



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

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

Report No.: 50-261/87-35

Licensee: Carolina Power and Light Company  
P. O. Box 1551  
Raleigh, NC 27602

Docket No.: 50-261

License No.: DPR-23

Facility Name: H. B. Robinson

Inspection Conducted: November 30 - December 4, 1987

Inspectors:

*[Signature]*  
W. P. Kleinsorge

*Dec 21, 1987*

Date Signed

*[Signature]*  
R. W. Newsome

*12/23/87*

Date Signed

Approved by:

*[Signature]*  
J. J. Blake, Chief  
Materials and Processes Section  
Division of Reactor Safety

*12/23/87*

Date Signed

SUMMARY

Scope: This routine, unannounced inspection was conducted in the areas of verification of compliance with order for modification of license: primary coolant system pressure isolation (Event V) Valves (TI-2515/84), service water piping degradation (92706B), inservice testing of pumps and valves (73756), inservice inspection, IE bulletins, IE notices, and inspector followup items.

Results: No violations or deviations were identified.

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*R. Crook, Acting Director Regulatory Compliance  
W. Farmer, ISI
- \*E. Harris, Jr., Director - ONS  
J. Latimer, Engineer
- \*W. McCutcheon, Inservice Inspection (ISI)
- \*D. Quick, Manager Maintenance
- \*B. Rieck, Manager - Control and Administration
- \*D. Sayer, Regulatory Compliance
- \*R. B. Weber, ISI
- \*H. Young, Director Quality Assurance (QA) and Quality Control (QC)

Other licensee employees contacted included engineers, technicians, operators, mechanics, and office personnel.

#### NRC Resident Inspector

- \*R. M. Latta, Resident Inspector

\*Attended exit interview

### 2. Exit Interview (30703B)

The inspection scope and findings were summarized on December 4, 1987, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection findings listed below. Dissenting comments were not received from the licensee.

<u>Item No.</u>	<u>Status</u>	
261/87-35-01	OPEN	"Event V Order OQE", (paragraph 5.b(2))

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 (UNR 92701B) (VIO 92702B)

Not inspected.

#### 4. Unresolved Items

Unresolved items were not identified during this inspection.

#### 5. Verification of Compliance with Order for Modification of License: Primary Coolant System Pressure Isolation (Event V) Valves. (T1 2515/84)

##### a. Background

The Reactor Safety Study (RSS), WASH-1400, identified in a PWR an intersystem loss of coolant accident (LOCA) that is a significant contributor to risk of core melt accidents (Event V). The design examined in the RSS contained in-series check valves isolating the high pressure primary coolant system (PCS) from the low pressure injection system (LPIS) piping. The scenario which leads to the Event V accident is initiated by the failure of these check valves to function as a pressure isolation barrier against reactor coolant system (RCS) pressure. This causes an overpressurization and rupture of the LPIS low pressure piping which results in a LOCA outside of the containment.

To better define the Event V, all light water reactor licensees were requested by letter, dated February 23, 1980, to provide system design information in accordance with 10 CFR 50.54(f).

Based on licensee responses, it was concluded that a valve configuration of concern existed at 36 plants.

On April 20, 1981, an order requiring Event V valve testing was sent to 32 PWR plants and two BWR plants. This order included a Safety Evaluation Report (SER) and Technical Specification inserted pages to require leak rate testing of Event V pressure isolation valves. The two additional plants had previously been issued a licensee amendment.

##### b. Inspection

The inspectors reviewed documentation associated with the implementation of the Event V order from 1980 to present to evaluate compliance. The specific areas examined are indicated below.

- (1) The inspectors reviewed the plant's technical specifications (TS) to ensure the modification was entered as required by the Event V Order.
- (2) The inspectors reviewed the below listed test procedures to determine whether those test procedures reflected all requirements of the TS including: an acceptable test method is used (this would include a direct volumetric leakage rate

measurement or other equivalent means capable of demonstrating that leakage rate limits given in the TS are not exceeded); test procedure requirements which ensure that leakage rates obtained are for individual valves rather than for combined components; procedural requirements that leakage rates measures at test pressures less than the maximum potential pressure differential across the valve be adjusted by assuming leakage to be directly proportional to the pressure differential to the one-half power (as noted in the SER which accompanies the Order); and procedural acceptance criteria stated in accordance with the TS. In addition, the inspectors reviewed the licensee's procedures to verify that it identified corrective actions required in the event unacceptable leakage rate results.

<u>Identification</u>	<u>Title</u>
IST-160, Rev. 6	"Hot Leg, Cold Leg and RHR Check Valve Back Leakage Test (Refueling and Cold Shutdown Interval)"

With regard to the inspection above, the inspectors noted that the licensee was unable to provide objective quality evidence (OQE) that the requirements of Section III, item 2 of the order were satisfied. The licensee indicated that they would have the necessary OQE available for the inspectors at the next inspection. This matter will be identified as inspector followup item 50-261/87-35-01: "Event V Order OQE."

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

#### 6. Service Water Piping Degradation (92706B)

##### - Background

The degradation of the service water system is described in RII Report No. 261/84-45. Additional inspection in this area is reported in RII Report Nos. 261/84-48, 261/85-12, 261/85-22, 261/86-12, and 261/87-03.

This inspection is a continuation of the inspection described in the above reports.

In CP&L letter RESP/84-1267, dated January 4, 1985, the licensee committed to an inservice monitoring program to include 15 service water welds that would represent a variety of configurations, lengths of corrosion (microbiological attack) and sleeved as well as non-sleeved joints. These joints were to be radiographed (baseline) prior to start up and re-radiographed (inservice monitoring) in six weeks  $\pm$  one week. Should no further attack be identified, the next radiographic examination would be scheduled three months  $\pm$  two weeks later.

The licensee radiographed 15 weld joints (baseline) on December 12, 1984, (except for weld 2S03-2 radiographed on November 19, 1984), re-radiographed the same 15 weld joints on February 26, 1985, and re-radiographed the same 15 weld joints between May 31, 1985, and June 14, 1985. In addition, two more welds 3-S03-3 and 3-S03-5 were added to the sample. The same sample of 17 welds were re-radiographed during the period October 29 - November 4, 1985, and the results reported to the NRC by CP&L letter RNP/86-124, dated January 31, 1986. The inspectors reviewed a sample of six of the radiographs (inservice monitoring) made late in 1985 and compared them with baseline radiographs made in late 1984. The inspectors reviewed the radiographs to determine whether there had been any corrosion growth between the baseline radiographs of December 28, 1984, and the (inservice monitoring) radiographs of October 29 - November 4, 1985. The inspectors noted that the licensee's radiographic technique had changed since the last inservice monitoring radiographs of June 1985.

This change caused distortion resulting from geometric unsharpness. This distortion made it extremely difficult to determine corrosion indication enlargement. In view of this, the inspectors discussed the matter with the licensee and made some recommendations for improvement. The licensee implemented the inspectors recommendations in their December 8-12, 1986, radiographic examination of the service water system sample. This examination detected new indications and apparent further growth of the microorganism induced corrosion (MIC). This radiographic examination indicated that six of the 15 sleeved welds sampled in containment and in the auxiliary building exhibit apparent new growth in the sleeve-to-pipe fillet weld heat affected zone. The results of the December examination were reported to NRC Region II by CP&L letter dated January 16, 1987.

All the six-inch welds in the containment have been sleeved. The licensee has determined that the growth rate of the indications is conservatively approximately 5/8-inch circumferentially. The licensee has reviewed all past radiographs for the non-sleeved welds in the auxiliary building. They have identified 17 welds which, given the 5/8-inch circumferential growth rate, would exceed the five inch structural limit by the 1988 refueling outage. Those 17 welds have been sleeved.

During the 1987 outage, the licensee has completed a chemical treatment intended to remove the biological based fouling from the service water system. This treatment consisted of a temporary recirculation/flushing loop established with each individual cooler unit and its piping. A combination of a biodispersant and a biocide was recirculated in the loop to clean the system's interior wall areas followed by a flushing with service water. After completion of treatment with biodispersant/biocide, the system was cleaned with a hydrogen peroxide solution (<3%), to further break up interior fouling and kill microorganisms, and flushed. When treatment was

complete, each cooler unit piping was restored, tested, and returned to service.

The chemical treatment process was implemented during the last five days of the 1987 refueling outage. Due to time constraints and problems with equipment, each HVH loop was treated for only 1-4 hours instead of 12 hours as originally scheduled. The biodispersant dislodged some brown material in the system, but did not remove the bulk of the black fouling. The fouling was approximately 1/8-inch thick, and had an apparently different composition than other fouling found elsewhere in the service water system. The Harris E&E Center Analytical Chemistry Unit and Buckman Laboratories (who provided the biocide/dispersant) are both currently analyzing the fouling. The HVH 4 loop was treated for the longest period of time (4 hours), and a visual inspection of the piping revealed that the fouling was removed in high velocity areas (i.e., in elbows). This observation indicates that the dispersant is effective in cleaning the pipes, but requires more recirculation time to ensure complete cleaning.

Samples of water before and after treatment with dispersant and biocide were taken by the Buckman Laboratories representative to determine biological activity. A culture sample of untreated service water indicated 60 microorganisms; the same size culture sample for the treated water indicated over 60,000 microorganisms. The one thousand fold increase in microbes is a positive indication that the dispersant and pump were highly effective in removing some of the bacteria. However, the low level dose of biocide was not as effective in digesting the organisms. The licensee indicated that a biocide is needed that will kill these organisms so that the count in a water sample will approach zero. Buckman Laboratories will be issuing a report on their findings of the effectiveness of the biocide, and the results will be incorporated with other information in a report issued by the licensee, some time early in 1988.

The spring 1987 radiographs revealed an average growth rate of less than 1/2 inch per year. However, due to the limited availability of 3-exposure historical data the original estimate of growth (5/8 inch per year) will remain unchanged and the six-month inspection interval will continue. Radiography of the sample welds is next scheduled for the week of December 7, 1987.

The inspectors discussed the above with the licensee and reviewed a sample of the spring 1987 radiographs.

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

7. Inservice Testing (IST) of Pumps and Valves (73756)

The inspectors reviewed procedures, observed work activities and reviewed pertinent quality records, as indicated below, to determine whether inservice testing regulatory requirements and licensee commitments are

being met. The applicable code for IST of pumps and valves is ASME Boiler and Pressure (ASME B&PV) Code Section XI 1977 Edition Summer 1978 Addenda (77S78).

Valve Records Examined

<u>Valve No.</u>	<u>Valve Category</u>	<u>Valve Class</u>	<u>Valve Size (In.)</u>	<u>Actuator/Valve Type (4)</u>	<u>System</u>
FCV-1931A	A	2	3	AO/GA	(1) SGB&WL
V-12-7	A	2	42	AO/BF	(2) HVAC
LCV-115C	B	3	4	MO/GA	(3) CVCS
844B	B	2	8	MO/GA	Safety Injection
857B	C	2	3/4 x 1	SA/RV	Safety Injection
DA-24A	C	3	1 1/2	SA/CH	Emergency Diesel Generator
875 A, B & C	C	1	10	SA/CH	Safety Injection
876 A, B & C	C	1	8	SA/CH	Safety Injection

(1) Steam Generator Blowdown and Wet Layup System

(2) Heating Ventilating and Air Conditioning

(3) Chemical and Volume Control System

(4) Actuator Type

Valve Type

MO - Motor Operated

GL - Globe Valve

AO - Air Operated

BF - Butterfly Valve

SA - Self

GA - Gate

RL - Relief

CH - Check

Procedures Examined

<u>Identification</u>	<u>Title</u>
OST-701, Rev. 7	"Inservice Inspection Valve Test (Quarterly)"
OST-703, Rev. 14	"Primary Side Valve Test (Cold Shutdown Greater Than 48 Hours Unless Previously Completed Within Ninety Days)"
OST-704, Rev. 2	"ISI Purge Valve Test (Prior to Purge Valve Use Unless Previously Completed Within Ninety Days)"
OST-353, Rev. 6	"Containment Spray System Component Test (Quarterly)"
OST-029, Rev. 8	"Auxiliary Relief Valve Testing (Refueling Shutdown)"
OST-401, Rev. 14	"Emergency Diesels (Weekly)"
EST-004, Rev. 8	"Isolation Valve Seal Water Refueling Interval"

- a. The inspectors reviewed the last six completed test procedures for the above listed valves to verify that these procedures were the latest ones approved and that test acceptance criteria used were valid for the component being tested.
- b. The inspectors reviewed the last six completed procedures for the above listed valves to verify that the licensee performed IST per an approved schedule within the limitations described in the IST program, including increased frequency testing.
- c. The inspectors reviewed the last six completed procedures for the above indicated valves to verify that inservice test results were recorded per the approved procedures and that data was evaluated within the time constraints delineated in the appropriate edition of the ASME Code Section XI, Subsection IWV.
- d. The inspectors reviewed the above identified procedures for the above indicated valves to ensure that IST procedures and data reflect all requirements of the appropriate edition of the ASME Code Section XI, including: evaluations of imposing and removing increased frequency testing requirements; evaluation and justification of changes to test acceptance criteria; performance of positive testing of Category C check valves whose safety function is to open and close; evaluation of Category A valve leak test data conducted in accordance with ASME IWV-3426 and -3427 guidelines and including containment isolation and pressure isolation valves; testing of safety and relief valves in accordance with ASME IWV-3510 through -3513; observation of remote position indicators, including those on the remote shutdown panels, at least once every two years to verify that valve operation is accurately indicated; and indication that valve stroke times are commensurate with the capabilities of the valve tested.
- e. The inspectors reviewed the data for the above indicated valves for the last six intervals to verify that IST data was evaluated per the requirements of ASME Code Section XI, Subsection IWV, and 10 CFR 50.55a(g) and ensured that appropriate follow-up actions were taken.
- f. The inspectors examined selected records to verify that IST records are maintained as delineated in IWV-6000; and engineering evaluations are sufficient to justify changes to reference values and removal of increased frequency testing requirements should be documented and reviewed.
- g. Relative to the above the inspectors made the following observations.
  - (1) Categories A and B valves are required to be tested in accordance with paragraph IWV-3300 if fitted with remote position indication. This test required a biannual verification of the accuracy of remote position indicator. All the

procedures reviewed by the inspectors, for the testing of Category "A" & "B" valves did not provide clear instructions that would assure compliance with IWV-3300 in that there was no requirement for the observer of the valve under test to be in direct communication with the observer of the remote position indicator and to verify that the remote position indicator was in fact accurate.

The inspectors discussed the above with the licensee. The licensee informed the inspectors that the IWV-3300 tests were performed quarterly in lieu of biannually, were performed consistent with the Code and that both observers were in constant communication during the performance of the test. The licensee provided written clarification during this inspection to the personnel concerned, of the necessity for direct continuous communications between both observers (valve & remote indication) during the performance of the IWV-3300 Testing.

The licensee indicated that they would add clarification to applicable procedures as part of the next procedure revision.

- (2) Valve DA-24A is tested by the performance of procedure OST-401. Procedure OST-401 tests the operability of the emergency diesels. The licensee indicated that if the diesels start, then valve DA-24A must have opened and passed FSAR rated air flow. The acceptance criteria for the testing of valve DA-24A and the records attesting to the completion of that testing are by inference only, which was not intuitively obvious to the inspectors. The licensee indicated that they would make necessary changes to their program to assure that acceptance criteria for valve testing and the associated records for all valves in the program are clear and direct. The inspectors noted that the above valve had been tested in accordance with Section XI of the Code.
- (3) Valves 875A&C and 876A&C, 10-inch and 8-inch, respectively check valves are required by TMM-004, Rev. 14, "Inservice Inspection and Testing", to be full flow tested in accordance with OST-703.

The licensee was unable to show that they tested the above valves, consistent with IWV-3522 as interpreted by the Office of Nuclear Reactor Regulation (NRR). IWV-3522 has been interpreted by NRR letter, from D. G. Eisenhut, Director, Division of Licensing to C. E. Norelius, Director, Division of Engineering and Technical Programs, Region III, dated January 3, 1983, which indicated that NRR has found four methods acceptable to testing check valves in which the full stroke motion of the disk cannot be directly observed or where there is no position-indicating device as follows:

- a. By demonstrating that the valve can pass the full flow which has been taken credit for in FSAR analyses.
- b. By showing that, for the measured flow, the pressure loss through the valve is such that the valve could only be fully open.
- c. By using a mechanical exerciser which can be observed to move through a full stroke.
- d. By partial disassembly of the valve and manually moving the disc through a full stroke.

The above was discussed at a meeting of CP&L and NRR in Bethesda on November 10, 1987. This issue is expected to be clarified in the SER for the Robinson Pump and Valve Program now in preparation by NRR.

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

#### 8. Inservice Inspection (ISI)

The inspectors examined documents, activities, and records as indicated below to determine whether ISI was conducted in accordance with applicable procedures, regulatory requirements and licensee commitments. The applicable code for ISI ASME B&PV Code, Section XI, 77S78. ISI examinations were conducted by Westinghouse Electric (W) and Combustion Engineering (CE) for the licensee. Westinghouse conducted all NDE and visual examinations with the exception of the eddy current examinations of the steam generator tubing.

##### a. Review of Procedures (73052)

- (1) The inspectors 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.

<u>Procedure ID</u>	<u>Title</u>
ISI-8 (R9)	Visual Examination
ISI-11 (R10) with F. C. 3	Liquid Penetrant Examination
ISI-70 (R2)	Magnetic Particle Examination

NSD-ISI-10 (R6)	Qualification of Ultrasonic Manual Equipment
ROB-410-004 (R0)	Procedure for Multi-Frequency Eddy Current Examination of Non-Ferromagnetic Steam Generator Tubing Using MIZ-18 Equipment
ROB-410-005 (R0)	Eddy Current Data Analysis Procedure Evaluation of Westinghouse Steam Generator

- (a) The inspectors reviewed procedure ISI-11 to ascertain whether it had been reviewed and approved in accordance with the licensee's established QA procedures. The above procedure was reviewed for technical adequacy and conformance with ASME, Section V, Article 6, and other licensee commitments/requirements in the below listed 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.

While reviewing the Liquid Penetrant (PT) procedure, ISI-11, the inspectors noted that a field change, FC 3 dated 4/13/87, had been made to the procedure as follows:

- Paragraph 3.4.1

"Add - the time from complete excess penetrant removal to application of developer shall not exceed 10 hours."

The reason stated for the change was:

- "To meet the latest interpretation of the applicable code."

Paragraph 3.4.1 of the procedure, with the included words of the field change, now reads in part;

"Developer shall be applied as soon as practical after final dry wipe of penetrant removal. -- the time from complete excess penetrant removal to application of developer shall not exceed 10 hours" (emphasis added).

The applicable code for this ISI is ASME 77S78, Section V, Article 6. Paragraph T-646, of this Article, states in part;

"The developer shall be applied as soon as possible after penetrant removal; the time interval should not exceed that established during procedure qualification" (emphasis added).

The reason given for the field change does not appear to be appropriate in this instance and documented evidence of the allowable 10 hour delay of developer application for procedure qualification was not addressed. Licensee staff was able to produce a notice from the supplier of the liquid penetrant materials, Magnaflux, dated November 1, 1982, that indicated the evaporation loss of the penetrant was less than 2% in 72 hours at 100°F, however test parameter details were not included and the claim was listed under the title "Typical Properties (Not a Specification)." Also, a review of selected complete PT examination data did not indicate that a 10 hour delay had occurred during any of the examinations.

During discussions with licensee personnel regarding the wording of the procedure and the content of field change 3, the inspectors strongly suggested that the PT procedure wording be changed to more closely reflect the words of the applicable code and that the time delay selected between excess penetrant removal and developer application be established by a witnessed, documented procedure qualification test. The inspectors also indicated that the PT procedure would be reviewed during a future inspection. The licensee staff indicated that these suggestions would be seriously considered.

- (b) The inspector reviewed procedure ISI-70 to ascertain whether it had been reviewed and approved in accordance with the licensee's established QA procedures. The above procedure was reviewed for technical adequacy and for conformance with ASME Section V, Article 7, and other licensee commitments/requirements in the below listed areas: examination method; contrast of dry powder particle color with background; surface temperature; suspension medium and surface temperature for wet particles; viewing conditions; examination overlap and directions; pole or prod spacing; current or lifting power (yoke); and; acceptance criteria.
- (c) The inspectors reviewed procedure NSD-ISI-10 to ascertain whether they had been reviewed and approved in accordance with the licensee's established QA procedures. The above

procedure was reviewed for technical adequacy and conformance with ASME, Section V, Article 5 and other licensee commitments/requirements in the below listed areas: type of apparatus; calibration requirements; search units; beam angles; DAC curves; and, acceptance limits.

- (d) The inspectors reviewed procedures ROB-410-004 & 005 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.
- (e) The inspectors reviewed the visual examination procedure to determine whether they contained sufficient instructions to assure 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.

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

All ISI examinations reviewed had been completed during the most recent plant outage and prior to this inspection. The inspectors reviewed certification records of equipment, materials, and NDE personnel which had been utilized during the required ISI 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 W and CE examiners in the following areas: employer's name; person certified; activity qualified; activity qualified to perform; effective period of certification; signature of employer's designated representatives; basis used for certification; and annual visual acuity, color vision examination and periodic recertification.

Method - Level

<u>Company</u>	<u>Examiner</u>	<u>UT</u>	<u>PT</u>	<u>MT</u>	<u>EC</u>	<u>VT</u>
W	JDF	II	II	II	-	II
W	TJB	-	I	-	-	-
W	PJK	I	II	I	-	I
W	RWH	-	-	-	-	II
W	WGH	II	II	-	-	-
W	WWM	II	II	II	-	-
CE	SAC	-	-	-	IIA	-
CE	TUB	-	-	-	IIA	-
CE	MGT	-	-	-	IIA	-
CE	DDW	-	-	-	III	-

- (2) The following listed ultrasonic equipment and materials certification records were reviewed:

Ultrasonic Instruments

<u>Manufacturer/Model</u>	<u>Serial No.</u>
Sonic/MKI	07853E
Sonic/MKI	06209E
Sonic/MKI	11221E
Sonic/MKI	05939E

Ultrasonic Couplant Sonotrace 40

Batch Nos. 8662 and 8558

Ultrasonic Transducers

C03620  
56761  
C16353  
62410

Ultrasonic Calibration Blocks

CPL-47B  
CPL-31  
CPL-40  
CPL-54

- (3) The inspectors reviewed the below listed PT materials certification records to ascertain if the sulfur and halogen content of the material was within acceptable content limits.

<u>Materials</u>	<u>Batch Number</u>
Liquid Penetrant	86J018
Cleaner/Remover	84M062, 85M039
Developer	85M035

- (4) The inspectors reviewed batch number 84J035 non-fluorescent magnetic particle material certification records to ascertain if the sulfur and halogen content of the material was within acceptable content limits.

During the review of magnetic particle (MT) examination equipment certification documented, the inspectors requested documented evidence that alternating current (AC) yoke identified as W-004 had performed a 10 pound lift test within the last year as required by MT procedure ISI-70. The lift test is conducted to assure that the yoke will perform MT examinations adequately. The licensee was unable to locate specific documentation to confirm a lift test had been conducted by AC Yoke W-004. However, discussions with on-site personnel, including the Authorized Nuclear Inservice Inspector (ANII) and a review of ISI examination surveillance log entries made by the ANII and a QA surveillance individual, represented undeniable evidence that a lift test had been performed by AC Yoke W-004 with the test being witnessed by at least three different individuals.

Following resolution of the lift test matter, the inspectors strongly suggested that some means of requiring mandatory documentation of the lift tests be included as a requirement of the MT procedure. The inspectors indicated that this area would be reviewed during future inspections.

- (5) The inspectors reviewed certification records for eddy current calibration standards identified as Z3922 and Z3923.

c. 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.

<u>Sketch No.</u>	<u>Weld/Item I.D.</u>	<u>NDE Method</u>
CPL-118A	*5	PT
CPL-118A	*6	PT

CPL-122A	*V-WS	VT
CPL-133	16	PT
CPL-208	1	UT
CPL-209	WS-2	VT
CPL-209	1	UT
CPL-209	2	UT
CPL-106	1	UT
CPL-106	6	UT
CPL-106	15	UT
CPL-106	16	UT
CPL-213	1	UT/MT
CPL-213	F-WS	MT
CPL-216	G-WS	MT
CPL-216	14A	UT/MT
CPL-222B	15	PT
CPL-222B	6	PT
CPL-229	C	VT
CPL-230	3	PT
CPL-230	10	PT
CPL-220	*42	PT
CPL-221A	95	PT
CPL-221A	96	PT
CPL-232	J	VT
CPL-232	K	VT
CPL-232	L	VT
CPL-101	Ligaments 18 thru 34	UT
CPL-144	*Bolts 1 thru 18	MT/VT

\*Previous examination results compared with latest examination results.

- (2) 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 multi-channel Eddy Current Examination equipment has been identified including indicator, meter, tube, strip recorder and tape; method for maximum sensitivity is applied; method for determining material permeability; material permeability has been recorded; 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; 100% coverage of steam generator tubes occurs during the examination; and acceptance criteria is specified or referenced and is consistent with the procedure or the ASME B&PV Code.

SG-A		SG-B		SG-C	
Tube	I.D.	Tube	I.D.	Tube	I.D.
<u>Row</u>	<u>Column</u>	<u>Row</u>	<u>Column</u>	<u>Row</u>	<u>Column</u>
8	82	14	22	13	3
22	23	4	48	30	40
26	24	7	41	38	71
7	37	8	54	9	50
13	88	11	52	10	48
6	20	14	49	6	75
13	25	12	7	11	24
20	50	13	45	17	72
28	81	19	35	31	61
37	21	27	83	36	74
10	55	2	45	2	54
15	12	5	16	7	12
20	30	11	2	10	84
24	11	18	27	13	36
30	46	19	12	14	40
36	52	23	84	22	42
37	48	25	76	38	31
38	42	28	57	40	25
41	40	36	68	42	36
45	51	42	58	44	43

During May 1987, Combustion Engineering performed parallel eddy current examinations on all three steam generators (approximately 330 tubes each) for a total of 993 tubes at Robinson Unit 2. Ten percent random sample examinations were conducted in all three generators which included some tubes that were inspected in the 1986 outage program and all tubes with previously identified indications. The percentage inspection was selected to meet the requirements of the Plant Technical Specifications.

There were three indications greater than 20% through wall identified. In steam generator A, two (2) indications were evaluated to be 22% through wall in tube number, Row 33, Column 25. The other indication was on steam generator B in tube number, Row 14, Column 22. This indication was evaluated to be thirty three percent through wall. These indications were investigated by reviewing previous data which indicated their origin to be manufacture processing flaws, and not service induced flaws.

A primary and secondary analysis was performed on all tubes examined. The primary results are considered final for all tubes except where resolutions were required. Resolutions were conducted in accordance with the Data Analysis Procedure ROB-410-005, Rev. 0. These indications were resolved by the Level III and recorded as a resolution.

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

9. IE Bulletins (92703)

a. IE Bulletin 87-01, Thinning of Pipe Walls in Nuclear Power Plants

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 documentation reviews conducted by the inspectors are documented in the following subparagraphs.

(1) Plan Review

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

Maintenance Instruction - Unit 2	Errosion/Corrosion
MI No. MI-010-1 (6-10-87)	Control Program

(2) The inspectors reviewed Ultrasonic Procedure NEDP-408, Revision 4. 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.

(3) The inspectors reviewed the thickness data and associated records for the 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. The inspectors also reviewed certification records of equipment, materials, and NDE personnel being utilized during the examination of these items.

<u>System Line I.D.</u>	<u>Component</u>	<u>Location</u>
16-FW-11	90° ELL	Adjacent to valve FW73
16-FW-11	90° E11 -	Adjacent to Tee from line (short for elbow) 24-FW-12
	top & bottom	
16-FW-10	16"x24" Tee	-
24-FW-12	16"x24" Tee	-
20-FW-6	90° E11	To Feedwater Heaters
20-FW-6	90° E11	To valve FW4A
20-FW-28	90° E11	To 6A Heater

20-FW-17	20"x20" Tee	-
20-FW-4	20"x20" Tee	-
20-C-23	90° E11	-
20-C-22	45° E11	Off 30-C-21 FW Heater
20-C-22	90° E11	Downstream of 45° at 30-C-21
20-C-23	45° E11	Off 30-C-21 FW Heater
14-HD-48	14"x30" Tee	-
30-C-21	14"x30" Tee	-

(4) Discussions with licensee personnel and a review of the completed data, to date, indicate that some significant pipe wall thinning has occurred at isolated locations in the main steam from MSR #6 heater and condenser; main steam dump lines - drains; and, some blowdown piping. Replacement of the identified areas is schedule during the next refueling outage.

b. (Open) IEB No. 87-02: "Fastener Testing to Determine Conformance with Applicable Material Specifications", Unit 2

As of the date of this writing, the licensee has not responded or is required to respond to this bulletin. The inspectors reviewed the below listed procedures, and purchase orders and made a physical inspection of the receipt inspection areas, storage and issue areas to assess compliance to procedural and regulatory requirements, as they relate to fasteners.

Procedures Reviewed

<u>Identification</u>	<u>Title</u>
TMM-14, Rev. 6	"Determination of Technical and QA Requirements for Procurement Documents"
PCM-001, Rev. 8	"Procurement of Plant Material and Equipment"
PCM-002, Rev. 6	"Receiving Plant Material and Equipment"
PCM-003, Rev. 9	"Storing Plant Materials and Equipment"
PCM-004, Rev. 6	"Issuing Plant Materials and Equipment"

Purchase Orders Reviewed

385264AV	4/9/87
385922AV	4/14/87

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

10. NRC Information Notice 87-36, Significant Unexpected Erosion of Feedwater Lines

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 9.a. above, CP&L 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 containment is not included in the current H. B. Robinson inspection program, after discussion with the licensee regarding the information notice, site personnel stated that inspection points on feedwater piping inside the containment would be examined as soon as feasible - probably during the next refueling outage.

11. Inspector Followup Items

(Open) Items 50-261/84-45-01: "Service Water Degradation"

This matter was further examined during this inspection and is discussed in paragraph 6 of this report. This item remains open.