



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

April 21, 2011

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

**SUBJECT: BELLEFONTE NUCLEAR PLANT - NRC INSPECTION REPORT NOS.  
50-438/2011601 AND 50-439/2011601**

Dear Mr. Bhatnagar:

On March 23, 2011, the NRC completed an inspection at your Bellefonte 1 & 2 reactor facilities. The results of the inspection were discussed with Mr. Ray Hruby and other members of your staff on March 23, 2011. 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, no findings of significance were identified.

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).

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Sincerely,

**/RA/**

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

Docket Nos. 50-438, 50-439  
Construction Permit Nos. CPPR-122, CPPR-123

NRC Inspection Report 50-438/2011601 AND 50-439/2011601  
w/Attachment - Supplemental Information

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cc w/encl:

Mr. Gordon P. Arent, Manager  
New Generation Licensing  
Nuclear Generation Development  
and Construction  
Watts Bar Nuclear Plant  
P.O. Box 2000  
Spring City, Tennessee 37381

Mr. J.A. Bailey, Vice President  
Nuclear Generation Development  
and Construction  
Tennessee Valley Authority  
1101 Market Street  
Lookout Place 5A  
Chattanooga, Tennessee 37402-2801

Mr. R.M. Krich  
Vice President, Nuclear Licensing  
Tennessee Valley Authority  
1101 Market Street  
Lookout Place 3R  
Chattanooga, Tennessee 37402-2801

Mr. R.A. Hruby  
General Manager, Bellefonte Nuclear Plant  
Nuclear Generation Development  
and Construction  
Tennessee Valley Authority  
2744 Bellefonte Road, OSB 1A  
Hollywood, Alabama 35752

Mr. Z.W. Rad  
Manager, Bellefonte Nuclear Plant  
Units 1 & 2 Licensing  
Nuclear Generating Development  
and Construction  
Tennessee Valley Authority  
2744 Bellefonte Road, OSB 1A  
Hollywood, Alabama 35752

Mr. Preston D. Swafford  
Chief Nuclear Officer  
and Executive Vice President  
Tennessee Valley Authority  
1101 Market Street  
Lookout Place 3R  
Chattanooga, Tennessee 37402-280

Mr. T.J. Niessen  
General Manager, Quality Assurance  
Nuclear Generation Development  
and Construction  
1101 Market Street  
Blue Ridge 3A  
Chattanooga, Tennessee 37402-2801

Mr. E.J. Viglucci  
Assistant General Counsel  
Tennessee Valley Authority  
400 West Summit Hill Drive  
West Tower 6  
Knoxville, Tennessee 37902

State Health Officer  
Alabama Dept. of Public Health  
P.O. Box 30317  
Montgomery, AL 36130-3017

Chairman  
Jackson County Commission  
Courthouse  
Scottsboro, AL 35768

TVA

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cc email distribution w/encl:  
Zachary Rad  
Tennessee Valley Authority  
Electronic Mail Distribution

Ray Hruby  
Tennessee Valley Authority  
Electronic Mail Distribution

Letter to Ashok S. Bhatnagar from Robert Haag dated April 21, 2011.

SUBJECT: BELLEFONTE NUCLEAR PLANT - NRC INSPECTION REPORT NOS.  
50-438/2011601 AND 50-439/2011601

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S. Cambell, NRR  
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J. Baptist, RII DCP  
G. Khouri, RII DCP  
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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-438 and 50-439  
Construction Permit Nos: CPPR-122 and CPPR-123

Report No: 50-438/2011601 and 50-439/2011601

Applicant: Tennessee Valley Authority (TVA)

Facility: Bellefonte Nuclear Plant, Units 1 & 2

Location: Bellefonte Road  
Hollywood, AL 35752

Dates: March 21-23, 2011

Inspector: G. Khouri, Senior Construction Project Inspector, Division of  
Construction Projects (DCP), Construction  
Projects Branch 3 (CPB3), Region II (RII)  
J. Baptist, Senior Construction Project Inspector, DCP,  
CPB3, RII  
A. Masters, Senior Construction Inspector, Division of  
Construction Inspection (DCI), Construction  
Inspection Branch 2 (CIB2), RII  
A. Ponko, Construction Inspector, DCI, CIB2, RII

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

Enclosure

## EXECUTIVE SUMMARY

Bellefonte Nuclear Plant, Units 1 and 2  
NRC Inspection Report 05000438,439/2011601

The inspection included aspects of engineering and preservation activities, performed by Tennessee Valley Authority (TVA), associated with the Bellefonte Nuclear Plant (BLN), Units 1 and 2. This report covered a three-day period of inspections in the areas of quality assurance (QA); identification and resolution of problems; maintenance activities; engineering activities; access controls; and control of documents and records. The inspection was performed primarily under the guidance of NRC inspection procedure (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 processes and controls necessary to comply with regulatory requirements associated with its construction permits. The inspection evaluated the status of the applicable program areas, specified in Section III.A, "Deferred Plant", of the Commission Policy Statement on Deferred Plants. This was accomplished through examination of procedures and representative records, interviews with personnel, equipment status verification, and observations of programs and processes.

The inspection concluded that TVA's activities remain within the guidelines established for a plant in deferred status, consistent with the Commission Policy Statement for Deferred Plants. The inspection results are discussed in detail below.

### Inspection Results:

- Protection and preservation of plant assets through housekeeping efforts was appropriate for the status of the equipment. (Section I)
- Proper procedural controls were developed for work and inspection activities conducted under the preventative maintenance (PM) program. These activities were performed by qualified personnel using approved procedures. Associated documentation was found to be properly prepared, reviewed, approved, and distributed. (Section II)
- The corrective action program (CAP) procedures were properly established. Audits and self-assessments to evaluate plant programs and processes were properly conducted and were of good quality. (Section III)
- Management and implementation of the QA program involving ongoing design and procurement activities was effective. (Section IV).



## Report Details

### Summary of Plant Status

During the inspection period, BLN Units 1 and 2 remained in a "Deferred Plant" status, as defined by the Commission Policy Statement on Deferred Plants (52 FR 38077)

## **I. Plant Walk-downs (IP 92050)**

### a. Inspection Scope

Systems, structures, and components (SSCs) at BLN remain in an indeterminate status due to the lapse of the QA program and investment recovery activities. However, certain assets that are typically considered important to safety were reviewed to evaluate the effectiveness of preservation efforts. The inspectors toured selected portions of the main control room, auxiliary building, reactor building, turbine building, and Unit 1 diesel generator rooms to review the condition of plant equipment. During these tours, the inspectors reviewed the protection and preservation efforts including, control of groundwater intrusion, installation of protective coverings, weather protection, fire protection, proper housekeeping practices, and rodent control measures. The following areas were inspected:

Unit 1 and 2 Auxiliary Building  
Unit 1 and 2 Main Control Room  
Unit 1 and 2 Reactor Building  
Unit 1 and 2 Primary Containment Tendon Gallery  
Unit 1 and 2 Intake Structure  
Unit 1 Diesel Generator Rooms, 1A and 1B

The inspectors observed training of general walkdown practices. Training handouts and walkdown procedures were reviewed. The training is an integral part of the site's walk-down program.

Additional documents reviewed are listed in the attachment.

### b. Observations and Findings

No findings of significance were identified.

## **II. Preventive Maintenance Program (IP 92050)**

### a. Inspection Scope

The inspectors reviewed the PM program to determine the adequacy of the program for asset preservation and procedural compliance. Implementation of the preservation program relies on performance of many PMs that have been identified as necessary to protect plant assets. Examples of PMs performed under this program include system piping flushes, motor and pump lubrication verification, engine checks, component external inspections, containment penetration pressure checks, and humidity checks.

The inspectors reviewed procedural guidance and implementation of PM activities to ensure that procedures were readily available, current, approved, and followed.

The following PM activities were observed:

PM Number	Work Performed
1-NC-MRCS-000	Inspect Unit 1 mechanical reactor coolant system
2-NC-MRCS-000	Inspect Unit 2 mechanical reactor coolant system
0-QO-VAULT-001	Inspect sapphire vault suppression system bottle pressure
1-IP-TEND-000-N	Inspect Unit 1 tendon galleries
2-IP-TEND-000-N	Inspect Unit 2 tendon galleries

Additional documents reviewed are listed in the attachment.

b. Observations and Findings

No findings of significance were identified.

**III. Corrective Action Program (IP 92050)**

a. Inspection Scope

The inspectors reviewed Problem Evaluation Reports (PERs), interviewed personnel regarding their understanding of the CAP process and concerns resolution program, and attended daily meetings to ensure that identified problems were appropriately classified and captured.

Specifically, the inspectors reviewed a sample of PERs to verify that the initiation level was appropriate, condition classification criteria were followed, management review and action was appropriate, and resolution of the issue was sufficient. The review also assessed if the licensee had appropriately identified and prioritized corrective actions to prevent recurrence.

The inspectors reviewed the findings and recommendations from two QA observations and three self assessments, including items such as readiness for NRC inspection and corrective action follow-up. The observations and self assessments were also reviewed to verify that they were performed with appropriate scope and frequency.

Additional documents reviewed are listed in the attachment.

b. Observations and Findings

No findings of significance were identified.

#### IV. QA Activities

##### Q.1 Design Interfaces (IPs 92050, 35060, 36100)

###### a. Inspection Scope

The inspectors reviewed the containment building tendon detensioning procedure included in Work Request Number 642. Specifically, quality control procedure SQ 10.0 "Detension Tendon" prepared by Precision Surveillance Corporation (PSC) was reviewed.

The inspectors held discussions with TVA and their engineering consultants, concerning the V-9 tendon coupler failure and the work associated with Work Request Number 642, including the detensioning procedures. The basis of TVA's conclusion, that the primary containment structure would not be adversely impacted by this work, was also discussed.

Design drawings, calculations and other documentation were reviewed as necessary to confirm specific information provided in PSC Procedure SQ 10.0.

###### b. Observations/Findings:

No findings of significance were identified. The inspectors verified that the maximum jack force provided in PSC Procedure SQ 10.0 did not exceed the limits given in BLN's Design Basis Document based on prestressing system identified on drawing 1RN0711-X1-1 R0. PSC Procedure SQ 10.0 referenced another quality control procedure included in the work request (PSC Procedure SQ 2.0) to identify the tendons to be detensioned. The inspectors confirmed that the tendons listed in this procedure were consistent with the work request.

##### Q.2 Posting and Procurement activities (IPs 92050, 35060, 36100)

###### a. Inspection Scope

The inspectors performed walkdowns of the several buildings, including the newly renovated areas, and determined that BLN had adequately implemented the postings requirement of 10CFR21.6.

Procurement documents were reviewed and found to be in compliance with the requirements of 10CFR21.31 regarding specifying the applicability of Part 21.

Site procedures were reviewed to verify adequate guidance existed for regulatory reporting requirements.

###### b. Observations/Findings:

No findings of significance were identified.

**V. Access Controls (IP 92050)**a. Inspection Scope

The team reviewed BLN procedure BPP-14.4, "BLN Nuclear Security", Revision 0000, and interviewed personnel to verify the implementation of TVA's access control program. While not specifically required by the guidance in the Commission Policy Statement for Deferred Plants, the inspectors recognized the potential effect on BLN "current plant status" if efforts were not in place to minimize unauthorized plant access.

b. Observations and Findings

No findings of significance were identified. The inspectors verified, through witnessing entrance and exit requirements of both personnel and vehicles, that security measures were implemented in accordance with prescribed procedure.

**VI. Exit Meeting Summary**

The inspectors presented the inspection results to Mr. R. Hruby, Jr., General Manager, Bellefonte Nuclear Plant, and other members of management on March 23, 2011.

## **SUPPLEMENTAL INFORMATION**

### **PARTIAL LIST OF BLN PERSONNEL**

Zack Rad, Manager Licensing  
Mark Palmer, Construction Plant Manager  
Ray Hruby, General Manager BLN Project  
Jim Chardos, Senior Manager, BLN Site Projects  
Walter Justice, Senior Manager, Engineering  
Mark Hellstem, Senior Manager, Project Support  
Mark Schaible, Manager Operations  
Pete Forsberg, Senior Manager, Project Controls  
Roger Reynolds, Manager Construction Security  
Tom Neissen, Project QA Manager  
Rick Cutsinger, Civil Engineering Manager  
Maurice McCaney, Senior Project Manager, Corporate Licensing  
Alvin Hinson, I&C Engineering Manager  
Tony Langley, Electrical Engineering  
David Lafever, Senior Engineering Specialist  
Glen Camper, Maintenance Support  
David Breland, Employee Concerns

### **LIST OF INSPECTION PROCEDURES**

IP 92050: Review of Quality Assurance for Extended Construction Delay  
IP 35060: Licensee Management of QA Activities  
IP 36100: Inspection of 10CFR Part 21 and 10 CFR 50.55(e) Programs for Reporting Defects and Noncompliance

### **ITEMS OPENED AND CLOSED**

Opened

None

Closed

None

## List of Documents Reviewed

### Procedures

TVA-NQA-PLN89-A, Nuclear Quality Assurance Plan (NQAP), Rev. 0024A1  
 BPP-01.0, Organizations and Responsibilities, Rev. 0000  
 BPP-01.1, Administration of Site Procedures, Rev. 0001  
 BPP-01.14, Service Request Initiation, Rev. 0000  
 BPP-01.15, Service Request Review, Rev. 0000  
 SSP-1.3, Training and Qualification of Personnel, Rev. 0015  
 BPP-03.1, Corrective Action Program, Rev. 0001  
 BPP-03.5, Regulatory Reporting Requirements, Rev. 0000  
 BPP-04.1, Procurement of Material, Labor and Services, Rev. 0000  
 BPP-07.1, Work Management, Rev. 0003  
 BPP-14.4, BLN Nuclear Security, Rev. 0000  
 BPP-31.1, Document Control, Rev. 0000  
 BLN-EDP-7, Bellefont Engineering Support, Rev. 0000  
 BLN-EDP-11, Walkdown Procedure for General Walkdown Requirements, Rev. 0000

### Self-Assessments

BLN-CAP-S-11-005, PER Closures  
 BLN-TRN-S-11-002, Training Records - Engineering  
 BLN-CAP-S-11-002, Quaterly CAP Roll Up  
 QA-BL- 10-04, QA Observations from July 1, 2010 Through September 30, 2010  
 QA-BL- 11-01, QA Observations from October 1, 2010 Through December 31, 2010

### PERs Reviewed

228006, Licensing Self-Assessment identified clearer PER description needed  
 236853, NRC identified – Safety Hazard, suspended plywood  
 236854, NRC identified – Open feedwater piping  
 237053, During inspections of electrical penetrations, Code not followed  
 237774, NRC Observation - PM Program  
 201271, Accumulated condensation in U1 Reactor Vessel  
 230234, Bottom drawer of filling cabinet contained completed PM cards  
 230345, Section I.C of the PURPOSE of procedure NGDC-BLN3/4-3-04  
 234265, Area for improvement BLN-TRN-S-10-001, training requirements per the BLN training matrix.  
 236019, Implementation of procurement process  
 236672, Condensation in U2 reactor cavity  
 237775, Plant security failed to perform a required patrol  
 242163, Self Assessment BLN-CAP-S-10-004, Area for Improvement 1  
 253100, Water is accumulating around V-372 Tendon in Unit 2 Tendon Gallery  
 280523, Mechanical reactor coolant system problems  
 285813, Current practice for PMs that have exceptions does not meet industry standards  
 293412, Three self assessments were not properly handled at the end of 2010 fiscal year  
 316210, Approval authority for BLN BPPs  
 316222, Procedure on BLN policies  
 316246, Self Assessment BLN-SIT-S-11-001 (Site Procedures) Learning Opportunities  
 316281, Self Assessment BLN-CAP-S-11-002, CAP Roll Up, AFI 3

PERs initiated as a result of this inspection

SR# 342471, Unit 2 reactor vessel cold leg plug (dam) falling down

SR#342786, Unit 2 reactor vessel head O-ring sealing surface does not have a protective cover

SR#342727, Sargent & Lundy calculation No. 2010-01905, related to BLN Tendon Margin Assessment, contains an editorial error

Work Orders

Work Order 111849875, Inspect Sapphire Vault Suppression System Bottle Pressure

Work Order 111849529, Inspect Unit 1 Mechanical Reactor Coolant System (MC 284)

Work Order 111849541, Inspect Unit 2 Mechanical Reactor Coolant System (MC 284)

Work Order 111850320, Inspect Unit 1 Tendon Galleries

Work Order 111850332, Inspect Unit 2 Tendon Galleries

Purchase Orders

175036-1 – Bellefonte FY2011 Open Items Closure Program

237233 – Bellefonte Nuclear Plant Engineering Calculation / Analysis Hydrologic Study

200926 – Bellefonte Primary System Hot Leg Temperature (T-Hot) Reduction Scoping Analysis

Miscellaneous

Sargent & Lundy Calculation 2010-01905, BLN Tendon Margin Assessment, Approved 5/28/2010

Work request No. 642, degrease and detention and make ready for inspection 2 vertical tendons, dated completed 7/21/2010

BLN Design Basis Document, DBD-0003, Title: Civil/Structural Design, Revision 1

PSC Procedure SQ 6.0, Grease Cap Removal, Revision 0

Drawing 791-10, Wall Tendon Layout Between 225° & 135° Elevs 706' & 796' Bellefonte Unit 1, Revision E

Drawing 791-17, Dome Tendon Layout Bellefonte Unit 1, Revision D

Drawing 791-24, Roof Plan Showing Vertical Trumplate Locations Bellefonte Unit 1, Revision D