

APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION

REGION IV

NRC Inspection Report: 50-458/85-41

Construction Permit: CPPR-145

Docket: 50-458

Category: A2

Licensee: River Bend Station (RBS)
P. O. Box 2951
Beaumont, Texas 77704

Facility Name: River Bend Station, (RBS)

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

Inspection Conducted: May 22-July 12, 1985

Inspectors: J. E. Bess
J. E. Bess, Reactor Inspector, Engineering Section
Reactor Safety Branch

8/23/85
Date

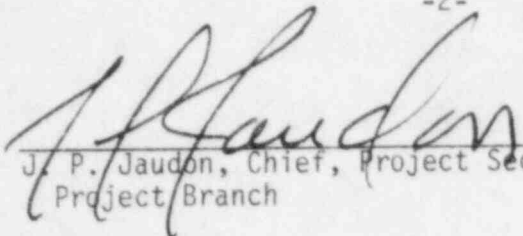
R. P. Mullikin
R. P. Mullikin, Project Inspector, Project
Section B, Reactor Projects Branch

8/19/85
Date

W. McNeill
W. McNeill, Reactor Inspector, Operations Section
Reactor Safety Branch

8/27/85
Date

Approved:


J. P. Jaudon, Chief, Project Section A, Reactor
Project Branch

8/29/85
Date

Inspection Summary

Inspection Conducted May 22-July 12, 1985 (Report 50-458/85-41)

Areas Inspected: Routine, unannounced inspection of followup on previous inspection findings, comparison of as-built plant to FSAR description, verification of as-builts electrical routing and terminations, raceway support welding and as-built verification of electrical raceway and conduits. The inspection involved 149 inspector-hours onsite and 20 inspector hours offsite by three NRC inspectors.

Results: Within the six areas inspected, no violations or deviations were identified.

DETAILS

1. Persons Contacted

Gulf States Utilities (GSU)

*C. L. Ballard, Projects Supervisor
W. H. Benkert, Senior Quality Assurance (QA) Engineer
*W. J. Cahill Jr, Senior Vice President
B. Chustz, Area Coordinator
*T. C. Crouse, Manager QA
*P. J. Dautel, Licensing Staff Assistant
*L. A. England, Supervisor - Licensing
*P. E. Freehill, Superintendent - Startup and Testing
*D. R. Gipson, Assistant Plant Manager, Operations, Chemistry Radwaste
*R. W. Helmick, Director - Projects
*M. W. Henkel, Engineer - Nuclear Licensing
*B. E. Hey, Engineer
*G. R. Kimmell, Supervisor - Operations QA
*G. V. King, Plant Services Supervisor
*A. D. Korvalczuk, Assistant Plant Manager
D. Kratzer, System Engineer, Technical Staff
*T. W. Overlid, Process System Supervisor (Acting)
*G. A. Patrissi, QA Engineer, Operations
*T. F. Plunkett, Plant Manager
*S. R. Raderbaugh, Assistant Superintendent Startup and Testing
*C. D. Redding, QA Engineer, Operations
*R. D. Ruby, Systems Engineer, Fire Protection
*J. E. Spivey, QA Engineer, Operations
*K. E. Suhrke, Manager, Project Planning and Coordination
*P. F. Tomlinson, Director Operations QA
*R. E. Turner, QA Engineer
R. West, PGCC Supervisor

Stone & Webster (S&W)

*W. I. Clifford, Resident Project Manager
K. Dunham, I&C Lead Inspector
R. J. Fay, Chief Inspection Supervisor
*R. L. Spence, Resident Quality Control (QC) Manager
*H. E. Stubbs, Supervisor, Field QC
*W. T. Tucker, Assistant to Superintendent of Engineering

*Denotes those attending the exit interview.

The NRC inspectors also contacted other site personnel including operations, construction, quality assurance, quality control and licensing.

2. Followup on Previous Inspection Findings

(Closed) Open Item (458/8527-01): This item involved the addition and relocation of some emergency lights required for safe shutdown, as well as the issuance of a maintenance procedure. The NRC inspector verified that all the additional lights required for safe shutdown were installed along with the relocation of some existing lights. In addition, the emergency lighting preventive maintenance procedure (PMP-1019) was reviewed and found adequate. This item is considered closed.

(Closed) Open Item (458/8527-02): This item required the NRC approval of the use of Method 2 (manual actuation of the Division II safety relief valves) for safe shutdown. The NRC inspector has been informed by NRR that approval will be included in the safety evaluation report for River Bend. This item is considered closed.

(Open) Open Item (458/8527-03): This item required the completion of all Appendix R fire barrier wrap. The safe shutdown wrap has been installed in all areas with a few exceptions. GSU has requested that the NRC grant the deferral of fire wrap for some Division III cables required for the operation of standby services water pump 2c prior to 5% power. Also, GSU has requested that the fire wrap for Division II cabling for spent fuel pool cooling be deferred until prior to full power operation. This item remains open.

(Open) Open Item (458/8527-04): The completion of Procedure AOP-0031, "Shutdown From Outside The Main Control Room" is pending the completion of work to isolate electrical circuits in the control room due to fire damage. GSU has requested that the NRC allow this work to be accomplished prior to exceeding 5% power. This item remains open.

(Closed) Open Item (458/8527-05): This item involved changes to prefire strategies that alert operators to the possibility of fire-induced spurious signals. GSU has generated technical change notice (TCN) 85-1120 to revise operating procedure AOP-0001, "Reactor Scram," to alert operators of the spurious signal concern. Since the prefire strategies tie into AOP-0001, this appears to be an adequate resolution to the concern. This item is considered closed.

(Open) Open Item (458/8527-06): The work necessary to isolate the diesel generator circuits from a fire in the control room is part of the GSU request to complete prior to exceeding 5% power. This item remains open.

(Closed) Open Item (458/8527-07): This item required the revision of the licensee's fire hazards analysis (FHA) to account for fire-induced spurious signals in all III.G.2 areas. The NRC inspector reviewed Revision 3 of the fire hazards analysis, dated June 14, 1985, and found spurious signals have been adequately addressed. This item is considered closed.

(Open) Open Item (458/8527-08): The possible need for communications between operators due to a control room fire is contingent upon completion of open item 458/8527-04. This item remains open.

(Closed) Open Item (458/8527-09): This item involved the resolution of fire door assembly ratings, completion of all safe shutdown penetration seals, and the installation of curbs between switchgear rooms. The NRC inspector verified the installation of curbs between switchgear rooms. The installation of fire rated doors is complete. The installation of all designed penetration seals has also been completed. However, existing seals are being breached when a new cable needs to be pulled. If any of these seals are still breached after fuel load, technical specifications will require a fire watch at the breach. This adequately resolves this concern. This item is considered closed.

(Closed) Open Item (458/8527-10): This item required certification from Underwriters Laboratory (UL) of the River Bend fire alarm system. The NRC inspector was shown an April 19, 1985, letter from UL confirming that the alarm system was tested and found acceptable. This item is considered closed.

(Closed) Open Item (458/8527-11): This item required the replacement of the fire pump suction butterfly valves and the installation of additional sprinkler heads in the cable chases and diesel generator rooms. The NRC inspector verified that the fire pump suction butterfly valves were replaced with gate valves, and that additional sprinkler heads were installed where needed. This item is considered closed.

(Closed) Open Item (458/8527-12): This item involved the completion of all fire protection procedures and preoperational tests. The NRC inspector verified that all the procedures and tests have been completed. This item is considered closed.

(Closed) Unresolved Item (458/8417-01): This item involved terminated cable (1ENCSCRC300) which did not have a permanent or temporary identification tag. The licensee (GSU) issued construction work request # 354 requiring permanent tags be placed on the referenced cable. The NRC inspector verified that permanent identification tags had been installed on cable 1ENCSCRC300. This item is considered closed.

(Closed) Unresolved Item (458/8417-02): This item required the licensee to provide additional support for cables being terminated in panel 1RSS*PNL102. The NRC inspector verified that E&DCR C-24,956B was written to install additional supports. The NRC inspector verified that additional supports have been added to the referenced panel and all documents were in the plant files. This item is considered closed.

(Closed) Open Item (458/8417-03): This item required the licensee to improve their housekeeping method in certain areas. Dust and dirt had accumulated on top of switchgears and motor control centers. The licensee issued Corrective Action Report CAR-0-85-001 to implement improved housekeeping practices. The NRC inspector verified that there was improvement. This item is considered closed.

(Closed) Deviation (458/8518-01): NRC Inspection Report 50-458/85-18 identified a deviation between the installed instrumentation requirements and Table 7.5-1 of the River Bend FSAR. The ranges in the FSAR were different from the "as installed" ranges of instruments on the main control board. The licensee has submitted a FSAR change request to clarify these differences. This item is considered closed.

3. Comparison of As-Built Plant to FSAR Description

The NRC inspector selected three safety-related systems in order to:

- o Verify that the latest revision of the system field drawings were in agreement with FSAR piping and instrumentation diagrams (P&IDs).
- o Verify by field observation that the component installations, including control and logic instrumentation, were as described in the FSAR.

The systems selected for examination were:

- High Pressure Core Spray
- Low Pressure Core Spray
- Suppression Pool Cooling Mode of the Residual Heat Removal (RHR) System.

a. Comparison of Field Drawings to FSAR P&IDs

Three FSAR P&IDs were compared with the applicable S&W and GSU P&IDs. The S&W drawings were updated by the NRC inspector using the S&W engineering and design coordination reports (E&DCRs) posted against them. The GSU drawings were those which included the results of the GSU walkdown as well as the outstanding E&DCRs. The documents reviewed were as follows:

- River Bend Station (RBS) FSAR Figure 6.3-1, "System 203, HPCS System, P&ID 27-4A," Amendment 14, September 1984
- RBS FSAR Figure 5.4-12C, "System 204, Residual Heat Removal - LPCI, P&ID 27-7C," Amendment 14, dated September 1984

- RBS FSAR Figure 6.3-4, "System 205, LPCS, P&ID PID-27-5A", Amendment 14, September 1984
- GSU Drawing PID-27-4A, "Engineering P&I Diagram, System 204, Residual Heat Removal," Revision 0, dated March 16, 1984
- GSU Drawing PID-27-5A, "Engineering P&I Diagram System 205, Low Pressure Core Spray," Revision 1, dated January 10, 1985
- GSU Drawing PID-27-7C, "Engineering P&I Diagram, System 204, Resident Heat Removal-LPCI," Revision 0, dated March 16, 1984
- S&W Drawing 12210-FSK-27-4A, "Flow Diagram, High Pressure Core Spray," Revision II, dated September 19, 1984
- S&W Drawing 12210-FSK-27-7C, "Flow Diagram Residual Heat Removal," Revision 10, dated December 3, 1984
- S&W Drawing 12210-FSK-27-7H, "Flow Diagram, Residual Heat Removal," Revision 7, dated April 17, 1984
- S&W Drawing 12210-FSK-27-4B, "Flow Diagram, High Pressure Core Spray," Revision 9, dated September 19, 1984
- S&W Drawing 12210-FSK-27-5, "Low Pressure Core Spray System," Revision 12, dated May 30, 1984
- S&W Drawing 12210-FSK-32-9AJ, "Flow Diagram, Reactor Building Equipment Drains," Revision 5, dated February 6, 1984.

In addition, the following E&DCRs were reviewed:

- C-13231A, C-13742, C-14710, C-14752, C-15113
- P-13047, P-13079A, P-13166, P-13122A

There were no violations or deviations identified in this area.

b. Comparison of Field Drawings to the As-Built Plant

The NRC inspector performed a walkdown of the three GSU P&IDs listed above. The GSU drawings were chosen since they reflected the most current physical configuration. The walkdown was performed to verify that:

- Piping was installed as designed (routing only).
- Valves were identified and installed in the correct position (where designated).
- Instrumentation transmitters and indicators were identified and installed per design.

The NRC inspector could not perform a physical verification of the flow direction alignment for most of the check valves installed. These valves did not have external indication of flow direction. The alignment was QC inspected at the time of installation.

During the walkdown the NRC inspector found three discrepancies between the GSU P&IDs and the actual installation in the plant. The discrepancies noted were as follows:

- A thermowell (CHS*TW102) was installed in the field (line 020-20-2(J-) coordinates H, 17) but was not shown on PID-27-4A, Rev. 1.
- Valve CHS*V3003, located on the discharge side of pump E22*PC003(J0), was not shown on PID-27-4A, Rev. 1.
- A branch line (004-16-2(J-)) with a motor operated valve (DFR-MOVF146) was discovered in the field but was not shown on PID-27-4A, Rev. 1.

The NRC inspector found that thermowell CSH*TW102 was inadvertently removed from PID-27-4A as a result of the GSU walkdown. The licensee stated that it will be added to the drawing.

E&DCRs C-15,211 and C-15,216 were generated to add valve CSH*V3003 to PID-27-4A and FSK-27-4A. S&W determined that this was not an isolated case after a surveillance was performed due to this inspection. Subsequently, a 100% review of all valves added on site was conducted and 43 were found to have possible drawing discrepancies. These discrepancies were either resolved or E&DCRs were generated to update the PID and FSK drawings. This concern is similar to NRC Unresolved Item 8429-02 and will be followed up on the closure of that item.

Branch lines 004-16-2(J), although not on PID-27-4A, was shown on E&DCR P-13043C with drawing FSK-27-4B listed as an affected document. This should assure that PID-27-4A will be revised.

No violations or deviations were identified in this area.

4. Verification of As-Built Electrical Cable Routing and Terminations

The NRC inspector selected six safety-related electrical cables in order to compare the design with actual installation, relative to routing, identification, protection, isolation and separation from redundant cables. The cables selected included two power, two control, and two instrumentation cables. During the inspection the NRC inspector found all six cables to be routed according to the S&W cable pull tickets.

However, there were two instances of improper conduit identification. These were:

- Control cable 1HVCARC547 ran through a short section of unmarked conduit (approximately 6 feet) as it exited tray 1TC027R and entered junction box 1*JB0103. There were three other cables in this conduit. The NRC inspector noted the cable numbers of these three cables and subsequently verified that all four cables were designed to run together in conduit 1CC027RK. Thus, these cables were routed correctly.
- Cable 1RPSNTX403 travelled in conduit 1CX540TM but the conduit had an incorrect identification marking near valve 1C11*LTN012B. This conduit identification (1CX504TM) was determined to be nonexistent. This identification has subsequently been corrected. This is considered an isolated case.

The six cables selected were:

- 1 HVCARK002 - Power
- 1 RCSBBK002 - Power
- 1 HVCARC547 - Control
- 1 RCSBBC003 - Control
- 1 RPSNTX401 - Instrumentation
- 1 RPSNTX403 - Instrumentation

The NRC inspector selected one termination point from each cable listed above to compare the actual termination with design documents. The following equipment termination points were compared against the S&W conductor termination sheets:

<u>Termination</u>	<u>Cable</u>
1 RCP*TCR10A	1 RPSNTX401
1 EHS*MCC14A	1 HVCARK002
1 SCV*PNL14A1	1 HVCARC547
1 RCP*TCR10A	1 RPSNTX403
1 RCP*TCR14A	1 RCSBBK002
1 RCP*TCR15	1 RCSBBC003

The NRC inspector selected five E&DCRs which required changes to raceway drawings but had not been incorporated at the time of the inspection. The S&W document IS-217, "Change Control Document Reporting System," issued April 26, 1985, was reviewed and it was verified that the E&DCRs were posted against the correct drawings.

The NRC inspector also verified that the changes to the drawings were being tracked via S&W document IS-255, "Exception Work Tracking Report," issue April 27, 1985. The five E&DCRs selected were:

- P 21005 (Drawing EE-460AA)
- P 21181 (Drawing EE-500T)
- P 21314 (Drawing EE-460AK)
- P 21320 (Drawing EE-460AX)
- P 21539 (Drawing EE-460AC)

Also reviewed were five E&DCRs which reflected changes that had been incorporated into the raceway drawings. The drawings were inspected and the changes listed on the E&DCRs had been incorporated. The E&DCRs were found by the NRC inspector to have been reviewed and approved by appropriate personnel. The five E&DCRs selected were:

- C-24759A (Drawing EE-460AX)
- P-21763G (Drawing EE-460AC)
- P-21764B (Drawing EE-460AA)
- P-22212A (Drawing EE-460AK)
- P-22251A (Drawing EE-500T)

No violations or deviations were identified in this area.

5. Raceway Support Welding

The objective of this inspection was to verify that welding on electrical raceway supports was performed in accordance with design requirements and procedures by qualified personnel.

The welding on cantilever type supports RB-192C through RB-195, trapeze type supports RB-121A through RB-123ES, and a special floor post support AB-509 PVFS-1 were inspected by the NRC inspector. On the cantilever type support, the scope of welding was the supports to the containment liner and tray clips to the supports. On the trapeze type supports, the scope of welding was the supports to structural steel, support members to support members, structural steel stiffeners, bracing and tray clips to the supports. On the floor post support the scope welding was the support post to the floor and "uni strut" to the post. The applicable drawings, specifications and E&DCRs were reviewed in order to establish the welding design requirements. The inspection reports of the sampled supports were reviewed. The welds in question were visually inspected and measured by the NRC inspector. This welding was performed to AWS D1.1 requirements and inspected to the Nuclear Construction Issue Group (NCIG) requirements. The qualified welders list was reviewed in order to verify the use of qualified welders for the bracing welding.

One problem identified during this inspection was the lack of detail information on drawing EE-340 AE for bracing of supports RB-122/121. E&DCR C28,242A was issued to clarify the detail requirements. This problem was limited in scope to one type of bracing (horizontal brace to a vertical support leg).

One observation of the NRC inspector was in regard to fillet weld size. The final fillet weld size should be a sum of the design requirement and the fit up gap (AWS D1.1 3.3.1). The fit up gap values for final inspection is a number determined by construction and recorded on travelers. In-process welding inspection instructions require the gap to be verified and they allude to checking the number recorded by construction. No IRs of in-process welding inspection could be found by S&W that demonstrated that the numbers for fit up gap and used for final size inspection were indeed verified by inspection. No violations or deviations were identified.

6. As-Built Verification of Electrical Raceway and Conduits

The NRC inspectors selected several class 1E conduit and cable tray runs located in the reactor building and auxiliary building for verification of actual installation against the latest approved design drawings. The inspection was limited to an examination of the following:

- Location and routing
- Supports
- Separation
- Loading (Cables-physical and thermal)

A total of 1,000 feet of conduit and cable trays were inspected.

The following is a list of documents examined:

- Drawing 12210-EE-340AQ-5, "Cable Tray Support Plan Auxiliary Building - EL. 141'"
- Drawing 12210-EE-34QA-6 "Cable Tray Arrangement Auxiliary Building - EL.141'"
- Drawing-12210-EE-340AR-5, "Cable Tray Support Plan Auxiliary Building EL.141'"
- Drawing-12210-EE-340AR-5, "Cable Tray Arrangement Auxiliary Building EL. 141'"
- Drawing-12210-EE-450AD-9, "Seismic Conduit Supports Standard Details"
- Drawing-12210-EE-450 AH-4, "Seismic Conduit Supports Standard Details"

- Drawing-12210-EE-450AA-8, "Seismic Conduit Standard Details"
- Drawing-12210-EE-450AC-7, "Seismic Conduit Standard Details"
- Drawing-12210-EE-450AB-7, Seismic Conduit Standard Detials"
- Drawing-12210-EE-490AM-3, "Seismic Conduit Installation Plan EL 170'-0" & 187'-4" Auxiliary Building"
- Drawing-12210-EE-490AL-3, "Seismic Conduit Installation Plan EL 141'-0" Auxiliary Building"
- Drawing-12210-EE-34FF-3, "Cable Tray Identification Auxiliary Building"
- Drawing-12210-EE-34FG-3, "Cable Tray Identification Auxiliary Building"
- Drawing-12210-EE-460AJ-4, "Seismic conduit Installation Plan Reactor Building"
- Drawing-1220-EE-340AK-4, "Seismic Conduit Installation Plan Reactor Building EL. 162'-3" "
- Drawing-12210-EE-340 AF-2, "Seismic Cable Tray Support Standard Details Reactor Building"
- Drawing-12210-EE-340AE-3, "Seismic Cable Tray Support Standard Details Reactor Building"
- Drawing-12210-EE-34AC-5, "Cable Tray Arrangement EL. 141'-0" Reactor Building"
- Drawing-12210-EE-340AC-4, "Cable Tray Supports Plan Reactor Building EL. 141'-0" "
- Drawing-12210-EE-340AA-5, "Cable Tray Supports Tabulations Reactor Building - EL. 114'-0" "

In addition, the following E&DCRs were reviewed:

- E&DCR No. P-2607G
- E&DCR No. TC-26,501
- E&DCR No. C-26,021
- E&DCR No. C-21,852
- E&DCR No. C-6846A

No violations or deviations were identified.

7. Interviews with Electrical Termination Personnel

The NRC inspector interviewed three S&W personnel who performed actual terminations of class 1E electrical cable. The three employees' training records were reviewed also. All three exhibited adequate technical knowledge as well as the understanding of procedure requirements.

No violations or deviations were identified.

8. Exit Interview

The Region IV inspectors met with Mr. W. J. Cahill Jr. and other licensee personnel on July 12, 1985, to discuss the scope and finding of this inspection.