



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
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Report No.: 50-62/95-02

Licensee: University of Virginia
 Charlottesville, VA 22901

Docket No.: 50-62

License No. R-66

Facility Name: University of Virginia Reactor Facility (UVAR)

Inspection Conducted: November 7-9, 1995

Inspector: A. Gooden 12-07-95
 A. Gooden Date Signed

Approved By: E. McAlpine 12/8/95
 E. McAlpine, Chief Date Signed
 Fuel Facilities Branch
 Division of Nuclear Materials Safety

SUMMARY

Scope:

This routine, announced inspection involved a review of the operational readiness status of the licensee's emergency preparedness program, and the evaluation of the licensee's annual emergency response drill. The following programmatic areas of emergency preparedness were assessed to determine the state of readiness: emergency response training; maintenance of emergency cabinets/equipment; and changes to the Emergency Plan, Emergency Plan Implementing Procedures, and the distribution of changes to copy holders.

Results:

Within the areas reviewed, no violations, deviations, or exercise weaknesses were identified. An inspector followup item was identified regarding the audibility of the criticality monitoring system (Paragraph 3), and four items were noted for improvement (Paragraph 5). The exercise was considered a successful demonstration of the emergency

Enclosure

organization's capability to cope with an emergency resulting from an earthquake. As a program strength, the licensee's critique process continues to be very detailed and effective in the identification of areas requiring improvements and corrective actions.

The emergency preparedness program elements were adequately maintained to ensure a state of readiness for responding to emergencies.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *P. Benneche, Reactor Supervisor
- *J. Farrar, Reactor Administrator
- *R. Flack, Chair, Mechanical Aerospace and Nuclear Engineering
B. Hostica, Research Scientist
R. Johnson, Reactor Safety Committee
- *D. Krause, Senior Reactor Operator (Emergency Coordinator)

Other licensee employees contacted during this inspection included administrative personnel.

*Attended Exit Interview

An index of abbreviations used throughout this report will be found in the last paragraph.

2. Emergency Plan and Implementing Procedures (82745)

The review, approval, and distribution of Plan and procedure changes was examined to determine whether significant changes were made since the last inspection (November 1994), to assess the impact of any program changes on the overall state of emergency preparedness at the facility, and determine if the Plan and procedures were revised to reflect those program changes. Requirements applicable to this area are found in 10 CFR 50.54(q) and Section 10.4 of the Emergency Plan.

The inspector discussed with a member of the licensee's staff the last audit performed by the RSC. According to documentation (memo dated September 1994), the last audit of the Plan and EIPs by the RSC was conducted during the period September 1993 and September 1994. The referenced audit was in accordance with Section 10.4 of the Emergency Plan.

Since the November 1994 inspection, changes were made to the Plan (Rev. 3, dated March 6, 1995), and EIPs (Rev. 18, dated March 6, 1995). According to the licensee and a review of the revised Plan and EIPs, changes were primarily to reflect current facility descriptions in the areas of operations and fuel enrichment; and EAL changes were made to reflect the revised terminology associated with 10 CFR Part 20 from MPC to effluent concentration, and dose equivalent rather than whole body. Section 7.5 of the Plan, addressing exposure and contamination limits, was changed to reflect the revised federal guidance in EPA 400 and requirements in

10 CFR Part 20. The inspector concluded that the selected changes did not decrease the effectiveness of the licensee's emergency preparedness program or response capability. The licensee was informed that the formal NRC review and approval would be via separate correspondence. Based on the RSC meeting documentation and an interview with the licensee contact, changes were submitted for RSC review on March 1, 1995, and approved during the March 6, 1995 meeting. Commitments contained in the EIPs continue to implement the EP commitments. The inspector noted during the review of this program area that previous inconsistencies and observations noted during the November 1994 inspection were resolved.

The licensee's EIP-6 "Notification of Emergency Response Personnel and Support Organizations," included the phone numbers and/or point of contacts for the onsite and offsite ERO. When questioned regarding a periodic update and verification of phone numbers in EIP-6, the inspector was informed that the last update to the roster was dated November 1994. The lack of a Plan or procedure commitment to perform a periodic verification resulted in the inspector discussing this matter with the licensee as an improvement item (implement a periodic review and verification of phone numbers to ensure call-list information is current and up-to-date). The inspector observed that the November 1994 emergency phone number roster was posted at several locations throughout the facility (Control Room, ESC, laboratory counting room, etc).

Regarding offsite support agreements, all agreements were reviewed and determined to be current and up-to-date. Appendix A of the Plan required biennial updates be obtained via written correspondence. According to agreements, all offsite support agencies were contacted during calendar year 1994. Therefore, the next biennial update is CY 96.

The inspector reviewed the administrative program governing the review, approval, and distribution of changes to the Plan and EIPs. A review of the RSC meeting documentation covering the period March 1-6, 1995, disclosed that changes were approved and distributed to onsite and offsite copy holders in a timely manner in accordance with the distribution list. Changes were distributed 21 days after approval. Copies number 6 (Control Room), 8 (HP office), and 18 (first floor emergency locker) of the Plan and selected EIPs were examined and found to be current revisions.

No violations or deviations were identified.

3. Emergency Facilities and Equipment (82745)

Facilities and equipment were inspected to determine whether the licensee's ESC, emergency response equipment, instrumentation, and supplies were maintained in a state of operational readiness, and to assess the impact of any changes on the emergency preparedness program. Requirements applicable to this area are found in Section 8.0 of the Emergency Plan and various implementing procedures.

The licensee maintained two lockers for emergency use. One locker, located on the ground floor of the Reactor Building, and a second locker, located on the first floor, contained portable survey instruments, protective clothing, sampling material, dosimetry, etc. Selective examination of the emergency locker located on the first floor disclosed no discrepancies. The inspector's review of documentation for the emergency locker inventory revealed that the inventories were performed at the required intervals. Surveillance documentation indicated that the ESC emergency lighting and the facility's CAM were checked and/or calibrated in accordance with procedures or technical specification requirements.

Additional records reviewed by the inspector included documentation to show that the criticality monitoring alarm system was tested periodically. The referenced warning system consisted of three audible horns and an indicator light was located in the wood shop. The most recent tests performed since the last inspection of this area was conducted on February 23, 1995, September 26, 1995, and as part of an annual evacuation drill on May 23, 1995. During the evacuation drill, the licensee noted that within certain areas of the building, the criticality alarm system was inaudible (e.g. electronics shop). A licensee contact provided the following details when questioned by the inspector regarding the actions taken or planned in light of the evacuation drill observations: "plans are to modify the facility evacuation alarm system to include the criticality monitoring system alarm." The inspector indicated that the modification and testing of the facility evacuation alarm system to ensure facility-wide audibility coverage would be tracked as an IFI.

IFI 50-62/95-02-01: Perform modification and testing of the facility evacuation alarm system to demonstrate facility-wide audibility coverage.

As further assessment of equipment maintenance, the inspector verified the following:

- o location and physical condition of fire extinguishers at several locations listed in the fire fighting procedure
- o availability and operability of emergency locker contents

- operability of battery-powered emergency lighting in the ESC
- operability of meteorological capability

No problems were noted with any of the above checks. Selected extinguishers had been audited and were charged for use. The contents of the emergency locker were verified as available for use, Unit A backup lighting was operational, and the selected radiation survey instrument responded properly to both a battery and source check.

No violations or deviations were identified.

4. Emergency Response Training (82745)

Emergency response training was reviewed to determine if the licensee was providing training in accordance with the Emergency Plan. The requirements for training are found in Section 10.1 of the Plan.

The training was to include at least two classroom training sessions and practical drills yearly. According to licensee training records, all personnel assigned to the Emergency Notification Roster were trained. The inspector's review disclosed that training was conducted on several dates during the period December 1994 to November 1995. According to the documentation, the subject matter included a discussion of the Emergency Plan, and a review of the revised EPIPs. Supplemental training included first aid, use of cellular phone and two-way radios, and radiation protection procedures.

Regarding offsite training, no training had been conducted since the last inspection. However, the licensee afforded offsite support groups (via letter dated October 10, 1995), the opportunity to participate in the November 1995 exercise. In addition, offsite support contacts were offered a site familiarization tour to review what situations or hazards response personnel may encounter in responding to an emergency at the UVA Reactor Facility.

No violations or deviations were identified.

5. Emergency Response Drill (82745)

Section 10.2 of the licensee's Emergency Plan required that periodic drills and exercises be conducted to test the adequacy of timing and content of implementing procedures and methods, to test emergency equipment, and to ensure that emergency personnel are familiar with their duties. Further, the Emergency Plan

required that annually an onsite emergency drill be conducted and, at least biennially, drills contain provisions for coordination with local offsite emergency organizations for testing communications and notification procedures.

The scenario was reviewed in advance of the exercise and was discussed with a licensee representative prior to the exercise. No major problems were identified during the review, but minor inconsistencies became apparent during the exercise. The inconsistencies failed to detract from the overall performance of the licensee's emergency organization. The calendar year 1995 exercise was conducted on November 8, 1995, and offsite participation was limited to notifications/communications only. The simulated accident started at approximately 8:45 a.m. and terminated at 9:37 a.m. The scenario details simulated a minor leak from the UVA reactor pool caused by an earthquake. During the earthquake, an equipment stand falls, pinning a student in the vicinity of the pool leak resulting in an injured/contaminated victim. The inspector observed the licensee's actions in the following areas:

- Notification and communication with offsite authorities
- Interface between the alternate ED and on-scene response personnel
- Facility evacuation and accountability
- On-scene response by health physics personnel
- Event recognition and classification

In response to the pool leak, an immediate building evacuation was announced. Accountability was completed within five (5) minutes of the announcement to evacuate the facility. The assessment of accident conditions and the resulting event declaration by the ED was both timely and correct. The ED demonstrated good command and control over the response activity as evidenced by the decision to relocate to a command post remote from areas of potential infrastructural damage (e.g. ESC). Additional observations that were noted and discussed with members of the licensee's staff as areas of improvement included the following:

- Personnel responding to the injured/contaminated victim did not use gloves for preventing contamination (radioactive or blood pathogens).
- The notification procedures for offsite organizations were discussed in EPIP-7 "Notification of Off-site Agencies." According to EPIP-7, the initial notification to State and local governments shall be made within 15 minutes following the declaration of the emergency. The licensee's response in this area was considered minimally acceptable in that the notification was initiated 16 minutes (9:15 a.m.) following the event declaration (8:59 a.m.). The offsite notifications were delayed due to the involvement by the ED in areas where responsibility may have been delegated to other staff (e.g. responding to scene of injured/contaminated victim). The notifications to

NRC were within the required time regime of 60 minutes (included were notifications to NRC Headquarters Operations Center, and the NRC Region II office).

- During the initial notifications (State/local and NRC), although details were provided regarding the earthquake and injured/contaminated victim, the communicator did not include the emergency classification status.
- HP personnel did not adequately implement provisions for transmitting and/or documenting dose rates, contamination levels, or dosimeter readings to the ED in accordance with EPIP-9.

At the conclusion of the exercise, the licensee conducted a critique that identified many of the items noted by the NRC evaluator. The critique process continues to be a program strength (detailed and critical assessment).

No violations or deviations were identified.

6. Exit Interview

The inspection scope and results were summarized on November 9, 1995, with those persons indicated in Paragraph 1. The inspector provided comments and observations from the exercise evaluation. The areas inspected were described in detail including the IFI (Paragraph 3) and areas for improvement. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

<u>Item Number</u>	<u>Status</u>	<u>Description/Reference</u>
50-62/95-02-01	Open	IFI - Perform modification and testing of the facility evacuation alarm system to demonstrate facility wide audibility coverage (Paragraph 3).

7. Index of Abbreviations Used In This Report

CAM	Continuous Air Monitor
CDE	Committed Dose Equivalent
CFR	Code of Federal Regulation
CY	Calendar Year
EAL	Emergency Action Level
ESC	Emergency Support Center
EC	Environmental Concentration
ED	Emergency Director

EP	Emergency Plan
EPA	Environmental Protection Agency
EPIP	Emergency Plan Implementing Procedure
ERO	Emergency Response Organization
HP	Health Physics
IFI	Inspector Followup Item
MPC	Maximum Permissible Concentration
NOUE	Notification of Unusual Event
NRC	Nuclear Regulatory Commission
PA	Public Address System
Rev.	Revision
RSC	Radiation Safety Committee
TEDE	Total Effective Dose Equivalent
UVA	University of Virginia

Attachment:
Scenario and Exercise
Objectives