

APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-382/89-26

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: September 1-30, 1989

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

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Approved:

D. D. Chamberlain
D. D. Chamberlain, Chief, Project Section A

10-16-89
Date

Inspection Summary

Inspection Conducted September 1-30, 1989 (Report 50-382/89-26)

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, and engineered safety feature system walkdown.

Results: Two violations were identified. One violation (paragraph 9.a) involved failure of the licensee to implement a five minute stabilization period prior to taking data during Inservice Testing (IST) of safety-related pumps. While the specific issue of failing to implement the requirement had minimal safety significance, this was another example of inadequate implementation of the IST program required by the Technical Specifications and ASME Code Section XI. See Inspection Reports 50-382/89-01 and -89-09. The

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second violation was a licensee (paragraph 6) identified failure to follow procedures resulting in a "near miss" for a potential loss of shut down cooling. Due to the licensee's prompt identification of the problem and appropriate corrective action, a Notice of Violation was not cited as allowed by the NRC enforcement policy.

During the engineered safety feature system walkdown (paragraph 9), three deficiencies found will require further evaluation as to whether NRC regulations were followed. These are being tracked as an Unresolved Item.

DETAILS

1. Persons Contacted

Principal Licensee Employees

- *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. Also present was Mr. J. M. Sharkey, Regional Coordinator for NRC Region IV.

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 operated at full power until the unit was shutdown on September 22, 1989, for the third refueling outage. As of the end of this inspection period, the plant was shut down, cooled and depressurized to ambient conditions, and drained to mid-loop to facilitate entry into the primary side of the steam generators for eddy current testing.

3. Onsite Followup of Events (93702)

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

On September 27, 1989, while inspecting MS-124B internals with a boroscope, the licensee noted what appeared to be a crack in the valve stem where it attaches to the valve gate. The purpose of the inspection was to ensure the valve internals were intact after the past fuel cycle because of valve guide rail failures found in MS-124 A & B during the past refueling outage. For details, refer to Inspection Reports 50-382/88-08 and -13. The licensee attempted to open the valve, but the stem separated from the gate assembly indicating that it may have already been broken. The licensee initiated actions to disassemble the valve and determine the cause of the failure. The licensee's initial evaluation concluded the failure

would not have prevented the valve from performing its intended safety function of closing. The MSIVs at Waterford-3 were manufactured by W-K-M Valve Division of ACF Industries. They are 40x30x40 Class 600 hydraulically opened, nitrogen pressure closed, Model D-2, "Pow-R-Seal" gate valves. The inspectors will continue to follow the licensee's actions during the next inspection period.

No violations or deviations were identified.

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, Technical Specifications, and appropriate industry codes or standards.

- a. Work Authorization 01042344. On September 8 and 9, 1989, the inspectors observed portions of the installation of a new cylinder block on Coolant Charging Pump B. The mechanics appeared to be applying good work practices and were signing off the applicable portions of the work authorization as the work progressed. A delay was experienced because the cylinder block studs were not easily removed. The work package was amended to provide for removal of an interfering pipe which prevented sliding the block off the studs so they wouldn't have to be forced out. The inspectors noted that as many times as the licensee has performed major corrective maintenance on charging pumps, the work instruction was still not well sequenced, thus the mechanics had to skip steps and then return to them later to accomplish the work correctly. This was discussed with licensee management with comments that there should have been a well developed procedure for dismantling and performing maintenance on the charging pumps. The licensee acknowledged the comments.
- b. Work Authorization 0104173. The inspector observed portions of the routine maintenance performed on the A emergency feedwater pump motor on September 11, 1989. Work was performed in accordance with Procedure ME-04-371, Revision 4, "Emergency Feedwater Pump Motor." No problems were identified.
- c. Work Authorization 01043988. On September 19, 1989, the inspector observed portions of the staking of the outboard bearing thrust collar on Component Cooling Water Pump B. During work activities, the maintenance technicians identified that the work authorization did not include steps to disassemble the bearing as required or replace the sealant between the casing halves during reassembly. The instructions were then added to the work authorization and the work was completed. This was a positive indication of maintenance technicians being more sensitive to procedural requirements.

- d. Work Authorization 01046364. On September 23 and 30, 1989, the inspector observed portions of the disassembly of MS-124B, which was the MSIV discussed in Paragraph 3.a above. The inspector noted that the valve manufacturer's representative was at the work site, good work practices were being used, and the work instructions appeared adequate up to the point of removing the valve gate, since there was no stem to lift from. The step covering gate removal appeared ambiguous, however, licensee management at the job site indicated it would be necessary to determine the best method with vendor assistance after the valve was disassembled. The inspectors will continue to closely monitor licensee activity in this area during the next inspection period.

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 Technical Specifications. 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 OP-903-003, Revision 7, "Charging Pump Operability Check." On September 9 and 10, 1989, the inspectors observed portions of the retest of Coolant Charging Pump B subsequent to replacement of the cylinder block. This inservice test (IST) established new reference data for the periodic IST in accordance with the Technical Specifications and ASME Code Section XI. The inspectors reviewed the completed data form and noted satisfactory results. No problems were identified.
- b. Procedure GP-903-046, Revision 7, "Emergency Feed Pump Operability Check." On September 11, 1989, the inspector observed part of the post maintenance testing of Emergency Feedwater Pump A. After the pump was started and the operator attempted to read and record recirculation flow, it was noted that the flow gauge (PPIS-FW8320AS) was reading in excess of the gauge range of 50 gpm, but not hard against the peg. The operator aborted the test because he could not obtain meaningful data. This problem was identified on March 27, 1989, in Inspection Report 50-382/89-08, at which time a condition identification was initiated by the licensee. The disposition of the condition identification was to replace the gauge with one that has an adequate range. The licensee has been waiting for material to arrive so that the gauge can be changed. In the meantime, after aborting the test on September 11, 1989, the licensee implemented a

temporary change (called a "deviation") to use a test gauge of the appropriate range and accuracy.

No violations or deviations were identified.

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, and 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 Technical Specification action statements in effect.

The inspectors observed operator actions as the plant was being partially drained in accordance with Operating Procedure OP-001-003, Revision 9, "Reactor Coolant Drain Down." The evolution included obtaining data to confirm the acceptability of the new remote Reactor Water Level Indicating Systems (RWLIS) installed during the last refueling outage and which was the subject of a near loss of shutdown cooling event (see Inspection Report 50-382/88-16). The data was being taken in accordance with Special Test Procedure STP99000076-A, Revision 2, "RWLIS Level Correlation." The operators exhibited considerable care and attention to the entire drain down process. The plant was drained to about mid-loop without incident. After achieving mid-loop conditions and stabilizing level and shutdown cooling, on September 28, 1989, at 4:30 p.m., a near miss occurred with regard to loss of shutdown cooling because of a personnel error on the part of an instrument and controls (I&C) technician. While I&C was calibrating Saturation Margin Monitor Loop A, the technician erroneously connected his test equipment to a transmitter which caused a signal to isolate the operating shutdown cooling loop by closing Isolation Valve SI405B. This is an auto closure interlock feature (AIF) in the plant to prevent overpressurization of the shut down cooling system during a plant heatup. An annunciator alarmed, but the valve did not close because it was gagged open because of a previous maintenance problem with the actuator. There are four valves associated with this feature, two in series in each shutdown cooling loop (Valves SI-401 A&B, and SI-405 A&B). As a precaution to prevent such an isolation from occurring, the licensee implemented temporary alterations so that all four valves would be blocked open while in this mode. The licensee took appropriate personnel action with the I&C technician. The inspectors reviewed the licensee's safety evaluation relative to the temporary blocking of the four valves and verified that no other important safety functions are lost. The

inspectors also verified that controls were in effect to ensure the AIF would be restored prior to the next plant heatup.

The licensee also initiated a significant occurrence report which placed the incident into their corrective action program, and the issue was identified on the industry's "Nuclear Net." Failure to connect to the correct transmitter required by the work instruction is an apparent violation of NRC regulations. In view of the licensee's prompt attention and corrective actions, a Notice of Violation for this violation is not being issued because the criteria of Section V.G.1 of the NRC's Enforcement Policy have been met.

7. Followup of Previously Identified Items (92701, 92702)

- a. (Closed) Violation 382/8731-03: For the first example regarding problems with cable splice instructions, the inspector verified that Procedure ME-004-809, "Low Voltage (600 Volts and Less) Power and Control Cable/Conductor Terminations and Splices," and Drawing LOU-1564-B-288, "Cable and Conduit List Installation Detail," have been revised to correct the terminal splicing instruction deficiencies. In response to the second example of the violation on torquing requirements, the licensee has been performing a review to ensure that vendor torque requirements are included in repetitive task work packages. Each package was reviewed as the task became due. This violation is closed.
- b. Followup on employee technical concerns: On April 19, 1989, the inspectors were informed by the licensee that one of their nonlicensed employees had filed a Department of Labor complaint relative to some personnel matters, and that the employee had also expressed some technical concerns over how some of the work was done at the plant during the second refueling outage. The inspectors reviewed all of the concerns and the actions taken by the licensee to address those concerns. There were three issues which gave rise to potential impact on safety-related equipment or systems, and they are discussed below:
 - (1) Wet Cooling Tower Basin Cracks: The concern was that contractors painting the basins could not apply the paint satisfactorily because of cracks in the basemat (bottom) which were seeping water. The licensee produced a memorandum stating that engineering had been requested by Nuclear Operations Construction to evaluate cracks in the walls. The engineer stated in the memorandum that in the area of the cooling towers, the wall was designed to resist lateral soil pressure and ground water on the outside and the lateral water pressure from the basin on the inside. He noted that the cracks were typical of other hairline cracks in other sections of the cooling tower area. He stated that when he first inspected the cracks, they were damp, but they dried out after being exposed to the air for

a day or so. Therefore, he concluded that the surface dampness was due to moisture that had seeped between the paint film and the concrete. He stated that there was no evidence of ground water seeping through the wall. The memorandum did not address the concerns about cracks in the basemat. The inspectors discussed this with the cognizant licensee representatives. They stated that there were no problems with cracks in the bottom of the basins seeping water to the best of their knowledge, and that if there had been, they would have been notified to resolve such a problem. In accordance with Licensee Condition 2.C.17, the licensee has a basemat cracking surveillance program. Cracks in the basemat have not been a problem, and as such, it is unlikely that any significant cracking problems would be isolated to the basin bottoms, which are not monitored due to them being full of water all the time. The inspectors determined that licensee action for this concern was appropriate.

- (2) Planners closing out work authorization packages with measuring and test equipment (M&TE) deficiencies uncorrected: The concern was that the licensee was not taking corrective action during work package closeout when a flag appeared indicating that the M&TE used during job performance was found out of calibration. Instead, the flag was deleted. The licensee explained that the M&TE flag was a feature incorporated into the software many years ago, and it was not a viable tool because it did not adequately provide for work packages that were closed out prior to discovery of M&TE deficiencies. Removal of this feature from the software was not cost effective, so the licensee chose to ignore and cancel the flags as they appeared. M&TE accountability has been adequately provided for in other licensee programs. The inspectors sampled 4 of 11 work authorization packages identified as having M&TE flags deleted and noted that they were not safety related. This issue is closed.
- (3) Planners closing out work packages with no work being done: The concern was that the licensee was closing out work packages on valves as if the work had been satisfactorily completed when it was alleged that no work was done. The inspectors sampled 3 of 10 work authorizations listed as having problems of this nature. In each case, the work authorizations had annotations to the effect that no work was done, and referenced the work authorization under which the work was done. The inspectors reviewed the referenced work authorizations and found objective evidence that showed the work was satisfactorily completed in each case. Again, none of the work involved safety-related equipment. The inspector determined that there is no evidence to support the concern. This issue is closed.

No violations or deviations were identified.

8. Licensee Event Report (LER) Followup (92700, 92702)

The following LER was 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 form was complete. The inspectors confirmed that unreviewed safety questions and violations of technical specifications, license conditions, or other regulatory requirements had been adequately described.

(Closed) LER 382/88-032, "Auxiliary Component Cooling Water Valves Not Seismically Qualified Due to Inadequate Control of Design Modification." The inspector observed that the positioner and regulators on Valves ACC-126A and ACC-126B have been replaced with seismically qualified components. This LER is closed.

9. Engineered Safety Feature (ESF) System Walkdown (71710)

The inspectors conducted a walkdown of the accessible portions of the High Pressure Safety Injection (HPSI) System, Trains A and B, to verify system operability. The licensee's operating procedures and system drawings were reviewed and compared with the as-built configuration. Equipment condition, valve and breaker positions, housekeeping, labeling, permanent instrument indication, and apparent operability of support systems essential to activation of the ESF system were all noted as appropriate.

One violation was identified regarding an inadequate procedure for implementation of ASME Section XI testing requirements. Procedure OP-903-030, Revision 6, "Safety Injection Pump Operability Verification," did not require conformance with IWP-3500, "Duration of Tests," of ASME Section XI. IWP-3500 requires that pumps are run for 5 minutes under conditions as stable as the system permits prior to observing and recording data if bearing temperatures are not required to be taken. If bearing temperatures are required to be taken, then data is not to be recorded until after bearing temperatures stabilize. These requirements were not provided in OP-903-030. This problem was discussed with the licensee so that the licensee could evaluate the validity of past testing without these requirements being prescribed. The licensee indicated on October 2, 1989, that all of the applicable surveillance test procedures were revised to include the requirements. Failure to provide a procedure that implemented all of the testing requirements of ASME Section XI for testing the HPSI and LPSI pumps is an apparent violation of NRC requirements (Violation 382/8926-01).

The inspectors also identified three issues during this walkdown which could have affected component or system performance. These were discussed with licensee management and the licensee is evaluating the effect of these as-found conditions on system performance.

- ° A bolt was missing from the cover of the motor casing on motor operated Valve SI-121A. The bolt was replaced prior to the end of the inspection period.
- ° A tag was found on a support for the suction line of HPSI Pump A which identified support HER SIRR-749 as nonsafety-related.
- ° Scaffolding was installed at Column 9 in the overhead in Safeguards Room A which would interfere with the movement with a spring hanger installed on safety injection piping. This was promptly corrected by the licensee.

These items which are listed above will be tracked as Unresolved Item 382/8926-02 pending review of the licensee's evaluation.

In addition, several minor deficiencies were identified which had no apparent effect on system operability. These were discussed with the licensee for corrective actions. They include the following:

- a. Procedure OP-903-030, Revision 6, "Safety Injection Pump Operability Verification," had the following deficiencies:
 - (1) Step 6.1.1 required the installation of temporary gauges for recording pump data. The procedure did not provide a step for gauge removal.
 - (2) Steps 8.2.6, 8.2.16, 8.3.6, and 8.3.16 required operation of the low pressure safety injection (LPSI) pump suction pressure gauge isolation valves, but there were no valve identification numbers provided.
- b. Procedure OP-009-008, Revision 7, "Safety Injection System," had the following deficiencies:
 - (1) In Step 6.6.6, the safety injection tank 1B fill/drain valve, SI-307B, was incorrectly designated as SI-037B.
 - (2) Section 6.5 includes a note to warn personnel in containment prior to venting the safety injection tanks. Section 6.6 vents the safety injection tanks but does not include a similar note.
 - (3) Steps 4.12.1 and 4.12.2 specify the minimum safety injection tank pressure for Modes 3 and 4. These steps should have included the safety injection tank upper pressure limit. The inspectors noted that within a few days of the inspection, Revision 8 of this procedure was issued which did not contain the above deficiencies.
- c. Procedure OP-903-026, Revision 4, "Emergency Core Cooling System Valve Lineup Verification," required venting of the LPSI pumps by opening the pump casing vents. These valves had no identification numbers and were not shown on system drawings.

- d. The following equipment conditions were observed:
- (1) Several caps were missing from vent/drain tail pieces on both trains of the safety injection system.
 - (2) Slight oil leaks were observed at both bearings on HPSI Pump B.
 - (3) The label on the 4.16 KV breaker for HPSI Pump A did not include the "A" designation and only identified the breaker as the "High Pressure Safety Injection Pump" breaker.
 - (4) Lagging was missing from the discharge piping on both HPSI Pumps A and B. Lagging was also missing from the "miniflow" line for the HPSI Pump B. Damaged lagging was observed in Safeguards Room B. No CI tags were observed. It was apparent that the lagging was removed to perform maintenance and not reinstalled.
 - (5) Several screws were missing from the vent screens on the HPSI Pump B motor. No CI tag was observed.
 - (6) Vent screens were not installed on the bottom of the motor case for HPSI Pump A. No CI tag was observed.
 - (7) A large "U" shaped section of electrical conduit was found stowed on the floor below Valve SI-129A.
 - (8) Several ropes were observed hanging from the overhead in the Safeguards Room B.
 - (9) The identification tag for Support SIRR-307 had wire ends that were not properly trimmed creating a personnel safety hazard.
- e. Two Condition Identification Tags (Nos. 1388-AA, March 28, 1986 and 02235-BB, April 29, 1989) were found on safety-related equipment even though the conditions had been corrected and the tags were administratively cleared.
- f. The basis for Technical Specification (TS) 3/4.1.2, "Boration Systems," appeared inconsistent with the TS for minimum refueling water storage pool level. It stated that "the higher limit of 447,100 gallons is specified to be consistent with Specification 3.5.4 in order to meet the ECCS requirements." However, the inspector noted that TS 3.1.2 and 3.5.4 now specify 475,000 gallons. This inconsistency was referred to licensee management for correction.
- g. The minimum flow stop check valves for the HPSI pumps were not locked in the open position. This was previously identified in Inspection Report 50-382/89-01 as an example of a valve that should be locked open for pump protection. This was discussed with licensee personnel

and these valves are now required to be locked open by procedure. The licensee also stated that they would review other safety systems to determine if other minimum flow valves should be locked open for pump protection.

Correction of all of the above deficiencies shall be tracked under Inspector Followup Item 382/8926-03.

10. Exit Interview

The inspection scope and findings were summarized on October 4, 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.