

APPENDIX
U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-382/82-23

License: CPPR-103

Docket: 50-382

Licensee: Louisiana Power and Light Company
142 Delaronde Street
New Orleans, Louisiana 70174

Facility: Waterford Steam Electric Station, Unit 3

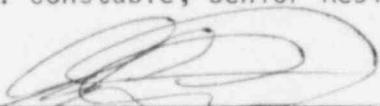
Inspection At: Taft, Louisiana

Inspection Conducted: July 16 to September 15, 1982

Inspectors:


G. L. Constable, Senior Resident Inspector

11/1/82
Date


J. E. Cummins, Resident Inspector

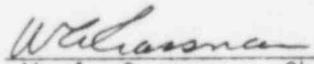
11/1/82
Date

Assisting
Personnel:


W. B. Jones, Engineering Assistant

11/1/82
Date

Approved:


W. A. Crossman, Chief, Reactor Project
Section B

11/10/82
Date

Inspection Summary

Areas Inspected: Routine, announced inspection of: (1) Previously Identified Inspection Findings; (2) Preoperational Test Procedure Review; (3) Preoperational Test Witnessing; (4) Site Tour; and (5) Startup Quality Assurance. This inspection involved 223 inspector-hours by three NRC inspectors.

Results: Within the five areas inspected, no violations or deviations were identified.

DETAILS

1. Persons Contacted

- *D. Lester, Plant Manager
- C. Oakley, Startup Engineer
- J. Boyle, Startup Engineer
- B. Wier, Preoperational Test Director
- L. Arnold, Unit Coordinator Operations Testing
- B. Toups, QA Engineering Technical
- *J. Woods, Plant QC Engineer
- T. K. Armington, Lead Startup Engineer
- *B. Morgan, QA Engineer
- T. Gerrets, QA Manager
- *G. Rogers, Site Director
- *C. Wells, Advisor to Vice President Nuclear Operations
- *M. Wise, Advisor to Plant Manager
- *B. Cross, NPSG Licensing Onsite

*Present at exit interviews.

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

2. Plant Status

The Waterford 3 site is presently in the preoperational testing phase. A few systems have been preoperationally tested with many more being readied for turnover from construction to the startup group for testing. Preparation for the reactor coolant system hydro is being made, and the test will probably be performed in early October 1982. The current, published fuel load date is May 1983. Construction is indicated as approximately 94% complete.

3. Previously Identified Inspection Findings

The NRC inspector reviewed Louisiana Power and Light Company's (LP&L) corrective action on Open Item 8123-01, "Station Battery Maintenance," which was identified in a previous NRC inspection report. This item is considered closed.

4. Preoperational Test Procedure Review

The NRC inspectors reviewed the preoperational test procedures for performing preoperational testing of the emergency core cooling system. The procedures were reviewed for technical adequacy, compliance with

regulatory guides, compliance with the final safety analysis report (FSAR), and compliance with licensee's administrative procedures. The preoperational test procedures reviewed are listed below:

SPO-60A-001, Rev. 1	High Pressure Safety Injection (HPSI) System
SPO-60B-001, Rev. 2	Low Pressure Safety Injection System and Shutdown Cooling System
SPO-60C-001, Rev. 1	Safety Injection Tank

These procedures do not fully accomplish the tests required by Regulatory Guides 1.68 (August 1978) and 1.79 (September 1974). Specific tests, which are required by these regulatory guides, but which are not fully accomplished by the preoperational test procedures are listed below:

- a. Regulatory Guide 1.68, Appendix A, Section 1.h states that testing of the engineered safety features (ESF) should demonstrate that such features will perform satisfactorily in all expected operating configurations or modes.

Regulatory Guide 1.79, Sections C.2.c(1) and (2) states that pumps and motors should be tested for proper operation in all design operating modes and that acceptable net positive suction head performance should be verified under maximum system flow conditions.

Performance of the tests in accordance with the procedures does not appear to demonstrate satisfactory performance of the ESF systems in all operating configurations or modes, nor do they demonstrate system performance at maximum flow conditions.

For example, the procedures require running only one pump at a time, whereas a more likely configuration would be for more than one pump to be running at the same time and for the low pressure and high pressure safety injection systems to be operating at the same time.

This is an open item (8223-01).

- b. Regulatory Guide 1.68, Appendix A, Section 1.7(1)(b) states that operability of the emergency core cooling system should be demonstrated using the normal and emergency power supplies. However, testing in accordance with these procedures does not require use of the emergency power supply.

This is an open item (8223-02).

- c. Regulatory Guide 1.79, Section C.1.a(1) states that testing during the safety injection flow test cold conditions should verify the adequacy of the electric power supply by testing under maximum startup loading conditions. However, by utilizing these procedures, the adequacy of the electric power supply is not tested under maximum startup loading conditions.

This is an open item (8223-03).

- d. Regulatory Guide 1.68, Appendix A, Section 1.2(2) states that emergency loads should be tested to demonstrate that they can start and operate with the maximum and minimum design voltage available. However, by utilizing the procedures, emergency load operation is not tested with maximum and minimum design voltage conditions.

This is an open item (8223-04).

- e. Regulatory Guide 1.79, paragraph C.2.a(2) states that the proper functioning of instrumentation and alarms used to monitor system availability should be verified. However, by utilizing these procedures, proper functioning of instruments PT-SI-0319, PT-SI-0329, PT-SI-0349, PT-SI-0390AS, and PT-SI-0390BS is not verified.

This is an open item (8223-05).

These tests may be included in future test procedures; however, during this inspection period, test engineers were not able to specifically identify to the NRC inspectors the procedure that covered these issues.

No violations or deviations were identified.

5. Preoperational Test Procedure Witnessing

The NRC inspectors witnessed the performance of portions of the following preoperational test procedures:

SPO-60A-001	High Pressure Safety Injection (HPSI) System
SPO-60B-001	Low Pressure Safety Injection System (LPSI) and Shutdown Cooling System
SPO-60C-001	Safety Injection Tank System (SITS)
SPO-59-001	Containment Spray System (CS)
SPO-02-003	125 Vdc System Channel A/B

The NRC inspectors verified that testing was conducted in accordance with approved procedures and evaluated the performance of licensee personnel conducting the test.

No violations or deviations were identified.

While no violations or deviations were identified, the NRC inspectors made the following observations while witnessing the safety injection system (SIS) and CS tests.

a. There appeared to be a lot of incomplete work on the system as evidenced by the following:

- (1) The number of open items (incomplete items) on the master tracking system list for each system prior to commencing test.

Approximately 506 for System 60A, HPSI
Approximately 540 for System 60B, LPSI
Approximately 317 for System 60C, SITS
Approximately 215 for System 59, CS

- (2) Testing on System 59, CS, was not completed because all the spray ring nozzles in containment had not been installed.
- (3) Condition Identification Work Authorizations (CIWA's) 827204, 827205, 827206, and 827207 install volume pots on the safety injection tank low pressure sensing lines in accordance with Design Change Notice (DCN) IC-944. Installation of these volume pots on the level sensing lines will invalidate the affected portions of the safety injection tank level checks performed by Preoperational Test Procedure SPO-60C-001. This work was identified prior to the performance of the preoperational test on the safety injection tanks.

The CIWA's identifying this work were initiated on June 6, 1982. The completion priority block on the CIWA forms originally required the work to be completed prior to preoperational testing. This priority was changed on September 16, 1982, after the level checks of Preoperational Test Procedure SPO-60C-001 had been performed.

Regulatory Guide 1.68, paragraph C.2 states that a prerequisite for testing is that the construction or installation of structures, systems, and components should be essentially completed (to the degree that the outstanding construction items could not be expected to affect the validity of test results).

The FSAR, Section 14.2.12.51.2.A states that construction activities on the systems to be tested will be complete. The cases described in a(2) and a(3) above strain the interpretation of the term "construction activities completed" as used in the regulatory guide and the FSAR. In view of the small inspection sample and the number of open items outstanding, as indicated in a(1) above, on the systems tested the burden becomes one not only of testing the systems, but also one of ensuring that, as each of these items is completed, it does not invalidate any portion of the completed test.

- b. Participation by the permanent operating and maintenance staff, whose ultimate duty will be to operate the plant, appeared to be minimal. Regulatory Guide 1.68 and the FSAR state the preoperational testing shall be used for training plant personnel. Regulatory Guide 1.68, in paragraph C.6, states that the applicant's plant operating and plant technical staff shall participate, to the extent practical, in the development and conduct of the initial test program.

The FSAR, Section 14.2.1 states that one of the objectives of the startup test program shall be to assist in the training of the plant operating and maintenance staff and to provide them with hands-on experience in the operation and maintenance of plant equipment utilizing plant procedures.

While the words, to the extent practical, allow flexibility in the amount of participation by plant operating and maintenance staff, there are a limited number of windows of opportunity available for training that can provide hands-on system operating experience. The preoperational test of the SIS and CS was one such window.

- c. There did not appear to be a significant utilization of plant procedures during the performance of the test.

Regulatory Guide 1.68 and the FSAR state that preoperational testing shall be used for trial testing plant procedures. Regulatory Guide 1.68, in paragraph C.7, states that plant operating and emergency procedures should, to the extent practical, be developed, trial tested, and corrected during the initial test program prior to fuel loading to establish their adequacy.

The FSAR, Section 14.2.9, states that one objective of the initial test program is to "use test" plant procedures and whenever practical, plant procedures will be referenced in, or used in lieu of, test procedures or portions thereof.

While the words, to the extent practical, allow flexibility, the performance of these preoperational tests provided an opportunity for trial testing of plant procedures which was not utilized.

- d. The following are outstanding items revealed by the tests where changes to equipment were required for proper operation or where components failed to meet acceptable criteria.

System 60A, HPSI:

- (1) Motor-operated valve 2SI-V1542 exceeded the maximum time of 10 seconds for opening (approximately 10.4 seconds) and closing (approximately 10.2 seconds).
- (2) The thermal overloads on motor-operated valves had to be changed out to prevent tripping.

System 60B, LPSI:

Flow transmitters FT-SI-0307A and FT-SI-0306B had flow fluctuations on their associated flow indicators, and the circuit could not control the associated valve below 700 gpm.

System 60C, SIT's:

Flowdown time on three of the four safety injection tanks exceeded the acceptable maximum time of 101 seconds. The flowdown time of the three tanks that did not meet acceptance criteria was approximately 135 seconds.

System 59, CS:

The containment spray pump differential pressures recorded during the test did not match the referenced pump curves.

These items are being evaluated by the licensee or his representative.

The NRC inspectors had no further questions in this area.

6. Site Tour

At various times during the course of the inspection period, the NRC inspectors conducted general tours of the auxiliary building, fuel handling building, reactor building, and the turbine building to observe ongoing construction and testing.

During one of the tours, the NRC inspectors observed workers installing a hanger support plate on the wall in safety injection room "B" on the -35' level of the reactor auxiliary building. The workers were using a hammer to drive the plate on the Hilti-Bolts because the holes in the plate did not line up with the Hilti-Bolts. The workers were not using a procedure to perform this work.

The NRC inspectors reported this incident to LP&L construction quality assurance (QA) and while showing the plate in question to the LP&L QA inspector, it was also noted that unused bolt holes in the wall had not been filled and that there could possibly be unfilled holes behind installed plates.

LP&L construction QA performed an investigation which resulted in the following findings and actions:

- a. The work was being performed by Ebasco Services, Inc. (Ebasco) force account.
- b. There was a breakdown in Ebasco's QA/QC program in that procedures were not being followed.
- c. Base plates had been installed over unfilled holes drilled in the concrete.
- d. On September 3, 1982, Ebasco's site QA program manager issued a stop-work order on the installation of expansion anchor plates by Ebasco force account.
- e. On September 3, 1982, Nonconformance Report W3-4467 was issued.

The NRC inspectors had the following questions concerning the incident:

- a. Does forcing the plate on the Hilti-Bolts provide an acceptable installation?
- b. What training will be done to ensure personnel perform work in accordance with procedures?
- c. What action will be taken to verify that other plates have been installed correctly by force account personnel?

This is an open item (8223-06).

7. Startup Quality Assurance

LP&L has established a startup quality assurance group. The group is made up of three people who report functionally to T. F. Gerrets, LP&L Quality Assurance Manager. This group has been created to provide the startup program with personnel whose primary function is to enhance quality assurance in the startup area.

The group will ensure quality assurance goals are being met by performing such activities as reviewing startup procedures, reviewing maintenance documentation, witnessing tests and evaluating test data. The group will coordinate all quality assurance related activities between the startup group and all other onsite and off site organizations.

The LP&L quality assurance manager has established an office onsite and will be spending the bulk of his time onsite.

8. Unresolved/Open Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations or deviations.

Open items are specific items that will be reviewed at a later inspection. Open items identified and the paragraph of this report in which they are discussed are:

<u>Open Item</u>	<u>Paragraph</u>
8223-01	4-a
8223-02	4-b
8223-03	4-c
8223-04	4-d
8223-05	4-e
8223-06	6

9. Exit Interviews

The NRC inspectors met with the licensee representative (denoted in paragraph 1) at various times during the course of the inspection. The scope and findings of the inspection were discussed.

