

NORTHWESTERN UNIVERSITY

EVANSTON - CHICAGO

September 7, 1979

OFFICE OF RESEARCH SAFETY

B - 106 WARD BUILDING
303 EAST CHICAGO AVENUE
CHICAGO, ILLINOIS 60611

Mr. John E. Bowyer
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Control# 01831
License# 12-00382-03

Dear Mr. Bowyer:

This reply is in answer to your letter of August 3, 1979, which requested additional information for the consideration of our license application. The two questions are discussed independently below.

1. "Describe in greater detail your procedures for storage, surveys, personnel monitoring, and handling of neutron emitters."

STORAGE

All neutron sources are provided with adequate shielding which was initially calculated, then experimentally measured.

- a. 252-Cf, 511 ugm (12/18/78) is loaded in a neutron howitzer, locked, and surrounded by a brick fort to yield a dose rate at the surface of the fort of ≤ 2.0 mRem/hr.
- b. 252-Cf, 3.7 ugm (1/26/78) is stored in the original shipping container which is a polyethylene bucket and is stored in a locked cabinet.
- c. PuBe sources are stored either in position in the subcritical reactor or in a specially designed storage drum. Both are accessible only with keys.

All neutron sources are stored in one room which is located in the Tech. Institute in Evanston and are assigned to Dr. Donald Eggen, Chairman of the Nuclear Engineering program. The sources and their containers are clearly labeled indicating type, strength, and, when applicable, special handling instructions.

Inventory records are kept for all radioactive sources, including the neutron sources. An inventory check is performed quarterly, the leak tests are performed semi-annually and the room is surveyed quarterly, therefore, the sources are accounted for at least 10 times annually.

Transfer of sources is carried out in an adequately shielded and closed container, clearly labeled with signs, and is supervised by radiation safety personnel.

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PERSONNEL MONITORING

Individual film dosimeters are assigned to personnel who work in the area. If any possible contamination were to occur, body waste analysis would be performed by either radiation safety personnel or a qualified outside laboratory.

Area monitoring is accomplished by periodic surveys and an area film dosimeter. Portable survey equipment is used to periodically check for contamination and exposure rates. In addition, smear tests are performed. Calibration of the portable survey meter (BF_3) is carried out with the 252-Cf source whose activity has been determined by Oak Ridge National Laboratory.

HANDLING PROCEDURES

All adjacent areas are monitored during those periods of time when the sources are being used experimentally to assure that exposure rates are within acceptable limits. Rooms are clearly marked with signs which indicate the nature of the hazard. When the sources are handled, precautions are taken to reduce any personal exposure. The use of the sources is planned and movement of the sources is rehearsed prior to actual transfer. Remote handling tools are routinely used.

The rules of hot lab conduct are posted in the laboratory where the sources are used. In the event of an emergency, researchers are instructed to phone radiation safety personnel immediately.

2. "Describe personnel training program for students, housekeeping and security personnel."

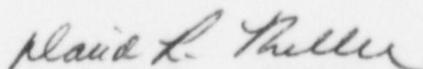
The personnel training program for students does not differ from that for technicians, post-doctoral students, faculty members or others wanting to use radioactive materials. Students are required to attend the training program described in the license application. Of course, some students are in special programs where they receive an in depth presentation of the material. Such programs might be in environmental health or nuclear engineering.

Housekeeping and maintenance personnel attend periodic lectures where information regarding the safe handling of radioisotopes is presented. In this presentation, a discussion of radiation signs and zones is made. Personnel are instructed in the requirements for entering a lab posted with a radioactive materials sign and what they should and should not do. In addition, specific questions with regard to working on ventilation and plumbing equipment is addressed.

Security personnel are instructed primarily in writing. Since radioactive packages come directly to the radiation safety office, even in off-duty hours, security personnel are not required to handle them.

If additional information is required, please contact me.

Sincerely,



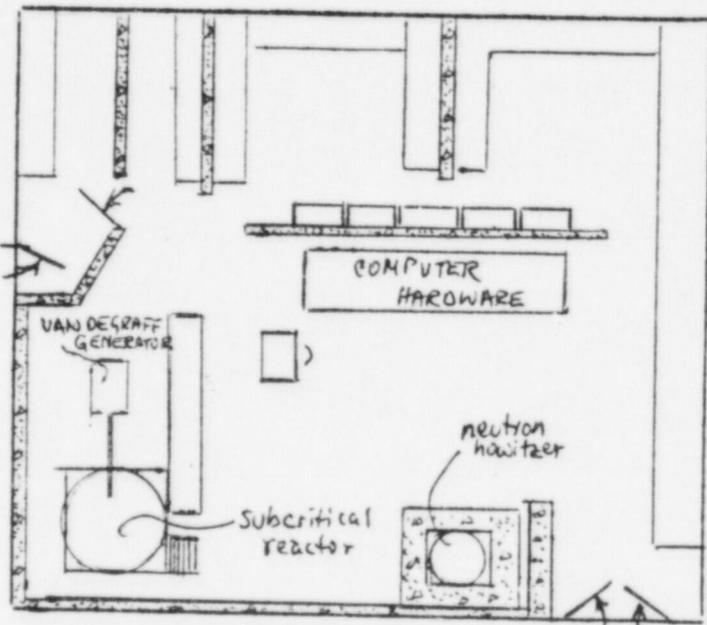
David R. Miller, Director
Office of Research Safety

NORTHWESTERN UNIVERSITY
RADIOLOGICAL SAFETY SURVEY REPORT SHEET

BUILDING TECH ROOM B970 DATE _____ BY _____

Routine Spot Check Special Equipment

Survey Instrument _____ Sources of Ionizing Radiation _____



Inventory *MCI*

TYPE	FORM	ACTIVITY

Ventilation: _____
 Comments: _____

SURVEY FINDINGS

	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
	9			
	0			
Background				

RECOMMENDATIONS: _____

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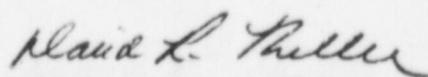
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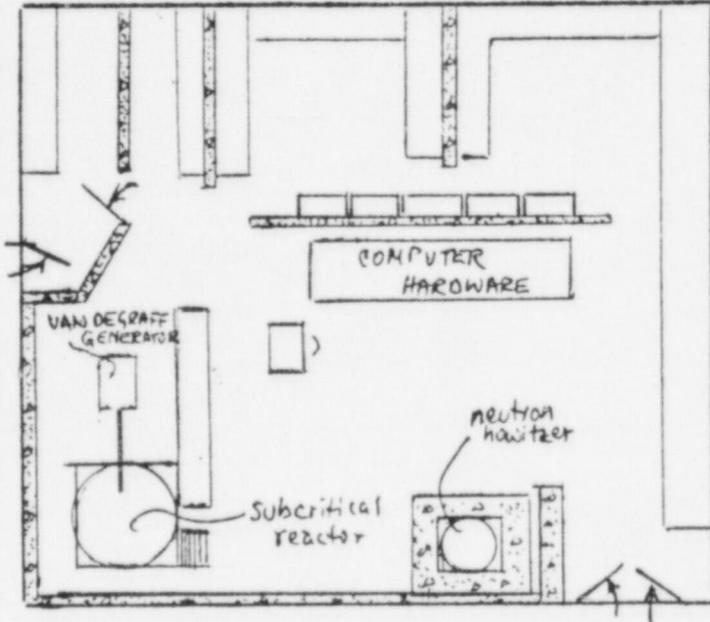
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	5			
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	7			
	8			
	9			
	0			
Background				

RECOMMENDATIONS: _____

NOTE TO DCS:

Those documents not checked
on renewal tie-down have been
temporarily misplaced (per. W. J. Adam).
They will be sent through system
when located.