

# YANKEE ATOMIC ELECTRIC COMPANY

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BYR 2000-021

U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

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

Subject: Voluntary Licensee Event Report (LER) 2000-01

This letter forwards voluntary Licensee Event Report 2000-01, titled "Mathematical Error in Exposure Records".

We trust this information is satisfactory; however, if you have any questions, please contact us.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

Merrill J. Atkins  
Licensing Manager

c: Mr. Phillip Ray, Project Manager  
Decommissioning Section  
Project Directorate IV and Decommissioning  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Mr. R. Bellamy, Chief  
Decommissioning and Laboratory Branch  
USNRC, Region I

IE22

NRC FORM 366 (4-95)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB NO. 3150-0104 EXPIRES 04/30/98 <small>ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.</small>					
<b>LICENSEE EVENT REPORT (LER)</b>										
FACILITY NAME (1)  Yankee Nuclear Power Station					DOCKET NUMBER (2)  50-029		PAGE (3)  1 of 3			
TITLE (4)										
EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
12	6	1999	2000	01		2	25	2000	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		NA		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)						
POWER LEVEL (10)		000		20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)
				20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)
				20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
				20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		<input checked="" type="checkbox"/> OTHER
				20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)						
LICENSEE CONTACT FOR THIS LER (12)										
NAME Jim Kay, Principal Licensing Engineer (978) 568-2302						TELEPHONE NUMBER (Include Area Code) YNPS (413) 424-5261				
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
SUPPLEMENTAL REPORT EXPECTED (14)						EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).				X NO						
<b>ABSTRACT (16)</b> (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)										
<p>This is a voluntary LER. Yankee Nuclear Power Station was permanently shutdown in February 1992 and is currently decommissioning the facility. On December 6, 1999, following an extensive verification of radiation worker exposure records, it was discovered that the personnel exposure for one individual in 1972 was incorrectly recorded due to a mathematical error. The correction of this mathematical error resulted in the identification that the individual received an exposure above the regulatory limits imposed at that time (10CFR20.101). It was also determined that this error had been first discovered in April 1992 and that the exposure records had been corrected at that time. However, at the time of this correction, the exposure was not identified by the correcting individual as an unreported exposure above regulatory limits. By the current regulations in 10CFR20.2203 (amended in 5/21/91 and implemented at YNPS on 1/1/94), this exposure is not an exposure above regulatory limits as the limit was changed from a quarterly to an annual limit. No other previously unidentified exposures above 3 rem/quarter were found following a re-examination of the database.</p>										

**LICENSEE EVENT REPORT (LER)**  
**TEXT CONTINUATION**

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Yankee Nuclear Power Station	50-029	2000	-- 01 --		2 of 3

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

**BACKGROUND INFORMATION**

This is a voluntary LER. Yankee Nuclear Power Station (YNPS) was permanently shutdown in February 1992 and is currently decommissioning the facility.

In 1990, YNPS initiated a voluntary Dose Reconstruction Project designed to provide a complete and accurate database record of the personnel exposure monitoring that was provided during the lifetime of radiological activities at the plant site. This project involved the thorough review of personnel monitoring records for about 18,000 individuals.

**EVENT DESCRIPTION**

In April 1992, a mathematical error, which originally occurred in 1972, was discovered in the exposure records of one individual. It was found that the sum of the individual's exposure for the period 10/30/72 to 12/3/72 (as determined from six film badge readings) was originally recorded as 2.080 rem with a quarterly total of 2.810 rem. There was no occupational exposure for the individual prior to the fourth quarter of 1972. The correct sum for the period 10/30/72 to 12/3/72 should have been 2.800. Therefore, the corrected total for the fourth quarter was 3.530 rem. The specifics are as follows:

10/23 - 10/29/72	0.730	
10/30 - 11/05/72		0.800
11/06 - 11/12/72		0.510
11/13 - 11/19/72		0.030
11/20 - 11/26/72		0.650
11/27 - 12/03/72		0.810
12/04 - 12/10/72		M ("minimal" is treated as zero)

1972 Recorded total:	0.730	+	2.080	=	2.810 rem
ACTUAL total:	0.730	+	2.800	=	3.530 rem

At the time when this error was discovered and corrected in April 1992, the individual (no longer with the company) who corrected the records apparently did not recognize that the corrected exposure total resulted in an exposure above the 1972 regulatory limits. No notifications were made to higher management or the NRC. (Note: This discovery occurred at a time when the regulations were changing. Although the change in regulatory limits from a quarterly limit to an annual limit had not yet been implemented, the planned changes were well publicized on 5/21/91 in 56FR23391. It is possible that this anticipated regulatory change may have caused some confusion in the recognition of what had occurred and may also explain why no notifications were made at this time.)

The "verification phase" of the Dose Reconstruction Project began in early 1998 and was completed in the latter part of 1999. On 12/6/99, a query of the database, as part of the project, indicated the previously unidentified 3.530 rem exposure. A Condition Report (CR) (99-190) was initiated and a review of 1972/1973 correspondence to the NRC was conducted to determine if any prior reporting had occurred. No prior notifications to the NRC concerning this

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Yankee Nuclear Power Station	50-029	2000	-- 01 --		3 of 3

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issue were found. It was determined that this occurrence was not reportable in 1999 as this exposure did not exceed the current regulatory limits of 10CFR20.2203. Additionally, a complete and thorough review of the database was initiated to determine if any other similar circumstances (exposures above 3 rem/quarter) existed. The database review did not find any other similar circumstances. This investigation, as part of the CR evaluation, was completed on 2/14/00.

The NRC lead inspector was notified of this single occurrence on 2/15/00. Subsequent discussions with the NRC have resulted in an agreement for this voluntary LER submittal.

## **CAUSE OF EVENT**

The cause of this event is human error. A mathematical error in 1972 resulted in the incorrect recording of personnel exposure for one individual. An underlying cause of this condition is inattention to detail. Had the recorded exposure been checked against the Contractor dosimetry reports, the error may have been identified.

## **SAFETY ASSESSMENT**

As published in 5/21/91 (56FR23391) and implemented at YNPS on January 1, 1994, the regulatory limits for personnel exposure were changed from a quarterly limit of 3 rem/quarter (then 10CFR20.101) to an annual limit of 5 rem/year (10CFR20.2203). Following discovery of this error on 12/6/99, it was determined that this exposure in 1972 did not exceed the current regulatory limit.

## **CORRECTIVE ACTION**

A review of the entire exposure record database has been completed and no other previously unidentified exposures above 3 rem/quarter were found.

No further actions are planned since this event occurred in 1972 and many improvements and enhancements have been made to personnel monitoring programs since then.

## **ADDITIONAL INFORMATION**

None.

## **PREVIOUS SIMILAR EVENTS**

There are no similar events within the last five years.