

APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report No. 50-382/92-06

Operating License No. NPF-38

Licensee: Entergy Operations, Inc. (Entergy)
P.O. Box B
Killona, Louisiana 70066

Facility Name: Waterford Steam Electric Station, Unit 3 (W3SES)

Inspection At: W3SES, Taft, Louisiana

Inspection Conducted: February 10-14, 1992

Inspector: R. C. Stewart, Reactor Inspector, Materials and Quality
Programs Section
Division of Reactor Safety

Approved:

I. Barnes
I. Barnes, Chief, Materials and Quality
Programs Section, Division of Reactor Safety

3-19-92
Date

Inspection Summary

Inspection Conducted February 10-14, 1992 (Report No. 50-382/92-06)

Areas Inspected: Routine, announced inspection of the licensee's boric acid corrosion prevention program procedures and implementation. In addition, a followup review was conducted of previously identified inspection findings.

Results: Within the two areas inspected, one violation was identified (paragraph 3.3) pertaining to the failure to follow procedures in regard to documentation and engineering evaluation of boric acid leakage. The inspector also observed that only three reactor coolant pressure boundary (RCPB) valves were included in the boric acid corrosion prevention program. The documented basis for omission of other RCPB valves that had been identified to contain parts that were susceptible to boric acid corrosion did not adequately address the criteria contained in Generic Letter (GL) 88-05. An inspection followup item was identified (paragraph 3.2) pertaining to review of a committed reevaluation of the omitted valves.

DETAILS

1. PERSONS CONTACTED

- *T. J. Gaudet, Operational Licensing Supervisor
- *D. F. Packer, General Manager Plant Operations
- *R. G. Azzarello, Director Design Engineering
- *R. F. Burski, Director, Nuclear Safety
- *J. G. Hoffpauir, Maintenance Superintendent
- *D. E. Baker, Director Operations Support & Assessments
- *B. R. Loetzerich, Licensing Engineer
- *P. A. Gropp, Systems Engineering Supervisor
- *W. R. Brian, Plant Engineering Superintendent
- *L. W. Laughlin, Licensing Manager
- *D. V. Gallodoro, Procurement Engineering Supervisor
- *J. P. Pennington, Procurement Engineer
- *A. S. Lockhart, Quality Assurance (QA) Manager

NRC

- *W. F. Smith, Senior Resident Inspector
- *I. Barnes, Section Chief, Materials and Quality Program Section

*Indicates those persons who attended the exit meeting conducted on February 14, 1992.

2. LICENSEE ACTIONS ON PREVIOUSLY IDENTIFIED INSPECTION FINDINGS (92701 and 92702)

2.1 (Closed) Violation (382/9119-01): The failure to implement immediate corrective action after discovering hydraulic fluid leakage from the valve actuator packing gland on a main steam isolation valve (MSIV).

An interim corrective action was initiated by Condition Identification (CI) No. 276942 and Work Authorization (WA) No. 1081940, which required daily monitoring and valve stem wipe downs. In addition, a subsequent Design Change DC 6977 was initiated wherein the valve actuator will be modified during Refueling Outage No. 5 in order to preclude the recurrence of hydraulic fluid leakage.

In order to avoid further violations, the applicable procedures (i.e., PE-002005, Revision 12; UNT-005-002, Revision 10; and UNT-005-015, Revision 2) were revised to add a requirement that "any necessary interim measures that control or monitor the condition are to be identified until long term action is completed."

During this inspection, the inspector verified the above corrective actions, including the review of the maintenance department's daily shift log book and

the WA 01081940 addendum which documented the daily leakage monitoring of the MSIV and wipe down.

This item is considered closed.

2.2 (Closed) Violation (382/8911-01): Inadequate design control relative to the backup air supply accumulators for the containment sump recirculation valves (SI-602A & B) which were not designed or tested to ensure proper system operation for all conditions postulated by the design basis. In addition, the static uninterruptible power supply (SUPS) 3A-S was found to have been modified by the addition of a nonsafety-related load to the distribution panel without accounting for the effects of load faults on the inverter operations.

The inspector reviewed the licensee's engineering evaluation (i.e., Plant Engineering Information Request No. 71128 dated December 12, 1989) of the design basis for the air and nitrogen accumulators with respect to small break LOCAS and applicability to SI-602A & B. The inspector also reviewed the subsequent Licensee Event Report (LER) 89-007, dated January 3, 1990.

The inspector observed that long term corrective actions included the installation of an alternate means to supply nitrogen backup for operations of Valves SI-602A & B. These measures were discontinued during Refueling Outage 4 when both valves were modified to accommodate motor operated actuators. This modification was documented via DC 3195, which was completed and tested on May 14, 1991.

With regard to the SUPS 3A-S deficiency, the licensee's response to the violation dated June 9, 1989, indicated that the root cause related to the original design philosophy of the architect engineer who considered communications to be a vital part of the plant, thereby adding the telephone circuit to the SUPS distribution panel.

On March 30, 1989, the telephone circuit (No. 65 of PDP 390) was disconnected from SUPS 3A-S at the local terminals in the cabinet. All loads on PDP-SA and PDP 391-SB were reviewed to ensure that no other non-1E loads exist. DC-3180, completed September 1, 1989, finalized the corrective action regarding the deficiency.

The above items are considered closed.

2.3 Inspection Followup Item (382/9018-01): Audit of special processes primarily focused on program requirements with little emphasis on observation of work activities.

During this inspection, the inspector reviewed Procedure QAD-111, Revision 1, "Conduct of Quality Assurance Surveillances," and the 1991 quarterly surveillance schedule and surveillance log. It was observed by the inspector that audit schedules are being supplemented by surveillances of work

activities. In addition, QA surveillances were conducted regarding special processes during January and April 1991.

This item is considered closed.

3. BORIC ACID CORROSION PREVENTION PROGRAM (62U01)

The objectives of this inspection were to verify that the licensee had a documented program for prevention of corrosion caused by boric acid solution leaking out from boric acid containing systems, as required by GL 88-05. Additional objectives were to verify that the licensee had prepared procedures which provide clear guidance for performing the activities required by the program and verify that the licensee had implemented the program in accordance with its written procedures.

3.1 GL 88-05 Recommendations

In summary, GL 88-05 recommends that licensees: (1) determine the principal locations where leaks, smaller than the allowable Technical Specification limit, can cause degradation of the primary pressure boundary by boric acid corrosion. Particular consideration should be given to identifying those locations where conditions exist that could cause high concentrations of boric acid on pressure boundary surfaces; (2) include procedures for locating small coolant leaks (i.e., leakage rates at less than Technical Specification limits) that establish potential paths of the leaking coolant, and the reactor pressure boundary components that it is likely to contact; (3) establish methods for conducting examinations and performing engineering evaluations to determine the impact on the reactor coolant pressure boundary when leakage is located; and (4) establish corrective actions to prevent recurrences of this type of corrosion.

3.2 Waterford 3 Boric Acid Monitoring Program

On February 10, 1992, the licensee provided the inspector with numerous documents which addressed activities associated with the examination, evaluation, and reduction of boric acid leakage. A review noted that Administrative Procedure UNT-007-027, Revision 1, "Control of Boric Acid Corrosion on the Reactor Coolant System," was established in response to GL 88-05. The procedure addressed the reactor coolant pressure boundary (RCPB) inspection areas, inspection guidelines, initiation of a CI to identify observed leakage, engineering evaluation requirements, and responsibilities.

During the documentation review, the inspector noted that visual examinations of the RCPB were conducted during each refueling outage on the components delineated in Attachment 6.1 to the procedure. The Attachment specified inspection areas on the following components: four reactor coolant pumps; primary side of the two steam generators; pressurizer; reactor vessel; reactor coolant piping; and three safety injection valves (SI-332 A and -401 A and B).

In discussing the program content with the cognizant systems engineer, the inspector questioned why only three valves within the RCPB were included in the inspection/examination program. The system engineer provided the inspector with a copy of an internal memorandum dated May 17, 1988, reflecting the results of an evaluation of Class 1 system components for susceptibility to boric acid corrosion. Some 59 valves were identified in the memorandum as being within the RCPB, with the majority of the valves containing parts susceptible to boric acid corrosion. The evaluation concluded that since most of the valves were small manual isolation valves and the susceptible parts were not classified as pressure retaining, they would not require a specific inspection for corrosion damage. The inspector expressed a concern in that the documented justification for their omission did not adequately address all aspects of boric acid leakage conditions as discussed GL 88-05. At the conclusion of the exit meeting, the cognizant system engineering supervisor committed to a reevaluation of the program requirements for these valves. Licensee completion and inspector review of the reevaluation is considered to be an inspection followup item (382/9206-01).

3.3 Program Implementation

The results of the visual examinations conducted under WA-01071406 during the refueling outage commencing March 16, 1991, were reviewed by the inspector. These results showed that three valves and the four reactor coolant pumps exhibited boric acid leaks and/or boric acid crystal buildup; however, no CIs were generated as required by paragraph 5.1.5 of Procedure UNT-007-027 for the three valves. In addition, documentation was not available to confirm that the engineering evaluation required by paragraph 5.2.1 of Procedure UNT-007-027 was performed for the three valves. The failure to initiate a condition identification and perform a documented engineering evaluation are an apparent violation of 10 CFR 50, Appendix B, Criterion V (382//9206-02).

4. EXIT INTERVIEW

An exit interview was conducted on February 14, 1992, with those personnel denoted in paragraph 1 in which the inspection findings were summarized. No information was presented to the inspector that was identified by the licensee as proprietary.