

# YANKEE ATOMIC ELECTRIC COMPANY

Telephone (508) 721-7736  
Facsimile (508) 721-7743



Suite 200, 19 Midstate Drive, Auburn, Massachusetts 01501

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U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555-0001

References: (a) License No. DPR-3 (Docket No. 50-29)

Subject: Licensee Event Report (LER) 2001-001-00

Pursuant to 10CFR50.73(a)(2)(i)(B) of the Commission's Rules and Regulations, Yankee Atomic Electric Company (YAEC) is providing Licensee Event Report 2001-001-00, titled "Spent Fuel Pit Area Radiation Monitor Alarm Setpoint Set Above Limit Allowed by Technical Specification 3.3".

If you should have any questions, please contact Mr. Greg Babineau (413) 424-2202.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

James A. Kay  
Manager of Regulatory affairs

c: R.R. Bellamy, NRC Region I  
J.B. Hickman, NRC Project Manager

IE22

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**LICENSEE EVENT REPORT (LER)**

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME Yankee Nuclear Power Station	2. DOCKET NUMBER 05000 029	3. PAGE 1 OF 4
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4. TITLE  
Spent Fuel Pit Area Radiation Monitor Alarm Setpoint Set Above Limit Allowed by Technical Specification 3.3

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
06	26	2001	2001	- 001	00	08	22	2001	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE N/A	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
	20.2201(b)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
10. POWER LEVEL	20.2201(d)	20.2203(a)(4)	50.73(a)(2)(iii)	50.73(a)(2)(x)
	20.2203(a)(1)	50.36(c)(1)(I)(A)	50.73(a)(2)(iv)(A)	73.71(a)(4)
[REDACTED]	20.2203(a)(2)(i)	50.36(c)(1)(ii)(A)	50.73(a)(2)(v)(A)	73.71(a)(5)
	20.2203(a)(2)(ii)	50.36(c)(2)	50.73(a)(2)(v)(B)	OTHER
	20.2203(a)(2)(iii)	50.46(a)(3)(ii)	50.73(a)(2)(v)(C)	Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iv)	50.73(a)(2)(I)(A)	50.73(a)(2)(v)(D)	
	20.2203(a)(2)(v)	X 50.73(a)(2)(I)(B)	50.73(a)(2)(vii)	
	20.2203(a)(2)(vi)	50.73(a)(2)(I)(C)	50.73(a)(2)(viii)(A)	
	20.2203(a)(3)(i)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(B)	

12. LICENSEE CONTACT FOR THIS LER

NAME Greg Babineau, Safety Oversight Manager	TELEPHONE NUMBER (Include Area Code) (413) 424-2202
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED				15. EXPECTED SUBMISSION DATE		MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	x	NO						

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

Yankee Nuclear Power Station ceased power operation in February 1992 and is being decommissioned. On 06/26/01 during the conduct of a Nuclear Safety (Quality Assurance) Audit a discrepancy regarding the alarm setpoints for the Spent Fuel Pit (SFP) Area Radiation Monitor (ARM) was identified. The SFP ARM is an instrument required by Technical Specification 3.3 to ensure early detection of inadvertent criticality during fuel handling activities. The Technical Specification requires the alarm setpoints for the ARM be set at less than 5 mr/hr or two times the background radiation level, whichever is greater, while moving irradiated fuel, control rods or sources. The discrepancy identified was that the background radiation level annotated on procedure OP-4816, "Functional Test and Alarm Setting of the Area Radiation Monitoring System" was 2 mr/hr while the alarm setpoint for both the alert and high alarms was set at 7 mr/hr, thus greater than the Technical Specification requirement. As such, this LER is submitted in accordance with 10CFR50.73(a)(2)(i)(B) as a condition of non-compliance with a Technical Specification. No fuel handling evolutions were in progress at the time of discovery of this issue.

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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

**EVENT DESCRIPTION**

Yankee Nuclear Power Station ceased power operation in February 1992 and is currently being decommissioned. During Nuclear Safety (Quality Assurance) Audit Y-01-A-06-01 in support of preparations for moving fuel to Dry Cask Storage, an auditor discovered the Spent Fuel Pit Area Radiation Monitor alarm setpoints were greater than 5 mr/hr or two times the background radiation level, whichever is greater, which exceeded Technical Specification 3.3. The auditor immediately informed the Safety Oversight Manager of the condition. The Safety Oversight Manager promptly had the condition evaluated and verified that the Area Radiation Monitor setpoints were improperly set and exceeded the criteria of Technical Specification 3.3. A Condition Report was issued and the SFP ARM Alert and High alarm were immediately reset to be consistent with the Technical Specification 3.3 LCO. The SFP ARM is an instrument required by Technical Specifications to ensure early detection of excessively high radiation (associated with an inadvertent criticality event) during fuel handling activities. The Technical Specification requires that the alarm setpoints for the SFP ARM be set at less than 5 mr/hr or 2 times the background radiation level, whichever is greater, while moving irradiated fuel, control rods or sources. The discrepancy identified was that the background level annotated on procedure OP-4816, " Functional Test and Alarm Setting of the Area Radiation Monitoring System" was 2 mr/hr while the alarm setpoint for both the alert and high alarms was set at 7 mr/hr. No fuel handling evolutions were in progress at the time of discovery of this issue. It has also been determined that fuel handling evolutions in August of 1999 and April/May of 2000 were conducted under similar circumstances where the SFP ARM alarm setpoints were improperly set.

**CAUSE OF EVENT**

In order to address all the issues surrounding this incident, a Root Cause Analysis team was assembled to determine the cause(s) for exceeding Technical Specification 3.3. The Barrier and Change Analysis methodology was used to evaluate this occurrence. The causes of this incident were determined to be procedure deficiency and inadequate training as described below:

- Failure to incorporate guidance from Technical Basis Document 99-75, "Basis for the Spent Fuel Pool Area Radiation Monitor Background Determination" into plant procedures.

The guidance from the Technical Basis Document was not formally proceduralized and therefore Radiation Protection (RP) Technicians were not trained to implement the revised alarm setpoint methodology until this incident was investigated. In August of 1999, Technical Basis Document 99-75 was developed to address the difficulty in determining SFP ARM background radiation levels used to establish alarm setpoints. This document provides a basis to determine the background used for setting the Alert and High alarm setpoints. This guidance in addition to RP Technician training (see below) would have given the RP Technicians the required knowledge and skills to determine the appropriate background value and use it to set the proper alarm setpoints.

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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

- Lack of detail and poor design in procedure OP-4816 "Functional Test and Alarm Setting of the Area Radiation Monitoring System."

The functional test procedure did not alert the user to the Technical Specification requirements. It was also determined that the procedure design was inadequate such that had the worksheet used to annotate the functional test data also contained the guidelines for setting the alarm setpoints, any discrepancy would have been more readily apparent.

- Failure to train on Technical Basis Document 99-75, "Basis for the Spent Fuel Pool Area Radiation Monitor Background Determination."

If the RP Technicians had been trained on the revised alarm setpoint methodology from the Technical Basis Document, the RP technician would not have annotated the worksheet with an incorrect background value and would have appropriately set the SFP ARM Alert and High alarm setpoints.

**SAFETY ASSESSMENT**

The safety significance of this incident is low. Although the alarm setpoints for the SFP ARM were out of tolerance with Technical Specification 3.3, the SFP ARM was operable. The actual time interval to reach an alarm condition, as compared to the time required to reach the Technical Specification required alarm setpoints was negligible. An increase in radiation levels would have been detected early enough to preclude any additional impact to the workers or public safety.

**CORRECTIVE ACTIONS**

A major revision to procedure OP-4816 "Functional Test and Alarm Setting of the Area Radiation Monitoring System" was initiated, approved by PORC and issued on July 13, 2001. The following is a summary of the changes:

- Technical Basis Document 99-75 "Basis for the Spent Fuel Pool Area Radiation Monitor Background Determination" was added as a reference;
- The procedure was revised to clarify the process of obtaining and using the background value to determine Alert and High alarm setpoints based on the guidance from Technical Basis Document 99-75;
- The procedure worksheet was revised to alert the RP Technicians to Technical Specification implications, rearranged so that data and the Guidelines for Alarm Setpoints are all on one worksheet, and removed the designee from the RPM review signature, to ensure independent supervisory review; and
- Training was conducted for the RP Technicians that perform the surveillance using the proper method for alarm setpoint determination.

In addition, a revision was initiated to the I & C procedure OP-4669 "Area Radiation Monitor Channel Calibration and Setpoint Change" to contact the Radiation Protection Department for setting the Alert and High alarm setpoints.

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**17. NARRATIVE** (If more space is required, use additional copies of NRC Form 366A)

The following additional corrective actions will be implemented.

- Procedure OP-4816 will be revised to add Technician sign off lines for procedure steps requiring action. Due [ 8/31/01]
- A lesson plan will be developed for Technical Specification training, applicable to the Radiation Protection surveillance program. Due [ 9/7/01]
- Technical Specification training will be conducted for members of the RP staff that are qualified to perform Technical Specification surveillance procedures. Due [ 9/21/01]
- A review of all Radiation Protection procedures that have Technical Specification implications will be conducted to ensure that the potential for a similar occurrence does not exist in other procedures. Due [9/13/01]

**ADDITIONAL INFORMATION**

None.

**PREVIOUS SIMILAR EVENTS**

None.