

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

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Licensee: GPU Nuclear Corporation

Facility: Three Mile Island Nuclear Station

Dates: June 8 - 11, 1999

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## EXECUTIVE SUMMARY

Three Mile Island Nuclear Station  
Full-Participation Emergency Preparedness Exercise Evaluation  
June 8 - 11, 1999  
Inspection Report 50-289/99-06

Overall licensee performance during this exercise was very good as the Emergency Response Organization (ERO) demonstrated that it could implement the emergency plan. The emergency response facilities were staffed and activated in a timely manner. Good command and control were demonstrated by all of the facility leads. There were good communications observed within and among the facilities. Event classifications were accurate and timely. Offsite notifications were all made within the 15 minute requirement. News releases and press briefings were accurate and timely.

Facilities were well equipped and capable of supporting ERO activities. The licensee identified that the Technical Support Center (TSC) size was a challenge in meeting the comfort needs of responders.

There was very good assessment of plant conditions. Mitigation strategies were quickly developed and implemented. The licensee addressed current simulated problems well while anticipating potential plant degradation issues, classification upgrades, and protective action recommendations. Dose projection and dose assessment activities were well coordinated between the Emergency Control Center (ECC) and Emergency Operations Facility (EOF).

During the critique, the licensee methodically reviewed the exercise objectives for each facility and identified issues in addition to the ones identified by the inspectors. Positive and negative items were noted. Overall, the critique was thorough and appropriately self-critical and was assessed as very good.

## Report Details

### **P3 EP Procedures and Documentation**

#### a. Inspection Scope (82701)

The inspectors reviewed changes the licensee had made to the emergency plan and its associated implementing procedures since the last EP inspection. They performed this review in the NRC regional office. Specifically, they reviewed revision 15 to the GPUN nuclear emergency plan and revision 0 of the TMI emergency plan. They also reviewed revisions and temporary changes made to the emergency plan implementing procedures during the period September 29, 1998 through April 16, 1999.

#### b. Observations and Findings

Based on the licensee's determination that the changes made to the emergency plans and implementing procedures during the period September 29, 1998 through April 16, 1999, do not decrease the effectiveness of the onsite emergency plan and that the plan, as changed, continues to meet the requirements of 10 CFR Part 50.47 (b) and Appendix E to 10 CFR Part 50, no prior NRC approval of those changes is required. The inspectors noted that revision 0 of the TMI emergency plan was simply a rewrite of the GPUN nuclear emergency plan with all references to GPUN and the other nuclear site operated by GPUN removed. This revised plan was developed in support of the planned transfer of ownership of the TMI site. The inspectors determined that this change, as well as the other changes made to the onsite emergency plan and implementing procedures which they reviewed, were made in accordance with NRC regulations. The inspectors did not review revision 5 of the licensee's emergency classification and basis procedure since that change was approved by a licensing action made by the NRC's Office of Nuclear Reactor Regulation.

#### c. Conclusions

The inspectors determined that the changes made to the onsite emergency plan and its implementing procedures from September 29, 1998 through April 16, 1999, which they reviewed were made in accordance with NRC regulations.

### **P4 Staff Knowledge and Performance**

#### a. Exercise Evaluation Scope

During this inspection, the inspectors observed and evaluated the licensee's biennial full-participation exercise in the emergency control center (ECC), the technical support center (TSC), the operations support center (OSC), the emergency operations facility (EOF) and joint information center (JIC). The inspectors assessed emergency response organization's (ERO) recognition of abnormal plant conditions, classification of emergency conditions, notification of offsite agencies, development of protective action recommendations (PARs), command and control, communications, utilization of repair and field monitoring teams, and the overall implementation of the emergency plan. In addition, the inspectors observed the post-exercise critique to evaluate the licensee's self-assessment of the exercise.

b. Emergency Response Facility Observations and Critique

b.1 ECC

The ERO staffed the ECC in a timely manner. The shift supervisor emergency director (SSED) correctly classified the Alert, and the notification of offsite agencies of this event was accurate and within the required 15 minutes. The SSED exhibited excellent command and control in directing the actions of the operations crew. Turnover to the emergency director (ED) was adequate and completed quickly.

The ED also exhibited excellent command and control in the ECC. Communications within the ECC, especially between the ED and the operations coordinator, were very good. Additionally, communications between the ECC and the TSC, OSC, and EOF were very clear. Briefings by the ED were informative and very timely with respect to events. The ED ensured that all notifications of offsite agencies were accurate and within the required 15 minutes. Detection and classification of the Site Area Emergency (SAE) and General Emergency (GE) events were accurate. The ED and the operations coordinator also did good contingency planning, tying the TSC into the process.

b.2 TSC

The TSC was activated very quickly, within 25 minutes of the Alert declaration and within 15 minutes of the announcement of the Alert declaration over the plant public address system. The facility was activated with a minimum staff of five and satisfactorily performed at this staffing level for a half hour before additional responders were admitted. This was done in order to demonstrate the adequacy of the minimum staffing levels. The minimum responders were able to set up the facility's communications links with the other emergency response facilities, generate plant process computer printouts and trend this information on the status boards, and perform routine engineering functions such as the calculation of reactor coolant system leak rates.

The TSC was able to accommodate its full complement of emergency responders, but it was uncomfortable for those responders. There were, at times, up to 16 responders in the facility, and there were not enough chairs for all of these people. The temperature and humidity of the room were adversely affected by the personnel loading, and several responders waited outside the facility proper, entering when summoned for a support task. Toward the end of the exercise, the room's environment produced fatigue that affected efficiency of the responders, but not adversely enough that the facility was unable to perform its required functions. The TSC size was a challenge in meeting comfort needs of responders. This issue was also identified by the licensee during the critique.

Facility command and control were very good in the TSC. The TSC coordinator gave frequent briefings to the entire facility where he elaborated on TSC task priorities. He practiced three-way communications and enforced its use among his subordinates. He directed facility responders' attention to the plant public address system when important exercise information was being transmitted. He established priorities early as plant

events occurred and plant conditions changed. He re-directed staff efforts as the priorities changed. He was assisted by the TSC advisor in performing these command and control tasks.

The TSC performed its support functions of engineering assessment adequately. Engineers there quickly determined a level of fuel damage when mechanical damage had occurred to the core. They performed a primary-to-secondary leak rate calculation early in the scenario when condenser conditions supported the ability to do so. The TSC also supported the ECC's and the ED's needs by development of mitigation procedures for removing power to a stuck open reactor building isolation valve and for establishing a fluid seal on the once-through steam generator tube leak.

b.3 OSC

The activation of the OSC was timely and staffing was sufficient to carry out assigned functions. The OSC was activated within 15 minutes of the Alert declaration. The initial manning was provided by the on-shift personnel and then turned over to the emergency responders. Manning was in accordance with TMI Emergency Plan Implementing Procedure EPIP-TMI-.29, OSC Operations.

Command and control within the OSC were good. The OSC Coordinator effectively discharged his duties and responsibilities. Frequent briefings were held to inform OSC personnel of changing plant conditions and priorities. Congestion and noise were held to a minimum by providing pre-designated staging areas within the OSC for operations, maintenance, and radiological personnel waiting for assignment. Personnel assigned to perform tasks were properly briefed on the work to be performed including the expected radiological conditions. Workers were debriefed on completion of their assigned tasks. The status board was maintained up-to-date to track teams as they were sent into the plant. The inspectors identified some minor procedural (EPIP-TMI-.29) adherence deficiencies concerning the set-up and use of internal OSC communications equipment. This was identified by the licensee at the critique.

The OSC effectively carried out its support functions. Radio communications were maintained between the OSC and teams sent into the field. For teams assigned to perform tasks covered by plant procedures, procedure adherence was maintained. Emergency maintenance was conducted with the approval of the ECC and was coordinated with the TSC.

b.4 EOF

The EOF was staffed and activated in a timely manner, although there were some minor communication problems initially caused by Commonwealth of Pennsylvania personnel arriving at the EOF sooner than ERO members. The Commonwealth personnel had quickly staffed and established communication links; and, in the early phase of operation at the EOF, they had information sooner than the emergency support director (ESD). As more EOF staff arrived, this issue dissipated. This issue was identified by the licensee during the post-exercise debrief and is being evaluated.

There was good control and leadership demonstrated by the ESD. Frequent briefings were conducted. The EOF noise level was maintained at a minimal level. The ESD effectively solicited input from his leads.

The use of the computer generated plant status information provided good and timely information. Plant/emergency status boards were kept up to date, with proper supervisor review. Communications between the engineering, dose assessment and public relations personnel were very good. Technical support personnel questioned plant data and demonstrated the ability to think of contingency plans and to comment on plans being developed at the TSC. The emergency action levels were continually referenced during the exercise.

The EOF staff developed the appropriate PAR for the GE and relayed it in a timely fashion to Commonwealth emergency officials. After the initial PAR, the EOF staff frequently reviewed the PAR applicability for possible upgrade. Throughout the entire exercise, there were good interactions between the EOF staff and the Commonwealth representatives as discussions were frequent and informative.

b.5 Dose Assessment

b.5.1 Dose Assessment at the ECC

The group radiological controls supervisor arrived at the ECC and was expedient in establishing communications, retrieving procedures and placing the dose assessment process into operation. Once the radiological assessment coordinator (RAC) arrived, he received a good turnover and maintained good command and control throughout the exercise. The RAC interacted with the ED on numerous occasions, kept him informed of any changing radiological conditions and continuously verified the plant radiation monitor parameters in the dose assessment model corresponded with the simulator panel. Once a release was imminent, the RAC dispatched a site team to radiologically monitor the site boundary and continuously reassessed their positions with respect to the direction of the plume. The RAC and the dose assessment staff kept in contact with the Bureau of Radiation Protection (BRP) representatives from the Commonwealth providing radiological updates, as well as, plant information while the BRP waited for the EOF to be activated.

Once the EOF was activated, the RAC at the ECC maintained control of onsite activities (radiological) and conferred with the radiological environmental coordinator (REC) at the EOF who coordinated and monitored the offsite activities. Throughout the exercise, the ECC's dose assessment team continued to perform "what if" calculations and served as a verification check on the dose assessment data that was generated by the team at the EOF.

b.5.2 Dose Assessment at the EOF

The radiological environmental support team was very knowledgeable, continuously ran dose assessment calculations and performed "what if" calculations. During the SAE, the REC was pro-active in evaluating the plant conditions and making recommendations to the ESD regarding PARs. At the time of the GE, the PAR was accurate and the

notification to the Commonwealth met the time requirements. Excellent teamwork was observed between the RAC, ECC and the technical support group for acquiring changing plant conditions, questioning erroneous information and re-evaluating the PAR for upgrade.

The data generated by the licensee's dose assessment model compared well to the calculations performed by the BRP and the ECC. Very good interactions were observed between the REC and the Commonwealth representatives, particularly, during the ESD briefings for answering questions.

Field monitoring teams were properly dispatched and moved accordingly with changing radiological conditions. They were able to locate the center of the plume and were later moved to verify there were no dose consequences beyond the 10 mile emergency planning zone.

b.6 JIC

The JIC was activated in a timely manner. Press releases were prompt and accurate. Mock press meeting were conducted by the licensee, in conjunction with the Commonwealth, in an orderly and coordinated manner. Simplified drawings and maps were used to communicate information to the press. The press players asked challenging questions to the spokespersons in a realistic manner. The licensee provided accurate or clarifying information and researched information during breaks for questions that they did not have an immediate answer.

b.7 Licensee Exercise Critique

Immediately following the exercise, the licensee began its critique process with players, as well as controllers, providing debriefs. Players and controllers were mostly candid discussing both positive and negative comments regarding player and equipment performance. At the formal licensee critique on June 11, 1999, the licensee methodically reviewed the exercise objectives for each facility. The licensee identified issues in addition to the ones identified by the inspectors. Overall, the critique was thorough and self-critical.

c. Overall Exercise Conclusions

Overall licensee performance during this exercise was very good as the ERO demonstrated that it could implement the emergency plan. The emergency response facilities were staffed and activated in a timely manner. Good command and control were demonstrated by all of the facility leads. There were good communications observed within and between the facilities. Event classifications were accurate and timely. Offsite notifications were all made well within the 15 minute requirement. News releases and press briefings were accurate and timely.

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There was very good assessment of plant conditions. Mitigation strategies were quickly developed and implemented. The licensee addressed current simulated problems well while anticipating potential plant degradation issues, classification upgrades, and protective action recommendations. Dose projection and dose assessment activities were well coordinated between the ECC and EOF.

During the critique, the licensee methodically reviewed the exercise objectives for each facility and identified issues in addition to the ones identified by the inspectors. Positive and negative items were noted. Overall, the critique was thorough and appropriately self-critical and was assessed as very good.

## **P8 Miscellaneous EP Issues**

### **P8.1 Scenario Preparation and Exercise Control**

An in-office review of the exercise objectives and scenario was conducted by the inspectors prior to the exercise. It was determined that the scenario was adequate to support the demonstration of the stated objectives and satisfactorily exercised a significant portion of the emergency response capabilities.

During the exercise, controllers mostly performed well and drillsmanship was good. However, in two minor instances, OSC controller input was unrealistic. There was minimal impact upon the exercise and these instances were identified by the licensee during their critique.

### **P8.2 (Closed) Inspector Follow-up Item 50-289/98-07-01: Exercise Weakness - Failure to notify offsite agencies within 15 minutes**

This open item concerned instances when notifications were made late during an emergency drill. The licensee determined the cause for the late notifications was inadequate training and practice of ERO communicators in performing the offsite notification task. Contributing to this was a large number of individuals qualified to perform the offsite communicator's task; therefore, many individuals did not have an opportunity to practice the required skills during drills. Additionally, the procedures for performing the notifications were changed frequently during 1997, and a complete revision was completed in 1998.

Corrective actions taken included: the pool of communicators was reduced by removing individuals from the list who would not normally be communicators, such as shift technical advisors and senior reactor operators; the procedures for performing notifications have been controlled to limit the number of changes; and, when changes are made, training is conducted regarding the changes; and additional training was conducted for the appropriate individuals regarding how to efficiently perform the notifications, and the importance of completing the notifications within 15 minutes. The inspector reviewed the completed corrective actions and discussed them with licensee personnel. Additionally, the inspectors observed that during the exercise, conducted on June 8, 1999, all notifications were completed efficiently, in less than 10 minutes each time. Management oversight and sensitivity to completion of the notifications quickly and accurately was apparent during the process. The inspectors concluded that actions taken have adequately addressed the concern with making timely notifications.



V. Management Meetings

**X1 Exit Meeting**

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on June 11, 1999. The licensee acknowledged the inspectors' findings.

## INSPECTION PROCEDURES USED

82301: Evaluation of Exercises for Power Reactors

82302: Review of Exercise Objectives and Scenarios for Power Reactors

## ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

None

### Closed

IFI 50-289/98-07-01: Exercise Weakness - Failure to notify offsite agencies within 15 minutes

### Discussed

None

## LIST OF ACRONYMS USED

BRP	Bureau of Radiation Protection
ECC	Emergency Control Center
ED	Emergency Director
EOF	Emergency Operations Facility
ERO	Emergency Response Organization
ESD	Emergency Support Director
GE	General Emergency
GPUN	GPU Nuclear Corporation
JIC	Joint Information Center
NRC	Nuclear Regulatory Commission
OSC	Operations Support Center
PAR	Protective Action Recommendation
RAC	Radiological Assessment Coordinator
REC	Radiological Environmental Coordinator
SAE	Site Area Emergency
SSED	Shift Supervisor Emergency Director
TMI	Three Mile Island
TSC	Technical Support Center