

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

REGION V

Report No. 50-142/79-01

Docket No. 50-142 License No. R-71 Safeguards Group _____

Licensee: University of California at Los Angeles

Los Angeles, California 90024

Facility Name: UCLA Research Reactor

Inspection at: UCLA Campus (Argonaut-100KW)

Inspection Conducted: February 12-15, 28, and March 1, 1979

Inspectors: F. A. Wincelowski 3/2/79
for R. D. Thomas, Radiation Specialist Date Signed

Date Signed

Approved By: H. E. Book 3/2/79
H. E. Book, Chief, Fuel Facility and Materials Safety Branch Date Signed

Summary:

Inspection of February 12-15, 28 and March 1, 1979 (Report No. 50-142/79-01)

Areas Inspected: Environmental protection which included effluent monitoring and records; emergency planning including tests and drills, emergency equipment and kits, and emergency procedures; radiation control including area posting, radiation surveys, personnel monitoring, instrument calibrations, training, audits, and waste disposal; independent inspection effort. Follow up telephone calls on February 28 and March 1 to clarify environmental TLD data results. This inspection involved 28 inspector hours onsite by one inspector.

Results: Of the 14 areas inspected, no apparent items of noncompliance or deviations were identified.

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DETAILS

1. Persons Contacted

- J. Hornor, Resident Health Physicist
- *A. Zane, Reactor Supervisor
- J. Kauffmann, Radiation Safety Officer
- C. Ashbaugh, Nuclear Engineer/Security Officer
- *N. Ostrander, Manager, Nuclear Energy Laboratory (NEL)
- I. Catton, Director, Nuclear Energy Laboratory (NEL)
- *J. Evraets, Campus Radiation Safety Officer
- S. Leichter, UCLA Police Department
- P. Arnold, UCLA Electrician

*Denotes those attending the exit interview.

2. Environmental Protection

a. Gaseous Releases

An examination of the gaseous effluent release records for 1978 to date indicate that the bulk of gases released were argon-41. The average release rate was 4.8 curies per month with a maximum concentration of 1.2×10^{-5} uCi/ml at the point of release. The gaseous effluent releases were monitored and recorded in accordance with the Technical Specifications. The concentrations released were within Technical Specification limitations.

The licensee's environmental program, consisting of 20 TLD devices, which was conducted in accordance with Part 2.C.(3) of Amendment No. 10 to License R-71, was completed on March 4, 1978, and was terminated after the two year study. Analyses of the data gathered over the past two year period indicated the highest average quarterly dose at the periphery of the controlled area to be 10.9 milliroentgens. From review of TLD data, the licensee believes some TLD data were influenced by posting on concrete walls. The licensee is still evaluating the TLD study, but based on initial review it is believed the study supports the theoretical analysis provided to support Amendment No. 10 to the licensee. The licensee will include the results and conclusions of the study in the annual operating report pursuant to Paragraph VIII.M.3.h. of the Technical Specifications.

No items of noncompliance or deviations were identified.

b. Particulate Activity Releases

An examination of the weekly particulate stack sample records for the period of January-December 1978 indicated a maximum activity level of 1.48×10^{-12} uCi/ml. All sampling data results were within 10 CFR 20, Appendix B, limitations.

No items of noncompliance or deviations were identified.

c. Liquid Waste Releases

An examination of the liquid waste release records for 1978 to date was conducted. On June 29, 1978, approximately 200 gallons of contaminated water was released to the sewer system. Analysis of the water indicated an activity level of 1.04×10^{-7} uCi/ml (Fe-59). The liquid release made to the sanitary sewer system was within 10 CFR 20, Appendix B, limitations.

No items of noncompliance or deviations were identified.

d. Solid Waste Disposal

There were no solid waste shipments made during 1978.

No items of noncompliance were identified.

3. Emergency Planning

a. Tests and Drills

The inspector observed a test of the fire alarm and the evacuation alarm circuits. Operation of the alarm circuits was verified at the Campus Communications Center. All tests were acceptable.

The licensee conducted two evacuation drills in 1978. One was conducted on May 25, 1978, and the other on December 20, 1978. A critique was held after each drill by the Reactor Supervisor, the Resident Health Physicist, and the Manager of NEL. Problem areas were associated with students that did not leave the shop areas when the alarm was sounded. This situation has been corrected by the Reactor Supervisor.

No items of noncompliance or deviations were identified.

b. Emergency Equipment and Kits

The emergency equipment specified in the current emergency plan was examined. All instrumentation was in current calibration and in operable condition. The emergency kit in the control room was complete. Well stocked first-aid kits are available at different locations within NEL.

No items of noncompliance or deviations were identified.

c. Emergency Procedures

The licensee is currently using a one page emergency procedure dated July 1977. The licensee stated that a new emergency plan is being reviewed and should be approved and implemented in June or July of 1979. The plan will incorporate the response of outside agencies and their response procedures.

No items of noncompliance or deviations were identified.

4. Radiation Control

a. Posting

A review of the posting requirements was made during a walk-through inspection of NEL. All radiation areas were posted in accordance with 10 CFR 20.203. The posting requirements of 10 CFR 19.11, and 10 CFR 21.6 had been fulfilled.

No items of noncompliance or deviations were identified.

b. Radiation Surveys

The licensee performs weekly surveys consisting of instrument readings and contamination smears in the reactor room. Special surveys are conducted during experiments. An annual radiation survey is conducted, while the reactor is at 100KW, which incorporates areas adjacent to the reactor room. An examination of the survey records for 1978 to date, indicated radiation levels in the range of 1.0-200.0 mrem/hr (Beta-Gamma), and 0.5-4.5 mrem/hr (Neutron). Most areas were less than 1.0 mrem/hr (Beta-gamma) and 0.5 mrem/hr (Neutron). Radiation levels outside the reactor high bay area were at a background level for beta-gamma, and neutron radiation. Contamination smear records showed no significant contamination in most areas within the reactor high bay. The last annual survey was conducted on May 2, 1978. All survey data were acceptable.

An independent radiation survey was conducted by the inspector inside the reactor high bay area. All instrument readings were taken with a Digi/Master exposure ratemeter, NRC No. 000356, last calibrated on 11/28/78. Most measurements were made with the instrument held at approximately waist level. The radiation levels ranged from 0.2-45.0 mrem/hr. During the survey, the reactor was at 100KW power level. Contamination smears of a 100 cm² area were taken with dry filter paper discs. The smear samples were counted with a Nuclear Measurements Corporation (NMC) Proportional Counter Model PC-55, NRC No. 000383. The counting results ranged from 3.0-23.0 dpm/100 cm².

No items of noncompliance or deviations were identified.

c. Personnel Monitoring

An examination of the personnel monitoring records for 1978 indicated that 47 film badges had been assigned, of which, 16 were assigned to the reactor staff. Neutron films are included in 13 of the badges assigned to the reactor staff. The maximum quarterly exposure was 132 mrem with a yearly total of 135 mrem. The licensee maintains a NRC Form-4 on six individuals which authorizes the 3 rem per quarter limit.

Pocket dosimeters are available for use, but are not used routinely. The quarterly exposures ranged from 5.0-22.0 mrems. Two hand and shoe counters are maintained for personnel monitoring. The counters are located at the main exits to the reactor bay.

No items of noncompliance or deviations were identified.

d. Instrument Calibrations

The calibration records of all portable survey instruments for 1978 were examined. All portable instruments were in current calibration, and all calibrations had been performed in a timely manner.

The annual dosimeter functional and drift test was performed during the period of January 12-16, 1979. Results were acceptable. The dosimeters were calibrated on January 17, 1979. All results were acceptable.

The calibration records for the stack monitor and the two area monitors in the reactor bay were examined. All instruments were in current calibration, and all calibrations had been performed in a timely manner (semi-annually) as specified in the Technical Specifications.

A functional test is conducted weekly on all portable survey instruments and the hand and shoe counters.

No items of noncompliance or deviations were identified.

e. Training

The Resident Health Physicist conducts health physics training courses periodically as needed for individuals (students) requiring the use of the reactor facility. The courses are of two to four hours duration pending upon the type of training required. During 1978, sixty-two students and four employees were given the health physics training. The average grade level on the examinations was 91.0. A four hour course in health physics procedures and emergency planning is given to the reactor operators once a year. The last course was taught on August 28-29, 1978, to five individuals. Average grade level on the examination was 96.0.

No items of noncompliance or deviations were identified.

f. Audits

An annual in-depth audit of all NEL operations and procedures is conducted by the Resident Health Physicist. The results of the audit are presented to the Radiation Use Committee for review and corrective action. The records indicated that the last audit was performed on March 15, 1978. The results of the audit indicated no violations and all requirements appear to be documented as required by the Technical Specifications. The licensee stated that a quarterly in-depth audit may be conducted starting in April 1979.

No items of noncompliance or deviations were identified.

5. Reactor Bay Ventilation Study Followup

As a result of the ventilation study conducted during a previous inspection (NRC Report No. 50-142/78-02, Paragraph 4.h), the leakage of the emergency dampers in the reactor stack was examined. The operation of the dampers was observed. Based upon the repairs made by the licensee and the examination of the dampers by the inspector, it appears that the air leakage around the dampers should be minimal. The licensee has specified that the leakage will not exceed 0.4% of the design exhaust rate. As a result of discussions with the Division of Operating Reactors, NRR, by Region V staff personnel, it was concluded that the leakage rate described by the

licensee is compatible with the type of construction of the ventilation system and is considered acceptable. Based upon the conclusion by DOR-NRR, the matter is considered closed.

No items of noncompliance or deviations were identified.

6. Exit Interview

An exit interview was held with those individuals denoted in Paragraph 1. The inspector summarized the scope and findings of the inspection. The licensee was informed that no items of non-compliance or deviations were identified. A discussion was held regarding the repair to the emergency damper system in the reactor stack. Based upon the modifications and repairs made by the licensee, this matter was closed. (See Paragraph 5.)

The shipment of several old fuel bundles and plates to the Idaho Chemical Processing Plant, Idaho Falls, Idaho was discussed. Based upon the radiation levels involved and the handling techniques proposed, it was suggested that the Region V office be contacted prior to the loading operation so arrangements could be made to have an inspector onsite during the transferring of the fuel bundles.

The licensee stated that a change to Section V.E of the Technical Specifications was being considered due to a projected increase in the reactor use factor. This matter will be discussed by the licensee with DOR-NRR. If it is determined that the increased reactor use factor will produce an unacceptable increase of argon-41 concentrations, the licensee proposes to use a compressor and decay tank system to collect the argon-41 for storage and release after a decay period.