



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

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Report No.: 70-824/92-06

Licensee: Babcock and Wilcox Company

Docket No.: 70-824

License No.: SNM-778

Facility Name: Nuclear Environmental Services
Lynchburg Technology Center (LTC)

Inspection Conducted: October 27-30, 1992

Inspector: *J. L. Kreh*
J. L. Kreh

11-27-92
Date Signed

Accompanying Personnel: M. Elliott

Approved by: *W. M. Sartor*
W. M. Sartor, Acting Chief
Emergency Preparedness Section
Radiological Protection and Emergency
Preparedness Branch
Division of Radiation Safety and Safeguards

11-27-92
Date Signed

SUMMARY

Scope:

This routine, announced inspection was conducted in the area of emergency preparedness, and included evaluation of the following program elements:

- (1) coordination of emergency planning with offsite support agencies;
- (2) Radiological Contingency Plan and its implementing procedures;
- (3) emergency facilities and equipment; and (4) performance of the licensee's emergency response organization during the annual exercise, which was conducted on October 29, 1992 from 9:00 - 10:00 a.m.

Results:

In the area inspected, one violation and no deviations were identified. The violation, which was not cited, concerned a failure to submit an appropriately revised emergency plan with the recent license renewal application (for details, see Paragraph 3). The licensee's emergency preparedness program was being maintained in a state of readiness that was adequate to protect the health and safety of the public and plant personnel. The site emergency organization, which included personnel from the Naval Nuclear Fuel Division (NNFD), performed capably and effectively in response to the events postulated by the exercise scenario. Areas for possible improvement in the emergency preparedness

program were identified with respect to the information-gathering and approval process for notification messages (Paragraph 5) and the use of a tracking system for the follow-up of drill critique findings (Paragraph 5).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *R. Bennett, Manager, Nuclear Environmental Laboratories
- *C. Boyd, Licensing and Compliance Officer
- *R. Gilchrist, Manager, Health and Safety (NNFD)
- *T. Grochowski, Jr., Health Physicist
- *J. Hughes III, Emergency Preparedness Officer (NNFD)
- *P. Rosenthal, Manager, Environment, Safety, and Health
- *D. Spangler, Health Physics Supervisor
- *D. Ward, Manager, Safety (NNFD)
- *T. Whitaker, Health Physicist
- *C. Yates, Health Physicist

Other licensee employees contacted during this inspection included technicians, mechanics, security force members, and administrative personnel.

Other Organizations

- E. Talbert, Administrator and Deputy Director, Campbell County Emergency Services
- E. Suydam, Emergency Department Coordinator, Lynchburg General Hospital

*Attended exit interview

2. Coordination With Offsite Support Agencies (88050)

The inspector held discussions with licensee representatives and reviewed documentation regarding the coordination of emergency planning with offsite support agencies. The licensee was required by Section 7.2 of the Radiological Contingency Plan (RCP) to offer appropriate training to five designated offsite support agencies on an annual basis. Documentation reviewed by the inspector disclosed that a total of 16 personnel from the Concord Volunteer Fire Department and the Concord Rescue Squad attended training given by the licensee on October 20, 1992. Nine members of the Campbell County Sheriff's Office attended site familiarization training on September 30, 1992. On October 15, 1992, the licensee provided a training session for 17 members of the Emergency Room staff of Lynchburg General Hospital regarding handling and treatment of radiologically contaminated patients. Licensee letters dated December 19, 1991 and April 27, 1992 offered radiation safety training and facility familiarization to Campbell County Emergency Services, as required by the RCP. However, that agency did not avail itself of the training opportunity.

The licensee maintained letters of agreement (LOAs) with three offsite support organizations: Lynchburg General Hospital, Concord Rescue Squad, and Concord Volunteer Fire Department. The most recent versions of these LOAs (updated with the respective agencies in September 1991 under the aegis of the Naval Nuclear Fuel Division) were provided to the inspector for review and will be included in the next revision of the Radiological Contingency Plan (RCP). An indication of the adequacy of the interfaces between the licensee and offsite support organizations was obtained through telephonic interviews with representatives of two of those agencies (see Paragraph 1). Both interviewees stated that a good working relationship existed with the licensee. The Emergency Department Coordinator indicated that the recent licensee-provided training (see above) had been beneficial to the hospital staff.

No violations or deviations were identified.

3. Radiological Contingency Plan and Emergency Procedures (88050)

The version of the RCP in effect at the time of the current inspection was Revision 3, dated January 1991. This was submitted as a revision which did not reduce the effectiveness of the RCP, and has been implemented by the licensee, although not yet formally reviewed by the NRC. As noted by the last inspection of the licensee's emergency preparedness program in October 1991 (NRC Inspection Report No. 70-824/91-04), changes incorporated in Revision 3 were primarily organizational, involving the naming of Nuclear Environmental Services as a corporate entity, and the identification of NNFD resources (personnel, facilities, and equipment) for augmentation of the LTC response to an emergency condition. These changes appeared to have significantly improved the licensee's emergency response capability. This observation was further confirmed by the licensee's generally good performance during the October 29 drill.

The concept of operation for responding to an emergency at the LTC involved the activation of the NNFD emergency organization and five designated responders for the LTC. Those five LTC positions were Plant Operations Director, Industrial Engineering Coordinator, Radiation Protection Coordinator (all three stationed at the NNFD's Emergency Operations Center [EOC]), On-Scene Technical Advisor (reports to the LTC incident scene), and Evacuation Officer (regular working hours only). The availability of designated individuals to fill the first four of these positions during off-hours was tested monthly as part of NNFD's procedure EP-HS-012, "Inspection of EOC Readiness." This test included contacts via telephone or pager, as necessary, using a call list (EOC Staff Roster) which was updated quarterly. Review

of monthly test records for the period October 1991 to September 1992 indicated no significant problems with respect to availability of LTC personnel to respond to an emergency during off-hours.

During discussions with licensee representatives, the inspector learned that a license renewal application was submitted by LTC in June 1992 (the deadline for timely renewal was July 1, 1992). A relatively recent change to 10 CFR 70.22(i) required that any application for a Part 70 license or license renewal after April 7, 1990 must include a revised emergency plan addressing the information and commitments specified in the 13 subsections of 10 CFR 70.22(i)(3). This revised regulation necessitated emergency plan changes with respect to the standard event classification scheme, exercise frequency, and notification requirements, among others. However, the June 1992 licensee renewal application failed to include an RCP which addressed the revised emergency planning requirements for fuel-cycle facilities. Licensee representatives indicated that they were not aware of the aforementioned requirements for a revised RCP. The inspector informed licensee management that the situation as described here represented a violation of 10 CFR 70.22(i). On October 29, at the request of the inspector, a conference call involving licensee management, the inspector, and the NRC Licensing Project Manager for LTC resulted in an agreement that the licensee would request in writing, no later than November 3, 1992, a scheduler exemption from the subject requirement for an RCP submittal. (Subsequent to the current inspection, the licensee fulfilled this commitment by means of a letter to the NRC dated November 2, 1992 requesting a scheduler exemption until February 1, 1993 for the submittal of an RCP which fully conforms to the requirements of 10 CFR 70.22.) Based upon this licensee commitment to timely corrective action, the subject violation is not being cited because the criteria specified in Section VII.B of the Enforcement Policy (Appendix C to 10 CFR Part 2) were satisfied.

(Closed) Noncited Violation (NCV) 70-824/92-06-01: Failure to submit an appropriately revised RCP in conjunction with the June 1992 license renewal application.

One violation and no deviations were identified.

4. Emergency Facilities and Equipment (88050)

The inspector reviewed documentation of surveillances performed in accordance with procedure TP-578, "Monthly Inspection of Emergency Equipment." Records for the period February-September 1992 indicated that calibrations and operability checks of instruments and equipment were performed as required, and that identified

discrepancies were promptly corrected. Selective inspection of emergency equipment disclosed no problems. Documentation showed that the monthly test of the Emergency Notification System had been performed as required during the past year.

As discussed in Paragraph 3, the licensee's concept of operation for emergency response included significant reliance upon the capabilities and facilities of the NNFD, located adjacent to the LTC. Inspection of the EOC indicated that the facility was being properly maintained, and that no significant changes had been made since the last inspection.

No violations or deviations were identified.

5. Tests and Drills (88050)

Section 7.3 of the RCP specified the conduct of an annual emergency exercise to "test the integrated response of all emergency responders." The required exercise for calendar year 1992 was conducted on October 29. The exercise began at 9:00 a.m. and lasted one hour. With one exception, offsite participation was limited to testing the communications links with State and local authorities and the NRC. The referenced exception was the involvement of the Concord Volunteer Fire Department to the extent of responding to the site and standing by until the termination of the exercise.

The licensee submitted the exercise objectives and scenario to the NRC for review in advance of the exercise. No significant problems were identified with regard to this submittal. The inspector telephonically discussed various aspects of the scenario with a licensee representative prior to the inspection, and was provided appropriate clarifying information to resolve several questions.

The remainder of this report makes references to facility equipment damage, abnormal radiological conditions, and personnel casualties, all of which were postulated to have occurred in order to effect activation of the licensee's emergency response organization (ERO). All such conditions referenced herein were simulated, although the licensee's responses actually occurred (to the extent practicable), and were evaluated.

The exercise scenario involved an explosion in the Liquid Waste Building (LWB), a small structure physically separated from the main facility. A relatively small fire ensued; two persons working in the LWB were rendered unconscious by the force of the explosion and were radiologically contaminated by leaks from

ruptured radioactive waste liquid drain lines. A radioactive calibration source lying inside the LWB near the entrance served as a complicating factor for the Emergency Team. Details of the exercise objectives and scenario are provided in the Attachment to this report.

The inspector observed selected aspects of the drill, including the following: (1) activation of the ERO; (2) management of the response/mitigation efforts by the Emergency Director and his staff at the EOC; (3) offsite notifications; (4) on-scene command and control; (5) personnel search, rescue, treatment, and other support efforts at the accident scene by the NNFD Emergency Team; (6) contamination-control practices; (7) facility evacuation; and (8) communications among onsite response personnel.

Licensee personnel at both the EOC and the incident scene performed capably and effectively in response to the scenario events. No significant performance problems were observed during the exercise. The milestones in terms of event initiation, ERO activation, emergency declaration, and offsite notifications during the exercise were as follows: (1) fire/evacuation alarm at 9:00 a.m.; (2) EOC activated at 9:05 a.m.; (3) Notification of Unusual Event declared by Emergency Director at 9:11 a.m.; (4) notification of State and local authorities and the NRC completed at 9:25 a.m.; and (5) an update provided to State and local authorities at 9:50 a.m. These responses were consistent with the requirements of the RCP.

The inspector observed the EOC to be fully staffed by 9:05 a.m. Internal communications in the EOC were good. Licensee personnel used available procedures and plans (including the Pre-Fire Plan) to assist them in understanding the situation and making decisions on appropriate responses. The LTC counterparts for Plant Operations, Radiation Control, and Industrial Engineering arrived at the EOC at 9:11 a.m. and were briefed on the situation. A discrepancy was identified in communications between the EOC and the on-scene personnel in that the EOC staff was not notified of the fire and its subsequent extinguishment until the exercise was terminated. This matter was also identified by the licensee's critique. All other EOC activities appeared to be conducted in an orderly and efficient manner.

At the LWB, a smoke generator inside the building produced virtually zero visibility on the lower level where the two "victims" (manikins weighing approximately 150 pounds each) were positioned. An inordinate amount of time and effort was spent trying to determine what to do with the cesium-137 calibration source found inside the LWB. Since the Fire Team Leader was equipped with a dose-rate meter, he knew that the source was not a significant hazard and could have simply been moved aside (which was the ultimate action anyway). The licensee's critique identified this delay in victim rescue resulting from

nonthreatening radiation sources. The inspector observed the virtually generic problem of persons wearing self-contained breathing apparatus (SCBA) trying to communicate using a portable transceiver. The Incident Commander at the scene had considerable difficulty understanding the transmissions from Emergency Team personnel who were wearing SCBAs. Improved technology is available to remedy this problem. A good practice was noted in the use of brightly colored vests with large, highly legible lettering worn by the On-Scene Director, the On-Scene Health Physics Coordinator, and the Incident Commander, thus clearly addressing the question of who was in charge.

After the exercise, the inspector's review of the initial and follow-up messages to State and local authorities disclosed that those agencies had been erroneously informed as follows: (1) both messages wrongly stated that there had been no evacuation of onsite personnel, and (2) the follow-up message was incorrect in stating that offsite assistance was requested only from the Concord Rescue Squad (which was unavailable during the exercise because of responses to actual emergencies), whereas the Concord Volunteer Fire Department was also requested and actually reported to the site. The inspector discussed with licensee representatives the need to review the information-gathering process used by the communicator (a secretary), and to consider requiring management approval of notification messages prior to transmission. This issue will be tracked as an Inspector Follow-up Item (IFI).

IFI 70-824/92-06-02: Review of communicator's information-gathering process and consideration of management approval of notification messages.

Inquiry from the inspector regarding the status of licensee critique findings from the 1991 exercise disclosed that the licensee Commitment List for tracking regulatory issues did not include such critique findings. A licensee representative ultimately located a handwritten summary of the 1991 exercise critique findings, but was unable to produce documentation showing how (or whether) each finding was addressed. Section 8.2 of the RCP specified that information regarding exercise critique findings was to be maintained for at least two years, but did not require that deficiencies identified during critiques be corrected. The inspector was informed that the licensee had planned to use the NNFD list of "Emergency Preparedness Commitments" to track LTC critique findings beginning with the 1992 exercise. The licensee's implementation of this planned corrective action will be tracked as an IFI.

IFI 70-824/92-06-03: Implementation of a system for tracking critique findings.

No violations or deviations were identified.

6. Exercise Critique

As required by the RCP, the licensee conducted a critique during which verbal comments from controllers, evaluators, observers, and principal players were received. The inspectors observed the critique and determined it to be adequate in identifying several response problems, corrective actions for which will be tracked by the licensee to ensure implementation (see Paragraph 5, above). Future NRC inspections will review the adequacy of those corrective actions.

7. Action on Previous Inspection Findings (92702)

- a. (Closed) Violation 70-824/91-04-01: Failure to offer training to Campbell County Emergency Services in accordance with Section 7.2 of the RCP.

The inspector reviewed the licensee's December 18, 1991 response to the subject violation, and verified the corrective steps outlined in that response. The specific actions taken in this regard are discussed in Paragraph 2.

- b. (Open) IFI 70-824/91-04-02: Completing the development and implementation of an Emergency Preparedness Manual.

The licensee efforts to address this item were ongoing at the time of the inspection, and will be reviewed again during a future inspection.

- c. (Closed) Exercise Weakness 70-824/91-04-04: Inadequate test of facility evacuation.

The date, but not the time, of this year's exercise/evacuation drill was announced. A memorandum dated October 4, 1991 informed LTC site employees of the need for "drillsmanship" in order to test and demonstrate the effectiveness of evacuation procedures. Artificialities of the type observed last year were not in evidence during the current drill.

- d. (Open) Exercise Weakness 70-824/91-04-05: Failure to classify the event in accordance with Section 3.2.3 of the RCP.

The inspector reviewed the licensee's January 18, 1992 response to this exercise weakness and the subsequent commitments documented in the March 10, 1992 NRC letter to the licensee. The licensee's proposed RCP revisions were not consistent with the referenced commitments. Further discussion elicited a commitment that the next revision of the RCP would include the following classification criterion: "A major fire will be classified as an Alert,"

instead of the planned statement that "a fire which requires that actual hands-on assistance of off-site responders will be classified as an Alert." The term "major fire" will be explicitly defined. This item will be further reviewed during a future inspection.

- e. (Closed) Exercise Weakness 70-824/91-04-06: Inadequate radiological instrumentation for performing area survey.

The licensee provided special, documented training on January 29, 1992 for seven health physicists on the subject of "Instrument Selection for Emergency Response at LTC." This training appeared to provide suitable corrective action. During the October 29 exercise, the selection of an ion-chamber instrument for monitoring beta-gamma in the LWB was appropriate.

8. Exit Interview

The inspection scope and results were summarized on October 30, 1992, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results listed below. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

<u>Item Number</u>	<u>Category, Description, and Reference</u>
70-824/92-06-01	NCV: Failure to submit an appropriately revised RCP in conjunction with the June 1992 license renewal application (Paragraph 3)
70-824/92-06-02	IFI: Review of communicator's information-gathering process and consideration of management approval of notification messages (Paragraph 5)
70-824/92-06-03	IFI: Implementation of a system for tracking critique findings (Paragraph 5)

Attachment (2 pages):
Objectives and Scenario for
1992 B&W LTC Exercise

B & W NUCLEAR ENVIRONMENTAL SERVICES, IN

1992 ANNUAL EMERGENCY DRILL

The Lynchburg Technology Center annual emergency drill will be conducted on Thursday, October 29, 1992. It will commence at approximately 0900 and run for approximately one and one-half hours. The exercise scenario includes events which will require involvement of the NNFD and LTC Emergency Response Organizations as well as off-site response personnel. In the event of inclement weather, the emergency exercise will be rescheduled for the following day.

Personnel safety will receive uppermost priority during the exercise. All safety procedures will be monitored by the Controller/Evaluators. In the event of an actual emergency during the exercise, the lead controller will terminate the exercise to allow response to such emergency.

SCENARIO:

Two personnel are working in the Liquid Waste Building when a gas line on the lower level breaks near the laundry dryers causing an explosion.

One maintenance worker is performing laundry duties on the lower level when the explosion and resulting fire occurs. The worker is hit by flying debris and is rendered unconscious on the floor. During the explosion and resulting fire, the radioactive liquid waste drain lines are ruptured and mildly contaminated liquid waste is pouring on the floor and victim.

A health physics representative is on the upper level leak testing a 200 millicurie sealed source (approx. 350 mr/hr @ 1 foot) when the explosion occurs. The sealed source is dropped on the floor near the exit when the H.P. exited the building. The H.P. initiates the emergency response by dialing the 5000 emergency phone number. He reports the explosion, fire, and that a maintenance worker was working on the lower level. The emergency evacuation alarm is sounded.

OBJECTIVES:

The Drill Controller and Observers will evaluate areas involving specific disciplines during the response to the scenario. All of these specific area objectives will combine to satisfy the following overall objectives of the drill which will be monitored by the drill controllers:

1. Orderliness of Site Evacuation
2. Timeliness of Personnel Accountability
3. Adherence to Emergency Organization Assembly/Reentry Requirements
4. Effectiveness of EOC Activities:
 - a. Internal communications
 - b. Communication to field response groups (On-Scene)
 - c. Accuracy & timeliness of required regulatory agency contacts
 - d. Adequacy of communications to off-site response agencies

- e. General EOC atmosphere/efficiency
- 5. Effectiveness of On-Scene Incident Command Post:
 - a. Selection of command post site
 - b. Communication with on-scene responders (Emergency Team Captain, Radiation Protection, etc.)
 - c. Clarity of communication/information transfer to EOC
- 6. Effectiveness of Emergency Response Groups:
 - a. Attack methods/equipment for fire-fighting
 - b. Appropriateness of the rescue team approach and treatment of injured

SUMMARY:

This situation requires the attention of emergency responders from both inside and outside the facility and tests the interaction between the LTC and NNFD response personnel.

Facility responders will include:

- 1. Radiation Control personnel (contamination control for personnel and area contamination.)
- 2. Security (facility egress, crowd control and personnel accountability assistance)
- 3. Emergency Fire and Rescue Teams (emergency response, fire control and medical emergency rescue and transport)

Outside agencies to be contacted for assistance will include:

- 1. Concord Rescue Squad (injured personnel transport)
- 2. Concord Volunteer Fire department (on-site standby)
- 3. Campbell County Sheriff's Department (traffic control)
- 4. Lynchburg General Hospital Emergency Room (treatment of injured patients)

Any questions or concerns relating to this activity should be addressed to John H. Hughes III, NNFD Emergency Preparedness Officer, at (804) 522-6167.