

NOV 15 1988

Docket Nos. 50-289; 50-320

MEMORANDUM FOR: Lee H. Bettenhausen, Chief, Projects Branch No. 1, Division
of Reactor Projects

FROM: Curtis J. Cowgill, Chief, Reactor Projects Section 1A, DRP

SUBJECT: TMI STATUS REPORT FOR THE PERIOD OCTOBER 7 - NOVEMBER 5, 1988

Enclosed is the TMI Resident Office monthly status report, which covers both TMI-1 and TMI-2. This report is to provide NRC management and the public with highlights of significant events at TMI-1 and TMI-2 from an NRC regulatory perspective.

ORIGINAL SIGNED BY

Curtis J. Cowgill, Chief
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Enclosure: As stated

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TMI STATUS REPORT - 0002.0.0
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ENCLOSURE

TMI-1 AND TMI-2 STATUS REPORT FOR THE PERIOD
OCTOBER 7 - NOVEMBER 5, 1988

1. TMI-1

a. Facility Operations Summary

During the report period, the licensee decided to shut down the reactor to troubleshoot and repair the cause of an oil leak in the lubricating system for the "C" reactor coolant pump (RCP). On October 17, 1988, the plant was taken off line, repairs were completed, and power operations were resumed on October 19, 1988. Also, on October 30, 1988, a reactor trip occurred due to high Reactor Coolant System (RCS) pressure. As of November 5, 1988, the TMI-1 reactor was at 100 percent power with Tave at 579 F and RCS pressure at 2155 psig.

b. Items of Special Interest

Outage for Reactor Coolant Pump Oil Leak

At 4:00 p.m. on October 17, 1988, the licensee shut down the reactor to accomplish repairs to the lube oil system piping on the "C" RCP motor. A leak developed on the lube oil system and the licensee made reactor building entries on October 14, 15, and 16, 1988, to add oil to the system. The leak point could not be specifically determined. Also, because of relatively high vibrations on the "D" RCP, the licensee decided to re-balance this pump.

The licensee representative traced the oil leak to an area near an oil cooler for the RCP. They originally thought the leak was from a piping connection. With the pipe connection repair completed and pending some additional balancing work on the "D" RCP, the licensee decided to start up the reactor (critical 11:18 a.m., October 18, 1988). Subsequently, the post-maintenance test on the "C" RCP revealed that the oil leak was from the oil cooler itself. In light of the new work, the licensee decided to shut down the reactor. Following completion of work on both RCP's, the licensee then conducted another reactor start-up (critical 3:41 p.m., October 19, 1988).

Reactor Trip on October 30, 1988

On October 30, 1988, at 8:59 a.m., a reactor trip occurred due to high RCS pressure. Based on the post-trip review, the licensee determined that the main turbine control valves went shut. With the control valves shut, high pressure developed in the steam generator (SG) causing the safety valves to lift (maximum SG pressure was 1060 psig).

Several seconds later high RCS pressure developed because of the loss of heat removal in the SG's. The Reactor Protection System (RPS) then properly tripped the reactor.

The post-trip plant response was normal. There was no challenge to the Emergency Core Cooling System (ECCS) or the Heat Sink Protection System (HSPS) (safety-grade initiation and control for the Emergency Feedwater System). Also, there was no challenge to the Power Operated Relief Valve or the pressurizer safety valves (maximum RCS pressure was 2362 psig). There was no indication of a radiation release based on a review of plant effluent monitors. Operators initially reported to the NRC Operations Center a stuck open SG safety valve. However, after they lowered turbine header pressure, the valve successfully seated.

The licensee made a 10 CFR 50.72 notification at 9:59 a.m., well within allowable reporting requirements; however, the NRC Operations Center first learned of the trip by a local citizen who heard the noise and had visual observation of the SG safety valves lifting.

The licensee's post-trip review determined that it was safe to start up the reactor, although the specific reason for the turbine stop valve closure could not be determined. They determined that more root cause analysis (RCA) on the main turbine's Electro-Hydraulic Control (EHC) System and the plant's Integrated Control System (ICS) was necessary. The licensee declared the reactor critical at 10:51 p.m. October 30, 1988. During testing, the licensee found a malfunctioning power supply in the EHC system, which they replaced. They also found a bad "control card" for one of six intercept valves. The licensee suspected that, if an intercept valve went shut, the Main Turbine Monitoring system would sense a power load imbalance that might cause the control valves to go shut. They replaced this control card and they were to review the affect of the faulty power supply on the EHC system. Also, the licensee is pursuing additional bench testing on suspect equipment in an attempt to better understand the cause of the malfunction.

Other Plant Transients

Two other minor transients occurred. On October 11, 1988, an electronic component failed in the unit's Integrated Control System (ICS). At 2:10 p.m., operators observed a drop in steam generator "A" and "B" levels from 79 percent and 78 percent to 75 percent and 74 percent, respectively, with a corresponding partial insertion of control rods. This apparent runback appeared momentarily and then plant parameters appeared to return to normal. Within a short time period, the transient condition returned. Operators took manual control of the ICS to prevent further oscillations and stabilized the plant while Instrument and Control (I&C) technicians identified and corrected the problem. Licensee personnel attributed the problem to a faulty analog memory module that is a component of the unit load demand of the ICS. Plant power decreased approximately 4 percent

during the transient, which was terminated at 2:21 p.m. Upon replacing the analog memory module, plant conditions returned to normal with the ICS in auto.

On October 13, 1988, another minor plant transient occurred when an I&C technician inadvertently removed an electronic module from service. The technicians were troubleshooting the cause of spurious signals in an electronic component that provides Reactor Coolant System (RCS) hot leg temperature (T-hot) input to the ICS. Subsequent to troubleshooting the instrument loop, the technician removed the wrong module to determine if it was also functioning properly.

Removing the other module from service caused an immediate reduction in feedwater flow to the steam generators through the British Thermal Units (BTU) limits function of the ICS. Being prepared for such a plant transient, the control room operators responded in restoring feedwater flow. Instrument and Control (I&C) technicians also quickly restored the input signal; together these actions prevented a plant trip. The transient was short-lived as the plant was quickly returned to steady-state, full power operation.

2. TMI-2

Facility Activities Summary

During the reporting period, cutting of the grid forging continued at a slow pace. This third of five plates comprising the Lower Core Support Assembly (LCSA) is the largest of the five plates and proved to be very difficult to cut into the planned four sections for removal. The plasma arc torch is unable to make complete cuts and much re-cutting and clearing of cut paths was required. Decontamination of plant surfaces continued at a reduced pace. Five areas in the auxiliary building were isolated from routine use and placed in an interim status for meeting proposed Post-Defueling Monitored Storage (PDMS) conditions.

Decontamination/Dose Reduction Activities

Major work emphasis was applied to the reactor building to ensure that this portion of the decontamination effort will be completed first. The majority of the 143 cubicles in the auxiliary/fuel handling buildings have been decontaminated and work remaining consists of verifying that the cubicle is isolated, equipment secured, and the cubicle is ready for the reduced monitoring which would accompany the PDMS phase.

3. NRC Staff Activities

The NRC staff assigned on site consisted of the senior resident inspector, three resident inspectors, a project manager (for TMI-2), and a secretary.

During this period, Region I issued the following inspection reports.

TMI-1 (50-289)

- 88-16 on October 24, 1988, addressing various engineering/technical support outstanding inspection findings. In the cover letter of that report, the NRC staff addressed a concern, which the licensee committed to resolve, about the potential for overloading an emergency diesel generator.
- 88-17 on October 17, 1988, addressing the special (outage) team inspection conducted August 8-19, 1988. The NRC staff identified two apparent violations: failure to adequately establish procedures in the operations and maintenance areas and failure to properly change maintenance procedures. The licensee had until November 17, 1988, to respond. Overall, the team concluded that outage activities were conducted in a technically competent fashion.
- 88-18 on October 12, 1988, addressing routine power operations and the transition period for plant start-up from the last refueling outage. Two apparent violations were identified: exceeding the cooldown limits for the pressurizer and failure to adhere to low pressure protection limits for the RCS (no licensee response is required) and failure to properly review and approve a change to a maintenance procedure. The licensee had until November 12, 1988, to respond to the latter violation. In the cover letter of that report, the NRC staff provided an overall favorable conclusion on the licensee's performance, noting some areas of improvement needed.
- 88-23 on October 14, 1988, addressing the licensee's fire protection program. No violations were identified.
- 88-25 on October 14, 1988, addressing the licensee's corporate engineering support functions for TMI-1 (and Oyster Creek). No violations were identified.

TMI-2 (50-320)

- 88-14 on October 28, 1988, addressing routine TMI-2 defueling/decontamination activities. No violations were identified.

During October 18-19, 1988, the Office of Nuclear Reactor Regulation (NRR) had a team on site to review the licensee-submitted Probabilistic Risk Analysis (PRA) for TMI-1.

During the week of October 31, 1988, NRR had a team at the corporate headquarters and at the site to review selected licensee actions with respect to improvements in the instrumentation and control functional areas at TMI-1. A report will be issued at a later date.

4. Public Meetings

On October 25, 1988, the members of the Advisory Panel on the Decontamination of TMI-2 met with the NRC Commissioners. Arthur Morris, chairman of the panel and mayor of Lancaster, Pennsylvania, reported the panel's 8-2 vote against Post-Defueling Monitored Storage (PDMS). The panel members discussed their reasons for opposing PDMS. They primarily were the uncertainties in ultimate clean-up and decommissioning funding and the uncertainties in the time the facility would be in a PDMS state. The next Advisory Panel meeting will be in early 1989; specifics regarding time and place will be announced in a future monthly status report, as well as routine news releases.

The Atomic Safety and Licensing Board (ASLB) hearings on the disposal of accident-generated water (AGW) at TMI-2 were held on October 31 - November 4, 1988, in Lancaster, Pennsylvania. They included an evening session on November 3, 1988, in which limited appearances were made by members of the public. The hearings are scheduled to be completed on November 15, 1988, in Bethesda, Maryland.