

NORTHEAST UTILITIES



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

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October 26, 1984

Docket No. 50-423
B11338

Director of Nuclear Reactor Regulation
Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Reference: (1) U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the Operation of Millstone Nuclear Power Station, Unit No. 3, Docket No. 50-423 (NUREG-1031)," July 1984.

Dear Mr. Youngblood:

Millstone Nuclear Power Station, Unit No. 3
Comments on Safety Evaluation Report


Northeast Nuclear Energy Company (NNECO), as applicant for an operating license for Millstone Nuclear Power Station, Unit No. 3, herein submits the attached comments on the Safety Evaluation Report (Reference 1).

Should you have any questions or comments related to the information herein, please contact our licensing staff.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY
et. al.

BY NORTHEAST NUCLEAR ENERGY COMPANY
Their Agent



W. G. Council
Senior Vice President

cc: see attached list **

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ATTACHMENTS

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 3

DOCKET NO. 50-423

NORTHEAST NUCLEAR ENERGY COMPANY'S

COMMENTS ON

SAFETY EVALUATION REPORT (NUREG-1031)

October, 1984

GENERAL CONCLUSIONS

Northeast Nuclear Energy Company (NNECO) has reviewed the Safety Evaluation Report (SER) related to the Operating License Application for Millstone Unit 3 and, in general, concurs with the findings of the NRC Staff. During our review, however, several areas were identified which should be corrected or otherwise resolved in a subsequent supplement to the SER.

The accompanying attachments provide our detailed comments on the SER.

INSTRUCTIONS

The comments are presented in the order of the SER sections. Suggested word changes or additions to the text of the SER are identified by underlining.

Attachment A provides comments of a substantive nature which may impact the accuracy of the SER.

Attachment B identifies typographical and editorial errors noted in the SER.

ATTACHMENT A

- o Table 1.4 (page 1-18)

Confirmatory item number 12, "Predicted Cladding Collapse Time" should be removed from this list. See SER Section 4.2.3.2, Cladding Collapse, page 4-15.

- o Table 1.4 (page 1-20)

Confirmatory item number 52, "Routing of Power Cables in the Cable Spreading Area" should be removed from this list. See SER Section 8.3.3.3.3, page 8-16, third paragraph.

- o Section 2.5.1.2 (page 2-21, fourth full paragraph, second sentence).

This sentence states that, "Generally, the soil consists of fill derived from construction activities connected with Millstone Units 1 and 2." It is recommended that the following clarification be added to preclude misinterpretation of this statement. "All fill material was removed from the Unit 3 structure areas prior to construction."

- o Section 2.5.2.5 (page 2-30, second full paragraph, second sentence).

The sentence that begins, "Before 1982..." may be inaccurate. Better wording may be "Except for the 1755 Cape Ann earthquake which has been constrained to a particular area, before 1982..."

- o Section 3.5.1.1 (page 3-9, first full paragraph, third sentence); Section 3.5.1.2 (page 3-10, second full paragraph); and Section 10.4.9 (page 10-19, fourth paragraph, second sentence).

On the basis of recent experience with fan fracture resulting in a missile, the staff required further justification from the applicant that adequate protection has been provided.

The required information was transmitted in a letter from W. G. Council to B. J. Youngblood, B11221, dated June 13, 1984. This letter also provides results of the analysis showing that the potential missiles from the turbine-driven AFW pump will not damage safety-related equipment.

- o Section 3.5.1.3.3 (page 3-18, first full sentence).

The SER states, "In response to an NRC request, the applicant has agreed to

- (1) submit for NRC approval, within 3 years of obtaining an operating license, a turbine system maintenance program based on the manufacturer's calculations of missile generation probabilities, or
- (2) volumetrically inspect all low-pressure turbine rotors at the second refueling outage as stated above and every other (alternate) refueling

outage thereafter until some other maintenance program is approved by the staff, and

- (3) conduct turbine steam valve maintenance (following initiation of power output) in accordance with NRC recommendations as stated above."

The applicant was not requested to agree nor does it agree with these commitments. Section 3.5.1.3, page 3-10 and 3-11 of the Draft SER requested the following:

"The Staff considers that turbine missile issue as a confirmatory item if the applicant agrees

- (1) to submit for NRC approval, within 3 years of obtaining an operating license, a turbine system maintenance program based on the manufacturer's calculations of missile generation probabilities or
- (2) to volumetrically inspect all low-pressure turbine rotors at the second refueling outage and at every other (alternate) refueling outage thereafter until a maintenance program is approved by the staff and to conduct turbine steam valve maintenance (following initiation of power output) in accordance with present NRC recommendations as stated in SRP Section 10.2."

In a W. G. Council letter to B. J. Youngblood, B11227, dated June 15, 1984, the applicant's response to the above request stated:

"NNECO agrees to submit for NRC approval, within three years of obtaining an operating license, a turbine system maintenance program based on the manufacturer's calculations of missile generation probabilities with the option of conducting an independent review and analysis if so desired."

The SER should be modified to accurately reflect our position on this matter.

- o Section 3.6.1 (page 3-22, first paragraph, first sentence).

Information regarding the NRC performing an independent calculation to verify our analysis of the environmental conditions in a compartment after a high-energy line break was provided in a letter from W. G. Council to B. J. Youngblood, B11238, dated June 20, 1984. Also, see SER page 3-21, third paragraph.

The SER should be revised accordingly.

- o Section 3.7.1 (page 3-24, first paragraph, last sentence).

This sentence would be more accurate if "(non-seismic Category I..." were changed to "(not Category I) and...."

- o Section 4.4.8 (page 4-32, sixth full paragraph, first sentence).

This paragraph states that:

"The staff has reviewed the applicant's submittal (FSAR Section 4.4.6.5) and has found that the applicant's description of his proposed inadequate core cooling (ICC) instrumentation is incomplete with respect to the documentation required by Item II.F.2 of NUREG-0737."

This information was provided in a letter from W. G. Council to B. J. Youngblood, B11231, dated June 14, 1984. The NRC Core Performance Branch Reviewer has indicated that this response was acceptable.

The SER should be revised accordingly.

- o Section 6.1.1 (page 6-2, next-to-last paragraph, first sentence).

"The applicant will use borated water (with a concentration of up to 2200 ppm boron)...", not "4,000 ppm." See FSAR Table 6.1-2.

- o Section 6.2.2 (page 6-12, second full paragraph, next-to-last sentence).

"The CDA signal is initiated by high containment pressure (24.7 psia)," not "psig." See FSAR page 6.2-42, fourth full paragraph.

- o Section 6.3.1 (page 6-25, third and fourth paragraphs).

The last sentence of the third paragraph states that:

"...the applicant stated that the design velocity through the screens is limited to 0.2 ft/sec. assuming 50% of the available screen area is blocked." In response to NRC question 480.18 (W. G. Council letter to B. J. Youngblood, B11092, dated March 20, 1984), we stated that the maximum sump approach velocity assuming 50% screen blockage was 0.296 ft/sec.

The second sentence of the fourth paragraph states that:

"The 50% blockage assumption is conservative since lighter particles will float on the water surface which will be above the screen assembly. Heavier particles will sink to the containment floor and will not be drawn into the screen because low inlet velocities were used in the design of the sump." This is in conflict with the last sentence of the last paragraph on page 6-13 of the SER, which states that "...the Staff will require the applicant to evaluate sump screen blockage using an acceptable methodology and considering the types and quantities of insulation that are to be installed to justify the assumption of 50% blockage."

- o Section 6.4 (page 6-32, third full paragraph).

The first sentence states, "On the basis of the foregoing, the applicant has demonstrated that the control room habitability system will adequately protect the control room operators in accordance with the requirements of NUREG-0737, Item ILLD.3.4, and GDC 19." Therefore, the second sentence, "Until this matter is resolved the control room habitability remains an open item," should be deleted.

- o Section 7.5.2.3 (page 7-32, second full paragraph, last two sentences).

There is a discrepancy between paragraph 7.5.2.3 NUREG-0737, Item ILLD.3, Direct Indication of Relief and Safety Valve Positions and the second to last sentence which mentions "the valves' position-indicating limit switches." While the PORV's have position indicating limit switches, the safety valves do not. Each safety valve relies on a flow measuring device down stream of the valve to determine the valve's position. The NRC was informed of the types of valve position indication systems at an Instrumentation and Control Systems Branch meeting in Boston on July 26, 1983.

The SER should be revised accordingly.

- o Section 8.2.1.1 (page 8-1, last paragraph).

This paragraph states that the system description and analysis demonstrating compliance with GDC 5 is acceptable, yet it has been designated confirmatory item number 43. The applicant should be informed if further information is requested or confirmatory item number 43 should be deleted from SER Table 1.4.

- o Section 8.2.3.1 (page 8-4, fifth paragraph).

This paragraph states that the system description and analysis demonstrating compliance with GDC 18 is resolved, yet it has been designated confirmatory item number 48. The applicant should be informed if further information is requested or confirmatory item number 48 should be deleted from SER Table 1.4.

- o Section 8.3.3.3.17 (page 8-22, second and third paragraphs).

The two paragraphs in this section contradict each other. The equivalency of a silicon dioxide versus metal enclosure has been established for short lengths of cable. This contradiction should be eliminated by deleting the last two sentences of the first paragraph.

- o Section 9.5.1.4, Building Design (page 9-42, fifth paragraph, second sentence).

Not all fire-rated assemblies are designed in accordance with fire-barrier designs for three (3) hours. Therefore, delete the word "all" from this sentence. For clarification, refer to W. G. Council letter to B. J. Youngblood, B11090, dated March 9, 1984.

- o Section 9.5.1.4 (page 9-44, sixth paragraph, second sentence).

This sentence should be clarified by changing it to read as follows:

"All hydrogen gas supply piping located inside buildings is either enclosed in steel guard piping (which is vented to the atmosphere) or designed to seismic Category I." Refer to W. G. Council letter to B. J. Youngblood, B11156, dated May 14, 1984.

- o Section 9.5.1.5, Carbon Dioxide Suppression System (page 9-48, third full paragraph, second sentence).

As certain CO₂ suppression systems at Millstone 3 are also activated by cross-zone smoke detectors, add the words "or cross-zone smoke detectors" after the words "heat detectors" in this sentence.

- o Section 9.5.1.6, Containment (page 9-49, first paragraph, second sentence).

The heat detectors are also part of the containment building fire protection features. Add the words "heat detectors," after the words "hose station" in this sentence.

- o Section 9.5.1.6, Switchgear Rooms (page 9-50, first full paragraph, second sentence) and Section 9.5.1.6, Remote Safety-related Panels (page 9-50, fifth full paragraph, second sentence).

Delete the words "heat and" as no heat detectors are provided in the switchgear rooms.

- o Section 9.5.1.6, Switchgear Rooms (page 9-50, third full paragraph, first sentence).

The applicant did not commit to install 4 inch high watertight curbs at all door openings between the switchgear rooms and adjacent fire areas as stated in this sentence. Refer to W. G. Council letter to B. J. Youngblood, B11090, dated March 9, 1984. Therefore, the word "watertight" should be deleted from this sentence.

- o Section 9.5.1.6, Remote Safety-related Panels (page 9-50, fifth full paragraph, first sentence).

This sentence needs clarification. We recommend that it read as follows: "The remote shutdown panels are located in the west switchgear room which is separated from the remainder of the plant by walls and floor/ceiling assemblies with fire ratings of 3 hours."

- o Section 9.5.1.8 (page 9-51).

This section lists ten (10) unresolved fire protection items. Information contained in a W. G. Council letter to B. J. Youngblood, B11156, dated May 16, 1984 apparently was not considered for the following items:

- (1) Potential systems interaction (SER Section 9.5.1.1).
- (2) Qualification of fire doors (SER Section 9.5.1.4).
- (5) Protection of cables outside cable spreading room (SER Section 9.5.1.4).
- (6) Installation of fire detectors (SER Section 9.5.1.5).
- (7) Independent sprinkler and hose station connections (SER Section 9.5.1.5).
- (8) Manual hose coverage (Section 9.5.1.5).
- (9) Hose station standpipe diameters (Section 9.5.1.5).

The SER should be revised accordingly.

- o Section 10.3.5 (page 10-8, second paragraph).

This paragraph implies that the applicant has committed to the reporting of secondary chemistry data trending and out of specification parameters to NRC staff on an annual basis. The applicant has not made such a commitment, either in the Millstone Unit 3 FSAR, or in subsequent letters to the NRC on Secondary Side Water Chemistry.

Our commitments to data management are summarized in a letter from W. G. Council to B. J. Youngblood, B11135, dated April 19, 1984. These actions are entirely for in-house use and will not be provided on an annual basis to NRC staff. If the in-house data analyses/trending show out of specification data that could lead to significant consequences and/or events, a report on these events would be made to NRC in accordance with current regulations.

Therefore, we recommend that this paragraph be revised to accurately reflect our position on this matter.

- o Section 10.4.5 (page 10-14, third full paragraph, last sentence).

This sentence needs to be clarified as follows: "Therefore, continued operation of the circulating water pumps will not result in damage to safety-related systems or components."

- o Section 12.3.2 (page 12-6, second full paragraph).

Information regarding the Millstone Unit No. 3 shielding design was provided in a response to Q471.13 (see W. G. Council letter to B. J. Youngblood, B11197, dated May 21, 1984).

The SER should be revised to document the staff's acceptance of our shielding design.

- o Section 12.3.4.2 (page 12-8, first full sentence).

The sentence states that: "All installed instruments have independent emergency battery power supplies that are activated whenever a power failure occurs." This statement is very general and is not completely accurate. We, therefore, recommend the following as clarification.

Each monitor in the radiation monitoring system has an independent microprocessor. These microprocessors have independent battery power supplies to prevent the microprocessors from losing stored data should the normal AC power fail. These battery power supplies will not enable the monitors to keep performing their radiation monitoring function in the event of a power failure.

The SER should be revised accordingly.

- o Section 13.1.1.1 (page 13-1, first paragraph, third sentence).

This paragraph states that "Northeast Utilities is a parent company of several electric utility subsidiaries, the Northeast Nuclear Energy Company...." The words "electric utility" should be deleted and the word "including" should be added after the word "subsidiaries" since Northeast Utilities is the parent company of other subsidiaries (namely, The Connecticut Light and Power Company (CL&P), Western Massachusetts Electric Company (WMECO), and Holyoke Water Power Company (HWP)) besides NNECO and NUSCO.

- o Section 13.5.1.3 (page 13-21, second full paragraph).

To be consistent with SER section 13.5.1.6, the phrase "...and verification of the correct performance of operating activities" should be removed from the next-to-last sentence in SER section 13.5.1.8. Also, the last sentence in this section should be revised accordingly as follows: "Therefore, except for the one open item..." instead of "two open items."

- o Section 18 (page 18-1, second paragraph, first sentence).

In a January 11, 1984 letter from W. G. Council to B. J. Youngblood (A02959), we revised our submittal date for the Detailed Control Room Design Review (DCRDR) summary report from "June 1984" to "November 1, 1984."

The SER should be revised accordingly.

ATTACHMENT B

- o Section 2.5.2.7.2 (page 2-32, last paragraph, line 5)
"Mition" should be "motion."
- o Section 3.6.1 (page 3-21, last paragraph)
This paragraph is a duplicate of the second paragraph on this page. One of them should be eliminated.
- o Section 3.8.3 (page 3-31, fifth full paragraph, third line)
"Millstone Unit 2" should be "Millstone Unit 3."
- o Section 3.9.3.2 (page 3-43, fifth paragraph, line 4)
"Millstone Unit 2" should be "Millstone Unit 3."
- o Section 7.3.3.9 (page 7-22, second paragraph)
See attached marked-up page.
- o Section 8.3.3.3.7 (page 8-18, second paragraph, next-to-last line)
"IEEE Std. 384-1984" should be "IEEE Std. 384-1974."
- o Section 13.1.2.1 (page 13-5, last paragraph, last line)
Our Millstone Station Security Supervisor is Ms. Patricia Weekly. This sentence should read "The Security Supervisor is responsible for station security and has the Security Shift Supervisors reporting to "her" not "him;" however, a more appropriate sentence would be "The Security Shift Supervisors report to the Security Supervisor who is responsible for station security."
- o Section 13.2.1.3, Item I.A.2.1 (page 13-14, fifth paragraph, second line)
Each licensed operator candidate will be certified competent to take the NRC license exam by the Senior Vice President, Nuclear Engineering and Operations, not the Vice President, Nuclear Engineering and Operations.
- o Section 17.2 (page 17.1, third paragraph, ninth line)
A better word would be "Responsibility" instead of "Authority."
- o Section 18 (page 18-1, second paragraph, line 2).
"November 18, 1983" should be "November 28, 1983."

7.3.3.9 Power Lockout Feature for Certain Motor-Operated Valves

The design of the control circuits for some motor-operated valves includes a power lockout feature. The power lockout is used to preclude single failures that could result in an inadvertent change in valve position. The power lockout feature consists of an additional set of contactors that interrupts power to the valve motor and is controlled by manual switches located on the rear panel of the main control board. The staff raised a concern that when the power lockout feature is used, a single failure could result in the pickup and sealing of the contactors used for normal valve control and that this condition would not be detectable. Further, this condition could occur if an attempt were made to change the position of the valve by the valve control switch. Under these conditions single failures in the power lockout circuits could result in an inadvertent change in valve position. The applicant proposed a modification of the design that uses an auxiliary contact of the power lockout contactors to deenergize the normal contact circuit. The staff finds the proposed modification acceptable. This is a confirmatory item subject to documentation of the drawing changes.

The modifications of the power lockout feature will be implemented for the following motor-operated valves:

<u>Valve No.</u>	<u>Function</u>	<u>Drawing No.</u>
3SIH*MV 8806	SI pumps suction/RWST	ESK-GMF
3SIL*MV 8840	RHR pumps/hot leg	ESK-GMH NH
3SIH*MV 8802A	SI pump disch/hot leg	ESK-GMR
3SIH*MV 8802B	SI pump disch/hot leg	ESK-GMS
3SIH*MV 8835	SI pumps disch/cold leg	ESK-GML
3SIL*MV 8809A	RHR pump disch/cold leg	ESK-GME MZ
3SIL*MV 8809B	RHR pump disch/cold leg	ESK-GNA
3SIH*MV 8813	SI pumps recir/RWST	ESK-GMN
3RHS*MV 8716A	RHR pump disch cross over/hot/cold leg	ESK-GNJ
3RHS*MV 8716B	RHR pump disch cross over/hot/cold leg	ESK-GNK
3SIH*MV 8821A	SI pump disch cross over/hot/cold leg	ESK-GMJ
3SIH*MV 8821B	SI pump disch cross over/hot/cold leg	ESK-GMK

7.3.3.10 Failure Modes and Effects Analyses of ESFAS

The applicant referred to the Westinghouse Topical Report WCAP-8584, "Failure Mode and Effects Analysis (FMEA) of the Engineered Safety Feature Actuation System," for ESF systems equipment (FMEA) within the nuclear steam supply system (NSSS) scope of supply. For balance-of-plant (BOP) equipment, fault tree analyses, based on actual wiring diagrams and components of the plant, were performed. The applicant concluded that the single-failure criterion of IEEE Std. 279 requirements was met for the Class 1E instrumentation and control portions of the safety-related systems.