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Nuclear Energy

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The Northeast Utilities System

OCT 6 1998

Docket No. 50-336
B17474

Re: 10CFR50.90

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

Millstone Nuclear Power Station, Unit No. 2
Response to a Request for Additional Information
Regarding Technical Specification Amendment Request
Reactor Protection and Engineered Safety Features Trip Setpoints (TAC NO. MA2340)

In a letter dated July 21, 1998,[1] Northeast Nuclear Energy Company (NNECO) requested a change to the Millstone Unit No. 2 Technical Specifications which involved changes to the Reactor Protection and Engineered Safety Features Trip Setpoints. In response to this letter, the NRC has requested, in a letter dated September 16, 1998,[2] additional information to aid in the review of the proposed License Amendment Request. The purpose of this letter is to transmit the requested additional information, which is contained in Attachment 1.

There are no regulatory commitments contained within this letter.

A001

(1) M. L. Bowling, Jr. letter to U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 2, Proposed Revision to Technical Specifications, Reactor Protection and Engineered Safety Features Trip Setpoints," dated July 21, 1998.

(2) D. G. McDonald, Jr. letter to Northeast Nuclear Energy Company, "Request for Additional Information Regarding Technical Specification Amendment Request - Millstone Nuclear Power Station, Unit No. 2 (TAC NO. MA2340)," dated September 16, 1998.

If you should have any questions on the above, please contact Mr. Ravi Joshi at (860) 440-2080.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

M. L. Bowling, Jr.
Recovery Officer - Technical Services

Attachments (1)

cc: H. J. Miller, Region I Administrator
D. G. McDonald, Jr., NRC Senior Project Manager, Millstone Unit No. 2
S. Dembek, NRC Project Manager, Millstone Unit No. 1
D. P. Beaulieu, Senior Resident Inspector, Millstone Unit No. 2
W. M. Dean, Director, Millstone Project Directorate
W. D. Lanning, Director, Millstone Inspections
J. P. Durr, Chief, Inspections Branch, Millstone Inspections
E. V. Imbro, Director, Millstone ICAVP Inspections

Director
Bureau of Air Management
Monitoring and Radiation Division
Department of Environmental Protection
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Attachment 1

Millstone Nuclear Power Station, Unit No. 2
Response to a Request for Additional Information
Concerning a Proposed Revision to Technical Specifications
Reactor Protection and Engineered Safety Features Trip Setpoints

October 1998

Response to a Request for Additional Information
Concerning a Proposed Revision to Technical Specifications
Reactor Protection and Engineered Safety Features Trip Setpoints

Question 1: The NRC staff has not reviewed or approved ISA RP67.04, Part II, 1994 Standard. The approved standard, which provides guidance for setpoint (SP) calculations for instrumentation in safety-related systems, is ISA 67-04, 1982, which has been endorsed by the staff in Regulatory Guide 1.105, Revision 2.

Please confirm the following, since the SP methodology used by Northeast Nuclear Energy Company (NNECO) is based on ISA RP67.04, Part II, 1994 Standard, which has not yet been approved by the NRC:

a) That the methodology used by NNECO treats all elements of the instrument loop uncertainties the same way as is prescribed by the 1982 version of the ISA standard.

Response: Millstone is not committed to either RG 1.105, Rev 2 or ISA 67.04, 1982. The methodology previously used by Millstone Unit No. 2 was consistent with the Combustion Engineering approach as detailed in Combustion Engineering calculations 4467-ICE-3607, "Maine Yankee Instrument Error Analysis," dated July 29, 1974, and 18767-ICE-3622 Rev. 01, "Nusco RPS Error Calculation," dated May 15, 1975. The present Millstone Unit No. 2 methodology envelops (is more conservative than) this historical Combustion Engineering methodology.

While ISA RP67.04, Part II, 1994 is used for guidance in the Millstone Unit No. 2 methodology, the treatment of elements of instrument loop uncertainty in the Millstone methodology is consistent with the treatment required by RG 1.105, Rev. 2, and ISA 67.04, 1982. The Millstone methodology merely provides additional guidelines to the preparers of uncertainty and setpoint calculations beyond that found in RG 1.105, Rev. 2 and ISA 67.04, 1982. As described in the responses to 1b) and 1c) below, the calculation of the trip setpoint and allowable value are based on allowances which take into account the test methods of the monthly and refueling surveillance procedures. The methodology requires appropriate treatment of those elements of uncertainty which are and which are not observed during each type of surveillance test and ensures that mitigating actions are initiated prior to each variable encroaching on its respective analytical limit.

In summary, while Millstone Unit No. 2 is not committed to RG 1.105 or ISA 67.04, 1982, the Millstone Unit No. 2 methodology is consistent with

these documents and envelops (is more conservative than) the historical Combustion Engineering methodology.

b) That the selected nominal SP will always initiate the required mitigating action(s) prior to the monitored variable encroaching its analytical limit when considering all elements of instrument uncertainties and the response time of the actuated equipment/system. Please provide a description of the allowable value (AV) and its development with respect to the analytical limit and trip SP.

Response: The methodology ensures that the selected nominal setpoints will initiate mitigating actions(s) (i.e., reactor trip or engineered safety feature actuation) prior to the monitored variable encroaching on its analytical limit by appropriately considering all elements of instrument uncertainty and response time of the actuated equipment. Response time of the actuated equipment is considered in the development of the analytical limit. For each trip or actuation credited in the safety analysis (for operation in the presence of normal or harsh environment), the corresponding analytical limit has been shown to have acceptable consequences. The analytical limit is used by the methodology to develop both the trip setpoint and the allowable value.

The allowable value differs from the analytical limit by an allowance that includes all elements of instrument uncertainty that are not observed during the monthly functional test. These typically include process measurement effects, sensor effects and environmental effects including any biases conservatively applied. The allowable value differs from the trip setpoint by an allowance that includes elements of the instrument uncertainty that are observed during the monthly test. These typically include calibration uncertainties for the tested equipment and drift for the monthly surveillance interval. Taken together, the two allowances ensure that the difference between the analytical limit and trip setpoint includes all elements of instrument uncertainty.

c) That the calculation of the AV is consistent with the channel functional test and calibration surveillance requirements in that the uncertainty terms included in the AV calculation are representative of the associated component uncertainties under test. (Reference IEEE-338)

Response: The setpoint methodology requires the preparers of setpoint calculations to determine the scope of each channel tested in the monthly and refueling surveillance procedures. The allowances used to calculate the trip setpoint and allowable value are then based on the surveillance

procedures. The setpoint methodology also includes the calculation of as-found and as-left acceptance criteria for the monthly and refueling surveillance procedures. The acceptance criteria in the surveillance procedures must be at least as restrictive as the values determined in the setpoint calculations. Engineering review of surveillance procedures ensures the correct implementation of the trip setpoint, allowable value and acceptance criteria.

Question 2: The current surveillance frequency at Millstone Nuclear Power Station, Unit No. 2, is 18 months. However, as noted in the submittal, the revised SP calculations are based on 24 months drift, which is conservative with regard to SP determination. Please confirm that the surveillance-test-acceptance criteria for the 18-month surveillance test is compatible to the drift-values used in SP calculations. Please note that the staff's review of the referred submittal is limited to revised SP/AV calculations only and does not include areas relating to extending surveillance frequency from 18 months to 24 months including drift extension methodology.

Response: Drift analyses were performed to estimate the 30 month drift (24 months plus 25%) values used in the uncertainty calculations. Historical surveillance test and calibration data were collected for the applicable instrumentation and entered into databases. Selected items of "time-tagged" data from the verified databases were then copied into spreadsheets for analysis. Linear regression analyses of the data were performed to determine if the drift values were time dependent. The data were tested for normality, and estimates of bounding values of drift were determined using the method for normal distributions, or a distribution free method, as appropriate. Scatter plots and histograms were prepared to assist in visualization of the data. The regression analyses confirmed that most drifts did not increase with time. Based on the historical data and the results of the analyses, there should be no difference between the drift for the 30-month interval and the drift for the surveillance period (18 months plus 25%) for these variables. In the few cases where drift was time dependent, a conservative multiplier was used to determine bounding drift for 30 months. The 30-month bounding values for time dependent drift are conservative for the current surveillance period (18 months plus 25%). As long as the as-found values are within the acceptance criteria, the assumptions of the setpoint calculations are valid. Therefore, the surveillance testing is compatible with the drift values.