



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

Report No.: 50-395/84-14

Licensee: South Carolina Electric and Gas Company
Columbia, SC 29218

Docket No.: 50-395

License No.: NPF-12

Facility Name: Summer

Inspection Date: May 15-18, 1984

Inspection at Summer site near Jenkinsville, South Carolina

Inspector: J. J. Lenahan *J. J. Lenahan* 6/5/84
Date Signed

Approved by: F. Jape *F. Jape* 6/5/84
Date Signed
F. Jape, Section Chief
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection involved 25 inspector-hours on site in the areas of review of the snubber surveillance program and licensee identified items.

Results: In the areas inspected, no violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- O. S. Bradham, Director, Nuclear Plant Operations
- *J. Connelly, Deputy Director, Nuclear Plant Operations
- *R. Cox, Nuclear Engineering
- *H. I. Donnelly, Senior Nuclear Licensing Engineer
- *G. Moffett, Associate Manager, Nuclear Engineer
- *J. Turkett, Maintenance Engineer

Other licensee employees contacted included 3 engineers and 2 mechanics.

NRC Resident Inspector

- *C. W. Hehl

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on May 18, 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. Two new items discussed were as follows:

Unresolved Item 395/84-14-01, Functional Testing of Mechanical Snubbers - Paragraph 6.a.

Unresolved Item 395/84-14-02, Adequacy of Engineering Evaluation of Inoperable Snubbers - Paragraph 7.b.

3. Licensee Action on Previous Inspection Findings

Not Inspected.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve noncompliance or deviations. New unresolved items identified during this inspection are discussed in paragraphs 6.a., and 7.b.

5. Independent Inspection Effort (92706)

The inspector reviewed the procedures listed below which control the containment building tendon surveillance activities. Acceptance criteria examined by the inspector appear in Technical Specification 3/4.6.1.6. Procedures reviewed were as follows:

- a. Procedure STP 207.001. Containment Tendon Tests
- b. Procedure STP 207.002, Inspection of Containment, Tendon End Anchorages and Adjacent Concrete

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

6. Snubber Surveillance Program (61729)

The inspector reviewed procedures and quality records related to the snubber surveillance program and observed functional testing of a safety-related snubber. Acceptance criteria for functional testing appears in Technical Specification 3/4.7.7.

- a. Review of Snubber Surveillance Procedures

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

- (1) Procedure STP-403.001, Component Supports Visual Examination
- (2) Procedure STP-403.002, Mechanical Snubber Visual Examination
- (3) Procedure STP-403.003, Mechanical Snubber Basic Operational Test
- (4) Procedure STP-403.004, Hydraulic Snubbers Visual Examination

Review of the above procedures disclosed the following problem: Procedure STP-403.003 covers the method for functional testing of mechanical snubbers to verify activation takes place in both directions of travel per the requirement of Technical Specification 4.7.7.f.1. The mechanical snubbers at the Summer site were manufactured by Pacific Scientific (PSA). Procedure STP-403.003 specifies that activation (restraining action) is achieved if the snubber offers resistance to rapid change in velocity. Discussions with licensee engineers disclosed that the rapid change in velocity is achieved by manually applying a force to the snubbers of sizes PSA-1/4 through PSA-10. The PSA-35 and PSA-100 snubbers are tested using an air operated tool to apply a force to achieve a rapid change in velocity. Since activation of PSA mechanical snubbers only occurs when a force is applied to the snubber which results in an acceleration in excess of a predetermined

threshold "g" level, the applied test force must be large enough to result in an acceleration (change in velocity) in excess of the threshold "g" level. Since the test loads are not specified for various size snubbers, the determination of whether or not activation takes place appears to be dependent upon the judgement of the individual applying the force. The inspector expressed concern to licensee engineers that the resistance to rapid increase in velocity perceived by the individuals applying the test loads may be a combination of the snubber's drag force and the inertial resistance of the snubber's mass to a change in velocity. The test method does not appear to be precise enough to demonstrate that activation of the mechanical snubbers takes place. The test method is operator dependent and is not a reproducible test to verify the Technical Specification requirement. Licensee engineers discussed the functional test requirements specified in the snubber manufacturer's (PSA) installation and maintenance manual with the inspector. These requirements address drag testing of the snubbers and do not specify a test to verify activation occurs in the snubber. The licensee stated they would contact PSA and discuss their test methods with PSA to determine if, in the opinion of the manufacturer, the licensee's test procedure is adequate to verify that activation takes place. Pending further review of the licensee's test method by both the licensee and NRC, this problem was identified to the licensee as Unresolved Item 395/84-14-01, Functional Testing of Mechanical Snubbers.

b. Observation of Functional Testing of a Safety-Related Mechanical Snubber

The inspector observed functional testing of a PSA 3 snubber, serial number 686 (pipe hanger MK-SPH-092), on the containment spray piping system. Functional testing of this snubber was required due to an unstaked spherical bearing which was identified during the visual inspection performed with procedure STP-403.001. The bearing was restaked during functional testing in accordance with the licensee's maintenance procedure. The inspector witnessed restaking of the bearing, measurement of the drag force, activation testing, verification of snubber set and pin to pin dimensions, and QC inspection of the functional test. The functional test was accomplished with procedure STP 403.003. However, as discussed above, the inspector questioned the licensee's test method to verify activation of the snubber.

The inspector examined approximately 10 additional safety-related snubbers located on various piping systems in the west penetration area on elevation 436 and verified that the snubbers were not bound, that snubber attachments to piping and components supports were secure, that support alignment was within the angular tolerance, and that there was no evidence of damage or deterioration to the snubbers.

c. Review of Quality Records Related to the Snubber Surveillance Program.

The inspector reviewed quality records which documented inspection of safety-related snubbers. Records reviewed were as follows:

- (1) Results of visual inspection of hydraulic snubbers performed in May 1983
- (2) Records of visual inspection of mechanical snubbers on support numbers MK-SPH-258, 300, and 4006 and MK-NGH-1021 performed in 1984.
- (3) Type I QA surveillance report numbers 7-LCN-84-OK and 01-JMH-84-Q.
- (4) Nonconformance Notice (NCN) numbers 1332, 1535, 1560, 1571, 1579, 1588, 1597, 1611, 1614, 1616 and 1619.

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

7. Licensee Identified Items (CDR (50.55(e)) and LER)

- a. (Closed) CDR (82-29-03), Snubbers Designed in Bottomed Out Position. This item was reported to NRC Region II in a letter dated February 19, 1982. The licensee submitted a final report on this item to NRC Region II in a letter dated June 24, 1982. During initial pre-operational snubber surveillance inspections, the licensee identified four snubbers that were designed bottomed out. The definition of designed bottomed out is that the snubber was designed either in the fully extended or fully compressed position. This problem was identified after approximately half the snubbers in the plant had been checked. After completing the initial snubber surveillance, the licensee identified one additional snubber that was designed bottomed out. In order to correct this problem the licensee modified the L dimension of the five snubbers. The L dimension is the distance from the centerline of the pin on the snubber guidetube end to the back of the base-faceplate on the attachment end. The L dimensions were changed by modifying the transition tube assembly on the snubber. The pin to pin dimensions were not changed. The L dimensions for additional snubbers were modified based on results of the hot functional, thermal expansion test. The inspector reviewed the SCE&G memo dated August 4, 1983, Subject: Verification of Mechanical Shock Arrestor "L" Dimension Review, which documented inspection of snubbers on 7 supports. Based on review of snubber surveillance procedure STP-403.003 which requires measurement of the L dimension, and discussions with licensee engineers, this item is closed.

- b. (Open) LER (84-018) Steam Generator Blowdown System. This LER is a voluntary report which was submitted by the licensee in a letter dated April 27, 1984. This LER summarized the results of inspection of snubbers on the steam generator blowdown system which was conducted from March 23 - April 22, 1984. All of the 32 snubbers inside containment associated with the system were inspected. Eleven supports were identified which would not maintain their design function. Nine of the eleven snubbers associated with the 11 supports failed their functional test. The cause of the problem has been attributed to a system transient apparently caused by misoperation of the system. The inspector reviewed Gilbert letters CGGS-31152, dated April 19, 1984, Subject: Steam Generator Blowdown System Review. This letter summarized the probable cause of the transient and recommended changes to the method of operation of a valve in the system to prevent future system transients. The licensee prepared Station Operation Procedure 212, Steam Generator Blowdown, to control operation of the steam generator blowdown system. No further transients have been observed since blowdown has been established in accordance with this procedure. The licensee committed to re-inspect the blowdown system during the planned September 1984 refuelling outage. In order to replace the defective snubbers, the licensee issued nonconformance notices (NCN) numbers 1588, 1597, 1611, 1614, 1616 and 1619. The inspector reviewed the NCNs and noted that, although the corrective action has been completed (i.e., the snubbers replaced), evaluation for 10 CFR 21 and/or 10 CFR 50.59 is still in progress.

Review of the NCNs and discussions with licensee engineer disclosed the following problem.

Technical Specification 4.7.7.g requires that an engineering evaluation be made of each functional test failure to determine the cause of the failure. An engineering evaluation is also required for each inoperable snubber to determine if the components to which the inoperable snubber were attached were adversely affected by the inoperability of the snubber in order to ensure that the component remains capable of meeting its designed service. Review of documentation and discussions with licensee engineers disclosed that the engineering evaluation consisted of a walkdown inspection of the piping system by a cognizant engineer. During the walkdown, the engineer made a visual inspection of the piping and supports to verify that the inoperable snubbers did not result in visual distortion of any of the piping or supports. The inspector questioned the engineer concerning the adequacy of a walkdown inspection to ensure that the piping system is capable of meeting its designed function. Pending further review of this problem by NRC, this item was identified to the licensee as Unresolved Item 395/84-14-02, Adequacy of Engineering Evaluation of Inoperable Snubbers. LER 84-018 will remain open pending final disposition of the NCNs and review of the results of the reinspection of the blowdown system.

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