

APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-382/89-41

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: December 1-31, 1989

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

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

Approved:


D. D. Chamberlain, Chief, Project Section A

Jan. 19, 1990
Date

Inspection Summary

Inspection Conducted December 1-31, 1989 (Report 50-382/89-41)

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, and fitness-for-duty training inspection.

Results: One violation of NRC regulations was identified in paragraph 4.c, involving failure to comply with the licensee's independent verification program. The incident demonstrated possible weaknesses in LP&L employees' understanding of the importance of performing independent verifications properly when they are required by procedures. The licensee committed to review the program and take appropriate corrective action.

On December 23, 1989, the reactor was manually tripped due to failure in the feedwater control system to maintain steam generator water inventory. System responses and operator actions were satisfactory; however, the root cause of the failure appeared to be associated with the unusually cold weather at the time and the outdoor location of the feedwater regulating valves and controls. The licensee is evaluating the possible generic implications as well as plant

specific corrective actions. These actions are being tracked by an inspector followup item (IFI). See paragraph 3.a.

In paragraph 6, this report discusses the less than conservative approach taken by the licensee in response to a main steam isolation valve low operator cylinder nitrogen pressure alarm. This was discussed with licensee management and was determined to be an isolated incident with minor safety significance. Corrective actions were prompt and responsive to NRC's concerns.

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. S. Starkey, Operations Superintendent
R. W. Lailhegue, Nuclear Operations Administration Manager

*Present at exit interview.

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)

At the beginning of this inspection period, the plant was at full power, where it remained until December 23, 1989, when the operators manually tripped the reactor in anticipation of a low steam generator water level automatic trip. This is discussed in paragraph 3.a below. By December 24, 1989, the plant was restored to full power. As of the end of this inspection period, the plant remained at full power.

3. Onsite Followup of Events (93702)

a. Manual Reactor Trip Due to Low Steam Generator Water Level

On December 23, 1989, at 11:09 a.m., the reactor was manually tripped in anticipation of low Steam Generator (SG) No. 1 water level. The plant was at full power when No. 1 feedwater regulating valve went shut, causing the low level transient. After the trip, the feedwater regulating valve reopened. The inrush of feedwater cooled the reactor coolant system (RCS) resulting in a safety injection actuation due to low RCS pressure. All systems functioned properly, and no actual injection was apparent since RCS pressure did not go below 1542 psia. The operators tripped both main feed pumps and fed the steam generators using the motor driven startup (auxiliary) feed pump.

At approximately 5 a.m. the same day, the operators had encountered a high level transient with SG No. 2 but were able to take manual control and restore level. After troubleshooting, it appeared that the control problems may have been caused by unusually low (12°F) temperatures. The feedwater regulating valves and controls are outside and are exposed to the weather. The low level transient and manual reactor trip occurred while the licensee was making preparations for installing tents and heaters over the valves.

After erecting tents and heaters and troubleshooting and calibrating the feedwater control system, the plant was restarted and restored to the grid at 6:30 a.m. on December 24, 1989, and returned to full power shortly after 3 p.m. The licensee was conducting root-cause analyses as of the end of this inspection period, including consideration of generic implications. Preliminary findings indicated possible malfunctions of diaphragm valve operators under extreme low temperatures. The inspectors will follow up on the results of the analyses and will review corrective actions. This shall be tracked under IFI 382/8941-01.

No violations or deviations were identified.

4. Monthly Maintenance Observation (62703)

The station maintenance activities affecting safety-related systems and components per the below listed work authorizations (WAs) 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. WA 01050819. On December 19, 1989, the inspector observed a portion of the replacement of Seismic Monitor (SM) IYT6001 after it failed its periodic surveillance and was declared inoperable. The work authorization was reviewed, and it was properly prepared and was approved as adequate for the task. Test equipment was properly calibrated, and the workers were well briefed for the work being performed. The recalibration of the replacement SM was done in accordance with MI-3-340, Revision 1, "Triaxial Time-History Accelerographs Channel Calibration." A portion of the recalibration was also observed, and no problems were identified.
- b. WA 01038287. On December 20, 1989, the inspector observed preventive maintenance performed on the 314B motor control center in the fuel handling building. The work was being performed in accordance with ME-4-151, Revision 4, "480 VAC Motor-Control Center (MCC)." The WA and the maintenance procedure were reviewed and found to be properly prepared and approved for performance. Test equipment was properly calibrated, and the crew was well briefed for the task. No problems were identified.

- c. WA 01051422. On December 26, 1989, the inspector witnessed charging of the main steam isolation valve (MSIV) operating cylinders with nitrogen to clear a low pressure alarm. The charging evolution on MSIV A was performed in a step-by-step manner in accordance with the WA, except the inspector noted that each step had an independent verification signature blank to verify proper completion of each step, and no one was present to do the verifications. This apparent noncompliance with the licensee's independent verification program was discussed with the technician. Prior to commencing the same evolution on MSIV B, a verifier was made available, and the WA steps were properly verified on MSIV B. The inspectors expressed concern to licensee management that some LP&L employees may not understand the importance and meaning of independent verifications as intended by the licensee's program. The licensee stated the intent to review the program and take appropriate corrective actions. In addition, in response to the inspector's concerns with MSIV A, on December 26, 1989, the licensee initiated a quality notice to enter the specific problem into the corrective action program. Failure to comply with the licensee's independent verification program for MSIV A was a violation of NRC regulations (382/8941-02).

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 OP-903-068, Revision 6, "Emergency Diesel Generator Operability Verification." On December 2, 1989, the inspector witnessed an unloaded operability surveillance test of Emergency Diesel Generator (EDG) A pursuant to TS 3.8.1.1.b. No problems were identified.
- b. Procedure OP-903-007, Revision 4, "Turbine Inlet Valve Cycling Test." On December 20, 1989, the inspector observed the performance of OP-903-007 which involved reducing plant power to approximately 90 percent and individually cycling the turbine stop and governor valves and the intercept and reheat stop valves. Plant conditions and prerequisites appeared to be in accordance with the procedure and the work was being performed by qualified individuals. No problems were identified with the exception of several malfunctioning position indicator lights. Condition identification reports were prepared for the malfunctioning lights. The valves were observed locally for proper operation during the test.
- c. Procedure OP-903-005, Revision 6, "Control Element Assembly Operability Check." On December 20, 1989, the inspector observed

portions of the performance of OP-903-005. Individual control element assemblies (CEAs) were moved at least 5 inches from their current position and then returned to normal to ensure freedom of movement. Plant conditions and prerequisites appeared to be in accordance with the procedure and the work was performed by qualified individuals. No problems 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, 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 that were in effect.

On December 26, 1989, while observing control room operations, the inspector noted locked-in annunciators indicating low nitrogen (N₂) pressure in the operator cylinders for both MSIVs. The alarm response procedure for both annunciators stated that "The MSIV will not close as fast with N₂ pressure low. Refer to TS 3.7.1.5." The TS required the MSIVs to be demonstrated OPERABLE by verifying full closure within 3.0 seconds when tested. When the offgoing and oncoming shift supervisors were questioned as to whether the MSIVs should be considered OPERABLE, they did not have any supporting data to show that the valves would close within 3.0 seconds at reduced cylinder pressure, even though the condition had existed for several days. Apparently, no action was taken to clear the alarms or to verify that the cylinder heaters were functioning. The operators considered the unusually cold weather to be the cause of the pressure reduction and indicated to the inspector that they did not consider it prudent to recharge the cylinders until warmer weather. The inspector expressed concern to licensee management over the nonconservative manner in which this issue was being handled. Within a few hours, engineering data was given to the inspector showing that the MSIVs would remain operable at the reduced pressure, the cylinder heaters were checked, and the cylinders were recharged to clear the alarms. The licensee committed to provide better guidance in the alarm response procedure such that the operators would be in a position to make a prompt and appropriate operability call should the alarm trip in the future. This shall be tracked under IFI 382/8941-03. The lack of conservatism demonstrated by the operators over the dispositioning of MSIV

nitrogen pressure was not typical, but rather, appeared to be an isolated incident.

No violations or deviations were identified.

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

- a. (Closed) Open Item 382/8821-05: This open item concerned resolution of excessive cooling water leakage from the seals of the containment spray pumps. The inspector reviewed Design Change 3135 which was completed during the third refueling outage. The design change replaced the shaft seal on the containment spray pumps with a new seal that uses a carbon/stainless steel bushing rather than packing for backup. The new seal does not require cooling water for operation and should solve the problems identified in the open item. The modification was discussed with the cognizant design engineer and the inspector had no further questions. This item is closed.
- b. (Closed) Violation 382/8821-01: This violation was for failure to correct an inoperable containment penetration over current protection device. The inspector reviewed the licensee's response to the Notice of Violation and the implementation of their corrective action. Correction of the identified nonconforming circuit breakers was previously reviewed as identified in Licensee Event Report (LER) 382/88-019. To prevent future TS violations of this type, the licensee implemented Nuclear Operations Procedure NOP-019, "Nonconformance/Indeterminate Qualification Process," which will insure higher level management involvement in the decision process. This violation is closed.
- c. (Closed) Open Item 382/8707-02: This open item concerned the potential for degradation of whip restraints on safety-related pipes. The inspector reviewed Design Change 3007 which was completed during the third refueling outage. The design change involved verifying proper engagement and then either lock wiring or tack welding the nuts on the whip restraints for high energy systems. These systems included main steam, feedwater, blowdown, reactor coolant, and safety injection. The inspector verified the performance of the design change on selected whip restraints on the main steam and feedwater system. The licensee has addressed the concerns expressed in the open item. The item is closed.
- d. (Closed) Violation 382/8819-05: This violation was for failure to perform a special process with properly qualified individuals. The inspector reviewed the corrective action taken by the licensee in response to this Notice of Violation and verified that the procedures related to the installation of fire wraps and seals had been revised as stated. In addition, the procedures for training and qualification of maintenance personnel and contractors performing the work had been revised. This violation is closed.

- e. (Closed) Violation 382/8823-01: This violation was for failure to process vendor information properly. The corrective action taken in response to this violation had been verified complete previously with the exception of the implementation of the licensee's "Key Vendor Contact Program." This program was implemented and controlled by procedure Nuclear Operations Engineering and Construction Instruction-155, "Key Component Supplier List," dated July 31, 1989. This violation is closed.

8. Fitness-for-Duty (FFD) Training Inspection (TI2515/104)

On December 4 and 5, 1989, the inspector attended the licensee's initial FFD training, which was conducted as required by 10 CFR Part 26. The training was conducted in two 4-hour sessions by a licensee contractor (Bensinger, Dupont and Associates).

The first training session covered FFD policy awareness combined with FFD training for escorts. The escort training was combined because, under the licensee's policy, all personnel that were authorized for unescorted access to the protected areas of the plant were potential escorts, therefore, all personnel who had unescorted access were to be given this training. Most of the session pertained to the generic aspects of drug recognition, drug and alcohol abuse, and effects on the workplace. The policy communications and awareness training for employees and escorts was briefly conducted as required by 10 CFR Part 26; however, the contractor did not address licensee policies in depth and no one from the licensee's staff was available to answer questions.

The second session covered FFD training for supervisors. The contractor reviewed drug identification and provided training on intervention methods and on recognizing the need for intervention. The training requirements of 10 CFR Part 26 appeared to have been met; however, as above, discussion on licensee policies was brief, and no one from licensee management was present to address policy or procedural questions.

The inspector was unable to review the licensee's policies ahead of time because the licensee had not yet published approved FFD policies implementing the 10 CFR Part 26 requirements. As of January 2, 1990, the licensee published approved policies and procedures.

No violations or deviations were identified.

9. Exit Interview

The inspection scope and findings were summarized on January 3, 1990, 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.