

NON-PUBLIC?: N
ACCESSION #: 8806170134

LICENSEE EVENT REPORT (LER)

FACILITY NAME: Three Mile Island Unit 2 PAGE: 1 of 5

DOCKET NUMBER: 05000320

TITLE: Procedural Non-Compliance During Operation of the XY Bridge Flush Wand
EVENT DATE: 05/13/88 LER #: 88-009-00 REPORT DATE: 06/10/88

OPERATING MODE: N POWER LEVEL: 000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION
50.73(a)(2)(ii)

LICENSEE CONTACT FOR THIS LER:

NAME: Russell D. Wells, TMI-2 Licensing Engineer TELEPHONE #: 717-948-8461

COMPONENT FAILURE DESCRIPTION:

CAUSE: X COMPONENT: P MANUFACTURER: 6200 REPORTABLE TO NPRDS:
N

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: At approximately 0722 hours on May 13, 1988, a flush of the X-Y Bridge, which positions the plasma arc torch, was being performed in the TMI-2 Reactor Vessel (RV) using the X-Y Bridge Flush Wand. This activity was being directed by a Task Supervisor, stationed in the Command Center, and a Lead Engineer, station in the Reactor Building (RB). The Task Supervisor was directing this activity per Operation Procedure 4210-OPS-3255.29. This procedure requires that the flush wand be connected to the water jet supply pump, VAC-P1, which is submerged in the RV. However, at the time of the event, VAC-P1 was inoperable; thus, the Task Supervisor and Lead Engineer decided to perform the flushing operation using the Borated Water Storage Tank (BWST)/Fuel Transfer Canal Fill (FCC) System as the source of flush water. The BWST/FCC System is not authorized for this activity; thus, this event is reportable per 10 CFR 50.73(a)(2)(ii)(c). Pump VAC-P1 was returned to service on May 27, 1988. This event is being discussed with the Task Supervisor, the Lead Engineer, and other personnel who may engage in similar type activities. The referenced operating procedure is being revised to allow use of an alternative borated water supply for this activity.

(End of Abstract)

I. PLANT OPERATING CONDITIONS BEFORE THE EVENT

The TMI-2 facility was in a long-term cold shutdown state; the defueling evolution was in progress. The reactor decay heat was being removed via loss to ambient. Throughout this event there was no effect on the Reactor Coolant System (RCS) or the core.

The Automated Cutting Equipment System (ACES), which includes the plasma arc torch, is being used in the Reactor Vessel (RV IEEE Code 805-AB) to disassemble RV structural components. The plasma arc torch is positioned by means of an X-Y Bridge which is located in the RV during plasma arc torch operations. At the start of this event, the X-Y Bridge was in the process of being removed from the RV following operation of the plasma arc torch. The removal of the X-Y Bridge does not constitute a Core Alteration; thus, this activity was being performed under the direction of a Task Supervisor stationed in the TMI-2 Command Center and a Lead Engineer stationed in the TMI-2 Reactor Building (RB). If required, the X-Y Bridge is cleared of debris by means of flushing prior to removal from the RV per Operating Procedure 4210-OPS-3255.29, "Automatic Cutting Equipment System Operation." The procedural required configuration for the X-Y Bridge Flush Wand is provided in Attachment 2.

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

The water jet supply pump, VAC-P1 (see Attachment 2), was out-of-service at the time of this event due to a leak in the supply hose of the pump. VAC-P1 is a submersible pump located in the RV to provide Reactor Coolant System (IEEE Code 805-AB) grade water to the X-Y Bridge Flush Wand. The RCS is borated to a concentration of 4350-6000 ppm per the TMI-2 Technical Specifications which assures subcriticality under all credible conditions.

III. EVENT DESCRIPTION

During the 2300-0700 shift, commencing on May 12, 1988, the X-Y Bridge was being removed per Special Operating Procedure (SOP) 4730-3255-88-R670, "ACES Equipment Installation." The Task Supervisor was directing the Lead Engineer in the performance of this activity in accordance with Section 4.6, "X-Y Bridge Removal," of this SOP. Section 4.6.3 of the SOP states: "Verify the X-Y frame is clear

of any debris which could interfere with delivery tool engagement. If necessary, flush off debris using X-Y Bridge Flush Wand per 4210-OPS-3255.29."

It was determined that flushing of the X-Y Bridge was required and the Task Supervisor commenced directing the Lead Engineer in the performance of this activity per Section 6.3.3.10, "X-Y Bridge Flush Wand," of the referenced operating procedure. This procedure clearly requires that the X-Y Bridge

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Flush Wand is to be connected to the water jet supply pump, VAC-P1, and refers to a diagram of the procedural required configuration (Attachment 2). Additionally, Section 6.3.3.10.4 of this operating procedure requires, prior to operating the X-Y Bridge Flush Wand, a hand-over-hand walkdown of the flush wand supply hose to verify that a substitute water source has not been inadvertently connected.

The Task Supervisor properly referred to the figure shown in Attachment 2 and, as described in Section II of this report, noted that VAC-P-1 was out of service. The Task Supervisor and Lead Engineer decided to operate the X-Y Bridge Flush Wand using the Borated Water Storage Tank (BWST) System/Fuel Transfer Canal Fill (FCC) System as the source of flush water. However, the Task Supervisor failed to refer to Section 6.3.3.10.4 of the operating procedure which would have indicated that this water source is not permitted by this procedure.

The flush of the X-Y Bridge was performed using the X-Y Bridge Flush Wand with a water source not permitted by the plant's operating procedures. Thus, this event is reportable pursuant to 10 CFR 50.73(a)(2)(ii)(c) due to the "nuclear power plant being in a condition not covered by the plant's operating procedures."

This event was identified by a Fuel Handling Senior Reactor Operator (FHSRO) during the flush of the X-Y Bridge at approximately 0722 hours on May 13, 1988. The FHSRO questioned the methodology for performing the flush and, after reviewing the above referenced procedures, it was determined that the flush of the X-Y Bridge was not being performed in accordance with the referenced procedures. The flush was terminated and the Control Room was notified.

IV. ROOT CAUSE OF THE EVENT

The root cause of this event was personnel error by the Task Supervisor due to failure to properly follow procedures. The referenced

procedures were very specific as to the configuration for flushing the X-Y Bridge and also required verification that a substitute water source was not being used. The Task Supervisor failed to recognize the procedural requirement prior to performing the flushing operation. Additionally, the Lead Engineer should have been cognizant of the procedural requirements, based on the pre-job briefing, and also should have recognized that a substitute water source was not permitted by the referenced operating procedure.

The Task Supervisor and Lead Engineer apparently felt justified in utilizing the X-Y Bridge Flush Wand with the BWST/FCC System in this event since the BWST/FCC System is utilized for flushing defueling tools as they are removed from the RV per Operating Procedure 4210-OPS-3254.01, "SF-P-2 Operations." However, use of the BWST/FCC System for flushing the X-Y Bridge was not permitted for flushing the X-Y Bridge in the RV since it

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does not satisfy the requirements of the TMI-2 Boron Hazards Analysis (BHA) which provides controls for preventing and detecting a boron dilution event. The ACES Operating Procedure specifies that only RV water, via VAC-P1, is to be used for flushing the X-Y Bridge and further requires verification of this configuration to preclude the inadvertent use of a substitute water source.

V. CORRECTIVE ACTIONS

Immediate

Upon identification of this event, the flushing activity was terminated and the Control Room was notified.

The water jet supply pump, VAC-P1, was returned to service on May 27, 1988.

Long-Term

This event will be reviewed with the Task Supervisors, the Lead Engineers, and other personnel who may perform similar activities described in this event. This review will emphasize that proper use and compliance with procedures is mandatory and that deviation from procedures must be performed via the procedure change system. Additionally, the review will emphasize that procedural required systems for introducing fluids in the RV are designed to prevent the potential for a boron dilution event and that substitute

systems for introducing fluids in the RV are not to be utilized unless they have been specifically evaluated and approved for the planned activity.

Operating Procedure 4210-OPS-3255.29 is being revised to allow use of the Defueling Water Cleanup System (DWCS) as an alternative system to supply borated water to the X-Y Bridge Flush Wand. Use of the DWCS with additional deboration controls via the X-Y Bridge Flush Wand has been evaluated and determined to be consistent with the BHA.

VI. COMPONENT FAILURE DATA

Water Jet Supply Pump, VAC-P1, manufactured by Goulds Pumps, Inc., Model - 13EM054

Supply Hose is a double-braided, one (1) inch diameter rubber hose (no make or model number.)

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VII. AUTOMATIC OR MANUALLY INITIATED SAFETY SYSTEM RESPONSES

N/A

VIII. ASSESSMENT OF THE SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

Normally the BWST is utilized to supply borated water to the FCC manifold on the Defueling Work Platform for flushing defueling tools as they are removed from the RV. At the time of this event the BWST was the only source of water to the FCC manifold. The BWST is a source of makeup water to the RV; it is borated to a concentration of 4350 - 6000 ppm as required by the TMI-2 Technical Specifications. This boron concentration ensures that the fuel in the TMI-2 RV would remain subcritical under all credible fuel configurations. During and following this event, no reduction in boron concentration was detected via plant monitors or during Technical Specification required sampling. Thus, this event did not affect the health and safety of the public.

ATTACHMENT # 1 TO ANO # 8806170134 PAGE: 1 of 1

ATTACHMENT 2
4410-88-L-0095

XY Bridge Flush Wand Tool

FIGURE OMITTED - NOT KEYABLE (DRAWING)

ATTACHMENT # 2 TO ANO # 8806170134 PAGE: 1 of 1

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June 10, 1988
4410-88-L-0095/0396P

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

Dear Sirs:

Three Mile Island Nuclear Station, Unit 2 (TMI-2)
Operating License No. DPR-73
Docket No. 50-320
Licensee Event Report 88-09

Attached is Licensee Event Report 88-09 concerning the operation of the X-Y Bridge Flush Wand on May 13, 1988, which resulted in a condition not covered by the plant's operating procedures.

This event is considered reportable pursuant to Title 10 of the Code of Federal Regulations, Section 50.73(a)(2)(ii)(c).

Sincerely,

/s/
for F. R. Standerfer
Director, TMI-2

RDW/emf

Attachment

cc: Senior Resident Inspector, TMI - R. J. Conte
Regional Administrator, Region 1 - W. T. Russell

Director, Plant Directorate IV - J. F. Stolz
Systems Engineer, TMI Site - L. H. Thonus

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