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4410-90-L-0009/0521P

US Nuclear Regulatory Commission
Washington, DC 20555

Attention: Document Control Desk

Three Mile Island Nuclear Station, Unit 2 (TMI-2)
Operating License No. DPR-73
Docket No. 50-320
Inspection Report 89-13

Dear Sirs:

The subject Inspection Report identified a violation of 10 CFR 20.201(b) wherein an inadequate survey resulted in an unplanned radiation exposure to a technician. Pursuant to the provisions of 10 CFR 2.201, the attachment provides the GPU Nuclear response to the NRC Notice of Violation.

Sincerely,

M B Roche

M. B. Roche
Director, TMI-2

EDS/emf

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

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NOTICE OF VIOLATION

10 CFR 20.201(b), requires, in part, that each licensee shall make or cause to be made such surveys as may be necessary and reasonable to ensure compliance with the requirements of 10 CFR Part 20. 10 CFR 20.201(a) defines a survey, in part, as an evaluation of the radiation hazards incident to the presence of radioactive materials under a specific set of conditions. When appropriate, such an evaluation includes a physical survey of material and equipment and measurements of levels of radiation present.

Contrary to the above, at approximately 2:15 a.m. on November 28, 1989, inadequate surveys were made to assure compliance with that part of 20.101 which limits radiation dose to individuals in restricted areas. Specifically, a hose end-plug fitting was removed from the reactor vessel and handled by two technicians without properly measuring the radiation dose from the end-plug. This resulted in an unplanned radiation exposure to one of the technicians and in the inappropriate removal of contaminated material from the reactor vessel.

This violation is categorized as a Severity Level IV problem (Supplement IV).

GPU NUCLEAR RESPONSE

GPU Nuclear concurs with the Notice of Violation as described above. As identified in Inspection Report 89-13, this violation occurred during the removal of a tool from the TMI-2 Reactor Vessel. Due to the Radiological Controls Technician's (RCT) failure to perform an adequate radiological survey of a highly radioactive item (i.e., the end-plug) during removal from the Reactor Vessel, this resulted in an unplanned exposure to the hand of the RCT. Several immediate corrective actions were taken including:

1. Restricting access of the RCT to Radiologically Controlled Areas (RCAs);

2. Performance of a preliminary dose assessment to ensure an exposure in excess of the 10 CFR 20 limits had not occurred (the most probable dose to the skin of the right hand was less than 300 mrem); and

3. Stopping work in the Reactor Building pending a review of the event and the implementation of appropriate corrective actions to prevent recurrence.

In the period following the event, GPU Nuclear management performed an in-depth review of the event. In addition, several discussions were held with NRC personnel prior to the December 4, 1989, enforcement conference, to describe the event and the corrective actions GPU Nuclear proposed to undertake prior to resuming work in the Reactor Building.

As discussed at the enforcement conference, the following actions had been initiated by GPU Nuclear.

A training program was instituted for radiological workers and supervisors entering the Reactor Building that included a review of the following:

- Their responsibilities in recognizing unsafe conditions in areas that have the potential for presence of uncontained fuel debris and/or core structural material;
- The immediate actions that should be taken if such material is encountered; and
- A practical factors demonstration of techniques when such material is encountered.

This training program is required of all personnel prior to entry into the Reactor Building.

One-on-one management meetings were held with all Radiological Controls personnel to ensure that the proper level of awareness and vigilance exists concerning proper handling of material potentially containing fuel debris. In addition, a design review of tools and equipment currently in use was performed to minimize "crud traps." Supervisors were counselled concerning their obligation to continually re-evaluate the professional qualifications of their personnel prior to task assignments based on technical knowledge, behavorial attitude, and fitness for duty. Further, the existing Management Off-Shift Tour Program was modified to ensure that Reactor Building cleanliness is monitored on these tours. Finally, a Human Performance Evaluation System (HPES) review of the event was undertaken to determine if additional corrective actions were warranted.

In addition to the actions discussed above, Inspection Report 89-13 also listed certain NRC-identified program weaknesses which were discussed at the December 4, 1989, enforcement conference. These weaknesses and GPU Nuclear's actions taken are provided on the attached table.

GPU Nuclear concluded on December 8, 1989, that appropriate corrective actions had been implemented to prevent recurrence. On this basis, Reactor Building work was resumed.

In addition to the corrective actions noted above, disciplinary action was subsequently taken against the RCT for failure to perform his work activities in accordance with procedures, training, and qualifications. Further, the HPES Report of this event was recently completed. In general, the recommendations in this report have been addressed. Recommendations not addressed by the corrective actions are being reviewed by the responsible departments to determine if further action is warranted. This review and implementation of any additional corrective actions should be accomplished by March 1990.

ACTIONS TAKEN TO ADDRESS NRC IDENTIFIED PROGRAM WEAKNESSES

NRC IDENTIFIED WEAKNESS	SPECIFIC ACTION(S) TAKEN	STATUS
The RCT stated that the background dose rate in the vicinity of where surveys were being made of the Peters tool and the end-plug were 5 to 8 R/hr beta. It was not clear to the technician what an acceptable background dose rate is for making such surveys. In discussions the inspectors had regarding this with other RCTs, it appeared that there was a confusion among the RCTs what acceptable background levels are. One RCT said that acceptable background would be about 2-3 R/hr open window, and another said 1 R/hr open window would be acceptable. The licensee should modify procedures to provide clear directions to RCTs as to what background levels are acceptable for survey work and what should be done when the specified levels are exceeded. Direction should be clarified for all types of future work where there is a potential for high background dose rates.	A revised ALARA review (890009) for defueling and defueling support activities was issued to include more specific radiological control practices and radiological survey requirements. Guidance for approval authority at various background levels is provided. A memorandum (9200-89-022) was issued to give general guidance in assessing work site conditions.	Completed 12-07-89.
The end-plug was removed from the vessel without having received an adequate survey. Survey procedures for all types of future work should be upgraded to ensure that adequate surveys are performed. The procedures need to take into consideration the possibility of objects with very high beta to gamma ratios and the particular problems of surveying objects with this type of contamination. Procedures should clarify how surveys are to be made, for example open or closed window and survey distance. Where appropriate, special equipment should be specified.	A Rad Con Department SOM has been prepared providing guidelines to Rad Con personnel for survey practices during removal of equipment from the Reactor Vessel and when performing surveys in other areas of the plant where fuel may be present.	Completed 12-07-89.
The end-plug was bagged for removal from the work slot much more quickly than usual without receiving oral approval from the RCT. The rapidity in which the end-plug was bagged may have contributed to the inadequacy of the survey. The practice has been that the operators may remove objects from the vessel unless the RCT tells them not to. Licensee procedures should be revised to require approval by RCT at critical points in the progress of each job. These critical points should be designated for each type of future job and clearly communicated to workers and to the RCTs.	1. PCR to Defueling Operations procedure and implementing procedures and UWIs approved requiring positive RCT indication prior to raising the horizontal section of tools or equipment above the level of the work platform. ALARA Review 890009 also has hold points included. 2. Work crew meetings have been held with all Rad Con personnel to re-emphasize that the RCT is responsible to assure that work activities are conducted in a radiologically safe manner, that the RCT possesses "stop work" authority (i.e., the decision to proceed is the responsibility of the RCT) and when the RCT becomes aware of conditions which are not consistent with the ALARA review and RWP requirements, corrective action should be taken, including "stop work."	1. Completed 12-06-89. 2. Completed 12-08-89.

TABLE 1
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ACTIONS TAKEN TO ADDRESS NRC IDENTIFIED PROGRAM WEAKNESSES

NRC IDENTIFIED WEAKNESS	SPECIFIC ACTION(S) TAKEN	STATUS
The RCT handled the end-plug prior to performing an adequate survey on it. While in this case the RCT may have thought he performed an adequate survey, in actuality he did not. The licensee should emphasize to the RCTs the importance of performing radiological surveys on objects before handling them.	The importance of performing radiological surveys on objects before handling them has been the subject of numerous instructions prior to this incident. The RCT involved in this incident had, in fact, signed a statement indicating he had read an instruction to this effect shortly before this incident occurred. Nonetheless, because of this incident all RCTs were again instructed on the importance of performing radiological surveys on objects prior to handling them.	Completed 12-08-89.