NORTHEAST UTILITIES
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October 24, 1980

Docket No. 50-245
A01203

Mr. Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, DC 20555

References: (1) D. G. Eisenhut letter to All BWR Licensees dated October 1, 1980.
(2) W. G. Counsil letter to B. H. Grier dated July 8, 1980.
(3) W. G. Counsil letter to B. H. Grier dated July 14, 1980.
(4) W. G. Counsil letter to B. H. Grier dated July 16, 1980.
(5) W. G. Counsil letter to B. H. Grier dated July 27, 1980.
(6) W. G. Counsil letter to B. H. Grier dated August 7, 1980.
(7) W. G. Counsil letter to B. H. Grier dated August 13, 1980.
(8) W. G. Counsil letter to B. H. Grier dated August 15, 1980.
(9) W. G. Counsil letter to B. H. Grier dated August 27, 1980.
(10) W. G. Counsil letter to B. H. Grier dated September 1, 1980.
(11) W. G. Counsil letter to B. H. Grier dated September 19, 1980.
(12) W. G. Counsil letter to B. H. Grier dated September 26, 1980.

Gentlemen:

Millstone Nuclear Power Station, Unit No. 1
BWR Scram Discharge System

In response to Reference (1), Northeast Nuclear Energy Company (NNECO) has participated fully in the development of design and operational criteria for the scram discharge system by the BWR Owners' Group Ad-Hoc Committee on I&E Bulletin No. 80-17. The attached criteria, which have been prepared through extensive and exhaustive efforts by the BWR Owners' Group Ad-Hoc Committee, provide more than reasonable assurance of reliable and safe operation of the scram discharge system. The criteria have been discussed with the NRC Staff, and their comments have been considered in the generation of the criteria.

In addition, the following points are in response to specific items in Reference (1):

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(1) Conformance with the General Design Criteria in Appendix A to 10CFR50 is adequately assured by ten years of trouble-free operation of the scram discharge system and, as described in References (2) through (12), by recent system modifications, design and procedural reviews, and surveillance and verification tests as required by I&E Bulletin No. 80-17 and subsequent Supplement Nos. 1, 2, and 3.

(2) The Millstone Unit No. 1 scram discharge system will be reevaluated and modified as necessary to meet the attached design and operational criteria.

(3) Results of the above reevaluation will be provided to the NRC by December 15, 1980, along with a schedule for implementation of any required modifications.

We trust that this information satisfactorily addresses the items included in Reference (1).

If you have any questions, please feel free to contact us.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

W. G. Counsil
Senior Vice President

Attachment

STATE OF CONNECTICUT)
) ss. Berlin Oct. 24, 1980
COUNTY OF HARTFORD)

Then personally appeared before me W. G. Counsil, who being duly sworn, did state that he is Senior Vice President of Northeast Nuclear Energy Company, a Licensee herein, that he is authorized to execute and file the foregoing information in the name and on behalf of the Licensees herein and that the statements contained in said information are true and correct to the best of his knowledge and belief.

Sheila M. Oates
Notary Public

My Commission Expires March 31, 1981

DOCKET NO. 50-245

ATTACHMENT

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 1

BWR SCRAM DISCHARGE SYSTEM

OCTOBER, 1980

Long-Term Evaluation of

Scram Discharge System

The utilities have reviewed General Electric's evaluation and are following the ongoing INPO/NSAC study on failure of the control rods to fully insert on a scram signal at Brown's Ferry. The utilities agree that at Brown's Ferry there was an undetected accumulation of water in the scram discharge volume. Subsequent testing at some plants has also indicated that under certain conditions the instrumentation may not give consistent level indication due to the piping configuration as it ties into the instrument volume.

Scope

The following is a listing of design and operational criteria that shall be followed by the utilities in formulating individual design changes. The criteria has taken into consideration the original system criteria, problems experienced in the operation of the system and concerns regarding operability and reliability. Criteria which have been added or changed as a result of this evaluation are denoted by an asterisk (*). For the purpose of this discussion, the word "system" includes all components downstream of the scram exhaust valves. The philosophy for evaluation of the design is that the safety function is of prime concern. The safety boundaries are whatever affects the scram function of the system. The evaluation must show that the safety boundaries considered meet this philosophy.

Functional Criteria

* The scram discharge volume shall have sufficient capacity to receive and contain water exhausted by a full reactor scram without adversely affecting control rod drive scram performance.

Safety Criteria

1.* No single active failure of a component, or service function shall prevent a reactor scram, under the most degraded conditions that are operationally acceptable.

2.* No single active failure shall prevent uncontrolled loss of reactor coolant.

3.* The scram discharge system instrumentation shall be designed to provide redundancy, to operate reliably under all conditions, and shall not be adversely affected by hydrodynamic forces or flow characteristics.

4. System operating conditions which are required for scram shall be continuously monitored.

5.* Repair, replacement, adjustment, or surveillance of any system component shall not require the scram function to be bypassed.

Operational Criteria

1. Level instrumentation shall be designed to be maintained, tested, or calibrated during plant operation without causing a scram.

2. The system shall include sufficient supervisory instrumentation and alarms to permit surveillance of system operation.

3. The system shall be designed to minimize the exposure of operating personnel to radiation.

4.* Vent paths shall be provided to assure adequate drainage in preparation for scram reset.

5.* Vent and drain functions shall not be adversely affected by other system interfaces. The objective of this requirement is to preclude water backup in the scram instrument volume which could cause spurious scram.

Design Criteria

1.* The scram discharge headers shall be sized in accordance with GE OER-52 and shall be hydraulically coupled to the instrumented volume(s) in a manner to permit operability of the scram level instrumentation prior to loss of system function. Each system shall be analyzed based on a plant-specific maximum inleakage to ensure that the system function is not lost prior to initiation of automatic scram. Maximum inleakage is the maximum flow rate through the scram discharge line without control rod motion summed over all control rods. The analysis should show no need for vents or drains.

2.* Level instrumentation shall be provided for automatic scram initiation while sufficient volume exists in the scram discharge volume.

3.* Instrumentation taps shall be provided on the vertical instrument volume and not on the connected piping.

4.* The scram instrumentation shall be capable of detecting water accumulation in the instrumented volume(s) assuming a single active failure in the instrumentation system or the plugging of an instrument line.

5.* Structural and component design shall consider loads and conditions including those due to fluid dynamics, thermal expansion, internal pressure, seismic considerations, and adverse environments.

6.* The power-operated vent and drain valves shall close under loss of air and/or electric power. Valve position indication shall be provided in the control room.

7.* Any reductions in the system piping flow path shall be analyzed to assure system reliability and operability under all modes of operation.

8.* System piping geometry (i.e., pitch, line size, orientation) shall be such that the system drains continuously during normal plant operation.

9.* Instrumentation shall be provided to aid the operator in the detection of water accumulation in the instrumented volume(s) prior to scram initiation.

10.* Vent and drain line valves shall be provided to contain the scram discharge water, with a single active failure and to minimize operational exposure.

Surveillance Criteria

1.* Vent and drain valves shall be periodically tested.

2.* Verifying and level detection instrumentation shall be periodically tested in place.

3.* The operability of the entire system as an integrated whole shall be demonstrated periodically and during each operating cycle, by demonstrating scram instrument response and valve function at pressure and temperature at approximately 50% control rod density.