

PR

Integrated Action Item Database Revision Form

PR96.0096.01

Extension: 0

EVALUATION

Date: 03/20/96

Responsible Manager: ~~PERITO, M.~~ G. DYCKMAN

Status: ~~OPEN~~ CLOSED

Division: PLANT

Significance: 2

Department: OPS

Priority: A

Sub Division:

Doc Type/Number: RPR

Title

WATER SAMPLE FROM TORUS ROOM FLOOR SHOWS HIGH TRITIUM LEVELS INDICATIVE OF PROCESS SYSTEM LEAKAGE

Rec'd Date: //	Due Date: 04/27/96
Assign Date: 03/20/96	Dead Date: 05/27/96
Start Date: 03/27/96	Completion Date: //

Action

- CONDUCT AN EVALUATION TO DETERMINE THE CAUSE OF THE WATER FOUND ON THE TORUS ROOM FLOOR. DETERMINE CORRECTIVE ACTIONS AND ACTIONS TO PRECLUDE RECURRENCE.

Closure Requirements

- COMPLETE EVALUATION PER NOP92A1, SECTION 6.4

Notes

Basis for Change(s)

SEE ATTACHED

ENTERED

Change(s) Approved By: T. WHITE Date: 11/21/96

Manager

Change(s) Accepted By: [Signature] Date: 11/21/97

PR Coordinator

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Action Plan to Determine Cause of Water on the Torus Room Floor

Problem Report Action Item

PR 96.0096 was written on March 19, 1996, after ponded water on the torus room floor was sampled in Bay #6 and found to contain tritium, indicative of process water. The tritium concentration was $1.10E-4$ micro Ci/ml ($\pm 4.9E-7$). An action item was assigned as follows: "Conduct an evaluation to determine the cause of the water found on the torus room floor. Determine corrective actions and actions to preclude recurrence."

Background

Water on the torus room floor has been a chronic condition over the years and subject to numerous evaluations (Attachment A). The most probable cause is believed to be groundwater intrusion which has by-passed the waterproof membrane encapsulating the substructure of the Reactor Building and adjacent buildings. This is based on the following facts:

- The groundwater table is estimated to be at EL +1 ft. or higher around the Reactor Building (Ref. #1).
- We have experienced similar groundwater intrusion in the Radwaste Building control room and corridor at EL -1 ft. at the expansion joint in the abutting floor slabs of the Radwaste/Reactor Building, and the Radwaste/Turbine Buildings respectively. This was corrected by a modification (Ref. #2).
- We have experienced known process water leaks (e.g. torus trough overflow, torus bottom drains leakage, etc.) in past years which have been corrected and are believed not to be recurring. A walkdown performed by Operations on 3/27/96 found no evidence of process water leaks onto the floor (Ref.3).
- We have investigated the drywell air gap drains which discharge onto the torus room floor between Bays #6&7, and 14&15, in response to NRC Generic Letter 87-05 and past inspections during RFO's concluded that these are dry (Ref. 4). Inspections for such leakage during RFO's is an NRC commitment contained in our GL 87-05 response letter.
- Walkdowns performed on 10/21/96 after a weekend of intense rainfall (4 to 6 inches) and again on 10/28/96 found no differences in the observations made 10/28/96 (Ref. 3). Bays #5,6,10 and 11 had ponded water at the low point of the floor under the torus invert, and Bay 15 appeared to be damp. In some cases the ponded water seems to have flowed across the sloped floor from the direction of the drywell pedestal.

Current Situation

A definitive cause for the torus room ponded water has not previously been pursued because the consequences of the ponded water have been acceptable (i.e. no significant structural degradation to the

Exhibit 4
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concrete or torus, and no ALARA impact), and the dollar and dose cost of further evaluation and/or corrective actions were considered to be of limited benefit. The presence of tritium in the ponded water raises new questions:

1. Can the seepage on the floor be traced to a point of entry in the concrete structure or to a process component?
2. Is the initial test that identified tritium in the ponded water repeatable?
3. Is the tritium concentration in the ponded water the same as in the air?
4. Could the tritium be a residual product from a previous process water spill?
5. Could the tritium result from an undetected process water leak in the torus room?
6. Could the tritium result from a process water leak into the ground from a component which is outside the Reactor Building, migrating into the torus room through the groundwater?

Data Gathering

A data gathering program will be conducted to attempt to answer these questions. This will be performed in phases consistent with safety significance and ALARA objectives, and to make the most effective use of resources and dose budgets. The results from each phase will be reviewed to determine necessity and scope of additional phases.

Phase I

Additional information is needed to characterize the nature and potential significance of the tritium in the sample which lead to this PR. This initial phase is designed to provide input to respond to questions 1, 2 and 3. A sampling plan is proposed as follows to begin after the torus de-sludge in RFO #11:

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AI.01⁰¹ (NESG - G. Dyckman). Perform a detailed visual inspection of the concrete floor and wall surfaces for a full 360 degrees under the torus and adjacent to the drywell pedestal to see if the seepage on the floor be traced to a point of entry in the concrete structure or to a process component.

AI.02⁰² (Plant Services - D. Sukanek) After completion of AI.01, clean up the existing ponded water and damp areas in Bays #5,6,10,11 and 15. decontaminate the concrete surfaces and dry the floor.

AI.03⁰³ (Operations - T. Trepanier) Perform inspections of Bays #5,6,10,11 and 15, during routine operator tours. If seepage on the floor is observed, notify NESG.

* AI.04⁰⁴ (Chemistry - D. Fountain) When directed by NESG pursuant to AI.03, obtain samples and test for tritium concentrations and for any other characteristics indicative of a process stream origin. Concurrently, obtain air humidity sample from the torus room. Test these samples for tritium concentrations.

* AN ACTION ITEM FOR CHEMISTRY TO PERFORM SAMPLING IS NOT REQUIRED. THIS ACTION WILL BE COORDINATED BY ENGINEERING ON AN AS NEEDED BASIS. *J. Smith 2/17/97*

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Attachment A: Previous Evaluations of Water on the Torus Room Floor

1. Memo "Torus Water In-Leakage", RED 92-06, dated 1/23/92, to C. E. Bowman from G. W. Vazquez
2. Memo ERM 89-857, dated 9/15/89, to R. N. Swanson from J. G. Dyckman
3. Memo "Final Response to ROR 89-02-10-0015", TCH 89-121, dated 6/27/89, to W. A. Mauro from P. D. Smith
4. Memo "ROR 89-02-10-0015, Water Leakage Collecting on Torus Room Floor", TCH 89-52, dated 3/20/89, to W. A. Mauro from P. D. Smith
5. Memo "Groundwater Leakage into Torus Compartment", NOS 82-162/CSG 82-85/NED 82-166, dated 3/18/82, to R. D. Machon from R. M. Butler
6. Memo "Disposition of F&M #81-176", DM 82-75/CSG 82-50/NED 82-115, dated 2/25/82, to R. D. Machon from R. M. Butler

Attachment B: Reference Documents

1. SUDDS/RF 90-77, Analysis of Groundwater Levels by GEI, dated 2/28/83.
2. FRN 92-01-11 for repair of Radwaste Building corridor expansion joint
3. PR 96.0096 Notes by M. Perito, 3/28/96, documenting a 3/27/96 torus inspection.
4. BECo Letter 87-074, Response to GL 87-05, dated 5/11/87
5. Specification No. 6498-C-22, Waterproof Membrane (Sub-Grade Liner Type)
6. Memo "Torus Buttress Repairs I-82-56-177B", SP 477, dated 10/12/82, to R. M. Butler from H. F. Brannan

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