U. S. NUCLEAR REGULATORY COMMISSION

REGION I

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Facility:	Haddam Neck Plant
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EXECUTIVE SUMMARY

Haddam Neck Plant
Full-participation Emergency Preparedness Exercise Evaluation
August 13-16, 1996
Inspection Report 50-213/96-007

This inspection evaluated the licensee's performance during its biennial emergency preparedness exercise. The inspectors observed emergency facility staffing, procedure implementation, effectiveness of mitigation actions, communications, direction and control, emergency classifications, and off-site notifications.

During the exercise, two weaknesses were observed: 1) failure to recognize the need for an Alert declaration early in the exercise (which consequently was prompted by the lead controller) and confusion with the use of emergency action level tables prior to the declaration of the General Emergency; and 2) failure to implement protective actions for the SERO at the EOF and site personnel, and consider protective action recommendations beyond the 10 mile emergency planning zone, based upon the dose projections used in support of those protective actions. These exercise weaknesses are being considered for enforcement action since they may constitute violations of 10 CFR 50.47(b) and Appendix E. **(EEI 50-213/96-07-01; EEI 50-213/06-07-02)**

The inspectors also observed that: 1) the overstaffing of key SERO positions with two and three individuals very early in the exercise caused confusion and problems for other individuals initially assigned to the SERO, and made it extremely difficult for the NRC inspectors to assess the true performance of the individuals actually assigned to those positions; and 2) the over-staffing also may have affected the ability of the SERO to communicate effectively within and among the facilities and with the State. The latter two situations severely limited the inspectors' ability to determine if the SERO could effectively implement the emergency plan and implementing procedures.

At the completion of the licensee's critique, the licensee's staff committed 1) to take timely and appropriate corrective action for the weaknesses identified, 2) to have a management meeting at the NRC Region I office to discuss those corrective actions, and 3) to perform a drill onsite of sufficient scope to demonstrate the effectiveness of those corrective actions prior to the restart of the Haddam Neck Plant.

REPORT DETAILS

P4 Staff Knowledge and Performance

a. Exercise Evaluation Scope

During this inspection, the NRC inspectors observed and evaluated the licensee's 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 off-site 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.

The scenario began with the plant operating at 100% power, with electrical bus 8 out of service for replacement of bus work fasteners. Additionally, severe thunderstorms had been forecast for the area. At 3:25 p.m., lightning struck the intake structure exhaust pipe from the diesel fire pump and caused a momentary loss of semi-vital power. The shift manager received information that the intake structure, diesel fire pump, and D circulating water pump had been damaged. An Alert declaration should have been made on visible damage to vital structures and equipment. This was not done until prompted by the controller. At 4:30 p.m., a small reactor coolant leak began through the head vent and shortly after that there was a loss of all semi-vital power due to a faulty breaker, requiring a manual reactor trip due to loss of feedwater. This caused the shift crew to transition to Function Restoration Procedure (FR-H1) when feed flow could not be established within 15 minutes and the shift manager declared a Site Area Emergency (SAE) based on potential loss of two barriers (i.e., reactor coolant system and fuel). When safety injection was actuated for feed and bleed the "B" High Pressure Safety Injection (HPSI) pump failed to start and the running HPSI pump experienced a break in the HPSI common injection line in containment. At 3:35 p.m., a steam generator tube rupture occurred due to a high differential pressure across the number 4 steam generator. Additionally, at 5:40 p.m., reactor coolant pump seals failed. Due to the loss of reactor coolant system inventory, the core exit thermocouples and containment radiation monitor readings began to increase. At about 5:55 p.m., the steam generator code safety lifted releasing reactor coolant system secondary and primary coolant water directly to the atmosphere, requiring a General Emergency (GE) to be declared on loss of three barriers (fuel, reactor coolant system, and containment).

The SERO had been expected to pursue multiple success paths to restore core cooling and the electrical repair team was able to restore power to emergency bus 8. Additionally, the SERO isolated the reactor coolant system loop to the faulted steam generator and terminated the release.

At the time the exercise was terminated (about 8:30 p.m.), the State of Connecticut was in the process of evacuating the ten mile emergency planning zone (EPZ).

b. Emergency Response Facility Observations and Critique

b.1 Simulator Control Room (SCR)

The control room shift manager (SM) improperly classified the initiating event as a unusual event. Both the SM and the duty officer reviewed the emergency action levels (EALs) table and failed to identify that the reported structural damage to the intake structure and the "D" service water pump warranted an Alert classification. Subsequently, the SM was prompted to classify the event as an Alert by the drill controller. However, even after a second review of the EAL table, the SM was still uncertain about the basis for the Alert classification. This was assessed an exercise weakness. Following the activation of the EOF and further equipment degradation, the SM and duty officer made a timely and correct recommendation to the Director of Site Emergency Operation (DSEO) to upgrade the event classification.

The crew implemented the initial emergency response plan procedures appropriately and offsite notifications were made within the required time limits following the event classification. However, during the initial activation of the emergency response organization, the emergency notification system phone was not continuously manned for approximately one-half hour. Further, the SM did not adequately implement procedure 1.5-26, "Manager of Control Room Operations" following his relief as DSEO. For example, control room ventilation was not verified to be in the fallout mode, health physics support for plant operator actions in radiological areas was not requested, and the assistant director, technical support (ADTS) was not kept informed of the deployment of operations personnel as specified in the procedure.

Communications between the control room and other emergency response support facilities was adequately handled by the SM. However, the SM did not keep control room personnel informed of the changes in event classifications, the EOF activation, and the duty officer being relieved of his DSEO responsibilities. Although not evident in the scenario, the demands of maintaining an effective flow of information to external support facilities and personnel could become a distraction for the SM who also needs to maintain oversight of control room activities while acting as the shift technical advisor. The licensee plans to re-evaluate the use of the SM as the principle communications link between the control room and other emergency response facilities.

The implementation of 10 CFR 50.54(x) to perform actions contrary to emergency operating procedures (EOPs) and other guidance was not adequately controlled or documented. The SM identified cases in which 10 CFR 50.54(x) was necessary; however, the review and concurrence by the TSC was informal. The SM directed that the safety injection relays be reset per 10 CFR 50.54(x) to prevent automatic opening of the core deluge valves when the reactor vessel depressurized. The rationale for this action was to minimize the potential for an inter-system leak if the system check valves leaked and this action was not questioned by the TSC staff. The resetting of the safety injection relays was later determined to be inappropriate following discussions between the inspector and the operations manager. In most

cases, 10 CFR 50.54(x) declarations were not articulated to the crew and were not logged in the SCR. Although most declarations of 10 CFR 50.54(x) were logged at the TSC or EOF, including the notification of the NRC, the actions taken and their justifications were typically not documented. In one case, the SM implemented actions to bleed steam from a steam generator following a tube rupture, as allowed by 10 CFR 50.54(x), without the action being logged or NRC notification being made. The control of actions under 10 CFR 50.54(x) is also discussed as a command and control issue in the TSC area in Section b.2 of this report.

The crew appropriately implemented abnormal operating procedures and EOPs although many of the events were beyond the guidance provided in the EOPs. The crew promptly diagnosed most equipment failures; however, a HPSI line break and failure of the reactor coolant pump seals were not identified during the exercise. The failure to identify the HPSI line break could have delayed the crew in establishing an injection source to the vessel; however, an exercise control error allowed the use of HPSI to reflood the core. In addition, the SM identified a number of changing plant conditions such as the trip of the "A" HPSI pump and core uncovery, that were not initially identified by the crew. Throughout the exercise, the crew anticipated further plant degradation and established contingency plans. For example, electrical maintenance was directed to restore electrical bus 8 following the notification of impending severe weather.

Additionally, the SCR crew directed plant operator actions in and outside the plant without consistently ensuring the appropriate health physics coordination or precautions were taken. Health physics personnel were typically not assigned to accompany the operators while performing tasks in and around areas of radiological releases. For example, an operator was sent to close the auxiliary feed bypass valves and to close service water motor operated valves 3 & 4, without consideration of radiological consequences.

b.2 Technical Support Center (TSC)

The TSC was activated in a timely manner with managers and personnel representing the appropriate disciplines. Managers and personnel in the TSC, the accident management team (AMT) and the ADTS staff appeared familiar with assigned duties and responsibilities. Assigned tasks were performed efficiently. The TSC assessment tools and support information were readily available and adequate to support the response efforts. Examples included the drawings, procedures and computer terminals (offsite facilities information services (OFIS), and the safety parameter display system (SPDS)) in the TSC.

The communications link established among the TSC, the SCR and the DSEO worked well to allow the flow of information and the rapid exchange of data to assess or clarify plant conditions, and to relay changes in mitigation strategies. The display of status information within the TSC was generally good; plant and event information boards were updated and used by the staff. The communication links with the DSEO were also effective in communicating emergency response status information and corrective actions. Examples included the responses following the

loss of semi-vital power/reactor trip, the steam generator tube rupture, and the communication of estimates for degraded core conditions. However, not all important status information was effectively shared with personnel needing that information. For example, key members of the AMT were not aware of the restoration time for Bus 8, even though this information was readily available within the TSC. This information deficiency contributed to an incorrect PAR made to the State.

The TSC was effective in working with the manager, control room operations (MCRO) to assess plant status as conditions degraded, and to identify actions needed to restore core cooling and minimize releases. The ADTS coordinated well with the manager, technical support center (MTSC) and manager, operational support center (MOSC) to establish and prioritize repair tasks. The coordination was particularly effective during periods when plant conditions were degrading to reassess task priority real-time with changing plant status. Examples included the coordination to assess the conditions at the intake structure and the status of HPSI following restoration of power. The mitigation actions in response to degraded equipment were generally appropriate, as were the strategies to identify the success paths to stabilize the plant.

The TSC staff was generally aware of plant conditions, including the systems in a degraded status. Two exceptions were noted. The TSC failed to assess the status of the reactor coolant pressure boundary fully, and did not note the failure of the reactor coolant pump seals or the failure of HPSI injection when safety injection first occurred. Although the symptoms of increased reactor coolant system (RCS) leakage were noted, the TSC failed to pursue this information to establish the cause(s) or assess the significance. While these failures did not impact the successful mitigation of this event, the failure to diagnose these conditions impacted the quality of the information provided to the AMT for use in core damage predictions.

The TSC was somewhat effective in diagnosing events, providing recommendations to mitigate degraded conditions, and implementing the E-plan (classification of plant damage status). There was a duplication of effort in the review of EALs. This was done by both the TSC engineers and the ADTS support staff. Once stable plant conditions were achieved to assure core cooling, the TSC staff performed well in reviewing plant conditions and assessing plant and equipment vulnerabilities. These evaluations included "brainstorming" and the development of "what-if" scenarios along with recommended contingencies. An example included the recommendation to rack the breaker open for RH-MOV-22.

An area for improvement was identified relative to the need to take more initiative to develop and suggest (rather than just concur with) strategies in response to situations where 50.54(x) may be invoked, and the development of written strategies for handling these contingencies. As noted in Section b.1 above, the implementation of 10 CFR 50.54(x) to perform actions contrary to EOPs and other guidance was not adequately controlled. The TSC staff did not take an active role in determining, directing or documenting mitigation strategies. In most cases, the MCRO developed the mitigation strategies even when ample time existed for the TSC to pre-plan evolutions such as controlling the rate of core and steam generator

re-flooding following the restoration of electrical power. Typically, the MCRO would inform the TSC of his planned action and if no objections were immediately voiced, the action would be implemented. An example included the decision to steam the No. 4 steam generator in an attempt to prevent a safety valve from lifting and thus preserve the containment barrier. In this instance, the TSC called the MCRO several times to question the actions which had already been taken under 10 CFR 50.54(x). The strategy of deliberately venting a faulted steam generator to delay the onset of major offsite releases as a trade-off to the preservation of vessel inventory did not receive full review and concurrence within the TSC. The ADTS was not effective in resolving conflicting views within the TSC on the best mitigation strategy that both preserved inventory and containment, which prompted a differing opinion regarding the venting of the steam generator.

Overall, the TSC functioned adequately to support the SERO in the major actions necessary to mitigate the accident and minimize the risk to plant workers and the public. Command and control in the TSC was not fully effective, due to the problems related to complete diagnosis of RCS conditions, duplication of efforts in EAL reviews, the development of written strategies and (most significant) the failure to keep the AMT fully integrated in TSC functions. The TSC became too focused on the myriad of subscenario details and did not maintain a comprehensive overview of overall plant conditions and the TSC input to the overall SERO response.

b.3 Operations Support Center (OSC)

The OSC was activated and fully staffed within one hour of the Alert declaration. The MOSC fulfilled the responsibilities of this position as documented in Emergency Plan Implementing Procedure (EPIP) 1.5-42, "Manager of Operational Support Center" Section 6.1. The inspector observed good coordination among the MTSC, ADTS, and the MOSC. The OSC provided appropriate priorities for the emergency repair teams (ERTs) and the priorities were appropriately changed as plant conditions degraded.

The inspector noted that individuals fulfilling the OSC positions and their backups had reported to the center prior to and during activation. Because of the immediate response by the backup staff, no additional plant status briefings were necessary for the relief personnel. The congestion and noise levels were acceptable within the OSC, however, in the post-drill debriefing, the licensee felt that the OSC Maintenance Assistant (OSCMA) should be on a head set for radio communications so as not to impact the TSC functions.

The ERTs were dispatched in a timely manner. The four ERTs used during the exercise were dispatched within one hour of the activation of the OSC. Excellent briefings were provided by the Manager of Radiological Consequence Assessment (MRCA) to the OSC ERTs on changing radiological conditions, establishment of radiation field criteria to terminate maintenance repair activities, and how often personnel monitoring devices should be read. Radio communications between the OSCMA and the ERTs were generally reliable and, in cases where it became inoperable, backup phone extensions were appropriately used. The OSC provided appropriate control and tracking of ERTs and their changing work scope.

Inspector observations of one of the ERTs noted a good understanding of the tools and equipment necessary for troubleshooting and repairing semi-vital power. A minor controller issue allowed simulation of acquiring the tools and equipment, whereas the exercise developers expected the repair teams to physically locate the necessary tools and drawings. Additionally, this simulation hampered the repair team's ability to diagnose the loss of semi-vital power problem because they didn't have the plant drawings. Minor equipment malfunctions occurred when one of the personnel monitoring devices failed for an electrician. Additionally, not all radio communications with the OSC were followed with "this is a drill."

The inspector noted that EPIP 1.5-42 required a facsimile of the emergency team work assignment sheet to be sent to the control room. This did not occur, since the ADTS was in constant communications with the SCR regarding the status of repair teams and the ADTS approves the work assignments. This was discussed with the licensee at the end of the exercise, with the licensee concluding that a procedural revision was necessary to reflect the current practices.

b.4 Emergency Operations Facility (EOF)

The Alert was declared at 3:52 p.m. and the DSEO in the emergency operations center (EOC) assumed and transferred DSEO duties from the SCR at 4:33 p.m. The EOC positions were filled and the entire SERO was activated at the EOF at 4:44 p.m. The inspectors considered these to be timely responses as the licensee met its one hour activation commitment.

The inspectors observed that there were multiple individuals filling the manager positions in the EOC shortly after it was activated. For example, there were backups present for the DSEO, the technical information coordinator, and the manager of communications positions. There were also two backups for the manager of public information and there were three backups for the assistant director of the EOF. All of these individuals collectively performed the necessary duties of the position they were backing up. However, the licensee's emergency plan does not include backup personnel to implement the plan and, therefore, they should not have been present to assist the assigned SERO members during the exercise. Because of the additional personnel and their contributions to the exercise, it was difficult for the inspectors to determine if the licensee's emergency plan could be implemented with the response organization stated in the plan.

Information flow within the EOC was good. Three-part communications were regularly used during the exercise by the players. The DSEO promptly made announcements to the EOF regarding changes in plant status and event classification. The DSEO held manager briefings to disseminate information and the status of the various response efforts. The DSEO and the backup DSEO kept each other informed as they individually spoke with managers or responded to telephone calls.

Event classifications, declarations and notifications were accurate and timely for the SAE and the GE. However, there were two discrepancies observed by the inspectors. The first discrepancy occurred shortly after the SAE declaration while the DSEOs were reviewing the EAL barrier failure reference table and logic chart. The SAE had been declared due to a potential loss of fuel clad and RCS barriers. The backup DSEO improperly entered the logic chart at the point where a loss of two barriers requires a GE declaration. He then incorrectly stated that if conditions worsen such that a loss of the fuel clad and RCS barriers occurred, the criteria for a GE would be met. The DSEO acknowledged this incorrect statement. The second discrepancy occurred when a steam generator tube ruptured and the DSEO was ready to implement the SM's recommendation to declare a GE due to the breaching of the third barrier - containment. However, other managers immediately informed him that not all of the criteria had been met for the GE declaration. The DSEO then reviewed the EAL table criteria and concurred with their assessment. The inspectors considered these two potential misclassifications, in conjunction with the SM's premature recommendation to declare a GE and his failure to classify the Alert properly, as a weakness in classifying events using the EAL tables.

The DSEOs also provided an overly conservative protective action recommendation (PAR) to the State of Connecticut consisting of evacuating 10 miles, 360 degrees. At the time of the GE declaration (6:00 p.m.), the DSEOs were aware that core uncovery was not projected to occur until about 7:35 p.m. and that a HPSI pump was to be returned to service at about 6:30 p.m., which would restore core cooling. The DSEOs should have challenged the PAR because of the restoration of core cooling which would have precluded the need to evacuate the full 10 miles, 360 degrees, which was based upon a "worst case" assumption.

Good teamwork among the various backups precluded several problems in the EOC and resulted in accurate SAE and GE classifications and timely notifications to the State. The discrepancies observed regarding the DSEO's EAL usage and the SM's failure to classify the Alert properly were determined to be an exercise weakness. The DSEO's failure to incorporate important plant system information resulted in an overly conservative PAR. The backup managers in the EOC, though each contributed to fulfilling the duties of the position, made it difficult to determine if the licensee could implement the emergency plan with the staffing stated in the plan.

The dose assessment area of the EOF was staffed in 50 minutes from the time of the Alert classification notification.

Upon arrival at the EOF, the Manager Radiological Dose Assessment (MRDA) was quick to assigned priorities to the radiological dose assessment team and kept the Assistant Director Emergency Operations Facility (ADEOF) staff updated on changing radiological conditions. The Radiological Dose Engineer (RDE) performed "what if" dose calculations using a computer-based Accident Dose Assessment Model (ADAM) and the team participated in useful discussions about potential radiological release pathways. Field teams were properly briefed, dispatched and controlled by the Field Team Data Coordinator and status boards were continuously updated. One coordination discrepancy was observed when three ADEOF "backups" had reported to the EOF after the Alert declaration and the primary ADEOF elected to utilize all three "backups" during the exercise. This created

confusion in the dose assessment area, because the MRDA and the dose assessment team were responding to multiple and sometimes conflicting requests from the ADEOF staff. For example, one ADEOF "backup" asked the MRDA to request a sample from the Post Accident Sampling System (PASS), while another requested a PASS sample at the discretion of the MRDA. However, no PASS sample was taken during the exercise. Also, the dose assessment team was asked by the ADEOF staff to estimate the dose consequences in the EOF in case the plume changed directions and impacted the EOF. The team could not calculate doses because they did not have the building specifications for determining shielding factors and ventilation information. Once the request had been made, however, the ADEOF staff did not follow up for a reply.

The licensee did not follow the steps described in Procedure NUC EPOP 4428G, for making a PAR decision. The MRDA is responsible for providing a PAR to the ADEOF. However, while the MRDA was assessing the radiological and plant conditions for making that decision, the ADEOF informed the MRDA, (12 minutes prior to the GE), that he had already decided the PAR would be an evacuation of the whole EPZ out to 10 miles. This resulted in the removal of the MRDA's expertise and the licensee not following procedures. The MRDA diligently continued to make attempts to receive information from the accident management team leaders (AMTLs) regarding plant conditions before officially concurring with the ADEOF's decision. The AMTLs stated that the electrical system for the operation of the HPSI pumps would not be restored and plant conditions were worsening. However, at that time, there was a communication breakdown in the TSC, and the AMTLs were not told that the HPSI pumps were expected to be operational within a short period of time. Not knowing this information at the time of the GE, the MRDA concurred with the ADEOF's PAR decision.

The PAR was made within two minutes after the GE declaration, meeting the 15-minute requirement. However, the licensee based its PAR decision on dose projections for a "worst case" scenario in which 100% of the noble gases were released within 15 minutes. The dose projections indicated an integrated whole body dose of 6510 rem at the site boundary and 100 rem at 10 miles. Due to this very high dose projection and to some erroneous information received from the TSC (that plant conditions were worsening), the licensee made a PAR to evacuate the general public out to 10 miles, but did not initiate planning for protective actions for the SERO.

The inspector discussed with the RDE that an 100% noble gas release in 15 minutes was an unrealistic assumption. The RDE stated that he knew the "what if" assumptions were "overly conservative." The assumption of a total release in 15 minutes from a steam generator tube rupture, through a stuck open safety is unrealistic due to the restricted flow through the safety valve itself. The RDE also performed dose projections using current plant conditions, and ADAM (a dose projection computer code) predicted a whole body dose (cloud shine) of 3 rem at the site boundary from a noble gas release. Based on this information, he felt it was reasonable to evacuate out to 10 miles. This lower, more reasonable projection was not utilized in formulating the PAR, however, nor was this projection communicated to the State. No recommendations were provided for the onsite personnel either, who, according to the licensee's dose projections, would receive

as much as 6510 rem. Even though the PAR was timely, it was based on a "worst case" scenario resulting in very high dose projections. If these projections, which were passed on to the decision-makers and the State, were believed by the licensee, then the PAR should have extended past the 10 mile EPZ. No recommendations were made relative to protective actions beyond the 10 mile EPZ. This is considered an exercise weakness.

Using the NRC dose assessment computer model, "radiological assessment system for consequence analysis (RASCAL)," in Region I, the inspector ran various "what if" dose calculations based on plant conditions at the time of the GE declaration. The results verified the projected doses calculated on ADAM of approximately 3 rem at the site boundary. The inspector concluded that based on the current plant conditions, an evacuation out to a 5 mile radius would have been more reasonable; however, evacuating out to a 10 mile radius would also have been reasonable. The inspector cautioned the licensee about moving the general public unnecessarily and that once a PAR had been provided and a protective action decision made, an additional PAR can always be made to extend protective actions as additional plant information is received. A protective action cannot be reduced, however, once it has been announced, without causing considerable confusion among the members of the affected public.

The licensee continuously communicated radiological conditions to the State via telephone and facsimile. However, the facsimiles were often late and update reports contained ambiguous information. For example, the information received by the State indicated that "100% release" of core activity was projected, not 100% of noble gases, as intended. Also, the State had initially received erroneous information that the release pathway was filtered and through the plant stack, and not a steam generator tube leak that was released directly to the environment through a stuck open steam generator safety valve.

Overall, there was good coordination, teamwork and communication among the dose assessment personnel and offsite teams were effectively managed. The overstaffing of the ADEOF position created confusion and some dose assessment tasks were assigned and not completed. However, there were problems noted with the PAR in that unrealistic radiological release assumptions were made, and procedures for PAR formation were not followed. Additionally, there were miscommunications regarding radiological conditions to the State and inaction relative to protective action beyond 10 miles based on overly conservative projections used in the PAR.

b.5 Licensee Exercise Critique

The licensee's critique was very comprehensive, thorough, identified all of the major concerns identified by the NRC inspection team and recognized the SERO's poor performance. During the critique, the licensee committed to take timely and appropriate corrective actions for the identified items, to participate in a management meeting at the NRC regional office to discuss the corrective actions, and to perform another drill/exercise on site to demonstrate the effectiveness of the corrective actions prior to the restart of the Haddam Neck Plant.

c. Overall Exercise Conclusions

The facilities were staffed and activated in a prompt manner. Adequate direction and control were observed at all of the facilities. The initial classification of the simulated event was not recognized by the SCR SM who had to be prompted by the lead controller at that facility. The SAE and GE classifications were correct and timely. However, missing the Alert classification and the discussions on the SAE and GE declarations are considered an Exercise Weakness **(EEI 50-213/96-007-01)**.

Emergency response training, including EAL training, is provided to both the Millstone and Haddam Neck Plant personnel by the Northeast Utilities Nuclear training Services Department. Past NRC inspections have identified a history of EAL classification problems for both plants. While corrective actions have been taken by the licensee in cases where these problems were identified, those actions appear not to have been effective over the long term. The following reports indicate this trend: Combined Inspection Report 50-245/91-19, 50-336/91-23, and 50-423/91-19; Combined Inspection Report 50-245/92-07, 50-336/92-07, and 50-423/92-07; Combined Inspection Report 50-245/94-20, 50-336/94-18 and 50-423/94-17 (escalated enforcement); 50-213/95-17.

The PAR was given to the State of Connecticut within 15 minutes of the GE. However, the basis for the PAR and the fact that there was not any consideration of protective actions beyond the 10 mile EPZ is considered an Exercise Weakness **(EEI 50-213/96-007-02)**.

The Northeast Utilities Corporate Emergency Operations Center (CEOC) had previous problems during exercises with timely, correct and appropriate PARs as indicated in the following reports: 50-213/91-10; 50-213/92-06; 50-213/93-02; 50-213/95-10. This problem apparently continued even though the CEOC staff was moved into the SEROs in the EOFs.

SERO staff held many good discussions during the exercise within individual facilities and among the facilities. However, the extra staffing in all key positions hampered the ability of the NRC evaluation team to determine whether the emergency plan and procedures could be implemented, as stated in the emergency plan, by the key SERO members assigned to the exercise. Even though extra staffing was present, they were not able to identify all of the problems and provide corrective actions for mitigation of the simulated events presented during the scenario. This is considered an inspector follow-up item **(IFI 50-213/96-007-03)**.

The NRC evaluation team also noted that there were communication problems within the SERO and between the SERO and the State of Connecticut. This is also considered an inspector follow up item **(IFI 50-213/96-007-04)**.

P8 Miscellaneous EP Issues

P8.1 In-Office Review of Licensee Procedure Changes

An in-office review of revisions to the emergency plan and its implementing procedures submitted by the licensee was completed. A list of the specific revisions reviewed are included in Attachment 1 to this report.

Based on your determination that the changes do not decrease the overall effectiveness of your emergency plan and after limited review of the changes, no NRC approval is required, in accordance with 10 CFR 50.54(q). Implementation of these changes will be subject to inspection to confirm that the changes have not decreased the overall effectiveness of your emergency plan.

P8.2 Inspector Review of Licensee's Adverse Condition Report for the May 23, 1996, Training Drill

a. Inspection Scope

The inspector reviewed the Licensee's Adverse Condition Report Number 96-0642, on a May 23, 1996 training drill.

b. Observation and Findings

During the licensee's May 23, 1996 training drill, the following eight weaknesses were identified:

1. Some SERO personnel were unfamiliar with the EOF layout and manager/facility location.

2. Some SERO personnel were unfamiliar with their procedures.

3. Some personnel were not aware of their SERO responsibilities, goals, and interfaces.

4. Communications of significant events, information and activities within, and between facilities was weak.

5. Some SERO personnel did not aggressively carry out responsibilities.

6. Emergency repair teams were not deployed in a timely manner.

7. Continuous assessment of the EAL tables was not effectively maintained in the TSC.

8. Classification of the SAE was late in transmission.

The licensee performed a root cause analysis to determine the cause of the problems. Items identified by the licensee were as follows: 1) Dilution of the SERO, i.e., too many personnel on the on-call roster; need to reduce to six. 2) Long time between training and drill participation as player or controller.

Corrective actions were to conduct several facility drills to bring personnel back up to desired knowledge level for their positions. These training drills would include lessons learned from previous drills, facility lay out changes, changes in the SERO due to the incorporation of the corporate organization into the SERO, review of the procedures and a discussion on the requirements and responsibilities of the SERO.

c. Conclusions

The licensee conducted three technical and three radiological training drills during June and July, 1996. Based on the performance demonstrated during this graded exercise, the licensee was successful in correcting some of the weaknesses, such as the deployment of emergency repair teams and awareness of plant issues.

MANAGEMENT MEETINGS

X1 Exit Meeting

The inspector presented the inspection results to members of licensee management, and verified the commitments presented during the critique at the conclusion of the inspection on August 16, 1996. The licensee acknowledged and agreed to the inspector's findings. Additionally the inspector restated the licensee's commitments as indicated during the critique to 1) take timely and appropriate corrective action for the identified items, 2) to participate in a management meeting at the NRC regional office to discuss the corrective actions, and 3) to perform another drill/exercise on site to demonstrate the effectiveness of the corrective actions prior to the restart of the Haddam Neck Plant.

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P. Rainha, Shift Manager, Connecticut Yankee Operations

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

50-213/96-007-01	EEI	Failure to properly classify emergency event
50-213/96-007-02	EEI	Failure to give correct and appropriate PARs to the State of Connecticut
50-213/96-007-03	IFI	Over staffing of the emergency response facilities
50-213/96-007-04	IFI	Communication problems within the SERO and between the SERO and the State of Connecticut

Closed

None

Discussed

50-213/95-10-01	URI	MRCA failed to get appropriate approvals for PAR

LIST OF ACRONYMS USED

ADAM	Accident Dose Assessment Model
ADEOF	Assistant Director Emergency Operations Facility
ADTS	Assistant Director Technical Support
AMRDA	Assistant Manager Radiological Assessment
AMT	Accident Management Team
AMTL	Accident Management Team Leader
CEOC	Corporate Emergency Operations Center
DSEO	Director of Site Emergency Operations
EAL	Emergency Action Level
ECL	Emergency Classification Level
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EOP	Emergency Operating Procedure
EPZ	Emergency Planning Zone
ERTs	Emergency Repair Teams
GE	General Emergency
HPSI	High Pressure Safety Injection
MCRO	Manager Control Room Operations
MOSC	Manager Operational Support Center
MRCA	Manager of Radiological Consequence Assessment
MRDA	Manager Radiological Dose Assessment
MTSC	Manager Technical Support Center
NRC	Nuclear Regulatory Commission
OFIS	Offsite Facility Information System
OSC	Operations Support Center
OSCMA	Operations Support Center Maintenance Assistant
PAR	Protective Action Recommendation
PASS	Post-Accident Sampling System
RASCAL	Radiological Assessment System for Consequence Analysis
RCS	Reactor Coolant System
RDE	Radiological Dose Engineer
SAE	Site Area Emergency
SCR	Simulator Control Room
SERO	Site Emergency Response Organization
SM	Shift Manager
SPDS	Safety Parameter Display System
TSC	Technical Support Center
UFSAR	Updated Final Safety Analysis Report

Attachment 1

List of the Emergency Plan and Implementing Procedures Reviewed

Procedure Number	Procedure title	Revision(s)/Change(s) Reviewed
	Haddam Neck Emergency Plan	33
EPIP 1.5-1A	Non-Emergency Event Assessment	6
EPIP 1.5-28	Manager of Technical Support Center	17
EPIP 1.5-37	Assistant Manager of Radiological Dose Assessment Initial Response	15
EPIP 1.5-48	Control Room Data Coordinator	12
EPIP 1.5-51	Technical Information Coordinator	4
EPIP 1.5-39	Post Accident Sampling of Reactor Coolant	17
EPIP 1.5-40	Post Accident Sampling of Containment Atmosphere	15
NUC EPOP 4411A	Assistant Director Technical Support	0
NUC EPOP 4411B	Assistant Director Emergency Operations Facility	0
NUC EPOP 4422A	Thermal Hydraulic Evaluation Methods	0
NUC EPOP 4428A	Radiological Dose Assessment Team	0
NUC EPOP 4428D	Meteorological Team	0
NUC EPOP 4428E	Post Accident Release Rates	0
NUC EPOP 4428F	Refined Dose Assessment	0
NUC EPOP 4428G	Protective Action Recommendations	0
NUC EPOP 4428H	Radionuclide Deposition and Dose Calculation	0
NUC EPOP 4428I	Direction of POSL Field Team Sampling	0

Procedure Number	Procedure title	Revision(s)/Change(s) Reviewed
NUC EPOP 4428J	Health Physics Network Communica s	0
NUC EPOP 4455	Manager of Public Information	0
NUC EPOP 4455A	Nuclear News Manager	0
NUC EPOP 4455B	Executive Spokesperson	0
NUC EPOP 4455C	Technical Assistant	0
NUC EPOP 4455D	News Releases	0
NUC EPOP 4455E	News Conferences	0
NUC EPOP 4455F	Rumor and Inquiry Control	0
NUC EPOP 4460A	IRG Representative	0
NUC EPOP 4475A	External Resources Coordinator	0
NUC EPOP 4490	Implementation of Recovery Operations	0