U.S. NUCLEAR REGULATORY COMMISSION REGION I

Report/License No. 50-193/94-02/R-95

Licensee: Rhode Island Atomic Energy Commission Rhode Island Nuclear Science Center South Ferry Road Narragansett, Rhode Island

Facility Name: Rhode Island Nuclear Science Center

Inspection At: Narragansett, Rhode Island

Inspection Conducted: December 7-9, 1994

40 gou Dragoun, Project Scientist Thomas

Approved by:

Inspector:

Elizabert Ulling

Elizabeth Ullrich, Chief Effluents Radiation Protection Section

Areas Inspected: Implementation of the emergency preparedness program and corrective actions for loss of control of low level radioactive material.

Results: No safety concerns were observed. One apparent violation was cited for failure to control radioactive material (details in Section 3.0 of the report).

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DETAILS

1.0 INDIVIDUALS CONTACTED

1.1 PRINCIPAL LICENSEE EMPLOYEES

- * N. Jacob, Radiation Safetty Officer
- D. Johnson, Health Physicist
- * W. Simoneau, Assistant Director
- * T. Tehan, Director, Rhode Island Nuclear Science Center

1.2 STATE OF RHODE ISLAND

J. Ferruolo, Radiological Health Specialist

1.3 NRC EMPLOYEES

- * W. Maier, Emergency Preparedness Specialist
- * D. Silk, Emergency Preparedness Specialist
- * Denotes those present at the exit meeting on December 9, 1994.

2.0 PURPOSE OF INSPECTION

The purposes of this inspection were to review the implementation of the emergency preparedness program and licensee corrective action regarding the lcss of control of low level radioactive material.

3.0 LOSS OF CONTROL OF RADIOACTIVE MATERIAL

On May 24, 1994, the licensee took possession of an orifice plate and three wires with a total activity of approximately 75 microcuries of cobalt-60 at the request of Rhode Island State representatives. The material was retrieved from a trasn hauling truck that caused an alarm at a trash transfer station. About June 13, the licensee identified the items as their own and notified the NRC of the loss of licensed material, as required by Technical Specification 6.8.2 and 10 CFR 20.2201. Written notification with corrective actions was forwarded on June 15. From records and other evidence, the licensee concluded that this radioactive material had been stored in a cardboard box on the floor in a controlled area in the reactor room (reactor containment). The items were in individual plastic bags labeled as radioactive material. On May 6 the reactor pool overflowed due to failure of automatic level control systems, resulting in minor flooding and causing water damage to the cardboard box. In the subsequent cleanup, the items in question were erroneously placed in a clean trash receptacle, removed from the reactor room, and placed with other clean trash for disposal.

The licensee estimated that the highest individual exposure from this material was to the building janitor during the handling of the trash bag. This exposure was calculated to be less than 2 millirem. After the bag was placed in the dumpster, the possibility for additional personnel exposures was remote. Considering the low level activity of

the material, the licensee's assumptions appear reasonable. The root causes of this event as determined by the licensee are:

1) Transferring radioactive material to an unlabeled container in violation of RINSC procedures.

 Insufficient controls and procedures implemented to detect an unplanned release of radioactive material from the restricted area/facility.

3) Lack of sufficient procedures to prevent mixing of State of Rhode Island licensed byproduct material with items regulated by the NRC.

4) Poor choice of storage package material (cardboard box).

5) Poor general housekeeping.

Licensee corrective actions for this event included creation of a locked radioactive materials storage area, implementation of complete materials inventory and control system, radiation survey requirements for trash, and building egress controls. The inspector toured the new radioactive materials storage area in the basement of the reactor building, reviewed the inventory records, and selected radioactive items at random for retrieval. The inspector verified that the orifice plate and wires were in storage. No deficiencies were noted. The inspector, accompanied by a State of Rhode Island Radiological Health Specialist, walked through the revised process for handling non-radioactive trash from the reactor room and laboratory wing with the Health Physics technician. Appropriate controls have beem implemented for the reactor material. The State representative reviewed the controls with respect to the radioactive material held under the byproduct license and will issue a separate report of findings.

Within the scope of this review, the inspector determined that an apparent violation of the requirements in 10 CFR 20.1801 had occurred regarding the failure by the licensee to secure from unauthorized removal from the controlled area radioactive material consisting of approximately 75 microcuries of cobalt 60 (Violation 50-193/94-02-01). However, the short term and long term corrective actions described in the licensee's June 15 notification to the NRC have been fully implemented and are satisfactory in preventing a recurrence. No additional safety concerns were identified.

4.0 EMERGENCY PREPAREDNESS

The inspector reviewed the licensee's implementation of selected portions of the NRC-approved Emergency Plan for this facility. Section 8 of the Plan specifies the equipment and supplies that must be maintained. The inspector toured the Emergency Support Center (ESC) and reviewed the contents of the emergency storage lockers with respect to the equipment inventory lists. No deficiencies were noted. The ESC is located in the basement of the laboratory wing adjacent to the counting laboratory. This is a well shielded area that is easily accessible from the reactor room. The annual communications test was completed in November 1994 from the ESC.

Section 10 of the Plan specifies the drills and training required to maintain emergency preparedness. A full scale exercise requiring offsite response was held in December 1993. As a result of this drill, the licensee installed: (1) a magnehelic gauge to measure the pressure differential in the reactor room to verify that the standby emergency air exhaust system was operating and, (2) a valve to divert the effluent air sampler suction from inside the reactor room to the exhaust stack. The inspector verified that these changes had been implemented. In October 1994, a building evacuation drill was initiated while the reactor was critical and personnel were working in the clean room. The Assistant Director, who initiated the drill and observed the response, reported that no evacuation problems were noted during this surprise drill. He also stated that future drills will occasionally involve response from the fire department. This section of the Plan also specifies the training of off-site support groups. The inspector verified that personnel from the Rhode Island Hospital, Narragansett Fire Department, State Police, and Coast Guard were provided with training and/or a tour of the facility. The annual Rhode Island Emergency Management Agency (RIEMA) meeting is held on campus which provides a convenient opportunity for visits by RIEMA staff to the reactor facility.

Section 3 of the Plan specifies the letters of agreement required to be negotiated with off-site agencies for emergency support. The inspector reviewed these agreements and confirmed that they all were signed within the past two years.

Within the scope of this review, the inspector determined that the licensee was effectively implementing the Emergency Plan.

5.0 EXIT MEETING

The inspector met with the licensee representatives denoted in Section 1.0 of this report at the conclusion of the inspection on December 9, 1994. The inspector summarized the purpose, scope and findings of the inspection. The licensee acknowledged the inspection findings.