

ACCESSION #: 9001220170

LICENSEE EVENT REPORT (LER)

FACILITY NAME: THREE MILE ISLAND - UNIT 2 PAGE: 1 OF 4

DOCKET NUMBER: 05000320

TITLE: Extremity Overexposure of Two Individuals

EVENT DATE: 09/25/89 LER #: 89-006-00 REPORT DATE: 10/25/89

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 000

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

20.405(a)(1)(i) and 20.405(a)(1)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: Edward D. Schrull, TMI-2 TELEPHONE: (717) 948-8461

Licensing Engineer

COMPONENT FAILURE DESCRIPTION:

CAUSE: SYSTEM: COMPONENT: MANUFACTURER:

REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: YES EXPECTED SUBMISSION DATE:
11/30/89

ABSTRACT:

At approximately 10:00 a.m. on September 25, 1989, two (2) workers handled a piece of material now believed to be fuel debris in the TMI-2 Reactor Building Decontamination Facility creating a potential extremity overexposure condition. Based on preliminary calculations, a 10 CFR 20.403(b) 24-hour notification was made to the NRC on October 6, 1989, via the Emergency Notification System. That notification stated that one worker may have experienced an extremity exposure to the hands of more than 75 rem, but less than 375 rem and a second worker may have experienced a similar exposure to the hands of more than 18.75 rem, but less than 75 rem. The dose assessment is continuing. As a

result of this preliminary assessment, this event is reportable pursuant to 10 CFR 20.405(a)(1)(i) and (iv) since an individual may have been exposed to radiation in excess of the applicable limits of 10 CFR 20.101(a) and 10 CFR 20.403(b)(1), respectively. In addition, a 10 CFR 50.72(b)(2)(vi) 4- hour notification was made to the NRC on October 7, 1989, regarding the subsequent news release. This event occurred because of apparent poor radiological work practices. However, the investigation of this event is ongoing. Numerous actions have been undertaken including instructing defueling workers regarding the appropriate handling of fuel debris, conduct of an independent review of facility operations and controls, conduct of a security investigation, and establishment and implementation of a management oversight task force review. The two workers have undergone medical examinations and continued medical consultation.

A supplemental report will be submitted detailing the final dose assessment, conclusions of the investigations underway, the root cause and secondary causes, and corrective actions taken or planned.

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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 affect on the Reactor Coolant System or the core.

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

At approximately 10:00 a.m. on Monday, September 25, 1989, two workers handled a piece of material now believed to be fuel debris in the TMI-2 Reactor Building Decontamination Facility (No IEEE Code) creating a potential extremity overexposure condition. The

workers were performing a decontamination/ flush operation in the Decon Facility as a planned followup to work that was performed on Friday, September 22, 1989. The decon/flush operation created a steam environment which reduced visibility in that area. A worker picked up what he thought was a nut laying on top of the drain grating in the flush facility. He held the debris for approximately 30 seconds while continuing the flush operation. He then tossed it toward a bag used for collecting trash. The debris missed the bag opening and was subsequently handled for approximately 7 seconds by a second worker, who was performing hands-on decontamination work in another portion of the facility and was in the process of moving the trash bags to decon that portion of the facility. He picked up the piece of debris, presumably to place it in the trash bag, and was told by the first worker to leave it alone. The first worker then picked up the debris again, carried it about eight (8) feet and set it down. He then contacted the nearby Radiological Controls Technician (RCT) who surveyed the debris. The RCT was unaware that the workers had handled the material. Since the radiation dose rate was high, the debris was placed in a plastic bucket, using long-handled tools, and returned to the Reactor Vessel. The material was not recoverable and the lack of this material has affected the ability of Radiological Engineering and Radiological Health to determine the radiation level and isotopic composition of the

material and the subsequent dose to the workers. GPU Nuclear management was not informed of this event until the following day when the first worker asked another RCT about the implications of handling fuel debris. An investigation was initiated immediately thereafter.

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III. EVENT DESCRIPTION (Cont'd)

Differences in the chronology of events detailed by the three (3) individuals have further complicated the dose assessment. Re-enactments, using a full-scale mockup of the Decon Facility, have provided a range of values in the amount of time that the material was held by the two workers. A security investigation has been initiated to determine the most probable sequence of events.

However, based on preliminary calculations, a 10 CFR 20.403(b) 24-hour notification was made to the NRC on October 6, 1989, via the Emergency Notification System, stating that one worker may have experienced an extremity exposure to the hands of more than 75 rem, but less than 375 rem and a second worker may have experienced a similar exposure to the hands of more than 18.75 rem, but less than 75 rem. The dose assessment is continuing. As a result of this preliminary assessment, this event is reportable pursuant to 10 CFR 20.405(a)(1)(i) and (iv) since an individual may have been exposed to radiation in excess of the applicable limits of 10 CFR 20.101(a)

and 10 CFR 20.403(b)(1), respectively. In addition, a 10 CFR 50.72(b)(2)(vi) 4-hour notification was made to the NRC on October 7, 1989, regarding the subsequent news release.

IV. ROOT CAUSE OF THE EVENT

This event occurred because of apparent poor radiological work practices which were contrary to previous training, published memoranda, and the extant Radiation Work Permit (RWP). Since the investigation of this event is ongoing, the root cause and secondary causes, such as the adverse working conditions (e.g., steam environment), will be provided in the supplemental report.

V. CORRECTIVE ACTIONS

The immediate corrective actions included performing a medical examination of the two workers, barring their entrance into controlled radiation areas, and initiating an extremity dose assessment. Long-term corrective actions consist of:

1. Conduct of continued medical consultation with the two workers (ongoing);
2. Conduct of several meetings with the defueling workers to discuss the appropriate handling of fuel debris (completed);
3. Publication of memoranda addressing appropriate radiological practices and the lessons-learned from this event (completed);

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V. CORRECTIVE ACTIONS (Cont'd)

4. Conduct of a security investigation (expected completion date - October 25, 1989);
5. Conduct of an independent review facility operations and controls (expected completion date - October 31, 1989);
6. Conduct of an extensive extremity exposure assessment (expected completion date - November 10, 1989); and
7. Conduct of a whole body dose assessment (expected completion date November 10, 1989).
8. Conduct of a management oversight task force review (expected completion date November 15, 1989);
9. Conduct of an external review of dose assessment by an independent expert (expected completion date November 15, 1989).

Finally a supplemental report is expected to be submitted to the NRC by November 30, 1989, following completion of the actions noted above.

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

This event resulted in a potential excessive extremity exposure to two workers. We do not expect these workers to experience adverse

health effects as a result of these overexposures, but their health is being monitored by on-site medical personnel. No other workers were excessively exposed during this event. Attachment 2 provides preliminary information required pursuant to 10 CFR 20.405(b).

*** END OF DOCUMENT *** No attachment transmittal letter
