



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

January 9, 2006

Tennessee Valley Authority
ATTN: Mr. Karl W. Singer
Chief Nuclear Officer and
Executive Vice President
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: SEQUOYAH NUCLEAR PLANT - NRC INDEPENDENT SPENT FUEL
STORAGE INSTALLATION (ISFSI) UNRESOLVED ITEM INSPECTION
REPORT NO. 07200034/2005002

Dear Mr. Singer:

On December 13, 2005, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection of Unresolved Item (URI) 72-34/2004-001-03, associated with design control of the auxiliary building crane, at your Sequoyah Nuclear Plant. The enclosed report documents the results, which were discussed with Mr. D. Kulisek and other members of your staff.

The inspection examined activities as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspection reviewed selected procedures, calculations, and records, examined the components, and interviewed personnel.

Based on results of the inspection, this URI was closed.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Mark S. Lesser, Chief
Engineering Branch 3
Division of Reactor Safety

Docket No.: 72034
License No.: General License

Enclosure: (See next page)

Enclosure: NRC Inspection Report 07200034/2005002
w/Attachment: Supplemental Information

cc w/encl:

Ashok S. Bhatnagar
Senior Vice President
Nuclear Operations
Tennessee Valley Authority
Electronic Mail Distribution

Larry S. Bryant, General Manager
Nuclear Engineering
Tennessee Valley Authority
Electronic Mail Distribution

Randy Douet
Site Vice President
Sequoyah Nuclear Plant
Electronic Mail Distribution

Robert J. Beecken, Vice President
Nuclear Support
Tennessee Valley Authority
Electronic Mail Distribution

General Counsel
Tennessee Valley Authority
Electronic Mail Distribution

John C. Fornicola, Manager
Nuclear Assurance and Licensing
Tennessee Valley Authority
Electronic Mail Distribution

Glenn W. Morris, Manager
Corporate Nuclear Licensing and
Industry Affairs
Tennessee Valley Authority
Electronic Mail Distribution

Paul L. Pace, Manager
Licensing and Industry Affairs
ATTN: James D. Smith
Sequoyah Nuclear Plant
Tennessee Valley Authority
Electronic Mail Distribution

David A. Kulisek, Plant Manager
Sequoyah Nuclear Plant
Tennessee Valley Authority
Electronic Mail Distribution

Lawrence E. Nanney, Director
TN Dept. of Environment & Conservation
Division of Radiological Health
Electronic Mail Distribution

County Mayor
Hamilton County Courthouse
Chattanooga, TN 37402-2801

Ann Harris
341 Swing Loop
Rockwood, TN 37854

James H. Bassham, Director
Tennessee Emergency Management
Agency
Electronic Mail Distribution

Distribution w/encl:
 Bob Pascarelli, NRR
 C. Evans (Part 72 Only)
 L. Slack, RII EICS
 Robert Camp, SFPO, NMSS
 RIDSNRRDIPMLIPB
 PUBLIC

PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE NON-SENSITIVE

ADAMS: Yes ACCESSION NUMBER: _____

OFFICE	RII:DRS	RII:DRS	RII:DRP	RII:DRP		
SIGNATURE	/RA By Mlesser for/	/RA/	/RA/	/RA By RCarroin for/		
NAME	RChou:pmd	MLesser	BDesai	SCahill		
DATE	1/6/06	1/6/06	1/6/06	1/9/06	1/ /2006	1/ /2006
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 72-34

License No.: General License

Report No.: 07200034/2005002

Licensee: Tennessee Valley Authority

Facility: Sequoyah Nuclear Plant, Units 1 and 2

Location: Sequoyah Access Road
Soddy-Daisy, TN 37379

Dates: December 12 and 13, 2005

Inspector: Rich C. Chou, Reactor Inspector

Approved by: Mark S. Lesser, Chief
Engineering Branch 3
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 07200034/2005002; 12/12-12/13/2005; Sequoyah Nuclear Plant, Units 1 and 2; Unresolved Item (URI) 72-34/2004-001-03 Inspection.

This inspection was conducted by an inspector from the NRC's Region II office. This Unresolved Item was closed.

A. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violations

None.

REPORT DETAILS

(Closed) Unresolved Item (URI) 72-34/2004-001-03: Adequacy of Design Control for Calculation 44N300C7, 125-Ton Crane-Auxiliary Building

The inspector reviewed the licensee's response to the unresolved item, calculations, drawings, documents, and examined the replaced components. The response letter was dated December 17, 2004, entitled "Additional Information for Unresolved Item (URI) Regarding Adequacy of Design Control for 125-Ton Auxiliary Building Crane Calculation." The URI contained three parts: structural component allowable stresses increased, assumption to use two rails to resist the bridge wheel lateral forces, and assumption to release wheel loads from the bridge rail longitudinal direction (East-West).

A. Structural Component Allowable Stresses Increased

The concern was that the licensee increased the Operational Basis Earthquake (OBE) allowable stress for the structural components to the equivalent of the Design Basis Earthquake (DBE) allowable stress. Generally, the loads induced by the OBE are less than the loads induced by the DBE and the structural member allowable stress in the OBE condition is less than the structural member allowable stress in the DBE condition based on codes and industrial design standards. The licensee stated in the response that the crane would not be considered to be fully operable after an OBE condition, but is required to retain control of and hold the load during and after any design basis OBE and DBE earthquake. Therefore, the OBE allowable stress increase to match the DBE allowable stress was adequate since the crane will not be considered operable following OBE or DBE conditions. The inspector consulted with NRR and concluded that the licensee explanation was adequate.

B. Assumption to Use Two Rails to Resist the Bridge Wheel Lateral Forces

The licensee's calculation analysis used two rails at the same time to resist and share the bridge wheel lateral forces. The licensee could not qualify the bolts connecting bridges and saddles using one rail only (more conservative and consistent with the industry standard) to resist wheel lateral forces. The inspector considered this to be an unrealistic and non-conservative assumption. Rails and wheels would have unparallel gaps or tolerances during the construction or manufacturing. The licensee relied on deformation of the rails or wheels during the initial earthquake in order to produce conditions to achieve both rails in contact with the wheels at the same time to resist the bridge wheel lateral forces.

The licensee used an opportunity during the replacement of the repaired crane bridge trucks in November 2005 to replace the overstressed saddle bolts with ASTM A-490 high strength bolts. The licensee also revised the design calculation to qualify new bolts using one rail only to resist the wheel lateral forces during the earthquake. The inspector reviewed the revised calculations, drawings, and other documents, discussed the activities with the engineers, and examined and measured the replaced bolts, which met the requirements.

C. Assumption to Release Wheel Loads from the Bridge Rail Longitudinal Direction (East-West)

The licensee's calculation could not qualify bolt connections between the girder and the saddle for the combination of shear and tension stresses as required by the mathematical model, which fixed one wheel and released the other wheel in the same rail direction to obtain the longitudinal wheel loads during a seismic event. Therefore, the calculation assumed that both wheels were released to remove the longitudinal loads on the rails or wheels in order to qualify the bolt connections.

The response letter stated that the analysis included longitudinal loads in the east-west direction due to the application of brakes that keep the crane from freely moving. The restraint of the crane in this direction is not rigidly fixed. Once the coefficient of friction between the rails and the wheels is overcome, the bridge may slide along the rails during a seismic event. The inspector consulted with NRR specialists and concluded the licensee explanation was adequate.

The URI is closed based on the inspection.

Meetings, Including Exit

A exit was held with the licensee on December 13, 2005 to discuss inspection results. Proprietary information is not included in this inspection report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

R. Alsup, NA Program Manager
D. Kulisek, Plant Manager
Z. Kitts, Licensing Engineer
R. Proffitt, Licensing Engineer
R. Rogers, Engineering Manager
D. Ryder, Civil Engineering Manager

NRC

S. Freeman, Senior Resident Inspector, Sequoyah Nuclear Station

LIST OF ITEMS CLOSED, DISCUSSED AND OPENED

Closed

72-34/2004-01-03	URI	Adequacy of Design Control for Calculation 44N300C7, 125-TON Crane - Auxiliary Building
------------------	-----	--

None

DOCUMENTS REVIEWED

- TVA Response Letter to NRC Inspection Report 72-34/2005-001 dated December 17, 2004, entitled: Sequoyah Nuclear Plant - Additional Information for Unresolved Item (URI) Regarding Adequacy of Design Control for 125-Ton Auxiliary Building Crane Calculation (URI 07200034/2004-001-03; 05000327/2004009-03)
- Calculation 44N300C7, Revs. 5, 6, 7, and 10 125-Ton Crane - Auxiliary Building
- Calculation 48N703, Rev. 04, Crane Rail and Crane Bumper for Auxiliary Building 125-Ton Crane
- Data Input for Procedure 0-MI-ECR-303-921.0, Rev. 8, Auxiliary Building Crane Periodic Inspection, Dated November 21 & 23, 2005
- Work Order 05-78273-000, Tracking Purpose for Load Cell Calibration
- Certificate of Calibration for Tension Load Cell Dated November 15, 2005 by Holloway Houston, Inc.
- Drawing Change Authorization for 7/8" A-490 Bolt for Drawing D14071-28 R0 MD for DCN D21941
- Drawing Change Authorization for Detail for Access Holes to Saddle Bolt Connection for Drawing D14071-12 Rev. 4 MD for DCN D21941 (DCN P21982)
- PER 63096 Auxiliary Building Crane End Truck Cracks Dated October 14, 2005
- DCN D21941, Rev. A, Replace Bridge Trucks Due to Structural Cracks with More Heavy Duty Trucks Including New Saddle Bolts
- Work Instruction to Replace Auxiliary Building Crane Bridge Trucks for Work Order 05-779534-000

Attachment