UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report Nos.: 50-259/90-09, 50-260/90-09, and 50-296/90-09

Licensee: Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Docket Nos.: 50-259, 50-260 and 50-296 License Nos.: DPR-33, DPR-52, and DPR-68

Facility Name: Browns Ferry 1, 2, and 3

Inspection Conducted: March 26-30, 1990

Inspector: R. C. Chou 4-24-90
Date Signed

Approved by: For J.O. Blake, Chief 4/24/90
Date Signed
Material and Processes Section
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope:

This routine, announced inspection was conducted in the areas of pipe support modifications for the licensee's IEBs 79-02/79-14 program and previous open items.

Results:

In the areas inspected, violations or deviations were not identified.

Three out of 34 pipe supports were found to have discrepancies and were additional examples of previous violation 89-57-01. The licensee has improved the weld quality, but should consider more training for construction foreman and Quality Control (QC) inspectors, since all reinspected pipe supports had been signed off and accepted by foreman and QC inspectors.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*B. V. Baird, Civil Engineer
P. R. Baron, Site Quality Manager
*G. Campbell, Plant Manager
*J. T. Carlin, Unit Operation Manager
*W. Massie, Site Licensing Engineer
*J. McCarthy, Regulatory - Licensing Supervisor
*L. W. Myers, Plant Manager
*P. R. Rupert, Lead Civil Engineer
*J. Smithson, Modification Engineer Supervisor
*M. L. Strickland, Quality Control (QC) Shift Manager
*E. F. Thomas, Project Manager
*M. M. Turner, Quality Manager
D. Winchester, Modification Engineer - Mechanical

Other licensee employees contacted during this inspection included craftsmen, engineers, mechanics, technicians, and administrative personnel.

NRC Resident Inspectors

*D. R. Carpenter, NRC Site Manager
*E. F. Christnot, Resident Inspector
*K. D. Ivey, Jr., Resident Inspector

*Attended exit interview

2. Licensee Action on Pipe Support Modifications.

a. Reference 1: IE Bulletin 79-02, "Pipe Support Base Plate Designs Using Concrete Expansion Anchor Bolts"

Reference 2: IE Bulletin 79-14, "Seismic Analyses For As-Built Safety-Related Piping System"

(1) Status

This inspection involved pipe support modifications required to meet IEBs 79-02 and 79-14 before the restart of Unit 2. The last inspection in this area was documented in Inspection Report Nos. 50-259, 260, 296/89-57.

The licensee has completed approximately 850 pipe support modifications, which represents about 35 percent of the total to be completed before restart. All pipe support modifications are scheduled to be completed by early July 1990 to support a restart schedule of September 1990.

(2) Walkdown Re-Inspection

The inspector ramdonly selected 34 pipe supports which had previously been inspected and accepted by the licensee construction foreman and QC inspectors. The 34 pipe supports, in five different systems, included large bore and small bore piping for safety-related systems located both inside and outside of containment. The walkdown re-inspection was completed with assistance from licensee engineers and a QC mechanical inspector who is also qualified as a welding inspector. The supports were partially re-inspected against detail drawings, including the original walkdown sketches, the Design Change Notices (DCNs), and the Field Design Change Notices (FDCNs) for configuration, identification, fastener/anchor installation, anchor size, anchor type, anchor marking, anchor edge distance, base plate size and thickness, plate warpage, member size, weld sizes, component identification numbers, component sizes and settings, dimensions, oxidation accumulation, maintenance, and damage/protection. The supports re-inspected during the current inspection are listed below.

TABLE I

Walkdown Re-Inspection Supports

Support No.	Revision	System No.	System Description	Large Bore or Small Bore	Comments/ Discrepancies
2-47B400S0009	000	001	Main Steam	Large	
2-47B400S0025	001	001	Main Steam	Large	
2-47B400S0029	001	001	Main Steam	Large	
2-47B400S0030	000	001	Main Steam	Large	
2-47B400S0133	001	001	Main Steam	Small	
2-47B400S0158	001	001	Main Steam	Small	
2-47B400S0159	001	001	Main Steam	Small	
2-47B400S0201	001	001	Main Steam	Large	Note 1
2-47B400S0209	001	001	Main Steam	Small	
2-47B400S0212	000	001	Main Steam	Large	
2-47B464S0119	000	070	Reactor Building Cooling Water	Large	

TABLE I

Walkdown Re-Inspection Supports

(cont'd)

Support No.	Revision	System No.	System Description	Large Bore or Small Bore	Comments/ Discrepancies
2-47B464S0120	000	070	Reactor Building Cooling Water	Large	
2-47B464S0121	000	070	Reactor Building Cooling Water	Large	
1-47B450R0009	000	023	RHR Service Water	Large	
1-47B450R0020	001	023	RHR Service Water	Large	
1-47B450S0019	000	023	RHR Service Water	Large	Note 2
1-47B450S0025	000	023	RHR Service Water	Large	
1-47B450S0030	000	023	RHR Service Water	Large	
2-47B450H0035	001	023	RHR Service Water	Large	
2-47B450H0039	001	023	RHR Service Water	Large	
2-47B450R0025	000	023	RHR Service Water	Large	Note 3
2-47B455H0075	001	073	HPCI	Large	
2-47B455H0088	001	073	HPCI	Large	
2-47B462S0003	000	063	Standby Liquid Control	Small	
2-47B462S0004	000	063	Standby Liquid Control	Small	
2-47B462S0006	000	063	Standby Liquid Control	Small	
2-47B462S0011	000	063	Standby Liquid Control	Small	Note 4
2-47B462S0012	000	063	Standby Liquid Control	Small	
2-47B462S0088	000	063	Standby Liquid Control	Small	
2-47B462S0061	000	063	Standby Liquid Control	Small	
2-47B462S0068	000	063	Standby Liquid Control	Small	
2-47B462S0073	000	063	Standby Liquid Control	Small	
2-47B462S0075	000	063	Standby Liquid Control	Small	
2-47B462S0117	000	063	Standby Liquid Control	Small	

Notes:

1. A gap of 3/8" existed between the new cover plate and the existing cover plate (gusset plate) on the far side of Section A201-A201. The drawings for Support No. 2-47B400S0201

did not have welds on both sides between the new plates and the existing plates which is a design deficiency; the gap between the new plate and the existing plate is a construction deficiency.

2. The support rod contacts adjacent conduit. Similar pipe clearance problems on other pipe supports were previously identified by an NRR Team Inspection as open item No. EMG-016. The licensee is working on this problem per Task No. TSD-S101. This support was already identified and included in the task program by the licensee.

3. The drawings for support No. 2-47B450R0025 stated expansion anchors without specifying "wedge anchors." Therefore, the design capacity for expansion anchors should be the lower capacity of Self-Drilled Expansion Anchors. The design calculation used the higher capacity of wedge anchors which were based on the previous installation records.

4. Support 2-47B462S0011 is located 2'-0 1/4" from the pipe elbow. The drawing showed the support as 1'-0 1/16" from the elbow. TVA General Construction Specification G-43 allows ± 6" location tolerance for small bore piping.

The discrepancies as stated for the three supports shown in notes 1, 3 and 4 are additional examples of the condition described in Violation 50-260/89-57-01.

(3) Support Calculation Review

The design calculations for Support Nos. 2-47B400S0201 and 1-47B450R0012 were partially reviewed and evaluated for thoroughness, clarity, consistency, and accuracy. The calculations contained the purpose, assumptions, references, data, computations, summaries and conclusions, and attachments. The attachments included existing pipe support configuration from walkdowns, proposed support modifications or Design Change Notices (DCNs), Employee Concerns Checklist, and computer input and output for frame and base plate analyses. The review included: that the applied loads used were taken from the latest stress calculation; computer model, computer input and output, check of displacements, member size, weld sizes and symbols, bolt sizes, and standard component capacity and settings. In general, the design calculations were of good quality, except for the computer input assumption which differed from the drawing indicated for Support No. 2-47B400S0201. The original wide flange, W10x33, with 20" gusset plate added at the bottom, was not qualified previously to carry the snubber loads.

This wide flange was qualified by adding a new cover plate on each side above the existing gusset plates, to reinforce the wide flange as a box type beam and continue the gusset plate function for reinforcement. The drawing did not require welds between the new cover plates and the existing gusset plates for reinforcement continuation. Therefore, the weakest portion of this post is still the portion of wide flange W10x33 located between the new cover plate and the existing gusset plate. The design input for this post assumed the whole length as a reinforced W10x33 with the new cover plates without the discontinuity. The licensee evaluated this problem and will modify the support again or rerun the computer analysis based on the field condition.

b. (Open) Violation 50-260/89-57-01, Pipe Support Discrepancies

This violation involved discrepancies found during a previous inspection of the pipe support modification program. The licensee's response letter dated March 16, 1990, was reviewed at the site by the inspector, and discussed with the licensee's engineers. Items 1, 2, and 3 of violations are considered to be acceptable and closed.

The licensee's response on Item 4 of the violation and the engineering disposition for DCN No. Q10004A, dated February 22, 1990, were not acceptable. The inspector and the licensee's QC shift manager reinspected the gap or warpage for Support No. 1-47B450R0012 and found that the contact area was approximately 8 sq. in. Therefore, the licensee should reevaluate this problem. The commitments listed on Items 1, 2, and 4 of Enclosure 2 of Response to Violation 89-57-01 were reviewed and considered to be acceptable. TVA will reconsider its position on Item 3 of Enclosure 2, of the response, since the commitment conflicted with internal memorandum R28-900306-901, dated March 7, 1990. The three new examples listed in Paragraph 2.a.(2) are taken as indications that corrective actions are not yet complete. This violation remains open.

3. Exit Interview

The inspection scope and results were summarized on March 30, 1990, with those persons indicated in paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

The inspector expressed the concern about the licensee's IEBs 79-02/79-14 program on modifications because discrepancies on three more supports were found during this inspection.