

ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket No.: 50-458  
License No.: NPF-47  
Report No.: 50-458/97-06  
Licensee: Entergy Operations, Inc.  
Facility: River Bend Station  
Location: 5485 U.S. Highway 61  
St. Francisville, Louisiana 70775  
Dates: February 2 through March 15, 1997  
Inspectors: W. F. Smith, Senior Resident Inspector  
D. L. Proulx, Resident Inspector  
Approved By: P. H. Harrell, Chief, Project Branch D  
Division of Reactor Projects

Attachment: Supplemental Information

## EXECUTIVE SUMMARY

### River Bend Station NRC Inspection Report 50-458/97-06

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

#### Operations

- In general, the performance of plant operators was professional and reflected a focus on safety, with the exception that entry into the at-the-controls area was not always properly controlled and the at-the-controls operator spent approximately 20 minutes filling out nonwork-related paperwork (Section O1.1).
- A nuclear equipment operator (NEO) exhibited good practices and a questioning attitude during rounds. However, the operator round sheets did not require periodic checks of standby liquid control (SLC) pump parameters or a tour of the traversing incore probe (TIP) system area (Section O1.2).
- The licensee appropriately trained the operators and staged materials for the effective implementation of an emergency operating procedure (EOP) (Section O2.1).
- A violation was identified for failure to develop administrative procedures with specific controls for reviewing and approving overtime for staff that performed safety-related work. Several individuals exceeded the Technical Specification (TS) overtime limitations without proper administrative approvals (Section O6.1).
- In general, the Nuclear Review Board (NRB) effectively reviewed plant issues and recommended corrective actions, with notable exceptions. The excessive backlog of Facility Review Committee (FRC) minutes impeded the NRB's ability to perform timely and effective oversight of FRC activities. Quality Assurance (QA) surveillance resources were not allocated among the functional areas commensurate with performance (Section O7.1).

#### Maintenance

- Mechanics performed good troubleshooting and correction of the Control Building Chiller C low refrigerant temperature trip. The trip was caused by an isolated case of poor workmanship related to a previous improper assembly of the economizer valve float arm. A noncited violation (NCV) was identified for failure to properly implement the applicable work instructions during the previous assembly (Section M1.1).
- The Division II emergency diesel generator (EDG) maintenance outage was generally well planned and performed. The electricians used a test configuration not described in the maintenance action item (MAI) and were unaware of whether or not they complied with the procedure until reviewing wiring drawings later (Section M1.2).

- Personnel performed surveillance testing well. Self-checking was evident (Section M1.3).
- The engineer performing the logic system functional test review exhibited excellent attention to detail in identifying that the loss of power contact for the Division II EDG rear air starting system was not properly tested. An NCV was identified for failure to comply with TS Surveillance Requirement (SR) 3.0.2. The licensee's initial review of the past operability of Division II EDG was weak in that the review did not discover a past outage of the forward air starting system (Section M1.4).

#### Engineering

- Reactor engineers demonstrated poor performance by calculating an incorrect full power exposure at which to change the operating limit minimum critical power ratio (OLMCPR). Consequently, a nonconservative limit was being monitored by the reactor operators for 6 days; however, no thermal limits were exceeded (Section E2.1).
- The failure to maintain clear procedural guidance for the implementation of a performance-based local leak rate test (LLRT) program resulted in missed surveillance testing of some valves and unnecessary testing of other valves which required taking safety-related systems out of service during plant operation at power. A violation of TS 5.4.1.a was identified for failure to maintain the proper guidance (Section E3.1).

#### Plant Support

- Housekeeping in the plant continued to be excellent (Section O1.1).
- A violation for failure to post a radiation area was identified. On two occasions, the radiation area posting at the entrance to the alternate decay heat removal (ADHR) system room was modified without radiation protection (RP) technician approval. Radiological postings were inappropriately relocated on two previous occasions, which indicated that increased personnel sensitivity to radiological postings was required (Section R1.1).
- Security boundaries were maintained properly and entry screening processes were performed properly. The inspectors noted during night tours that the protected area was properly illuminated (Section S1.1).

## Report Details

### Summary of Plant Status

The plant operated at essentially 100 percent power for the duration of this inspection period.

### I. Operations

#### **O1 Conduct of Operations**

##### **O1.1 General Comments (71707)**

The inspectors conducted frequent reviews of ongoing plant operations including control room observations, attendance at plan-of-the-day meetings, and plant tours. In general, the performance of plant operators was professional and reflected a focus on safety, with minor exceptions. During a sustained control room observation on February 11, 1997, the inspectors noted that entrances into the control room at-the-controls area were not controlled in accordance with licensee policies. Several personnel entered the at-the-controls area without permission or a stated operations purpose. In addition, the inspectors noted that the at-the-controls operator spent approximately 20 minutes filling out nonwork-related paperwork. The inspectors discussed these observations with the Operations Manager, who stated that these observations did not reflect written management policies for control room conduct and operations personnel would be briefed on proper control room conduct.

Decisions made in support of maintenance were usually conservative based on the inspectors' reviews of TS limiting conditions for operation entered and exited. During plant tours, the inspectors found that housekeeping continued to be excellent. Any minor discrepancies identified by the inspectors were promptly corrected.

##### **O1.2 NEO Tours**

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

On February 15, 1997, during a backshift tour, the inspector accompanied the reactor building NEO during the conduct of operator rounds. The operator rounds included tours of the standby cooling tower, auxiliary building, fuel building, primary containment, and several tunnels.

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

The inspector noted that the NEO demonstrated good self-checking techniques and a questioning attitude during the tour. The NEO checked several items that were important to safety but not specifically required to be signed off during the operator rounds. The NEO identified two plant equipment deficiencies and wrote MAIs for the items. However, the inspectors identified two apparent weaknesses with the operator round signoff sheets.

The inspectors noted that the operator rounds procedure required the NEOs to check lubricating oil level in several safety-related pumps and fans, including the emergency core cooling system and the standby service water pumps. However, the operator round sheets only required a general inspection of SLC system area for housekeeping purposes. Further, the round sheets did not specifically require the NEOs to check the lubricating oil level of the SLC pumps or other appropriate pump checks. During this inspection period, an MAI was issued for gasket replacement on the Division II SLC pump because of a lubricating oil leak and a crack was discovered on the pump casing, which demonstrated a need to examine the SLC system during operator rounds.

The inspectors also noted that the operator round sheets required periodic entry (approximately every 2 weeks) into most of the high radiation and locked high radiation areas. In addition, the operator round sheets required a visual inspection of the suppression pool at the 95-foot elevation of containment. However, the round sheets required no entries into the area where the TIP system was located. This area was identified as a high radiation area and was also located at the 95 foot elevation of containment. The inspectors noted that, without periodic tours of the TIP system area, items could be in the suppression pool below the TIP system area and items could be left near the TIP system for a significant period of time without notice. The licensee performed maintenance in the TIP system area during this inspection period, which required a number of items to be brought into the TIP system area. The inspectors discussed improving the operator rounds weaknesses with the Operations Manager, who stated that Operations would evaluate improvements to the operator round sheets.

c. Conclusions

The NEO accompanied by the inspectors exhibited good operator practices and a questioning attitude during reactor building operator rounds. The inspectors noted areas for improvement with the operator round sheets in that the procedure did not require periodic checks of the SLC pumps or a tour of the TIP system area.

**O2 Operational Status of Facilities and Equipment**

**O2.1 Walkdown of EOP Supporting Enclosures**

On February 28, 1997, the inspectors evaluated licensee implementation of an EOP supporting enclosure was contained within Procedure EOP 5, "Emergency Operating Procedures-Enclosures," Revision 9. The inspectors walked down Enclosure 4, which addressed defeating the isolation of the reactor water cleanup system on low reactor pressure vessel level and upon initiation of SLC. The inspectors verified that all keys and tools were staged and that on-shift licensed operators were sufficiently familiar with the actions stated in these enclosures. The inspectors concluded that the licensee adequately trained the operators and staged materials for effective implementation of Enclosure 4 of Procedure EOP 5.



## **O6 Operations Organization and Administration**

### **O6.1 Plant Staff Overtime Review**

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

The inspectors reviewed the overtime records of Operations, Radiation Protection, and Plant Engineering personnel for January and February 1997 to ensure that the licensee met the requirements of TS 5.2.2.e. In addition, the inspectors reviewed procedures to ensure that the TS was properly implemented.

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

The requirements for controlling on-shift operator overtime were contained in Procedure ADM-0022, "Conduct of Operations," Revision 19. This procedure required formal documentation of the reasons for exceeding the TS overtime limits in the control room operator log. The inspectors reviewed operator time sheets and noted no instances of operating shift personnel exceeding the overtime requirements. However, the inspectors noted that several individuals routinely worked 72 hours in a 7-day period with the plant operating. This heavy work schedule did not meet the intent of TS 5.2.2.e, which states that the operating shift complement shall be met without routine heavy use of overtime. The inspectors also noted that several support staff personnel exceeded 24 hours in a 48-hour period and 16 hours in a 24-hour period. The licensee stated that because these personnel were reviewing condition reports (CR), writing procedures, and performing other support functions, the support personnel were not considered subject to the TS restrictions on working hours.

The inspectors reviewed the overtime controls for Radiation Protection personnel. The inspectors noted that Procedure RBNP-024, "Radiation Protection Plan," Revision 7, implemented the requirements of TS 5.2.2.e. However, Procedure RBNP-024 merely repeated the words of TS 5.2.2.e, which states that deviations from the TS overtime guidelines shall be authorized by the Plant Manager or his designee in accordance with approved procedures. Procedure RBNP-024 did not identify the procedure to be used. The inspectors identified five instances of personnel exceeding 24 hours in a 48-hour period. The Radiation Control Superintendent stated that the extra hours worked (up to 3 hours) were shift turnover activities. The inspector noted that the extra hours were spent in radiation protection shop meetings and training, which the licensee considered to be part of shift turnover.

The inspectors reviewed the overtime of system engineers for January and February 1997 and noted 14 instances where the TS limits were exceeded. For example, one individual worked 23 hours in a 24-hour period. The Manager, Plant Engineering stated that none of these system engineers had performed safety-related work, although records indicated that these individuals spent

significant amounts of time in the plant during their work periods. No procedure was in place to control overtime of system engineers, as required by the TS.

The inspectors reviewed Procedure ADM-0023, "Conduct of Maintenance," Revision 13B, to ascertain how the Maintenance Department implemented TS 5.2.2.e. Section 8.1.5 of Procedure ADM-0023 stated that overtime shall be controlled per Section 5 of the TS. No further direction was given for how overtime for maintenance personnel was to be controlled administratively.

The inspectors requested that the licensee provide objective evidence that the Plant Manager or his designee performed monthly reviews of overtime assigned as required by TS 5.2.2.e. The licensee did not have objective evidence that these reviews were performed. However, the licensee stated that when supervisors reviewed their employees' time sheets, they ensured that excessive hours were not worked. The inspectors performed a review of CRs dating back 3 years and noted that no CRs were written concerning excessive overtime during this period of time. In addition, the last CR written for personnel exceeding overtime controls was written in 1994 by QA personnel, which appeared to indicate the quality of these reviews was questionable.

TS 5.2.2.e states, in part, that procedures shall be developed to limit the working hours of staff who perform safety-related functions. In addition, TS 5.2.2.e requires specific controls for the Plant Manager or his designee to document exceeding the overtime limits and perform monthly reviews of overtime usage. The procedures did not clearly delineate how each of these functions was to be performed for all of the personnel performing safety-related functions and what specific controls were in place. In addition, the procedures did not define what constituted safety-related work or shift turnover. The failure to maintain specific administrative procedures that delineated specific controls for reviewing and approving overtime for personnel who perform safety-related functions is a violation of TS 5.2.2.e (50-458/9706-01).

c. Conclusions

A violation was identified for failure to develop administrative procedures with specific controls for reviewing and approving personnel overtime. The licensee's process for controlling overtime was weak in that the process was fragmented and was without clear definitions, lines of responsibility, and administrative processes. Several individuals exceeded the TS overtime limitations without proper administrative approvals.

## 07 Quality Assurance in Operations

### 07.1 Nuclear Review Board

#### a. Inspection Scope (71707)

The inspectors attended the NRB meeting held on February 21, 1997, and reviewed the subcommittee reports and various presentations.

#### b. Observations and Findings

The NRB meeting consisted of presentations on several safety and plant performance issues, which was followed by formal discussion of these issues by the members. The inspectors noted that, in general, the NRB membership asked probing questions and recommended appropriate corrective actions.

The subcommittee for the FRC identified that the FRC minutes had not been issued in a timely manner. There was a backlog of approximately 25 sets of minutes with some being about 1 year late. The inspectors noted that untimely issuance of FRC minutes impacted the NRB's ability to perform its oversight function because the NRB bases much of its review of FRC effectiveness on FRC minutes. The licensee initiated a CR to enter this item into the corrective action program. Although the untimely issuance of the FRC minutes was indicative of poor performance, the FRC charter did not have timeliness goals and no violation of NRC requirements occurred.

The inspectors also observed the presentation of the NRB subcommittee that provided oversight of the QA organization. The subcommittee concluded that QA was effective without an apparent definition of what constituted QA effectiveness (e.g., was QA reactive or were outside organizations identifying major issues that QA had audited). The NRB recognized that QA required improvement but did not emphasize some performance issues. For example, during the past quarter, QA performed 17 surveillances of Maintenance, 5 of Engineering, and 3 of Operations. The inspectors noted that these three functional areas have performed at the same level, as identified in the recent Systematic Assessment of Licensee Performance report, so QA allocation of resources for surveillances did not appear to be performance based. The NRB was not aware of the basis for the number of surveillances performed in each area. In addition, one NRB member noted that a number of QA reports were written and reviewed by the same person, but no action was taken by the NRB to review whether or not this was considered a good practice. The inspectors also noted that none of the subcommittees contained outside members, which could have added to the quality of the subcommittee reviews.



The inspectors discussed these observations with the Director, Nuclear Safety (the NRB chairman) who agreed with the comments. The licensee initiated actions to improve the effectiveness of the NRB.

c. Conclusions

The NRB was generally effective in reviewing plant issues and recommending appropriate corrective actions. The excessive backlog of FRC minutes impeded the NRB's ability to perform timely and effective oversight of FRC activities. QA surveillance resources were not allocated among the functional areas commensurate with performance.

**O8 Miscellaneous Operations Issues (92901)**

- O8.1 (Closed) Inspection Followup Item (IFI) 50-458/95026-01: Review of methods used by the licensee to manage overall plant risk associated with on-line maintenance. The inspectors reviewed "River Bend Station On-Line Maintenance Guidelines," Revision 0, which was prepared by the on-line maintenance natural work team. The document provided guidelines for integrating quantitative and qualitative risk insights into the on-line maintenance process. The guidelines described the on-line maintenance process, which included the role of the various disciplines involved and use of the equipment out of service (EOOS) computer.

The inspectors attended a 2-week look-ahead meeting on February 26, 1997. This meeting was attended by planners from the various Maintenance, Operations, and Radiation Protection disciplines, the work week manager for the week being planned, the outage management senior planner who operated the EOOS computer, the work control supervisor, and others. The attendees discussed the proposed work, testing, and operations on the plant planned for the week of March 9. There was a good exchange of information and the inspectors noted that the EOOS planner was knowledgeable of the nature of the activities and their impact on the plant. This individual was also a licensed reactor operator in the past.

On February 27, the inspectors observed the outage management senior planner apply the EOOS program to the information gained in the February 26 meeting above. The planner demonstrated proficiency in applying the program and produced a report that identified the plant safety index for each day and night during the planned week of March 9. The plant safety index was a simplified graded representation of core damage frequency. The values for the week of March 9 were Green (nonrisk significant) even though there was a Division II EDG outage planned. This was expected, however, because the planners staggered the equipment outages to minimize diverse system outages and the 12-week revolving schedule restricted the week of March 9 to Division II only, which eliminated the potential for a loss of safety function.

The inspectors interviewed the operating personnel on day shift on February 27 and found that the shift technical advisor and the work control supervisor had a working knowledge of the EOOS computer monitor. They were cognizant of the need to utilize the EOOS program when emergent work or testing appeared or the schedule shifts to the extent that safety-significant equipment could be placed out of service. This was acceptable.

## II. Maintenance

### **M1 Conduct of Maintenance**

#### **M1.1 Troubleshooting of Control Building Chiller C**

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

The inspectors observed portions of troubleshooting activities associated with the low refrigerant temperature trip of safety-related Control Building Chiller C. The work was accomplished in accordance with MAI 310606.

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

On February 19, 1997, Control Building Chiller C tripped off because of low refrigerant temperature. This chiller provided air conditioning to the control building, including the main control room. Chiller D started automatically and assumed the load, as designed.

The operators declared the chiller inoperable and since there was another operable 100 percent capacity chiller in Division I, TS limiting conditions for operation were met. CR 97-0227 was initiated to enter the problem into the corrective action program. Chiller C was overhauled in the fall of 1996, including the chemical cleaning of the chiller heat exchangers. Subsequent to the cleaning, there were problems experienced after the startup of the chiller with refrigerant strainers becoming clogged. This was resolved by repeated running of the chiller and cleaning of the strainers and filters. This appeared to have been successful until the February 19 trip of the chiller. The licensee suspected that the strainer and filter were clogged again, so the MAI instructed the mechanics to open and inspect the strainer in the economizer and the filters in the filter/dehydrator.

The inspectors reviewed the MAI instructions and found them to be well written and concise. The inspectors observed the mechanics as they opened both ends of the economizer to inspect for clogged strainers or foreign material. The work was performed well and in accordance with the MAI instructions. The mechanics were trained and experienced in working with the chillers.

When mechanics removed the head from the high side of the economizer, the float valve float was lying in the bottom, disconnected from the valve operating shaft.

The system engineer explained that failure of the float valve to operate properly caused the chiller to trip on low refrigerant temperature because there was insufficient refrigerant returning to the evaporator. The system engineer documented this problem in CR 97-0227. The inspectors noted that the fastener compressing the clamp on the end of the float arm was not tight enough to compress the lock washer and secure the arm to the valve shaft; therefore, the float worked itself off the valve shaft. Because there was a key on the valve shaft, the float valve probably functioned properly until it fell off the valve shaft.

System Engineering management evaluated the loose fastener issue and determined that this was an isolated workmanship problem not affecting the other three safety-related chillers because they had not been dismantled recently for major cleaning as was Chiller C. The issue of human performance was referred to the In-House Events Analysis group for root cause and corrective action determination in accordance with the corrective action program.

The inspectors questioned maintenance management as to the cause of the improper assembly of the float arm. The inspectors reviewed the documentation of the previous installation of the economizer float arm, which occurred on October 13, 1996 (MAI 307327). The inspectors found that the instructions were adequate to properly install the float arm and apparently were not followed. The Mechanical Maintenance Superintendent stated that the instructions were adequate and the mechanics failed to self-check or peer check the installation. This was exacerbated by the limited accessibility of the fastener for tightening in accordance with MAI 307327.

Corrective actions taken or planned by the licensee included checking the economizer low side float arm (it was properly installed), ensuring the high side float arm was properly reassembled by checking for tightness on the valve shaft, changing the MAI instructions to specifically check the float arm for proper assembly during future work on all the safety-related chillers, and reinforcing self-checking and peer checking while reviewing this incident with mechanical maintenance personnel.

Failure to comply with the written instructions in MAI 307327 for installation of the Chiller C economizer float arm is a violation of TS 5.4.1.a. However, this self-identified and licensee-corrected violation is being treated as an NCV consistent with Section VII.B.1 of the NRC Enforcement Policy. Specifically, the violation was self-identified and documented by the licensee, was not willful, actions taken as a result of a previous violation should not have corrected this problem, and appropriate corrective actions were completed by the licensee (50-458/9706-02).

c. Conclusions

Mechanics demonstrated good performance as they performed troubleshooting and correction of the Control Building Chiller C low refrigerant temperature trip. The trip

resulted from improper assembly of the chiller economizer valve float arm. An NCV was identified for failure to properly implement the applicable work instructions during the previous assembly.

M1.2 Division II EDG Outage

a. Inspection Scope (62707)

The inspectors witnessed the following MAIs on March 12, 1997, during the Division II EDG maintenance outage.

MAI P593078      Calibrate Temperature Switch 1EGS-TS2B

MAI P593131      Calibrate Temperature Switch 1EGS-TS92B

MAI P591340      Preventive maintenance on Breaker 1ENSSWGR-BKR-ACB27  
(Division II EDG 4160 Volt Supply Breaker)

b. Observations and Findings

The inspectors noted that the Division II maintenance outage was well planned with the Division II EDG unavailability time minimized. MAIs P593078 and P593131 were performed well and in accordance with procedures.

During performance of MAI P591340, the electricians timed the breaker opening and closing using a test cabinet. Step 9.9.1 required the electricians to connect the breaker test cabinet leads to Terminals 6, 7, and 9 of the secondary disconnects. The breaker primary disconnects were required to be connected to the timer and the timer connected again using the secondary disconnects. The electricians connected the leads from the timer to test jacks on the face of the plant breaker test cabinet.

The inspectors questioned the electricians on this practice because the timer test leads were not connected directly to Terminals 6, 7, and 9. The electricians replied that the MAI was written for performance of the preventive maintenance in the shop, rather than using the breaker test cabinet installed in the field. The electricians further stated that the configuration used was functionally equivalent to the setup described in the MAI and they intended to perform the work, then revise the MAI to fit the methodology used. The electricians did not know if the test setup that they used actually connected through Terminals 6, 7, and 9 of the breaker. The technicians completed the task and the breaker was retested satisfactorily.

Following completion of the task, the electricians researched the acceptability of the test setup using wiring drawings. The electricians found that they had actually used Contacts 6, 7, and 9; therefore, the electricians complied with the procedure.

The inspectors reviewed the drawings and concurred with the electricians' conclusion.

The inspector discussed these observations with electrical maintenance supervision. The inspectors noted that although a violation did not occur, the electricians appeared to proceed in the face of uncertainty and had the MAI been worded slightly differently, the electricians would not have been in compliance with the MAI. The Electrical Maintenance Supervisor agreed with the inspectors comments and discussed them with the electricians.

c. Conclusions

The Division II EDG maintenance outage was well planned with the Division II EDG unavailability time minimized. The MAIs for the Division II EDG were generally performed well.

M1.3 Surveillance Observations

a. Inspection Scope (61726)

The inspectors observed all or portions of the following surveillance tests during this inspection period:

STP-309-0202	Division II EDG operability testing on February 11, 1997.
PEP-0083	Signature testing of Motor Operated Valve 1E51-MOVF059, tank bypass to the condensate storage tank, a postmaintenance test, on February 19.
STP-051-4522	Emergency core cooling system and reactor core isolation cooling response to reactor vessel low water level channel functional test, on February 24.

b. Observations and Findings

The inspectors found that the surveillance tests listed above were conducted properly such that meaningful results were obtained. Self-checking and peer checking was evident when it was appropriate to do so. During independent verification, the verifiers demonstrated a conscious effort to maintain independence from the performers. TS limiting conditions for operation were entered, when required. Measuring and test equipment was verified to have been in calibration. The inspectors reviewed the completed test documentation and noted that it was legible and all acceptance criteria were met.



c. Conclusions

All surveillance tests observed in this section of the report were performed properly and in accordance with the applicable procedures. Self-checking was evident as the test performers manipulated valves and switches.

M1.4 Missed EDG Surveillance

a. Inspection Scope (61726)

The inspectors evaluated the response to CR 97-0104, which identified that the loss of power function to the Division II EDG had not been adequately surveillance tested.

b. Observations and Findings

On February 13, 1997, during a logic system functional test review, the licensee identified that they had not been adequately testing the starting circuitry for the Division II EDG. The licensee found that individual contacts actuated each of the air banks for the air starting system. The forward air starting system contact was adequately tested during refueling outage (RFO) 6, but the contact for the rear air starting system had not been verified as operable. Therefore, the licensee noted that TS 3.3.8.1 (EDG instrumentation) requirements may not have been met.

The licensee wrote an operability evaluation, which stated that the EDG was operable because either the forward or rear air starting system was adequate to meet the system design basis, and as long as the forward air starting system was operable, the Division II EDG was operable. The inspector reviewed the licensee's operability assessment and identified no concerns.

However, the inspector asked the licensee if the forward air system had been removed from service such that the licensee was depending on the rear air starting system (which was not adequately surveillance tested) for operability of the Division II EDG. The system engineer stated that, since RFO 6, the forward air starting system for the Division II EDG had not been removed from service. The inspector independently reviewed the tracking limiting conditions for operation since RFO 6 and identified that the forward air starting system was declared inoperable from February 5-19, 1997. In addition, the inspector identified three 2-week periods in the previous operating cycle where the forward air starting system was inoperable. These time periods in which the forward air starting system was inoperable exceeded the 72-hour limiting condition for operation for the Division II EDG. In addition, the licensee changed operational modes from Mode 4 (Cold Shutdown), to Mode 2 (Startup) on February 14 with the forward air inoperable.

Therefore, the failure to test the loss-of-power contact for the rear air starting system of the Division II EDG during the time periods when the forward air starting

system was inoperable constituted a missed surveillance. The licensee revised the test procedure to ensure that all of the loss of power functions were properly tested. Because this test was intrusive while operating at power, the licensee chose not to perform the test until the next outage or if forward air became inoperable again. Although the licensee had not performed the surveillance test, the licensee believed, based on past EDG reliability and engineering judgment, that the surveillance of the rear air starting circuitry would probably pass; therefore, the Division II EDG was capable of meeting its intended safety function even during times that forward air was inoperable.

The failure to perform the required surveillance of the loss-of-power contact for the rear air starting system of the Division II EDG was a violation of TS SR 3.0.2. This licensee-identified and corrected violation is being treated as an NCV consistent with Section VII.B.1 of the NRC Enforcement Policy. Specifically, the violation was identified by the licensee, was not willful, actions taken as a result of a previous violation should not have corrected this problem, and appropriate corrective actions were completed by the licensee (50-458/9706-03).

c. Conclusions

The engineer performing the logic system functional test review exhibited excellent attention to detail in identifying that the loss of power contact for the Division II EDG rear air starting system was not properly tested. An NCV was identified for failure to comply with TS SR 3.0.2. The licensee's initial review of the Division II EDG past operability was weak in that the review did not discover a past outage of the forward air starting system.

III. Engineering

**E2 Engineering Support of Facilities and Equipment**

**E2.1 Inappropriate Application of Core Operating Limits Report**

a. Inspection Scope (37551)

The inspectors reviewed the actions in response to CR 97-0256, where the reactor engineers identified an error in applying required changes in the OLMCPR at the correct time within the current fuel cycle, as required for GE-11 fuel.

b. Observations and Findings

On February 25, 1997, while monitoring and reviewing the approach of the reactor full power exposure at which the OLMCPR for the newer GE-11 fuel in the reactor must be changed from 1.28 to 1.32, the reactor engineers realized that the date should have been February 19. Consequently, from February 19-25, the reactor operators had been monitoring a maximum fraction limiting critical power ratio

(MFLCPR) that was nonconservative and could have allowed the OLMCPR limit to be exceeded.

The reactor engineers immediately implemented an administrative limit of 0.969 for MFLCPR. The limit was normally 1.0. This compensated for an OLMCPR limit of 1.32 until the correct limit was programmed into the 3D Monicore computer monitor. The program was subsequently adjusted on February 26 and the monitored parameters were restored to those normally observed by the reactor operators.

The core operating limits were not exceeded during the above 6-day period. The reactor engineers reviewed the historic core performance edits and found that the highest MFLCPR was 0.911, which translated to 0.9395 with an OLMCPR of 1.32.

The licensee stated that the cause of the above problem was human error. The supplemental reload licensing report from General Electric indicated a predicted end-of-cycle full power exposure of 11,850 megawatt days per short ton of fuel. The report indicated that the OLMCPR should be changed from 1.28 to 1.32 when the exposure reached end-of-cycle, minus 3350 megawatt days per short ton. Subsequent to startup from RFO 6, the startup and operations report stated that the predicted end-of-cycle full power exposure would be 12,626.2. The reactor engineer subtracted 3350 from 12,626.2 instead of 11,850, in error, and tracked core exposure to the longer exposure time.

To prevent a recurrence, the licensee was considering requesting software for the 3D Monicore System to automatically shift the OLMCPR limit at the appropriate time during the fuel cycle. The appropriate actions were taken to reduce personnel errors.

The inspectors concluded that there was no violation of regulatory requirements; however, this was poor human performance. The safety significance was mitigated by the fact that the reactor was being operated with sufficient margin from thermal limits such that minor errors, as discussed above, did not result in exceeding the OLMCPR.

c. Conclusions

The reactor engineers demonstrated poor performance by calculating the incorrect full power exposure at which to change the OLMCPR for GE-11 fuel in the reactor in accordance with the license. Consequently, a nonconservative limit was being monitored by the reactor operator for 6 days. No licensed thermal limits were exceeded because the reactor was being operated with sufficient margin below the limits.

**E2.2** Review of Facility Conformance to Updated Final Safety Analysis Report Descriptions

Discovery of a licensee operating a facility in a manner contrary to the Updated Final Safety Analysis Report highlighted the need for a special focused review that compares plant practices, procedures, and/or parameters to the Updated Final Safety Analysis Report. While performing the inspections discussed in this report, the inspectors reviewed the applicable portions of the Updated Final Safety Analysis Report that related to the areas inspected. The inspectors verified that the Updated Final Safety Analysis Report wording was consistent with the observed plant practices, procedures, and/or parameters. No inconsistencies were noted.

**E3** Engineering Procedures and Documentation

**E3.1** Deficiencies in Determining Extended LLRT Intervals

a. Inspection Scope (37551)

The inspectors reviewed the response to CR 97-0127, which identified four safety-related valves that were inappropriately selected for an extended LLRT interval of 5 years, and therefore were not tested within the 2-year interval required by the LLRT program.

b. Observations and Findings

On February 4, 1997, while reviewing LLRT intervals in preparation for testing to be performed during the upcoming refueling outage in September 1997 (RFO 7), Plant Engineering determined that four safety-related valves were not tested during the previous refueling outage in January 1996 (RFO 6). The valves were not tested because they were selected for a 5-year LLRT interval pursuant to the performance-based LLRT program, which implemented Option B of 10 CFR Part 50, Appendix J.

The four containment isolation valves in question were: (1) E12-MOVF027B, Low Pressure Coolant Injection B to the reactor, (2) E12-MOVF037B, Low Pressure Coolant Injection B to the reactor, (3) E51-MOVF068, reactor core isolation cooling turbine exhaust to the suppression pool, and (4) SWP-MOV503B, standby service water return from Containment Unit Cooler B.

The operators entered TS SR 3.0.3, which allowed 24 hours for the licensee to accomplish the LLRT for the valves before declaring the effected systems inoperable because of the missed surveillance. The LLRT was completed satisfactorily for each of the four valves by February 7. It was necessary to declare the effected systems inoperable in order to support testing and the operators entered the appropriate TS limiting conditions for operation.

The licensee explained that the personnel in charge of the LLRT program prior to RFO 6 did not document why they selected the four valves for the extended interval. The licensee stated they assumed the decision was based on the criteria stated in Procedure ADM-0050, "Primary Containment Leakage Rate Testing," Revision 4. Procedure ADM-0050 implemented a performance-based LLRT program pursuant to 10 CFR Part 50, Appendix J, Option B. According to Procedure ADM-0050, in order to select a given valve for extended LLRT interval, among other criteria, the two previous consecutive LLRT as-found results must not have exceeded the administrative limits. The four valves had satisfactory results in RFO 4; however, the RFO 5 results were as-left after maintenance was performed on the actuators.

On February 4, 1997, Plant Engineering determined that the criteria had not been met, and therefore, an LLRT should have been performed on the four valves during RFO 6. While this was considered to be a missed surveillance, the licensee stated that this was probably a conservative decision, because the nature of the maintenance done during RFO 5 probably had no significant effect on the leak tightness of the valves. The inspectors reviewed the documentation of the maintenance performed on the four valves and found that the actuators were removed from the valves, dismantled in the shop, cleaned and lubricated, and in two cases, the torque switches were balanced. This was clearly more work than Procedure ADM-0050 allowed in order to accept an as-left LLRT for an as-found value.

On February 13, the licensee informed the inspectors that they had looked more thoroughly into the LLRT history of the valves and found in each case that an acceptable as-found LLRT was completed during RFO 3 and no maintenance was done at that time. Furthermore, the licensee demonstrated to the inspectors' satisfaction that the actuator maintenance performed during RFO 5 would not have had any significant impact on valve leakage and thus would not have masked a problem if it had occurred with valve seat tightness. Therefore, it was not necessary to perform the LLRTs on the four valves on February 4 as described above. The inspectors questioned why this did not come to light during the Plant Engineering review and the reply was that the RFO 3 data was not on the matrix they were using.

The inspectors expressed concern that the licensee appeared to have been unsuccessful in implementing and prescribing a program that effectively reflected the test interval guidance provided by NUREG-1493, "Performance-Based Containment Leak-Test Program," September 1995, and the "Nuclear Energy Institute Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," July 26, 1995. It was evident that the licensee had several opportunities to correct the problem. For example, in January 1996, a programmatic review identified 18 valves that may not have met the criteria for extended intervals (CR 96-0319). The CR was closed in March 1996. In July 1996, during a Quality Assurance review, another valve was identified as



having been placed on extended interval inappropriately (CR 96-1327). No other similar examples were identified during that review. The CR was closed in August 1996.

In September 1996, a reevaluation of CR 96-0319 identified two valves that should have been tested during RFO 6 (CR 96-0319A). An NCV was identified on this issue in NRC Inspection Report 50-458/96-14, Section M1.3. Also in September 1996, the inspectors identified that Procedure ADM-0050 permitted a 25 percent extension on LLRT test intervals, when TS 5.5.13 does not allow it. Although there were no examples found where the extension was inappropriately used, as of February 1997, the procedure error had not been corrected (CR 96-1564). During this inspection period, because of ambiguities in the performance-based LLRT program, safety-related systems were taken out of service unnecessarily during power operation to accomplish testing that was not needed.

The licensee explained that in January 1996, because of the complexity and newness of the performance-based LLRT program at River Bend, experienced and knowledgeable people were brought in from another plant and established the first program for Entergy Operations, Inc., to make sure that proper decisions were made for testing during RFO 6. Again in February 1997, industry experts were brought in to review the program in preparation for testing during the upcoming RFO 7. Although these were proactive initiatives to ensure proper implementation of their new performance-based LLRT program, the inspectors considered the program should have been corrected early in 1996.

Corrective actions initiated during this inspection period included clarifying the requirements associated with the performance-based LLRT program by revising Procedure ADM-0050 and providing the appropriate training for personnel responsible for implementation of the program. The licensee also indicated that Engineering would be documenting the basis of each component placed on extended test interval. On February 13, 1997, the General Manager, Plant Operations directed the establishment of a review team whose charter would be to step back and review the overall surveillance program and recent initiatives to determine if an adjustment was warranted, based on the above CRs.

Because the licensee identified and was in the process of correcting nearly all of the above problems associated with the LLRT program, the inspectors considered exercising enforcement discretion. However, Section VII.B.1.(b) of the NRC's Enforcement Policy, NUREG-1600 could not be satisfied, in that this was a violation that could reasonably have been expected to have been prevented by the corrective actions for previous licensee findings. Failure to establish and maintain adequate procedures to implement a satisfactory performance-based LLRT program pursuant to 10 CFR Part 50, Appendix J, is a violation of TS 5.4.1.a (50-458/9706-04).

c. Conclusions

The failure to establish clear procedural guidance for the implementation of a performance-based LLRT program pursuant to 10 CFR Part 50, Appendix J, Option B, resulted in missed testing of valves and unnecessary testing of other valves that required taking safety-related systems out of service during plant operation at power. A violation of TS 5.4.1.a was identified.

IV. Plant Support

**R1 Radiological Protection and Chemistry Controls**

**R1.1 Inspection Scope (71750)**

- a. Throughout this inspection period, the inspectors observed performance in radiological protection. The inspectors observed a sample of radiation, high radiation, and locked high radiation areas to verify that these areas were properly posted and controlled.

b. Observations and Findings

On February 20, 1997, the inspectors noted that Door TU070-001 was propped open to support the ADHR modification. The personnel involved properly obtained permission from the control room to prop this door open and an hourly fire watch patrol was assigned. However, the sign posted to inform personnel that this area was a radiation area was hung on this door. Therefore, when door TU070-001 was propped open, the radiation area sign was obscured from view such that not all personnel entering the area would not be aware that they were entering a radiation area.

The inspectors informed RP that the entrance to the ADHR room was not adequately posted. An RP technician relocated the radiation area sign from the door to a stanchion placed at the doorway. The licensee initiated CR 97-0257 to enter this item into the corrective action program.

On February 24, an RP technician reinspected the radiological postings near the ADHR room. The RP technician noted that the stanchion with the radiation area sign that was previously located in the doorway of the ADHR room had been moved to a corner of the room. RP personnel reposted the area by hanging the radiation area sign on a rope across the doorway. This additional unauthorized movement of the radiation area sign was added to CR 97-0257.

10 CFR 20.1902(a) requires each radiation area to be conspicuously posted with signs stating "CAUTION, RADIATION AREA." Because the radiation area sign at the entrance to the ADHR room was obscured from view, this radiation area was

not conspicuously posted as required. The failure to conspicuously post a radiation area is a violation of 10 CFR 20.1902(a) (50-458/9706-05).

The inspectors noted that this violation was mitigated because no unauthorized personnel entered the radiation area without proper dosimetry. However, the inspectors noted that River Bend general employee training information directed radiation workers to obey all radiological postings and stated that any unauthorized removal or movement of radiological postings will not be tolerated. The above violation indicated that personnel involved with the ADHR modification were not adequately implementing their training on basic radiological work practices. In addition, NRC Inspection Report 50-458/96-06 discussed two previous instances in which radiological postings were inappropriately relocated, which indicated that improvement in ensuring radiological postings were intact was required.

c. Conclusions

A violation was identified for failure to conspicuously post a radiation area. On two occasions the radiation area posting at the entrance to the ADHR room was modified without RP approval, which indicated that personnel were not sufficiently sensitive to following basic radiation protection practices. No unauthorized entries or unmonitored dose resulted from these posting deficiencies.

**S1 Conduct of Security and Safeguard Activities**

**S1.1 General Comments (71750)**

Throughout this inspection period, the inspectors observed security and safeguards practices. Security boundaries were maintained properly and entry screening processes were performed properly at the primary access point. The inspectors noted during night tours that the protected area was properly illuminated.

**V. Management Meetings**

**X1 Exit Meeting Summary**

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on March 24, 1997. The licensee acknowledged the findings presented.

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

J. P. Dimmette, General Manager, Plant Operations  
M. A. Dietrich, Director, Quality Programs  
D. T. Dormady, Manager, System Engineering  
J. R. Douet, Manager, Maintenance  
J. Holmes, Superintendent, Chemistry  
H. B. Hutchens, Superintendent, Plant Security  
D. N. Lorfing, Supervisor, Licensing  
C. R. Maxson, Senior Lead Licensing Engineer  
J. R. McGaha, Vice President-Operations  
W. P. O'Malley, Manager, Operations  
W. H. Odell, Superintendent, Radiation Control  
D. L. Pace, Director, Engineering

INSPECTION PROCEDURES USED

IP 37551	Onsite Engineering
IP 61726	Surveillance Observations
IP 62707	Maintenance Observation
IP 71707	Plant Operations
IP 71750	Plant Support Activities
IP 92901	Followup - Operations

ITEMS OPENED AND CLOSED

Opened

50-458/9706-01	VIO	Failure to establish procedure to control overtime (Section O6.1)
50-458/9706-04	VIO	Failure to adequately maintain LLRT program (Section E3.1)
50-458/9706-05	VIO	Failure to conspicuously post radiation area (Section R1.1)

Closed

50-458/95026-01	IFI	Review of plant risk assessment for on-line maintenance (Section O8.1)
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Opened and Closed

50-458/9706-02	NCV	Failure to implement MAI on control building emergency chiller (Section M1.1)
50-458/9706-03	NCV	Missed surveillance on EDG air start circuitry (Section M1.4)



LIST OF ACRONYMS USED

ADHR	Alternate Decay Heat Removal
CR	Condition Report
EDG	Emergency Diesel Generator
EOOS	Equipment Out of Service
EOP	Emergency Operating Procedure
FRC	Facility Review Committee
IFI	Inspection Followup Item
LLRT	Local Leak Rate Testing
MAI	Maintenance Action Item
MFLCPR	Maximum Fraction Limiting Critical Power Ratio
NCV	Noncited Violation
NEO	Nuclear Equipment Operator
NRB	Nuclear Review Board
OLMCPR	Operating Limit Minimum Critical Power Ratio
PDR	Public Document Room
QA	Quality Assurance
RFO	Refueling Outage
RP	Radiation Protection
SLC	Standby Liquid Control
SR	Surveillance Requirement
TIP	Traversing Incore Probe
TS	Technical Specification