APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-458/84-24

Docket: 50-458

Permit: CPPR-145
Category: A2

Licensee: Gulf States Utilities (GSU)
P. O. Box 2951
Beaumont, Texas 77704

Facility Name: River Bend Station, Unit 1

Inspection At: River Bend Station, St. Francisville, Louisiana

Inspection Conducted: June 17 through August 17, 1984

Inspector: R.E. Farrell by Wm McNeill — 9-11-84
R. E. Farrell, Senior Resident Inspector — Date

Approved: J.P. Jaudon by Wm McNeill — 9-11-84
J. P. Jaudon, Chief, Project Section A — Date
Reactor Project Branch 1

Inspection Summary

Inspection Conducted June 17 through August 17, 1984
(Report: 50-458/84-24)

Areas Inspected: Routine, announced inspection of licensee action on previous inspection findings; licensee identified deficiency reports, 10 CFR 50.55(e); site tours; licensee investigation of Cardinal Industrial Products supplied fasteners; electrical equipment installation; plant staffing; and quality concerns program. The inspection involved 222 direct inspector-hours onsite by one NRC inspector and two NRC consultants.

Results: Within the seven areas inspected, no violations or deviations were identified in six areas, one violation was identified in the remaining area (failure to maintain protective environment, paragraph 2a).

One new open item was identified (cable ties, paragraph 6g).

DETAILS

1. Persons Contacted

Principal Licensee Employees

W. J. Cahill, Senior Vice President, River Bend Nuclear Group
*J. C. Deddens, Vice President, River Bend Nuclear Group
T. C. Crouse, Manager, Quality Assurance (QA)
*C. L. Ballard, Supervisor, Quality Engineering
R. E. Bailey, QA Engineer
B. Bemis, QA Engineer
O. deMiranda, QA Engineer
L. A. England, Supervisor Nuclear Licensing (Beaumont, TX)
P. J. Dautel, Licensing Staff Assistant
D. J. Duckering, QA Engineer
P. F. Gillespie, Compliance Engineer
J. Hamilton, Site Engineering Supervisor
*L. P. Handy, QA Engineer
*R. W. Helmick, Project Engineer
*K. C. Hodges, Supervisor, Quality Systems
P. G. McGill, Senior Electrical Engineer
*J. Norman, Construction Supervisor
W. M. Searcy, QA Engineer
*R. B. Stafford, Director, Quality Services

Stone and Webster (S&W)

*W. I. Clifford, Senior Construction Manager
C. A. Goody, Resident Manager
*B. R. Hall, Assistant Superintendent, Field Quality Control (FQC)
*P. D. Hanks, General Superintendent, Construction
*R. L. Spence, Superintendent, FQC
*D. P. Barry, Superintendent of Engineering
*R. J. Fay, Chief Inspection Supervisor (Electrical)
T. Shea, Senior Electrical Engineer
N. Mu[illegible]i, Lead Seismic Qualification Engineer (Cherry Hill, N.J.)
*J. J. Zullo, QA Engineer
*R. L. Lykens, QA Program Administrator

The NRC senior resident inspector (SRI) also interviewed additional licensee personnel, S&W personnel, and other contractor personnel during this inspection.

*Denotes those present at the exit interview August 17, 1984.

2. Licensee Actions on Previous Inspection Findings

a. (Closed) Violation (458/8404-01): "Failure to Maintain Protective Environment." The SRI toured the containment control rod drive hydraulics areas, drywell areas, switchgear rooms, and cable chases, as well as general plant areas to ascertain the degree of licensee corrective action. While much improvement was noted in general plant areas, Zone IV housekeeping is inadequately enforced. The SRI found used chewing gum, gum and candy wrappers, pop cans, beverage can pull tabs, food wrappers, cigarette butts, tobacco juice, and garbage in Zone IV areas. Additionally, at least one Zone IV sign prohibiting eating, drinking, and tobacco use within, had been defaced in a manner reflecting total disdain for Zone IV housekeeping rules.

This was the second time the SRI attempted to close this violation. Consequently, the problem of maintaining Zone IV housekeeping is considered a programmatic problem. Violation 8404-01 is closed by opening an upgraded violation of 10 CFR 50, Appendix B, Criterion XIII, which requires measures to control storage to preserve material and to prevent damage or deterioration of the same (50-458/8424-01).

b. (Closed) Violation (458/8404-02): "Failure to Control Welding Material." The SRI inspected the shield building annulus, containment, drywell, and auxiliary building areas to confirm licensee corrective action. No uncontrolled rod was found.

3 Licensee Identified Deficiency Reports, 10 CFR 50.55(e)

a. (Closed) Deficiency Report (DR-146/GSU Letter RBG-18,225): "Multipole Circuit Breakers." The licensee determined that no reportable deficiency exists because none of the suspect equipment has been delivered to RBS. The SRI agrees with this determination.

b. (Closed) Deficiency Report (DR-159/GSU Letter RBG-18,234): "Fuses in Explosive Valve Circuits in Standby Liquid Control System." The licensee reported that since the explosive valves require a minimum of 2 amperes to fire and the fuses in question are 2 ampere fuses, that no reportable deficiency exists.

The SRI interviewed licensee representatives who clarified this position:

- The 2 ampere fuses used will sustain a 3 ampere current for 70 seconds before opening the circuit.

- The explosive valves fire within milliseconds when subjected to a 3 ampere current. Thus, the SRI agrees that no reportable deficiency exists.

c. (Closed) Deficiency Report (DR-165/GSU Letter RBG-18,275): "Copper Bus Bars Procured for Category II and III Applications used in Category I Applications." The licensee has determined that no reportable deficiency exists since the Category II and III bus bar used in Category I applications was procured to Category I requirements and was documented as meeting Category I requirements. The SRI agrees.

d. (Closed) Deficiency Report (DR-169/GSU Letter RBG-18,423: "Wiring Errors in Ground Fault Indicator on 125 VDC System." The licensee determined that no reportable deficiency exists since the dc system is a normally ungrounded system and a single undetected ground would not affect operation. The ground fault detector wiring has, however, been corrected. The SRI agrees with the determination.

e. (Closed) Deficiency Report (DR-171/GSU Letter RBG-18,228): "Robert Shaw Model 1284 Control Valves." The licensee has determined that the suspect Robert Shaw valves were used in the cooling water system of the emergency diesel generators. The licensee has further determined that this condition is not reportable as the valve fails in the safe direction causing over-cooling of the diesel generators, but not impairing performance of the diesel generator safety function. The SRI agrees with the determination.

f. (Closed) Deficiency Report (DR-226): "Linear Indication in Structural Beam." The licensee determined internally, without notification of Region IV, that this deficiency was not reportable under the provisions of 10 CFR 50.55(e). The beam supported pipe supports for Category I HVAC. Licensee engineering determined that had the indications gone uncorrected the beam would have still perfomed its safety function. The licensee has repaired the indications. The SRI agrees with the determination.

g. (Open) Deficiency Report (DR-199): "Connectors on Coaxial Cable Electrical Penetrations Assemblies Separated from Coaxial Cable."

(Open) Deficiency Report (DR-216): "Shorted Power Cable Conductors of Electrical Penetration Assemblies."

The above two deficiency reports both involved electrical penetrations supplied by Conax. The licensee's investigation of DR-199 resulted in the licensee upgrading DR-199 to reportable under the provisions of 10 CFR 50.55(e). DR-216 is still under investigation. The hardware involved in DR-199 has been repaired, but action to prevent recurrence is still under discussion.

While investigating DR-199 and DR-216, the licensee identified further problems with Conax-supplied electrical penetrations. RTD penetrations have a maximum resistance requirement for the conductors through the penetration. This required maximum is on the order of .2 ohms per conductor. Six of seven such penetrations have exhibited out-of-tolerance resistances with some as high as 12 ohms. There appears to be a generic problem with these penetrations. The vendor branch has been notified and is pursuing the problem concurrent with the licensee's investigation.

No violations or deviations were identified in this area.

4. Site Tours

The SRI toured areas of the site during the inspection period to observe construction progress, general job practices, housekeeping, and fire protection. The only violation noted is documented in paragraph 2.a of this report.

5. Licensee Investigation of Cardinal Industrial Products Supplied Fastener Quality

The SRI is monitoring the licensee's actions to determine the quality of mechanical fasteners supplied to RBS by Cardinal. This action by the licensee is in response to Information Notice 84-52, "Inadequate Material Procurement Controls on the Part of Licensees and Vendors." The licensee is identifying Cardinal-supplied fasteners used at River Bend. The largest source of such fasteners is expected to be Velan valves with as many as 1500 valves involved. Concurrent with the identification of Cardinal fasteners in the plant, the licensee is verifying the quality of Cardinal supplied fasteners. A July 1984 audit of Cardinal by GSU/S&W resulted in four nonconformance reports against Cardinal. The SRI will continue to monitor this activity.

No violations or deviations were identified in this area.

6. Electrical Equipment Installation

This portion of the inspection was conducted by two consultants; Messers Boyd Cloward and Mark Russell of EG&G, Idaho. They worked, under the supervision and guidance of the SRI, as consultants to the NRC.

a. Batteries

Category I batteries were installed in battery racks with a flameable material used to fill the gaps between the battery jars and the racks. This condition has subsequently been identified by the licensee via DR-212 as potentially reportable under 10 CFR 50.55(e).

Deficiency reports from the licensee are carried as open items by NRC Region IV. The SRI will continue to monitor licensee's activity in this area. Additionally, during the battery inspection, a GSU QA engineer noted the air filters to the battery rooms were dirt clogged and torn. These have subsequently been replaced.

No violations or deviations were identified in this area.

b. Cable Raceways

Cable tray and conduit installation and installation of cable in same was inspected. Many problems were encountered. They are: (1) crossed cables within trays and raceways; (2) improperly secured cables; (3) improper transitions from conduit to tray, tray to tray, and tray to conduit; (4) welding above open trays containing cable; and (5) pipe grinding and welding next to trays and over electrical panels. These items are currently being tracked via unresolved item 8417-07.

No violations or deviations were identified in this area.

c. Cable Pulls

An investigation was made of the cables involved in a recent cable pull that resulted in a broken cable. Based on the location of the break, the cause of the break was determined to be an attempt to correct unequal slack in the cables at a pull box. The cable which broke was being pulled back individually to give it the same amount of slack as the other cables in the pull. Test results for the remaining cables involved in the pull showed them to be in satisfactory condition. The broken cable was left in place, but listed and marked to prevent use.

No violations or deviations were identified in this area.

d. Relays

Spot checks were run on several relays (CO-9 overcurrent, General Electric manufacture). They were found to be correctly set and calibrated per licensee specifications.

No violations or deviations were identified in this area.

e. Nelson Studs Supporting Class 1E Cable Trays

The studs attaching Class 1E cable trays to the building via steel embedments were evaluated by a review of the stress calculations for one of the more heavily loaded studs observed in the plant (support CV509A1). The stud was found to be loaded at 75% of its rated capacity based on a conservative calculation.

No violations or deviations were identified in this area.

f. Cabinets Bolted Together in the Field

A load distribution center (tag 1EJS*X1A) was observed in the plant to consist of two separate cabinets bolted together. An assurance was sought that seismic qualification of the cabinets includes consideration of cross-coupling. The analysis of the coupled structure was in progress at the time of the inspection.

No violations or deviations were identified in this area.

g. Cable Ties

Plastic cable ties are used extensively in the plant to secure cables and wiring. These ties have not been environmentally qualified for 40 years service, so their usefulness in providing seismic restraint near end-of-plant-life is questionable. S&W personnel interviewed stated that cable ties are used in support applications for the construction period only, with two exceptions. Cable ties are used to support cable in vertical runs of cable tray of 5 ft or less, and in termination cabinets to support wiring between floor and termination point. Neither application was of concern. In the first application, the general plant specification is a 5-ft spacing between vertical cable supports in all vertical cable trays. In the second application, terminations under S&W jurisdiction are specified to be ring type, which provide sufficient confidence in the termination to alleviate concern about tie failure. Spade type lugs were found in the control room termination cabinets. (These are under GE jurisdiction.) The integrity of this type of connection is questionable, since a 1/8 counterclockwise rotation of the wire at the termination could loosen the connection. There is a concern remaining about the seismic adequacy of plastic tie wire supports used in combination with spade type terminations in the control room. This item is open (458/8424-02).

No violations or deviations were identified in this area.

h. Seismic Adequacy of IE Equipment Supports

Motor control centers, switchgear, battery racks, and five remote electrical instruments were inspected. They appeared adequately supported to resist a seismic event. This conclusion is limited in that the associated qualification documentation was not reviewed. Tolerances in the battery rack (approximately 1/8-inch gap around each battery) could result in some seismic response. However, the copper bus/lead terminal structure connecting the batteries should have sufficient plastic capability to accomodate seismic deflections without loss of function.

No violations or deviations were identified in this area.

i. Broken/Repaired Weld on Electrical Cabinet TC05

A weld which had been broken and then partially repaired was observed on cabinet TC05. The associated documentation was reviewed. Equipment removal tags and rework inspection checklists were provided and found to be in order. The weld had been deliberately removed to allow work inside the cabinet.

No violations or deviations were identified in this area.

j. Missing Seals on H22-P010 Enclosure (In Containment)

Penetrations into the enclosure for cable entry were found to lack environmental seals. Review of drawing 450-BA showed that installation of the seals had been deferred to a later date.

No violations or deviations were identified in this area.

k. Uncontrolled Spring Nuts Found in the Field

During the inspection, two spring nuts were found in the area of local instrument supports. This raised a concern that non-Category 1E spring nuts could be installed in Category 1E supports as a result of lack of material control. A check indicated that there was only one type of non-Category 1E spring nut in the plant, and that that type of nut would not fit any of the Category 1E struts in the plant.

No violations or deviations were identified in this area.

l. Calibration Lab

Documentation and control of instruments were found to be in compliance with NRC requirements. A spot check was made on a randomly chosen item, a calibrated crimper. The crimper and its supporting documentation were found to be in order.

No violations or deviations were identified in this area.

7. Plant Staffing

The licensee has filled the plant manager vacancy and one of the open shift supervisor positions during the inspection period. One shift supervisor position remains vacant, the licensee is interviewing candidates and expects to fill the position shortly.

No violations or deviations were identified in this area.

8. Quality Concerns Program

The licensee has dedicated a full time QA engineer, assisted by a full time engineer from project engineering, to resolve concerns identified in employee exit interviews and received via the quality concern hotline. Though the program has not been formalized procedurally, involved personnel appear dedicated and highly qualified. The licensee has received the first quality concern via the telephone hotline and has adequately addressed the concern. No corrective action was required; however, procedures were upgraded in the coatings material control area.

No violations or deviations were identified in this area.

9. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. An open item disclosed during the inspection is discussed in paragraph 6g.

10. Exit Interview

The SRI met with the licensee representatives noted in paragraph 1 on August 17, 1984. The SRI summarized the purpose and scope of the inspection and the findings.