

NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

General Offices • Selden Street, Berlin, Connecticut

P.O. BOX 270
HARTFORD, CONNECTICUT 06141-0270
(203) 666-6911

March 28, 1983

Docket No. 50-336
A03035

Director of Nuclear Reactor Regulation
Attn: Mr. Robert A. Clark, Chief
Operating Reactors Branch #3
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Gentlemen:

Millstone Nuclear Power Station, Unit No. 2
Request for Additional Information, Containment Purge/Vent Review

In Reference (1) Northeast Nuclear Energy Company (NNECO) was requested to provide additional information concerning the operability of the 6-inch containment purge and vent valves. Our response to your questions are complete and attached. We have concluded that no additional Technical Specifications are needed.

We trust you will find this information responsive to the Reference (1) requests.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

W. G. Council
Senior Vice President

A03A

References:

1. R. A. Clark letter to W. G. Counsil, dated February 9, 1983.
2. W. G. Counsil letter to D. G. Eisenhut, dated December 30, 1981.
3. W. G. Counsil letter to D. G. Eisenhut, dated May 20, 1981.

I. Question:

Provide the following information for the 6-inch butterfly-type hydrogen purge valves.

- a. Is purging/venting through these valves needed for safety related purposes? How long are these valves open per year?

Response to 1a:

Purging/venting through the 6-inch butterfly containment vent valves is used for two purposes at Millstone Unit No. 2. At present their primary function is to relieve internal containment pressure in order to comply with the Limiting Condition for Operation as delineated in Section 3.6.1.4 of the Millstone Unit No. 2 Technical Specifications. These valves are opened for this purpose approximately 300 hours per year. Originally these valves were designed for safety use as part of the containment Post Incident Hydrogen Control System. The hydrogen purge lines are a subsystem redundant to the Hydrogen Recombiner Units as described in Section 6.6 of the Millstone Unit No. 2 FSAR.

- b. Design information on the 6-inch valves with an evaluation of the reliability of valve closure upon demand.

Response to 1b:

The 6-inch hydrogen purge and vent valves at Millstone Unit No. 2 are FisherControl Co. Butterfly type 9212 valves with a Fisher 656-40 Diaphragm Actuator. They are seismically qualified category I valves built to ASME Section III, Class 2 standards. The 6-inch valves are powered from 125 VDC vital power and receive redundant Containment Isolation Actuation System (CIAS) signals.

In over seven years of plant operation, these valves have performed satisfactorily with the exception of one failure to close. This event occurred on December 12, 1981 while performing a Type C local leak rate test and was reported in Licensee Event Report 81-42. At that time, excessive leakage was noted due to the actuator to valve stem adjustment collar set screw having slipped, causing the valve to not close fully. An indent was made in the valve stem to provide a positive seat for the set screw. This corrective action was then applied to the three other valves. Since this event the 6-inch butterfly type valves have functioned as designed.

NNECO has also evaluated the ability of these valves to close against the differential pressures which would exist following a design basis loss-of-coolant accident. It has been determined that these valves will perform their intended function and close upon a CIAS with a differential pressure of 60 psi. This is conservative with respect to the maximum differential pressure expected to exist following the design basis LOCA.

- c. Propose TS to insure operation of the 6-inch valves for safety related reasons only.

Response to 1c:

In order to respond to question 1c, Northeast Nuclear Energy Company performed an analysis to determine the radiological consequences of a Loss of Coolant Accident (LOCA) coincident with containment venting through the 6-inch vent lines. Results of the analysis demonstrated that the steam released through the 6-inch penetration prior to valve closure on containment isolation increased the thyroid and whole body doses previously calculated for the Site Boundary and Low Population Zone (LPZ) by less than 0.1%. These values are well below the limits of 10CFR100 and as such unlimited purging and venting through the 6-inch valves is justified.

Given this information, it is NNECO's position that technical specifications limiting the duration of time that these valves can be open are inappropriate. Existing Technical Specifications require that these valves isolate on a Containment Isolation Actuation Signal. These specifications are adequate.

2. Question:

Propose TS changes to periodically test the integrity of the 6-inch and 42-inch seals. Appropriate TS would be:

"The leakage integrity tests of the 6-inch isolation valves in the hydrogen purge lines shall be conducted at least once every three months. The leakage integrity tests of the 42-inch isolation valves in the containment purge lines shall be conducted at least once every six months."

Response:

It is NNECO's understanding that the Staff is requesting such technical specifications in order to identify excessive degradation of the resilient seals for both the 6-inch and 42-inch purge valves.

42 inch seals:

The Millstone Unit No. 2 Standard Technical Specifications section 3/4 6.1.2 presently requires periodic testing of the 42-inch seals on the large containment purge valves. These valves are normally locked closed and electrically disconnected during MODES 1 through 4 and are Type C local leak rate tested each refueling outage. As such, these valves are considered to be a passive purge system (i.e. locked closed during Modes: 1 through 4) and are seldom in use. Therefore, NNECO concludes the present leak rate testing requirements are adequate to determine seal integrity.

6-inch seals

At present the 6-inch valves are local leak rate tested in accordance with Technical Specification 3/4 6.1.2. The maintenance and repair of the resilient seals are per manufacturer's instructions. To date there has been no degradation more rapid than stated by the manufacturer. As such, NNECO concludes the present leakage rate testing is adequate to ensure valve seal integrity. Therefore, we do not believe a technical specification change is warranted.

Reference (1) expresses the Staff's concern that passive purge line isolation valves were subject to leakage because of the potential adverse effect due to seasonal weather conditions. In response to this concern, NNECO notes that the Millstone Unit No. 2 containment is completely surrounded by the enclosure building, as described in section 5.3 of the FSAR. The enclosure building prevents redundant valve seal degradation, for both the 42-inch seals and the 6-inch seals, due to seasonal weather conditions. As such, NNECO believes no new technical specifications regarding these valve seals are needed.

3. Question:

Modify the isolation logic for the 6-inch hydrogen purge valves to receive an isolation signal from radiation monitor(s) that sense primary containment atmosphere.

Response:

In References (2) and (3), NNECO documented findings that high radiation auto-closure of the 6-inch hydrogen purge valves is not required since the valves auto-close on high containment pressure and low pressurizer pressure signal. The basis of this position is that in the event of a loss-of-coolant accident (LOCA), the high containment pressure and low pressurizer pressure signals would precede a high radiation signal and isolate containment. Furthermore, Millstone Unit No. 2 operating procedure 2506 "Loss of Coolant Incident" requires verification that all equipment associated with the Containment Isolation Actuation Signal (CIAS) is in the accident mode. This includes the 6-inch purge/vent valves which are required to be verified closed.

Reference (1) document the Staff's judgement that those lines that provide for a direct path from the containment atmosphere to the environment should be isolated on high radiation so that radioactivity releases will be contained. NNECO would like to clarify that the 6-inch containment purge/vent lines do not provide a direct path to the environment but rather vent effluent through charcoal, particulate, and absolute filters and then discharge through the monitored 375 foot stack at Millstone Unit No. 1. This equipment is part of the Enclosure Building Filtration System, an engineered safety feature. Reference (1) also expresses the Staff's concern that a high radiation signal will also provide the only signal to the purge/vent lines for very small breaks, thus limiting the amount of radiation release from the containment. Regarding this item NNECO notes that to postulate a scenario wherein significant amounts of radioactive materials are released to the containment and subsequently to the

environment through the open hydrogen vent valves, one must assume significant core damage has occurred. A loss-of-coolant event which results in such core damage would invariably initiate a safety injection actuation signal (SIAS). A SIAS automatically initiates containment isolation thereby closing any potential leakage path from the containment.

Additionally, based upon the analysis documented in response to question 1.c, increases to the thyroid and whole body doses due to purging through the 6-inch lines coincident with a design basis LOCA are negligible compared to previously calculated values for the site boundary and the low population zone. Thus, this event does not constitute an undue hazard to the people residing around the Millstone site and meets the intent of the Staff's generic review on this subject as documented in Reference (1).

Given the above reasons, modifying the 6-inch purge valves to close on high containment radiation signals would amount to a significant expenditure without added benefits. As such, adequate justification does not exist to warrant modifications to this equipment.