NRC Form 313 I (12-81) 10 CFR 30

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE
INDUSTRIAL

See attached instructions for details.

Completed applications are filed in duplicate with the Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety, and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555 or applications may be filed in person at the Commission's office at 1717 H Street, NW, Washington, D. C. or 7915 Eastern Avenue, Silver Spring, Maryland.

1. APPLICATION FOR: *(Check and/or complete as appropriate)*

	a. NEW LICENSE
	b. AMENDMENT TO LICENSE NUMBER
X	c. RENEWAL OF LICENSE NUMBER 18-2254-1

2. APPLICANT'S NAME *(Institution, firm, person, etc.)*
Public Health Laboratory
Maine Department of Human Services
TELEPHONE NUMBER: AREA CODE – NUMBER EXTENSION
207-289-2727

3. NAME AND TITLE OF PERSON TO BE CONTACTED REGARDING THIS APPLICATION
Chester C. Small - Chemist III
TELEPHONE NUMBER: AREA CODE – NUMBER EXTENSION
207-289-2727

4. APPLICANT'S MAILING ADDRESS *(Include Zip Code)*
(Address to which NRC correspondence, notices, bulletins, etc., should be sent.)
State House
Augusta, Maine 04333

5. STREET ADDRESS WHERE LICENSED MATERIAL WILL BE USED *(Include Zip Code)*
221 State Street
Augusta, Maine 04333

(IF MORE SPACE IS NEEDED FOR ANY ITEM, USE ADDITIONAL PROPERLY KEYED PAGES.)

6. INDIVIDUAL(S) WHO WILL USE OR DIRECTLY SUPERVISE THE USE OF LICENSED MATERIAL
(See Items 16 and 17 for required training and experience of each individual named below)

	FULL NAME	TITLE
a.		
b.	SEE SUPPLEMENTAL	SHEET A
c.		

7. RADIATION PROTECTION OFFICER
Robert C. Ericson, Asst. Dir.

Attach a resume of person's training and experience as outlined in Items 16 and 17 and describe his responsibilities under Item 15.

8. LICENSED MATERIAL

LINE NO.	A. ELEMENT AND MASS NUMBER	B. CHEMICAL AND/OR PHYSICAL FORM	C. NAME OF MANUFACTURER AND MODEL NUMBER *(If Sealed Source)*	D. MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTIVITY PER SOURCE WHICH WILL BE POSSESSED AT ANY ONE TIME
(1)				
(2)		SEE SUPPLEMENT	SHEET B	
(3)				
(4)				

E. DESCRIBE USE OF LICENSED MATERIAL

(1) 8510290187 851004 REG1 LIC30 18-02254-01 PDR

(2) SEE SUPPLEMENT SHEET C

(3)

(4)

9. STORAGE OF SEALED SOURCES

LINE NO.	CONTAINER AND/OR DEVICE IN WHICH EACH SEALED SOURCE WILL BE STORED OR USED. A.	NAME OF MANUFACTURER B.	MODEL NUMBER C.
(1)			
(2)	SEE SUPPLEMENTAL SHEET D		
(3)			
(4)			

10. RADIATION DETECTION INSTRUMENTS

LINE NO.	TYPE OF INSTRUMENT A	MANUFACTURER'S NAME B	MODEL NUMBER C	NUMBER AVAILABLE D	RADIATION DETECTED (alpha, beta, gamma, neutron) E	SENSITIVITY RANGE (milliroentgens/hour or counts/minute) F
(1)						
(2)		SEE SUPPLEMENTAL SHEET E				
(3)						
(4)						

11. CALIBRATION OF INSTRUMENTS LISTED IN ITEM 10

☐ a. CALIBRATED BY SERVICE COMPANY

NAME, ADDRESS, AND FREQUENCY

☐ b. CALIBRATED BY APPLICANT

Attach a separate sheet describing method, frequency and standards used for calibrating instruments.

SUPPLEMENTAL SHEET F

12. PERSONNEL MONITORING DEVICES

TYPE (Check and/or complete as appropriate.) A	SUPPLIER (Service Company) B	EXCHANGE FREQUENCY C
XX (1) FILM BADGE ☐ (2) THERMOLUMINESCENCE DOSIMETER (TLD) ☐ (3) OTHER (Specify): SEE SUPPLEMENTAL SHEET L	U.S. Army Ionizing Radiation Dosimetry Center Lexington, Kentucky ~~SEE SUPPLEMENTAL SHEET I~~	X ☐ MONTHLY ☐ QUARTERLY ☐ OTHER (Specify):

13. FACILITIES AND EQUIPMENT (Check were appropriate and attach annotated sketch(es) and description(s).

☐ a. LABORATORY FACILITIES, PLANT FACILITIES, FUME HOODS (Include filtration, if any), ETC.
☐ b. STORAGE FACILITIES, CONTAINERS, SPECIAL SHIELDING (fixed and/or temporary), ETC.
☐ c. REMOTE HANDLING TOOLS OR EQUIPMENT, ETC.
☐ d. RESPIRATORY PROTECTIVE EQUIPMENT, ETC.

SEE SUPPLEMENTAL SHEET G

14. WASTE DISPOSAL

a. NAME OF COMMERCIAL WASTE DISPOSAL SERVICE EMPLOYED

b. IF COMMERCIAL WASTE DISPOSAL SERVICE IS NOT EMPLOYED, SUBMIT A DETAILED DESCRIPTION OF METHODS WHICH WILL BE USED FOR DISPOSING OF RADIOACTIVE WASTES AND ESTIMATES OF THE TYPE AND AMOUNT OF ACTIVITY INVOLVED. IF THE APPLICATION IS FOR SEALED SOURCES AND DEVICES AND THEY WILL BE RETURNED TO THE MANUFACTURER, SO STATE.

SEE SUPPLEMENTAL SHEET H

INFORMATION REQUIRED FOR ITEMS 15, 16 AND 17

Describe in detail the information required for Items 15, 16 and 17. Begin each item on a separate page and key to the application as follows:

15. RADIATION PROTECTION PROGRAM. Describe the radiation protection program as appropriate for the material to be used including the duties and responsibilities of the Radiation Protection Officer, control measures, bioassay procedures *(if needed)*, day-to-day general safety instruction to be followed, etc. If the application is for sealed source's also submit leak testing procedures, or if leak testing will be performed using a leak test kit, specify manufacturer and model number of the leak test kit.

16. FORMAL TRAINING IN RADIATION SAFETY. Attach a resume for each individual named in Items 6 and 7. Describe individual's formal training in the following areas where applicable. Include the name of person or institution providing the training, duration of training, when training was received, etc.

    a. Principles and practices of radiation protection.

    b. Radioactivity measurement standardization and monitoring techniques and instruments.

    c. Mathematics and calculations basic to the use and measurement of radioactivity.

    d. Biological effects of radiation.

17. EXPERIENCE. Attach a resume for each individual named in Items 6 and 7. Describe individual's work experience with radiation, including where experience was obtained. Work experience or on-the-job training should be commensurate with the proposed use. Include list of radioisotopes and maximum activity of each used.

18. CERTIFICATE

(This item must be completed by applicant)

The applicant and any official executing this certificate on behalf of the applicant named in Item 2, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 30, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.

WARNING.--18 U.S.C., Section 1001; Act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

a. LICENSE FEE REQUIRED *(See Section 170.31, 10 CFR 170)* NONE Exempt under section 170.11 (9)	b. CERTIFYING OFFICIAL *(Signature)* Robert C. Ericson
	c. NAME *(Type or print)* Robert C. Ericson
(1) LICENSE FEE CATEGORY:	d. TITLE Assistant Director
(2) LICENSE FEE ENCLOSED: $	e. DATE March 31, 1983

SUPPLEMENTAL SHEET A

6. INDIVIDUAL(S) WHO WILL USE OR DIRECTLY SUPERVISE THE USE OF LICENSED MATERIAL

FULL NAME	TITLE
A. Robert C. Ericson	Assistant Director
B. Chester Small	Chemist III
C. Thomas Dwyer	Chemist II
D. Cheryl Baker	Chemist II

012777

SUPPLEMENTAL SHEET B 1.

8. LICENSED MATERIAL

	ELEMENT AND MASS NUMBER	CHEMICAL AND/OR PHYSICAL FORM	NAME OF MANUFACTURER AND MODEL NUMBER	MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTIVITY PER SOURCE WHICH WILL BE POSSESSED AT ONE TIME
1.	Any by-product material	Any		1 mc.
2.	Americium 241	Any		1 mc.
3.	Cesium 137	Sealed Sources	Nuclear-Chicago Models RR-138 and RR-139	1 source not to exceed 3.5 mc.
4.	Hydrogen 3	Titanium tritide foil	(US Radium Model LAB 503-3) in Barber Colman Model A-5120 detector cells	2 foils not to exceed 300 mc. each
5.	Nickel 63	Foil	(Nuclear Radiation Development Model N-1002) in H/P Model 2-6195 detector cells	Not to exceed 2 mc/foil
6.	Hydrogen 3	Titanium tritide foil	(US Radium Model LAB 503-3) in H/P Model 2-2837 detector cell	Not to exceed 200 mc/foil
7.	Nickel 63	Custom plated source	(Amersham Corp. or New England Nuclear) in H/P Model 18713A detector cells	Not to exceed 15 mc. per source
8.	Hydrogen 3	Any		1 mc.
9.	Carbon 14	Any		1 mc.
10.	Iodine 125	Any		1 mc.
11.	Nickel 63	Plated sources	Hewlett-Packard Model 19303	Not to exceed 15 mc. per plated source
12.	Cerium 144-Praseodymium 144	Any		1 mc.
13.	Zirconium 95-Niobium 95	Any		1 mc.

SUPPLEMENTAL SHEET B2.

8. LICENSED MATERIAL

	ELEMENT AND MASS NUMBER	CHEMICAL AND/OR PHYSICAL FORM	NAME OF MANUFACTURER AND MODEL NUMBER	MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTIVITY PER SOURCE WHICH WILL BE POSSESSED AT ONE TIME
14.	Cobalt 60	Any		1 mc.
15.	Iodine 131	Any		1 mc.
16.	Cesium 137 - Barium 137	Any		1 mc.
17.	Barium 140 - Lanthanum 140	Any		1 mc.
18.	Ruthenium 106 - Thodium 106	Any		1 mc.
19.	Strontium 89	Any		1 mc.
20.	Strontium 90 Yttrium 90	Any		1 mc.
21.	Yttrium 90	Any		1 mc.
22.	Americium 241	Any		1 mc.
23.	Cesium 137	Any		1 mc.
24.	Cesium 134	Any		1 mc.
25.	Hydrogen 3	Any		1 mc.
26.	Chromium 51	Any		1 mc.
27.	Ruthenium 103	Any		1 mc.
28.	Zinc 65	Any		1 mc.
29.	Iron 59	Any		1 mc.

SUPPLEMENTAL SHEET C

8E. DESCRIBE USE OF LICENSED MATERIAL

1. For possession incident to analysis of samples from Maine Yankee Atomic Plant.

2. For use as reference source in determination of alpha radiation.

3. Testing of Nuclear Chicago Model P-20 and P-22 probes containing sealed sources for leakage and/or contamination.

4. For use in Barber-Colman gas chromatograph for sample analysis.

5. through 7. For use in Hewlett-Packard gas chromatographs for sample analysis.

8. through 10. For use in radioimmunassay.

11. For use in gas chromatographs for sample analysis.

12. through 29. For use as reference sources in determination of fallout or contamination in water, milk and other foods.

SUPPLEMENTAL SHEET D

9. STORAGE OF SEALED SOURCES

	CONTAINER AND/OR DEVICE IN WHICH EACH SEALED SOURCE WILL BE STORED OR USED.	NAME OF MANUFACTURER	MODEL NUMBER
3.	Material is kept in probe devices and brought to this facility only for testing.	Nuclear Chicago	RR-138 and RR-139
4.	Detector cells	Barber Colman	A-5120
5.	Detector cells	Hewlett-Packard	2-6195
6.	Detector cells	Hewlett-Packard	2-2837
7.	Detector cells	Hewlett-Packard	18713A
11.	Detector cells	Hewlett-Packard	19303

SUPPLEMENTAL SHEET E

10. RADIATION DETECTION INSTRUMENTS

TYPE OF INSTRUMENT	MANUFACTURER'S NAME	MODEL NO.	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE
Geiger Muller	Victoreen	CDV 700	1	beta gamma	0-50 mr/hr.
Proportional Counters	Nuclear Measurement Corp.	PCA DSLB	2	alpha beta gamma	0-500000 cpm
Low Background Beta Counter	Nuclear Chicago	8703	1	beta	0-500000 cpm
Pulse Height 1024 Channel Analyzer with 8"x3" + 4"x4" NaI Detector	Canberra	8000	1	gamma	
Eberline TLD Reader	Eberline	TLR-5	1	gamma	
Pulse Height 32K Channel Analyzer with Ge (Li) detector	Canberra	Ser-80	1	gamma	

SUPPLEMENTAL SHEET F

11b. CALIBRATED BY APPLICANT

Victoreen Geiger Muller is calibrated by use of certified radium source whenever used to measure quantity of radiation in any area.

(See Exhibits F-1 and F-2)

All other instruments in item 10, except Ge (Li) detector, are checked daily whenever used by counting Cs 137 standards made from solutions obtained from USEPA Environmental Monitoring and Support Laboratory, Las Vegas, Nevada 89114, or from NBS.

All instruments are calibrated when required by use of various standards from the same sources.

EXHIBIT F-1

UNION MINIÈRE DU HAUT-KATANGA

SOCIETE ANONYME

CERTIFICAT N° 22358

POUR SEL DE RADIUM

livré à

UNITED STATES RADIUM CORPORATION

Bloomsburg, Pennsylvania

L'Union Minière du Haut Katanga atteste

par la présente que l'aiguille en platine iridié 10% marquée 26636- - -

renferme ----*4.94*---- milligrammes de Radium élément sous

forme de sulfate de Radium.

BRUXELLES, (Belgique), le 20 juin 1963

Attesté par

Le Laboratoire de Mesure

UNION MINIÈRE DU HAUT KATANGA

RM

EXHIBIT F-2

UNION MINIÈRE DU HAUT-KATANGA

SOCIETE ANONYME

CERTIFICATE Nr 26401

OF PURITY

of Radium preparation supplied to

UNITED STATES RADIUM CORPORATION

Bloomsburg, Pennsylvania

Union Minière du Haut Katanga certifies hereby that the gamma radiation emitted by the radium salt contained in the 10% platinum iridium needle marked - - - - - - - - - - N° 26636 is due entirely to radium and its derivatives and not to mesothorium or any of its disintegration products.

BRUXELLES (Belgium) June 20, 1963.

UNION MINIÈRE DU HAUT KATANGA

In addition to the measurement certificate nr.22358.

RM.

SUPPLEMENTAL SHEET G

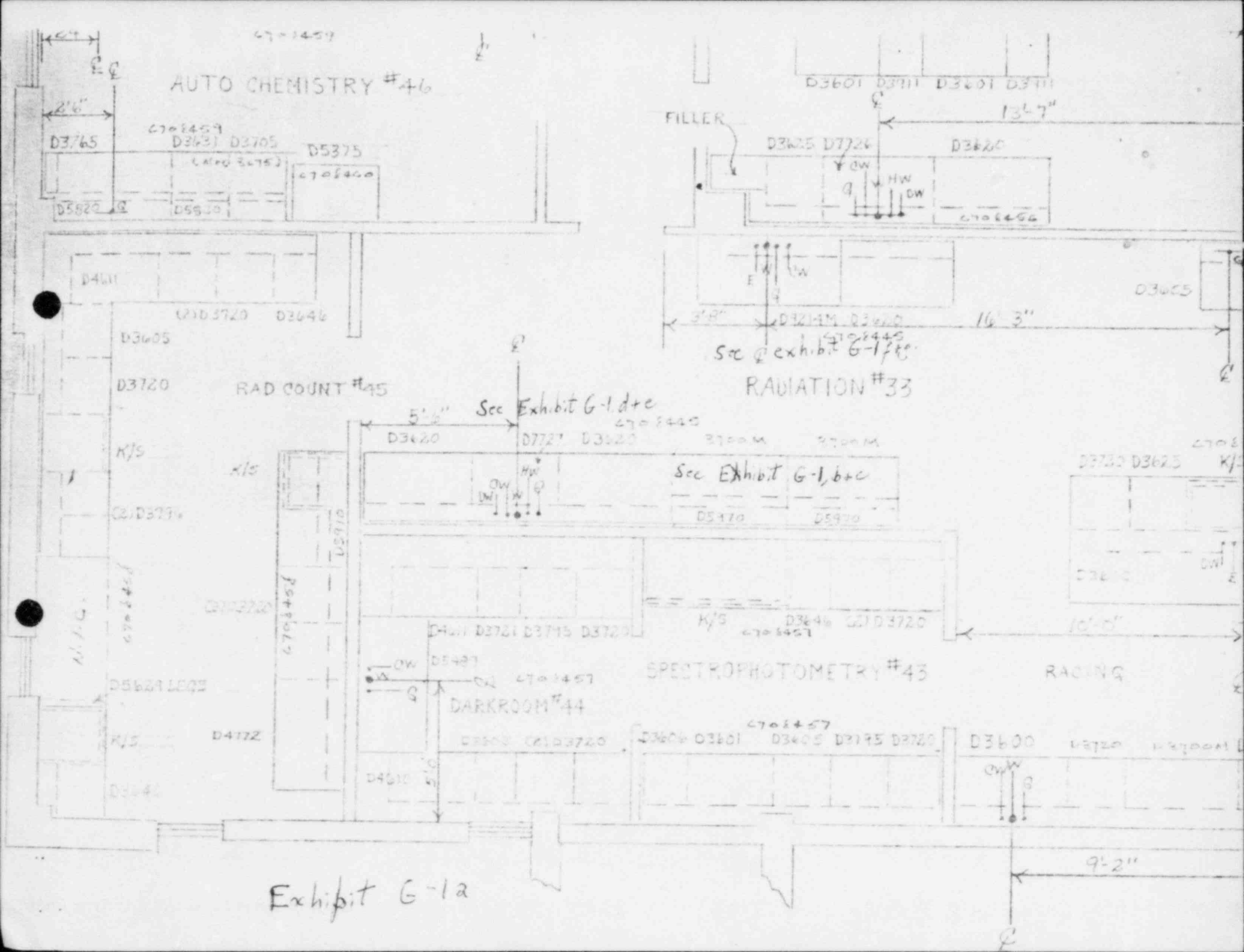
13. FACILITIES AND EQUIPMENT

A standard laboratory fume hood having a face velocity of at least 100 feet per minute will be used when making dilutions. Remote handling tongs, remote pipetting and safety pipetting devices with adequate shielding will be used and in addition, large enameled trays will be used to contain possible spills.

A survey of the hood area and wipe tests will be made after the area had been used to make dilutions. All equipment will be thoroughly decontaminated if necessary and personnel will be checked with a Geiger counter.

For sketches of area where this work will be done (See Exhibit 1)

All standards containing more than 1 microcurie will be stored in underground storage and removed only for diluting. (See Exhibit 2)


AUTO CHEMISTRY #46
RAD COUNT #45
See Exhibit G-1,d+e
RADIATION #33
See Exhibit G-1,f+g
SPECTROPHOTOMETRY #43
DARKROOM #44
RACING
FILLER
D3765
D3631
D3705
D5375
D5820
D5830
D4611
D3720
D3646
D3605
D3620
D7726
D3625
D3600
D3601
D3711
D3735
D3623
D4772
D5497
D5470
D5930
D5910
D5629
D4610
D3648
D3795
13'-7"
16'-3"
10'-0"
9'-2"
5'-6"
2'-6"
3'-9"
Exhibit G-1a

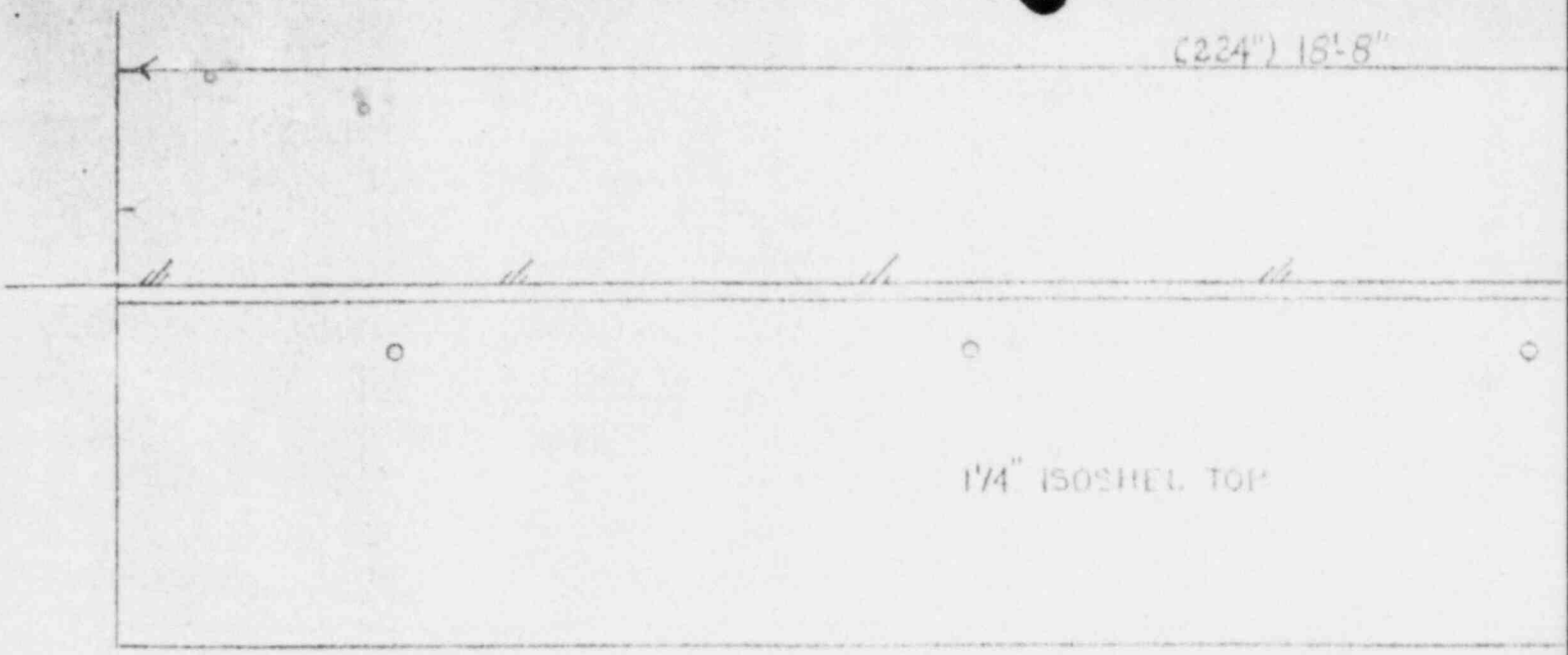
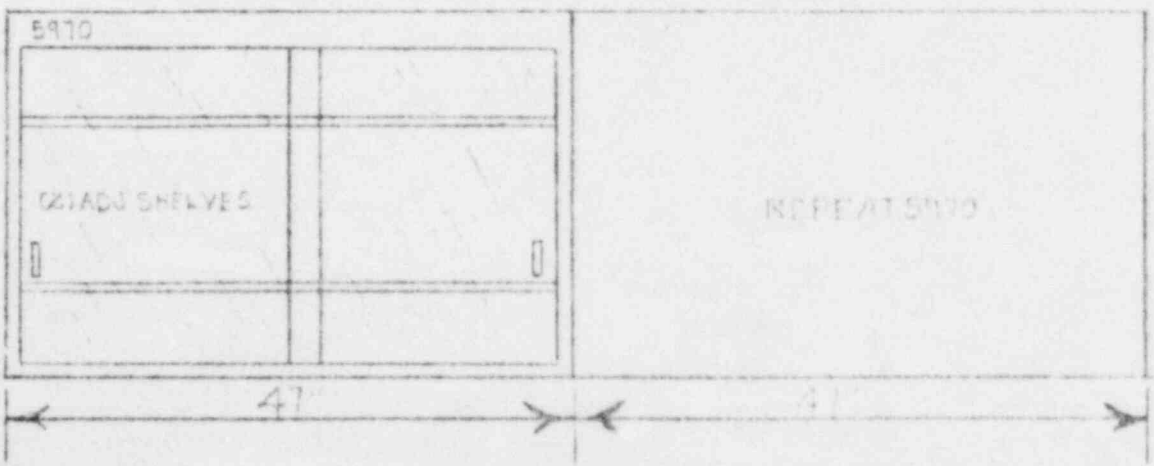
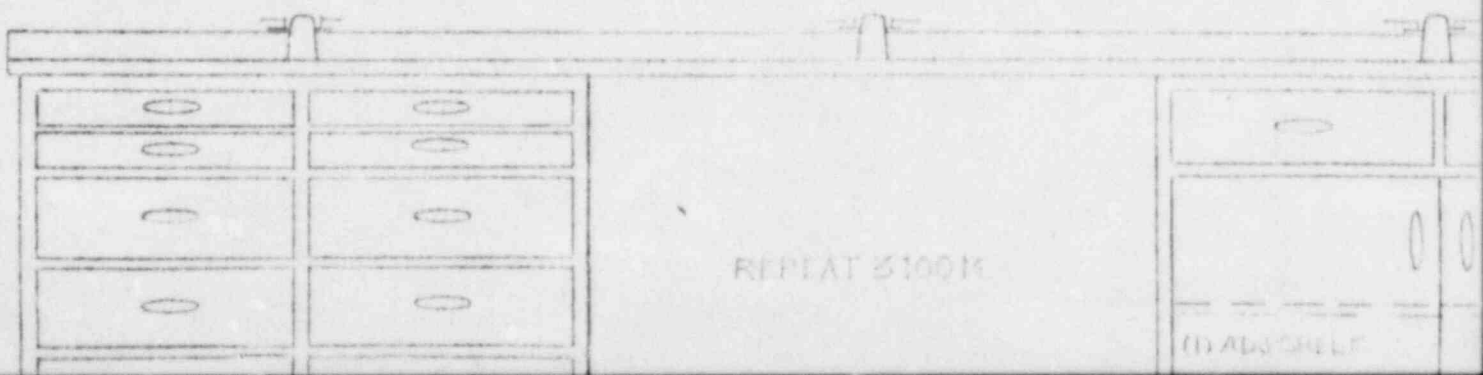


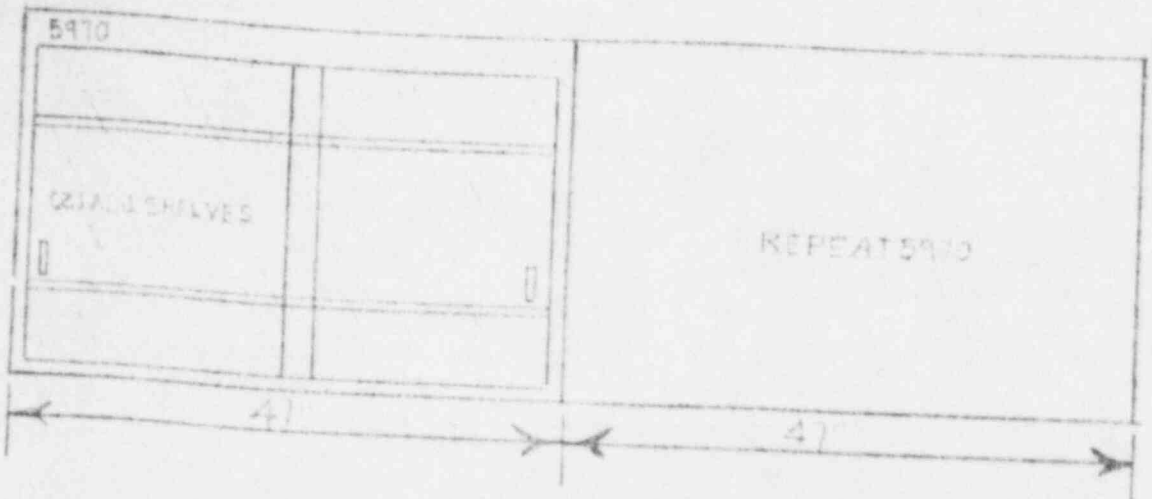
Exhibit 6-16

PLAN VIEW





PLAN VIEW



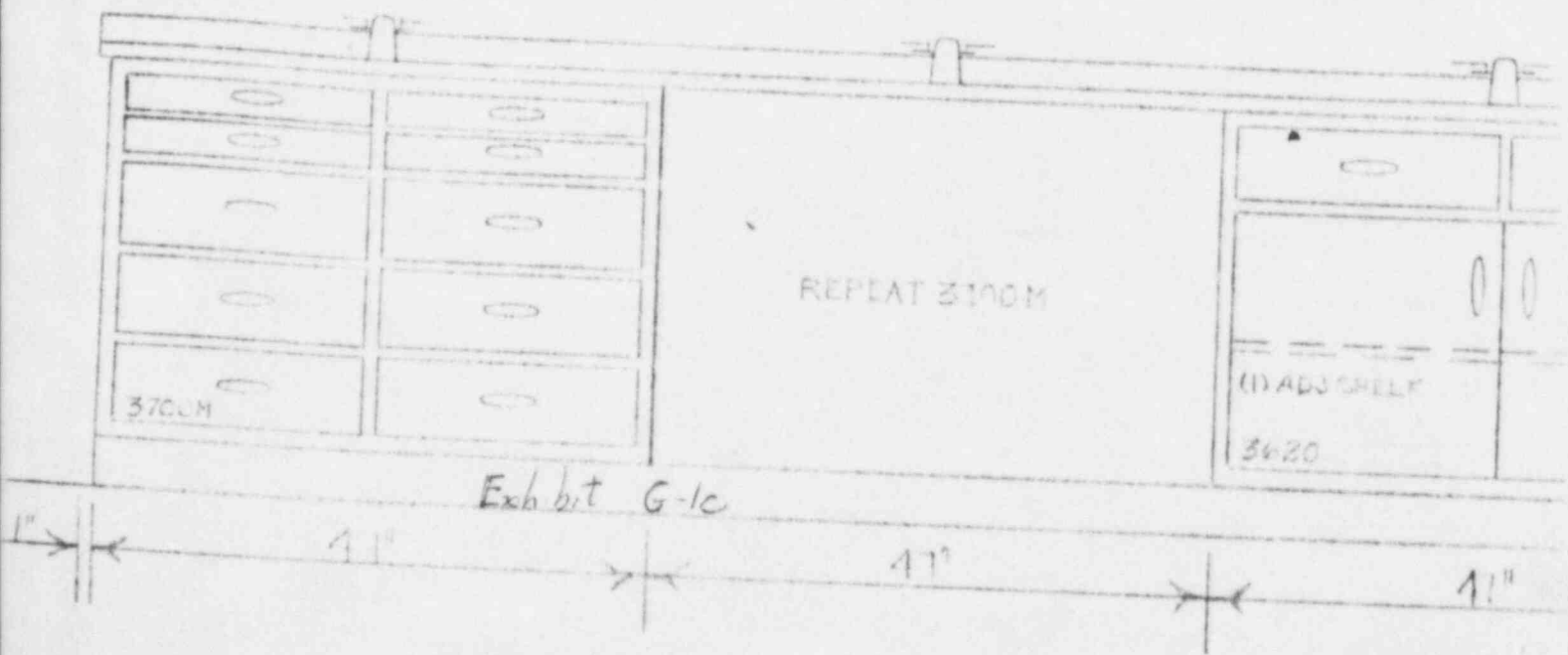


Exhibit G-1c

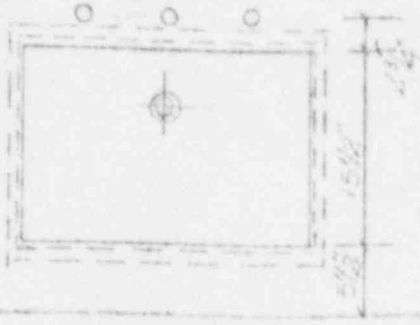
ELEVATION

TO 9250 WALL ASSE

24") 18'-8"

7" 7"

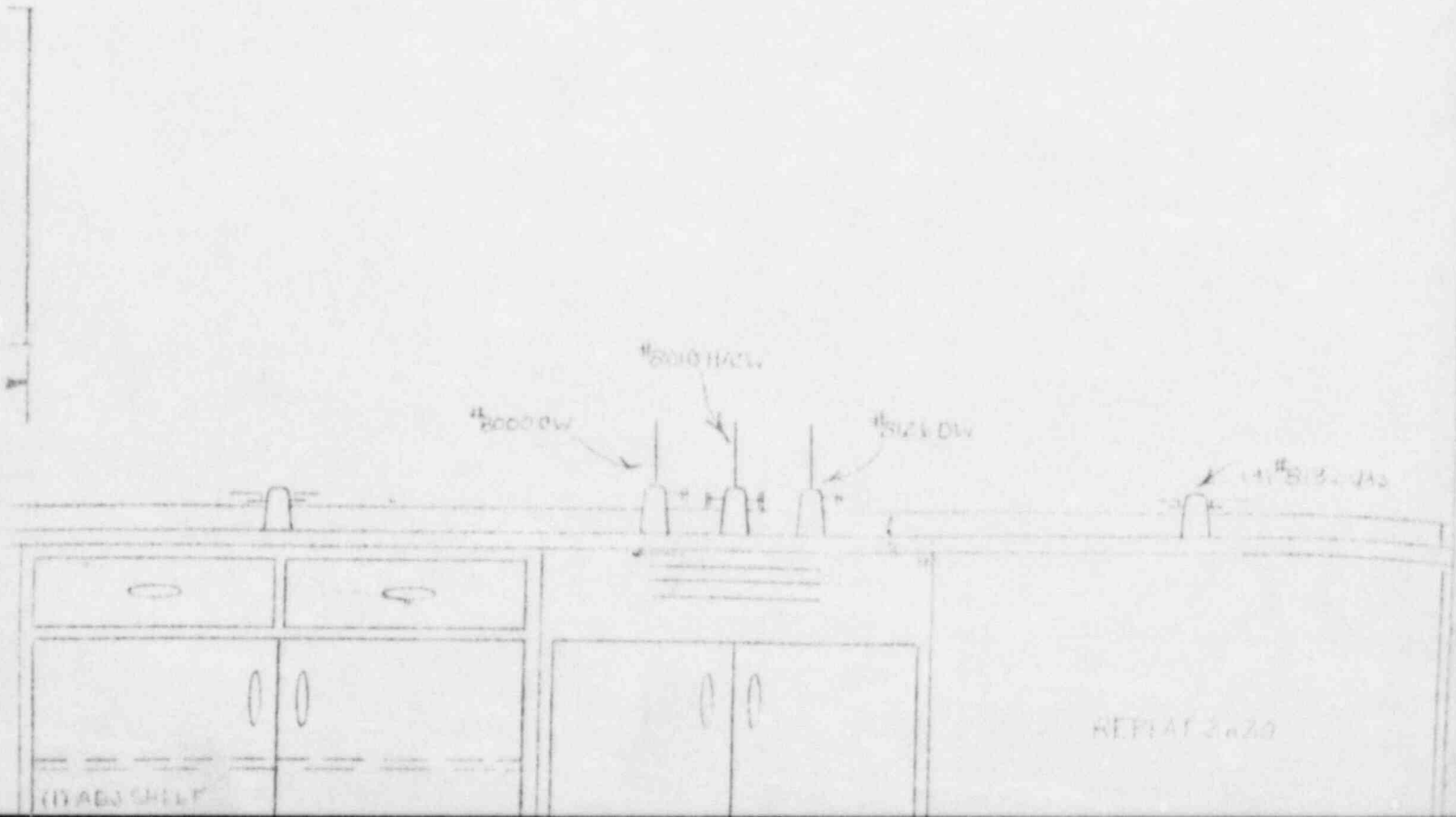
OP



VIEW

2'-3 1/2"

Exhibit G-1d



PLAN VIEW

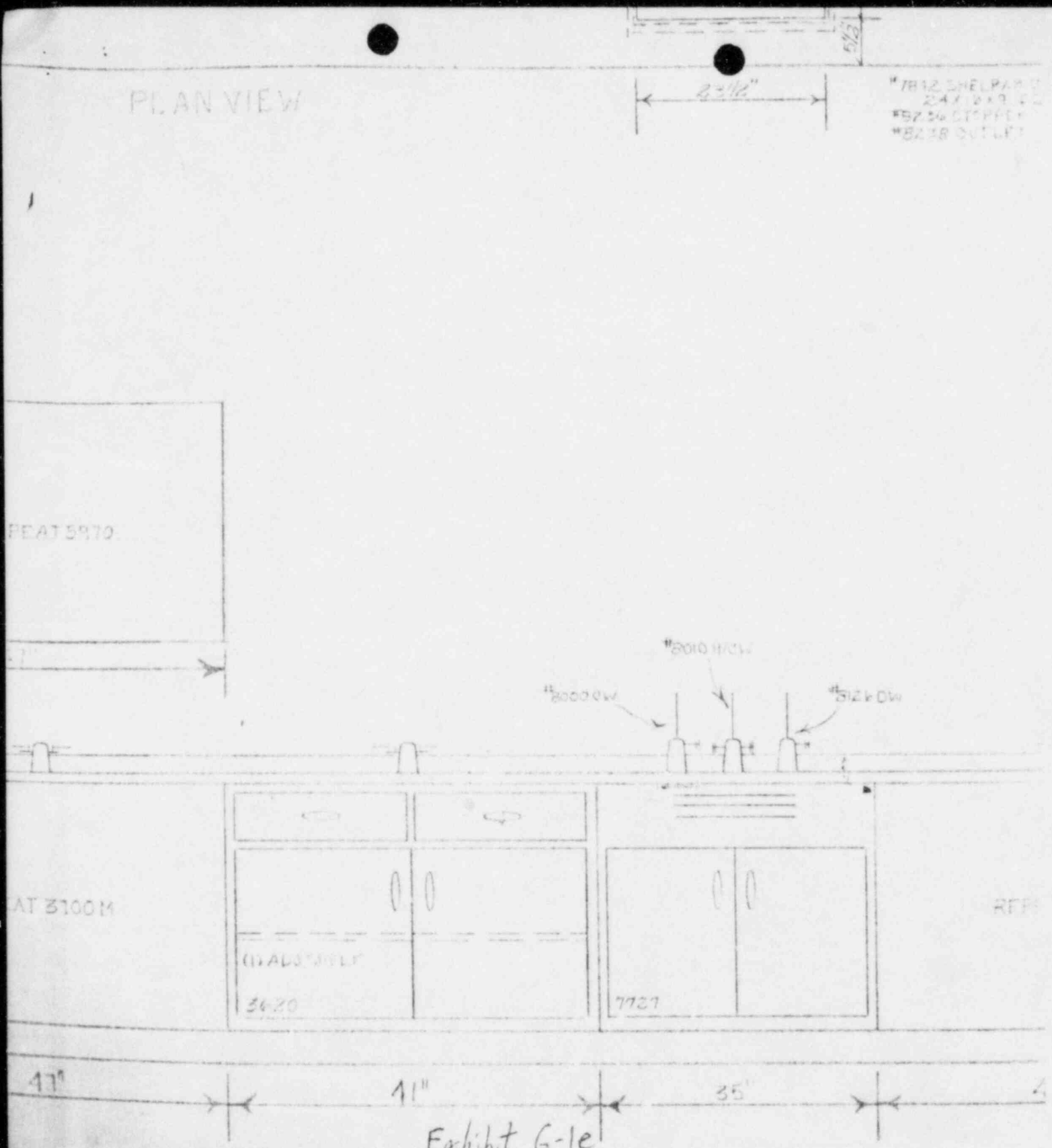
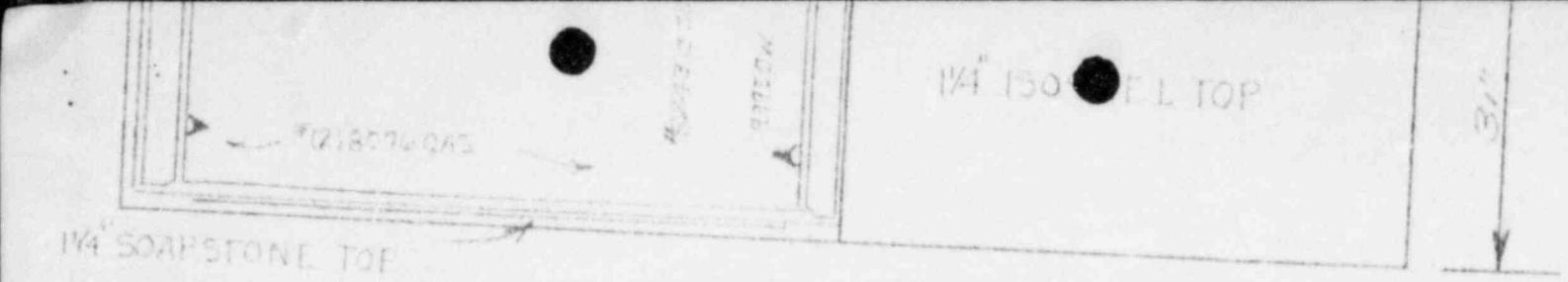


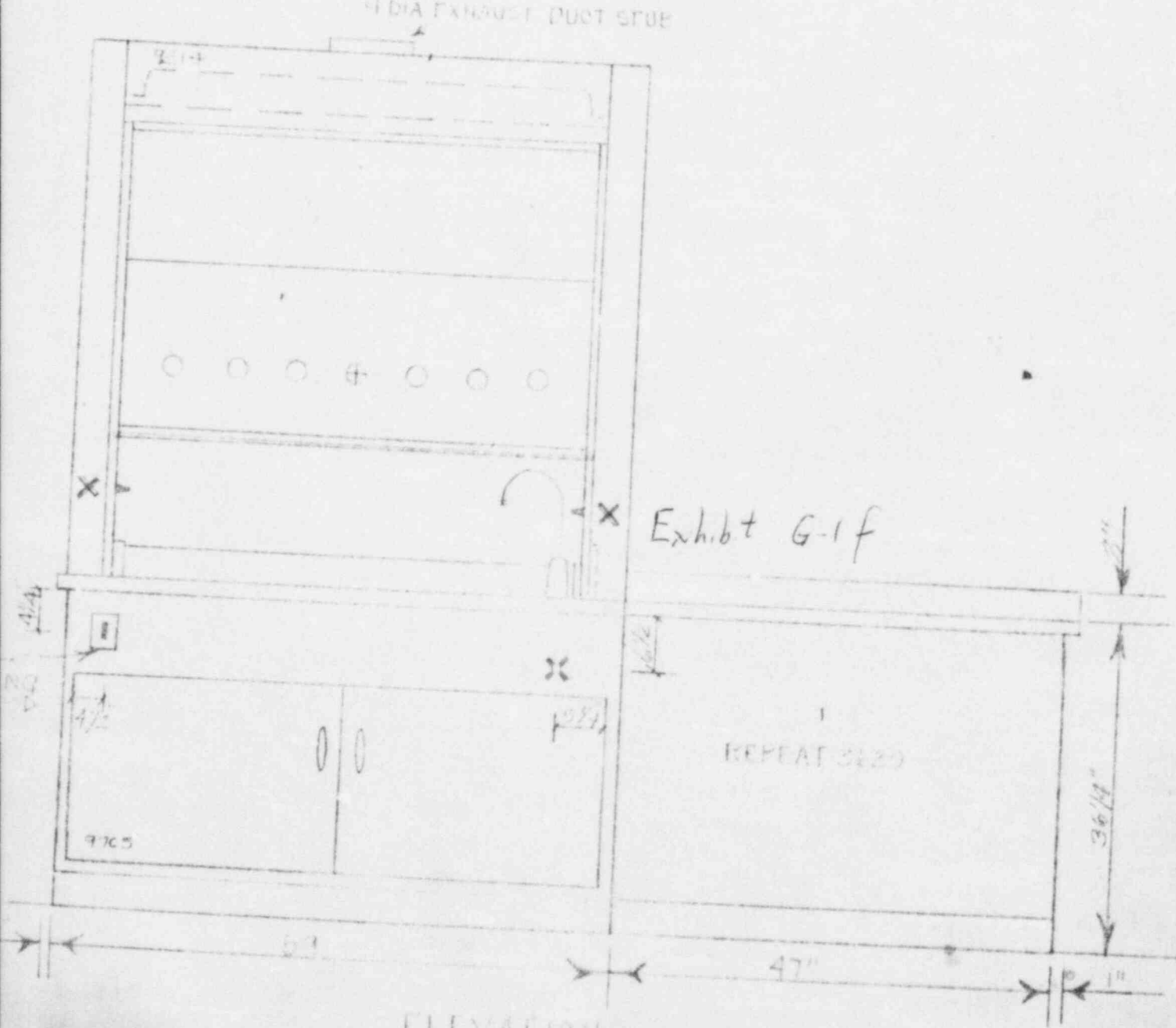
Exhibit G-1e

ELEVATION

OVERALL ASSEMBLY (1) PEG'D BOOM #33



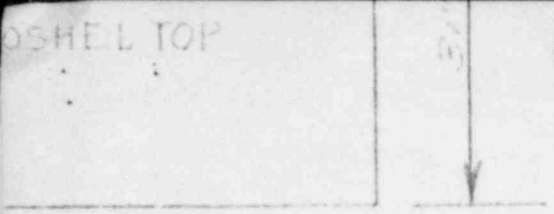
PLAN VIEW

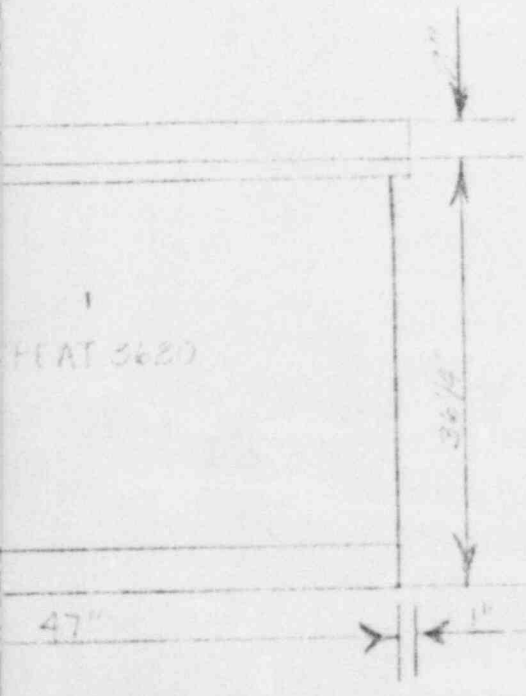


ELEVATION

FO-9250

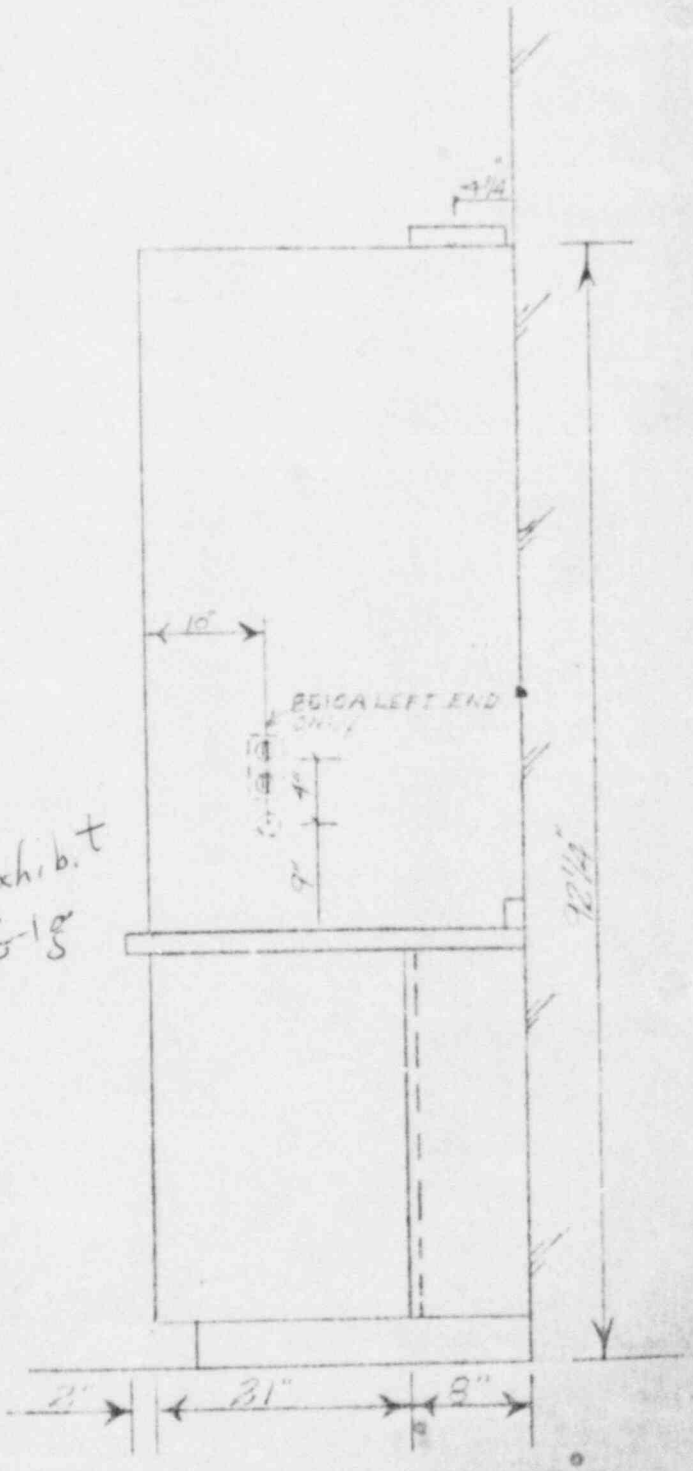
OSHELTOP





HEAT 3620

Exhibit G-15



END

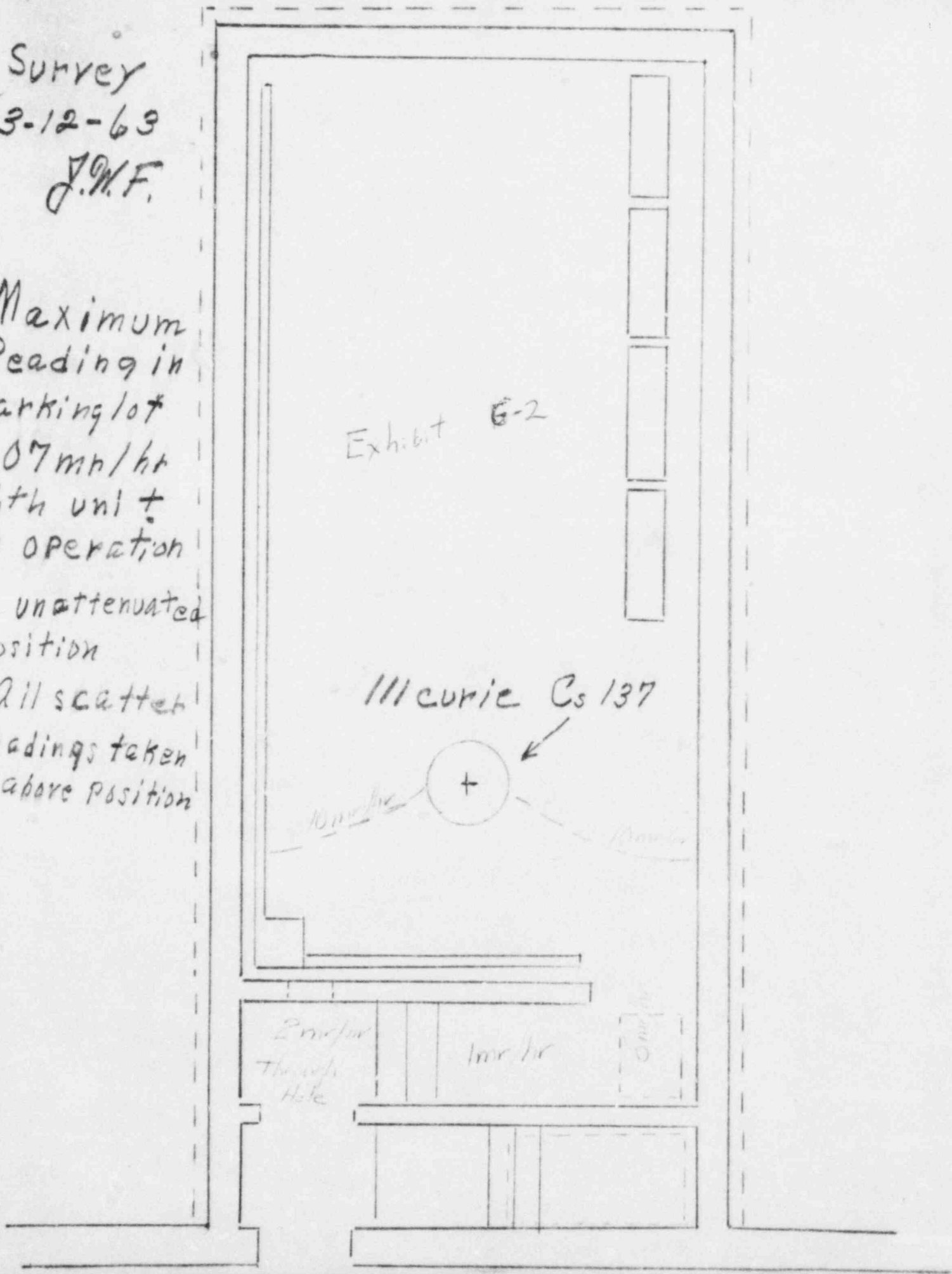
Y CHECK FOR

Rib Joint Federal Pub. Health Service

Survey
3-12-63
J.W.F.

Maximum Reading in parking lot .07 mr/hr with unit in operation unattenuated position

All scatter readings taken above position



SUPPLEMENTAL SHEET H

14 b. WASTE DISPOSAL

The radioactive wastes will be disposed of by release into a sanitary sewage system and such disposal will comply with 10-C F R-20, paragraph 20.303.

SUPPLEMENTAL SHEET I

15. RADIATION PROTECTION PROGRAM

Mr. Robert Ericson will be the radiation protection officer (see supplemental sheets J and K for his training and experiences).

An isotope committee will be established and be composed of the following persons:

Robert Ericson, B.S., Assistant Director
Public Health Laboratory

Chester C. Small, B.A., Chemist III
Public Health Laboratory

Thomas Dwyer, B.S., Chemist II
Public Health Laboratory

All other specifications in appropriate sections of 10-C F R-20 will be met.

SUPPLEMENTAL SHEET J

16. FORMAL TRAINING IN RADIATION SAFETY

– Robert Ericson, B.S.

	WHERE TRAINED	DURATION OF TRAINING	FORMAL COURSE
a.	Taft Engineering Center	2 weeks	YES
b.	Taft Engineering Center	2 weeks	YES
c.	Bowdoin College, B.S.-Chemistry	4 years	YES

– Chester Small, B.A.

	WHERE TRAINED	DURATION OF TRAINING	FORMAL COURSE
a.	Taft Engineering Center	2 weeks	YES
b.	Taft Engineering Center	2 weeks	YES
c.	Bates College, B.A. Brown University	4 years 1 year	YES YES

– Thomas Dwyer, B.S.

	WHERE TRAINED	DURATION OF TRAINING	FORMAL COURSE
a.	Harvard School of Public Health	3 weeks	YES
b.	Harvard School of Public Health	3 weeks	YES
c.	University of Maine, B.S.-Bio-Chemistry	4 years	YES

– Cheryl Baker, B.S.

	WHERE TRAINED	DURATION OF TRAINING	FORMAL COURSE
b.	Dept. of Energy Environmental Science Laboratory	1 week	YES
c.	University of Maine, B.S.-Chemistry	4 years	YES

SUPPLEMENTAL SHEET K

17. EXPERIENCE

- ROBERT ERICSON, B.S.

Isotope	Maximum Amount	Where Experience Was Gained	Duration Of Experience	Type Of Use
Co 60	100 mc	Public Health Laboratory	19 years	Calibration, etc.

- CHESTER SMALL, B.A.

Isotope	Maximum Amount	Where Experience Was Gained	Duration Of Experience	Type Of Use
Co 60	100 mc	Public Health Laboratory	17 years	Calibration, etc.

- Thomas Dwyer, B.S.

Isotope	Maximum Amount	Where Experience Was Gained	Duration Of Experience	Type Of Use
Ra^{226}	4.94 mc	Public Health Laboratory	6 years	Calibration, etc.

- Cheryl Baker, B.S.

Isotope	Maximum Amount	Where Experience Was Gained	Duration Of Experience	Type Of Use
Ra 226	4.94 mc	Public Health Laboratory	4 years	Calibration, etc.

SUPPLEMENTAL SHEET L

12. PERSONNEL MONITORING DEVICES
A (3)

In our present program no individual is working with millicurie quantities of hydrogen-3, iodine-125, or iodine-131.