



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

Report Nos.: 50-424/90-01 and 50-425/90-01

Licensee: Georgia Power Company
P.O. Box 1295
Birmingham, AL 35201

Docket Nos.: 50-424 and 50-425

License Nos.: NPF-68 and NPF-81

Facility Name: Vogtle 1 and 2

Inspection Conducted: January 8 thru 12, 1990

Inspectors: Ronald W. Newsome 1-18-90
R. W. Newsome Date Signed

Approved by: J. J. Blake 1/18/90
J. J. Blake, Chief Date Signed
Materials and Processes Section
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope

This routine, announced inspection was conducted on site in the area of licensee response to previously identified NRC opened items and Temporary Instruction (TI) 2500/27.

Results

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

All items reviewed are considered closed as indicated in this report. However, resolution of Unresolved Items 50-424/88-03-02 and 50-425/88-02-02 resulted in the licensee agreeing to the commitments documented in Paragraph 2.a. of this report.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- P. Burwinkel, Heating Ventilation and Air Conditioning, Supervisor
- *G. Frederick, Safety Audit Engineering Review, Supervisor
- *C. Garrett, Engineer
- *W. Kitchens, Assistant General Manager, Operations
- *G. McCarley, Independent Safety Engineering Group, Supervisor
- *A. Mosbaugh, Assistant General Manager, Support
- *R. Odem, Nuclear Safety and Compliance, Supervisor
- M. Sheibani, Plant Review Board, Supervisor
- *J. Williams, Plant Engineering, Supervisor

Other licensee employees contacted during this inspection included engineers, security force members, technicians, and administrative personnel.

Other Organizations

Southern Company Services

R. Keck, Inservice Inspection (ISI) Project Coordinator

NRC Resident Inspector

*D. Starkey, Resident Inspector

*Attended exit interview

2. Licensee Action on Previously Opened Items

- a. (Closed) Unresolved Items (URI) 50-424/88-03-02 and 50-425/88-02-02, Potential For Banded Microstructure In Cold Leg Accumulator Piping.

This item identified a concern with the metallurgical adequacy of certain 10 inch, Schedule 140, type 316 pipe manufactured to SA-316 that had been installed in the safety injection system. Ultrasonic (UT) examinations of the welds joining this material had indicated that the material was not American Society of Mechanical Engineers (ASME) Code testable using conventional shear wave examination due to an unexplained angle shift from 45 degrees, as required by the ASME Code, to an angle of approximately 20 degrees. However, it was determined that inspection of the material was possible using a refracted longitudinal 45 degree ultrasonic wave, which is allowed and meets the requirements of the ASME code.

In an effort to determine why inspection of this material was not possible with conventional shear wave examination methods, the licensee requested Associated Metallurgical Consultants, Inc. (AMC) to perform metallurgical analysis on a sample of the subject material. The AMC report, dated February 27, 1985, indicated the following:

- The material appeared to be uniform with no defects or lack of uniformity.
- Both longitudinal and transverse sections indicated the microstructure is entirely austenitic with the grain structure highly banded, whereas a uniform equiaxed austenitic microstructure is normal for this material.
- Rockwell hardness of the material is B80 - 82, which is normal for Type 316 material.
- Magnegage test showed no ferrite detectable, which is normal for Type 316 material.
- The report concluded that the banded microstructure of the material, which can result from incomplete annealing, was the probable cause of the change in angle of the ultrasonic waves during ultrasonic testing.

This material was certified to ASME Section III, Class 1, ASME SA-376 and SA-655. ASME SA-376 requires a fully-annealed structure (unless otherwise indicated). As noted above, this material does not appear to be fully annealed as evidenced by the banded microstructure.

Based on the above AMC report findings, concerns were expressed regarding the subject materials strength properties and the possibility that the material may not have been properly annealed and therefore might be susceptible to intergranular stress corrosion cracking (IGSCC).

In order for the licensee to resolve these concerns, additional metallographic examination of the subject material was accomplished and a corrosion test, ASTM A-262, Practice A, was performed.

The NRC inspector reviewed the following reports relative to this material:

Associated Metallurgical Consultants, Inc., dated February 27, 1985

Law Engineering, dated March 15, 1988

Cortest Columbus, dated August 30, 1988

All of the metallurgical examinations conducted generally concluded that the strength properties of the material met the requirements of ASTM A376, Type 316 material. However, the photographs of the microstructures shown in each report revealed what appeared to be microstructure banding which could indicate that the material might be susceptible to IGSCC.

Since material strength properties are not a concern with this material but there is still some concern that the material might be susceptible to IGSCC, the licensee has agreed to the following commitments to assure that should IGSCC develop in the heat affected zone at the welds joining this material it will be promptly identified:

- 1) The welds involved with this material will be flagged in the Unit 1 and Unit 2 ISI plans.
- 2) The welds will be UT examined during future inservice inspections using a qualified IGSCC detection procedure.
- 3) The welds will be UT examined using personnel who are IGSCC qualified UT examiners.

Based on the documents reviewed by the NRC inspector and the actions committed to by the licensee, this item is considered closed.

- b. (Closed) Violation 50-424/88-18-01, Failure To Install HVAC System In Accordance With The FSAR.

Inspection confirmed that all corrective actions committed to by the licensee were implemented as required, namely:

- A deficiency card was written on April 8, 1988, to document the installation of improper bolting material for Engineered Safety Feature filter housings and resulted in the initiation of six Maintenance Work Orders (MWO). The MWO's were initiated to accomplish the following: 1) Replacement of the A-307 type bolts with the stronger and appropriate diameter A-325 type bolts, 2) Installation of appropriate washers for high strength joints, and 3) Adherence to the proper tension requirements for the A-325 bolts.
- An engineering evaluation was completed that concluded that the mounting conditions currently existing would maintain the seismic integrity and function of the HVAC filtration units. The evaluation did state, however, that the mounting bolts were to be replaced in a timely manner to achieve the original design configuration. This resulted in the six MWO's referred to above.

In order to verify the adequacy of the licensees actions in this matter, the NRC inspector accomplished the following:

- 1) Reviewed Deficiency Card 1-88-923
- 2) Maintenance Work Orders packages were reviewed for MWO's 18802363 and 18802425. These packages contain the following listed documentation:
 - Work instructions and replacement material requirements
 - Documentation of actual work performed, including bolt tensioning
 - Quality Control Hold Point Sheet
 - Quality Control Inspection Report
 - Environmental Quality Evaluation Checklist
 - Material issue and material traceability documentation
- 3) Reviewed Deficiency Card 1-89-1189 and associated MWO 18803483 for the Unit 1, trains A and B, control room emergency filter units.
- 4) Reviewed Request for Engineering Review (RER) 88-0221 and documentation of the final disposition of this RER.
- 5) Reviewed the licensees Root Cause Determination Worksheet.
- 6) Reviewed American Air Filter's letter of April 1, 1988 which detailed the actions that should be taken by the licensee in order for the filtration units to meet required seismic qualification.
- 7) Reviewed several vendor drawings, that had not originally specified bolting requirements, which were revised to include bolting requirements.
- 8) Conducted a Unit 1 in-field examination of 2 HVAC fan housings and 2 HVAC filter housings. During these examinations the NRC inspector visually verified that the correct type and size bolts were installed. In addition, observations indicated that required washers were installed and that the installed bolts had been tensioned.

Based on the above NRC reviews and in-field examinations, this violation is considered adequately resolved.

c. (Closed) URI 50-424/88-45-01, Unrecorded Support Spring Can Readings.

This item identified spring can type supports and hangers that were marked satisfactory on examination data sheets even though there was no spring can dimension setting recorded and there was no indication as to system status, i.e., hot or cold. It was further determined that an adequate evaluation of these items could not be made if the spring can dimension and system status were not known.

At the time of this finding, 9 ASME required supports had been examined and an additional 22 non ASME supports had been examined due to other licensee commitments. At that time the licensee agreed to re-examine these items to determine the spring can dimension settings and the system status. In addition, the items were to be evaluated based on the additional information provided.

At the conclusion of the original NRC inspection all of the re-examinations of the ASME required supports had been completed with all but 1 support being determined as acceptable. Final acceptance of the remaining ASME support was to be determined through engineering evaluation and submitted for review at a later date.

The licensee has re-examined all of these supports and hangers and during the re-examinations used the revised procedure examination criteria for examination documentation and spring can dimension acceptability criteria, as noted in paragraph d. below.

The NRC inspector reviewed data for 15 of the re-examinations, including the one ASME support that originally required engineering evaluation. The acceptability of the supports was based on the additional information provided by the re-examinations. Also, the final determination of the ASME support by engineering evaluation indicated the support was considered acceptable as is.

Based on the corrective actions taken by the licensee and the subsequent reviews conducted by the NRC inspector, this item is considered closed.

d. (Closed) Inspector Followup Item (IFI) 50-424/88-45-02, Revisions To Procedures 85052-C and 54171-C.

This item identified an omission in Procedure 85052-C, Revision 0, as not having specific information relative to what constituted an acceptable spring position on supports with spring cans and did not require that the spring position indicator dimension or the system temperature be determined and recorded during the course of the examinations. This procedure has been revised and a review of the procedure by the NRC inspector indicated that the procedure now requires the spring position indicator dimension be recorded at the time of support examination and that the temperature of the pipe be determined and recorded during the examination.

This item also identified Procedure 54171-C, Revision 6, as dealing primarily with snubbers and not having sufficient engineering evaluation criteria to determine the acceptability of spring can type hangers. This revised procedure was reviewed by the NRC inspector. The procedure now contains sufficient evaluation criteria to determine the acceptability of spring can type hangers.

Based on the above reviews, this item is considered closed.

- e. (Closed) IFI 50-425/88-33-02, Protection Of Permanent Plant Equipment From Uncontrolled Leakage.

This item was addressed and closed in Region II Inspection Report 50-425/88-78.

- f. (Closed) Violation 50-425/89-03-01, Failure To Report Potential 10CFR50.55(E) Item On Class 1 Forge Fitting As Required By Quality Assurance Department Procedure QA-04-02.

This violation was issued as a result of the licensee's failure to report a potentially reportable deficiency in Unit 2 within the time restraints required by 10CFR50.55(E). The discrepancy concerned the replacement of a Class 1 Forged Fitting which took place on May 21, 1987 but was not thought to be a reportable deficiency by the licensee at that time; however, the discrepancy was identified during a subsequent NRC inspection. The deficiency was subsequently reported to the NRC on November 14, 1988.

The licensee's system for control and implementation of their program to identify, track, and review deficiencies for reportability has been in place for several years and has been reviewed and determined acceptable by the NRC on several occasions during that period.

The licensee has not received any additional NRC citations for violation of the time restraints imposed by 10CFR50.55(E) for potential reportable deficiencies since November 14, 1988.

Based on the above observations and the fact that this violation of requirements appears to be an isolated incident, this matter is considered closed.

- g. (Closed) TI 2500/27, Inspection Requirements For NRC Compliance Bulletin 87-02, "Fastener Testing To Determine Conformance With Applicable Material Specifications".

The objective of this TI was to verify that licensees ensure that fasteners used in licensed nuclear plants meet the requisite specifications and that operability of safety-related components is not affected.

The licensee has completed all testing of fasteners as stipulated in Bulletin 87-02. As a result of these tests one Unit 1 stud, sample VEGP-029, that represented a population of 4 studs in a non-safety related application, failed the chemical analysis for Molybdenum and Vanadium. The sample was ordered as A-193 grade B16. The test results indicated, however, that the material should meet the requirements of A-193 grade B7, a higher strength stud. Plant application for the stud is non-nuclear safety pressure boundary. The difference between grades B7 and B16 is related to the expected temperature of the application. Grades B7 and B16 have the same allowable stress up to 700 degrees Fahrenheit which is above the service temperature application. Therefore, the VEGP-029 stud could be used in the non-nuclear safety pressure boundary without any safety significance.

Based on the NRC inspectors review of documentation supporting the above, this discrepancy is not considered significant and this TI is considered closed.

3. Exit Interview

The inspection scope and results were summarized on January 12, 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.