



ENTERGY

Entergy Operations, Inc.

PO Box 8

Killbuck, LA 70086

Tel 504 739 6774

R. F. Burski

Director

Nuclear Safety

Waterford 3

W3F1-94-0155

A4.05

PR

September 2, 1994

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 94-15
Reply to Notice of Violation

Gentlemen:

In accordance with 10CFR2.201, Entergy Operations, Inc. hereby submits in Attachment 1 the response to the violation identified in Appendix A of the subject Inspection Report.

If you have any questions concerning this response, please contact W.H.Pendergrass at (504) 739-6254.

Very truly yours,

R.F. Burski
Director
Nuclear Safety

RFB/WHP/tjs
Attachment

cc:

L.J. Callan (NRC Region IV), D.L. Wigginton (NRC-NRR),
R.B. McGehee, N.S. Reynolds, NRC Resident Inspectors Office

9409090121 940902
PDR ADDCK 05000382
B PDR

TEO1

ATTACHMENT 1

ENTERGY OPERATIONS, INC. RESPONSE TO THE VIOLATION IDENTIFIED IN
APPENDIX A OF INSPECTION REPORT 94-15

VIOLATION NO. 9415-01

During an NRC inspection conducted on May 29 through July 9, 1994, two examples of one violation of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions, "10 CFR Part 2, Appendix C, the violation is listed below:

Technical Specification 6.8.1.a requires, in part, that written procedures be established, implemented, and maintained covering the activities referenced in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978.

Site Directive W4.201, Section 3.4, "Configuration Management" states, in part, that "Plant configuration documents specifying operations, maintenance, testing, installation, procurement and training requirements are updated and maintained consistent with the plant design."

1. Contrary to the above, the flow diagram for the chemical and volume control system did not show all letdown radiation monitor purge connections. Specifically, on June 7, 1994, the flow diagram for the primary makeup water system incorrectly indicated that letdown radiation monitor purge flow was routed to a floor drain and not the chemical and volume control system. The flow diagram discrepancy contributed to an inadvertent positive reactivity addition to the core during a letdown monitor purge evolution.
2. Contrary to the above, the component cooling water system flow diagram did not show all the valves in the system. Specifically, on June 23, 1994, the inspectors identified that a ball valve installed immediately downstream of component cooling water heat exchanger drain valve CC-120A did not appear on the diagram and did not have an identification label.

These two examples constitute one Severity Level IV violation (Supplement I) (382/9415-01).

RESPONSE

(1) Reason for the Violation

Entergy Operations Inc. admits this violation and believes that the root causes for the examples cited are A) inadequate technical review, and B) failure to ensure vendor followed procedures. The two conditions are discussed separately as sections A and B of this response.

- A) Waterford 3 has determined that the root cause for the flow diagram discrepancy contributing to an inadvertent positive reactivity addition was an inadequate technical review of the Station Modification Package (SMP-1817) which installed the Letdown Radiation Monitor in June, 1988.

On June 7, 1994, Maintenance Planning initiated Work Authorization (WA) 01125055 to repair a leak in the Letdown Radiation Monitor heat exchanger. The Instrumentation & Controls (I&C) technician performing the work requested that Operations purge the radiation monitor with Primary Makeup Water (PMU) to lower radiation dosage levels at the work site. The Primary Nuclear Plant Operator (PNPO) granted the request and the radiation monitor was declared out of service at 1028 hrs as the I&C technician prepared for a 30 minute purge. Valve PMU-120, normally locked closed, was then opened to line up purge flow to the radiation monitor.

The PMU purge was initiated but was unsuccessful due to a low flow alarm on the radiation monitor. The I&C technician removed the alarm by changing the flow setpoint to zero, and the purge was successfully started at 1234 hours. Concurrently, and for reasons not associated with this event, the PNPO commenced a blended makeup to the Volume Control Tank. At 1306 hours a second 30 minute purge was initiated. Operations shift personnel and the I&C technician involved with the process were unaware that the purge for the radiation

monitor enters the CVCS process and dilutes the borated water being injected into the RCS.

At 1310 hours the PNPO noted increased reactor power and temperature. Analysis of the situation was complicated by the recently completed blended makeup and problems with the Auxiliary Protection Cabinet (APC) muxsite sporadically toggling. Both of these events masked the effects of the dilution that was taking place from the radiation monitor purge. Blended makeup tends to result in innexact mixtures of acid and water which can cause a slight increase or decrease in power. Toggling by the APC muxsite creates changes in the Core Operating Limit Supervisory System (COLSS) calculations which affect the operator's indication of calculated power operating limits. The PNPO notified the Control Room Supervisor (CRS) and the Shift Supervisor (SS) of the problem with reactor power and temperature and commenced adding boric acid to the RCS.

At 1325 hours Procedure OP-901-104, Inadvertent Positive Reactivity Addition, was entered. The SS questioned an I&C technician, who was not involved with the Letdown Radiation Monitor purging, about the flow path of the purge water from the Letdown Radiation Monitor. The technician replied that the water was injected into the CVCS process stream, a fact not understood by any of the Control Room personnel on shift or the I&C technician involved with the evolution. At 1335 hours, purge was secured to the Letdown Radiation Monitor by the PNPO at the control panel in the Control Room. PMU-120 was then closed, in accordance with OP-901-104, to further isolate purge water to the Letdown Radiation Monitor. The PNPO continued to borate the RCS with power peaking at 100.5% at 1342 hours and dropping below 100% by 1400 hours. OP-901-104 was exited at 1415 hours. It was determined, based on the total purge time and flow rate, that approximately 285 gallons of PMU was inadvertently added to the VCT during this event. As mentioned earlier, the root cause of this event was an

inadequate technical review of the Station Modification Package (SMP-1817) which installed the Letdown Radiation Monitor in June, 1988. The package contains a flow diagram which incorrectly indicates that the purge flow is routed to the waste system via a floor drain and does not indicate that it also goes to the CVCS process. A vendor drawing which correctly indicates that purge flow is routed back to the process is included in the SMP as an attachment. The conflicting information in the SMP was not realized by the originator and was not recognized and resolved during the SMP review process. This situation resulted in inadequate procedures, training, and controlled drawings, which are considered contributing factors to this event. Had the SMP clearly indicated the correct purge flow path, there would have been greater opportunity for this information to be picked up during reviews and included in plant procedures, drawings, and training programs.

Operations personnel in the Control Room and the I&C technician involved in the purge believed the purge water was discharged to a floor drain. There is no procedural guidance warning the operator about the flow path for the Letdown Radiation Monitor purge, however it is included in a general list of valves to verify closed in the Off-Normal procedure, OP-901-104, Inadvertent Positive Reactivity Addition. The NSSS flow diagram for the CVCS does not show all monitor connections, including the purge flow path, nor does it reference the vendor drawing. The Architectural Engineering flow diagram for the PMU system only indicates that the purge flow goes to a floor drain and does not indicate that it is normally routed to the CVCS process. Because purging a radiation monitor is considered a routine evolution which occurs automatically at the touch of a button in the Control Room, a concern was not recognized prior to initiating the process. Valve PMU-120 was unlocked and opened to allow maintenance to perform their procedure. It was believed that PMU-120 was maintained locked

closed to prevent sample dilution during the monitor's normal operation. This is consistent with other radiation monitors in the plant of the same design, although these monitors are in systems where a boron dilution event is not possible.

The most recent Radiation Monitoring System training was given to Operations personnel during a 1992 Licensed Operator Requalification training cycle. The instructor who gave the RMS lectures was unaware that the purge flow path for the Letdown Radiation Monitor returned to CVCS piping. He assumed that purge flow went to a floor drain. Neither the RMS Lesson Plan nor the RMS System Description describe the purge flow path. The operator training lesson plan presented during 1988, when SMP-1817 was installed, did not emphasize that purging the Letdown Radiation Monitor could dilute the RCS; however, a drawing which correctly indicates the flow path is attached to the lesson plan. The technician who was questioned during the event and identified the correct purge flow path gained this knowledge from on-the-job training.

- B) Waterford 3 has determined that the root cause for the temporary ball valve remaining on the CCW Heat Exchanger drain line when it should have been removed is failure to ensure vendor followed procedures.

During Refuel Outage 6, Component Cooling Water Heat Exchangers A and B, while out of service for a planned outage, were inspected and chemically cleaned using a vendor provided process and procedures. The vendor's chemical cleaning process procedure required the use and installation of an additional temporary ball valve on the heat exchanger drain line downstream of drain valve ACC-120A.

The instructions to install and remove the temporary ball valve were part of the vendor's process procedure. The Work

Authorization (WA) work instructions provided steps to perform chemical cleaning in accordance with the vendor supplied procedures. The vendor's process procedures were not part of the work package, therefore, were unavailable for closure reviews by Waterford personnel.

Upon completion of the chemical cleaning process the vendor failed to complete restoration steps of their procedure, as required. The restoration steps in the vendor's procedure were not signed as being completed, and the temporary ball valve remained installed, downstream of ACC-120A.

Since the vendor's procedure was not part of the WA package, Waterford's closure review process did not disclose that the vendor's procedure was incomplete. Waterford personnel, therefore, failed to ensure that the vendor completed the restoration portion of their procedure and the temporary valve remained installed on the heat exchanger drain line.

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

- A) Once the source of the RCS dilution was realized, the purge was secured to the Letdown Radiation Monitor by the PNPO in the Control Room. PMU-120 was then closed to further isolate purge water to the Letdown Radiation Monitor. RCS boration was continued until reactor power level dropped below 100%. A danger tag was placed on PMU-120 and note placed on the tagout sheet to alert personnel to the potential to dilute the RCS while purging the Letdown Radiation Monitor.
- B) When the additional temporary valve was identified it was removed, a pipe cap installed, and a Condition Report written.

The vendor's process procedures were obtained and reviewed. The review of the vendor's process procedure for cleaning of

the 'A' and 'B' CCW Heat Exchangers revealed that the restoration steps for the 'A' heat exchanger had not been completed however, the 'B' heat exchanger restoration had been completed and signed. All the temporary vendor equipment had been removed, and no similar condition existed for the 'B' heat exchanger.

The Systems Engineering Supervisor- Mechanical, has completed an Improving Human Performance review of this event with the cognizant System Engineer.

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

- A) Previous design changes on systems that can alter the boron concentration of the RCS will be reviewed for the potential to cause a similar event.

The appropriate flow diagrams will be revised to clarify the purge flow paths for the radiation monitors installed under SMP-1817.

Waterford 3 will evaluate if additional engineering guidance is necessary to assist the engineering staff in determining the level of detail to be included on flow diagrams for new or changed "skid" mounted equipment.

The appropriate design bases documents will be revised to include information on the purge flow paths for radiation monitors.

Operations and Plant Maintenance Instrumentation & Control (PMI) technicians lesson plans will be revised to include information on purge flow paths for radiation monitors.

The appropriate system descriptions will be revised to include information on purge flowpaths for radiation monitors.

SMP-1817 was approved in 1988. The design engineers, responsible for the review and approval of this modification are no longer associated with Entergy, with the exception of one. This individual is no longer performing design work. Therefore, no individual counseling was done. However, this event will be included in an Industry Events Seminar for Operations, Maintenance and Engineering personnel emphasizing the importance of attention to detail, maintaining a questioning attitude and performing good technical reviews.

This event also will be incorporated into the Engineering Support Personnel orientation course, "Industry Experience Program Overview", W116-000.

- B) The plant staff has evaluated procedural controls in place under UNT-005-015, Work Authorization, Preparation and Implementation. Enhancements have been included that require vendor work process documentation to be included within WA packages. This will ensure vendor work process documentation will be available for closure review.

Prior to Refuel 7, Project Leads will discuss this event and any other applicable events which are related to vendor provided services as "lessons learned".

In addition, an evaluation will be performed on the vendor work control process to determine how improved awareness and effectiveness can be achieved in this area and provide any necessary corrective action recommendations.

Additionally, to address any overall configuration control issues, Waterford 3 engineering has formed a special task force to evaluate previously identified configuration control concerns. The team performed a review of Condition Reports (CR's), since February 1993 when the CR program was established, which have the potential to

affect plant configuration. The Condition Reports were reviewed to identify the root cause as it specifically relates to configuration management. The special task force will continue evaluations to determine how improved awareness and effectiveness can be achieved in these areas and provide any necessary corrective action recommendations.

(4) Date When Full Compliance Will Be Achieved

- A) Previous design changes on systems that can alter the boron concentration of the RCS will be reviewed for the potential to cause a similar event. To be completed by 09/30/94.

The appropriate flow diagrams will be revised to clarify the purge flow paths for the radiation monitors installed under SMP-1817. To be completed by 12/15/94.

Engineering guidance evaluation for level of detail on flow diagrams will be completed with recommendations for any enhancements or corrective actions by 9/30/94

The appropriate design base documents will be revised to include information on the purge flow paths for radiation monitors. To be completed by 12/15/94.

Operations and Plant Maintenance Instrumentation & Control (PMI) technicians lesson plans will be revised to include information on purge flow paths for radiation monitors. To be completed by 12/15/94.

The appropriate system descriptions will be revised to include information on purge flowpaths for radiation monitors. To be completed by 12/15/94.

This event will be included in an Industry Events Seminar for Operations, Maintenance and Engineering personnel emphasizing

the importance of attention to detail, maintaining a questioning attitude and performing good technical reviews. To be completed by 12/15/94.

This event will be incorporated into the Engineering Support Personnel orientation course, "Industry Experience Program Overview", W116-000. To be completed by 12/15/94.

B) Project Leads will discuss applicable events prior to Refuel 7.

The vendor work control evaluation will be completed with recommendations for any enhancements or corrective actions by 10/31/94.

The Special Task Force will have their evaluation completed with recommendations for any enhancements or corrective actions by 10/31/94.

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