



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos. 50-553/79-11 and 50-554/79-11

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

Facility Name: Phipps Bend Nuclear Plant, Units 1 and 2

Docket Nos. 50-553 and 50-554

License Nos. CPPR-162 and CPPR-163

Inspection at Phipps Bend Site near Kingsport, Tennessee

Inspector: *R. W. Wright* 8/17/79
R. W. Wright / Date Signed

Approved by: *F. S. Cantrell* 8/17/79
F. S. Cantrell, Section Chief, RCES Branch / Date Signed

SUMMARY

Inspected on July 31 - August 3, 1979

Areas Inspected

This routine, unannounced inspection involved 34 inspector-hours onsite in the areas of licensee action on previous inspection findings; construction status; excavation - cooling towers, intake pumping station, and nuclear service water spray ponds; structural concrete; granular fill testfills; the handling of LII's and IEB's.

Results

Of the six areas inspected, no items of noncompliance or deviation were identified in five areas; one item of noncompliance was found in one area. (Deficiency- Improper handling and storage of cadweld materials - paragraph 5.)

DETAILS

1. Persons Contacted

Licensee Employees

- *W. P. Kelleghan, Project Manager
- *J. C. Coefield, Assistant Construction Engineer, PE
- *T. V. Abbatiello, Assistant Construction Engineer, QC
- *G. W. Hogg, Materials and Civil Engineer, QC
- *D. E. Hitchcock, Site QA Unit Supervisor
- **J. J. Ritts, ENDES, Licensing Engineer
- J. A. Crittenden, Electrical Unit Supervisor, QC
- W. K. Burner, Welding Unit Supervisor, QC
- E. J. Barnett, Project Engineering Mechanical Unit Supervisor
- J. E. Rose, Welding QC Engineer

Other Organizations

A. G. Bishop, General Electric Company Field Rep.

*Attended exit interview

**Participated in exit interview by telephone

2. Exit Interview

The inspection scope and findings were summarized on August 3, 1979, with those persons indicated in Paragraph 1 above. Deficiency 553/79-11-03, "Improper handling and storage of cadweld materials" was discussed and the licensee acknowledged the findings. This deficiency is discussed in paragraph 5.

3. Licensee Action on Previous Inspection Findings

(Open) Infraction 553-554/79-03-01, Failure to follow procedures for safety related service contracts.

The licensee's response dated May 8, 1979 states that TVA has since reviewed their site procurement files and verified that all requisitions and requests for delivery have obtained site QA Unit review. Site procurement procedures reviewed by the RII inspector have been established to require that all site originated purchase requisitions, requests for delivery, and bid packages related to QA and non-QA equipment, material and/or services be submitted by the Materials Expediting Unit to the site QA Unit for its approval. All three deficient service contracts involve Southern Calibration and Service (SC&S). Contract 79K18-567532 one of the deficient three that contained no QA requirements is to be modified to contain the details and QA requirements necessary to cover the control of the vendor's calibration service. Since the work involved on contracts 566870 and 567469 has been completed, no modifications can be made to those contracts. This item

remains open pending further review by the RII inspector of additional data to be provided by TVA supporting the acceptability of the serviced test equipment.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Independent Inspection Effort

The inspector examined the following areas:

Overall construction status and work activities underway in containment, auxiliary, fuel and turbine building areas.

The alignment and leveling of reactor pressure vessel (RPV) pedestal base plates for Unit 1.

Excavation and cleaning operations at the intake pumping station.

In-process welding of the upper sections of Unit 1's RPV pedestal and examination of an adjacent weld issuing station.

Excavations for Unit 1 and 2 cooling towers.

During the inspector's observation of work activities underway three vertical series Cadwelds (C-18-HB-0329, Z-18-HB-0121-F, D-18-HB-o336F) were found cutout and lying on the bottom of the basemat of Unit 1. Research into this matter revealed that Design Information Request No. C-008 gave the field engineers permission to use any of the shear bar combinations shown on drawing S-010 Rev. 6 thereby allowing their removal and replacement with an acceptable alternate. Examination of the subject Cadweld documentation revealed their removal had been appropriately recorded and the inspector has no problem with the subject Cadwelds. However, located in the same area the RII inspector found a punctured Erico Cadweld cartridge (No. F-270) and three throughly rusted No. 18 horizontal Cadweld sleeves. Discussion with licensee personnel indicated that Cadwelding operations had ceased in this area for approximately two weeks. Standard Operating Procedure, SOP-10, Rev. 0, Section 11.1 requires that cartridges be stored in a dry place and handled with care to avoid puncturing and should a cartridge be found that is punctured, the cartridge should be disposed of per section 12 of the subject SOP. Additionally, Receiving Inspection Storage and Preventive Maintenance Procedure C-401, Section B 1.2. requires C level storage for Cadweld sleeves with protection of rust inhibiting paper until they are ready for use in the splicing procedure. The above two examples of improper handling and storage of Cadweld materials has been identified as deficiency 553/79-11-03 rather than as an infraction because the materials had not been used, and Quality Control and Cadwelding procedures should have precluded their use in safety-related structures.

6. Observation of Work and Work Activities

a. Lakes, Dams, and Canals - Units 1 and 2

The RII inspector observed the soils excavation of Unit 2's (east) emergency service water spray pond (ESWSP); the priming, blasting of shots Nos. 186 and 187, and the rock excavation underway in Unit 1's (west) ESWSP. All blasting was observed being monitored by QC under the direction of the blasting shift engineer. Acceptance criteria examined by the inspector appear in the following documents; - PSAR Section 2.5 and 3.8, SER Section 2.5, Construction Specification N7C-876, TVA Specification G-9, SOP-2, and Drawing No. 1YE0100-Y1-01R1.

The excavation and blasting activities witnessed were accomplished in accordance with the above mentioned acceptance criteria.

No deviations or items of noncompliance were identified.

b. Central Service Building (Structural Concrete II) - Observation of Work and Work Activities Units 1 and 2

The RII inspector observed the preparation, partial delivery, placement, in-process testing documentation prepared, and inspection of the central service building wall placement No. S-AB01-8B. Although this placement is not considered safety related (Q), TVA treats these Non-Q pours similar to Q placements as far as QC inspection is concerned; hence, the continued effectiveness of the licensee's concrete QA program can be measured by witnessing and evaluating such placements. The activities associated with the subject concrete placement were inspected to the following acceptance criteria:

Section 3.8 and 17 of the PSAR
Work Package R012-1C-8
TVA Specification G-2 "Plain and Reinforced Concrete"
Drawing No. 4SE0377-2S-01, 02
QCI C-201, 208
CEP 2.10, 9.02, 12.01, 17.01

An examination of the batch plant indicated materials were being controlled, accurate batch records were being generated and activities were continually monitored by a QC inspector.

No deviations or items of noncompliance were identified.

c. Granular Fill Testfills

The diesel generator buildings, the control buildings and the diesel generator fuel storage tanks which are not supported directly on rock will be supported by a granular fill extending to sound rock. The requirements for the engineered granular fill material which is being obtained from a offsite source are that it be compacted to an average relative density of 85-percent or greater with a minimum relative density of 80-percent.

The inspector observed the construction of two granular fill testfill sections composed of 1032 crushed stone which were compacted by a self propelled Dynapac Model CA-125 and a smaller manually operated Bomag 60S roller respectively. The inspector witnessed the various stages of testing of the granular fill testfills conducted by Singleton Materials Engineering Laboratory (SME) and Phipps Bend soils QC personnel. Testing observed included in-place dry density and moisture contents by both the sand-cone and nuclear probe methods, settlement readings after each roller pass and sampling of the fill material for gradation testing. All testing equipment used was found to be of current date calibration. The testing was conducted by approved ASTM methods and in accordance with Construction Specification No. N7C-876 Rev. 3 for "Earth and Rock Foundations and Fills."

No deviations or items of noncompliance were identified.

7. Licensee Identified Items (LII)

Prior to the inspection, the licensee identified several items which were considered potentially reportable under 10 CFR 50.55 (e). The items are as follows:

- a. (Open) Item 553-554/79-06-02, Lower than required factor of safety for actual design of welded anchorages. TVA's first interim report dated May 24, 1979 has been received by RII. The licensee's testing program and analysis of test results was reported still in progress and a final report on this item is anticipated by August 17, 1979.
- b. (Closed) Item 553/79-06-03, Piping elbows made of unspecified materials (Tube Turns). As stated in TVA's final report dated May 25, 1979, the cause of this deficiency was attributed to U.S. Steel fabricating a heat of API-5AC pipe on which the heat identity number was incorrect by one digit thereby giving it the same heat identity number (W6719) of the SA-234 pipe material. Examination of records for receipt of material revealed a total of 82 fittings of suspect heat W6719 were shipped to Phipps Bend. A U.S. Steel representative spark tested each of the 82 suspect fittings onsite and found one which was made of the nonconforming material. The one nonconforming elbow was taken back to U.S. Steel by the representative. This item is closed.
- c. (Open) Item 553-554/79-11-01, Faulty welding by Lakeside Bridge and Steel on the drywell vent structure and reactor pressure vessel (RPV) pedestal. On June 6, 1979, TVA notified RII that shipments of drywell vent structure and RPV pedestal by Lakeside have been discovered to have buttered edges that have been found by TVA forces to contain enough porosity, lack of fusion, and slag inclusion to be deemed unacceptable per the American Welding Society (AWS), code D1.1. None of the drywell vent structures for the Phipps Bend Nuclear Plant (PBN) have been shipped from Lakeside to date. All four upper pedestal sections and four lower out of the eight total lower pedestal sections have been received at the PBN plant. The licensee submitted a interim

report dated July 5, 1979 stating TVA will perform the necessary repairs for all RPV pedestal and drywell vent structure segments shipped by Lakeside before June 1, 1979. For all RPV pedestal and drywell vent structure segments not shipped from Lakeside before June 1, 1979 Lakeside is to perform 100 percent RT inspection and repair, as necessary all buttered welds before these segments are shipped to TVA. The inspector conducted discussions with knowledgeable QC personnel concerning this deficiency, examined welding in-progress of the upper RPV pedestal and inspected some repaired and yet to be repaired vertical buttered edges of the lower RPV pedestal segments on site. A final report on the subject item will be transmitted on or before October 1, 1979.

- d. (Open) Item 553-554/79-11-02, Defective auxiliary switch in emergency service water (ESW) switchgear. On July 18, 1979, TVA notified RII that during testing of Hartsville ESW switchgear at the vendor's shop, a defective switch was found (SB-12 auxiliary switch). A worn die caused an elongated hole during manufacture. The subject switches were reported to have not been shipped to Hartsville or Phipps Bend. A written report is due August 17, 1979.

8. Status of NRC Inspection and Enforcement Bulletins

- a. (Open) IEB 78-12, 12A, 12B, A Typical Weld Material in Reactor Pressure Vessel Welds. The licensee's response dated May 29, 1979 followed by a supplemental response dated July 9, 1979 states that CBI has submitted a generic report to the NRC dated May 1, 1979. GE has notified TVA that the Phipps Bend reactor pressure vessels are covered by this report which TVA is currently reviewing and TVA plans to provide a final response on this matter by August 31, 1979.
- b. (Open) IEB 79-02, Pipe Support Base Plate Designs Using Concrete Expansion Bolts. On July 5, 1979, TVA provided a response to this bulletin in a letter to RII. This bulletin will remain open pending further review by RII.
- c. (Closed) IEB 79-03, Longitudinal Weld Defects in ASME SA-312 Type 304 Stainless Steel Pipe Spools Manufactured by Youngstown Welding and Engineering Company (YWEC). TVA submitted to RII an interim response dated May 14, 1979 and a final response dated July 13, 1979. The licensee's investigation of this bulletin revealed that none of the subject piping has been procured for use in safety-related system at Phipps Bend.
- d. (Closed) IEB 79-04, Seismic Stress Analysis of Safety-Related Piping. The licensee's enclosure to response letter dated May 31, 1979 states in part, "TVA's review of Phipps Bend has revealed that three-inch, four-inch, or six-inch diameter Velan swing check valves have neither been installed nor are scheduled for installation in any seismic Category I piping system".

- e. (Closed) IEB 79-07, Seismic Stress Analysis of Safety-Related Piping. On May 31, 1979 TVA provided a response to this bulletin in a letter to RII. The licensee stated that no analysis were performed using the Response Spectrum Model Analysis or Time History Analysis on either NSSS systems or non-NSS systems as defined in Item (1) of the subject bulletin. Subsequent to this inspection, IE-HQ notified RII that they had completed their review of this item and had no further questions at this time.

- f. (Closed) IEB 79-09, Failure of GE Type AK-2 Circuit Breakers in Safety-Related Systems. The licensee stated in the response dated June 20, 1979 that GE type AK-2 circuit breakers are neither in use or planned for use in safety-related systems at Phipps Bend.

- g. (Closed) IEB 79-11, Faulty overcurrent trip device in circuit breakers for engineered safety systems. The licensee stated in the response dated July 20, 1979 that investigations revealed none of the DB-50 and DB-75 circuit breakers with overcurrent trip devices have been used or are planned for use at Phipps Bend Nuclear Plant.