



**Memorandum from the Office of the Inspector General**

June 27, 2013

Michael D. Skaggs, LP 6A-C

**REQUEST FOR MANAGEMENT DECISION – EVALUATION 2012-14623 – WATTS BAR  
NUCLEAR UNIT 2 QUALITY ASSURANCE PROGRAM**

As a result of delays and overruns on the Tennessee Valley Authority (TVA) Watts Bar Nuclear Unit 2 (WBN U2) construction project, questions have been raised about the quality of the work performed. Nuclear Construction (NC) Quality Assurance (QA) plays a key role in ensuring that work completed meets high-quality standards. The objective of our review was to determine if the NC QA program is effective in its oversight of the WBN U2 construction project.

We found NC QA has generally been effective in its oversight of the construction project; however, a breakdown in the QA program resulted in a lack of oversight in one area. Multiple reviews, both internal and external, were conducted related to the QA program. With the exception of the breakdown in QA discussed below, no significant issues were identified. In addition, we reviewed documentation that showed NC QA conducted oversight activities and Bechtel performed QA activities. As issues were identified, Problem Evaluation Reports (PERs) were generated to address those issues. A breakdown in the QA program related to the commercial-grade dedication<sup>1</sup> program was identified by the Nuclear Regulatory Commission (NRC). Specifically, there was no oversight of the commercial-grade dedication program by QA since 2008. In response, TVA conducted an evaluation to see if problems existed in other areas. The evaluation found a few areas that required minor adjustments, and those adjustments were made. Furthermore, TVA assembled an independent, technical team to review commercial-grade dedication packages, and as of May 2013, no significant issues had been identified. In addition, while the turnover of one system has occurred, a process for transitioning the authority for the execution of the QA program from Bechtel QA to NC QA has not been implemented, which could limit the effectiveness of the NC QA's oversight efforts. The process for transition of authority from Bechtel QA to NC QA will provide evidence that the construction phase QA requirements in the Nuclear Quality Assurance Plan have been met and also help to prevent any steps or reviews from being missed.

---

<sup>1</sup> In 1995, regulators enacted rules requiring that parts obtained from non-nuclear certified vendors must receive special and strict industry testing to be performed and documented by operators.

We recommend the Senior Vice President, NC, make implementing the process for the transfer of authority for the execution of the QA program from Bechtel QA to NC QA a priority.

The Senior Vice President, NC, agreed with our findings and recommendation. He also provided some clarifying comments for our consideration, which we reviewed and incorporated as appropriate.

## **BACKGROUND**

The 10 CFR 50<sup>2</sup> Appendix B specifies 18 Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants. As used in this appendix, "quality assurance" comprises all those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service. QA includes quality control, which comprises those quality assurance actions that provide a means to control the quality of the material, structure, component, or system to predetermined requirements.

The execution and accountability for the WBN U2 construction completion, construction phase tests and inspections, and related QA activities have been delegated to Bechtel and is implemented through the project-specific, TVA approved Bechtel Nuclear Quality Assurance Manual. Procedures and instructions that control engineering, procurement, construction, and QA/quality control activities were developed by Bechtel prior to commencement of those activities and were reviewed and approved by TVA to ensure inclusion of QA program requirements. TVA retains and exercises the overall responsibility for the establishment and execution of an effective QA program for completing WBN U2.

## **OBJECTIVE, SCOPE, AND METHODOLOGY**

As a result of delays and overruns on the WBN U2 project, questions were raised about the quality of the work performed. QA plays a key role in ensuring that work completed meets high-quality standards. The objective of our review was to determine if the NC QA program is effective in its oversight of the WBN U2 construction project. This review included the QA activities for the WBN U2 construction project from January 2011 through June 2012. To achieve our objective we:

- Conducted interviews and/or reviewed provided documentation to determine:
  - Oversight activities performed by NC QA of Bechtel's QA program.
  - Assessments of the QA program that have been completed.
  - Actions taken in response to major issues with the WBN U2 construction project.
  - Actions taken based on Bechtel QA findings.

This review was performed in accordance with the Council of the Inspectors General for Integrity and Efficiency's *Quality Standards for Inspection and Evaluation*.

---

<sup>2</sup> Domestic Licensing of Production and Utilization Facilities.

## **FINDINGS**

We found NC QA has generally been effective in its oversight role of the construction project; however, a breakdown in the QA program resulted in a lack of oversight in one area. A breakdown in the QA program related to commercial-grade dedication was identified by the NRC. Specifically, there was no oversight of the commercial-grade dedication program by QA since 2008. In addition, while the turnover of one system has occurred, a process for transitioning the authority for the execution of the QA program from Bechtel QA to NC QA has not been implemented, which could limit the effectiveness of the NC QA's oversight efforts.

### **NC QA Has Generally Been Effective in Its Oversight**

We found NC QA has generally been effective in its oversight role of the construction project. Multiple reviews, both internal and external, were conducted related to the QA program. With the exception of the breakdown in QA discussed below, no significant issues were identified. In addition, we reviewed documentation that showed NC QA conducted oversight activities and Bechtel performed QA activities. As issues were identified, PERs were generated to address those issues.

The effectiveness of the QA program was assessed through both internal and external audits and assessments. During both the 2011 and 2012 Construction Safety Review Board's reviews of various programs at WBN U2, it was concluded quality programs and processes have been established for the nuclear construction projects and are being adequately implemented. Also, in May 2012, the NRC completed an inspection of construction activities at WBN U2. The inspection examined activities conducted under the construction permit. The report covered a 7-week period of inspections in areas that included quality assurance. The report noted that inspectors continued to review PERs as a part of the applicant's corrective action program to verify that issues being identified under the corrective action program were being properly identified, addressed, and resolved. The report concluded the issues identified in the PERs were properly identified, addressed, and resolved. We also reviewed audits from 2011 conducted by TVA personnel external to WBN U2 and 2012 conducted by Southern Company. Both concluded that the WBN U2 QA department is effectively meeting both regulatory and TVA QA program requirements.

We also reviewed the reports for the audits NC QA performed of Bechtel's QA program. We found NC QA performed oversight reviews of Bechtel QA work and identified issues. PERs were generated to address those issues. In addition, NC QA generated a quarterly oversight report. This report summarized the QA oversight work NC QA has completed for the quarter. At the beginning of 2011, there were concerns that oversight activities had declined; however, in 2012, this issue was not identified in the quarterly oversight reports.

### **Breakdown in QA**

In 2013, TVA was cited with three violations stemming from a 2011 NRC evaluation at WBN U2 related to the commercial-grade dedication program. One of the violations was related to the failure to report a significant breakdown in NC QA. A contributing factor to the breakdown was the cancellation of Bechtel's process to follow TVA's. This would allow packages previously prepared using TVA's process to be accepted without additional work. Canceling the process removed the commercial-grade dedication program from the scope of WBN U2 QA audits and assessments. This breakdown resulted in no audits, surveillances, or assessments of the commercial-grade dedication program being performed for WBN U2 since 2008. A PER was initiated and resulting actions included a systematic evaluation of oversight performed and scheduled to determine if other activities needed to be included in the oversight program. The evaluation determined there were a few areas that required minor adjustments. According to the PER, adjustments have been made to address the areas. In addition, TVA assembled an independent team of technical personnel to perform a review of the commercial-grade dedication packages used by the WBN U2 project. As of May 2013, no significant issues had been identified.

### **A Process Has Not Been Implemented for the Transition of Authority**

A process for the transition of authority for the execution of the QA program from Bechtel QA to NC QA and from NC QA to Nuclear Power Group QA has not been implemented. According to the Program Manager, WBN U2 QA, NC QA has developed a strategy, which once approved, will be used to develop processes for both the transition of authority for the execution of the QA program from Bechtel QA to NC QA and from NC QA to Nuclear Power Group QA. According to a draft of the strategy document, the project has advanced to a level where the process for transition of authority for the execution of the QA program from Bechtel QA to NC QA needs to be established. The process for transition of authority from Bechtel QA to NC QA will provide evidence that the construction phase QA requirements in the Nuclear Quality Assurance Plan have been met and also help to prevent any steps or reviews from being missed. Our review found NC QA has taken over the QA function from Bechtel for one safety-related system; however, they have not implemented a process for transition of authority for the execution of the QA program. Not having a process for transitioning authority for the execution of the QA program could limit the effectiveness of NC QA's oversight efforts.

### **RECOMMENDATION**

We recommend the Senior Vice President, NC, make implementing the process for the transfer of authority for the execution of the QA program from Bechtel QA to NC QA a priority.

**TVA Management's Comments** – The Senior Vice President, NC, agreed with our findings and recommendation. He also provided clarifying comments for our consideration, which we reviewed and incorporated as appropriate.

- - - - -

Michael D. Skaggs  
Page 5  
June 27, 2013

This report is for your review and information. Please advise us of your management decision within 60 days from the date of this report. Information contained in this report may be subject to public disclosure. Please advise us of any sensitive information that you recommend be withheld.

If you have questions or wish to discuss our observations, please contact me at (865) 633-7450 or Greg Stinson, Director, Evaluations, at (865) 633-7367. We appreciate the courtesy and cooperation received from your staff during the evaluation.



Robert E. Martin  
Assistant Inspector General  
(Audits and Evaluations)  
ET 3C-K

HRK:FAJ

cc: Peyton T. Hairston, Jr., WT 7B-K  
Joseph J. Hoagland, WT 7C-K  
William D. Johnson, WT 7B-K  
Richard W. Moore, ET 4C-K  
Emily J. Reynolds, OCP 6C-NST  
Robert B. Wells, WT 9B-K  
Andrea L. Williams, WT 9B-K  
OIG File No: 2012-14623