



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

Report Nos.: 50-338/92-06 and 50-339/92-06

Licensee: Virginia Electric and Power Company
 Glen Allen, VA 23060

Docket Nos.: 50-338 and 50-339 License Nos.: NPF-4 and
 NPF-7

Facility Name: North Anna 1 and 2

Inspection Conducted: March 9 through 13, 1992

Inspector:	<u><i>B. R. Crowley</i></u>	<u>3/24/92</u>
	B. R. Crowley	Date Signed
Approved by:	<u><i>J. J. Blake</i></u>	<u>3/24/92</u>
	J. J. Blake, Chief	Date Signed
	Materials and Processes Section	
	Engineering Branch	
	Division of Reactor Safety	

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the area of Inservice Inspection (ISI). The inspection included a review of the Unit 2 ISI program and plan for the current outage, as well as overall programmatic controls; review of nondestructive examination (NDE) procedures; observations of in progress NDE examinations; review of NDE personnel qualifications; and review of NDE equipment calibration and material certification documentation. Also, NRC TI 2500/27 was used to evaluate the licensee test results in response to NRC Bulletin 87-02.

Results:

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

This inspection indicated that, in general, a good ISI program was in place with good implementation. ISI nondestructive examinations were being conducted in a professional manner by qualified personnel in accordance with applicable procedures.

The procedures, examination techniques used to conduct the examinations, and documentation of examination results were good. One site administrative control procedure for ISI needed to be enhanced to agree with the corporate ISI Manual in the area of inspection scope expansion when rejectable inspection results are found and clarified, relative to the requirements for issue of outage plans.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. Bailey Supervisor Procurement Engineering
- C. Conner, Inservice Inspection Engineer
- D. Dodson, Corporate Level III Examiner
- S. Hamill, Lead ISI Engineer
- *D. Heacock, Superintendent Engineering
- *G. Kane, Station Manager
- P. Kemp, Supervisor, Licensing
- *J. Leberstien, Licensing Engineer
- P. Naughton, Corporate Inservice Inspection Engineer
- T. Porter, Supervisor ISI/NDE/Engineering Programs
- J. Smith, Manager of Quality Assurance, North Ann
- R. Stack, Level III Examiner - NDE Inspector
- *J. Stall, Assistant Station Manager Nuclear Safety and Licensing
- J. Temple, Supervisor Mechanical Design Engineering
- *H. Travis, Supervisor, NDE Services

Contractor Personnel

- K. Ingraham, Lead ET Analyst, Westinghouse

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

NRC Resident Inspectors

- *M. Lesser, Senior Resident Inspector

*Attended exit interview

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

2. Inservice Inspection (ISI) (Unit 2)

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 Unit 2 ISI is the American Society of Mechanical Engineers Boiler and Pressure Vessel (ASME B&PV) Code, Section XI, 1986 Edition. The applicable code for Unit 1 is the ASME B&PV Code, 1983 Edition with Addenda through the Summer of 1983.

For Unit 2, the second 10-Year interval started in December 1990. The current outage is the first outage of the first period. The second interval inspection program plan with relief requests was submitted to the NRC by VEPCO letter Serial 90-662 dated November 1, 1990. The NRC requested additional information by letter dated August 5, 1991. VEPCO provided additional information by letter serial number 91-461 dated September 9, 1991. VEPCO has developed additional information and program changes and is in the process of submitting a revision to the program to the NRC. The NRC, Safety Evaluation Report (SER) has not been issued.

For Unit 1, the second 10-Year interval started in December 1988. The recently completed outage was the last outage of the first period. The second interval inspection program plan, with relief requests, was submitted to the NRC by VEPCO letter serial 88-323 dated June 3, 1988. The NRC requested additional information by letter dated April 11, 1991. VEPCO provided additional information by letter serial number 91-218 dated May 31, 1991. The NRC, SER has not been issued.

The licensee's corporate and site ISI organizations are responsible for the nondestructive examination (NDE) program. Contractors furnish inspection examiners and a supervisor but overall coordination and supervision provided by the VEPCO site ISI organization. For the current outage, Virginia Corporation of Richmond (VCR) is performing the majority of NDE examinations. Westinghouse is performing Eddy Current (ET) examinations of steam generator tubing.

a. ISI Program Review (73051) (Unit 2)

The inspector reviewed the following documents relating to the ISI program to determine whether relief requests had been approved by NRR, the services of an Authorized Nuclear Inservice Inspector (ANII) had been procured and was involved in ISI activities, the plan had been approved by the licensee and to assure that procedures and plans had been established (written, reviewed, approved and issued) to control and accomplish the following applicable activities: program organization including identification of commitments and regulatory requirements, preparing plans and schedules, and qualification, training, responsibilities, and duties of personnel responsible for ISI; repair and replacement program requirements; personnel qualification requirements; and guidance for identifying and processing relief requests.

- North Anna Unit 2 - Inservice Inspection Plan For Components and Component Supports (Second Interval)
- Inservice Inspection Program For the Second Inspection Interval
- Inservice Inspection Manual
- NASES-2.12, Revision 0, Preparing Engineering Evaluations For In-Service Inspection Reportable Indications North Anna Power Station
- NASES-6.02, Revision 0, Inservice Inspection Organization and Responsibilities
- NASES-6.03, Revision 1, ASME Section XI Component Support Visual Examination Program
- NASES-5.04, Revision 0, System Pressure Test Program
- NASES-6.05, Revision 0, ASME Section XI NDE Examination Program
- NASES-6.14, Revision 0, Inservice Inspection Repair/Replacement Program
- NDE-7.3, Revision 2, General Requirements for ISI Nondestructive Examination
- NDE-3.1, Revision 6, Preparation, Issue and Control of Nondestructive Examination Procedures
- NDE-4.1, Revision 11, Virginia power Written Practice For Certification of Nondestructive Examination Personnel

Review of the above documents revealed the following two areas where procedures needed clarification and/or enhancement.

Section 6 of the corporate Inservice Inspection Manual detailed the types of inspection plans to be issued and identified the requirement for an outage plan. Site procedure NASES-6.05 identified an Outage Check List, but was not clear relative to who was to issue the check list or how it was to be used. Although procedures were not clear as

to what type outage plan was to be issued and used, the plans in use appeared to be adequate.

Site procedures specified inspection sample expansion in accordance with code requirements when rejectable defects are identified, but did not provide details on how the sample expansion process is accomplished. Discussions with ISI Engineering personnel indicated the process is in place and working, although not described in procedures.

Responsible site personnel agreed that clarification and enhancements are needed in the above procedural areas and stated that procedures will be revised.

b. Review of NDE Procedures (73052)

The inspector reviewed the procedures listed below to determine whether these procedures 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, compilation of required records, and division of responsibility between the licensee and contractor personnel, if applicable.

- NDE-PT-501, Revision 0, Liquid Penetrant Examination
- NDE-PT-503, Revision 0, Liquid Penetrant Examination For Temperatures Less Than 60°F
- NDE-MT-501, Revision 0, Magnetic Particle Examination
- NDE-MT-502, Revision 0, Magnetic Particle Examination of Bolting
- VP-ISI 2.9, Revision 0, Manual Ultrasonic Examination For The Detection Of Flaws At Virginia Power (VCR Procedure)
- ISI-16.0, Revision 2, Visual Examination Procedure - VT - General
- ISI-16.3, Revision 0, Visual Examination Procedure - VT-3

MRS 2.4.2 VRA-21, Revision 0, Eddy Current
Inspection of Preservice and Inservice Heat
Exchanger Tubing at North Anna 1&2

c. Observation of Work and Work Activities (73753)

The inspector observed work activities, reviewed NDE personnel qualification records, and reviewed certification records of NDE equipment materials, as detailed below. During the examinations, the inspector verified: availability of and compliance with approved NDE procedures, use of knowledgeable NDE personnel, and use of NDE personnel qualified to the proper level.

(1) Liquid Penetrant Examination (PT)

The inspector observed the in process PT examinations as indicated below. The observations were compared with the applicable procedure and the ASME B&PV Code.

Examinations Observed

<u>Drawing</u>	<u>Line</u>	<u>Welds</u>
12050-WMKS-0103BB	6"-SI-533-1502-Q1	14 SW-42
"	6"-SI-532-1502-Q1	SW-36

(2) Magnetic Particle Examination

The inspector observed the in-process MT examination, including the 10 pound lift test for calibration check, indicated below. The observations were compared with the applicable procedures and the Code.

Examinations Observed

<u>Drawing</u>	<u>Line</u>	<u>Welds</u>
12050-WMKS-102A	16"-WFPD-424-601-Q2	54J

(3) Ultrasonic Examination (UT)

The inspector observed calibration activities and the in-process UT examinations as indicated below. These observations were compared with the applicable procedures and the ASME B&PV Code.

Examinations Observed

<u>Drawing</u>	<u>Line</u>	<u>Welds</u>
12050-WMKS-0103BB	6"-SI-533-1502-Q1	14 SW-42
"	6"-SI-532-1502-Q1	SW-36

(4) Visual Examinations (VT)

The inspector observed the in-process VT examinations as indicated below. The observations were compared with the applicable procedure and the ASME B&PV Code.

Examinations Observed

<u>Drawing</u>	<u>Line</u>	<u>Supports/ Bolting</u>
12050-WMKS-0103BP	6"-SI-533-1502-Q1	2-SI-R-3
12050-WMKS-0103BK	2"-CH-408-1502-Q1	2-CH-R-23
12050-WMKS-0103BB	6"-SI-533-1502-Q1	2-SI-19

(5) Eddy Current Examination (ET)

The inspector observed in-process ET inspection activities as follows:

- Data acquisition for the following steam generator (S/G) tubes was observed:

<u>S/G</u>	<u>Coil</u>	<u>Row</u>	<u>Column</u>
C	RPC	3	33
B	RPC	14	20
B	RPC	12	20
B	RPC	10	20
B	RPC	9	20
B	BOBBIN	22	84
B	BOBBIN	21	84

In addition, a "NEW REEL" calibration was observed for the S/G BOBBIN inspection.

The data analysis process was observed for the following S/G tubes:

B	RPC	11	20
B	RPC	10	20
B	BOBBIN	21	84
B	BOBBIN	20	84
B	BOBBIN	19	84

S/G ET examination activities will be examined further in a future inspection (See RII report 50-338,339/92-08).

(6) Personnel Qualifications

The inspector reviewed personnel qualification documentation as indicated below for examiners who performed the examinations detailed in paragraphs (1), (2), (3), (4), and (5) above. These personnel qualifications were reviewed in the following areas: employer's name; person certified; activity qualified to perform; current period of certification; signature of employer's designated representative; basis used for certification; and, annual visual acuity, color vision examination, and periodic recertification.

Examiner Records Examined

<u>Method</u>	<u>Level</u>	<u>Employer</u>	<u>Number</u>
PT	II	VCR	2
MT	II	VCR	2
UT	II	VCR	2
VT	II	VCR	2
ET	I	W	3
ET	IIA	W	1

In addition, qualification records for one VEPCO level III (PT, MT, and UT) examiner was reviewed.

(7) Equipment Certification Records

Equipment certification records as listed below, for equipment used in the inspections detailed in paragraphs (1), (2), and (3) above, were reviewed to ensure compliance with all applicable requirements.

<u>Equipment Type</u>	<u>Equipment Identification</u>
Penetrant Cleaner	Batch 90C09P
Penetrant	Batch 90C07K
Penetrant Developer	Batch 88K018
UT Couplant	Batch SS 8090
UT Transducer	Serial 33380
UT Transducer	Serial 33258
UT Transducer	Serial G121205
Cal Block	VGB-7
MT Powder	Batch 88F024
MT Cal Weight	MT-04

RESULTS:

In the areas inspected, no violations or deviations were identified. In general, a good ISI program was in place with good implementation. Examination procedures meeting code requirements were being used and inspections were being conscientiously performed by qualified personnel. As detailed above, the need for clarification and enhancement of one administrative procedure was identified.

3. NRC Temporary Instruction (TI) 2500/27

See RII report 50-338,339/89-29 for documentation of a previous inspection of this TI.

The licensee responded to NRC Bulletin 87-02, Fastener Testing to Determine Conformance with Applicable Material Specifications, by letters 87-705A dated January 18, 1988, and 87-705C dated February 29, 1988. The letters indicated that a number of samples tested did not meet specification requirements and provided justification for the acceptability of the fasteners. TI 2500/27 was issued to evaluate the licensee's corrective actions for significantly out of specification test samples.

In RII report 89-29, the inspector evaluated the inspection data for the samples in question. In addition, the inspector noted that the licensee identified the root cause of the out of specification fasteners to be the lack of an inspection program to sample material at receipt inspection to detect substandard materials. At the time of the 89-29 inspection, the inspector further noted that the licensee was in the process of upgrading fastener specifications, procurement, receiving inspection, and storage procedures and practices.

During the current inspection, the inspector discussed the upgraded fastener procurement program with procurement engineering personnel. The following documents were provided as evidence of the upgraded program and were reviewed by the inspector:

- Specification NAS-2094/NUS-2206, Specification For Pressure Boundary Threaded Fasteners, North Anna And Surry Power Stations
- VPAP-0701, Revision 2, receiving and Receipt of Material and Services
- VPAP-0702, Revision 3, Identification and Control of Material, Parts and Components
- VPAP-0703, Revision 2, Storage, Handling and Shipping Requirements for Station Materials

The inspector noted that the receipt inspection program did not specify sample testing of fastener lots. Since the licensee had identified the lack of a sample testing program as a root cause for finding fasteners not meeting specification requirements, the inspector questioned licensee personnel relative to the lack of sample testing in the new receiving inspection process. The Supervisor of Procurement Engineering stated that the decision not to implement sample testing was based on improvements in the procurement process. The improvements cited included:

- Expanded Procurement Engineering
- Involvement of Procurement Engineering in the auditing process for vendors
- More involvement of Procurement Engineering in resolving material problems
- Improvement in fastener specifications
- Improvement in the receiving inspection process, especially in verifying proper marking and traceability
- Reduction in the number of types of fasteners stocked
- Compliance with NUMARC and EPRI guidelines for receiving inspection (NCIG-15, EPRI Project Q101-18 dated January 1990)

The inspector pointed out that, although the procurement process for fasteners has been improved, some sample testing would provide an added level of assurance that fasteners

received were the actual fasteners represented by the vendor documentation. This testing would seem prudent based on past experience with fasteners not meeting specification requirements even though the vendor documentation was acceptable. At the exit interview, the Station Manager agreed that some sample testing may be in order and stated that the need for testing would be evaluated. Inspector Followup Item 338,339/92-06-01, Sample Testing of Fasteners, is opened to review the licensee's further actions on this matter.

Based on the above review and the review documented in report 50-338,339/89-29, TI 2500/27 is closed.

4. Exit Interview

The inspection scope and results were summarized on March 13, 1992, with those persons indicated in paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results listed below. Relative to sample testing of fasteners at receipt inspection (See paragraph 3. above), the licensee agreed that some testing may be in order and stated that the need for testing would be evaluated. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

(Open) IFI 338,339/92-06-01, Sample Testing of Fasteners, Paragraph 3

5. Acronyms and Initialisms

ANII	-	Authorized Nuclear Inservice Inspector
ASME	-	American Society of Mechanical Engineers
B&PV	-	Boiler and Pressure Vessel
CH	-	Charging System
DAC	-	Distance Amplitude Curve
EPRI	-	Electric Power Research Institute
ET	-	Eddy Current Test
IFI	-	Inspector Followup Item
ISI	-	Inservice Inspection
MT	-	Magnetic Particle Testing
NASES	-	North Anna Site Engineering Services
NDE	-	Nondestructive Examination
NRC	-	Nuclear Regulatory Commission
PT	-	Liquid Penetrant Testing
QA	-	Quality Assurance
RII	-	Region 2
RPC	-	Rotating Pancake Coil
SER	-	Safety Evaluation Report
S/G	-	Steam Generator
SI	-	Safety Injection System

TI - NR Temporary Instruction
UT - Ultrasonic Testing
VT - Visual Testing
VCR - Virginia Corporation of Richmond
VEPCO - Virginia Electric and Power Company
W - Westinghouse