Northeast
Nuclear Energy

Rope Ferry Rd. (Route 156), Waterford, CT 06385

Millstone Nuclear Power Station
Northeast Nuclear Energy Company
P.O. Box 128
Waterford, CT 06385-0128
(203) 447-1791
Fax (203) 444-4277

The Northeast Utilities System

Docket No. 50-423
Re: 10CFR50.36

November 20, 1995
MP-95-339

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Millstone Nuclear Power Station, Unit No. 3
Post Accident Sampling System - Voluntary Special Report

This Special Report is voluntarily submitted to describe recent problems with various valves in the Post Accident Sampling System (PASS) and the corrective actions that are being taken.

On August 25, 1995, with the plant in Mode 1, at 100% power, 2250 psia, and 587° Fahrenheit, while the semiannual PASS surveillance was being performed, the Containment Isolation valve in the return path for PASS initially indicated an intermediate valve position followed by full open and full closed during valve stroke, valves in the Reactor Coolant Module of the PASS system did not cycle, and system flow was not obtained. Additionally, during stroke time testing in September 1995, the Containment Isolation valve in the return path for PASS would not stroke fully and indicated an intermediate position.

The PASS system is designed to obtain liquid samples from the Reactor Coolant System hot legs and cold legs when RCS pressure is above 240 psig or from the Containment Sump when the Containment Recirculation Spray system is operating. Pressurized Reactor Coolant System liquid samples are isolated in the liquid sample loop. The liquid sample loop is connected to a gas sample loop through a four-way valve, which allows the liquid sample to expand and depressurize. A small stripping pump agitates the sample, "stripping" the gases for collection in a gas sample chamber. The PASS system can also obtain a sample of the Containment atmosphere.

In accordance with Regulatory Guide 1.97, Millstone Unit 3 has a program to periodically verify PASS operability. The Millstone Unit 3 program requires semiannual surveillances to be performed to verify that samples can be successfully drawn from the Containment atmosphere and from the RCS. While not a surveillance requirement, the Containment sump is sampled during the calendar quarters between RCS samples.

240059

IE22
1/0

As corrective actions following the August 25, 1995 event, the valves within the Rector Coolant Module were replaced and flow through the cabinet to the vent just upstream of the manual isolation valve was verified. When the Containment Isolation valve displayed dual indication during stroke time testing in September, the Technical Specification LCO 3.6.3.c was entered for Containment Isolation, which takes credit for the normally locked closed manual isolation valve. Subsequently, valve limit switch testing was performed which indicated that the valve was not stroking fully. Flow testing showed that no system flow was obtained through either path downstream of the Containment Isolation valve. Consequently, the PASS system was declared inoperable. Radiography was performed on the manual isolation vlave, which verified that it was properly isolated. The Containment Isolation valve was replaced. Flow testing was then repeated for both exit paths, and a positive flow indication was obtained for both paths. The stroke testing of the replacement isolation valve was successfully performed and the LCO 3.6.3.c was exited.

The cause of the valve failure to stroke was attributed to particulates inherent to the effluent stream adhering to the vertical sides of the valve body and mating disc surfaces. This resulted in valve binding and dual indication.

The Containment Isolation valve is isolated on either side by normally closed valves. When the Containment Isolation valve indicated intermediate indication during stroke time testing, LCO 3.6.3 was entered which takes credit for the normally locked closed manual isolation valve. The operation of the Containment Isolation valve affects the operation of the PASS system such that if the valve was lodged in the closed position, alternate available methods may not be sufficient to obtain a PASS RCS sample without potentially exceeding the release and dose limits in the event of an accident. Consequently, the PASS system was declared inoperable. The PASS system is not needed to mitigate the consequences of an accident. The system is not required to maintain the plant in a safe condition. The PASS system is used in the long term diagnostic mode following an accident and is not specifically required to perform any Emergency Operating Procedures (EOPs) necessary to mitigate the consequences of a design basis accident. The system is associated with the Administrative section of the plant's Technical Specifications (6.8.4.d) which require the plant to have a program which will ensure the capability to obtain and to analyze Reactor Coolant, radioactive iodines, and particulates in plant gaseous effluents and Containment atmosphere samples under accident conditions. The failure did not affect the ability to sample the Containment atmosphere.

Our investigations to ensure reliable valves for this application are continuing. The installed Containment Isolation valve is the same design Target Rock valve that has functioned reliably since plant startup (approximately 10 years). However, since we have experienced some problems with similar valves in other systems, a long-term replacement program is under investigation for the systems that presently use this valve design. During the spring 1995 refueling outage, several valves of a different manufacturer were installed in the Reactor Plant Sampling system for testing. Additionally, a Target Rock bolted bonnet valve design is being investigated as a suitable replacement. Other improvements that are being considered are a correlation between the frequency of system flushes and proper valve operation, as well as the installation of an inline filter. These actions should ensure the long term reliability of valves used in this application.

Historically, the PASS system has experienced problems including failed surveillances. Although corrective actions were taken in the past, the residual problems are under investigation through a combined effort among Chemistry personnel, Nuclear Licensing personnel, and the System Engineer. The additional corrective actions that are under consideration should improve the reliability and availability of the PASS system.

The licensee contact for this Special Report is Kimberlee Beagle, who may be contacted at (860) 440–2169.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

Donald B. Miller, Jr.
Senior Vice President – Millstone Station

DBM/KB:clc

cc: T. T. Martin, Region I Administrator
P. D. Swetland, Senior Resident Inspector, Millstone Unit Nos. 1, 2, and 3
V. Rooney, NRC Project Manager, Millstone Unit No. 3