UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
230 PEACHTREE STREET, N. W. SUITE 818
ATLANTA, GEORGIA 30303

IE Inspection Report Nos. 50-129/75-1 and 70-1766/75-2

Licensee: University of West Virginia
College of Engineering
Morgantown, West Virginia

Facility Name: University of West Virginia
Docket No.: 50-129
License No.: R-58
Category: G
Group: V

Location: Morgantown, West Virginia

Type of License: Research, 75 watts (license for possession only)

Type of Inspection: Routine, Announced, Nuclear materials safeguards

Date of Inspection: May 16, 1975

Date of Previous Inspection: Initial safeguards inspection

Inspector-in-Charge: J. H. Joyner, Reactor Technologist
Materials and Plant Protection Branch

Accompanying Inspector: E. W. McPeek, Physical Security Inspector
Materials and Plant Protection Branch

Other Accompanying Personnel: None

Principal Inspector: _____ 6-20-75
W. S. Little, Reactor Inspector Date
Facilities Operations Branch

Reviewed by: for George H. Williams 6/20/75
W. B. Kenna, Chief Date
Materials and Plant Protection Branch

IE REPORT NO: 50-129/75-1 70-1766/75-2
COPY NO: 4

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Licensee: University of West Virginia
College of Engineering
Morgantown, West Virginia

Facility Name: University of West Virginia
Docket No.: 70-1766
License No.: SNM-1512
Priority: IV
Group: V

Location: Morgantown, West Virginia

Type of License: SNM

Type of Inspection: Routine, Announced, Nuclear materials safeguards

Date of Inspection: May 16, 1975

Date of Previous Inspection: Initial safeguards inspection

Inspector-in-Charge: J. H. Joyner, Reactor Technologist
Materials and Plant Protection Branch

Accompanying Inspector: E. W. McPeek, Physical Security Inspector
Materials and Plant Protection Branch

Other Accompanying Personnel: None

Reviewed by: George H. Williams for W. B. Kenna, Chief
Materials and Plant Protection Branch

6/20/75
Date

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DETAILS Prepared by: J. H. Joyner by George Williams 6/20/75
J. H. Joyner, Reactor Technologist Date
Materials and Plant Protection Branch

Dates of Inspection: May 16, 1975

Reviewed by: George Williams 6/20/75
W. B. Kenna, Chief Date
Materials and Plant Protection Branch

1. Individuals Contacted

S. R. Amtey - Radiation Safety Officer
M. D. Allan - Radiological Health Technician
G. L. Blackshaw - Reactor Supervisor

2. The inspection was conducted to determine the University of West Virginia's (WVU) conformance to materials safeguards requirements contained in Title 10, Code of Federal Regulations, Part 70, "Special Nuclear Material," and specific requirements contained in NRC License Nos. R-58 and SNM-1512.

The licensee's material safeguards controls were reviewed by conduct of a physical inventory, audit of records, observations by the inspectors and interviews with appropriate personnel. In accordance with 10 CFR 70.51(c), since the licensee is authorized to possess less than one effective kilogram, written material control and accounting procedures are not required.

3. Inventory

The AGN-211 reactor facility is located in a basement room of the Physics Building. WVU is licensed to possess, but not to use, up to 900 grams of U-235 in connection with the AGN-211. The uranium fuel, enriched to 19.84% U-235, is contained in 42 fuel elements. The uranium, as UO_2, is homogeneously mixed with polyethylene and clad in aluminum. Forty elements are in the reactor core and two elements are stored in a wooden box located adjacent to the reactor tank. The 42 elements contain about 800 grams of U-235, within the license possession limit. Also stored in the room containing the reactor was a fission detector containing 1.7 milligrams of U-235. The license governing the fission detector allows possession of only 1.5 milligrams of U-235. The licensee will request an amendment to the license. However, the licensee was cited for failure to comply with 10 CFR 70.3, which requires that the licensee possess only SNM authorized by the license. The fuel is possessed under License No. R-58 and the fission detector is held under License No. SNM-1512.

The remaining SNM possessed by the WVU consists of two plutonium-beryllium neutron sources held under License No. SNM-1512. The sources, one of 1 curie and one of 4 curies, contain about 79 grams of plutonium, within the license possession limit of 92 grams.

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SUMMARY OF FINDINGS

I. Enforcement Items

A. Infraction

Contrary to 10 CFR 70.51(d), the licensee has not performed annual physical inventories of special nuclear material (SNM) in his possession.

This infraction had the potential for causing or contributing to an occurrence related to common defense and security.

B. Deficiency

Contrary to 10 CFR 70.3, the licensee has exceeded the U-235 possession limit specified in License No. SNM-1512.

This item is a deficiency.

II. Management Interview

A discussion was held at the conclusion of the inspection with Dr. S. R. Amtey, Radiation Safety Officer for the University of West Virginia (WVU). The following items were discussed:

A. Suggestions were made relative to records of the inventory, including identification of location of each item. All licensed materials were accounted for during the inspection.

B. Review and audit of material transfer documents revealed that there have apparently been no shipments or receipts since 1962. The ten-day acknowledgment requirement was discussed since most of the transfer documents were not acknowledged and the receipt date was not filled in.

C. Audit of material status reports submitted by the licensee revealed that they had not been signed by a corporate officer, as required by instructions for completing the status report.

D. The inspectors suggested that the licensee request an increase in the SNM-1512 possession limit to cover the 1.7 milligrams of U-235 in a fission chamber. The authorized possession limit is 1.5 milligrams of U-235.

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4. Inventory Verification

The AGN-211 reactor consists of a shielded, water-filled tank containing the core. The fuel elements in the core were counted by the inspectors. Two fuel elements had previously been removed from the core and stored in a locked wooden box. The elements were removed from the box and the serial numbers recorded. The fission detector was removed from its storage box and the serial number recorded.

The two plutonium-beryllium neutron sources are stored in a Research Building laboratory. The one-curie source was located in a small paraffin-filled drum. The source serial number was verified and a neutron detection instrument used to confirm the presence of the source. The four-curie source was stored in a locked metal container. The professor responsible for the source could not be located and the source presence could not be verified.

Discussion with the licensee revealed that the inventory had not been verified in several years. This is contrary to the annual inventory requirement of 10 CFR 70.51(d). The inspectors discussed the preparation of inventory records with the licensee. WVU was cited for noncompliance with paragraph 70.51(d).

5. Internal Control

The licensee has maintained copies of transfer documents as the principal records of the type and quantity of material in the inventory. All fuel received for the AGN-211 was either in the reactor core or in the locked box nearby. The room was locked with a unique lock (not part of the WVU lock system) and the key controlled. The laboratory containing the plutonium sources was locked and access to the key restricted. The container for the four-curie source was locked and access to the key controlled.

6. Reactor Thermal Output

The AGN-211 has not been operated in several years. The current license does not permit operation of the reactor. The reactor is rated at 75 watts.

7. Nuclear Material Depletion

The low power level of the reactor reduces fuel depletion to a neglible level. Since the reactor has not been operated for considerable time, there is no fuel depletion to report.

8. Records and Reports

This was the initial SNM accountability inspection of WVU. SNM

was initially received in 1959. Receipts and shipments were verified by examination of transfer documents on file. The most recent transfer of SNM occurred in 1962. Receipt dates were not filled in on some forms and other receipt documents were not acknowledged. The ten-day acknowledgment requirement was discussed with the license, primarily for future reference. Plans are underway to transfer the AGN-211 and fuel to another university as soon as Licensing's approval is obtained.

Review and audit of 1973 and 1974 material status reports revealed that they had been signed by the Reactor Supervisor rather than the corporate officer required by the instructions for completing the form. The licensee agreed to take corrective action.