U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-289/80-08
50-320/80-05

Docket No. 50-289
50-320

License No. DPR-50
DPR-73 Priority -- Category C
C

Licensee: Metropolitan Edison Company

100 Interpace Parkway

Parsippany, New Jersey 07054

Facility Name: Three Mile Island Nuclear Station Units 1 and 2

Inspection at: Middletown, Pennsylvania

Inspection conducted: March 17 - April 30, 1980

Inspectors: D. Haverkamp, Senior Resident Inspector — 7/29/80 date signed

R. Conte, Senior Resident Inspector — 7/25/80 date signed

M. Shanbaky, Senior Radiation Specialist — 7/31/80 date signed

Approved by: A. Fasano, Chief, Site Operations Section, TMI Program Office — 8/1/80 date signed

Inspection Summary:
Inspection on March 17 - April 30, 1980, (Combined Report Nos. 50-289/80-08; 50-320/80-05).
Areas Inspected: Special inspection by NRC TMI Program Office staff of: selected new and revised procedures submitted for NRC approval (Unit 2); health physics and environmental areas (Units 1 and 2); high airborne activity event (Unit 2); spent resin tank overflow event (Unit 1); and licensee action on IE Bulletin No. 79-19 (Units 1 and 2). The inspection included daily (Monday-Friday) onsite staff coverage with selected backshift coverage.
Results:
(Unit 1) No items of noncompliance were identified.
(Unit 2) No Items of noncompliance were identified.

DETAILS

1. Persons Contacted

Licensee Representatives

Principal licensee and contractor personnel contacted during this inspection are identified in paragraph 8.

NRC Inspection Participants

The following personnel participated in this inspection.

R. Baer, IE:RI, March 31 - April 6, 1980
L. Bettenhausen, IE:RI, March 18 - March 20, 1980
D. Caphton, IE:RI, March 18 - March 20, 1980
R. Conte, IE:RI, March 17 - April 30, 1980
A. Fasano, IE:RI, March 17 - April 30, 1980
D. Haverkamp, IE:RI, March 17 - April 30, 1980
W. Kinney, IE:RI, March 17, 1980
L. Lacey, IE:RII, April 15 - April 22, 1980
W. Millsap, IE:RII, April 22 - April 30, 1980
R. Nimitz, IE:RI, March 28 - March 30, 1980
K. Plumlee, IE:RI, March 17 - March 27, 1980 and April 7 - April 30, 1980
J. Puckett, IE:RII, March 19 - March 26, 1980
M. Shanbaky, IE:RI, March 17 - April 30, 1980
N. Terc, IE:RI, March 17 - March 19, 1980
L. Thonus, IE:RI, March 17 - April 26, 1980
J. Wigginton, IE:HQ, April 2 - April 15, 1980
J. Wray, IE:RII, March 26 - April 2, 1980

2. Facility Procedures Submitted for Approval (Unit 2)

Facility procedures and subsequent revisions, required to be submitted for approval to the NRC as required by Technical Specification (TS) 6.8.2, were reviewed by the NRC TMI Program Office staff. These procedures address the Recovery Operations Plan implementation (Surveillance Procedures) and Recovery Mode Implementation (Operating Procedures). Detailed review of selected procedures included both health physics and operations aspects with consideration of the following: (1) the procedures, when implemented, would not degrade the containment of radioactive material, jeopardize core cooling, or result in excessive personnel exposures; (2) the health physics and operations aspects with consideration of the technical content of the procedures are adequate to perform the intended evolutions.

Composite staff comments on procedures were forwarded to the licensee. Licensee resolution of these comments was acceptable.

3. Health Physics and Environmental Inspection and Review (Units 1 and 2)

a. Plant Tours

On a daily basis shift inspectors completed a general plant tour including all control points and selected radiologically controlled areas. Observations included:

-- Access control to radiologically controlled areas;

-- Adherence to Radiation Work Permit (RWP) requirements;

-- Proper use of respiratory protection equipment;

-- Adherence to Health Physics and Operating Procedures;

-- Use of survey meters including personnel frisking techniques;

-- Cleanliness and housekeeping conditions; and,

-- Fire protection measures.

b. Measurement Verifications

The below listed measurements were independently obtained to verify the quality of licensee performance in these selected areas:

-- Radioactive material shipping;

-- Radiological control, radiation and contamination surveys; and,

-- Onsite environmental air samples.

c. Fire Protection

During a shift tour of the fuel handling building on March 29, 1980, open flame cutting was in progress on the 305' elevation by contract (vendor) personnel.

The below listed observations were made:

-- The individuals did not have a permit form as required by Fire Protection Procedure 1410-Y-26;

-- Sparks were spanning an area of 20-30 feet from the source cutting with flammable boxes within 5 feet and with the cutting done on non-treated wood;

-- No fire extinguishers were designated for use in this particular operation; and,

-- There was no documentation of followup inspection by the designated firewatch.

At the close of this inspection period this event was under review by the NRC. This is unresolved (320/80-05-02).

4. Seal Injection Piping Leak (Unit 2)

a. Background

On March 20, 1980, at approximately 3:15 a.m., there was a significant radiation activity increase in the auxiliary building as indicated by local air particulate monitors (AMS-3). The highest monitor reading indicated that the airborne radiation activity was due to a leak in the "B" Makeup Pump cubicle (1.8×10^{-7} uCi/cc versus normal reading 1×10^{-10} uCi/cc). Reactor coolant pump seal injection and the letdown system were isolated and reactor coolant system pressure control was transferred to the Standby Pressure Control (SPC) system.

Subsequent investigation by the licensee later that day revealed the leak was in the seal injection piping (an instrument rack) of the makeup system. Due to the high radiation levels in the area of this piping (cubicle) access to the instrument rack was precluded and the leak could not be identified to a specific component.

As a result of this, the licensee changed operations to the SPC system as the primary pressure control system and makeup/ letdown as backup for emergency use only with seal injection system isolated.

The effluent monitors did not indicate a release to the environment during these events.

NRC TMI Program Office staff monitored these events, made reports to Regional and Headquarters staff personnel, and reviewed the action taken by the licensee.

b. Purpose of Review

An evaluation of the licensee's performance during this event, on March 20, 1980, was conducted. The following items were verified based on record review, direct observation, and discussions with licensee personnel:

-- Nature of the event and stable plant conditions were achieved or were being achieved;

-- Event description, including date, time, cause, and systems or plant components affected (sequence of events formulated and reviewed);

-- Safety significance of the event, and compliance with Technical Specifications or other license requirements;

-- Reportability of the event (including use of 10 CFR 50.72, Notification of Significant Event) and licensee plans regarding a press release;

-- Necessity to notify state or local government officials;

-- Amount of radioactivity released (MPC factor, duration, total activity);

-- Direct radiation levels in the plant, onsite, or offsite; and,

-- Monitoring and sampling of the environs.

c. Documents Reviewed

The following documents were reviewed:

-- Control Room Operator's Log for March 19-20, 1980;

-- Shift Foreman's Log for March 19-20, 1980;

-- Station Radiation Emergency Procedure 1670.1, Revision 6, February 13, 1978, Local Emergency Procedure;

-- Station Radiation Emergency Procedure 1670.2, Revision 9, November 22, 1978, Site Emergency Procedure; and,

-- 10 CFR 50.72, Notification of Significant Event.

d. Findings

No items of noncompliance were identified, however, one unresolved item was noted. During this review discrepancies were noted in the licensee's interim measures for classification of events for emergency action. Station Radiation Emergency Plan, Revision 12, April 21, 1979, and associated implementing procedures, classify events and required action for local, site and general emergencies with the most serious events classified as general emergency.

However, Emergency Plan Memorandum No. 1, dated February 22, 1980, was issued to incorporate the recommendations of NUREG 0654/ FEMA-REP-1, dated January 1, 1980. Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, and to implement 10 CFR 50.72, Notification of Significant Event, requirements. The memorandum classified events as: events of potential public interest, unusual, alert, site and general where unusual and alert, site, and general corresponded to the local, site and general categories of the Emergency Plan respectively. The public interest items were intended to be a licensee self-imposed lower threshold category for local reporting only in light of the local increased attention to TMI events. This memorandum also erroneously listed 10 CFR 50.72 types of events under unusual events. Some 10 CFR 50.72 events could be classified in other categories more or less severe.

As an example of the apparent operator confusion in this area, the March 20 high airborne activity event was classified as an event of potential public interest in accordance with the subject memorandum. The memorandum listed in that classification a leak of radioactive material resulting in an evacuation of an area due to high airborne activity. Accordingly local and state emergency preparedness agencies and the onsite NRC staff

were notified of the event. However, the emergency plan implementing procedure 1670.1, Revision 6, February 13, 1978, Local Emergency, classified this event as a local emergency (significant increase in the level of airborne activity in a work area). Appropriate local emergency actions were taken to evacuate the area and isolate the source of the leak except the local emergency was not formally declared. Therefore a 10 CFR 50.72(1) report (for any event requiring initiation of the licensee's emergency plan or any section of the plan) was not made.

Subsequent discussion with the licensee revealed that the criterion of "high" airborne was ambiguous and should be quantified to resolve that ambiguity. Further review of the above occurrence and notification discrepancies identified several other inconsistencies or conflicting criteria with the subject memorandum. This matter was reviewed with facility management, operations department and emergency planning personnel. The importance of correct classification, announcement and reporting of emergency conditions in accordance with the approved emergency procedures was discussed. Licensee representatives stated that event and emergency notification procedures would be promptly reviewed and revised as necessary to remove any apparent ambiguity or conflicting reporting criteria. This item is unresolved pending NRC review of the revised notification and reporting procedures (320/80-05-03).

5. Spent Resin Tank Overflow (Unit 1)

About 8:30 p.m., March 31, 1980, a health physics technician noted water leaking from the spent resin tank room in the auxiliary building basement. The leakage was reported to operations personnel, and the control room operator then stopped a water transfer operation from a demineralizer tank to the spent resin tank. Ten to fifteen gallons of radioactive water were estimated to have overflowed the spent resin tank, apparently due to improper determination of available tankage capacity. The standing water was flushed from the corridor floor. Some radioactive spent resin, which remained on the floor in the spent resin tank cubicle, was scheduled for later cleanup. The licensee's response to the overflow was reviewed subsequent to the occurrence. All radiological and operational immediate and followup actions were acceptable except as described below.

Station Radiation Emergency Procedure 1670.1, Revision 6, dated February 13, 1978, "Local Emergency Procedure," defines three emergency action levels for declaring a local emergency. One of these action levels is stated as "Report of a radioactive spill in a work area (at least 2 mr/hr @ 1/2" or 10^{-2} uCi/cc over 25 square feet)." The spent resin tank overflow caused a radioactive spill in the auxiliary building basement corridor greater than 2 mr/hr @ 1/2", and appropriate measures were taken to isolate and confine

the spill and to decontaminate and monitor the area. However, the spill was not considered a "local emergency" condition and announced as such over the paging system due to confusion caused by another procedure, TCN 1-80-73, approved March 13, 1980, to Procedure 1044, "Event Review and Reporting Requirements." As stated in TCN 1-80-73, the change was implemented:..."to provide an expanded scope for information flow to associated agencies during emergency situations.... The change incorporates new action level requirements and classifications for more conservative notification of events per NUREG 0654 and 10 CFR 50.72." In addition to providing characteristics/action levels for proposed emergency plan categories (unusual event, alert, site, and general), the TCN identifies classification criteria for potential public interest events. The spent resin tank overflow and resultant spill was classified as an Event of Potential Public Interest, based on the following guideline contained in TCN 1-80-73, Enclosure 1, "5. A spill or leak of radioactive material which results in an evacuation of the area due to high airborne activity/radiation." Licensee notifications of an Event of Potential Public Interest were made to state and local emergency preparedness agencies and to site NRC personnel. However, the spill is also required to be classified as an Unusual Event based on Enclosure 2 action level 14, "Any of the events required by 10 CFR 50.72 as follows: a) Any event requiring initiation of the licensee's emergency plan or any section of the plan." Thus additional notification would have been made to the NRC Bethesda Duty Officer using the installed OPX telephone if the spill had been considered a "local emergency." The more severe classification of the spill as an Unusual Event should have been made to appropriately distinguish the occurrence from the less significant consequences normally associated with an Event of Potential Public Interest.

During review of the above occurrence and notification discrepancies, several other inconsistencies or conflicting criteria were identified in TCN 1-80-73. This matter was reviewed with facility management, operations department and emergency planning personnel. The importance of correct classification, announcement and reporting of emergency conditions in accordance with the approved emergency procedures was discussed. Licensee representatives stated that event and emergency notification procedures would be promptly reviewed and revised as necessary to remove any apparent ambiguity or conflicting reporting criteria. This item is unresolved pending NRC review of the revised notification and reporting procedures (289/80-08-01).

6. Licensee Action on IE Bulletin No. 79-19 (Units 1 and 2)

During this inspection period, the licensee's followup actions regarding IE Bulletin (IEB) No. 79-19, Packaging of Low Level Radioactive Waste for Transport and Burial (Items 5, 6, and 8) were reviewed. The review included discussions with licensee personnel, and review of selected facility records.

The status of the licensee's action as of the close of this inspection period is noted below.

"Item 5. Provide training and periodic retraining in the DOT and NRC regulatory requirements, the waste burial license requirements, and in your instructions and operating procedures for all personnel involved in the transfer, packaging and transport of radioactive material. Maintain a record of training dates, attendees, and subject material for future inspections by NRC personnel."

The list of personnel trained, course content and examination given were reviewed. An adequate number of personnel have received the 8-hour Department of Transportation (DOT) course in each unit. Training of personnel in this area is greater than 90% complete. In that personnel continuously turnover, there will usually be a few technicians who haven't received the training. This would not result in an adverse effect on shipments since the people who have received the training can be assigned the tasks associated with shipments (as is current practice). The number of individuals who have received this training is adequate to support the licensee's radioactive material shipping program.

At the completion of the licensee's DOT/NRC shipping regulations course, a written examination was given. The examination was adequate to evaluate understanding of the subject material. However, individuals who failed the examination were given the same examination over. In one case an individual was given the same examination three times. Subsequent passing of the exam might indicate the retraining had increased the individual's understanding of the subject material or it might indicate a process of memorizing and familiarity with a particular set of exam questions. Licensee personnel responsible for the training program and testing agreed to administer different examinations for re-examinations.

"Item 6. Provide training and periodic retraining to those employees who operate the processes which generate waste to assure that the volume of low-level radioactive waste is minimized and that such waste is processed into acceptable chemical and physical form for transfer and shipment to a low-level radioactive waste burial facility."

The current radiation work permit (RWP) training incorporates training to minimize the generation of waste by workers in the plant. Unit 1 operations personnel have received waste processing training as have individuals operating the Unit 2 supplemental systems i.e., EPICOR II. The licensee intends to have a course for Unit 1 and Unit 2 operators covering waste processing and minimization developed by June 1, 1980. Modifications to training will be required when Unit 1 changes solidification media. Training in this area (item 6) appears adequate for the shipment of dewatered resins, compacted waste, and LSA boxes from either unit.

"Item 8. Perform, within 60 days of the date of this bulletin, a management-controlled audit of your activities associated with the transfer, packaging and transport of low-level radioactive waste. Maintain a record of all audits for future inspections by NRC or DOT inspectors. (Note: If you have an established audit function and have performed such an audit of all activities in Items 1-6 within the past six months, this audit requirement is satisfied.)"

The licensee conducted an audit, S-TMI-80-04, from February 25-29, 1980, which included items 1-6 of IEB 79-19. This audit was conducted by the licensee's quality assurance (QA) organization augmented by contractor personnel. There were several findings in the areas of radioactive materials shipments. The NRC staff reviewed the licensee's response to the QA audit and discussed response verification with QA personnel. None of the findings would indicate a need to preclude shipments. One of the findings was that the licensee had no retraining program/retraining interval for radioactive material shipment training. The licensee has several months lead time to implement this program.

NRC review of IEB 79-19 will continue (320/79-8U-19).

7. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during this inspection are discussed in Paragraphs 3.d, 4.d, and 5.

8. Exit Interviews

Meetings were held with licensee management to discuss inspection findings and concerns as noted below.

Unit 1 Meeting on May 9, 1980

Licensee Representatives

G. Troffer, Deputy Manager, TMI-1 Restart
R. Harbin, Technical Analyst

NRC Representatives

D. Haverkamp, Senior Resident Inspector
M. Shanbaky, Senior Radiation Specialist

Findings in the operations and health physics areas for the inspection period were discussed.

Unit 2 Meeting on March 21, 1980

Licensee Representatives

J. Barton, Manager, Site Operations, Unit 2
J. Chwastyk, Plant Operations Manager, Unit 2
R. Heward, Radiological Control Manager, Unit 2
G. Kunder, Supervisor of Compliance, Unit 2
P. Ruhter, Manager, Radiation Technical Support

NRC Representatives

J. Collins, Deputy Program Director, TMI Program Office
R. Conte, Senior Resident Inspector
A. Fasano, Chief, Site Operations Section
M. Shanbaky, Senior Radiation Specialist

The events of March 20, 1980, high airborne in the auxiliary building was discussed.

Unit 2 Meeting on May 8, 1980

Licensee Representatives

J. Barton, Manager, Site Operations, Unit 2
D. Carl, PORC Administrator
J. Chwastyk, Plant Operations Manager, Unit 2
R. Heward, Radiological Control Manager, Unit 2
P. Ruhter, Manager, Radiation Technical Support

NRC Representatives

L. Bettenhausen, Reactor Inspector, Region I
J. Collins, Deputy Program Director, TMI Program Office
A. Fasano, Chief, Site Operations Section
M. Shanbaky, Senior Radiation Specialist
L. Thonus, Radiation Specialist

Findings in the operations and health physics areas for the inspection period were discussed.