

APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-458/90-27

Operating License: NPF-47

Docket: 50-458

Licensee: Gulf States Utilities Company (GSU)  
P.O. Box 220  
St. Francisville, Louisiana 70775

Facility Name: River Bend Station (RBS)

Inspection At: RBS, St. Francisville, Louisiana

Inspection Conducted: October 1-5, 1990

Inspectors: *J. Barnes* 10-16-90  
*for* W. M. McNeill, Reactor Inspector, Materials  
and Quality Programs Section, Division of  
Reactor Safety Date

*J. Barnes* 10-16-90  
*for* L. D. Gilbert, Reactor Inspector, Materials  
and Quality Programs Section, Division of  
Reactor Safety Date

Approved: *J. Barnes* 10-16-90  
I. Barnes, Chief, Materials and Quality  
Programs Section, Division of Reactor Safety Date

Inspection Summary

Inspection Conducted October 1-5, 1990 (Report 50-458/90-27)

Areas Inspected: Routine, unannounced inspection of actions on previously identified inspection findings, welding, and inservice inspection.

Results: An apparent violation (paragraph 3) was identified with respect to implementation of the program for control of welding activities. The specific deficiencies noted pertained to inconsistencies in the use of prequalified welding procedures and lack of monitoring of in-process welding activities.

The inspection additionally indicated that training of welding personnel could be improved. In regard to inservice inspection, no violations or deviations were identified. Based on the observations of the available work in-process, it appears that the inservice inspection program was adequate and effectively implemented.

DETAILS

1. PERSONS CONTACTED

1.1 GSU

- \*D. L. Andrews, Director-Nuclear Training
- \*T. P. Anthony, Supervisor-Design Engineering
- \*R. E. Barnes, Supervisor-Codes and Standards
- J. J. Barrett, Quality Control (QC) Inspector
- \*J. B. Blakely, Supervisor-American Society of Mechanical Engineers (ASME) XI  
Inservice Inspection (ISI)
- \*J. E. Booker, Manager-Nuclear Industry Relations
- \*G. A. Bysfield, Assistant Plant Manager
- \*J. W. Cook, Technical Assistant-Licensing
- \*M. E. Crowell, Nuclear Training Coordinator
- J. D. Davis, Quality Assurance (QA) Engineer
- \*S. V. Desai, Independent Safety Engineering Group Engineer
- \*L. A. England, Director-Licensing
- H. S. Garcha, QA Engineer
- \*P. D. Graham, Plant Manager
- \*G. K. Henry, Director Quality Operations
- R. K. Jackson, Field Coordinator
- B. S. Kienlen, QC Inspector
- \*G. R. Kinmell, Director-Quality Services
- F. E. Lenox, Area Coordinator
- \*D. N. Lorring, Supervisor-Nuclear Licensing
- \*I. M. Malik, Supervisor-Quality Operations
- \*W. H. Odell, Manager-Oversight
- \*J. P. Schippert, Assistant Plant Manager
- \*C. W. Walker, Supervisor-QC
- B. R. Williams, QC Inspector

1.2 Cajun Electric

- \*W. L. Curran, Site Representative

1.3 Rockwell International

- T. G. Barker, QA Site Representative
- W. R. Johnson, QA Site Representative

1.4 Ebasco Services Inc.

- D. G. Garcia, Level II
- T. J. Godeau, Level I
- S. D. Thistlethwaite, Level II
- M. M. Truusskey, Level II

1.5 Stone & Webster Engineering Corporation

M. E. Baron, Level II  
G. J. McQuillan, Level II

1.6 Hartford Steam Boiler Inspection & Insurance

T. D. McGovern, Authorized Nuclear Inspector

1.7 NRC

\*E. J. Ford, Senior Resident Inspector  
\*D. P. Loveless, Resident Inspector

\*Denotes those persons that attended the exit meeting on October 5, 1990.

The inspectors also contacted other personnel including administrative and clerical personnel.

2. ACTION ON PREVIOUS INSPECTION FINDINGS (92701 and 92702)

2.1 (Closed) Inspector Followup Item (458/8926-01): Licensee review of Modification Request (MR) 89-0032 to assure that there was no conflict with Updated Safety Analysis Report (USAR).

MR 89-0032 has been installed. In the review process of MR 89-0032, it was identified that the USAR needed to be changed and the current USAR Section 7.3 reflects the design change. The section of the USAR that was referenced in the inspection report, 12.3, was not however changed. The licensee issued a License Change Notice (LCN 12.3-11) to revise Section 12.3 during this inspection.

2.2 (Closed) Inspector Followup Item (458/8929-01): Licensee review of Quality Audit Finding Reports (QAFRs) 89-02-04 through -06.

The licensee issued Condition Report 89-0901 in regard to this item and found that there was not a generic problem with the root cause analysis with the referenced QAFRs. A followup audit (90-02-1-EQAL) has been performed on these QAFRs. No further problems were identified.

2.3 (Closed) Violation (458/8912-01): Procedure requirements were not followed concerning the maximum interpass temperature qualified for a welding procedure specification (WPS) and the use of the latest edition and current addenda of Section IX of the ASME Code.

The inspector reviewed the licensee's followup action which was documented in Condition Report 89-0471. The inspector verified that a procedure change had been issued to reduce the maximum interpass temperature of WPS W3-01 from 500°F to 425°F and that the latest code and current addenda were available to the welding engineering staff. The inspector verified that the committed corrective actions had been performed. Refer to paragraph 3 for additional information

regarding incorporation of the latest Code acceptance requirements into the QC procedures. This violation is considered closed.

### 3. WELDING ACTIVITIES (55050 and 55100)

The purpose of the inspection was to evaluate the implementation of the licensee's program for controlling safety-related welding activities. The inspector was informed that limited welding activities were scheduled during the week of the inspection and that most of the contract welders had completed their qualification test. During the inspection, the inspector observed a total of three safety-related welding activities and also performed a review of welder qualification testing and monitoring of in-process welding activities.

For the first safety-related welding activity, the inspector observed welding of a modification to the residual heat removal (RHR) system. Modification Request (MR) 88-208 was being accomplished to disable the steam condensing mode of the RHR system. Two sections of the RHR system Code Class 2 piping, designated as Line 1-RHS-008-36-2, were being replaced with segments containing a welded plug flange inside the pipe which was specified as Detail B and Detail C on Drawing XI-RHS-036-CD-B. The replacement piping was being fabricated in accordance with ASME Section XI Replacement Plan 1S-1-90-584 and Maintenance Work Order (MWO) 143544. The work package included a weld data sheet and the applicable referenced WPS W3-01 and general welding Procedure SPP-7001. The welder was observed welding with the shielded metal-arc welding (SMAW) process using size 5/32 inch diameter E7018 welding electrode, and was noted to check the 200°F minimum preheat and 425°F maximum interpass temperatures during the welding in accordance with the requirements of the welding procedure. The welder indicated that the welding machine amperage was set at 150 which was within the procedure amperage range of 110 to 220. The inspector noted that the welding amperage when measured with a calibrated meter was actually 180. The inspector also observed the liquid penetrant examination of the weld backgouge surface using Procedure QCI-3.13, which was performed prior to the welding of the second side of the inside plug/flange full penetration weld.

The second safety-related welding activity observed was fabrication of the tornado damper separator on MWO R138033 for the diesel generator as detailed on page 89 of MR 86-1389. The work package included a weld data sheet and the applicable referenced welding documents, WPS W1.1-01 and SPP-7002, for instructions to the welder and fitter. The welder was observed using the SMAW process and size 3/32-inch diameter E7018 welding electrode for tacking the flange plates to the outer plates of the separator. The welder indicated that the welding machine amperage was set at 75 but was actually about 90 which was within the procedure range of 60 to 120. The welding amperage was 90-95 when measured with a calibrated meter. The inspector discussed the fitup requirements for the joint being tack welded with the fitter and the fitter supervisor. When asked what the root opening requirements were for the weld joint, the fitter indicated 1/16-inch maximum and the fitter supervisor indicated 1/8-inch maximum, but neither one could find where the root opening requirement was specified which they quoted as applicable to the joint. In discussing the above weld joint and welding instructions with welding engineering, it was

determined that the weld joint specified for the flange to outer plate did not conform to any of the prequalified weld joints detailed in SPP-7002 or the referenced AWS D1.1-84 Structural Welding Code; therefore, the prequalified welding procedure had been incorrectly specified by the welding engineer for this application. While reviewing SPP-7002 with the welding engineer, it was also determined that the prequalified weld joint details in SPP-7002 were inconsistent with those in AWS D1.1. For example, the root opening for prequalified Joint A-TC-U4a in SPP-7002 specifies joint fitup details which are beyond the fitup requirements of AWS D1.1 for this prequalified weld joint. These discrepancies represent two examples of the apparent violation that is discussed later in this section.

For the third safety-related welding activity, the inspector observed welding of another modification to the RHR system involving the welding of 3/4 inch diameter piping. The welder had finished tack welding a socket joint, identified as Weld XI-FW-001 on Drawing XI-RHS-065-CD-A, using the gas tungsten-arc welding (GTAW) process. The welding data sheet referenced SPP-7001 and WPS W3-01 for the welding instructions. The joint preparation, fitup, and welding requirements were discussed with the fitter and welder. The fitter provided responses which were consistent with the procedure requirements of SPP-7001 for joint preparation and fitup. Although the welder was making an effort to weld within the requirements of the welding instruction and no requirements of the procedure were known to have been violated, the welder did not know: (1) the gas cup size being used, (2) the correct way to read the gas flowmeter and that he was using a nitrogen flowmeter for the argon gas, and (3) when to apply the travel speed requirements of the WPS. The training of welders was discussed with the welding engineer responsible for the qualification of welders. The inspector was informed that welders were given training in the welding procedures during initial qualification of welders. The training was stated to be documented, however, it was described as minimal and informal. In addition to the above socket weld, the inspector reviewed the radiographic examination reports and film associated with the acceptance of five 3/4 inch diameter RHR system piping butt welds fabricated as part of MR 88-0145 and MWO 138093. The radiography was consistent with the requirements of Procedure QCI 3.29.

The inspector also observed the qualification of welders, which included the bend testing of four side bend specimens for pipe welding with the SMAW process and the welding of a 6-inch pipe specimen by four automatic GTAW process welding operators. The welder performance testing including QC witnessing and evaluation of the bend testing was consistent with the requirements of Procedures SPP-7006 and QCI-3.11. In discussing the requirements for qualification of welders, the inspector was informed that the latest edition and current addenda of the ASME Code Section IX was available in the welding engineering office but the Code edition available in the welder qualification area as reference material was the 1986 edition. This issue was discussed with welding engineering and QC supervision. To improve availability of the latest Code, the inspector was informed that a copy was taken to the welder qualification office and QC was also considering other welding program enhancements.

The inspector discussed the monitoring of in-process welding activities with QC personnel responsible for implementing the QC procedures. The inspector was informed that QC was performing inspection of in-process welding activities where hold points had been established on the weld data sheet but had not performed other in-process monitoring, such as, specified in paragraph 6.8.5 of Procedure QCI-3.15. This procedure requires QC to verify, on a random basis, in-process welding for proper technique, cleaning between passes, appearance of individual welding beads, sequence of welding, and use of correct voltage and amperage. The QC supervisor issued additional instructions to QC personnel to clarify the performance and documentation of in-process monitoring activities for production welding.

Failure to adequately implement welding and QC programs to assure that special processes, such as welding, are controlled and accomplished using qualified procedures in accordance with applicable codes and standards is an apparent violation of Criterion IX of Appendix B to 10 CFR 50. (458/9027-01)

The licensee promptly initiated action to address the discrepancies identified during the inspection and to resolve the concerns raised by the inspector. The licensee prepared an action plan to enhance the welding program. This plan included the following proposed actions to be completed by the licensee's maintenance, training, and QC organizations:

a. Maintenance:

- Develop and conduct training of contract welders, QC inspectors and foremen to the RBS program by October 15, 1990. Until training is completed, surveillance will be increased by Maintenance Engineering.
- Develop weldmap program for AWS welding.
- Review and revise, as required, SPP-7002, "AWS Welding Procedure."
- Weld machine amperage will be checked beginning by October 25, 1990, once per shift.
- Procedures will be revised to require independent verification of fitter/welder holdpoints.

b. Training:

- Develop comprehensive welder training program prior to RF-4.

c. QC:

- Revise appropriate procedures or develop inspection plan to assure inspectors use the latest ASME code acceptance criteria during welding qualification.

- Annual monitoring plan will prescribe weekly surveillance when welding activities are ongoing.
- Develop checking for in-process welder verification.

The effectiveness of the licensee's actions to remedy the identified weaknesses in the welding program will be assessed during a future inspection.

#### 4. INSERVICE INSPECTION (73753)

The objective of this inspection was to ascertain whether performance of inservice inspection (ISI) examinations and repair of components are in accordance with regulatory and ASME Code requirements, and correspondence between NRC and the licensee concerning relief requests. The inspector reviewed Technical Specifications (TS), Amendment 122, dated June 2, 1989; Inservice Inspection Program Plan, Revision 3, dated August 2, 1988; and the following procedures:

- ° QCI-3.13, Liquid Penetrant Examination (PT), Revision 5 with Change Notice 1
- ° QCI-3.41, Qualification of Contract Nondestructive Testing (NDE) personnel and Surveillance of NDE Activities, Revision 0
- ° GS-UT-W81-3, Ultrasonic Examination of Class 1 and 2 Piping Welds Joining Similar and Dissimilar Materials, Revision 3
- ° GS-UT-W81-9, Ultrasonic Manual Examination of the Reactor Vessel Flange Ligament Areas, Revision 0
- ° UT-CP-2, Procedure for Inspection System Performance Checks, Revision 1

The inspector witnessed the performance of the following:

- ° PT and ultrasonic testing (UT) of the five circumferential welds of line 1RHS\*09CA numbered FW 002, FW 003, FW 010, FW 012, and SW 037
- ° UT calibration for the reactor vessel ligament examination

It was noted by the inspector that examination personnel appropriately complied with the examination, calibration, and documentation requirements of the approved procedures. The use of the correct UT calibration blocks was verified by the inspector. The inspector also checked the personnel certifications to verify that personnel were appropriately qualified for the examinations performed. A minor error in the qualification records of one Ebasco inspector was corrected. The equipment used (PT materials, UT search units, UT scopes and UT gels) was found to be appropriately certified and the instruments calibrated as required.

It was noted by the inspector that the ISI subcontractor's performance was monitored by both the contractor's QA staff and the licensee's QC staff who



appeared to be sufficiently qualified. The licensee's surveillances of the previous refueling and mid-cycle ISI activities were reviewed by the inspector. The licensee was found to independently test and qualify contract ISI personnel. The monitoring of contractor performance had been a comment in an earlier Inspection Report 50-458/89-10.

Inspection of Code repairs or replacements activities was addressed in the previous paragraph.

The ISI activities were found to be satisfactory. No violations or deviations were identified.

#### 5. EXIT INTERVIEW

An exit interview was held on October 5, 1990, with those individuals denoted in paragraph 1 of this report. At this meeting, the scope of the inspection and the findings were summarized. During the meeting, the licensee stated that a list of corrective actions was being prepared to address the issues and concerns raised in the areas of welding and monitoring of welding activities. After the meeting, the inspector was given a memorandum dated October 5, 1990, which listed the proposed actions described in paragraph 3 above. The licensee did not identify as proprietary any of the information provided to, or reviewed by the inspectors.