U.S. NUCLEAR REGULATORY COMMISSION
Region I

Report No. 50-333/84-20

Docket No. 50-333

License No. DPR-59 Priority -- Category C

Licensee: Power Authority of the State of New York

Post Office Box 41

Lycoming, New York 13093

Facility Name: James A. FitzPatrick Nuclear Power Plant

Inspection At: Scriba, New York

Inspection Conducted: October 1-5, 1984 and October 17-19, 1984

Inspectors: Samuel D Reynolds 11/29/84
S. D. Reynolds, Lead Reactor Inspector date

Lewis Narrow 11/23/84
L. Narrow, Lead Reactor Engineer date

Samuel D Reynolds for 11/29/84
R. McBrearty, Reactor Engineer date

Approved By: J. P. Durr 11/30/84
J. P. Durr, Chief, Materials and Processes Section date

Inspection Summary:
Inspection conducted on October 1-5, 1984 and October 17-19, 1984 (Report No. 50-333/84-20)
Areas Inspected: Routine unannounced inspection by two region based inspectors (during the first inspection period) of licensee activities associated with the snubber surveillance program and a review of the induction heating stress improvement (IHSI) program to mitigate intergranular stress corrosion cracking (IGSCC). The second inspection period was an announced inspection to review the licensee's activities in ultrasonic examination (UT) conducted to determine the extent of IGSCC.

Inspection involved a total of 84 hours at the site and 45 hours office time by three inspectors.

Results: No violations were identified.

DETAILS

1.0 Persons Contacted

New York Power Authority (NYPA)

* R. Baker, Technical Services Superintendent
* T. Butler, Outage Coordinator
(b)* R. Converse, Superintendent of Power
* H. A. Glovier, Prospective Resident Manager
N. Johnson, Mechnical Planner
* R. Lisemo, Maintenance Superintendent
C. McNeill, Resident Manager
* T. Moskalyk, Senior Plant Engineer
(b)* R. L. Patch, QA Superintendent
(b)* D. Sancic, Senior Nuclear Operations Maintenance Engineer
* P. Schlau, Mechanical Engineer
(b) S. Toth, Senior Licensing Engineer
(b) G. Sechler, QA Level III

Universal Testing Labs (UTL)

W. Shelton, Level III Examiner

General Electric Company

P. Kison, Engineer NEBO
C. Vaughan, Engineer NEBO
C. Johnson, Engineer, A&ESO
K. Grayson, QA Manager, A&ESO
W. Anderson, QA Technician, A&ESO

U.S. Nuclear Regulatory Commission (NRC)

(b)* L. Doerflein, Senior Resident Inspector

* Indicates those present at October 4, 1984 exit.

(b) Indicates those present at October 19, 1984 exit.

2. Snubber Surveillance Program

The Snubber Surveillance Program provides for visual examination of all snubbers and functional testing of 10% or 10 snubbers at approximately 18-month intervals. Additional inspections and tests are performed, as prescribed by the Technical Specifications, if inoperable snubbers are identified. Visual examinations and functional tests were performed during the last refueling outage in 1983 and are scheduled for the next outage in 1985. In addition, visual examinations of accessible snubbers were performed during the present outage.

Visual examinations are performed by teams consisting of one maintenance mechanic and one QC inspector. Functional tests of hydraulic snubbers are performed onsite by maintenance mechanics and inspected by QC. Mechanical snubbers are sent off site for testing. Results of visual examinations and tests are reviewed by the responsible maintenance engineer to determine if any tests, rework or replacements are required. This review also determines if any snubbers should be declared inoperable.

2.1 Procedures

The inspector discussed the procedures for control of this program with maintenance and QC personnel and reviewed the maintenance and QC procedures listed below. In addition to these procedures, overall control is provided by Work Request/Event/Deficiency/Forms (WRED) and Work Tracking Forms. QC signs the data sheets of the maintenance procedures and prepares QC inspection reports or Surveillance Reports for all inspections. The inspector was informed that all work procedures are being revised and will include QC inspection points.

Procedures reviewed:

-- MP No. 100.2, "Revision 4, "Visual Exam of Snubbers"

-- MP No. 100.1, Revision 5, "Functional Testing of Hydraulic Snubbers"

-- QAP 10.1, Revision 0, "Inspection of Quality Related Activities"

-- QAP 11.1, Revision 0, "Test Control"

No violations were identified.

2.2 Qualifications of Maintenance and QC Personnel

Maintenance mechanics are qualified as Level I inspectors for visual examination and for snubber testing. QC inspectors assigned to this program are qualified as Level II inspectors for visual examinations and mechanical inspection. Qualifications are based on ANSI N45.2.6 requirements. Classroom instruction and on-the-job training is provided to mechanics and QC personnel in visual examination, testing and assembly/disassenbly of snubbers. In addition, QC personnel and QA Engineers have received training by outside instructors in the following EPRI Learning Modules:

-- No. 102-10PS, "Component Supports - Snubber Configuration and Construction"

-- No. 102-11PS, "Component Supports - Snubber Examination"

-- No. 102-12PS, "Component Supports - Snubber Functional Testing"

The inspector reviewed the experience and training records and Certifications of Qualifications of maintenance and QC personnel involved in the 1984 snubber surveillance program.

No violations were identified.

2.3 Observation of Installed Snubbers

During a tour of several areas of the reactor building, the inspector observed the installed condition of accessible snubbers. The hydraulic snubber tester and test area were also observed and its operation was discussed with a maintenance representative. The snubber tester tension and compression gages had been calibrated as shown by attached stickers and the inspector was informed that the velocity meter was calibrated daily prior to taking data of functional testing. This was confirmed during review of functional testing records.

No violations were identified.

2.4 Record Review

The inspector reviewed selected records of visual examination and functional tests of snubbers during the 1983 outage and visual examination of snubbers during the 1984 outage. Review of this data was discussed with the responsible engineer.

Visual examination records for 1983 showed one unsatisfactory condition and a number of minor discrepancies such as loose or missing hardware items and small oil leakages. Minor discrepancies were either corrected in the field or removed and rebuilt. All snubbers tested were operable although some were rebuilt. All snubbers removed were re-inspected after re-installation. The visual examination was reported on QCIT No. F84-0398 which also identified the unsatisfactory snubber (No. 10-15A-MS-307) and the Deficiency and Corrective Action Report (DCAR) which was written (DCAR No. 034-83). Corrective actions were carried out under WRED's No. 10-14965, 10-14966 and 10-14969.

Review of visual examination records had not been completed. WRED No. 10-25474 had been issued for correction of minor deficiencies; loose hardware, minor oil seepage, etc. Snubber No. 10-3B-S-154 will be examined to determine the explicit nature of the reported problem and any corrective action if necessary. Snubber No. 10-15A-S-306 will be replaced and tested to determine its operability.

Functional testing data included the record of ambient temperature at the time of the test. The inspector asked if and how the temperature was used during evaluation of the data and was informed that the limits of the testing criteria for Locking Velocity and Bleed Rate established in Procedure MP-100.1 were sufficiently broad to cover all anticipated test conditions and therefore the effect of temperature variation had not been used in evaluation of data. Information on file showed an anticipated change in lockup velocity of 2-inches/minute for every 10°F change in temperature. Temperature variations on data examined was less than 10°F in all cases. The inspector also noted that visual examination data had in some case been crossed out without explanation or initials and was informed that due to the use of more than one inspection team, some snubber examinations had been duplicated and the duplicated data was crossed out.

These questions were discussed during the exit meeting and the licensee agreed that; the effect of temperature variation on lockup Velocity and Bleed Rate would be made available to the engineer responsible for review of data, and any change to data would be properly identified.

3. Evaluation of 50.59(a) Significance of IHSI

The inspector reviewed the licensee's safety evaluation JAF-SE-8 (and applicable attachments) and found it adequately addressed the requirements for IHSI and weld overlay.

No violations were identified.

4. Review of IHSI Quality Records

The inspector reviewed the GE traveler which indicates the holdpoint check inspections conducted by GE and the licensee. This document for Project JAF-IHSI Number 657-3206-EP1 contains 21 sequential operations and indicates the applicable GE Procedure Instructions for each specific operation. The applicable instructions were also reviewed along with the coil fine alignment data sheet and special process control sheet which summarized the thermal cycle. The inspector reviewed 12 GE IHSI operations which were complete to Sequential Number 18 (Removal of Thermocouples (T/C)). Sequential Numbers 19 and 20 involved final PT of the T/C removal areas and final post IHSI UT examination which are performed by the licensee. In addition, the inspectors reviewed travelers for 8 partially completed IHSI operations. Also reviewed were GE Field Deviation and Disposition Reports (FDDR) EP1-500 and 501 which requested GE San Jose engineering disposition on thermal cycles that failed to fully meet the temperature requirements stated in JAF IHSI 6.0, Revision 0 on 7 welds. Analyses of the FDDR's indicated minimal undertemperature for 1 to 4 T/C's in 6 of the 7 welds, and over temperature and overtime (by one second) for

the other weld. Due to the conservatism utilized in determination of the ΔT in establishing the IHSI 6.0 limits (based on high ID wall temperature assumptions) the GE dispositions will be to accept these IHSI operations. The major heat treatment problem is in those welds which exhibit the worst heat sink mismatch and/or coil placement problems. The inspector noted that since the Peach Bottom IHSI operations, the reliability of the GE operation has increased. The experience of the IHSI Engineers to determine the effectiveness of test heatup cycle is utilized rather than setting go-no-go parameter ranges in the procedure for the test heatup cycle.

Review of the GE traveler quality records for welds which had received IHSI treatments (which were only signed off to sequential operation No. 18) indicated that all holdpoints and check points to this point were completed satisfactorily.

No violations were identified.

5. Observation of IHSI Operations

The inspector visually observed the operation of the IHSI equipment, verified T/C connections to the control equipment, and reviewed the T/C time-temperature charts for a number of thermal cycles.

No violations were identified.

6. Quality Assurance and Quality Control

The inspector reviewed the surveillance audit program conducted by the licensee. A total of 55 audits have been conducted in 1984. Those audits relating most closely to the IHSI program were audits 985 on UTL/KWU on their UT activities and 982 on EBASCO UT operations. These audits reviewed UT and related procedures and personnel qualifications. Also reviewed was audit 969 on the Bell PSGC welder qualification program. The audits were thorough and conducted by qualified personnel.

The inspector reviewed records indicating that the GE QC and licensee QC personnel were qualified for UT applicable procedures and also indicated that they attended IHSI mockup training.

The licensee does not conduct site QA audits of the GE IHSI activities because of the licensee 100% holdpoint inspection of the most important sequential operations and licensee sign off responsibilities for NR's and FDDR's. The licensee generates their own Deficiency Correction Reports (DCR) as applicable. The licensee is utilizing (their own) QC inspectors who have had previous experience on the March 1984 NUTECH IHSI program (where the licensee also had QC responsibilities for the operation). The licensee Level III UT examiner has review and approval responsibilities for the pre-and post-IHSI UT interpretation. The licensee conducts surveillance inspections on the contractor personnel records, training records and equipment certifications.

Audits of GE as a qualified vendor have been conducted by the NYPA Corporate Staff. In accordance with the NYPA QA program, GE (as a qualified vendor) has the authority through their approved QA program to indicate by letter that the IHSI equipment operators are qualified without sending records of the qualification to the site.

The IHSI quality program of the licensee which calls for 11 hold points for the NYPA Responsible Engineer and 5 for NYPA QA (QC inspector), combined with the 8 GE QC inspector holdpoints results in good control of the operation.

The inspector noted that the traveler required final GE QA checkoff (Sequence Number 21) to be performed following the NYPA PT and UT operations whereas the final operations actually performed by GE were completed upon removal of T/C's (Sequence Number 18). The last item on the traveler is audit of the traveler by the NYPA Project QC Supervisor. The inspector questioned the licensee's ability to adequately audit the GE portions of the travelers as they would all come in at the last minute (because of the requirement for sign off of the post IHSI UT). The licensee indicated they would evaluate the efficiency of submittal of the travelers by GE prior to post IHSI PT and UT.

No violations were identified.

7. Nondestructive Examination (NDE) Data Review

The inspector reviewed examination data associated with the following recirculation system welds:

- 12-4, 12 inch diameter pipe to sweep-o-let
- 12-12, 12 inch diameter pipe to safe end
- 12-17, 12 inch diameter pipe to safe end
- 12-23, 12 inch diameter pipe to safe end
- 12-64, 12 inch diameter pipe to safe end
- 12-69, 12 inch diameter pipe to safe end
- 12-70, 12 inch diameter elbow to pipe
- 28-112, 28 inch diameter elbow to valve
- 28-113, 28 inch diameter valve to pipe

The inspector's review was done to ascertain that the data were complete and adequate for evaluation and disposition of the associated welds.

Five of the welds, 12-12, 12-23, 12-64, 12-69 and 12-70, were scheduled for repair by weld overlay and the remaining welds were considered acceptable for service without overlay based on fracture mechanics analysis. All of the welds have received the Induction Heating Stress Improvement treatment.

The data packages were found to be complete and included ultrasonic detection and sizing information, and computer printouts which graphically displayed the condition of each weld found to be cracked.

No violations were identified.

8. NDE Personnel Qualification/Certification Records

The inspector reviewed qualification/certification records of the individuals who participated in the detection and sizing of cracks at the Fitz-Patrick plant to ascertain that they were properly qualified to perform the activity in which they took part. The records indicated that each individual was qualified to detect and/or size cracks, and that his ability to perform those activities was demonstrated at the EPRI NDE Center at Charlotte, North Carolina.

No violations were identified.

9. Review of NDE Procedures

The following were reviewed by the inspector to ascertain compliance with regulatory requirements and, additionally, for technical adequacy:

- Ebasco Procedure JAC-UT-5, "Ultrasonic Examination for the Detection of Intergranular Stress Corrosion Cracking"

New York Power Authority (NYPA) Procedures and QA Instructions (QAI)

- Procedure BDEP 9.4-7, Revision 4, "Ultrasonic Examination Procedure for the Detection of Intergranular Stress Corrosion Cracking (IGSCC)"
- QAI-9.1, Revision 0, "Generic Procedure for Sizing Planar Flaws in Piping by the dB Drop Method"
- QAI-9.2, Revision 0, "Generic Instruction for Sizing Planar Flaws in Piping by the Creeping Wave Method"
- QAI-9.3, Revision 0, "Generic Instruction for Sizing Planar Flaws in Piping by the Tip Diffraction Method"
- QAI-9.4, Revision 0, "Generic Instruction for Sizing Planar Flaws in Piping by the Full Vee-Path Method"

The inspector found that the procedures used for the detection of IGSCC were demonstrated and qualified on cracked samples at the EPRI NDE Center at Charlotte, North Carolina. The sizing techniques which are described by the QAI's reflect the latest, accepted methods for sizing cracks which are taught at the EPRI NDE Center.

No violations were identified.

10. Observations of Work in Progress

The licensee, Ebasco Services, Inc. and Kraftwerk Union (KWU) personnel participated in the detection and sizing of intergranular stress corrosion cracking at the FitzPatrick plant during the current outage.

The inspector observed sizing and detection activities associated with the following welds:

- 12-1, 12 inch diameter pipe to safe end
- 12-7, 12 inch diameter pipe to safe end
- 12-69, 12 inch diameter pipe to safe end

The above listed welds were previously examined and ultrasonic indications were reported in each weld. Weld 12-69 was known to be cracked through the wall in two places approximately 90° apart. The licensee Level III and the Ebasco Level III examined 12-1 and 12-7 to verify the presence and extent of cracks. KWU personnel were then requested to re-examine the two welds using the ROBIE system which permits the qualified technician to perform the examination using remotely operated transducer manipulators from a relatively radiation free area.

The inspector found that the activities were done by personnel who were qualified for the detection of IGSCC and the final determination, by KWU personnel, was made by individuals who were qualified for the detection and sizing of IGSCC.

No violations were identified.

11. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item 333/83-16-01: Inadequate ultrasonic examination data. The inspector reviewed completed ultrasonic data sheets and found they included information considered to be complete and adequate for meaningful evaluation and disposition of the associated welds. This item is considered closed.

12. Exit Interview

Inspectors Reynolds and Narrow met with the licensee representatives (denoted in paragraph 1) on October 4, 1984. Additional inspection was conducted on October 5, 1984 with no further findings. Inspector McBrearty met with the licensee representatives on October 19, 1984 to discuss ultrasonic inspection findings. In both exits, the inspectors summarized the purpose and scope of the inspections and summarized their findings. Review of ultrasonic inspection data was also conducted in the regional office.

No written material was given to the licensee during the course of the inspections.