROUCH: Yes.

9 MEMBER BROWN: And so it's these parts  
10 that you're having to deal with to replicate that?  
11 That's an old system.

12 MR. CROUCH: That's correct.

13 MEMBER BROWN: The architect -- let me ask  
14 again. The architecture stays the same? I mean  
15 you're tripping the same things? You got the same  
16 independence and channels, the instrumentation, the  
17 instruments, they all -- their little boxes are the  
18 same, etcetera?

19 MR. CROUCH: Yes.

20 MEMBER BROWN: The capacity, integrated  
21 circuit, whatever it is that's necessary to get the  
22 job done?

23 MR. CROUCH: Yes. With that, I'm going to  
24 Slide No. 26, please. Wanted to talk a little bit  
25 about the Unit Separation Security. There was, I

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1 think, a question that was sent to us after the March  
2 meeting. Go into a little bit into more detail.

3 Now that you've been on a tour of the  
4 Plant, you can see some of the things that we're doing  
5 to try to make sure we stay on our side of those  
6 fences and don't venture over into the operating  
7 spaces. At least when we do have to venture over into  
8 there to work on something, that we're fully aware of  
9 that we are in operating space and are taking  
10 appropriate care.

11 As you toured, you probably noticed you  
12 walked through the turbine building area there on the  
13 ground floor that divider fence, that orange fence  
14 that was down in between the units. You also probably  
15 noticed some of those yellow chains that stood in  
16 front of some of the electrical boards. Yellow chains  
17 are for everybody, not just us. I mean to make sure  
18 people are aware that there's critical loads on those  
19 electrical boards. The orange fence of course is the  
20 divider that we're obligated to stay on our side or at  
21 least get permission to go over onto the other side to  
22 do our work.

23 When there is Unit 1 equipment that's the  
24 Auxiliary Building. I don't know if everybody got to  
25 tour it. But that's kind of a common building to

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1 begin with. Those -- you'll see those yellow chains  
2 around all of the critical equipment with typically  
3 stop signs that say -- especially if they're trip  
4 sensitive equipment, it says, "Stop, you must have  
5 permission of Shift Manager to enter in."

6 Up in the Control Room you saw that  
7 curtain that was installed between the two horseshoe  
8 areas. That curtain was installed to -- provides both  
9 segregation and they really can't hear us on the other  
10 side of that curtain. I mean it does a very good job.

11 They were quite pleased with the way that -- it's  
12 really a sound insulating curtain the way that it  
13 works or how well that it works. We actually --

14 CHAIRMAN RAY: When those barriers come  
15 down, do you speculate yet on how you're going to be  
16 able to designate visually -- that's about the only  
17 way you can do it -- the difference between the units  
18 in electrical switch gear?

19 MR. CROUCH: Well, as far as -- you're  
20 talking about the unit designations?

21 CHAIRMAN RAY: Color coding or, yeah.  
22 Typically on a dual plant like this you use color  
23 coding. But you seemed to have used all the colors  
24 already. So, I'm not sure.

25 MR. CROUCH: I don't think that we've used

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1 all the colors.

2 CHAIRMAN RAY: I'm being a little  
3 facetious maybe.

4 MR. BAJESTANI: Actually we're going to  
5 cover all the questions that came up during the tour.

6 CHAIRMAN RAY: I thought it was a time I  
7 could ask that question because --

8 MR. BAJESTANI: We are going to address  
9 that. Let him finish this and then we're doing to.

10 MR. CROUCH: Okay. But anyway back to the  
11 curtain. When we first installed that, we did take a  
12 grinder on our side of it and the folks in the Control  
13 Room were listening for it and really couldn't hear  
14 it. So it's there for their purposes more than ours  
15 to make sure that they're not distracted by the  
16 grinding and the welding and all that that's going on  
17 on our side of it.

18 Other things that we did that we did open  
19 the North Security Portal to allow all the  
20 construction people to pass through there and not put  
21 a burden on the one for the Operations side.

22 The Unit 2 Project workers are all in  
23 yellow hard hats. The TVA folks are not -- I mean we  
24 are allowed to travel over into Unit 1 when we need  
25 to. But if you saw all the yellow hard hats, those do

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1 designate Unit 2 construction personnel so that  
2 they're visible. And if we see one of them wandering  
3 in areas that we don't think they belong, we can  
4 challenge that.

5 All those contractor personnel are also  
6 given badges with the orange background. Our badges  
7 are blue. And the Unit 1 folks' colors are blue. And  
8 of course you all had the benefit of a visitor's  
9 badge. You could see the distinction of that.

10 And one of the other key things that we  
11 did is we did cut construction openings. You walked  
12 over into containment, you saw the big chunk of  
13 concrete that we cut through so that you could walk  
14 without having to walk through the Unit 1's RCA and  
15 challenge the RADCON folks. And of course, it saves  
16 us from having to walk all the way around the building  
17 to get into Containment and do -- a large volume of  
18 our work will be in that Containment building.

19 So that's physical. Any questions on  
20 that?

21 The next slide, please.

22 As far as organizational separation, as  
23 Masoud mentioned, we are a separate group from the  
24 Operating group completely. And within our  
25 organization we have an Operations Group and a Work

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1 Control process that will recognize a potential  
2 interfaces with the Operating unit and the Operating  
3 Unit's personnel and will steer those items, those  
4 ones that need to will go through the Unit Work  
5 Control Group for ultimate approval and be included in  
6 their schedule.

7 The Reviewers that we have in our  
8 Operations Group, we've got a pretty big number, I  
9 think 12 or so former AUOs, Assistant Unit Operators,  
10 either from Watts Bar or from Sequoyah that walk out  
11 into the Plant with the folks doing work and basically  
12 shepherd them and make sure that, especially when  
13 they're in critical areas, that they don't go too  
14 close to that critical equipment.

15 The folks that are reviewing the work  
16 documents and the work process are former SROs from  
17 Watts Bar or Sequoyah. And they review every work  
18 order and design package. They're trying to recognize  
19 those interfaces. When they do recognize one, they  
20 work with the construction work force to be sure all  
21 the requirements of working in the Operating Unit are  
22 met. And in certain cases, they'll go with them.  
23 Those work items will be included and sent to Unit 1  
24 for review and ultimate approval. Be included in  
25 their schedule and risk reviewed in their schedule.

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1 And when necessary, those SORs will accompany any of  
2 the construction folks to help them explain what's  
3 going on and make it an easier review for the Unit 1  
4 folks so that they don't have to expend as much time.

5 Additionally, the activities that we have  
6 in operating spaces, we review it every day in our  
7 POD. But also those SROs that I mentioned, those  
8 former SROs that I mentioned, attend the Operations  
9 Turn Over Meeting and go over the activities that we  
10 have in operating spaces so that Operations staff is  
11 made aware every shift, every shift that we're  
12 working, of those activities that'll be going on in  
13 the Plant.

14 Any questions about that?

15 Oh, I'm sorry. I missed one bullet. The  
16 Problem Evaluation Reports that we write, the PERs,  
17 that's Corrective Action Documents. The Unit 1 folks  
18 read all of those. Our folks will do the screening.  
19 Our SROs will do the screening for potential  
20 operability issues. If we identify something on Unit  
21 1 or call something on Unit 1, they'll do that review  
22 and then divert that PER to the SROs for ultimate  
23 operability evaluations. But they are reading our  
24 PERs on a daily basis.

25 Questions about that? Okay.

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1 Next slide, please.

2 A few quick notes about the Unit  
3 Separation and Security aspects. The existing  
4 security plan for Watts Bar, it currently addresses  
5 the physical security controls for both the units. We  
6 didn't require any changes to recommence the  
7 construction activities for the activities going on.  
8 Had no changes required for the future operational  
9 activities. There may be some implementing procedures  
10 that require revision prior to fuel load. But those  
11 procedures will be revised on time.

12 The Watts Bar Security Plan, it will be  
13 revised to implement the changes resulting from the  
14 new security rule on or before March 13th of next  
15 year. So whatever requirements -- that's not required  
16 as a function of our project, but of course, the  
17 project will maintain an interest in that.

18 For the Cyber Security Rule, the  
19 protection of the visual computer communication  
20 systems and networks, these requirements are to  
21 provide high assurance that the digital computer and  
22 communication systems are adequately protected against  
23 the cyber attacks. That's being handled for TVA  
24 corporate. Mr. Arent over here, our Licensing  
25 Manager, is our member of the team on that. And TVA

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1 expects to submit its security plan on or before  
2 November the 23rd of this year.

3 And finally, the Aircraft Rule, Watts Bar  
4 Unit 2 is a required to develop and implement  
5 procedures that employ mitigative strategies similar  
6 for those for licensed plants to basically maintain or  
7 restore core cooling, containment, or spent fuel for  
8 cooling under the circumstances associated with loss  
9 of large areas of the Plant due to explosions or fire.

10 Current license requirements and that's what we're  
11 committed to and that's what we plan to do.

12 That's all I have, if there are any  
13 questions.

14 Masoud.

15 MR. BAJESTANI: Okay, during the tour we  
16 had some questions. I'd like to go over some of these  
17 questions just provide the answer.

18 CHAIRMAN RAY: Before you do, Masoud,  
19 could I direct a question to your QA Manager.

20 MR. BAJESTANI: Sure. Go ahead.

21 CHAIRMAN RAY: He'll need a microphone.

22 MR. BAJESTANI: Raul, come on up here.  
23 Come here. And don't speak Spanish.

24 (Laughter)

25 MR. BARON: This is intimidating presence.

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1 (Laughter)

2 CHAIRMAN RAY: Have you had occasion thus  
3 far in this work to stop work?

4 MR. BARON: We haven't had -- I haven't  
5 had to issue stop work. There have been several  
6 administrative holds. My managers, after issues have  
7 been identified, have taken the appropriate action  
8 which then at that point I didn't have to issue a stop  
9 work as a result of that.

10 We had some issues at the beginning where  
11 the program, inspectors program, we're implementing.  
12 They issue -- we issue a Corrective Action Document.  
13 They held the program. And they fixed all those  
14 issues before they continue.

15 CHAIRMAN RAY: You are prepared to issue a  
16 stop work?

17 MR. BARON: Oh, yes, sir. If I don't see  
18 that the corrective actions that are taken as  
19 sufficient and they don't take appropriate actions, I  
20 will stop work. I understand how to do that.

21 CHAIRMAN RAY: That's all I have.

22 MEMBER BROWN: Would you give an example  
23 of what you've had to do?

24 MR. BARON: Well, when we initiate --

25 MEMBER BROWN: What was the category other

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1 than the stop work? Was it administration?

2 MR. BARON: Yeah, usually you know the  
3 Management themselves when we identify an issue that  
4 is sufficiently significant, they will take  
5 appropriate action. They will hold the work and take  
6 the actions appropriate. We will review those actions  
7 to make sure we are satisfied.

8 MR. BAJESTANI: He's looking for a  
9 specific example. Give us a specific example.

10 MR. BARON: For example, we had a  
11 condition where during the initial baseline of the  
12 walk down for the supports on the 7914 we found some  
13 issues above and beyond what Bechtel --

14 MEMBER BROWN: What kind of an issue?

15 MR. BARON: Well, they were missing some  
16 of the dimensions. The drawings, you know, some of  
17 the required dimensions they were supposed to take  
18 during the baseline walk down weren't done.

19 MEMBER BROWN: The dimensions were  
20 associated, you said a walk down, during one of the  
21 walk downs of 7914?

22 MR. BARON: Right. There was a full walk  
23 down to verify the as-per conditions of the supports  
24 in place.

25 MEMBER BROWN: Was it largely a

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1 configuration control type?

2 MR. BARON: A configuration control type.

3 When I brought those issues up, Management took  
4 appropriate corrective action in cooling and stopping  
5 all the activities, going to all the trainings,  
6 creating a -- going back and redoing everything that  
7 they have done to that point. That by itself allowed  
8 me to evaluate the actions and monitor how they  
9 implemented corrective actions.

10 MR. BAJESTANI: Were there any material  
11 discrepancies that were --

12 MR. BARON: Well, this is the baseline to  
13 try to determine.

14 MEMBER BROWN: Oh, those were dimensional  
15 you talked about. So was any part of configuration  
16 control materials that are used being reviewed? So  
17 I'm just curious if there was any examples of those  
18 that came up? Whether something is two inches or one  
19 inch or one foot, two foot, whatever, that's one  
20 thing. But you got stainless steel where you should  
21 have titanium, for instance.

22 MR. BARON: No, none of those. None of  
23 those type of material issues. There were really  
24 dimensional issues. For example they missed the size  
25 of the weld which are critical when the size reviewing

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1 the configuration of the support.

2 We had a lot of those issues previously in  
3 all the plants when we started. So those what we were  
4 trying to ensure that the Bechtel, as far as control,  
5 that we do not QC by the field engineering walk down  
6 and the qualified individuals were picking up those  
7 dimensions and those configurations measurements so  
8 the design can evaluate correctly so we don't have to  
9 deal with it at the final point for the as-field  
10 configuration.

11 MEMBER BROWN: You said a weld dimension?

12 MR. BARON: Right.

13 MEMBER BROWN: The final weld dimension  
14 that's wrong?

15 MR. BARON: For example, they --

16 MEMBER BROWN: How do you correct that? I  
17 mean if it's supposed to be -- the weld band was  
18 supposed to be so wide or whatever, wider than it's  
19 supposed to be or narrower than it's supposed to be.  
20 All you can do is grind it out and do it again. Or  
21 you have to do an engineering evaluation to decide  
22 it's okay?

23 MR. BAJESTANI: This was in baseline  
24 verification of supports. So you measure. The walk  
25 down was to go measure the weld. They measure the

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1 weld. And after that, QA they do some sampling of  
2 those data that was taken to ensure the accuracy.  
3 When they did the evaluation, they found that there  
4 was some welds that the dimension -- if it was  
5 supposed to be a three-quarter of inch, it was not  
6 exactly three-quarter of inch. So this data all is  
7 going to be taken Central Engineering for their  
8 evaluation. So --

9 MEMBER BROWN: Has it been evaluated yet,  
10 or you're just in the process?

11 MR. BAJESTANI: No, he was in process of  
12 taking the data and sending to engineering for  
13 evaluation.

14 MEMBER BROWN: So you haven't finished  
15 that yet?

16 MR. BAJESTANI: No. It was part of the  
17 process.

18 MR. BARON: You got to remember what I was  
19 saying is, we initiated our baseline program. We  
20 wanted to make sure the program is going to work  
21 properly. We found discrepancies and we took the  
22 appropriate action so that the program will give us  
23 the resource that we need that engineering will have  
24 to evaluate to determine the as-field configurations  
25 of the Plant, which is also going to be determining

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1 what kind of a modifications we have to do or repairs  
2 on those type of supports that we have in the field.  
3 So this is just the baseline to determine that.

4 MR. BAJESTANI: The questions that came  
5 through during the tour. One was on the refueling  
6 water in the storage tank. The tornado question that  
7 came up whether or not it's qualified. How do we  
8 design that?

9 Bill, you want to answer that?

10 MR. CROUCH: We went and did a little more  
11 research based even beyond what I told you out in the  
12 field. The tank is made such that it actually extends  
13 below grade and has a concrete wall around it. It  
14 goes below grade. So this concrete wall protects the  
15 sides of the tank from the grade down to ensure that  
16 there's roughly 20,000 gallons of water still  
17 available in this tank structure.

18 Also down in the tank there are vortex  
19 suppressors. So that if you had any kind of debris  
20 that comes in, first of all the tank itself would hold  
21 the water. And the vortex suppressors would keep  
22 something from just being able to push up flat against  
23 a suction point on a pipe. So you'd still be able to  
24 get suction from the tank.

25 CHAIRMAN RAY: So the water volume that's

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1 required sounds to me like it is protected from  
2 tornado missiles?

3 MR. CROUCH: That's correct.

4 CHAIRMAN RAY: What's sticking up that you  
5 see is excess volume.

6 MR. CROUCH: That's correct.

7 MR. BAJESTANI: Okay, any other questions  
8 on that?

9 The next question that -- again I wrote  
10 down some of these questions as we were going through  
11 the tour. It was on the electrical board room. As we  
12 were going through from one room to another room,  
13 there was a question whether or not these were all one  
14 fire zone, or is it separate fire zone?

15 Steve, you want to answer that?

16 MR. HILMES: The way it's designed and  
17 it's our analysis is that each of the channels is in  
18 its own fire zone. Channel 1, you will have a Unit 1  
19 and a Unit 2. Unit 1 and Unit 2 for the -- are for  
20 Channel 1 are in the same fire zone. The Channel 2  
21 there's a "isolation zone" for Unit 2.

22 MEMBER BROWN: So it's an open isolation  
23 zone.

24 MEMBER SIEBER: It's allowed under --  
25 provided there's some pressure detection.

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1 MR. HILMES: Some pressure detection and  
2 no intervening combustibles.

3 MR. BAJESTANI: Any other questions on  
4 that?

5 The next one that we had was on the flox  
6 probe and thermocouples, the locations and what's  
7 different. This is an improvement that we're making  
8 on Unit 2. How is this designed -- and how many  
9 locations and so on and so forth?

10 Steve.

11 MR. HILMES: Steve Hilmes. What the  
12 system does is it uses the existing thermotubes --  
13 essentially there will be 58 probes. Each of those  
14 probes will have five -- detectors as part of the core  
15 power parameters. There will be one -- normal couple  
16 at the very top that from core exit thermocouple  
17 temperature -- detectors they are designed with --

18 MEMBER BROWN: How long years for the  
19 material -- six four zero?

20 MR. HILMES: Four zero, yes. The expected  
21 design life is around 20 years for the overall probe.

22 That may change as we go. It's just right now that's  
23 what -- what occurs after it comes out of the probe  
24 the core exit thermocouples actually go to our post X  
25 monitoring system, which is called the Continuity -- a

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1 system called Common Q. And too they are divided into  
2 two trains out of -- they exit the seal tank --

3 MEMBER BROWN: So that's a digital system.

4 MR. HILMES: That is a digital system.

5 MEMBER BROWN: Microsoft software based?

6 MR. HILMES: Yes.

7 MEMBER BROWN: Is that different from Unit  
8 1?

9 MR. HILMES: Unit 1 uses also a digital  
10 system. It's called ICCm 86. That pipe form wasn't  
11 available. So we're using THE Common Q system, which  
12 has the -- as far as the wind size itself which is the  
13 core power parameters, it's not a safe related system.

14 Those probes go into two panels that are mobile  
15 mounted and they'll be sent out, digitally out, to our  
16 -- that's pretty much the design of the system. The  
17 advantages of it are essentially you've got -- it's  
18 continuously taking readings so -- better information.

19 Additionally, you're eliminating many of the  
20 penetrations you have on the upper -- you're getting -  
21 -

22 MEMBER BROWN: And so there's one  
23 thermocouple per probe?

24 MR. HILMES: Per --

25 MEMBER BROWN: Per -- and it's at the top?

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1 MR. HILMES: Yes.

2 MEMBER SIEBER: The disadvantage is you  
3 lose the resolution of the actual profile, watch  
4 profile, of the form that you were getting -- so I  
5 presume -- I'll have to check this, but I presume that  
6 somebody has justified the lower resolution and the  
7 application to --

8 MR. HILMES: Actually Westinghouse  
9 predicts actually because of the fact that -- is  
10 monitoring and the different elevations -- that  
11 actually connects you with more accuracy --

12 MEMBER SIEBER: Are they all at the same  
13 elevation?

14 MR. HILMES: I'm not sure of that.

15 MEMBER SIEBER: The VF5 preferred or are  
16 they equally spaced or different probes at different  
17 elevations?

18 MR. HILMES: I can't answer that. I'll  
19 have to go back --

20 MEMBER SIEBER: Well, we can check that.  
21 But I need to ask more questions about it.

22 MR. BAJESTANI: We may be able to --

23 UNIDENTIFIED MALE: All at the same level,  
24 one probe --

25 MEMBER SIEBER: Well, there are things you

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1 can't detect unless you -- on the other hand, you  
2 can't detect -- if you use your up support detectors  
3 to do that anyway.

4 MR. HILMES: That's correct.

5 MEMBER SIEBER: Well, I'll just have to  
6 read up on it.

7 MR. BAJESTANI: We got the information.  
8 Let him go through and they can tell you actually  
9 exactly what the locations are. We have that  
10 information.

11 MEMBER SIEBER: Great.

12 MR. BAJESTANI: So any other questions on  
13 the wind size?

14 Okay, the next question that I wrote down  
15 was under the hydrogen ignitor, whether or not it's  
16 the diesel back power? It is?

17 Any questions on that?

18 Next question that we had was under color  
19 coding of the units, Unit 1 and Unit 2. Okay, we have  
20 had some discussion with Unit 1 as far as what do they  
21 want us to do really code, color, paint, different  
22 systems, different colors.

23 Unit 1 is actually coming up. They're  
24 going to give us their guideline what they want us to  
25 color. But it is going to be color coded which means

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1 Unit 1 is going to be different than Unit 2.

2 CHAIRMAN RAY: Okay, maybe we want a  
3 barber pole, usually stripe or something.

4 MEMBER SIEBER: Usually when they do that,  
5 they paint the walls different than the piping. It's  
6 all color coded depending on what's the pipe. For  
7 example, fire protection is red.

8 MR. BAJESTANI: Right. We're talking  
9 about -- the color. You know, there are certain  
10 systems that you have to have certain color, like --

11 MEMBER SIEBER: Right.

12 MR. BAJESTANI: -- oil system is yellow.  
13 Fire protection is red.

14 MEMBER SIEBER: Perhaps the wall could be  
15 -- the building could be any color you pick.

16 MR. BAJESTANI: That's really what we  
17 looking at.

18 MEMBER SIEBER: You got a choice of two.

19 MR. BAJESTANI: That's right, that's  
20 right. So we all going to get that guideline Unit 1  
21 what they want us to color or paint and that's what  
22 we're going to do.

23 MEMBER MAYNARD: You keep saying that get  
24 that guide from Unit 1. I'm assuming you're treating  
25 this as though when this is all over basically Unit 1

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1 ends up owning the entire both units.

2 MR. BAJESTANI: Yes.

3 MEMBER MAYNARD: Okay. That's why --

4 MR. BAJESTANI: That's the reason we have  
5 to keep --

6 MEMBER MAYNARD: What you're really saying  
7 that this site -- whoever is going to end up owning  
8 the site, just the site.

9 MR. CROUCH: Well, ultimately they have to  
10 license all the Operators and everything, whatever  
11 human performance things that they want to do, we're  
12 going to --

13 MEMBER MAYNARD: Got it. I understand  
14 that and I can understand what you're saying basically  
15 you don't want to become the owner of the site there,  
16 right? The way you kept presenting is kind of like,  
17 well, we're told there's going to be a Unit 1, Unit 2.

18 Neither could decide on kind of what they want. And  
19 that's --

20 MR. BAJESTANI: I don't know if you note  
21 this as we were going through Unit 1 and Unit 2.  
22 There are tags actually right now that are different  
23 color. Unit 1 actually is yellow; Unit 2 is blue.  
24 And then Unit Common is actually -- common equipment  
25 is white. So if you look at the unit ID, you can

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1 actually say, yes, this is Unit 1, this is Unit 2, and  
2 this is common equipment. But as far as component --,  
3 we're going to color it the way that it's different  
4 than Unit 1 and what we waited till essentially to  
5 really get that from Unit 1 what did they want, what  
6 color.

7 MEMBER STETKAR: Masoud, I didn't want to  
8 -- you have more answers to the questions from this  
9 morning. Let me just follow up on this.

10 MR. BAJESTANI: Sure, sure. Go ahead.

11 MEMBER STETKAR: Cause we're okay on time.  
12 We talked an awful lot in March and in this meeting  
13 about what's being done right now and in the next year  
14 or two in terms of physical equipment at the Plant and  
15 reviewing design calculations and licensing bases and  
16 so forth. You haven't talked very much about what's  
17 being done on the operational side of the house in  
18 terms of what are the plans for training -- not so  
19 much training, but retraining Operations personnel and  
20 looking at maintenance practices and so forth.

21 Because as Otto mentioned, we've heard  
22 there's a Watts Bar Unit 1 and there's a Watts Bar  
23 Unit 2. But in some time in the period of 2011 to  
24 early 2012, there will be a single site with two units  
25 that is operated by a set of trained Operators. In

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1 many cases those Operators have operated Unit 1 now  
2 for 13, 14 years and they know how Unit 1 operates.  
3 And in particular with a lot of shared systems, they  
4 know how those shared systems work. But their shared  
5 systems that are only Unit 1 systems now with a lot of  
6 extra equipment in some cases.

7 So what I'm curious about is it is  
8 necessary to -- I don't want to say the words untrain  
9 the Operators. But change Operators' state of  
10 knowledge about some of these systems and how they  
11 shall be operated, like alarm responses, abnormal  
12 procedures, not necessarily emergency procedures.

13 What kind of track are you on in terms of  
14 that type of training and preparation? Also things  
15 like preventive maintenance programs, scheduled  
16 maintenance, you know, do you have a lot more  
17 flexibility right now than perhaps you might have  
18 after Unit 2 starts operating?

19 MR. BAJESTANI: Let me start by saying  
20 that right now Unit 1 staffing, they have about a  
21 little bit over 500 people. When we start this  
22 project, when we actually start Unit 2, we going to  
23 have a little bit over 800 people. So we are hiring  
24 300 permanent -- over 300 permanent employees for two  
25 unit operations.

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1 We have already actually we started hiring  
2 back in October of 2007. The first class that we  
3 actually had was AUO classes for two unit operations  
4 so we can get ahead of the game. Because that was one  
5 of the lessons learned also from Browns Ferry, we  
6 started with the late. So we have actually had a  
7 number of Operator class that they're going to right  
8 now.

9 With respect to maintenance procedures,  
10 operating procedures, alarm response procedures,  
11 actually we, Unit 2 Project, we are actually writing  
12 those procedures right now. We're going through  
13 Operation is writing operating instructions. We're  
14 going to be writing all the preventive maintenance.

15 But the people that we are hiring on Unit  
16 1, the 300, over 300 people, that we're hiring, these  
17 are the same people that they're going to come in on  
18 Unit 2 side and drum component testing, system  
19 testing, integrated testing to get familiar as we go  
20 through all this testing, alarm response, so on and so  
21 forth that we're going to do. So we're going to get  
22 that type of experience from Unit 1 or from the total  
23 number, these 800 people, that they will be working  
24 some of them on Unit 2 to get familiar.

25 So when we get to a point that we're going

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1 to load fuel, we actually transition from construction  
2 procedure. Before we load fuel, everything is going  
3 to be going into the operating side. We're going to  
4 be using operating procedures.

5 So this process is already started. The  
6 only thing that we planning to do right now we looking  
7 at, okay, we are changing valves, motors, pumps.  
8 We're going to be actually putting a PN in place for  
9 the next two or three years that essentially a lay-up.

10 We're going to have to go take pumps, motors, so on  
11 and so forth. We are looking at actually writing the  
12 procedures. We are looking at bringing Unit 1 staff -  
13 - really it's going to be Unit 1, 2. The guys that we  
14 have hired bring them to actually do some of this work  
15 so they can start learning. And if there is anything  
16 different, they can actually start looking at the  
17 stuff now.

18 MEMBER STETKAR: That's good. I mean that  
19 sounds really good that you've learned to start that  
20 process now rather than waiting for another or  
21 something like that.

22 MR. BAJESTANI: Exactly.

23 MEMBER STETKAR: I think a little bit of my  
24 focus was the context in which that new training is  
25 going. In other words, if I have a shared system with

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1 five pumps that is supplying flow on two units what I  
2 do when a pump trips might be a little bit different  
3 than if I have two pumps normally running with three  
4 extra pumps supplying only one unit so that then my  
5 responses and the way I think about operating that  
6 system or perhaps precautions about the outline of it  
7 might be a little bit different than when I have that  
8 fully unit load.

9 So I'm just curious whether you're  
10 training your people now within the context of your  
11 understanding of the way the combined dual unit site  
12 will work, especially for these shared systems. I'm  
13 not so concerned about the stand alone systems on  
14 either unit.

15 MR. BAJESTANI: That very good question.  
16 Again part of really this startup process is  
17 especially on some of this shared safety related  
18 common systems, like ERCW pumps. We're replacing all  
19 the eight pumps. We're going to actually have to go  
20 and do a flow balancing. That's going to be a very  
21 tough job really operating and really another unit to  
22 get the flow and so on and so forth. Actually that's  
23 part of the procedure and process that Pete is putting  
24 together, our Pre-op Startup Manager.

25 Some of this work we may actually have to

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1 do during core off-flow type period. I don't know  
2 exactly how we're going to do this. But we are  
3 planning all this. We're going to bring the --  
4 obviously we're going to write the process and  
5 procedures. We're going to go through different  
6 things. If this happen, what is going to happen?  
7 What is going to do to their flow for certain  
8 equipment? These are generators. You have to  
9 maintain certain cooling water. Okay, as I'm going  
10 through this flow balance, tripping the pump, what is  
11 it going to do to the tech spec equipment that's  
12 required for operating?

13 So all that is being -- again we're  
14 looking at the stuff and we're trying to figure out,  
15 okay, how we're going to do certain things and when we  
16 need to do it. And the Operator involvement up front.

17 Based on again the fact that we are doing this hiring  
18 up front and we have done the hiring up front, we're  
19 going to get some of these Operators. They are going  
20 to be actually integrated into our Pre-op Startup  
21 Program as we go through the program.

22 MR. FREEMAN: And I would add to what  
23 Masoud said that neither one group does have a what I  
24 call an Operational Readiness Group that includes  
25 Operator -- the operations training. They are

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1 beginning to look at the changes. This week  
2 specifically I attended the meeting that they were  
3 looking at the unit difference.

4 You know, we want to be an exact match,  
5 but inevitably some of the control systems we know are  
6 going to be slightly different. So they're starting  
7 to look at those, both individually for Operator  
8 training needs and they'll look at them in the  
9 aggregate as well just to be sure that we don't build  
10 something that's too cumbersome for that to a  
11 difference there.

12 But anyway they have a group that's  
13 focused on that. They're training the new Operators  
14 that Masoud is speaking of. And since I'm on the  
15 Committee, I'll be glad to say, look, you do need to  
16 change some things. If you're training new Operators,  
17 we don't want to lose focus on the fact that, yeah,  
18 those Operators that are out there today have been  
19 running one unit for 13, 15 years by the time we get  
20 this unit on.

21 And they need to consider changes to the  
22 common system. They need to consider deprogramming,  
23 if you will. I think that's what you're getting at,  
24 deprogramming some of the Operators from single unit  
25 mentality. I'll address that with them. But Unit 1

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1 ultimately has that --

2 MR. BAJESTANI: And part of our Startup  
3 Program really is each organization is going to go  
4 through and do a detailed self-assessment as far as  
5 readiness for operating two units. Those are some of  
6 the questions that is going to be part of. Okay, what  
7 are we going to do? And those self-assessment we have  
8 actually started that now. What do we need to do?

9 VICE CHAIR ABDEL-KHALIK: Would you expect  
10 any changes in the -- any differences in the set  
11 points, for example, for the reactor protection  
12 system?

13 MR. BAJESTANI: We need to get Steve back  
14 here. What we do expect some changes. The reason for  
15 that we are licensing this Plant to the original  
16 megawatt thermal. Unit 1 right now they do have the  
17 delineate flow meter which they got 1.4 percent extra  
18 power, megawatt thermal, which is going to have some  
19 impact on some of the set points.

20 VICE CHAIR ABDEL-KHALIK: Would the  
21 differences in the set points with the reactor  
22 protection system cause any confusion if you have a  
23 dually licensed Operator?

24 MR. BAJESTANI: Again part of this unit  
25 difference is we are evaluating every one of this

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1 changes, if there are some set point changes, and see  
2 what the impact is on the Operator and dual unit  
3 operations. But personally I don't know of any -- and  
4 again I'll have to ask Steve when he gets back.

5 Or maybe, Frank, you can address that?  
6 Any set point change?

7 MR. COOMBS: This is Frank Coombs. We  
8 don't expect either set point changes that would meet  
9 the two units. And as Masoud mentioned, we will start  
10 up with the original licensed power. Soon after we  
11 license the unit, we will be requesting from the NRC  
12 to use the -- flow meter, which will upgrade our power  
13 to the same power level as Unit 1. At that point in  
14 time again we will have to revise set points for to  
15 get the two to match. There will be a short period of  
16 time there where we would have a difference. But then  
17 it will be later when maybe some factor in the first  
18 or second cycles.

19 VICE CHAIR ABDEL-KHALIK: So you wouldn't  
20 expect that any of the physical differences that  
21 you're, you know, forced to use a different kind of  
22 piece of hardware because of obsolescence to cause any  
23 differences in the set points for either the reactor  
24 protection or set points for various systems?

25 MR. BAJESTANI: No, we don't expect that.

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1 But again I want to have Steve just confirm.

2 Do you understand the question, Steve?

3 MR. HILMES: Differences in set points  
4 based?

5 MR. BAJESTANI: Differences in set points  
6 based on the megawatt thermal. Is that going to  
7 create any problem as to reactor protection?

8 MR. HILMES: Not for the change in reactor  
9 powerage, it should not.

10 MR. CROUCH: Any of the instrument changes  
11 cause a change in response time or anything like that  
12 that might affect set points or --

13 MR. HILMES: No. The only thing that I'm  
14 expecting right now as far as deltas and set points is  
15 steam generator level and that has nothing to do with  
16 any instrument change, implementation changes. All it  
17 has to do with the difference in steam generating --

18 VICE CHAIR ABDEL-KHALIK: My concern is  
19 if there are significant differences, then it may  
20 cause confusion amongst the Operators.

21 MR. BAJESTANI: Sure, exactly.

22 MR. HILMES: We went through this before  
23 we went in and started selecting different transcripts  
24 and stuff. We went through that with Westinghouse and  
25 --

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1 MR. BAJESTANI: Okay, I think those are  
2 all the questions that I had during the tour. So if  
3 there is no other questions, I was just going to  
4 basically summarize the presentation and turn it back  
5 to you.

6 CHAIRMAN RAY: I think we have time for  
7 one more. Ten minutes. Or is your summary going to  
8 take longer than five minutes?

9 MR. BAJESTANI: My summary is going to  
10 take five minutes or less.

11 MEMBER BROWN: Just a quick -- can I?

12 CHAIRMAN RAY: Yes.

13 MEMBER BROWN: You're talking about  
14 refurbishing -- inspecting and refurbishing a large  
15 number of components: flox valves, etcetera, whatever.

16 And I guess my question is if there's a large number  
17 of items identified as a set or there may some more.  
18 And I got the implication that those are all going to  
19 be done here by site personnel. Or are you shipping  
20 some of the more complex components back to the  
21 original vendor or as close to the original vendor as  
22 you can get that have the people used to taking those  
23 things apart and putting them back together as opposed  
24 to somebody who has never taken one apart? Even  
25 replacing packing in a valve if you haven't taken that

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1 valve apart before, you can mess it up when you put it  
2 back together again. So that was my --

3 MR. BAJESTANI: On the major equipment,  
4 major safety related pumps, we are removing those  
5 pumps. Actually we send them to the vendor for  
6 refurbishment. Same thing with the big motors. Same  
7 thing with -- again, major components. On valve  
8 packing, we have trained people actually here. We  
9 have brought people over here to do valve packing  
10 changing.

11 MEMBER BROWN: You have brought people  
12 here?

13 MR. BAJESTANI: We have brought people  
14 here.

15 MEMBER BROWN: From?

16 MR. BAJESTANI: It's actually is part of  
17 the subcontractor to Bechtel. There's another company  
18 that's actually doing that for us right now.  
19 Specialty vendor on valve packing. We just brought --  
20 I don't remember exactly the name of the company.

21 MEMBER BROWN: To answer that, let me  
22 paraphrase so I don't get eaten alive here. Safety  
23 related components, pumps, major valves, anything  
24 that's safety related, those you're trying to get  
25 back? You were sending back or using the people that

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1 know how to deal with them as opposed to trying to do  
2 them here on site?

3 MR. BAJESTANI: That's correct.

4 MEMBER BROWN: Or bringing people on site,  
5 I guess, if you brought the vendor here. Okay. That  
6 answers my question. Thank you.

7 MR. BAJESTANI: Okay, in summary, again,  
8 we have spent a lot of time actually establishing what  
9 we have as far as the material and condition, look at  
10 the equipment, what we have have, what's missing, the  
11 condition of the equipment. We have evaluated all the  
12 lessons learned from Watts Bar Unit 1, Brown's Ferry  
13 Unit 1, and the industry. All the lessons learned  
14 from early '80s. Some of the plants that have had  
15 problems. We have looked at all those. We have  
16 incorporated those lessons learned into our process  
17 and procedures to make sure we don't have the same  
18 problem over and over.

19 We have developed and implemented programs  
20 to install the new equipment where we need it. You  
21 heard some of the new equipment that we are going to  
22 be putting in. The refurbishment program is extensive  
23 refurbishment program. We are also looking at any  
24 place that we can actually improve the material or  
25 equipment performance. We are looking at that too.

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1 Again, Bill went over some of the examples of  
2 improvement.

3 We are taking the opportunity. We know  
4 that because there is essentially no dose, certain  
5 things we can do now before we start up, we're going  
6 after those. We are actually going to make some of  
7 those changes before we start up. Again these are  
8 some of the improvements. Opportunity to take to when  
9 we come back with this unit have it better, more  
10 reliable with better operating capacity factor.

11 So again in summary we have looked at all  
12 this. We have pretty good planning place. And we  
13 really believe that when we finish with this project,  
14 we're going to have a unit that's going to be running  
15 well with some of the changes, some of the lessons  
16 learned that we have learned from industry or TVA.

17 The other thing that we've been doing  
18 actually again everything that we -- Bill mentioned on  
19 the regulative framework and all this different  
20 program that as we're going through we've been  
21 communicating all our programs how we're going to do  
22 it with the Region. Region has significance presence  
23 here and also with NRR. So all this has been  
24 coordinated and we've had a very good communication  
25 between Region, us Region and us and NRR.

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1           That's really all I had unless you had any  
2 other questions. If not, I'm going to turn it back to  
3 you.

4           CHAIRMAN RAY: Okay, thank you. What  
5 we're going to do from here is I'll check with the  
6 other members here about any further questions for  
7 TVA. Then we'll have a period of public comment. I  
8 want to be clear that this is an ACRS meeting. Public  
9 comments will be made to the ACRS. And if there's any  
10 response, we'll make it.

11           With that said, I want to congratulate you  
12 on a very excellent response to our request to visit.  
13 Your team has done in my judgment a really  
14 outstanding job of responding to our questions. And  
15 we sincerely appreciate it.

16           MR. BAJESTANI: Appreciate it.

17           CHAIRMAN RAY: As always, there's the  
18 caveat that we can only speak for ourselves as  
19 individuals at this point. So with that, let me ask  
20 is there anything else anybody would like to say to  
21 TVA? Question, comment? Oh, okay. But again, thank  
22 you very much.

23           MR. BAJESTANI: Thank you. Appreciate  
24 that.

25           CHAIRMAN RAY: Now, Maitri, do we have a

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1 list of any persons who want to make any public  
2 comment?

3 MS. BANERJEE: Well, right now we have  
4 three members of the public attending the meeting. I  
5 don't know maybe we should check to see if anybody is  
6 on-line or not. Will somebody do that? Is there  
7 anybody on-line who wants to make any questions or  
8 comments to the ACRS members present here. Please  
9 identify yourself and speak.

10 Is there anybody back there?

11 CHAIRMAN RAY: Any member of the public  
12 present?

13 All right, we're going to use this  
14 microphone here. We have a microphone. May I ask you  
15 to please stand and identify yourself?

16 MR. CALLEN: I can identify myself in a  
17 couple of ways. I'm Said's friend. Anyway, I live --  
18 I have a cabin about five miles north of here on Watts  
19 Bar Lake.

20 CHAIRMAN RAY: Name?

21 MR. CALLEN: My name is James, Jim Callen,  
22 C-a-l-l-e-n. I'm also Professor Emeritus Engineering  
23 Physics of the University of Wisconsin. Anyway I  
24 actually have three questions from most of the  
25 presentations.

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1           The first is if I understood correctly,  
2 the indication was that on Watts Bar 2, you would use  
3 analog controls on the basic controls of the reactor.

4           I would just note that it seems to me those must be  
5 getting difficult to acquire. And if you think of a  
6 40-year license, let alone a possible extension to 60  
7 years. I kind of wonder if that's the right thing.  
8 And I would be curious, if I got that right.

9           And secondly if there's a plan to move  
10 from a basically analog control system to a digital  
11 control system that might be more vendor available  
12 over some extended period of time?

13           CHAIRMAN RAY: Well, we'll take your  
14 comments, sir. You framed your first comment in the  
15 form of a question. But thank you for that. Go  
16 ahead.

17           MR. CALLEN: Well, the second one is the  
18 Chairman here has asked some questions about ways of  
19 delineation of responsibilities between Bechtel and  
20 TVA. And I got confused in the discussion having to  
21 do with what I understand are nuclear certifications,  
22 etcetera, where it sounded like Bechtel was the only  
23 sign off there. And the question, and the TVA almost  
24 just pass through. And so it's just a question, an  
25 observation that didn't -- it sounded ambiguous to me

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1 as if TVA did not have sufficient nuclear capability  
2 and professional engineers who could sign off. But  
3 anyway...

4 And the third comment, which I'm a little  
5 surprised after living five miles from here, was the  
6 comments on the preceding to the next -- if you could  
7 go back one -- but anyway it says Aircraft Rule.  
8 Watts Bar 2 is exempted from the Aircraft Rule. I'm  
9 not aware of what that rule is. I presume it's a 911  
10 thing. And secondly I'm curious what exactly that  
11 means.

12 CHAIRMAN RAY: Okay, thank you. If you  
13 could -- you've given us your name. If you could give  
14 us your address, a way we could get back to you.

15 MR. CALLEN: Sure.

16 CHAIRMAN RAY: We'll make sure that the  
17 Designated Federal Official right here has taken it.  
18 And we'll deliberate and decide if we should respond  
19 or someone else should. Thank you.

20 Anybody else?

21 Okay, seeing none, then we pass into the  
22 last phase on the -- well, next to the last phase,  
23 adjournment, last phase actually. Next to the last  
24 phase is Subcommittee deliberations. And we can  
25 deliberate on the comments just heard as well as the

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1 input that we've received all day from TVA. And the  
2 purpose of this is to identify things that we want to  
3 take away from here for our own further action perhaps  
4 or dialog among the members for a few minutes based on  
5 what we've seen today.

6 And so as we usually do, I'll start with  
7 Otto and see if he has anything he would like to say.

8 MEMBER MAYNARD: Well, first of all I do  
9 appreciate the time and the tour. I know how much  
10 trouble it is to put those on. I think we heard a lot  
11 of good things today of what's been said.

12 I think the proof is in as they implement  
13 them how are those being inspected and verified and  
14 how are issues going to be handled. We'll be talking  
15 with the Region later this week a little bit about  
16 their plan for that.

17 But I think it's a little early in the  
18 process to be drawing any final conclusions on the  
19 applicacy (sic) of all this. But what I've heard so  
20 far has been encouraging that there is a process in  
21 place to deal with this.

22 So I don't have anything else that I take  
23 away from this point.

24 CHAIRMAN RAY: John?

25 MEMBER STETKAR: I'd also love to add to

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1 Otto's thanks for being very responsive. And I think  
2 we -- I certainly have a much better appreciation of  
3 what's happening here. I think also as Otto  
4 mentioned, it's -- we're well into this process. He  
5 mentioned a couple of years, but things seem to be  
6 moving quite rapidly. It's not -- it sounds like TVA  
7 has a very thorough, systematic process laid out to be  
8 sure that everything is accomplished in a very  
9 carefully thought out process.

10 Quite honestly, I'm not sure whether  
11 you're going to make your target dates for loading  
12 fuel. But that remains to be seen. I would encourage  
13 TVA to keep on a very systematic process, not to worry  
14 too awfully much about that schedule. I know that's  
15 easy for me to say.

16 MR. BAJESTANI: Easy for you to say.

17 MEMBER STETKAR: It's easy for me to say  
18 because I'm not a repair.

19 CHAIRMAN RAY: Okay. Jack.

20 MEMBER SIEBER: I also appreciate the  
21 efforts of TVA and the Resident Inspector and the  
22 Region 2 Inspectors for their effort in giving us a  
23 good presentation. I was interested in coming here  
24 because I was responsible for the restart of  
25 construction of the second unit also, and I know what

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1 an effort that was.

2 And I have seen other units where  
3 construction was stopped and the conditions after a  
4 period of time were not good. I was pleased to see in  
5 the case of Watts Bar 2 that there has been  
6 preservation going on, that the plan of attack to  
7 resume construction seems to me pretty reasonable.  
8 And I would not want to see you go on-line without my  
9 further attention. However, I expect that you're  
10 starting in the right direction.

11 All of my questions have been answered to  
12 one extent or the other. Except I need to follow up  
13 on the -- monitoring and how to -- myself.

14 The commentor's question, I think, are  
15 interesting. I would -- I intended to ask his third  
16 question but did not. In the time that I would like  
17 to hear the answer to and that is the exemption from  
18 the Aircraft Rule. What is the basis for the  
19 exemption? Does the exemption last forever? Or does  
20 it last until you start up? And so I'm sure either  
21 the staff or the licensing can give us those.

22 CHAIRMAN RAY: We will meet on this  
23 further. I'm a little reluctant to pursue licensing  
24 issues in this one. Just because it's not something  
25 that we made -- prepared to respond to without some

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1 further research.

2 Said?

3 VICE CHAIR ABDEL-KHALIK: I agree with the  
4 comments made by Otto and John. I found the tour to  
5 be very valuable. I had questions about the material  
6 conditions of Plant, given that long time period that  
7 the Plant has been sitting there. I found it to be  
8 very reassuring to see the current material condition.

9 Thank you.

10 CHAIRMAN RAY: Charlie?

11 MEMBER BROWN: Yeah, I wanted to echo  
12 Said's comment relative to the valuableness of seeing  
13 the material conditions. That was obviously a big  
14 question for a lot of us. I don't have any other  
15 additional items other than to anecdotally express not  
16 a negative response. I wouldn't want our public  
17 commentor to think analog is really not gone. I mean  
18 it's -- (Laughter) In spite of everybody's  
19 infatuation with digital instrumentation, analog is  
20 alive and well and you can build a lot of stuff. A  
21 few piece parts might be a little difference.

22 And as a matter of fact, just to show you  
23 how archaic it really is, they're still waging  
24 arguments about whether sound produced by vacuum tubes  
25 is better than or less than that which is digitally

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1 mastered by those who are just think they have sample  
2 rates and high speed processors. And believe me, if  
3 you've ever listened to one --

4 CHAIRMAN RAY: Don't do a lot better.

5 MEMBER BROWN: -- have sensitive ears,  
6 vacuum tubes are better.

7 CHAIRMAN RAY: Well, but so you're using  
8 that by way of analogy

9 MEMBER BROWN: Exactly.

10 CHAIRMAN RAY: You're not saying --

11 (Laughter)

12 You're not suggesting vacuum tubes.

13 MEMBER BROWN: No, no. Anecdotally. I  
14 agree with you. I'm not -- I'm done. I exited vacuum  
15 tube in 19 -- well, actually in 1985 in the nuclear  
16 naval program. And I was thankful we eliminated  
17 those. That's another story. No, I'm just kidding.

18 But anyway that's -- so again I do  
19 appreciate the candor and I appreciate the responses  
20 to the questions that I asked. I appreciate the rapid  
21 responses. I've had some drag outs. So thank you  
22 very much.

23 CHAIRMAN RAY: Maitri, is there anything  
24 else we need to do?

25 MS. BANERJEE: I guess we finish

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1 Subcommittee deliberations. So you can now adjourn  
2 the meeting.

3 CHAIRMAN RAY: Done.

4 (Laughter)

5 (Whereupon, this meeting was concluded at  
6 4:05 p.m.)

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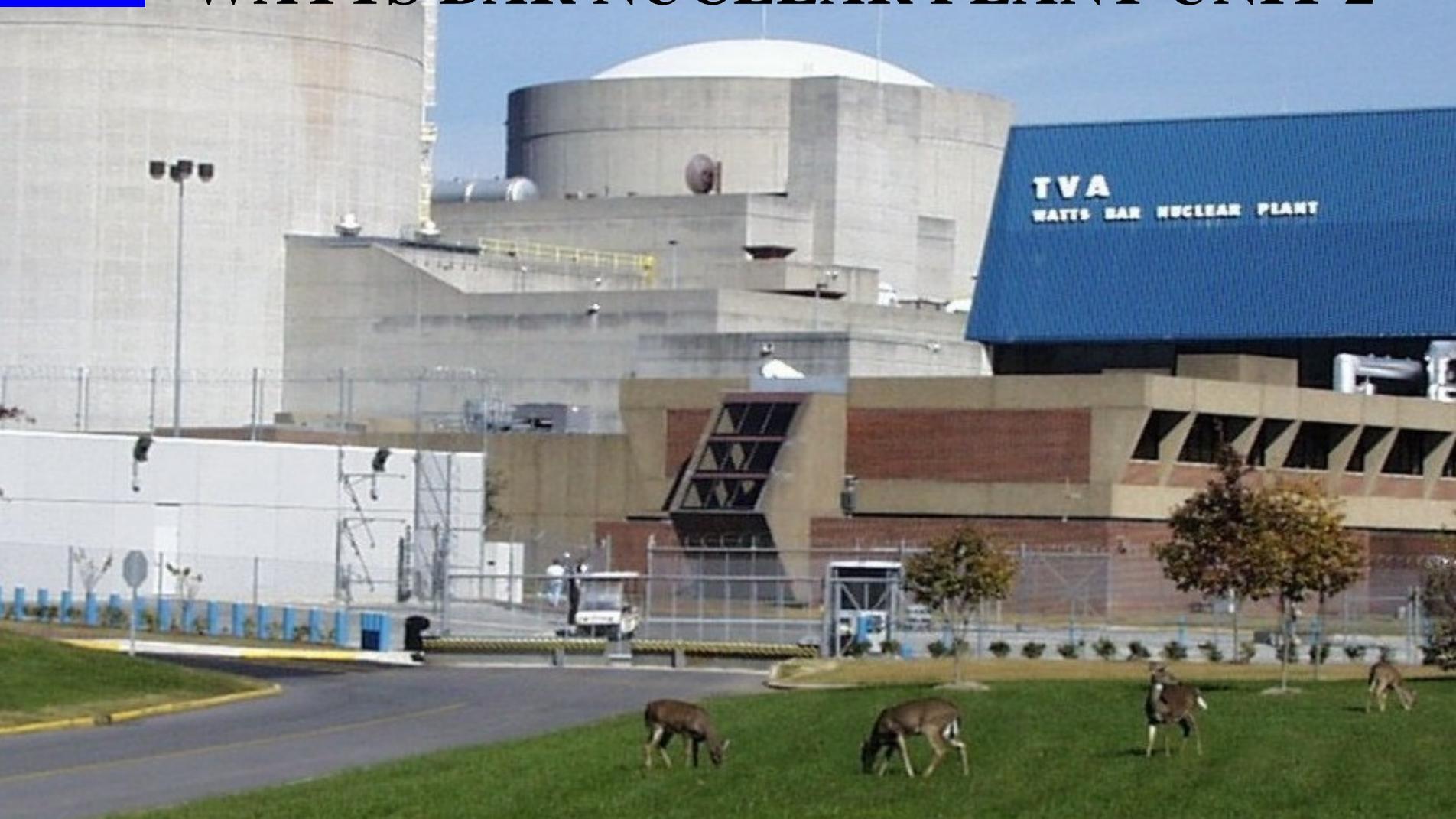
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# TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR PLANT UNIT 2



**Advisory Committee on  
Reactor Safeguards**

**July 28, 2009**

**WBN Tour and Meeting**

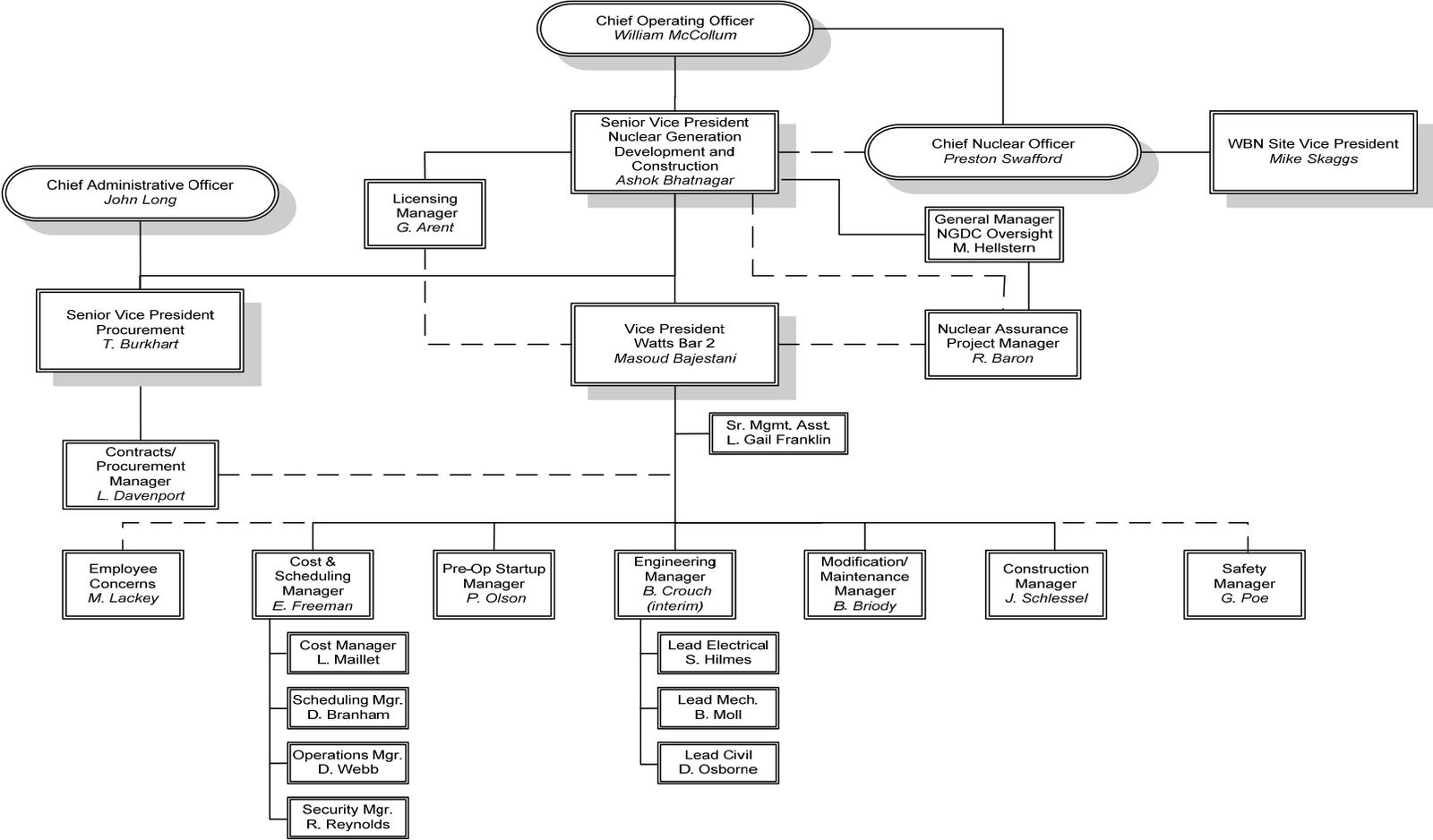
# Agenda

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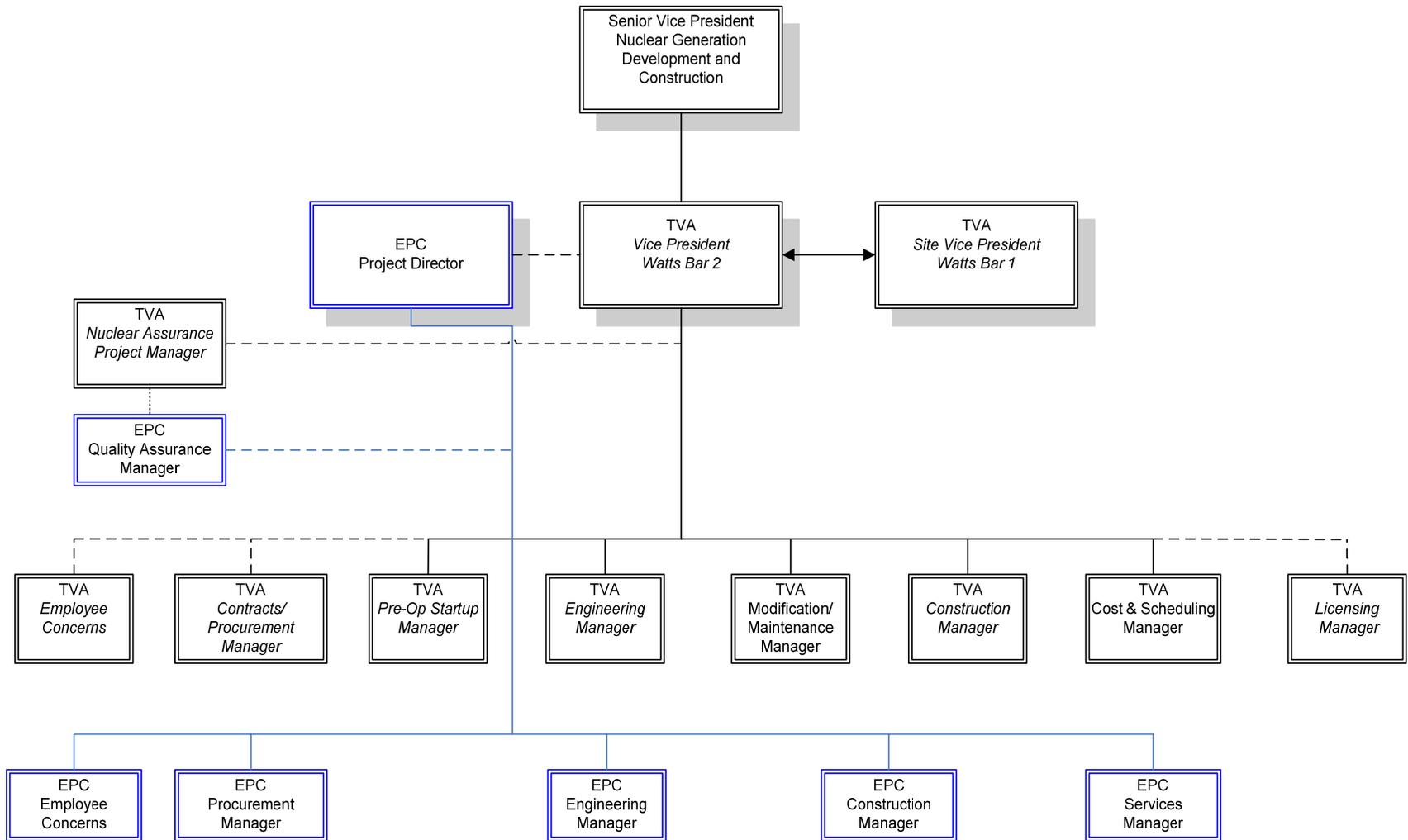
- Introductions
- Organization
- WBN Unit 2 Material Condition
- WBN Unit 2 Design, Licensing and Construction Activities
- Security and Separation of Activities Between Units
- Conclusion

# WBN Unit 2 TVA Organization



Updated 07/17/09

# WBN Unit 2 Construction Organization



M. Bajestani

# WBN Unit 2 – Project Staffing

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## Current Staffing – Key Areas

- Engineering – Bechtel - 732 / TVA - 55
- Construction – Bechtel Manual - 401 / TVA – 9  
- Non-Manual - 236
- Project Controls – Bechtel - 82 / TVA - 15
- Nuclear Assurance – Bechtel - 42 / TVA - 6
- Supply Chain – Bechtel - 33 / TVA – 7
- Startup Testing – TVA – 44
- Operations – TVA - 16

## Future Staffing Forecast – January 2010

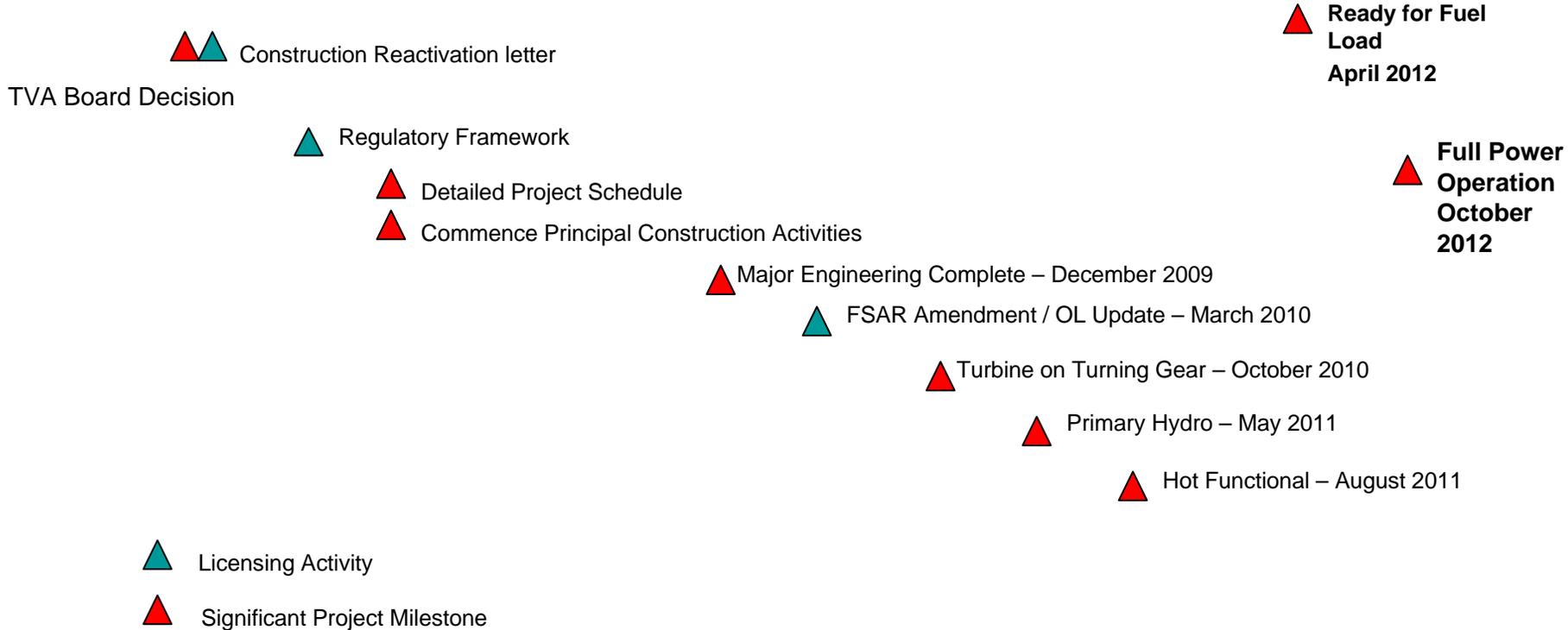
- Engineering – ~600
- Construction – ~1200

# WBN Unit 2 Integrated Schedule



FY 2007				FY 2008				FY 2009				FY 2010				FY 2011				FY 2012				FY 2013																			
O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M

DSEP



# WBN Unit 2 Material Condition

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## Evaluation of Material Condition

- Performed Plant Walkdowns
  - Identify Missing/Removed Components
  - Baseline to Determine Current Configuration of Installed Equipment
    - Electrical
    - Mechanical
    - Civil
- Reviewed Quality Assurance Records to Support ASME Section III Program
- Results Addressed by Engineering Modifications and Refurbishment Program

# WBN Unit 2 Material Condition



As-found condition of internal piping shown below.



Containment Spray Piping – 676' Pipe Chase

B. Crouch

# WBN Unit 2 Material Condition



Centrifugal Charging Pump  
2B-B



Pump recently removed for refurbishment. Internal suction piping shown above and discharge at left.

# WBN Unit 2 Material Condition



Centrifugal Charging Pump 2A-A



Pump is currently being removed for refurbishment. Internal pump casing shown at left and suction piping at right.



# WBN Unit 2 Material Condition



## Ventilation Damper

Damper sent off-site to vendor facility for inspection, evaluation and recommended refurbishment and testing requirements.

# WBN Unit 2 Material Condition

---

## Refurbishment Program

### Equipment Scope

- Safety Related / Non-Quality Related
- Active / Passive

### Refurbishment Program Process Steps

- Identification
- Classification
- Inspection/Evaluation
- Refurbishment/Replacement
- Component/System Testing

### Required Outcome

- Plant meets original licensing, design and equipment vendor specifications

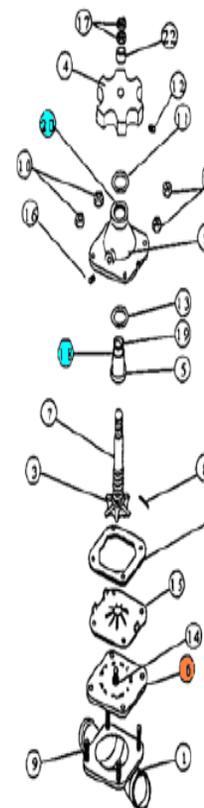
# WBN Unit 2 Material Condition



## Refurbishment/Replacement Commodity Estimates

<b>COMMODITY</b>	<b>TOTAL PROJECT (estimate)</b>
Pumps	80
Motors	90
Breakers	600
Manual Valves	4000
Air Operated Valves	500
Motor Operated Valves	200
Safety/Relief Valves	300

# WBN Unit 2 Material Condition



ITEM	DESCRIPTION
1	VALVE BODY
2	BONNET
3	COMPRESSOR
4	HANDWHEEL
5	BUSHING
6	DIAPHRAGM
7	SPINDLE
8	SPIRAL PIN
9	BONNET STUD
10	BONNET NUT
11	SHIM WASHER
12	SET SCREW
13	THRUST BEARING
14	DIAPHRAGM STUD
15	FINGER PLATE
16	"V" TYPE VENT PLUG
17	JAM NUTS (OR LOCK NUT)
18	"O" RING SEAL COLLAR
19	SEAL COLLAR
20	"O" RING BONNET
21	GASKET
22	SPACER

• MAY NOT BE PRESENT DEPENDING ON VALVE SIZE OR TYPE.

# WBN Unit 2 Material Condition



12" Swing Check Valve

The refurbishment activity has identified surface indications (right) which could affect the pressure boundary in the bonnet gasket area which will likely require a Code repair.





# WBN Unit 2 Material Condition

Data Sheet 1  
(Page 1 of 1)

## Check Valve Data Sheet

As-Found Inspection:

As-Left Inspection:

**CHECK VALVE GENERAL INFORMATION:**

(Enter N/A if information was obtained previously or is not available).

UNID _____	Type (Swing, Lift, piston, etc.) _____
WO No _____	Size _____
Manufacturer _____	
Model/Serial No _____	

Location: (ENTER in the Remarks Section below the valve proximity to upstream flow disturbance, physical orientation, physical location in plant, and any other pertinent information.)

<b>OPERABILITY CHECK:</b>						
Valve operates freely	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	N/A
Valve internals are clear of sludge buildup corrosion, or debris which could restrict full opening/closing	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	N/A
<b>WEAR CHECK:</b>		<b>LOOSE PARTS CHECK:</b>				
Disc/Piston OK	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	N/A
Anti-rotation device OK	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	N/A
Hinge Pin OK	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	N/A
Bushings OK	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	N/A
Disc Arm OK	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	N/A
Disc Post OK	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	N/A
Disc Nut OK	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	N/A
Backstop/Body OK	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	N/A
Seat Ring OK	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	N/A
Spring OK	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	N/A
Other _____	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	N/A
		<b>REMARKS/RECOMMEDED ACTIONS:</b>				
		_____				
		_____				
		_____				
INSPECTION PERFORMED BY: _____		Field Engineer/Supervisor or Vendor Rep.		Date _____		

A copy of this datasheet forwarded to TVA check valve coordinator.

\_\_\_\_\_ Date \_\_\_\_\_  
Field Engineer/Supervisor

Example Check Valve Data Sheet

# WBN Unit 2 Material Condition



**This valve is a 1 1/2", Hammel-Dahl, Globe valve with an A-40 Pneumatic Diaphragm type actuator. The items subject to refurbishment are the actuator diaphragm and valve packing**

# WBN Unit 2 Material Condition

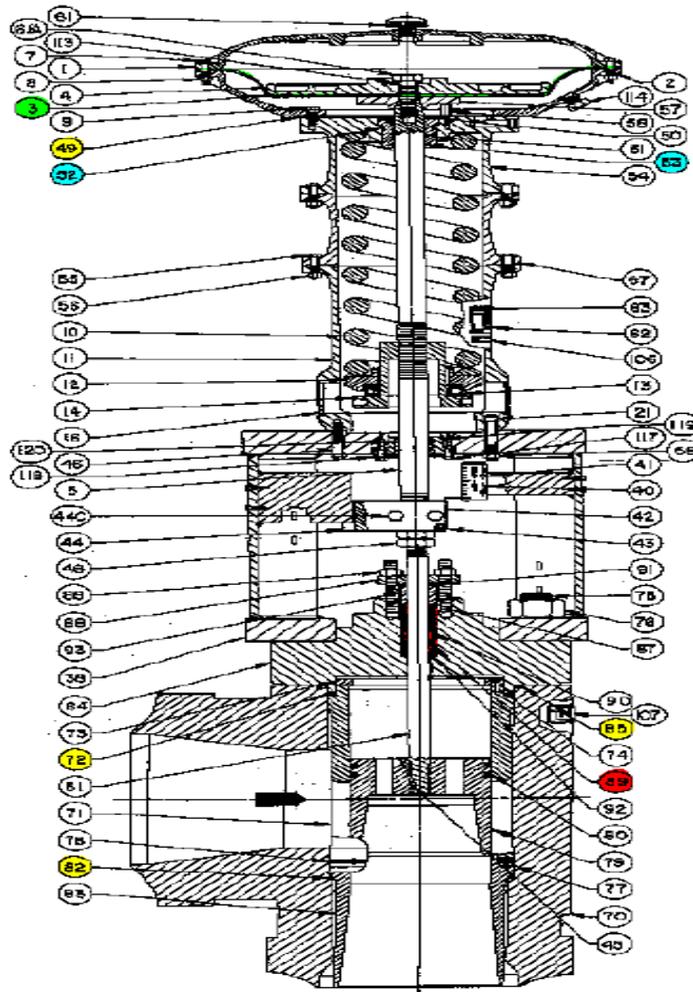
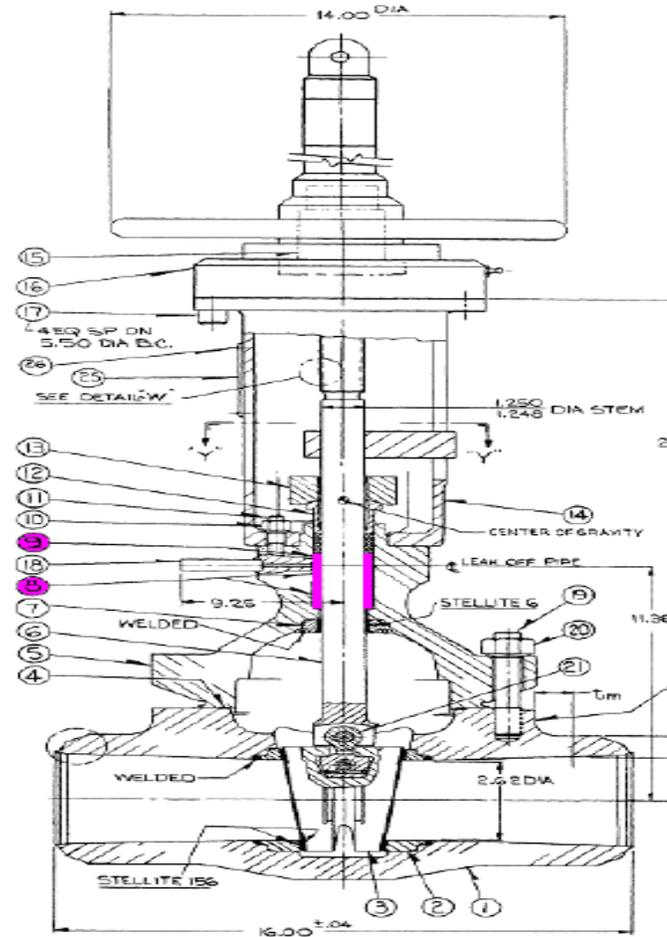


FIG. NO.	NO. REV	PART NUMBER	DESCRIPTION
1	1	3L448122012	UPPER DIAPHRAGM CASING
2	1	224644K012	LOWER DIAPHRAGM CASING
3	1	10000000000	DIAPHRAGM
4	1	1L524122012	DIAPHRAGM FLATE
5	1	10A7648K012	ACTUATOR STEM
6-1A	1	1A1248K012	CAP SCREW, 1-4 x 3
7	30	1A1188K012	CAP SCREW, 7/16-20 x 2
8	30	1A146324122	HEX NUT, 7/16-20
9	12	1A240324032	CAP SCREW, 1/2-13 x 1-1/4
10	1	1U1314K012	ACTUATOR SPRING
11	1	15A8702K012	SPRING CASE
12	1	1L440322012	SPRING SEAT
13	1	1H73120002	THRUST BEARING
14	1	1W4822012	SPRING ADJUSTING SCREW
15	1	1H7318X00A2	DRIVE BAND ASSEMBLY
16	0	1H734822002	CAP SCREW, 1/2-13 x 4
38	3	15A018K012	YOKE
40	1	1K174112002	TRAVEL INDICATOR SCALE
41	2	1A240120002	MACHINE SCREW, 10-24 x 1/4
42	1	1H731420002	TRAVEL INDICATOR
43	2	1K31520002	MACHINE SCREW, 6-40 x 1/4
44	1	21A1837X012	STEM CONNECTOR
44C	2	1A334724052	CAP SCREW, 1/2-13 x 2-1/4
46	1	1V34030012	BRIDGE PIN
48	4	1A112D4052	CAP SCREW, 1/2-13 x 2-3/4
48	2	0A073024122	HEX NUT, 1/2-13 x 1-1/4-12
50	1	1H730440012	BASKET, 8-3/4 x 12-13/16 x 1.75
51	1	1H74407022	SNAP RING
51	1	1H744114012	SEAL BUSHING
52	1	1K43920002	O-RING, 2-7/8 x 3-1/4 x 3/16
52	1	1A13430002	O-RING, 1-3/8 x 2 x 3/16
54	1	3L12422012	SPRING CASE ADAPTOR
59	24	1A131544052	CAP SCREW, 1/2-13 x 2
59	30	1A131244122	HEX NUT, 1/2-13
57	1	1K404924352	LOWER DIAPHRAGM PLATE
59	3	1H744024002	TRAVEL STOP
62	1	1B225000A2	VENT
62	1	1K32470002	NAMEPLATE
63	6	1A13120002	DRIVE SCREW, NO. 2 x 3/16
67	1	2U1318000A2	SPRING CASE EXTENSION
70	1	15A413K012	CAGE BODY
71	1	35A417K012	CAGE
72*	1	1U4514K012	CASE BASKET, 6-5/8 x 10-5/8 x .175
73*	1	1H740300A2	ASSEMBLY RING
74	18	1F144832002	CAP SCREW, 5/16-18 x 3/4
75	12	15A9101X012	STUD, 1-3/4-10 x 10-1/2
76	12	1N489210022	HEX NUT, 1-3/4-8
77	12	1U18100012	CASE PIN
78	1	1U18100012	RETAINING SPRING
79*	1	3V113K0002	VALVE PLUG
80*	2	1U16170012	PISTON RING
81*	1	1V4112K0022	STEM
81*	1	1V1613K012	SPIRAL WOUND GASKET, 10-1/11 x 12-5/13 x .175
82*	1	2U1345K012	SEAT & LINER
83*	1	15A4850K012	DIAPHRAGM
84*	1	1V1014K012	SPIRAL WOUND GASKET, 11-13/16 x 11-13/16 x .175
85	1	1W10052002	PACKING FLANGE
87	2	1W100531002	STUD, 3/4-10 x 4-1/4
88	2	1A188124112	HEX NUT, 1/2-10
88*	0	1D76000122	PACKING RING, 1-1/4 x 2 x 3/8
89	1	1V4112K0022	STEM
90	1	1J673000302	UPPER WIFE
91	1	1J673030012	PACKING BOX RING
92	1	1H384400072	PACKING FOLLOWER
93	1	1K101010	RAILWAY POUCH
94	1	35A7940012	MOUNTING BRACKET
96	1	TYPE 87FR	FILTER REGULATOR
96	2	1A44010002	NUTRITIONAL SCALE LIMIT SWITCH SA170 81100
100	1	34A8890012	MOUNTING PLATE
101	1	TYPE 84R	PRESSURE REGULATOR
102	1	1H384400072	MOUNTING BRACKET
103	1	TYPE 88LA	VOLUME BOOSTER
104	1	1H4320A100W	ABSO SOLVENT VALVE
105	1	1A20010012	MOUNTING PLATE
106	1	1A200410012	NAMEPLATE
107	1	1A200420012	NAMEPLATE, MODULAR
108	1	TYPE 84	TRASHOLIN WAHRESET
109	1	TYPE 114	NEEDLE VALVE
110	4	1A200410012	ABSO NEEDLE VALVE
111	1	1U18100012	BRACKET
114	1	02020120002	PIPE FLUG, 3/8-16 NPT
117	4	1A200420002	CAP SCREW
118	1	1A1124K012	YOKE BUSHING RETAINER
118	1	1087203012	YOK BUSHING HOLDER
120	1	16A1206012	BUSHING

\* RECOMMENDED SPARE PARTS: 5, 49, 58, 59, 72, 75, 76, 80, 81, 82, 83, 88, 89  
 RECOMMENDED RETAINING PARTS: 71, 74, 76, 78, 79, 84



# WBN Unit 2 Material Condition



B. Crouch



# WBN Unit 2 Material Condition

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## Improvement Initiatives:

- Reduction of Appendix R Operator Manual Actions
- Replace All 8 ERCW Pumps to Improve Flow Margin
- Replacement of Piping Susceptible to Flow Accelerated Corrosion (FAC)
- Glycol Chiller Replacement
- Double 500 kV Breaker Arrangement in Switchyard
- Add Zinc Injection System for Passivation
- Add ERCW Strainer Bypass for On-Line Maintenance
- Retube Main Condenser
- Intake Pumping Station Diver Barrier
- Pressurizer Weld Mechanical Stress Improvement Process (MSIP)
- Additional Offsite Power Source
- Split Pin Replacement Prior to Operation
- Reduction of Pipe Support Snubbers
- Improvements to Containment Sump Performance

# WBN Unit 2 Project Activity Status

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## Engineering

- Overall Progress – 46% complete
  - Design Modifications – ~ 55% complete
  - Calculations – ~ 76% complete
  - Corrective Action Programs and Special Programs – ~ 40% complete
- Historical Design Basis Quality Records
  - Retrievable, Legible, Usable
- On Track to Complete Majority of Engineering by December 2009

# WBN Unit 2 Project Activity Status

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## Licensing

- Regulatory Framework
- Final Safety Analysis Report
  - Four Milestone Submittals – April, August, November, January
  - Includes Submittal of Applicable Technical Specifications and Generic Communications
- Corrective Action Programs and Special Programs
  - 27 of 29 – Closure Methodology Reviewed and Approved by NRC
  - Quality Records and Replacement Parts Programs Under Review
- Historical Documents
  - ~37,000 Historical Documents Evaluated for Applicability
  - Population Included: Concerns, Non-Conformances, Commitments
  - Applicable Items being Tracked to Closure

# WBN Unit 2 Project Activity Status

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## Construction

- Overall Progress – >15% complete
- Construction Focus Areas
  - Refueling Outage – Pre-Outage work
  - Refurbishment Activities
  - Increase Construction Backlog of Ready to Work Activities
- Critical Path
  - Essential Raw Cooling Water
  - Probabilistic Risk Assessment
- Near Critical Path
  - Reactor Coolant System
  - Reactor Protection – Eagle 21
- On Track to Complete Construction Activities to Support Current Fuel Load Schedule

# WBN Unit 2 – Unit Separation & Security

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## Unit Separation Program

- Physical and Operational separation of operating unit systems and components from construction accomplished by use of lifted wires, removal of valve handwheels, installation of blind flanges
- Fencing and chain
- Tagging and marking
- Unit 2 craft personnel wear YELLOW hardhats
- Designated walkways
- Construction Access

# WBN Unit 2 – Unit Separation & Security

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## Unit Separation Program

- Separate Organization
- Work in operating spaces reviewed daily
- Work Orders reviewed by experienced Operations personnel
- Problem Evaluation Reports (CAP) reviewed for operability by Operations personnel
- Work on Common systems uses WBN Unit 1 processes

# WBN Unit 2 – Unit Separation & Security

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## Security

- Site Security Plan Addresses Both Units
  - No Change to Security Plan As a Result of WBN Unit 2
  - Some Implementing Procedure Revisions Will Be Required
  - New 10 CFR 50.73 Rule Changes Will Be Incorporated
- Cyber Security Rule
  - New Rule Will Be Implemented
- Aircraft Rule
  - WBN Unit 2 Exempted from Rule

# Conclusion

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In Summary TVA Has:

- Established the Existing Condition of WBN Unit 2
- Evaluated the Lessons Learned From WBN Unit 1 Operation
- Developed and Implemented Programs to
  - Install New Equipment Where Necessary
  - Refurbish Existing Equipment
  - Improve Material Condition and Equipment Performance Where Appropriate
- Improvement Initiatives
- To Ensure Safe, Reliable and High Capacity Operation of Watts Bar Unit 2