



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

June 30, 1997

David A. Lochbaum
Union of Concerned Scientists
1616 P Street NW., Suite 310
Washington, DC 20036-1495

Dear Mr. Lochbaum:

I am responding to your letter of May 9, 1997, to Samuel J. Collins, Director, Office of Nuclear Reactor Regulation, in which you requested that the U.S. Nuclear Regulatory Commission (NRC) determine whether the Millstone Unit 1 licensee (Northeast Nuclear Energy Company) complied with 10 CFR 50.59 when debris was left in the spent fuel pool; and whether the Millstone Unit 1 licensee is currently conducting activities in the spent fuel pool in accordance with General Design Criterion (GDC) 61 "Fuel Storage Handling and Radioactivity Control." You based your questions on information you read in NRC Combined Inspection Report 50-245/97-01, 50-336/97-01, 50-423/97-01 dated April 11, 1997.

After discovering the debris in the spent fuel pool, the licensee performed an operability determination (as recommended by the NRC staff in Generic Letter (GL) 91-18, "Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and Operability"). Although not a regulatory requirement, the NRC staff's GL 91-18 guidance provides an acceptable method for licensees to disposition design basis discrepancies. If an initial operability evaluation determines that the subject system remains operable, facility operation may continue. The licensee must then decide whether to restore the system to the condition described in the design basis documents or operate in a manner different than as described in the design basis documents. If the licensee chooses the former, the restoration must take place in a time frame commensurate with safety. If, instead, the licensee chooses the latter action, or not to restore, then an evaluation must be performed, pursuant to 10 CFR 50.59, to ensure an unreviewed safety question (USQ) is not involved.

In the case of Millstone Unit 1, the licensee's analyses determined that the applicable spent fuel pool safety functions remained operable. Since the licensee determined the debris in the spent fuel pool would not be immediately removed, a USQ analysis pursuant to 10 CFR 50.59 was performed. The licensee concluded there were no USQs due to the debris in the spent fuel pool. The licensee's conclusion was based, in part, on a report supporting a 1988 spent fuel pool rerack license amendment request that showed that an 80 percent blockage of convection flow area would result in a maximum local temperature increase of 11° F and that a substantial margin against local boiling existed. Based on viewing a videotape of the debris, the licensee concluded that none of the debris found in the spent fuel pool would result in a blockage of flow area that is close to 80 percent of the total flow area.

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Regarding the issue of compliance with GDC 61, the GDC (i.e., 10 CFR Part 50, Appendix A) set forth general requirements for design of nuclear power reactors. Specifically, the GDC establish the principal design criteria for establishing "the necessary design, fabrication, construction, testing, and performance requirements for structures, systems, and components important to safety." The specific design information used to meet the GDC then becomes part of the plant's design basis as defined in 10 CFR 50.2. Thus, licensees indirectly ensure compliance with the GDC by operating their plant in conformance with their design bases assumptions. Additionally, licensees are required to comply with Criterion XVI of Appendix B, to 10 CFR Part 50, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." This criterion states, in part, that "[m]easures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected." As previously noted, the licensee did perform a GL 91-18 operability determination as recommended by the staff and a USQ evaluation pursuant to 10 CFR 50.59. The licensee concluded that its systems remained operable and the de facto change (i.e., the debris in the spent fuel pool) did not involve a USQ; therefore, they were within their design bases.

The NRC staff has reviewed the licensee's analyses and spent fuel pool videotape and concluded that there were no immediate safety concerns due to the debris in the spent fuel pool. However, the staff considers the acceptability of the degraded conditions in the spent fuel pool to be unresolved pending completion of further NRC and licensee review of the issue. Once these reviews have been completed, the staff will consider enforcement action as appropriate. The staff's final resolution of this issue will be included in a subsequent inspection report.

I trust this reply responds to your concerns. If you have any further questions on this matter please contact me at (301) 415-2240.

Sincerely,

Phillip F. McKee
Deputy Director for Licensing
Special Projects Office
Office of Nuclear Reactor Regulation

Docket No. 50-245

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June 30, 1997

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Original signed by:

Phillip F. McKee
Deputy Director for Licensing
Special Projects Office
Office of Nuclear Reactor Regulation

Docket No. 50-245

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*see previous concurrence

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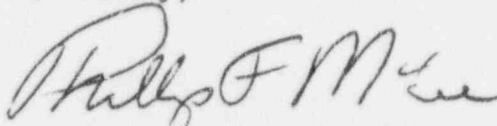
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NAME	MSlosson*	PMcKee	WTravers	L March <i>[Signature]</i>	
DATE	06/16/97	06/20/97	06/20/97	6/30/97	06/ /97

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TO:

S. J. COLLINS

FOR SIGNATURE OF : ** YEL **

DESC:

APPARENT UNREVIEWED SAFETY QUESTION INVOLVING
SPENT FUEL POOL STORAGE AT MILLSTONE UNIT 1

ROUTING:

COLLINS
MIRAGLIA
MARTIN
ZIMMERMAN
SLOSSON
BOHRER

ASSIGNED TO:

CONTACT:

SPO

TRAVERS

SPECIAL INSTRUCTIONS OR REMARKS:

ACTION
DUE TO NRR DIRECTOR'S OFFICE
BY <u>June 10, '97</u>

**UNION OF
CONCERNED
SCIENTISTS**

May 9, 1997

Mr. Samuel J. Collins, Director
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, DC 20555-0001

**SUBJECT: APPARENT UNREVIEWED SAFETY QUESTION INVOLVING SPENT FUEL
POOL STORAGE AT MILLSTONE UNIT 1**

Dear Mr. Collins:

Section U1 02.1 in NRC Combined Inspection Report 50-245/97-01, 50-336-97-01, 50-423/97-01 dated April 11, 1997, details a number discrepant conditions within the spent fuel pool at Millstone Unit 1. According to this inspection report, foreign material exclusion problems allowed the accumulation of a large amount of debris within the spent fuel pool. The debris was described as "rope, cable, boron tubes, a broom head, filter hoses, nuts, and unidentifiable objects." In addition, this inspection report stated that "14 fuel bundles are elevated [from their seated position in the spent fuel storage racks] due to unknown reasons, although it is suspected that debris is in the fuel rack preventing proper seating."

Section 15.7.4, "Radiological Consequences of Fuel Handling Accidents," of the NRC's Standard Review Plan (NUREG-0800) and NRC Bulletin 96-02, "Movement of Heavy Loads Over Spent Fuel, Over Fuel in the Reactor Core, or Over Safety-Related Equipment," describe limitations on the movement of heavy loads over the spent fuel pool. The stated purpose of these limitations is to prevent damage to irradiated fuel stored in the spent fuel pool to conform with the requirements of 10 CFR Part 50, Appendix A, General Design Criterion 61.

Section 50.59, "Changes, tests, and experiments," to 10 CFR requires all licensees to evaluate proposed changes to their facilities for potential unreviewed safety questions. In essence, if a proposed activity is not enveloped by the plant's licensing bases, it is an unreviewed safety question that requires NRC review and approval before it can be performed.

The Millstone Unit 1 Updated Final Safety Analysis Report does not discuss the storage of items such as "broom heads" in the spent fuel pool. If the licensee performed safety evaluations in accordance with Section 50.59 of 10 CFR prior to placing these items in the spent fuel pool, then it is not apparent why an unreviewed safety question was not identified. An object, such as a broom head or filter hose, dropped into the spent fuel pool and blocking flow into or out of one or more irradiated fuel assemblies would appear to constitute a new failure mode. Depending on the size of the object and the number of blocked assemblies, the consequences from this postulated scenario could exceed that from the previously analyzed fuel handling event at Millstone Unit 1. For example, if a panel

measuring 2'x4' fell into the pool and came to rest across the top of the racks, the flow from up to 18 irradiated fuel assemblies might be partially or full restricted. A similar scenario could be postulated for a rag or a sheet of plastic that drops into the spent fuel pool and winds up blocking the inlet to one or more irradiated fuel assemblies. Considering that Millstone Unit 1 is a boiling water reactor with its irradiated fuel assemblies possibly having fuel channels that prevent cross-flow, any inlet or outlet flow restriction has the potential for causing fuel damage from inadequate cooling. To our knowledge, no analysis or evaluation has been performed to demonstrate the irradiated fuel can be adequately cooled under restricted/blocked flow conditions.

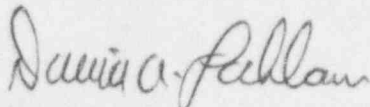
If the licensee did not perform safety evaluations in accordance with Section 50.59 of 10 CFR prior to placing these items in the spent fuel pool, then it is not apparent why the licensee seemed to have violated the law.

UCS respectfully requests that the NRC determine:

- 1) Whether the Millstone Unit 1 licensee complied with Section 50.59 of 10 CFR when items such as broom heads were stored in the spent fuel pool.
- 2) Whether the Millstone Unit 1 licensee is currently conducting activities in the spent fuel pool in accordance with GDC 61.

Please note that the concern about objects lighter than a fuel bundle (i.e., items not covered under the heavy load guidance in NUREG-0612) applies at least to all boiling water reactor plants that store irradiated fuel assemblies with channels and perhaps to all plants to a lesser degree. Thus, it seems prudent that the results from the recommended inquiry into this matter at Millstone be considered generically as appropriate.

Sincerely,



David A. Lochbaum
Nuclear Safety Engineer

cc:	Chairman: Shirley Ann Jackson United States Nuclear Regulatory Commission Washington, DC 20555	Commissioner Edward McGaffigan, Jr. United States Nuclear Regulatory Commission Washington, DC 20555
	Commissioner Kenneth C. Rogers United States Nuclear Regulatory Commission Washington, DC 20555	Mr. George Mulley United States Nuclear Regulatory Commission Washington, DC 20555
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