



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

Report Nos.: 50-438/84-03 and 50-439/84-03

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

Inspection at Bellefonte site near Scottsboro, Alabama

Inspector: J. J. Blake 2/23/84
for W. C. Liu Date Signed

Approved by: J. J. Blake 2/23/84
J. J. Blake, Section Chief Date Signed
Engineering Program Branch
Division of Engineering and Operational Programs

SUMMARY

Inspection on February 7 - 10, 1984

Areas Inspected

This routine, unannounced inspection involved 26 inspector-hours on site in the areas of licensee action on previous enforcement matters, pipe support base plate designs using concrete expansion anchor bolts (IE Bulletin 79-02).

Results

Of the areas inspected, one apparent violation was identified (Criterion V - Failure to follow procedures for concrete expansion anchor bolts and pipe support inspections - paragraph 5.b).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- L. Cox, Project Manager
- *R. Young, Construction Engineer
- *B. Thomas, Quality Manager
- *B. Painter, Construction Superintendent
- *E. Bennich, Assistant Construction Engineer
- *H. Johnson, Assistant Quality Manager
- *P. Mann, Nuclear Licensing Supervisor
- *R. Delay, Hanger QC Supervisor
- *R. Norris, Civil Engineering Unit Supervisor
- *J. Barnes, Section Supervisor, OQA-CQAB
- *D. Smith, Nuclear Power Compliance
- *G. Portwood, Technical Support, HEU-A

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

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on February 7 - 10, 1984, with those persons indicated in paragraph 1 above. The licensee was informed of the inspection findings listed below. The licensee acknowledged the inspection findings with no dissenting comments.

(Open) Violation, 438, 439/84-03-01, Failure to Follow Procedure for Concrete Expansion Anchor Bolts and Pipe Support Inspections, paragraph 5.b.

3. Licensee Action on Previous Enforcement Matters

- a. (Closed) Violation 438/83-22-01, Failure to Follow Procedure for Weld Inspection. TVA's letter of response dated October 18, 1983, has been reviewed and determined to be acceptable by Region II. The inspector held discussions with the licensee and examined the corrective actions as stated in the letter of response. The inspectors concluded that TVA had determined the full extent of the subject violation, performed the necessary survey and followup actions to correct the present conditions and developed the necessary corrective actions to preclude recurrence of similar circumstances. The corrective actions identified in the letter of response have been implemented.
- b. (Open) Violation 438/83-22-02, Failure to Follow Procedure for Hanger Inspection. TVA's letter of response dated October 18, 1983, has been reviewed and determined to be acceptable by Region II. The inspector

held discussions with the licensee and examined the corrective actions as stated in the letter of response. The inspector examined Hanger No. IND-MPHG-1014, sheet 2, Rev. 901 and Hanger No. IND-MPHG-0533, Rev. 3 in the decay heat removal system. It was noted that the pipe clamps were installed directly over the circumferential weld joint at Hanger No. IND-MPHG-0533. Bellefonte specification G-43, paragraph 2.2, states that pipe clamps shall not be installed directly over circumferential welds when such installation can be avoided. As a result of this examination, the inspector determined that the licensee had not performed an adequate survey to show that the aforementioned discrepancy was an isolated case. Pending an expanded survey this item remains open.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. IE Bulletin 79-02, Pipe Support Baseplate Designs Using Concrete Expansion Anchor Bolts (25528, Units 1 and 2)

Bellefonte Hanger Engineering Unit is responsible for carrying out the IE Bulletin 79-02 program. Two types of concrete expansion anchor bolts are used for the safety-related base plate installation. One is self-drilling expansion shell anchor (designated as SSD). The other is wedge bolt anchor (designated as WB). The purpose of the Phase I inspection is to implement IE Bulletin 79-02 requirements and to verify the correct installation of concrete expansion anchor bolts in safety-related pipe supports. Results from the phase I inspection have been sent to EN DES for further evaluation. The licensee has not decided whether the phase II inspections are to be performed at a later date.

a. Review of Work Documents and Procedures

The inspector reviewed portions of the following documents and procedures pertaining to safety-related pipe support base plate and anchor bolt installations to determine whether appropriate procedures have been established and whether they comply with NRC requirements and the licensee commitments.

- Bellefonte Nuclear Plant Concrete Expansion Anchor Verification Program (IEB 79-02, Draft)
- BNP-QCP-2.8, Bolt Anchors Set in Hardened Concrete, Rev. 11
- Construction Specification G-32, Bolt Anchors Set in Hardened Concrete, Rev. 8.

b. Observation of Work and Work Activities

The inspector selected the following safety-related pipe hangers, base plates, and concrete expansion anchor bolts that had been QC inspected and accepted for a reinspection in order to determine the effectiveness of the hanger inspection and the IE Bulletin 79-02 program.

<u>HANGER NO.</u>	<u>WEDGE ANCHORS (WB) BOLT QUANTITY AND SIZE</u>	<u>RESULTS FROM APPLIED TORQUE</u>
IND-MPHG-0863	(2) 5/8" diameter	Acceptable
IKC-MPHG-0056, sh.2	(4) 3/4" diameter	Acceptable
2KC-MPHG-0819	(4) 5/8" diameter	3WBs Undertorqued
2KC-MPHG-1023	(4) 3/4" diameter	1 WB Undertorqued
2KC-MPHG-1323	(4) 1" diameter	2 WBs Undertorqued
2KC-MPHG-1344, sh.1	(2) 5/8" diameter	2 WBs Undertorqued
OKC-MPHG-1378	(4) 3/4" diameter	Acceptable
ONM-PMHG-0035	(4) 5/8" diameter	Acceptable
ONM-MPHG-0901	(4) 3/4" diameter	4 Washers Missing

Summary: 9 Hangers
 11 Base Plates
 32 Wedge Bolts
 8 Wedge bolts were undertorqued
 4 Wedge bolts showed no washers

<u>HANGER NO.</u>	<u>SELF-DRILLING (SSD) BOLT QUANTITY AND SIZE</u>	<u>RESULTS FROM PULL TEST</u>
IRF-MPHG-2022F-R3	(2) 3/8" diameter	Acceptable
ORF-MPHG-0641-R1	(2) 1/2" diameter	Acceptable
ORF-MPHG-4079-R1	(4) 5/8" diameter	Acceptable
ONB-MPHG-1375-RO	(2) 1/2" diameter	Acceptable
ONB-MPHG-1376-RO	(2) 1/2" diameter	Acceptable
ONB-MPHG-1377-RO	(2) 1/2" diameter	Acceptable

Summary: 6 Hangers
 6 Base plates
 14 SSD bolts (all are acceptable)

The above wedge anchors (WB) and self-drilling shell anchors (SSD) were inspected against their detail drawings for configuration, identification, location, minimum spacing and edge distance. In general, the concrete expansion anchor bolts were installed in accordance with documented procedures with the exception of the discrepancies identified below:

- (1) Wedge anchors for Hanger No. ONM-MPHG-0901, were inspected. It was noted that no washers were used with the four wedge anchors. Bellefonte QCP-2.8, paragraph 6.3.3.4 states that a washer shall be placed over the bolt and a nut screwed onto the bolt.....The bolt shall then be driven until the nut, washer, and attachment are in solid contact.
- (2) Wedge anchors for Hanger No. 2KC-MPHG-1023-R4 were tested. It was found that the wedge anchor on the bottom east side was undertorqued. In accordance with QCP2.8, Attachment Q, the 3/4" diameter bolt should be able to take a torque of 192 ft-lb. In fact, test result indicated that this wedge bolt could only withstand a torque of 120 ft.-lb. of approximately 63 percent to the required value. The licensee indicated that this wedge bolt should be replaced with a new installation.
- (3) Results from the aforementioned table revealed that 8 out of 32 wedge anchors were undertorqued (i.e. the nut on an anchor turns during torque testing). QCP2.8, Attachment D requires that installed wedge anchors shall be able to withstand the specified torque values corresponding to their sizes.
- (4) During the inspection the inspector observed that Hanger No. 2KC-MPHG-1322-sh.1-R0 rear bracket had been disconnected. The body of the sway strut had been rotated approximately 90 degrees from its N-S original position to E-W position. This hanger was inspected and put in final status on March 15, 1982.
- (5) Hanger No. OKC-MPHG-1378-R2, in the component cooling system was examined. It was noted that the pipe gap on the south side was 3/16" and the pipe gap on the north side was zero. This gap exceeds the maximum tolerance of 5/32" identified in specification G-43, Appendix A. This hanger was inspected and put in final status on April 2, 1982.

Discrepancies identified from the above inspections indicate that portions of these hangers and concrete expansion wedge anchors were not installed by the craftsmen in accordance with the design drawings and specified procedures. The failure of QC inspectors to detect required

washers to be used for wedge anchor installations for Hanger No. ONM-MPHG-0901, to identify the deficiency of the installed wedge anchor for Hanger No. 2KC-MPHG-1023-R4, to verify the required torque values for eight installed wedge anchors, to identify the disconnected sway strut for Hanger No. 2KC-MPHG-1322-Sh.1-R0, and to verify the excessive pipe gap for Hanger No. OKC-MPHG-1378-R2, is a violation of 10 CFR 50, Appendix B, Criterion V, and is identified as violation, 438, 439/84-03-01, Failure to Follow Procedures for Concrete Expansion Anchor Bolts and Pipe Support Inspections.

Within the areas inspected, one violation was identified.