May 22, 1996

MEMORANDUM TO: Eugene V. Imbro, Director
Project Directorate II-1
Division of Reactor Projects - East

FROM: Carl H. Berlinger, Chief /s/
Containment Systems and Severe Accident Branch
Division of Systems Safety and Analysis

SUBJECT: RESPONSE TO REGION II TIA 94-031 (TACs M94220 and M94221)

The Containment Systems and Severe Accident Branch was asked to respond to a TIA from Region II regarding the continued operation of North Anna Unit 1 with a degraded containment isolation valve. Attached is our response.

We find that the licensee did not follow the requirements of the North Anna Unit 1 technical specifications. However, the technical specifications required action more extreme than those called for by the situation and the NRC has previously agreed to modify these requirements, both in the Improved Standard Technical Specifications and in individual licensing actions.

Docket Nos. 50-338
and 50-339

Attachment: As stated

XA
9605240198
4pp.

NRR RESPONSE TO REGION II TIA 94-031

REVIEW TECHNICAL SPECIFICATION APPLICABILITY TO CLOSED SYSTEM CONTAINMENT ISOLATION VALVES

1. Introduction

NRC inspectors at North Anna Unit 1 observed maintenance being performed during which a solenoid operated valve (SOV) for valve 1-CC-TV-103B was being replaced. 1-CC-TV-103B is a containment isolation valve for the Component Cooling Water System return line from the B Residual Heat Removal (RHR) System heat exchanger. The maintenance included bypassing the air supply around the SOV which defeated the valve's automatic containment isolation function.

The inspectors questioned whether this action was consistent with the North Anna technical specifications. The licensee's safety evaluation performed prior to the maintenance concluded that it was.

By memorandum dated October 18, 1994, Region II requested that NRR review this issue and determine if the licensee's position was correct.

2. Background

At North Anna, both RHR heat exchangers are located inside containment. The component cooling water system provides cooling for these heat exchangers. There are individual supply lines to and return lines from each RHR heat exchanger. This configuration forms a closed system inside containment since these lines are neither part of the reactor coolant system pressure boundary nor connected directly to the containment atmosphere.

Component cooling water is also supplied to the RHR pump seal coolers from both supply lines; however, both coolers return flow to the "B" return line (the line in question here). Therefore, isolation of the "B" return line would result in loss of cooling to both seal coolers which renders both subsystems of RHR inoperable.

General Design Criterion 57 "Closed System Isolation Valves" requires that each line of a closed system that penetrates containment shall have at least one containment isolation valve which shall be either automatic, or locked closed, or capable of remote manual operation. One isolation valve is sufficient, since the closed system is an isolation barrier.

North Anna Technical Specification 3.6.3.1 requires the containment isolation valves to be OPERABLE. With one or more containment isolation valves inoperable, Technical Specification 3.6.3.1 requires that at least one isolation valve be maintained operable in each affected penetration that is open, and either of four actions be taken. These actions are:

a. restore the inoperable valve(s) to OPERABLE status within 4 hours, or

b. isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the isolation position, or

c. isolate each affected penetration within 4 hours by use of at least one closed manual valve or a blind flange, or

d. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Notice the and in the above requirement. Even if the licensee complies with one or more of the conditions a. through d., the licensee must comply with the requirement to maintain at least one [containment] isolation valve OPERABLE. Based on this wording, if a GDC 57 isolation valve is declared inoperable, there may not be another isolation valve available to be maintained OPERABLE.

In this case, as discussed in the October 18, 1994 TIA request, the licensee did comply with action a. by restoring the isolation valve to OPERABLE status within 4 hours.

The North Anna licensee perrormed a safety evaluation in which credit was taken for the closed system as a second isolation barrier. This is consistent with the NUREG-1431 "Improved Technical Specifications" developed by the NRC and the nuclear industry. Section 3.6.3 "Containment Isolation Valves" of NUREG-1431 requires only that a GDC 57 penetration be isolated within 4 hours. It does not require an isolation valve be maintained OPERABLE.

However, taking credit for the closed system as a second barrier does not comply with the North Anna technical specifications. As stated above, the North Anna technical specification 3.6.3.1 requires a second containment isolation valve be maintained OPERABLE. If there is no second containment isolation valve, the licensee cannot comply with this technical specifications requirement and the licensee must enter technical specification 3.0.3. While the NRC has recognized this to be unnecessary and has revised the requirement in NUREG-1431, it is still the correct interpretation for the North Anna technical specifications.

This situation has occurred before. For example, on April 28, 1992, South Texas Unit 2 was shut down from 100 % power in compliance with Technical Specification 3.0.3 when two isolation valves on a steam generator water sample line containment penetration (a GDC 57 system) could not be closed. The licensee subsequently proposed a change to the technical specifications to require that an isolation *barrier* (defined as either a closed system or an isolation valve) be maintained OPERABLE. The staff approved this change by letter dated July 12, 1993.

In addition, the staff has approved a requested change to the Improved Standard Technical Specifications to extend the 4-hour allowable time for a GDC 57 isolation valve to be inoperable to 72 hours. The justification for this change is the existence of the closed system.

Thus, it appears that the licensee's actions were not in accordance with the North Anna technical specifications. However, the safety significance is minimal. The staff has recognized that the requirement to maintain an OPERABLE isolation valve in a GDC 57 system is not meaningful and it has been changed on several occasions.

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Date: May 22, 1996