

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION V

Report No. 50-27/78-02

Docket No. 50-27 License No. R-76 Safeguards Group _____

Licensee: Washington State University
Pullman, Washington 99163

Facility Name: Research Reactor, Nuclear Radiation Center

Inspection at: Washington State University, Pullman Washington

Inspection conducted: November 14-15, 1978

Inspectors: F. A. Wenslawski 12/5/78
for J. R. Curtis, Radiation Specialist Date Signed

Date Signed

Approved By: H. E. Book 12/5/78
H. E. Book, Chief, Fuel Facility and Materials Date Signed
Safety Branch

Summary:

Inspection on November 6-8, 1978 (Report No. 50-27/78-02)

Areas Inspected: Routine, unannounced inspection of the radiation protection, environmental controls and emergency response planning programs. The inspection included a tour of the facility, examination of radiological surveys, environmental sampling and radiation level measurement records, material transfer and personnel monitoring records. Interviews were conducted with operating staff, radiation protection and campus fire department personnel. The inspection involved 14 hours by one NRC inspector.

Results: There were no items of noncompliance identified in this inspection.

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DETAILS

1. Persons Contacted

- *W. E. Wilson, Associate Director, WSU Nuclear Radiation Center
- *R. Brown, WSU Radiation Safety Officer
- J. Neidinger, Reactor Operator
- D. Branner, Assistant Chief, WSU Fire Department

*Denotes those present at exit interview.

2. Review of Licensee Action on IE Bulletins

The licensee had received, reviewed and replied to NRC IE Bulletin 78-07 (6/12/78) regarding protection factors applied to respiratory protective equipment. The licensee does not have Airborne Radioactivity Areas and does not use respiratory protection equipment in the reactor operation.

No items of noncompliance or deviations were identified.

3. General Operations - Tour

The inspector toured the facility and observed reactor startup and sample irradiation operations. Radiation protection practices and procedures were utilized. Posting and labeling was in compliance with 10 CFR requirements.

No items of noncompliance or deviations were identified.

4. Organizational Changes

Mr. T. Lovas, who held the position of Reactor Supervisor, left WSU in September 1978. The position will be filled in January by an applicant who has previous experience in a TRIGA type reactor.

Mr. D. Faust, who held the position of H.P. Technician, left WSU in February 1978. The routine radiation surveys of the reactor room and surrounding facilities that had been performed by Mr. Faust are now being performed by reactor operators. Waste pickup, area monitoring, periodic surveillance surveys and nonroutine surveys are being performed by Mr. R. Bidstrup, the H.P. Technician who recently joined the staff of Mr. R. Brown, the Radiation Safety Officer (RSO).

The impact of having operations personnel rather than surveillance personnel perform routine radiation surveys was discussed with the campus RSO and reviewed at the exit interview. Licensee representatives responded to the inspector's concern over the lessening of routine surveillance of the radiological conditions by non-operations personnel by indicating that the RSO, in his role as a member of the Reactor Safeguards Committee, could more actively review routine survey and effluent release reports and audit the radiation protection program of the reactor for increased "non-operations" surveillance.

No items of noncompliance or deviations were identified.

5. Examination of Records

Personnel monitoring, environmental monitoring, liquid effluent, material transfer, Argon-41 release and routine radiation survey records were examined. Reported data was consistent with expected values. Except for minor discrepancies and typographical errors, results for personnel monitoring and effluent releases were consistent with those reported in the WSU reactor annual report.

No items of noncompliance or deviations were identified.

6. Radiation Protection Procedures and Practices

The WSU reactor has written procedures for various aspects of the radiation protection program. Licensee representatives indicated that these had been reviewed by the Reactor Safeguards Committee in a recent meeting. Observed radiation procedures and practices were consistent with requirements and current professional standards.

No items of noncompliance or deviations were identified.

7. Emergency Response Planning

The licensee's planning and guidance for response to emergency situations is contained in their Standard Procedure #6, "Standard Procedure in the Event of An Emergency Situation."

Emergency response actions to be taken during working hours and nonworking hours are delineated for a variety of situations requiring response, i.e., fire, earthquakes, personnel injury, radiation emergency and civil disorder. The building has an evacuation alarm; it is tested quarterly. Spurious electronic transients and intermittent loss of power in the region have caused the alarm to be tripped and personnel to evacuate the building.

An emergency call list is maintained for the Nuclear Radiation Center and the WSU police/fire dispatcher has this list. Emergency response actions for the fire department and ambulance are general in nature, but for off-duty situations include contacting a person on the Nuclear Radiation Center emergency call list. The assistant fire chief was interviewed regarding any emergency response to the radiation center. He confirmed that call list personnel would be contacted for advice and guidance in their response to the center. New fire department and police staff members have been given guided tours of the facility by the reactor supervisor.

No medical support exercises involving exposed or contaminated and injured personnel from the radiation center have been held. The local hospital is located on the WSU campus, and some interaction has taken place between the hospital staff, the previous reactor supervisor and the campus radiation safety officer regarding handling of contaminated injured persons. The absence of formal contacts and agreements between the hospital and reactor management was discussed with licensee representatives. Efforts to formalize an arrangement and conduct training exercises will be initiated using the ANS 15 Emergency Planning Standard for guidance.

No items of noncompliance or deviations were identified.

8. Radioactive Waste-Effluents

Solid radioactive waste from the reactor is co-mingled with similar wastes from other laboratories in the radiation center. All solid waste is compacted in 55-gallon drums and transferred to a contractor for disposal at Richland Washington in approximately semi-annual batch shipments. Present accumulation and records are consistent with those reported in annual reports.

Liquid wastes are generated in the various radiochemical laboratories of the radiation center and during pool water filter and ion exchange resin bed changes. Liquids generated throughout the radiation center laboratories are routed from "hot" drains into holding tanks, sampled and routinely released based on sampling results (concentrations below limits of 10 CFR 20.106).

Liquid release records were consistent with those reported in the last annual report, except that monthly volume and resultant cumulative activity was generally lower in the 1978 report than the 1977 report. Early in 1978, in an attempt to conserve water costs, the licensee initiated an investigation of the sources of liquid in the hot drain system, and uncovered continuous sources of continuously running water from aspirator and laboratory cooling water system. Controlling these sources reduced the volume passing through the hot drains.

Increased review of monitoring and liquid sampling techniques for the hot drain system was discussed with the radiation safety officer. Since the system is a radiation center system, surveillance sampling and effluent is considered part of the campus-wide, state licensed activity. Any recommendations based on the review could be presented to both the Campus Radiation Safety and the Reactor Safety Committees.

Gaseous effluent from the reactor and its associated facility is monitored continuously and the Argon-41 activity released is determined on a daily basis and tabulated for monthly release totals. Current records reflected releases that are consistent with previous periods as reported in the facility annual report.

No items of noncompliance or deviations were identified.

9. Environmental Monitoring

The licensee maintains a TLD environmental radiation monitoring network in the vicinity around the reactor facility. Forty sensitive thermoluminescent dosimeters are placed in two arrays, one within 50 yards of the facility, the other from 50 yards to 15 miles distance. They are exchanged on a quarterly schedule. Results are consistent with previous years, and except for those within 50 yards of the facility, there is no evidence of increased radiation levels above ambient background that are related to reactor operation. Results of those within 50 yards of the facility were well within the limits of 10 CFR 20.105.

Liquid samples are taken from potable water, the local sewage treatment plant, and from local rivers. Beta-gamma activity of the samples is measured and tabulated. Average values for the various locations are reported in the annual report. Results reported are within the expected range and there is no evidence of increased activity related to reactor operations.

No items of noncompliance or deviations were identified.

10. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection. The scope and findings of the inspection were discussed. The licensee was informed that no items of noncompliance or deviations were identified.