UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

JUL - 1 1998

Charles M. Dugger, Vice President
Operations - Waterford 3
Entergy Operations, Inc.
P.O. Box B
Killona, Louisiana 70066

SUBJECT: NRC INSPECTION REPORT 50-382/98-06

Dear Mr. Dugger:

Thank you for your letter of June 15, 1998, in response to our April 21, 1998, letter and Notice of Violation concerning the failure to test a containment isolation valve (CVC-103) after performing maintenance to ensure that the valve could still perform its intended safety function, the failure to perform comprehensive corrective actions following overflow of the spent fuel pool, and an involvement by an engineer who performed an operational activity without the direction or concurrence of control room personnel. We have reviewed your reply and find it responsive to the concerns raised in our Notice of Violation. We will review the implementation of your corrective actions during a future inspection to determine that full compliance has been achieved and will be maintained.

Sincerely,

Phillip H. Harrell, Chief
Project Branch D
Division of Reactor Projects

Docket No.: 50-382
License No.: NPF-38

cc:
Executive Vice President and
Chief Operating Officer
Entergy Operations, Inc.
P.O. Box 31995
Jackson, Mississippi 39286-1995

Vice President, Operations Support
Entergy Operations, Inc.
P.O. Box 31995
Jackson, Mississippi 39286-1995

Wise, Carter, Child & Caraway
P.O. Box 651
Jackson, Mississippi 39205

General Manager, Plant Operations
Waterford 3 SES
Entergy Operations, Inc.
P.O. Box B
Killona, Louisiana 70066

Manager - Licensing Manager
Waterford 3 SES
Entergy Operations, Inc.
P.O. Box B
Killona, Louisiana 70066

Chairman
Louisiana Public Service Commission
One American Place, Suite 1630
Baton Rouge, Louisiana 70825-1697

Director, Nuclear Safety &
Regulatory Affairs
Waterford 3 SES
Entergy Operations, Inc.
P.O. Box B
Killona, Louisiana 70066

William H. Spell, Administrator
Louisiana Radiation Protection Division
P.O. Box 82135
Baton Rouge, Louisiana 70884-2135

Parish President
St. Charles Parish
P.O. Box 302
Hahnville, Louisiana 70057

Mr. William A. Cross
Bethesda Licensing Office
3 Metro Center
Suite 610
Bethesda, Maryland 20814

Winston & Strawn
1400 L Street, N.W.
Washington, D.C. 20005-3502

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Entergy

Entergy Operations, Inc.
P.O. Box B
Killona, LA 70066
Tel 504 739 6242

Early C. Ewing, III
Director
Nuclear Safety & Regulatory Affairs
Waterford 3

W3F1-98-0104
A4.05
PR

June 12, 1998

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
NRC Inspection Report 98-06
Reply to Notice of Violation

Gentlemen:

In accordance with 10CFR2.201, Entergy Operations, Inc. hereby submits in Attachment 1 the response to the violations identified in Enclosure 1 of the subject Inspection Report. On May 20, 1998, an extension of the original 30-day response date until June 12, 1998, was granted to Waterford 3 by Mr. G. Pick, NRC Region IV.

If you have any questions concerning this response, please contact me at (504) 739-6242 or Tim Gaudet at (504) 739-6666.

Very truly yours,

for

E.C. Ewing
Director,
Nuclear Safety & Regulatory Affairs

ECE/ELL/GCS/ssf
Attachment

cc: E.W. Merschoff (NRC Region IV), C.P. Patel (NRC-NRR), J. Smith,
N.S. Reynolds, NRC Resident Inspectors Office

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IE-1555

ATTACHMENT 1

ENTERGY OPERATIONS, INC. RESPONSE TO THE VIOLATION IDENTIFIED IN ENCLOSURE 1 OF INSPECTION REPORT 98-06

VIOLATION NO. 9806-03

Technical Specification 6.8.1.a requires, in part, that written procedures shall be established covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Appendix A, Section 9, requires that the licensee have maintenance procedures.

Contrary to the above, the licensee failed to establish a maintenance procedure that provided instructions for testing of a containment isolation valve following completion of maintenance on Valve CVC-103.

This is a Severity Level IV violation (Supplement I) (50-382/9806-03)

RESPONSE

(1) Reason for the Violation

The root cause for this violation is inadequate procedural guidance in regard to setup of valve CVC-103 following maintenance activities. CVC-103 is a fail closed, letdown and containment isolation valve with a Masoneilan Sigma F operator. During Refuel 8, maintenance was performed on the valve operator. Maintenance procedure MM-006-002, Valve Operator Maintenance, provided instructions for post maintenance testing. However, the procedure states that either it can be used as guidance for maintenance and post maintenance testing or the valve vendor manual can be used. This choice is at the discretion of the maintenance planner and/or the field mechanic. Procedure MM-006-002 delineates steps for performing post maintenance testing, including instructions for valve stroke length testing. However the valve vendor manual, which was used to perform maintenance on valve CVC-103, did not include directions for checking the valve stroke length. As a result, adequate valve post maintenance testing was not performed. The lack of post maintenance verification led to the failure to detect the incorrect stroke length of the valve.

This adverse condition was revealed on September 7, 1997, following refuel 8, when power was lost to CVC-103 due to a Static Uninteruptible Power Supply failure. Upon loss of power, the valve went to its closed position. However, approximately 23 gpm of letdown flow was observed through the valve with the valve indicating closed. The valve stroke length was found to be inadequately adjusted which led to the excessive leakage.

Contributing to this condition were inconsistencies between the valve manufacturer's data and existing plant data regarding the required stroke length for CVC-103. According to the manufacturer, the required stroke length for CVC-103 is 1.2". However, the plant's calibration sheet for CVC-103 stated that the valve's stroke length was 1.25" +/- 1/4" and the plant's Station Information Management System (SIMS) stated that the stroke length was 2.625". The valve vendor manual gives three stroke lengths the valve is capable of, but does not specify which stroke length is appropriate for CVC-103. The inconsistencies in these documents may have contributed to the stroke length being improperly set, as revealed in the September 7, 1997 event.

Not all the safety functions of CVC-103 were identified and documented, further contributing to the violation. The Letdown Isolation function of CVC-103 was not clearly identified and no impact on the IST program was documented.

(2) Corrective Steps That Have Been Taken and the Results Achieved

- An Engineering Evaluation was performed on September 8, 1997, to confirm operability of CVC-103. The evaluation concluded that CVC-103 was capable of performing both its containment and letdown isolation functions. This was based on an engineering evaluation that concluded the following:

    1. Based on the valve materials of construction, the valve plug/seat is not expected to degrade for the duration of a letdown line break event.
    2. Based on recent CVC-103 valve rework and LLRT, CVC-103 would perform its containment isolation safety function.
    3. An evaluation was performed by Safety and Engineering Analysis which determined the consequences of the leakage through CVC-103 is within 10CFR100 limits.
    4. The additional water released to the RAB due to CVC-103 leakage does not represent a flooding concern because of available drain paths, the large floor area, and the absence of safety-related equipment in communicating compartments. Also, the high energy flooding in the RAB is enveloped by existing moderate energy flooding analysis.

- Design Engineering performed a preliminary review of primary and secondary system air operated valves that may impact offsite dose if the operators were setup improperly for dual safety functions. No concerns were identified.

- Containment was entered on September 11, 1997, to adjust/lengthen the valve/actuator stem coupling. After the adjustment was made, CVC-103 was closed and no leakage was indicated.

- The Masoneilan technical manual for valve CVC-103 and similar valves was revised to require stroke length measurement upon reassembly. In addition, the appropriate stroke lengths for the safety related valves were added to the manual.

(3) Corrective Steps Which Will Be Taken to Avoid Further Violations

- A review of active safety related air-operated valves (AOVs), including CVC-101 and CVC-103, will be performed; necessary Design Basis Documents will be revised if closed safety functions at Normal Operating Pressure exist but are not identified; and, if an unidentified safety function is discovered, an evaluation will be performed to determine its impact on the IST Program.

- The proper set-up parameters for the Masoneilan Sigma F safety related AOVs, including CVC-101 and CVC-103, will be established and transmitted to Maintenance for procedure incorporation.

- Maintenance procedures will be revised to include the set-up parameters.

The actions taken, as described above, will bring Waterford 3 into full compliance and will resolve the issue with those valves found to be sensitive to valve adjustments.

(4) Date When Full Compliance Will Be Achieved

- The review of safety related AOVs and subsequent actions are scheduled to be completed by March 31, 1999.

- Revising Maintenance procedures to include the set-up parameters for Masoneilan Sigma F safety related AOVs, including CVC-101 and CVC-103, is scheduled to be completed by December 18, 1998.

Upon completion of the above actions, Waterford 3 will be in full compliance.

VIOLATION NO. 3806-04

Criterion XVI of Appendix B to 10 CFR Part 50 requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected.

Contrary to the above, from May 21, 1997, to February 2, 1998, the licensee failed to establish adequate measures to promptly identify and correct conditions adverse to quality in that the spent fuel pool overflow event had been attributed to a misadjusted stop nut on a manually-operated diaphragm valve and all other similar type valves installed in the facility were not inspected for the same deficiency.

This is a Severity Level IV violation (Supplement 1) (50-382/9806-04).

RESPONSE

(1) Reason for the Violation

The cause for this violation is misjudgement due to inadequate assumptions made regarding the cause of the diaphragm valves' deficiencies. The valves were first identified as being misadjusted following a Root Cause Analysis (RCA) Investigation of an overflow of the Spent Fuel Pool. It was determined that the travel stop nuts on Fuel Pool Ion Exchanger to Fuel Pool Isolation Valve, FS-345, were incorrectly positioned 1/8 inch lower than specified by the valve technical manual. This resulted in the valve not fully blocking flow to the Spent Fuel Pool when closed. This, in part, led to the overflow of the Spent fuel Pool.

A review of the maintenance history on the valve revealed that it was modified in May, 1992, by installation of an extension stem per Design Change DC-3211. This activity required the travel stops nuts to be removed. An inspection was also performed on all of the valves that were affected by DC-3211. Within this scope, four additional valves, FS-304, CMU-513, CMU-5132 and CMU-5133, were identified with misadjustments. It was determined that the same work instructions used to install the extension stem on FS-345 were used for these four valves. Based on these findings, it was concluded that this condition was due to the activities associated with DC-3211. In hindsight, it is clear that this conclusion was incorrect.

Since the discovery of additional similar misadjusted diaphragm valves, there is no conclusive evidence to support whether the problems associated with the five valves, affected by DC-3211, existed prior to or after the design change. In addition to the potential for the valves being set-up incorrectly, undetected degradation in the material condition of the valves by normal wear appears to have contributed to the degraded condition of these valves.

Contributing to the failure to identify the full scope of this adverse condition is a lack of training. Plant personnel, including personnel from maintenance, operations and engineering, routinely walkdown plant systems. Deficiencies with the valves were not identified during the walkdowns. The problems were apparently not detected due to a lack of understanding of the construction, operation, and maintenance of the manual diaphragm valves.

(2) Corrective Steps That Have Been Taken and the Results Achieved

- A walkdown of approximately fifty diaphragm valves was performed to determine the scope of the valve deficiencies. A wide range of discrepancies were noted with the manual diaphragm valves.

- An inspection of all manual diaphragm valves immediately accessible (approximately 400 valves) has been performed by Plant Engineering. There were no valve operability concerns identified following this inspection and the above walkdown.

- A Training Request has been issued to develop and administer a lesson plan for the proper construction, operation, and maintenance of manual diaphragm valves.

(3) Corrective Steps Which Will Be Taken to Avoid Further Violations

- Based on the inspections discussed above, the population of valves to be inspected (and repaired, as necessary) has been increased to include the entire population (approximately 262 additional valves).

- Training will be provided to nuclear auxiliary operators, mechanical maintenance personnel, and system engineers with manual valves installed in their system.

(4) Date When Full Compliance Will Be Achieved

- Manual diaphragm valves, with safety functions, will be inspected and repaired by Maintenance by May 31, 1999. Several of the valves require outage conditions to perform the above activity. Waterford 3's next scheduled outage is February, 1999.

- All other manual diaphragm valves will be inspected and deficiencies documented in the work control system for tracking of repairs by May 13, 1999.

- Training will be provided to nuclear auxiliary operators, mechanical maintenance personnel, and system engineers with manual valves installed in their system by December 18 1998.

Upon completion of the above actions, Waterford 3 will be in full compliance.

VIOLATION NO. 9806-05

Technical Specification 6.8.1.a requires, in part, that written procedures shall be implemented and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Appendix A, Section 1, requires that the licensee have administrative procedures/written instructions.

Administrative Procedure OP-100-001, "Duties and Responsibilities of Operators on Duty," Revision 14, Section 5.8.1.3 specified, in part, that operational activities performed locally in the plant must take place under the direction of, or with the concurrence of, the shift superintendent or control room supervisor.

Contrary to the above, on March 5, 1998, it was discovered that equipment in the plant was operated without direction from the shift superintendent or control room supervisor. Specifically, on past occasions, an engineer had operated the governor valve on the emergency feedwater turbine without the direction or concurrence of the shift superintendent or the control room supervisor and without written procedures or instructions.

This is a Severity Level IV violation (Supplement 1, (50-382/9806-05).

RESPONSE

(1) Reason for the Violation

The root cause of this violation was unclear expectations regarding manipulations of plant equipment by engineering personnel. The Waterford 3 Plant Engineering Desk Guide states that "Operations is the sole authority for control and manipulation of plant equipment." While this expectation appears to be well understood with regard to manipulations of plant equipment involving a change in state, rendering equipment temporarily out of service and/or altering the status of equipment (such as manipulating hand wheels, manipulating control switches, and starting or stopping equipment), expectations were not as well communicated regarding more subtle manipulations. Checking equipment vibration and temperature through contact is an accepted and expected observation; however, the extension of this action to checking freedom of movement and spring engagement did not meet expectations and unacceptably encroached on the concept of manipulation of plant equipment, particularly in the absence of prior Operations knowledge and permission.

(2) Corrective Steps That Have Been Taken and the Results Achieved

- The event was discussed on March 5, 1998, by the System Engineer-Nuclear Steam Supply System (NSSS) Superintendent with the Emergency Feedwater (EFW) System Engineer. The expectations

regarding manipulations of plant equipment were clarified (no movement of the governor valve stem without prior Operations permission and proper documentation), reinforcing that the event did not meet the intent of expectations as established in the Plant Engineering Desk Guide and the requirements of Operations Administrative Procedure OP-100-009, "Control of Valves and Breakers". The need for proper notification of Operations, documentation of activities, avoidance of preconditioning and consideration of Technical Specification LCOs were included in the discussion.

- This event was reviewed on March 6, 1998, by the System Engineer-NSSS Superintendent with System Engineers at the System Engineering daily meeting with emphasis on the same expectations as outlined in the item above.

- This event was reviewed on March 6, 1998, by the Plant Engineering Manager with Plant Engineers at the Plant Engineering bi-weekly meeting regarding the expectations as outlined in the item above.

- This event was reviewed by the System Engineer-NSSS Superintendent with new engineering personnel and staff augmentation contractors regarding the same expectations as outlined in the item above.

- An "on demand" repetitive task was developed and approved to be used for obtaining Operations approval and documentation prior to future partial strokes of valve MS-417.

- The General Manager Plant Operations issued a letter to Waterford 3 personnel on March 20, 1998, regarding manipulation of plant equipment. This letter re-emphasized management expectations and emphasized that manipulation of plant equipment may not be performed by anyone other than qualified Operations personnel unless specifically allowed for in an approved procedure/work package or unless specific permission is granted by the on-shift operating crew.

As a result of the above actions, the individual initially involved in this violation has stopped the undesired action. In addition, Waterford 3 management has clearly conveyed its expectation to site personnel regarding manipulation of plant equipment.

(3) Corrective Steps Which Will Be Taken to Avoid Further Violations

The above corrective steps are adequate to avoid further violations of this type.

(4) Date When Full Compliance Will Be Achieved

Waterford 3 is in full compliance.