



CONNECTICUT YANKEE ATOMIC POWER COMPANY

HADDAM NECK PLANT  
362 INJUN HOLLOW ROAD • EAST HAMPTON, CT 06424-3099

October 20, 1997

Docket No. 50-213  
CY-97-108

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

Haddam Neck Plant  
Facility Operating License No. DPR-61  
Reportable Occurrence Licensee Event Report 50-213/97-005-01

This letter forwards Licensee Event Report 97-005-01 submitted, pursuant to the requirements of the Haddam Neck Plant's Technical Specifications.

Very truly yours,  
CONNECTICUT YANKEE ATOMIC POWER COMPANY

G. H. Bouchard  
Unit Director

Enclosures

cc: H. J. Miller, NRC Region I Administrator  
M. B. Fairtile, NRC Senior Project Manager, Haddam Neck Plant  
W. J. Raymond, NRC Senior Resident Inspector, Haddam Neck Plant

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**LICENSEE EVENT REPORT (LER)**(See reverse for required number of  
digits/characters for each block)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 (IT  
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.

FACILITY NAME (1)

Haddam Neck

DOCKET NUMBER (2)

05000213

PAGE (3)

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TITLE (4)

Calibration of Radiation Monitoring System Effluent Monitors Potentially Inadequate

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
02	06	97	97	05	01	10	20	97	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)							
POWER		000	20.2201(b)		20.2203(a)(2)(v)		<input checked="" type="checkbox"/> 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)		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

Scott Herd, Chemistry Manager

TELEPHONE NUMBER (Include Area Code)

(860)267-3544

**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)**

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/> NO	<b>EXPECTED SUBMISSION</b>	MONTH	DAY	YEAR
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**ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)**

On February 6, 1997, at approximately 1400 hours, with the plant defueled, it was determined that the methods used to calibrate the liquid and gaseous radiation effluent monitors were potentially inadequate. On February 6, 1997, at 1639 hours the monitors were declared inoperable and appropriate compensatory sampling was initiated in accordance with the plant's Technical Specifications. Efforts to determine historical operability of the monitors proved inconclusive therefore, on March 3, 1997 it was decided to conservatively report this event under 10CFR50.73(a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications. This LER documents the results of actions taken in response to the initial event report including the results of the root cause analysis and the results of the investigation to determine if the as found settings of the monitors were accurate. Commitments to perform baseline calibration for all monitors have been met. In addition, commitments to modify procedures which employ electronic techniques to calibrate monitors have been met.

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

## BACKGROUND INFORMATION

Technical Specification 3.3.3.7 (Radioactive Liquid Effluent Monitoring Instrumentation) requires that the radioactive liquid effluent monitoring instrumentation be operable with applicable alarm/trip setpoints set to ensure that the concentration of radioactive material released from the site does not exceed the concentrations specified in 10CFR20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases.

Technical Specification 3.3.3.8 (Radioactive Gaseous Effluent Monitoring Instrumentation) requires that the radioactive gaseous effluent monitoring instrumentation be operable with applicable alarm/trip setpoints set to ensure that the dose rate offsite due to radioactive materials released in gaseous effluents from the site do not exceed specified limits.

Technical Specification 4.3.3.7.1 and 4.3.3.8.1 requires channel calibrations of the radiation monitoring system (EHS Code: IL) effluent monitors.

## EVENT DESCRIPTION

On February 6, 1997, at approximately 1400 hours, with the plant defueled, it was determined that the methods used to calibrate the liquid and gaseous radiation effluent monitors were potentially inadequate. On February 6, 1997, at 1639 hours the monitors were declared inoperable and appropriate compensatory sampling was initiated in accordance with the plant's Technical Specifications.

The river effluent monitor (R-18) which monitors service water leaving the plant was upgraded to a new type of monitor on June 29, 1996. During the installation process, the station accepted the vendor's primary calibration transfer data without performing a primary calibration (calibration with standards in a similar geometry to the operating configuration) for verification of the electronic settings provided by the vendor.

The liquid test tank monitor (R-22) had been electronically calibrated on February 1, 1997 without performing a plateau check. Plateau checks are an accepted method used to verify the high voltage bias applied to the detector of the radiation monitor.

The main stack monitor (R-14A) which monitors all gaseous effluents from the facility was upgraded to a new type of monitor on August 4, 1996. During the installation process, the station accepted the vendor's primary calibration transfer data without performing primary calibration (calibration with

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standards in a similar geometry to the operating configuration) for verification of the electronic settings provided by the vendor.

The Wide Range Gas Monitor (R-14B), which is used as a backup to the main stack monitor was last calibrated in November 1996 without performing a plateau check. Plateau checks are an accepted method used to verify the high voltage bias applied to the detector of the radiation monitor.

#### CAUSE OF EVENT

The RMS was upgraded during 1995-1996 including the installation of Victoreen monitors. During this time it was decided that the responsibility for conducting calibration would be transferred from the Chemistry group to the I&C group. As this transition took place, several quality barriers were breached. There was inadequate management / supervisory involvement and poor decision making. There was inadequate follow up on safety concerns from the chemistry group. There was not an adequate PORC review of the calibration procedure. This led to inaccurate calibrations in the field.

#### SAFETY ASSESSMENT

Efforts to determine historical operability of the monitors proved inconclusive, therefore, on March 3, 1997, it was decided to conservatively report this event under 10CFR50.73 (a) (2) (i) (B) as a condition prohibited by the plant's Technical Specifications. It was determined that failure to verify the primary calibrations constituted a missed surveillance.

Calibration of the radiation monitoring system ensures that setpoints can be established to insure all radioactive effluents released from the site are maintained within the specified limits. Since most of the doses associated with effluents are calculated based on source term activities and not monitor readings, the dose limits specified in Technical Specification 3.11.1.1.(Liquid Effluents Concentration) and 3.11.2.1 (Gaseous Effluents Dose Rate) were not exceeded. Exceptions to source term based dose calculations would be an unplanned gas release and venting of the reactor coolant loops during outages. In these cases release permits are prepared based upon monitor response, however source term sampling is performed as soon as practical. Both evolution's represent a small fraction of the total annual dose of the site.

Based on the above, the safety significance of this event is low.

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## CORRECTIVE ACTION

A root cause evaluation was performed which determined the existence of inadequate management control, poor decision making, poor engineering practices, and an inadequate follow up to chemistry group concerns. The recommended corrective actions resulting from the root cause evaluation include RMS hardware modifications, procedural revisions, UFSAR/Technical Specification adequacy reviews to assess conformance to regulatory requirements, and an assessment of PORC effectiveness. Implementation of these recommended corrective actions are expected to prevent the subject calibration inaccuracies from recurring.

An investigation to determine if the as found settings of the monitors were accurate was performed. Several weaknesses in RMS calibrations and poor management decisions resulted in reduced sensitivities and uncertainties in RMS detector results over the years. Although these weaknesses existed, the data obtained during the investigation suggests that all monitors reviewed, except the waste test tank monitor, R-22, were adequate to preclude the release of a significant amount of radioactive material. Significant weaknesses associated with detector R-22, put the operability and accuracy of this detector in question during some periods of plant operation. However, as can be ascertained from the report data, it is unlikely that a significant release occurred from tanks that exceeded regulatory requirements because the effluent water would have been detected by monitor R-18, located downstream of monitor R-22.

Other corrective actions consisted of revising all procedures to meet current industry standards and then performing calibration of all monitors.

## PREVIOUS SIMILAR EVENTS

None.

## ADDITIONAL INFORMATION

The following are commitments made within this report. All other statements are for information only.

CY-97-108-1: The recommendations of the root cause evaluation identified under the "Corrective Action" heading will be implemented.