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

REGION V

Report No. 50-142/81-01

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 (100 KW Argonaut)

Investigation at: Nuclear Energy Laboratory, Boelter Hall, UCLA

Investigation conducted: June 10, 1981

Investigators

O.C. Shackleton, Jr., Senior Investigator — Date Signed 7/28/81

A.D. Johnson, Director, Enforcement & Investigations — Date Signed 7/28/81

Date Signed

Approved By:

A.D. Johnson, Director
Enforcement & Investigations — Date Signed 7/28/81

Summary:

Investigation on June 10, 1981, Report No. 50-142/81-01

Area Investigated: Nonroutine announced Investigation of circumstances surrounding manipulation of the control of the reactor regulating blade by unlicensed science students not enrolled in nuclear engineering courses and by Utility Company personnel in training for Operator licensees for nuclear power plants. The investigation involved 12 investigator hours on site by two investigators.

DETAILS

1. Persons Contacted

Dr. I. Catton, Director, Nuclear Energy Laboratory
Mr. N. Ostrander, Manager, NEL
Mr. A. Zane, Reactor Supervisor
Mr. C. Ashbaugh, Senior Operator
Mr. W. Cormier, Counselor,-At-Law

2. Background

Region V staff members were made aware that during the current licensing proceeding before the Atomic Safety and Licensing Board for the relicensing of the research reactor at UCLA, the intervenor, Committee to Bridge the Gap, propounded interrogatories dated April 20, 1981, concerning operation of the reactor by unlicensed individuals. The licensee responses to the interrogatories affirmed that unlicensed individuals had manipulated the reactor controls. The pertinent interrogatories and licensee response follow:

Interrogatory

"54. On page 16 of the NEL Annual (Specialized Activity) Report for 1976 it is indicated that a group of students from Culver City High School were able to come to UCLA to individually operate and observe the UCLA reactor,...

"c. Did any of these visitors with or without supervision, manipulate the controls of the reactor during this visit...

Response

"Yes

"e. If the answer to c. is yes, precisely which controls were manipulated and precisely which reactor operations were manipulated. If power or reactivity was altered by the visitor, please specify the range of alteration...

Response

"Control rods were manipulated. See the operating logs and strip charts.

"j. Please specify the age and educational background in nuclear engineering for each visitor who operated the reactor...

Response

"Age 16 to 18 years, high school physics students with previous orientation in nuclear reactor physics."

Interrogatory

"68. Does applicant content that instances in which visitors such as the high school students from Culver City High School manipulated the reactor controls did not constitute unlicensed operation? If so, please detail all facts in Applicant's possession which support such a contention.

Response

"Yes; in all cases applicant's licensed reactor operator is deemed to have operated the controls of the reactor."

In view of the above, the investigators visited the subject facility on June 10, 1981, to obtain the facts and circumstances relating to manipulation of reactor controls by unlicensed persons.

3. Manipulation of Reactor Control by unlicensed persons.

According to the licensee representatives, one of the primary purposes of the reactor at UCLA is for use as an education tool to interest students and teach them the principles of nuclear physics, engineering, reactor operation, and associated subjects. To further this purpose, the licensee explained that the university cooperates with other colleges in the area by providing instruction at the laboratory in the control of radiation, and the theories and principles associated with the controls of nuclear reactors. In addition, instruction had been provided to employees of utilities that were in training for reactor operator licenses for nuclear power plants. Also, to encourage high school students studing physics and interested in nuclear energy, the Licensee had provided a half day indoctrination type tour where these special students received lectures in control of radioactive waste, radiation, and reactor operations.

As a part of the instruction given to the special students the instructor, an NRC senior licensed operator, demonstrated how the reactor power level was increased and decreased by requesting each student to sit at the reactor control console while the reactor was operating. After questioning and receiving appropriate answers from the student on how to increase and decrease the power level, the instructor would direct the student to depress the appropirate spring return switch to either withdraw or insert the reactor control blade. Upon reaching a predetermined rod position the instructor would direct the student to release the control switch. After completing the foregoing exercise the student would then discuss what had occurred. Each student was thereafter given the opportunity to manipulate the control switch for the control blade in the foregoing described manner. According to the instructor, the individuals, especially the high school physics students, had participated in the exercise with enthusiasm.

The records of reactor operations were examined for the years of 1977 thru 1981 to the date of the investigation. Entries in the records show that the most recent high school physics class permitted to manipulate the reactor control blade was on May 18, 1979. The licensee representative stated that the practice was discontinued in early 1980 when questions arose within the staff of the UCLA Nuclear Energy Laboratory as to whether the practice of allowing high school students to manipulate the control switch was in compliance with NRC rules and regulation. The Senior Operator/Instructor contended that the provisions of 10 CFR 55.4(d) permitted the practice. Other members of the staff agreed, but were unsure of what NRC's interpretation of the provision would be. 10 CFR 55.4(d), the provision relied on by the Senior Operator reads:

> "Operator is any individual who manipulates a control of a facility. An individual is deemed to manipulate a control if he directs another to manipulate a control."

4. Exit Interview

The Investigators met with Messrs Ostrander, Zane and Cormier at the conclusion of the investigation to discuss the scope findings of the investigation. The licensee representatives stated that the program involving high school physic students would not be reinstituted until the legal aspect of the matter was clarified. The investigators indicated that the licensee's program involving utility personnel and students from other colleges and universities appeared to be permitted by the provisions of 10 CFR 55.9, Exemption From License.