



SCHOOL OF ENGINEERING AND APPLIED SCIENCE
LOS ANGELES, CALIFORNIA 90024

June 20, 1975

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Director, Division of Reactor Licensing
United States Nuclear Regulatory Commission
Washington, D. C. 20545

Dear Sir:

Due to the sensitive nature of the contents of this letter, we request that this document be withheld from public disclosure pursuant to Section 2.790 of 10 CFR Part 2.

The physical security plan for the Nuclear Energy Laboratory at the University of California, Los Angeles as required by 10 CFR Parts 50.34(c) and 73.40 is as follows:

The Nuclear Energy Laboratory presently has in its possession 9.0 kg of Special Nuclear Material in the form of 93% enriched uranium (fuel plates, fuel scraps and uranyl nitrate) and two 32 gm Pu - Be neutron sources. Of the SNM in the exempt form, 3.6 kgs of U-235 is in the reactor and 0.7 kg is in the radioactive storage pits. The 4.7 kgs of SNM in the non exempt form are stored in the radioactive storage room.

I. Design Features

A. Essential Equipment

The UCLA reactor is an Argonaut-type nuclear reactor and is located in 2567 Boelter Hall. The reactor is described in figures (pages) 1 through 9 of Appendix A.

The UCLA R-1 reactor is an extremely safe reactor. It has a large negative void and negative temperature coefficient, since it is an under moderated reactor. Figure 10 describes the cooling system of the reactor. A descriptive account of the safety systems, records and reporting procedures are included in Appendix B. Appendix B is a summary of our License No. R-71, our Technical Specifications.

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B. Security Area

The security areas (reactor high bay and radioactive storage room) are identified in figures 11 through 13. Figure 11 describes the first floor, figure 12 describes the second floor, and figure 13 describes the radioactive storage area in detail. The alarm system is shown in red ink with the ultrasonic transmitter and receiver transducers identified by an "X", the magnetic switches for the doors by a "Y" and the two master control units by a "Z".

The radioactive storage room is located below ground level so that all outside walls are backed by earth fill. The inside walls are two-foot-thick concrete block, and the two steel mesh doors provide the only access to the area. The inner door #1 has two locks. One of the locks is keyed to "A", the Master level, and the other lock is a Sargent & Greenleaf combination padlock No. 8077A, which meets the specifications outlined in AEC Regulatory Guide 5.12. The outer door #2 is keyed to "A" level. (Refer to Figure 13.) The fuel plates and fuel scraps are stored in a Metal File Cabinet Safe, Model T-20, Serial No. 48727, made by Underwriters Laboratory. It is secured to the north concrete wall and floor by 1x1x1/8 angle iron. A separate key and combination are required to open it. One fuel bundle with attached thermocouples is stored in an 8 foot long 6 inch steel schedule 40 pipe with a steel lid hinged and locked with a Sargent & Greenleaf combination padlock. The pipe is welded to the north concrete wall. All the bolts securing the safe and the schedule 40 pipe are welded to the angle iron so they cannot be removed. The two Pu - Be neutron sources are kept in steel drums filled with paraffin, which are chained to the east wall and secured with the same type of Sargent & Greenleaf Combination padlocks. The uranyl nitrate (250 gms) is stored in padlocked steel lockers at the south end of the room.

The storage pits in the reactor high bay are composed of cylindrical holes, 6.5 feet deep, set into the concrete floor. The cylinders are secured with a 4 foot long, 10 inch diameter, 380 pound steel lined concrete plug which can only be removed with a special handling device or the reactor room crane. The concrete plug handling device and the crane are both secured with Sargent & Greenleaf padlocks.

The remainder of the enriched uranium is kept in the reactor. Due to its power history, the fuel is too hot to handle without cumbersome shielding. The crane, the handling cast, shielding and a great deal of time are required in order to remove it from the reactor and then from the facility.

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C. Security Systems

1.a. Locks and Keys

Every door leading into the Nuclear Energy Laboratory and every door within the facility is under a lock and key system comprised of three levels: A, B, and C. The lock and key system is under the control of C. E. Ashbaugh, the Reactor Supervisor, who keeps a written and signed record of the individuals having the keys.

Level A is issued only to permanent, full-time employees of the Nuclear Energy Laboratory. It is the Master Key and will open any door in the facility. Only seven of these keys were ever made.

Level B keys are issued to qualified individuals who have taken the laboratory health physics course and who have passed the health physics and laboratory procedures test. These individuals include qualified students, the secretary, and the custodian.


One level B key is also issued to the UCLA Police Department to be used by the patrol and the detective units only. The personnel of these two units are given a condensed course on health physics, equipment, access points, and emergency procedures. They are not given an exam, but will receive the course on an annual basis.

Level C keys are issued to unqualified students for office space or for the use of our library.

The locks are Corbin heavy duty cylindrical six pin locks. The key blanks are off master and in the registered key section of UCLA, meaning that no one may obtain or use this type of blank which is of the east coast variety. This was done in order to provide a smaller chance of compromise. The key level required for passage through the doors in this facility is shown by the letters A, B, or C in red ink in figures 11, 12; and 13. The letter D means dummied lock, so it cannot be unlocked from the outside. The door can be opened only from the inside and is to be used as a possible escape route during an emergency.

1.b. Ultrasonic Intrusion - Detection System

The ultrasonic alarm system is manufactured by Walter Kidde and Co.; and is installed by the Physical Plant of UCLA. The type, model and part number of each piece of equipment for the system appears on page 14 in Appendix A.



2. Communications

In the event of a security violation, the following communication system is used. The alarm system registers a security violation. A signal is sent along an isolated tamper proof telephone line to the 24 hour manned Honeywell Alarm Receiver W840B,D located at the UCLA Police Station. At the station there is also a printed recorder which prints out the status on each and every alarm. The status categories are normal, alarm, and trouble. Trouble means tampering with the system and the appropriate action is to assume that it is an alarm.

An officer on duty then calls the patrol units on a two-way radio. If the officers are not in their cars, they still would have direct voice contact since they carry portable radios. The officer on duty then telephones the laboratory personnel listed in order on the Nuclear Energy Laboratory Emergency Procedure list until one is contacted. The contacted individual then proceeds to the laboratory to assist and to advise the police on the situation.

II. Administrative Controls

A. Organization

1. Security Organization

The Reactor Supervisor, C. E. Ashbaugh, is responsible for the facility security program. On a day-to-day basis, all full-time employees of the laboratory are responsible for laboratory security. The seven full-time employees with A level keys will have the authorization to activate and to deactivate the high bay alarm system. Only the Reactor Supervisor and the Laboratory Manager will have the authorization and the code to activate and to deactivate the radioactive storage area alarm.

The UCLA Police Department is responsible for detecting any intrusion during working and non-working hours, and for taking the appropriate action in the event of a security violation. The Police Department has, at a minimum, 6 units (men) on duty at all times. At night between the hours of 1630 and 0130, there is in addition, a one man foot patrol around and through the Engineering Building, Boelter Hall. He checks the doors and looks to see if there is any unusual activity taking place.

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2. Local Law Enforcement Authorities

The UCLA Police Department has as a back up the West Los Angeles Police Department. This is possible because of a mutual aid agreement between the two parties.

B. Access Control

1. Personnel

At the present time, there are seven people who have A level keys, and are authorized to enter the reactor high bay. They are full-time laboratory employees. Level B and C keyholders may enter the reactor high bay if they are accompanied by one who has a level A key. There are only two people, the Reactor Supervisor and the Laboratory Manager, who are authorized to open the radioactive storage area.

The following personnel, by name and title, are issued A level keys:

Professor T. E. Hicks - Director
Neill C. Ostrander - Laboratory Manager
C. E. Ashbaugh - Reactor Supervisor
Ronald Bolek - Senior Mechanician
William Debley - Senior Electronics Technician
Jack Hornor - Resident Health Physicist
Anthony Zane - Principal Electronics Technician

2. Control

The door to the reactor high bay can be opened only with an A level key. Only full-time employees of the laboratory (excluding the secretary and the custodian) are issued A level keys.

The door of the radioactive storage room can be opened only with an A level key and the combination to the Sargent & Greenleaf combination padlock. Only the Reactor Supervisor and the Laboratory Manager have both. Once entry is gained, it requires the proper two individuals to gain access to the SNM because of the series key and combination requirement of the safe. The four individuals who are authorized to enter the safe are:

Laboratory Director - key
Laboratory Manager - combination
Reactor Supervisor - combination
Resident Health Physicist - key

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C. Surveillance


1. Working Hours

There are two separate alarm systems and each alarm system can be deactivated only by specified individuals. All A level personnel are authorized to deactivate the alarm system of the reactor high bay by telephoning the University Police Department, stating their name, waiting for recognition and permission, and then properly deactivating the system at the master control unit. The same procedure is followed at the end of the day to reactivate the alarm system. While the system is deactivated, the surveillance is done by the working personnel holding A level keys and by students and faculty who are in the facility.

The Reactor Supervisor and the Laboratory Manager are the only personnel authorized to deactivate the alarm system of the radioactive storage room. This may be done only between the hours of 0800 and 1700 on university working days. The normal sequence of events for entry into the radioactive storage room is for one of the above two individuals to call the police, give the code, and wait for recognition and permission before entering the storage area and deactivating the alarm at the master control unit. When the alarm system is reactivated, the police are telephoned to see if the system has cleared and is in the alarm position. This alarm system is rarely deactivated, but when it is, there is at least one of the four laboratory personnel authorized to open the safe in this room during that time. Normally, this alarm system is kept on. During this time, the surveillance of this area is accomplished by the working personnel, the lock and key system and the ultrasonic alarm system. Backing up these systems are the UCLA Police Department and the West Los Angeles Police Department.

2. Non-Working Hours

During non-working hours, the lock and key system and the alarm system provide the surveillance of the security areas. A special foot patrol also offers some surveillance between the hours of 1630 and 0130. His rounds are such that he can see and check the outer doors of the facility at least once every one and one-half hours. The UCLA Police Department and the West Los Angeles Police Department back up these systems.



D. Procedures

1. Response to Detected Unauthorized Intrusions

The silent alarm sends a signal via the isolated telephone line to the UCLA Police Station. The signal registers on the 24 hour on site manned Honeywell Alarm Receiver. Notification is then sent via two-way radio to a unit to converge immediately on this facility to take the appropriate action. Since the police have portable radios, a minimum of five other units would be able to respond to the alarm if the situation warranted it. In case the problem is too great for them to handle, the UCLA Police Department could call as a back up, the West Los Angeles Police Department.

2. Security Violations by Authorized Personnel

For the Reactor High Bay, there are no provisions for security violations by authorized personnel other than proper screening during hiring. However, the SNM is of the exempt form, being highly radioactive. If anyone were to remove this material from the high bay, he would need time and would risk a lethal dose from the radiation if he tried to remove it from the facility.

The Radioactive storage area can be entered only by the two individuals mentioned previously, the Reactor Supervisor and the Laboratory Manager. Entry is impossible during non-working hours. If entry is attempted, the police will assume that the entry was unauthorized, and will take appropriate action. To have a security violation by authorized personnel, two people would be involved. One would have to be either the Reactor Supervisor or the Laboratory Manager and the other, the Laboratory Director or the Resident Health Physicist.

3. Bomb Threats

In the event of a bomb threat, the laboratory would be secured and evacuated. The standard emergency procedures would be followed. The emergency procedures are given on page 15 of Appendix A.

4. Acts of Civil Disorder

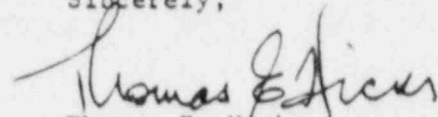
For acts of civil disorder, the emergency procedures would be followed.

E. Security Program Review

The security program will be reviewed and tested every twelve months by the Reactor Supervisor. He will also conduct a key inventory on a semi-annual basis.

We hope that this security plan meets with your approval.

Sincerely,



Thomas E. Hicks
Director
Nuclear Energy Laboratory

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Enclosures: Appendix A
Appendix B