



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001**

May 12, 2011

MEMORANDUM TO: ACRS Members

FROM: Girija Shukla, Senior Staff Engineer */RA/*  
Reactor Safety Branch – B  
Advisory Committee on Reactor Safeguards

SUBJECT: CERTIFICATION OF THE MINUTES OF THE MEETING OF THE  
SUBCOMMITTEE ON PLANT OPERATIONS AND FIRE PROTECTION  
REGARDING OPERATING LICENSE APPLICATION FOR WATTS BAR  
UNIT 2, ON OCTOBER 6, 2010

The minutes for the subject meeting were certified on May 12, 2011. Along with the transcripts and presentation materials, this is the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment: As stated

cc w/o Attachment: E. Hackett  
C. Santos  
Y. Diaz-Sanabria

cc w/ Attachment: ACRS Members



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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WASHINGTON, DC 20555 - 0001**

May 12, 2011

MEMORANDUM TO: Girija Shukla, Senior Staff Engineer  
Reactor Safety Branch – B  
Advisory Committee on Reactor Safeguards

FROM: Harold Ray, Chairman  
Operations and Fire Protection Subcommittee  
Advisory Committee on Reactor Safeguards

SUBJECT: CERTIFICATION OF THE MINUTES OF THE MEETING OF THE  
SUBCOMMITTEE ON PLANT OPERATIONS AND FIRE PROTECTION  
REGARDING OPERATING LICENSE APPLICATION FOR WATTS BAR  
UNIT 2, ON OCTOBER 6, 2010

I hereby certify, to the best of my knowledge and belief, that the minutes of the subject meeting held on October 6, 2010, are an accurate record of the proceedings for that meeting.

/RA/

5/12/2011

Harold Ray, Chairman  
Plant Operations and Fire Protection Subcommittee

Date

Certified on: May 12, 2011  
Certified by: Harold Ray

Issued: May 12, 2011

**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
MINUTES OF THE MEETING OF  
THE SUBCOMMITTEE ON PLANT OPERATIONS AND FIRE PROTECTION  
REGARDING WATTS BAR UNIT 2 OPERATING LICENSE APPLICATION REVIEW  
OCTOBER 6, 2010, ROCKVILLE, MARYLAND**

On October 6, 2010, the ACRS Subcommittee on Plant Operations and Fire Protection held a meeting in Room T-2B3, 11545 Rockville Pike, Rockville, Maryland. The purpose of the meeting was for the Subcommittee to receive an information briefing from the NRC staff and TVA, the applicant, regarding the status of engineering, construction, and operating license (OL) application activities for a second unit at the existing Watts Bar Unit 1 site in Tennessee. The meeting was convened at 8:30 AM and adjourned around 12:00 PM the same day. The meeting was open to the public.

**Attendees:**

**ACRS Members**

Harold Ray (Chairman)  
Mario Bonaca  
Jack Sieber  
Mike Ryan

**TVA Presenters**

Masoud Bajestani  
Robert Phillips  
Jerry Schessel  
Steve Hilms  
Bill Crouch  
Pete Olsen  
Ken Welch

**NRC Staff**

L. Raghavan, NRR  
Pat Milano, NRR  
Joseph Gitter, NRR  
Allen Howe, NRR  
Steve Campbell, NRR  
Justin Poole, NRR  
Prem Sahay, NRR

**ACRS Staff**

Girija Shukla (DFO)

The presentation slides and handouts used during the meeting are attached to the Office Copy of the meeting transcript. The presentation to the Subcommittee is summarized below.

**Opening Statement**

Subcommittee Chairman Harold Ray convened the meeting by introducing the ACRS members present. He noted that the July 2009 meeting that was held at the Watts Bar site during which the members toured the plant. He then invited the staff and TVA to begin the presentation.

**TVA Presentation**

TVA provided a construction completion status for WBN 2 and discussed special topics related to Refurbishment, Buried Piping, Buried Cable, and the Integrated Safeguards Testing (IST).

For WBN 2 construction completion status for engineering items, TVA noted that overall progress is 88% complete, including design modifications 98% complete, calculations 88% complete, and other programs are 79% complete. The construction overall progress is 60% complete, and construction activities are on track to support current fuel load schedule

of April 2012. For start-up testing, TVA noted that 9 systems have been turned over to start-up test organization. For refurbishment program status, TVA stated that safety related valves are 34% complete, large safety related pumps are 30% complete, and large safety related motors are 40% complete.

TVA further discussed Buried Piping and Groundwater Protection Program. TVA stated that no additional safety-related buried piping will be placed in service as a result of completion of Unit 2. Integrity and reliable operation of all plant buried piping is ensured by TVA's Buried Piping Integrity Program (BPIP). TVA concluded that to date there has not been any occurrence of major failure and the piping system will maintain reliable operation. WBN 2 has processes and procedures to monitor all safety related piping and is currently following the industry initiatives for buried piping. Additionally, TVA fleet has a plan for inspections and assessments of buried piping that will be completed by June 2013. TVA's Groundwater Protection Program is to minimize the potential for inadvertent releases to the environment from plant activities, and provides for a site risk assessment for groundwater protection.

For buried cable, TVA noted that its construction practices require that no process cables are directly buried in soil, regardless of their safety class. Furthermore, no additional buried or underground safety-related power cable will be added by WBN 2. TVA further concluded that it performs periodic testing of medium voltage cables and underground duct banks cables, and the cables will maintain reliable operation.

TVA further discussed the Integrated Safeguards Testing (IST) at Watts Bar, Units 1 & 2, which is performed in accordance with the Regulatory Guide 1.41, "Preoperational Testing of Redundant On-site Electric Power Systems to Verify Proper Load Group Assignments." The purpose of IST is to verify that redundant power sources and load groups are independent of each other. It also demonstrates that operation of a load group is not affected by the partial or complete failure of any other power source or load group. Regulatory Guide 1.41 was partially satisfied for Dual Unit Operation during Unit 1 Pre-Operational Testing. Regulatory Guide 1.41 testing for Unit 2 is to be conducted with Unit 1 on-line.

The Watts Bar plant electrical design is as follows: It has four power trains – two for each unit. The power train consists of Diesel Generator, 6.9 Kv Shutdown Board, and Lower Voltage Distribution System. There are two load groups (A and B), for Unit 1 - 1A and 1B, and for Unit 2 - 2A and 2B. There are four Diesels and four 6.9 Kv Shutdown Boards in service for Unit 1 Operation. The common equipment is on Unit 2 Shutdown Boards. Unit 2 lower voltage distribution system is not totally in service for Unit 1 Operation.

For Unit 1, the Independence Test includes both tested group and non-tested group. It includes four Diesels and four 6.9 Kv Shutdown Boards, and lower voltage distribution systems required for Unit 1 Operation. The Unit 2 lower voltage distribution systems are not totally included. The test ensures that tested load group functions as designed, and ensures that there was no voltage on non-tested load group. It also demonstrates that no cross connection exists between the load groups.

For Unit 2, the Independence Test will include both tested group and non-tested group. Each power train (A or B) will receive testing of manual safety injection, loss of offsite power (LOOP), safety injection coincident with loss of off-site power, load group independence test (simultaneous SI with LOOP). The test will not disable opposite train diesel. It will ensure that

tested load group functions as designed and that no voltage is on non-tested load group. The test will also demonstrate that no cross connection exists between load groups.

### **NRC Staff Presentation**

The NRC HQ and Region II staff provided status update of WBN 2 Construction Inspection and Licensing Activities. The discussion included: action items from last meeting, TVA's status of Engineering, Construction, and Refurbishment Program, and NRC's status of Licensing and Construction Inspection. Past action items included Pre-service condition and refurbishment, Aging of buried pipe and cable, Safe Conduct of Integrated Safeguards Test, and Watts Bar Reactivation Assessment Group. The staff also discussed the WBN 2 Reactivation Assessment Group (WRAG) progress.

Regarding the status of operating license application, staff stated that the safety, environmental, and program reviews are continuing and critical path items and project milestones are identified. Further staff review includes resolution of open items in safety evaluation report, review of generic communication items, corrective action program plans, security plan, emergency preparedness plan, fire protection program, anti-trust program, quality assurance program, and Technical Specifications.

Regarding TVA's Refurbishment Program, the staff noted that the scope of the program is comprehensive and the scope of refurbishment and replacement is adequate. For Safety Evaluation Report topics, the staff stated that the staff has received TVA amendments to FSAR from 92 to 100. The staff is preparing SER supplements and most staff reviews are expected to be completed in early 2011, though there are schedule challenges.

The staff further discussed its review of Corrective Action Programs, Generic Communications, and Final Environmental Statement. The staff also provided the review status of the following programs: Radiological Emergency Plan, Physical Security Plans, Fire Protection Program, and the Startup Test Program.

### **Region II Presentation of Status of Construction Inspection Activities**

Region II staff provided a status of construction inspection activities and stated that resident and regional inspections are increasing. Region II has completed second Problem Identification & Resolution team inspection and performed 2010 Mid-Cycle review. Additionally, 4 construction resident inspectors are assigned for WBN 2 and guidance has been provided to Unit 1 and Unit 2 resident inspectors to inspect Unit 2 construction activities to ensure Unit 1 not adversely impacted.

For inspection of refurbishment activities, the Region II staff stated that inspection guidance is provided by IP-37002, scoping team inspections have verified that appropriate SSCs are included in the program, review of implementation activities is ongoing which includes inspections, rebuilds, and replacements, and the samples selected are based on risk significance and potential damage from degradation mechanism.

### **NRC staff review conclusion**

The NRC staff concluded that the review is continuing with some delays. The following are the milestones for 2011: to complete most technical review by 1<sup>st</sup> quarter, 2011, to complete SER by June 2011, and to complete operational readiness assessment in Fall 2011.

**COMMENTS AND OBSERVATIONS FROM THE SUBCOMMITTEE MEMBERS**

ACRS members at the meeting asked several pertinent questions and made several comments to the presenters. These members' questions and comments and their responses are provided in the transcript of this meeting. Overall, the members commented that there are no issues related to the operating license application for the Watts Bar Nuclear Plant, Unit 2.

**SUBCOMMITTEE CONCLUSIONS**

Chairman Ray concluded the meeting by thanking the staff and the applicant. He stated that the presentations and discussions were very informative. The meeting was adjourned.

**REFERENCES**

- Revision 1 To Watts Bar Nuclear Plant, Unit 2, Reactivation Assessment Group Charter, dated March 24, 2010 (ML1006307801)
- NRC letter to TVA, dated July 2, 2010, Watts Bar Nuclear Plant, Unit 2 – Program For Construction Refurbishment (ML 101720043)
- NRC letter to TVA, dated July 28, 2010, Watts Bar Nuclear Plant, Unit 2 – Status of Operating License Application Review (ML 102040013)  
Watts Bar Nuclear Plant, Unit 2, Final Safety Analysis Report, Amendment 100, dated September 1, 2010

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NOTE:

Additional details of this meeting can be obtained from a transcript of this meeting available in the NRC Public Document Room, One White Flint North, 11555 Rockville Pike, Rockville, MD, (301) 415-7000, downloading or view on the Internet at <http://www.nrc.gov/reading-rm/doc-collections/acrs/> or it can be purchased from Neal R. Gross and Co., 1323 Rhode Island Avenue, NW, Washington, D.C. 20005, (202) 234-4433 (voice), (202) 387-7330 (fax), [nrgross@nealgross.com](mailto:nrgross@nealgross.com) (e-mail).

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