

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

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Licensee: North Atlantic Energy Service Corporation (NAESCO)
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Facility: Seabrook Station

Dates: September 16, 1996 - September 20, 1996

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EXECUTIVE SUMMARY

Seabrook Station
Full-participation Emergency Preparedness Exercise Evaluation
September 16-20, 1996
Inspection Report 50-443/96-007

Overall performance of the emergency response organization was very good. Simulated events were accurately diagnosed, proper mitigation actions were performed, emergency declarations were timely and accurate, and offsite agencies were notified promptly. Exercise strengths were noted in the command and control of the Emergency Operations Facility staff by the Response Manager, and in the licensee's interface with the States of New Hampshire and Maine, the Commonwealth of Massachusetts, and the NRC Site Team, which participated in the exercise.

REPORT DETAILS

P4 Staff Knowledge and Performance

a. Exercise Evaluation Scope

During this inspection, the NRC inspectors observed and evaluated the performance of the licensee's emergency response organization (ERO) during the biennial, full-participation exercise in the simulator control room (SCR), technical support center (TSC), operations support center (OSC), and the emergency operations facility (EOF). The inspectors assessed licensee recognition of abnormal plant conditions, classification of emergency conditions, notification of offsite agencies, development of protective action recommendations, command and control, communications, and the overall implementation of the emergency plan. In addition, the inspectors attended the post-exercise critique to evaluate the licensee's self-assessment of the exercise.

b. Emergency Response Facility Observations and Critique

b.1 Simulator Control Room (SCR)

The SCR crew was quick to identify the abnormal simulated plant conditions. Shortly after a small reactor coolant system (RCS) leak began, the shift manager (SM) declared an unusual event. While in the process of completing forms for notifications, the crew recognized that the leak had worsened and met the criteria for an Alert declaration. The classification was upgraded. These declarations were prompt and the offsite notifications were completed in a timely manner.

There was good command and control demonstrated in the SCR. The crew effectively divided the operations and emergency response duties as the simulated events occurred. The SM quickly assumed the role of Short Term Emergency Director (STED). After the Alert declaration, the SCR crew performed a smooth and thorough transfer of emergency plan responsibilities to the TSC staff. Throughout the exercise, the SM and the unit supervisor conducted timely, frequent and informative briefings to apprise the crew of classification status, plant status, and procedural implementation. Additionally, there was generally a good transfer of information to and interface with the TSC throughout the exercise.

The SCR crew effectively implemented the appropriate procedures. The unit supervisor correctly implemented and transitioned among the emergency operating procedures (EOPs). The SM and the work coordinator implemented emergency response procedures while the emergency director's function was still in the SCR. During the remainder of the exercise, the SM and work coordinator reviewed the emergency action levels (EALs) as simulated conditions occurred and they anticipated future classification declarations based current conditions and hypothetical occurrences.

Some minor discrepancies were observed in SCR crew performance. When the RCS leak was initially quantified, a reactor shutdown was required by technical specifications. The rapid power reduction (which caused a shrinkage of the RCS inventory) combined with the leak, resulted in the crew over-estimating the size of the RCS leak resulting in the initiation of a manual reactor trip/safety injection and thereby subjecting the plant to an unnecessary transient. Additionally, later in the exercise, when the large break loss of coolant accident (LOCA) occurred, the crew acknowledged a containment hatch trouble alarm at about 12:10 p.m., but failed to inform TSC personnel. The hatch was the radiological release point from the containment. Had this information been provided to TSC staff, the location of the release point could have been identified more quickly. This failure delayed the identification of the release point by about 20 minutes; the hatch was first suspected by the TSC personnel as the release point at about 12:30 p.m.

Despite some minor discrepancies, the SCR crew performed very well. The crew correctly and effectively implemented the emergency response procedures and EOPs. The crew quickly recognized off-normal conditions and performed well as a team to mitigate the simulated conditions and perform emergency plan duties.

b.2 Technical Support Center (TSC)

The turnover from the STED to the Site ED (SED) began at about 8:40 a.m. The turnover briefing was thorough and timely. After ensuring that all necessary staff were present, the SED activated the TSC at 8:55 a.m., 35 minutes after the Alert declaration. He frequently briefed his staff on event status, and clearly identified the work priorities for accident mitigation. However, he did not routinely provide briefings on such items as offsite radiological assessments, current protective action recommendations (PARs), protective action decisions (PADs) implemented by the States, and a summaries of NRC response activities, as suggested in the briefing agenda, in Section 4b of the checklist. Additionally, he did not conduct and document periodic reviews of action items as suggested by Section 5b of the checklist. These oversights did not detract from the ERO's response during this exercise, but inadequate tracking of action items could result in problems.

The Site Area Emergency and General Emergency (GE) declarations by the SED were correct and timely. The SED also directed his staff to review all EALs for applicability to occurring events. The facility coordinators provided good support to the SED and worked together well as a team.

Overall, the performance of the TSC staff was very good.

b.3 Operations Support Center (OSC)

The OSC was activated 20 minutes after the Alert. The OSC Coordinator (OSCC), Radiological Controls Coordinator (RCC), OSC Communicator, and other responders appropriately used emergency response procedures and completed associated checklists during the facility activation process. OSC personnel signed in on the position status board and manpower attendance sheets, which aided the management of resources.

Command and control by the OSCC was excellent. He provided frequent and informative briefings to OSC personnel on event status and effectively utilized the resources available to him in the OSC.

The preparation of emergency repair teams (ERTs) was excellent. The ERTs were thoroughly briefed by the Work Control Coordinator on the expectations for each job and by health physics (HP) personnel on radiological conditions for each job. The dispatch of ERTs was closely coordinated with the TSC and recorded on the team status board. Upon return, teams were logged in and debriefed. The OSC Communicator listed the expertise of ERT members (i.e., mechanic, instrumentation and control, electrician, HP) on the ERT status board. The team status board provided a good and quick reference on the status of ERTs dispatched and the tasks that they were assigned.

However, there seemed to be an occasional lack of urgency by the OSCC to respond to tasks requested by the TSC. This lack of a sense of urgency and increase in changing priorities for the task to be performed, resulted in an unnecessary delay in getting some ERTs out of the OSC and into the field. The TSC correctly delayed granting permission to release ERTs to the field when priorities were changing to preserve resources and avoid unnecessary radiation exposures.

The RCC effectively managed OSC personnel to minimize any simulated radiological hazard. He ensured ERTs were thoroughly briefed on current and possible changes in plant radiological conditions. The ERT members had adequate dosimetry provided and knew their dosimetry alarm setpoints and protective clothing requirements for each assigned task. After the radiological release, the RCC ordered facility air samples and the realignment of ventilation systems to ensure safe habitability conditions. Issuance of potassium iodide (KI) and use of respirators were considered. The use of KI was determined not to be necessary since iodine concentrations were minimal.

All of the personnel in the OSC demonstrated proficiency and professionalism in their activities during the exercise. The licensee staffed many key positions in the OSC with currently licensed operators. The use of licensed operators in the OSC resulted in an overall excellent response.

b.4 Emergency Operations Facility (EOF)

Overall, the licensee's performance in the EOF was very good. Its activation and staffing were timely and efficient. The large size of the EOF readily and comfortably accommodated the influx of the NRC site team and the States' support staffs. The size and layout of the EOF helped to reduce noise and congestion, and allowed the EOF staff to work effectively and without distractions.

In general, the status boards were maintained and used by the staff. However, the chronology board was not always updated in a timely manner and the graphical display was difficult to read from a distance and visually blocked by responders in the vicinity.

The Response Manager (RM) gave frequent and thorough briefings to the staff, the NRC site team and the states. He maintained good command and control throughout the exercise. However, it was noted by the inspectors and raised by the controller in the critique that when the representative from the Commonwealth of Massachusetts wanted to obtain some information from the licensee, he had to wait to talk to the RM who was generally very busy or on the phone.

The RM and his staff were very proactive. They continuously assessed plant conditions and the status of key components, and reviewed EALs for a potential classification upgrade. The RM requested his staff to look at various scenarios in anticipation of degraded plant conditions. They also evaluated the offsite conditions and in-plant conditions relative to issuing PARs.

Notifications and communications in the EOF were very good. Interaction with the states and the NRC site team at all levels were maintained in the EOF through formal briefings and one-on-one interfaces. Notifications to the states and NRC, as well as press releases, were timely and accurate.

All objectives related to the EOF were successfully completed and the licensee properly followed its EOF procedure.

Dose Assessment

The dose assessment function in the EOF was fully staffed within 25 minutes after the Alert classification notification.

The Dose Assessment Specialist (DAS) directed the dose assessment function, evaluated meteorological and radiological conditions, and briefed and advised the EOF Coordinator (EOFC). The EOFC informed the RM of changing radiological conditions, advised the RM in making the PARs and communicated the PAR to representatives of the states.

The DAS was very good at delegating responsibilities to the dose assessment staff and kept the EOFC apprised of changing radiological conditions. When the NRC dose assessment team arrived, the DAS immediately briefed the NRC Protective Measures Coordinator on current radiological conditions, "what if" dose projections and promoted teamwork between the NRC and the licensee.

The Meteorological Post Accident Computer operator performed "what if" dose calculations and provided updates every 15 minutes to the DAS. The licensee's "what if" dose calculations compared very well to the NRC's dose assessment model.

The PAR was made within 10 minutes of the GE declaration, meeting the 15-minute requirement. Plant conditions met the licensee's criteria for a PAR requiring evacuation out to 2 miles, 360 degree radius and 2 to 5 miles downwind in the effected sectors. (PAR GROUP A, EPIP 5.4A, PAR). The RM hesitated to make this PAR because of the potential for deteriorating plant conditions, which would have required evacuation out to 10 miles. But, the EOFC cautioned the RM about unnecessarily evacuating the general public and advised the RM that an updated PAR would be the better path if additional information indicated further plant deteriorating conditions. The RM made the PAR (2 mile radius) and the EOFC notified the states of the decision and the potential for an upgrade, if necessary. Soon after, the RM received information from the TSC regarding plant conditions and based on this information, the RM decided to upgrade the PAR to extend the evacuation to 5 miles, 360 degree radius, and 5 to 10 miles in the effected sectors. The EOFC advised the RM to confer with the state representatives and the NRC's, Director of Site Operations, prior to officially making the upgrade. The inspectors observed an excellent demonstration of teamwork and communication among the licensee and state and federal representatives that resulted in the decision to upgrade the PAR.

Offsite radiological monitoring teams were briefed and dispatched in a timely manner, and were frequently updated on changing plant conditions. The Yankee Atomic Environmental Mobile Laboratory set up a portable gamma spectrometry system at the EOF for analyzing field samples. One of the offsite teams returned to the EOF with an air sample (charcoal cartridge) for radioiodine analysis. This was an excellent initiative by the offsite monitoring coordinator because it enabled the licensee to quantify the extent of radioiodine in the surrounding areas.

Overall, the dose assessment staff was excellent in performing its functions, and the teamwork, with the NRC site team, contributed to a well organized performance.

b.5 Licensee Exercise Critique

The licensee's critique was very comprehensive and thorough. It identified all of the observations identified by the NRC inspection team.

c. Overall Exercise Conclusions

Overall performance of the ERO was very good. Simulated events were accurately diagnosed, proper mitigation actions were performed, emergency declarations were timely and accurate, and offsite agencies were notified promptly. Exercise strengths were noted in command and control in the EOF by the RM, and the licensee's interface with the States of New Hampshire, Maine, the Commonwealth of Massachusetts, and the NRC Site Team, which participated in the exercise. No exercise weaknesses, safety concerns, or violations of NRC requirements were observed.

P8 Miscellaneous EP Issues

P8.1 SCR Announcements

IFI 50-443/94-29-01: During the December 1994 exercise, the shift superintendent did not announce major decisions to the crew in a loud and clear manner. During this exercise, the unit superintendent and SM conducted timely, frequent and informative briefings to the crew. These briefings apprised the crew of classification status, plant status, and procedural implementation. This issue is closed.

P8.2 Updated Final Safety Analysis Report (UFSAR) Review

A recent discovery of a licensee operating their facility in a manner contrary to the UFSAR description highlighted the need for a special focused review that compares plant practices, procedures, and/or parameters to the UFSAR or the emergency plan. During this exercise, the inspectors reviewed the licensee's compliance with the emergency plan regarding the demonstration of reduced ERO staffing, facility activation and usage, classification of simulated events, and notification of offsite agencies. Results are discussed in the exercise conclusion. No discrepancies were noted.

P8.3 In-Office Review of TI 2515/134 Licensee On-shift Dose Assessment Capabilities

The inspector did an in-office review of TI 2515/134 "LICENSEE ON-SHIFT DOSE ASSESSMENT CAPABILITIES," with the licensee over the telephone and verified the information provided by the licensee by reviewing the specific sections that were referenced in the emergency plan and emergency plan implementing procedures. All areas included in TI 2515/134 with exception of a backup method are identified in the emergency plan. The back-up dose assessment system is discussed in the emergency plan implementing procedures. The on-shift dose projection system (ODPS) is on two plant computers, and if these systems fail, there are lap-top computers with the ODPS installed that can be used to do the dose assessment. Additionally, the ODPS can be installed and operated on any disk operating system based personnel computer system. The inspector concluded that the licensee maintained on-shift dose assessment and adequate back-up capabilities to ensure that on-shift dose assessments could be performed.

MANAGEMENT MEETINGS**X.1 Exit Meeting**

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on September 20, 1996. The licensee acknowledged the inspector's findings.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

C. Berry, Training Supervisor
 S. Buckwald, Quality Assurance Supervisor
 A. Callendrello, Licensing Manager
 W. DiProfio, Station Manager
 B. Drawbridge, Executive Director, Nuclear Services and Operations
 S. Dodge, Radiation Services Department Supervisor
 R. Donald, Auditor
 J. Grillo, Operations Manager
 R. Lizotte, Administrative Services Manager
 R. Messina, Security Supervisor
 J. Peterson, Maintenance Manager
 D. Roy, Operations Training Supervisor
 B. Seymour, Security and Safety Manager
 J. Sobotka, NRC Coordinator
 P. Stroup, Director, Emergency Preparedness
 D. Tailleart, Emergency Preparedness Manager
 R. White, Engineering Manager
 D. Young, Senior Nuclear Emergency Preparedness Coordinator

NRC

J. Macdonald, Senior Resident Inspector, Seabrook
 D. Mannai, Resident Inspector, Seabrook

LIST OF INSPECTION PROCEDURES USED

82301: Evaluation of Exercises for Power Reactors
 82302: Review of Exercise Objectives and Scenarios for Power Reactors

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

IFI 94-29-01 Marginal simulator control room announcements

Discussed

None

LIST OF ACRONYMS USED

DAS	Dose Assessment Specialist
EAL	Emergency Action Level
EOF	Emergency Operations Facility
EOFC	Emergency Operations Facility Coordinator
EOP	Emergency Operating Procedure
EP	Emergency Preparedness
ERO	Emergency Response Organization
ERT	Emergency Repair Team
GE	General Emergency
HP	Health Physics
KI	Potassium Iodide
LOCA	Loss Of Coolant Accident
NRC	Nuclear Regulatory Commission
ODPS	On-shift Dose Projection System
OSC	Operations Support Center
OSCC	Operational Support Center Coordinator
PADs	Protective Action Decisions
PAR(s)	Protective Action Recommendation(s)
RCC	Radiological Controls Coordinator
RCS	Reactor Coolant System
RM	Response Manager
SCR	Simulator Control Room
SED	Site Emergency Director
SM	Shift Manager
STED	Site Temporary Emergency Director
TSC	Technical Support Center
UFSAR	Update Final Safety Analysis Report