

**ENCLOSURE**

**U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV**

Docket No.: 50-458  
License No.: NPF-47  
Report No.: 50-458/99-14  
Licensee: Entergy Operations, Inc.  
Facility: River Bend Station  
Location: 5485 U.S. Highway 61  
St. Francisville, Louisiana  
Dates: November 14 through December 25, 1999  
Inspectors: T. W. Pruett, Senior Resident Inspector  
N. P. Garrett, Resident Inspector  
R. V. Azua, Project Engineer  
Approved By: William D. Johnson, Chief, Project Branch B  
Division of Reactor Projects  
Attachment: Supplemental Information

## EXECUTIVE SUMMARY

### River Bend Station NRC Inspection Report 50-458/99-14

This routine announced inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a 6-week period of resident inspection.

#### Operations

- The inspectors identified that operations personnel did not adequately verify that the facility was prepared for freezing weather during the first week of November as required by Procedure OSP-0043, "Freeze Protection and Temperature Maintenance." Specifically, five cold weather-related maintenance action items associated with heat tracing were not corrected and one temporary structure installed for cold weather protection was not suitable. This Severity Level IV violation of Technical Specification 5.4.1.a is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was entered in the licensee's corrective action program as Condition Report 1999-1979 (Section O2.1).
- The inspectors identified a general knowledge weakness of the operation of heat trace panels. Specifically, operations, maintenance, and engineering personnel could not determine the position of the HAND-OFF-AUTO switch on heat trace panels. Additionally, the licensee could not explain the operation of heat trace panels with the switch in the HAND position (Section O2.1).

#### Maintenance

- The inspectors identified that repetitive tasks (preventive maintenance activities) were not developed for five of the seven cold weather-related heat trace panels at the facility. Specifically, only two repetitive tasks at 6-year intervals were utilized by the licensee for heat trace panels in the circulating water and fire protection areas (Section O2.1).

#### Engineering

- The inspectors identified two examples of a failure to translate design requirements into calculations, procedures, and drawings involving a containment fuel pool level transmitter and spent fuel pool heat loading. Specifically, design requirements were not translated into maintenance procedures following a modification which installed suppression pool cleanup suction Valve RHS-AOV62. Additionally, Procedure AOP-0051, "Loss of Decay Heat Removal," was not revised following changes in the heat loading of the spent fuel pool. These issues were treated as additional examples of a violation of Criterion III of Appendix B to 10 CFR Part 50 which was described in NRC Inspection Report 50-458/99-13. These items were entered in the licensee's corrective action program as Condition Reports 1999-1542 and -1958 (Sections M8.1 and E1.1).

## Report Details

### Summary of Plant Status

The facility operated at essentially 100 percent power during the inspection period.

### I. Operations

#### **O2 Operational Status of Facilities and Equipment**

##### **O2.1 Cold Weather Preparations**

###### **a. Inspection Scope (62707 and 71707)**

The inspectors interviewed personnel, reviewed procedures, and conducted a walkdown of plant spaces to assess the licensee's readiness for cold weather.

###### **b. Observations and Findings**

The inspectors determined that with respect to heat trace systems, weaknesses existed in plant procedures, personnel knowledge, and maintenance.

The inspectors reviewed operator logs, standing orders, and plant procedures. The inspectors determined that auxiliary operators were required to check heat trace panels at least once per shift. However, inconsistent guidance was provided on what aspects of the heat trace panels were to be observed. Procedure OSP-0029, "Daily Log Report - Auxiliary, Reactor, and Fuel Buildings," required an operator to verify that the local hand switch for the condensate storage tank area heat trace panel was in the AUTO position. Procedure OSP-0027, "Daily Log Report - Normal Switchgear, Control, and Diesel Generator Buildings," required an operator to verify that all of the test lights on the normal switchgear area heat trace panel were operable. Procedure OSP-0031, "Daily Log Report - Outside Area," did not include specific checks for heat trace panels associated with the normal service water, clarifier, circulating water, or fire protection areas. Each procedure did provide generic guidance when checking the panels to verify that the light bulbs are functioning properly and that control switches were in the proper position.

During inspections of heat trace panels, the inspectors questioned operations, electrical maintenance, and engineering personnel on the placement of the HAND-OFF-AUTO switch on cold weather-related heat trace panels. None of the individuals were able to determine if the position of the hand switch was in HAND or AUTO position. Additionally, the licensee personnel could not explain the operation of the panel with the switch in the HAND position. Following subsequent discussions between the licensee and vendor, engineering personnel determined that the heat trace panel switch positions were in AUTO and that an individual would have to hold the switch to the HAND position since the switch was designed to spring return from HAND to OFF. The licensee initiated Condition Report (CR)1999-1978 to review the knowledge weaknesses associated with heat trace systems.

Technical Specification (TS) 5.4.1.a requires, in part, that written procedures be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Section 2 of Appendix A of Regulatory Guide 1.33 requires the licensee to have general plant operating procedures. Procedure OSP-0043, "Freeze Protection and Temperature Maintenance," specified that the purpose of the procedure was to provide actions during the first week of November to verify that the plant is prepared for freezing weather.

On November 30, 1999, the inspectors requested a listing of all maintenance items associated with cold weather preparations. In response, the licensee provided a listing of five maintenance action items (MAIs) which were open on cold weather-related heat trace circuits. Each of the MAIs had been initiated between December 1997 and October 1999. However, action to correct the MAIs was scheduled between December 6 and 10, 1999, which was after the inspectors' review. The inspectors determined that no priority had been assigned to the MAIs to ensure the conditions were repaired before the onset of cold weather. The heat trace circuits in question involved lines penetrating the condensate storage tank, fire protection piping, demineralized water piping, a normal service water transmitter, and the circulating water area temperature probe. During the subsequent review of the MAIs, maintenance personnel identified additional inoperative heat trace circuits and alarm light malfunctions. The failure to ensure that MAIs were completed in order to prepare the facility for freezing weather by the first week of November, as required by Procedure OSP-0043, was a violation of TS 5.4.1.a. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy (NCV 50-458/9914-01). This item was entered in the licensee's corrective action program as CR 1999-1979.

On December 7, 1999, the inspectors identified one temporary enclosure with portable heating which had been installed on January 5, 1999. The enclosure had been installed adjacent to the condensate storage tank to protect an instrument transmitter line from the effects of cold weather. The inspectors observed that the enclosure was in disrepair, that two portable heaters were located in a puddle of water, and no temporary power cords were available to provide electricity to the heaters. The inspectors determined that Procedure OSP-0043 required that external heat sources be frequently monitored during times when temperatures were below freezing. However, no provisions existed to verify that temporary structures or external heat sources were functional prior to the onset of cold weather. The failure to ensure that temporary enclosures and external heat sources were sufficient for freezing weather by the first week of November, as required by Procedure OSP-0043, was a second example of the violation of TS 5.4.1.a.

The inspectors reviewed Standing Order 136, "Actions to be Taken When Outside Temperature is Less Than 25°F," dated November 28, 1996. Standing Order 136 was initiated to require operations personnel to verify room temperatures, contact engineering if room temperature decreased below the minimum required, provide temporary heating if necessary, and log actions that had been completed once per shift in the main control room logbook. The inspectors determined that the acceptance criteria for room temperatures was consistent with the values specified in the Updated

Safety Analysis Report. Following discussions with the inspectors, the licensee initiated actions to incorporate the requirements of Standing Order 136 into plant procedures.

The inspectors determined that only two repetitive maintenance tasks existed for heat trace components. Task 4300 involved a clean, inspect, and functional test of the heat trace circuits associated with the circulating water area at a frequency of once per 6 years. Task 4301 involved a clean, inspect, and functional test of the heat trace circuits associated with fire protection pump house area at a frequency of once per 6 years. No recurring tasks existed for heat trace panels in the normal switchgear, clarifier, condensate storage tank, normal service water, or demineralizer areas. Maintenance personnel stated that a review would be performed as part of CR 1999-1979 to determine the appropriate maintenance activity and interval for heat trace systems.

c. Conclusions

The inspectors identified that operations personnel did not adequately verify that the facility was prepared for freezing weather during the first week of November as required by Procedure OSP-0043, "Freeze Protection and Temperature Maintenance." Specifically, five cold weather-related MAIs associated with heat tracing were not corrected and one temporary structure installed for cold weather protection was not suitable. This Severity Level IV violation of TS 5.4.1.a is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was entered in the licensee's corrective action program as CR 1999-1979.

The inspectors identified a general knowledge weakness of the operation of heat trace panels. Specifically, operations, maintenance, and engineering personnel could not determine the position of the HAND-OFF-AUTO switch on heat trace panels. Additionally, the licensee personnel could not explain the operation of the panel with the switch in the HAND position.

The inspectors identified that repetitive tasks were not developed for five of the seven cold weather related heat trace panels at the facility. Specifically, only two repetitive tasks at 6 year intervals were utilized by the licensee for heat trace panels in the circulating water and fire protection areas.

**O8 Miscellaneous Operations Issues (92901)**

- O8.1 (Closed) Licensee Event Report (LER) 50-458/9914: Automatic reactor scram due to inappropriate work activities in the plant substation. The review of this event was documented in NRC Inspection Report 50-458/99-13. No new information was obtained during a review of this LER.

## II. Maintenance

### **M1 Conduct of Maintenance**

#### **M1.1 General Comments**

##### **a. Inspection Scope (61726 and 62707)**

The inspectors observed all or portions of the following work activities:

|              |  |
|--------------|--|
| STP-000-3604 | Fire Barrier Sealed Penetration Inspection   |
| STP-201-0201 | Standby Liquid Control Continuity and Valve Position   |
| STP-209-6310 | Reactor Core Isolation Cooling Quarterly Pump and Valve Operability Test                                   |
| MAI 327588   | EGA-PS28B -Calibrate PS28B   |
| MAI 328061   | EGS-PS84B - Reset Pressure Switch Setpoint Controlling K1 Relay Reset Coil per Engineering Request 99-0144 |

##### **b. Observations and Findings**

All work observed was performed with maintenance and surveillance documents present and in active use. Technicians were knowledgeable of the assigned task. No specific observations were noted during the review.

### **M8 Miscellaneous Maintenance Issues (92902)**

**M8.1 (Closed) LER 50-458/9913:** Unplanned automatic actuation of primary containment isolation valve during maintenance due to inadequate procedure. On September 28, 1999, during performance of routine preventive maintenance, an unplanned automatic isolation of a containment isolation valve for the suppression pool cleanup system occurred.

Criterion III of Appendix B to 10 CFR Part 50 requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions. On September 28, 1999, an unplanned automatic isolation of a containment isolation valve for the suppression pool cleanup system occurred while instrument and control technicians were performing a scheduled calibration of containment fuel pool level Transmitter SFC-LT11B. When the transmitter was removed from service a low level isolation signal was generated. The signal resulted in the Division II suppression pool cleanup suction Valve RHS-AOV62, which is a containment isolation valve, unexpectedly closing. The licensee determined that the preventive maintenance work task, loop calibration reports, test loop diagrams, and piping and instrument diagram did not contain a reference to a potential containment

isolation during instrument calibration. Subsequent investigations revealed that the elementary diagrams were properly revised by the modification that installed Valve RHS-AOV62. However, the modification package did not include a revision to the loop calibration reports, test loop diagrams, piping and instrument diagram, and preventive maintenance work task.

The inspectors determined that the failure to translate design requirements into procedures for testing containment fuel pool level Transmitter SFC-LT11B was an additional example of the violation of Criterion III of Appendix B to 10 CFR Part 50 described in NRC Inspection Report 50-458/99-13. This additional example of the violation was entered in the licensee's corrective action program as CR 1999-1542.

### **III. Engineering**

#### **E1 Conduct of Engineering**

##### **E1.1 Heat Loading of Spent Fuel Pool**

###### **a. Inspection Scope (71707)**

The inspectors reviewed Procedure AOP-0051, "Loss of Decay Heat Removal."

###### **b. Observations and Findings**

Criterion III of Appendix B to 10 CFR Part 50 requires, in part, that measures be established to assure that applicable regulatory requirements and the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions.

The inspectors performed a review of Procedure AOP-0051, "Loss of Decay Heat Removal." Procedure AOP-0051 provided direction for a loss of decay heat removal capabilities from the reactor pressure vessel during shutdown and a loss of decay heat removal from irradiated fuel in the containment fuel pool and spent fuel pool. In addition to procedural steps to restore cooling to the reactor pressure vessel and the fuel pools, Procedure AOP-0051 provided curves for heat loads, heatup rates, and time to boil. The current revision of Procedure AOP-0051 was dated December 30, 1998. This revision used the heat loading calculations for the expected core offload following Refueling Outage 8. However, the actual core offload in the spent fuel pool included the expected offload of one-third of the active core from Fuel Cycle 8, the unexpected offload of an additional one-third of the core from Fuel Cycle 8, and the removal of selected fuel bundles from Fuel Cycles 4, 5, and 6 from the spent fuel pool for reuse as part of the modified core load for Fuel Cycle 9.

The inspectors determined that Procedure AOP-0051 had not been revised to reflect the current heat load in the spent fuel pool. Based on discussions with the licensee, both plant and corporate engineers failed to realize that the calculations and curves to support Procedure AOP-0051 had not been updated to reflect the mixed core loading and unexpected spent fuel pool heat loading present during Fuel Cycle 9. The

inspectors determined that the failure to revise Procedure AOP-0051 following changes in the expected heat loading in the spent fuel pool was an additional example of the violation of Criterion III of Appendix B to 10 CFR Part 50 described in NRC Inspection Report 50-458/99-13. This additional example of the violation was entered in the licensee's corrective action program as CR 1999-1958.

Immediate corrective actions included the generation of heat load and time to boil curves for use by the main control room. The inspectors considered the immediate corrective actions to be acceptable.

c. Conclusions

The inspectors determined that Procedure AOP-0051, "Loss of Decay Heat Removal," had not been revised following changes in the heat loading of the spent fuel pool. This additional example of a violation of Criterion III of Appendix B to 10 CFR Part 50 described in NRC Inspection Report 50-458/99-13 met the criteria of a noncited violation and is in the licensee's corrective action program as CR 1999-1958.

E1.2 Containment Cooler Operability Determination

a. Inspection Scope (71707 and 37551)

The inspectors reviewed the operability determination for a potential thermally induced rupture of standby service water tubing in the containment unit coolers.

b. Observation and Findings

The inspectors reviewed the operability determination performed by engineering for a potential thermally induced rupture of standby service water tubing in containment. The licensee determined a potential existed for a thermally induced rupture of the containment unit cooler tubing if a single valve failure of the standby service water containment isolation valves to the containment unit coolers occurred following a loss of power/loss of coolant accident.

The operability determination evaluated the potential failure mode and the potential effects of a leak inside containment. The immediate compensatory action consisted of adding a step in Procedure AOP-0003, "Containment Isolation," to verify the position of the containment cooler standby service water isolation valves following a containment isolation. The inspectors determined that the operability determination was technically adequate and the licensee's immediate compensatory action was sufficient.

c. Conclusions

The licensee performed an operability determination for a potential thermally induced failure of containment unit coolers. The inspectors determined that the operability determination was technically adequate and the licensee's immediate compensatory action was sufficient.

#### **IV. Plant Support**

##### **R8 Miscellaneous Radiation Protection and Chemistry Issues**

- R8.1 (Closed) Violation 50-458/EA98132-01013: Violation of 10 CFR Part 50.9. This issue involved a licensee employee who provided inaccurate and incomplete information to the inspectors in response to a potential violation concerning radiation work permits. The licensee attributed the root cause of the event to be improper communications between the employee and the NRC and the failure of the employee to understand and follow the licensee's procedure for candid and nonmisleading communications with the NRC. Corrective actions implemented by the licensee included emphasizing management expectations on communicating with the NRC, conducting training sessions for lead engineers and supervisors, providing additional guidance for communicating with the NRC while maintaining open communications, taking disciplinary action against the individual involved, and implementing additional oversight of the employee's activities. The inspectors consider the licensee's corrective actions to be acceptable.

##### **S2 Status of Security Facilities and Equipment**

###### **S2.1 Tour of Security Facilities**

###### **a. Inspection Scope (71750)**

The inspectors toured security facilities and performed a walkdown of selected spaces within the protected area.

###### **b. Observations and Findings**

No lighting or access deficiencies were observed during walkdowns of the protected area. Security personnel stationed in the central alarm station were attentive and knowledgeable of equipment operation.

###### **c. Conclusions**

No deficiencies were observed during a walkdown of the protected area or during observations of the central alarm station.

#### **V. Management Meetings**

##### **X1 Exit Meeting Summary**

The exit meeting was conducted on December 28, 1999. The licensee did not express a position on any findings in the report. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

M. Bakarich, Manager, Emergency Preparedness  
R. Edington, Vice President-Operations  
T. Hildebrandt, Manager, Maintenance  
J. Holmes, Manager, Radiation Protection and Chemistry  
R. King, Director, Nuclear Safety and Regulatory Affairs  
D. Mims, General Manager, Plant Operations  
J. McGhee, Manager, Operations  
D. Pace, Director, Engineering

INSPECTION PROCEDURES USED

|           |                           |
|-----------|---------------------------|
| IP 37551: | Onsite Engineering        |
| IP 61726: | Surveillance Observations |
| IP 62707: | Maintenance Observations  |
| IP 71707: | Plant Operations          |
| IP 71750: | Plant Support             |
| IP 92901: | Followup-Operations       |
| IP 92902: | Followup-Maintenance      |

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

|                |     |  |
|----------------|-----|--|
| 50-458/9914-01 | NCV | Failure to implement cold weather actions. |
|----------------|-----|--|

Closed

|                      |     |  |
|----------------------|-----|--|
| 50-458/9914          | LER | Automatic scram due to inappropriate work activities in the plant substation.  |
| 50-458/9913          | LER | Unplanned automatic actuation of primary containment isolation valve during maintenance due to inadequate procedure. |
| 50-458/EA98132-01013 | VIO | Violation of 10 CFR Part 50.9.   |

Discussed

50-458/9913-04

NCV

Two additional examples of the failure to translate design requirements into specifications, drawings, procedures, and instructions involving the containment spent pool level transmitter and spent fuel pool heat loading.

LIST OF ACRONYMS USED

|     |                         |
|-----|-------------------------|
| CR  | Condition Report        |
| LER | Licensee Event Report   |
| MAI | Maintenance Action Item |
| NCV | Noncited Violation      |
| PDR | Public Document Room    |
| TS  | Technical Specification |
| VIO | Violation               |