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SCHOOL OF ENGINEERING AND APPLIED SCIENCE
LOS ANGELES, CALIFORNIA 90024

September 30, 1976

Mr. Bernard C. Rusche, Director
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, D. C. 20555

Docket 50-142

Dear Mr. Rusche:

The attached Draft-Security Plan is intended to replace our existing, approved Plan and Amendments thereto. The Draft Plan relegates many details of the existing Plan to the status of Written Procedures subject to review and approval by a laboratory Security Committee. Neither current circumstances nor current planning demand immediate changes in the provisions of the existing Plan, however we believe that the approach taken here will supply greater flexibility to meet the increasing activity and changing space allocation/utilization within the Nuclear Energy Laboratory.

Please note that the locations of alarm system transducers (Figures 11, 12, and 13) remain a portion of the Draft Plan, but that adoption of the Plan will remove the door-keying information from those figures to a written procedure status.

It is our intent to secure an "Approval in Principle" of the Draft Plan before proceeding with the creation of the Security Committee and the compilation of Written Procedures for approval by that committee. During this interim period we shall continue to operate under the existing, approved Security Plan.

The Draft Plan is believed to be in conformity with the requirements of 10 CFR Part 73.40. 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.

Sincerely,

Ivan Catton, Director
Nuclear Energy Laboratory

CEA:NCO:vl

cc: Mr. V.N. Rizzolo, Chief, Safeguards Branch, U.S. Nuclear Regulatory Comm., Region V, Suite 202, Walnut Creek Plaza, 1990 N. California Blvd. Walnut Creek, California, 94596

(In accordance with our letter of August 20, 1976)

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-DRAFT-

SECURITY PLAN

UCLA Nuclear Energy Laboratory

I. General Description

A. Physical Site and Activities

The Nuclear Energy Laboratory is located in the UCLA School of Engineering and Applied Science with the principal access via room 2567, Boelter Hall. Activities within the laboratory are varied and include (1) the operation of a 100 kw Argonaut nuclear reactor, (2) undergraduate laboratory classes, (3) graduate student projects that are often NRC or ERDA supported by contract arrangements, (4) a major ERDA sponsored fusion research project, and (5) supporting functions performed in machine and electronics shops. The general physical plan is shown in Figures 11 and 12 of Appendix A.

The various activities engage a staff of approximately 25, a number of faculty members with research and/or educational interests within the laboratory, a number of graduate students conducting research, and the closely supervised and scheduled undergraduate student classes.

B. Security Considerations

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 the SNM in the non-exempt form are stored in the radioactive storage room. The safeguarding of these materials is the dominant consideration in providing a security plan.

C. Essential Equipment

The materials described in the preceeding paragraph comprise the essential equipment of the laboratory in a security-related sense. The laboratory possesses no equipment described by "Restricted Data" or "Secret" documents.

II. Physical Security

A. Security Areas (A-level and Restricted Entry)

Security areas require A-level access or higher. These areas, the reactor room (1000) and the radioactive storage room (within room 540) are identified in figures 11 through 13. Security areas are protected by an intrusion alarm system, permit limited access, and present well defined physical boundaries to both innocent and overt intrusion. The security areas are defined in Figure 11 with a detail of the "radioactive" storage room elaborated in Figure 13. The alarm system is shown 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, is backed by a steel plate and has two locks. One of the locks is keyed to "A" level, the Master level, and the other lock is a Sargent and 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 11 or 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 diameter steel schedule 40 pipe with a steel lid hinged and locked with a Sargent and 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 to prevent easy removal. The two Pu-Be neutron sources are kept in steel drums filled with paraffin, chained to the east wall, and secured with the same type of Sargent and Greenlead 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 contain irradiated fuel elements and a 5 curie, Co-60 radioisotope source. Other radioactive materials may be stored within these pits as demanded by special circumstances. The storage pits 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.

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 cask, shielding and a great deal of time are required in order to remove it from the reactor and then from the facility.

For the purpose of radiological control and personnel safety, the subcritical facility of room 1540 requires A-level access. Upon occasion, encapsulated neutron sources may be left overnight in a subcritical assembly to provide sufficient neutron fluence for class demonstration purpose. That room houses a Kaman 1001-A neutron generator that is tritium contaminated and uses tritiated targets. Permissive entry by A-level access provides a prudent means of radiological control, but the security implications are regarded as negligible. The fact that the radioactive storage security area is behind the A-level door to this area is a convenient and simplifying physical arrangement.

B. Controlled Areas (B-Level)

The bulk of the laboratory area is controlled for personnel and visitor radiological safety reasons. Security and A-level regions are accessible only via passage through B-level areas. Thus the B-level areas, because of physical and administrative controls, serve as a coincidental buffer region on the perimeter of the A-level and security regions.

C. Uncontrolled areas (C-Level)

Peripheral areas of the laboratory encompassing the reception room and some office space are controlled only for the purpose of preventing petty theft of office equipment and supplies. These areas, denoted C-level, are not within the scope of the security plan presented here. Figure 12 delineates these areas as parts of the laboratory without implying that they constitute a part of the plan.

D. Lock and Key Provisions

The A, B, and C levels of the facility are defined by walls with penetrating doors. An A-level key will also open B and C locks, the B-level will open B and C locks, the C-key opens only C-level doors.

All locks are Corbin heavy duty cylindrical six pin locks. The key blanks are off. aster (east coast variety) and in the registrated key section of UCLA, meaning that no one may obtain or use this type of blank. This was done to reduce the possibility of compromise.

E. Ultrasonic Intrusion Detection System

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

F. 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 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 intrusion.

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 Procedures list until one is contacted. The contacted individual then proceeds to the laboratory to assist and to advise the police of the situation.

III. Administrative Controls

A. Organization

The Director of the Laboratory is responsible for the implementation and enforcement of the Security Plan. The Director shall appoint a Security Officer to maintain control of keys, key distribution records, and the Security log.

The Security Officer shall maintain updated personnel access lists and communicate with and provide limited training for campus police. He performs the annual review and test of the security system. He is an A-level keyholder.

There is a Security Committee consisting of the Director, the Security Officer, the Reactor Supervisor and two others familiar with the laboratory operations. Three committee members shall constitute a quorum. The Security Officer shall act as Secretary to the Committee. The Security Committee shall review and approve all security-related written procedures.

B. Supporting and Enforcing Agencies

1. On a day-to-day basis, all A-level keyholders are responsible for observance of the Security Plan and for reporting security violations.

2. 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.

3. 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.

C. Access Control

1. Regular users of the laboratory (faculty, graduate students, staff, and other researchers) must qualify for key access to A and B areas by satisfactorily passing a qualifying examination on the subject of radiological safety and general emergency procedures. A brief course of instruction in these matters is periodically offered by the resident health physicist. A written procedure for qualification and key issuance authorization is maintained by the Laboratory Security Officer.

2. The distribution of A-level keys is limited to no more than 10 individuals intimately concerned with reactor operations and/or maintenance. A-level keyholders must fulfill all of the requirements imposed upon B-level keyholders. The issuance of an A-level key requires approval by the Security Committee.

3. The radioactive storage area, the fuel storage safe, and other containers within the radioactive storage area require special access. Access to the fuel storage safe requires two individuals, each possessing only a portion of the physical requirements (keys and codes) for entry. The detailed control is set forth in a written procedure. Changes in the control must be approved by the Security Committee.

4. Floor plans indicating doors and keying are described by a written procedure, independent of the floor plans illustrating alarm system transducers. A change in the keying arrangements requires approval of the Security Committee.

D. Written Procedures

Written procedures shall be maintained by the Laboratory Security Officer. These procedures shall include:

1. Key request and approval procedure

2. Procedures for entering special security areas.

3. Security Committee approval of changes in specific door-keying arrangements.

4. Alarm setting and clearing procedures.

5. Procedure for treating alarm system malfunction and hardware malfunction.

6. Procedure for responding to police or emergency call-in during off-hours.

7. Procedure for responding to bomb threats.

8. Procedures to be used in the event of wide-spread civil disorder.

9. Procedures and sanctions related to security violations.

10. Procedures relating to lost or compromised keys.

E. Surveillance

1. Working Hours

During working hours, the surveillance alarm system of the reactor room is normally deactivated. Individuals authorized to activate and deactivate the alarm system are (1) A-level keyholders with (2) said authority, by name, on file with the UCLA Police Department. Details of activation and deactivation are specified in a written procedure.

The surveillance alarm system of the radioactive storage room is normally active 24 hours per day. Two individuals, A-level keyholders appointed by the Director, possess the information for authorized deactivation of the alarm system. Details of deactivation and restoration of this alarm system are specified in a written procedure.

2. Non-Working Hours

During non-working hours, the lock, 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.

F. Security Program Review

The security program shall be reviewed and tested every twelve months by the Laboratory Security Officer. He will also conduct a key inventory and identification check upon a semi annual basis.

A. PENDIX - A

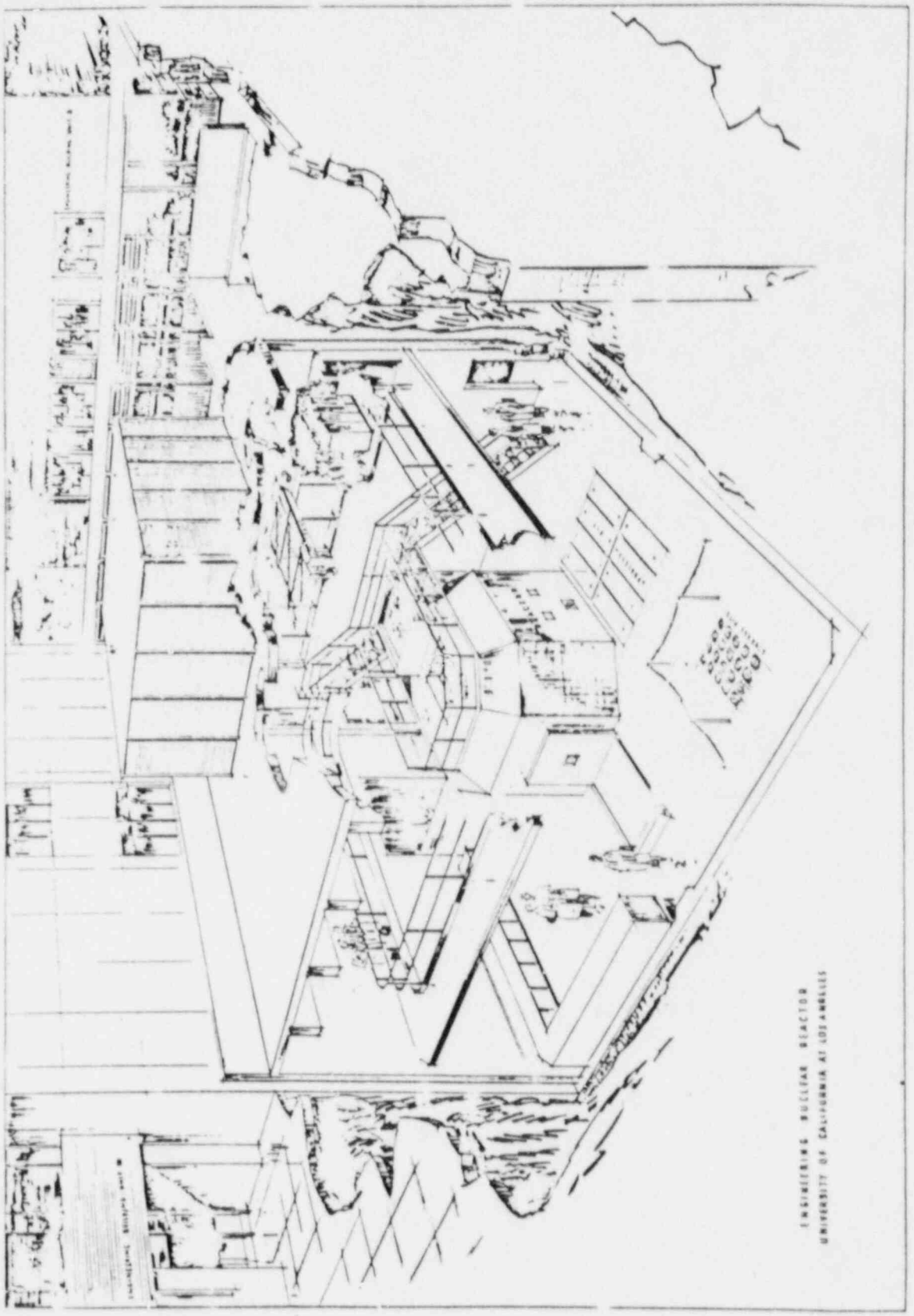
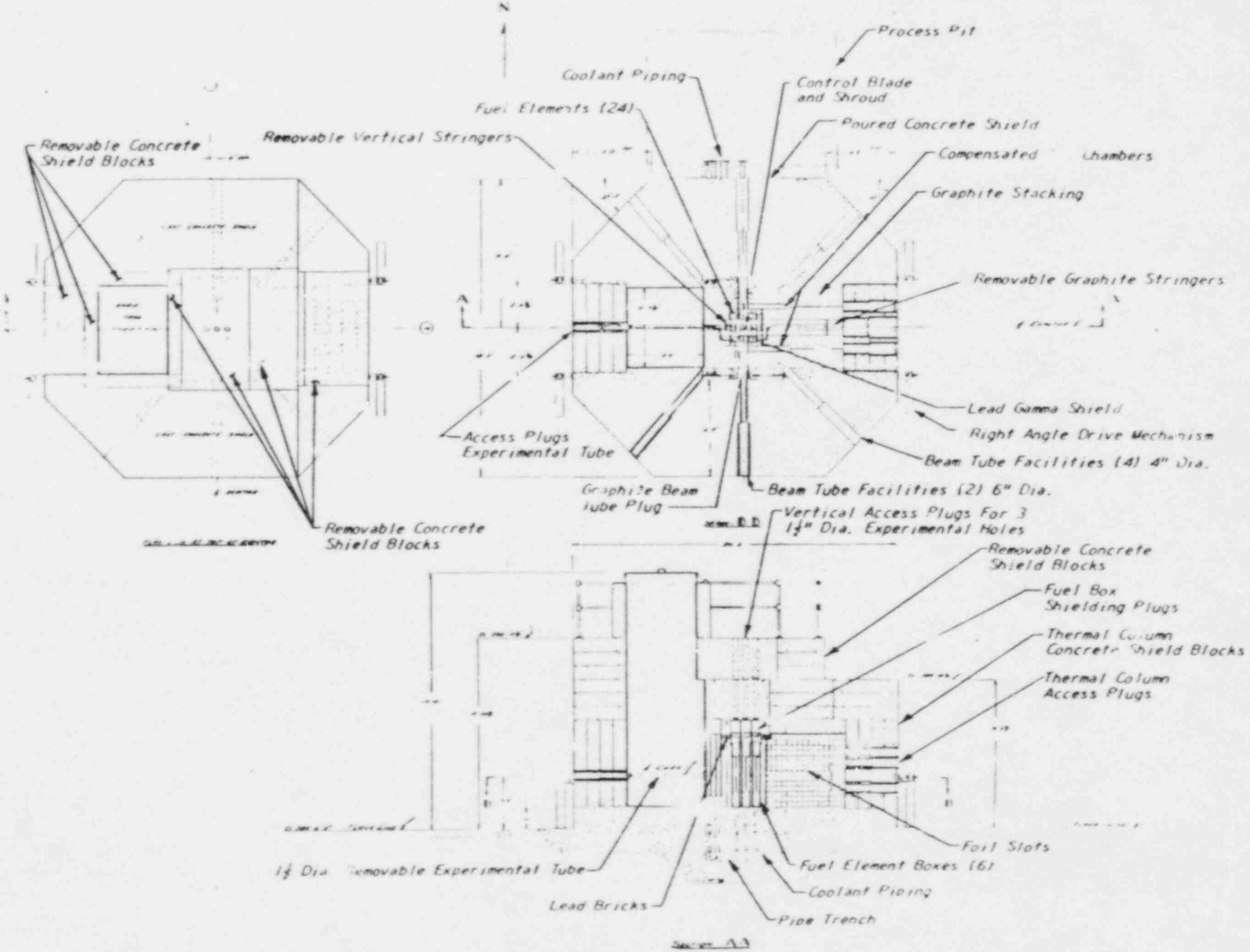
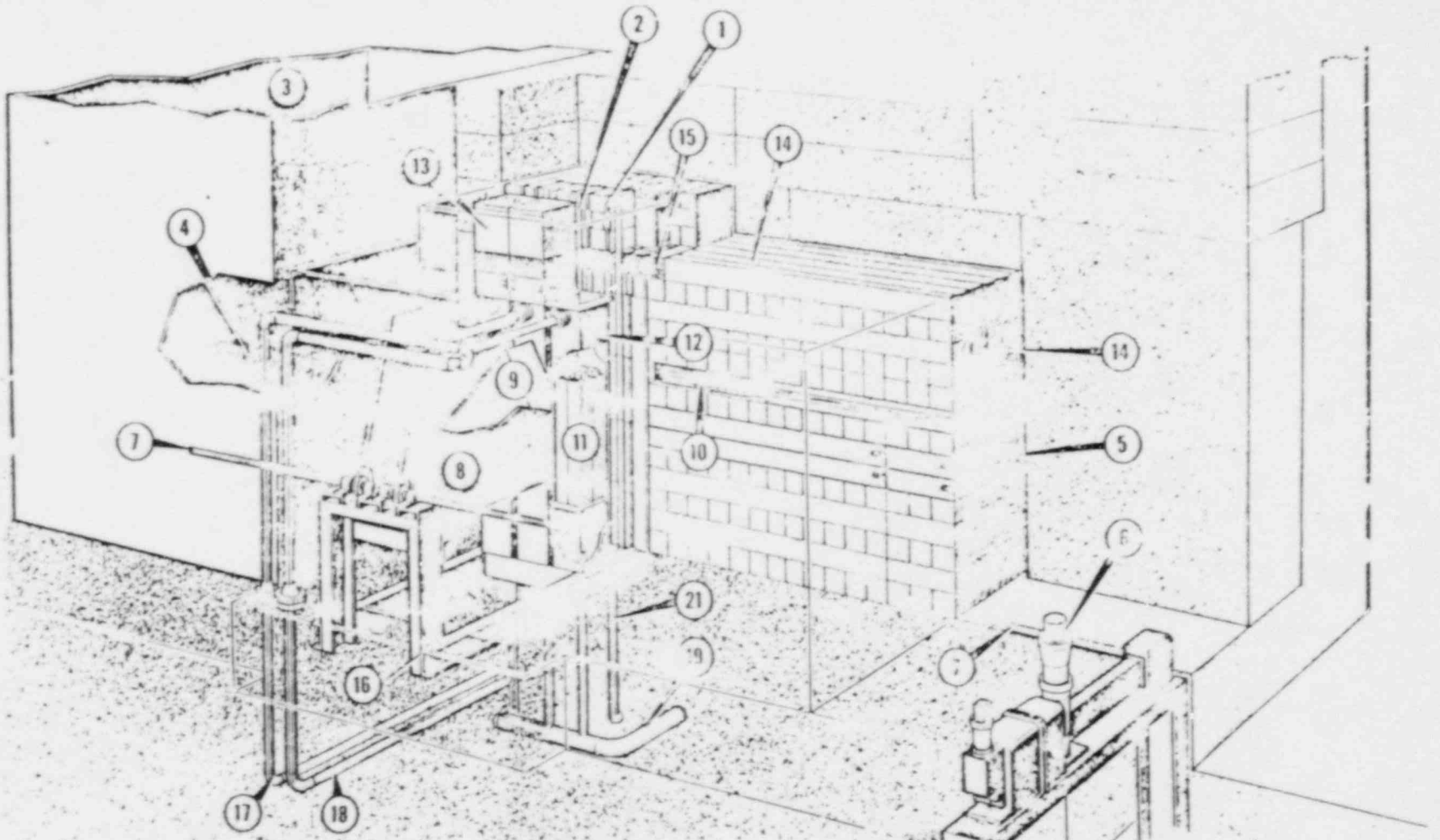

ENGINEERING NUCLEAR REACTOR
UNIVERSITY OF CALIFORNIA AT LOS ANGELES

FIGURE 1



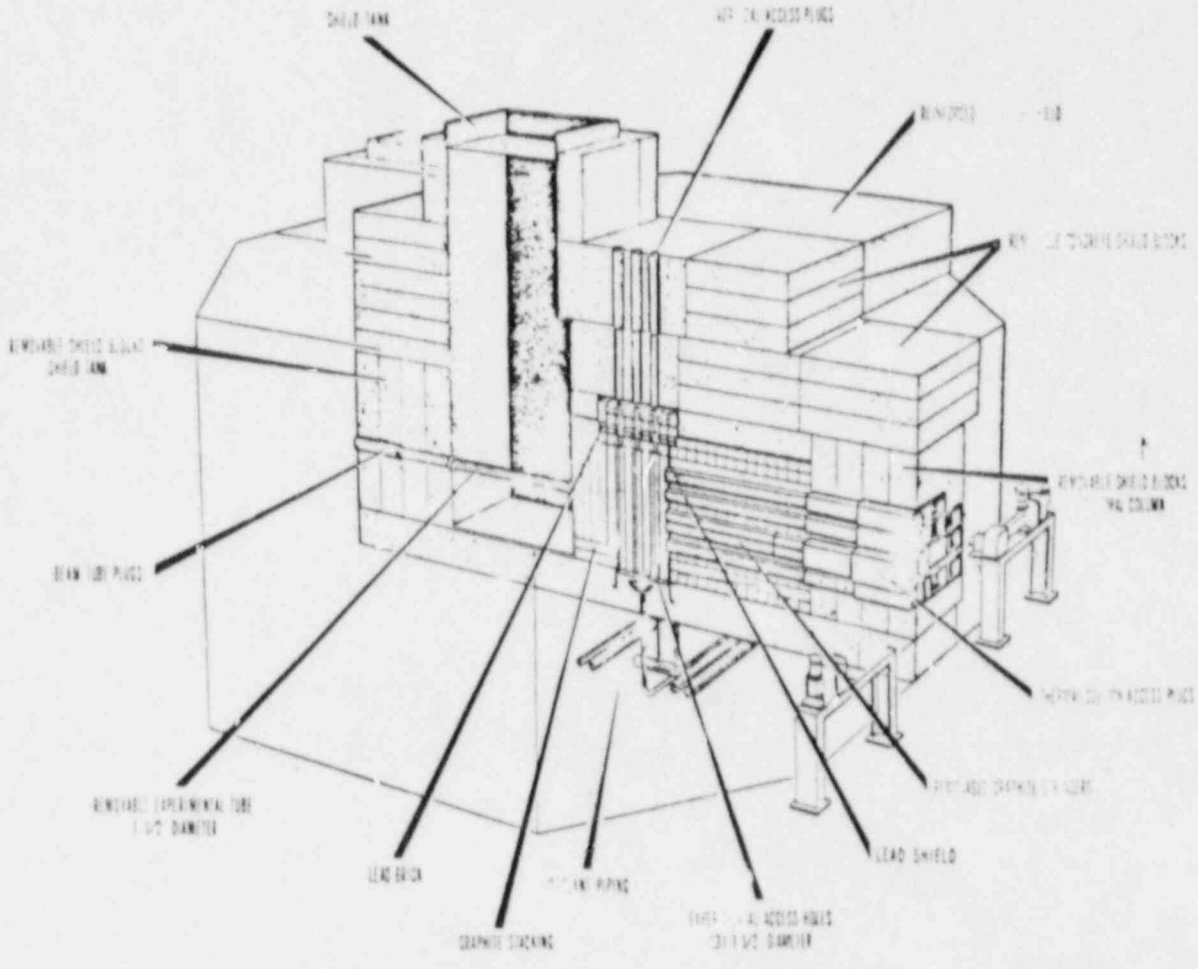
GEN...AL AR... GEMENT



EXPERIMENTAL FACILITIES	CONTROL SYSTEM	CORE COMPONENTS	EMBEDDED COMPONENTS
1 VERTICAL FOIL SLOTS	6 AMF STANDARD RT ANGLE DRIVE MECH	11 FUEL ELEMENTS	16 STRUCTURAL SUPPORT
2 VERTICAL ACCESS HOLES	7 CONTROL SHAFT	12 FUEL BOXES	17 1" VENT LINE
3 SHIELD TANK	8 MAGNESIUM SHROUD	13 SHIELDING PLUG & DEFLECTOR	18 2" RETURN LINE
4 REMOVABLE EXPERIMENTAL TUBE	9 CADMIUM CONTROL BLADE	14 GRAPHITE THERMAL COLUMN	19 3" SUPPLY LINE
5 REMOVABLE GRAPHITE STRINGERS	10 BF_3 PROPORTIONAL COUNTER	15 LEAD BRICK	21 1" DRAIN LINE

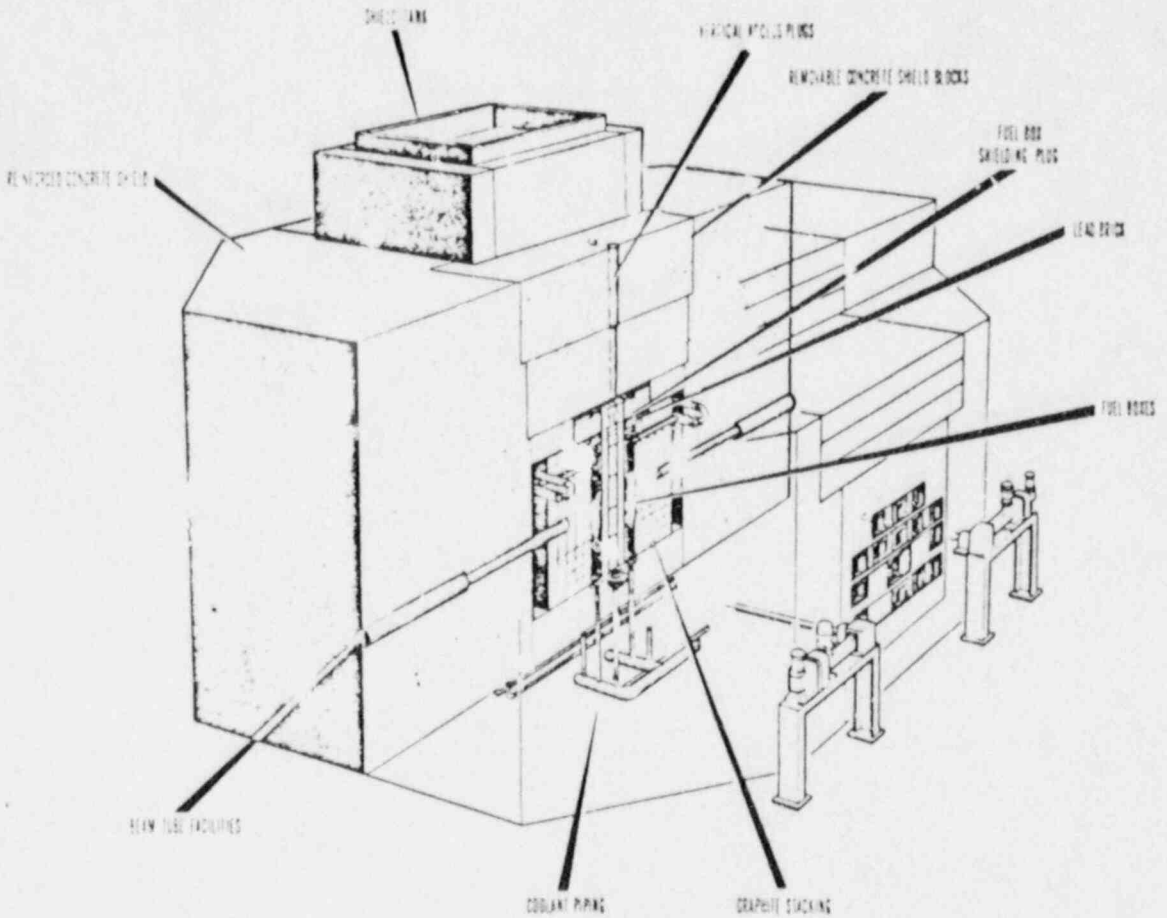
EDUCATOR REACTOR – CORE AREA

FIGURE 3



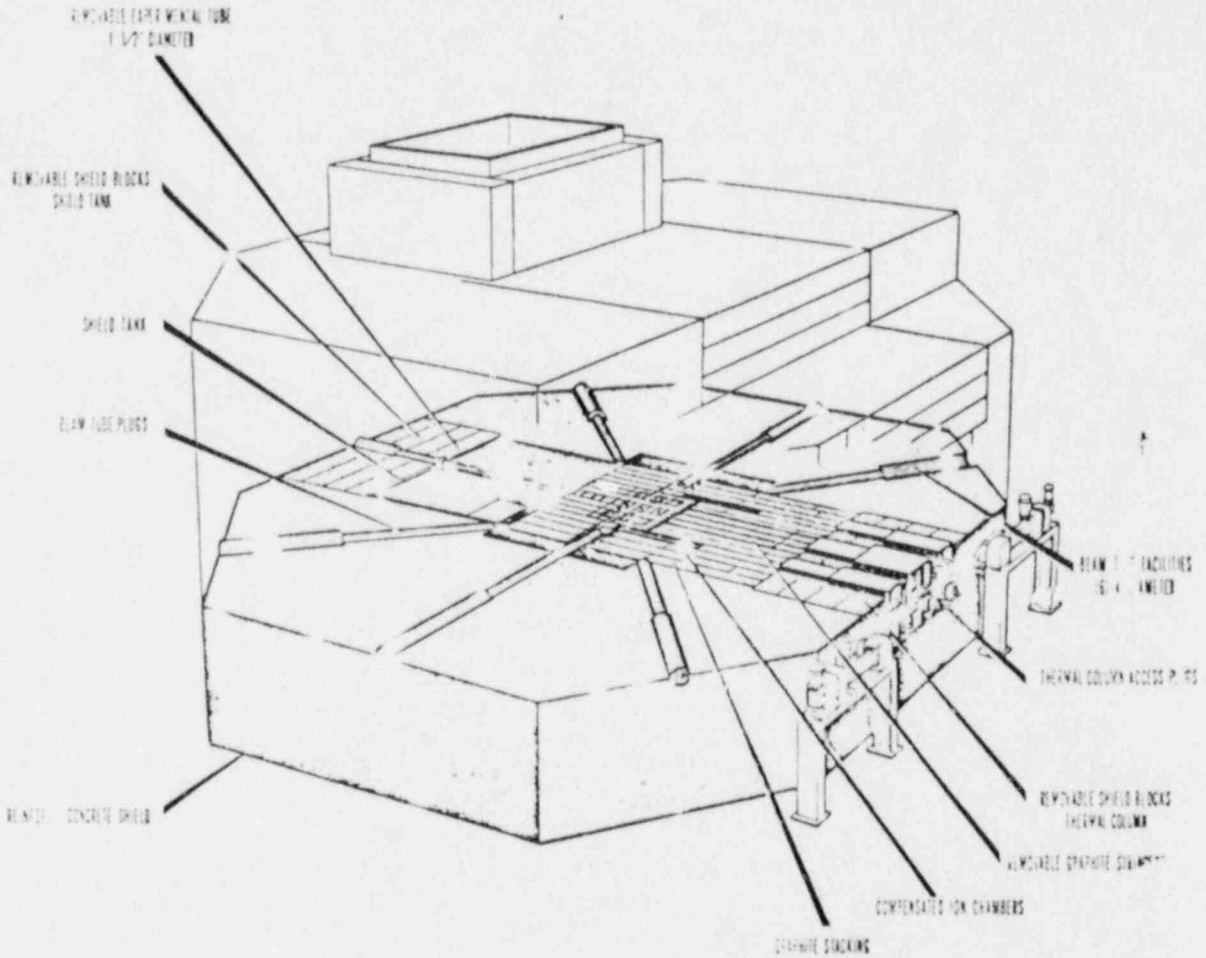
EDUCATOR REACTOR - LONGITUDINAL SECTION

FIGURE 4



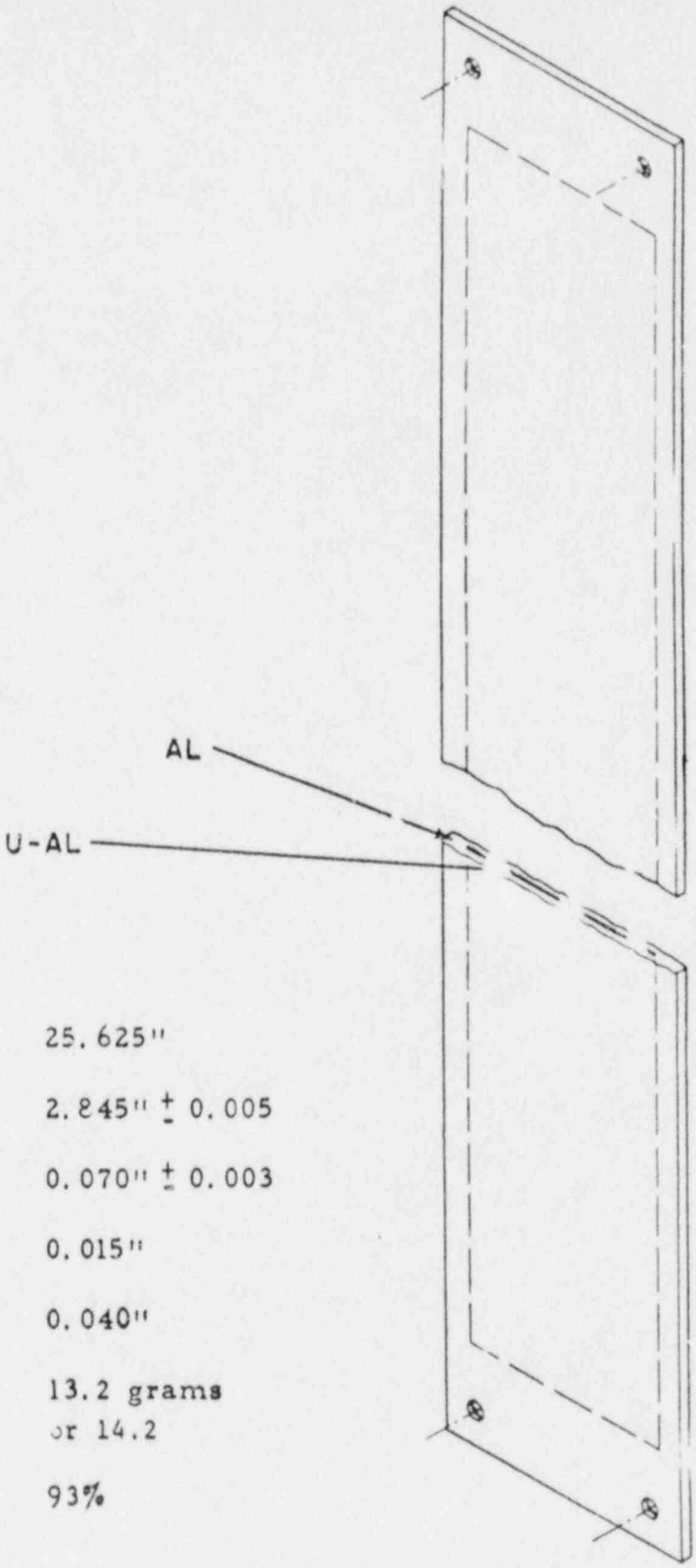
EDUCATOR REACTOR–TRANSVERSE SECTION THROUGH CORE CENTER

FIGURE 5



EDUCATOR REACTOR – HORIZONTAL SECTION AT BEAM TUBE LEVEL

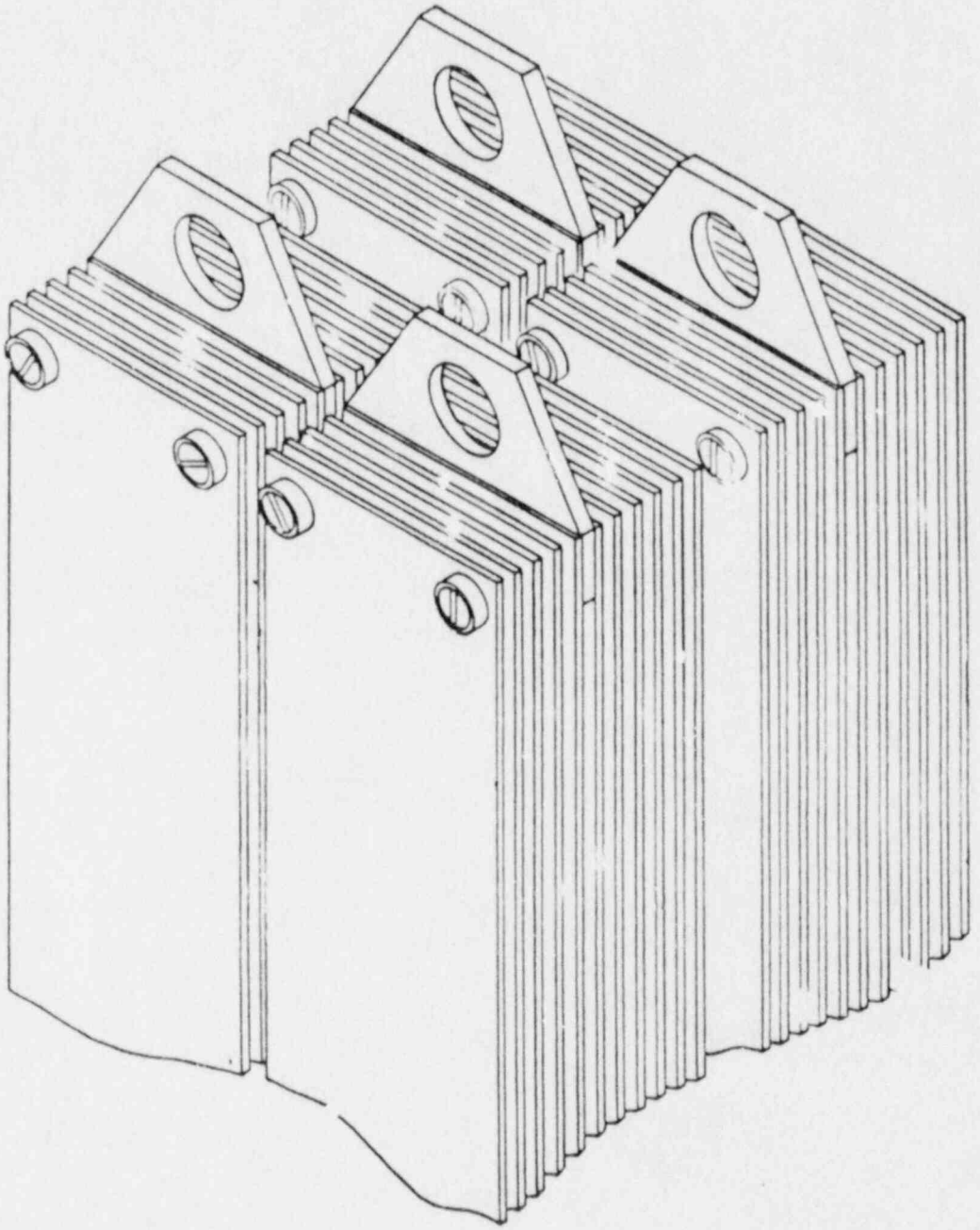
FIGURE 6



LENGTH OF PLATE	25.625"
WIDTH OF PLATE	2.845" ± 0.005
THICKNESS OF PLATE	0.070" ± 0.003
THICKNESS OF CLADDING	0.015"
THICKNESS OF U-AL	0.040"
WEIGHT OF U-235 PER PLATE	13.2 grams or 14.2
URANIUM ENRICHMENT	93%

FUEL PLATE

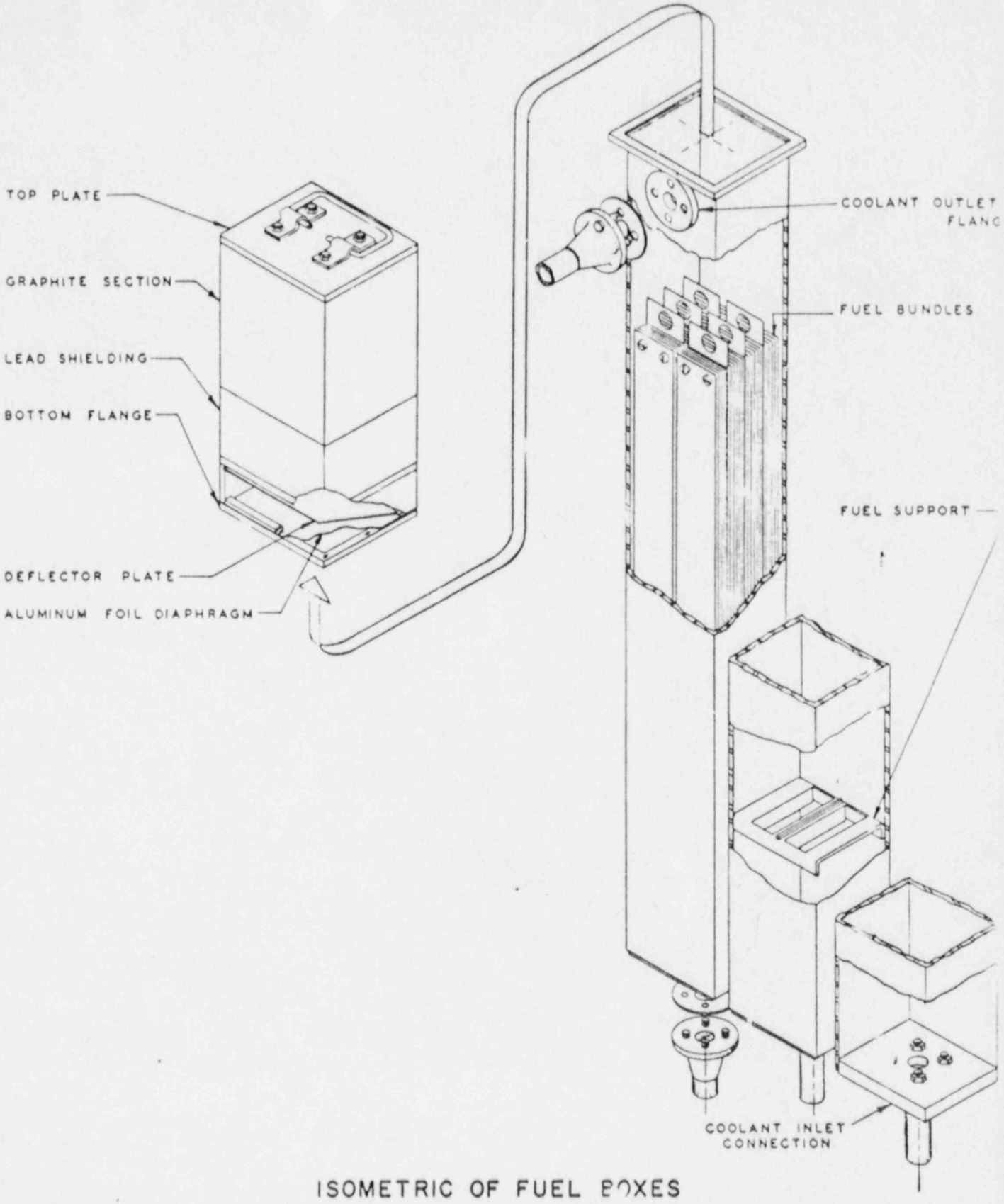
FIGURE 7



TYPICAL FUEL CLUSTER

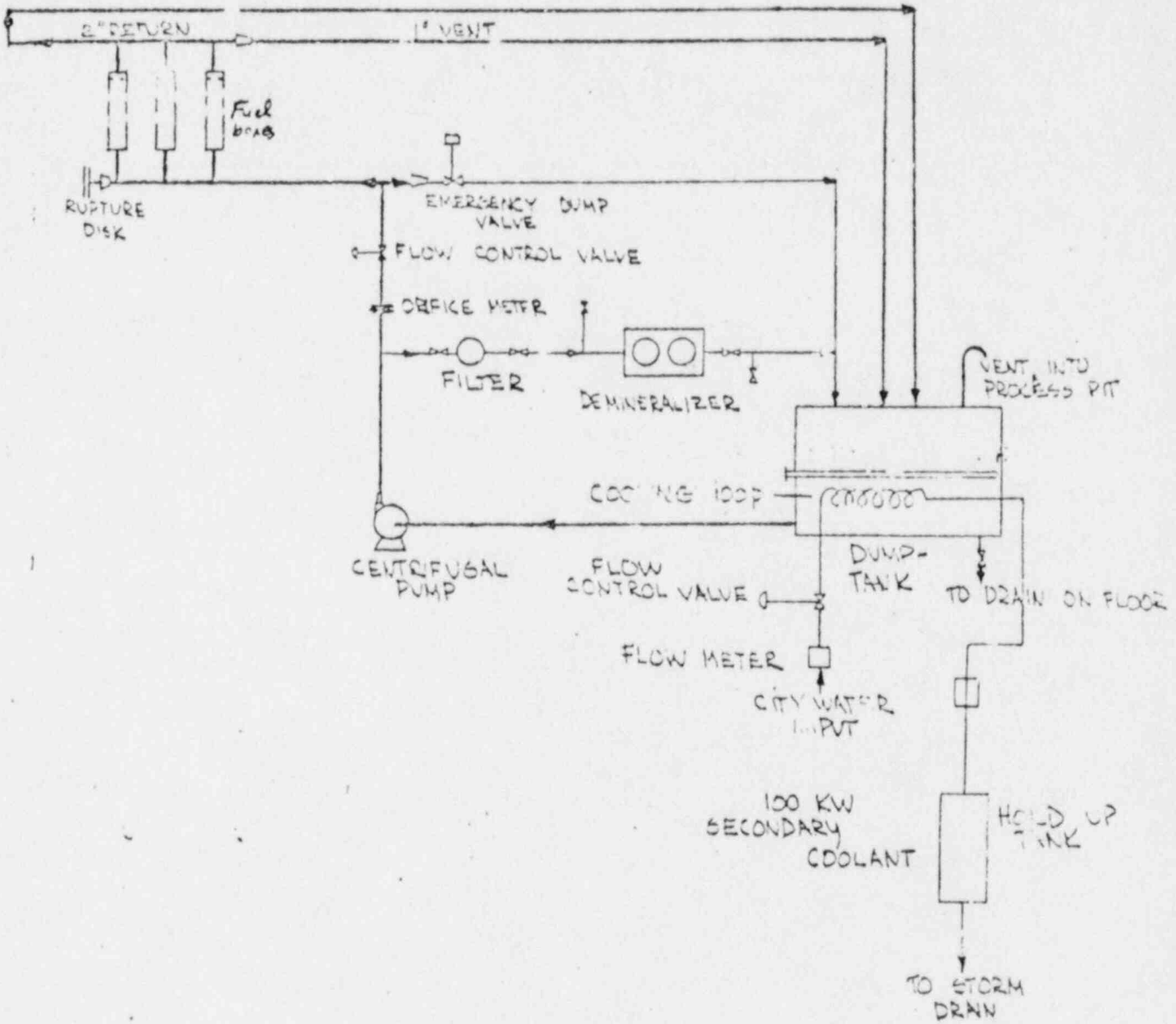
FIGURE 8

AMF-GNE EDUCATOR
AMF ATOMICS, NEW YORK
DIV. AMERICAN MACHINE & FOUNDRY COMPANY

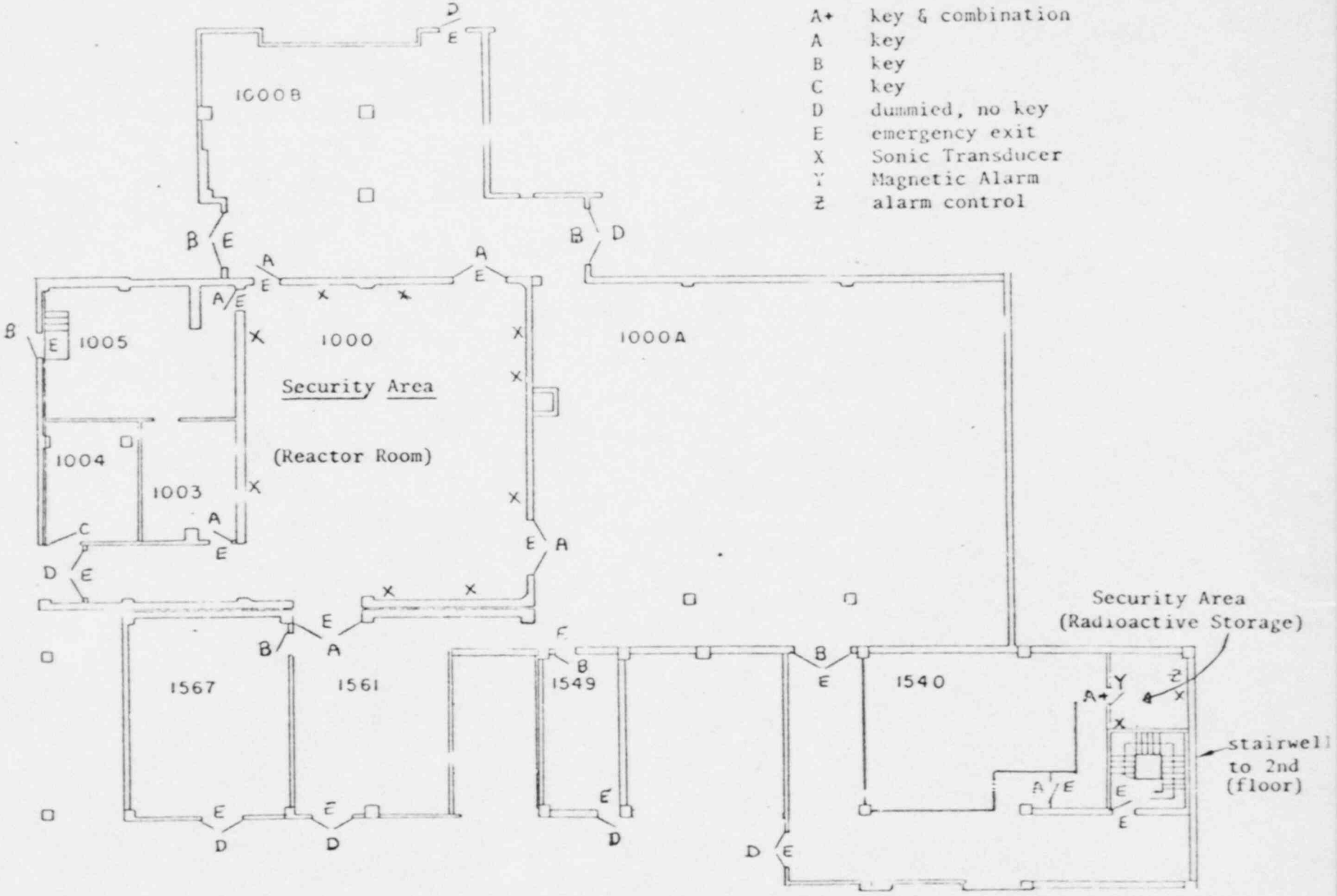


ISOMETRIC OF FUEL BOXES

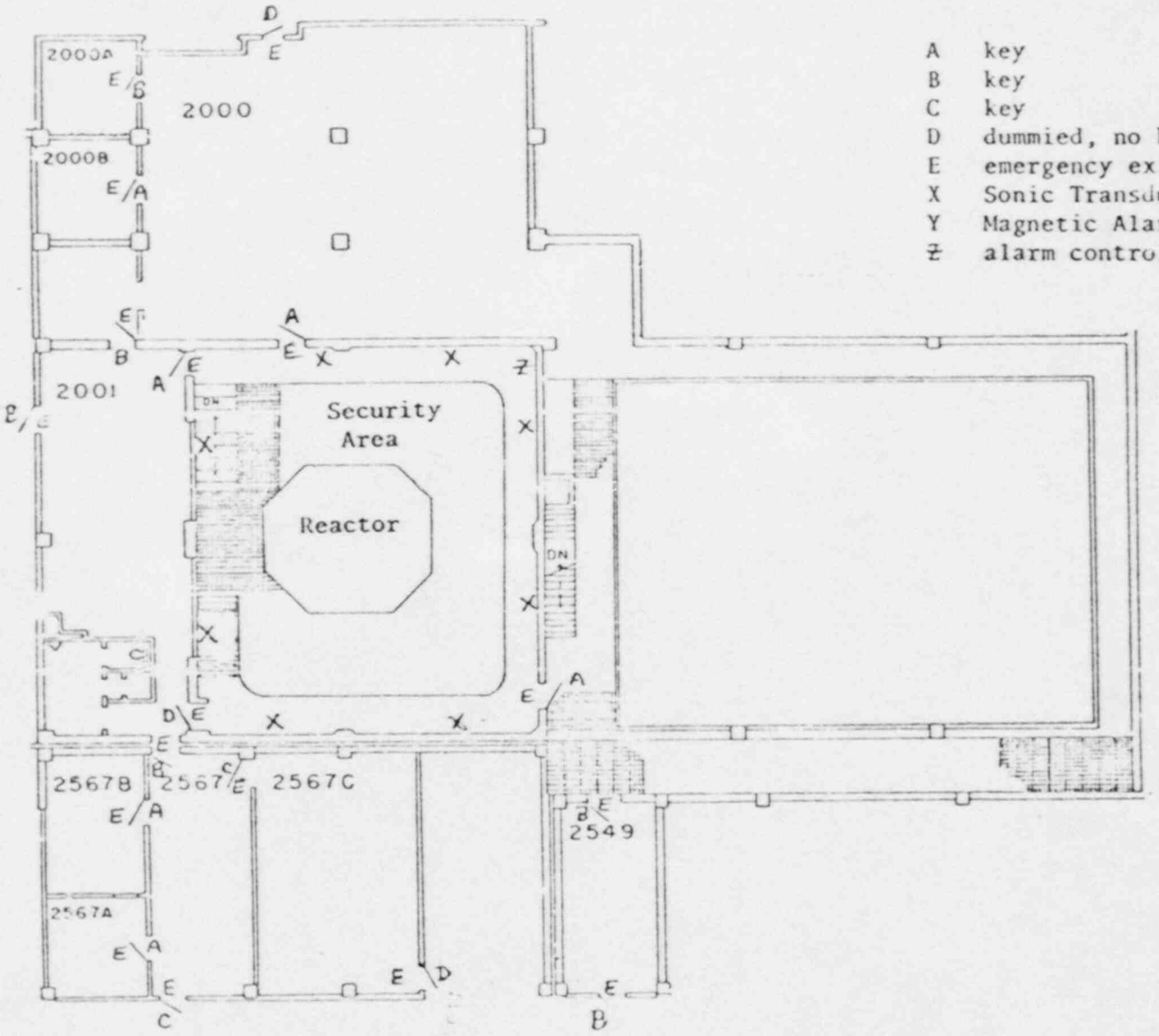
FIGURE 9



REVISED COOLING SYSTEM DIAGRAM
FIGURE 10

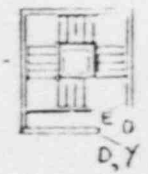


FIRST FLOOR
Figure 11
9-30-76



SECOND FLOOR

Figure 1?
9-30-76



Emergency Exit Only
See First Floor Diagram
for Orientation

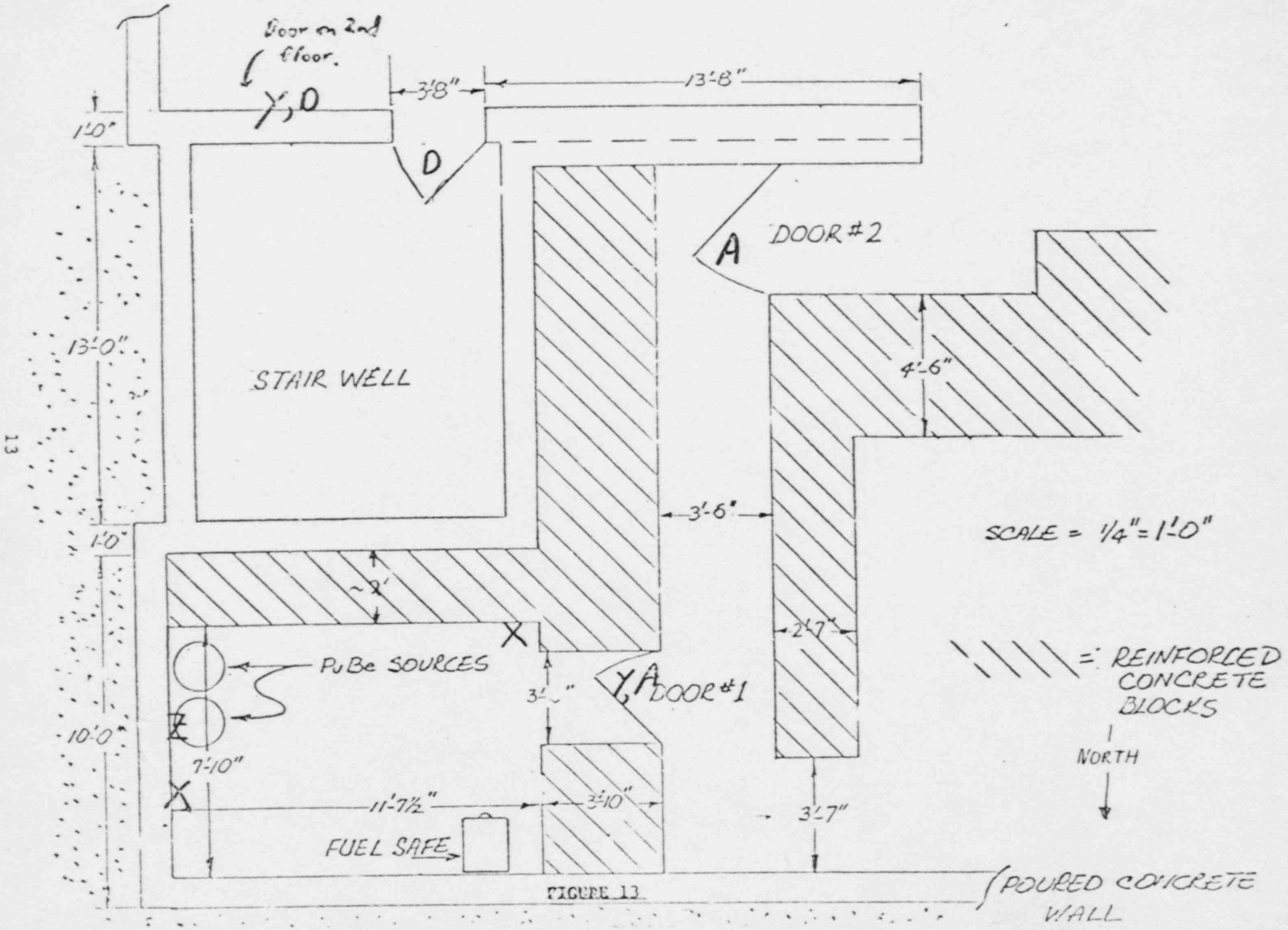

Door on 2nd floor.
3'8"
13'-8"
1'-0"
D
A
DOOR #2
STAIR WELL
13'-0"
4'-6"
3'-6"
1'-0"
~2'
2'-7"
SCALE = 1/4" = 1'-0"
Pu Be SOURCES
3'-
DOOR #1
REINFORCED CONCRETE BLOCKS
10'-0"
7'-10"
NORTH
11'-7½"
3'-10"
3'-7"
FUEL SAFE
POURED CONCRETE WALL

FIGURE 13

EQUIPMENT LIST

1. 9 Omnidirectional transmitters

   Model TR - 90, Part Number 511252

2. 10 Omnidirectional receivers

   Model RC - 91, Part Number 511253

3. 2 High Security Magnetic Switch for Doors

   Model DR 850, Part Number 630802

4. Two Master Control Units

   Model KD3, Part Number 630162

   Manufacturer: Walter Kidde & Co. Inc.
   Belleville, New Jersey 07109