

UNITED STATES NUC_CAR REGULATORY COMMISSION

REGION II 101 MARIETTA ST., N.W. ATLANTA, GEORGIA 30323

Report No.: 50-424/88-45

Licensee: Georgia Power Company

> P. O. Box 4545 Atlanta, GA 30302

Docket No.: 50-424

License No.: NPF-68

Facility Name: Vogtle 1

Inspection Conducted: October 17-21, 1988

Inspector, some

Make, Chief Materials and Processes Section

Engineering Branch Division of Reactor Safety

SUMMARY

Scope:

Approved by

This routine, unannounced inspection was conducted in the areas of inservice inspection (IS2) including review of the ISI program, review of the ISI plan for this outage, review of NDE procedures including procedures for eddy current examination and visual examination of component supports and hangers, review of personnel qualifications, review of NDE equipment and material certification records, observation of in-process examinations, and review of completed examination records.

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

The licensee's ISI program appears to be adequate in all areas reviewed. Management appears to be very involved in the administration of the program and staffing needs appear to be fully adequate. The licensee's control of examination data, records of personnel qualifications, and material certification records made these records easily accessible and well managed. The examination personnel appeared to be well qualified are cognizant of examination requirements. In general, the examination procedures were adequate, however weaknesses were found in the visual examination procedures relative to the examination of component supports and hangers and the engineering evaluation of these items to determine acceptability.

One unresolved item was identified involving unrecorded support spring can settings, paragraph 2.d.(1)(a).

One inspector followup item was identified involving visual examination procedures relative to information recording and engineering evaluation criteria for hangers and supports, paragraph 2.b.(5).

Persons Contacted

Licensee Employees

*A. Caudill. ISI Senior Plant Engineer

*G. Frederick, QA Site Manager, Operations

*T. Creen, Plant Support Manager S. Lee, Plant Engineer

*W. Nicklin, Regulatory Compliance Supervisor, NSAC

*K. Pointer, Senior Plant Engineer, NSAC *J. Swartzwelder, NSAC Manager

*J. Williams, Plant Engineering Supervisor

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

Other Organizations

R. May, Southern Company Services, ISI Senior Inspector

J. Liou, ANII, Hartford Insurance Company A. Immel, ISI Coordinator, Westinghouse Electric Corp. *D. Smith, Manager Joint Generation, Oglethorpe Power Corp.

NRC Resident Inspector

*J. Rogge, Senior Resident Inspector, Operations

*Attended exit interview

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

Inservice Inspection (ISI) Unit 1

The inspector examined documents, activities, and records 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 is American Society of Mechanical Engineers coiler and Pressure Vessel (ASME B&PV) Code, Section XI, 1983 edition with addenda through Summer 1983. Westinghouse (W) has the responsibility for the eddy current examination of steam generator tubing and is utilizing automated evaluation equipment in addition to W, Zetec, and Echoram personnel for examination data evaluations. Southern Company Services (SCS) has the responsibility for the remainder of the ISI examination activities and is utilizing SCS and Ebasco personnel to conduct the examinations.

a. Inservice Inspection, Programmatic Review (73051)

The inspector reviewed the below listed documents relating to the licensee's Inservice Inspection (ISI) program (Plan) in the areas of: program approval; QA program requirements including organizational structure; audit requirements; general QA requirements (examination reports, control of deviations from established program; quality documentation and identification of components); work and quality inspection procedures; control of processes; corrective action; document control; control of examinations and examination equipment; quality records; inspection scope; inspection intervals; personnel qualifications; and, NDE records including provisions for storage.

ISI Outage Plan First Refueling Outage (Period 1/Outage 1)

VEGP/00411-C (R4) Preservice and Inservice Inspection Program

SCS/Inspection, Testing, and Engineering Policy and Procedures Manual

Procedure	Title
09.5-0 (R0) 09.5-51 (R1)	Documents and Records Final Reports - Preparation, Approval and and Submittal
09.5-100 (R2) 09.6-50 (R1)	Quality Assurance Record Control Procurement of Nondestructive Examination Materials and Equipment
09.7-50 (R3) 09.50-0 (R0) 09.50-1 (R0) 09.50-2 (R1) 09.50-3 (R1)	Nonconformance Item On-Site Activities Conducted By ITE On-Site Data Review On-Site Data Control On-Site Control and Issuance of Non- destructive Examination (NDE) Documents and
09.50.4 (R2)	Equipment Indication Notifications

b. Review of Procedures (73052)

The inspector reviewed the procedures indicated below to determine whether the 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, and compilation of required records; and if applicable, division of responsibility between the licensee and contractor personnel if contractor personnel are involved in the ISI effort.

Procedure

Title

AUX-H/F/V-300 (R4)

Procedure (Written Practice) for Qualification and Certification of Nondestructive Examination Personnel

Procedure (cont'd)	<u>Title</u>
AUX-H/F/V-303 (RO)	Control of Measuring and Test Equipment
AUX-V-306 (R1)	Measuring and Recording Search Unit Location During Manual Ultrasonic Examinations
AUX-V-307 (R2)	Preservice and Inservice Inspection Documentation
UT-V-404 (R2)	Manual Ultrasonic Examination of Full- Penetration Welds
UT-V-406 (R2)	Manual Ultrasonic Examination of Cast Stainless Full-Penetration Welds
UT-V-411 (R2)	Manual Ultrasonic Examination of Pressure Vessel Welds (2 Inches to 12 Inches in Thickness)
UT-V-455 (R1)	Qualification of Manual Ultrasonic Instruments
UT-V-465 (R2)	Ultrasonic Thickness Examination Procedure
MT-V-505 (R1)	Dry Powder Magnetic Particle Examination: Yoke Method
MT-V-506 (R1)	Wet Fluorescent Magnetic Particle Examina- tion: Yoko Method
PT-V-605 (R1)	Color Contrast, Solvent-Removable Liquid Penetrant Examination Procedure
VT-V-715 (R1)	Visual Examination (VT-1)
VT-V-725 (R1)	Visual Examination (VT-2)
VT-V-735 (R1)	Visual Examination (VT-3)
MRS 2.4.2 Gen-28 (R3)	Digital Multi-Frequency Eddy Current Inspection of Preservice and Inservice Heat Exchanger Tubing
DAT-GYD-001 (R2) with Addendum #1	Data Analysis Guidelines
85052-C (RO)	Visual Examination of Component Supports and Hangers
54171-C (RG)	Inspection of Component Supports and Engineering Evaluation

All procedures listed above, except 85052-C and 54171-C, had been reviewed during previous NRC inspections. Only current revisions were reviewed during this inspection.

- (1) The inspector reviewed the Ultrasonic procedures to ascertain whether the had been reviewed and approved in accordance with the licensea's established QA procedures. The above procedures were reviewed for technical adequacy and conformance with the ASME Code, Section V, Article 5, and other license commitments/requirements in the following areas: type of apparatus used; exters of coverage of weldment; calibration requirements; search units; beam angles; DAC curves; reference level for monitoring discontinuities; method for demonstrating penetration; limits for evaluating and recording indications; recording significant indications; and, acceptance limits.
- (2) The inspector reviewed the Eddy Current procedure for technical content relative to: multichannel examination unit; multichannel examination indication equipment is specified; examination sensitivity; material permeability; method of examination; method of calibration; calibration sequence; and, acceptance criteria.
- (3) The inspector reviewed Procedure PT-V-605 to ascertain whether it had been reviewed and approved in accordance with the licensee's established QA procedures. The procedure was reviewed for technical adequacy and conformance with the ASME Code, Section V, Article 6, and other licensee commitments/requirements in the following areas: specified method; penetrant material identification; penetrant materials analyzed for sulfur; penetrant materials analyzed for total halogens; acceptable pre-examination surface; drying time; method of penetrant application; surface temperature; solvent removal; surface drying prior to developing; type of developer; examination technique; evaluation technique; and, procedure requalification.
- (4) The inspector reviewed the Magnetic Particle procedures to ascertain whether they had been reviewed and approved in accordance with the licensee's established QA procedures. The procedures were reviewed for technical adequacy and for conformance with the ASME Code, Section V, Article 7, and other licensee commitments/requirements in the following areas: examination method; contrast of dry powder particle color with background; surface temperature; suspension medium for wet particles; viewing conditions, examination overlap and directions; pole or prod spacing; current or lifting power (yoke); and, acceptance criteria.

(5) The inspector reviewed the visual examination procedures to determine whether they contained sufficient instructions to asse that the following parameters were specified and controlled within the limits permitted by the applicable code, standard, or any additional specification requirement: method-direct visual, remote visual or translucent visual; application hydrostatic testing, fabrication procedure, visual examination of welds, leak testing, etc.; how visual examination is to be performed; type of surface condition available; method or tool for surface preparation, if any; whether direct or remote viewing is used; special illumination, instruments, or equipment to be used, if any; sequence of performing examination, when applicable; data to be tabulated, if any; acceptance criteria is specified and consistent with the applicable code section or controlling specification; and, report form completion.

During the review of Procedure 85052-C, Revision O, Visual Examination of Component Supports and Hangers, the NRC inspector noted that one of the unacceptable criteria for spring type supports and hangers is improper hot or cold positions. The procedure gave no specific information relative to what constituted an acceptable spring position and does not require that the spring position indicator dimension be recorded during the course of the examination. Discussions with licensee personnel revealed that a parallel Procedure 54171-C, Revision 6, Inspection of Component Supports and Engineering Evaluation, was intended to be used for the evaluation of spring type hangers and supports. The NRC inspector reviewed this procedure and concluded that the procedure dealt primarily with snubbers and did not contain sufficient engineering evaluation criteria to determine the acceptability of spring type hangers and supports especially in those cases when the spring position indicator dimension is unknown. Further discussions with licensee personnel resulted in a commitment by the licensee to revise these two procedures such that the spring position dimension of spring type supports and hangers would be recorded at the time of item examination and that specific criteria relative to determining the acceptability of this type hanger or support, based on the spring indicator position and the temperature and system load at the time of examination, would be included as part of the procedures revisions. By the conclusion of this NRC inspection, the revisions had not been completed. This item will be identified as Inspector Followup Item (IFI) 50-424/88-45-02, Revisions To Procedures 85052-C and 54171-C.

Observation of Work and Work Activities (73753)

The inspector observed work activities and reviewed certification records of equipment, materials, and NDE personnel which had been and will be utilized during the required ISI examinations during this

outage. The observations and reviews conducted by the inspector are documented below.

(1) The inspector observed calibration activities and the in-process ultrasonic examinations being conducted on Weld 11201-V6-001-W02 RV Flange to Head Weld. The observations were compared with the applicable procedures and the Code in the following areas: availability of and compliance with approved Nondestructive Examination (NDE) procedure; use of knowledgeable NDE personnel; use of NDE personnel qualified to the proper level; type of apparatus used; extent of coverage of weldment; calibration requirements; search units; beam angles; DAC curves; reference level for monitoring discontinuities; method of demonstrating penetration; limits of evaluating and recording indications; recording significant indications; and acceptance limits.

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

Ultrasonic Instruments

Manufacturer/Model	Serial No.
Sonic/MK1 Sonic/MK1 KK/USK-7 KK/USK-7	14494E 06216E 27276-1122 27276-4317-2 27276-4951-2

The inspector reviewed spectrum analysis data for ultrasonic transducers with serial numbers 031326, L30469, L24611 and K06626.

Ultrasonic Couplant Batches 8767 and 8871, Sonotrace 40.

Ultrasonic Calibration Blocks

ISI-D-342A	SS	12" Sch. 40
ISI-D-335A	SS	4" Sch. 40
ISI-D-413A		C" Sch. 120
ISI-D-344A	SS	14" Sch. 40
ISI-D-303A	SS	4" Sch. 160
ISI-D-410A	CS	5" Flat Block
ISI-D-409A	CS	3-3/4" Flat Block
ISI-D-400A	CS	7" RV Head Block

Ultrasonic Rompas Blocks 86-4329 and 793391

(2) The inspector reviewed the below listed liquid penetrant materials certification records to ascertain if the sulfur and halogen content of the material was within acceptable content limits.

Materials	Batch Number	
Liquid Penetrant Cleaner/Remover	87C037 87E001	
Developer	87E055, 86L045	

(3) The inspector observed the magnetic particle examinations indicated below. The observations were compared with the applicable procedures and the code in the following areas: examination methods; contrast of dry powder particle color with background; surface temperature; suspension medium for wet particles, if applicable; viewing conditions; examination overlap and directions; pole or prod spacing; current or lifting power (yoke); and acceptance criteria.

Weld ID	Dwg. No.	Description
11201-V6-001-W02	11201-V6-001	Flange to Head 240° - 360°
11201-V6-001-W206	11201-V6-001	RV Head Lug @ 240°

The inspector reviewed documentation indicating that a 10 pound lift test had been performed on magnetic particle AC yokes 43530 and 6661.

A review of magnetic particle material certification records for batch number 86M058 indicated the sulfu. and halogen content of the material was within acceptable content limits.

- (4) The inspector observed the Eddy Current activities indicated below. The observations were compared with the applicable procedures and the Code in the following areas: method for maximum sensitivity is applied; method for determining material permeability; method of examination has been recorded; examination equipment has been calibrated in accordance with the applicable performance reference; amplitude and phase has been calibrated with the proper applicable calibration reference and is recalibrated at predetermined frequency; required coverage of steam generator tubes occurs during the examination; acceptance criteria is specified or referenced and is consistent with the procedure or the ASME Code; and, results are consistent with acceptance criteria.
 - (a) In-process tube data acquisition, including calibration confirmation and tube location verifications was observed for the following steam generator tubes:

	SG-1	<u>sc</u>	<u>6-4</u>
Tut	be ID	Tut	oe ID
Row	Column	Row	Column
562456512578755557	4 4 5 6 6 8 10 15 15 16 74 77 77 79	51 50 47 45 45 44 42 40 40 2 2 1	56 67 69 70 67 69 67 68 119 110 100 90

(b) In-process Eddy Current inspection data evaluation, including calibration confirmation, was observed for the below listed Steam Generator tubes. Data analysis is accomplished by first having the data evaluated by the W Intelligent Eddy Current Data Analysis (IEDA) automated analysis system. The IEDA evaluation is designated as the Primary analysis. Following the evaluation by the automated IEDA system, the data is evaluated by conventional manual qualified evaluators. The manual evaluation of the data is designated as the Secondary evaluation. Any differences between the Primary and Secondary evaluations is resolved by an independent manual examination of the conflicting evaluations. A qualified analyst is assigned the task of resolving the differences between the Primary and Secondary evaluations and is designated at the Resolution analyst.

PRIMARY ANALYSIS

Row	SG-1 Column	Row SG-	4 <u>Column</u>
55	62	17	57
52	61	15	58
52	64	11	58
50	62	9	56

Row (cont'd)	Column	Row	Column
49 48 37 37	61 62 61 64	44 44 2	101 102 5

SECONDARY ANALYSIS

Row	SG-1 Column	Row SG-	Column
49 47 47 47 46 46 47 46 31 32 34 31 32 32 27	76 71 71 71 69 70 71 74 76 71 69 71 76 74 77	45 45 45 55 55 59 57 22 22 22 22 22 22	58 59 60 57 57 58 59 15 25 35 45 55 115 75 65

RESOLUTIONS

SG-1		SG-4	
Row	Column	Row	Column
47 12 31	24 19 22	52 41 37 11 15 42	34 36 36 78 73 96

(c) During the observations of the analysis activities for the above listed tubes, the inspector jointly evaluated a sample of the data with the secondary and resolution analysts. No significant discrepancies were noted.

- Certification records for Eddy Current calibration standards with serial numbers ISI-D-806A and ISI-D-806D were reviewed for material type, correct fabrication, and artificial flaw location/size.
- (5) The inspector reviewed the qualification documentation for the below listed examiners in the following areas: employer's name; person certified; activity qualified to perform; effective period of certification; signature of employer's designated representative; basis used for certification; and annual visual acuity, color vision examination, and periodic recertification.

Mag	nn	140	- 0	1100
He	HU	u	LE	vel

Company	Examiner	UT	PT	MT	EC	VT
SCS SCS EBASCO SCS SCS SCS SCS SCS SCS EBASCO EBASCO EBASCO EBASCO ECHORAM ECHORAM ZETEC ZETEC	BLD RRS GN MSC CFS JCB MH RLK NLH GBO JTL MNV AOS WDG FDG KAI SFR WJP RAN CMM PAA	III III III III III III		II II II II II II II		

- d. Inservice Inspection, Data Review and Evaluation (73755)
 - (1) Records of completed nondestructive examinations were selected and reviewed to ascertain whether: the method(s), technique and extent of the examination complied with the ISI plan and applicable NDE procedures; findings were properly recorded and evaluated by qualified personnel; programmatic deviations were recorded as required; personnel, instruments, calibration blocks and NDE materials (penetrants, couplants) were designated. Records selected for this review are listed below.

Drawing No.	Weld No.	NDE Method
ISI-11208-V4-001 ISI-11208-P6-002 ISI-11208-P6-002 ISI-11205-E6-001 ISI-11205-P6-001 ISI-11202-001 ISI-11202-001 ISI-11202-001 ISI-11202-231 ISI-11202-231 ISI-11202-231 ISI-11202-001 ISI-11202-231 ISI-11202-001 ISI-11202-001 ISI-11202-001 ISI-11202-001 ISI-11202-001 ISI-11202-001 ISI-11202-001 ISI-11202-231 ISI-11202-231 ISI-11208-123 ISI-11208-004 ISI-11205-004 ISI-11205-004 ISI-11205-008	11208-V4-001-W01 11208-P6-002-W03 11208-P6-002-W04 11205-E6-001-W04 11205-P6-001-W01 11204-V6-001-W03 11202-001-1 11202-001-4 11202-231-38 11202-231-39 11202-231-46 11202-001-1 11202-001-4 11202-001-1 11202-001-4 11202-001-1 11202-001-4 11202-001-7 11202-001-4 11202-001-17 11202-001-4 11202-001-17 11202-001-4 11202-001-17 11202-001-4 11202-001-17 11202-001-4 11202-001-17 11202-001-24 11202-001-17 11202-001-17 11202-001-17 11208-123-39 11205-004-17 11208-123-7 11208-123-7 11208-123-5 11208-123-5 11208-123-5 11208-123-5 11208-123-5 11208-123-7 11208-123-12 11208-123-12 11208-123-12 11208-123-12 11208-123-12 11208-123-12 11208-123-12 11208-123-12 11208-123-7 11208-123-12 11208-123-7 11208-123-12 11208-123-7 11208-123-7 11208-123-12 112	UT

Drawing No. (cont'd)	Weld No.	NDE Method
ISI-11205-005 ISI-11205-005 ISI-11205-005 ISI-11205-007 ISI-11208-123 ISI-11204-V6-001 ISI-11205-008 ISI-11205-010 ISI-11205-010 ISI-11205-010 ISI-11208-137 ISI-11301-001 ISI-11301-007 ISI-11301-107 ISI-11301-107 ISI-11301-107	11205-005-H004 11205-005-H013 11205-005-H016 11205-007-H012 11208-123-H028 11204-V6-001-S02 11204-V6-001-S03 11205-008-79 11205-010-7 11208-137-1 11301-104-H007 11301-001-1 11301-001-3 11301-001-4 11301-001-5 11301-001-6 11301-001-7 11301-001-8 11301-001-9 11301-001-10 11301-001-13 11301-107-1 11301-107-1 11301-107-1 11301-107-1	VT VT VT VT VT VT PT PT PT PT PT MT MT MT MT MT MT MT MT MT

(a) During the review of the visual examination data sheets for supports and hangers that have spring cans, the NRC inspector noted that these items were marked satisfactory on the 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. The inspector discussed these omissions with cognizant licensee personnel in an attempt to determine how these items were evaluated and specifically to determine if an adequate evaluation of these items could be made if the spring can dimension and system status were not known. During these discussions, it was determined that if the system status was unknown and the spring can setting dimension were not known that it would not be possible to determine whether the support or hanger is in an acceptable configuration.

Following the above discussions, the NRC inspector requested the licensee to determine how many supports and hangers of this type had been examined. The licensee

determined that a total of 31 supports and hangers of this type had been examined without the spring can dimension or the system status being recorded. Of the 31 items, 9 of the items were ASME Code required and the remaining 22 were examined due to other licensee commitments.

The NRC inspector requested that the supports and hangers be re-examined for spring can dimension position and that the system status be determined for each item. The licensee agreed to re-examine these items, however, at the termination of this NRC inspection all items had not been re-examined. The ASME Code required supports and hangers (9 total) had been re-examined with eight of the items apparently falling into an acceptable category and one item requiring further engineering evaluation.

The NRC inspector informed the licensee that pending final determination of the questionable items and subsequent review of the corrective actions taken by the licensee, that this matter would be identified as Unresolved Item 50-424/88-43-01, Unrecorded Support Spring Can Readings.

- (b) The inspector compared a randomly selected sample of current NDE examination results with historical examination results. No significant discrepancies were noted.
- (2) Eddy Current Examination of Steam Generator Tubing
 - (a) The inspector reviewed a sample of the records of the steam generator tubing eddy current uninations. The reviews were compared with the applicable procedures and the Code in the following areas: the multichannel eddy current examination equipment has been identified; material permeability has been recorded; method of examination has been recorded; and, results are consistent with acceptance criteria.
 - (b) A sample of the current examination results were compared with preservice examination results. No major discrepancies were noted.
 - (c) At the conclusion of the NRC inspection all examinations had not been completed. The inspector discussed the program and status with the licensee and the preliminary examination status for the steam generators is listed below.

		<u>SG-1</u>	SG-4
Tubes	examined	754	821
	with >20% indications	6	4
	previously plugged	0	4

3. Exit Interview

The inspection scope and results were summarized on October 21, 1988, with those persons indicated in paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results listed below. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

Unresolved Item 50-424/88-45-01, Unrecorded Support Spring Can Readings, paragraph 2.d.(1)(a).

Inspector Followup Item 50-424/88-45-02, Revisions to Procedures 85052-C and 54171C, paragraph 2.b.(5).

4. Acronyms and Initialisms

ASME American Society of Mechanical Engineers B&PV Boiler and Pressure Vessel CS Carbon Steel DAC Distance Amplitude Curve DWG Drawing EC Eddy Current Identification ID I.D. Inside diameter IFI Inspector Followup Item ISI Inservice inspection ITE Inspection, Testing and Engineering KK Krautkramer MT Magnetic particle NDE Nondestructive Examination No. Number NPF Nuclear Power Facility NRC Nuclear Regulatory Commission PT Liquid penetrant QA Quality Assurance Revision Reactor Vessel SCS Southern Company Services SG Steam Generator 55 Stainless Steel UT Ultrasonic VEGP Vogtle Electric Generating Plant VT Visual Westinghouse Electric Corporation