

January 2, 1997

Mr. Bruce D. Kenyon
President and Chief Executive Officer
Northeast Nuclear Energy Company
c/o Terry Harpster
P. O. Box 128
Waterford, Connecticut 06385-0128

SUBJECT: MILLSTONE UNIT 1 SPENT FUEL POOL INSPECTION 95-82

Dear Mr. Kenyon:

This letter refers to your August 30, 1996 correspondence, in response to our July 10, 1996 letter.

Thank you for informing us of the corrective and preventive actions documented in your letter. We acknowledge your intent to complete a self-assessment of the Unit 1 spent fuel pool systems by the end of February 1997, including reviews of areas such as design adequacy, licensing commitments, fuel handling, and corrective actions. You also indicated that the scope of the self-assessment will encompass a review of all your issues on the Unit 1 Spent Fuel Storage Issues List and those included in NRC Inspection Report 50-245/95-82. These actions will be examined during a future inspection of your licensed program, including the quality of the independent reviews of the self-assessment items that you indicated will be performed to confirm that relevant issues have been identified and addressed.

Your cooperation with us is appreciated.

Sincerely,

ORIGINAL SIGNED BY:

Jacque P. Durr, Chief
Special Projects Office
Office of Nuclear Reactor Regulation

Docket No. 50-245

9701090143 970102
PDR ADOCK 05000245
G PDR

LED 1/1

cc w/o cy of Licensee's Response:

T. C. Feigenbaum, Executive Vice President - Chief Nuclear Officer
J. McElwain, Unit 1 Recovery Officer
D. M. Goebel, Vice President, Nuclear Oversight
J. K. Thayer, Recovery Officer, Nuclear Engineering and Support
P. D. Hinnenkamp, Director, Unit Operations
H. F. Haynes, Director, Nuclear Training
J. F. Smith, Manager, Operator Training
F. C. Rothen, Vice President, Work Services

cc w/cy of Licensee's Response:

L. M. Cuoco, Esquire
J. R. Egan, Esquire
V. Juliano, Waterford Library
Department of Public Utility Control
S. B. Comley, We The People
State of Connecticut SLO Designee

Mr. Bruce D. Kenyon

3

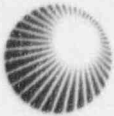
Distribution w/cy of Licensee's Response:
Region I Docket Room (with concurrences)
M. Kalamon, SPO, RI
NRC Resident Inspector
Nuclear Safety Information Center (NSIC)
PUBLIC
D. Screnci, PAO

DOCUMENT NAME: G:\BRANCH6\REPLYLTR\9582U1.RPY

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure
"N" = No copy

OFFICE	RI/DRP	RI/DRS	RI/DRP	
NAME	EKelly <i>[Signature]</i>	JWiggins <i>[Signature]</i>	JDurr <i>[Signature]</i>	
DATE	09/19/96 <i>[Signature]</i>	12/31/96	12/ /96	12/ /96

OFFICIAL RECORD COPY



Northeast
Utilities System

107 Selden Street, Berlin, CT 06037

Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270
(203) 665-5000

AUG 30 1996

Docket No. 50-245
B15870

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

Millstone Nuclear Power Station, Unit No. 1
60-Day Response to Inspection Report 50-245/95-82

On July 10, 1996, the Nuclear Regulatory Commission (NRC) issued Inspection Report No. 95-2, "Millstone Unit 1 Spent Fuel Pool Inspection 95-82."⁽¹⁾ The inspection focused on Northeast Nuclear Energy Company's (NNECO) modifications, test records, and resolutions related to various Millstone Unit No. 1 (MP1) spent fuel pool cooling system issues.

The inspection report requested NNECO to provide a response to the Staff's comments on the identification and resolution of deficiencies within NNECO's spent fuel pool project, and evaluate the processes within the project for their comprehensiveness in this regard. Attachment 1 to this letter responds to the Staff's request.

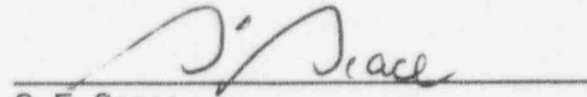
We trust that the information contained herein is responsive to the Staff's request. Should the Staff have any further questions, please contact Mr. William J. Temple at (860) 437-5904.

Very truly yours

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: T. C. Feigenbaum
Executive Vice President and
Chief Nuclear Officer

BY:


S. E. Scafe
Vice President - Nuclear

cc: See Page 2

(1) W. D. Lanning letter to T. C. Feigenbaum, "Millstone Unit 1 Spent Fuel Pool Inspection 95-82," dated July 10, 1996.

cc: H. J. Miller, Region I Administrator
J. W. Andersen, Millstone Unit No. 1 Project Manager
T. A. Easlick, Senior Resident Inspector, Millstone Unit No. 1

Docket No. 50-245
B15870

Attachment 1

Millstone Nuclear Power Station, Unit No. 1
60-Day Response to Inspection Report 50-245/95-82

August 1996

Millstone Nuclear Power Station, Unit No. 1
60-Day Response to Inspection Report 50-245/95-82

Restatement of NRC Request

During the exit meeting of March 14, 1996, we discussed our conclusion that your process for the identification and resolution of deficiencies within the spent fuel pool project was not comprehensive. This conclusion was based on at least six new adverse condition reports being issued as a result of our inspection of the 32 specific issues reviewed during the Phase B portion. We viewed these results to be a high (approximately 15%) turnback ratio of items inspected where your efforts on the issue being inspected were found by the NRC to be not fully complete, even though you had presented items to the NRC for closure. We request that you consider these comments and evaluate your process for its comprehensiveness regarding the identification and resolution of deficiencies within the spent fuel pool project. Please respond within sixty days regarding your assessment and any proposed actions to improve your process for the identification and resolution of deficiencies within the spent pool fuel project.

NNECO Response

NNECO concurs with the NRC observation that the process for the identification and resolution of deficiencies within the Millstone Spent Fuel Project (SFP) was indeed not comprehensive. Additionally, we agree that the six additional ACRs resulting from the NRC Inspection Team review of 32 issues is unacceptable.

In retrospect, we are able to conclude that the breadth of the discovery effort and the thoroughness of our resolution was lacking. Prior to, during, and after the NRC inspection, the large number of discrepancies (e.g., ACRs and LERs) appeared to be indicative of a questioning attitude. We know now that the large number of discrepancies was actually indicative of more systemic problems.

From an historical perspective, the SFP was initially established in late 1994 to provide engineering support for capital projects related to long term spent fuel storage, such as pool capacity expansions and inter-unit fuel transfers. The SFP was not established to perform a comprehensive review and evaluation of the existing Millstone Unit No. 1 (MP1) spent fuel pool cooling system design. Nonetheless, as issues related to the MP1 spent fuel pool were identified by the SFP and the NRC Staff (primarily related to cooling systems), the SFP began efforts to address and resolve these issues -- particularly prior to Refueling Outage (RFO) 15. As a result, significant hardware improvements and procedure upgrades were made prior to issuance of MP1 Operating License Amendment 89 in November, 1995.

Specifically, in early 1995, the SFP began assisting the ongoing engineering efforts supporting the preparation of Amendment 89. During the initial stages of this effort,

some discrepancies were noted which resulted in issuance of LER 245/95-006, "Non-Seismic Make-up Piping to The Spent Fuel Pool," and LER 245/95-009, "Incorrect Design Input to Spent Fuel Pool Cooling Piping Analysis." As a direct result of these two LERs, design reviews of the spent fuel pool piping systems were initiated by the SFP. These reviews consisted of an overall design basis review of the spent fuel pool cooling system⁽²⁾ to determine the design basis temperature and seismic requirements. A detailed review of the spent fuel pool cooling system piping was also performed.⁽³⁾ This review was in support of corrective action commitments made in LER 245/95-006. The review focused on piping connected to the spent fuel pool. Also, in support of the corrective action commitments contained in LER 245/95-009, a detailed design review⁽⁴⁾ was conducted of spent fuel pool piping connected to the spent fuel pool that could be subjected to the increased bulk pool water temperature of 150 °F.

These reviews and the continuing engineering efforts on the design of the Shut Down Cooling Project (Amendment 89) resulted in the issuance of several adverse condition reports (ACRs) relative to piping seismic and thermal design deficiencies, inadequate anchorage of the skimmer surge tanks, lack of anti-syphon holes in the spent fuel pool cooling discharge piping, potential for a cavity drain down path due to unanalyzed piping, various as-built discrepancies, and several administrative/procedural problems. An additional LER (245/95-016) was also issued for "Missing Anti-Syphon Holes in Spent Fuel Pool Cooling Return Line."

In response to these issues, corrective action design efforts were implemented to resolve the issues with potential plant safety implications. Plant design change records (PDCRs) were developed to implement permanent plant design changes that upgraded piping supports to seismic status,⁽⁵⁾ installed a thermal expansion loop to reduce piping thermal stresses,⁽⁶⁾ modified the skimmer surge tank supports,⁽⁷⁾ installed piping

-
- (2) Yankee Atomic Electric Company, "Millstone Unit No. 1, Spent Fuel Pool Cooling System Design Basis Review of Selected Issues," dated August 23, 1995.
 - (3) Spent Fuel Project Memo SFP-95-166, "Fuel Pool Cooling System Refueling Cavity Piping Seismic Qualifications," dated November 4, 1995.
 - (4) Spent Fuel Project Memo SFP-95-157, "Fuel Pool Cooling System Piping Thermal Qualifications," dated November 4, 1995.
 - (5) Plant Design Change Record 1-41-95, Task "A", "MP1 Pipe Support Modifications."
 - (6) Plant Design Change Record 1-41-95, Task "B", "6 inch - FPC-78 Expansion Loop."
 - (7) Plant Design Change Record 1-078-95, "MP1 Skimmer Surge Tanks (M4-18A&B) Support Modifications."

spectacle flanges to preclude potential cavity drain down,⁽⁸⁾ analyzed piping to ensure that a seismic event would not cause piping failure,⁽⁹⁾ and modified the spent fuel pool piping discharge lines to preclude potential syphoning after a safe shutdown earthquake (SSE).⁽¹⁰⁾ In addition, two bypass jumpers were installed to temporarily resolve SFP issues relative to the skimmer surge tank level monitoring,⁽¹¹⁾ and bulk pool temperature indication.⁽¹²⁾

While the above engineering efforts were ongoing, additional spent fuel related discrepancies were identified by NNECO. Some were the result of reviews in support of the ongoing work and others from specific initiatives intended to uncover potential spent fuel pool problems. These initiatives included a "Spent Fuel Storage Issues Assessment Team," which was formed at the request of the SFP and performed a review from October 5 to October 17, 1995. An additional initiative was the "Spent Fuel Pool Cooling Task Team," formed by the Vice President of Engineering in June 1995 to ensure spent fuel pool concerns were documented and entered into the corrective action system. This effort ended in late October 1995. The issues resulting from the ongoing engineering reviews and these separate initiatives were combined and published as the "MP1 Spent Fuel Storage Issues" list on October 17, 1995 by the SFP.

The first draft of the MP1 Spent Fuel Storage Issues List contained fifty separate issues which were traceable to a source document or an internal tracking system action request number (AR). This list was used by the SFP and the NRC Inspection Team for review and tracking of known issues and for tracking new discrepancies. The MP1 Spent Fuel Storage Issues List became a comprehensive repository of all known MP1 Spent Fuel Pool Issues, totaling 63 in number by mid November 1995.

The NRC Inspection Report highlights that, at the time of the inspection, several issues inspected were not fully resolved. The Report also questions the comprehensiveness of the process for identification and resolution of issues within the SFP. NNECO believes that, in general terms, these observations are accurate. With respect to the

-
- (8) Plant Design Change Record 1-41-95, Task "C", "4 inch Spectacle Flanges."
 - (9) Calculation 95-Eng-1375-M1, "MP1 Seismic Evaluation of Reactor Cavity Ventilation Lines."
 - (10) Plant Design Change Record 1-088-95, "Anti-Syphon Hole Installation in Spent Fuel Pool Cooling Discharge Lines."
 - (11) Bypass Jumper 1-95-86, "Skimmer Surge Tank Level Switch Relay R-LS-1901-106."
 - (12) Bypass Jumper 1-95-88, "Temporary Fuel Pool Temperature Monitoring"

comprehensiveness of the process for identification of issues, substantial efforts were undertaken as described above. The existence of three separate groups, the Spent Fuel Storage Project, the Spent Fuel Pool Cooling Task Team, and the Spent Fuel Issues Assessment Team, all of which assisted in the identification of discrepancies, demonstrates an intent to provide a thorough discovery effort. However, NNECO did not set out through the Spent Fuel Project or other initiatives to perform a complete design basis review of all spent fuel related systems.

With respect to the process for verification of issues within the SFP, some clarification is necessary. The NRC Inspection Team review of each issue contained on the Spent Fuel Storage Issues List was facilitated by a separate package of relevant information assembled specifically for review purposes. In several instances the NRC Inspection Team review of these packages resulted in additional questions and, as stated in the NRC Inspection Report 50-245/95-82, six additional ACRs were issued during the conduct of this review. Without exception, each new issue identified during this review related to our configuration management, FSAR, and document control weaknesses.

SFP Process Improvements

To address the NRC's concern regarding the comprehensiveness of the process for identifying and resolving spent fuel pool related issues, NNECO will initiate a comprehensive review of the Unit 1 spent fuel pool systems to encompass design requirements, operating, maintenance and surveillance/testing practices and implementation of corrective actions. The objective of this self-assessment will be to establish the operational readiness of the spent fuel pool and its support systems under all modes of operation, including the systems' capability to perform the functions required by the design basis and the adequacy of system testing and maintenance.

This review will be accomplished by assembling the relevant design documents and evaluating the modified systems to the original design and licensing bases as well as addressing impacts on related systems, using a combination of system walkdowns, interviews and document reviews. Design changes and modifications as well as 10CFR50.59 evaluations performed will be reviewed for technical adequacy and consistency with the design basis.

The scope of the self-assessment will also encompass a review and resolution of all open issues on the MP1 Spent Fuel Storage Issues List and those arising from the report of the NRC Inspection Team.

The self-assessment will be structured to include the following as applicable:

- Design Adequacy Review
- Nuclear/Criticality
- Mechanical Systems Review
- Radiological

- Electrical, Instrument and Control Systems Review
- Licensing Commitments
- Structural Systems Review
- Fuel Handling
- Operations Review
- Accidents
- Maintenance Review
- Heavyload Handling
- Surveillance/Testing Practices Review
- Corrective Actions Review

Prior to closeout of each item, an independent review will be performed to confirm that relevant issues have been identified and addressed, thus ensuring the comprehensiveness of the self-assessment effort.

We anticipate completion of the self-assessment and resolution of all issues⁽¹³⁾ by the end of February, 1997.

Additional Information

Recent NNECO self-assessments, including ACR 7007 and the Fundamental Cause Assessment Team Report, have identified station-wide performance issues related to the corrective action program. These weaknesses apply to spent fuel pool issues, as well as other issues. NNECO has embarked on a program that is significantly altering the corrective action program and increasing the resources that are dedicated to it. The enhancements will result in a common program at all five Northeast Utilities nuclear units that has improved ownership, accountability, tracking and performance measurement. The revised program will ensure that future corrective action evaluations will be broad and comprehensive to address the fundamental cause findings related to a narrow focus. In the recent past, NNECO has implemented a number of steps to improve the corrective action program, including the introduction of a common ACR program and a common action item tracking and trending system. NNECO has made progress in lowering the threshold for initiation of ACRs. A Unit-Specific Management Review Team (MRT) consisting of department manager level personnel appointed by the Unit Director was instituted this past year. The MRT charter is to review ACRs to determine evaluation requirements, and to perform a final review of the ACRs for acceptability.

Further improvements to the corrective action program will be completed before the restart of Millstone Unit 1, to ensure that discrepancies receive comprehensive reviews and are closely tracked until completion of the work required as part of the corrective

(13) Resolution that requires a design change or plant modification will be addressed under a separate schedule.

action. The corrective action program will include a common Operating Experience Manual which includes a common ACR procedure. Key components of the new program will be ownership, accountability, root cause evaluations, self-assessments, and measures of performance.