

APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-458/84-17

Construction Permit: CPPR-145

Docket: 50-458

Category: A-2

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

Facility Name: River Bend, Unit 1

Inspection At: River Bend Site

Inspection Conducted: June 25-29, 1984

Inspector: E.H. Johnson 7/27/84
FRC J. E. Bess, Reactor Inspector, Project Section B Date

Approved: E.H. Johnson 7/27/84
FRC J. P. Jaudon, Chief Project Section A Date

FRC E.H. Johnson 7/27/84
D. M. Hunnicutt, Chief, Project Section B Date

Inspection Summary

Inspection Conducted June 25-29, 1984 (Report 50-458/84-17)

Areas Inspected: Routine, unannounced inspection of construction activities including site tour; verification of electrical terminations, review of QC personnel training records, review of QA procedures pertaining to pulling and termination of electrical cable and verification of electrical cable installations.

The inspection involved 30 inspector-hours onsite by one NRC inspector.

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

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DETAILS

1. Persons Contacted

Principal Licensee Personnel

- *J. Deddens, Vice President, River Bend Nuclear Group
- *T. C. Crouse, QA Manager
- *M. E. Walton, Assistant to Project Engineer
- *B. Bemis, QA Engineer
- *B. Kilgore, Area Coordinator
- *J. E. Spivey, QA Engineer
- *P. F. Gillespie, QA Engineer
- *R. B. Stafford, Director, Quality Service
- *C. L. Ballard, Supervisor, Quality Engineering
- *W. M. Searcy, QA Engineer
- *R. Helmick, Project Engineer
- *J. Hamilton, Supervisor Site Engineering

Stone and Webster (S&W) Personnel

- *R. J. Fay, Chief Inspection Supervisor
- *B. R. Hall, Assistant Superintendent, Field Quality Control (FQC)
- *T. M. Shea, Senior Electrical Engineer
- *M. I. Furer, Chief, Electrical Supervisor Construction
- *R. L. Spence, Superintendent Field Quality Control (FQC)
- *J. J. Zullo, QA Program Administrator

The NRC inspector also interviewed other licensee and contractor employees during the course of the inspection.

*Denotes those attending the exit interview.

2. Site Tour

The NRC inspector toured the reactor building, auxiliary, and control building to observe construction in process and to inspect housekeeping.

No violations or deviations were identified.

3. Verification of Electrical Terminations

During this inspection, the NRC inspector verified the terminations of control cables. The NRC inspector verified that the use of specified material and installation procedures conform to NRC requirements. The cables inspected were:

- a. Cable No. 1ENSCRC301
Drawing 12210-EE-8AQ-4

<u>Wire Color</u>	<u>Terminal Board</u>	<u>Termination Point</u>
Red/Black	AK	5
Black/White	AK	3
Black	AJ	15

- b. Cable No. 1ENSC01C01
Drawing 12210-EE-3GJ-1

<u>Wire Color</u>	<u>1EGS-PNL1A</u>	<u>Termination Point</u>
Blue	Right Side	349
White		350
Black		351
Red		352
Green		397
Orange		362
Spare		400

- c. Cable No. 1ENSBBX801
Drawing 12210-EE 8AY-5

<u>Wire Color</u>	<u>Terminal Board</u>	<u>Termination Point</u>
Black	AK	1
White	AK	2
Shield		Floating

- d. Cable 1ENSBBX802
Drawing 12210-EE-8BX-4

<u>Wire Color</u>	<u>Terminal Board</u>	<u>Termination Point</u>
Black	AK	1
White	AK	2
Shield		Floating

The NRC inspector verified that the above termination agreed with the issued termination sheets. The scope of this verification included: cable identification, number of cable conductors, cable description, and terminations points.

However, during the verification of cable 1ENSCRC300 the NRC inspector noticed that there was not a permanent or temporary identification tag on the cable. Until corrective actions are completed by the licensee this item is considered unresolved (458/8417-01).

The NRC inspector also observed during the verification of terminations that the field terminations in shutdown panel (RSS-102) did not appear to be adequately supported for safety-related equipment. The field cables entered the cabinet from the bottom and were being terminated to terminal strips mounted on the side walls of the cabinet. It appeared that some of the cables weight was being applied directly to the terminal strips, thus applying excessive stress to the terminals.

The licensee has issued ENDCR-C-24956 to address this concern. This item is considered unresolved (458/8417-C2)

4. Qualification and Training of Electrical QC Personnel

The NRC inspector reviewed the qualification records of six QC electrical personnel associated with the inspection of pulling, installation and termination of electrical cables. The records were reviewed to ascertain whether the QC inspectors' records were complete and up-to-date and whether the QC inspectors were qualified for their duties at the time of the inspections.

No violations or deviations were identified.

5. QA Procedure - Electrical and Instrumentation Cables

The NRC inspector examined the licensee's QA program pertaining to pulling and termination of safety-related electrical and instrumentation cable. The inspection plans and other documentation examined are intended to ensure that the latest revision of drawings and specifications are being used by craft persons during installation. The procedures examined are listed below:

Quality Assurance Inspection Plan
Inspection Plan No. - R1248000F05180D02 Rev. 2
Title: Electrical Cable Installation Inspection Plan
Description: Cable Pulling Add. 2 Date: 5/11/84

Stone and Webster Quality Assurance
Inspection Plan Inspection Plan No. - R1248000F05250C01 Rev. 7 Add. 2
Title: Electrical Power Cable Termination (Above 600 volts)
Description: Power Cable Termination Date: 5/02/84

- Stone and Webster Quality Assurance Inspection Plan
Inspection Plan No. - R1248000F05360 E04 Rev. 7 Add. 2
Title: Electrical Instrumentation/Control and 600 Volts and
Below Power Cable Termination Inspection
Description: Instrumentation/Control and 600 Volts and Below Cable
Termination Date: 5/17/84

No violation or deviations were identified.

6. Verification - Electrical Cable Installations

The NRC inspector verified the routing and pulling of safety-related electrical cable through multi-elevation cable trays and conduits. The cables were "walked down" to verify that actual cable installation met applicable requirements pertaining to routing, protection and separation. The cables verified were:

- a. Cable No. 1GTSARC500 Service: Control Cable
Color: Red Service Voltage: 120 VAC
Conductor: 2 Wiring Diag.: 7GTS01
- Pulled From: 1EHS MCC2C To: 1JB8005
Routing: 1TC874R, 1TC801R, 1TC802R, 1TC803R, 1TC804R, 1TC805R,
1TC806R, 1TC807R, 1TC828R, 1CC828RG
- b. Cable No. 1GTSARC528 Service: Control Cable
Color: Red Service Voltage: 120 VAC
Conductors: 2 Wiring Diag.: 7GTS06
- Pulled From: 1EHS MCC2C To: 1GTSFN2A
Routing: 1TC874R, 1TC801R, 1TC802R, 1TC803R, 1TC804R, 1TC805R,
1TC806, 1TC807R, 1TC828, 1CK807RA

The NRC inspector verified that the above cable routing and pulls agreed with the issued raceway ticket, pull ticket, and wiring and elementary drawing. The scope of the verification included cable identification, cable color, cable tray node points, number of conductors, cable size and type of cables.

However, during the verification of cable pulling through multi-elevation cable trays the NRC inspector observed the following:

- extensive accumulation of dust and dirt on top of switchgears and motor control centers (MCCS).
- scaffolding boards, tray runners, pipes, oily rags and other items were laying in cable trays which contained safety-related cables.
- partial pulls of category-1 cables hung from the side of cable trays with tie wraps or ropes.

The NRC inspector notified the licensee that some of these concerns were also identified in NRC Inspection Report 50-458/84-04. This item is considered unresolved. (458/8417-03)

Also, during the verification of cable pulling, the NRC inspector observed that in some cases power cable were not meeting the spacing requirements as defined in Electrical Cable Installation Inspection Plan Procedures. According to the referenced Stone and Webster (S&W) procedure, "Cables shall be spaced and tied with a clearance between adjacent cables equal to or greater than 0.25 times the diameter of the largest adjacent cable diameter." The NRC inspector noted that in some cases power cables were in direct contact with one another. The licensee issued ENDCR-C-23992 to relax the requirements for meeting the 0.25 inch spacing between cables. The licensee stated that the cable ampacity rating was designed to be installed in conduit and, since the ampacity rating would be less conservative in cable trays, a relaxation on the .25 inch requirement was possible if cables were tied down at intervals of every three feet. Until documentation and calculations on cables, which does not meet the 0.25 inches spacing between adjacent cables, can be verified, this item is considered unresolved (458/8417-04)

7. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. Unresolved items discussed in this inspection report are:

<u>Paragraph</u>	<u>Subject</u>
3	No identification tag on cable
3	No support for field cable
6	Housekeeping concerns
6	Spacing between power cables

8. Exit Meeting

The NRC inspector met with licensee representatives (denoted in paragraph 1) and R. Farrell NRC Senior Resident Inspector on June 29, 1984. At this meeting the scope and findings of the inspection were summarized.