



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

Report Nos.: 50-327/85-49 and 50-328/85-49

Licensee: Tennessee Valley Authority
 6N11 B Missionary Ridge Place
 1101 Market Street
 Chattanooga, TN 37402-2801

Docket Nos.: 50-327 and 50-328

License Nos.: DPR-77 and DPR-79

Facility Name: Sequoyah 1 and 2

Inspection Conducted: December 16-20, 1985

Inspector: J. J. Blake 1/15/86
 Date Signed

Approved by: J. J. Blake 1/15/86
 Date Signed
 J. J. Blake, Section Chief
 Engineering Branch
 Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection involved 36 inspector-hours on site in the areas of licensee actions on previous enforcement matters pertaining to safety-related cable tray support systems, and safety-related pipe support and restraint systems.

Results: One violation was identified - Inspection and installation problems for seismically designed pipe supports, paragraph 5.b.

8603050558 860206
 PDR ADOCK 05000327
 G PDR

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *P. Wallace, Plant Manager
- *H. Rankin, Manager, Design Services
- *J. Vineyard, Project Manager, Office of Engineering (OE)
- *G. Kirk, Compliance Supervisor
- *R. Olson, Modification Manager
- *B. Patterson, Maintenance Superintendent
- *S. Cowart, Quality Surveillance Supervisor
- *G. Boles, Mechanical Maintenance Supervisor
- *C. Johnson, Civil Project Engineer, OE
- *D. Craven, QA Staff Supervisor
- *R. Birchell, Mechanical Engineer, Compliance
- L. Katcham, Civil Engineer, OE

Other licensee employees contacted included QC inspectors, craftsmen, engineers, technicians, security force members, and office personnel.

NRC Resident Inspector

- *K. Jenison, Senior Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on December 20, 1985, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee.

(Open) Violation 327, 328/85-49-01, Inspection and installation problems for seismically designed pipe supports, paragraph 5.b.

(Open) Inspector Followup Item 327, 328/85-49-02, Determination of locking devices for support installations, paragraph 6.a.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

- a. (Closed) Violation 327, 328/85-29-01, Inadequate design controls for seismically designed cable tray supports. TVA's letter of response dated November 25, 1985, has been reviewed and determined to be

acceptable by Region II. The inspector held discussions with licensee's representatives and examined the corrective actions as stated in the letter of response.

The inspector 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. (Closed) Violation 327, 328/85-29-02, Inadequate design control for safety-related cable tray support baseplate installations. TVA's letter of response dated November 25, 1985, has been reviewed and determined to be acceptable by Region II. The inspector held discussions with licensee's representatives and examined the corrective actions as stated in the letter of response. The inspector 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.

4. Unresolved Items

Unresolved items were not identified during the inspection.

5. Safety-Related Pipe Support and Restraint Systems

a. Review of Work Procedures and Design Documents

The inspector reviewed portions of the following inspection procedures and design documents pertaining to safety-related pipe support and restraint systems to determine whether they comply with NRC requirements and the licensee's commitments.

- SNP Instruction No. 66, Inspection of Supports, March 1, 1983
- Modifications and Additions Instruction M&AI-9, Inspection of Bolted Connections, July 5, 1983
- Pipe Support Design Manual, Volume 4, Manufacturer's Catalog Information, April 22, 1983
- SQN-DC-V-13.3, Detailed Analysis of Category I Piping Systems, August 13, 1984

b. Field Inspection of Pipe Supports and Baseplates

The following pipe supports including baseplates were partially inspected to determine whether they were properly installed and inspected in accordance with established procedures.

<u>Support Number</u>	<u>Piping System</u>
*1-AFDH-244, Rev. 7	Auxiliary Feedwater
*1-AFDH-254, Rev. 6	Auxiliary Feedwater
*1-AFDH-411, Rev. 1	Auxiliary Feedwater
*2-SIH-444A, Rev. 1	Safety Injection
1-ERCWH-515, Rev. 3	Essential Raw Cooling Water
**1-FS-040, Rev. 4	Fire Suppression
**1-FS-045, Rev. 7	Fire Suppression
**1-47A059-14, Rev. 0	Chilled Water Supply

*, ** Indicate discrepancies identified during the inspection.

** Indicates dead-load supports attached to seismic Class 1 structures.

The above pipe supports, in general, were installed in accordance with design documents with the exception of the supports identified below:

- (1) Support No. 1-AFDH-244, Rev. 7, pipe clamp bolt on the snubber side was loose.
- (2) Support No. 1-AFDH-254, Rev. 6, jam nut on the structural attachment side of the sway strut was loose.
- (3) Support No. 1-AFDH-411, Rev. 1, item 2 of the vertical rod was bent.
- (4) Support No. 2-SIH-444A, Rev. 1, one of the two vertical trapeze rods was disconnected.
- (5) Support No. 1-47A059-14, one of the two vertical trapeze rods was broken.
- (6) Support No. 1-FS-040, Rev. 4, jam nut was loose.
- (7) Support No. 1-FS-045, Rev. 7, jam nut was loose.

The above items (1), (2), (3) and (4) are seismically designed supports; (5), (6) and (7) are dead-load supports that are attached to seismic Class 1 structures. SNP Inspection Instruction No. 66, inspection of supports, requires that installation conforms to

applicable drawings and that all bolts are properly engaged and tightened. 10 CFR 50, Appendix B, Criterion V, requires that activities affecting quality shall be prescribed by documented instructions, procedures and drawings, and shall be accomplished in accordance with these instructions, procedures and drawings. Results of the field inspections indicate that portions of the aforementioned pipe supports failed to satisfy the licensee's instructions and the NRC requirements. As a result, these supports may not be able to perform their intended function as required by the design. This matter is identified as Violation 327, 328/85-49-01, Inspection and installation problems for seismically designated pipe supports.

Within the areas inspected, one violation was identified.

6. Technical Discussions

a. Locking Device

During the inspection, the inspector noted that many of the installed threaded fasteners that were utilized in the support installations showed no locking devices. Where pipe clamps were used for snubber or sway strut connections, only a single nut was installed. The inspector reviewed volume 4 of the Sequoyah Pipe Support Design Manual. It was found that a special instruction was noted on the manufacturer's drawing for standard pipe clamps. This special instruction requires that all hex nuts be replaced with two jamnuts for nuclear use. The second jamnut serves only as a locking device. The inspector held discussions with licensee's representatives regarding the above concerns. The inspector noted that the office of engineering had not informed the maintenance/modification group that a locking device should have been used in the support installations. Pending resolution with respect to the above concerns between the office of engineering and the maintenance/modification group, this matter is identified as Inspector Followup Item 327, 328/85-49-02, Determination of locking devices for support installations.

b. Bolted Connections for Supports

The inspector reviewed Modifications and Additions Instruction M&AI-9, inspection of bolted connections, paragraph 8.0 of the instruction states that bolts with washers shall show no visible evidence of slack and the bolt shall be verified to be, as a minimum, handtight. There is no definition given as to what the HANDTIGHT physically means in terms of installation and inspection requirements. The inspector held discussions with two QC inspectors and two maintenance/modification engineers regarding the physical meaning of HANDTIGHT. None of the above personnel understood the meaning of HANDTIGHT requirements. This indicates that the procedure shows a lack of understanding by the personnel who are responsible for implementing quality work activities.

Within the areas inspected, no violations or deviations were identified.

Tennessee Valley Authority
ATTN: Mr. Steven A. White
Manager of Power and
Engineering (Nuclear)
6N38 A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Gentlemen:

SUBJECT: REPORT NOS. 50-327/85-49 AND 50-328/85-49

On December 16-20, 1985, NRC inspected activities authorized by NRC Operating License Nos. DPR-77 and DPR-79 for your Sequoyah facility. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the enclosed inspection report.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

The inspection findings indicate that certain activities violated NRC requirements. The violations, references to pertinent requirements, and elements to be included in your response are presented in the enclosed Notice of Violation.

The responses directed by this letter and the enclosures are not subject to the clearance procedures of the Office of Management and Budget issued under the Paperwork Reduction Act of 1980, PL 96-511.

Should you have any questions concerning this letter, please contact us.

Sincerely,

John A. Olshinski
Deputy Regional Administrator for TVA

Enclosures: (See page 2)

Enclosures:

1. Notice of Violation
2. Inspection Report Nos. 50-327/85-49 and 50-328/85-49

cc w/encls:

H. L. Abercrombie, Sequoyah Nuclear Plant
Site Director
P. R. Wallace, Plant Manager
K. W. Whitt, Chief, Nuclear
Safety Review Staff
D. L. Williams, Jr., Supervisor
Licensing Section
G. B. Kirk, Compliance Staff Supervisor
J. E. Wills, Project Engineer

bcc w/encls:

Document Control Desk
State of Tennessee

bcc w/encl:

J. N. Grace
H. R. Denton, NRR
H. L. Thompson, NRR
J. M. Taylor, IE
B. B. Hayes, OI
NRC Resident Inspector

RII

RII

RII

RII

RII

WLiu:bhg
1/ /86

JBlake
1/ /86

AHerdt
1/ /86

AGibson
1/ /86

DVerrelli
1/ /86

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *P. Wallace, Plant Manager
- *H. Rankin, Manager, Design Services
- *J. Vineyard, Project Manager, Office of Engineering (OE)
- *G. Kirk, Compliance Supervisor
- *R. Olson, Modification Manager
- *B. Patterson, Maintenance Superintendent
- *S. Cowart, Quality Surveillance Supervisor
- *G. Boles, Mechanical Maintenance Supervisor
- *C. Johnson, Civil Project Engineer, OE
- *D. Craven, QA Staff Supervisor
- *R. Birchell, Mechanical Engineer, Compliance
- L. Katcham, Civil Engineer, OE

Other licensee employees contacted included QC inspectors, craftsmen, engineers, technicians, security force members, and office personnel.

NRC Resident Inspector

- *K. Jenison, Senior Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on December 20, 1985, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee.

(Open) Violation 327, 328/85-49-01, Inspection and installation problems for seismically designed pipe supports, paragraph 5.b.

(Open) Inspector Followup Item 327, 328/85-49-02, Determination of locking devices for support installations, paragraph 6.a.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

- a. (Closed) Violation 327, 328/85-29-01, Inadequate design controls for seismically designed cable tray supports. TVA's letter of response dated November 25, 1985, has been reviewed and determined to be

acceptable by Region II. The inspector held discussions with licensee's representatives and examined the corrective actions as stated in the letter of response.

The inspector 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. (Closed) Violation 327, 328/85-29-02, Inadequate design control for safety-related cable tray support baseplate installations. TVA's letter of response dated November 25, 1985, has been reviewed and determined to be acceptable by Region II. The inspector held discussions with licensee's representatives and examined the corrective actions as stated in the letter of response. The inspector 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.

4. Unresolved Items

Unresolved items were not identified during the inspection.

5. Safety-Related Pipe Support and Restraint Systems

a. Review of Work Procedures and Design Documents

The inspector reviewed portions of the following inspection procedures and design documents pertaining to safety-related pipe support and restraint systems to determine whether they comply with NRC requirements and the licensee's commitments.

- SNP Instruction No. 66, Inspection of Supports, March 1, 1983
- Modifications and Additions Instruction M&AI-9, Inspection of Bolted Connections, July 5, 1983
- Pipe Support Design Manual, Volume 4, Manufacturer's Catalog Information, April 22, 1983
- SQN-DC-V-13.3, Detailed Analysis of Category I Piping Systems, August 13, 1984

b. Field Inspection of Pipe Supports and Baseplates

The following pipe supports including baseplates were partially inspected to determine whether they were properly installed and inspected in accordance with established procedures.

<u>Support Number</u>	<u>Piping System</u>
*1-AFDH-244, Rev. 7	Auxiliary Feedwater
*1-AFDH-254, Rev. 6	Auxiliary Feedwater
*1-AFDH-411, Rev. 1	Auxiliary Feedwater
*2-SIH-444A, Rev. 1	Safety Injection
1-ERCWH-515, Rev. 3	Essential Raw Cooling Water
**1-FS-040, Rev. 4	Fire Suppression
**1-FS-045, Rev. 7	Fire Suppression
**1-47A059-14, Rev. 0	Chilled Water Supply

*, ** Indicate discrepancies identified during the inspection.

** Indicates dead-load supports attached to seismic Class 1 structures.

The above pipe supports, in general, were installed in accordance with design documents with the exception of the supports identified below:

- (1) Support No. 1-AFDH-244, Rev. 7, pipe clamp bolt on the snubber side was loose.
- (2) Support No. 1-AFDH-254, Rev. 6, jam nut on the structural attachment side of the sway strut was loose.
- (3) Support No. 1-AFDH-411, Rev. 1, item 2 of the vertical rod was bent.
- (4) Support No. 2-SIH-444A, Rev. 1, one of the two vertical trapeze rods was disconnected.
- (5) Support No. 1-47A059-14, one of the two vertical trapeze rods was broken.
- (6) Support No. 1-FS-040, Rev. 4, jam nut was loose.
- (7) Support No. 1-FS-045, Rev. 7, jam nut was loose.

The above items (1), (2), (3) and (4) are seismically designed supports; (5), (6) and (7) are dead-load supports that are attached to seismic Class 1 structures. SNP Inspection Instruction No. 66, inspection of supports, requires that installation conforms to

applicable drawings and that all jolts are properly engaged and tightened. 10 CFR 50, Appendix B, Criterion V, requires that activities affecting quality shall be prescribed by documented instructions, procedures and drawings, and shall be accomplished in accordance with these instructions, procedures and drawings. Results of the field inspections indicate that portions of the aforementioned pipe supports failed to satisfy the licensee's instructions and the NRC requirements. As a result, these supports may not be able to perform their intended function as required by the design. This matter is identified as Violation 327, 328/85-49-01, Inspection and installation problems for seismically designated pipe supports.

Within the areas inspected, one violation was identified.

6. Technical Discussions

a. Locking Device

During the inspection, the inspector noted that many of the installed threaded fasteners that were utilized in the support installations showed no locking devices. Where pipe clamps were used for snubber or sway strut connections, only a single nut was installed. The inspector reviewed volume 4 of the Sequoyah Pipe Support Design Manual. It was found that a special instruction was noted on the manufacturer's drawing for standard pipe clamps. This special instruction requires that all hex nuts be replaced with two jamnuts for nuclear use. The second jamnut serves only as a locking device. The inspector held discussions with licensee's representatives regarding the above concerns. The inspector noted that the office of engineering had not informed the maintenance/modification group that a locking device should have been used in the support installations. Pending resolution with respect to the above concerns between the office of engineering and the maintenance/modification group, this matter is identified as Inspector Followup Item 327, 328/85-49-02, Determination of locking devices for support installations.

b. Bolted Connections for Supports

The inspector reviewed Modifications and Additions Instruction M&AI-9, inspection of bolted connections, paragraph 8.0 of the instruction states that bolts with washers shall show no visible evidence of slack and the bolt shall be verified to be, as a minimum, handtight. There is no definition given as to what the HANDTIGHT physically means in terms of installation and inspection requirements. The inspector held discussions with two QC inspectors and two maintenance/modification engineers regarding the physical meaning of HANDTIGHT. None of the above personnel understood the meaning of HANDTIGHT requirements. This indicates that the procedure shows a lack of understanding by the personnel who are responsible for implementing quality work activities.

Within the areas inspected, no violations or deviations were identified.