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

Report Nos.: 50-269/92-21, 50-270/92-21, and 50-287/92-21

Licensee: Duke Power Company
P.O. Box 1007
Charlotte, N.C. 28201-1007

Docket Nos.: 50-269, 50-270, and 50-287 License Nos.: DPR-38, DPR-47, and DPR-55

Facility Name: Oconee Units 1, 2, and 3

Inspection Conducted: August 24-28, 1992

Inspector: James L. Coley 9-11-92
James L. Coley Date Signed
Reactor Inspector

Approved by: J. J. Blake 9/14/92
J. J. Blake, Chief Date Signed
Materials and Processes Section
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope:

This routine, announced inspection was conducted onsite in the areas of Inservice Inspection (ISI) - observation of work activities and review of completed records. In addition, radiographic film packages for replacement piping welds and plant modification welds were examined.

Results:

In each of the areas examined the inspector discovered that nondestructive test (NDE) examiners were conducting effective examinations in accordance with the appropriate test procedure. Supervisors, engineers, and NDE examiners contacted during this inspection were very knowledgeable in their responsible areas. One non-cited violation was identified: "Failure of Radiographic Technique to Discern Penetrameter Image", paragraph 3. During routine inspections on the 28" main steam system piping located on the auxiliary building roof for Unit 3, the inspector observed that 12 fasteners, which support the structural platform above the main steam piping and the safety relief valves, were

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misaligned and lacked full thread engagement into the embedded anchors. Duke's design engineering was notified of the fastener/anchor discrepancies and a Problem Investigation Report was issued by Duke to analyze the problem and to determine what subsequent actions would be required, paragraph 2.a.

1. Persons Contacted

Licensee Employees

*G. Bibb, UT Examiner
*T. Coleman, ISI Coordinator/Compliance Engineer
*C. Freeman, NDE Supervisor
*R. Harris, ONS Regulatory Compliance
*J. McArdle, NDE Level III Examiner
*O. Kohler, ONS Regulatory Compliance
*B. Peele, ONS Engineering
*S. Perry, Regulatory Compliance
*R. Pettit, ISI Outage Support
*M. Salim, ONS Component Engineering
*J. Weir, ONS Component Engineering Supervisor

Other licensee employees contacted included technicians, operators, mechanics, security force members, and office personnel.

NRC Resident Inspectors

P. Harmon
*B. Desai
K. Poertner

*Attended exit interview.

Acronyms and initialisms used throughout this report are listed in the last paragraph.

2. Inservice Inspection (ISI)

The inspector reviewed documents and records, and observed activities, as indicated below, to determine whether ISI was being conducted in accordance with applicable procedures, regulatory requirements, and licensee commitments. The applicable code for ISI, for Unit 1, Unit 2, and Unit 3, is the American Society of Mechanical Engineers Boiler and Pressure Vessel (ASME B&PV) Code, Section XI, 1980 Edition with Addenda through Winter 1980 (80W80). Unit 1 is operating, in the fourteenth fuel cycle, or the third 40 month period, of the second ten year ISI interval (P3,I2). Unit 1 received its operating license on February 6, 1973 and commenced commercial operations on July 15, 1973. Unit 2 is operating, in the thirteenth fuel cycle, or the third 40 month period, of the second ten year ISI interval (P3,I2). Unit 2 received its operating license October 6, 1973 and commenced commercial operations on September 9, 1974. Unit 3 has completed the thirteenth fuel cycle, and is in the second outage of the third 40 month period, of the second ten year ISI interval (P3,I2). Unit 3 received its

operating license July 19, 1974 and commenced commercial operations on December 16, 1974. The licensee's nondestructive examination personnel are performing the liquid penetrant (PT), magnetic particle (MT), ultrasonic (UT) and radiographic (RT) examinations under the umbrella of the Duke Power Company (DPC) Quality Assurance (QA) program. Babcock and Wilcox (B&W) is performing steam generator tube plugging repair activities, under the umbrella of the B&W QA program. Program and procedure review and eddy current examination activities normally examined during an outage were examined by inspectors in a previous inspection and reported in Region II, Inspection Report 50-269,270, and 287/92-19.

a. 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 in the ISI examinations during this outage. The observations conducted by the inspector are documented below.

Activities Observed

Liquid Penetrant Examination (PT)

The inspector observed PT examinations of piping welds listed below to determine whether the examinations were conducted in accordance with the licensee's approved procedure NDE-35, Rev.13. The inspector also performed an independent evaluation of the indications obtained to confirm the NDE examiner's evaluation.

Liquid Penetrant Examinations Observed

Item No	Weld No.	System
C05.011.113	6	High Pressure Injection
C05.011.014	4	High Pressure Injection

The examinations were performed and indications evaluated satisfactorily.

Magnetic Particle (MT) Examination

The inspector observed the MT examination of the welds for the items listed below to determine whether the examinations were performed in accordance with the licensee's approved procedure NDE-25, Rev. 14. The inspector also performed an independent evaluation of the indications obtained to confirm the NDE examiner's evaluation.

Magnetic Particle Examinations Observed

Item No	System
C05.031.005	Main Steam
C05.031.006	Main Steam
C05.040.019	Main Steam

The inspector reviewed the certification documentation for gray MT powder Batch No.89D081 and 88-DO050, yoke# OC-QA-205, and field indicator 0C-QA--FI-1. The inspector also reviewed the certification, qualification, and visual acuity documentation for MT level II examiner T.R.. The examinations were satisfactorily performed in accordance with the approved examination procedure.

However, during the MT examinations of two 28" Dia. main steam welds above the auxiliary building roof on Unit 3, the inspector noted that the structural steel platform, located above the main steam relief valves, had 12 embedded anchors that were misaligned. This resulted in fastener misalignment and, in the worst case, incomplete thread engagement of approximately 3/4". The licensee's design engineering was notified and after performing a visual examination of the reported fastener/anchor discrepancies, issued Problem Investigation Report No.3-092-0406 to handle the concern. Licensee actions regarding this issue will be verified during a subsequent inspection.

Ultrasonic Examination (UT)

The inspector observed examiners perform equipment calibrations and ultrasonic examinations for the welds listed below. The examinations were observed to determine whether approved procedures were being followed, if examination personnel were knowledgeable of the examination method and operation of the test equipment, whether welds were properly scanned, and whether examination results and evaluations of the results were recorded, plotted, and dispositioned correctly. The applicable procedure for the examinations was NDE-600, Revision 1. Personnel and equipment certifications were verified by the inspectors. The following ISI examinations were observed by the inspector:

Ultrasonic Examinations Observed

Weld Number	Item Number	Size
53.18-6	B09.011.201	10" DIA x 1.0"
53.18-8	B09.011.328	10" DIA x 1.0"

The above calibrations and examinations were conducted in accordance with the approved procedure and evaluation of indications appeared to be satisfactory.

Radiographic (RT) Examination

The inspector reviewed the radiographic film for the welds listed below to determine if the radiographic quality and the evaluation of the examination results were in accordance with the requirements of the approved radiographic procedure (NDE-12 Rev.8).

ISI Item No.	Weld No.	Size
C05.021.386	3-01A-10-16	12"Dia.x .562" Thk.
C05.021.308	3-03-29-WG91-H	14"Dia.x .750" Thk.
C05.021.361	3-01A-13-13	36"Dia.x 1.164" Thk.
C05.022.010	3-01A-13-13L	Longitudinal Seam

The review of the above film revealed that Duke's radiographic examiners are obtaining high quality radiographs and that evaluation of discontinuities were within Code requirements.

Code Repairs

The inspector reviewed procedures, observed work activities, and reviewed selected quality records associated with the plugging of the A and B Steam Generator tubes which had been rejected during eddy current examinations conducted this outage. The repair activities were controlled by the B&W QA program. As a result of inspections this outage, 74 tubes in A Steam Generator and 52 tubes in B Steam Generator had to have roll plugs installed. The following procedures were reviewed by the inspector to insure they had been properly approved and that the subject material properly controlled the repair activities.

Document No.	Title
1154835A Rev.26	Roll Plugging & Flex, Segmented or Hybrid Stabilization Field Procedure
1183514A	Field Procedure/operating Instruction for Preparing a Sleeved OTSG Tube for Installation of a Rolled Plug
1169879A Rev.6	Field Procedure for Manual and Remote Marking of Tube Locations in a OTSG

In addition to the above review, the inspector observed mockup training for manual insertion of tube plugs and stabilizers, observed the staging of the computer operated equipment fixtures and observed the plugging operations for the following tubes.

Row No.	Tube No.	SG	Tube Sheet
139	72	B	Upper
130	93	B	Upper
140	1	B	Upper
50	52	A	Lower
94	128	A	Lower
101	95	A	Upper
12	8	A	Upper

8	10	A	Upper
30	3	A	Upper
44	5	A	Upper
37	3	A	Upper
39	4	A	Upper
59	2	A	Upper
62	3	A	Upper
62	4	A	Upper
84	11	A	Upper
96	8	A	Upper
36	40	A	Upper
69	45	A	Upper

The above plugging activities were performed in accordance with the approved procedures and appeared to be satisfactory.

b. Data Review and Evaluation, Unit 3 (73755)

The inspector reviewed completed ultrasonic data and evaluations of welds where recordable indications had been detected to determine if indications were properly interpreted and dispositioned. The inspector also reviewed previously recorded data for welds that were in service base on a fracture mechanics analysis. Records for the following welds were reviewed:

Examination Records Examined

Weld ID Number	**Item Number**	**Component**
3-53A-15.2-64	C05.021.002	Pipe to Pipe
3-53A-17-17	C05.021.003	Pipe to Pipe
3-SGA-WG58-1	B02.040.001	Upper Head to Tube sheet
3-SGB-WG58-1	B02.040.003	Upper Head to Tube Sheet
3-53A-61-43C	E07.001.002	Pipe to Pipe
3-53A-18-08	B09.011.202	Elbow to Pipe
3-53A-18-06	B09.011.201	Elbow to Pipe
3-SGA-WG8-4	C01.010.004	Shell to Shell

Review of Completed Data - Continuation

3-SGA-WG8-1	C01.010.001	Shell to Shell
3-SGA-WG8-2	C01.010.002	Shell to Nozzle Belt
3-SGA-WG50-1	B03.130.002	Outlet Nozzle Y-Z Axis
3-SGA-WG25	B03.130.005	3A Inlet Nozzle Pc 70 to Pc 08
3SGB-WG25	B03.130.006	3B Inlet Nozzle Pc 70 to Pc 08
3-PIB1-7	B05.050.005	B1 Suction, Pump S/E to Pipe
3-PDB1-2	B05.050.006	B1 Discharge, S/E to Elbow
3-PIB2-7	B05.050.007	B2 Suction, Pump S/E to Pipe
3-PDB2-2	B05.050.008	B2 Discharge, S/E to Elbow
3-PSP-1	B05.050.012	Pressure Spray T/E to S/E
3-PIB2-1	B09.011.043	Terminal End to SG Nozzle
3-53A-16-05	B09.011.160	Core Flood Sys.
3-53A-17-02	BO9.011.161	Core Flood Sys.
3-53A-17-04	B09.011.162	Core Flood Sys.
3-53a-17-12	B09.011.164	Core Flood Sys.

Within the areas examined, no violation or deviation was identified.

3. Review of Radiographic Film Packages For Anderson Greenwood Relief Valve Welds and Plant Modifications (57090)

The inspector examined the radiographic film and records for the welds listed below to determine whether they were prepared, evaluated, disposition, and maintained in accordance with the licensee's approved procedure NDE-10, Rev. 18. The radiographic examination of the Anderson Greenwood Valve welds is due to the vendor missing this examination during the fabrication process in 1990. The valves were subsequently installed in plant systems. The licensee issued Problem Investigation Report No. 0-090-0342 to investigate and correct the cause of this program failure.

Anderson Greenwood Valve Radiographs Examined

Component ID No.	**Weld**	**SIZE**
N06-1516.002(N26908)	Inlet	1.0"Dia.x.250"
N06-1516.002(N26908)	Outlet	1.0"Dia.x.250"
N06-1051.005(N26026)	Inlet	.750"Dia.x.250"
N06-1051.005(N26026)	Outlet	.750"Dia.x.250"
N06-1516.002(N26906)	Inlet	.750"Dia.x.218"
N06-1516.002(N26906)	Outlet	1.0"Dia.x.250"
N06-1051.005(N26027)	Inlet	.750"Dia.x.230"
N06-1051.005(N26027)	Outlet	1.0"Dia.x.250"
N06-1051.006(N26030)	Inlet	1.0"Dia.x.230"
M06-1051.006(N26030)	Outlet	1.0"Dia.x.250"
N06-1051.006(N26028)	Inlet	.750"Dia.x.250"
N06-1051.006(N26028)	Outlet	1.0"Dia.x.250"
N06-1051.007(N26035)	Inlet	.750"Dia.x.250"
N06-1051.007(N26035)	Outlet	.750"Dia.x.250"

Plant Modification Weld Radiographs

Weld ID No.	Size
3-54B-8-43	8" Diameter x .250" Thickness
3-54B-6-40	8" Diameter x .250" Thickness
3-03A-15-31	6" Diameter x .432" Thickness

During the review of the above accepted radiographs the inspector discovered that the radiographs for the Inlet weld on relief valve N06-1051.007 (N26035) failed to exhibit the required sensitivity in that the image of the penetrameter was burnt-out due to its placement on the taper of the valve. DPC's Radiographic Procedure NDE-10, Rev. 18, paragraph 13.0 (a) requires that, the radiography shall be performed with a technique of sufficient sensitivity to display the pentrameter image and the specified hole. Although the penetrameter image was not distinguishable, the required 4T hole was very distinguishable. The licensee subsequently discovered that several techniques had been tried during the initial radiography of this weld and that acceptable radiographs were available for review without re-radiographing the weld.

The apparent cause of this discrepancy was that the 4T hole was so apparent that the radiographic examiner had focused his attention on this parameter and had missed the fact that the technique was not demonstrating the 2% sensitivity of the pentrameter image. Based on the radiographic quality of the film for the other relief valve welds this appeared to be an isolated examiner error and was reported as NCV50-287/92-21-01. "This NRC identified violation is not being cited because the criteria specified in Section VII.B of the NRC Enforcement Policy were satisfied".

Within the areas examined, no violations or deviations were identified, with the exception of the non-cited violation identified above.

4. Followup on Previous Inspection Findings (92701)

(Closed) Unresolved Item 50-269,270,287/92-19-01, "Failure of Vendor to Document Geometrical Reflectors"

Further review of Code requirements invoked during the time of the vendor's examinations revealed that there were no specific requirements delineated in the Code at that time to record geometrical reflectors. This item is considered closed.

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

5. Exit Interview

The inspection scope and results listed below were summarized on August 28, 1992, with those persons indicated in paragraph 1. The inspectors described the areas inspected. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

NOV 50-287/92-21-01, "Failure of Radiographic Technique to Discern Penetrameter Image", para. 3

(Closed) 50-269,270,287/92-19-01,"Failure of Vendor to Document Geometrical Refectors", para.4

6. Acronyms and Initialisms

ASME	-	American Society of Mechanical Engineers
B&PV	-	Boiler and Pressure Vessel
B&W	-	Babcock and Wilcox
DPC	-	Duke Power Company
EC	-	Eddy Current
EPRI	-	Electric Power Research Institute
ID	-	Identification
ISI	-	Inservice Inspection
MT	-	Magnetic Particle
NDE	-	Nondestructive Examination
No.	-	Number
NRC	-	Nuclear Regulatory Commission
NSR	-	Non Safety-Related
OTSG	-	Once Through Steam Generator
PT	-	Liquid Penetrant
QA	-	Quality Assurance
RT	-	Radiographic Examination
Rev	-	Revision
SE	-	Safe End
S/G	-	Steam Generator
TE	-	Terminal End
UT	-	Ultrasonic