

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-382/87-30

Operating License: NPF-38

Docket: 50-382

Licensee: Louisiana Power & Light Company (LP&L)
N-80
317 Baronne Street
New Orleans, Louisiana 70160

Facility Name: Waterford Steam Electric Station, Unit 3

Inspection At: Taft, Louisiana

Inspection Conducted: November 30 through December 4, 1987

Inspector: *I. Barnes for* 1-22-88
R. C. Stewart, Reactor Inspector, Materials
and Quality Programs Section Date

Approved: *I. Barnes* 1-22-88
I. Barnes, Chief, Materials and Quality
Programs Section Date

Inspection Summary

Inspection Conducted November 30 through December 4, 1987 (Report 50-382/87-30)

Areas Inspected: Routine, unannounced review of actions taken to implement reactor vessel transient protection and followup of a previously identified unresolved item.

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

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DETAILS

1. Persons Contacted

LP&L

T. Gerrets, Manager, Nuclear Services
 N. S. Carns, Plant Manager
 G. F. Koehler, Operations, Quality Assurance (QA)
 B. G. Morrison, Licensing
 C. Gaines, Assistant to Plant Manager
 P. M. Melancon, Reactor Engineering and Performance
 G. M. Woodard, Nuclear Operations Support and Assessments
 G. E. Weller, Operations, Licensing
 R. Brian, Staff Engineer
 D. Klinksiek, Supervisor, Mechanical Engineering
 P. Caropino, Operations, Licensing
 R. Murillo, Nuclear Services
 R. Gilroy, QA Engineer

The NRC inspector also contacted other plant personnel, including operators, technicians, and administrative personnel.

2. Followup of Previously Identified Items

(Open) Unresolved Item (382/8615-03): Licensee Evaluation of Apparent Conflicting FSAR Statements and the Ability of Low Temperature Overpressure Protection to Handle a Safety Injection Tank Discharge - This matter was discussed with the cognizant licensee representative and the related documentation was reviewed. The licensee representative stated that Section 6.3.2.5.1 of the FSAR will be revised to clarify the conflicting statement. This matter remains open pending the licensee's final documentation and close out of this item.

3. Review of Licensee's Actions Taken to Implement Reactor Vessel Pressure Transient Protection (Unreviewed Safety Issue (USI) A-26) - The objective of this inspection was to verify that the licensee has taken appropriate action to ensure that an effective mitigation system has been established for Low Temperature Overpressure Protection (LTOP) conditions.

a. Design Basis

Overpressure protection for the Waterford Steam Electric Station, Unit 3, steam generators and reactor coolant system (RCS) is similar to other Combustion Engineering (System-80) designs. Overpressure protection at operating pressure is ensured by means of primary safety valves, secondary safety valves, and the reactor protective

system. These systems maintain the RCS below 110 percent of design pressure during worst case transients.

During heatup, cooldown, and cold shutdown, low temperature overpressure protection is provided by relief valves (51-486 and 51-487), located in the shutdown cooling system suction line. The protection provided by these relief valves is required during heatup and cooldown, and during extended periods of cold shutdown whenever the RCS pressure is at 377 psig/350°F or below. To maintain RCS overpressure protection, the relief valves are aligned at all temperatures below the pressure-temperature (P-T) curve limits (Technical Specification figures 3.4-2 and 3.4-3) corresponding to the pressurizer safety valve setpoint (2500 psia). The shutdown cooling system relief valves are set at 415 psig; they are designed to protect the reactor vessel for any event initiating a pressure transient as a result of either operator error or equipment malfunction. No single failure of an isolation valve will prevent the relief valves from performing their intended function. An inadvertent pressure transient that increases RCS pressure should be controlled by the shutdown cooling system relief valve(s) with a conservative pressure margin below the setpoint of isolation interlock. This setpoint is >377 psig in the pressurizer. Since the interlock setpoint should never be reached, the shutdown cooling system relief valves should remain aligned to the RCS; therefore, the P-T limits, which are greater than the interlock setpoint, should not be exceeded.

b. Administrative Controls and Procedures

The principal documents and procedures reviewed by the NRC inspector during this inspection included the following documents:

- ° Waterford Steam Electric Station, Unit 3, Final Safety Analysis Report:
 - Section 5.2.2, "Overpressure Protection"
 - Section 5.3.1.5, "Fracture Toughness"
 - Section 5.2, "Integrity of Reactor Coolant Pressure Boundary,"
 - Appendix 5.2A and 5.2B
 - Section 6.3.2.5.1, "Safety Injection Tanks"
 - Section 7.2, "Reactor Protective System"
 - Section 9.3.6., "Shutdown Cooling System"
 - Section 15.2
- ° Safety Evaluation Report, Supplement 5, dated June 1983
- ° Safety Evaluation Report, Supplement 10, dated March 1987
- ° Technical Specification, Amendment 7, Sections 3.0 and 4.0

- ° LP&L Drawing, LOU-1564-G-167, Sheets 1 and 2, "Flow Diagram Safety Injection System"
- ° LP&L Drawing, LOU-1564-G-B-424, "Control Wiring Diagram"
- ° LP&L Operating Procedure OP-009-005, "Shutdown Cooling System"
- ° LP&L Operating Procedure OP-009-008, "Safety Injection System"
- ° LP&L Operating Procedure OP-10-001, "General Plant Operations"
- ° LP&L Procedure OP-903-001 "Technical Specification Surveillance Log" (Valve key - lock surveillances)
- ° LP&L Procedure MM-07-006, "Safety Injection Relief Valves"

c. Inspection Summary

The NRC inspector has verified that administrative controls and procedures provide the following:

- ° Controls necessary to provide low temperature overpressure protection are limited to those controls that open the shutdown cooling system isolation valves.
- ° Before entering the low temperature region for which overpressure protection is necessary, RCS pressure is decreased to below the maximum temperature and pressure required for shutdown cooling system operation (<350°F and 377 psig).
- ° Once the shutdown cooling system is aligned, there are no further procedural controls. The shutdown cooling system should remain aligned whenever the RCS is at low temperature and pressure and the reactor vessel head is secured.
- ° In order to prevent accidental overpressurization of the shutdown cooling system during plant cooldown, safety injection tanks are depressurized to 377 psig. An interlock with pressurizer pressure prevents isolation of the safety injection tanks and if pressurizer pressure is greater than 400 psig.
- ° During startup and shutdown operations, there is visual indication instrumentation, interlocks, and alarms in the main control room, which should preclude inadvertent overpressurization as a result of operator error.
- ° Documentation reviewed reflected that the licensee had conducted an evaluation of low temperature transients.

- ° The actions and commitments established by the licensee in response to USI 1-26, "Reactor Vessel Transient Protection for Pressurized Water Reactors," appeared to ensure that an effective mitigation system has been established for low temperature overpressure conditions.

No violations or deviations were identified.

4. Exit Meeting

The NRC inspector met with Mr. C. Gaines on December 4, 1987, and summarized the scope of the inspection and findings.