

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) THREE MILE ISLAND, UNIT 1 DOCKET NUMBER (2) 050002891 OF 05

TITLE (4) Misplugged Steam Generator Tube

EVENT DATE (5)			LER NUMBER (8)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)
06	02	83	84	004	00	08	04	07	84		05000
											05000

OPERATING MODE (9) N

POWER LEVEL (10) 000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)

20.402(b)	20.406(i)	50.73(a)(2)(v)	73.71(b)
20.406(a)(1)(i)	50.36(e)(1)	50.73(a)(2)(v)	73.71(e)
20.406(a)(1)(ii)	50.36(e)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 306A)
20.406(a)(1)(iii)	X 50.73(a)(2)(ii)	50.73(a)(2)(viii)(A)	
20.406(a)(1)(iv)	50.73(a)(2)(iii)	50.73(a)(2)(viii)(B)	
20.406(a)(1)(v)	50.75(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME R. A. SZCZECH, TMI-1 LICENSING ENGINEER TELEPHONE NUMBER 717 948-8833

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)

YES (If yes, complete EXPECTED SUBMISSION DATE)  NO  X

EXPECTED SUBMISSION DATE (15)

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

Subsequent to the performance of a bubble test on the "A" Steam Generator (OTSG) (IEEE Std. 803A Code "SG") on June 25, 1984, it was discovered that tube #A-135-72 was not plugged although it was required to be plugged in June of 1983. An adjacent tube (IEEE Std. 803A Code "TBG") (#A-134-74), which was not required to be plugged, was discovered plugged. Tube #A-134-74 was apparently mistakenly plugged while tube #A-135-72 was left unplugged.

A complete photographic reverification of all plugged tubes containing Westinghouse rolled plugs and B&W welded plugs was performed and no other incidents of tube misplugging were found. Tube #A-135-72 was plugged with manually welded plug (IEEE Std. 803A Code "CON").

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TEXT (If more space is required, use additional NRC Form 305A's) (17)

ONCE THROUGH STEAM GENERATOR "A" (OTSG) TUBE MISPLUGGING

I. PLANT CONDITIONS BEFORE THE EVENT:

TMI-1 was in a COLD SHUTDOWN condition. The Reactor Coolant System (RCS) (IEEE Std. 805 Code "AB") had been drained and depressurized to investigate a primary-to-secondary leakage increase on the B OTSG.

II. STATUS OF STRUCTURES COMPONENTS OR SYSTEMS:

The A and B OTSG secondary sides were in a full wet layup condition. When the RCS was pressurized to about 300 psig, an increase in primary-to-secondary leakage was noted on the B OTSG. The RCS was depressurized and drained and the A and B OTSG upper heads opened. "Bubble" tests were then performed on the A and B OTSG's upper tubesheets and a "drip" test was performed on the lower tubesheet of "B" OTSG.

III. EVENT DESCRIPTION:

During the bubble test on the A OTSG on June 25, 1984, a Westinghouse rolled plug (W) was found in tube #A-65-38 which should not have been plugged. Subsequent investigation revealed that the upper end of tube #A-135-72 was not plugged, although it was required to be plugged by a (W) plug June 2, 1983. To correct these problems, the upper end of #A-135-72 was plugged by a manually welded plug and the (W) plug in #A-65-38 was removed.

Cross-referencing of the batch serial no. of the removed (W) plug revealed that the plug could not have come out of #A-135-72. Because of the batch serial number mismatch, a 100% visual inspection using existing and additional sets of photographs was performed. This inspection then revealed the following:

- a.) #A-134-74, which was never scheduled to be plugged, was found to have a Westinghouse rolled plug.
- b.) #A-148-35, which was scheduled to be plugged, was found to be unplugged although earlier post-installation photographs showed it to be correctly plugged. Batch serial number for the plug found in #A-65-38 matched that batch number used for plugging #A-148-35. To correct this, tube #A-148-35 was plugged.

The scenario with respect to #A-134-74 and #A-135-72 is apparently as follows:

- a.) Tube #A-135-72 was originally plugged with a Westinghouse rolled plug in March, 1983.

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TEXT (If more space is required, use additional NRC Form 388A's) (17)

b.) During testing of the OTSG in April 1983, the plug was found to require replacement.

c.) The existing plug was pulled by Westinghouse on June 2, 1983. For some reason, an adjacent tube (#A-134-74) was plugged. #A-134-74 is one row and one tube away from #A-135-72.

During the pulling/replugging evolution, #A-135-72 was properly identified and the existing (W) plug was removed. Following removal, the worker apparently lost the identity of the tube and mistakenly plugged the immediately adjacent tube #A-134-74. Each tube (#A-135-72 and #A-134-74) is seven tubes away from the end of the row. Following tube plugging, the location of the plug was verified again by Site Quality Control, but for the reasons noted above, the misplugging was not noticed. This event was determined to be reportable on 07/06/84 in that the misplugging was found to be in non-compliance with Tech. Spec. 4.19.4.b surveillance requirements for declaring the OTSG's operable prior to exceeding 250 degrees F in the RCS. This condition is now found to have existed during the hot functional testing conducted from August to October, 1983 and again in May, 1984. This event was determined reportable per 10 CFR 50.73 a.2.i.B.

As noted above, following identification of the misplugging, a 100% photographic reverification of all (W) and welded plugs was performed in the "A" OTSG upper tubesheet. No additional plugging errors were found.

The apparent scenario with respect to #A-65-38 and #A-148-35 is that the plug originally installed in #A-148-35 came out and somehow re-located itself into the #A-65-38 tube location. Later, photographic verification of the lower tube sheets revealed 5 additional (W) plugs that were installed in correct tubes in the lower tubesheets are now found to be missing for unknown reasons. (Tube numbers A-10-62, A-133-77, A-134-73, B-12-51, and B-42-16). These tubes are addressed in GPUN Letter 5211-84-2184 dated July 18, 1984, and will be the subject of future correspondence.

IV. COMPONENT FAILURE DATA

Not Applicable

V. SAFETY SYSTEM RESPONSES:

None.

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VI. ASSESSMENT OF SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT:

Since the RCS was drained down with the manways open, there would have been no safety consequences at the time of detection.

The lowest (elevation) of multiple eddy current indications, in the OTSG A tubes with 90-95% through wall defects, were at 5" to 6" above the secondary face of the upper tubesheet. These tubes received 22" kinetic expansions. Since the tubesheet is 24" thick, there exists about a 3" to 4" kinetic expansion below these defects.

Tube severance due to defect propagation is unlikely as the tube is held both above and below the defect by the kinetically expanded region, and is, therefore, protected from all bending and most axial loading. Even assuming that the defect propagates to a full guillotine break, the tube end would still be captured within the tubesheet. This would prevent whipping and limit leakage with time, to be detected by our leakage monitoring program. It should be noted that these tubes exhibited no leakage during bubble testing even though they were unplugged.

Similarly, the two OTSG "B" tubes in question and Tube #A-148-35 had been plugged as required by Technical Specification 4.19.4.b but contained neither 100% through wall eddy current indications below the kinetic expansion joints nor did they leak during the June, 1984 bubble/drip tests. These 2 OTSG "B" tubes both contained eddy current indications analyzed at only 50-60% through wall between the 13th and the 14th tube support plates. Tube #A-148-35 had a 60% O.D. through wall eddy current indication at the 10th support plate.

VII. PREVIOUS EVENTS OF A SIMILAR NATURE

None.

VIII. CORRECTIVE ACTION:

- 1.) The upper end of #A-135-72 was plugged by a manually welded plug.
- 2.) A complete photographic reverification of all plugged tubes containing (W) rolled plugs and B&W manually welded plugs in the remaining heads was performed.

We have determined this undetected misplugging error to have been an isolated occurrence because no other misplugged errors were found from these photographic reviews and because all other misplugged errors had been identified and corrected prior to the completion of the plug installation procedures.



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TEXT (If more space is required, use additional NRC Form 308A's) (17)

- 3.) A test program is being developed by GPUN Technical Functions in conjunction with Westinghouse to provide added assurance that the remaining installed Westinghouse rolled plugs are securely installed. The results of this installed rolled plug test program will be provided to the NRC upon completion of on-site testing.
  
- 4.) A safety evaluation is being prepared by GPUN Technical Functions in conjunction with B&W to confirm the preliminary evaluation that the likely presence of the 5 missing rolled plugs in the bottom of the reactor vessel will not impair the thermal hydraulic performance of the reactor.



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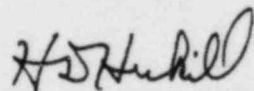
Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)  
Operating License No. DPR-50  
Docket No. 50-289  
LER 84-004-0

This letter transmits Licensee Event Report (LER) No. 84-004-0 which deals with a misplugged Steam Generator tube.

This LER is being submitted pursuant to 10CFR 50.73, using the required NRC forms (attached). NRC Form 366 contains an abstract which provides a brief description of the event. For a complete understanding of the event, refer to the text of the report which appears on Form 366A. This LER is being submitted one day late as discussed with F. Young, NRC.

Sincerely,

  
H. D. Hukill  
Director, TMI-1

HDH:RAS:vjf

Enclosure

cc: Dr. T. E. Murley  
R. Conte  
J. Van Vliet

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