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

Report Nos.: 50-413/87-38 and 50-414/87-38

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

Docket Nos.: 50-413 and 50-414 License Nos.: NPF-35 and NPF-52

Facility Name: Catawba 1 and 2

Inspection Conducted: November 2-6, 1987

Inspectors: B. R. Crowley 11/23/87
B. R. Crowley Date Signed

R. W. Newsome 11-23-87
R. W. Newsome Date Signed

Approved by: J. J. Blake 11/24/87
J. J. Blake, Section Chief Date Signed
MAterials and Processes Section
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection was in the areas of inservice inspection (ISI) (Units 1 and 2), maintenance program implementation (Units 1 and 2), maintenance/modification welding and NDE (Unit 1), licensee action on previous enforcement matters (Unit 2), IEB 87-01 (Units 1 and 2), NRC Information Notice 87-36 (Units 1 and 2) and inspector followup items (Units 1 and 2).

Results: No violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*R. F. Wardell, Superintendent of Technical Services
*J. O. Barbour, QA Manager - Operations
*B. F. Caldwell, Station Services Superintendent
*T. M. Hilderbrand, QA Supervisor
G. B. Robinson, Supervising QA Engineer - QA Technical Support
C. M. Sahma, Test Supervisor - Performance
*W. L. Anfin, Jr., Mechanical Maintenance Support
J. A. Kammer, Test Engineer - Unit 2 - Performance
T. G. Self, Station Instructor - Mechanical Maintenance
G. G. Barrett, Training Supervisor
J. B. Beckman, Maintenance Engineer
J. E. Reeves, Mechanical Maintenance - Production Specialist
*J. E. Cherry, QA Specialist - ISI
R. C. Giles, ISI Coordinator - ISI
H. D. Mason, QA Engineer - Technical Support - Mechanical
T. W. Huffstickler, Welding Engineering Technical - CMD
M. A. Cote', Compliance Specialist, QA/QC Personnel

Other licensee employees contacted included QA/QC personnel, construction craftsmen, engineers, security force members, and office personnel.

NRC Resident Inspectors

P. K. Van Doorn, Senior Resident Inspector
M. Lesser, Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on November 6, 1987, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

3. Licensee Action on Previous Enforcement Matters (92702)(Unit 2)

(Closed) Violation 414/87-04-01, Failure of Installed Equipment to Meet Drawings and Procedures. Duke Power Company's (DPC) letter of response dated April 8, 1987 has been reviewed and determined to be acceptable by Region II (RII). Based on examination of corrective actions as stated in

the letter of response and discussions with responsible licensee personnel, the inspector concluded that DPC had determined the full extent of the subject violation, performed the necessary survey and follow-up actions to correct the present conditions and developed the necessary corrective actions to preclude recurrence of similar circumstances. The corrective actions identified in the letter of response have been implemented. The inspectors verified by visual observation that the Condensate Drain Tank Support nuts had been tightened.

4. Unresolved Items

Unresolved Items were not discussed during this inspection.

5. Maintenance Program Implementation (62700) (Units 1 and 2)

The inspectors examined the licensee's maintenance program as detailed below to determine whether the program was being implemented in accordance with regulatory requirements. Requirements are specified in various Regulatory Guides, Section 6 of the Technical Specifications, and ANSI N18.7-1976.

Based on interviews with plant personnel, the two representative maintenance activities identified in paragraphs a. and b. below were selected for review. Records associated with the two maintenance activities were reviewed to determine whether:

- Cause of failure was evaluated and adequate corrective action was taken to reduce probability of recurrence.
- Procedure specified in maintenance package is adequate for scope of maintenance performance
- Vendor technical manual for equipment under repair is controlled and kept up-to-date
- Vendor maintenance recommendations are translated or referenced by maintenance procedures
- Limiting conditions for operation is met while equipment removed from service
- Approved procedures were used where activity appeared to exceed normal skills of qualified maintenance personnel
- Inspections made in accordance with licensee's requirements and quality control record are complete
- Functional testing and calibrations, as necessary, were completed before returning equipment to service and personal performing tests properly qualified

- Failures are evaluated and reported in accordance with requirements
- Corrective and preventative maintenance records are assembled and stored as part of maintenance history
- Measuring and test equipment used was identified and in calibration
- Parts and materials used were identified and at least met specifications of the original equipment
- Special processes were controlled and documented
- System lineups were made and verified prior to return to service
- Machinery history records are being kept up to date and properly stored

a. Letdown Heat Exchanger (Unit 1)

In June 1986, a tube leak occurred in the letdown heat exchanger. In March 1987, a tube ruptured. The following records associated with repair (tube plugging) to the heat exchanger, were reviewed:

- Maintenance Request (MR) 21452 OPS dated June 2, 1986
- Maintenance Request 25020 OPS dated July 3, 1987
- A sample of completed maintenance procedures for the above MRs
- Qualification/training records for three of the maintenance personnel involved in repair to the heat exchanger
- Qualification records for three QC personnel involved with inspection of repair work on the heat exchanger
- Welding records for plugging tubes, as follows:
  - MR 25020 OPS
    - Weld Process Control Sheets Pass 3 - R10-T4, 6-R10-T2, 6-R10-T1, 4-R10-T3, 5-R10-T1, and 5-R10-T2
    - Welding Procedure L-231-17
    - Welder Qualification records for welder H21
    - Material Certification records for Ht. 464177 of 3/32" ER308
    - Inspector Certification records for inspector HEE

- MR 21452 OPS
  - Weld Process Control sheets INV-HX-10-4 and INV-HX-8-9
  - Welder Qualification records for welders J46 and 0J4
  - Inspector Certification records for inspector RDB
  - Welding Procedure L231-R16

- Calibration records for torque wrenches CNMNT-18133, 18051 and 18046
- Vendor Technical Manual CNM-1201-06-083, updated June 4, 1984, "Auxiliary Heat Exchangers"
- Station Problem Report CNPR02722
- Problem Investigation Report 1-C87-0180
- NSM CN-11091
- Licensee's internal correspondence describing problem and proposing fix

Based on the licensee's investigation, the tube failures were attributed to vibration. During the current outage, the licensee was in the process of changing out the tube bundle and replacing with a modified design. The same modification is planned for Unit 2.

b. Centrifugal Charging Pump Seal (Units 1 and 2)

Leaking seals on the centrifugal charging pumps has been a recurring problem. The following records associated with replacement of pump seals were reviewed.

- MR 50880PS (Unit 1 Pump 1A) dated 5/27/83
- MR 46870PS (Unit 1 Pump 1A) dated 4/17/83
- MR 86780PS (Unit 1 Pump 1A) dated 3/22/84
- MR 330220PS (Unit 2 Pump 2B) dated 3/6/86
- MR 362460PS (Units 2 Pump 2B) dated 3/31/87
- A sample of completed maintenance procedures for the above MRs
- Qualification/training records for six of the maintenance personnel involved in change out of the seals

- Qualification records for eight QC personnel involved with inspection of seal change out

- Calibration records for torque wrenches CNMT-18064,, 18049, 18059, and 18138 and dial indicator CNMT-18652

- Vender Technical Manuals CNM-1201.05-203-001 updated 7/20/87, -493-001 updated 5/20/86 and -0025-001 updated 7/22/87

- Completed performance tests PT/2/A/4200/07B dated 4/24/86 and 4/3/87

- Qualification/training records for the two test technicians in charge of the above two performance tests

- Calibration records for the following instruments used in the above performance tests:

  - CNPRF 20401 DP Cell
  - CNPRF 20277 Pressure gauge
  - CNPRF 20301 Pressure gauge
  - CNPRF 20604 Vibration Instrument
  - CNPRF 20020 Pyrometer

The licensee has been studying the seal failures to try to determine the reason for the failures. At this time, it appears that vibration may be a factor.

c. The following maintenance procedures associated with the maintenance activities of paragraph a. above were reviewed:

- MP/0/A/7650/56, Heat Exchanger Corrective Maintenance

- MP/0/A/7650/01, Flange Gasket Removal and Replacement

The procedures were reviewed in the areas of:

- Conformance to licensee's administrative requirements

- Post-maintenance testing appropriate for repairs made

- Inspection and hold points identified

- Supplementary reference material adequate and controlled

- Activity described in sufficient detail

- Consideration given to radiological and environmental hazards as appropriate

- Provisions for fire protection, cleanliness and housekeeping

- Provisions for obtaining approval for operations

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

6. Maintenance/Modification Welding and NDE (Unit 1)

The inspectors examined the welding and NDE activities described below relative to maintenance/modification to determine whether applicable code and regulatory requirements were being met. In general, the governing code is the ASME Boiler and Pressure Vessel Code (B&PV), Section XI, 1980 Edition, W81 Addenda. The general controls are specified in the following sections of the Catawba Nuclear Station Maintenance Welding Manual:

Section I, Revision 6, Identification and Control of Class A, B, C, E and F Piping

Section III, Revision 4, Welding of Nuclear Structure (Containment and Canal Liner Plate, Structural and Miscellaneous QA Condition Steel) and Non-QA Structures

Section I identifies the ASME B&PV Code Section III, 1974 Edition, S74 Addenda as the applicable code for pipe welding. In addition, various editions and addenda of the following codes are being used:

ASME B&PV Code Section V
ASME B&PV Code Section IX
AWS Structural Welding Code D1.1

In addition to the above documents, the following administrative and QC inspection procedures are applicable:

QCL-8, Revision 12, Procedure for the Inspection of QA Condition 2, 3, and 4 Field Fabricated Pipe Welds

QCL-9, Revision 4, Procedure for the Inspection of Containment Plate, and Spent Fuel Pool Liner Plate (McGuire and Catawba Nuclear Stations only)

QCL-10, Revision 9, Procedure for the Examination of Structural and Miscellaneous Steel Welds

QCL-11, Revision 4, Procedure for the Inspection of Temporary Attachment Welds

MM Procedure 1.0, Revision 20, Work Request Preparation

a. Welding (55050 and 55100)

(1) Welder Performance Qualification

The inspectors reviewed the qualification status records for the below listed welders relative to the field welds listed in paragraph (2) below:

8A1	H37	549
H95	P64	

(2) Production Welding

(a) The inspectors observed in-process welding and reviewed in-process records for welds 17 and 18 on ISO 1CA-123 and repair weld 27 on ISO 1CA-90. The welding was observed and the records reviewed to determine whether:

- Work was conducted in accordance with a document which coordinates and sequences operations, references, procedures, establishes hold points, and provides for production and inspection approval
- Weld identification and location were as specified
- Procedures, drawings, and other instructions were at the work station and readily available
- WPS assignment was in accordance with applicable code requirements
- Welding technique and sequence were specified and adhered to
- Welding filler materials were the specified type and traceable to certifications
- Weld joint geometry was in accordance with applicable procedure and was inspected
- Alignment of parts was as specified
- Preheat and interpass temperature were in accordance with procedures
- Electrodes were used in positions and with electrical characteristics specified
- Shielding gas was in accordance with the welding procedure

- Welding equipment was in good condition
- Interpass cleaning was in accordance with applicable procedures
- Temporary attachments were removed in accordance with applicable procedures
- Gas purging, if specified, was used in accordance with applicable procedures
- Process control system had provisions for repairs
- Welders were qualified
- No peening performed on root and surface layers
- Weld inspection personnel were qualified

(b) Completed welds 1, 2, 3, and 4 on ISO 1NC286 were examined to verify by visual inspection that the characteristics listed below conformed to ASME Code and applicable procedures. These welds are Class A welds.

- Weld surface finish and appearance
- Transition between components of different diameter and thicknesses
- Shape and size of fillet and socket welds
- Weld reinforcement
- Removal of temporary attachments, arc strikes and weld spatter
- Finish grinding - absence of wall thinning
- Absence of surface defects

In addition, the completed weld process control sheets for the welds were reviewed.

(3) Welding Material Control

The inspectors verified that required ASME Code tests were performed on each lot of welding material by reviewing the receiving inspection and material certification documentation for the following materials used in the welds identified in paragraph (2) above:

- .035" ER308
  Ht. X4311T308

- 5/32" Insert
  Ht. E4252T308

- 1/8" E70S-2
  Ht. 97403

(4) Inspection Personnel Certifications

Inspection personnel certification records for the following examiners who inspected the welds listed in paragraph (2) above, were reviewed:

BC - Welding, VT, PT
RDB - PT, VT, Welding
HEE - Welding
CEF - Welding

b. Upper Head Injection Piping Deletion Radiography Unit 1 (57090)

Radiography activities associated with the welds generated by the deletion of piping in the upper head injection system were reviewed as documented below.

(1) The inspectors reviewed radiography procedure NDE-10 Rev. 16 "General Radiography Procedure," to determine whether it contained sufficient information to assure that the following parameters were specified and controlled within the limits permitted by the applicable code, or any additional specification requirement: type of material to be radiographed; material and weld surface condition requirements; type of radiation source, effective focal spot or effective source size; film brand or type; number of films in cassette; minimum source to film distance; type and thickness of intensifying screens and filters; quality of radiographs; film density and contrast for single and composite viewing; use of densitometers for assuring compliance with film density requirements; system of radiograph identifications; use of location markers; methods of reducing and testing for back-scatter; selection of penetrameters including penetrameter placement; number of penetrameters; shims under penetrameters; radiographic technique of double wall viewing; and, evaluation and disposition of radiographs.

(2) The inspectors performed an independent evaluation of the below listed finally accepted welds to determine if radiographic film quality was in accordance with the applicable procedure and Code requirements and to specifically verify the following: penetrameter type, size, and placement; penetrameter sensitivity; film density and density variation; film identification; film quality; and weld coverage.

Weld ID	Drawing No.	Film View Evaluated
1NC286-3	CNM1201.01.424-001	0-1, 1-2, 2-3, 3-4, 4-5, 5-0
1NC286-1	CNM1201.01.424-001	0-1, 1-2, 2-3, 3-4, 4-5, 5-0
1NC286-2	CNM1201.01.424-001	0-1, 1-2, 2-3, 3-4, 4-5, 5-0

(3) The inspectors reviewed the examination records for the above listed welds to determine compliance with procedure requirements for examination records and to determine if the reported disposition of the welds was consistent with the independent evaluation and in compliance with the applicable Code and specification requirements. The inspectors found no discrepancies.

(4) A review of qualification records for two radiographic examination personnel was accomplish to determine whether the qualification records reflect the employer's name, person certified, activity qualified to perform, level of qualification, effective period of qualification, effective period of certification, basis used for certification, and annual visual acuity.

(5) The inspectors confirmed the calibration status for densitometer 1788.

(6) The inspectors reviewed the weld process control sheets for welds 1NC286-1, 1NC286-02, and 1NC6-3 to ascertain if the documents were complete and accurate.

Within the areas examined, no violations or deviations were identified.

7. Inservice Inspection (ISI) and Preservice Inspection (PSI)

The inspectors examined documents, activities, and records as indicated below to determine whether PSI/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 Boiler and Pressure Vessel (ASME B&PV) Code, Section XI, 1980 edition with addenda through Winter 1981. Duke Power nondestructive examination (NDE) personnel are performing the liquid penetrant (PT), magnetic particle (MT), and visual (VT) examinations while Babcock and Wilcox (B&W) personnel are performing the ultrasonic (UT) and eddy current (ECT) examinations for Duke Power.

a. Review of Procedures Units 1 and 2 (73052)

(1) The inspectors reviewed the Duke Power (DP) and Babcock and Wilcox (B&W) 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 ID	Title
NDE-40 R8 Technique A	Ultrasonic Examination Procedure and Techniques for Thickness Measurements, Lamination Detection, and Stud Location
ISI-130 R23	Ultrasonic Examination of Vessel Welds and Nozzle Inside Radius Sections
NDE-12 R5	General Radiography Procedure for Preservice and Inservice Inspection
ISI-120 R25	Utrasonic Examination of Piping and Vessel Welds Joining Similar and Dissimilar Materials
ISI-424 R10	Multifrequency Eddy Current Examination of .750-inch OD x .044-inch Wall RSG tubing for Detection of Tube Wear at Support Plate
ISI-464 R4	Technical Procedure for the Evaluation of Eddy Current Data of Nuclear Grade Steam Generator Tubing for Wear Fretting
ISI-460 R14	Technical Procedure for the Evaluation of Eddy Current Data of Nuclear Grade Steam Generator Tubing

All procedures listed above had been previously reviewed by NRC during previous outages. During the current inspection, only changes to previously reviewed documents were reviewed.

(2) The inspectors reviewed ultrasonic procedures NDE-40, ISI-130, and ISI-120 to ascertain whether they had been reviewed and approved in accordance with the licensee's established QA procedures. The above procedures were reviewed for technical adequacy and conformance with ASME, Section V Article 5 and other license commitments/requirements in the below listed areas: type of apparatus used; extent 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.

(3) The inspectors reviewed eddy current procedures ISI-424, ISI-464, and ISI-460 for technical content relative to: multichannel examination unit, multichannel examination indication equipment is specified, examination sensitivity, material permeability, method of examination, method of calibration and calibration sequence, and acceptance criteria.

(4) The inspectors reviewed radiographic procedure NDE-12 to determine whether it contained sufficient information to assure that the following parameters were specified and controlled within the limits permitted by the applicable code, or any additional specification requirement: type of material to be radiographed; material and weld surface condition requirements; type of radiation source, effective focal spot or effective source size; film brand or type; number of films in cassette; minimum source to film distance; type and thickness of intensifying screens and filters; quality of radiographs; film density and contrast for single and composite viewing; use of densitometers for assuring compliance with film density requirements; system of radiograph identification; use of location markers; methods of reducing and testing for back-scatter; selection of penetrameters including penetrameter placement; number of penetrameters; shims under penetrameters; radiographic technique for double wall viewing; and, evaluation and disposition of radiographs.

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

The inspectors observed work activities and reviewed certification records of equipment, materials, and NDE personnel which had been and will be utilized during the required ISI/PSI examinations during this outage. The reviews conducted by the inspectors are documented below.

(1) Examiner Qualification

The inspectors reviewed the qualification documentation for the below listed Duke Power (DP) and B&W 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.

Method - Level

Company	Examiner	UT	PT	MT	EC	VT 1	VT 2	VT 3	VT 4
DP	TMB	-	II	-	-	-	-	-	-
DP	KLW	-	II	-	-	-	-	-	-
DR	GEH	II	-	-	-	-	-	-	-
DP	WMM	I	-	-	-	-	-	-	-
LP	BW	-	-	-	-	II	-	II	II
DP	PS	-	-	-	-	II	-	-	-
DP	KD	-	-	-	-	II	-	-	-
DP	JKT	-	-	II	-	-	-	-	-
DP	TJW	-	-	-	-	-	-	II	II
DP	HLM	-	-	-	-	-	-	II	II
DP	MM	-	-	-	-	-	-	II	II
B&W	ACG	-	-	-	-	IIA	-	-	-
B&W	RJP	II	-	-	-	-	-	-	-
B&W	CBW	-	-	-	-	IIA	-	-	-
B&W	WJP	II	-	-	-	-	-	-	-
B&W	MJK	-	-	-	-	IIA	-	-	-

(2) The inspectors observed calibration activities and the in-process ultrasonic examinations being conducted on the welds indicated below. 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.

Item No.	Weld No.
B01.021.002	1RPV-W09
B01.040.001	1RPV-W08
B05.010.009	1RPV-W51-01-SE
B05.010.012	1RPV-W51-04-SE

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

Ultrasonic Instruments

Manufacturer/Model	Serial No.
T-K/SM-100	1344
KK/USK-7	5161

The inspectors observed spectrum analysis being performed on ultrasonic transducers with serial numbers 184278 and M18416.

Ultrasonic Couplant Batch No. 8552 and 8558.

Ultrasonic Calibration Block 50360

(3) The inspectors conducted an ultrasonic verification examination using licensee equipment, on portions of weld 1RPV-W09. The examination was performed in order to evaluate the technical adequacy of the ultrasonic examination procedure being used by the licensee's contractor to perform ultrasonic examinations and to assess the validity of the information being reported by the ultrasonic examiners.

(4) The inspectors 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	78E084
Cleaner/Remover	86J005
Developer	83G033

(5) The inspectors reviewed documentation indicating that a current lift test had been performed on magnetic particle AC yoke CN026 and a review of magnetic particle material certification records for batch number 84K005 indicated the sulfur and halogen content of the material was within acceptable content limits.

(6) The inspectors 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.

(a) In-process tube data acquisition was observed for the following system generator tubes:

Tube I.D.

Steam Generator-B		Steam Generator-C	
Row	Column	Row	Column
41	38	20	63
43	35	18	63
38	35	49	62
35	34	46	62
33	35	29	61
30	34	45	61
27	34	47	61

(b) In-process eddy current (ET) inspection data evaluation including calibration checks were observed for the following steam generator (SG) tubes:

SG - C Tube I.D.		SG - C Tube I.D.	
Row	Column	Row	Column
4	108	16	51
6	102	12	51
15	10	12	52
11	27	17	54
17	29	2	50
9	17	2	44
10	16	2	43
13	43	1	30
15	45	45	73
17	49	46	73
		49	72

SG - B Tube I.D.	
Row	Column
25	77

Certification records for eddy current reference standard Z1579 was reviewed and eddy current equipment calibration was confirmed.

(c) Discussions with B&W and licensee personnel indicated that the current data and analysis procedure employed did not require that the data be evaluated by more than one analyst. B&W indicated that their contract did not include provisions for them to have the examination data analyzed by more than one analyst and, therefore, no second analysis of the data was accomplished by them. The inspectors pointed out to the licensee that although there is not a

requirement to conduct a second evaluation of the data, that the economical consequences associated with a missed leaking tube through the use of a single analyst could be very expensive. The probability of this occurring is documented in IE Information Notice 84-49. Further discussions with the licensee indicated that Duke Power was in the process of qualifying some of their personnel to perform eddy current data analysis and will be utilizing these examiners once the program is established. The NRC inspectors indicated to the licensee, that unless these examiners were going to be re-evaluating 100% of the data, that it still would only amount to a sampling and that provisions for a second evaluation of all data should be included as part of their eddy current examination program as this has become common practice through out most of the industry. The inspectors strongly recommended that the in-house data analysis program be given high priority and that a second analysis of the examination data be accomplished commencing with the next required eddy current examinations.

c. ISI/PSI Data Review and Evaluation, Unit 1 (73755)(73055)

(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 procedure; 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.

ISI/PSI Item No.	Item/Weld I.D.	NDE Method
B05.040.002A	1PZR-W2SE	PT
B05.040.003A	1PZR-W3SE	PT
B06.180.001	1RCP-1A-F	UT
B07.060.005	1RCP-1A-H (12 Bolts)	VT
B07.070.020	1ND-1B (8 studs)	VT
B08.020.002	1PZR-W10A	MT
B08.020.003	1PZR-W10B	MT
B09.011.053A	1NC173.01	PT
B09.011.054A	1NC190.19	PT
F1.01.635	RNV1489	VT
F1.02.055	1RCA 1082	VT
F1.02.427	1RND0546	VT
F1.03.397A	1RKC1093	VT
F1.03.418	1RKC1017	VT

(cont'd)

ISI/PSI Item No.	Item/Weld I.D.	NDE Method
B05.010.009	1RPV-W51-01-SE	UT
B05.010.010	1RPV-W51-02-SE	UT
B05.010.011	1RPV-W51-03-SE	UT
B05.010.012	1RPV-W51-04-SE	UT
B09.011.068	*1NC286-01	UT
B09.011.069	*1NC286-02	UT
B09.011.070	*1NC286-03	UT
B09.011.071	*INC286-04	UT
B01.040.001	1RPV-W08	UT
B01.021.002	1RPV-W09	UT

*Denotes examinations for PSI purposes.

(2) Eddy Current Examination of Steam Generator Tubing

(a) The inspectors reviewed records of the eddy current examinations indicated below. 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.

SG - B Tube I.D.		SG - C Tube I.D.	
Row	Column	Row	Column
18	4	34	34
19	9	47	53
37	20	47	64
46	29	48	50
46	34	48	54
48	57	48	61

(b) At the conclusion of the NRC inspection all examinations had not been completed. The inspectors discussed the program and status with the licensee and the preliminary examination status for steam generators B and C are listed below. Examination of steam generators A and D had not yet started.

	SG-B	SG-C
Tubes Scheduled	491	570
Tubes examined	389	474
Tubes with >20% TW indications	0	4

No violations or deviations were identified in this area of inspection.

8. IE Bulletin 87-10, Thinning of Pipe Walls in Nuclear Power Plants (Units 1 and 2)

The licensee has officially responded to the requirements of Bulletin 87-01; however, a final review of the response has not yet been completed within the NRC. The inspectors conducted a review of documentation and data relative to the actions being generated as a result of this bulletin. The inspectors also observed work being performed as a result of actions being taken by the licensee. The documentation reviews and observations conducted by the inspectors are documented in the following subparagraphs.

a. Plan Review

The inspectors reviewed the below listed documents relating to the inspection plan in the areas of: plan approval; general QA requirements; examination procedures; control of examinations and examination equipment; quality records, personnel qualifications; and, NDE records.

- PT/0/B/4600/18 - Periodic Inspection of Piping Wall Thickness
- Pipe Erosion Control Program Manual (second draft)

b. The inspectors reviewed Ultrasonic Procedure NDE-40 R8. This procedure is being utilized to obtain the thickness readings required by the licensee inspection plan. The procedure was reviewed in the areas of procedure approval, requirements for qualification of NDE personnel, and compilation of required records.

c. The inspectors observed approximately 400 thickness readings being taken on the items listed below. The inspectors also reviewed certification records of equipment, materials, and NDE personnel being utilized during the examination of these items.

Test Location	Drawing No.
CF-02	CN-1CF-41
CM-56	CN-1CM-37
CM-4	CN-1CM-37

d. The inspectors conducted an independent verification on several of the thickness readings taken on the above test locations. The verification readings were made following the completion of the examinations conducted by licensee personnel and with the use of the licensee's equipment, couplant, and calibration block. The verification readings obtained were within an acceptable tolerance range although minor deviations were noted that could be attributed to transducer placement.

e. The inspectors reviewed the thickness data and associated records for the Unit 1 test locations indicated below. The data was reviewed to determine whether the reported thickness was consistent with the data

being obtained in the field. The data was also reviewed to determine compliance with requirements for examination records.

Test Location	System
1CM10	Condensate
1CM36	Condensate
1SC14	Turbine Crossover
1SC19	Turbine Crossover
1CF05	Main Feedwater
1CF14	Main Feedwater

f. Discussions with licensee personnel and a review of the complete data from Unit 1 indicate that no significant pipe wall thinning has occurred. The scheduled examinations for Unit 2 have not yet started.

In this area of inspection, no violations or deviations were identified.

9. NRC Information Notice 87-36, Significant Unexpected Erosion of Feedwater Lines (Units 1 and 2)

IE Bulletin 87-01 requests written response from licensees concerning their programs for monitoring the thickness of pipe walls in high-energy single-phase and two-phase carbon steel piping systems. As noted in paragraph 8 above, DPC has responded to the Bulletin and has an extensive inspection program. Information Notice 87-36 notifies licensees that a thinning problem has been identified in feedwater piping inside the containment. Although the feedwater piping inside the containment is included in the Catawba inspection program, the sample selected for the current Unit 1 outage did not include any inspection points inside the containment. After discussion of the Information Notice with the licensee, site personnel stated that inspection points on feedwater piping inside the containment would be selected as soon as feasible - probably for inspection during the next outage.

10. Inspector Followup Items (IFIs)(92701B)(Units 1 and 2)

(Closed) IFI 413/86-34-01, 414/86-37-01, Clarification of Responsibilities for Evaluation of ISI Results. QA procedure QA-516 has been issued to more clearly cover responsibilities for evaluation of ISI results.