

NON-PUBLIC?: N  
ACCESSION #: 9307130156  
LICENSEE EVENT REPORT (LER)

FACILITY NAME: THREE MILE ISLAND - UNIT 2 PAGE: 1 OF 05

DOCKET NUMBER: 05000320

TITLE: FAILURE TO OBTAIN WEEKLY TRITIUM GRAB SAMPLES OF  
CHEMICAL  
CLEANING BUILDING EXHAUST  
EVENT DATE: 06/01/93 LER #: 93-002-00 REPORT DATE: 06/30/93

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR  
SECTION:

OTHER - Special Report

LICENSEE CONTACT FOR THIS LER:

NAME: John S. Schork - TMI Licensing TELEPHONE: (717) 948-8832  
Engineer

COMPONENT FAILURE DESCRIPTION:

CAUSE: SYSTEM: COMPONENT: MANUFACTURER:  
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On June 1, 1993 during the performance of 4210-SUR-3526.01, "EPICOR Exhaust Sampling," the health physics technician observed that the sample chamber in the sampling device was essentially empty of water. The lack of water in the sampling apparatus sample chamber rendered the device inoperable, i.e., the ability to retrieve the tritium grab sample was lost. No sample was taken for the month of May, 1993 as required in the Offsite Dose Calculation Manual (ODCM, Section 3.1.J and Table 3.1-3. Upon discovery of the empty sampler, TMI Radiological Controls Field Operations and Engineering personnel conducted a review of the sample chamber changeout procedure and Tritium bubble sample technique. The root cause of the event was inadequate monitoring of the Tritium sample apparatus sample chamber operability. Specifically, the status of the Tritium sample apparatus was not inspected on a weekly basis to ensure

its continued operability. Radiological Controls has initiated weekly inspections of the Tritium sample apparatus as a corrective action to preclude recurrence of this event.

END OF ABSTRACT

TEXT PAGE 2 OF 5

## I. PLANT OPERATING CONDITIONS BEFORE THE EVENT

The TMI-2 facility was in Mode 3. The TMI-2 EPICOR II system was shutdown at the time of the discovery of the "dry" sample chamber but the Chemical Cleaning Building (CCB) system exhaust ventilation system was operating. The EPICOR II system and the CCB exhaust ventilation system had been operated during the month of May, 1993, the sampling period.

## II. STATUS OF STRUCTURES, COMPONENTS, OR SYSTEMS THAT WERE INOPERABLE AT THE START OF THE EVENT AND THAT CONTRIBUTED TO THE EVENT

N/A

## III. EVENT DESCRIPTION

On June 1, 1993, a TMI-2 Radiological Controls technician initiated performance of 4210-SUR-3526.01, "EPICOR Exhaust Sampling." The TMI ODCM, Section 3.1.2.2.J, Table 3.1-3 and footnote b to Table 3.1-3 specify that Tritium grab samples shall be taken at least once per 7 days from the ventilation exhaust of the CCB (the CCB contains the EPICOR II water purification system and the terms EPICOR and CCB are often used interchangeably for the same structure) and analyzed at least monthly.

The method selected by TMI Radiological Controls for complying with this requirement has been to continuously sample the Chemical Cleaning Building (EPICOR) exhaust ventilation for Tritium by taking a slipstream flow from the exhaust ventilation and "bubbling" it through a water volume in a sample chamber. The water in the sample chamber is changed out on a monthly basis and the analysis of the Tritium in the sample chamber water is used to determine the release rate of the Tritium via the building exhaust. This sampling and analysis method has been successfully used to comply with surveillance requirement for several years.

During the performance of the surveillance, the Radiological

Technician performing the changeout of the water in the sample chamber found the container had essentially no water. Therefore, there was no Tritium sample obtained from the exhaust ventilation of the CCB for the month of May, 1993.

TEXT PAGE 3 OF 5

Radiological Controls and TMI-2 Operations and Maintenance initiated a review of the sample changeout procedure and the Tritium "bubbler" sampling technique to determine the root cause of the event. This review was unable to identify the cause of the dry sample chamber. Two potential causes investigated were failure to refill the sample chamber at the beginning of the month of May or sampler flowrate was established at an excessive level which resulted in "dry-out" of the sample water volume.

It was judged unlikely that the sample chamber was not refilled because the surveillance procedure requires a step sign-off for the refill of the chamber and the step was signed off. In addition, the labelled and dated container which was used to refill the sample chamber in early May was retrieved. It was moist on the inside, indicating that it had contained water.

It is possible that the sampler flow rate during the month of May was above the usual flow rate of 75 cc/min. This could have been caused by either an incorrect setting or a drift in the setting. A significantly higher sampling flow rate could cause sample dryout. However, as with the refill of the sample chamber, there is a sign-off step requiring the setting of the 75 cc/min flow rate in the surveillance procedure and the step was signed off. Thus, it is judged to be unlikely that the sample flow rate was incorrectly set.

Although it was not possible to determine the cause of the dry sample chamber, it was possible to determine the root cause of the event. The event was the failure to comply with the surveillance requirement in the ODCM that requires, at a minimum, weekly grab samples with a minimum monthly analysis. Use of the Tritium "bubbler" sampling apparatus to obtain continuous "grab" samples, with monthly analysis of the sample, had been used for several years to comply with the surveillance requirement. Weekly monitoring of the CCB exhaust ventilation Tritium sampler was not believed to be necessary until the occurrence of this event because of several years of successful sampling using only monthly sample changeouts. However, if the sampling apparatus had been monitored on a weekly basis, any problem with the sample chamber would have been observed in time for a weekly grab sample to be taken. Therefore, the root cause of this event was

inadequate monitoring of the sampling apparatus.

This event is not similar to previous events involving the failure to perform surveillances in a timely manner.

TEXT PAGE 4 OF 5

#### IV. ROOT CAUSE OF THE EVENT

The root cause of this event was a procedural inadequacy. TMI-2 Surveillance Procedure 4210-SUR-3526.01, "EPICOR Exhaust Sampling" does not require weekly monitoring of the Tritium sampling apparatus. Weekly monitoring of the sampling apparatus would have detected any problem with the sample chamber water volume and allowed for sufficient time to obtain a grab sample and therefore comply with the surveillance procedure.

#### V. CORRECTIVE ACTIONS

Immediate

Upon discovery of the "dry" sample chamber, a 24 hour grab sample was taken of the CCB exhaust ventilation. In addition, TMI Radiological Controls performed a review of the cause of the event. As a result of that review, TMI Radiological Controls initiated weekly monitoring of the CCB Tritium sampler apparatus to ensure proper water level.

Long-Term

TMI Radiological Controls will modify the surveillance procedure 4210-SUR-3526.01, "EPICOR Exhaust Sampling" to incorporate the weekly surveillance requirement. There are no other Tritium sampling requirements in the TMI ODCM that require weekly grab samples and monthly analysis.

#### VI. COMPONENT FAILURE DATA

N/A

#### VII. AUTOMATIC OR MANUALLY INITIATED SAFETY SYSTEM RESPONSES

N/A

TEXT PAGE 5 OF 5

#### VIII. ASSESSMENT OF THE SAFETY CONSEQUENCES AND IMPLICATION OF

## THE EVENT

Because of the very low amounts of Tritium released via the CCB exhaust ventilation, the failure to measure the effluent airborne Tritium during the month of May, 1993, has no significant consequences or implications and posed no hazard to the health and safety of the public. A review of EPICOR operating records for the month of May showed minimal operation of the system. In its years of operation, this system has processed much larger quantities of water over a monthly period, with significantly higher concentrations of tritium and the Tritium releases from this building have historically been a very small fraction (0.01%) of allowable limits.

The volume of water processed by EPICOR in May was approximately half of the volume processed in April. The tritium concentration in the water processed during both months was essentially the same. Based on this data, it is reasonable to conclude that the amount of tritium released from the CCB in May was not significantly different from that released in any of the previous months in 1993 and posed no hazard to the health and safety of the public.

The TMI ODCM requires that Tritium releases from the CCB be reported as part of the Annual Effluent Report. In order to conservatively estimate the Tritium released from the CCB during the unmonitored month of May, the highest monthly report of airborne Tritium concentration measured in the effluent from this building in 1993 will be used as a conservative estimate for of the month of May for the data in the annual effluent report.

## IX. PREVIOUS EVENT OF A SIMILAR NATURE

None.

ATTACHMENT 1 TO 9307130156 PAGE 1 OF 1

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US Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Three Mile Island Nuclear Station Unit 2 (TMI-2)  
Operating License No. DPR-73

Docket No. 50-320  
Special Report 93-02

Dear Sir:

Attached is Special Report 93-02 concerning the failure to obtain weekly Tritium grab samples from the Chemical Cleaning Building.

This event is being submitted as a Special Report pursuant to Part II Section 2/3.03 of the TMI Offsite Dose Calculation Manual and TMI-2 Technical Specification 6.9.2.

Sincerely,

R. L. Long  
Director, Services Division

JSS/dlb  
Attachment  
cc: M. G. Evans - Senior Resident Inspector, TMI  
T. T. Martin - Regional Administrator, Region I  
M. T. Masnik - Project Manager, PDNP Directorate  
L. H. Thonus - Project Manager, TMI Site

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