



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

Report Nos.: 50-269/91-20, 50-270/91-20, and 50-287/91-20

Licensee: Duke Power Company
 422 South Church Street
 Charlotte, NC 28242

Docket Nos.: 50-269, 50-270,
 and 50-287

License Nos.: DPR-38, DPR-47, and
 DPR-55

Facility Name: Oconee 1, 2, and 3

Inspection Conducted: August 12-16, 1991

Inspector:

J. J. Blake
 for N. E. Economos

9/4/91
 Date Signed

Approved by:

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

9/4/91
 Date Signed

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the areas of Unit 1 inservice inspection activities including eddy current examination of once through steam generator (OTSG), tubes, plans for plugging previously installed explosive plugs that exhibit cracking, and replacement of letdown cooler "1A" and associated piping.

Results:

By observation, interviews and records/procedures reviews the inspector ascertained that inservice inspection (ISI), activities i.e., plans, procedures and component examinations were consistent with code and regulatory requirements. Site engineering continues to maintain a strong position in planning and implementing plant maintenance and modifications.

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

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *H. B. Baron, Station Manager
- J. Batton, Nuclear Production Engineer
- J. M. Baumann, Supervisor Nuclear Eddy Current (EC)
- C. B. Cheezem, Manager, Inservice Inspection
- *T. J. Coleman, ISI Coordinator
- *W. W. Foster, Maintenance Superintendent
- B. Millsaps, Maintenance Service Manager
- *R. A. Morgan, QA Director
- D. L. Robinson, NDE Examiner

Other licensee employees contacted during this inspection included technical and administrative personnel.

NRC Resident Inspectors

- P. Harmon, Senior Resident Inspector
- *B. B. Desai, Resident Inspector
- *W. K. Poertner, Resident Inspector

*Attended exit interview

2. Inservice Inspection, Unit 1

This is the thirteenth refueling outage and the second ten year outage for this unit. In a meeting held at NRC Headquarters on June 18, 1991, the licensee presented to the staff, their plan for inspection of the reactor vessel. The presentation outlined the vessel welds scheduled for inspection including nozzles, dissimilar metal welds and main loop piping welds, previously submitted relief requests, augmented inspections, alternate examination methods, and technological enhancements in ultrasonic examination which will be implemented for improved inspection results. The applicable code for this examination and the scheduled ISI activity was the ASME Section XI 1980 Edition with Addenda through Winter 1980. At the site, the inspector reviewed the current outage inspection plan including applicable code cases, code relief requests and augmented inspections. Also the inspector reviewed, randomly selected records of previous results involving approximately thirty-five (35) welds scheduled for inspection during this outage and related NDE/QA procedures. The inspector observed ISI activities, indicated below to determine whether examinations/inspections were being conducted in accordance with requirements of the applicable code, procedures, regulatory requirements and licensee commitments. Independent third party inspection service(s) (ANII/ANI), was provided by Hartford Boiler Company.

At the time of this inspection, manual ISI examinations were in progress. Removal of reactor fuel was in the final stage of completion. Following removal of the fuel, the lower reactor vessel internals were removed and visually inspected. On August 15, the automatic remote control inspection tool (ARIS) was placed on the vessel. Following calibration, inspection of reactor vessel welds commenced. Within these areas, the inspector elected to observe a representative sample of the on-going ultrasonic and eddy current examinations, including placement of ARIS on the reactor vessel, and review QA documents relative to procedures, personnel qualifications and certification of materials and equipment used in these examinations.

a. Review of NDE Procedures (73052)

The inspector reviewed the procedures listed below to determine whether they were consistent with regulatory requirements and licensee commitments. The procedures were also reviewed in the areas of procedure approval, requirements for qualification of NDE personnel, and compilation of required records.

NDE-12 Rev. 8	General Radiography Procedure for Preservice and Inservice Inspection
NDE-25 Rev. 14	Magnetic Particle Examination Procedure and Technique
NDE-35 Rev. 13	Liquid Penetrant Examination
NDE-600 Rev. 0	Ultrasonic Examination of Similar Metal Piping Welds in Wrought Ferretic and Austenitic Material
NDE-610 Rev. 0	Ultrasonic Examination of Welds Using Refracted Longitudinal Waves
NDE-620 Rev. 0	Ultrasonic Examination of Welds in Wrought Ferretic Pressure Vessels less than 2" In Thickness
NDE-701 Rev. 1	Multifrequency Eddy Current Examination of Steam Generator Tubing at McGuire, Catawba and Oconee Station Only
NDE-703 Rev. 3	Evaluation of Eddy Current Data for Steam Generator Tubing
NDE-705 Rev. 0	Multifrequency Eddy Current Examination of Nonferrous Tubing

b. Observation of Work and Work Activities Unit 1 (73753)

The inspector observed work activities, reviewed certification records of NDE equipment and materials, and reviewed NDE personnel qualifications for personnel, utilized for ISI examinations observed. The observations and reviews conducted by the inspector are documented below.

(1) Ultrasonic Examination

<u>Figure No.</u>	<u>Item Description</u>	<u>Search Units</u>
B09.011.036	B1 Circ. Seam PC 57 to PC 62	45° and 61° Shear Wave
B09.011.088	B Hot Leg Terminal End PC 36 to PC 70	45° Shear
B09.012.025	B1 Long Seam PC 62R to 62L	45° and 61° Shear Wave
B09.012.026	B1 Long Seam PC 62L to PC62R	45° and 61° Shear Wave

With respect to these items, the inspector noted the following:

The examination of weld 1PIB15, figure B09.011.036 exhibited an indication near the root of the weld that had sufficient amplitude (50%), and depth to require further investigation. The indication was observed during the 45° shear wave examination and had an approximate length of 1.6 inches. Duke's corporate Level III has requested further examinations with associated plotting to help characterize it more accurately. Items B09.012.25 and .26 are long seams on the elbow, on the suction side of steam generator "B" primary piping. These seams were scheduled for a 45° and 60° shear wave examination. However during the examination the technicians discovered that the geometry of the weld crown was such that it precluded satisfactory examination of the code required weld volume and related base metal. The examination, as observed by the inspector, was partially successful with the 45° transducer and almost totally unsuccessful with the 60°/61° transducer. Discussions with cognizant licensee personnel resulted in the decision to grind down the weld crown to a level that would permit full examination of the code required weld volume.

Within the areas inspected violations or deviations were not identified.

c. Record Review and Evaluation (73755)

The following listed ultrasonic equipment and materials certification records were reviewed.

Ultrasonic Instrument:

Serial Number 31501-921 Model USD-10, Krautkramer

Spectrum analysis data was reviewed for the following ultrasonic transducers:

E01705	2.25 Mhz	61° shear	1" dia.
E15769	2.25 Mhz	45°	1" dia.

Ultrasonic couplant: Ultragel II Batch #8981
PO# 30307, 4/8/89

Thermometer: S/N 32916

Ultrasonic Calibration block: 40350

Eddy Current Examination of S/G(s) Tubes, Unit 1

As stated earlier, ISI activities during this outage included eddy current (EC) examination of tubes in "A" and "B" steam generators. Data acquisition and analysis were being performed in accordance with procedures identified earlier in this report. Controlling documents/code by reference, included ASME Code Section XI (80W80), Regulatory Guide 1.83 July 1975 and Code Case N-401, Digitized Data Collection for Eddy Current Examination. Data acquisition was being performed by licensee personnel while data analysis was conducted by Zetec and Babcock & Wilcox (B&W) personnel. Examinations were being performed with a multifrequency bobbin coil technique, utilizing the computerized MIZ-18 system. Current plans called for the inspection of 9351 tubes in S/G "A" and 9442 in S/G "B". In addition to these tubes, the licensee scheduled for inspection the explosive plugs in both S/G(s) to determine the extent of cracking, since a number of them, about eleven, had been found with crack indications. The number of explosive plugs to be inspected were as follows:

	S/G "A"	S/G "B"
Hot Leg	56	108
Cold Leg	12	33

By completion of this inspection, examination of these plugs was still in progress. Preliminary evaluations disclosed that S/G "1A" had approximately sixteen plugs with crack indications on the primary pressure end of the plug while S/G "1B" had approximately fourteen plugs with crack indications in the same region. These were included in the population of sixty (60) plugs in the hot and cold legs of

S/G, "B" and were still under investigation. The licensee had contracted the services of B&W Nuclear Technologies to help with the development of and assistance with a plan to repair the cracked plugs. Through discussions with the cognizant engineer, the inspector ascertained that B&W had developed a repair procedure which called for welding a plug, approximately 0.300" thick, on top of the existing plug thus capping the cracked plug and therefore isolating it from the primary water environment. At the close of this inspection, the inspector ascertained that B&W had provided the licensee with a copy of the qualified welding procedure qualification record for review and approval. The welding procedure specification, number 51-1205304-01, had been qualified for use with the automatic tungsten arc welding (TIG) process using ERNiCr-3 filler metal wire to deposit a continuous fillet weld with a minimum throat of 0.035 inches around each plug. The licensee indicated that B&W had qualified their operators on mock-ups to simulate field conditions. The welding would be done with remote control equipment for ALARA considerations. Finally, the inspector indicated that although the repair seemed technically feasible, the entire matter should be discussed with NRR before proceeding with the repair.

Following this inspection, the inspector ascertained that the licensee had contacted NRR to discuss and receive permission for using the provisions of ASME Code Section XI, 1989 Edition IWB-4239 to qualify the weld procedure. This edition of the Code has not been published in the Federal Register and as such has not been accepted by the Commission. In reference to the EC inspection of S/G tubes still in-service, on August 16, 1991, the inspector ascertained that, the following number of tubes had been inspected and analyzed.

	S/G "A"	S/G "B"
Tubes Examined	3725	2700
Tubes Analyzed	3530	2506

Of these, no tube had been identified as requiring plugging. Within this area, the inspector observed inspection activities for in-service tubes and defective plugs including in-line calibration. Personnel qualifications as well as equipment and calibration standards certifications were also reviewed.

Within the areas inspected violations or deviations were not identified.

3. Letdown Cooler "1A" Replacement Unit 1 (62700)

At the time of this inspection, the "1A" letdown cooler was being removed and replaced with a refurbished one from Unit 2. The replacement was being performed on work request (WR) number 09432C. Associated piping and fitting replacements included the following:

45° E11	3" schedule 160	SA403	Ht# 464671
Piping	3" schedule 160	SA312/376	Ht# 475132

Because the replaced piping was made from stainless steel type 316 material, an Exempt Change (EC), number 4132 was issued to address and to justify this change in material specification. The applicable code for this replacement activity included ANSI B31.7 and ASME Code Section XI. A total of seven welds were involved in this replacement effort. Weld number 24 on ISO 1-51A-134A Rev. 5 was selected for a review of radiographic film quality, weld procedure qualification records, material certifications and personnel qualifications. The weld was fabricated with a combination TIG/shielded metal arc procedure. The technique sheets were identified as L-231 Rev 18 and L-304 Rev 16, respectively. Welders used to fabricate this joint were identified by stencil numbers FBD/A65 and TUB/H16. The latter was qualified on the TIG process only and therefore fabricated only a portion of this weld. Filler material used was as follows:

Material	Lot/Ht#	QA Tag#	Size
ER-308	30536	62806	1/8" dia.
ER308-16	5A111Q01	62127	3/32" dia.

The weld was radiographed with the radiographic procedure identified earlier in this report as required by code. A review of the film and associated records disclosed the weld was repaired twice to remove rejectable indications in radiographic stations one through four. The final radiographs met code requirements and had been approved by QA and the Code/ANI inspectors.

With the areas inspected violations or deviations were not identified.

4. Exit Interview

The inspection scope and findings were summarized on August 16, 1991, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection results. No dissenting comments were received from the licensee. Proprietary information is not contained in this report.