

June 4, 1981

Docket No. 50-245
LSOS-81-06-012



Mr. W. G. Council, Vice President
Nuclear Engineering and Operations
Duke Power Nuclear Energy Company
P. O. Box 270
Hartford, Connecticut 06101

Dear Mr. Council:

SUBJECT: SEP TOPIC III-10.A, THERMAL-OVERLOAD PROTECTION FOR
MOTORS OF MOTOR OPERATED VALVES (MILLSTONE 1)

We have enclosed our contractor's final evaluation for SEP Topic III-10.A. The revised report reflects the additional information and some of the comments provided in your April 16, 1981 letter.

The impact with regard to the use of torque switches at your plant will be addressed in our integrated assessment report.

Although the Regulatory Guide publishing Criterion 3 has not yet been issued, operating plant experience with spurious torque switches actuation has shown that it is prudent to bypass torque switches over the first 10% of valve travel. The purpose of this bypass is to permit the motor and valve parts to come to operating speed and generate breakaway torque above the normal running torque.

You should provide within 30 days of receipt of this letter a summary of the history of motor operated valve performance at your plant to enable the staff to reach a determination regarding spurious torque switch actuation at your facility.

Sincerely,

Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
Division of Licensing

AD:SA:DL
GL:mas
6/3/81

8106100 236

Enclosure:
Topic III-10.A Final Report

*See previous yellow for additional concurrences.

OFFICE	cc w/enclosure: See next page	SEP B:DL	SEP B:DL	SEP B:DL	ORB#5:DL:PM	ORB#5:DL:C
SURNAMES		RScho11:dk*	RHermann*	WRussell*	JShea JP	DC: [Signature]
DATE		5/27/81	5/27/81	5/27/81	5/27/81	6/3/81

Docket No. 50-244
LS05-81-

Mr. John E. Maier, Vice President
Electric and Steam Productio:
Rochester Gas & Electric Corporation
89 East Avenue
Rochester, New York 14649

Dear Mr. Maier:

SUBJECT: SEP TOPIC III-10.A, THERMAL-OVERLOAD PROTECTION FOR
MOTORS OF MOTOR OPERATED VALVES (MILLSTONE 1)

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Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
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5/ /81

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SURNAMES	11:dk	RHermann	WRussell	JShea	DCrutchfield
DATE	5/27/81	5/27/81	5/27/81	5/ /81	5/ /81



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D. C. 20555

June 4, 1981

Docket No. 50-245
LS05-81-06-012

Mr. W. G. Council, Vice President
Nuclear Engineering and Operations
Northeast Nuclear Energy Company
P. O. Box 270
Hartford, Connecticut 06101

Dear Mr. Council:

SUBJECT: SEP TOPIC III-10.A, THERMAL-OVERLOAD PROTECTION FOR
MOTORS OF MOTOR OPERATED VALVES (MILLSTONE 1)

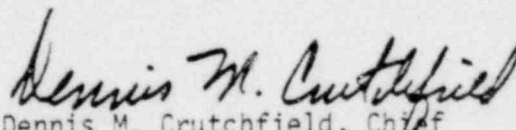
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Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
Division of Licensing

Enclosure:
Topic III-10.A Final Report

cc w/enclosure:
See next page

Mr. W. G. Council

cc

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Northeast Nuclear Energy Company
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Waterford, Connecticut 06385

Mr. James R. Himmelwright
Northeast Utilities Service Company
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Hartford, Connecticut 06101

Resident Inspector
c/o U. S. NRC
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Waterford Public Library
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First Selectman of the Town
of Waterford
Hall of Records
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Waterford, Connecticut 06385

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U. S. Environmental Protection
Agency
Region I Office
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JFK Federal Building
Boston, Massachusetts 02203

SEP TECHNICAL EVALUATION
TOPIC III-10.A

THERMAL-OVERLOAD PROTECTION FOR MOTORS
OF MOTOR-OPERATED VALVES

FINAL DRAFT

MILLSTONE 1

Docket No. 50-245

May 1981

SEP TECHNICAL EVALUATION
TOPIC III-10.A

THERMAL-OVERLOAD PROTECTION FOR MOTORS
OF MOTOR-OPERATED VALVES

MILLSTONE 1

TOPIC III-10.A Thermal-Overload Protection for Motors of Motor-Operated
Valves

The objective of this review is to provide assurance that the application of thermal-overload protection devices to motors associated with safety-related motor-operated valves do not result in needless hindrance of the valves to perform their safety functions.

In accordance with this objective, the application of either one of the two recommendations contained in Regulatory Guide 1.106, "Thermal-Overload Protection for Electric Motors on Motor-Operated Valves," is adequate. These recommendations are as follows:

- (1) Provided that the completion of the safety function is not jeopardized or that other safety systems are not degraded, (a) the thermal-overload protection devices should be continuously bypassed and temporarily placed in force only when the valve motors are undergoing periodic or maintenance testing, or (b) those thermal-overload protection devices that are normally in force during plant operation should be bypassed under accident conditions.

- (2) The trip setpoint of the thermal-overload protection devices should be established with all uncertainties resolved in favor of completing the safety-related action. With respect to those uncertainties, consideration should be given to (a) variations in the ambient temperature at the installed location of the overload protection devices and the valve motors, (b) inaccuracies in motor heating data and the overload protection

device trip characteristics and the matching of these two items, and (c) setpoint drift. In order to ensure continued functional reliability and the accuracy of the trip point, the thermal-overload protection device should be periodically tested.

In addition, the current licensing criteria require that:

- (3) In MOV designs that use a torque switch to limit the opening or closing of the valve, the automatic opening or closing signal should be used in conjunction with a corresponding limit switch.

DISCUSSION

On February 7, 1980, Northeast Utilities submitted a list of all safety-related motor-operated valves and the electrical schematics for those valves.⁴ The licensee subsequently revised the list, deleting six valves and supplying additional information.⁵ Of 59 safety-related MOVs, 38 have thermal-overload devices which provide alarm only; the TOLs are not in the valve control circuits. The remaining 21 valves have thermal-overload protection devices which are not bypassed; there is no docketed information to indicate that TOL trip setpoints have been set to comply with all the variables of Criterion 2, above. Nine of these valves are for containment isolation and are normally closed; they should not be required to operate during an accident. Additionally, 48 valve open functions and 54 valve close functions are terminated by torque switches rather than limit switches.

EVALUATION

Thermal-overload protection for motors of motor-operated valves at Millstone 1 does not comply with current licensing criteria. Thermal-overload protection devices are not bypassed, no information is available to support adequacy of trip setpoints, and for most of the valves, torque switches rather than limit switches are used to terminate valve travel.

REFERENCES

1. IEEE Standard 179-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations."
2. Branch Technical Position EICSB-27, "Design Criteria for Thermal Overload Protection for Motors of Motor-Operated Valves."
3. Regulatory Guide 1.106, "Thermal Overload Protection for Electric Motors on Motor-Operated Valves."
4. Letter, Northeast Utilities (Council) to NRR (Ziemann), dated February 7, 1980.
5. Letter, Northeast Utilities (Council) to NRR (Crutchfield), dated April 16, 1981.