



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

NOV 22 1989

Report No.: 50-160/89-04

Licensee: Georgia Institute of Technology
225 North Avenue
Atlanta, GA 30332

Docket No.: 50-160

License No.: R-97

Facility Name: Neely Nuclear Research Center

Inspection Conducted: September 25-29, 1989

Inspector: A. Gooden 11-8-89
A. Gooden Date Signed

Accompanying Personnel: J. Kreh

Approved by: W. Rankin 11-8-89
W. 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 included observation of the licensee's annual emergency drill, and an assessment of the operational readiness of the Neely Nuclear Research Center emergency preparedness program. Within the emergency preparedness program, specific areas that were reviewed included: (1) emergency organization training; (2) distribution of changes to the Plan and implementing procedures; (3) maintenance of emergency kits and equipment; and (4) changes to the emergency preparedness program or organization since the September 1988 inspection.

Results:

Within the areas inspected, no violations were identified. However, an exercise weakness was identified for failure to conduct the exercise in a manner that would fully test the implementation of emergency procedures and emergency personnel familiarity with their roles and responsibilities (Paragraph 2). The inspection results indicated that the licensee was maintaining a state of readiness for responding to emergencies.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*R. Karam, Director, Neely Nuclear Research Center

*B. Revsin, Manager, Office of Radiation Safety

Other licensee employees contacted during this inspection included operators, technicians, and administrative personnel.

*Attended exit interview

2. Emergency Response Drill (82745)

The licensee's Emergency Plan requires that annual onsite emergency drills be conducted to test the adequacy of emergency procedures and to ensure that emergency organization personnel are familiar with their duties. In addition, at least biennially, drills must contain provisions for coordination with offsite emergency personnel for testing communications and notification procedures with offsite support groups.

On September 28, 1989, the licensee conducted the annual emergency drill. The scenario involved a response to a criticality alarm actuated due to the level of zinc bromide ($ZnBr_2$) in the hot cell window. The inspector observed the response by the onsite emergency organization. Personnel accountability was conducted immediately after building evacuation at the designated assembly area. The activation and operation of the Emergency Command Center (ECC) by the Emergency Director and an alternate Emergency Director was effective in accident investigation and mitigation. However, a sense of artificiality was inherent in the response by virtue of the scenario details being developed by the individuals participating in the exercise as the Emergency Director and alternate. The licensee was informed that responding to a pre-planned exercise or an exercise in which the scenario details are known by key participants did not appear to provide a true test of the adequacy of timing (mobilizing personnel, event classification and notification), plan implementation, and assurance that personnel are familiar with their roles and responsibilities. In order to fully test the emergency program and procedures, the exercise players should not have advance knowledge of the scenario details. The licensee committed to take actions for ensuring that exercises are conducted using a confidential scenario for fully testing the entire emergency organization. The current practices of conducting drills using a scenario developed by a drill participant, was categorized as an Exercise Weakness. This finding was discussed in detail following the exercise critique.

Exercise Weakness (50-160/89-04-01): Failure to conduct the annual emergency drill in a manner that would fully test implementation of the Emergency Plan.

An inspector observed the response by Health Physics personnel in surveying the facility for abnormal radiation levels. The response to the simulated accident was prompt, and personnel conducting surveys demonstrated good survey techniques in accordance with standard Health Physics practices. Communications between the ECC and the emergency monitoring personnel was by walkie-talkies. With one exception, the use of walkie-talkies enhanced the licensee's communications capability between the Emergency Director and onsite emergency response personnel. The one exception involved a very brief loss of communications between the Emergency Director and Health Physics personnel during the performance of a survey in the vicinity of the source storage pool. This brief loss of communications was also identified by licensee personnel and discussed in detail during the licensee's critique. The licensee attributed this loss to a communications dead spot in the vicinity of the storage pool. The inspector discussed the importance of continuous communication throughout the entire Emergency Planning Zone (EPZ) between the Emergency Director and various emergency response personnel. The licensee agreed with this item and committed to conducting an evaluation of radio transmission over the entire EPZ to identify areas of impeded transmission (dead-spots). The inspector informed licensee representatives that this matter would be tracked as an Inspector Followup Item (IFI) for review during a subsequent inspection.

IFI 50-160/89-04-02: Conduct an evaluation of radio transmission over the entire EPZ to identify areas of impeded transmission.

In reviewing the licensee's response to the simulated emergency, the inspector noted that the event was not a classifiable event that warranted offsite notifications to State, local and federal authorities. In accordance with Section 10.2 of the Emergency Plan, on an annual basis drills are conducted involving the onsite emergency organization, and every two years, drills shall include coordination with offsite emergency personnel (State/local). The inspector's discussion with licensee representatives disclosed that recent full-scale exercises did not fully test all components (e.g., event classification, notification, etc.) of the onsite and offsite emergency organization. The licensee was informed that this matter was considered an IFI. The licensee committed to conducting the full-scale exercise on a biennial basis to include an accident scenario that will test all components of the emergency organization.

IFI 50-160/89-04-03: Conduct a full-scale exercise which includes an accident scenario that will test all onsite and offsite components of the emergency organization.

The critique conducted at the end of the drill highlighted very similar findings as noted by the NRC observer team. The inspector noted the following item for consideration by the licensee for improvement: prompt establishment of access control to the Neely Nuclear Research Center (NNRC) front entrance. In response to the aforementioned item, a licensee representative indicated that normally, when the building evacuation alarm sounds, the front entrance door is automatically locked. In addition, Georgia Tech Police personnel establishes access control over the area. The licensee indicated the operability of the automatic lock device would be reviewed.

No violations or deviation were identified.

3. Emergency Organization (82745)

Pursuant to 10 CFR Part 50, Appendix E, Sections IV.A and IV.F, this area was inspected to determine if the licensee had defined the key functional areas of the onsite and offsite emergency organization; and assigned trained personnel to all functional areas of the onsite organization.

The inspector reviewed Section 3.0 of the Emergency Plan for a description of the emergency organization. In addition, an interview was conducted with an individual designated as an alternate Emergency Director. Based on the review and interview, the inspector determined that the licensee had defined the key functional areas for the onsite emergency organization, and that the interviewee was aware of the responsibilities and authorities as the Emergency Director during an emergency. An emergency organization chart was available which depicted the various onsite and offsite interfaces. Training records for personnel designated as Emergency Director or alternate Emergency Director were reviewed. In addition, training for other support personnel assigned to the emergency organization were also reviewed. With one exception, documentation was available to show that personnel training were current and in accordance with the description in Section 10.0 of the Emergency Plan. The one exception involved documentation to verify one individual designated as an alternate Emergency Director, and another individual designated as Reactor Operator had attended training on the revised Emergency Plan Implementing Procedures. According to documentation provided by the licensee, both individuals acknowledged receipt of the revised procedures during the period February and March 1989, including their familiarity with the procedure's contents. However, both names were omitted from training rosters covering the referenced time periods. During the last routine inspection (See Report No. 50-160/88-03), the inspector discussed with a licensee representative the absence of a formalized procedure addressing training. At that time, the licensee did not indicate a willingness to commit to formalizing the training program to include a training procedure with course outline or lesson plans. The example stated above of two individuals omitted from the training roster appears to indicate the weakness associated with an informal philosophy regarding training and subsequent documentation thereof. The licensee acknowledged this finding and made a commitment to proceduralize the emergency response training

program to ensure documented compliance with Section 10.1 of the Emergency Plan. The licensee was informed that this matter would be tracked as an IFI.

IFI (50-160/89-04-04): Proceduralize the emergency response training program to ensure documented compliance with Section 10.1 of the Emergency Plan.

In addition to reviewing training for the Emergency Directors, the inspector reviewed training for other components of the emergency organization (Georgia Tech Police and Atlanta Fire Department). According to Section 10.1 of the licensee's Plan, the aforementioned groups are trained in radiation safety and NNRC emergency procedures. Since the last inspection, a plan change was made (Revision 2, dated June 8, 1989) that required training be provided on a biennial basis to the above groups. The previous plan did not specify a required frequency of training for the police and fire department. Documentation was provided to show that 14 members of the Georgia Tech Police force attended training on August 15, 1989; and during May and August 1989, 67 members of the Atlanta Fire Department had attended training entitled "Emergency Response."

A walk-through was conducted with a member of the emergency organization assigned responsibility as an alternate Emergency Director. The interviewee was familiar with the role and responsibilities as Emergency Director, and was prompt in analyzing the hypothesized accident scenario for event classification. The individual was knowledgeable on the Emergency Plan and Plan implementing procedures. No problems were noted during the walk-through.

No violations or deviations were identified.

4. Emergency Plan and Implementing Procedures (82745)

This area was reviewed to determine whether changes were made to the program since the last inspection (September 1988), and to assess the impact of these changes on the overall state of emergency preparedness. The inspector reviewed Section 10.4 of the Emergency Plan which described the program for review, update, and distribution of revisions to the Plan and implementing procedures.

According to licensee documentation, on April 6, 1988, a request was made to the Nuclear Safeguards Committee to conduct a review of changes incorporated as Revision No. 2. The inspector reviewed minutes for the September 30, 1988, Nuclear Safeguards Committee (NSC) meeting which disclosed the NSC approval of proposed changes. This review also satisfied Section 10.4 of the licensee's Emergency Plan which require a biennial review of the Emergency Plan by the NSC. Section 10.4 states that applicable portions of the Plan, agreements, and implementing procedures shall be distributed to authorized agencies and support organizations; and any revisions to implementing procedures affected by the Plan shall be approved and sent to authorized recipients within 30

days after approval. By letter dated June 9, 1989, changes incorporated as Revision 2 to the Plan were approved by the Nuclear Regulatory Commission. The inspector verified by review of transmittal letters dated June 15, 1989, that all copy holders shown on the controlled distribution list had been provided changes in accordance with Section 10.4 of the Plan.

The inspector reviewed revised procedures and discussed with a licensee contact the procedural upgrades that occurred since the September 1988 inspection. The implementing procedures format had been changed to bring about consistency with other procedures (Health Physics, Operations, etc.) used at the NNRC. The inspector reviewed Procedures 0100 (Preparation of Procedures) and 0110 (How to Modify Procedures) to verify that procedural development, review, approval, and distribution were being done in accordance with procedures governing this program. With one exception, no problems were noted. The one exception involved plan implementing procedure 6100 entitled "Emergency Notification," Revision 1, approved February 2, 1989. This procedure implements in part Section 3.0 and 4.0 of the Emergency Plan. During the procedure review, the inspector noted that two emergency action levels (EALs) for the Alert classification did not include the NRC on the list of required notifications for the specific emergency situation. When informed, the licensee took immediate action to implement a temporary procedure change to reflect the required NRC notification for both events (Sections 5.10.3 and 5.10.4 of Procedure 6100). The inspector acknowledged the licensee's timeliness in response to the referenced omissions or typographical errors. The licensee committed to review the referenced procedure for ensuring that all required notifications are included and made in a timely manner (in accordance with 10 CFR 50.72, 20.403, and Appendix E to 10 CFR 50). The licensee was informed that this item would be tracked as an IFI.

IFI 50-160/89-04-05: Review Procedure 6100 entitled "Emergency Notification" to ensure that all required notifications are included and made in a timely manner.

The inspector noted that on a periodic basis, the emergency notification roster was being verified as current and up-to-date. Documentation was provided to show that updated rosters were transmitted to various offsite support groups. The most recent update was dated August 17, 1989. Section 8.3 of the Emergency Plan requires agreement letters with offsite support agencies be updated on a biennial basis. The inspector noted that the current agreement letter for Grady Memorial Hospital was dated August 25, 1989.

No violations or deviations were identified.

5. Emergency Facilities, Equipment, Instrumentation, and Supplies (82745)

In accordance with Section 10.5 of the Emergency Plan this area was reviewed to determine whether the licensee's emergency response facilities

and other equipment, instrumentation, and supplies were maintained in a state of operational readiness.

Since the September 1988 inspection, the licensee had made enhancements in emergency communications and environmental monitoring by the acquisition of walkie-talkies and a hi-volume air sampler. The walkie-talkie provided the capability for communications between the Emergency Director and various response personnel.

The licensee had designated two kits for emergency use. One kit, located in the vestibule of the Reactor Building, contained primarily protective clothing, decontamination supplies, barrier ropes, etc. A second kit, located in the ECC, contained hand-held survey instruments, protective clothing, sampling material, dosimetry, etc. In addition, two air packs were available in the ECC. With one exception, all of the items that were inventoried were available in the quantities specified on the inventory listing and responded properly to battery and/or source checks. The one exception involved an ionization type survey instrument. The suspect equipment responded properly to a battery check, but would not zero properly and subsequently could not be properly source checked. A cognizant licensee representative took action immediately by removing the inoperable equipment from the inventory and providing a temporary replacement survey instrument from the Radiological Safety Office. The inspector was informed by a licensee representative that in the interim, a new ion chamber survey meter would be ordered. On September 28, 1989, the inspector was provided a copy of a purchase request dated September 28, 1989 for one Ion Chamber Survey Meter.

Documentation for the emergency kit and cabinet inventory were reviewed to verify that periodic inventories were being conducted. According to records review, quarterly inventories were being done. Records were reviewed covering the period October 1988 through July 1989. Additional records that were reviewed included documentation to verify that monthly test were being conducted on the criticality alarms and the Reactor Building evacuation lights. Documentation covering the period of December 1988 through August 1989 were reviewed. No problems were noted.

No violations or deviations were identified.

6. Action on Previous Inspection Findings (92701)

- a. (Closed) IFI 50-160/88-03-01: Revise the notification procedure to include the specific time period after the event declaration for making the offsite notifications.

The inspector reviewed Procedure 6100 entitled Emergency Notification, Revision 1 dated February 2, 1989, and noted that actions were taken in accordance with the licensee's commitment of October 7, 1988. The previous ambiguities regarding notification times (e.g., immediately, after assessment, etc.) had been resolved.

- b. (Closed) IFI 50-160/88-03-02: Improve drillsmanship regarding frisking techniques.

During the annual emergency drill conducted on September 28, 1989, Health Physics personnel were observed conducting radiation surveys in accordance with acceptable survey techniques and industry practices.

- c. (Closed) IFI 50-160/88-03-03: Conduct a post-drill critique with all players, controllers, and observers immediately after the drill is terminated.

Immediately after the emergency drill was terminated on September 28, 1989, a critique was held that included all exercise players and observers.

- d. (Closed) Violation 50-160/88-03-04: Failure to provide emergency response training in accordance with Section 10.1 of the Emergency Plan.

The inspector reviewed training for personnel designated as the Emergency Director and noted that training was in accordance with Section 10.1 of the Emergency Plan.

- e. (Closed) IFI 50-160/88-03-05: Conduct more frequent formalized classroom training in radiation safety and NNRC emergency procedures to Atlanta Fire Department personnel.

The licensee conducted the subject training during May and August 1989. In addition, the licensee's Emergency Plan was revised to require a biennial frequency for referenced training.

- f. (Closed) IFI 50-160/88-03-06: Revise the procedure for distributing changes to the Emergency Plan and implementing procedures to include a transmittal and/or acknowledgement sheet for accountability purposes. All changes to the Emergency Plan and procedures were transmitted via a cover memo which served as the transmittal and acknowledgement slip.

- g. (Closed) IFI 50-160/88-03-07: Verify that the procedural upgrade program includes revised Emergency Plan implementing procedures to adequately implement the Emergency Plan.

The inspector noted that the Emergency Plan implementing procedures had been reformatted to bring about consistency with Health Physics and Operations Procedures. The licensee was informed that further evaluation and changes may be necessary to Procedure 6100 entitled Emergency Notification (see Paragraph 4).

7. Exit Interview

The inspection scope and results were summarized on September 29, 1989, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results listed below. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector. There were no dissenting comments. Regarding the IFI detailed in Paragraph 3 of the report, the licensee management committed to proceduralize the emergency response training program by June 1990.

<u>Item Number</u>	<u>Description/Reference</u>
50-160/89-04-01	Exercise Weakness - Failure to conduct the annual emergency drill in a manner that would fully test implementation of the Emergency Plan (Paragraph 2).
50-160/89-04-02	IFI - Conduct an evaluation of radio transmission over the entire EPZ to identify areas of impeded transmission (Paragraph 2).
50-160/89-04-03	IFI - Verify that the full-scale exercise conducted on a biennial basis, included an accident scenario that will test all onsite and offsite components of the emergency organization (Paragraph 2).
50-160/89-04-04	IFI - Proceduralize the emergency response training program to ensure documented compliance with Section 10.1 of the Emergency Plan (Paragraph 3).
50-160/89-04-05	IFI - Review Procedure 6100 (Emergency Notification) to ensure that all required notifications are included and made in a timely manner (Paragraph 4).

Licensee representatives were informed that seven open items were reviewed and closed (Paragraph 6).