

APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-382/89-34

Operating License: NPF-38

Docket: 50-382

Licensee: Louisiana Power & Light Company (LP&L)
317 Baronne Street
New Orleans, Louisiana 70160

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

Inspection At: Taft, Louisiana

Inspection Conducted: October 1-31, 1989

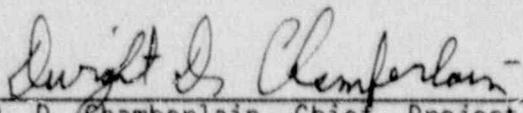
Inspectors: W. F. Smith, Senior Resident Inspector
Project Section A, Division of Reactor Projects

T. R. Staker, Resident Inspector
Project Section A, Division of Reactor Projects

S. D. Butler, Resident Inspector
Project Section A, Division of Reactor Projects

A. T. Howell, Project Engineer
Project Section A, Division of Reactor Projects

Approved:


D. D. Chamberlain, Chief, Project Section A
Division of Reactor Projects

11-20-89
Date

Inspection Summary

Inspection Conducted October 1-31, 1989 (Report 50-382/89-34)

Areas Inspected: Routine, unannounced inspection of plant status, onsite followup of events, monthly maintenance observation, monthly surveillance observation, operational safety verification, followup of previously identified items, licensee event report followup, installation and testing of modifications, and refueling activities.

Results: One violation was identified in paragraph 5.b of this appendix. The violation involved failure to meet the initial conditions required for a surveillance of Emergency Diesel Generator B. The condition was to have the turbocharger lube oil filter selector valve in the position required by the operating procedure. This was apparently overlooked while establishing conditions for the surveillance and illustrated a potential weakness in the licensee's accounting of valve and switch positions in systems previously aligned for operation. If a device is moved from its normal position for maintenance or other valid reasons but is not recovered by a procedure or tagout release, then there should be a means by which the operators can readily identify such abnormalities, whether they affect the safety function of equipment or not. The licensee's response should address this concern.

The first Unresolved Item (paragraph 3.b) pertains to concerns that certain containment penetrations may not have been capable of performing their safety function during a postulated accident. The licensee plans to resolve this technical issue prior to startup following the refueling outage. The second Unresolved Item (paragraph 3.c) involved concerns that retesting of Containment Fan Cooler C may not have been adequate to verify proper rotation of the fan, which was discovered to be wired incorrect for slow speed operation.

The inspectors noted excellent performance on the part of the licensee's staff during this outage. The operators maintained tight controls over reactor coolant inventory and shutdown cooling. It was readily apparent that lessons learned from previous incidents were in effect. With few exceptions, plant management sustained a close scrutiny over technical problems and scheduler performance.

DETAILS

1. Persons Contacted

Principal Licensee Employees

- R. P. Barkhurst, Vice President, Nuclear Operations
- *J. R. McGaha, Plant Manager, Nuclear
- *P. V. Prasankumar, Assistant Plant Manager, Technical Support
- *D. F. Packer, Assistant Plant Manager, Operations and Maintenance
- *A. S. Lockhart, Quality Assurance Manager
- D. E. Baker, Manager of Nuclear Operations Support and Assessments
- R. G. Azzarello, Manager of Nuclear Operations Engineering
- W. T. Labonte, Radiation Protection Superintendent
- *G. M. Davis, Manager of Events Analysis Reporting & Responses
- *L. W. Laughlin, Onsite Licensing Coordinator
- T. R. Leonard, Maintenance Superintendent
- R. F. Burski, Manager of Nuclear Safety and Regulatory Affairs
- R. S. Starkey, Operations Superintendent

*Present at exit interview. In addition, Mr. D. D. Chamberlain, Chief, Project Section A, NRC, Region IV, was present.

In addition to the above personnel, the inspectors held discussions with various operations, engineering, technical support, maintenance, and administrative members of the licensee's staff.

2. Plant Status (71707)

The plant was shut down for the third refueling outage during the entire inspection period. The reactor coolant system was cooled, depressurized to ambient conditions, and drained to various levels to facilitate planned outage work such as refueling, reactor coolant pump seal replacement, steam generator eddy current testing, reactor vessel inservice inspection, and miscellaneous valve work. On October 30, 1989, the reactor vessel head was installed with all studs tensioned, placing the plant in Operational Mode 5 (Cold Shutdown). The 58-day outage appeared to be progressing on schedule.

3. Onsite Followup of Events (93702)

a. Failure of Main Steam Isolation Valve (MSIV) MS-124B

On September 27, 1989, the licensee discovered the stem parted from the gate assembly. The problem was discussed in NRC Inspection Report 50-382/89-36.

Upon disassembling the MSIV, the licensee found that the bottom of the stem had broken off at the transition between the rectangular end

piece and the stem. The end piece is captured by the gate assembly casting to transmit the stem forces to the gate during valve operation. The stem is a 4-inch diameter machined forging. The end piece was rectangular, 6 inches by 9 1/2 inches by 3 1/2 inches thick. It was an integral part of the stem forging and, where it transitions to the 4-inch diameter, about a 1/8-inch radius was machined. The inspectors noted from the certificate of testing that the stem was made of "Stainless Steel, Type AL630-17CR4N (P.H. ACG ASME-SA-564 & 2542 PARA B & C)."

The licensee's initial failure analysis indicated that the stem had failed due to cyclic fatigue. Based on the preconditioned surface at the failure (black corrosion), it appeared that the stem failed prior to plant shutdown. The gate was free fall closed, except that by design it was wedged in the open position until the operators closed it by driving the broken stem inward when shutting down the plant. Also, one of the 1-inch socket head capscrews had broken off at the head on the gate segment stop.

No other damage was identified in MS-124B. The guide rails, which were found broken off during the last refueling outage, were intact, perhaps proving the licensee's design improvements in that area. The licensee also inspected the other MSIV and the (MS-124A) stem had not broken off but had indications of cracks in the same radius area at the bottom of the stem. The licensee replaced both stems with new machined forgings of the same type, except both had at least a 1/4-inch radius at the bottom transition. The licensee is pursuing measures to reduce the cyclic stresses on the new stems through adjustments of the hydraulic operator packages and procedures to "soft close" (i.e., close slowly when not required to perform its intended safety function of closing in less than 5 seconds) the valve during routine shutdowns and inservice inspections. The licensee had not formalized their failure analyses and corrective actions as of the end of this inspection period. The inspectors will review the information as it becomes available during routine safety verification inspections in the future. The actions taken in support of startup from this outage appeared adequate to assure that the MSIVs would perform their intended safety functions.

b. Inadequate Seismic Supports on Containment Penetrations

On October 20, 1989, the licensee identified a nonconforming condition with reactor containment building (RCB) Penetrations 45, 46, and 48. These are penetrations for the Containment Atmosphere Release (CAR) System used at power to maintain containment pressure at atmospheric.

In a letter dated October 10, 1989, Ebasco Services, Inc. (the Waterford 3 Architect-Engineer) documented a potential concern that anchors may be installed too close to the penetrations. This could cause failure of the penetrations during normal growth during an

Integrated Leak Rate Test (ILRT) of the RCB and during postulated accident conditions where the RCB is pressurized. This issue, according to the Ebasco letter, came from a "lingering question" in their minds dating back to a station modification where Penetration 47, the fourth CAR system penetration, was modified with provisions for RCB growth. On October 13, 1989, the licensee initiated a nonconformance report (CI-265838), thus placing the issue into the evaluation/corrective action program. A review of all the other RCB penetrations revealed four other penetrations (53, 54, 66, and 67) with the same potential problem.

By October 31, 1989, the licensee reported that the CAR system penetrations would not fail during an ILRT, and that Ebasco had verbally reported that these penetrations would probably not fail during an accident scenario. As of the end of this inspection period, the inspectors were not shown any documentation to support this. The four instrument penetrations were still being evaluated by Ebasco.

This issue posed questions that will require further review to resolve. For example, it appeared that there were unacceptable delays in Ebasco informing the licensee that "lingering questions" existed on Penetrations 45, 46, and 48, particularly while the plant was in operational modes requiring containment integrity. Documentation has not been provided to the inspectors on support of verbal reports from Ebasco that these penetrations would have performed their intended safety function, nor was information available on the acceptability of Penetration 53, 54, 66, and 67. The licensee implemented necessary modifications to the affected penetrations prior to restart of the plant. Pending further review of documented evaluations, this issue shall be tracked as an Unresolved Item (382/8934-01).

c. Containment Fan Cooler (CFC) Motor Rotation Found Reversed

On October 19, 1989, the licensee identified a problem with CFC C running backwards in slow speed. The CFCs are two-speed, vaneaxial duct fans which provide containment cooling during plant operation (in fast speed) and cooling and vapor condensation during a loss of coolant accident or steam break (in slow speed). There are four such fan-coil units in the RCB (two per redundant train). During the last fuel cycle, CFC C failed. An analysis and Technical Specification (TS) 3.6.2.2 amendment was implemented reducing the number of fans required operable to one per train. The fans have been surveillance tested monthly as required by TS 4.6.2.2.a; however, the test was in fast speed only, because the fans could not be started in slow speed without a safety injection actuation signal. The monthly engineered safety feature actuation system surveillance checked the fan in slow speed but did not verify fan differential pressure. During this outage, the licensee implemented a temporary alteration to permit running the CFC fans in slow speed for RCB cooling due to the noise levels in fast speed. When CFC C was

started in slow speed on October 19, 1989, there was no flow indicated, and the fan blades were rotating in the reverse direction. This was promptly corrected. The licensee could not identify the root cause of the reverse rotation as of the end of this inspection period; however, it appeared that there may have been an inadequate retest performed subsequent to the installation of the new CFC C in October 1988. Further review of the licensee's root cause analysis will be required to determine if a TS violation occurred and to evaluate the adequacy of the licensee's proposed corrective actions. This issue will remain unresolved pending this further review (382/8934-02).

d. Loss of Both Emergency Diesel Generators

On October 31, 1989, at 4:47 p.m., the licensee declared an Usual Event in accordance with their emergency plan due to both EDGs becoming inoperable at the same time. The NRC and local authorities were notified in accordance with the emergency plan and pursuant to 10 CFR 50.72.

EDG B had been inoperable as defined in TS 3.8.1.2 since the 24-hour surveillance test was performed on October 30, 1989. The B diesel fuel oil storage tank was below the specified minimum level but was in the process of being filled. Technical Specifications only required one diesel to be operable with the plant in Mode 5.

EDG A became inoperable at 3:15 p.m. when the licensee was notified by Saybolt & Company (fuel oil analysis vendor) that the A fuel oil storage tank sample results were outside TS limits for insolubles, which were 5.5 milligrams per 100 milliliters. The TS limit was less than 2 milligrams. The licensee stated that there was some discussion over whether or not this rendered the EDG inoperable but EDG A was declared inoperable at 4:35 p.m. In accordance with the TS 3.8.1.2 Action Statement, the licensee was already in the process of implementing corrective action to place EDG B in an operable status, thus it was apparent that TS requirements were being met. The inspector walked down EDG B to determine if an oil leak on the turbocharger lube oil filter noticed during an earlier tour had been repaired and the filter selector valve restored to the normal operating position required by the licensee's EDG operating procedure. One filter set was isolated and the leak did not appear to have been repaired. The inspector questioned what the licensee was going to do about the filter. The response was a plan to fix the filter leak and restore the selector valve as required by the procedure. This resulted in about a 2-hour delay after the fuel oil storage tank level was restored.

Based on previous samples on EDG A fuel oil, the licensee informed the inspector that the sample results were probably in error, and thus EDG A would not have been prevented from starting if called upon. EDG B, though slightly low in fuel, was also operational at

all times, even with one set of turbocharger lube oil filters in service. Consequently, there was no apparent safety significance to this event.

EDG B was declared operable at 10:49 p.m. on October 31, 1989, and the Unusual Event was terminated. The backup sample for EDG A fuel oil was processed by the vendor over the next 24 hours and found to be within TS limits, after which EDG A was declared operable.

4. Monthly Maintenance Observation (62703)

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

- a. Work Authorization (WA) 01045705: On October 19, 1989, the inspector observed Motor Operated Valve Actuator Testing System (MOVATS) testing on the Controlled Ventilation Area System Train A inlet isolation Valve HVR-313A. The test was successfully completed with no problems identified. The licensee has implemented a program which, by the end of the next refueling outage, was scheduled to complete MOVATS testing on all safety-related motor operated valves. This has provided a data base for the predictive maintenance of motor operated valves. The licensee indicated an intent to do similar predictive maintenance on selected balance of plant valves.
- b. WA 01048005: On October 27, 1989, the inspector observed trouble shooting of Emergency Diesel Generator (EDG) B. The generator had tripped on overspeed while starting during performance of the loss of offsite power in conjunction with an Engineered Safety Feature (ESF) actuation surveillance test required by TS. The diesel had just undergone a periodic maintenance inspection and had not yet been returned to service. The troubleshooting consisted of inspecting the Woodward Governor to verify proper settings and appearance and starting the EDG with the electric speed signal input disconnected from the governor. The System Engineer assisted and attempted to isolate the problem to either the electrical or hydraulic portion of the governor. On the next start attempt, the EDG again tripped on overspeed. It was concluded that the problem was in the hydraulic portion of the governor. The licensee then decided to replace the governor with a spare. The inspector witnessed the installation and initial setup of the spare Woodward Governor. This was done in accordance with the updated WA on October 28, 1989. The inspector discussed two observations with the System Engineer. The location and configuration of the setpoint controls on the governor appeared to be vulnerable to inadvertent bumping. The inspector also noticed some flakes of red paint in the replaced governor oil fill connection. The presence of paint flakes in the governor oil could contribute to governor failure. These issues were discussed with licensee personnel for consideration in their root cause evaluation. The

failed governor was sent to the vendor for failure analysis. The inspectors will review licensee actions in this area during future inspections.

- c. Procedure QAP-381, Revision 0, "Liquid Penetrant Examination": On October 13, 1989, the inspector observed the liquid penetrant examination of the Train A essential chilled water pump shaft. The inspector observed that the procedure was adequate and properly followed. No indications of defects were observed.
- d. WA 01046364: During brief periods covered by this inspection report, the inspectors observed the disassembly and reassembly of MSIVs MS-124A and B. This work was related to the stem failure found on MS-124B discussed in paragraph 3.a above. The maintenance mechanics appeared to be following the work instructions which, in turn, appeared adequate to the circumstances. No problems were identified.

No violations or deviations were identified.

5. Monthly 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 TS. The applicable procedures were reviewed for adequacy, test instrumentation was verified to be in calibration, and test data was reviewed for accuracy and completeness. The inspectors ascertained that any deficiencies identified were properly reviewed and resolved.

- a. Procedure MI-3-219, Revision 2, "Plant Protection System Bistable Response Time Verification." On October 26, 1989, the inspector witnessed a portion of bistable response time testing on Channel D of the Plant Protection System. The procedure was reviewed and discussed with the responsible technician, and the setup for the response testing of the low steam generator No. 1 level reactor trip was observed. Data was reviewed for the performance of response testing previously done on high pressurizer pressure, low pressurizer pressure and high containment pressure reactor trip, Hi Containment pressure ESF actuation, and high-high containment pressure spray actuation. Numerous delays prevented the actual witnessing of the steam generator level trip test, but all other aspects of the surveillance test appeared satisfactory. No other problems were identified.
- b. Procedure OP-903-069, Revision 7, "Integrated Emergency Diesel Generator/Engineered Safety features Test." On October 30, 1989, the inspector witnessed completion of the 24-hour run and subsequent loss of offsite power test on EDG B. The licensee brought in an experienced senior reactor operator to direct the test, thus relieving on-shift personnel of the burden of ensuring that all prerequisites and conditions were satisfied for this complex test.

There was good communication apparent between the test director and the shift supervisor throughout the test. On-shift reactor operators and auxiliary operators performed manipulations of the controls. The test was executed in a smooth and professional manner, and results appeared satisfactory. The inspector reviewed the completed data and found no problems.

The inspector discovered one problem, however, that came to light as a result of a routine inspection tour of EDG B on October 31, 1989. On October 27, 1989, while troubleshooting EDG B following maintenance, the licensee noted an oil leak on one set of the turbocharger lube oil filters. At that time, the filter set was isolated using the selector valve. The licensee did not repair the oil leak and reposition the selector valve to the position required for normal operation of the EDG until late in the evening on October 31, 1989. As a result, the 24-hour EDG surveillance of October 29-30 was run with the selector valve in the wrong position, i.e., one set of filters was isolated when both the valve lineup attachment and paragraph 5.1.10 of Operating Procedure OP-9-002, Revision 10, "Emergency Diesel Generator," required both sets of filters to be in service. This configuration was recommended for normal operation by the EDG vendor technical manual. OP-903-069, paragraph 5.6, required, as an initial condition for the test of the EDG, that EDGs be aligned in accordance with OP-9-002. Failure to comply with this requirement was a violation of NRC regulations (382/8934-03).

The inspector saw no evidence indicating any lube oil starvation of the turbocharger. The lube oil system is a closed system and there is another large simplex filter in the path. Thus, it was unlikely that the turbocharger lube oil filters would clog. The inspectors expressed concern that prior to and during the 24-hour run, the operators should have noted the hose attached to the filter draining the oil leak, and should have questioned the incorrect position of the selector valve. There appeared to be a need for a procedure for operators to account for valves and breakers taken out of the normal position for maintenance. This would only be appropriate when the device was not identified in a tagout, locked valve deviation report, or by a procedure that would restore the device to its normal position. This was discussed with licensee management, and they stated that they were developing such a procedure. The inspectors will monitor licensee actions on this.

6. 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, to ensure that the licensee's management controls were effectively discharging the licensee's responsibilities for continued safe operation, to assure that selected activities of the licensee's radiological protection programs are implemented in conformance with plant policies and

procedures and in compliance with regulatory requirements, and to inspect the licensee's compliance with the approved physical security plan.

The inspectors conducted control room observations, plant inspection tours, reviewed logs, and licensee documentation of equipment problems. Through in-plant observations and attendance of the licensee's plan-of-the-day meetings, the inspectors maintained cognizance over plant status and TS action statements in effect.

During maintenance testing, following the "24 Month Inspection Surveillance of Emergency Diesel Generator (EDG) B," the licensee experienced numerous problems associated with the air start system. After discussion of the problems with licensee personnel, it appeared that they were related to the rebuilding of the "air start" and "shutdown" solenoid valves used in the air start system. The inspectors discussed the rebuilding of the air solenoid valves and the problems identified during the subsequent EDG start attempts with the System Engineer. He contended that the replacing and fitting of the stem/disk kits was done properly in accordance with the vendor's technical manual. The problems caused by seat leakage from the valves could only be identified by testing with air at the same pressure as the EDG air start system (250 psig). Air at this pressure was not available in the shop but he did explain that the valves could have been tested in place before attempting to start the EDG and minor adjustments to stem dimensions made prior to attempting to start the EDG. They stated that the work instructions would be revised accordingly for future rebuilding of the valves. He indicated that the air solenoid valves on EDG A would be rebuilt during the next EDG outage if there is time, because the stem/disk kits did not become available until after the maintenance outage for EDG A was completed.

No violations or deviations were identified.

7. Followup on Previously Identified Items (92701, 92702, 92700)

- a. (Open) Open Item 382/8903-02: Followup on licensee's determination and correction of cause of Pressurizer Spray Valve RC-301A failure on January 27, 1989. During the current refueling outage, the licensee dismantled RC-301A. The valve seat, which was threaded into the body, had apparently backed out. Subsequent seating forces stripped most of the threads on both the seat ring and the body. A weld overlay was performed to restore the body metal, and new threads were machined. A new seat was installed with a new design liner which extended to the seat, locking it in place. The root cause of the failure was the lack of a positive lock on the seat ring. The valve manufacturer, Fisher Valve Company, had redesigned the liner in October 1985, extending it to the seat ring to lock it in place because of problems that occurred at the St. Lucie Plant. The licensee had a design change pending for RC-301A and B since February 1984 to lock the seat rings. The new design liners were in the licensee's warehouse since 1985, but no work authorization was issued to implement the change in the valves until this refueling

outage when RC-301A was opened to determine the cause of failure. The licensee was requested to explain why this design change was not implemented and whether or not there are similar design changes not yet implemented. This item shall remain open pending the licensee's response.

- b. Followup on 10 CFR 21 Report from the Limitorque Company, dated November 3, 1988. The report addressed common mode failure of Melamine torque switches in SMB-000 and SMB-00 actuators. The inspector verified that LP&L had received the report in January 1989. The licensee performed an alternate verification to establish which Limitorque operators may have the Melamine torque switches. WAs were implemented to replace gray colored torque switches in SMB-000 actuators with serial numbers lower than 354839 and SMB-00 actuators with serial numbers lower than 233218. Operability assessments were made and, as a result, eight Shield Building Ventilation actuators were replaced promptly, and 15 others were designated for inspection and/or replacement by the end of this refueling outage (RFO-3) for a total of 23 safety-related actuators. Twenty-eight nonsafety actuators were identified with a plan to inspect for Melamine torque switches when maintenance is performed for other reasons. The licensee did not factor this 10 CFR 21 report into their Equipment Qualification Program because, upon the conclusion of RFO-3, the licensee did not intend to have any Melamine torque switches installed in safety-related actuators at Waterford 3. The licensee's actions on this 10 CFR 21 report appeared reasonable and timely. This issue is closed for Waterford 3.
- c. Followup on 10 CFR 21 report from the Limitorque Company, dated September 29, 1989. The report addressed fiber washers installed on certain actuator torque switches that may fail. The licensee received this report on October 4, 1989, and initiated a work plan to replace leaf spring type torque switches supplied with SMB-000 actuators with serial numbers lower than 326670 and SMB-00 actuators with serial numbers lower than 233218. The licensee indicated plans to complete this work concurrent with the above Melamine torque switch work by the end of RFO-3. Based on the above, it appeared that LP&L acted upon the 10 CFR 21 report in an appropriate manner. This issue is closed for Waterford 3.

No violations or deviations were identified.

8. Licensee Event Report (LER) Followup (92700 92712)

- a. The following LERs were reviewed and closed. The inspectors verified that reporting requirements had been met, causes had been identified, corrective actions appeared appropriate, generic applicability had been considered, and that the LER forms were complete. The inspectors confirmed that unreviewed safety questions and violations of TS, license conditions, or other regulatory requirements had been adequately described.

1. (Closed) LER 382/89-009, "Steam Generator Tube Through-Wall Indication Not Inspected Due to Personnel Error"
 2. (Closed) LER 382/89-011, "Fuel Handling Building Radiation Monitor Out-of-Service Due to Possible Equipment Failure"
 3. (Closed) LER 382/89-012, "Radiation Monitor Inoperable during Discharge Due to Inadequate Administrative Controls"
 4. (Closed) LER 382/89-013, "Manual Reactor Trip Due to Loss of Feed Flow to Steam Generator Number 1"
 5. (Closed) LER 382/89-015, "Containment Isolation Valve Inoperable Due to Inadequate Design and Inadequate Procedure"
 6. (Closed) LER 382/89-016, "Inadvertent Engineered Safety Feature Actions Due to Personnel Error"
- b. The following LERs were selected for followup to determine whether the causes of the events were adequately identified, whether the corrective actions described in the LERs were appropriate, and whether the responses to the events were adequate and met regulatory requirements, license conditions, and commitments.

1. (Open) LER 89-014, "ACC-116A and 116B Not Included in In-Service Test Program Due to Misinterpretation of Requirements"

Because of a misinterpretation of ASME Section XI inservice test (IST) requirements, Auxiliary Component Cooling Water (ACCW) manual isolation valves ACC-116A and 116B were not included in the IST program. As a result, these valves were never tested. The corrective action stated in this LER appeared to be narrowly focused in that the only identified corrective action was to include ACC-116A and -B in the Waterford 3 IST program for pumps and valves. The inspector was concerned that this narrowly focused corrective action may not be sufficient to reduce the probability of similar events, i.e., that other equipment that is required to be tested per Section XI of the ASME Code is not being tested. This LER will remain open pending the licensee's addressing of this concern in a supplemental LER.

2. (Open) LER 89-017, "Reactor Trip Due to Complications Associated with Control Element Assembly"

As a result of complications associated with a stuck control element assembly (CEA), a reactor trip occurred. This LER does not provide all the information required by 10 CFR 50.73. The licensee had not determined the cause of failure of the CEA pull down and lower gripper coil current sensors, but did not plan to submit a supplemental LER once the cause had been determined.

This LER lists other LERs that are similar, but does not provide a description as to how the other events are similar. The LER does not list all the pertinent times associated with the event, such as the time CEA-18 was inserted below the TS limit or the time that shutdown margin (SDM) requirements were to be met. The licensee asserts that a contributing cause of the event was personnel error; however, cognitive personnel errors appear to be the actual cause of the reactor trip and not a defective control element assembly. The LER also does not discuss the inadequacies of the SDM procedure, nor what was done to make the SDM procedure adequate. This LER will remain open pending the submission of a supplemental LER that provides all the information required by 10 CFR Part 50.73.

No violations or deviations were identified.

9. Installation and Testing of Modifications (Design Changes) (37828)

The purpose of this inspection was to review and observe work in progress for selected design changes (DCs) being performed during the current refueling outage. The DCs were examined to determine that they were properly authorized and being performed in accordance with approved written instructions. In addition, selected work was observed to ensure that it was being performed by qualified individuals using properly approved instruction, installed hardware conformed to instructions or drawings, and the systems were properly returned to service and tested as required.

The following DCs were inspected:

a. DC-3059 Condenser Vacuum Pump Effluent Radiation Monitor

This DC deleted the Normal Range Radiation Monitor and the associated sample drying subsystem installed under temporary alteration TAR-87-090 and permanently installed a chiller package and a moisture removal/sample drying subsystem for the remaining wide range monitor. The remaining wide range monitor will perform both the normal and postaccident effluent radiation monitoring function for the Condenser Vacuum Exhaust System.

The inspector reviewed the DC package and the mechanical portion of the field work package. The work package appeared properly reviewed and approved for use, and the records of completed field work appeared complete. Completed field work was observed and appeared to be installed in accordance with the work package. The special test procedure, STP-99000270-A, required to be performed by the work package was reviewed and discussed with the responsible System Engineer. On October 31, 1989, a portion of the Special Test was observed. No significant problems were identified.

b. DC-3012, Installation of a Bypass for the Reactor Coolant Flow-Low Trip

This change added a bypass for the reactor coolant flow-low reactor trip. It included the addition of indicating lights and a control switch to Control Panel 7 in the main control room. The DC will eliminate the need to use jumpers to bypass the trip when it is not required to be operable and the reactor trip breakers need to be closed to support maintenance or testing.

The inspector reviewed the DC package and discussed the DC with the responsible maintenance personnel. The majority of the field work was performed during a previous outage, but the inspector observed some of the field wiring being performed. The work package was reviewed in part and the work requirements discussed with the Instrument and Control Maintenance technicians. The personnel appeared qualified to perform the work. No problems were identified.

The DCs inspected were not completed as of the end of the reporting period, however, sufficient inspection was conducted to complete the inspection module. The inspector will continue to monitor these DCs until they are completed and the systems returned to normal on a routine safety verification basis.

No violations or deviations were identified.

10. Refueling Activities Inspections (60710)

The purpose of this inspection was to verify that refueling activities were being controlled and conducted as required by the TS and approved procedures.

On October 12, 1989, shortly after the commencement of Core Alterations for the current refueling outage, the inspector reviewed the administrative controls in affect to ensure that they were in accordance with licensee procedures and TS requirements. The procedure in use, RF-005-001, "Fuel Movement," was reviewed to ensure it was properly reviewed and approved for use. Prerequisites and initial conditions were properly signed off and Attachment 8.15 was completed to document that TS requirements for core alterations were satisfied. Selected TS requirements observable from the control room were verified by the inspector. Special nuclear material accountability appeared to be properly controlled using Administrative Procedure UNT-008-030, "Control and Accountability of Special Nuclear Material," and the control room fuel tagboard.

During periodic review of the chronological log required by RF-005-001, the inspector noted concerns expressed by the on-shift refueling engineer about procedure compliance during fuel movement. The inspector brought these concerns to the attention of the Operations Superintendent. The concerns regarded poor communication to the control room of problems experienced during insertion of fuel assemblies into the core. The

concerns were investigated and resolved by Operations management and the Lead Refueling Engineer. The licensee contended that the procedure was being complied with because a refueling engineer was on the fuel handling bridge in the containment and was fully aware of problems that were being experienced with fuel movement. No other problems were identified.

The inspectors also observed portions of the fuel shuffling operation. Foreign material exclusion practices appeared to be improved over observations made during the second fueling outage. The licensee experienced some delays and difficulty while reinserting previously used fuel assemblies due to minor but normal bowing of the assemblies. This was not unexpected because the fuel was not fully off-loaded this time, so the assemblies were changed one-for-one at times. Through patience and careful manipulation, all of the fuel was properly installed without incident.

The inspectors also witnessed a small portion of the Fuel Alignment Plate modification performed by Combustion Engineering under supervision of the licensee. This involved machining out and relining the in-core nuclear instrument thimble penetrations to reduce vibration and wear. The modification progressed well and was completed successfully and on schedule.

No violations or deviations were identified.

11. Exit Interview

The inspection scope and findings were summarized on November 1, 1989, with those persons indicated in paragraph 1 above. The licensee acknowledged the inspectors' findings. The licensee did not identify as proprietary any of the material provided to, or reviewed by, the inspectors during this inspection.

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