



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

Report Nos.: 50-261/90-21

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

Docket No.: 50-261

License No.: DPR-23

Facility name: H. B. Robinson

Inspection Conducted: October 1-5, 1990

Inspector: James L. Coley Jr.
 J. L. Coley

10-15-90
 Date Signed

Approved by: J. J. Blake
 J. J. Blake, Chief
 Materials and Processes Section
 Engineering Branch
 Division of Reactor Safety

10/16/90
 Date Signed

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the areas of observation of inservice inspection and work activities (73753).

Results:

The licensee's inservice inspection work and work activities were proceeding effectively. During the inspection the inspector held discussions with cognizant licensee personnel concerning a crack discovered in a level indicator nozzle on the "C" accumulator; reviewed base-line radiographs for the new service water piping welds; observed ultrasonic re-evaluation examinations of indications on Steam Generator B, Weld 5; and observed other ultrasonic and liquid penetrant examinations on piping and components. One unresolved item was identified 50-261/90-21-01 "Welds not Identified on Inservice Inspection (ISI) Isometric (ISO) Sketches", paragraph 2 b, and one concern was identified to senior management involving a welding machine incorrectly grounded to a stainless steel pipe. In the areas inspected, violations or deviations were not identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *W. M. Biggs, Manager, Nuclear Engineering Department
- *S. A. Billings, Technical Aide, Regulatory Compliance
E. Black, Supervisor, Site QA/QC
- *R. D. Crook, Senior Specialist, Regulatory Compliance
- *C. R. Dietz, Site Project Manager, Robinson Nuclear Power Division
- *S. W. Farmer, Engineering Supervisor, Programs
- *E. M. Harris, Jr., Manager, On-site Nuclear Safety
- *R. E. Morgan, Assistant To Project Manager
- *M. F. Page, Manager, Technical Support
- *W. J. Powell, Senior Specialist, Nuclear Engineering Department
- *J. J. Sheppard, Plant General Manager
- *R. M. Smith, Manager, Maintenance
- *H. G. Young, Manager, QA/QC
- *A. R. Wallace, Operations Coordinator
D. Weber, ISI Engineer

Other licensee employees contacted during this inspection included engineers, technicians, and administrative personnel.

Other Organizations

- J. B. Campbell, Supervisor, Westinghouse
- G. Healey, Test Engineer, Gilbert and Associates
- B. Pelzer, Test Engineer, Gilbert and Associates

NRC Resident Inspectors

- *L. Garner, Senior Resident Inspector
- *K. Jury, Resident Inspector

*Attended exit interview on October 5, 1990

2. Inservice Inspection (73753) Unit 2

The inspector observed inservice inspection (ISI) work and work activities to ascertain whether examination, repair, and replacement activities associated with ASME Class 1, 2, and 3 components were performed in accordance with Technical Specifications, the applicable section and revision of the ASME Code, correspondence between NRR and the licensee concerning relief requests, and requirements imposed by NRC/industry initiatives. H. B. Robinson is presently in the fifth and last outage of the second inspection interval. The applicable Code for this interval is the ASME B&PV Code, Section XI, 1977 Edition, with addenda through Summer 1978.

a. Volumetric Examination of Welds using the Manual (A - scan) Ultrasonic Technique

The inspector observed ultrasonic examinations performed on the following welds:

<u>Weld Joint No.</u>	<u>ISO Sketch No.</u>	<u>System/Component</u>
2	CPL-237 Line No. 10-SI-55	10" Diameter Stainless Steel Weld on Loop C Accumulator Discharge
5	CPL-205A	Steam Generator "B" Girth Weld

Ultrasonic inspection of the safety injection weld (No. 2) was performed by Westinghouse examiners in accordance with CP&L procedure No. CP&L-ISI-206, Revision 0. No recordable indications were observed during the examination of this weld. However, the inspector noted nearby unsatisfactory conditions in the regenerative heat exchanger room during this inspection in that a cyclomatic weld machine had been grounded to a 1" diameter stainless steel pipe which ran across the room and branched down to valve CVC 389 (excess letdown heat exchanger to seal water return). Follow-on inspection using a flashlight by the inspector and a Westinghouse examiner established that the clamp for the ground lead had created a vee groove in the pipe approximately 2 1/2" long and 0.005" to 0.010" deep. This condition was reported to CP&L management and a liquid penetrant examination was performed on the pipe. However, licensee personnel stated that the examined area did not exhibit a groove. Therefore, either the liquid penetrant examination was performed on the wrong area of the pipe or the groove was removed by unauthorized grinding after removal of the ground lead and prior to the penetrant examination. During the exit the inspector addressed the unacceptable practice of attaching ground leads which can create arc strikes on plant piping systems. The site project manager stated that all welders on site would be notified that the practice of attaching ground leads to plant piping was unacceptable and not allowed. The engineering supervisor for programs stated that further investigation would be conducted as to whether the correct area of the pipe had been examined. Adequate resolution of this item will be verified during a subsequent inspection to be completed during the current outage.

The ultrasonic examinations performed on Weld No. 5 of SG - B were conducted on 3 indications that had been detected during the second interval examinations completed earlier in the current outage. The evaluation and sizing of the discontinuities was performed by a CP&L

examiner with assistance from Westinghouse. The 3 indications were all below the 50% DAC level and had not been detected during the first interval examinations. CP&L's technical staff expressed concerns that these discontinuities may be indicative of problems experienced at Indian Point, Surry and Zion where cold water (apparently from the feedwater header) had created significant cracking adjacent to this weld. Therefore accurate sizing data was collected for comparison to examination data to be taken at a later date. Evaluation of the present data indicated that problems similar to those at Indian Point do not presently exist for this steam generator girth weld at H. B. Robinson.

b. Surface Examination of Welds using the Liquid Penetrant Technique

The inspector observed Westinghouse examiners conduct liquid penetrant examinations on Weld No. 1 and Weld No. 2 of the seal water heat exchanger (CP&L Sketch 211, Revision 0). Only one third (1/3) of each weld was required to be examined this interval. The examiners conducted the inspection in accordance with CP&L Special Procedure SP-930 and both welds were determined to be satisfactory. In addition to the above examination, the inspector accompanied Westinghouse examiners during their attempt to perform liquid penetrant examinations on the following welds. The examiners were unable to perform the examinations for the reasons listed.

<u>Weld ID</u>	<u>CP&L Sketch No.</u>	<u>Diameter/System</u>	<u>Reason test Not Performed</u>
No. 29	CPL-220	6" Diameter Safety Injection	Pipe Too Hot
Nos. 2,3,4	CPL-234B	8" Diameter Containment Spray	Welds Not Adequately Cleaned

During the Westinghouse examiners' search for the weld joints listed on sketch CPL-234B the inspector noted that the weld configurations depicted in the sketch did not agree with actual field conditions. The actual as-built piping run from the containment penetration (P-44) to the first weld on the elbow includes 13 welds. However the sketch identifies the first weld on the elbow as No. 10 rather than 13. The inspector held discussions with the licensee's Inservice Inspection (ISI) Engineer concerning the inaccuracy of the ISI sketch and noted that this finding could indicate an incorrect total weld population included in the ISI program. Also that sketches which do not correctly depict the weld configuration could very likely cause an examiner to perform the required examination on the wrong weld. The ISI engineer stated that some of the sketches had been found inaccurate and updated and any others would be updated when found to be incorrect. Further that extra welds have been added to the program sample to offset the adverse impact of those

not depicted on the sketches. In the case of the three additional welds discovered on sketch CPL-234B one was added for examination. However, all three welds were on "pup" pieces and were not classed as structural discontinuities. Therefore the examination was not required under the applicable Code for these Class 2 pipe welds. The inspector informed the plant manager that the failure of H. B. Robinson inservice ISO sketches to accurately identify welds in the piping involved was of concern due to the reasons given above. Also that this matter would be discussed with NRC's Office of Nuclear Reactor Regulation (NRR) regarding potential adverse impact on the NRR approved current ISI program as well as the Third Inspection Interval program which CP&L is presently preparing to submit to NRR for approval. Senior plant management assured the inspector that CP&L would complete additional assessment of this matter to determine how these sketches can be corrected to accurately reflect actual pipe/weld joint configurations. This item was identified as Unresolved Item 50-261/90-21-01, "Welds not Identified on Inservice Inspection ISO Sketches".

c. Repair and Replacement Activities

During performance of a hydrostatic test on the SI accumulator "C", a leak was detected in the stainless steel nozzle coupling for one of the upper level transmitter instrument lines. The Material Engineering Unit of the CP&L Nuclear Engineering Department (NED) is providing technical support and will coordinate the evaluation activities for this project. Preliminary failure analysis results indicate that the cause of the leak was from an intergranular stress corrosion crack (IGSCC) in the nozzle coupling. A computerized search by the licensee on the Nuclear Plant Reliability Data System (NPRDS) revealed that a similar problem may have been experienced on one of Prairie Island's SI accumulators. This is a recent failure and evaluation of the defective condition, its root cause, and plans for repair are not yet complete. However, the following goals have been established by NED and work is proceeding to meet these goals:

- * Complete the failure analysis.
- * Acquire available information from Westinghouse on design and manufacture of SI accumulators.
- * Obtain specific information from Prairie Island personnel on their past accumulator problems.
- * Develop a Code acceptable repair method to be used in repairing this failed coupling with the assistance of Structural Integrity Associates. An engineering evaluation and any necessary special procedures would be developed prior to repair implementation.
- * Evaluate the susceptibility of the other stainless nozzles on the accumulators to IGSCC by determining if they are manufactured from low carbon grade of stainless (use of Westinghouse records and/or carbon analysis of filings obtained from nozzles).

- * Develop and implement a plan for the inspection and possible future reinspection of other accumulator nozzles if analyses show that these are manufactured from stainless other than low carbon (less than 0.03% carbon) grade. Inspection might include liquid penetrant examination and ultrasonic examination techniques to determine if nozzles contain IGSCC in that portion of the nozzles which extends outside the accumulator shell OD.
- * Prepare a final report on the evaluation and repair.

From work accomplished by the licensee to achieve the above goals the inspector was able to establish the following specifics concerning this failure:

- * Vessel thickness: 2 3/8"
- * Pipe size: 2" Diameter stainless steel
- * Materials: SA-182-304 (304 ELC)
- * Pressure: 600 psi minimum 700 psi maximum
- * Temperature Range: approximately 115 degrees F operational
300 degrees F design
- * Defect length: Defect extends from coupling socket crevice area to the accumulator ID
- * Crack resistance: Coupling and nozzle were sensitized during initial manufacture.
- * Ongoing examinations: CP&L is performing UT & PT examinations on the remaining 23 nozzles on the three accumulators at H. B. Robinson.
- * Carbon content for failed nozzle: 0.062%
- * Accumulator manufacturer: Delta Southern Company of Baton Rouge, Louisiana.
- * Hoop Stress: No significant hoop stress detected.
- * Chemical analysis: Chemical analyses not completed to date. Electric Power Research Institute (EPRI) contracted to perform necessary evaluation.

Since resolution of this item may have generic implications the inspector will complete further evaluations during a subsequent inspection scheduled to be completed during the current outage.

In addition to the evaluation and repair activity discussed above, the licensee is presently fabricating and installing new service water piping spool pieces to replace the plant piping which has been attacked by microbiologically induced corrosion (MIC). The new piping has been filled with water and the licensee is radiographing each circumferential weld in order to produce a base-line for future MIC inspections even though radiographic inspection of these welds is not required by the applicable Code. The inspector reviewed the radiographs taken to date to determine workmanship of the licensee's welders on Code welding applications not normally requiring radiography. The quality of the welds and radiographs reviewed was excellent.

d. Review of ISI Plan, Procedures, Qualifications, Certifications, and Completed Examination Records

The inspector reviewed the licensee's ISI plan as well as all material and equipment certifications; examiners' qualifications, certifications, and eye tests; records of examinations completed to date; and examination procedures. The following Westinghouse examiner certifications and procedures were also verified as satisfactory:

<u>Westinghouse NDE Examiner</u>	<u>UT</u>	<u>PT</u>	<u>VT</u>	<u>MT</u>
KMA	I	II	II	II
KHB	II	II	II	II
JBC	II	II	III	II
RWC	II	II	II	II
BD	I	II	II	II
GAJ	I	II		II
GAM	II	II	II	II
MWR	III	III	III	III

Examination Procedures Reviewed

CPL-SP-932, Rev. 0, Visual Examination
 CPL-SP-927, Rev. 0, Qualification of UT Manual Equipment
 CPL-SP-930, Rev. 0, Liquid Penetrant Examination
 CPL-SP-933, Rev. 0, Manual UT Examination of Bolting
 CPL-SP-931, Rev. 0, Manual UT Examination of Welds in Vessels
 CPL-SP-928, Rev. 0, Magnetic Particle Examinations
 CPL-SP-935, Rev. 0, Underwater Remote Vessel Examination
 CPL-SP-924, Rev. 0, Thickness and Beam Angle by Ultrasonics
 CPL-SP-925, Rev. 0, Preservice and Inservice Examination
 Documentation
 CPL-SP-929, Rev. 0, Manual Ultrasonic Testing of Welds

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

3. Exit Interview

The inspection scope and findings were summarized on October 5, 1990, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. Dissenting comments were not received from the licensee. Proprietary information is not contained in this report.

Unresolved Item 50-261/90-21-01, "Welds not Identified on Inservice Inspection ISO Sketches", paragraph 2 b.