ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket No.:	50-458
License No.:	NPF-47
Report No.:	50-458/96-17
Licensee:	Entergy Operations, Inc.
Facility:	River Bend Station
Location:	5485 U.S. Highway 61 St. Francisville, Louisiana 70775
Dates:	December 15, 1996 through February 1, 1997
Inspectors:	W. F. Smith, Senior Resident Inspector D. L. Proulx, Resident Inspector G. M. Good, Senior Emergency Preparedness Analyst, Division of Reactor Safety
Approved By:	P. H. Harrell, Chief, Project D Division of Reactor Projects

Attachment: Supplemental Information

EXECUTIVE SUMMARY

River Bend Station
NRC Inspection Report 50-458/96-17

This inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a 7-week period of resident inspection.

Operations

- In general, operator performance was good during this inspection period. Control room activities were carried out in a business-like manner, with good communications observed by the inspectors. Decisions made in support of maintenance were usually conservative.

- The reduction in power in support of balance-of-plant repairs was completed without incident, as were the control rod scram testing and main steam isolation valve cycling activities (Section O1.1).

- The licensee responded well to the cold weather advisories warning the River Bend area of snow on December 18, 1996. Operations developed a contingency watch bill and the Emergency Planning organization interfaced with external authorities to ensure emergency evacuation routes would be kept open (Section O1.2).

- Continued configuration control problems were noted when an operator identified the control switches were in the OFF position for both of the Division III emergency diesel generator (EDG) starting air compressors. Though nonsafety related, the compressors were important in that they maintained pressure in the safety-related air receivers. Although the licensee was unable to determine the cause, the licensee implemented good corrective actions and responded appropriately to the issue of configuration controls (Section O2.1).

- Equipment was properly staged for two emergency operating procedure (EOP) supporting enclosures. In addition, the on-shift operators demonstrated good knowledge to perform these procedures (Section O3.1).

Maintenance

- The licensee's response to the failure of Rod Control and Information System (RC&IS) Power Supply C11-PS1 demonstrated good teamwork, management oversight, quality assurance, and proper utilization of the licensee's administrative controls over maintenance work and plant design configuration (Section M1.1).

- The replacement of the standby service water (SSW) loop seal valves was performed in a step-by-step manner and in accordance with procedures. Good coordination was observed between operations and maintenance personnel in establishing conditions for the work, including a freeze seal (Section M1.2).

- After repeated failures of the containment airlock door seal air ball valves, the licensee appropriately formed a Significant Event Review Team (SERT) to determine

the root causes and recommend permanent corrective action. Actions already implemented, as well as those recommended, appeared to be appropriate to correct the problem. Mechanics effectively performed the work and postmaintenance testing (Section M1.3).

- The licensee identified a failure to implement a Technical Specification (TS) surveillance requirement (SR), which required monthly verification that the hydrogen mixing valves were closed. The licensee made an error in renumbering requirements for the Improved TS, which resulted in an incorrect procedure being referenced in the TS/surveillance procedure cross-reference matrix. The licensee's corrective actions were satisfactory to prevent recurrence. A noncited violation (NCV) was identified for failure to perform the TS surveillance at the correct frequency (Section M1.4).

- A procedure upgrade reviewer demonstrated excellent performance in identifying and documenting on a condition report (CR) a missed surveillance requirement associated with the control rod scram accumulator instrumentation testing. An NCV was identified for failure to maintain the technical adequacy of the surveillance test procedure implementing the requirement to test the common control room alarm from each of the 145 scram accumulators (Section M1.5).

- The inspectors identified a violation for failure to follow instructions that were instituted to preclude dropping items into the SSW cooling tower basin. The inservice testing (IST) of the Division II SSW pumps was otherwise performed properly and in accordance with the procedure (Section M1.6).

- The surveillance test on the low pressure coolant injection (LPCI) Pump C start logic was performed properly and in accordance with procedures. Technicians employed good self-checking and sound electrical safety practices while performing this test (Section M1.7).

Engineering

- Design Engineering demonstrated a good questioning attitude in reviewing the 1990 licensee response to NRC Information Notice 88-76, Recent Discovery of a Phenomenon not Previously Considered in the Design of Secondary Containment Pressure Control relative to possible secondary containment positive pressures caused by low outside temperature extremes. Immediate action to provide the operators with outside temperature dependent acceptance criteria for secondary containment pressure was appropriate to the circumstances pending implementation of permanent corrective action (Section E2.1).

Plant Support

- Housekeeping in the plant continued to be excellent. It was noteworthy that the construction area in which the new alternate decay heat removal system was being installed was being maintained clean and orderly (Section O1.1).

- The commitment to perform on-shift dose assessments was appropriately described in the licensee's emergency plan and implementing procedures. Further evaluation of the information obtained using Temporary Instruction (TI) 2515/134 will be conducted by NRC Headquarters personnel (Section P3.1).

REPORT DETAILS

Summary of Plant Status

The plant operated at essentially 100 percent power for the duration of this inspection period, except on January 18 through January 21, 1997, when power was reduced to approximately 60 percent in support of balance-of-plant maintenance and reactor control rod repositioning.

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 conduct of plant operators was professional and reflected a focus on safety. Decisions made in support of maintenance were usually conservative based on the inspectors' routine reviews of TS limiting conditions for operation (LCO) 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. During several tours, the inspectors considered it noteworthy that construction workers installing the new alternate decay heat removal systems kept the areas orderly and clean.

The inspectors reviewed the operator actions to reduce power to 60 percent on January 18, in support of corrective maintenance on the nonsafety-related isophase bus duct cooling fan, which reduced the heat load on the isophase duct to a level that would not cause overheating without the fan.

The operators followed the appropriate operating procedures to reduce power and then subsequently restored power in a well-controlled manner. The licensee also utilized the lower plant power level to replace a shaft seal on a heater drain pump, replace a relief valve on a feedwater pump gear increaser, perform scram time testing of five control rod hydraulic control units that were overhauled, and full-stroke cycle the main steam isolation valves. Testing and repairs were successfully accomplished without incident.

O1.2 Licensee Actions in Response to Snow Warnings (71707)

On December 18, 1996, the National Weather Service placed the St. Francisville area, in a snow warning. The inspectors evaluated the contingency plans that were implemented in the event emergency response became necessary. Operations management published a shift coverage contingency plan that utilized qualified personnel who resided close to the plant. Cold weather precautions had previously been implemented. These actions were reviewed by the inspectors and were found to be appropriate. Emergency Planning management interfaced with the Louisiana Radiation Protection Division and confirmed that provisions were made through the

Office of Emergency Preparedness and Federal Emergency Management Agency, Region 6, to ensure that evacuation routes would remain open.

The inspectors considered the preparations in response to the snow warning was appropriate to the circumstances. The forecasted snow did not arrive.

O2 Operational Status of Facilities and Equipment

O2.1 Additional Configuration Control Deficiencies

a. Inspection Scope (71707)

The inspectors evaluated the response to CR 96-1923, where an operator identified continuing problems with system configuration controls.

b. Observations and Findings

NRC Inspection Report 50-458/96-15 cited four examples of failure of the licensee to maintain configuration control of safety-related system valves and switches. While in the process of implementing corrective actions focused on addressing the apparent adverse trend in operations human performance, another problem was identified by the licensee.

On November 8, 1996, while performing the EDG building rounds, an operator discovered the control switches for both starting air compressors for the Division III EDG were in the OFF position. One of the two air tanks had dropped to 217 psig, which was below the pressure at which the compressor automatically starts. The setpoint was approximately 225 psig. The operator informed the control room promptly, placed the switches in the required auto position, and then initiated CR 96-1923. The operations shift superintendent ordered a complete control board lineup check on all three EDGs and no additional deficiencies were found. The Division III EDG was operable because air tank pressure did not decrease below the 160 psig minimum specified in the applicable TS.

The inspectors were concerned that although the compressors were not safety-related equipment, the compressors had the important function of maintaining the EDG starting air tanks at the required pressure. The licensee responded to the issue by implementing a thorough investigation to determine the cause. Security computer history was utilized to determine who was in the EDG building for the time period it would have taken for the air pressure to decay off. Each individual was questioned, but none recalled leaving the switches in the OFF position. After about 2 months of investigation, the licensee concluded that the cause of the switches being out of the required position was indeterminate. The licensee did identify that, the operators sometimes turned off the compressors when checking the oil each shift, especially when the tank pressure was near the setpoint for the

compressors to start. The licensee theorized that an operator did that and forgot to restore the switches to the AUTO position.

The licensee has since implemented many corrective action items as listed in the docketed reply to the Notice of Violation, dated January 24, 1997. This issue was not cited as a violation because corrective actions were in the process of being implemented when this problem was identified.

To avoid further violations, the licensee established a plant configuration control team, with the support of River Bend management, to maintain an aggressive approach to monitor, track, and resolve configuration control issues until performance is improved. The team leader and plant management have met with the inspectors on a periodic basis to keep the inspectors appraised of progress in this area.

c. Conclusions

The inspectors concluded that the licensee is implementing good corrective actions and has responded appropriately to the configuration control issues. The inspectors will evaluate the effectiveness of the licensee's actions during the followup inspections for closure of the violation in NRC Inspection Report 50-458/96-015.

O3 Operations Procedures and Documentation (71707)

O3.1 Walkdown of Enclosures for EOPs

On December 26 and 27, 1996, the inspectors performed reviews of the licensee's implementation of two enclosures for EOPs to verify the actions specified could be performed. These support procedures were contained within Procedure EOP-5, "Emergency Operating Procedures-Enclosures," Revision 9. The inspectors walked down Enclosures 1 and 12, which addressed defeating the main turbine trip from initiation of the reactor core isolation cooling system and injection into the reactor vessel with the condensate transfer system. 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 Enclosures 1 and 12 of Procedure EOP-5.

O8 Miscellaneous Operations Issues (92901)

O8.1 Survey of TS Interpretations

The inspectors conducted a survey of the licensee's TS interpretations and determined that no documents existed with informal references to NRC review and approval without formal NRC documentation. The inspectors emphasized to the licensee, at the exit interview, that any informal reference to NRC review and

approval in a TS interpretation is not recognized by the Commission and is not an acceptable practice.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Replacement of Failed RC&IS Power Supply

a. Inspection Scope (62707,37551)

The inspectors observed the licensee's actions in response to a failed RC&IS power supply that placed the plant in a condition where the TS required the plant to be shut down in 13 hours if not corrected.

b. Observations and Findings

On January 8, 1997, at 4:30 a.m., while the plant was operating at 100 percent power, the RC&IS inoperable alarm annunciated in the control room and could not be reset. Without this system being functional, the control rod withdrawal limiter was inoperable, which prevented control rod withdrawal or insertion by normal means. In addition, the control rod scram accumulator leakage and low pressure alarm function was disabled for all 145 control rods. The operators appropriately entered Technical Requirements Manual Limiting Condition for Operation (TLCO) 3.1.5.1, which required the operators to immediately declare the scram accumulators inoperable. This action led the operators to TS 3.1.5.B, which required the operators to declare the associated control rods inoperable within 1 hour.

At 5:30 a.m., the operators declared the control rods inoperable, which further led the operators to TS 3.1.3.E, which required the operators to shut down the reactor and place the plant in Mode 3 (Hot Shutdown) in 12 hours. In addition, because the rod withdrawal limiter was inoperable, TS 3.3.2.1 prohibited any control rod movement except to scram. This meant that power could only be reduced to approximately 70 percent by reactor flow reduction, and then the plant would be shut down by a reactor scram from that power level to achieve Mode 3 conditions.

The operators assembled the appropriate maintenance and engineering support and promptly informed licensee management of the problem and the potential plant transient. To better ensure control rod scram capability, the operators increased monitoring of control rod scram accumulator pressures from once per week to every 4 hours. By approximately 8:30 a.m., the licensee had determined by troubleshooting that RC&IS Power Supply C11-PS1 had failed. A new power supply was obtained from the plant warehouse and the failed power supply was removed from the panel. By this time, the licensee developed several contingency plans. A change to TLCO 3.1.5.1 was being considered, which would have allowed

monitoring the scram accumulator pressure and leakage alarm parameters instead of declaring the accumulators inoperable. A backup power supply was sent in from another nuclear facility, a temporary alteration was being considered to enable the accumulator alarms, and work was proceeding to install the new power supply in accordance with Maintenance Action Item (MAI) 309925. However, the maintenance technicians discovered that two of the four mounting bracket screw holes did not line up with the new power supply, which caused CR 97-0015 to be initiated.

The engineers supporting the work decided to repair the mounting bracket by drilling new holes. They noted that another installed RC&IS Power Supply (C11-PS2) had a bracket that was similarly modified to accommodate a previous power supply replacement. At this point, maintenance personnel converted the Reference MAI to a Compliance MAI in accordance with administrative procedures because a repair was involved, which necessitated explicit documentation and instructions. The Reference MAI was only appropriate for exact replacements using skill of the craft and referencing the applicable drawings and standards. The inspectors reviewed the MAI package and found it to be in order and appropriate to the circumstances.

In order to expedite restoration of RC&IS ability to function, Engineering personnel issued an interim disposition of the CR to allow installation of the new power supply with the modified mounting bracket. The inspectors reviewed the technical justification for the disposition and found that it had sufficient basis. The inspectors observed installation of the new power supply at approximately 12 noon and the RC&IS became fully operational as the postmaintenance test was completed satisfactorily. At 1:19 p.m., the Facility Review Committee completed review and approval of the CR disposition to modify the power supply mounting bracket. The approved documentation included a 10 CFR 50.59 safety evaluation screening, which appropriately did not require a safety evaluation.

On January 11, another RC&IS inoperable alarm annunciated in the control room. The power supply was checked and found to be satisfactory. In about 1 hour, the operators were able to reset the system and the cause was assumed to have been a spurious signal from an individual hydraulic control unit transponder card. The operators were instructed that should another alarm occur, to not attempt to reset RC&IS until Engineering personnel analyzed the RC&IS panel diagnostic display.

The licensee promptly revised TLCO 3.1.5.1 such that when the RC&IS became inoperable, which disabled the hydraulic control unit accumulator alarms, the operators would no longer be required to declare the accumulators inoperable. The revised TLCO required verification of the affected accumulator pressure at equal or greater than 1520 psig every 24 hours, and verify the affected accumulator water drained every 48 hours. This change was appropriately made pursuant to 10 CFR 50.59.

On January 20 and 21, additional RC&IS alarms occurred and as a result of troubleshooting, the licensee determined that there was a broken multiple contact plug in the RC&IS panel, which caused one of the connections to place intermittent noise on the signal. Also, while checking power supplies, the technicians found alternating current noise on the output of one of the power supplies and it was replaced. The licensee replaced the broken plug and the RC&IS was restored to operability. The system operated satisfactorily through the end of this inspection period.

The inspectors questioned what actions were to be taken to better ensure the reliability of all 14 RC&IS power supplies. The licensee responded that closer monitoring of the power supply output voltage and noise would be incorporated into the preventive maintenance program for this system.

Throughout this maintenance activity, the inspectors observed good teamwork in an effort to minimize outage time, balanced with establishing sound technical bases for the engineering decisions made. Continuous management oversight and quality assurance inspections were provided. The quality assurance inspector demonstrated a good questioning attitude and ensured that the work was properly done.

c. Conclusions

The inspectors concluded that the licensee's response to the failure of RC&IS Power Supply C11-PS1 demonstrated good teamwork, good management oversight, and proper utilization of the licensee's administrative controls over maintenance work and plant design configuration.

M1.2 Replacement of SSW Loop Seal Valves

a. Inspection Scope (62707)

On January 16, 1997, the inspectors observed the performance of MAI 224396, which replaced SSW Valves SWP-V656 and -V657. In addition, the inspectors observed the application of a freeze seal in accordance with Corrective Maintenance Procedure CMP-9186, "Freeze Seals," Revision 8C.

b. Observations and Findings

The inspectors noted that the maintenance mechanics methodically established the freeze seal in accordance with the procedure and implemented all applicable precautions. The licensee had previously exhibited weaknesses in the freeze sealing process; therefore, the licensee's performance was noted to have been improved. The inspectors noted that, except for minor administrative documentation errors that were immediately corrected, the task was performed properly and in accordance with the MAI. Good coordination was observed between operations

and maintenance personnel in establishing the freeze seal and draining the associated piping.

c. Conclusions

The replacement of the SSW loop seal valves was performed in a step by-step manner and in accordance with procedures. Good coordination was observed between operations and maintenance personnel in establishing conditions for the work.

M1.3 Repeated Failures of Containment Airlock Door Sealing Systems

a. Inspection Scope (62707,61726)

On January 17, 1997, the inspectors observed portions of the replacement of a broken valve stem on the 171-foot elevation containment air lock inner door, upper sealing system ball valve, in accordance with MAI 310118. The inspectors also observed portions of the postmaintenance testing and reviewed the completed test data.

b. Observations and Findings

The inspectors found that the MAI instructions were of sufficient detail for the skill of the crafts such that the quality of this maintenance activity was sufficiently controlled. The appropriate personnel and safety precautions were taken. The clearance was found to be appropriate and the work area on the floor grating was covered with mats to help prevent losses of tools and parts into the suppression pool. Craft supervision was present during some of the work and provided appropriate oversight. The craftsmen appeared adequately trained and experienced and performed their work in a professional manner in accordance with the MAI instructions. The postmaintenance air drop tests were performed in an excellent manner. The test performers followed the procedure and exercised great care in establishing a stable initial pressure to obtain meaningful results. Completed test data was legible and calculations were correct.

This was the second failure of a containment airlock door sealing system ball valve stem. On December 26, 1996, the lower ball valve in the same airlock door failed. The licensee replaced the stem and subsequently determined that the stem seal o-ring groove had signs of chloride stress corrosion cracking. This weakened the type 316 stainless steel stem and it eventually failed while in service from apparent fatigue.

The containment airlock door seal system ball valves had a history of leakage problems over the past year. To ensure the systems were maintained leak tight, the licensee increased the frequency of the air drop surveillance test from the TS-required periodicity of 18 months to quarterly. The licensee experienced several

test failures during the past year. The licensee replaced ball valve Tefzel seats and air lanced the carbon steel accumulators to remove the rust particles that appeared to have caused scratches on the balls resulting in seating failures. The licensee removed the lubricant from the ball valves because the lubricant appeared to trap the rust particles in the seating areas. In addition, the licensee concluded, in December 1996, that the valve body fasteners were not installed with sufficient torque, thereby defeating the seat design. Successful drop tests following the removal of lubricant and applying greater torque to the valve body fasteners led the licensee to believe they had solved the problem. However, tightening of the body and removing lubricant in combination with the presence of stress corrosion cracking may have contributed to valve stem failure.

The General Manager, Plant Operations directed a SERT be formed on January 21, 1997, to determine the root causes of the multiple failures of the air lock door sealing systems and to implement permanent corrective actions. By January 24, the SERT performed and implemented, in part, the following immediate corrective actions:

- Inspected ball valve balls and seats and replaced them if there were signs of wear or scoring.

- Replaced all of the Type 316 stainless steel ball valve stems with Type 630 stems, which were stronger and less vulnerable to chlorides.

- Applied a light film of vendor-approved lubricant in the ball valves.

- Retorqued the ball valve body bolts to the greater torque.

- Air lanced the accumulator tanks to remove as much rust as possible.

- Replaced the ball valve operating gear clamp pieces with new clamp pieces with a thickness equal to the gear to ensure even forces on the valve stems. The original clamp pieces were thinner than the gear, but were within drawing tolerances.

- Removed all locking compound from the valves and fasteners. This compound was found to be a potential source of chlorides which could lead to stress corrosion cracking on stainless steel parts.

The SERT was continuing its investigation as of the end of this inspection period and has recommended a list of 31 action items, some of which were completed. The SERT was considering design improvements that would eliminate the identified causes of frequent ball valve failures. One example was to replace the carbon steel accumulator tanks with stainless to eliminate rust as a potential ball valve failure mechanism. In the meantime, the SERT established a monthly air drop test for each of the airlock door sealing systems in lieu of the 18 month TS surveillance interval

until confidence was established that the ball valves would not fail. In addition, the SERT implemented a weekly inspection for obvious leaks, which would precipitate an immediate drop test.

c. Conclusions

After failures of the containment airlock door seal air ball valves, the licensee appropriately formed a SERT to determine the root causes and recommend permanent corrective action. Actions already implemented as well as those recommended appeared to be appropriate to correct the problem. Maintenance technicians performed the work and postmaintenance testing in an excellent manner.

M1.4 Missed Surveillance on Hydrogen Mixing Valves

a. Inspection Scope (61726)

The inspectors evaluated the licensee's response to CR 96-2033, which identified that the licensee had not met the surveillance requirement to verify that the hydrogen mixing valves were closed every 31 days.

b. Observations and Findings

On December 2, 1996, during a procedure review to implement a TS change, the licensee discovered that TS SR 3.6.5.3.2 was not implemented by Procedure STP-000-0201, "Monthly Operating Logs," Revision 15, as indicated by the licensee's TS/surveillance procedure cross-reference matrix. TS SR 3.6.5.3.2 requires the licensee to verify that the hydrogen mixing valves were in the closed position every 31 days. The licensee reviewed other similar procedures and could not identify any procedure in which the requirements of TS SR 3.6.5.3.2 were met. Operators entered TS SR 3.0.3, which allows the licensee 24 hours to perform a missed surveillance before declaring the LCO not met. Operators verified that all of the hydrogen mixing valves were closed and the licensee exited TS SR 3.0.3.

The investigation revealed that during the development of the Improved TS, an error in renumbering the new surveillance requirements was made such that the TS/surveillance procedure cross-reference was in error. The licensee also noted that prior to February 1996, the valve position of the hydrogen mixing valves was verified daily, to track the amount of time that the valves were open in accordance with Procedure STP-000-0001, "Daily Operating Logs." However, because the Improved TS no longer required the licensee to track the amount of time that the hydrogen mixing valves were open, the licensee deleted the daily valve position verification of the hydrogen mixing valves.

The licensee failed to satisfy the requirements of TS SR 3.6.5.3.2 from February to December 1996. However, this failure to meet the TS was mitigated because

operators verified the position of the hydrogen mixing valves during the quarterly operability surveillance test of the hydrogen mixing fans. Therefore, the licensee had reasonable assurance that the valves were closed during the time period that the surveillance was missed.

For corrective action, the licensee corrected their TS/surveillance procedure matrix and performed a review of the Improved TS to ensure that no other TS renumbering errors occurred.

The failure to verify the hydrogen mixing valves closed every 31 days is a violation of TS SR 3.6.5.3.2. 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 (50-458/9617-01).

c. Conclusions

An NCV was identified for failure to implement TS Surveillance Requirement 3.6.5.3.2, which required monthly verification that the hydrogen mixing valves were closed. The licensee made an error in renumbering requirements for the improved TS, which resulted in an incorrect procedure being referenced in the TS/surveillance procedure cross-reference matrix.

M1.5 Missed Surveillance on Scram Accumulators

a. Inspection Scope (61726)

The inspectors evaluated the licensee's response to CR 96-2046, which identified that the licensee had not met the surveillance requirement to perform a channel functional test on the associated alarm circuit for each control rod scram accumulator.

b. Observations and Findings

On December 5, 1996, during a procedure upgrade technical review, the reviewer discovered that the testing methodology used for the channel calibration and channel functional test of scram accumulator pressure and leakage alarms, respectively, did not test all circuits between the transmitters and the common alarm located in the control room. Procedure STP-500-4201, "Control Rod Scram Accumulator Instrumentation 18 Month Channel Functional and 18 Month Channel Calibration," Revision 6, was revised in June 1994 to test the common alarm only once from one accumulator. The procedure reviewers assumed that sufficient overlap was provided through the RC&IS system continuous diagnostic; however, the procedure upgrade reviewer noted that not all of the alarm logic was being

tested for each of the 145 accumulator transponder circuits. The AND gate for the pressure and leakage alarm was not tested by the self-diagnostic.

The operators entered Technical Requirements Manual SR 3.0.3, which allowed declaring the accumulators inoperable to be delayed for 24 hours to permit accomplishment of the surveillance test. Procedure STP-500-4201, Revision 7, was changed and within the 24-hour period, all 145 accumulator circuits were satisfactorily tested for common alarm annunciation. The inspectors observed portions of the performance of the revised surveillance test and found no problems.

The procedure upgrade project is a corrective action commitment in progress for previously identified inadequacies in surveillance test procedures. This process has been effective in making improvements in technical content, usability, and format. Utilizing reviewers with technical experience and expertise in the instrument and controls area has enhanced this effectiveness as demonstrated by the appropriate identification and dispositioning of this issue. For additional permanent corrective action, maintenance management had discussions with the instrument and control technicians to reinforce sensitivity toward digital control and alarm systems.

Failure to maintain Procedure STP-500-4201 technically adequate is a violation of TS 5.4.1.a. 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 (50-458/9617-02).

c. Conclusions

The procedure upgrade reviewer demonstrated excellent performance in identifying and documenting on a CR a missed surveillance requirement associated with the control rod scram accumulator instrumentation testing. An NCV was identified for failure to maintain the technical adequacy of the surveillance test procedure implementing the requirement to test the common control room alarm from all of the scram accumulators.

M1.6 IST of the Division II SSW System

a. Inspection Scope (61726)

On January 17, 1997, the inspectors observed performance of Procedure STP-256-6304, "Standby Service Water B Loop Quarterly Pump and Valve Testing," Revision 8.

b. Observations and Findings

The test was performed with satisfactory results and the operators followed the procedure in a step-by-step manner. During previous performances of SSW IST, the licensee did not take vibration data at the locations specified in Attachment 4 of Procedure STP-256-6304, which was discussed as a violation in NRC Inspection Report 50-458/96-15. The licensee corrected the procedural deficiencies for the test performance of January 17.

However, the inspectors noted that a sign on the entrance to the SSW pump rooms stated that the SSW pumps were not protected by suction strainers and provided instructions that all gaps in the floor must be covered during work to preclude dropping items into the SSW basin. The inspectors questioned the operators as to why they did not cover the holes in the floor during SSW pump testing per the posted sign. The operators stated that they did not notice the sign upon entry.

The inspectors determined that this sign was posted on the entry as corrective action for CR 91-0362, generated in 1991, which identified an item dropped into the SSW pump basin during a previous performance of SSW IST. The inspectors informed the shift superintendent, who wrote CR 97-0043 to address the inspectors' concerns with the effectiveness of the corrective actions for CR 91-0362.

The licensee's investigation revealed that none of the operators that frequently entered the SSW pump rooms had previously noticed the sign requiring holes to be covered. The inspectors noted that although the corrective actions for CR 91-0362 appeared to be ineffective for alerting personnel to take proper precautions to prevent dropping items into the SSW basin, no items were known to have fallen into the basin; therefore, the licensee appeared to have reasonable assurance of operability. However, the inspectors noted that the SSW system was the most important system with respect to risk significance in the licensee's individual plant examination, which emphasized the importance of taking conservative precautions to protect this system. The failure to implement instructions as corrective action to preclude dropping items into the SSW basin is a violation of 10 CFR Part 50, Appendix B, Criterion V (50-458/9617-03).

c. Conclusions

A violation was identified for the failure to take effective corrective actions to preclude dropping items into the standby cooling tower basin. Because SSW was the most important system in the licensee's individual plant examination, this violation emphasized the importance of taking conservative precautions to ensure operability. The IST of the Division II SSW pumps was otherwise performed properly and in accordance with the procedure.

M1.7 Surveillance Test of LPCI Pump C Pump Start Logic (61726)

On January 13, 1997, the inspector witnessed performance of Procedure STP-204-1302, "LPCI Pump C Start Time Delay Channel Calibration and Channel Functional Test," Revision 9A. The inspectors noted that the craftsmen consistently used good self-checking and sound electrical safety practices. The surveillance was performed in accordance with the procedure and the data was satisfactory.

M8 Miscellaneous Maintenance Issues (92902, 92700)

M8.1 (Closed) Violation 50-458/9525-03: Surveillance testing of the average power range monitors was not performed at the frequency specified by the TS. Amendment 74 of the TS, issued on August 2, 1994, reduced the frequency of a number of surveillance requirements from weekly/monthly to quarterly; however, the surveillance interval for the flow biased, thermal power trip remained at 7 days.

Immediate corrective actions to perform the surveillance tests and revise the implementing procedures were reviewed by the inspectors at the time. The results were satisfactory. The licensee reviewed all surveillance requirements associated with Amendment 74 and found no additional deficiencies. In response to this violation, the licensee referred to Licensee Event Report (LER) 50-458/95-009 for permanent corrective actions. The LER stated that implementation of TS Amendment 81, which was the Improved TS, on October 1, 1995, resulted in several improvements such as improved format providing for unique surveillance requirement numbering, revised surveillance test procedure data base to facilitate cross referencing specific surveillance requirements, and licensing procedures for processing license document changes were significantly revised to support implementation of the Improved TS.

The above referenced corrective actions were not fully effective, as demonstrated by the missed surveillances discussed in Sections M1.4 and M1.5 of this inspection report and in NRC Inspection Report 50-458/96-26. NRC Inspection Report 50-458/96-26 cited a violation for a breakdown in the licensee's surveillance testing program, which included similar examples of missed surveillances. The extensive corrective actions implemented and planned by the licensee in response to that enforcement action supersedes this item and the effectiveness of those actions will be evaluated during a future inspection.

M8.2 (Closed) LER 50-458/95-002: Deficient IST surveillance of EDG air receiver check valves because of an inadequate procedure.

On March 21, 1995, the EDG system engineer identified that the surveillance procedures for verifying the operability of the Division I and II EDG air receiver tank inlet check valves were deficient. The test incorrectly included nonsafety-related check valves in the test boundary. This LER was discussed and left open in NRC

Inspection Report 50-458/96-16. One corrective action for this problem was to train system engineers and other selected personnel who reviewed and verified IST surveillance procedures. When the inspectors reviewed the training records, they found that 4 engineers were not trained in this regard. The LER was left open pending completion of this training. After being informed of this observation by the inspectors, the licensee documented the discrepancy in CR 96-2069. On December 13, 1996 training was provided for the 4 engineers plus one extra. The inspectors reviewed the training attendance sheet. All system engineers who reviewed IST procedures were trained.

Failure to perform IST surveillance testing of the correct skid-mounted check valves in the EDG starting air system was a violation of former TS 4.0.5. 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 (50-458/9617-04).

M8.3 (Closed) LER 50-458/96-003: Engineered safety feature actuations because of electrical protection assembly breaker trip. This event was discussed in NRC Inspection Report 50-458/96-002, Section 2.2. An unresolved item was identified which questioned industry practice for retesting breakers after they had been racked out and then back in. The unresolved item was closed with no enforcement action as described in NRC Inspection Report 50-458/96-05, Section 9.2.

III. Engineering

E2 Engineering Support of Facilities and Equipment (37551)

E2.1 Outdoor Temperature Effects on Secondary Containment Negative Pressure

a. Inspection Scope

The inspectors evaluated the licensee's response to CR 96-1916, which was initiated as a result of a design engineering review of previous CR 90-0673, which pertained to the effects of extremely low outside temperatures on the ambient pressures required in secondary containment.

b. Observations and Findings

NRC Information Notice 88-76, alerted licensees that the design of secondary containment pressure control and monitoring systems may not have taken into account the temperature-induced difference in pressure gradients versus elevation when the atmosphere outside secondary containment was significantly colder than the ambient temperatures inside. During unusually cold weather, if secondary containment differential pressure was monitored and controlled near the lower

elevations of the building, the differential pressure could be within TS limits in the lower areas of the building; however, in the higher elevations the differential pressure would be less negative or perhaps positive. This is because of the difference in density between the inside and outside atmospheres. Consequently, after the postulated design basis loss-of-coolant accident (LOCA), radiation exposures could be higher than originally calculated because of the increased time there would be a positive differential pressure in the upper elevations of secondary containment.

On November 6, 1996, while updating calculations for standby gas treatment system drawdown analyses for the purpose of converting the calculations over to a new GOTHIC program, the design engineers reviewed the previous licensee disposition of NRC Information Notice 88-76. The design engineers found that the disposition confirmed that during cold weather, a slightly longer positive pressure would exist in secondary containment at the start of a design basis LOCA, but the exclusion area boundary thyroid dose would be less than the 300 REM established by 10 CFR Part 100. The disposition stated that the concern addressed by NRC Information Notice 88-76 was applicable but inconsequential to River Bend Station and no further action would be taken. The design engineers found that the licensing basis was not revised to reflect the increased positive pressure period or the increased post-LOCA doses.

The design engineers determined by calculation that post-LOCA and postfuel-handling accident doses would be within the limits of 10 CFR Part 100, and control room doses would be within the limits of 10 CFR Part 50, Appendix A, General Design Criterion 19, and Standard Review Plan Section 6.4, as long as the outside temperature did not go below 10°F. As an immediate corrective action, the operators were instructed to place the standby gas treatment system and the fuel building exhaust filtration unit in service whenever the outside ambient reached 10°F or below. The inspectors noted that this low temperature extreme would rarely be reached in the geographical area of River Bend Station. The licensee stated that the bounding temperature of 10°F assumed a 0 psi differential at ground level, an inside temperature of 85°F, and a relative humidity of 80 percent inside and 0 percent outside. The inspectors questioned when, since startup in 1985, the temperature was below 10°F. The licensee responded by producing meteorological tower printouts that indicated on December 23, 1989, the temperature dropped to 7°F for about 2 hours. This had a negligible effect on the positive pressure period such that postulated dose limits would not have been exceeded.

Until the differential pressure monitoring and alarm equipment could be modified to indicate the most conservative differential pressure, the design engineers provided curves indicating acceptable values of differential pressure as measured with existing equipment as a function of outside temperature. The engineers developed curves for the reactor building annulus, auxiliary building, and fuel building. The curves were incorporated into Procedure STP-000-0001, "Daily Operating Logs," Revision 20. A 10 CFR 50.59 safety evaluation was completed in support of the

change. The inspectors reviewed the change and the safety evaluation and found them to be technically adequate.

For long-term corrective actions, the licensee was considering moving the differential pressure monitoring and alarm equipment detectors to a higher elevation and/or changing the setpoints to a more conservative value so that there would be no problems with temperature-induced differences in pressure gradients in secondary containment.

c. Conclusions

Design Engineering demonstrated a good questioning attitude in reviewing the licensee's 1990 response to NRC Information Notice 88-76, relative to possible secondary containment positive pressures caused by low outside temperature extremes. Immediate action to provide the operators with outside temperature dependent acceptance criteria for secondary containment pressure was appropriate to the circumstances pending implementation of permanent corrective action.

E2.2 Review of Facility Conformance to Updated Final Safety Analysis Report (UFSAR) Descriptions

A recent discovery of a licensee operating their facility in a manner contrary to the UFSAR description highlighted the need for a special focused review that compares plant practices, procedures and/or parameters to the UFSAR description.

While performing the inspections discussed in this report, the inspectors reviewed the applicable portions of the UFSAR that related to the areas inspected. The following inconsistency was noted between the wording of the UFSAR and the plant practices, procedures and/or parameters observed by the inspectors:

While reviewing the UFSAR as it pertained to containment personnel air locks, discussed in Section M1.3 of this inspection report, the inspectors noted a minor inconsistency between the design description of the airlock door interlocks in the UFSAR and the actual design. Section 3.8.2.1.3.2 of the UFSAR stated that the airlock design is such that a failure of two devices/systems (double failure) is required to place the doors in a condition where both doors could not be opened simultaneously, thus satisfying the single-failure criteria. The word not was incorrect, in that the installed doors could be opened simultaneously in the event of a double interlock failure.

The licensee promptly initiated action to revise the UFSAR to delete the word not. The licensee's response to this minor inconsistency was appropriate. No additional documentation is required in this report.

E8 Miscellaneous Engineering Issues (92903)

E8.1 (Closed) Violation 50-458/9525-01: Failure to meet General Design Criterion 55. The inspectors identified that a line connected to the low pressure core spray system did not contain a locked closed manual valve or was not determined to be acceptable on some other defined basis. For corrective actions, the licensee: (1) performed a review to determine if any other lines had a similar problem and noted that the residual heat removal system had a similar configuration, (2) identified the containment isolation boundary and sealed closed the applicable valves, (3) revised the applicable system operating procedures, (4) revised the UFSAR, and (5) revised the engineering instruction that determined locking requirements. The inspectors reviewed the licensee's documentation of corrective actions and determined that these items were satisfactory. In addition, the inspectors verified that the valves in question were locked in the field.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 General Comments (71750)

Throughout this inspection period, the inspectors observed performance in radiological protection. For the activities observed, the inspectors noted that personnel properly donned dosimetry and followed radiological postings. The inspectors verified that a sample of radiation, high radiation, and locked high radiation areas were properly posted and controlled.

S1 Conduct of Security and Safeguards Activities

S1.1 General Comments (71750)

Throughout this inspection period, the inspectors observed security officers as they performed their duties. The security officers were alert at their posts, security boundaries were maintained properly, and entry screening processes were performed properly at the primary access point. Except for one minor discrepancy that was immediately corrected, the inspectors noted during night tours that the protected area was properly illuminated.

P3 Emergency Preparedness Procedures and Documentation

P3.1 Licensee On-shift Dose Assessment Capabilities (TI 2515/134)

a. Inspection Scope

Using TI 2515/134, the inspectors reviewed information regarding:

- Dose assessment commitment in emergency plan
- On-shift dose assessment emergency plan implementing procedure
- On-shift dose assessment training

b. Observations and Findings

On December 16, 1996, the inspectors conducted an in-office review of the emergency plan and implementing procedures to obtain the information requested by the temporary instruction. The inspectors conducted a telephone interview with the licensee on December 17, 1996, to verify the results of the review. Based on the documentation review and the licensee interview, the inspectors determined that the licensee had the capability to perform on-shift dose assessments using real-time effluent monitor and meteorological data and that the commitment was described in the emergency plan and implementing procedures.

c. Conclusions

The commitment to perform onshift dose assessments was appropriately described in the emergency plan and implementing procedures. Further evaluation of the information obtained using the TI will be conducted by NRC Headquarters personnel.

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 February 6, 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, Plant Engineering
J. Holmes, Superintendent, Chemistry
H. B. Hutchens, Superintendent, Plant Security
T. R. Leonard, Director, Engineering
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
R. L. Roberts, Acting Manager, Maintenance

INSPECTION PROCEDURES (IP) USED

IP 37551	Onsite Engineering
IP 61726	Surveillance Observations
IP 62707	Maintenance Observation
IP 71707	Plant Operations
IP 71750	Plant Support Activities
IP 92700	Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities
IP 92901	Followup - Operations
IP 92902	Followup - Maintenance
IP 92903	Followup - Engineering
TI 2515/134	Licensee On-Shift Dose Assessment Capabilities

ITEMS OPENED AND CLOSED

Opened

50-458/9617-03	VIO	Failure to implement effective corrective action (Section M1.6)

Closed

50-458/9525-01	VIO	Failure to meet General Design Criterion 55 (Section E8.1)
50-458/9525-03	VIO	Missed surveillance on average power range monitors (Section M8.1)
50-458/95-002	LER	Deficient IST procedure for EDG air receiver check valves (Section M8.2)
50-458/96-003	LER	Engineered safety feature actuations due to electrical protection assembly breaker trip (Section M8.3)

Opened and Closed

50-458/9617-01	NCV	Failure to verify hydrogen mixing valves closed every 31 days (Section M1.4)
50-458/9617-02	NCV	Failure to maintain Surveillance Test Procedure STP-500-4201 technically adequate (Section M1.5)
50-458/9617-04	NCV	Failure to perform IST of the correct check valves in the EDG starting air system (Section M8.2)

LIST OF ACRONYMS USED

CR	Condition Report
EDG	Emergency Diesel Generator
EOP	Emergency Operating Procedure
IP	Inspection Procedure
IST	Inservice Testing
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LOCA	Loss-of-Coolant Accident
LPCI	Low Pressure Coolant Injection
MAI	Maintenance Action Item
NCV	Noncited Violation
PDR	Public Document Room
psig	Pounds per Square Inch Gage
RC&IS	Rod Control and Information System
SERT	Significant Event Review Team
SR	Surveillance Requirement
SSW	Standby Service Water
TI	Temporary Instruction
TLCO	Technical Limiting Condition for Operation
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report