APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 50-382/94-05

License: NPF-38

Licensee: Entergy Operations, Inc.
P.O. Box B
Killona, Louisiana

Facility Name: Waterford Steam Electric Station, Unit 3 (Waterford 3)

Inspection At: Waterford 3

Inspection Conducted: January 29 through March 5, 1994

Inspectors: E. J. Ford, Senior Resident Inspector
J. L. Dixon-Herrity, Resident Inspector

Approved: _____ 4/7/94
Thomas F. Stetka, Chief, Project D Date

Inspection Summary

Areas Inspected: Routine, unannounced inspection of plant status, onsite response to events, operational safety verification, maintenance and surveillance observations, followup on corrective actions for violations, and other followup.

Results:

- A violation was identified in that instructions providing guidance on the installation of temporary shielding in close proximity to safety-related equipment operability of safety-related equipment were inappropriate (Section 3.1.1).
- Leaving a bag of contaminated trash on Containment Spray Pump B was identified as a poor practice (Section 3.1.2).
- The security staff took appropriate action to control access to the protected area (Section 3.1.3).
- The operation's shift brief was noted to be well run and informative (Section 3.1.3).

- An inspection followup item was opened to review the root cause and corrective actions taken in response to concerns with the component cooling water heat exchanger shell side relief valves and the design pressure of the auxiliary component cooling water system (Section 3.2).

- Maintenance and surveillance tasks observed were performed in accordance with procedures, with satisfactory results (Sections 4 and 5).

- Quality assurance, health physics, and system engineering personnel provided good maintenance support (Section 4.3).

- An observant operator noted that a Technical Specification surveillance had been missed while preparing to perform a surveillance (Section 5.2).

- The licensee was sensitive to correcting and tracking equipment problems discovered through the inservice test program and was conservative with respect to continuing to test components at an increased frequency after corrective actions had been accomplished. (Section 6.0).

Summary of Inspection Findings:

- Violation 382/9405-01 was opened (Section 3.1.1).
- Inspection Followup Item 382/9405-02 was opened (Section 3.2).
- Unresolved Item 382/9405-03 was opened (Section 5.2).
- Violation 382/9319-01 was closed (Section 7.1).
- Inspection Followup Item 382/9327-01 was closed (Section 8.1).

Attachments:

- Persons Contacted and Exit Meeting

DETAILS

1 PLANT STATUS

The plant operated at full power from the beginning of the reporting period until February 5, 1994, when reactor power was reduced to approximately 93 percent to allow routine turbine valve testing. The plant was returned to full power and remained there until March 4, 1994, when the licensee commenced decreasing power for Refuel Outage 6. At the close of the reporting period, the plant was in Mode 4.

2 ONSITE RESPONSE TO EVENTS (93702)

2.1 Unauthorized Fuel Movement

On February 18, 1994, at approximately 10:30 a.m., the licensee discovered the spent fuel handling machine grapple engaged to an unidentified container which apparently had been pulled out of its designated storage area. The licensee later determined that it was a fuel rod encapsulation tube which contained a damaged fuel rod from fuel reconstitution activities that occurred during Refuel Outage 2.

The licensee verified that there was no change in radiation levels on any of the four fuel handling building area radiation monitors during the event, nor did dosimetry of any of the individuals in the area show any unusual or unexpected readings (security card reader histories were used to determine who had the potential to be in the area). It was determined that the encapsulation tube had remained well below the surface of the spent fuel pool at all times. An investigation and interviews were conducted, but the licensee was not able to positively identify how the container became engaged in the spent fuel handling machine grapple. One explanation was that the tube was inadvertently snagged during spent fuel handling machine training operations and was wedged against the bottom of the fuel handling grappling tool (a part of the spent fuel handling machine). The tube was secured in a safe location in the pool and a continuous health physics technician watch was established at the spent fuel pool until it was returned to its storage location on February 19, 1994.

A fuel integrity and reactor subcriticality followup inspection conducted further reviews of the event and the findings will be documented in NRC Inspection Report 50-382/94-03.

3 OPERATIONAL SAFETY VERIFICATION (71707)

The objectives of this inspection were to ensure that this facility was being operated safely and in conformance with regulatory requirements and that the licensee's management controls were effectively discharging the licensee's responsibilities for continued safe operation.

3.1 Plant Tours

3.1.1 Temporary Shielding Construction

On January 26, 1994, while touring the area outside containment on the -4-foot level of the reactor auxiliary building, the inspectors noted that two temporary shielding structures in the area had been rebuilt and that one was in the process of being rebuilt. The structures consisted of scaffold frames supporting lead sheets. The original shielding was lead-wool blankets. The licensee replaced these with lead sheets, completed seismic reviews of the structures, and rebuilt the scaffolding to make the structures more permanent.

The structures were constructed in response to a concern addressed in NRC Inspection Report 50-382/92-26. The original postaccident radiation level calculations for the area failed to account for the recirculation of highly contaminated reactor coolant from the sump through the containment spray and high pressure safety injection lines. The failure of the accumulator for Return Header Inside Containment Isolation Valve CC-710 would have created a need for personnel to enter the area to manually isolate the header in the event of an accident. The temporary shielding structures were installed so as to limit operator exposure while performing this task.

The inspectors reviewed the construction of the two completed and one partially completed structure. A lead sheet on the completed structure near component cooling water (CCW) Return Header Containment Isolation Valve CC-713 was contacting the electrical conduit for the valve's solenoid. Also, lead sheeting on the partially completed structure was contacting High Pressure Safety Injection Line Snubber SIRR-1055. The inspectors discussed their observations with both radiation protection supervision and other licensee representatives. Personnel from design engineering inspected the structures and identified an additional concern in that the lead sheets came within 1 inch of an electrical conduit in the vicinity of the third temporary structure. On January 27, 1994, the structures were reworked so that the lead sheeting was at least 1 inch away from safety-related equipment or structures. Condition Report (CR) 94-067 was written to determine the root cause and necessary corrective actions. The inspectors verified these actions.

Administrative Procedure HP-001-114, Revision 4, "Installation of Temporary Lead Shielding," addressed the installation of shielding in close proximity to safety-related equipment. The inspectors noted that, while it prohibited attaching shielding to safety-related equipment, it did not provide guidance on the proximity of shielding installations to equipment or structural components. In addition, the inspectors noted that, while the procedure required a review for the effect of the installation on nearby equipment prior to the construction of the temporary shielding, it did not require an examination of the completed temporary shielding to identify and eliminate interference or contact with plant equipment or structures.

The inspectors reviewed Work Authorization (WA) 0118359, Problem Evaluation/Information Request (PEIR) TS-042, and Engineering

Calculation EC-C94-01, Revision 0, "Supporting Calculation for PEIR TS-042." These documents were detailed but did not clearly address the installation of the lead sheets in close proximity to equipment or structures. The structures had been inspected when the scaffolding modifications were complete and the lead sheeting was in the process of being hung, but not after the two structures were completed (on January 19, 1994).

The lack of appropriate instructions regarding the installation of temporary shielding in close proximity to safety-related equipment is considered to be a violation of 10 CFR Part 50, Appendix B, Criterion V (382/9403-01).

3.1.2 General Site Tour

During tours on February 2 and 3, 1994, the inspectors noted that a great deal of preparation for the refueling outage was underway. Scaffolding was being constructed in nonvital areas and temporary shielding was installed in vital areas in preparation for shutdown cooling. The inspectors observed no operability concerns with the structures inspected. Although some of the secondary steam leaks identified as problems in NRC Inspection Report 50-382/93-35 had been worked on and improvements noted, a large number of leaks still existed. The inspectors did note, however, that much of this work was scheduled for the refueling outage.

While touring Safety Injection Pump Room B, the inspectors noted a bag of contaminated insulation and trash lying on Containment Spray Pump B. Operations supervision was informed and the bag was immediately removed. CR 94-80 was generated to determine the reason the bag was left there. The CR was later reviewed by the quality assurance organization and the condition review board and invalidated due to the event being below the threshold of a condition requiring a CR. A precursor trending program card was completed identifying radwaste as the responsible department. The bag did not affect operability of the pump.

3.1.3 Observations During the Shutdown for Refueling Outage 6

On March 5, 1994, the inspectors noted, upon entering the primary access point for the protected area, that the security staff on duty was taking appropriate actions to maintain control over plant access. Due to the large number of personnel reporting for duty at the same time, security personnel were limiting the number of personnel that could enter the access point at one time. The entry process was closely observed and well controlled due to this action. The inspectors also noted that groups had been assigned staggered work schedules to diminish the problem and it was not subsequently observed.

The inspectors observed the operations staff shift brief following the shift change in the control room. The meeting was well managed and informative. On-shift personnel were appropriately warned of changing conditions in the plant and to remain observant due to the large number of personnel onsite unfamiliar with plant layout and procedures. In addition to the shift

personnel, the meeting was attended by supervisors from the operations and maintenance departments.

The inspectors noted that activity in the control room was controlled and did not interfere with the operator's duties. Access to the surveillance area (made up of the control panels and controls) was prevented both by Administrative Procedure OP-100-001, Revision 7, "Duties and Responsibilities of Operators on Duty," and boundary ropes until permission to enter was granted. Maintenance personnel requesting clearance to start work dealt with the shift supervisor in the administrative area, which is separated from the surveillance area by a glass wall. The noise level was being maintained so as not to distract the operators.

3.2 Auxiliary Component Cooling Water (ACCW) Operating Problem

On January 28 and 30, 1994, the licensee noted that ACCW Header B CCW Heat Exchanger Shell Side Relief Valve ACC-121B lifted when ACCW Pump B was started. The valve reseated when the pump was secured on January 28. The licensee could not verify that the valve reseated after the pump was secured on January 30. Valve ACC-121B was gagged shut and the heat exchanger outlet valve caution tagged open to ensure the heat exchanger was not isolated. Condition Identifications 189194 and 289217 and CRs 94-066 and 94-070 were written to resolve the concern.

Later, the setpoint on Valve ACC-121B was raised to ensure the valve would not lift when ACCW Pump B was started. The licensee performed tests and concluded that the ACCW system was operated at a pressure greater than the design for both Trains A and B on the section of piping from the discharge of the pump up to but not including the heat exchanger.

Nonconformance Condition Identification 289221 was written to resolve the operating pressure discrepancy and Site Directive W4.101, Revision 0, "Nonconformance/Indeterminate Analysis Process," was invoked to determine system operability. The resulting evaluation found that the system was operable because the system could still perform its safety functions in both the postaccident and safe shutdown scenarios. CR 94-072 was written to track this issue.

During the troubleshooting effort to identify the cause of the high pressures, the licensee found air in both the inlet and outlet piping in the vicinity of the CCW Heat Exchangers. There was enough air in the systems to warrant investigation of the effect the air would have on system operation. Site Directive W4.101 was again implemented and the system's operability was evaluated. The evaluation found that dynamic loads which would result from the water hammer effect the air could create would not damage system piping and components. It was recommended that the trains remain operable.

The licensee has elected to address the root causes and corrective actions for these items in the response to CR 94-072. Inspection Followup Item 382/9405-02 has been opened to review the root causes identified and

electrically when the manual declutch lever was in the manual mode, although it would electrically stroke when in the electrical mode.

On February 8, 1994, Valve MS-120B was inspected, the tripper fingers were found to be worn, and the tripper finger adjustment arm was out of adjustment. This valve had an old-style housing with no set screw adjustment to secure the adjustment arm in place. The tripper fingers were replaced and the valve was VOTES tested.

Although the valve VOTES tested satisfactorily, it failed to stroke electrically from the manual mode once out of the eight times this sequence was repeated to test the valve. The licensee experienced similar problems with this valve as documented in NRC Inspection Report 50-382/93-32. The licensee left the valve closed and inoperable until the upcoming Refuel Outage 6, when it could be completely disassembled to diagnose the problem. The licensee also planned to test Valves MS-119A and MS-401A during this refuel outage to verify that similar problems do not exist with these valves.

3.4 Conclusions

The absence of instructions providing guidance on the installation of temporary shielding in close proximity to safety-related equipment was identified as a violation. Leaving a bag of contaminated trash on Containment Spray Pump B was identified as a poor practice. The security staff took appropriate action to control access to the protected area. The operation's shift brief was noted to be well run and informative. An inspection followup item was opened to review the root cause and corrective actions taken in response to concerns with the ACCW system. The licensee's active pursuit of an MOV problem discovered during postmaintenance testing led to the discovery of an additional problem on a different MOV which would have normally gone undetected.

4 MONTHLY MAINTENANCE OBSERVATION (62703)

The station maintenance activities affecting safety-related systems and components listed below were observed and documentation reviewed to ascertain that the activities were conducted in accordance with approved WAs, procedures, and Technical Specifications and appropriate industry codes or standards.

4.1 Containment Spray Train A Outage

On February 9, 1994, the inspectors observed portions of preventive maintenance performed on the Containment Spray Pump A motor and motor circuit breaker. The work on the motor was performed in accordance with WA 1118315 and Maintenance Procedure ME-004-351, Revision 4, "Containment Spray Pump Motor." The inspectors noted that the proper safety equipment was used as required by the procedure and that calculations that were performed were correct. The task involving the circuit breaker was performed in accordance with WA 1116428 and Maintenance Procedure ME-004-131, Revision-8, "4.16 KV

corrective actions taken with regard to the lifting relief valve, the source of the air in the ACCW system, and the design pressure discrepancies.

3.3 Motor-Operated Valve (MOV) Failures

On February 3, 1994, Emergency Feedwater Pump Turbine Steam Shutoff Valve MS-401B failed to open electrically during the performance of Surveillance Procedure OP-903-046, Revision 10, "Emergency Feed Pump Operability Check," the postmaintenance test of Emergency Feedwater Pump AB. It was standard practice onsite to ensure an MOV was fully closed by manually operating it in the closed direction when tagging the valve out for maintenance. Operations personnel were then required to electrically operate the MOV prior to returning it to service and declaring the valve operable.

The manual declutch lever was found engaged when the failed valve was inspected. During troubleshooting, electrical maintenance personnel found that the declutch tripper cams were deformed. However, the tripper fingers properly operated when the valve was not loaded. The actuator was removed and disassembled. No additional worn or damaged components were found. The declutch finger cams were replaced with new ones and the reassembled actuator was successfully VOTES tested.

Operations personnel duplicated the condition the valve was in when it originally failed and attempted to stroke the valve. The valve failed to stroke electrically. Operations personnel then unseated the valve slightly and successfully stroked the valve.

The licensee determined that the root cause of the failure was the high excessive friction between the clutch key and keyway, preventing the valve from going automatically from the manual to electrical mode. The friction force was greater than the spring load force of the clutch compression spring, causing the clutch key to hang up and fail to return to the electrical mode. Slightly unseating the valve prior to electric operation reduced the clutch key and keyway friction force, allowing the actuator to return to the electrical mode. The licensee discussed this event with the MOV user group and found that this type of actuator was susceptible to failing when the handwheel was manually torqued into the seat and could cause improper electrical/manual operation.

The licensee inspected other MOVs in the vicinity of Valve MS-401B to determine if there was interference between the manual declutch lever and the MOV actuator as part of the corrective action for this event. The inspection was limited in scope because the licensee considered the most probable cause of the damage to have been related to heavy painting and preservation activities in the vicinity of MS-401B. Other valve operators of this type would be tested during their routine scheduled surveillance or IST tests. On February 7, 1994, Main Steam Drip Pot Bypass and Normal Drain Valves MS-119B and MS-120B were inspected and no interference was found. Each valve was manually declutched then stroked in the electrical mode. Valve MS-119B was successfully electrically stroked. Valve MS-120B failed to stroke

G.E. Magne-blast Breaker." In both cases, the procedures were followed and the equipment used was in calibration. A quality assurance auditor observed portions of both jobs.

4.2 High Pressure Safety Injection Pump AB Gasket Replacement

On February 10, 1994, the inspectors observed as mechanical maintenance personnel started disassembling High Pressure Safety Injection Pump AB to replace the head gasket. The work was being done in accordance with WA 01095276 and the vendor technical manual. The inspectors reviewed the work package and found that all authorizations and requirements were being met. Equipment that had been staged was within the calibration period. Representatives from the quality control and system engineering departments and mechanical maintenance supervision observed portions of the job. Health physics support was found to be good. One health physics technician was assigned to monitor the job inside the posted contaminated area, while others supported the job outside the area. Dose rates in the area remained low and samples taken when the system was opened indicated that the system was clean. The hydraulic wrench staged for the job did not operate correctly, but was promptly replaced.

4.3 Conclusions

Maintenance tasks observed were performed in accordance with procedures, with satisfactory results. Quality assurance auditors were noted appropriately performing maintenance observations. Work efforts were well supported by health physics and system engineering personnel.

5 BIMONTHLY SURVEILLANCE OBSERVATION (61726)

The inspectors observed the surveillance testing of safety-related systems and components listed below to verify that the activities were being performed in accordance with the licensee's programs and the Technical Specifications.

5.1 Condensate Storage Pool Level Loop Transmitter Calibration

On February 10, 1994, the inspectors observed as instrument and controls personnel checked Condensate Storage Pool Level Loop Transmitter EFWIL9013 A to ensure that it was calibrated. The test was performed in accordance with WA 01114047 and Surveillance Procedure MI-003-401, Revision 8, "Condensate Storage Pool Level Loop Check and Calibration EFWIL9013 A." At one point a wire was disconnected and the inspectors questioned why this was not required to be recorded on the wire removal and restoration record. The technicians explained that this record was not required in this case because the procedure required independent verification of the wire's removal and replacement. The inspectors verified that the work instruction allowed for this.

The transmitter was found out of calibration by +0.026 VDC (the acceptable error was +/-0.020 VDC) at the lowest level of indication for the pool. The transmitter was appropriately calibrated. The inspectors discussed what

action was taken as a result of the transmitter being found out of calibration with planning and scheduling personnel involved in data trending. The transmitter was being trended in accordance with Administrative Procedure MD-01-016, Revision 1, "Failure and Trend Analysis." The transmitter was tested every 18 months to verify that it was calibrated and any failures were tracked to determine if there was a trend. There had been one previous failure but, comparing the two, no trend was indicated. The procedure also required that data identified as a result of corrective maintenance be trended. Both failures were identified during performance of the 18-month repetitive task. The trending data was required to be reviewed quarterly to determine if a trend existed. The inspectors determined that the current procedure would cause a trend to be identified and corrective measures to be taken if the transmitter was degraded.

5.2 Functional Test of Plant Protection System (PPS) Channel C

On March 5, 1994, with the reactor in Mode 3 (Hot Standby), the inspector observed portions of the functional test for PPS Channel C. The test was being performed in accordance with Procedure OP-903-107, "Plant Protection System Channel A B C D Functional Test," for the high logarithmic power level trip. During this observation, the inspector became aware of the following discrepancy.

On March 4 at 11:21 p.m., the reactor trip breakers were opened, placing the reactor in Mode 3, to commence Refueling Outage 6. To allow maintenance on the control element assembly (CEA) drive system, the CEA motor generators remained in operation, thereby making them available for CEA withdrawal. This was an abnormal situation as the CEA motor generators are usually secured following a reactor shutdown. On March 5, testing of PPS Channel A commenced in accordance with Procedure OP-903-107, and at 5:25 a.m. the reactor trip breakers were closed as specified by Step 7.24 of this procedure. This action combined with the operating CEA motor generators, created a condition where the CEA's were capable of being withdrawn. This condition was not allowed by Technical Specification 3.3.1, but was not immediately recognized as such and apparently was permitted by Procedure OP-903-107. The performance of the remaining channels to be tested was to be accomplished by the next shift.

The oncoming operator, who was responsible for continuing the ongoing surveillance activity, questioned the plant conditions, i.e., the closed CEA breakers and operating CEA motor generator sets, with his supervision. Upon discovery that conditions were such that CEA withdrawal was possible, the reactor trip breakers were immediately opened. This occurred at 7:55 a.m.

Preliminary reviews by the inspectors indicate that the licensee's interpretation of the Technical Specifications was that all four channels of the PPS should have been tested prior to closing the trip breakers at 5:25 a.m. when the CEA motor-generator sets were in service. It also appears that Procedure OP-903-107 may have been inadequate to address the plant conditions involved in this event. The licensee initiated Condition Report 94-165 to determine root cause and document this occurrence. This event will

require further review to determine if any enforcement action is warranted. Further review of this event will be tracked as Unresolved Item 382/9405-03.

5.3 Conclusions

Surveillance tasks observed were performed in accordance with procedures, with satisfactory results. An observant operator demonstrated a good questioning attitude when it was noted that a Technical Specification surveillance was inconsistent with Technical Specification requirements. This inconsistency will be tracked as an unresolved item.

6 INSERVICE TESTING (IST) PROGRAM

6.1 IST Program Review

The licensee had 510 manual, check, relief, and power-operated valves, and 25 pumps in the IST program. The program was administered by the shift technical advisor group and testing was conducted by the operations staff. Increased frequency (IF) testing was required when a valve (or pump) had tested parameters which were in the ALERT range and the need for more frequent scrutiny was indicated. If a component was in the REQUIRED ACTION range and corrective actions were effective, there would be no requirement for IF testing. The inspector conducted interviews of cognizant personnel and supervisors and reviewed sufficient data and determined that the timeliness of corrective actions for components in the ALERT range were adequate and that, in many cases, the licensee had conservatively elected to keep valves on IF testing to assure the long-term efficacy of corrective actions.

As of February 18, 1994, the licensee had 5 out of 287 of the power-operated valves stroke-timed on IF testing. Two of these valves were found to be in the ALERT range. One of these valves (EFW-223A), a flow-control valve for emergency feedwater, had been on the IF list since January 15, 1991, and was scheduled for repair actions during Refuel Outage 5 (which concluded in November 1992). Although the repairs were effective, the licensee conservatively elected, as allowed by Procedure UNT-006-021, Revision 1, "Pump and Valve Inservice Testing," to keep the valve on an IF testing schedule.

The inspector reviewed data extending back prior to early 1991 and concluded that a relatively small number of components had been on IF testing. The following tables show: (1) components currently on IF testing or in an ALERT status and (2a) components that have been in ALERT or (2b) REQUIRED ACTION in the past year.

Table 1

Components Currently in ALERT	Components Currently in IF Testing	Valve Types and Actuator	Function	Date Placed in ALERT	Actions to Remove from ALERT
ACCW Pump B	ACCW Pump B	N/A	Auxiliary component cooling water	1/6/94	Will be trending
BAM Pump A	BAM Pump A	N/A	Boric Acid Tank	1/24/94	Will be trending
HPSI Pump AB	HPSI Pump AB	N/A	ECCS	2/11/94	Will be trending and Eng. evaluation for slight vibration
CHW-578	CHW-578	Globe, Motor Operated	SWGR AHU Chilled-Water outlet FCV	2/9/94	Will be trending
	CAP-203	Butterfly, Air Operated	Contain. Isolation	12/3/93	Trending
	EFW-223A	Globe, Air Operated	FCV to SG	1/15/91	Evaluating to remove from IF testing
	PSL-204	Globe, Air Operated	Contain. Isolation	11/29/93	Trending & rework in RF-6
SI-303B	SI-303B	Globe, Air Operated	SI Tank drain	2/15/94	Trending

Table 2a

Components Removed from IF Testing	Valve Type and Actuator	Dated Placed on IF Testing	Action to Remove from IF Testing
HPSI Pump AB	N/A	9/25/91	Inoperable during period from Nov. 1991 through May 1992 for evaluation of rotating orifice holes in min flow recirc flow line. In May 1992 a new test baseline was established and pump kept on IF testing for observation until end of 1992. At beginning of 1993 a long-cycle recirc was established (255 vs. 32 gpm) and IF testing was elected until end of July 1993.
Charging Pump B	N/A	7/20/92	Removed from IF testing after loop calibration, pump trending, and engineering evaluation
Fuel Oil Transfer Pump A	N/A	5/23/93	Both pumps A and B were removed from IF testing after further tests to validate pump performance after newly installed min flow d/p (Feb. 1994).
Fuel Oil Transfer Pump B	N/A	8/30/92	Same as above
HPSI Pump A	N/A	12/29/92	Corrective action (WA-01096776) involved setting pump balance drum. This resulted in alert value on vertical inboard bearing. Evaluation performed to remove from IF testing Sept. 1993
EFW-224A	Globe, Air Operated	3/9/92	Calibrated valve and adjusted position 11/2/92. Trended and removed from IF testing 8/27/93

CC-822B	Butterfly, Air Operated	2/23/93	Trended, evaluated and removed from IF testing 6/93
CC-822A	Butterfly, Air Operated	same as above	Trended, evaluated, and removed from IF testing 6/93
CC-823B	Butterfly, Air Operated	same as above	Trended, evaluated, and removed from IF testing 6/93
PSL-107	Globe, Air Operated		Engineering evaluation written to remove from IF testing after evaluating ten stroke times
CHW-129A	Globe, MOV	6/1/93	Engineering evaluation written to remove from IF testing August 1993
FFW-224B	Globe, Air Operated	9/29/91	Replaced booster relay 2/22/92. Trended for 1 year and removed from IF testing
CC-808B	Butterfly, Air Operated	2/23/93	Trended, evaluated, and removed from IF testing 6/93
CC-808A	Butterfly, Air Operated	2/23/93	Trended, evaluated, and removed from IF testing 6/93
CC-807B	Butterfly, Air Operated	2/23/93	Trended, evaluated, and removed from IF testing 6/93
CC-807A	Butterfly, Air Operated	2/23/93	Trended, evaluated, and removed from IF testing 6/93
ACC-139B	Butterfly, Air Operated	2/23/93	Trended, evaluated, and removed from IF testing 6/93
ACC-112B	Butterfly, Air Operated	2/23/93	Trended, evaluated, and removed from IF testing 6/93
CVC-218B	Globe, Target Rock Solenoid Operated	1/25/93	Trended, evaluated, and removed from IF testing 6/93
CC-823A	Butterfly, Air Operated	2/23/93	Trended, evaluated, and removed from IF testing 8/27/93

Table 2b

Component Exceeded Required Action	Valve Type, Actuator	Date	Actions
SI-1161A (LPSI Pump min flow recirc valve)	Globe, Solenoid Operated Target Rock	9/10/93	Stroke time (2.7 sec) exceeded action (2.0). Limit switches required adjustments completed 9/14/93
SI-1161B (same as above)	same as above	11/22/93	Stroke time exceeded max stroke time. Maintenance troubleshot, set point drift determined to be problem, complete 11/23/93

The following valves may have passed the time requirements for valve stroking but, nevertheless, had other inoperability or performance problems.

Component Declared Inoperable *or* Unusual Behavior during Stroke Time Testing	Valve Type and Actuator	Date	Actions
CHW-578 Switchgear Aux. Air Handling Unit Chilled Water Outlet FCV	Globe, MOV	11/12/93	Valve observed mechanically binding during stroke time. Troubleshooting in progress determined bad NDI card causing jerky motion. Valve is within required action limits.
CS-125A Containment Spray Injection Valve	Gate, Air Operated	2/1/93	Valve did not stroke smoothly. Lubricated and stroked six times in March 1993. This valve also identified for rework during RF-6 and is kept open as allowed by TS amendment. This valve strokes within the required action limits.

The inspector performed a sample review of WAs and analyses performed for the following components removed from IF testing and determined that there was a reasonable basis for removal:

SI MPMP0002	High Pressure Safety Injection Pump A	WA 01113018
PSLMVAAA107	RCS Hot Leg Sample Containment Isolation	WA 01115771
CHWMVAAA129	Essential Chiller A Recirc Line FCV	WA 01112753
EGFMPMP0001	Diesel Oil Transfer Pump B	WA 01120218

6.2 Conclusions

There were a small number (five) of valves and pumps (three recently added) on IF testing. The data supports a conclusion that the licensee had been sensitive to correcting and tracking equipment problems for components in the IST program. They were conservative with respect to continuing to test components (especially valves) at an increased frequency even after corrective actions had been accomplished. This had been done to assure that results were effective beyond the short term. No examples of removing components from the ALERT RANGE or increased frequency testing prior to appropriate corrective actions or analyses had been discovered in the samples reviewed.

7 FOLLOWUP ON CORRECTIVE ACTIONS FOR VIOLATIONS (92702)

7.1 (Closed) Violation 382/9319-01: Failure to Lock Valve EGA-152B

This item identified the failure to properly place a locking device on Diesel Generator Air Receiver B2 Outlet Isolation Valve EGA-152B, a normally locked open valve. The lock was installed only on the handwheel, not on the handwheel and valve yoke to prevent movement. Due to the appearance of the lock passing through the yoke, the independent verification of the valve's status did not identify the improperly locked valve.

The immediate corrective actions taken included verifying the valve was open and locking it in accordance with Procedure OP-100-009. The locked valves on Emergency Diesel Generators A and B were verified to be in accordance with Procedure OP-100-009. CR 93-071 was written and entered into the corrective action program. The individuals involved were debriefed in accordance with the licensee's improving human performance program and required to attend training on self-checking techniques. These actions were completed by July 29, 1993. The corrective actions to prevent recurrence included adding a description of the event to both required reading and to the lesson plan for operator training on administrative procedures.

The inspectors verified that the event was added to Lesson Plan ZPPA-001-03 on August 3, 1993, and the required reading was completed by all operators by September 27, 1993. The inspectors observed the status of locked valves

during tours of safety-related systems and noted no further problems. Discussions with the licensee disclosed that, as additional corrective actions, the licensee was reviewing locking devices for appropriateness and had received and was installing approximately 300 new devices to replace those with excessively long cables.

8 FOLLOWUP (92701)

8.1 (Closed) Inspection Followup Item 382/9327-01: Root Cause for Loss of Vital Bus

This item was opened to review the final root cause determination and corrective actions resulting from the inadvertent deenergizing of 480V Bus 31B on August 31, 1993. The licensee determined that the repetitive work task and Testing Procedure ME-007-036, Revision 5, "GE Auxiliary Relays HFA51A and HFA51B," did not adequately ensure the proper test configuration for checking relay calibrations. Performing the task with the 74/HR relay and associated circuit in service (or with a jumper installed on the relay prior to disconnecting the relay coil) caused the trip transfer relay to pick up. The licensee's immediate corrective action was to add caution statements to the repetitive work task and to Procedure ME-007-036. Further investigation revealed that the same problem could occur while testing 62-2 relays. Similar caution statements were added to Maintenance Procedure ME-007-030, Revision 4, "G.E. Auxiliary Relay Model 12HGA17C."

The event was also to be discussed at maintenance shop meetings to stress the necessity of notifying the control room when unexpected actuations or equipment manipulations occur before restoring equipment. The inspectors verified that caution statements were added in Change 1 to Revision 5 of Procedure ME-007-036 and Change 2 to Revision 4 of Procedure ME-007-030 both dated September 22, 1993. The repetitive work task was also modified to ensure the identified relays could not be calibrated with the equipment in service. The inspectors verified that electrical and instrument and controls maintenance shop personnel were briefed on the event on October 8 and 22, 1993, respectively.

ATTACHMENT 1

1 PERSONS CONTACTED

1.1 Licensee Personnel

R. E. Allen, Security and General Support Manager
*R. F. Burski, Director, Nuclear Safety
*W. E. Day, STA Supervisor
J. B. Houghtaling, Technical Services Manager
*L. W. Laughlin, Licensing Manager
*A. S. Lockhart, Quality Assurance Manager
*B. R. Lootzerich, Operational Licensing
*D. F. Packer, General Manager, Plant Operations
*P. V. Prasankumar, Design Engineering Manager
*R. S. Starkey, Operations and Maintenance Manager
D. W. Vinci, Operations Superintendent

*Denotes personnel that attended the exit meeting. In addition to the above personnel, the inspectors contacted other personnel during this inspection period.

2 EXIT MEETING

An exit meeting was conducted on March 10, 1994. During this meeting, the inspectors reviewed the scope and findings of the report. The licensee did not express a position on the inspection findings documented in this report. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspectors.