Form AEC-313
(2-73)
10 CFR 30

UNITED STATES ATOMIC ENERGY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE

Form approved
Budget Bureau No. 38-R0027

INSTRUCTIONS.—Complete Items 1 through 16 if this is an initial application or an application for renewal of a license. Information contained in previous applications filed with the Commission with respect to Items 8 through 15 may be incorporated by reference provided *references are clear and specific.* Use supplemental sheets where necessary. Item 16 must be completed on all applications. Mail two copies to: U.S. Atomic Energy Commission, Washington, D.C., 20545, Attention: Materials Branch, Directorate of Licensing. Upon approval of this application, the applicant will receive an AEC Byproduct Material License. An AEC Byproduct Material License is issued in accordance with the general requirements contained in Title 10, Code of Federal Regulations, Part 30, and the Licensee is subject to Title 10, Code of Federal Regulations, Part 20, and the license fee provisions of Title 10, Code of Federal Regulations, Part 170. The license fee category should be stated in Item 16 and the appropriate fee enclosed. (See Note in Instruction Sheet).

1. (a) NAME AND STREET ADDRESS OF APPLICANT. *(Institution, firm, hospital person, etc. Include ZIP Code and telephone number.)*

University of Massachusetts
Amherst, Massachusetts

(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED. *(If different from 1(a). Include ZIP Code.)*

Amherst, MA
Cranberry Station, E. Wareham, MA
Gloucester Marine Sta., Gloucester, MA
Waltham Field Station, Waltham, MA

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

Department in the University which have submitted requests.

3. PREVIOUS LICENSE NUMBER(S). *(If this is an application for renewal of a license, please indicate and give number.)*

20-00882-03

4. INDIVIDUAL USER(S). *(Name and title of individual(s) who will use or directly supervise use of byproduct material. Give training and experience as in Items 8 and 9.)*

Byproduct material shall be used by or under the supervision of, individuals approved by the Radioisotope Use Committee, Dr. M. Fournier, Chairman.

5. RADIATION PROTECTION OFFICER. *(Name of person designated as radiation protection officer if other than individual user. Attach resume of his training and experience as in Items 8 and 9.)*

James Tocci, RPO
Francis Roy, Associate Health Physicist, 1st alternate in absence of RPO

6. (a) BYPRODUCT MATERIAL. *(Elements and mass number of each.)*

A. Any byproduct materials between atomic nos. 3 and 83

(b) CHEMICAL AND/OR PHYSICAL FORM AND MAXIMUM NUMBER OF MILLICURIES OF EACH CHEMICAL AND/OR PHYSICAL FORM THAT YOU WILL POSSESS AT ANY ONE TIME. *(If sealed source(s), also state name of manufacturer, model number, number of sources and maximum activity per source.)*

A. Any

A. 10 millicuries of each byproduct material between Atomic Nos. 3 and 83 inclusive except as in B through DD below

(See attached sheet for items B through DD)

Total posession limit for all byproduct material between Atomic Nos. 3 and 83 shall not exceed 10 curies.

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7. DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED. *(If byproduct material is for human use, supplement A (Form AEC-313a) must be completed in lieu of this item. If byproduct material is in the form of a sealed source, include the make and model number of the storage container and/or device in which the source will be stored and/or used.)*

(See attached sheets)

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20-00882-03 PDR

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FEE EXEMPT

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(Continued on reverse side)

TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 *(Use supplemental sheets if necessary)*

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection			Yes No	Yes No
b. Radioactivity measurement standardization and monitoring techniques and instruments			Yes No	Yes No
c. Mathematics and calculations basic to the use and measurement of radioactivity			Yes No	Yes No
d. Biological effects of radiation			Yes No	Yes No

9. EXPERIENCE WITH RADIATION *(Actual use of radioisotopes or equivalent experience.)*

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE

10. RADIATION DETECTION INSTRUMENTS *(Use supplemental sheets if necessary.)*

TYPE OF INSTRUMENTS *(Include make and model number of each)*	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE *(mr/hr)*	WINDOW THICKNESS *(mg/cm²)*	USE *(Monitoring, surveying, measuring)*

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED *(For film badges, specify method of calibrating and processing, or name of supplier.)*

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS IN DUPLICATE

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. *(Circle answer)* Yes No

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved.

CERTIFICATE (This item must be completed by applicant)

16. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, 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.

License Fee Category $ _____

Fee Enclosed $ _____

University of Massachsetts
Applicant named in item 1

By: James Tori

Radiation Protection Officer
Title of certifying official

Date 20 Dec 78

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.

Byproduct material	Chemical and/or physical form	Maximum amount
B. C-14	Any	2 ci
C. Ca-45	Any	20 mci
D. I-131	Any	200 mci
E. P-32	Any	1.5 ci
F. Co-60	Sealed Sources	800 mci
G. Po-210	Alpha Source (Radium Corp. Lab-456-2)	2 mci
H. H-3	Foils	2 ci
I. H-3	Titanium tritide targets	10 ci
J. H-3	Any	2 ci
K. Am-241	Sealed Sources	150 mci
L. Cd-115	Any	50 mci
M. Pm-148	Any	50 mci
N. In-114	Any	50 mci
O. Cs-137	Sealed Sources	450 mci
P. Ni-63	Detector foil	14 mci
Q. Cf-252	Sealed Sources (Savannah River Models ALC or SALC)	5 micrograms
R. Cd-109	Sealed Source	50 mci
S. Fe-59	Sealed Source	50 mci
T. Am-241	Foils	1200 mci
U. H-3	Tritiated water	100 ci
V. Ni-63	Foil (New England Nuclear Model NER-002) contained in Perkin-Elmer Model 009-0282 detector cell assembly and electron capture detector Model No. 009-0282 97863	30 mci
W. S-35	Any	500 mci
X. I-135	Any	500 mci

Byproduct material	Chemical and/or physical form	Maximum amount
Y. Am-241	Sealed Source (Troxler Moisture Gauge Model 1255)	100 mci
Z. Ni-63	Varian Electron Capture Detector Model No. 02-000965-00	8 mci

7. The University uses byproduct materials for research and instruction in labs, greenhouses, and at field sites both on and off University property. Beta emitters (e,g, H-3, C-14, P-32, S-35, Ca-45) are principally used as labelled compounds for research purposes in the life science departments (e.g. Biochemistry, Biology, Zoology, Microbiology).

   The sealed sources (e.g. Sr-90, Co-60, Co-137, Am-241, Cf-252) are used as radiation field sources in experiments involving attenuation in matter, dosimetry, soil moisture gauging, and beta-gamma angular correlations.

   The gas chromatography detector foils (H-3, Ni-63) are used in routine laboratory analysis procedures.

   Prepared sources as deposited films (e.g. Cd-109, Ag-110, Co-56, Cs-134, Tm-170, Tl-204) are used for beta-gamma angular correlations.

University of Massachusetts Radioisotope Use Committee Members

Dr. Donald Anderson - Vet. & Animal Science Dept.

Dr. Lyle Craker - Plant & Soil Science Dept.

Dr. M. Fournier - Biochemistry Dept.

Dr. Herbert Hultin - Food Science & Technology Dept.

Dr. Thomas Mason - Biochemistry

Dr. Mark Mount - Plant Pathology Dept.

Dr. George Richason - Chemistry Dept.

Dr. B. Rubinstein - Botany Dept.

Dr. K.S.R. Sastry - Physics Dept.

Dr. Robert Walker - Environmental Science Dept.

Dr. Martin Wilder - Microbiology Dept.

James Tocci - Radiation Protection Officer - Secretary of RUC

Francis E. Roy, Jr. - Asst. Health Physicist- 1st alternate to RPO

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TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 (Use supplemental sheets if necessary)

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection	Andhra Univ. Waltair, India		Yes No	Yes No
b. Radioactivity measurement standardization and monitoring techniques and instruments	Physics Dept. Indiana University		Yes No	Yes No
c. Mathematics and calculations basic to the use and measurement of radioactivity	Bloomington, Indiana		Yes No	Yes No
d. Biological effects of radiation			Yes No	Yes No

9. EXPERIENCE WITH RADIATION. (Actual use of radioisotopes or equivalent experience.)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Ra_{60}	5mc	Andhra University	1955-56	meas. of γ-energy
Co^{60}	17mc	" "	1955-58	γ-ray attenuation coeff.

Continued on attached sheet.

10. RADIATION DETECTION INSTRUMENTS. (Use supplemental sheets if necessary.)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm^2)	USE (Monitoring, surveying, measuring)
(1) NaI Scin. Spectrometers	5	γ-rays			Measuring
(ii) Plastic Scin-Spectrometer	1	β-rays			Measuring
(iii) Radiation meter	2	$(+)\gamma$-rays	0-500	$2mg/cm^2$	(monitoring (Surveying

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE. Calibration is done using sources of known radiation and strength, such as Cs^{137}. Instrument calibration is checked prior to use. Also calibration is checked every week.

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. (For film badges, specify method of calibrating and processing, or name of supplier.)
Two pocket dosimeters (rang 0-200mr) are available. Film badge service from Nuclear Chicago Copr. will be used. We also have TLD Dosimetry

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) Yes No
On attached sheet.

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.
On attached sheet.

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved. On attached sheet.

CERTIFICATE (This item must be completed by applicant)

16. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, 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.

K. S. R. Sastry
Applicant named in item 1

Date Dec. 21, 1966

By: _____

Title of certifying official

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.

U. S. GOVERNMENT PRINTING OFFICE : 1958 O—451408

TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 (Use supplemental sheets if necessary)

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection	H. B. Gunner -- none		Yes No	Yes No
b. Radioactivity measurement standardization and monitoring techniques and instruments	P. J. Warner -- none		Yes No	Yes No
c. Mathematics and calculations basic to the use and measurement of radioactivity	R. W. Walker -- Mass. State Dept. of Public Health, Division of Sanitary Engineering	1 week	(Yes) No	(Yes) No
d. Biological effects of radiation			Yes No	Yes No

9. EXPERIENCE WITH RADIATION. (Actual use of radioisotopes or equivalent experience.)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
		None		

10. RADIATION DETECTION INSTRUMENTS. (Use supplemental sheets if necessary.)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm²)	USE (Monitoring, surveying, measuring)
Not required due to type of material being requested					

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE

Same as item 10

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. (For film badges, specify method of calibrating and processing, or name of supplier.)

Not applicable

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) Yes No

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved.

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Robert W. McClure

Applicant named in item 1

Date May 11, 1964

By: _____

Title of certifying

"ARNING.—18 U. S. C., Section 1001, Act of June 25, 1948, 62 Stat. 749, makes it a crim[e] ...sentation to any department or agency of the United States as to any matter within its jurisdiction ...ense to make a willfully false statement or

* U.S. GOVERNMENT PRINTING OFFICE : 1961 O—615991

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TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 8. (Use supplemental sheets if necessary)

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection	University of Kansas Depts. Radiation Biophysics and Microbiology	1 yr	Yes (No)	(Yes) No
b. Radioactivity measurement standardization and monitoring techniques and instruments	" "	2 yr	(Yes) No	(Yes) No
c. Mathematics and calculations basic to the use and measurement of radioactivity	" "	1 yr	Yes (No)	(Yes) No
d. Biological effects of radiation	" "	1 yr	Yes (No)	(Yes) No

9. EXPERIENCE WITH RADIATION. (Actual use of radioisotopes or equivalent experience.)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Fe^{59}	100uCi	University of Kansas Lawrence, Kansas	2 yr	Metabolic Studies
D-Glucose ($C^{14}U$)	500uCi	Ft. Detrick Frederick, Maryland	2 yr	Metabolic Studies

10. RADIATION DETECTION INSTRUMENTS. (Use supplemental sheets if necessary.)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm²)	USE (Monitoring, surveying, measuring)
Packard-Tri Carb Liquid Scintillation Spectrometer Model 3003	1	gamma-beta	27 counts/nanocurie		

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE.

Packard Tri-Carb Standards (Toluene) H^3 100,400 DPM

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. (For film badges, specify method of calibrating and processing, or name of supplier.)

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) (Yes) No

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved.

CERTIFICATE (This item must be completed by applicant)

16. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, 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.

Martin L. Wible
Applicant named in item 1

Date 1/16/76

By: J. W. Stayton
Radiation Safety Officer
Title of certifying official

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.

U. S. GOVERNMENT PRINTING OFFICE: 1958 O—491408

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TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 (Use supplemental sheets if necessary)

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8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection	Oak Ridge Inst. of Nuclear Studies & UT-AEC Agric. Res. Lab., Oak Ridge, Tenn.	4 wks. 10 mos.	Yes No	Yes No
b. Radioactivity measurement standardization and monitoring techniques and instruments	Same	"	Yes No	Yes No
c. Mathematics and calculations basic to the use and measurement of radioactivity	Same	"	Yes No	Yes No
d. Biological effects of radiation	Same	"	Yes No	Yes No

9. EXPERIENCE WITH RADIATION (Actual use of radioisotopes or equivalent experience)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Ca-45	50 mc	UT-AEC Agric. Res. Lab	10 mos.	Tracer & Radiation
Sr-89	50 mc	" " " "	10 mos	Tracer & Radiation
P-32	50 mc	" " " "	10 mos.	Tracer
Se-75	25 mc	" " " "	4 mos.	Tracer
S-35	20 mc	" " " "	2 mos.	Tracer & Radiation (cont.)

10. RADIATION DETECTION INSTRUMENTS (Use supplemental sheets if necessary)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm²)	USE (Monitoring, surveying, measuring)
SC-51 Tracerlab scaler	1	-	-	-	Measuring
SU-5A Tracerlab survey meter with "G" probe	1	beta, gamma	.02-.20	less than 2	Surveying, monitoring
P-20 CQG scintillation detector	1	gamma	-	.016 in. aluminum	Measuring
SC-535 Tracerlab scaler-spectrometer	1	gamma	-	.016 in. aluminum	Measuring

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE

Survey meter calibrated weekly by use of radiation source suppled by manufacturer for that purpose. Gamma spectrometer calibrated at monthly intervals with a Cs^{137} standard and(cont)

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. (For film badges, specify method of calibrating and processing, or name of supplier.)

With the tracer levels of radioactivity anticipated for use in these studies, personal monotoring devices (film badge, pocket dosimeters) appear unnecessary. However, if radiation levels of sufficient intensity to warrant their use is anticipated, one or (cont.)

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) Yes No

See attached sheet.

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.

See attached sheet.

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved.

See attached sheet.

CERTIFICATE (This item must be completed by applicant)

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Date July 31, 1964

Applicant named in item 1

By: _____

Title of certifying official

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.

U. S. GOVERNMENT PRINTING OFFICE: 1959 O—491406

TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4. (Use supplemental sheets if necessary)

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection	University of Minnesota	3 Months	(Yes) No	(Yes) No
b. Radioactivity measurement standardization and monitoring techniques and instruments	University of Minnesota	3 months	(Yes) No	(Yes) No
c. Mathematics and calculations basic to the use and measurement of radioactivity	University of Minnesota	3 months	(Yes) No	(Yes) No
d. Biological effects of radiation	University of Minnesota	3 months	(Yes) No	(Yes) No

9. EXPERIENCE WITH RADIATION. (Actual use of radioisotopes or equivalent experience)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
$^{89}_{45}Sr$	1 mc	Univ. of Minn.	3 yr	Tracer
$^{32}_{15}P$	10 mc	Univ. of Minn.	3 yr	Tracer
^{14}C	10 mc	Ft. Detrick, Md.	2 yr	Tracer
^{3}H	50 mc	Ft. Detrick, Md.	2 yr	Tracer
	1 mc	Ft. Detrick, Md.	2 yr	Tracer

10. RADIATION DETECTION INSTRUMENTS (Use supplemental sheets if necessary.)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm²)	USE (Monitoring, surveying, measuring)
Scaler Baird Atomic Model 123	1	beta	0-100mR/hr	0-100mg/cm	Monitoriting, Surveying, measuring
Rate meter Baird Atomic Model 432	1	beta	0-100mR/hr	0-100mg/cm	Monitoriting, measuring
Survey meter, Baird Atomic Model 904-121	1	beta & gamma	0-1,0-10	0-100MR/cm	Monitoring, surveying

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE
Use of reference Standard sources as instruments are used.

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. (For film badges, specify method of calibrating and processing, or name of supplier.)
FILM BADGES - MONTHLY - TRACERLAB 1601 TRAPELO ROAD WALTHAM MASS. 02154

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) (Yes) No See attached sheet A

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.
See attached sheet B

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved. Picked up by UMass. Health Physists

CERTIFICATE (This item must be completed by applicant)

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Date 14 Oct 71

Applicant named in item 1

By: J. W. Stryker

Radiation Safety Officer

Title of certifying official

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.

U. S. GOVERNMENT PRINTING OFFICE : 1958 O - 451606

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TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 (Use supplemental sheets if necessary)

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection	Dartmouth College Walter-Reed Army Inst. of Res. National Institutes of Health	4 yrs. 2 yrs. 2 yrs.	(Yes) No	Army (Yes) No
b. Radioactivity measurement standardization and monitoring techniques and instruments	↓	↓	(Yes) No	(Yes) No
c. Mathematics and calculations basic to the use and measurement of radioactivity	↓	↓	(Yes) No	(Yes) No
d. Biological effects of radiation	↓	↓	(Yes) No	(Yes) No

9. EXPERIENCE WITH RADIATION. (Actual use of radioisotopes or equivalent experience.)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
$P^{32,33}$ S^{35} C^{14} H^{3}	20mC 10mC 1mC 5mC	Dartmouth College Walter Reed Army Inst. of Res. National Inst. Health	4 yrs. 2 yrs. 2 yrs.	See. no. 7

10. RADIATION DETECTION INSTRUMENTS. (Use supplemental sheets if necessary.)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm²)	USE (Monitoring, surveying, measuring)
Nuclear Chicago survey meter (A. Gawienowski's)	one	β γ			

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED (For film badges, specify method of calibrating and processing, or name of supplier.)

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) (Yes) No see attached

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.
See attached.

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved.
See attached

CERTIFICATE (This item must be completed by applicant)

16. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, 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.

Marcelle J. Fournier
Applicant named in item 1

Date April 14, 1972

By: G W Stryker

Radiation Safety Officer
Title of certifying official

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.

U. S. GOVERNMENT PRINTING OFFICE : 1958 O - 491498

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TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 (Use supplemental sheets if necessary)

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection	M.I.T.	1 semester	Yes (No)	(Yes) No
b. Radioactivity measurement standardization and monitoring techniques and instruments	M.I.T.	"	Yes (No)	(Yes) No
c. Mathematics and calculations basic to the use and measurement of radioactivity	M.I.T.	"	Yes (No)	(Yes) No
d. Biological effects of radiatio	M.I.T.	"	Yes (No)	(Yes) No

9. EXPERIENCE WITH RADIATION. (Actual use of radioisotopes or equivalent experience.)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
P-32	1 mc	Institute for Enzyme Res., U. Wisconsin	1 year	Research in ion transport and ATP synthesis
Ca-45	0.5 mc	Univ. of Massachusetts	2 years	

10. RADIATION DETECTION INSTRUMENTS. (Use supplemental sheets if necessary.)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm²)	USE (Monitoring, surveying, measuring)
Tracer Lab model SC 18A	1	Beta	0.003-1650	1.6	measuring
Liquid Scintillation	1	Beta	-	-	measuring
Portable survey meters (one tritium meter)	2	α, β, γ	0.1-100		monitoring

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE

Use of calibrated beta source at weekly intervals.

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. (For film badges, specify method of calibrating and processing, or name of supplier.)

Survey meters

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) Yes (No)

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved.

CERTIFICATE (This item must be completed by applicant)

16. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, 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.

Herbert O. Kultin
Applicant named in item 1

Date 10-20-71

By: J. W Stryker
Radiation Safety Officer
Title of certifying official

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.

U. S. GOVERNMENT PRINTING OFFICE 1958 O—481438

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TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 5 (Use supplemental sheets if necessary)

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL (Circle answer)
a. Principles and practices of radiation protection	UNIVERSITY OF MINNESOTA CORNELL UNIVERSITY		(Yes) No	(Yes) No
b. Radioactivity measurement standardization and monitoring techniques and instruments			(Yes) No	(Yes) No
c. Mathematics and calculations basic to the use and measurement of radioactivity			(Yes) No	(Yes) No
d. Biological effects of radiation			(Yes) No	(Yes) No

9. EXPERIENCE WITH RADIATION. (Actual use of radioisotopes or equivalent experience.)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
^{3}H	100 mC	Cornell	2 years	Ref. to #7
^{14}C	5 mC	University of Minnesota	5 years	
^{32}P	10 mC			

10. RADIATION DETECTION INSTRUMENTS. (Use supplemental sheets if necessary.)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm²)	USE (Monitoring, surveying, measuring)
Nuclear Chicago Survey Meter (Departmental Instrument) Model #2650	one	β			

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE.

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. (For film badges, specify method of calibrating and processing, or name of supplier.)
Film badges to be used with P-32, P-33. To be supplied by Landauer, Tracerlab, etc

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) (Yes) No (See attached sheet)

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved. (See attached sheet)

CERTIFICATE (This item must be completed by applicant)

16. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, 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.

Date 10/12/73

Item 1 Above
Applicant named in item 5

By: J. W. Stryker
Radiation Safety Officer
Title of certifying official

19 OCTOBER 1973

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.

U. S. GOVERNMENT PRINTING OFFICE : 1958 O—481404

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TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 (Use supplemental sheets if necessary)

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	Visitor ~~Academic~~ COURSE (Circle answer)
a. Principles and practices of radiation protection	Michigan State Univ. E. Lansing, Mich.	8 wks	Yes (No)	(Yes) No
b. Radioactivity measurement standardization and monitoring techniques and instruments	Mich. State Univ. - demonstrated to me by Mr. Malcman, Health Phys. at Mich. State Univ.		(Yes) No	Yes (No)
c. Mathematics and calculations basic to the use and measurement of radioactivity	Mich. State Univ.	8 wks	Yes (No)	(Yes) No
d. Biological effects of radiation	Mich. State Univ.	8 wks	Yes (No)	(Yes) No

9. EXPERIENCE WITH RADIATION. (Actual use of radioisotopes or equivalent experience)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
P^{32}	10 mc	Mich. State Univ.	2 yr. (thesis)	Uptake and transfer studies in plants.
S^{35}	10 mc	" " "	" " "	
Rb^{36}	1 mc	Cornell Univ., Ithaca, N.Y.	1 yr.	Leakage from potatoes due to enzymes.
C^{14}	50-60 µc	Univ. of Mass.	4-1/2 yr.	Enzyme analysis.

10. RADIATION DETECTION INSTRUMENTS. (Use supplemental sheets if necessary)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm²)	USE (Monitoring, surveying, measuring)
Liquid scintillation counter, Unilux I, Model 6850 (Rm. 7, Fernald Hall)	1	Analytical Instrument			Analysis, radiation detection surveying

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE

Quarterly with C^{14} standard source

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. (For film badges, specify method of calibrating and processing, or name of supplier.)

Film badges - ICN Tracerlab

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) (Yes) No

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.

Conducted under auspices of Health Physics Group.

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved. c/o Health Physics

CERTIFICATE (This item must be completed by applicant)

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Mark I. Weeks
Applicant named in item 1

Date January 10, 1975

By: J. W. Styka
Radiation Safety Officer
Title of certifying official

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.

U. S. GOVERNMENT PRINTING OFFICE : 1959 O—481830

Experience with Radiation: George Richason

Brookhaven National Lab - 8 week course in Nucleonics, 1956

Ames Atomic Energy Lab - 8 week course in Nucleonics, 1957

2 week seminars at Oak Ridge National Lab (3), Brookhaven National Lab (3), Naval Research Lab (4), 1950-1965

Teaching undergraduate - graduate level course in Radiochemistry, University of Massachusetts, 1959-present.

Isotope	Max. Amount	Where	Duration
C^{14}	2mCi	UMass/Amherst	1959 - Present
P^{32}	10mCi	"	"
Cl^{36}	0.03 mCi	"	"
Fe^{59}	2mCi	"	"
Co^{60}	5mCi	"	"
SrY^{90}	1mCi	"	"
I^{131}	30mCi	"	"
$Ce\text{-}Pr^{144}$	5mCi	"	"
Ra^{226}	3mCi	"	"
Co^{60}	500mCi(sealed source)	"	"

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TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 (Use supplemental sheets if necessary)

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection	Purdue U.	1 Sem	Yes No	Yes No
b. Radioactivity measurement standardization and monitoring techniques and instruments	"	"	Yes No	Yes No
c. Mathematics and calculations basic to the use and measurement of radioactivity	"	"	Yes No	Yes No
d. Biological effects of radiation	"	"	Yes No	Yes No

9. EXPERIENCE WITH RADIATION. (Actual use of radioisotopes or equivalent experience.)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
^{3}H	5 mC.	University Research Laboratory	15 yrs.	Research
^{14}C	"	"	"	"
^{36}Cl	"	"	7 yrs	"
^{45}Ca	"	"	2 yrs	"

10. RADIATION DETECTION INSTRUMENTS. (Use supplemental sheets if necessary.)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm²)	USE (Monitoring, surveying, measuring)

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. (For film badges, specify method of calibrating and processing, or name of supplier.)

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) Yes No

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.

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CERTIFICATE (This item must be completed by applicant)

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Date 1/24/75

Purdue University
Applicant named in Item 1

By: J. W. Stryker
Radiation Safety Officer
Title of certifying official

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.

U. S. GOVERNMENT PRINTING OFFICE: 1958 O—481408

NRC 313:

ADDITIONAL INFORMATION

8. Training and Experience of J. Tocci

a,b,c,d. Cancer Research Institute,N. E. Deaconess Hospital, Boston, Mass. from 1965-1968, on the job training; and Basic Radiological Health Course, U.S. Department of Health Education and Welfare, Public Health Service, Division of Radiological Health, Northeastern Radiological Health Laboratory, 80 hours, formal course, 1970; American Board of Health Physics Certification Preparatory Course, New England Chapter of the Health Physics Society, 45 hours, formal course, 1974.

9.

Isotope	Max Amount	Where	Duration	Type of use
Co^{60}	3.5 Mci	US Army Natick Laboratories	5 years	Research on food irradiation
Cs^{137}	210 Kci	US Army Natick Laboratories	5 years	Research on food irradiation
U^{238}	$50X10^{3}$ lbs	US Army Materials and Mechanics Research Center	1 year	Exposure measurements, accountability
Cf^{252}	2.5 ci	"	1 year	Exposure measurements
Pu-Be	10 Ci	"	1 year	Calibration of instruments
Ra	1 ci	"	1 year	Calibration of instruments
Other Research Isotopes	x uci	"	1 year	Leak tests
I^{131}	100 mci	CRI, NE Deaconess Hospital	4 years	Standardization
P^{32}	20 mci	"	4 years	Standardization
Other Medical Use Isotopes	x mci	"	4 years	Preparation for patient administration

JAMES TOCCI
11 Emmons St., Milford, MA 01757
Tel. 617-473-1743

JOB OBJECTIVE — Health Physicist/Radiation Protection Officer

Qualifications in Brief — Nuclear Regulatory Commission inspector, organized and administered a radiological safety program; developed specialized instrumentation used in the study of fast chemical transients produced by high energy electron pulses from a linear electron accelerator and maintained a 3 million curie Co^{60} source; previously a radiological technologist.

EXPERIENCE

Nov. 1975 to Present — U.S. Nuclear Regulatory Commission
TITLE: Radiation Specialist

Responsible for inspection of persons, organizations, corporations, etc. who are licensed by the Nuclear Regulatory Commission to possess, use, manufacture and transfer radioactive material in order to insure their compliance with applicable Nuclear Regulatory Commission regulations and license conditions.

Nov. 1974 to Nov. 1975 — U.S. Army Materials and Mechanics Research Center
TITLE: Health Physicist - Radiation and Occupational Safety Office

Responsible for organizing and administering the radiological safety program at AMMRC which has a large depleted uranium melting, forging and machining program, a deactivated nuclear reactor, a Cf^{252} neutron source, a 14 Mev neutron generator, a 2.5 Mev radiographic X-ray unit, numerous X-ray diffraction and flourescent units, pulsed X-ray units, and several electron microscopes and lasers.

1969-1974 — U.S. Army Natick Laboratories
TITLE: Research Physicist - Radiation Preservation of Food Division, Food Engineering Laboratory

Responsibility for development and operation of specialized instrumentation and automatic data handling techniques used in conjunction with a linear electron accelerator to perform experiments concerning unstable intermediates produced in irradiated food; also part of the group responsible for operating, maintaining, and replenishing a 3 million curie Co^{60} irradiator used to irradiate food for research purposes.

1965-1968 — Cancer Research Institute, New England Deaconess Hospital
TITLE: Radiological Technologist - Biophysics Department

Our department was responsible for receiving, storing, standardizing and preparing all radioisotopes used by CRI laboratories, or by the hospital for therapy, and diagnostic purposes; also responsible for all X-ray irradiation given to research animals; maintained personnel and laboratory monitoring program, X-ray units, and all radiation detection instrumentation.

EDUCATION 1969 — Northeastern University, Boston, Mass. Received BA in physics; minor in mathematics.

REFERENCES

Mr. R. F. Cowing, P.O. Box 156, E. Weymouth, Mass. 02189
Mr. T. G. Martin, 588 Winter Street, Framingham, Mass. 01701
Dr. P. A. Hurwitz, 144 Pleasant Street, East Walpole, Mass. 02032

RESUME

FRANCIS E. ROY jr.

Apt. 62
50 Meadow Street
Amherst, MA 01002

Tele.: 413-549-5131 Home
413-545-2682 Work

Age: 25

Marital Status: Married

Physical Condition: Excellent

Available: July 1, 1978

EMPLOYMENT SOUGHT: Health physicist position in radiological health with some research and engineering.

EDUCATION:

College: University of Massachusetts in Amherst
B.S. Physics, 1975

Important Courses:

Physics - Senior Honors Thesis, Radiation Physics, Modern Physics, Molecular Biophysics, Mechanisms of Radiation Biology, Electronics Instrumentation.

Chemistry - Radiochemistry, Physical Chemistry, Organic Chemistry.

Biology - Histology, Physiology.

Secondary School: Acton-Boxborough Regional High School
Acton, MA : Graduated 1971

EXPERIENCE:

Aug. 1978 to Present — University of Massachusetts in Amherst, employed as Associate Health Physicist with the Department of Environmental Health & Safety. Duties include calibration of survey meters for the University, routine radioisotope surveys, machine source surveys such as diagnostic diffraction & fluorescence x-ray equipment, microwave ovens and lasers. Also supply health physics support with the iodination laboratory performing bioassays, conducting leak tests of sealed sources and being responsible for other duties as outlined by NRC rules and regulations.

Annual Salary: $15,000

July 1977 to July 1978 — Radiation Physics, Inc., working as a consultant in radiation physics to community hospitals in the Boston area assisting Dr. Jacob Spira, radiation physicist at the Boston University Medical Center. Duties include calibration and routine checks on diagnostic x-ray and radiation therapy equipment (4Mv. Linac, Co-60, orthovoltage, superficial, and contact), health physics support in brachytherapy (using Ra-266, Cs-135, Ir-192, Rn-222, Au-198, I-125), and teaching physics to x-ray technicians.

Annual Salary: $14,000

July 1976 to July 1977 — Radiation physics fellowship in the Radiation Medicine Department of the University Hospital in Boston. Duties included calibration and safety checks of a 42 Mv. Betatron and Co-60 therapy machines, computer planning, physics support in brachytherapy, and some research in radiological physics.

Annual Salary: $12,000

June 1975 to July 1976 — Radiation Control Inspector with the Massachusetts Department of Public Health. On a contract with the Food and Drug Administration to inspect diagnostic x-ray equipment for compliance with the new Federal performace standard of the Radiation Control for Health and Safety Act of 1968.

Annual Salary: $11,570

Summer of 1974 & 1975 — Raytheon Co., Waltham, MA. Employed as an engineering assistant in the Industrial Engineering Department, potting and coating electronic assemblies for use on Fleet Baliistic Missile programs.

HOBBIES:

Basketball, Amateur radio, Photography and Stained Glass.

HONORS:

Senior Honors Thesis, an independent research project on an electron spin resonance study of Co-60 gamma-ray irradiated and low energy x-ray irradiated heme proteins (Awarded an A).

Advisor: Dr. Kandula S. R. Sastry
Department of Physics and Astronomy
University of Massachusetts

PROFESSIONAL SOCITIES:

Member of the Health Physics Society, New England Chapter.
Full member of the American Association of Physicists in Medicine, national organization.

10. Radiation Detection Instruments

Type of Instruments	# Available	Radiation Detected	Sensitivity range	Window Thickness	Use
Eberline PRM-5-3 with HP-210, 2" diameter Geiger Muller	1	α, β, γ, X	500k cpm	1.5 mg/cm^2	Survey
Eberline PRM5-3 with					
1) SPA-2, 1"x1" NaI(Tl) detector	1	γ	"	5 mmAl	Survey
2) AC-21B Gas Proportional Probe	1	α, β	"	0	Survey
Eberline E-120 with HP190 GM Probe	1	α, β, γ, X	70k cpm		Survey
Victoreen 440	1	β, γ, X	300 mr/hr	3 mg/cm^2	Survey
Victoreen 666 (rate & integrate modes, 2 chambers)	1	β, γ, X	30 R/hr	3 mg/cm^2	Survey
Victoreen r-meter (6 chambers)	1	γ, X	100 R	50 mg/cm^2	Measuring(Tertiary N.B.S. Standards)
Tracerlab 1" Geiger-Muller	1	α, β, γ, X		1.5 mg/cm^2	Survey
Civil Defense CDV-700 with GM Probe	1	α, β, γ, X		1.5 mg/cm^2	Survey
Self Reading Pocket Dosimeters	8	γ, X	200 mr	20 g/cm^2	Measuring
Victoreen 493 with 489-110 GM Pancake Probe	2	α, β, γ, X	30k cpm	1.4-2.0 mg/cm^2	Survey
Nuclear Chicago Mark I Liquid Scintillation Counter Model 6860	1	β	999,999 cpm	-	Swipe Survey Analysis
Nuclear Measurements Corp. DS-3 Scaler with:	1		999,999 cpm	-	
1) gas proportional counter	1	α, β	"	1.5 mg/cm^2	Measuring
2) NaI (Tl) detector	1	γ	"	-	"
Eberline Miniscaler, MS-2 with LEG-1 Probe	1	γ	999,999 cpm	.025 mm Al	Measuring

11. Method, frequency and standards used in calibrating instruments.

All portable survey instruments will be calibrated quarterly on all ranges of the instrument, i.e. at least 2 points/scale, by placing the instrument/probe in an appropriate radiation field. A Tech Ops, model 571, 15 mCi Co^{60} Calibrator is used for all GM and ionization chamber survey instrument calibrations. A PuBe source (2Ci) is used for neutron probe calibrations.

The Eberline Miniscaler, model MS-2 with LEG-1 scintillation probe used for thyroid counting of I^{125} burdens is calibrated with a .101 uCi I^{129} source, NEN, model NES-135S (accuracy $\pm$ 3 - 5% at 99% confidence). This calibration is performed each day thyroid counts are required. The source is placed in a cylindrical water phantom measuring 15 cm in diameter by 17.5 cm in height at a distance of 1 cm from the inside surface and 10 cm from the top of the phantom.

The Nuclear Chicago, Mark I liquid scintillation counter used for lab swipe analysis is calibrated using an internal standard of tritium. This standard was made from a certified calibration compound, NEN's NES-004, toluene, H^3, 2 X 10^6 dpm/ml $\pm$ 3% at 99% confidence.

12. Whole body and ring badges are supplied to the University researchers requiring them by ICN Life Sciences Group, Cleveland, Ohio. The entire personnel dosimetry program is funded and administered centrally by the EH&S Division of the University Health Services. Film badges are changed monthly.

Bioassays will be required of all researchers using H^3 and/or I^{125} according to the following:

1. Occasional use of 10 mci or more of H^3 labelled compounds or 100 mci or more of other uncontained forms of H^3 labelled material will require a bioassay within 48 hours after completion of the work. Continuous use requires weekly bioassays.
2. Occassional use of carrier-free I^{125} for iodination requires thyroid counting at 48 hours after completion of the work. Continuous use requires weekly thyroid checks.
3. Bioassays for uptakes of other radioisotopes will be done for cause (to be determined by Radioisotope Use Committee prior to research authorization).

The tritium bioassay procedure will consist of:

1. 24 hour composite urine samples will be requested and collected by EH&S personnel.
2. Calibrate Liquid Scintillation Counter.
3. 1 ml of tap water, in 10 ml Aquasol, will be used for the background count.
4. 1 ml of urine into 10 ml Aquasol and count 10 minutes in LSC. Record counts.
5. Add 100λ of toluene (H^3), 2 X 10^4 dpm/100λ calibration solution to a second vial containing 1 ml urine and 10 ml Aquasol and count 10 minutes in LSC. This permits accurate computation of counting efficiency even in the presence of quenching.

Calculations: $$\text{eff} = \frac{\text{cpm of spiked sample}}{2 \times 10^4 \text{ dpm of spiked sample}}$$

$$\frac{\text{non-spiked sample count - background count}}{\text{efficiency}} = \text{dpm of urine sample}$$

$$\frac{\text{dpm of urine sample}}{2.22 \times 10^3 \text{ dpm/nCi}} = \text{activity (nCi)/ml}$$

activity X 43,000 ml/std man body fluid = Body Burden (nCi)

12. Cont.

For I^{125} thyroid counting, researchers will be requested to come to EH&S Office at B407 Morrill Science Building at the appropriate time. Two minute thyroid counts will be performed using an external scintillation probe/single channel analyzer system (see attached Procedure/Calculation Worksheet and Sensitivity Calculation Sheet).

ML10

"OFFICIAL RECORD COPY"

I^{125} THYROID COUNTING PROCEDURE AND CALCULATION

DATE:

RESEARCHER:

INSTRUMENT USED: A) Eberline Mini Scaler, model MS-2 with LEG-1 probe
B) H.V. @ 5 (approx. 750 v)
threshold @ 4.1 (22.5 Kev)
window @ 3.0 (37.5 Kev)
C) Calibration using cylindrical water phantom (15 cm X 17.5 cm)

Background = cts/min

.101 uci I^{125} Std. = cts/2 min

$$\text{eff} = \frac{\text{cpm/101 nci std.}}{\text{224,220 dpm/101 nci std.}} =$$

RESULTS: Thyroid was counted for 2 minutes with the probe contacting neck just below the adam's apple, yielding _____ counts.

CALCULATIONS: r_n = _____ - _____ = , where r_n = net counting rate

$$\sigma_n = \sqrt{\text{_____ + _____}} = \text{, where } \sigma_n = \text{standard deviation}$$

$$t = \frac{r_n}{\sigma_n} = \text{, where t = test for null hypothesis}$$

$$\frac{r_n}{\text{eff}} = \text{_____} \div 2220 \frac{\text{dpm}}{\text{nci}} = \text{thyroid burden (nCi)}$$

CONCLUSION: ( ) 1. Since the above test shows that there are less than 2.55 standard deviations (2.55σ) in the net counting rate and within the 99% confidence limit, the null hypothesis is accepted and no activity is assumed present at this time.

( ) 2. Since the above test shows that there are more than 2.55 standard deviations in the net counting rate and outside the 99% confidence limit, the null hypothesis is rejected and activity is assumed present.

CALCULATION OF LIMIT OF SENSITIVITY FOR I^{125} THYROID COUNTING WITH LEC-1 PROBE AT SURFACE OF NECK

Instrument Used: Eberline Mini Scaler (single channel analyzer) with LEC-1 probe at surface of phantom

typical bkg.- 480 cts/20 min

" I^{125} std.(101nci) - 11,731 cts/2 min

$$\text{eff} = \frac{5{,}866 \text{ cpm/101 nci std}}{224{,}220 \text{ dpm/101 nci std}}$$

$$= 2.6\%$$

Calculations:

$$r_n = \frac{L_s}{2} - \frac{480}{20}$$

$$\sigma_n = \sqrt{\frac{\frac{L_s}{2}}{2} + \frac{24}{20}}$$

find L_s when $t = \frac{r_n}{\sigma_n} = 2.55$ (or within 99% conf. level)

eq.1 $$r_n = 2.55\sigma_n = \frac{L_s}{2} - \frac{480}{20}$$

eq.2 $$\sigma_n = \sqrt{\frac{\left(\frac{L_s}{2}\right)}{2} + \frac{24}{20}}$$

$$L_s = 2(2.55\sigma_n) + 2\left(\frac{480}{20}\right) \quad \text{(transposing from eq.1)}$$

$$= 2(2.55\sigma_n) + 48$$

substituting:

$$\sigma_n = \sqrt{\frac{\left(\frac{2(2.55\sigma_n) + 48}{2}\right)}{2} + \frac{24}{20}}$$

$$\sigma_n^2 = 1.275\sigma_n + 13.2$$

$$\sigma_n^2 = 1.275\sigma_n - 13.2 = 0$$

$$\sigma_n = \frac{-(-1.275) \pm \sqrt{(1.275)^2 - 4(1)(-13.2)}}{2(1)}$$

$$\sigma_n = \frac{1.275 \pm \sqrt{1.626 + 52.8}}{2}$$

$$= 4.326$$

$$\therefore L_s = 2(2.55)\ (4.326) + 48$$

$$= 22.06 + 48 = 70.06$$

$$\therefore r_n = \frac{70}{2} - \frac{480}{20} = 11$$

$$\therefore \frac{11 \text{ cpm}}{.026 \frac{\text{cpm}}{\text{dpm}}} = 423 \text{ dpm}$$

$$\frac{423 \text{ dpm}}{2.22 \frac{\text{dpm}}{\text{pci}}} = 190 \text{ pci}$$

190 pci = limit of sensitivity or smallest amount in thyroid detectable at 99% confidence level.

13. Facilities and Equipment

All laboratories using RAM are typical life sciences laboratories containing fume hoods, sinks, refrigerator/freezers, centrifuges, incubators, lab benches, etc. (see drawings attached). At any one time any or all of these laboratories may use or store 1 mci or more of RAM, depending on their authorization/activity status. All lab hoods used for volatile RAM experiments are at least 100 lfm and calculations are made prior to authorization for compliance with applicable NRC release limits.

Carrier-free iodinations using I^{125} are done only in one lab, 41 Goessman (see drawing). The hood in this lab is completely separate from allother hoods. Within the hood is a dual chamber lucite glove box (see drawing). The primary chamber is fitted with a recirculating charcoal filter used to remove I^{125} gas released during the iodination procedure. The hood duct above is fitted with a secondary charcoal filter used to capture any I^{125} gas released inadvertantly during transfer or waste disposal procedures. The use of this facility is scheduled and controlled by the Environmental Health and Safety Office (see 14.33 of manual). Isokinetic air sampling of the hood exhaust is done using charcoal filters during each iodination. All releases thus far have been far below the Appendix B, Table II, Column 1, limit of 8×10^{-11} uCi/ml.

97863

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...Goessmann.....Room...41.....Type of Facility...iodination lab...

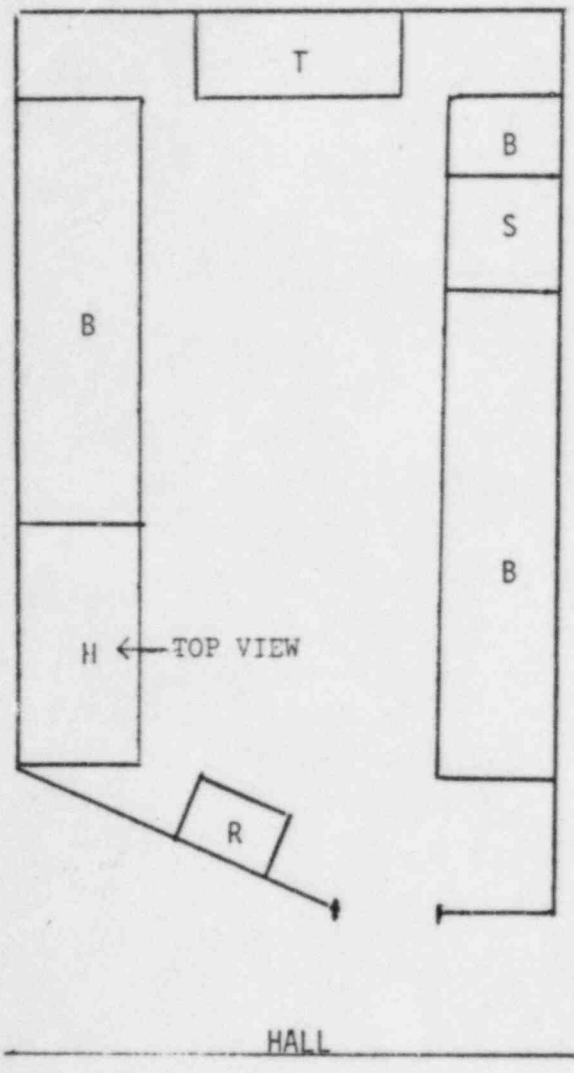
Radiation Sources in Facility.....

Persons Working in Facility.....

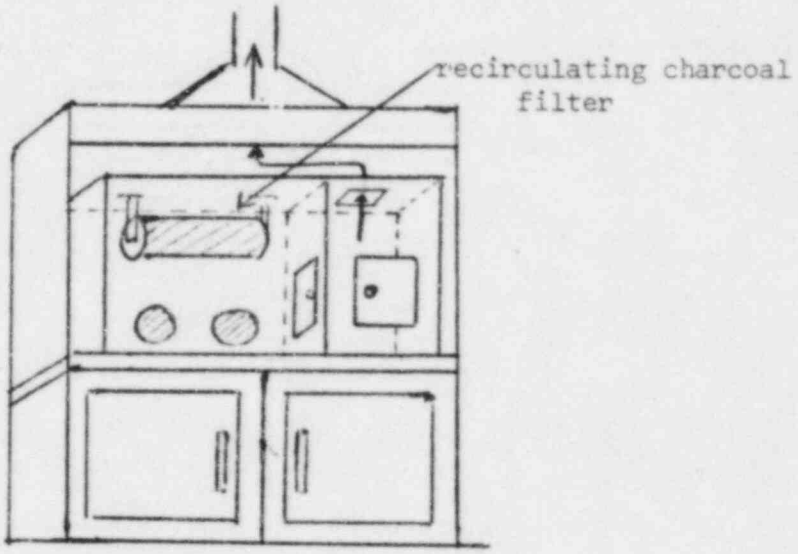
Surveyor.....Date.....

SURVEY DATA

Location



Findings



FRONT VIEW

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

14. Radiation Protection Program

The radiation protection program at UMass is an extremely active and service oriented program. Our aim is to aid the researchers involved in the use of byproduct material while assuring minimum exposure and regulatory compliance. This is mainly accomplished by frequent contact with the user during RAM package deliveries, laboratory surveys, individual procedure consultation, and waste pick-up.

To further assure the NRC of our byproduct material control/accountability (see page 6.1 in manual), virtually no material reaches the user unless it physically goes through the EH&S office. This includes all exempt quantity shipments which are shipped unlabeled via the U.S. Postal Service. This was accomplished through the centralized procedure on receiving, shipping, and mail handling on the UMass Amherst Campus.

The EH&S Office occupies a strong position on Campus. Coupled with the Radioisotope Use Committee, the EH&S Office has been able to gain strong management support, including funding, through the office of the Dean of the Graduate School (the graduate programs are essentially the sole users of byproduct material). The Dean of the Graduate School is in a direct line to the Provost, who reports to the Chancellor. Our present Radiation Protection staff includes, Radiation Protection Officer, Associate Health Physicist, full time Clerk-Typist, 3 full time Senior Technical Assistants, part of whose duties are radioactive package receipt and delivery, and radioactive waste pick-up. Workstudy students are also employed to aid the Health Physics program in routine procedures.

In conclusion, the Radioisotope Use Committee feels that this renewal application and Part-I Radionuclide Policy and Program of our Radiation Safety Manual amply supports our position of being able to meet all Commission rules and regulations.

"OFFICIAL RECORD COPY"

15. Waste Disposal

All byproduct material waste is disposed of via Radiac Research, Inc., Brooklyn, N.Y. The EH&S Division has 3 technicians, properly trained in the handling and accountability of Rad waste. A van is employed one day a week for hazardous waste pick-up. All Rad waste is placed in a 55 gal. barrel (stationed permanently in some lab areas or brought to the lab requesting pick-up) thereby providing secondary containment during the pick-up procedure. Technicians wear protective clothing and follow rigorous procedures (see attached).

The only other waste disposal method is via sanitary sewer. An authorized user Activity Report is compiled quarterly according to the following protocol:

1. total activity for each isotope, received by the individual user, was compiled from Radioisotope Satus Report Form (Receipts)
2. total activity for each isotope, disposed of by individual user through the EH&S Office, was compiled from Radioisotope Status Report Form (Disposals)
3. the entries in the disposal column were subtracted from the entries in the receipt column to arrive at figures in "mpads" column - activity still in posession of User, or maximum possible activity disposed of down lab sink by each user
4. all activity listed in the "mpads" column was then added to arrive at the maximum possible activity disposed of in sinks at the University.

NOTE: Researchers do not take decay of short lived isotopes into accountability (e.g. 50 mCi P^{32} comes - one month or more goes by during experimental procedures - 50 mCi is either entered incrementally or in total as disposed), therefore, receipts minus disposals on our records reflect fairly accurate posession plus possible sanitary sewer disposals (mostly via the washing of laboratory vessels). Our records show that these reports are always under 1 curie total (see attached example) on an annual basis. Current use over the past years indicates a stable annual purchase of 2.0 - 2.5 Ci of RAM.

15. Waste Disposal (cont)

The Radioisotope Use Committee discourages sanitary sewer disposal of all liquids except the washing of laboratory glassware and large volumes of aqueous low specific activity material (e.g. 2 liters of aqueous solution containing 10 uci of H^3 labelled organic coumpound). However, most all experimental protocols utilize very small volumes of RAM (e.g. 10 to 100 ul) and are disposed of by dumping into disposable vessels containing "Kitty liter" for solidification.

The amount of water released via sanitary sewer from the University is monitored separately and continuously at the Amherst Sewage Treatment Plant. The average daily release by the University is well over one million gallons (or 3.846×10^9 ml/day). It is clear that this is an extremely large dilution factor (e.g. H^3 soluable, 10 CFR 20, appendix B, Table II, Column 2= 3×10^{-3} uCi/ml water or 1.154×10^7 uCi/day release on concentration basis only). Our inventory records (described above) continually show on both user/isotope basis that no applicable release concentration has been exceeded on an annual basis.

PROCEDURE FOR WASTE DISPOSAL & PICKUP

1. When EH&S accepts a request for a hazardous waste pickup, the EH&S Hazardous Waste Disposal Sheet or RAD Waste Log Sheet will be completed by the individual accepting the request, and the sheet will be placed on the Hazardous Waste Clipboard in room 407. The deadline for accepting requests for each week's pickup is 5PM on the Wednesday preceding the pickup. It is important to fill out the Waste Disposal Sheet as fully as possible, with information on the type, amount, and hazard of the waste chemicals.

2. A vehicle will be assigned by the Fire Safety Officer, and be ready for use on Thursday, no later than the Wednesday preceding. Van 90 is the first choice and is permanently assigned for this purpose. An alternate pickup vehicle will be assigned if necessary by the Fire Safety Officer.

3. Two technicians, or one technician and a work study student will be assigned for this routine procedure by the Fire Safety Officer no later than the Wednesday preceding the Thursday of the same week. In the event of unavailability of the above personnel, other arrangements will be made by the Radiation Protection Officer when prior notice of unavailability is received, no later than the Wednesday preceding the Thursday of the week in question.

4. The technician(s) who will be conducting the week's waste pickup should review the Hazardous Waste Clipboard when planning ahead. The purpose of the review is to determine special hazards, appropriate protective equipment, and the amount of time necessary for the pickup.

   With regard to the hazards of waste chemicals, it is important to know these in advance. When faculty, staff or students call in requests, they do not always know the hazards of their materials. Therefore, consult with the Laboratory Safety Officer (hazardous chemicals), the Radiation Protection Officer (ionizing radiation), and the Campus Safety Officer (pesticides). Also, information may be obtained from NFPA (Hazardous Materials) and Sax (Dangerous Properties of Industrial Materials). This information is to be written directly on the Hazardous Waste Disposal Sheets, for easy reference.

5. A two-way radio will be used throughout the waste pickup procedure for advisory communication needs. The base station will be manned throughout the waste pickup procedure.

6. Waste pickup will proceed at 9 AM on Thursday morning. Bring appropriate protective clothing and equipment in the van, including:
   a. laboratory gloves, made of heavy rubber, for handling acids, corrosives, and solvents
   b. surgical gloves, for handling powders, solids, pesticdes, and radioactive materials (i.e. materials that may contaminate hands but will not cause burns)

6. (cont)
   c. goggles and/or safety glasses, to be worn when entering laboratories where eye protection is required, where there is danger of splashing chemicals, flying particles, or irritating vapors
   d. MSA respirators - a supply of cartridges should be available
      1) GMA (black) for organic vapors
      2) GMB (white) for acid gases
      3) GMP for pesticides
   e. Nalgene pint bottle safety carrier
   f. First Aid Kit (permanently mounted in van)
   g. fire extinguisher (B,C)
   h. J.T. Baker spill kits (acids, bases, flammable liquids, mercury, cyanides, and hydrofluoric acid)
   i. NFPA Hazardous Materials Guide (6th Ed.)
   j. disposable coveralls
   k. kitty litter and plastic bags

7. When actually picking up waste chemicals from a laboratory, the following should be observed:
   a. All bottles should be placed in a cardboard or wooden box, supported in an upright position to prevent them from tipping over
   b. Visually check each bottle for the appropriate cap, cracks, leaks, the label, and appropriate packaging. Pesticides and carcinogens should be sealed inside two plastic bags. Chemicals labeled lachrymator (tear gas) should be placed inside another container with a screw cap - plastic bags are not acceptable
   c Keep incompatible chemicals separate - that is, keep flammable solvents away from oxidizing agents, keep acids away from bases, keep water-sensitive materials (i.e. sodium, lithium, potassium) away from water
   d. Wear respiratory protection if a leak is suspected of a chemical or compressed gas that has a health hazard rating of
      1) 2 or 3 according to Sax
      2) 2, 3 or 4 according to NFPA
   e. Insist that the people properly package the waste materials. If they are resistant, contact the head of the department or the responsible faculty member
   f. Do not pick up chemicals that are not on the list that was phoned in prior to 5 PM on Wednesday. Exceptions may be made if it is determined by the technician(s) that immediate pickup is necessary to prevent a very hazardous situation from developing.

8. No waste will be put into a vehicle unless it has been placed in secondary containment and therefore safe for transportation, e.g. a bottle of chemical waste must be placed into a barrel, cardboard box, or wooden box.

9. The vehicle will be visually and radiologically monitored by the technicians for contamination, i.e. survey with GM meter and swipe test van seats and loading bed (to be given to RPO for analysis).

9. (cont)
Clean vehicle if necessary. A significant GM meter reading should be immediately reported to the RPO. The RPO is responsible for surveying the barrels and the waste depot and labeling the barrels. The technicians will be responsible for securing the barrels.

10. All coveralls utilized in waste pickup procedure will be placed in plastic bags at the Waste Storage Building. The plastic bags will then be taken to EH&S and placed in a barrel. Only clean coveralls from the laundry service will be allowed in the office area. Appropriate gloves will be worn during handling of all hazardous waste materials. These gloves will be stored at the Waste Storage Building.

When a full laundry load of coveralls is ready (17 coveralls), the Radiation Clerk will be informed. She will arrange for pickup and return of the coveralls with the laundry service.

11. All radiological pickup receipts will be given to the Radiation Clerk and all chemical pickup receipts to the technician in charge, for filing, no later than 10 AM on the Friday morning following the Thursday pickup.

12. Anybody speaking with Radiac will inform the Laboratory Safety Officer, the Campus Safety Officer, the Radiation Protection Officer, the General Chemistry Office in Goessman, and the technician responsible for Radiac pickup for that month. Notification of all dates for pickups and any other pertinent information will be in writing to the above people as soon as this information becomes available.

13. Technicians will be responsible for the following:
    a. insuring that Goessman Rm 23 and the Waste Storage Depot is clean before Radiac leaves. Do not sign the bill of lading unless areas have been picked up.
    b. reporting waste quantities to Radiac for arrangement for pickup.
    c. assisting Radiac on its monthly pickup at UMass.

14. Any changes in the above procedure must be discussed with all staff members involved, and a decision reached prior to implementation.

It is important to follow these precautions to protect our own health and safety, and to provide a good example to the faculty, staff, and students on proper handling of hazardous chemicals.

EHS/sw

USER	ISOTOPE	IN	OUT	"mpads"
Black	C-14	.01mci	0	.01mci
	H-3	1.25mci	.01mci	1.24mci
Brandts	H-3	0	.1mci	0
	C-14	.25mci	.05mci	.2mci
	S-35	7mci	.2mci	6.8mci
Canale-Parola	C-14	.05mci	0	.05mci
Cox	C-14	.5mci	0	.5mci
Duby	H-3	0	.11mci	0
Fite	H-3	0	.15mci	0
Fournier	P-32	225mci	185mci	40mci
	H-3	10mci	1mci	9mci
	C-14	.05mci	0	.05mci
Hixson	H-3	10mci	0	10mci
	C-14	10mci	3mci	7mci
Kaulenas	I-125	.001mci	0	.001mci
Mason	H-3	1mci	.65mci	.35mci
	C-14	0	.05mci	0
	S-35	0	25.06mci	0
	P-32	0	1mci	0
Maynard	Ca-45	1mci	0	1mci
Moner	H-3	1mci	0	1mci
	C-14	.25mci	0	.25mci
Mount	H-3	0	.1mci	0
	C-14	0	.25mci	0
	I-125	0	.02mci	0
Noden	H-3	0	.625mci	0
Nordin	Cr-51	0	.4uci	0

USER	ISOTOPE	IN	OUT	"mpads"
Roberts	H-3	5mci	2.5mci	2.5mci
Sastry	In-111	4mci	0	4mci
Schwartz	H-3	6mci	0	6mci
	S-35	0	.05mci	0
Slakey	H-3	1.75mci	.01mci	1.74mci
	C-14	.01mci	.01mci	0
Stern	C-14	1mci	.002mci	.998mci
	P-32	2mci	0	2mci
Wade	H-3	6mci	2.464mci	3.536mci
Walker	H-3	0	.2mci	0
	C-14	0	.3mci	0
Westhead	H-3	0	5.76mci	0
	C-14	.6mci	.05mci	.55mci
	I-125	4mci	16.215mci	0
Wilder	C-14	.1mci	0	.1mci
Woodcock	H-3	4mci	.3mci	3.7mci
	C-14	.05mci	.004mci	.046mci
Zimmermann	P-32	15mci	0	15mci
	H-3	13mci	0	13mci

Total for "mpads" column, or Maximum Possible Activity Disposed of in the Sinks at UMass/Amherst = 130.621 mCi for the 3rd Quarter of 1978.

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building....GRC.....Room....331A.....Type of Facility.....

Radiation Sources in Facility.....

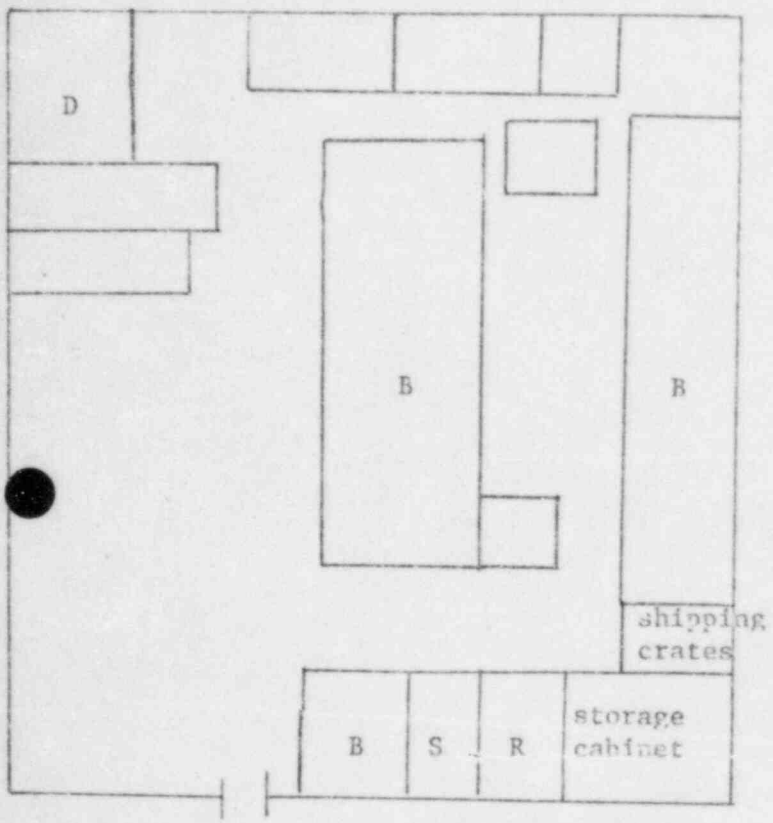
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

97863

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building..GRC.....Room..609.....Type of Facility.....

Radiation Sources in Facility.....

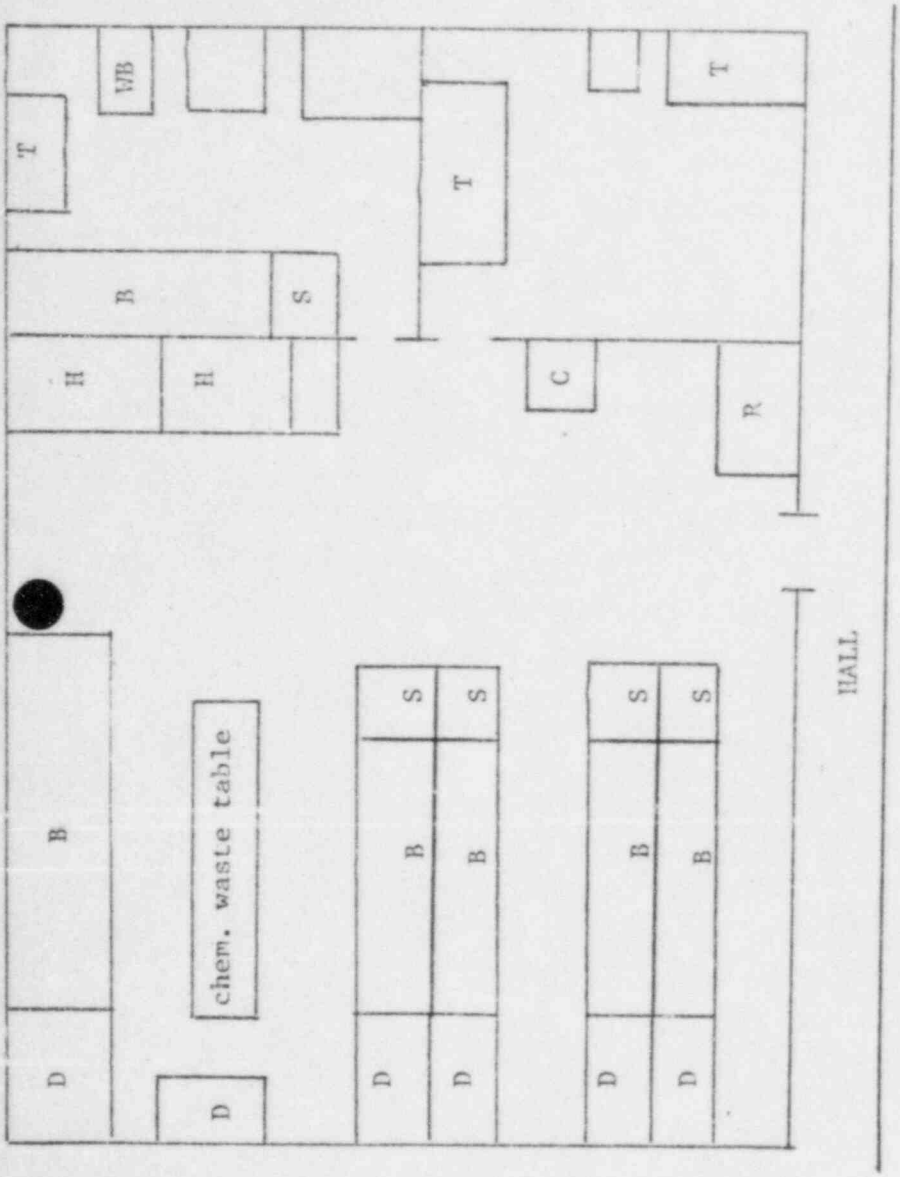
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

ML16

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table; WB=Water Bath

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building....CRT - A.....Room....901.....Type of Facility.....

Radiation Sources in Facility.....

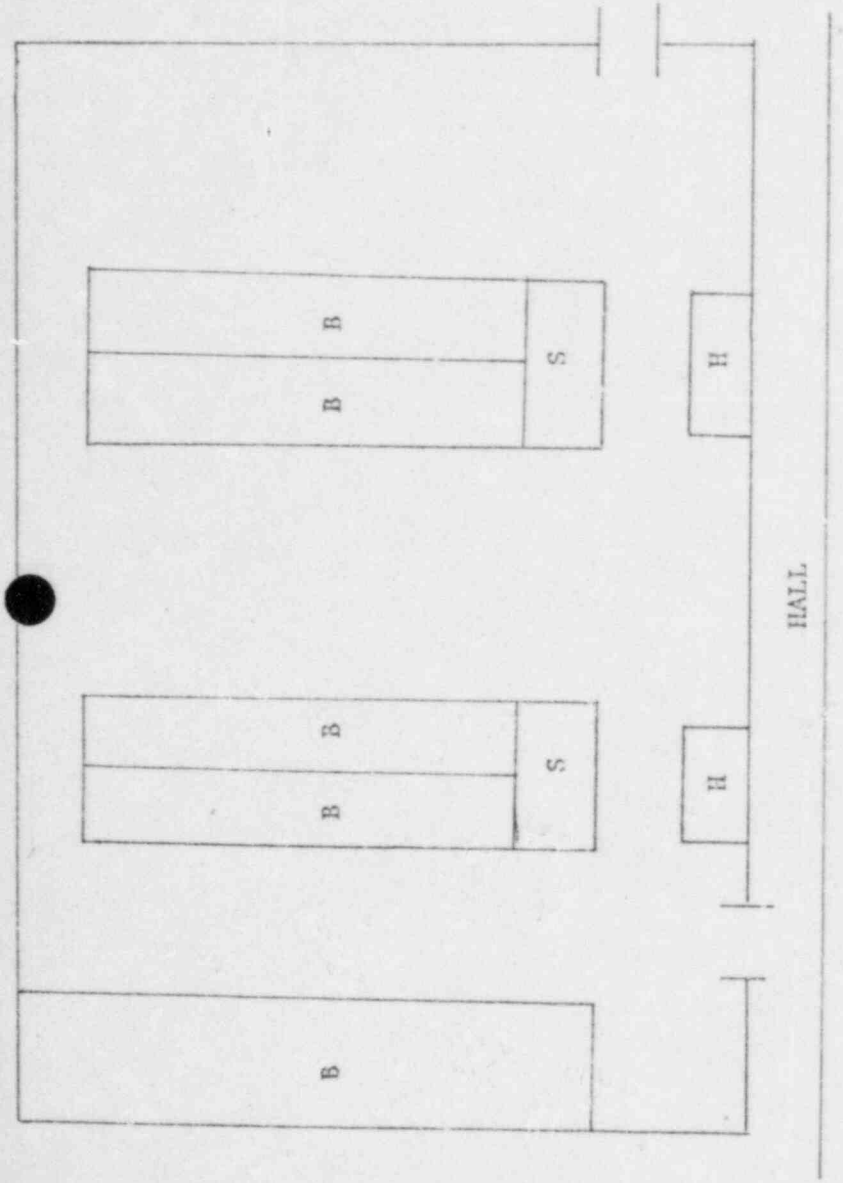
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

"OFFICIAL RECORD COPY"

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...CRT - A.....Room...902.....Type of Facility.....

Radiation Sources in Facility.....

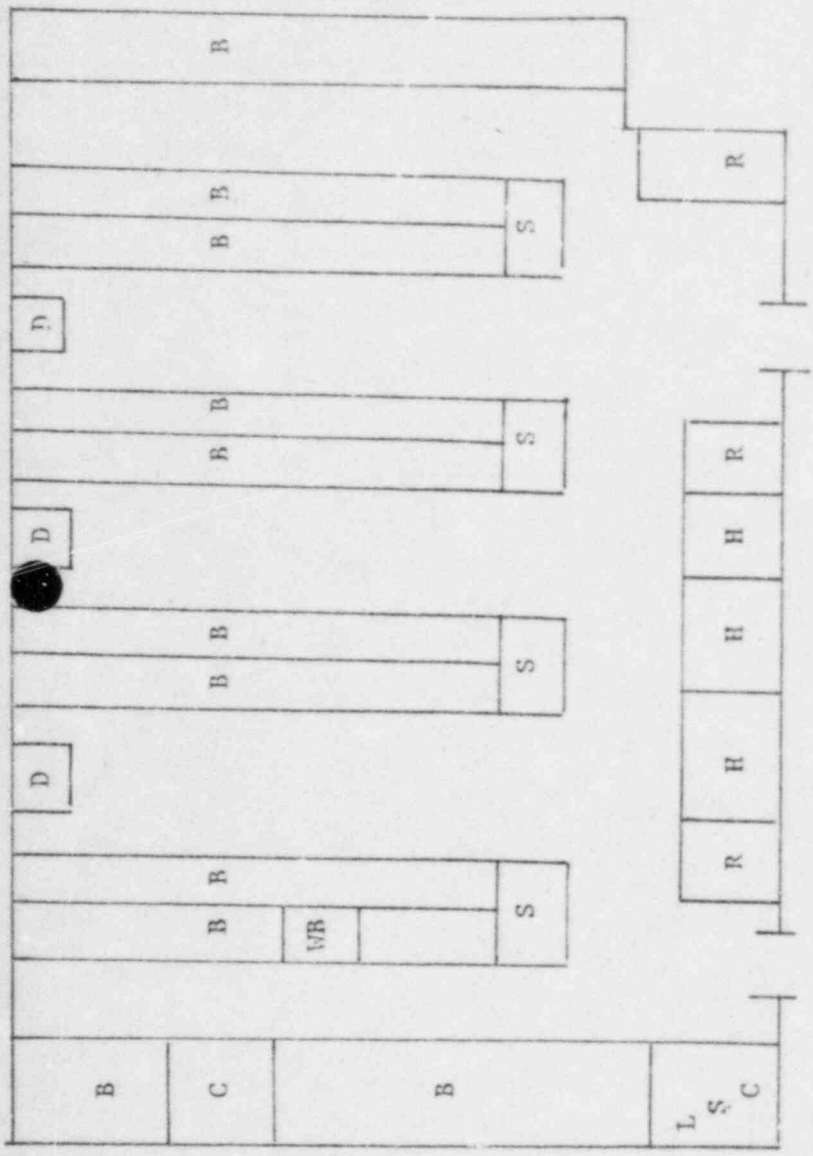
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
WB=Water Bath

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...GRT - A.....Room...903.....Type of Facility.....

Radiation Sources in Facility.....

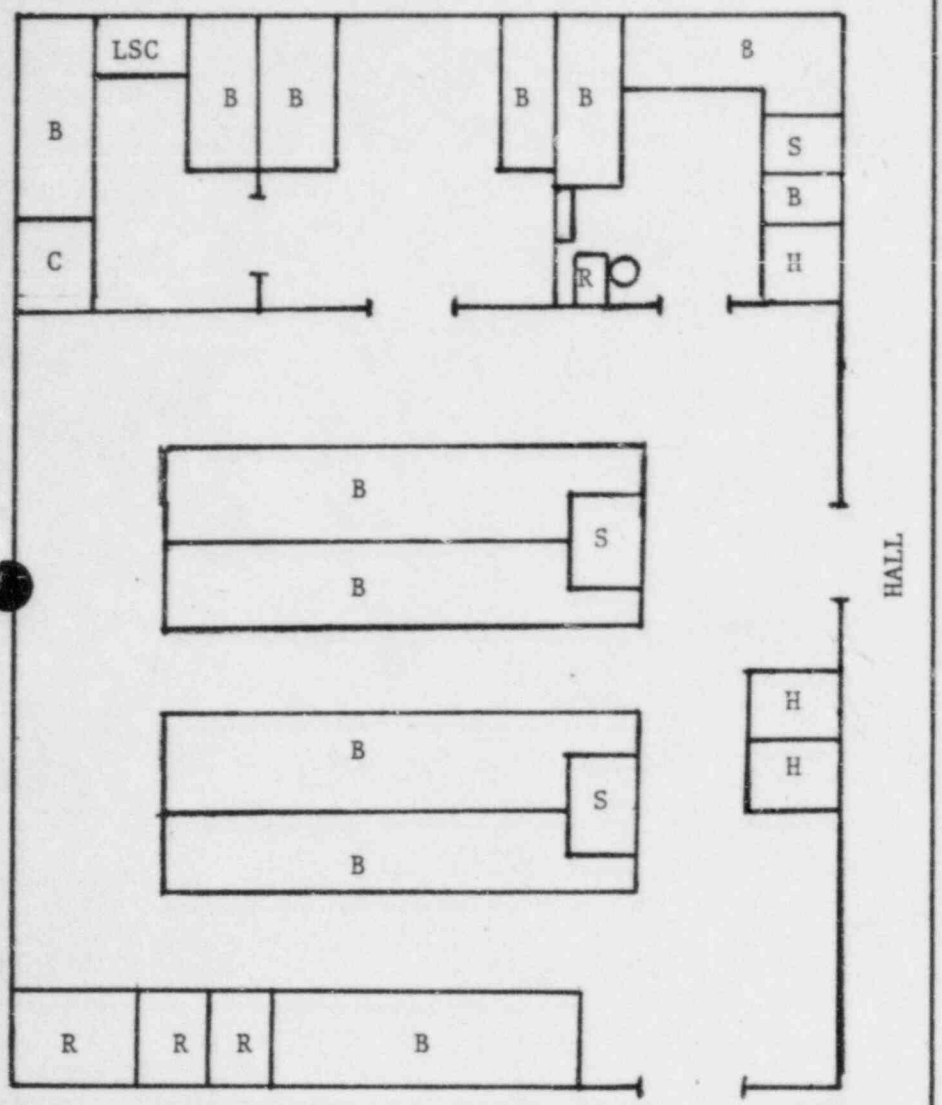
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

F badges being worn.....

ML10

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building..CRT.....Room. 904.....Type of Facility.....

Radiation Sources in Facility.....

Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location Findings

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM"..... ..... General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building....GRT - A.....Room...906.....Type of Facility.....

Radiation Sources in Facility.....

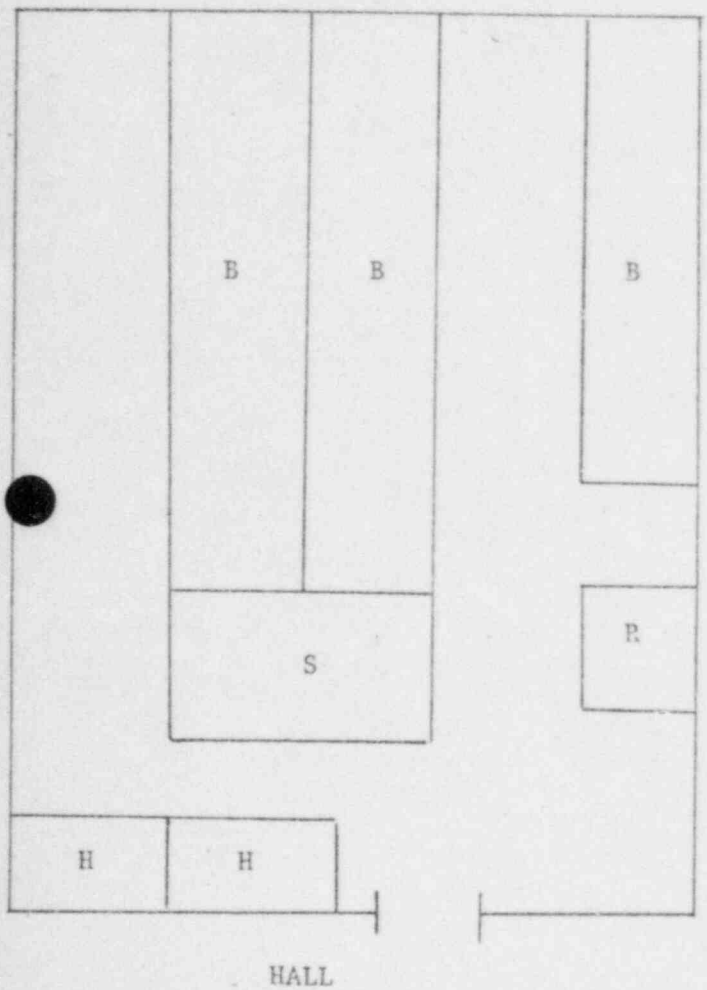
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



"OFFICIAL RECORD COPY"

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

ML18

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

__Initial __ Follow-up Monthly

Person Responsible.....Department.....

Building.....GRT.....Room.....1002.....Type of Facility.....

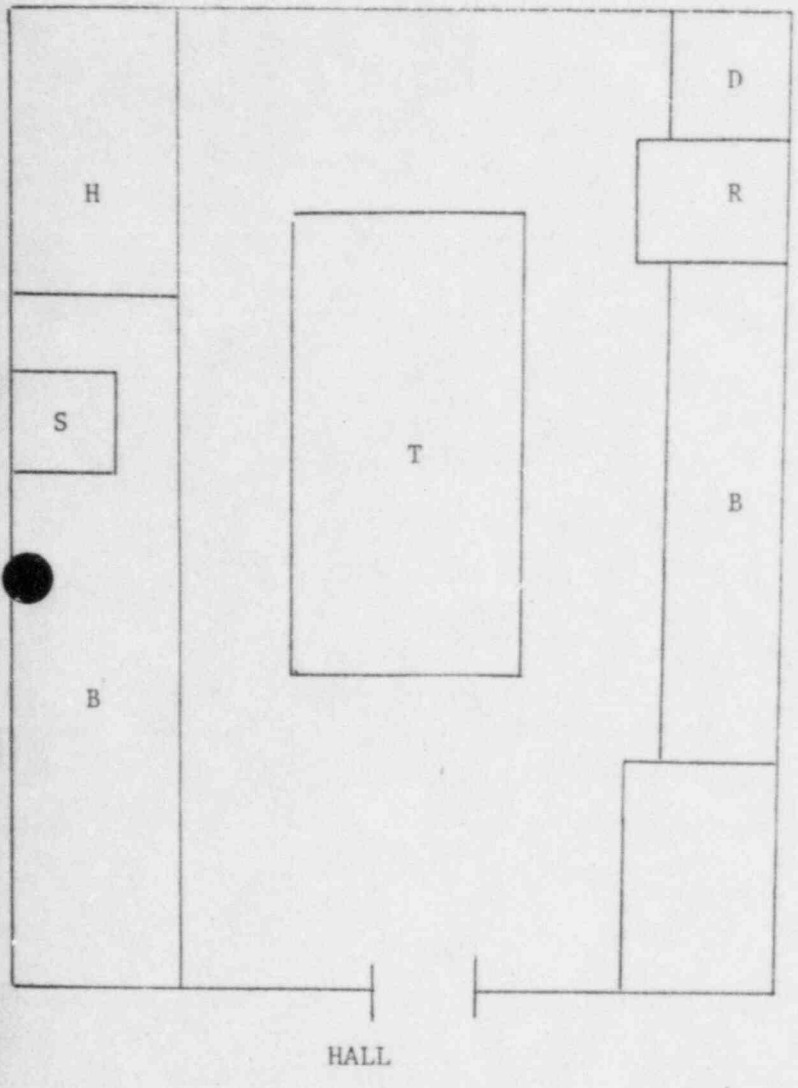
Radiation Sources in Facility.....

Persons Working in Facility.....

Surveyor..... Date.....

SURVEY DATA

Location Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

F badges being worn.....

Code; R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building..CRT.....Room..1003.....Type of Facility.....

Radiation Sources in Facility.....

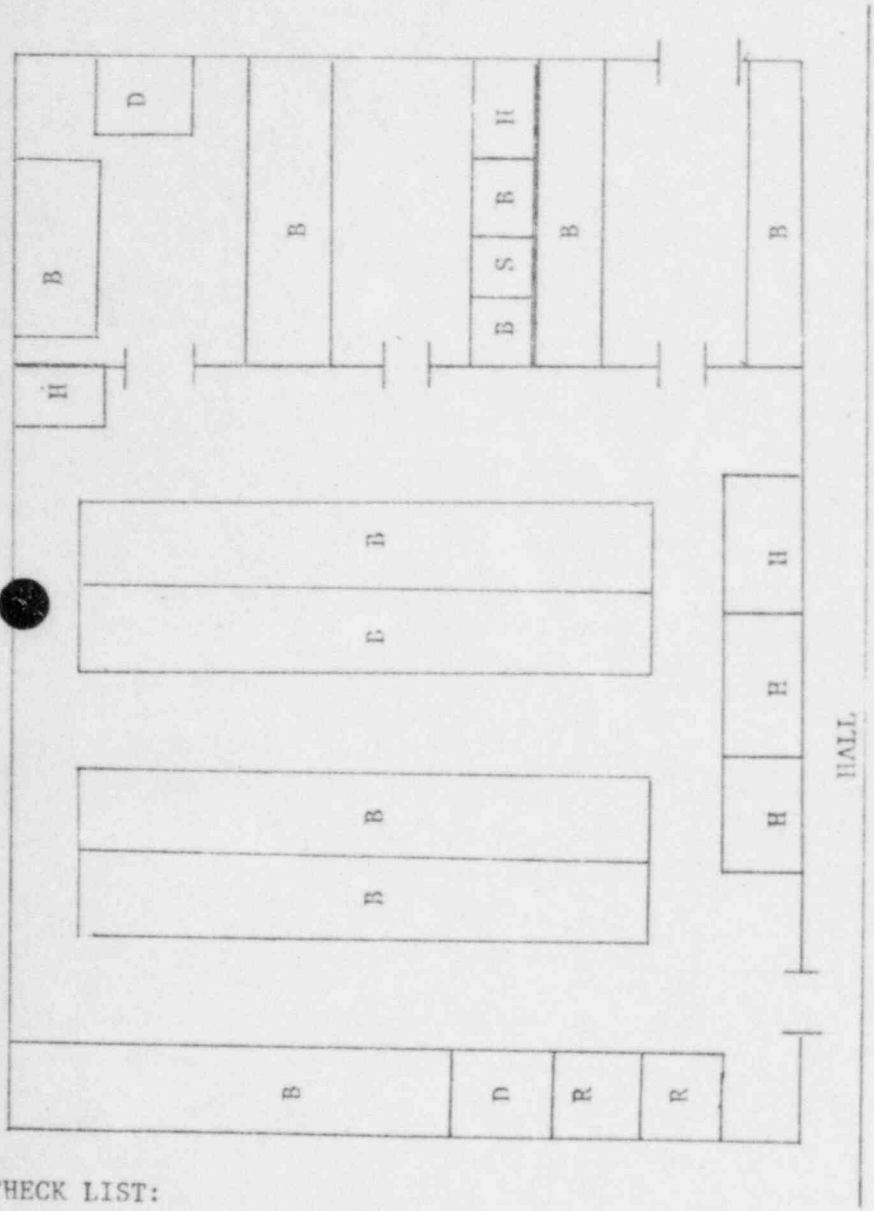
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

F badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

__Initial __ Follow-up __Monthly

Person Responsible.....Department.....

Building....GRT.....Room....1004.....Type of Facility.....

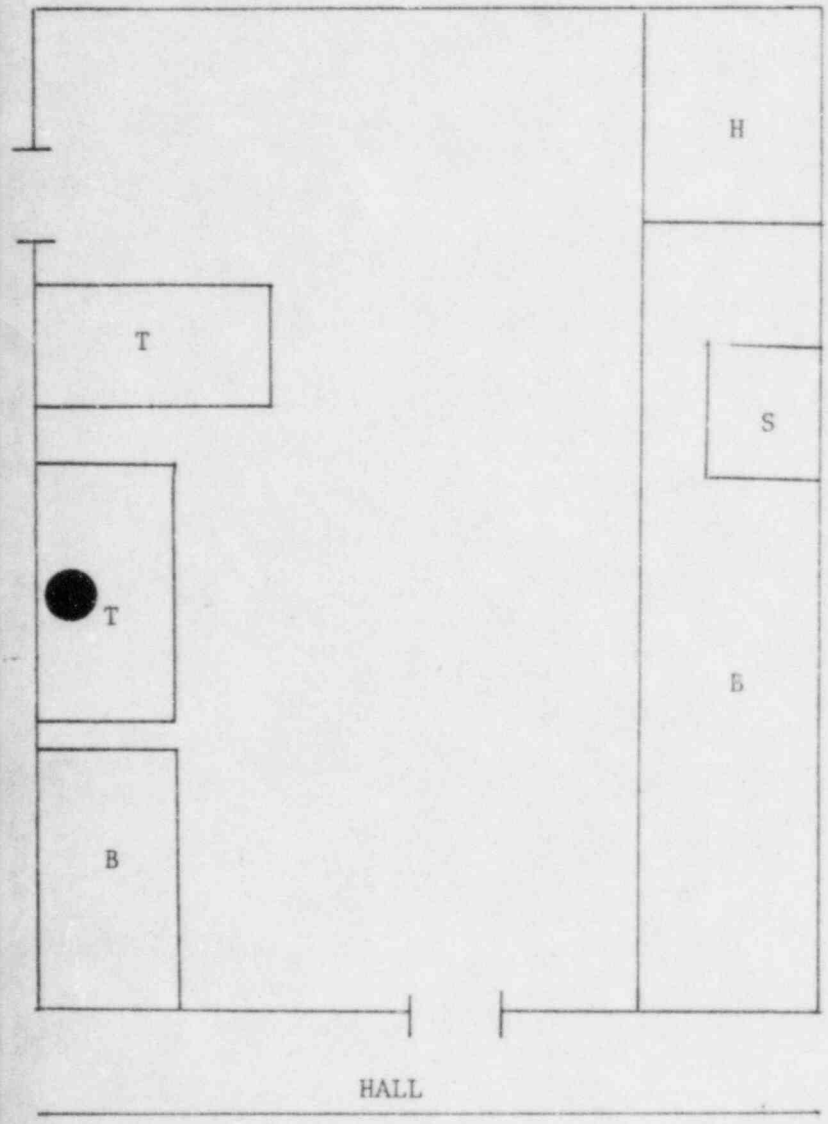
Radiatica Sources in Facility.....

Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location Findings



ML18

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

F badges being worn.....

97863

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building GRT.....Room 1006.....Type of Facility.....

Radiation Sources in Facility.....

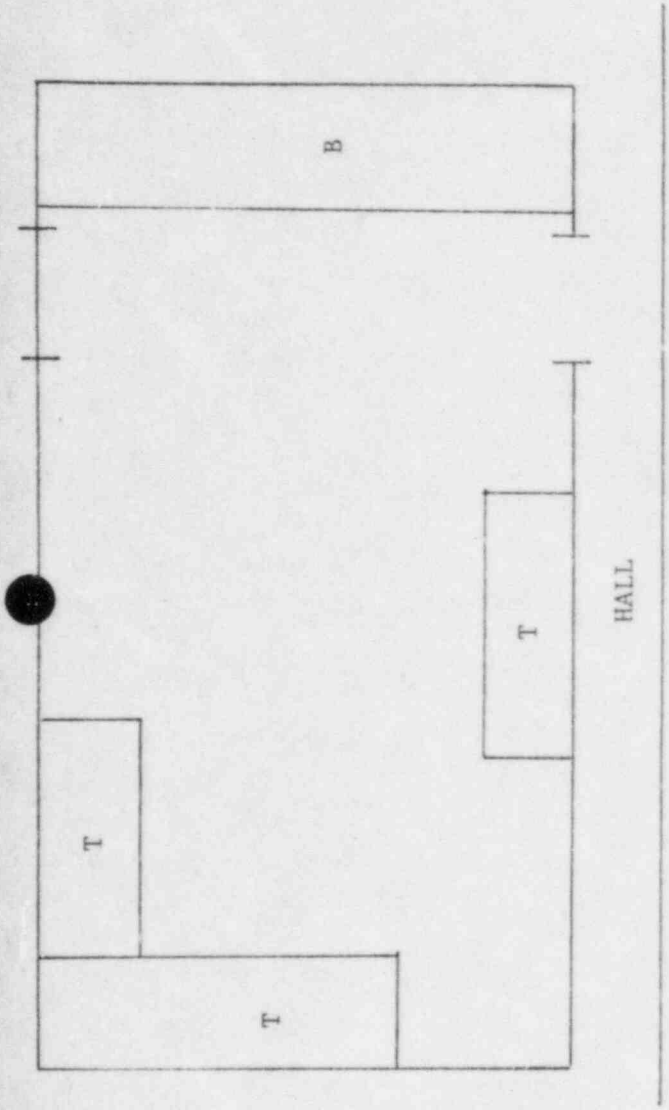
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

F badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building..GRT - A.....Room..1009.....Type of Facility.....

Radiation Sources in Facility.....

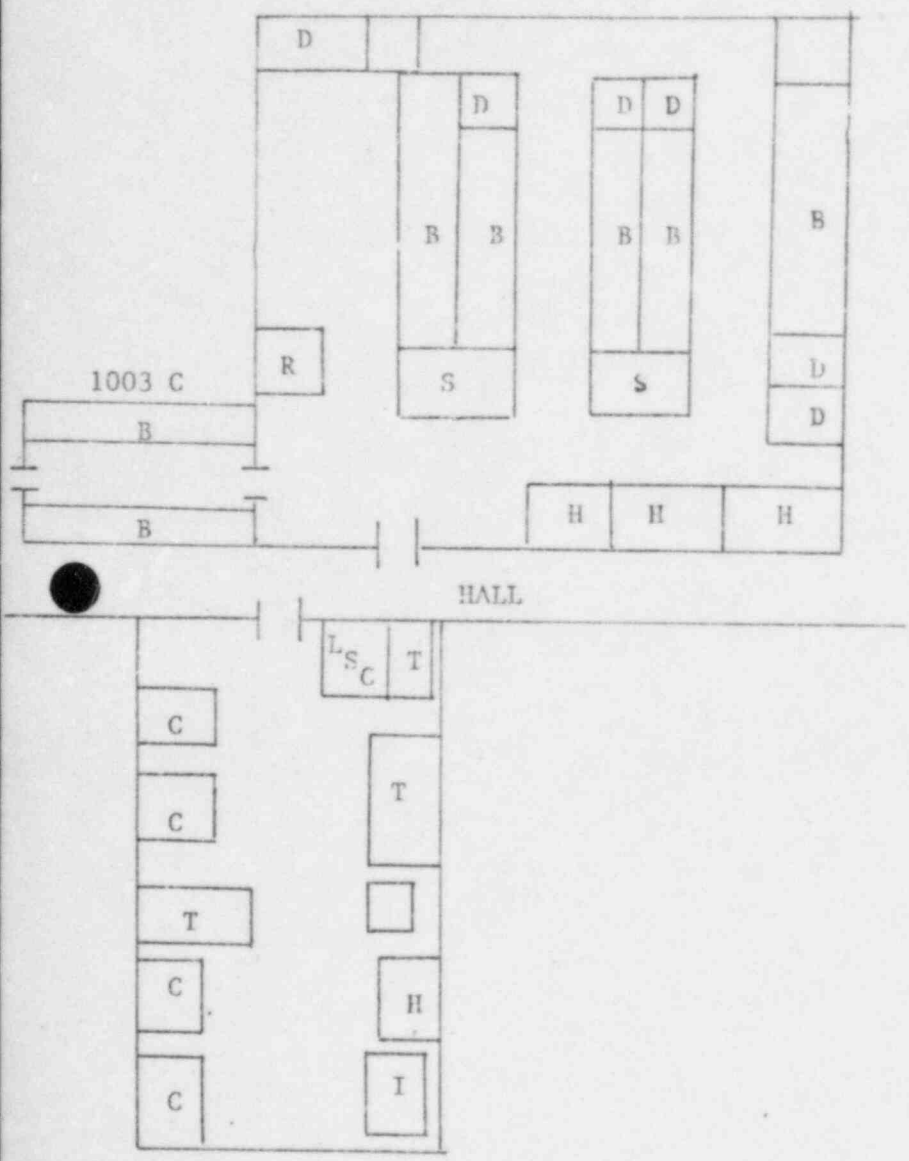
Persons Working in Facility.....

Surveyor.....Date..... .....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...GRT - A.....Room..1104.....Type of Facility.....

Radiation Sources in Facility.....

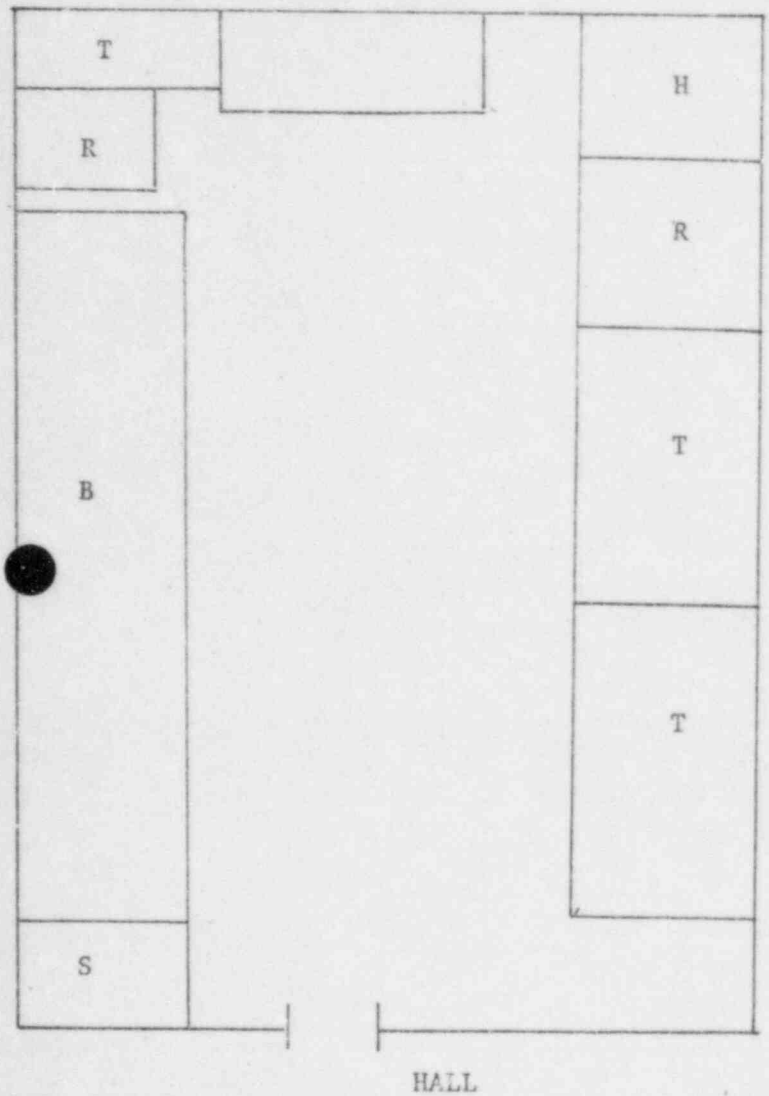
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



"OFFICIAL RECORD COPY"

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

ML18

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building.....CRC.....Room...1106.....Type of Facility.....

Radiation Sources in Facility.....

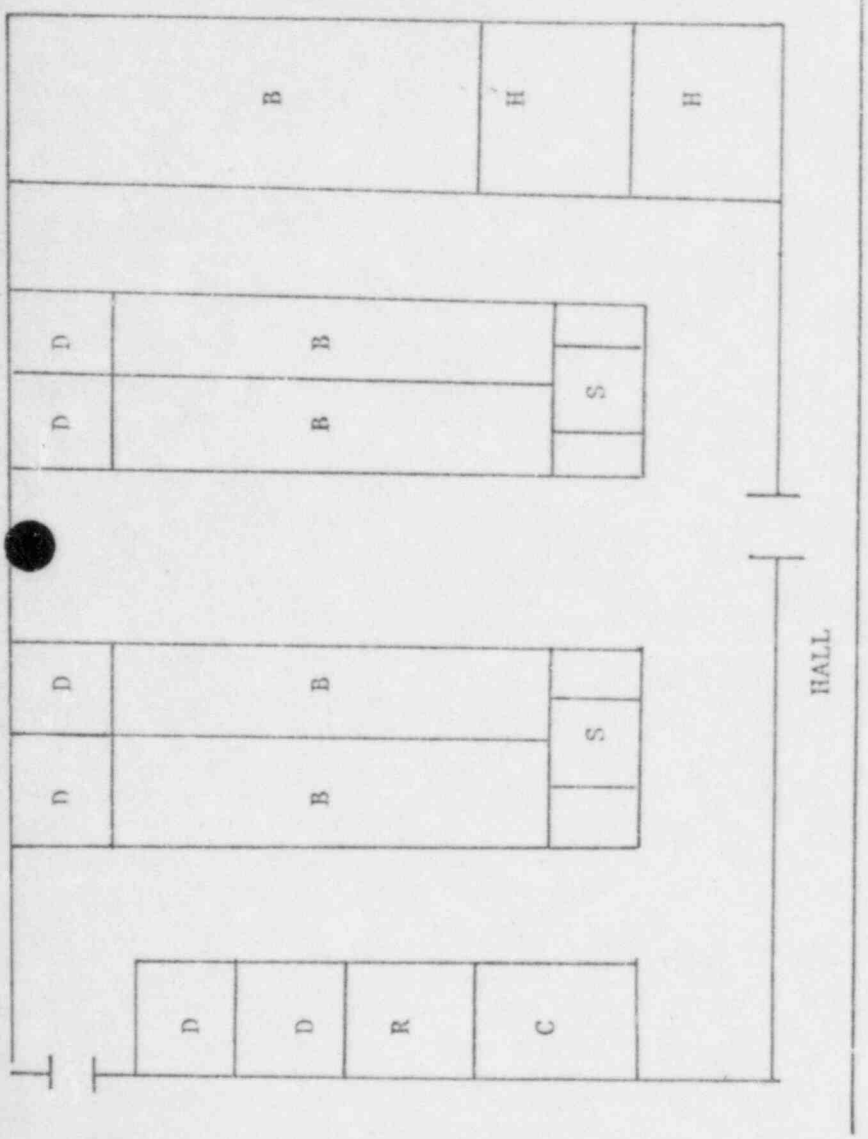
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...CRC.....Room..1201/1203.....Type of Facility.....

Radiation Sources in Facility.....

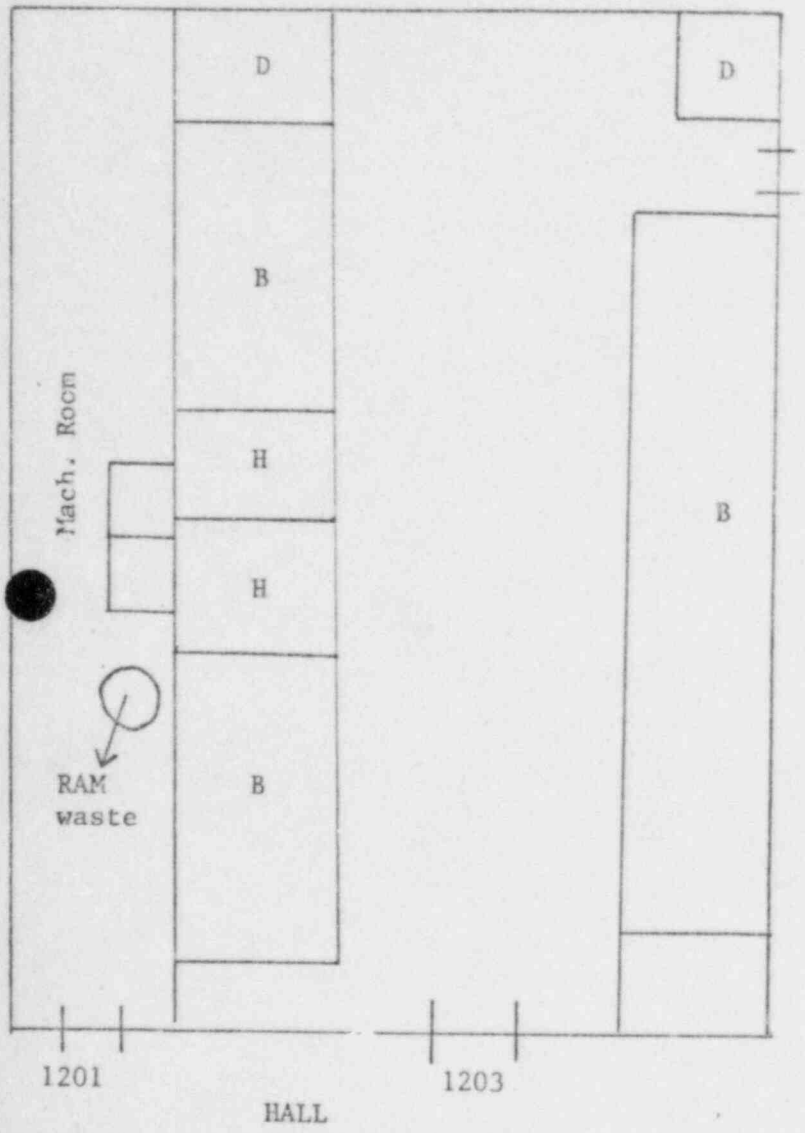
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...CRT - A.....Room...1203.....Type of Facility.....

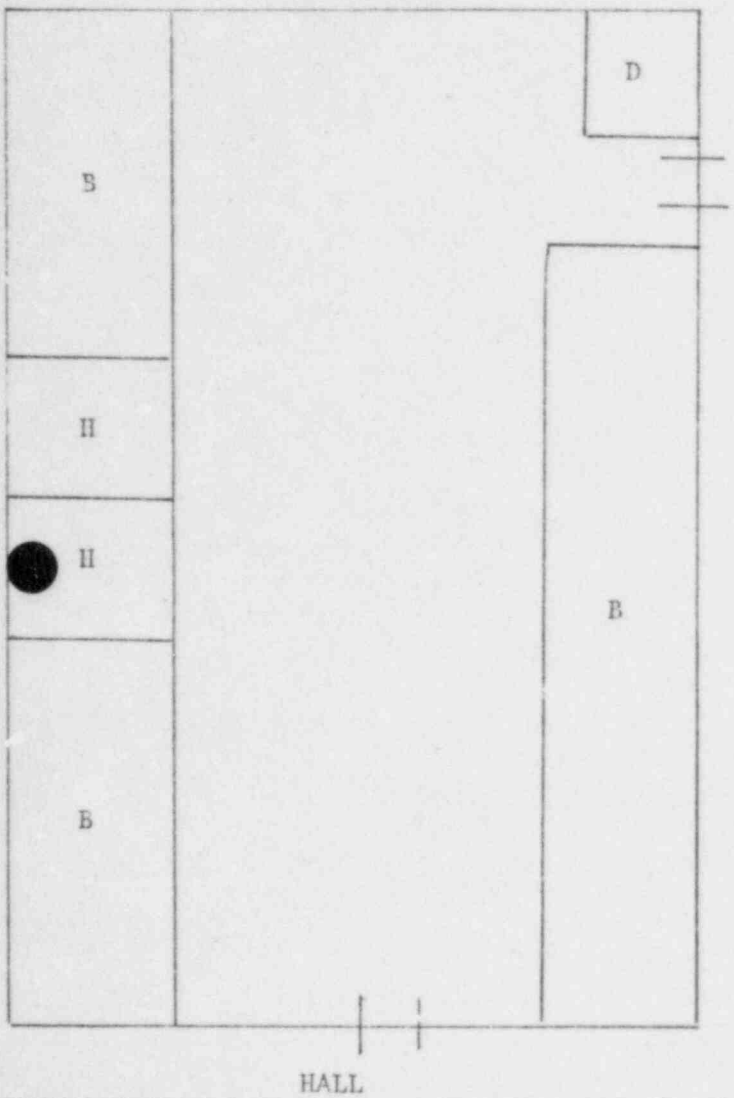
Radiation Sources in Facility.....

Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location Findings



"OFFICIAL RECORD COPY"

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...GRT - A.....Room...1204.....Type of Facility.....

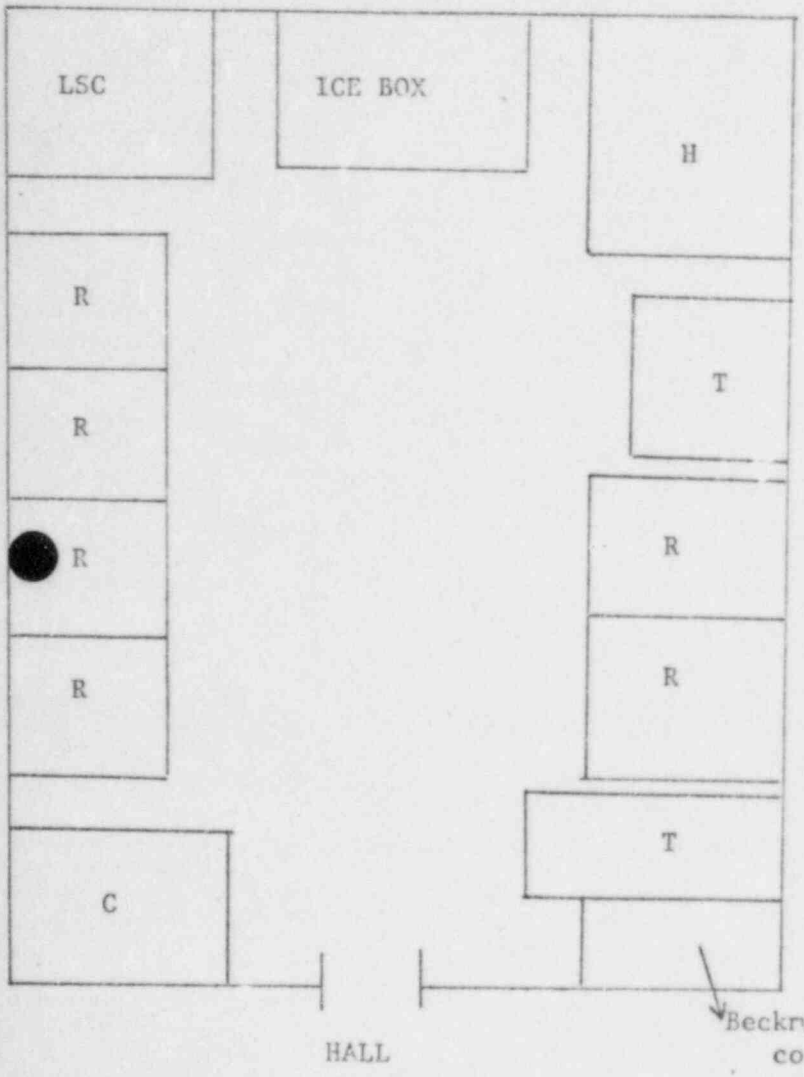
Radiation Sources in Facility.....

Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building....CEC.....Room..1205.....Type of Facility.....

Radiation Sources in Facility.....

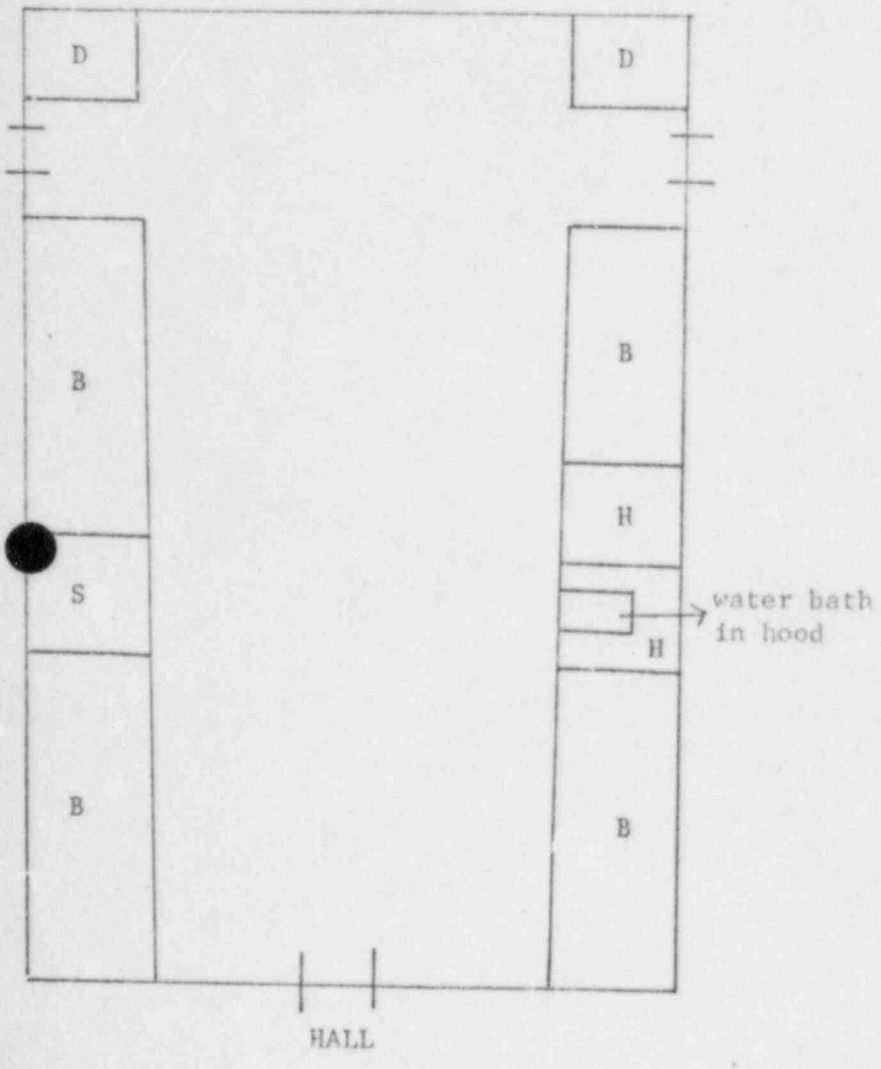
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



ML10

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building CPT - A.....Room 1207.....Type of Facility.....

Radiation Sources in Facility.....

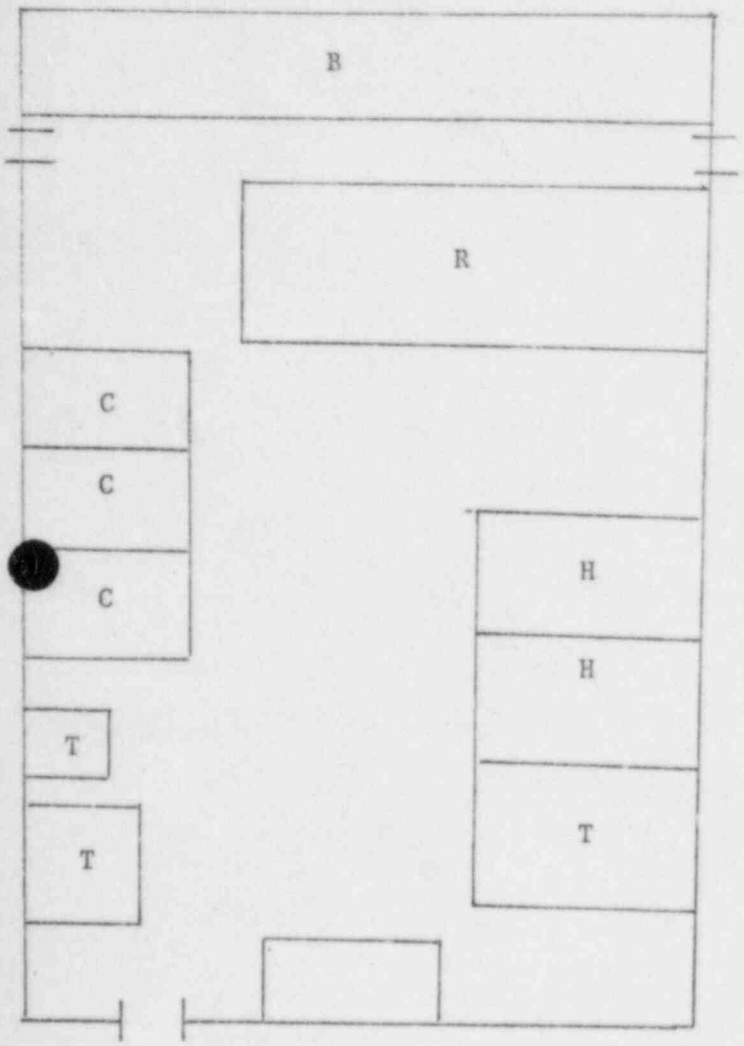
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building....GRT - A.....Room..1208.....Type of Facility.....

Radiation Sources in Facility.....

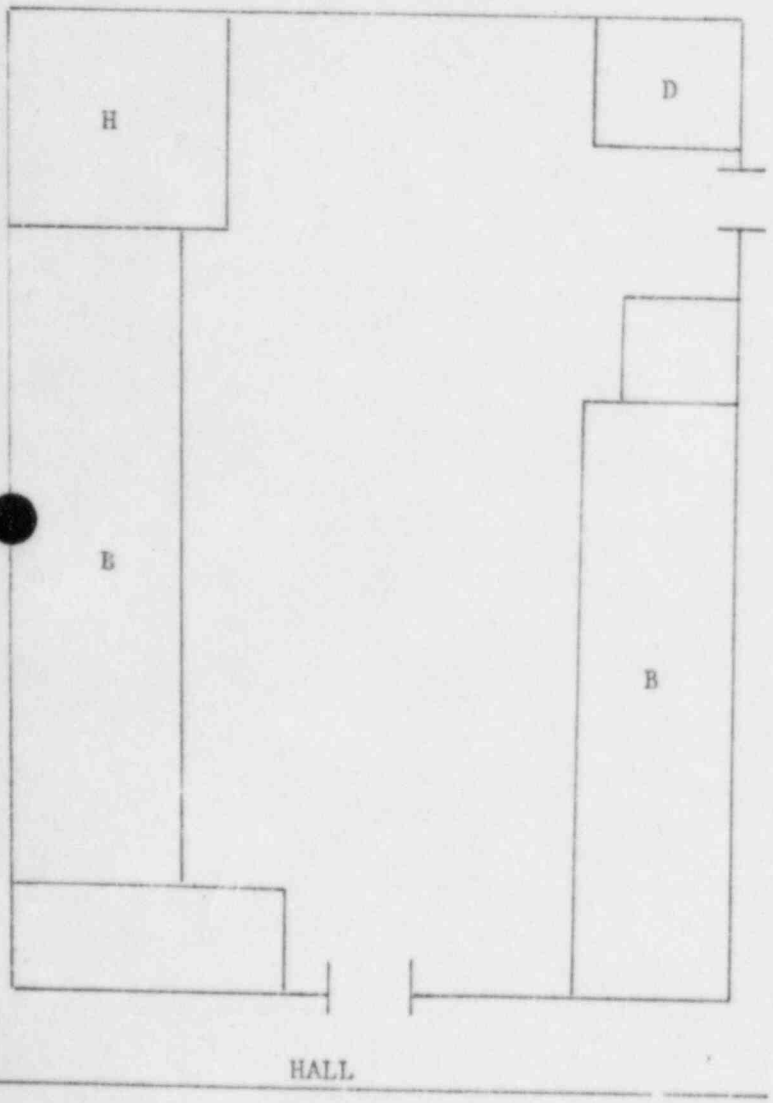
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM"..... General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...GRC.....Room...1209.....Type of Facility.....

Radiation Sources in Facility.....

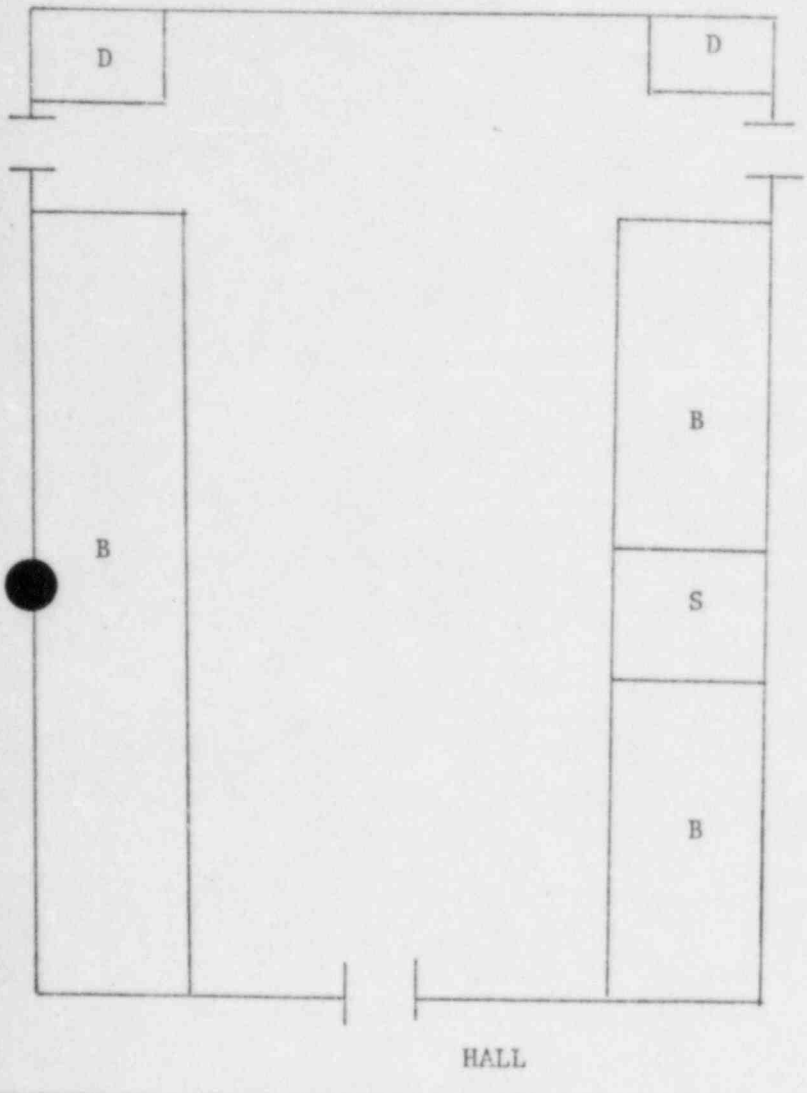
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building.....GRT - A.....Room.....1210.....Type of Facility.....

Radiation Sources in Facility.....

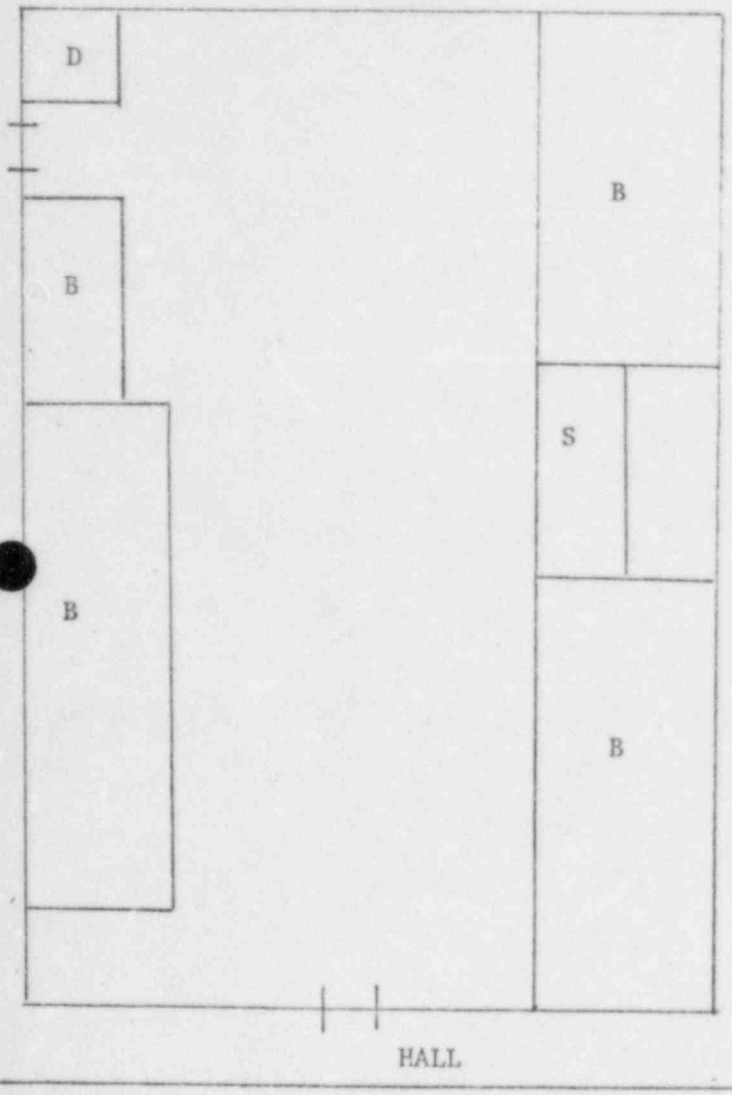
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



ML18

"OFFICIAL RECORD COPY"

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...GBT-A.....Room...1211.....Type of Facility.....

Radiation Sources in Facility.....

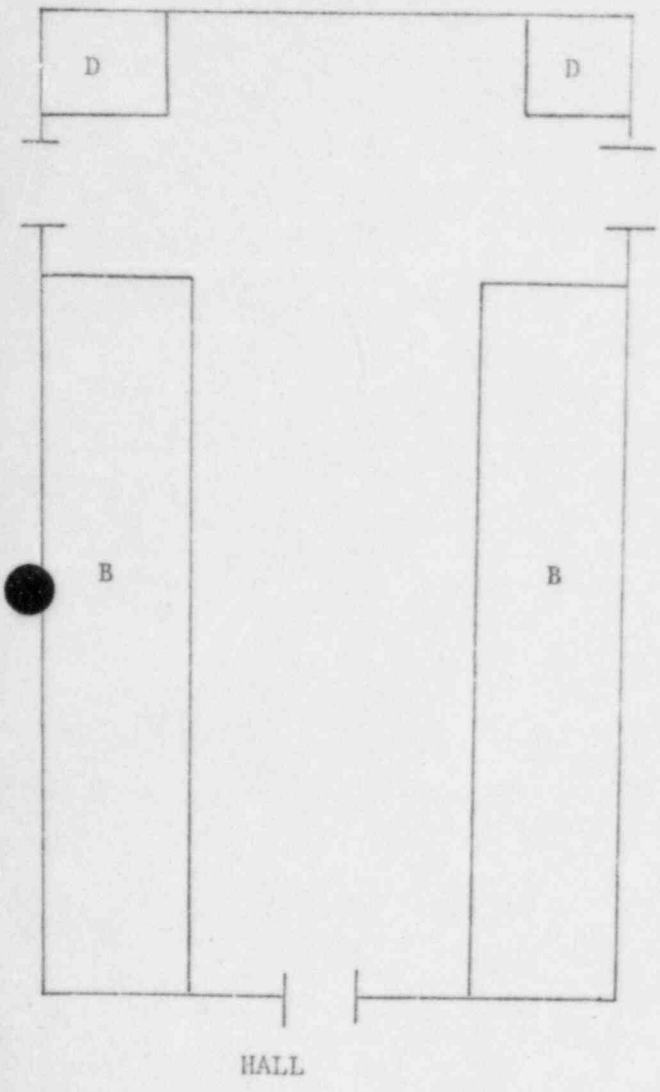
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM"..... ..... General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building.....CRT - A.....Room...1213.....Type of Facility.....

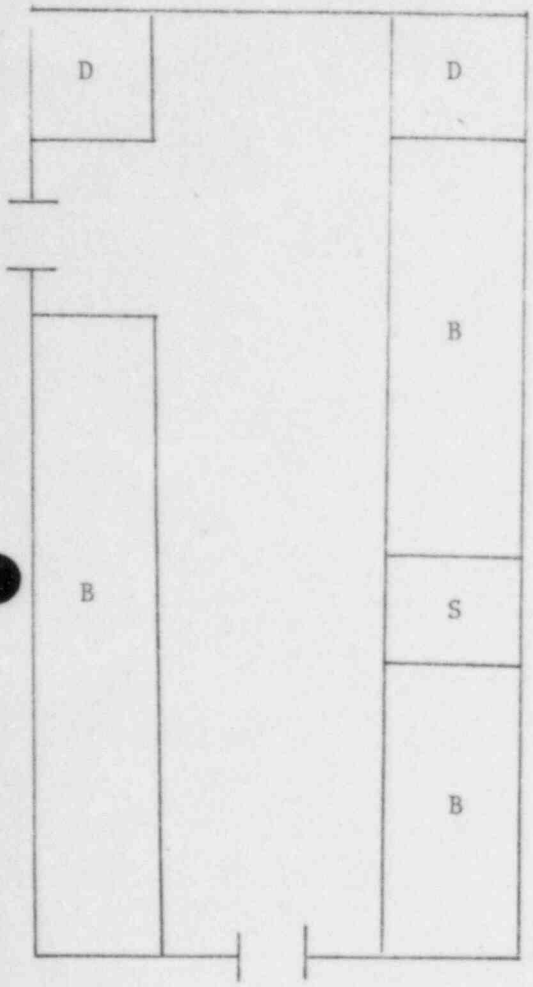
Radiation Sources in Facility.....

Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location



Findings

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building..CRT - A.....Room...1214.....Type of Facility..Freezer Room.....

Radiation Sources in Facility.....

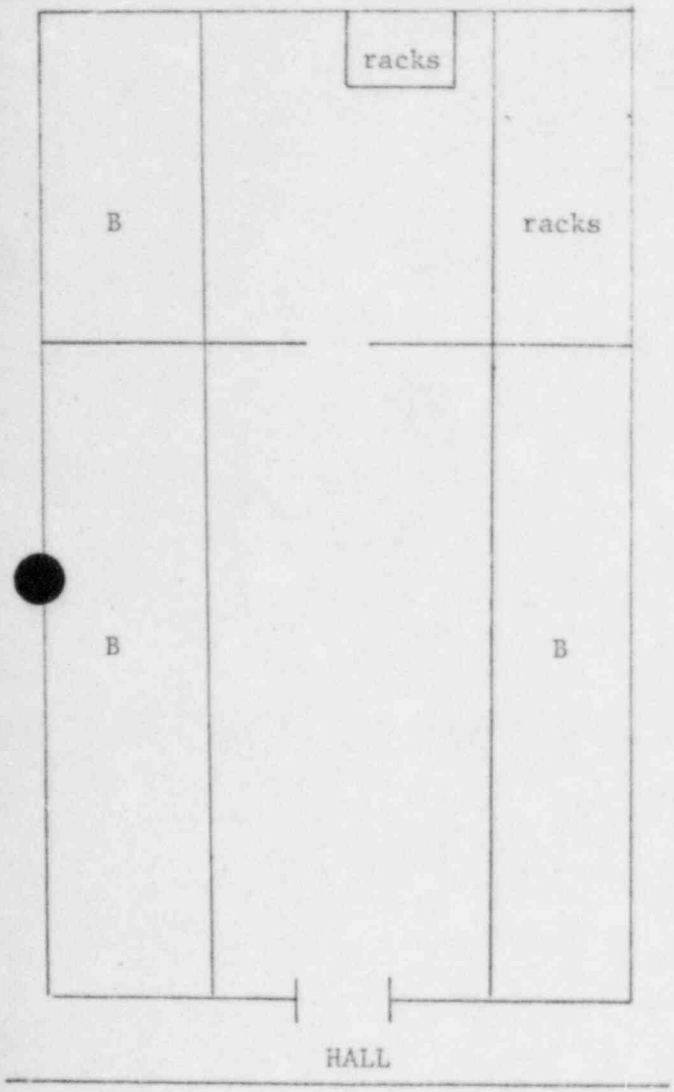
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building....GRC.....Room....1404.....Type of Facility.....

Radiation Sources in Facility.....

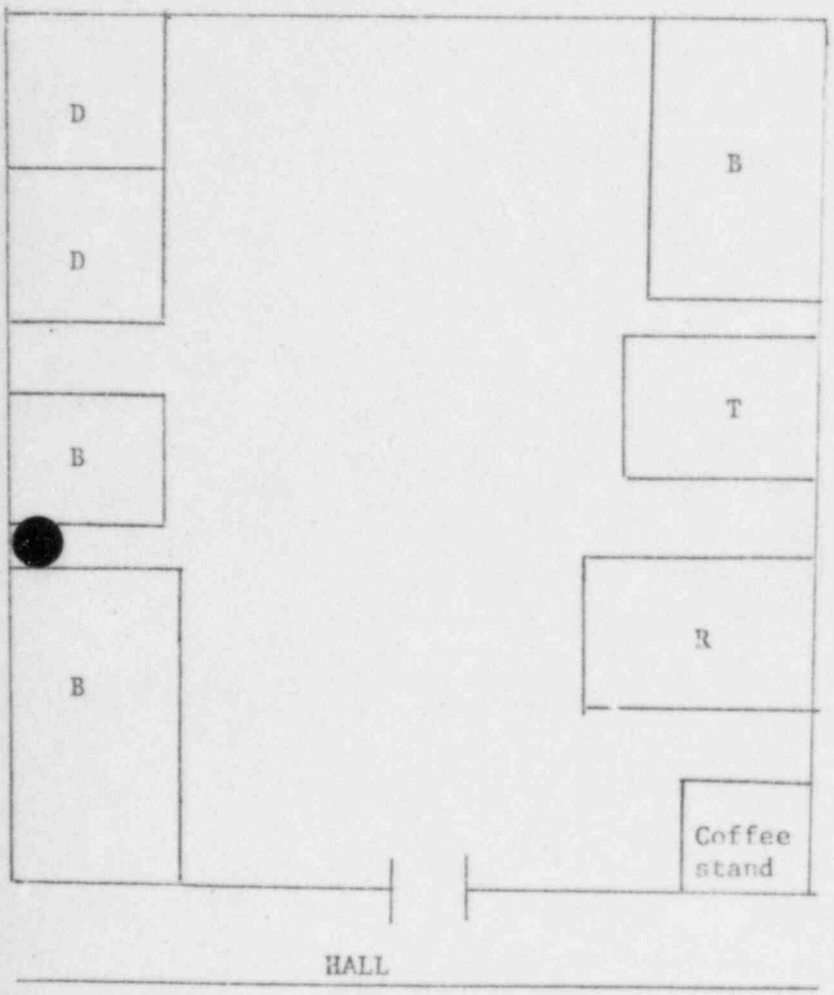
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



"OFFICIAL RECORD COPY"

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...GRC.....Room...1405.....Type of Facility.....

Radiation Sources in Facility.....

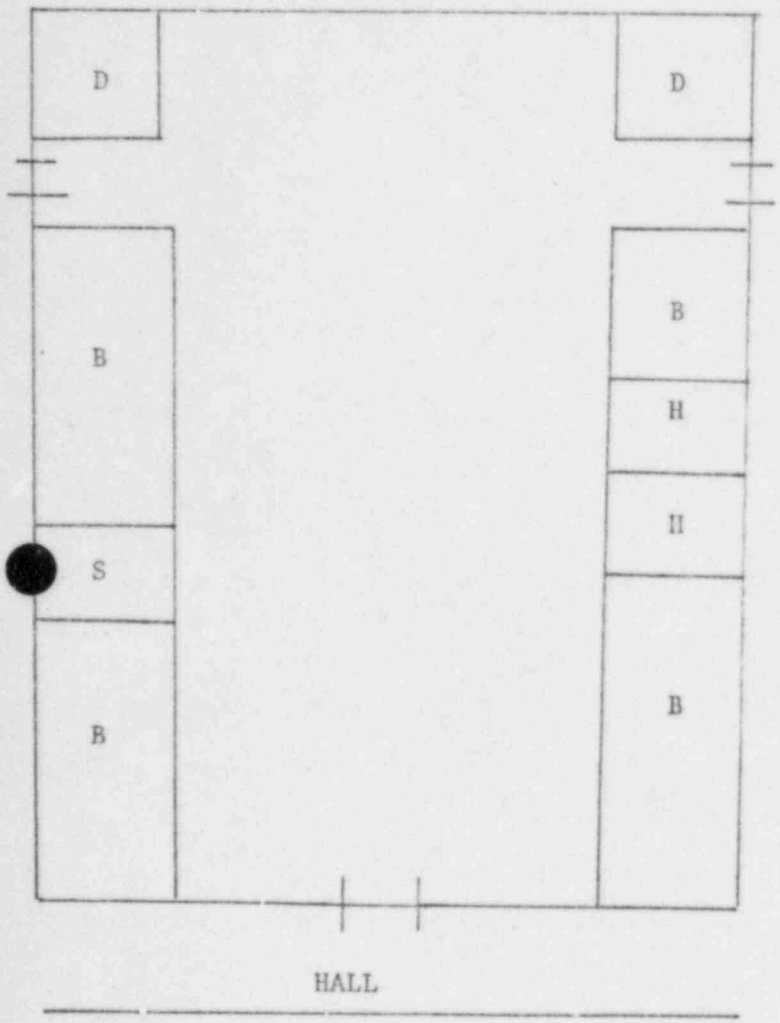
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



ML18

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building..GRT - A.....Room...1407.....Type of Facility.....

Radiation Sources in Facility.....

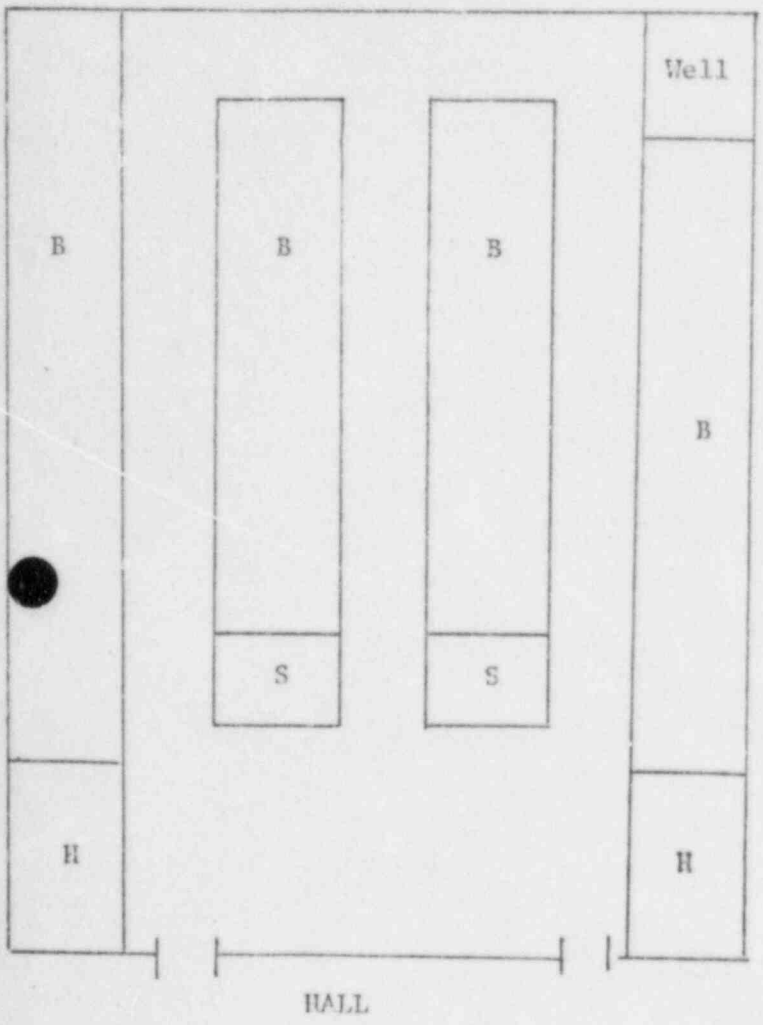
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building..Morrill.....Room...106.....Type of Facility.....

Radiation Sources in Facility.....

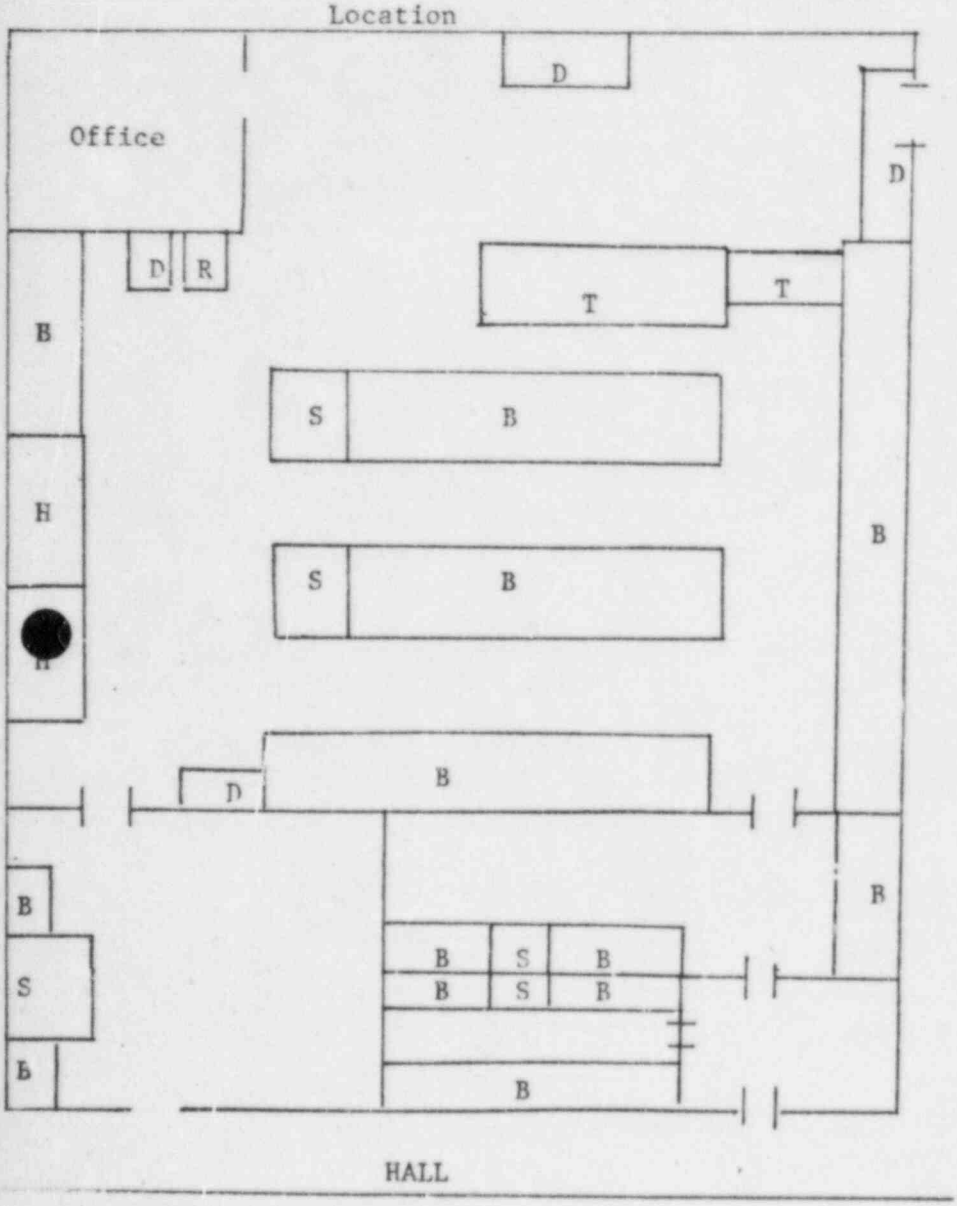
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



"OFFICIAL RECORD COPY"

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up Monthly

Person Responsible.....Department.....

Building..Merrill.....Room..111.....Type of Facility.....

Radiation Sources in Facility.....

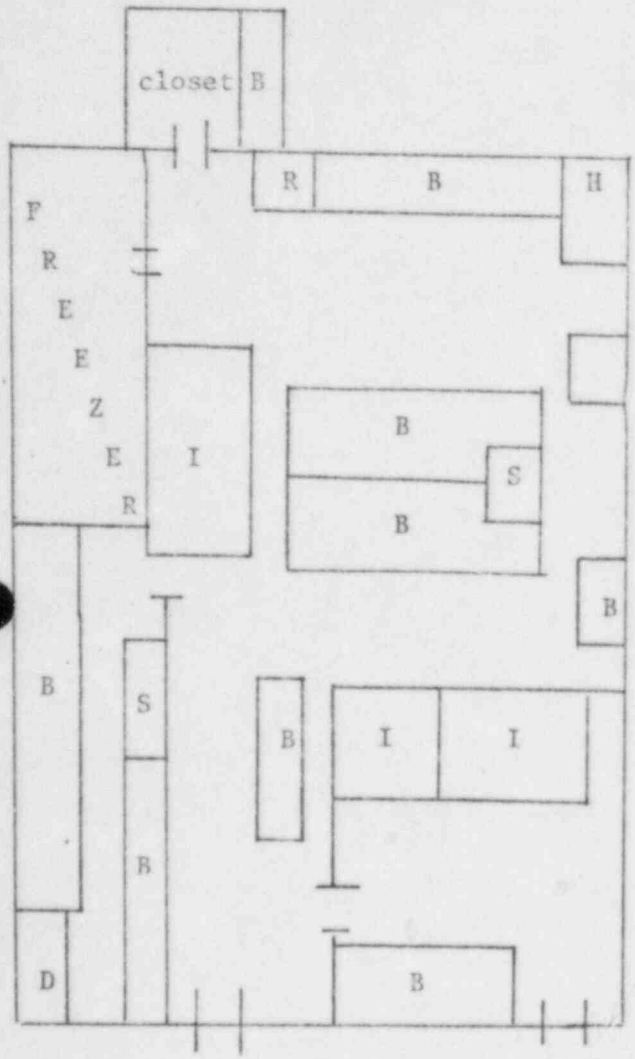
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



HALL

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building. Morrill.....Room. 364/368.....Type of Facility.....

Radiation Sources in Facility.....

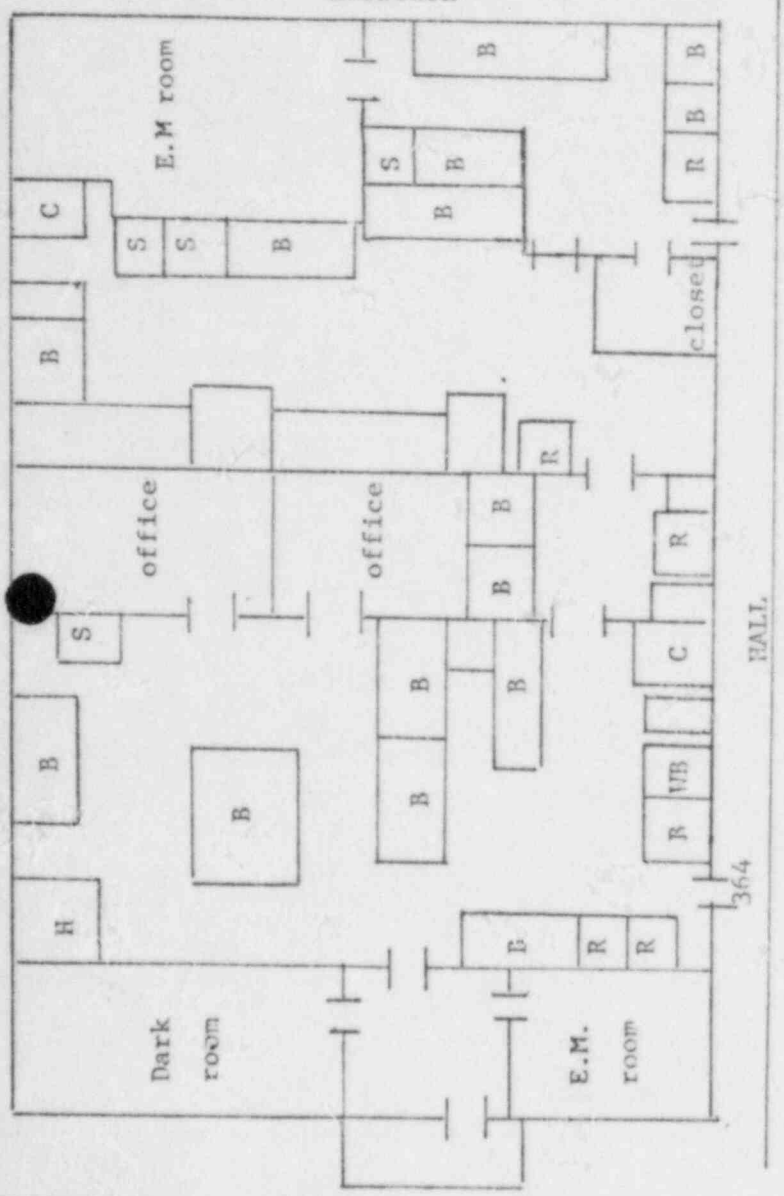
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

W.B.=Water Bath

__Initial __ Follow-up __ [redacted]thly

Person Responsible.....Department.....

Building...Morrill.....Room..314/316.....Type of Facility.....

Radiation Sources in Facility.....

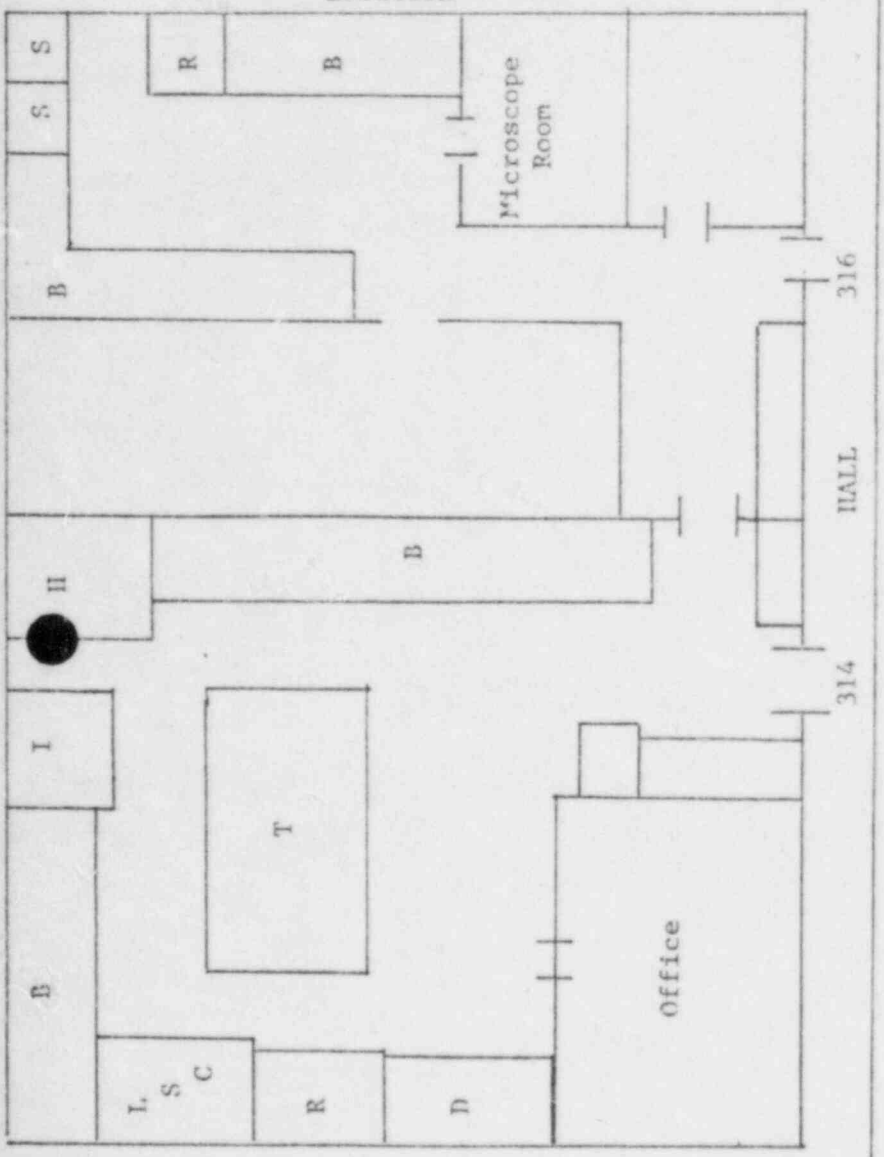
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



"OFFICIAL RECORD COPY"

ML18

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

F[redacted] badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building..Morrill.....Room...413.....Type of Facility.....

Radiation Sources in Facility.....

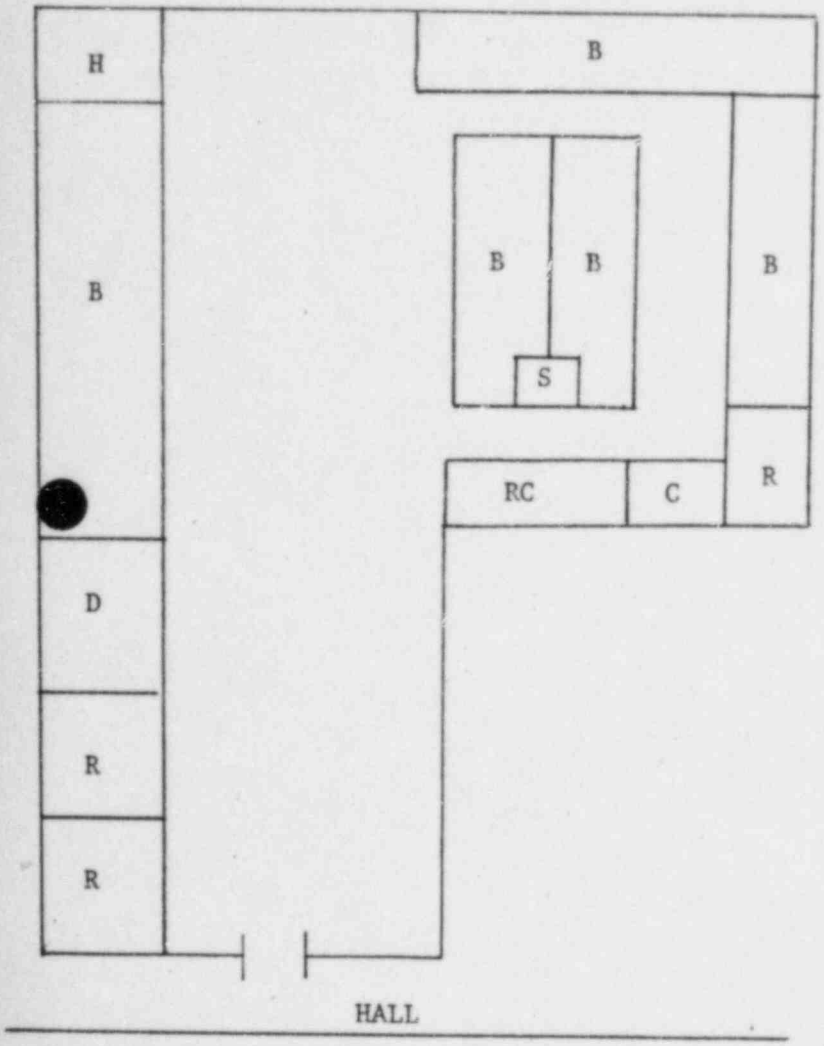
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
RC=Refrigerated Counter

RADIATION SURVEY REPORT

__Initial __ Follow-up __Monthly

Person Responsible.....Department.....

Building..Morrill.....Room..414.....Type of Facility.....

Radiation Sources in Facility.....

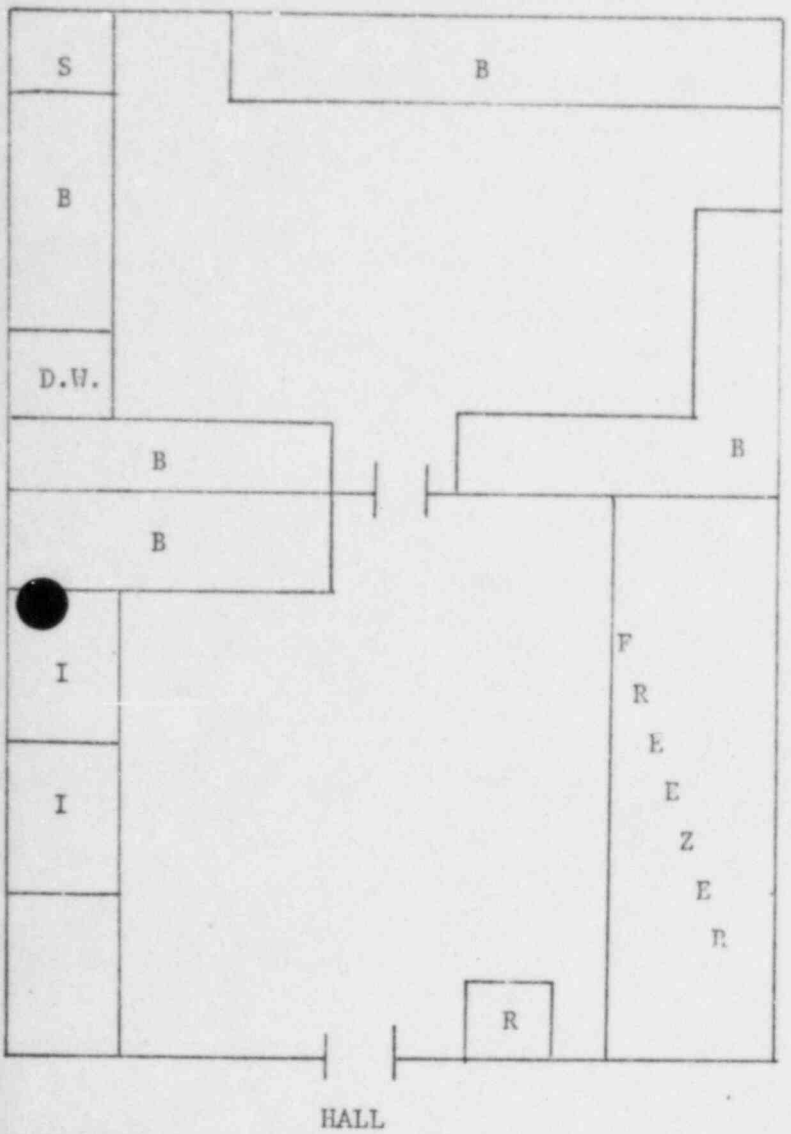
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Fi badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

D.W.=Dishwasher

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...Morrill.....Room..425/427.....Type of Facility.....

Radiation Sources in Facility.....

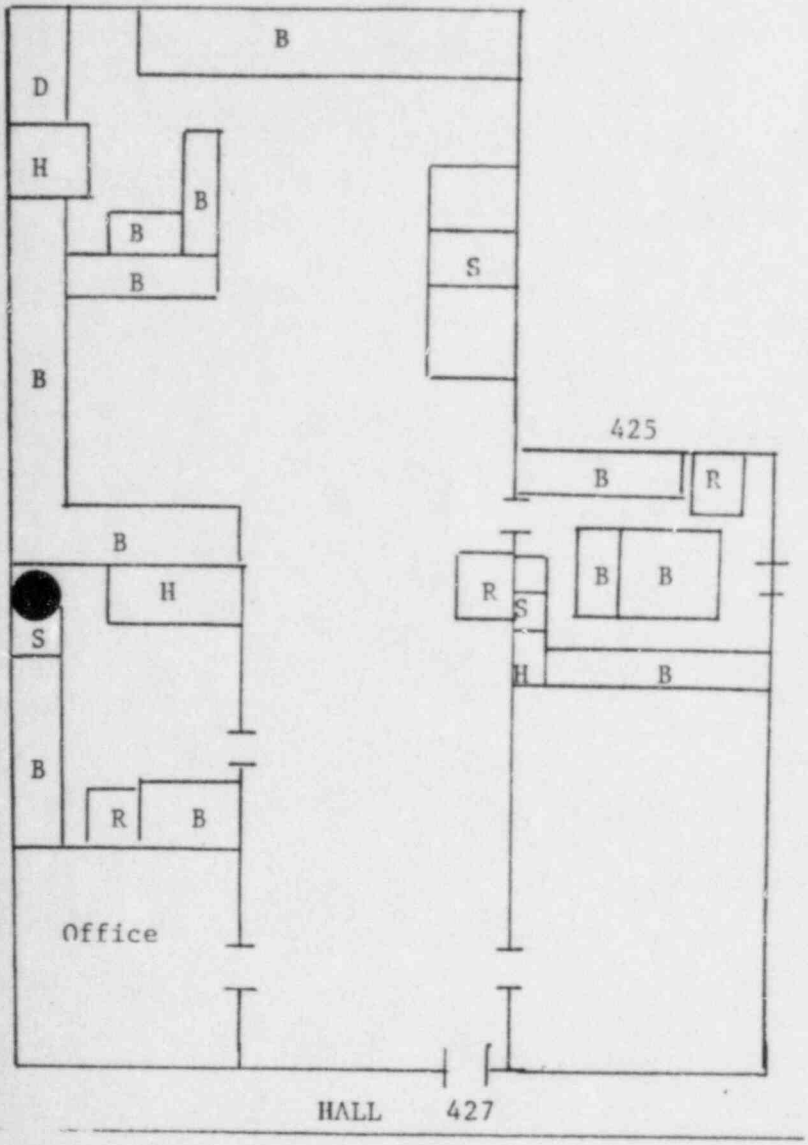
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



ML18

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

F badges being worn.....

97863

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

__Initial __ Follow-up Monthly

Person Responsible.....Department.....

Building Morrill .....Room 438 .....Type of Facility.....

Radiation Sources in Facility.....

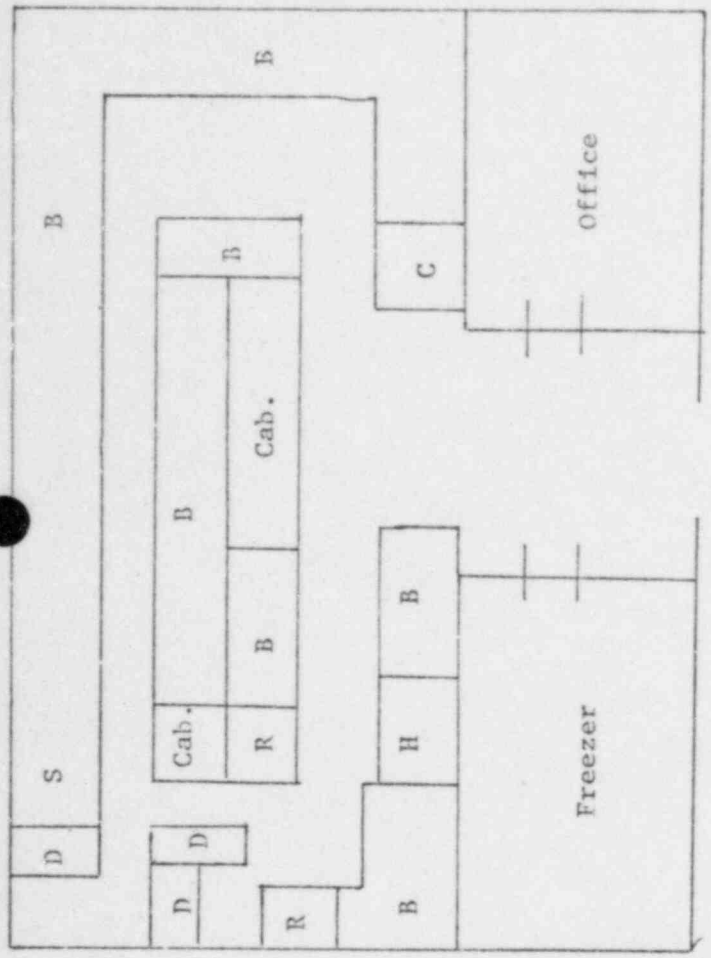
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
Cab.=Cabinet

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building Morrill .....Room 444 .....Type of Facility.....

Radiation Sources in Facility.....

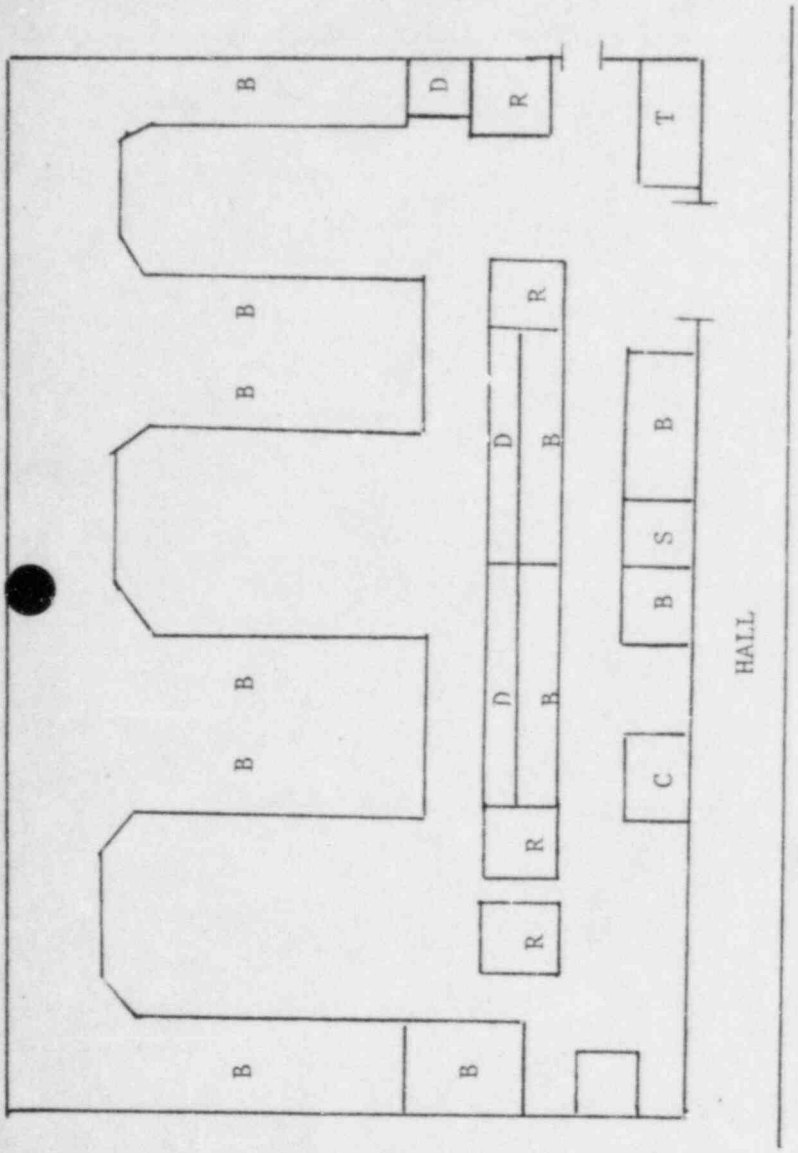
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up __Monthly

Person Responsible.....Department.....

Building.Morrill.....Room.446.....Type of Facility.....

Radiation Sources in Facility.....

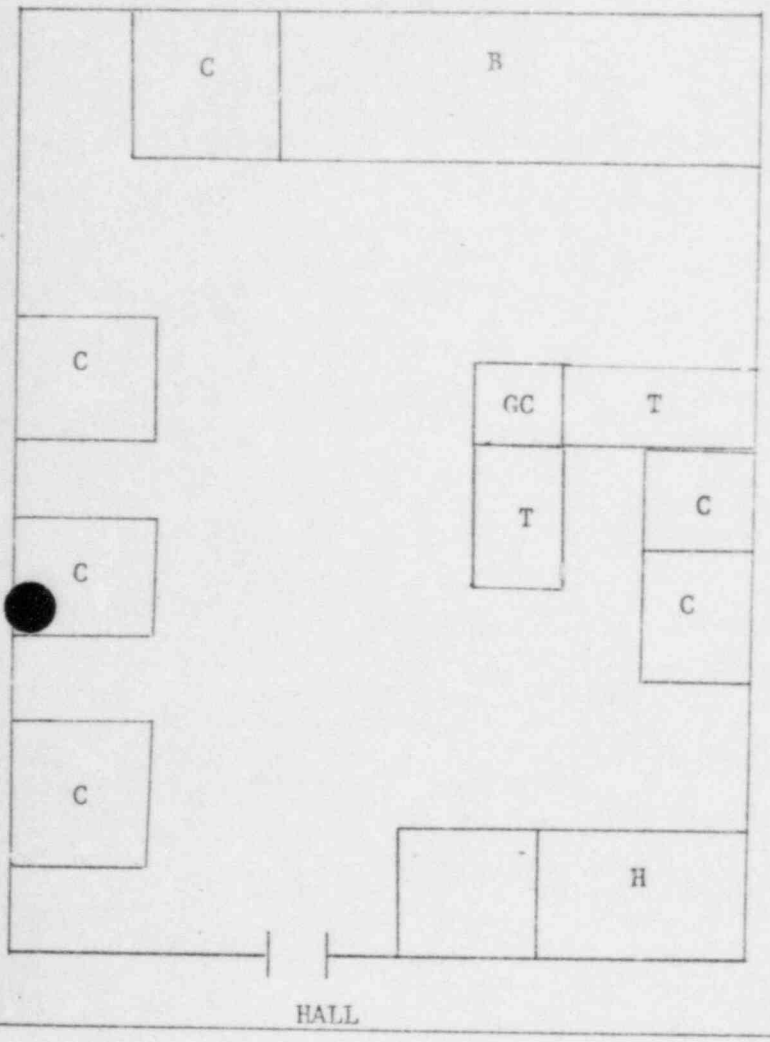
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.. .....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
GC=Gas Chromatograph; T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up _ Monthly

Person Responsible.....Department.....

Building..Morrill.IV.South...Room...448.....Type of Facility.....

Radiation Sources in Facility.....

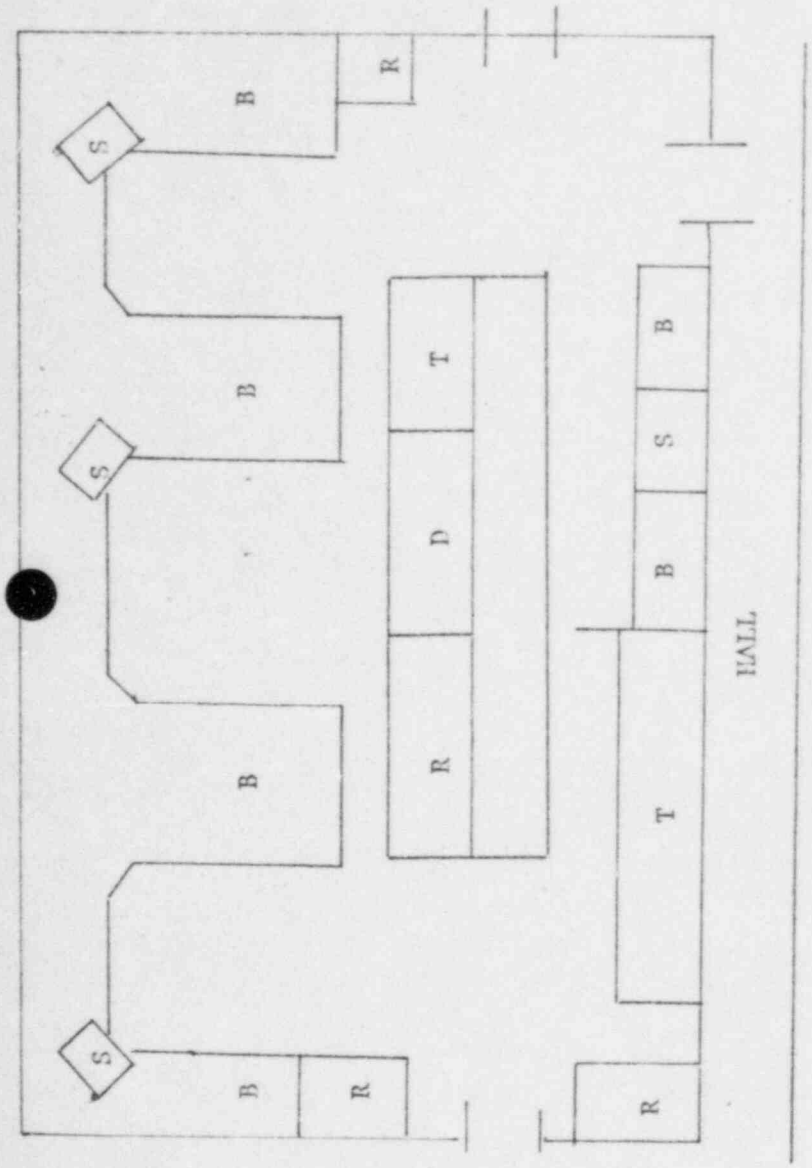
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



ML18

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up ● Monthly

Person Responsible.....Department.....

Building. Morrill.....Room. 451.....Type of Facility.....

Radiation Sources in Facility.....

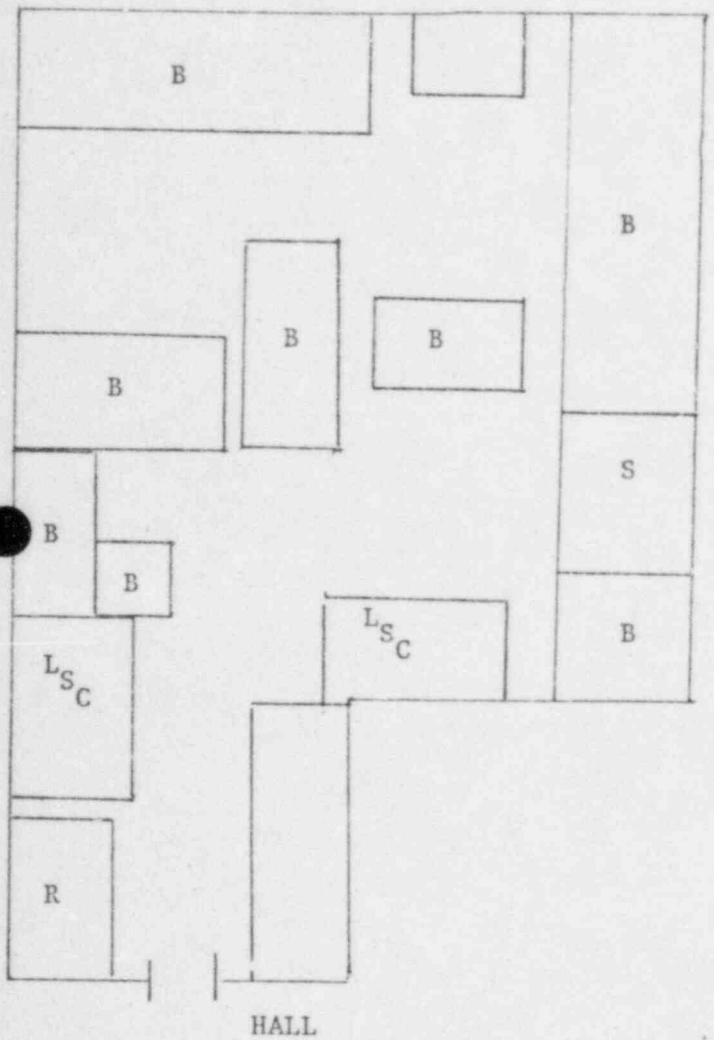
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



"OFFICIAL RECORD COPY"

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up ● Monthly

Person Responsible.....Department.....

Building...Morrill.....Room...453.....Type of Facility.....

Radiation Sources in Facility.....

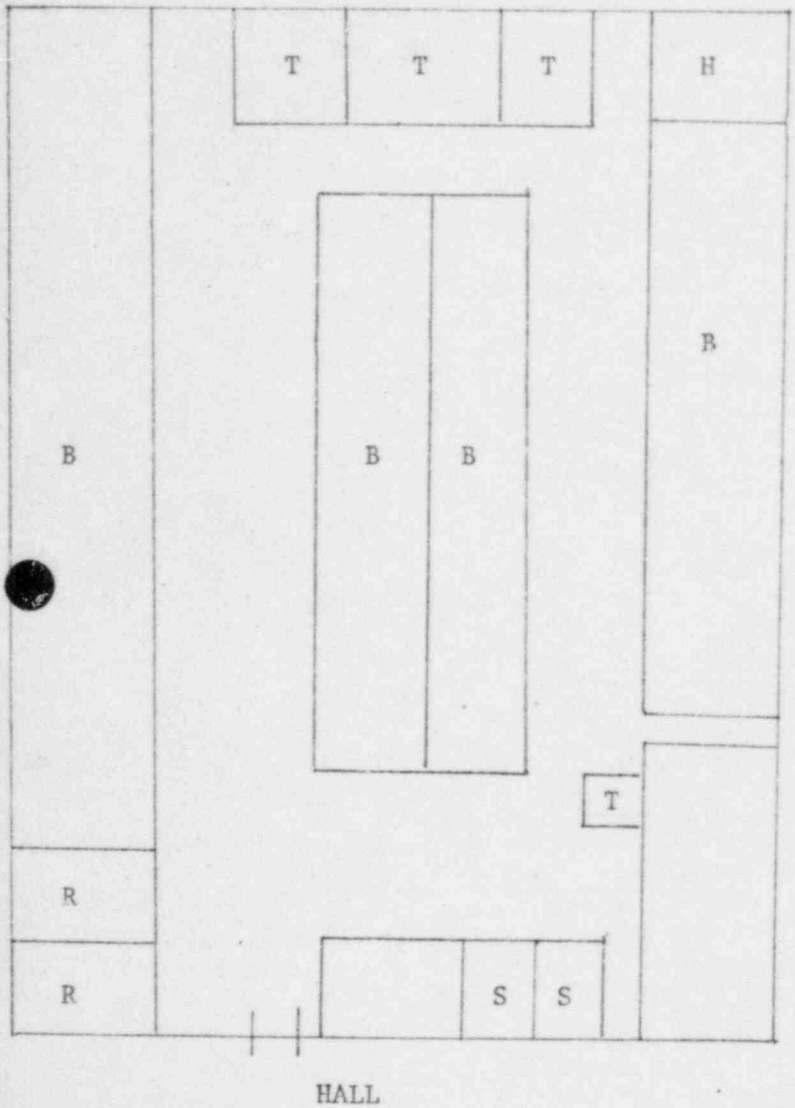
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



ML10

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM beirg used.....

"Caution RAM".....General housekeeping.....

F[illegible] badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building..Morrill.....Room..455.....Type of Facility.....

Radiation Sources in Facility.....

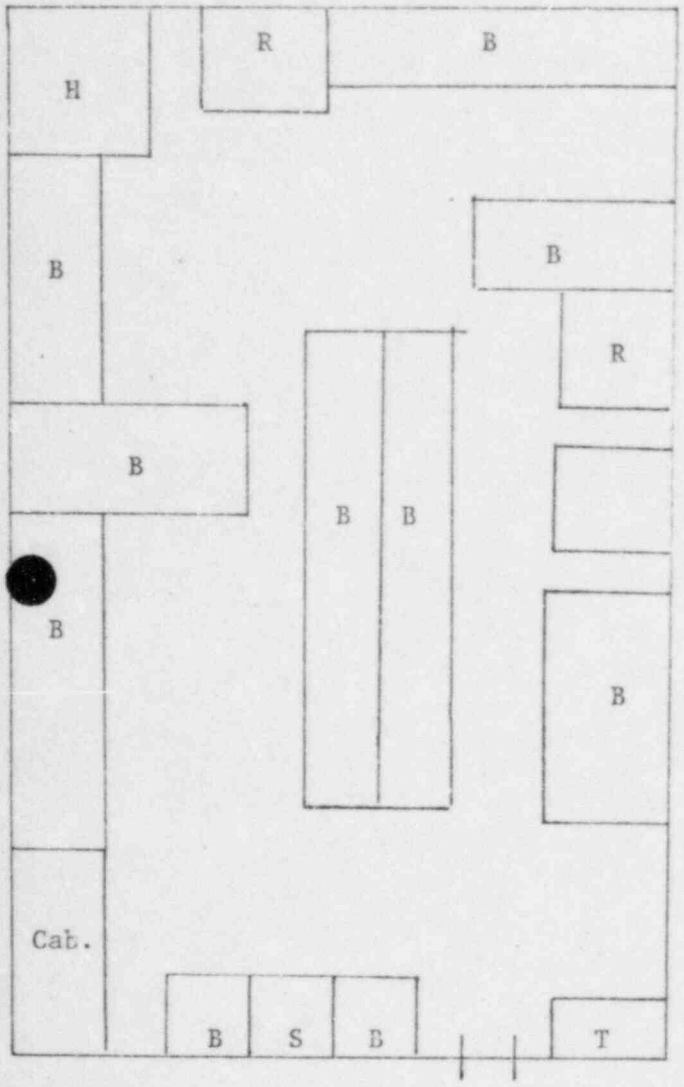
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table; Cab=Cabinet

RADIATION SURVEY REPORT

__Initial __ Follow-up ● Monthly

Person Responsible.....Department.....

Building..Morrill.....Room..457.....Type of Facility.....

Radiation Sources in Facility.....

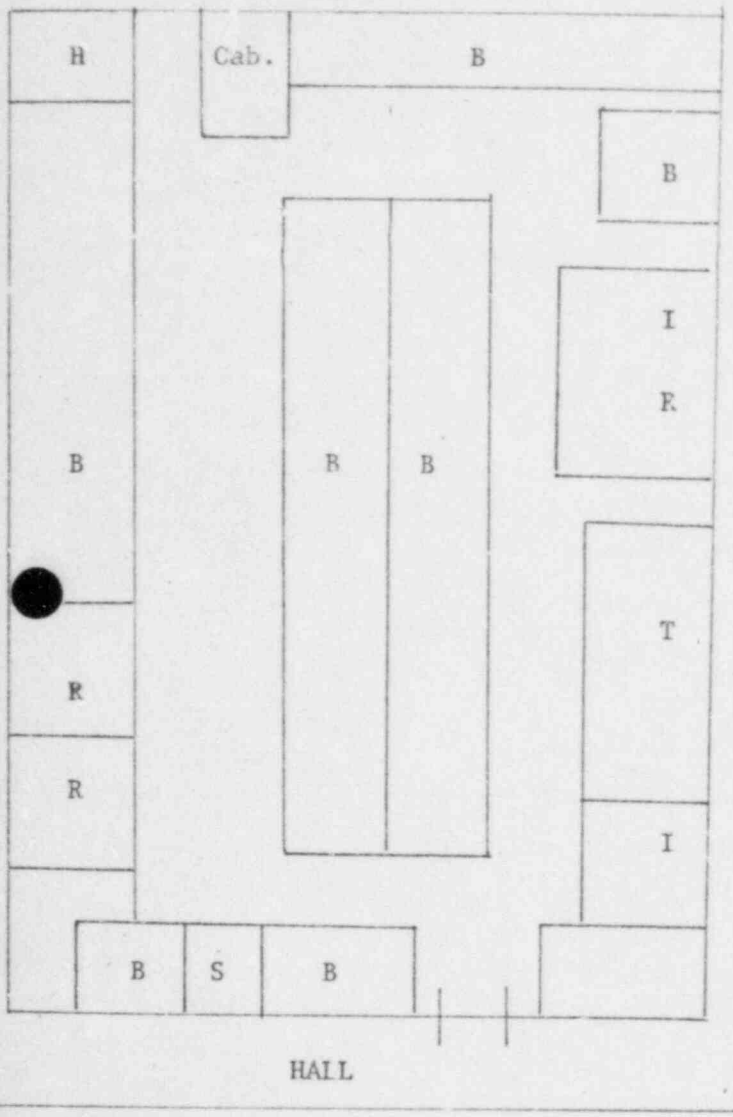
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

F● badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table; Cab=Cabinet

RADIATION SURVEY REPORT

__Initial __ Follow-up Monthly

Person Responsible.....Department.....

Building..Morrill.....Room..N.101.....Type of Facility.....

Radiation Sources in Facility.....

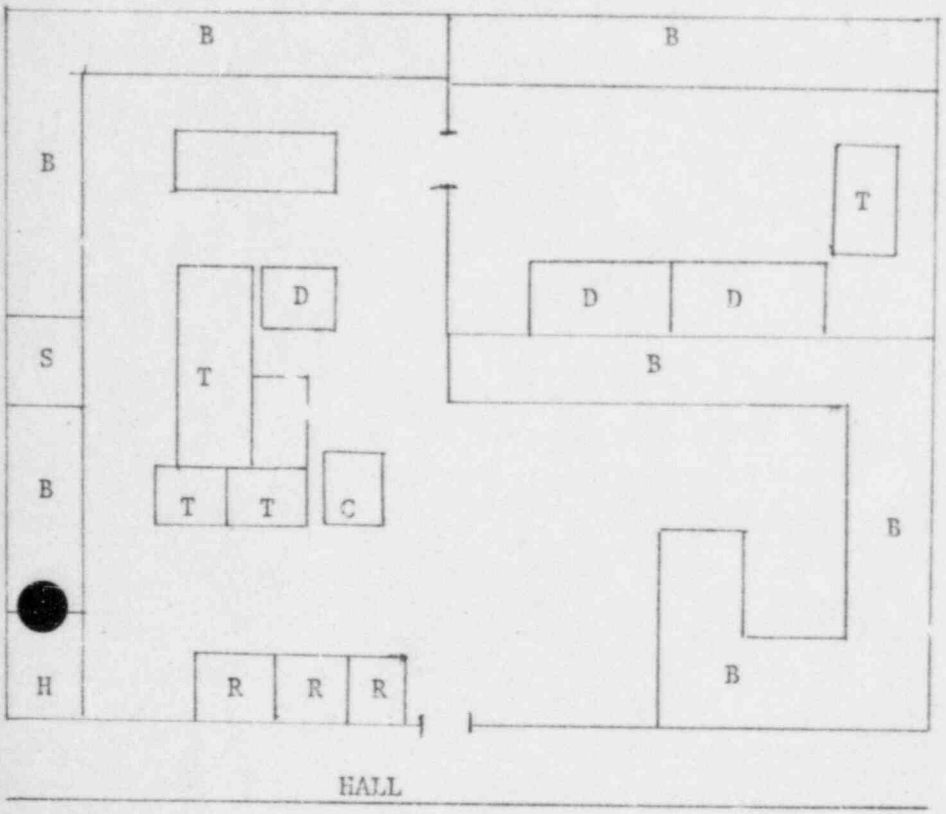
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

97863

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood T=Table

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...Morrill.....Room...102N.....Type of Facility.....

Radiation Sources in Facility.....

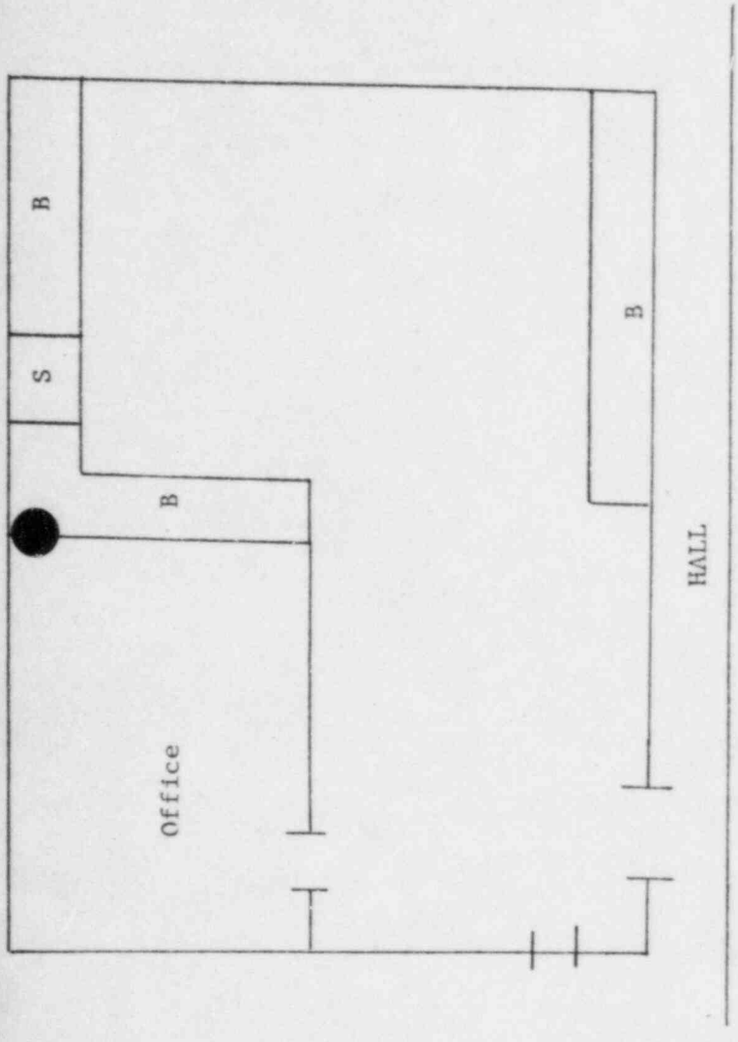
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



ML10

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

F[illegible] badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

__Initial __ Follow-up ● Monthly

Person Responsible.....Department.....

Building....Morrill.....Room...104N.....Type of Facility.....

Radiation Sources in Facility.....

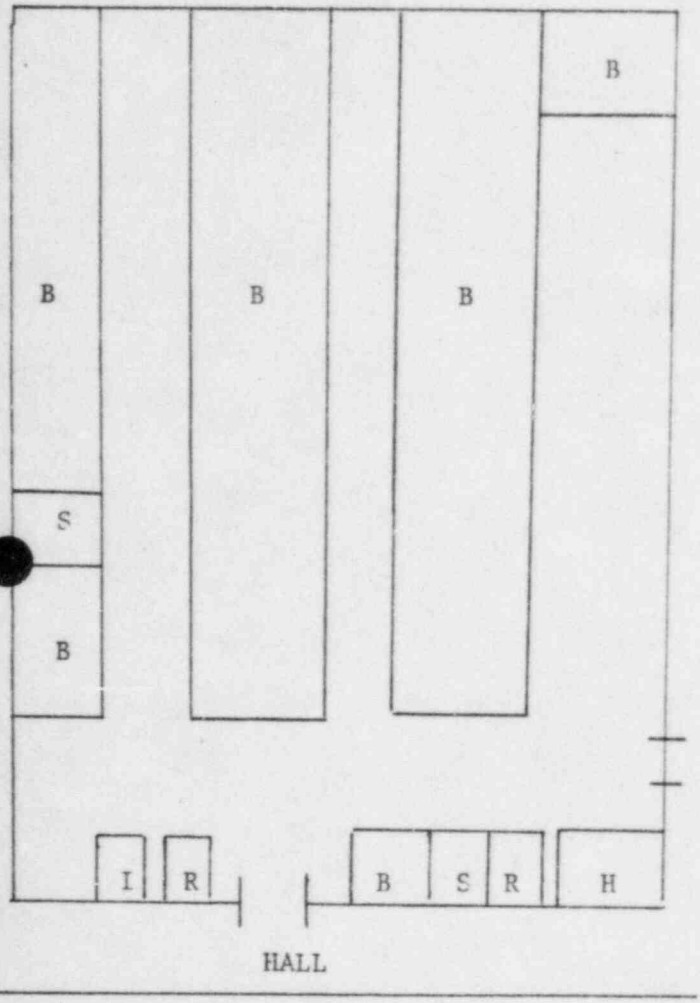
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



"OFFICIAL RECORD COPY"

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

R● badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building..Morrill.....Room..N 111.....Type of Facility.....

Radiation Sources in Facility.....

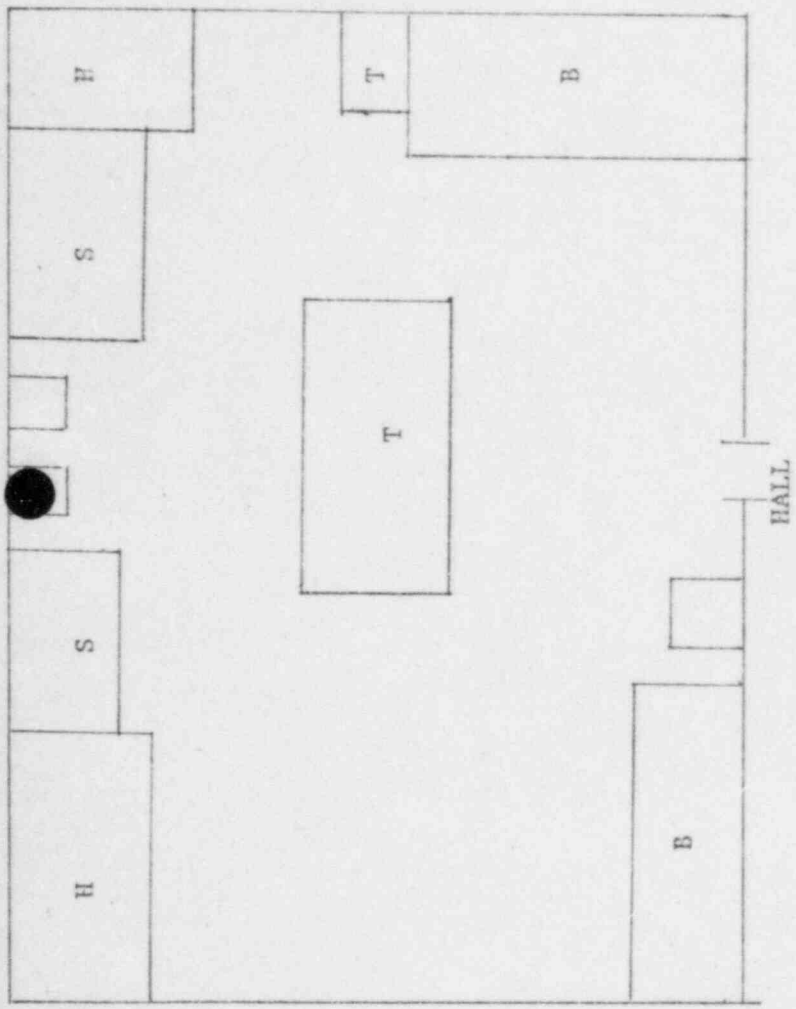
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

__Initial __ Follow-up ✓ Monthly

Person Responsible.....Department.....

Building Morrill .....Room 113N/115N .....Type of Facility.....

Radiation Sources in Facility.....

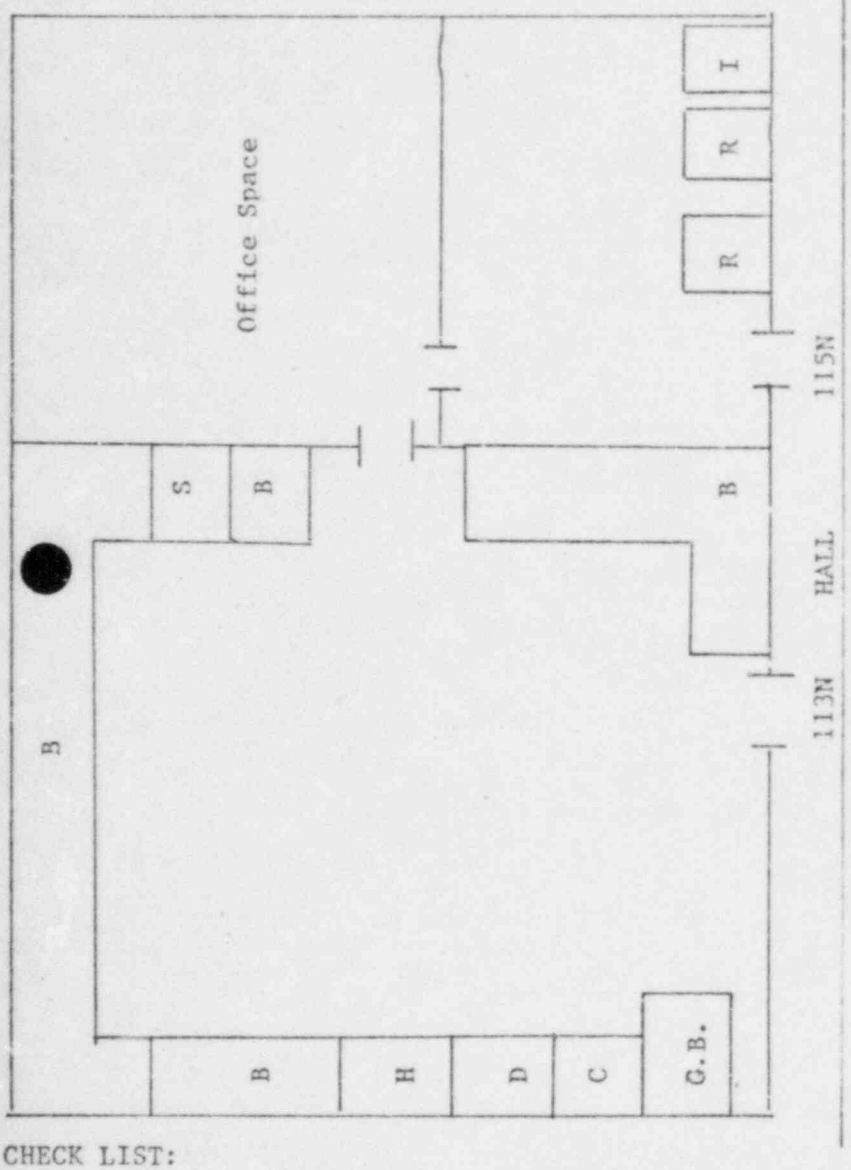
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



ML10

CHECK LIST:

Waste pick-up needed..... .....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

F badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

G.B.=Glove Box

RADIATION SURVEY REPORT

__Initial __ Follow-up Monthly

Person Responsible.....Department.....

Building..Morrill.....Room...117N.....Type of Facility.....

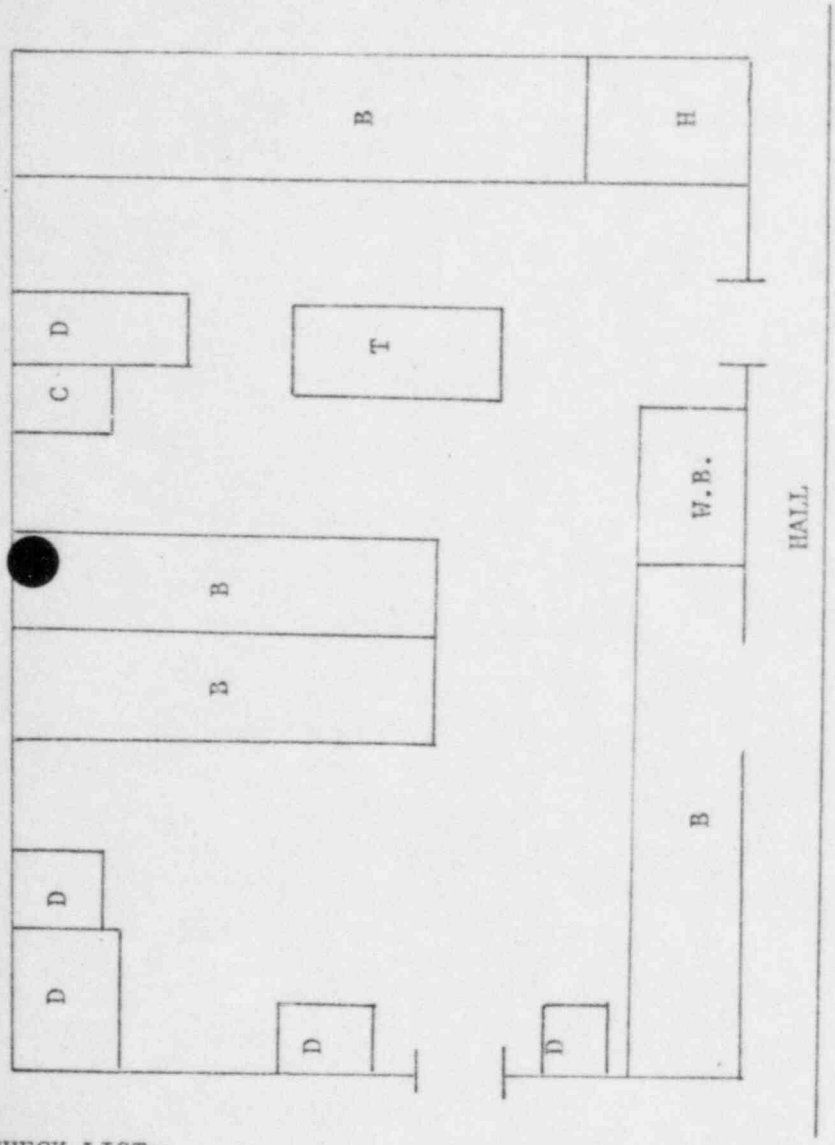
Radiation Sources in Facility.....

Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Fi badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table; W.B.=Water bath

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building..Merrill.....Room..N 121, 123...Type of Facility.....

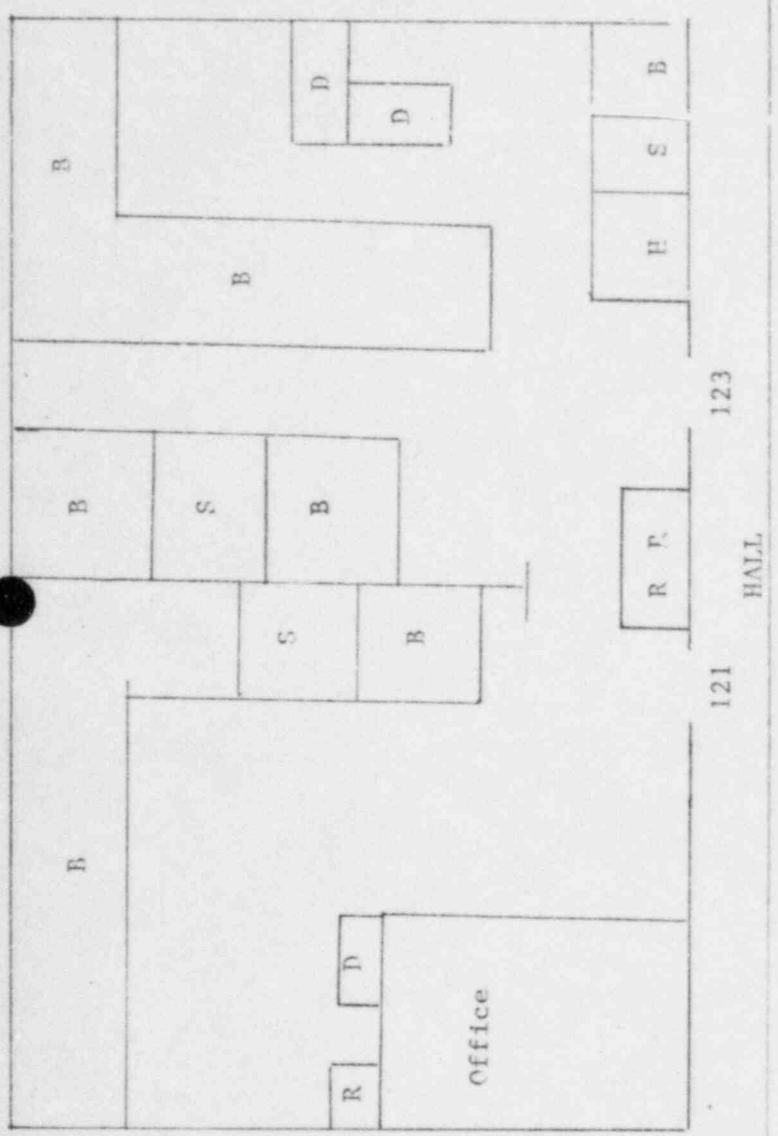
Radiation Sources in Facility.....

Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location



Findings

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building. Morrill - North ....Room. 209-211.....Type of Facility.....

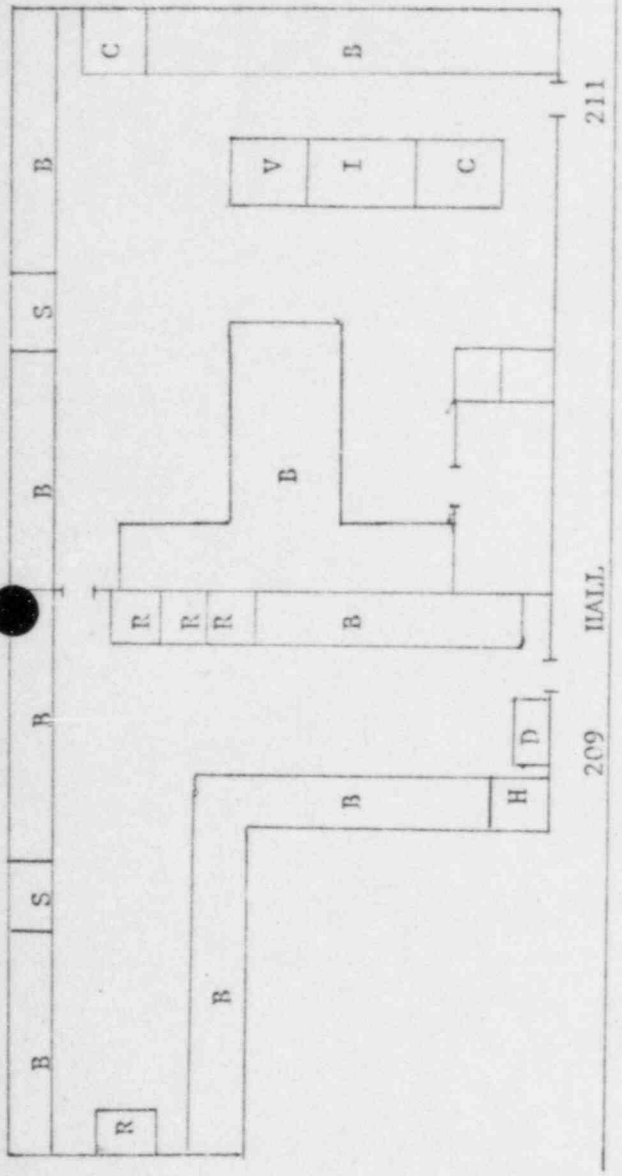
Radiation Sources in Facility.....

Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location



Findings

"OFFICIAL RECORD COPY"

ML18

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

[illegible]m badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
V=Vacuum Unit

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...Morrill.....Room...N215.....Type of Facility.....

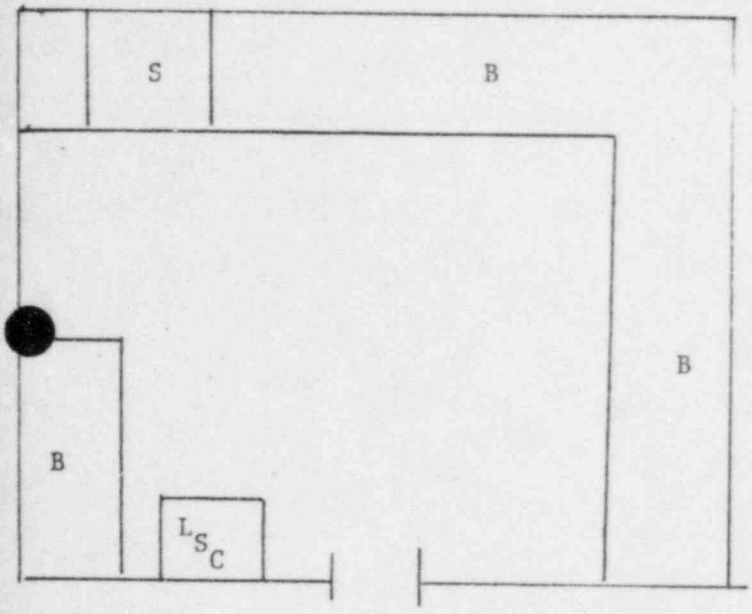
Radiation Sources in Facility.....

Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

[illegible]m badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...Morrill.....Room...N 219, 221.....Type of Facility.....

Radiation Sources in Facility.....

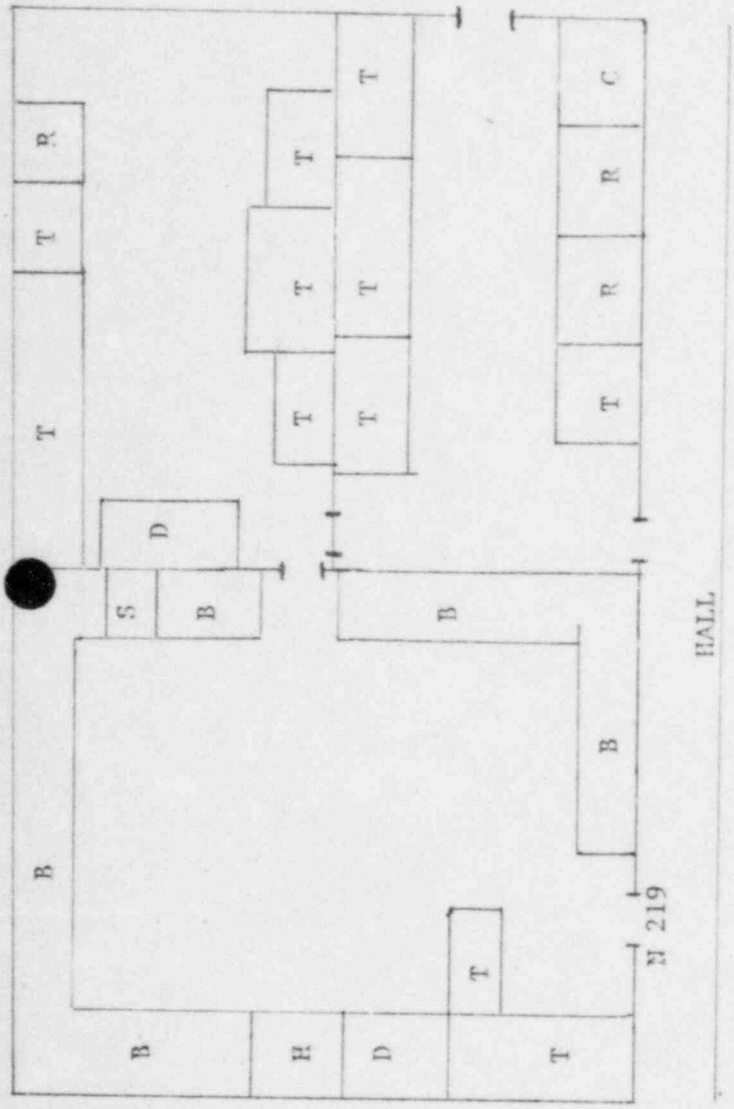
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood; T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building..Morrill.....Room..M 223.....Type of Facility.....

Radiation Sources in Facility.....

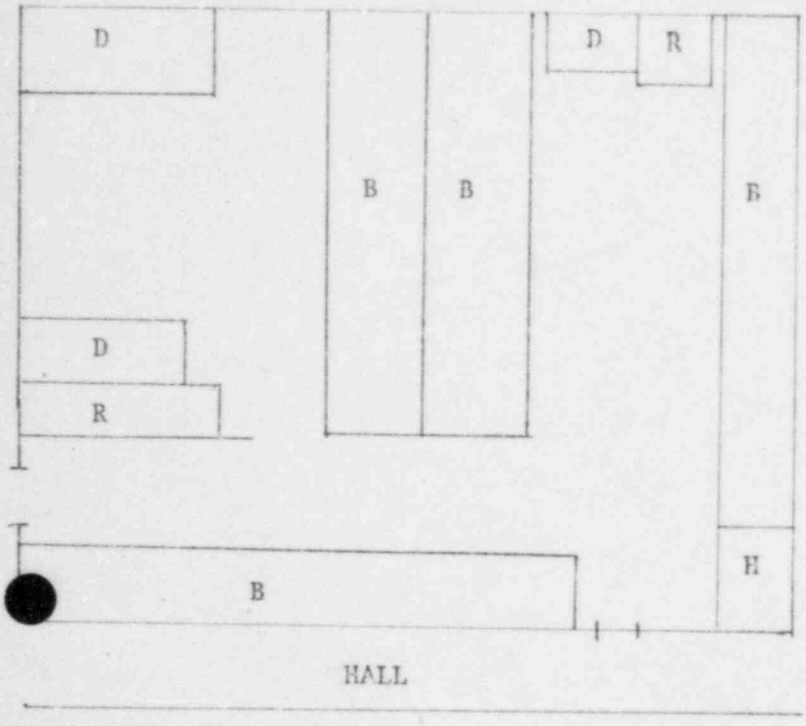
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood; T=Table

__Initial __ Follow-up __Monthly

Person Responsible.....Department.....

Building...Morrill.....Room...304N.....Type of Facility.....

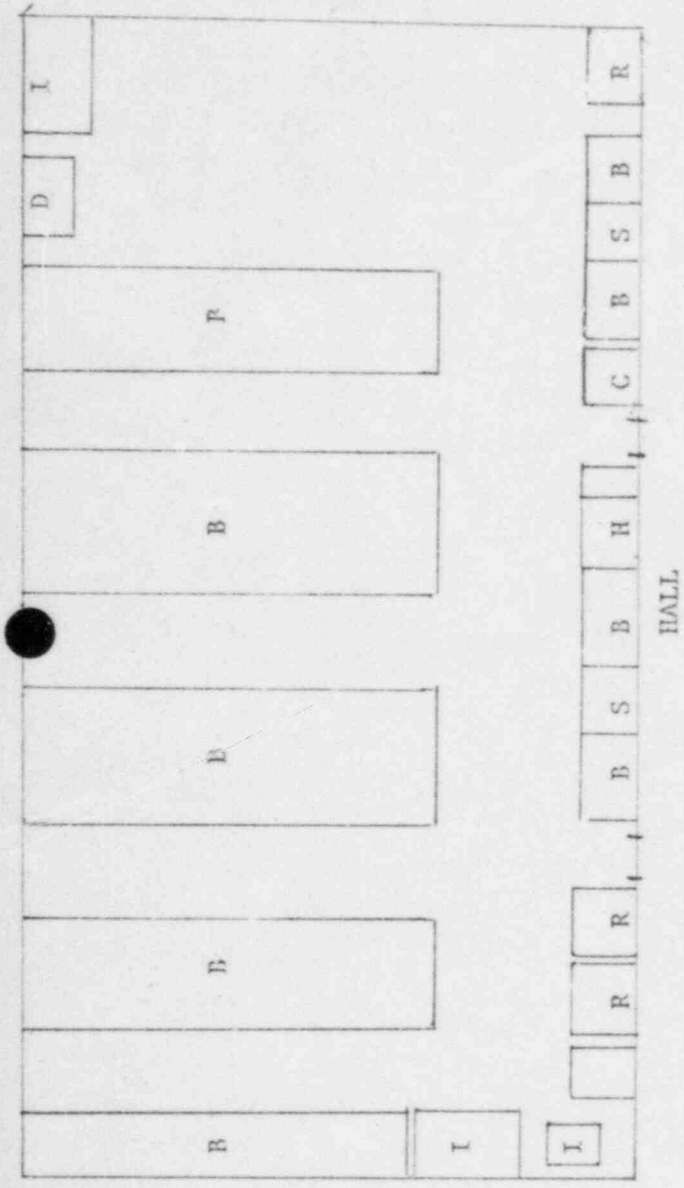
Radiation Sources in Facility.....

Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location



Findings

"OFFICIAL RECORD COPY"

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

H badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building.Morrill.....Room..310N.....Type of Facility.....

Radiation Sources in Facility.....

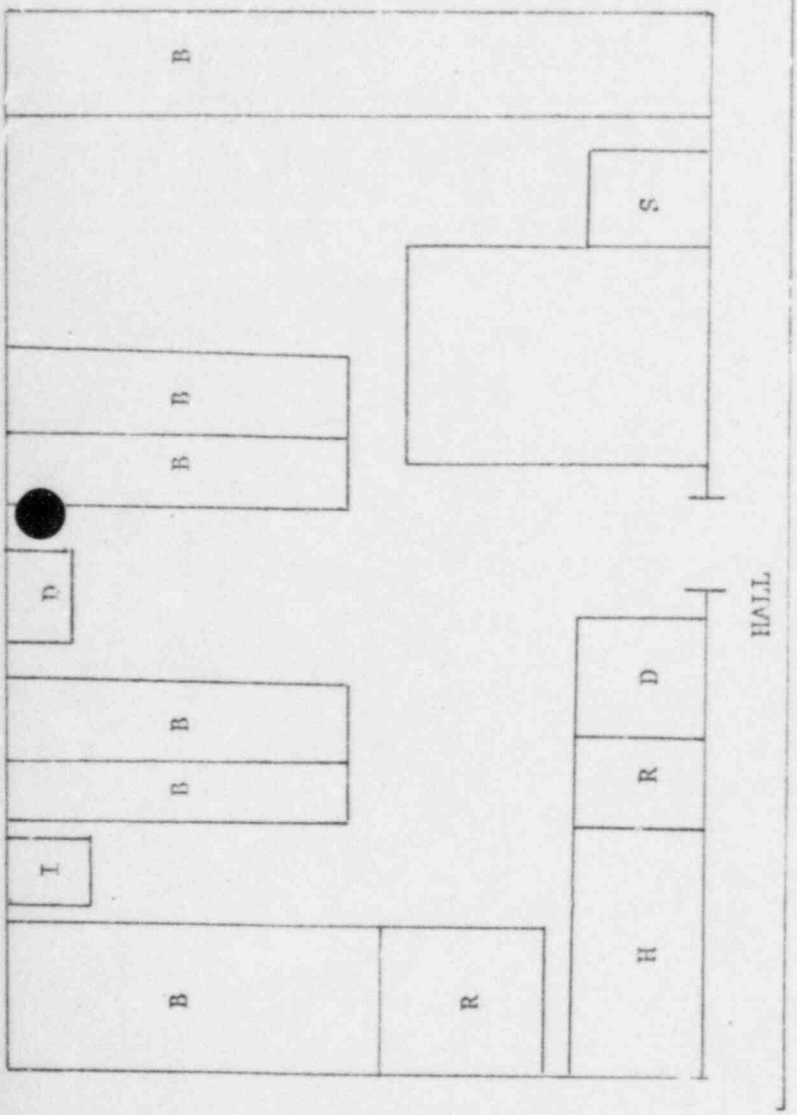
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...Bartlett.....Room...33A.....Type of Facility.....

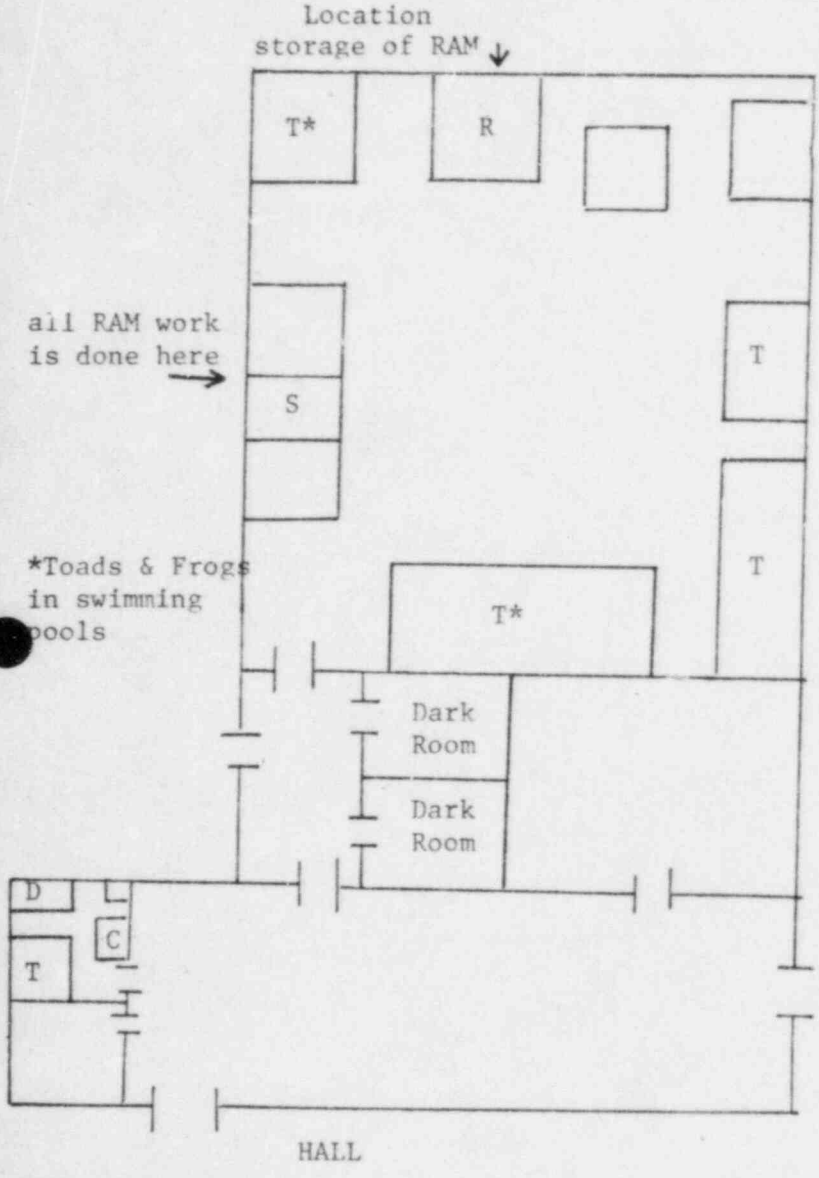
Radiation Sources in Facility.....

Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

97863

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...Bowditch.....Room...305.....Type of Facility.....

Radiation Sources in Facility.....

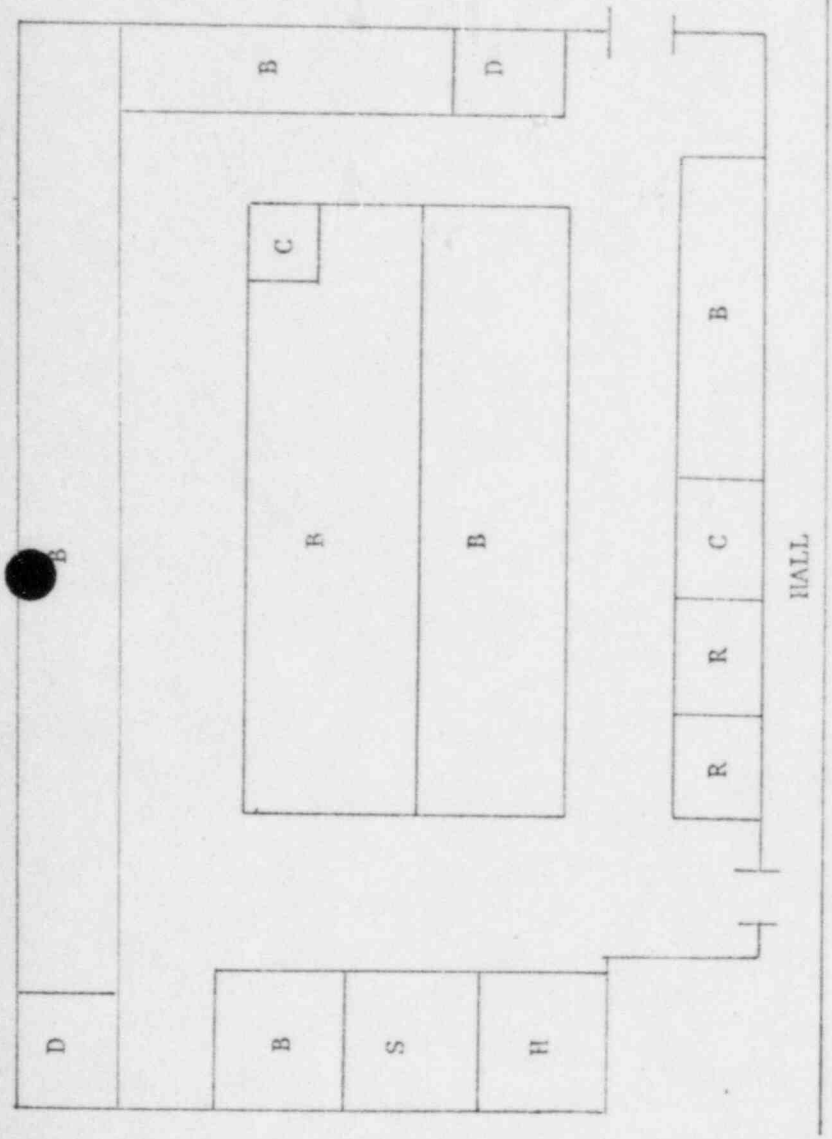
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building..Chemoeth.....Room..417.....Type of Facility.....

Radiation Sources in Facility.....

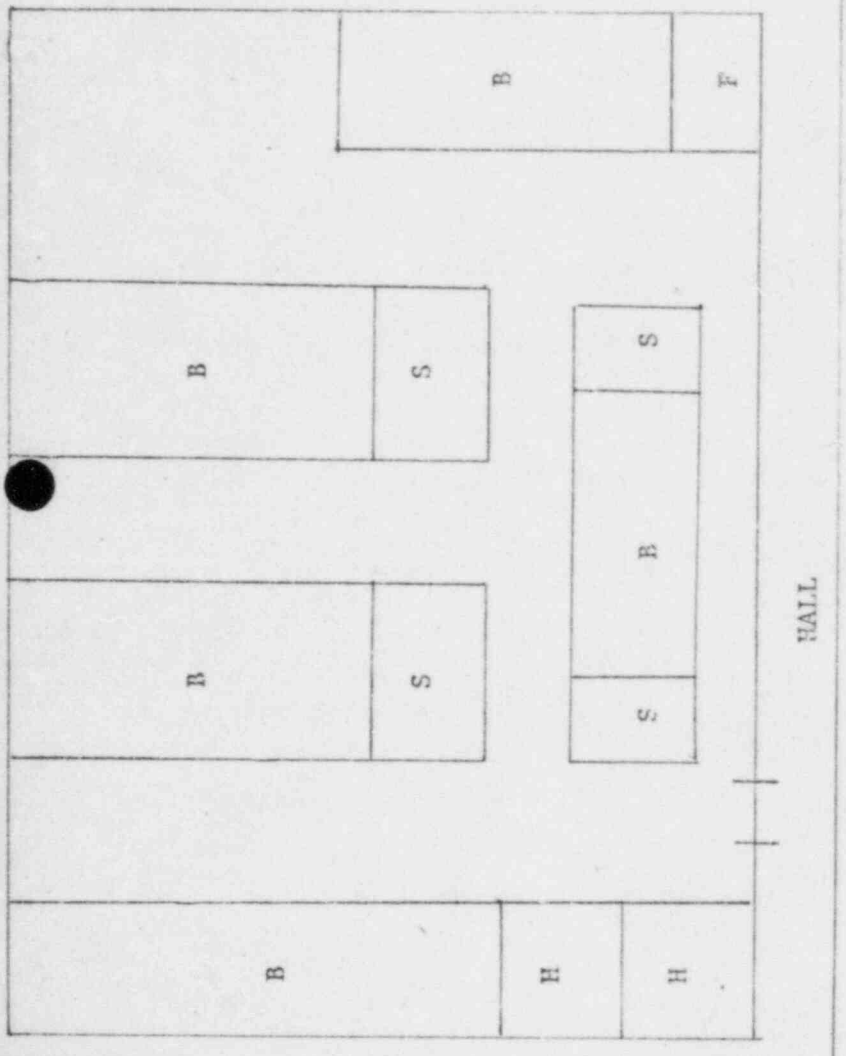
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



ML10

"OFFICIAL RECORD COPY"

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 3.13.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

F badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building.....Chenoweth.....Room.....430A.....Type of Facility.....

Radiation Sources in Facility.....

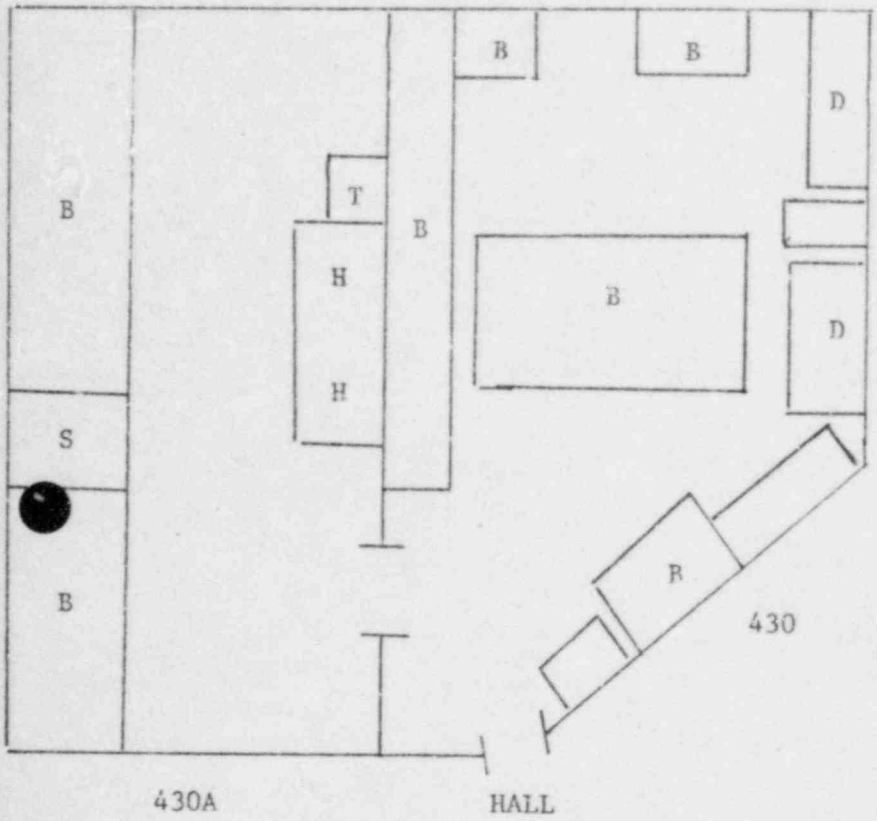
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

__Initial __ Follow-up Monthly

Person Responsible.....Department.....

Building..Fernald..Wall.....Room....B-2.....Type of Facility.....

Radiation Sources in Facility.....

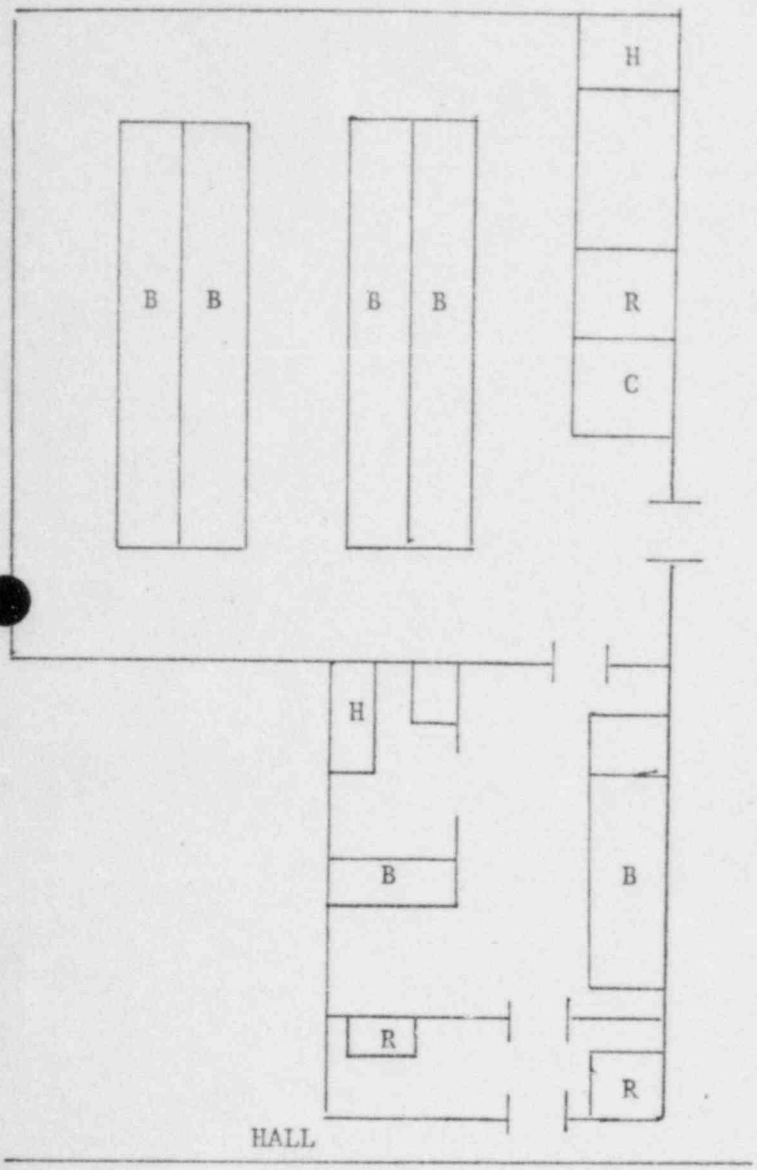
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building..Fernald Hall.....Room...7.....Type of Facility.....

Radiation Sources in Facility.....

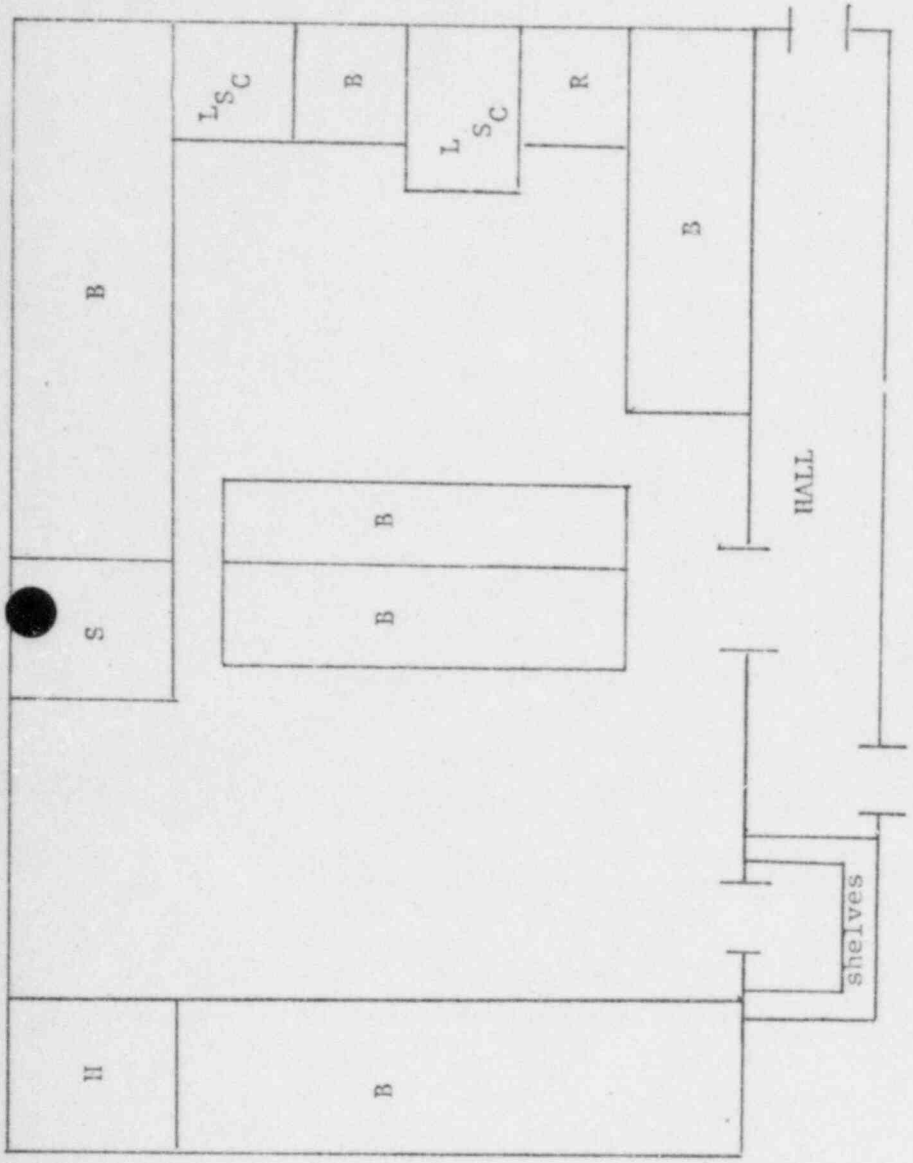
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

__Initial __ Follow-up Monthly

Person Responsible.....Department.....

Building..Goessmann.....Room..257.....Type of Facility.....

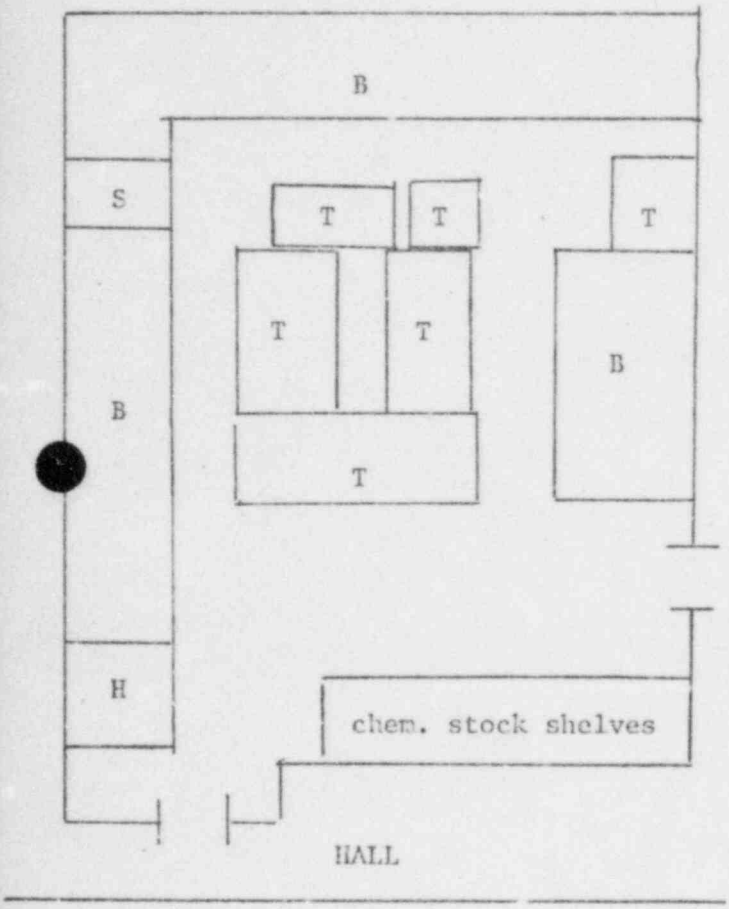
Radiation Sources in Facility.....

Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location Findings



ML10

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

F badges being worn.....

97863

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

__Initial __ Follow-up Monthly

Person Responsible.....Department.....

Building...Goessmann.....Room..Refrig/269...Type of Facility.....

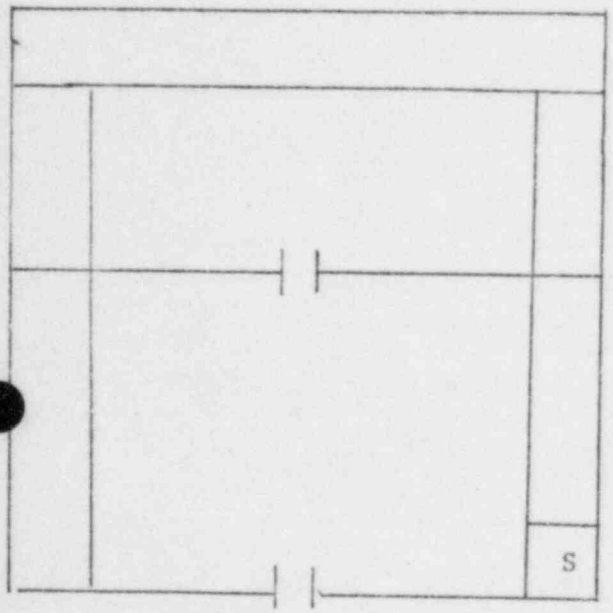
Radiation Sources in Facility.....

Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

Film badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

__Initial __ Follow-up ● Monthly

Person Responsible.....Department.....

Building...Hasbrouck.....Room....3.....Type of Facility.....

Radiation Sources in Facility.....

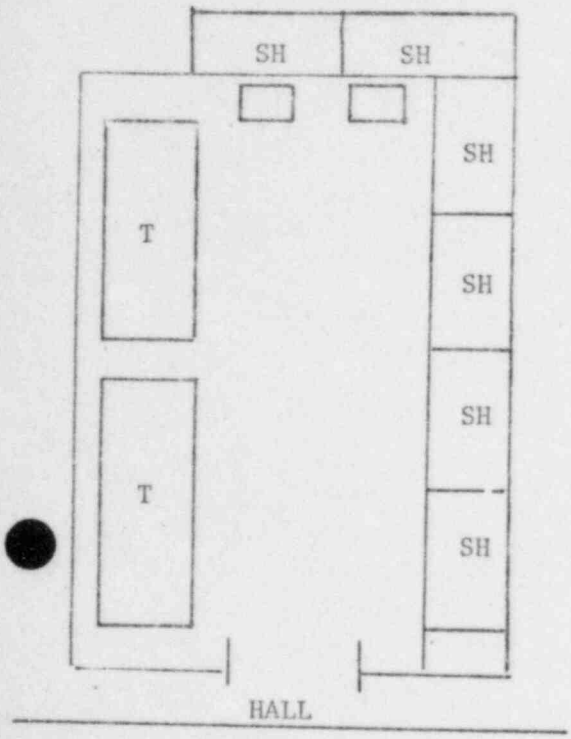
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



ML18

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

F● badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table; SH=Shelves

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...Hatch Lab.....Room.....Type of Facility.....

Radiation Sources in Facility..... .....

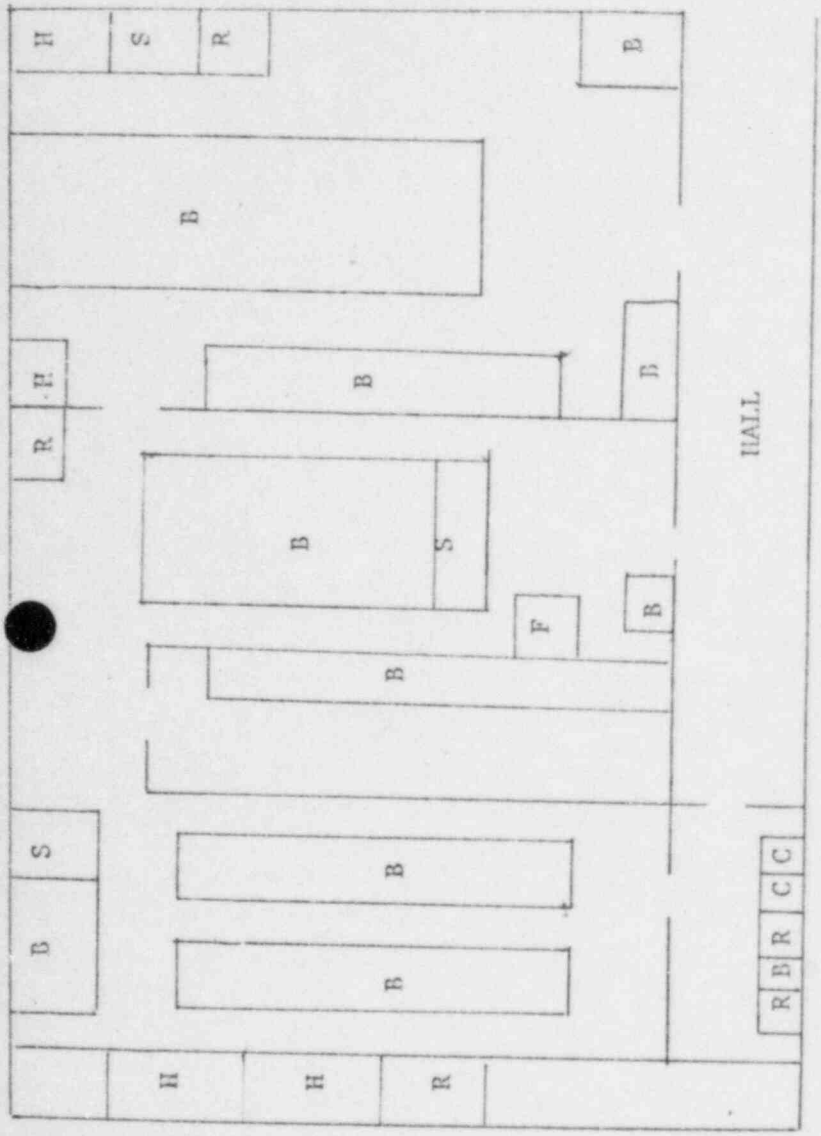
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...Marshall.....Room...22.....Type of Facility.....

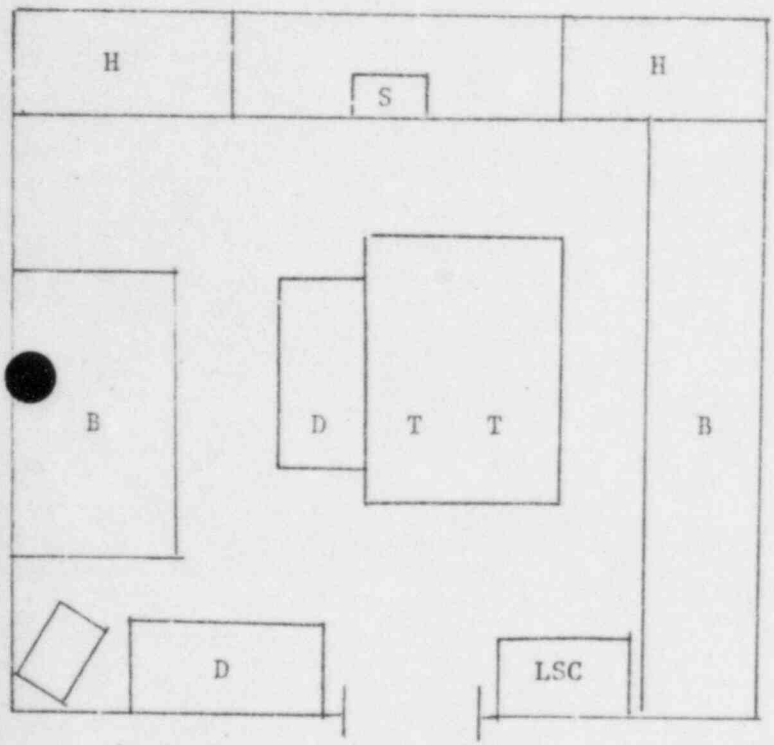
Radiation Sources in Facility.....

Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

n badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building..Paige Lab.....Room..405.....Type of Facility.....

Radiation Sources in Facility.....

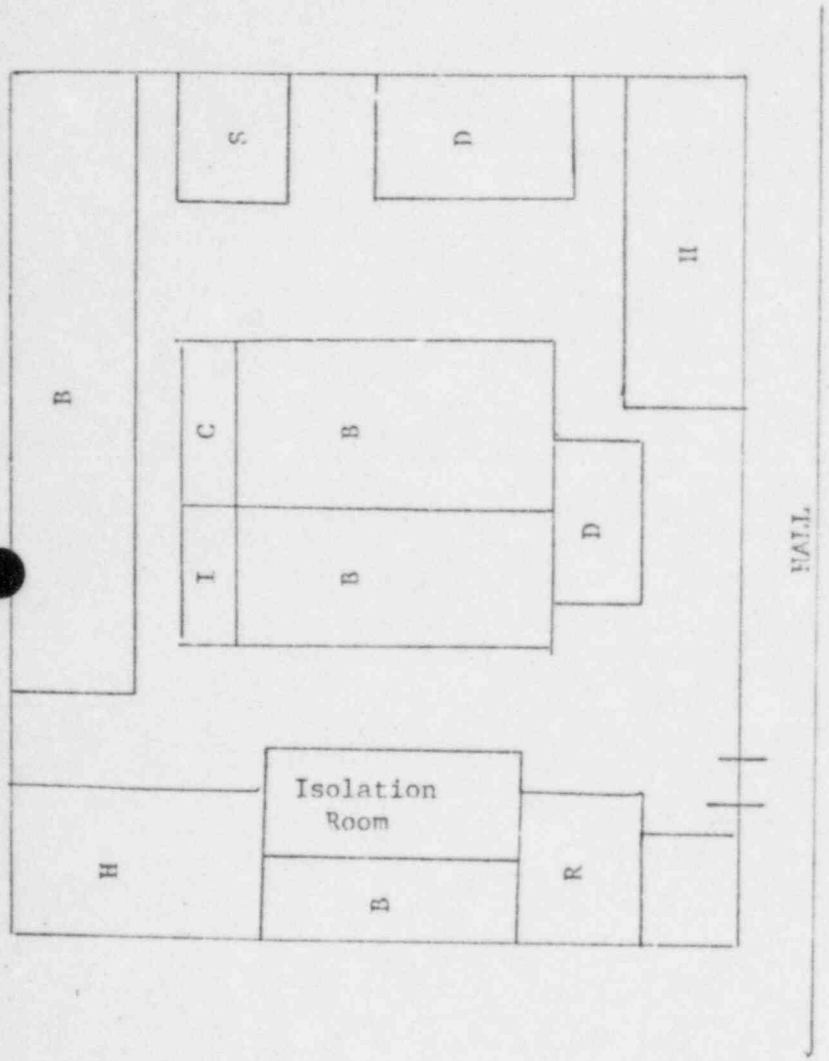
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste p[illegible]k-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

[illegible] badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...Paige.....Room....416.....Type of Facility.....

Radiation Sources in Facility.....

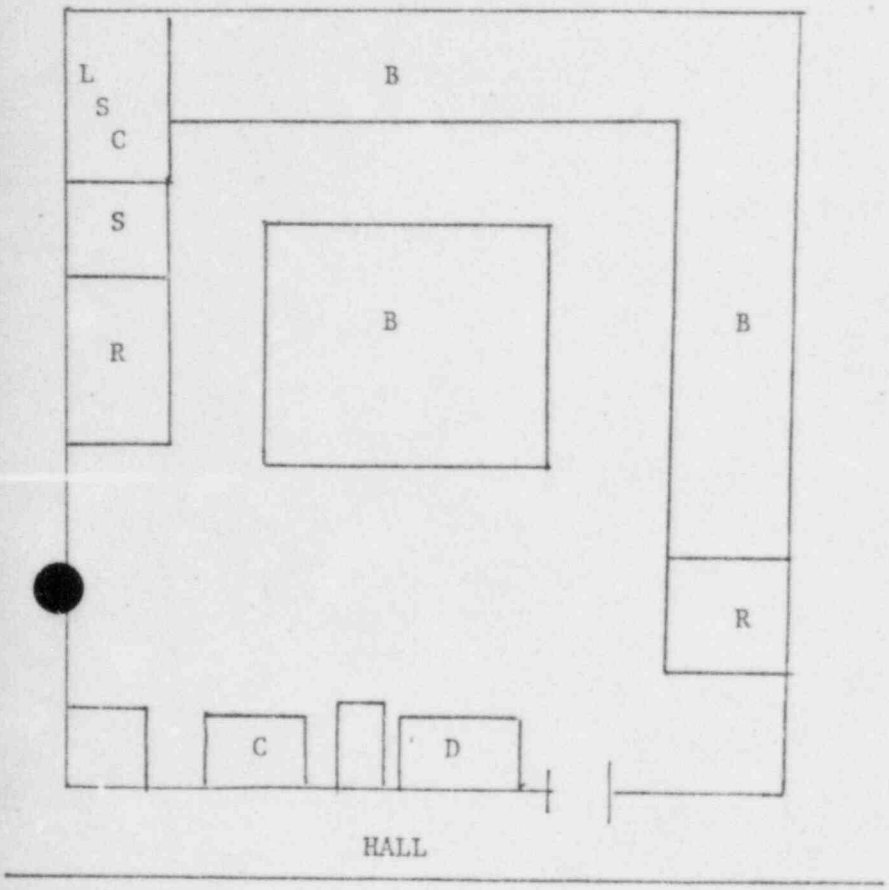
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



"OFFICIAL RECORD COPY"

CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

P badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building....Tobin.....Room....444N.....Type of Facility.....

Radiation Sources in Facility.....

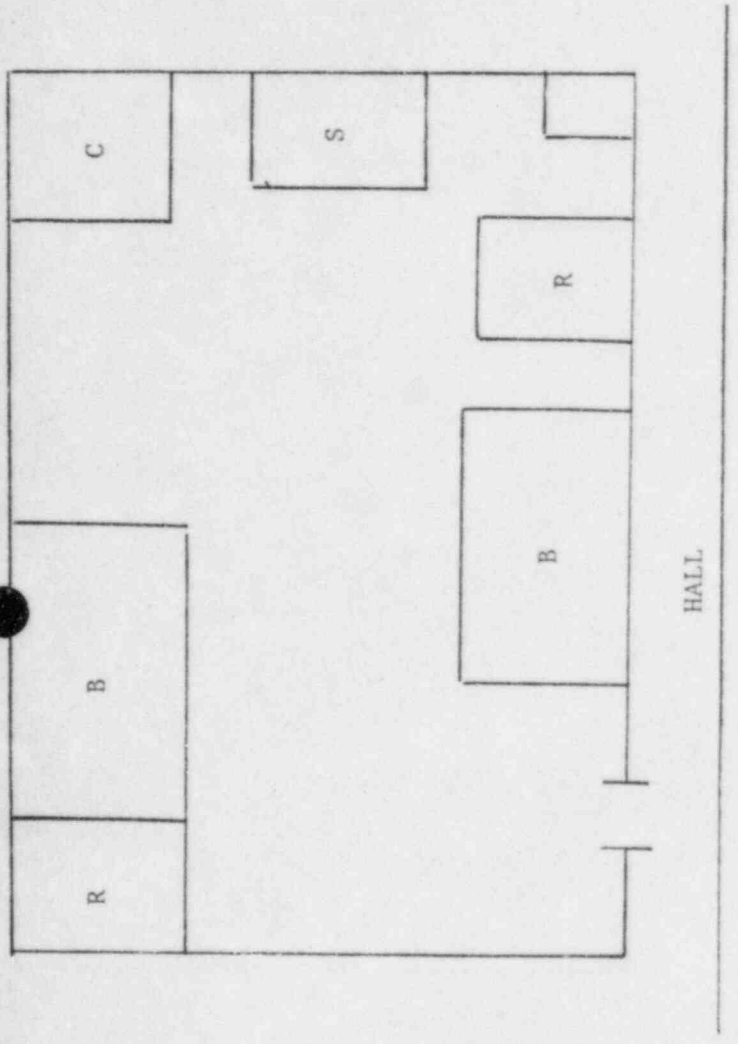
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

n badges being worn.....

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
T=Table

RADIATION SURVEY REPORT

__Initial __ Follow-up __ Monthly

Person Responsible.....Department.....

Building...Tobin Hall.....Room...449.....Type of Facility.....

Radiation Sources in Facility.....

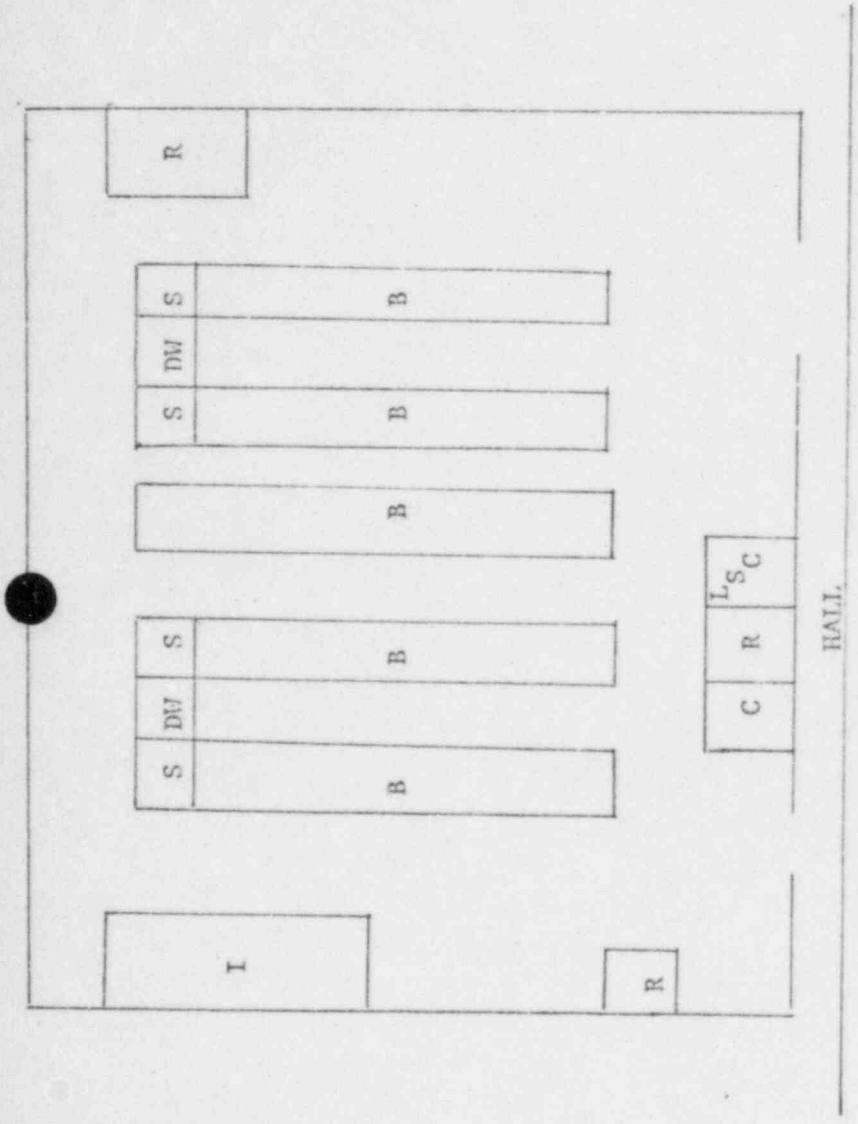
Persons Working in Facility.....

Surveyor.....Date.....

SURVEY DATA

Location

Findings



CHECK LIST:

Waste pick-up needed.....Currently using RAM.....

Posting - 10 CFR 20.....Sink disposal of RAM.....

NRC 313.....Volatile RAM being used.....

"Caution RAM".....General housekeeping.....

badges being worn.....

97863

Code: R=Refrig; C=Centrifuge; I=Incubator; S=Sink; B=Lab Bench; D=Desk; H=Hood
DW=Dishwasher

BETWEEN: William O. Miller, Chief
License Fee Management Branch
Office of Administration

John E. Glenn, Chief
Nuclear Materials Section B
Division of Engineering and
Technical Programs

LICENSE FEE TRANSMITTAL

Fee Exempt

A. REGION I

1. APPLICATION ATTACHED

Applicant/Licensee: University of Massachusetts

Application Dated: 4/8/85

Control No.: 03667

License No.: 20-00882-03

2. FEE ATTACHED

Amount: 0

Check No.: 0

3. COMMENTS

Signed Brenda P. Latchek

Date 4/16/85

03 ✓ 6/85

B. LICENSE FEE MANAGEMENT BRANCH

1. Fee Category and Amount: 03610 EX 3L1K EX 3M - No fee due

2. Correct Fee Paid. Application may be processed for:

Amendment

Renewal ✓

License

Signed Frances Brown

Date 4/23/85 bg 4/25/85

REGION I FORM 213
(MARCH 1983)