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REGION I

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Licensee: Vermont Yankee Nuclear Power Corporation

Facility: Vermont Yankee Nuclear Power Station

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## EXECUTIVE SUMMARY

Vermont Yankee Nuclear Power Station  
Full-Participation Emergency Preparedness Exercise Evaluation  
April 26-28, 1999  
Inspection Report 50-271/99-04

Overall licensee performance during this exercise was good as the ERO demonstrated that it could implement the emergency plan. Facilities were activated in a timely manner, classifications and notifications were accurate and timely, and PARs were appropriate.

While activation of the TSC was completed within 50 minutes of the alert declaration, initial administrative duties performed by the TSC coordinator could result in an untimely activation should an event occur during off-hours when ERO members are coming from offsite.

The continuous air monitor used in the TSC/OSC operated in a degraded condition during the exercise but was operable. The licensee acknowledged problems with the operation of the monitor during the exercise and initiated action within its corrective action system to prevent recurrence of the problems.

During the critique, the licensee 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.

## Report Details

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

#### a. Inspection Scope (82701)

The inspector reviewed, in the NRC Region I office, change number 32 which the licensee recently made to its emergency plan as well as several other changes the licensee made to the emergency plan implementing procedures. The inspector followed up with on-site discussion of these changes with licensee staff.

#### b. Observations, Findings and Conclusions

Based on the licensee's determination that the changes do not decrease the overall effectiveness of its emergency plan, no prior NRC approval of these changes is required in accordance with 10 CFR 50.54(q). After a limited, in-office review of the changes and follow-up discussion onsite with licensee staff, the inspector concluded that these changes were made in accordance with the provisions of §50.54(q).

### **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 simulator control room (SCR), the technical support center (TSC), the operations support center (OSC), the engineering support center (ESC), the emergency operations facility (EOF) and media news center (MNC). 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 SCR

The SCR crew promptly responded to events and implemented the appropriate procedures. The senior reactor operators double-checked each other to ensure the proper emergency classification was being made. They accurately classified the alert condition and initiated offsite notifications in a timely manner. The ERO was activated promptly.

b.2 TSC

Facility activation is to occur within one hour of event declaration. Although the TSC was activated within 50 minutes, the inspector noted that the TSC coordinator was challenged with initial organization and administrative burdens which detracted from his ability to focus on turnover of plant status and any impending event classifications. Since activation was within 10 minutes of meeting the timeliness requirement, the initial duties could result in an untimely activation should an event occur during off-hours and the TSC coordinator was coming from offsite. During the post-exercise critique, the licensee stated that the procedures governing TSC set up and minimum activation criteria will be reviewed.

Once activated, good command and control was demonstrated in the TSC. Site accountability was completed in a timely manner. TSC briefings were conducted well and occurred on a routine basis. Briefs provided a good level of information to the supporting coordinators, delineated priorities, and were used as an opportunity to solicit questions and concerns. There was very good coordination, communication, and synergy between the TSC coordinator, the operations coordinator, and the decision maker. An excellent job was done in maintaining the emergency operating procedure (EOP) boards and backing up the SCR crew's implementation of the EOPs. Plant status boards were also well maintained.

Problems were noted regarding the primary ringdown line, which is an open communications link between the emergency response facilities. The line malfunctioned for about one hour into the alert classification and later when the TSC attempted to advise the EOF on criteria being met for the site area emergency (SAE) classification. (These problems were also observed in the EOF.) When the primary ringdown line was malfunctioning, communicators successfully used alternate telephone lines. The licensee identified this issue during the critique and entered it into the corrective action program.

b.3 OSC

The OSC coordinator (OSCC) exhibited very strong command and control of the facility. The OSC was activated quickly. The OSCC assigned tasks to both his support staff and personally gave direction to several repair teams. The OSCC was required to be absent from the OSC for extended periods of time in order to participate in TSC briefings of the plant emergency director. His absence did not, however, diminish his ability to understand OSC priorities and the status of OSC activities. The OSCC's assistant maintained the command and control function during the periods in which the OSCC was absent.

The OSCC provided briefs to his immediate staff, but he did not give overall status briefings to the OSC personnel. Rather, these personnel relied on briefings provided by the TSC over the plant page system. The plant page volume was very weak in the OSC hallway where status board keepers were located, and personnel stationed in the lunch

room also reported difficulty hearing several page system announcements. This problem was identified by the licensee and reported at the facility critique for the OSC held immediately after the exercise.

Repair teams were well-briefed prior to dispatch regarding the assigned tasks and radiological conditions and were adequately debriefed upon return. The repair team responsible for isolating the simulated radiological release path was initially dispatched without an emergency dose authorization and consequently encountered a turn back dose rate prior to completing their task. They exited the reactor building and awaited an extended dose commitment which was granted via telephone. They subsequently re-entered the reactor building and stopped the radiological release.

Since the team was initially dispatched without an emergency dose authorization, there was a minor delay of six minutes in performing their task. The OSCC attempted to get this authorization while the team was being assembled. Licensee emergency response management in the TSC decided to dispatch the team without waiting for the authorization, since isolating the release was the highest priority. Holding the team until the authorization was approved would have precluded the team's turning back and re-entering, would have resulted in a shorter delay, and would have reduced the dose to the team members. The licensee's controllers also noted this fact and discussed it at the facility critique for the OSC held immediately after the exercise.

#### b.3.1 TSC/OSC Continuous Air Monitor (CAM)

The licensee initiated habitability surveys of the TSC and OSC areas quickly and performed these surveys regularly. The radiation protection technician performing the surveys noted some problems with the operation of a single continuous air monitor (CAM) used to measure airborne activity in both the TSC and OSC and alert responders of high airborne conditions. Specifically, the technician noted that the channel operating lights for the iodine and noble gas channels were extinguished, and she determined that the bulbs were burnt out. The inspector noted that in addition to the burnt lights, the indicating meters for the iodine and noble gas channels were pegged low, the strip chart recorder paper was not advancing, the recorder pens had bled heavily upon the strip chart paper, one ink cartridge for the recorder was dislodged, and it was not easily determined which recorder pen correlated to which monitor channel. Further, the calibration for the meters for the monitor channels had expired the previous month.

The inspector learned, through discussions with the licensee that the calibration had expired due to the fact that the CAM was not on the I&C department's calibration schedule. The licensee had noted prior to the exercise that the calibration had expired. It also had noted that the calibration had not exceeded its grace period of 50% of the calibration interval. Because of a heavy calibration workload existing at the time of the licensee's discovery, the licensee prioritized the calibration of the CAM to some time after the exercise but prior to the expiration of the grace period.

The inspector tracked the status of the CAM and its deficiencies during the course of the exercise and noted that the cartridge had been reinstalled, but the chart recorder was still not advancing. He discussed the issue with the licensee's EP staff and a licensee radiation protection supervisor after the exercise. The inspector also learned that the

bulbs for the iodine and noble gas channels were indeed burnt out and the channels were, in fact, operable. The CAM was capable of alarming on a condition of high airborne radioactivity, and the degraded condition did not affect the CAM's ability to alert responders of a high airborne radioactivity condition.

The strip chart was also able to be adjusted the day following the exercise so that it advanced properly. The inspector questioned why this had not occurred during the exercise. Although the CAM was a model that was used regularly in the plant to monitor airborne radioactivity during non-emergency conditions, the personnel interpreting the data displayed during the exercise did not demonstrate familiarity with how to correct the degraded conditions existing. Radiation protection supervision committed before the end of the inspection to add guidance to the emergency plan implementing procedures to assist technicians in diagnosis and correction of CAM deficiencies. The licensee had identified these issues with the CAM and entered them into the corrective action program. Event report 99-0524 was written a week after the exercise to document the CAM deficiencies noted during the exercise. Procedure change suggestion forms had been submitted for both the Emergency Plan Implementing Procedure OP 3507 (Emergency Radiation Exposure Control) and the surveillance procedure OP 3506 (Emergency Equipment Readiness Check) to refer personnel to the Radiation Protection Department procedure that provides guidance for performing daily CAM operation checks.

#### b.4 ESC

Early in the exercise, the ESC staff was not aggressively pursuing issues. For example, one hour into the alert condition, an ESC staff member questioned why the SCR staff went directly to an alert classification. However, throughout the remainder of the exercise, the ESC staff quickly acquired data via the emergency response facility information system (ERFIS) terminals and the telephone communicator. The ESC staff had plant data sooner than the TSC engineers because the TSC engineers did not have immediate access to an ERFIS terminal. The ESC staff was quick to respond to requests from the plant. It was noted that the ESC did not have the EOP flow charts. Although they had the EOP background documents, the flow charts would have been helpful to the ESC staff. Also, it was noted that there was only one facsimile machine in the ESC and thus precluded simultaneous sending and receiving of information. This resulted in only minor delays of information transfer and did not negatively impact ESC staff performance.

#### b.5 EOF

The EOF was staffed in a timely manner. Regular briefings were conducted to keep the EOF staff and offsite officials informed of plant status and response activities. The SAE and general emergency (GE) classifications were made accurately and promptly. The associated offsite notifications were made within the 15 minute goal. The PAR for the GE was appropriate and timely based upon plant and meteorological data. The site recovery manager (SRM) provide good command and control by effective directing his staff. The SRM staff demonstrated a proactive outlook by anticipating event classification upgrades or PAR modifications.

b.6 Dose Assessment

The EOF Radiological Assessment area was staffed well within one hour by all key members of the dose assessment team including the radiological assistant, radiological coordinator, and METPAC (Meteorological Post Accident Computer) operator. Environmental conditions inside the EOF were good in that work areas were spacious and well illuminated, noise levels were low, and computer and communications equipment were fully functional. Controlled copies of procedural guidance were readily available in the dose assessment area. The dose assessment team closely monitored ERFIS data for changes in station and weather conditions, conducted discussions to assess and interpret plant conditions, and performed multiple "what-if" calculations to evaluate potential offsite dose. The radiological coordinator maintained cognizance of wind direction and directed field teams to appropriate monitoring locations. Communications with field teams were clear and frequent and included "three-way" repeat backs. Status boards for dose assessment and field teams were diligently maintained.

Overall, effective performance was exhibited in the activation of the EOF dose assessment area and in the monitoring and evaluation of offsite radiological conditions.

b.7 MNC

A various times during the exercise, inspectors observed the activities in MNC. Press briefings were informative. Questions from the press were directed to the proper person and answered appropriately. Press releases by the licensee contained appropriate information written in understandable language. The press releases were made with minimal delays from the time of event occurrence. There were sufficient facilities and security at the MNC.

b.8 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 candid and discussed both strengths and areas for improvement. At the formal licensee critique on April 28, 1999, the licensee identified issues in addition to the ones identified by the inspectors. Positive and negative items were noted regarding both ERO performance and equipment issues. Overall, the critique was thorough and appropriately self-critical.

c. Overall Exercise Conclusions

Overall licensee performance during this exercise was good as the ERO demonstrated that it could implement the emergency plan. Facilities were activated in a timely manner, classifications and notifications were accurate and timely, and PARs were appropriate.

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## **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 generally performed well and drillsmanship was good. However, in two minor instances, controllers at the SCR and EOF provided information that was available to the players. There was minimal impact upon the exercise.

## **V. Management Meetings**

### **X1 Exit Meeting**

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on April 28, 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

None

Discussed

None

**LIST OF ACRONYMS USED**

|       |  |
|-------|--|
| CAM   | Continuous Air Monitor                         |
| EOF   | Emergency Operations Facility                  |
| EOP   | Emergency Operating Procedure                  |
| ERFIS | Emergency Response Facility Information System |
| ERO   | Emergency Response Organization                |
| GE    | General Emergency                              |
| MNC   | Media News Center                              |
| OSC   | Operations Support Center                      |
| OSCC  | Operations Support Center Coordinator          |
| PAR   | Protective Action Recommendation               |
| SAE   | Site Area Emergency                            |
| SCR   | Simulator Control Room                         |
| SRM   | Site Recovery Manager                          |
| TSC   | Technical Support Center                       |