

APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Inspection Report: 50-458/94-10

License: NPF-47

Licensee: Entergy Operations, Inc.  
P.O. Box 220  
St. Francisville, Louisiana

Facility Name: River Bend Station

Inspection At: St. Francisville, Louisiana

Inspection Conducted: April 25-29, 1994

Inspector: C. E. Johnson, Reactor Inspector, Maintenance Branch  
Division of Reactor Safety

Approved:

*Dale A. Powers*  
Dr. Dale A. Powers, Chief, Maintenance Branch  
Division of Reactor Safety

*05/18/94*  
Date

Inspection Summary

Areas Inspected: Routine, announced inspection of the inservice inspection program and implementing work activities.

Results:

- Quality assurance audit reports of the Inservice Inspection Program were comprehensive (Section 2.1.2).
- The licensee's controls in monitoring, identifying, resolving, and preventing further intergranular stress corrosion cracking problems were being effectively implemented (Section 2.1.2).
- The licensee had established a well defined Inservice Inspection Program, and had implemented the program effectively (Section 2.1.2).
- Nondestructive examination personnel appeared knowledgeable of procedural requirements (Section 2.2.2).
- A violation was identified during the observation of a nondestructive examination technician who failed to follow a procedural requirement during magnetic particle examinations (Section 2.2.2).

- Nondestructive examination personnel were properly qualified and certified to perform the assigned examinations (Section 2.3.2).
- Nondestructive examination procedures contained sufficient details and instructions to perform intended work (Section 2.4.2).
- Nondestructive examination reports were properly completed and evaluated (Section 2.4.2).
- Code replacement and repair work had been accomplished according to approved procedures and instructions (Section 2.5.2).
- Procedures for housekeeping and cleanliness control had not clearly defined or adequately addressed the housekeeping controls for the spent fuel pool area. The lack of an adequate procedure resulted in the introduction of foreign material, and was a violation (Section 2.6.2).

Summary of Inspection Findings:

- Violation 458/9410-01 was opened (Section 2.2.2).
- Violation 458/9410-02 was opened (Section 2.6.2).

Attachments:

- Attachment 1 - Persons Contacted and Exit Meeting
- Attachment 2 - Documents Reviewed

## DETAILS

### 1 PLANT STATUS

During this inspection period, River Bend Station was in the first week of the fifth refueling outage (RF-5).

### 2 INSERVICE INSPECTION (ISI) (73753)

The objective of this inspection was to determine whether the performance of ISI examinations and the repair and replacement of Class 1, 2, and 3 pressure retaining components were performed in accordance with Technical Specifications, the applicable ASME Boiler and Pressure Vessel Code, requirements imposed by NRC and industry initiatives, and correspondence between the Office of Nuclear Reactor Regulation and the licensee concerning relief requests and commitments made in response to Generic Letter 88-01.

#### 2.1 ISI Program

##### 2.1.1 Discussion

The inspector met with the licensee's ISI staff after the entrance interview, to discuss the ISI program and scheduled examinations. The inspector reviewed the ISI plan and schedule for the third inspection period of the first 10-year interval. The inspector reviewed ASME code cases that the licensee had utilized, and found them to be acceptable. The inspector reviewed relief requests submitted with the first 10-year ISI Program and found that the NRC had approved the ISI Program for the first 10-year interval. The NRC staff had denied approximately 5 relief requests submitted with the initial ISI Program. However, the relief requests were later approved by letter dated August 1, 1988, after further review by the NRC staff and technical assistance from Idaho National Engineering Laboratory. The licensee informed the inspector that no other changes were made to the current ISI first 10-year program. Documents describing relief requests to the ISI Program were appropriately maintained.

The inspector selected ISI records of Class 1 components examined during the first and second inspection periods to determine if the licensee had followed their ISI Program. The inspector selected records for the following components:

- Reactor Vessel CRD Housings -- Item No. B7.80 -- Category B-G-1, and
- RCS Pump Studs -- Item No. B6.180 -- Category B-G-2.

Records for these Class 1 components were available for review. The inspector concluded from the selection of records reviewed, that the licensee had

followed their ISI Program during the first 10-year interval for these Class 1 components. No deficiencies were identified.

The inspector also reviewed the licensee's quality assurance (QA) audits performed on ISI activities. QA audit reports were comprehensive. Deficiencies were identified and submitted by memoranda to the responsible organizations for corrective action. There were no significant issues identified by the licensee's QA audit reports. The QA audit reports concluded that the ISI Program was well organized and thoroughly documented.

The inspector's review of the licensee's ISI Program and current schedules indicated that the licensee had established a well defined ISI Program, and had implemented the program effectively.

As part of the ISI Program review, the inspector also reviewed the licensee's response and program implementation developed in response to Generic Letter 88-01, "NRC Position On IGSCC In BWR Austenitic Stainless Steel Piping." Generic Letter 88-01 addressed the NRC staff position on intergranular stress corrosion cracking (IGSCC) in BWR austenitic stainless steel piping. The technical bases for the NRC staff positions are detailed in NUREG-0313, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping," Revision 2, published January 1988. Generic Letter 88-01 requested the licensee to furnish current plans for replacement, inspection, repair, and leakage detection on piping that is subject to the generic letter.

The inspector's review of the licensee's response to the generic letter determined that the licensee had developed procedures to inspect and monitor IGSCC. The augmented inspections of the components that were subject to the generic letter were properly implemented into the ISI Program. The licensee began implementing the IGSCC inspection efforts during RF-2. During ultrasonic testing conducted on Feedwater Nozzle-to-safe-end N4A-2 weld in RF-2, a circumferential indication was identified in the buttered area on the safe-end side of the weld. The indication was detected and sized appropriately by the licensee. A crack growth evaluation was performed by the licensee, and submitted as part of the licensee's notification of the indication to the NRC in a letter dated May 15, 1989. The licensee repaired this weld during RF-4. Approximately 23 nozzle-to-safe-end welds, and 6 safe-end-to-safe-end extensions were identified as nonresistant (i.e., susceptible) to sensitization and IGSCC. All 29 welds have been examined. No other indications were found in similar welds.

The licensee planned to mitigate IGSCC by implementing a stress improvement process. The licensee was preparing this outage to use a mechanical stress improvement process. This process uses a hydraulic system which uniformly compresses the pipe at a location near the weld joint. All remaining nonresistant nozzle safe ends (approximately 29) will undergo this process, which was discussed in NUREG-0313 as a possible mitigation method.

The inspector determined that the licensee has aggressively addressed IGSCC problems, and has established well defined procedures and augmented inspection programs. The inspector determined that the licensee's controls in monitoring, identifying, resolving, and preventing further IGSCC problems were being effectively implemented.

### 2.1.2 Conclusions

QA audit reports of the ISI Program were comprehensive. Documents describing relief requests to the ISI Program were appropriately maintained. The licensee's controls in monitoring, identifying, resolving, and preventing further IGSCC problems were effective. Overall, the licensee had established a well defined ISI Program, and had implemented the program effectively.

## 2.2 Observation of Nondestructive Examinations (NDEs)

### 2.2.1 Discussion

The inspector did not have the opportunity to observe the various types of NDEs that were planned during the inspection because unexpectedly high radiation levels in some plant areas caused the licensee to postpone various NDEs. However, the inspector did observe several liquid penetrant (PT) and magnetic particle (MT) examinations as discussed below.

The inspector observed PT examinations on the following welds located on Reactor Coolant System Line 1RCS-010-90E-1:

- 1RCS\*900C-SW01B BLB,
- 1RCS\*900C-SW01B ALA,
- 1RCS\*900C-SW01B BLC,
- 1RCS\*900C-SW01B ALB,
- 1RCS\*900C-SW01B BA, and
- 1RCS\*900C-SW01B ALC.

The inspector verified that the dye penetrant materials used were acceptable by procedure. Before the PT examinations began, surface preparation of the pipe was performed, and surface temperatures taken, as required. Observation by the inspector determined that penetrant dwell times were according to procedure. No indications were visible during these PT examinations. The inspector concluded that the PT examinations observed were performed according to the applicable procedure.

The inspector also observed MT examinations performed on two circumferential welds (FW003 and SW032) located on the residual heat removal system in Pump



Room C. Surface preparation was properly performed on the welds before the MT examinations were initiated. The material and equipment utilized were as specified by procedure. The NDE technicians appeared knowledgeable of the procedural requirements. Approved NDE procedures were available and were being followed during the examinations, with one exception. During the MT examinations on circumferential welds FW003 and SW032, the inspector observed that Procedure NDE-4.12, "Magnetic Particle Examination (MT) Dry Method," Revision 0, was not followed.

Procedure NDE-4.12 implements the requirements of ASME Code, Section V, 1980 Edition, which requires that at least two separate examinations be conducted on each area that is to be examined. In the second examination, the lines of magnetic flux are to be approximately perpendicular to those used for the first examination in that area. It was observed that the NDE technician did not perform the second examination as required by the procedure on the portion of pipe that was visible to the inspector. This failure to follow requirements of Procedure NDE-4.12 and Section V of the ASME Code, 1980 Edition, and to conduct the second examination was a violation (458/9410-01).

The licensee's representatives, who were not observing the technician's work, were informed of the violation by the inspector. The licensee was responsive to the inspector's observation and had welds FW003 and SW032 reinspected the next day. The inspector verified that the reinspection was performed according to procedure. No deficiency was noted during the reinspection. The noncompliant MT examinations observed by the inspector were the first NDEs performed by the subject NDE technician this outage.

### 2.2.2 Conclusions

The inspector determined that material and equipment used in the PT and MT examinations were in compliance with procedures. Approved procedures were available. The NDE technicians appeared knowledgeable of the procedural requirements. However, during MT examinations, a violation was observed when an NDE technician failed to follow the procedure's specification.

## 2.3 Personnel Qualifications and Certifications

### 2.3.1 Discussion

The inspector reviewed the qualifications and certifications of Voit Technical Services and Ebasco L-II technicians performing the NDEs. The documents reviewed by the inspector indicated that NDE technicians were qualified to perform the intended work. During the inspection, the inspector observed those same NDE technicians perform various NDEs. NDE technicians were knowledgeable of procedural requirements, examination techniques, and test equipment. The inspector verified that qualification and certification records properly reflected the employer's name; person certified; activity qualified for performance; level of certification; effective period of certification; L-III signature certifying the individual; and the annual visual acuity and color vision examination. The inspector also reviewed the

qualification and certification of the licensee's L-III NDE technicians. The inspector determined that NDE technicians designated as qualified to perform the examinations were properly certified according to the applicable industry standard ASNT-TC-1A. No discrepancies were identified.

### 2.3.2 Conclusions

The documents reviewed by the inspector indicated that NDE technicians were qualified and certified to perform the assigned examinations. The NDE technicians were also properly certified according to the industry standard ASNT-TC-1A.

## 2.4 ISI Procedures and Records Review

### 2.4.1 Discussion

The inspector reviewed NDE procedures associated with the type of ISI examinations being performed for consistency with the requirements of the ASME Code, Section V, 1980 Edition. The procedures reviewed by the inspector are listed in Attachment 2.

The ASME Code, Section V, 1980 Edition requires that NDEs performed shall be done in accordance with written procedures. These NDEs shall be demonstrated to the satisfaction of the Authorized Nuclear Inservice Inspector (ANII). Discussions with the current ANII indicated that he had been at the site since October 1993. The ANII was observed witnessing several code activities.

The inspector determined that the procedures contained sufficient details and instructions to perform the intended examinations. The inspector determined that the sampled NDE reports had been properly completed and submitted to the NDE supervisor, for review and evaluation. NDE records requested by the inspector were readily retrievable by the licensee's representatives.

### 2.4.2 Conclusions

The ISI procedures contained sufficient details and instructions to enable the performance of the NDEs that were observed. The NDE reports sampled had been properly completed and evaluated. The NDE records were readily retrievable.

## 2.5 Code Repair and Replacement Activities

### 2.5.1 Discussion

The inspector reviewed Maintenance Work Order (MWO) C304702. This MWO was prepared to replace Motor-Operated Valve (MOV) 1E12\*MOVFO24B, which was located in the test return line for Residual Heat Removal Loop 1A. The MWO C304702 package was comprehensive. It was easy to locate specific work activities associated with MOV 1E12\*MOVFO24B because of the indexing system used for the MWO. Documents such as hot work permit, weld data package, material requisitions, inspection reports, and drawings were included.

Signatures were present, indicating work instruction steps were completed for those activities. The review of MWO C304702 indicated that maintenance personnel were following work package instructions. No discrepancies were identified. The inspector observed the general orientation and configuration of the replaced MOV 1E12\*MOVFO24B. The component's placement appeared to conform to the drawings. The inspector reviewed the NDE results of the welds made after installation of MOV 1E12\*MOVFO24B and associated piping. Radiography was the NDE method used after the valve replacement.

The inspector reviewed the film taken during the radiography examination. Indications of slag and porosity were observed by the licensee's L-III NDE technician. The inspector verified the L-III NDE results. These indications were sized and documented properly on examination reports by the licensee's L-III technician. These indications were in process of being repaired during the inspector's review of the results.

The inspector also reviewed Modification Request (MR) 93-0047. This MR was initiated to replace existing Valves 1E12\*MOVFO24A and 1E12\*MOVFO24B. The existing valves were 14-inch MOVs, and the replacement valves were 14-inch rotary disc shutoff valves with motor operators. The reasons for the change were the excessive maintenance and testing requirements imposed on the licensee to keep the valves operable.

The review of MWO C304702 and MR 93-0047 indicated that code replacement and repair work were being accomplished according to approved procedures and instructions. The MR 93-0047 package appeared complete, including the safety and environmental evaluation, which was adequate. Installation, inspection, and design documents were also included in the MR package. No discrepancies were noted.

## 2.5.2 Conclusions

Code replacement and repair work had been accomplished according to approved procedures and instructions. An adequate safety and environmental evaluation was performed for MR 93-0047.

## 2.6 Plant Tour

### 2.6.1 Discussion

On April 26, 1994, the inspector made a plant tour of the auxiliary building, containment building, and the fuel building. During this tour the inspector noted the following items located in the areas listed below:

- Fuel Building Spent Fuel Pool Area  
Tape (roll),  
Trash,



Plastic bags,

Metal chairs not secured,

Trash container on refueling bridge not secured, and

Loose package of plastic protective clothing on the refueling bridge.

• Containment Building

Two pair of unsecured work gloves on elevation 114 ft (above the suppression pool).

The inspector did not observe any housekeeping area signs leading into the spent fuel pool area to indicate a housekeeping zone designation. Also, there was nothing in the spent fuel pool area to indicate that the area around the spent fuel pool was controlled as a foreign material exclusion (FME) area. Immediately adjacent to the spent fuel pool was an area where contractor material and equipment were stored. This area was roped off and designated as a contaminated area. This area contained the trash, plastic bags, and other items noted above. There was a lack of control of the spent fuel pool area in regard to housekeeping and access control of personnel and material.

The licensee's representative later informed the inspector that a Housekeeping Zone IV designation was posted in the area, however, it was not in the location it should have been. The inspector noted that Housekeeping Zones I, II, and III had more access control over personnel and materials than did Zones IV and V. Housekeeping Zone IV areas were controlled only in regard to the use of tobacco or eating. The controls for Housekeeping Zone IV did not address access control of personnel, trash, or other materials. The licensee's representative acknowledged that they have had problems with housekeeping on occasions, however, they were trying to minimize the occurrences.

The inspector asked the licensee's representatives whether the spent fuel pool area was controlled as an FME area. The licensee's representatives initially told the inspector that the spent fuel pool area was not considered an FME area. After further investigation, however, the licensee's representatives informed the inspector that the spent fuel pool area was controlled as a Housekeeping Zone IV according to Procedure GMP-0062, "Cleanness Control," Revision 7 and ADM-018, "Plant Housekeeping And Cleanliness Control," Revision 7.

Procedure ADM-018 and GMP-0062 defined an FME as a specific method used to prevent the introduction of foreign material into areas, systems, and components to minimize damage or harmful effects such as corrosion, fuel damage, component malfunction, adverse changes in coolant chemistry, reduced heat transfer, increased contamination and radiation levels, and adverse changes in system fluid flow. It also defined a housekeeping zone as an area

designated as requiring a specific degree of housekeeping attention, including FME requirements. Neither procedure clearly defined or adequately addressed the housekeeping level for the spent fuel pool area.

Consequently, the inspector concluded that the licensee had not appropriately classified the spent fuel pool area for the proper housekeeping zone. The existing procedures were not adequate for program implementation, in that insufficient guidance was provided to control personnel, designate material access, set forth barrier placement, and provide necessary housekeeping controls over the spent fuel pool area during the ongoing refueling activities. This issue of inadequate procedural control was a violation (458/9410-02) of Technical Specification 6.8.1, which states, in part, that written procedures are to be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operations)," dated February 1978, including activities during refueling operations. Regulatory Guide 1.33 endorses American National Standard ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants," which states, in part, that housekeeping practices shall assure that only proper materials, equipment, processes and procedures are utilized and that the quality of items are not degraded as a result of housekeeping practices or techniques.

#### 2.6.2 Conclusions

The licensee's procedures for housekeeping and cleanliness control had not clearly defined or adequately addressed the housekeeping levels for the spent fuel pool area. This issue was a violation.

## ATTACHMENT 1

### 1 PERSONS CONTACTED

#### 1.1 Entergy Personnel

- \*R. Biggs, Supervisor, Quality Systems
- \*J. Blakley, Director of Predictive Programs
- \*O. Bulich, Licensing Manager
- \*R. Carlyle, Inservice Inspection Coordinator
- \*J. Fisicaro, Director, Nuclear Safety
- K. Giadrosich, Manager, Quality Assurance
- \*M. Krupa, Assistant Plant Manager, System Engineering
- \*D. Lorfing, Supervisor, Nuclear Licensing
- \*I. Malik, Supervisor, Corrective Action and Reviews
- \*J. McQuirter, Senior Licensing Analyst
- \*J. Schippert, Technical Assistant to Director of Engineering
- \*M. Sellman, Plant Manager
- \*G. Zinke, Technical Coordinator, Nuclear Safety

#### 1.2 Cajun Electric

- \*B. Curran, Site Representative
- \*W. Day, Site Representative

#### 1.3 NRC Personnel

- \*W. Smith, Senior Resident Inspector

In addition to the personnel listed above, the inspector contacted other personnel during this inspection period.

\*Denote personnel that attended the exit meeting on April 29, 1994.

### 2 EXIT MEETING

An exit meeting was conducted on April 29, 1994. During this meeting, the inspector reviewed the scope and findings of the report. The licensee did not express a position on the inspection findings documented in this report. The licensee did not identify as proprietary, any information provided to, or reviewed by, the inspector.

ATTACHMENT 2  
DOCUMENTS REVIEWED

PROCEDURES

GMP-0062, "Cleanliness Control," Revision 7  
ADM-018, "Plant Housekeeping And Cleanliness Control," Revision 7  
NDE-4.12, "Magnetic Particle Examination (MT) Dry Method," Revision 0  
GS-UT-W81-12, "Ultrasonic Examination For Detection Of Cracking In Alloy 182  
Nozzle Weldments," Revision 1  
MSP-0035, "Repair/Replacement Program," Revision 1

MODIFICATION REQUEST

93-0047

AUDIT REPORTS

92-01-I-IIPG  
93-12-I-IIPG

CONDITION REPORTS

89-0559  
92-0410  
92-0675  
90-1140  
91-0416

NDE REPORTS

94IR2195  
94IR21987  
94IR22024  
94IR22025  
94IR22035