



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA STREET, N.W., SUITE 2900
 ATLANTA, GEORGIA 30323-0199

Report No.: 50-297/96-01

Licensee: North Carolina State University
 Raleigh, NC 27695-7909

Docket No.: 50-297

License No.: R-120

Facility Name: North Carolina State University PULSTAR Reactor

Inspection Conducted: January 9-11, 1996

Inspector: WJM Alpine for 2/9/96
 William J. Tobin, Senior Safeguards Inspector Date Signed

Approved by: WJM Alpine 2/9/96
 Edward J. McAlpine, Chief Date Signed
 Fuel Facilities Branch
 Division of Nuclear Materials Safety

SUMMARY

Scope:

This announced, routine inspection was conducted to review the licensee's Program for the Physical Protection of Special Nuclear Material (SNM) of Low Strategic Significance. Additionally, the inspector conducted a review of the licensee's program for Material Control and Accountability of SNM.

Results:

The licensee had established and maintained acceptable programs for the physical protection and an acceptable and accurate system for accounting for SNM. Two issues of minor safety significance were identified and classified as Non-Cited Violations (NCVs); (96-01-01) failure to notify the NRC within 60 days of changing a commitment of the Physical Security Plan, and, (96-01-02), failure to store all SNM inside the Controlled Access Area.

Enclosure

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REPORT DETAILS

1. Persons Contacted

- *S. Bilyj, Reactor Operations Manager
- *D. Dudziak, Department Head of Nuclear Engineering
 - R. Harper, Director of Public Safety
 - K. Kincaid, Reactor Maintenance Supervisor
- *P. Perez, Associate Director of Nuclear Reactor Program
 - C. Plavney, Licensed Reactor Operator
- *G. Wicks, Reactor Health Physicist

*Attended the Exit Meeting held on January 11, 1996.

2. Physical Protection of Special Nuclear Material

a. Plans, Procedures, and Reviews (81401)

Requirements for physical protection of special nuclear material of low strategic significance at fixed sites are contained in 10 CFR 73.67 and the licensee's Physical Security Plan (PSP). Requirements for submission of changes to the PSP which do not decrease the effectiveness of the program are specified in 10 CFR 50.54(p) as within two months of the change.

Revision 7 of the licensee's PSP dated May 1, 1995 was accepted by NRC by letter dated August 4, 1995 and was determined to contain proprietary information under the provisions of 10 CFR 2.790. The inspector reviewed the PSP and Revision 3 of the following security procedures, dated October 16, 1995: Security Procedure #1.0, "Unauthorized Intrusion in Controlled Access Area"; Security Procedure #2.0, "SNM Theft or Theft Threats and Acts of Civil Disturbance"; Security Procedure #3.0, "Bomb Threats in Burlington Engineering Laboratories"; Security Procedure #4.0 "Intrusion in Controlled Access Area by Authorized Personnel"; and Security Procedure #5.0 "Key Control".

The inspector determined that the procedures were thorough, adequately provided for handling and responding to contingencies, and appropriately implemented the commitments of the PSP.

During the inspection, the inspector determined that a recently completed security upgrade of various facilities on campus by the Public Safety Department resulted in an improvement in the alarm system and the associated transmission devices. The inspector also determined that the licensee had not informed the NRC that the backup power supply had been modified from the configuration described in the PSP. According to alarm test records, the upgraded alarm system became functional during the week of September 8, 1995. The new system has different backup power supply capability than the original system, and the NRC should have been notified of the change within two months pursuant to 10 CFR 50.54(p)(2). During the inspection, the licensee prepared

a PSP revision notice to the NRC, and physically altered the backup power supply on a temporary basis to provide the capability as originally committed to in the PSP.

The inspector determined this was of minor significance and is therefore being treated as a Non-Cited Violation (NCV), consistent with Section IV of the NRC Enforcement Policy (NCV 96-01-01).

b. Reports of Safeguards Events (81402)

Requirements for reporting of safeguards events are contained in 10 CFR 73.71.

The inspector determined through discussions with licensee personnel and a review of records that no Safeguards Events or "red phone" events had occurred.

The inspector concluded that the licensee had complied with the requirements of 10 CFR 73.71 during the period reviewed.

c. Fixed Site Physical Protection of Special Nuclear Material of Low Strategic Significance (81431)

Requirements for physical protection of special nuclear material of low strategic significance at fixed sites and in transit are contained in 10 CFR 73.67 and the licensee's PSP. 10 CFR 73.67(f)(1) requires that SNM of low strategic significance shall be stored within a controlled access area (CAA).

The inspector toured the facility and compared barriers, intrusion alarms, and access controls to the requirement in the PSP. In particular, the Control Room, Reactor Bay, and Primary Piping Area were protected in accordance with the commitments of the PSP with respect to locked doors, alarms, keys, surveillance and alarm annunciation. The inspector also reviewed such documentation as the Permanent Ledger of Keys, Alarm Test Records, Operator Security Checklist, and Alarm Records.

The inspector randomly inspected various rooms of the Reactor Facility and compared storage locations with security requirements and material control and accountability records. Fuel assemblies were stored in the fuel pool along with several sources and fission chambers. The inspector determined that a 5 curie plutonium-beryllium source was stored outside the Controlled Access Area, yet secured within a locked storage area. The licensee immediately moved the source to a more secure storage location inside the Controlled Access Area (CAA). Since this constitutes a violation of minor significance, it is being treated as an NCV, consistent with Section IV of the NRC Enforcement Policy (NCV 96-01-02).

No other discrepancies with PSP commitments were noted. The inspector determined that the licensee's program for protecting the SNM as specified in the PSP, had been appropriately implemented and in some respects exceeded PSP commitments.

3. Material Control and Accountability (85102)

Requirement for material control and accountability are specified in 10 CFR 70.51 (c) and (d), 70.53, and 70.54. The requirements specify physical inventory frequency, maintenance of records and procedures, and issuance of reports.

The inspector reviewed certain of the licensee's procedures which implemented material control and accountability requirements. Specifically, the inspector reviewed: Procedure 10.1, "Inventory and Location of Special Nuclear Material," Revision 2, dated March 1, 1989, and Procedure 10.2, "Special Nuclear Material Accountability", Revision 2, dated March 1, 1995. These procedures require the Reactor Health Physicist to conduct a physical inventory of all material at intervals not greater than 12 months, and specified the Reactor Health Physicist to be the "Accountability Representative" and as such responsible for preparing NRC/DOE Forms 741 and 742.

The latest inventory had been conducted on December 7, 1995. The inspector reviewed Amendment 6 to the licensee's NRC License dated September 17, 1980, and determined that the licensee is authorized possession of 435 kilograms of uranium and 200 grams of plutonium 239 in the form of sealed plutonium-beryllium neutron sources. The PuBe sources equate to approximately 12.4 curies. A review of the last two NRC/DOE Forms 742, dated April 11 and September 30, 1995, disclosed that the licensee possesses 432,583 grams of 4% enriched uranium.

The inspector concluded that the licensee was performing physical inventories as required, was maintaining their inventory within authorized possession limits, was maintaining accurate records of special nuclear material location, and had a working program to control and account for the possessed special nuclear material.

4. Exit Meeting

The Exit Meeting was held on January 11, 1996, with those so noted in Paragraph 1 in attendance. The licensee was informed of the inspector's findings. No dissenting comments were voiced.

<u>Type</u>	<u>Item No.</u>	<u>Status</u>	<u>Description</u>
NCV	96-01-01	Closed	Security Plan revision not furnished to the NRC (Paragraph 2.a).
NCV	96-01-02	Closed	SNM stored external to CAA (Paragraph 2.c).