



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

January 6, 2012

Mr. Mike Skaggs  
Senior Vice President  
Nuclear Generation Development and Construction  
Tennessee Valley Authority  
1101 Market Street  
Lookout Place 6A  
Chattanooga, Tennessee 37402-2801

SUBJECT: BELLEFONTE NUCLEAR PLANT - NRC INSPECTION REPORT NO.  
05000438/2011-602

Dear Mr. Skaggs:

On December 1, 2011, the NRC completed an inspection at your Bellefonte 1 reactor facility. The results of the inspection were discussed with Mr. Hruby and other members of your staff. The enclosed report presents the results of that inspection.

The purpose of the inspection was to determine whether activities authorized by the construction permits were conducted safely and in accordance with NRC requirements. Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

Based on the results of this inspection the inspectors did not identify any findings of significance.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).



TVA

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Should you have any questions concerning this letter, please contact us.

Sincerely,

/RA/

Robert C. Haag, Chief  
Construction Projects Branch 3  
Division of Construction Projects

Docket No. 50-438,  
License No. CPPR-122

Enclosure: NRC Inspection Report 50-438/2011602  
w/Attachment - Supplemental Information

Should you have any questions concerning this letter, please contact us.

Sincerely,

/RA/

Robert C. Haag, Chief  
 Construction Projects Branch 3  
 Division of Construction Projects

Docket No. 50-438,  
 License No. CPPR-122

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 w/Attachment - Supplemental Information

\* Previous Concurrence

PUBLICLY AVAILABLE     
  NON-PUBLICLY AVAILABLE     
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  NON-SENSITIVE  
 ADAMS:  Yes   
 ACCESSION NUMBER: ML12006A160     
  SUNSI REVIEW COMPLETE

OFFICE	RII:DCP						
SIGNATURE	*						
NAME	L. Mellen						
DATE	01/03/2012						
E-MAIL COPY?	YES NO						

cc with enclosures

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Mr. Pete Gaillard  
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Letter to Mike Skaggs from Robert C. Haag dated January 6, 2012

SUBJECT: BELLEFONTE NUCLEAR PLANT - NRC INSPECTION REPORT NO.  
05000438/2011-602

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Letter to Mike Skaggs from Robert C. Haag dated January 6, 2012

SUBJECT: BELLEFONTE NUCLEAR PLANT - NRC INSPECTION REPORT NO.  
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cc email distribution w/encl:

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Ray Hruby  
Tennessee Valley Authority  
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**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket No: 50-438  
License No: CPPR-122

Report No: 50-438/2011602

Applicant: Tennessee Valley Authority (TVA)

Facility: Bellefonte Nuclear Plant, Unit 1

Location: Bellefonte Road  
Hollywood, AL 35752

Dates: November 30 – December 1, 2011

Inspector: L. Mellen, Senior Project Inspector

Accompanying Personnel: R. Karas, Branch Chief, Division of Site and Environmental  
Analysis, Geoscience and Geotechnical  
Engineering Branch 1, New Reactors (NRO)  
F. Vega, Geotechnical Engineer, NRO  
J. Vasquez, Construction Inspector

Approved by: Robert C. Haag, Chief  
Construction Projects Branch 3  
Division of Construction Projects

Enclosure



## EXECUTIVE SUMMARY

Bellefonte Nuclear Plant, Unit 1  
NRC Inspection Report 05000438/2011602

The inspection included aspects of engineering and construction activities, performed by Tennessee Valley Authority (TVA), associated with the Bellefonte Nuclear Plant (BLN), Unit 1 project. This report covered a two-day period of inspections in the areas of quality assurance (QA); identification and resolution of problems; and subsurface geology. The inspection was primarily performed using the guidance in NRC inspection procedures (IP) 45051, "Geotechnical/Foundation Activities Procedure Review", IP 45053, "Geotechnical/Foundation Activities Work Observation" and IP 92050, "Review of Quality Assurance for Extended Construction Delay"

The inspection evaluated if TVA had properly implemented the NRC-approved QA program, adequately identified the status and quality of currently installed and stored equipment, and established associated processes and controls necessary to comply with regulatory requirements associated with its construction permits.

### Inspection Results:

- The observed portions of the Component Cooling Water system walked down were conducted in accordance with approved procedures and the results were appropriately documented. (Section 1)
- The portions of the subsurface investigations reviewed were conducted in accordance with approved procedures and the investigation results were appropriately documented. (Section 2)
- The portions of the subsurface investigations reviewed met applicable QA requirements and the results were appropriately documented. (Section 3)

## **Report Details**

### **1.0 Plant Walkdowns**

#### a. Inspection Scope (92050)

The Bellefonte Nuclear Plant equipment remains in an indeterminate status. The inspectors accompanied the licensee in the walk down of the Component Cooling Water (KC) system, to confirm the system information/data identified on the Master Equipment List was accurate. This walk down also documented basic material condition, captured equipment nameplate data, and confirmed the accuracy of existing plant drawings. The inspectors verified the final walkdown QA records accurately reflected as found material condition. The inspectors also confirmed the licensee did not evaluate the condition or suitability of the as-found components nor did they take any actions that advanced construction.

#### b. Observations and Findings

The portions of the Component Cooling Water system walkdowns were conducted in accordance with approved procedures and the results were appropriately documented.

No findings of significance were identified.

### **2.0 Subsurface Geology**

#### a. Inspection Scope (45051/45053)

The purpose of these subsurface investigations is to review the Quality Assurance associated with the licensing application Bellefonte unit 1. NRC inspectors visited the Bellefonte Unit 1 site to observe in-process subsurface geotechnical and geophysical investigations performed in the proximity of safety related structures. The inspectors evaluated the storage conditions to ensure the samples are kept in accordance with Regulatory Guide 1.132, Site Investigations for Foundations of Nuclear Power Plants, Revision 2, 2003.

The inspectors observed drilling and coring activities performed on boring B-106 in accordance with ASTM D 4543, 2008, using HQ triple core barrel wireline tubes, at an approximate 145 ft depth. In addition, the inspectors observed how the sample was recovered and removed from the inner barrel and how the rig geologists generated logging records to record boring location, sample name, depth interval length, rock classification, and rock quality designation (RQD). The RQD for this specific sample was 100%.

Geophysical testing activities were also observed on boring B-104. Activities were being conducted by Geovision staff, who acquired P-S velocity data for the upper 25 ft. of soil boring. In addition, acoustic televiewer, 3-arm caliper, and resistivity testing were also performed on this borehole. NRC inspectors reviewed the complete acoustic televiewer log for boring B-104 looking for possible fractures, bedding planes, and orientation of



these features. Additionally, the inspectors reviewed the training and qualification records of each member of the Geovision staff.

The inspectors reviewed the storage conditions for the rock core samples to ensure the samples were protected, labeled, and the climatic conditions had the proper humidity and temperature parameters. The inspectors observed shallow rock cores from borings B-103 (EL. 25 ft, approximate foundation level) and cores from B-104 extracted from depths of 240 ft and 365 ft; the cores from boring B-104 exhibited a low shear wave velocity ( $V_s$ ) of approximate 6000 ft/s. Overall, the majority of the observed samples exhibited excellent RQD and recovery at or near 100%. To assess uniformity and consistency of  $V_s$  measurements throughout the site, the inspectors asked the licensee for the following documents:

- Preliminary  $V_s$  data from P-S suspension logging performed at boring B-104
- P-S suspension logging measurements from Units 3 and 4
- Down-hole and cross-hole  $V_s$  measurements performed for the Units 1 and 2 foundation area

The inspectors reviewed these documents and compared data between the surveys. The plots showed a good correlation and consistency of  $V_s$  with depth throughout the site.

The inspectors selected random core samples and confirmed that the licensee could retrieve the sample. The inspectors confirmed the QA records associated with each of the selected samples were correct. These records included verification Hammer Calibration, Geologist Qualification, M&TE records, Complete Field Notes, core sample identification markings and storage location.

b. Observations and Findings

The portions of the subsurface investigations reviewed were conducted in accordance with approved procedures, met applicable QA requirements and the results were appropriately documented.

No findings of significance were identified

### 3.0 **Corrective Action Program (CAP)**

a. Inspection Scope (92050)

The inspectors also reviewed the findings and recommendations from an internal audit in the subsurface geology area, and independently confirmed the results. The inspectors confirmed that all findings from the audit were appropriately entered into the corrective action program.

b. Observations and Findings

No findings of significance were identified.

#### **4.0 Exit Meeting Summary**

The inspector presented the inspection results to Mr. R. Hruby, General Manager, Bellefonte Nuclear Plant, and other members of management on December 1, 2011. Some proprietary information was reviewed during this inspection. All material was returned to the applicant.





## **SUPPLEMENTAL INFORMATION**

### **PARTIAL LIST OF PERSONS CONTACTED**

R. Hruby, General Manager  
N. Massoudi, Bechtel Power Contractor  
M. Bryan, Areva Licensing  
L. Williams, Areva Program Director  
R. Parekh, Vector Project Director  
M. Palmer, TVA Construction Plant Manager  
E. West, TVA Licensing  
D. Holt, Vector Licensing

### **LIST OF INSPECTION PROCEDURES**

IP 45051, "Geotechnical/Foundation Activities Procedure Review",  
IP 45053, "Geotechnical/Foundation Activities Work Observation".  
IP 92050, "Review of Quality Assurance for Extended Construction Delay"

### **LIST OF ITEMS OPENED AND CLOSED**

Opened

None

Closed

None

### **LIST OF DOCUMENTS REVIEWD**

Procedures

MACTEC Project No. 6468-11-0485, Quality Assurance Project Document, Revision 0

Condition Reports

NUK2011-243, Incorrect Initial Position for Boring B-110, Revision 0  
NUK2011-246, Incorrect Photographs Take of Core Samples, Revision 0  
NUK2011-257, Required Forms Were Not Submitted Prior to Drilling, Revision 0  
NUK2011-258, Wrong Bechtel Specification Referenced in Work Instructions, Revision 0  
NUK2011-259, Required Fluid Measurements Were Not Taken, Revision 0  
NUK2011-260, Incorrect Correction to Boring Logs, Revision 0  
NUK2011-243, Failure to Get Required Approval Prior to Exceeding 350 Feet in Boring B-104, Revision 0  
25644-000-GCA-GAMG-00001, Test Location Coordinates Incorrect Datum, Revision 0



25644-000-GCA-GAMG-00002, Service Requisition and the Subcontract for Site Subsurface Investigation did not Include the Boring Location Plan Drawings, Revision 0  
25644-000-GCA-GAMG-00003, Potential Frac Tank Contamination, Revision 0

Quality Surveillance Reports

QSR-11-0013, MATEC Geotechnical Investigation  
QSR-11-0014, MATEC Geotechnical Investigation

Drawings

25644-12 CY-0000-00001 000 – Subsurface Investigation Location Plan – Power Block, Revision 0  
25644-12 CY-0000-00002 000 – Subsurface Investigation Location Plan – Intake Pumping Station and Utility Corridor, Revision 0

Miscellaneous

General Engineering Specification, G-9, Earth and Rock Foundations and Fills During Construction, Modification, and Maintenance for Nuclear Plants, Revision 8  
Core Boring Field Log for Boring B-104, Sheet 11 of 15  
BLN-EDP-11, Walkdown Procedure for General Walkdown Requirements, Revision 2