



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

Report Nos.: 50-438/84-19 and 50-439/84-19

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 Conducted: September 18-21, 1984

Inspector: T. D. Gibbons *T. D. Gibbons* *for* 10-19-84
Date Signed

Approved by: T. E. Conlon, Section Chief *T. E. Conlon* 10-19-84
Engineering Branch
Division of Reactor Safety
Date Signed

SUMMARY

Scope: This routine, unannounced inspection involved 28 inspector-hours on site in the areas of previously identified enforcement matters, licensee identified items, inspector followup item, instrumentation (components and systems) work and work activities, instrumentation (cable and terminations) work and work activities.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Licensee Employees Contacted

- *L. Cox, Project Manager
- *D. C. Smith, Compliance Section Supervisor (Power)
- *J. T. Barnes, QA Construction Section Supervisor
- *D. R. Bridges, Assistant Quality Manager
- *D. J. Thomas, Quality Manager
- *R. E. Young, Construction Engineer
- *M. V. Rudolph, Project Engineer, OEDC

NRC Resident Inspector

J. York, Senior Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on September 21, 1984, with those persons indicated in paragraph 1 above. The licensee had no comments on the inspection findings.

3. Licensee Action on Previous Enforcement Matters

- a. (Closed) Violation 438, 439/82-22-01, Violation of Minimum Bend Radius in Vertical Cable Tray Fittings.

The licensee's letters of September 9, 1982, September 24, 1982, and December 16, 1982, have been reviewed and determined to be acceptable by Region II. The licensee has issued Nonconforming Condition Report (NCR) No. 1889 documenting cables that had a minimum bend radius less than specified in the General Construction Specification (GCS) G-38. The GCS-G-38, "Installing Insulated Cables Rated up to 15K Volts," is the governing specification for cable installation. The licensee contacted various cable manufacturers by letter to determine if the "as-built" cable bend radius would be damaging to the cable. The manufacturers' replies indicated the as-installed cable bend radius was satisfactory and that the TVA specification in this area was very conservative. Design engineering has accepted the manufacturers' replies. Based on the above, the subject cables were accepted as installed.

The licensee has established a task team composed of representatives from Engineering Design (ENDES) and Construction. This task team will review all identified cases where the cable bend radius is less than

the specification and will disposition them on a case by case basis. All future installations will comply with the established bend radius or receive specific relaxation of the values from the vendor prior to installing the cable.

- b. (Closed) Violation 438, 439/83-04-02, Cable Minimum Bend Radius.

This item was identified in the Construction Appraisal Report (CAT) 50-438, 439/82-32 which was conducted from September 20 to October 22, 1982.

During an inspection conducted in February 1983, a RII inspector examined the CAT finding and established that the licensee had not addressed the specific CAT finding during the generic review of the violation identified in paragraph 3.a. The inspector identified this item as a violation. The licensee's letter of response dated April 25, 1983, has been reviewed and determined to be acceptable by Region II. The licensee issued NCR 2331 which documents the cable bend radius problems in the areas of cable leaving the tray to enter equipment. As identified in (a) above, the licensee has contacted the manufacturer to establish that the cables are not degraded. Engineering design has accepted the manufacturer's reply. Based on the above, the subject cables were accepted as installed. The licensee has stated that in the future, TVA will comply with the established cable bend radius values or receive specific relaxation of the values from the manufacturer prior to cable installation.

- c. (Closed) Violation 438, 439/81-26-02, Employee Signed Name of Another Employee on a QA Document.

This violation was identified during a special inspection and documented in Report 50-438, 439/81-26. The licensee's letter dated February 10, 1982, has been reviewed and found acceptable by Region II. The licensee issued NCR 1578 to document the item. The disposition of the NCR required that all records involved be reviewed against an authenticated signature list of all QC personnel and, if necessary, perform a reinspection to validate any record in question.

The onsite QC procedure BNP-QCP-10.7, Revision 4, "Quality Assurance Records," was revised by Addendum 1, dated October 23, 1981. The revision states that, "Under no circumstances shall an individual's stamp/initials/signature be entered or other authentication be made by another individual".

- d. (Closed) Unresolved Item 438, 439/84-04-01, Station Battery Life Expectancy.

The licensee has completed a review of vendor's (C&D Power Systems) report dated July 18, 1984, on two cells from the IEB-EU-50-D station battery. The IEB-EU-50-D station battery failed the capacity test

during pre-op test PT-EU-01A. The vendor reported that the "reigel wrap" material used as a mat between the positive plates and the separators is shedding and filling the bottom of the cell area normally reserved as sediment space.

This condition, combined with the normal shedding of active material, is increasing the potential for internal short circuits between the positive and negative plates. The vendor has identified that the internal shorting is the cause of the low capacity exhibited by station battery No. 1EB-EU-50-D. The vendor has recommended that the 1-EB-EU-50-D battery be replaced. The licensee has issued an NCR BLNEEB-84-16 which identified seven additional batteries plus the subject battery that contains "reigel wrap". The licensee's corrective action for the NCR is to replace all eight batteries. The licensee has reported this issue to Region II under 10 CFR 50.55(e) and 10 CFR Part 21. The above actions close the unresolved item that questioned the life expectancy of these batteries; however, the violation 50-438/84-04-02 relating to the failure to document a condition adverse to quality remains open.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Instrumentation (Components and Systems II)

Observation of Work and Work Activities (Unit 1) (52054B)

The inspector selected six instruments for examination. The instruments selected are as follows:

1ND-IFT-907A	Decay Heat Removal Flow
1ND-IFT-902B	Decay Heat Removal Flow
1CA-IPT-001-A	Auxiliary Feedwater Flow
1CA-IPT-002-B	Auxiliary Feedwater Flow
1ND-ITW-901-B	Decay Heat Removal Temperature
1ND-ITW-906-A	Decay Heat Removal Temperature

The instruments were examined to assure that SAR, drawings and procedures were complied with in the areas of identification, location, protection, cleanliness, nonconformance control and inspection. The tubing installation was fully acceptable. The instrument racks were properly installed, anchored, and protected to prevent damage to the components from normal construction activities. The tubing was inspected from the sensing devices to the instrument racks where the transmitters were located.

Within the areas examined, there were no violations or deviations identified.

6. Instrumentation (Cables and Terminations II)

Observation of Work and Work Activities (52064B) Unit 1

The inspector examined the following cables which were routed between cabinets located in the control room. The cabinets were approximately 50 to 60 feet apart. The following cables were examined:

11E-ECA2-146-A	From 11X-IM-016A-A to 11X-IM-004
11E-ECA2-145-B	From 11X-IM-016R-B to 11X-IM-004

The cables were examined for identification of material, size and types of cable, location, routing, physical separation, protection, raceway loading and terminations. The routing was verified using signal tracing. The raceway identification system was clear and adequate.

Within the areas examined, there were no violations or deviations identified.

7. Licensee Identified Items

- a. (Closed) Item 438/CDR 81-15 and 439/CDR 81-15, "Pipe Hanger Documentation Error" (10 CFR 50.55(e)). The final report was submitted August 11, 1981, and a revised final report was issued on December 8, 1982. The reports have been reviewed and determined to be acceptable. The inspector held discussions with responsible licensee representatives and reviewed supporting documentation to verify that the corrective actions identified in the reports have been completed. The addition of the pipe hangers to the seismically qualified cable trays invalidated the original analysis. ENDES has reanalyzed the 55 hangers which were documented on NCR 1350. ENDES has accepted 21 hangers and required the other 34 to be removed from the electrical cable tray supports.
- b. (Closed) Item 438/CDR 84-10 and 439/CDR 84-09, "Overtorqued Conduit and Conduit Box Support Bolts" (10 CFR 50.55(e)). The final report was submitted on June 12, 1984. The report has been reviewed and determined to be acceptable. The inspector held discussions with responsible licensee representatives, and reviewed supporting documentation. The licensee has determined that this issue is not reportable. The electrical inspection unit identified possible over torquing of attachment bolts using breakaway torque. [ENDES has determined that breakaway torque is not an adequate indication of the actual torque applied to a bolt.] Torque values should be determined during initial installation.

- c. (Closed) Item 438/CDR 84-13 and 439/CDR 84-12, "Numerous Deficiencies on E-Max Panels" (10 CFR 50.55(e)). The final report was submitted on September 17, 1984. The report has been reviewed and determined to be acceptable. The inspector held discussions with responsible licensee representatives and reviewed supporting documentation to verify that the corrective actions identified in the report have been completed. The licensee has reworked the cabinets per the vendor drawings. The vendor QA program has been examined by TVA QA and documented in audit report DBI-V-0054. The QA program was found to be acceptable. Engineering Design has instructed the QA Engineering Branch not to waive any source inspections without Engineering Design's approval.
- d. (Closed) Item 438/CDR 83-54 and 439/CDR 83-47, "Contact Gaps on HFA Relays Not Adjusted Property" (10 CFR 50.55(e)). The final report was submitted on June 15, 1984. The report has been reviewed and determined to be acceptable. The inspector held discussions with responsible licensee representatives and reviewed supporting documentation to verify that the corrective actions identified in the report have been completed. The licensee has replaced the coils on all HFA relays on site as identified in IEN 83-19 and IEB 84-02. General Electric Service Information Letter (SIL) 44, supplement 4, identified the need to verify the contact gaps. The licensee inspected the 66 relays that had the coils changed and, as a result of the inspection, six relays required contact gaps adjustment.
- e. (Closed) Item 438/CDR 83-12, "Defective Sequencer Control Cards from Consolidated Control Corporation" (10 CFR 50.55(e)). The final report was submitted on January 13, 1984. The report has been reviewed and determined to be acceptable. The inspector held discussions with responsible licensee representatives and reviewed supporting documentation to verify that the corrective actions identified in the report have been completed. The defective sequence control cards have been returned to the vendor for failure analysis and repair. The apparent cause of the failures was mishandling at the site. The cards have been repaired and returned to the site. The licensee has established procedures for handling the cards and is now using static protection envelopes for the cards.
- f. (Closed) Item 438/CDR 83-05, "Uncontrolled Parts of Battery Chargers from Power Conversion Products, Inc." (10 CFR 50.55(e)). The final report was submitted on April 19, 1984. The report has been reviewed and determined to be acceptable. The inspector held discussions with responsible licensee representatives and reviewed supporting documentation to verify that the corrective actions identified in the report have been completed. The vendor failed to identify the Class IE amplifier boards with a unique part number. The part number supplied was a generic part number which identified the amplifier boards prior to modification for the specific usage. The vendor has assigned a part number specifically for the 125VDC Class IE Chargers.

- g. (Closed) Item 438/CDR 82-68 and 439/82-61, "Generic Deficiencies at Consolidation Controls Corporation" (10 CFR 50.55(e)). The final report was submitted on October 27, 1983. The report has been reviewed and determined to be acceptable. The inspector held discussions with responsible licensee representatives and reviewed supporting documentation to verify that the corrective actions identified in the report have been completed. This item defines generic deficiencies identified by both TVA and NRC-Vendor Inspection Branch. Each item has been evaluated and corrected by the vendor. The licensee has evaluated the corrective actions and found them acceptable.
- h. (Closed) Item 438/CDR 82-52, "Failed Valve Control Unit" (10 CFR 50.55(e)). The final report was submitted on March 26, 1984. The report has been reviewed and determined to be acceptable. The inspector held discussions with responsible licensee representatives and reviewed supporting documentation to verify that the corrective actions identified in the report have been completed. The cause of the failure was identified by the vendor as an open filter capacitor in the electronic relay which controls the valve. The vendor has changed sources for this electronic relay. The licensee replaced all affected units.
- i. (Closed) Item 438/CDR 82-30 and 439/CDR 82-27, "Defects in RPS and ESFAS Modules Supplied by Bailey Meter Company" (10 CFR 50.55(e)). The final report was submitted on November 3, 1983. The report has been reviewed and determined to be acceptable. The inspector held discussions with responsible licensee representatives and reviewed supporting documentation to verify that the corrective actions identified in the report have been completed. The vendor has inspected the equipment and identified the necessary rework. The problems identified were defective connectors (retaining clips), loose terminations, and damaged terminal studs. The rework for both units was completed by construction crafts. ENDES has requested a periodic inspection of the polycarbonate connector (retaining clips) to assure non-recurrence of the cracking. Construction is performing the inspections.

The licensee has requested that the Quality Engineering Branch increase their surveillance activities in the areas of assembly and installation of circuit boards.

- j. (Closed) Item 438/CDR 82-56 and 439/CDR 82-50, "Cable Bend Radius" (10 CFR 50.55(e)). The final report was submitted on January 19, 1984. The report has been reviewed and determined to be acceptable. The inspector held discussions with responsible licensee representatives and reviewed supporting documentation to verify that the corrective actions identified in the report have been completed. This CDR relates to the NCRs issued as a result of the generic review of the violations

identified in paragraphs 3.a and b. The NCRs, numbers 1889, 2003, 2372, and 2490, have been dispositioned and corrective actions completed. The work involved included modifying 24 conduits, reworking cable entrances and modifying motor control centers to meet the requirements.

8. Inspector Followup Item

(Closed) 438/84-13-01, Missing Valve Operator Plugs.

The valve operators have plugged holes for installation of conduits. During construction, one of the plugs is removed and a cable installed for temporary heating to prevent internal condensation. When the motor is connected to permanent power, the temporary heating is disconnected and removed. Two valves 1-NS-1FCV-105A and 1-NS-1FCV-089B were identified by a RII inspector, as having the plugs not reinstalled after disconnection of the temporary heater cables. The inspector verified that the two valves had the plugs reinstalled. The inspector examined numerous other motor operators to ensure that the plugs were in place.