



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

OCT 20 1989

Report Nos.: 70-824/89-07

Licensee: Babcock and Wilcox Company  
 Naval Nuclear Fuel Division  
 Lynchburg, VA 24505

Docket No.: 70-824

License No.: SNM 778

Facility Name: Naval Nuclear Fuel Division - Research Laboratory

Inspection Conducted: September 18-22, 1989

Inspector: W. H. Rankin 10-18-89  
 J. L. Kreh Date Signed

Accompanying Personnel: J. B. Kahle, Resident Inspector, B&W NNFD

Approved by: W. H. Rankin 10-18-89  
 W. H. Rankin, Chief Date Signed  
 Emergency Preparedness Section  
 Emergency Preparedness and Radiological  
 Protection Branch  
 Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This routine, announced inspection was conducted in the area of emergency preparedness, and included review of: (1) the Radiological Emergency Plan and associated implementing procedures; (2) emergency facilities and equipment; (3) the licensee's efforts in coordination of emergency planning with offsite support agencies; (4) the fire protection program; and (5) the annual radiological emergency response drill, conducted on September 20, 1989.

Results:

The licensee's emergency response capabilities have improved in the past year because of personnel changes and corrective actions implemented in response to several violations identified during recent inspections. However, the Emergency Procedures were found to contain numerous minor discrepancies; the licensee was aware of these and committed to issuance of revised Emergency Procedures by October 31, 1989. A noncited violation was identified for failure to appropriately revise the notification roster for the Emergency Control Organization (Paragraph 2). Evaluation of the emergency preparedness program and drill indicated an adequate overall emergency response capability at the Research Laboratory.

## REPORT DETAILS

### 1. Licensee Employees Contacted

- \*F. Alcorn, Nuclear Criticality Safety Officer
- A. Ambrose, Industrial Safety Officer
- \*R. Bennett, Manager, Safety and Licensing (Emergency Officer)
- \*C. Boyd, Jr., Licensing and Compliance Officer
- T. Grochowski, Jr., Health Physicist
- \*S. Schilthelm, Health Physics Supervisor
- \*L. Trent, Manager, Safety and Safeguards
- C. Yates, Health Physicist
- W. Younger, Supervisor, Plant Engineering

\*Attended exit interview

### 2. Radiological Contingency Plan and Implementing Procedures (88050)

The emergency preparedness program was reviewed to determine whether changes had been made since the last routine inspection of the program (March 1989), and to observe how any such changes may have affected the state of emergency preparedness at the facility. Based on documental review and discussions with licensee representatives, the inspector ascertained that there had been no changes in the Radiological Contingency Plan (RCP) since June 1987, the date of the current version (Revision 2). The licensee was planning to issue a revision of the RCP within a few weeks after the current inspection.

The inspector's review of the Emergency Procedures (EPs) resulted in the identification of numerous minor discrepancies, including the following:

- ° references to shutdown of the CX-10 reactor in the event of high winds, and implementation of the Emergency Plan for that facility (which was decommissioned in 1987);
- ° obsolete nomenclature, such as Lynchburg Research Center (LRC) instead of NNFD-RL, and Fire and Rescue Team/Officer instead of Emergency Response Team/Officer;
- ° outdated call lists of individuals at the Mt. Athos site qualified to provide health physics (HP) assistance;
- ° incorrect telephone number for NRC Region II and misleading instructions regarding use of the Emergency Notification System (ENS); and
- ° reference to a Bomb Search Team, which was no longer a viable component of the NNFD-RL emergency organization.

The licensee had detected the problems delineated above during the required annual review in June 1989, and was in the process of extensively revising the EPs. Based on licensee management's commitment during the Exit Interview to correct the identified discrepancies by October 31, 1989 through the issuance of revised EPs, this finding is categorized as an Inspector Follow-up Item (IFI).

IFI 70-824/89-07-01: Issuance of updated EPs by October 31, 1989.

The inspector's review of the NNFD-KL Emergency Control Organization (ECO) roster (August 1989 revision), included as Appendix A to the EPs, identified several personnel changes which predated the issuance of the roster. The individual listed as Alternate No. 1 for the position of Nuclear Criticality Safety Officer had retired in July 1989; the listing of Emergency Response Team (ERT) personnel omitted one name and included the names of two persons who had not been ERT members since before June 15, 1989. Failure of the Emergency Officer to adequately make changes to the EPs was identified as a violation of the requirements of Section 4.2.1.2 of the RCP (Revision 2, June 1987). On September 21, 1989, the licensee issued a corrected ECO roster to holders of the Emergency Procedure Manual, and instituted a system for closer review of revisions to the EPs. The NRC-identified violation described above is not being cited because criteria specified in Section V.A of the NRC's Enforcement Policy were satisfied. This finding is considered closed, but will be documented as a Non-Cited Violation (NCV).

NCV 70-824/89-07-02: Failure to make required changes to the ECO roster.

One violation and no deviations were identified.

### 3. Emergency Facilities and Equipment: (88050)

The inspector selectively examined emergency facilities and equipment and found that proper maintenance had been provided by the licensee. Records of calibrations and/or surveillances performed since the March 1989 inspection were reviewed for each of the following:

- ° Emergency Lockers (Buildings A and B),
- ° Meteorological System (annual certification: April 20, 1989),
- ° Portable radiological instruments, and
- ° Emergency generator for hot-cell fans.

Surveillance records indicated that identified problems were corrected expeditiously.

Onsite medical facilities, equipment, and supplies were examined and found to be adequate.

No violations or deviations were identified.

4. Coordination With Offsite Support Agencies (88050)

The inspector held discussions with licensee management representatives regarding the coordination of emergency planning with offsite support agencies. As required by the RCP, written agreements had been established with the Concord Rescue Squad, the Concord Volunteer Fire Department, and Lynchburg General-Marshall Lodge Hospitals. All three Letters of Agreement had been renewed in August 1987. The inspector reviewed letters dated August 25, 1989 to the first two agencies inviting their personnel to tour the licensee's facility and receive annual training. A letter dated September 15, 1989, offered training for hospital personnel at either their own facility or NNFD-RL.

No violations or deviations were identified.

5. Fire Protection Program (88050)

The inspector discussed this area with licensee representative. Records showed that six persons were trained and qualified for the ERT. Appropriate fire-fighting apparel and self-contained breathing apparatus were maintained in the Building B Emergency Locker. The inspector reviewed surveillance records generated since March 1, 1989 for the following equipment:

- ° Halon fire suppression system for the hot cells (annual test by vendor on April 11, 1989),
- ° Sprinkler systems and water supply valves (weekly checks), and
- ° Portable fire extinguishers (monthly checks).

The inspector also reviewed the report on a Factory Mutual inspection conducted on March 26, 1989, which identified no significant problems with respect to fire protection at NNFD-RL.

No violations or deviations were identified.

6. Annual Emergency Response Drill (88050)

Section 7.3 of the RCP required an annual emergency drill in order to "test the adequacy of timing and content of implementing procedures and methods, to test emergency equipment and to ensure that emergency organization personnel are familiar with their duties." On September 20, 1989, the licensee conducted the required annual drill, which commenced at 1:05 p.m. and lasted for approximately 30 minutes. The attachment to this report documents the licensee's drill objectives and the scenario details as established in advance.

The inspector observed various aspects of the drill, including evacuation and monitoring of facility personnel in response to the criticality alarm, management and control of the simulated accident by the Emergency Officer and his staff, notifications, and radiation protection practices.

The drill was judged by the inspector to be a successful demonstration of the licensee's emergency response capabilities. The ECO quickly deduced the nature of the "problem" once the Emergency Response Team discovered and reported a low-water-level alarm for the storage pool and a high-radiation alarm in the pool vicinity. Alternative approaches to recovery were discussed and a plan of action was formulated just prior to drill termination. One minor observation by the inspector was that the licensee should consider allowing the evacuation alarm to be reset upon completion of accountability so as to facilitate radio communications with the ERT inside the buildings.

The licensee's EPs specified evacuation of all facility structures when the emergency alarm sounded. The ECO management operated from the assembly area even after accountability was completed. However, in the event of an actual emergency coincident with precipitation, darkness, and/or cold weather, this mode of operation would probably be revised on an ad hoc basis in favor of an indoor facility, with the additional advantage of telephones immediately at hand. The licensee's critique also identified the desirability of an indoor Emergency Operations Center (EOC), and this finding will be tracked as an IFI.

IFI 70-824/89-07-03: Consideration of a designated indoor location for an EOC.

#### 7. Action on Previous Inspection Findings (92701)

- a. (Closed) Violation (VIO) 70-824/88-04-04: Failure to provide annual retraining for members of the ECO.

The inspector reviewed the licensee's August 20, 1989 response to the Notice of Violation (NOV) and confirmed implementation of the corrective actions described therein.

- b. (Open) IFI 70-824/88-04-05: Development of a procedure for performing emergency radiological dose assessment using meteorological and source-term inputs.

A procedure to address this findings was in the final stages of review and will be assessed during a future inspection.

- c. (Closed) IFI 70-824/89-02-01: Formalizing the distribution of changes to the RCP and EPs to ensure that manuals are maintained up to date.

The licensee had developed a distribution process that satisfactorily addressed this finding.

- d. (Closed) NCV 70-824/89-02-02: Failure to conduct a monthly inventory of emergency lockers in accordance with the RCP.

The NRC considers that a NCV is a closed item. Since the original description of the subject finding was not explicit on this point, closure is hereby officially documented.

- e. (Closed) Program Weakness 70-824/89-02-03: Failure to conduct the annual emergency drill in a manner that would adequately test implementation of the RCP and EPs.

The licensee's method of scenario development and advance submittal to NRC was effective in maintaining the confidentiality of the scenario details.

- f. (Closed) IFI 70-824/89-02-04: Providing additional emergency response training to alternates for the Receptionist position.

Licensee documentation indicated that appropriate training was provided on April 4, 1989, to four relief receptionists (all from NNFD Security).

- g. (Closed) VIO 70-824/89-02-05: Failure to conduct quarterly training for Fire and Rescue Team (now called ERT) personnel in accordance with Section 7.2 of the RCP.

The inspector reviewed the licensee's August 4, 1989 response to the NOV and verified implementation of the corrective actions described therein. The last quarterly training session for the ERT was held on June 15, 1989, and the next was scheduled for September 25, 1989.

- h. (Open) IFI 70-824/89-02-07: Including a comprehensive communications exercise as part of the 1989 annual drill.

Because of a misunderstanding on the part of licensee personnel, communications with the various designated onsite and offsite support groups were tested on the morning of the drill date rather than on a "real-time" basis during the drill. Licensee management specifically acknowledged the RCP commitment that a test of the communications links and notifications procedures for support agencies shall be included in the annual drill.

## 8. Exit Interview

The inspection scope and results were summarized on September 22, 1989, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results listed below. Although proprietary information was reviewed during this inspection, none is contained in this report. Dissenting comments were not received from the licensee.

<u>Item No.</u>	<u>Description and Reference</u>
70-824/89-07-01	IFI - Issuance of updated EPs by October 31, 1989 (Paragraph 2).
70-824/89-07-02	NCV - Failure to adequately make required changes to the ECO roster (Paragraph 2).
70-824/89-07-03	IFI - Consideration of a designated indoor location for an EOC (Paragraph 6).

Attachment:  
NNFD-RL Drill of September 20, 1989

OBJECTIVES

1. All buildings evacuated
2. Successful roll completed. (Search planned if necessary.)
3. Probable cause of evacuation determined.
4. External environment monitored.
5. Hazard to evacuated employees assessed.
6. Hazards for reentry teams assessed.
7. Facility monitored.
8. Stay times calculated.
9. Immediate corrective action planned.
10. Event classified.
11. Notifications determined and carried-out or simulated.
12. Help needed determined and requested (simulated).
13. Immediate corrective action ordered and executed (simulated).



July 17, 1989

To: NRC

From: F.M. Alcorn, Babcock & Wilcox Co.

Subject: Annual Emergency Drill for B&W's Naval Nuclear Fuel  
Division Research Laboratory - SNM 778 (formerly  
known as the LRC)

Date: Wed., Sept. 20, 1989 (alternate date is Friday,  
Sept. 22, 1989)

Time: 1:15 pm

Description and Scope: A rapid leak in the Hot Cell  
Pool with increasing radiation levels at the  
pool and nearby will be postulated and  
simulated through the posting of sealed  
envelopes to be opened by the re-entry team  
following the evacuation alarm.

Objectives to be fulfilled: In addition to  
drilling employees on evacuation and roll  
taking, it is hoped this drill will exercise  
the emergency organization in an unusual event  
as to classifying the event, making proper  
notification, monitoring the facility and the  
surrounding area, planning for both immediate  
and continuing corrective actions, making  
emergency dose rate decisions as well as  
determining stay times, and deciding on what  
help is needed and where to get it.

September 5, 1989

To: US NRC, Region II  
From: FM Alcorn, Babcock & Wilcox Company

Subject: 20-Day Notification for Annual Emergency Drill at  
B&W's Naval Nuclear Fuel Division Research  
Laboratory - SNM778

The 45-day notification for the NNFD-RL's annual drill was prepared on July 17, 1989; a copy of that notification is attached for information. Information for the 20-day notification is given below.

The exercise will begin at about 1:15 pm on Wed., Sept. 20, 1989 by announcing an evacuation drill over the PA system. The evacuation alarm will be sounded following the announcement. Certain key operations will be notified prior to the alarm to prevent injury or product damage.

When the Emergency Officer arrives at the command station, he will be handed an envelope with the following message: "About an hour ago there was what is believed to have been a minor earthquake. A general check of the area at that time showed no apparent damage." The radiological protection officer will also be handed an envelope with the same message plus indications that his HP survey instruments read less than 2 MR/HR in the assembly area. If the question of dose rate in the assembly area is raised later in the exercise, additional envelopes will indicate that the rate is not rising.

Approximately 12 Large envelopes will be taped at specific, very visible locations in and around Building B with Large Letters informing the finder that the envelopes are for use in an evacuation drill and are to be opened by the re-entry team and only after the drill is in progress. Inside will be given dose rates and other appropriate information. Locations such as alarm panels, HP radiation detection panels, fence around the Hot Cell facility, doors leading to the Hot Cell Pool, a window over looking the pool and the pool side railing have been chosen for the envelopes. The radiation levels will be described as becoming larger as the pool is approached; on pool side the dose rate will be 100 R/HR. The pool will be described as having lost about half its water (12 feet) but stabilized at a large visible crack.

The re-entry teams will be instructed to follow all routine safety precautions and observe all normal HP requirements for the Hot Cell area (ie., this is a drill). They will also be instructed that should they observe any thing unusual or have actual abnormal HP instrument readings the drill is to be immediately terminated (ie., the drill is on paper only)

The drill will be terminated by the controller after the Emergency Officer has completed planning and issued instructions for immediate corrective action. Hopefully this should not take more than 30 minutes to an hour.