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

REGION V

Report No. 50-027/80-03

Docket No. 50-027 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

Inspection conducted: October 22-24, 1980

Inspectors: for F. A. Wenslawski 12/18/80
J. R. Curtis, Radiation Specialist Date Signed

Approved by: F. Wenslawski 12/18/80
F. Wenslawski, Chief, Reactor Radiation Safety Section Date Signed

Date Signed

Approved By: H. E. Book 12/18/80
H. E. Book, Chief, Fuel Facility and Materials Safety Branch Date Signed

Summary:

Inspection on October 22-24, 1980 (Report No. 50-027/80-03)

Areas Inspected: Routine unannounced inspection of the radiation protection, environmental protection, emergency response planning programs and followup of licensee response to IE Bulletins, Circulars and Information Notices. The inspection included a tour of the facility, examination of radiological monitoring, material transfer, waste release, routine survey and personnel radiation protection and audit committee members. The inspection involved 18 hours onsite by one NRC inspector.

Results: One item of noncompliance, related to timely submittal of personnel monitoring summaries, was identified. The summary reports were compiled and submitted prior to the close of the inspection and no additional corrective action was required.

RV Form 219 (2)

DETAILS

1. Persons Contacted

*W. E. Wilson, Associate Director, WSU Nuclear Radiation Center
*R. Brown, Radiation Safety Officer Washington State University (WSU)
*J. Neidiger, Reactor Supervisor
*J. Sheppard, Chairman Reactor Safeguards Committee
V. P. Sikorsky, Reactor Operator

Other members of the reactor staff

*Indicates presence at the exit interview.

2. Review of Licensee Response to IE Bulletins,etc

The licensee had received and responded to IE Bulletin 79-19, "Packaging of Low-level Radioactive Waste for Transport and Burial". Low-level solid waste generated at the facility is collected and co-mingled with the radioactive wastes collected from other programs conducted under the universities state license by the University Radiological Safety Officer. The waste from the reactor constitutes a small fraction of the annual total. The wastes are compacted, packaged and transferred to a disposal contractor under the university state license.

The licensee had received IE Circular 80-14, Radioactive Contamination of Plant Demineralized Water System..., and had reviewed their plant systems for cross connections or possible siphon points. No corrective actions were warranted.

No items of noncompliance or deviations were identified.

3. General Operations - Tour

The inspector toured the facility and observed the conduct of a daily routine radiation survey performed by a reactor staff member. Confirmatory measurements of radiation levels were made by the inspector during the tour. General radiation levels measured at approximately three feet above the floor were 0.1 to 1.7 mrem/hr with levels in posted areas on the reactor bridge and in a source storage area in the range of 2.2 to 20 mrem/hr. The survey was made with a XETEX Model 305B survey meter, serial #8172, latest calibration 9-4-80, due for recalibration 12-4-80. Posting, labeling, radiological safety and material control procedures and practices were observed and discussed. They were found to be proper and consistent with present standards and the level of exposure hazard presented.

The routine daily radiation survey, performed by the staff member was part of the survey activity prescribed by the WSU Reactor Standard Procedure #5, "Standard Procedure for Health Physics Surveys". Many of the routine reactor operations, maintenance and radiation protection activities are prescribed in WSU Standard Operating Procedures. All reactor procedures are reviewed periodically by the Reactor Supervisor, changes are reviewed and authorized by the Reactors Safeguards Committee.

No items of noncompliance or deviations were identified.

4. Organizational Changes

Mr. S. Hawley, previous Reactor Supervisor left the Nuclear Radiation Center to accept employment at Battelle Northwest Laboratories in September 1980. The Reactor Supervisor position has been filled by Mr. J. Neidiger, who has been on the reactor facility staff as operator and senior operator since 1978.

5. Examination of Records

A variety of records and forms used routinely for radiation surveys, sample monitoring and release, personnel exposure and area radiation level determination, and reactor operation logs were examined. Results of measurements and compilations were consistent with expected values; facility personnel exposures are low (0 to 100 millirem per year), liquid and gaseous effluent samples indicate release levels in the range of 10^{-7} to 10^{-8} microcuries per cubic centimeter. These results were consistent with previously reported values in the licensee's annual report and in quarterly summaries submitted by the W.S.U. Radiation Safety Officer, who reviews the records to assess radiological conditions as part of the Reactor Safeguards Committee's surveillance of reactor operations.

No items of noncompliance or deviations were identified.

6. Emergency Response Planning

The licensee's plans and current guidance for emergency response is contained in their Standard Procedure #6, "Standard Procedure in the Event of an Emergency Situtation." The licensee management representative indicated that a new emergency plan had been written and submitted in conformance with the guidance and format of the ANS-15 Emergency Planning Standard and the staff was working on a reiteration of this plan in response to changesi indicated in the recently announced 10 CFR 50 Appendix E requirements.

Evacuation Alarms are checked on a routine quarterly schedule. Periodically, electronic transients and power failures have triggered alarms during off hours and precipitated response by the campus police, who as part of their response plan, contact persons on the facilities Emergency Call List. These events have been considered as appropriate tests of the emergency response plan.

No items of noncompliance or deviations were identified.

7. Radioactive Waste-Effluents

Small quantities of solid waste are generated at the reactor facility in the form of plastic gloves, absorbent paper and towels and plastic vials, etc, used during irradiated sample handling manipulations. These wastes are collected and incorporated into the universities waste collection, compaction and disposal program, conducted under a State of Washington license. The volume and specific activity content of strictly "reactor produced" waste is not compiled, but estimates by the WSU Radiation Safety Officer, who oversees the university's waste disposal program, estimated the annual volume to be two to five 55 gallon drums per year and the activity in the millicuries range.

Liquid wastes are generated in certain laboratories in the Nuclear Radiation Center building which also houses the reactor facility. Hot sink drains in these laboratories and drains in the reactor facility are routed to a holdup and dilution tank system. The liquid wastes collected in these tanks are held for batch type release; they are sampled prior to release to the sanitary sewer system. The Reactor Supervisor authorizes the actual release after evaluating the sample analysis. Concentrations reported have been in the 0.1 to 10 X 10^{-7} micro-curies per cubic centimeter range.

Argon-41 releases in the gaseous effluent are monitored continuously during reactor operation. The quantity of Argon-41 released per operating day is calculated based on the integrated count from the stack gas monitor and monthly release summaries are made for reporting purposes. The average concentrations reported in recent summaries are consistent with previous levels reported and are well within the limitations of the facility technical specifications.

No item of noncompliance or deviations were identified.

8. Environmental Monitoring

The licensee is maintaining its environmental monitoring program in the form of an array of TLD dosimeters from "close-in" to 15 miles away, and analsysis of monthly water samples from water bodies in the vicinity of the Washington State University's Pullman campus. Recent results and those reported in the 1979-80 annual report are consistent and show no impact from reactor operations.

No items of noncompliance or deviations were identified.

9. Exit Interview

An exit interview was held with licensee representatives denoted by an asterisk in paragraph one, at the conclusion of the inspection. The scope and findings of the inspection were discussed. The licensee representatives were advised that the failure to submit the 1978-1979 personnel monitoring reports in a timely manner might consitute a citable item of noncompliance.