



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

Report Nos.: 50-280/91-16 and 50-281/91-16

Licensee: Virginia Electric and Power Company  
Glen Allen, VA 23060

Docket Nos.: 50-280 and 50-281

License Nos.: DPR-32 and DPR-37

Facility Name: Surry 1 and 2

Inspection Conducted: May 28-31, 1991

Inspector:

J. J. Lenahan

6/18/91

Date Signed

Approved by:

for J. J. Blake, Chief  
Materials and Processes Section  
Engineering Branch  
Division of Reactor Safety

6/19/91

Date Signed

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the areas of the snubber surveillance program and follow-up on licensee action on previous inspection findings.

Results:

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

Snubber surveillance procedures were explicit and well-stated for control of surveillance activities. Approach to resolution of technical issues was sound, thorough, and conservative. Staffing was adequate and training of inspection personnel was effective.

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*R. Bilyeu, Licensing Engineer
- \*D. Hart, Supervisor, Quality Assurance
- \*T. Huber, Inservice Inspection Supervisor
- \*M. Kansler, Station Manager
- \*E. Smith, Site Quality Assurance Manager
- \*M. Whitt, Civil Design Supervisor
- D. Wong, Snubber Engineer

#### NRC Resident Inspectors

- W. Holland, Senior Resident Inspector
- \*M. Branch, Senior Resident Inspector
- S. Tingen, Resident Inspector

\*Attended exit interview

### 2. Inspection of Pipe Supports and the Snubber Surveillance Program, Units 1 and 2 (70370)

The inspector examined procedures and quality records related to the snubber surveillance program and inspected snubbers and pipe supports on safety-related piping systems. Acceptance criteria utilized by the inspector are specified in Technical Specification 4.17.

#### a. Review of Snubber Surveillance Procedures

The inspector examined the following procedures which control snubber surveillance activities:

- (1) Procedure numbers 1-PT-39A-1 and 2-PT-39A-1, Visual Inspection - Accessible Snubbers - As Left
- (2) Procedure numbers 1-PT-39B-1 and 2-PT-39B-1, Visual Inspection - Accessible Snubbers - As Found
- (3) Procedure numbers 1-PT-39A-2 and 2-PT-39A-2, Visual Inspection - Inaccessible Snubbers - As Left
- (4) Procedure numbers 1-PT-39B-2 and 2-PT-39B-2, Visual Inspection - Inaccessible Snubbers - As Found
- (5) Procedure numbers 1-PT-39.3 and 2-PT-39.3, Mechanical Snubbers - Functional Testing

- (6) Procedure numbers 1-PT-39.4 and 2-PT-39.4, Snubber Functional Test
- (7) Procedure number PT-39.5, Snubber Surveillance Program Update
- (8) Procedure numbers 1-PT-39.6 and 2-PT-39.6, Large Bore Snubbers Functional Test
- (9) Procedure number O-MPT-PR-001, Snubber Selection for Functional Testing
- (10) Administrative Procedure SUADM-M-34, Snubber Surveillance and Testing.

b. Inspection of Snubbers and Pipe Supports

The inspector performed a walkdown inspection to examine selected mechanical and hydraulic snubbers installed on safety-related piping systems in the Units 1 and 2 safeguards buildings and in the Unit 2 containment building. The piping systems included portions of the reactor coolant, main steam, auxiliary feedwater, main feedwater, and residual heat removal. During the walkdown, the inspector verified that snubbers were not damaged, that attachment to the supporting structure and piping was secure, that the fluid level in the hydraulic snubber reservoirs was higher than target levels, and that leakage of the fluid was not occurring. During the walkdown inspection, the inspector also examined selected spring cans and rigid restraints installed on the safety-related piping systems listed above and verified that the supports were not damaged and that attachment to the piping and supporting structure was secure.

During the walkdown inspection in the Unit 2 containment building, the inspector accompanied licensee personnel and the NRC resident inspectors performing a containment closeout inspection (inspection performed by the licensee prior to startup after an outage). The inspector noted that numerous grating clips had not been properly re-attached in some areas after performance of maintenance. The purpose of the clips is to secure the grating. Other housekeeping deficiencies were also identified by the Resident Inspectors. These problems were identified to licensee management and are documented in the Resident Inspectors' monthly reports, Report Nos. 50-280/91-14 and 50-281/91-14.

c. Review of Quality Records

The inspector examined the following quality records:

- (1) Results of visual inspections performed on Unit 1 accessible and inaccessible snubbers in November, December 1990

- (2) Results of the visual inspection performed on Unit 2 accessible and inaccessible snubbers in April, May 1991
- (3) Results of functional tests performed on Unit 1 snubbers in December 1990 and on Unit 2 snubbers in April, May 1991.
- (4) Calibration data for the Wyle Snubber Testing Machine, Model Number 100, Serial Number 104
- (5) Service life records for the seals installed in Units 1 and 2 hydraulic snubbers
- (6) Engineering Work Request (EWR) 90-351, Evaluation of visual inspections and functional tests performed on Unit 1 snubbers during the 1990 refueling outage
- (7) EWR 91-056, Evaluation of visual inspection and functional test performed on Unit 2 snubbers during the spring 1991 refueling outage

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

3. Action on Previous Inspection Findings (92701)

- a. (Closed) Inspector Follow-up Item 280/89-29-01, Reanalysis of Pipe Support to Account for Unsymmetric Members

During review of Calculation Number 14937.53-NZ(B) -005-ZB -007, Revision 0, titled Re-analysis of Support H-34, dated June 24, 1988, a regional based specialist inspector noted that the unsymmetrical members in the supports were not properly analyzed for the possible effect of loading-induced torsional stresses. The licensee referred this concern to Stone and Webster engineers, who revised the calculation to account for the effects of the unsymmetric angle members. The inspector reviewed the revised calculation, Number 14937.53-NZ(B) -005-ZB-007, Revision 1. The stresses within the support members and the anchor bolt loadings were within design allowable values.

- b. (Closed) Unresolved Item 280,281/89-29-02, Survey of Calculations of Supports with Unsymmetrical Members. Due to the concern identified regarding failure to analyze support H-34 for effect of loading induced torsional stresses in unsymmetrical members, as discussed above, the regional specialist inspector requested that the licensee perform a survey of pipe support calculations to determine if other supports with unsymmetrical members had been properly analyzed. The inspector reviewed the results of the licensee's calculation survey conducted to resolve this concern. The licensee selected a random sample of approximately 10 percent of all pipe supports and identified 173 supports with one or more non-symmetric members. The calculations for these supports were reviewed to

determine if the effect of torsional stresses had been conservatively addressed in the design process. As a result of this review, 14 supports were identified which required additional calculation review to ascertain whether the supports met design requirements. Addenda to the calculations were prepared to document this additional evaluation. The inspector reviewed the calculation addenda which showed that the stresses in the unsymmetrical members in these 14 supports were within design allowable values. No pipe support modification were required.

Further discussions with licensee engineers disclosed that a similar concern was identified during the pipe support calculations performed to closeout IE Bulletin 79-14, in late 1979 or early 1980. A similar review was conducted at that time, although the results were not well documented. The inspector also reviewed Virginia Power Civil Engineering Nuclear Standard STD-CEN-0018, Nuclear Pipe Support Standard, which addresses evaluation of unsymmetrical structural shapes in design of pipe supports. Based on review of the licensee's survey, the inspector concluded that the effect of torsional stresses in unsymmetrical members had been addressed in the design process.

#### 4. Exit Interview

The inspection scope and results were summarized on May 31, 1991, 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.