



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA STREET, N.W.  
ATLANTA, GEORGIA 30303

Report Nos.: 50-438/84-05 and 50-439/84-05

Licensee: Tennessee Valley Authority  
500A Chestnut Street  
Chattanooga, TN 37401

Docket Nos.: 50-438 and 50-439

License Nos.: CPPR-122 and CPPR-123

Facility Name: Bellefonte 1 and 2

Inspection at Bellefonte site near Scottsboro, Alabama

Inspector: *P. F. Strickland*  
for J. W. York

3/19/84  
Date Signed

Approved by: *C. A. Julian*  
for C. A. Julian, Section Chief  
Project Branch No. 1  
Division of Project and Resident Programs

3/20/84  
Date Signed

### SUMMARY

Inspection on February 1 - 29, 1984

#### Areas Inspected

This routine, announced inspection involved 122 inspector-hours on site in the areas of previous enforcement matters, independent inspection and licensee identified items.

#### Results

Of the three areas inspected, no violations or deviations were identified in two areas; two apparent violations were found in one area.

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PDR ADOCK 0500043B  
Q PDR

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*L. Cox, Project Manager
- \*R. Young, Construction Engineer
- \*B. Thomas, Quality Manager
- \*H. Johnson, Assistant Quality Manager
- \*D. Bridges, Assistant Quality Manager
- \*J. Barnes, Section Supervisor, OQA
- \*K. Lawless, Welding Engineering Unit Supervisor
- \*P. Mann, Nuclear Licensing Unit Supervisor
- \*D. Smith, Supervisor Nuclear Power Compliance
- \*R. Ives, Nuclear Licensing Unit

Other licensee employees contacted included construction craftsmen, QC technicians and office personnel.

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on March 1, 1984, with those persons indicated in paragraph 1 above. The licensee acknowledged the inspection findings.

### 3. Licensee Action on Previous Enforcement Matters

(Closed) Unresolved Item 438/83-23-06, Arc Strikes and Rust on the Reactor Vessel Internals. On a tour of the facility, the resident inspectors had previously noted arc strikes and localized rusting on incore instrument nozzles which are welded to the bottom of the flow distributor assembly. The inspectors requested that TVA QC inspect the area and evaluate for acceptance status. Quality Control Investigation Report (QCIR) number 35,843 was issued. The rust was evaluated as being within specification. The TVA welding QC personnel evaluated the areas of concern and stated that these areas are the result of an acceptable industry practice whereby the gas tungsten arc welding (GTAW) arc is initiated leading into the weld joint or extinguished leading away from the weld joint. The areas have no appreciable depth. The inspector performed a visual inspection of the areas and discussed the evaluation with the licensee. The inspector concurs with the evaluation and this item is resolved.

### 4. Unresolved Items

Unresolved items were not identified during this inspection.

## 5. Independent Inspection Effort (92706)

The inspector witnessed activities in the following areas:

- Tube removal on a component cooling heat exchanger. Some of these tubes are pitted thru wall and the licensee is retubing the units.
- Visual examination of some reactor vessel internals by the resident inspector and licensee cognizant engineer. Discussions were held concerning some of the problems encountered by the licensee.
- Observation of the startup of diesel generator 1B. The licensee has V-16 Transamerica Delaval diesels. Each of these diesels are started once a month for maintenance purposes. The qualification runs for the diesels have not been made.

## 6. Licensee Identified Items (92700)

The resident inspector reviewed with site personnel the adequacy of licensee actions on the following licensee identified items (LII):

- a. (Closed) CDR's 438/82-13 and 439/82-13, Check Valve Leak in Air Start System of Standby Diesel Generators. The licensee submitted a final report on January 25, 1984. The report stated the following:

A check valve identical to those installed by Transamerica Delaval, Incorporated (TDI), in the diesel generator starting air system between the air compressor and the air storage tanks was found to leak during a seismic qualification test. The function of the valve is to allow the starting air compressor to charge the storage tank, and then prevent backflow once the tanks are charged. TVA has modified the defective valves by replacing the existing disc assembly per the conversion procedure and revised drawing provided by TDI. This modification has been seismically tested and accepted.

The inspector reviewed the purchase order, receiving inspection check list, material certifications, ASME N-2PT Certificate, and the sequence control chart for this modification and considers the item closed.

- b. (Closed) CDR's 438/82-82 and 439/82-73, Delaval Problems with Starting Air Valve Assembly on Standby Diesels. The licensee submitted a final report on January 23, 1984. The report stated the following:

Transamerica Delaval Incorporated (TDI), notified the NRC of this defect under 10 CFR 21 by letter dated May 13, 1982 from R. E. Boyer, Manager, Quality Assurance to the Director of the Office of Inspection and Enforcement. The potential defect is related to the length of the capscrew which holds the starting air valve assembly in the cylinder head. If all dimension tolerance is stacked in one direction, the installed clearance is less than

desirable. If this capscrew bottoms in the tapped hole in the cylinder head before the assembly is properly seated, the torque wrench reading would be misleading and the assembly would be too loose and could possibly fail. TVA has replaced the capscrews on the starting air valve assemblies in accordance with an approved procedure and a revised drawing provided by TDI which reflects the new shorter length of the capscrew. The torque valve of the capscrew need not be changed. The use of the shorter capscrew length will ensure that the clearance is desirable, and that the capscrew will not bottom in the tapped hole.

The inspector reviewed the sequence control charts for the four diesel generators and noted that one fourth of an inch was removed from the capscrews. This item is closed.

- c. (Closed) CDR's 438/83-17 and 439/83-13, Cannot Identify Grade of Nuts Because of Orientation. The licensee submitted a final report on February 3, 1984. The report stated the following:

The grade of nut on approximately 50 percent of all high strength bolted connections installed in the plant cannot be identified since the nuts were installed with the grade markings faced against the structural member. The high strength nuts in question are very similar to a heavy-hex low strength nut which has no identifying markings and is in use at the project. Because of a lack of segregation in the field, the possibility exists that low strength nuts have been installed in place of high strength nuts. TVA's Division of Construction (CONST) and Singleton Materials Laboratory have completed a random sampling of over 600 high strength connections in Category I structures. The sampling indicated that less than 10 percent (a total of 60) of the high strength nuts were turned with their grade markings inward rather than the 50 percent originally estimated. Further investigation of the unidentifiable nuts found only one of the nuts rejectable based on it not being of the specified material. The bolted connection from which the rejected nut was taken was not unsafe since failure would have, by design values, taken place in the body of the bolt and not the nut.

The report concluded that:

- (1) The random sampling results indicated with a 95 percent confidence level that the as-specified high strength nuts have been installed.
- (2) All remaining unmarked nuts are acceptable as installed.
- (3) No further sampling is required.

The inspector noted that BNP-QCP-2.15, Structural Steel Installation, had been revised to state that the grade of nut must be identifiable

when installed. Three areas in the Reactor Buildings were randomly inspected and the laboratory report concerning hardness testing of the bolts was reviewed. This item is closed.

- d. (Open) CDR's 438/82-66 and 439/82-59, Deficient Welds on Cable Tray Supports. The licensee submitted a final report on January 21, 1984. The report stated the following:

Groove welds specified on TVA drawing (4DW0750-X2 series) were made as fillet welds. The subject welds are cable tray support welds on trays in the Diesel Generator Buildings. Bellefonte Construction has identified to Engineering Design (EN DES) the sizes of the fillet welds used on the supports. EN DES has evaluated the weld sizes for adequacy and has determined which welds require rework. Revised drawings 4DW0760-X2-4 R7, 4DW0760-X2-6 R11, 4DW0760-X2-7 R5, and 4DW0760-X2-8 R6 have been revised by TVA, and these drawings now include a new or alternate weld symbol to indicate the supports needing rework. The rework will utilize fillet welds and the fillet welds size shown in the drawings is the minimum acceptable size. Where existing fillet welds exceed the specified dimension, they may be used as is.

The inspector selected the following sampling of welds that require rework for a reinspection:

Unit 1

- Weld Map No. 1 RV - 10
  - Weld No. 1RV - 1502 - Station 6
  - Weld No. 1RV - 1511 - Station 6AB
  - Weld No. 1RV - 1517 - Station 15
  - Weld No. 1RV - 1518 - Station 15
- Weld Map No. 1RV - 11
  - Weld No. 1RV - 1619 - Station 4
  - Weld No. 1RV - 1620 - Station 5
  - Weld No. 1RV - 1621 - Station 6
- Weld Map No. 1RV - 12
  - Weld No. 1RV - 1992 - Station 37
  - Weld No. 1RV - 1994 - Station 38 (weld inaccessible)
  - Weld No. 1RV - 1997 - Station 39

Unit 2

- Weld Map No. 2RV - 10
  - Weld No. 2RV - 1691 - Station 5
  - Weld No. 2RV - 1693 - Station 6
  - Weld No. 2RV - 1695 - Station 7
  - Weld No. 2RV - 1761 - Station 32

Weld No. 2RV - 1767 - Station 34  
 Weld No. 2RV - 1769 - Station 35  
 Weld No. 2RV - 1770 - Station 35  
 Weld No. 2RV - 1779 - Station 38  
 Weld No. 2RV - 1780 - Station 38

- Weld Map No. 2RV - 12  
 Weld No. 2RV - 2057 - Station 77  
 Weld No. 2RV - 2058 - Station 77  
 Weld No. 2RV - 2059 - Station 78  
 Weld No. 2RV - 2060 - Station 78

The inspector found that all of the fillet welds measured met the drawing requirements. In addition, approximately ten welds that had been previously found to have the correct fillet sizes were verified. In the sample for Unit 1, one weld (Weld No. 1994) was found to be inaccessible for fillet weld measurement. The inspector reviewed the licensee's checklist for all the welds and found the following results:

Unit 1

Total Welds - 415  
 Inaccessible Welds - 74 (approximately 18% of total)

Unit 2

Total Welds - 348  
 Inaccessible Welds - None

The licensee could not produce documentation to show that the 74 inaccessible welds had been measured by site personnel or evaluated by EN DES. This condition was identified to the licensee as Violation 438/84-05-01, failure to take effective corrective action for evaluating welds on cable tray supports.

During the inspection of the cable tray supports, the following three Mark 8C type supports were found to not conform to the latest revision of the drawing:

- Support With Weld No. 1RV - 1619 - Station 4  
 - Support With Weld No. 1RV - 1620 - Station 5  
 - Support With Weld No. 1RV - 1621 - Station 6

The fillet size was found to be adequate, but Revision 6 to drawing No. 4DW0760-X-8 had added two metal plate stiffeners to the 3" X 3" tube steel and the supports did not have the stiffeners. The configuration QC records show these supports as final inspected to a previous revision. The date of these finalized inspections was October 30, 1978. Bellefonte QCP-10.7, Quality Assurance Records, paragraph 6.1.11 states in part that the Responsible Engineering Unit evaluates revised design drawings to determine if changes are required

to the existing records. The Responsible Engineering Unit had not invalidated the previous revision QC records. This condition was identified to the licensee as Violation 438/84-05-02, Failure to follow procedure for evaluating revised design drawings.

e. The inspector reviewed the in-progress status of the following LII's:

438/84-06 439/84-05	2707	Lengths of flex conduit extensions not as specified
438/84-07 439/84-06	BLN CEB 8308	Global coordinates of maximum pipe movements
438/84-08 439/84-07	BLN EEB 8401	Damage to wiring in Westinghouse low voltage switchgear
438/84-09 439/84-08	BLN CEB 8401	Insulation weights assumed in analysis for valves and pipe fittings
438/84-10 439/84-09	2734	Overtorqued conduit and conduit box support bolts
438/84-11 439/84-10	2726	Level A and B storage temperature went below 40 degree F. limit
438/84-12 439/84-11	BLN BLP 8401	Halogens in Carboline 305 paint on carbon steel pipe supports
438/84-13 439/84-12	2784	Numerous deficiencies on E - Max panels
438/84-14 439/84-13	2787	Adaptor keyway on 8" Borg - Warner globe valves
438/84-15 439/84-14	BLN MEB 8401	Loose drive hubs on over speed governor drive shaft on Delaval diesels