NON-PUBLIC?: N
ACCESSION #: 8902270635
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Three Mile Island Unit 2 PAGE: 1 of 4

DOCKET NUMBER: 05000320

TITLE: Performance of a Core Alteration without the Supervision of a Fuel Handling SRO.
EVENT DATE: 01/20/89 LER #: 89-001-00 REPORT DATE: 02/17/89

OPERATING MODE: N POWER LEVEL: 000

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

LICENSEE CONTACT FOR THIS LER:
NAME: Russell D. Wells, TMI- 2 Licensing Engineer TELEPHONE: 717-948-8461

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE TO NPRDS:

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

January 20, 1989, the Midi Air-Lift (MAL) Vacuum System was being removed from the TMI-2 Reactor Vessel (RV). This activity was being performed under the direction of a Task Supervisor stationed in the Coordination Center. A Fuel Handling Senior Reactor Operator (FHSRO) was on duty to supervise Core Alterations (i.e., movement of fuel within the RV), as defined in the TMI-2 Technical Specifications (Tech. Spec.). However, the FHSRO was not in the Coordination Center at the time of the event. The MAL had been operated for approximately two (2) hours during the previous shift and no noticeable increase in the weight of the MAL debris bucket was observed suggesting no significant quantity of core debris had been collected. In preparation for removal of the MAL, the debris bucket was removed from the MAL. When the bottom door of the debris bucket was opened, personnel stationed in the vicinity of the RV observed an unknown quantity of core debris fall from the debris bucket into the RV. Table 6.2-1 of the Tech. Specs. requires a Core Alteration to be directly supervised by an Senior Reactor Operator (SRO) or an FHSRO. Thus, this event is reportable pursuant to 10 CFR50.73(a)(2)(i)(B) due to the existence of a condition prohibited by the plant's Tech. Specs. The root cause of this event

was personnel error by the duty Task Supervisor and FHSRO in that they jointly failed to adequately communicate which resulted in the failure to properly assess plant conditions which provided reasonable evidence that removal of the MAL could constitute a Core Alteration. This event is being reviewed with all Task Supervisors and FHSROs.

This LER is similar in nature to LER 86-05.

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. Defueling operations were in progress; Lower Core Support Assembly (LCSA) fuel debris was being removed by the Midi Air Lift (MAL) Vacuum System (no applicable IEEE Code). The MAL Vacuum System is a vacuum device that introduces air bubbles into a suction hose causing a rising flow of water and entrained debris through the hose for collection into a debris bucket.

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

This event involves a Core Alteration performed without the direct supervision of a dedicated Senior Reactor Operator (SRO) or a Fuel Handling SRO (FHSRO), as required by Table 6.2-1, "Minimum Shift Crew Composition," of the TMI-2 Technical Specifications (Tech. Specs.) TMI-2 Tech. Spec. 1.15 defines Core Alteration as "the movement or manipulation of any reactor component (including fuel) within the reactor pressure vessel with the vessel head removed."

At approximately 1114 hours on January 20, 1989, the MAL Vacuum System was being removed from the TMI-2 Reactor Vessel (RV). This activity was being performed under the direction of a Task Supervisor stationed in the TMI-2 Coordination Center. During the previous shift (i.e., 2300-0700), the MAL Vacuum System had most recently operated for a two (2) hour period (i.e., from approximately 0320 hours to 0540 hours). The FHSRO log entry at 0540 hours on January 20, 1989, indicated no observed increase in the weight of the MAL debris bucket. Thus, as a result of the shift turnover briefing, the on-duty FHSRO and Task Supervisor (i.e., 0700-1500 shift) concluded that the MAL vacuum system did not contain a

significant quantity of fuel debris. Further, the Task
Supervisor understood
that he had the FHSRO concurrence to proceed with the removal of the MAL Vacuum System in the belief that this activity did not involve a Core Alteration.

At approximately 1114 hours, the MAL was lifted out of the RV for flushing and eventual placement in temporary storage. Visual inspection of the debris bucket prior to removal was hampered due to a lack of water clarity in the RV. To facilitate flushing of the bucket, the bottom door of the

III. EVENT DESCRIPTION (Cont'd)

debris bucket was opened using an extension pole. Personnel stationed in the vicinity of the RV observed an unknown quantity of core debris fall from the debris bucket into the RV. Upon discovery of this event, the duty FHSRO was so advised and initiated a debriefing to discuss the circumstances of this event.

This event is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B) (i.e., condition prohibited by the plant's Tech. Specs.) because a Core Alteration occurred without the direct supervision of a FHSRO, as required by Table 6.2-1 of the Tech. Specs. This determination is based on the fact that a visible quantity of core debris was observed to dislocate from the subject equipment (i.e., Midi Air-Lift). The criteria of "visible fuel" has been established in current NRC-approved Licensing Basis Documents (i.e., LCSA Defueling Safety Evaluation Report and the LCSA/Lower Head Defueling Safety Evaluation Report) as a mechanism for ascertaining whether components being removed from the RV contain core material. Similarly, it is the practice of FHSROs to utilize the criteria of "visible fuel" as a mechanism for determining whether an in-vessel activity constitutes a Core Alteration.

IV. ROOT CAUSE OF THE EVENT

The root cause of this event was personnel error shared jointly by the Task Supervisor and FHSRO due to inadequate communications which resulted in the failure to properly assess plant conditions, as communicated in shift turnover and defueling logs. These documents provided reasonable evidence that the MAL vacuum system contained core debris. For example:

The MAL Vacuum System had been operated for an extended period of time (i. e. approximately two hours) and operations with the MAL during previous shifts had resulted in accumulation of fuel debris. Thus, absence of a detectable increase in weight of the debris bucket did not provide positive verification of the absence of fuel debris.

Lack of sufficient water clarity in the RV hampered visual verification of the condition of the debris bucket and a determination as to whether debris was present.

Based on the above condition and previous MAL operating experience, this event could have been avoided if the FHSRO and Task Supervisor had judged it appropriate to assume the presence of core debris and classified this event as a Core Alteration prior to removal of the MAL.

This event is similar in nature to LER 86-05 which involved the performance of a Core Alteration without the direct supervision of an FHSRO.

V. CORRECTIVE ACTIONS

This event will be discussed with all FHSROs and Task Supervisors to emphasize the following:

Future activities, similar to those described in this report, which have the potential to constitute Core Alterations should be approached accordingly by Task Supervisors and FHSROs. Conservatism in judgment is appropriate.

Though certain events initially may not appear to constitute Core Alterations, it is imperative that defueling support personnel maintain close communications with the on-duty FHSRO so that the FHSRO is cognizant of activities which are planned to be performed in-vessel and can adequately assess whether such activities require the direct supervision of the FHSRO.

VI. COMPONENT FAILURE DATA

N/A

VII. AUTOMATIC OR MANUALLY INITIATED SAFETY SYSTEM RESPONSES

N/A

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

The basis for requiring a licensed individual to supervise Core Alteration is to ensure that appropriate supervision is provided for those activities which could pose a potential criticality or radiological safety concern. The core debris that dislocated from the debris bucket remained within the confines of the RV. The TMI-2 RV is filled with water borated to a concentration of at least 4350 ppm, pursuant to the TMI-2 Tech. Specs., which ensures

subcriticality under all credible conditions. Additionally, this event did not result in personnel radiological exposure in excess of any regulatory limits. Therefore, this event did not jeopardize the health and safety of the public.

ATTACHMENT 1 TO 8902270635 PAGE 1 OF 1

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February 17, 1989
4410-89-L-0016/0452P

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 89-01

Attached is Licensee Event Report 89-01 concerning the performance of a Core Alteration without the supervision of a Fuel Handling Senior Reactor Operator on January 20, 1989.

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

Sincerely,

M. B. Roche
Director, TMI-2

RDW/emf

Attachment

cc: D. M. Johnson - Acting Senior Resident Inspector, TMI
W. T. Russell - Regional Administrator, Region I
J. F. Stolz - Director, Plant Directorate I-4
L. H. Thonus - Project Manager, TMI Site

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