

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee

1. Department of Health and Human Services
Gillis W. Long Hansen's Disease Center
USPHS, Laboratory Research Branch
2. P.O. Box 25072
Baton Rouge, Louisiana 70894

In accordance with application dated
January 23, 1997,

3. License Number 17-14996-01 is amended in
its entirety to read as follows:

4. Expiration Date January 31, 2002

5. Docket or
Reference No. 030-08380

6. Byproduct, Source, and/or
Special Nuclear Material7. Chemical and/or Physical
Form8. Maximum Amount that Licensee
May Possess at Any One Time
Under This License

- A. Hydrogen-3
- B. Carbon-14
- C. Iodine-131
- D. Iodine-125
- E. Phosphorus-32
- F. Sulfur-35
- G. Chromium-51
- H. Calcium-45
- I. Cesium-137

- A. Any
- B. Any
- C. Any
- D. Any
- E. Any
- F. Any
- G. Any
- H. Any
- I. Sealed
Sources

- A. 100 millicuries
- B. 500 millicuries
- C. 10 millicuries
- D. 20 millicuries
- E. 10 millicuries
- F. 10 millicuries
- G. 10 millicuries
- H. 10 millicuries
- I. 100 microcuries

9. Authorized use:

- A. through H. To be used in vitro laboratory and diagnostic studies, chemical
synthesis of labeled compounds, protein labelling, and animal studies.

1. Instrument calibration

200094

ML40

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number

17-14996-01

Docket or Reference Number

030-08380

Amendment No. 17

CONDITIONS

10. Licensed material shall be used only at Gillis W. Long Hansen's Disease Center, USPHS, Carville, Louisiana (storage only low level waste burial site), and Gillis W. Long Hansen's Disease Center, USPHS, Laboratory Research Branch, Louisiana State University, School of Veterinary Medicine and School of Veterinary Medicine Annex, Baton Rouge, Louisiana.
11. Licensed material shall be used by, or under the supervision of, Eugene Harris; Melvyn Morales; Kochukunju Prabhakaran, Ph.D.; Edward Shannon, Ph.D.; James L. Krahenbuhl, Ph.D.; Thomas P. Gillis, Ph.D.; David Scollard, M.D., Ph.D.; Scott G. Franzblau, Ph.D.; Diana L. Williams, Ph.D.; or Linda B. Adams, Ph.D.
12. The Radiation Safety Officer for this license is J. P. Pasqua.
13. Experimental animals administered licensed materials or their products shall not be used for human consumption.
14. Licensed material shall not be used in or on human beings.
15. The licensee shall maintain records of information important to safe and effective decommissioning at Gillis W. Long Hansen's Disease Center, Louisiana State University, School of Veterinary Medicine, Baton Rouge, Louisiana, per the provision of 10 CFR 30.35(g) until this license is terminated by the Commission.
16. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.

A. Application dated January 23, 1997

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date JAN 31 1997

By James L. Montgomery
Materials Branch
Region IV, WCFO
Walnut Creek, California 94596

(FOR LFMS USE)
INFORMATION FROM LTS

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

PROGRAM CODE: 03620
STATUS CODE: 2
FEE CATEGORY: EX 3M
EXP. DATE: 19930731
FEE COMMENTS: 170.11(A)(5)
DECOM FIN ASSUR REQD: N

LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED
APPLICANT/LICENSEE: HEALTH & HUMAN SERV., DEPARTMENT OF
RECEIVED DATE: 930630
DOCKET NO: 3008380
CONTROL NO.: 464789
LICENSE NO.: 17-14996-01
ACTION TYPE: RENEWAL

2. FEE ATTACHED
AMOUNT: \$1200.00
CHECK NO.: 8597

3. COMMENTS

SIGNED
DATE

Billie Guesynski
FEE EXEMPT

B. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILESTONE IS ENTERED / /)

1. FEE CATEGORY AND AMOUNT: EX 3M 170.11(a)(5)
2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:
AMENDMENT _____
RENEWAL ✓
LICENSE _____

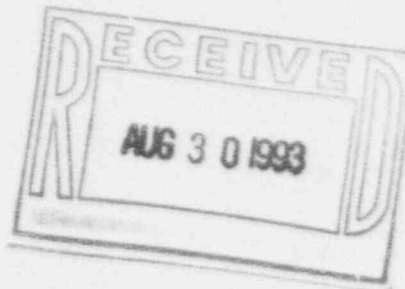
3. OTHER _____

SIGNED
DATE

JA
7-16-93

7/19/93

Per call LA, the check
is to be returned to
Rosemary Hauge.



AUG 27 1993

Department of Health & Human Services
Laboratory Research Branch
GWL Hansen's Disease Center
ATTN: Rosemary Hauge
P.O. Box 25072
Baton Rouge, LA 70894

Gentlemen:

Enclosed is Check No. 03597 (\$1200) which accompanied your application for renewal of Materials License 17-14996-01.

Your application is exempt from fees as specified in §170.11(a)(5) of revised 10 CFR 170. Enclosed is a copy of the July 23, 1992, **Federal Register** notice containing the Commission's revised fee regulations which went into effect August 24, 1992.

Your application has been forwarded to the Licensing staff for processing.

Sincerely,

/s/

Shirley Crutchfield
License Fee and Debt Collection Branch
Division of Accounting and Finance
Office of the Controller

Enclosures:

1. Check No. 03597 (\$1200)
2. July 23, 1992, Federal Register notice

OFFICE: OC/LFDCB
SURNAME: SCrutchfield
DATE: 8/1/93

OC/LFDCB
SKimberly
8/2/93

DISTRIBUTION:

S/F Copy
OC/DAF R/F
LFDCB R/F (2)

cdm:gwl.ltr



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV

Walnut Creek Field Office
1450 Maria Lane
Walnut Creek, California 94596-5368

JAN 31 1997

Department of Health and Human Services
G.W. Long Hansen's Disease Center
ATTN: Robert R. Jacobson, M.D., Ph.D.
Director
P.O. Box 25072
Baton Rouge, Louisiana 70894

SUBJECT: LICENSE RENEWAL

Please find enclosed License No. 17-14996-01. You should review this license carefully and be sure that you understand all conditions. Please note that your procedure for opening licensed material packages (Item 15) must be in compliance with 10 CFR 20.1906, including the swiping of the package for external removable contamination.

As discussed with your Radiation Safety Officer, Mr. J.P. Pasqua, by telephone on January 31, 1997, you should be aware of the NRC Decommissioning Rule contained in 10 CFR 30.36. This rule, in part, requires you to submit a written notification to the NRC Region IV office concerning the decommissioning of the Carville, Louisiana burial site. Based on information I have received from our Region IV office in Arlington, Texas, NRC guidance documents concerning the 30.36 requirements were sent to you last year, however no official correspondence concerning your notification has been received. Failure to comply with 10 CFR 30.36 could result in enforcement action being taken against you by the NRC. If you have any questions concerning your license, please contact me at 510-975-0249. Questions concerning decommissioning requirements and your Carville site can best be answered by Vivian Campbell of the Region IV Arlington, Texas office (phone 817-860-8143).

NRC expects licensees to conduct their programs with meticulous attention to detail and a high standard of compliance. Because of the serious consequences to employees and the public which can result from failure to comply with NRC requirements, you must conduct your program involving radioactive materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, note that you must:

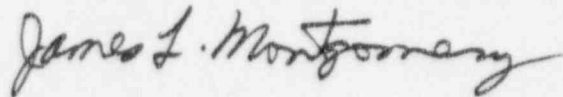
1. Operate in accordance with NRC regulations 10 CFR Part 19, "Notices, Instructions and Reports to Workers: Inspection and Investigations," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.
2. Possess radioactive material only in the quantity and form indicated in your license.
3. Use radioactive material only for the purpose(s) indicated in your license.
4. Notify NRC in writing of any change in mailing address (no fee required if the location of radioactive material remains the same).

5. Request and obtain written NRC consent before transferring your license or any right thereunder, either voluntarily or involuntarily, directly or indirectly, through transfer of control of your license to any person or entity. A transfer of control of your license includes not only a total change of ownership, but also a change in the controlling interest in your company whether it is a corporation, partnership, or other entity. In addition, appropriate license amendments must be requested and obtained for any other planned changes in your facility or program that are contrary to your license or contrary to representations made in your license application, as well as supplemental correspondence thereto, which are incorporated into your license. A license fee may be charged for the amendments if you are not in a fee-exempt category.
6. Maintain in a single document decommissioning records that have been certified for completeness and accuracy listing all the following items applicable to the license:
 - Onsite areas designated or formerly designated as restricted areas as defined in 10 CFR 20.3(a)(14) or 20.1003.
 - Onsite areas, other than restricted areas, where radioactive materials in quantities greater than amounts listed in Appendix C to 10 CFR 20.1001-20.2401 have been used, possessed, or stored.
 - Onsite areas, other than restricted areas, where spills or other unusual occurrences involving the spread of contamination in and around the facility, equipment, or site have occurred that required reporting pursuant to 10 CFR 30.50(b)(1) or (b)(4), including areas where subsequent cleanup procedures have removed the contamination.
 - Specific locations and radionuclide contents of previous and current burial areas within the site, excluding radioactive material with half-lives of 10 days or less, depleted uranium used only for shielding or as penetrators in unused munitions, or sealed sources authorized for use at temporary job sites.
 - Location and description of all contaminated equipment involved in licensed operations that is to remain onsite after license termination.
7. Submit a complete renewal application with proper fee, or termination request at least 30 days before the expiration date on your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of radioactive material after your license expires is a violation of NRC regulations.
8. Request termination of your license if you plan to permanently discontinue activities involving radioactive material.

You will be periodically inspected by NRC. Failure to conduct your program in accordance with NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC will result in enforcement action against you. This could include issuance of a notice of violation; imposition of a civil penalty; or an order suspending, modifying, or revoking your license as specified in the "General Statement of Policy and Procedure for NRC Enforcement Actions" (Enforcement Policy), 60 FR 34381, June 30, 1995.

Thank you for your cooperation.

Sincerely,

A handwritten signature in cursive script that reads "James L. Montgomery".

James L. Montgomery
Senior Health Physicist
Materials Branch

Docket: 030-08380
License: 17-14996-01
Control: 564789

Enclosures: As stated

cc w/enclosure:
J.P. Pasqua, Laboratory Research Branch
Radiation Safety Officer
G.W. Hansen's Disease Center

Department of Health & Human
Services

-4-

bcc:

VCampbell, RIV

Docket File

WCFO Inspection File

LFDCB, T-9 E10

State of Louisiana (License Only)

DOCUMENT NAME: G:\564789

To receive copy of document, indicate in box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

RIV:MB								
JLMontgomery								
01/3/97								

OFFICIAL RECORD COPY



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Jan. 23, 1997

Dr. James L. Montgomery
Senior Health Physicist
U.S. Nuclear Regulatory Commission
Walnut Creek Field Office
1450 Maria Lane
Walnut Creek, CA 94956-5368

97 JAN 27 Laboratory Research Branch
GWL Hansen's Disease Center at
Louisiana State University
P.O. Box 25072
Baton Rouge, LA 70894

Tel: 504-346-5785
FAX: 504-346-5786

Dear Dr. Montgomery,

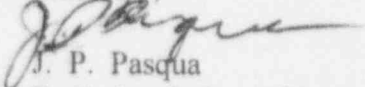
Enclosed please find our NRC License Renewal application. I apologize for the delay in submitting this application to you. Regarding the six queries in your letter of 26 July:

1. The latest draft of the G W Long Hansen's Disease Center's plans for the landfill nuclear waste site at Carville was sent to me Jan. 13, 1997 by CDR Fuller and is attached (Project Summary, HDC-434, Appendix A).
2. The renewal application reflects the changes CFR Part 20 that you brought to our attention.
3. The renewal application contains our means of converting cpm to dpm on our survey instrument.
4. Regarding the "check source" for our survey instruments; our scintillation and gamma counters of course have sealed standards. Our survey instrument is not checked daily against a standard. We rely on it's scheduled calibrations to keep it standardized. We will comply with your suggestions for acquiring a "check source" for daily use.
5. All radiation survey results will be recorded and maintained for inspection.
6. I hope the added details for our bioassay program, as described in the renewal application, are sufficient.

Please contact me with any questions or comments you may have. Again I apologize for the delayed filing of this application.

Docket #030-08380
License #17-14996-01
Control #464789

Sincerely,


J. P. Pasqua
Radiation Safety Officer

504-346-5776

564789

APPENDIX A

PROJECT SUMMARY HDC- 434

Site Investigation for the Landfill

INTRODUCTION

The site is located at the Gillis W. Long Hansen's Disease Center (GWLHDC) in the Town of Carville, Iberville Parish, Louisiana, Longitude: 91° 7' 28" W, Latitude 30° 11' 52" N. The owner is the US Department of Health And Human Services. The mailing address for the facility is 5445 Point Clair Road, Carville, Louisiana 70721.

The facility is licensed by the US Nuclear Regulatory Commission (License No. 17-14996-01) to utilize nuclear material in small quantities in *in vitro* laboratory and diagnostic studies, chemical synthesis of labeled compounds, protein labeling and animal studies. The licensed material, half-lives and maximum on-site quantities are as follows:

<u>Radioisotope</u>	<u>Maximum Quantity</u>	<u>Half-Life (days)</u>
Hydrogen - 3	100 millicuries	4,500
Carbon - 14	20 mCi	2 million
Iodine - 131	10 mCi	8
Iodine - 125	20 mCi	60
Phosphorus - 32	10 mCi	14
Sulfur - 35	10 mCi	87
Chromium - 51	10 mCi	28
Calcium - 45	5 mCi	165

From 1970 to 1984, disposal of low-level radioactive materials took place on hospital grounds in accordance with a Nuclear Regulatory Commission license. The waste materials were buried 6-8 feet deep and at 6 foot intervals. Waste material included paper, gloves, pipettes, liquid scintillation fluids and vials, gamma counter vials, animal carcasses, aqueous washings and shipping containers. Most of the material was reportedly from experiments with tritiated thymidine and is comprised of contaminated liquid scintillation fluids. Generally, 3-10 millicuries were buried at any one time and only 6-10 burials per year were accomplished. Each burial site was marked with a metal pipe. In 1990 the Laboratory Research Branch was relocated off-site to Baton Rouge & the records of this site were lost in the move. Many of the employees however are still with the program and could be interviewed.

A. Statement of Work for the Nuclear Regulatory Commission License Landfill

The site contamination investigation at the Carville site will consist of field and laboratory testing of soils, groundwater and surface water and an evaluation of remediation requirements of identified contaminated areas. The area of concern includes a site in the north corner of the property approximately 50 feet (15 m) by 150 feet (45 m) in size. (On site plan)

B. The objectives of the study are as follows:

B-1. Decommission the landfill site for unrestricted use.

- a. Determine the aerial extent and composition of the landfill.
- b. Conduct a background survey using the NRC's "Screening Methodology For Assessing prior land burials for Radioactive Waste Authorized under former 10 CFR 20.304 & 20.302".
- c. Determine impact resulting from the landfill if any to the soils, groundwater, or streams.
- d. Develop a closing plan for the landfill to satisfy State and Federal requirements and, if indicated, develop a plan to address remediation requirement resulting from contamination identified during the investigations.

C. QUALIFICATION OF CONTRACTOR

The Contractor must be approved by the Nuclear Regulatory Commission (NRC) to perform this type of site investigation.

D. REPORTING REQUIREMENTS

The contractor shall furnish the following three (3) reports.

The reports shall be typewritten and in a format which can be forwarded to the project officer. Reports shall be subject to approval by Louisiana Department of Environmental Quality (DEQ) and Nuclear Regulatory Commission (NRC). Work Shall Commence within Fifteen (15) days of the Notice to Proceed.

1. Environmental Assessment Plan (EAP)

A plan which clearly defines the method and steps that will be utilized by the Contractor in making the environmental assessment shall be submitted to the Project Office for approval prior to commencement of work. The plan shall indicate each step intended for the specific site at GWLHDC to investigate the area described herein and obtain data for the Environmental Investigation Report following Screening Methodology For Assessing prior land burials for Radioactive Waste Authorized under former 10 CFR 20.304 & 20.302. As a minimum, the following steps should be completed:

1. Review license records, documentation supporting license application.
2. Perform a preliminary field reconnaissance and meet with on-site personnel from the U.S. Public Health Service.
Discuss site history with employees and former employees who may have information on the past operations.
3. Identify Radionuclides used.
4. Determine which radionuclides could be site contaminants.

FROM: Capt. J. Wayne Friet, R.SAF, U.S. Air Force, Air Force Center, P.O. Box 504-042-8770, Voice: 504-042-8725, JAMES L. STANBOND, JR., ST. LOUIS, MISSOURI, 63101, JAMES L. STANBOND, JR., ST. LOUIS, MISSOURI, 63101, JAMES L. STANBOND, JR., ST. LOUIS, MISSOURI, 63101

5. Identify locations of likely residual activity.

6. Perform Scoping Survey (If Required)

This typically consists of limited direct measurements (exposure rates and surface activity levels) and samples (smears, soils, water, and material with induced activity obtained from the site locations considered to be the most likely to contain residual activity and adjacent locations not expected to have been affected by the site operations.

6.1 Hydrologic and Hydrogeologic Review

A regional hydrologic and a hydrogeologic review may be performed for the site area. This will be accomplished by reviewing information from publicly available sources such as United States Government Department of Interior - Geological Survey (U.S.G.S.), U.S. Department of Agriculture - Soil Conservation Service, university libraries, regional agencies and the Louisiana State Geological Survey. Existing well searches will be conducted and data compiled. In addition, the available historic aerial photographs for the site will be studied in order to approximately delineate the areas of land disposal activities and to determine the relative topographic changes of the site.

The information obtained from the above study will be used to determine the locations of soil and groundwater explorations.

6.2 Field Investigations

Based on the available information, a field sampling and analysis plan (SAP) will be developed for the site. The SAP will describe the procedures, methodologies, quantities and locations of proposed soil and water sampling program and quality assurance and quality control (QA/QC) requirements. The SAP will follow the guideline outlined in NRC's Manual for Conducting Radiological Surveys in Support of License.

6.3 Surface Water and Sediment Sampling

Surface water and sediment sampling may be performed in the bayous, one crossing and the other bordering the property. Samples may be collected at points upstream of the site, at the middle of the site and downstream of the site. Sediment and water samples will be collected for chemical analysis from each of the two bayous. Water quality measurements will be taken in the field for dissolved oxygen, temperature, pH and conductivity.

6.4 Groundwater Monitoring Well Installation Program

Based on the information obtained from the hydrologic and hydrogeologic study and field reconnaissance, some groundwater monitoring wells may

From: Capt. J. Wayne Fuller E.S.CPE O.W. LONG HANSEN DISEASE CENTER FAX: 504-643-4779 VOIC: 504-643-4770
be required located upgradient and downgradient of the landfill area. Eight inch diameter borings will be drilled to an average depth of 25 feet below ground level for the installation of groundwater monitoring wells. Standard split spoon sampling will be performed throughout the depth of the borings. Soils will be classified and logged in accordance with the Unified Soil Classification System. Four inch diameter well screens and casings will be used for well installations.

The wells will be protected with steel outer casings and guard posts as required by the Louisiana Department of Transportation (LADOT). Wells will be developed following installation and left for at two weeks prior to sampling.

Groundwater monitoring wells will be surveyed and the locations will be established with reference to Louisiana State plane coordinate system and the National Geodetic Vertical Datum (NGVD).

7. Establish guideline values.
8. Laboratory testing
Samples should be taken to a well- established Laboratory for analysis. There shall be a written procedures that document the laboratory's analytical capabilities for radionuclides and a QA QC program which assures the validity of the analytical results.
9. Health and Safety Plans
A site specific Health and Safety plan (HASP) will be prepared for the field crew. The contractor will require the drilling subcontractor to also develop a health and safety plan complying, at a minimum, with OSHA regulations governing site safety practices, as described in OSHA 29 CFR 1910 and 29 CFR 1926, and the United States Environmental Protection Agency (USEPA) Standard Operating Guidelines, July 1988.

2. Environmental Investigation Report (EIR)

This report shall describe in detail the extent of subsurface contamination resulting from the landfill. Four (4) copies of the EIR shall be submitted to the Project Officer within sixty (60) days of Notice to Proceed.

At a minimum, the EIR shall include the following:

1. Description of the field investigations performed.
2. Data obtained from the field investigations such as types of material encountered, boring logs and well diagrams, groundwater levels, horizontal and vertical extent
3. of landfills and soil gas survey results.
4. Laboratory analytical results for soil and groundwater.
5. Data analysis and interpretation identifying contamination problems (if any) as revealed from the investigations.
6. Installation of groundwater monitoring wells immediately outside of the confirmed zone of contamination, defining both up-gradient and down-gradient boundary conditions.
7. A determination of groundwater elevations, direction and velocity of flow from at least three (3) of the monitoring wells.
8. A diagram showing the location of all bore-holes and or wells existing at the site.
9. Results of laboratory analyses from all existing and new wells where free-phased product was not observed. For soil samples taken from borings and for dissolved constituents in groundwater, BTEX and TPH analyses should be provided using Solid Waste 846 - California Department of Health Services Method.
10. Driller's logs from all boreholes and wells installed. For wells, include the well construction information.
11. If necessary, a plan of additional investigation activities to determine off-site contamination must be included unless an alternate investigation plan is agreed upon by the Department.

3. Corrective Action Plan (CAP)

Within fifteen(30) calendar days of EIR, the contractor shall provide approved options for corrective action for remediation of the GWLHDC site. If required, Project Officer will select a plan of action within ten (30) calendar days.

The contractor shall provide a detailed Corrective Action Plan within fifteen (15) calendar days of Project Officer's approval of remediation option. Four (4) copies of the CAP must be submitted to the Project Officer within forty (45) days after the submittal of the

Environmental Investigation Report.

3.1 REMEDIAL ACTION REQUIREMENTS

Chemical Data

The laboratory analytical results for soil, sediment, surface water and groundwater will be validated for Quality Assurance Quality Control (QA/QC) compliance. The groundwater results will be compared against LA DEQ groundwater standards, to EPA's maximum contaminant levels (MCL's), regional water quality, background levels within the site and to drinking water standards. The soil and sediment analytical results will be compared against site background data.

Landfill Area

Based on the review of the available aerial photographs and other available records, the boundaries of the landfill will be determined and mapped on available site plans. Subsurface information acquired from the field investigations will be analyzed to determine the containment characteristics of the landfill. Structural characteristics of the NRC landfill will be obtained from existing permit documents.

Groundwater potentiometric surface contours will be developed using groundwater elevation readings measured during the water sampling program. This data will be used to establish the groundwater flow patterns for the landfill areas. Based on the analytical results, impacts to groundwater quality resulting from the landfills will be determined. Contaminant concentration contours will be developed in order to determine the distribution of contamination, if any, and to determine the remedial action requirements to the extent permitted by the data.

Louisiana DEQ requirements for closure and post-closure actions of landfills will be assessed, and applicability and costs of meeting these requirements will be developed.

COST ESTIMATE

1.	Consultation Costs	\$ 10,000.00
2.	Laboratory Cost	6,000.00
3.	Drilling Costs 4 x 2,000 each well	8,000.00
4.	Equipment Rental Cost	1,000.00
5.	Travel Cost	<u>2,500.00</u>
Subtotal		\$27,500.00
OH Profit		4,200.00
TOTAL		\$31,700.00

FORM NRC-313 I (1-79) 10 CFH 30		U.S. NUCLEAR REGULATORY COMMISSION	
APPLICATION FOR BYPRODUCT MATERIAL LICENSE INDUSTRIAL		1. APPLICATION FOR: <i>(Check and/or complete as appropriate)</i>	
See attached instructions for details. <i>Completed applications are filed in duplicate with the Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555 or applications may be filed in person at the Commission's office at 1717 H Street NW, Washington, D.C. or 7915 Eastern Avenue, Silver Spring, Maryland.</i>		<input type="checkbox"/> a. NEW LICENSE	
		<input type="checkbox"/> b. AMENDMENT TO: LICENSE NUMBER	
		<input checked="" type="checkbox"/> c. RENEWAL OF: LICENSE NUMBER 17-14996-01	
2. APPLICANT'S NAME <i>(Institution, firm, person, etc.)</i> G.W.L. Hansen's Disease Center TELEPHONE NUMBER AREA CODE - NUMBER EXTENSION 504-346-5785		3. NAME OF PERSON TO BE CONTACTED REGARDING THIS APPLICATION Joseph P. Pasqua TELEPHONE NUMBER AREA CODE - NUMBER EXTENSION 504-346-5780	
4. APPLICANT'S MAILING ADDRESS <i>(Include Zip Code)</i> U.S. Public Health Service 5445 Point Clair Road Carville, LA 70721		5. STREET ADDRESS WHERE LICENSED MATERIAL WILL BE USED <i>(Include Zip Code)</i> Laboratory Research Branch LSU School of Veterinary Medicine Baton Rouge, LA 70803	
(IF MORE SPACE IS NEEDED FOR ANY ITEM, USE ADDITIONAL PROPERLY KEYED PAGES.)			
6. INDIVIDUAL(S) WHO WILL USE OR DIRECTLY SUPERVISE THE USE OF LICENSED MATERIAL <i>(See Items 16 and 17 for required training and experience of each individual named below)</i>			
FULL NAME		TITLE	
a. Pages 12 - 15			
b.			
c.			
7. RADIATION PROTECTION OFFICER Joseph P. Pasqua		Attach a resume of person's training and experience as outlined in Items 16 and 17 and describe his responsibilities under Item 15. Page 1	
8. LICENSED MATERIAL			
L I N E NO.	ELEMENT AND MASS NUMBER A	CHEMICAL AND/OR PHYSICAL FORM B	NAME OF MANUFACTURER AND MODEL NUMBER <i>(If Sealed Source)</i> C
			MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTI- VITY PER SOURCE WHICH WILL BE POSSESSED AT ANY ONE TIME D
(1)	Page 2	Page 2	Page 2
(2)			
(3)			
(4)			
DESCRIBE USE OF LICENSED MATERIAL E			
(1)	Page 3		
(2)			
(3)			
(4)			

9. STORAGE OF SEALED SOURCES			
LINE NO.	CONTAINER AND/OR DEVICE IN WHICH EACH SEALED SOURCE WILL BE STORED OR USED A.	NAME OF MANUFACTURER B.	MODEL NUMBER C.
(1)	Page 4	Page 4	Page 4
(2)			
(3)			
(4)			

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

11. CALIBRATION OF INSTRUMENTS LISTED IN ITEM 10	
<input type="checkbox"/> a. CALIBRATED BY SERVICE COMPANY NAME, ADDRESS, AND FREQUENCY Page 5	<input type="checkbox"/> b. CALIBRATED BY APPLICANT <i>Attach a separate sheet describing method, frequency and standards used for calibrating instrument:</i> Page 5

12. PERSONNEL MONITORING DEVICES		
TYPE (Check and/or complete as appropriate) A.	SUPPLIER (Service Company) B.	EXCHANGE FREQUENCY C.
<input checked="" type="checkbox"/> (1) FILM BADGE <input type="checkbox"/> (2) THERMOLUMINESCENCE DOSEMETER (TLD) <input checked="" type="checkbox"/> (3) OTHER (Specify) _____ <u>Ring badge for P-32</u>	Page 5 and 6	<input type="checkbox"/> MONTHLY <input checked="" type="checkbox"/> QUARTERLY <input type="checkbox"/> OTHER (Specify) _____ _____

13. FACILITIES AND EQUIPMENT (Check where appropriate and attach annotated sketch(es) and description(s))	
<input checked="" type="checkbox"/> a. LABORATORY FACILITIES, PLANT FACILITIES, FUME HOODS (Include filtration, if any), ETC <input type="checkbox"/> b. STORAGE FACILITIES, CONTAINERS, SPECIAL SHIELDING (fixed and/or temporary), ETC <input type="checkbox"/> c. REMOTE HANDLING TOOLS OR EQUIPMENT, ETC <input type="checkbox"/> d. RESPIRATORY PROTECTIVE EQUIPMENT, ETC	Appendix A and Appendix 1-7

14. WASTE DISPOSAL	
a. NAME OF COMMERCIAL WASTE DISPOSAL SERVICE EMPLOYED Page 6	
b. IF COMMERCIAL WASTE DISPOSAL SERVICE IS NOT EMPLOYED, SUBMIT A DETAILED DESCRIPTION OF METHODS WHICH WILL BE USED FOR DISPOSING OF RADIOACTIVE WASTES AND ESTIMATES OF THE TYPE AND AMOUNT OF ACTIVITY INVOLVED IF THE APPLICATION IS FOR SEALED SOURCES AND DEVICES AND THEY WILL BE RETURNED TO THE MANUFACTURER, SO STATE N/A	

INFORMATION REQUIRED FOR ITEMS 15, 16 AND 17

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

Item 15 - Pages 6-12; Items 16 & 17 - Pages 12-15

15. **RADIATION PROTECTION PROGRAM.** Describe the radiation protection program as appropriate for the material to be used including the duties and responsibilities of the Radiation Protection Officer, control measures, bioassay procedures (if needed), day-to-day general safety instruction to be followed, etc. If the application is for sealed source's also submit leak testing procedures, or if leak testing will be performed using a leak test kit, specify manufacturer and model number of the leak test kit.
16. **FORMAL TRAINING IN RADIATION SAFETY.** Attach a resume for each individual named in Items 6 and 7. Describe individual's formal training in the following areas where applicable. Include the name of person or institution providing the training, duration of training, when training was received, etc
 - a. Principles and practices of radiation protection.
 - b. Radioactivity measurement standardization and monitoring techniques and instruments.
 - c. Mathematics and calculations basic to the use and measurement of radioactivity
 - d. Biological effects of radiation.
17. **EXPERIENCE.** Attach a resume for each individual named in Items 6 and 7. Describe individual's work experience with radiation, including where experience was obtained. Work experience or on-the-job training should be commensurate with the proposed use. Include list of radioisotopes and maximum activity of each used.

18. CERTIFICATE

(This item must be completed by applicant)

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

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

* **LICENSE FEE REQUIRED**
(See Section 170.31 10 CFR 170)

Fee paid, your invoice #AM5086-96,
DHHS P.O. #1166

(1) **LICENSE FEE CATEGORY** 3M

(2) **LICENSE FEE ENCLOSED \$**

by **CERTIFYING OFFICIAL** (Signature)

NAME (Type or print)

Robert R. Jacobson, M.D., Ph.D.

d. **TITLE**

Director, GWL Hansen's Disease Center

e. **DATE**

11/23/97

Item 7.

**INDIVIDUAL RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR
TRAINING AND EXPERIENCE: Joseph P. Pasqua**

TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES			
Field of Training in Radiation	Location & Dates	Type and Length of Training	
		Lecture, Laboratory Courses (Hours)	Supervised Laboratory (Hours)
a. Matter, Property Interactions, Dosimetry Sources & Measurement	Baton Rouge, LA (1995) Louisiana State University Nuclear Science Center	7 hours	-0-
b. Health Physic Calculation, Lab Measurement, Protection, Biological Effects	Baton Rouge, LA (1995) Louisiana State University Nuclear Science Center	7 hours	-0-
c. Licensing and Regulation, Survey Instruments, Lab. Exercise Measurements	Baton Rouge, LA (1995) Louisiana State University Nuclear Science Center	5 hours	3 hours
d. Shielding Respiratory Protection, Transporation, Personnel, Monitoring Health - Physics-Exercise	Baton Rouge, LA (1995) Louisiana State University Nuclear Science Center	5 hours	2 hours
e. Sources of Information, Emergency Procedures, Decontamination Tech.	Baton Rouge, LA (1995) Louisiana State University Nuclear Science Center	3 hours	-0-

EXPERIENCE WITH RADIOACTIVE MATERIALS				
Isotope	Maximum Amt.	Where Experience was Gained	Duration of Experience	Type of Use
¹⁴ C	500 uCi	GWL Hansen's Disease Center @ LSU Baton Rouge, LA	1990-Present	Enzyme studies
⁵¹ Cr	900 uCi	GWL Hansen's Disease Center @ LSU Baton Rouge, LA	1990-Present	Mammalian cell lysis studies
³ H	500 uCi	GWL Hansen's Disease Center @ LSU Baton Rouge, LA	1990-Present	³ H Thymidine/DNA

Item 8. **LICENSED MATERIAL**

Item	A. Element & Mass #	B. Chemical and/or Physical Form	C. Manufacturer	D. Maximum Amount Possessed at any Time
A	Hydrogen-3	Any	NEN/ICN	100 millicuries
B	Carbon-14	Any	Dupont/Beckton Dickinson	500 millicuries
C	Iodine-131	Any	ICN	10 millicuries
D	Iodine-125	Any	ICN	20 millicuries
E	Phosphorus-32	Any	Amersham	10 millicuries
F	Sulfur-35	Any	ICN	10 millicuries
G	Chromium-51	Any	ICN	10 millicuries
H	Calcium-45	Any	ICN	5 millicuries
I	Cesium-137	Sealed Source	Beckman	0.1 uCi
J	Cesium-137	Sealed Source	Beckman	30 uCi
K	Cesium-137	Sealed Source	Beckman	30 uCi

E. DESCRIBE USE OF LICENSED MATERIAL

Item	Chemical	Purpose
A	Hydrogen-3	<i>In vitro</i> studies: bacterial metabolic, enzymatic and diagnostic studies.
B	Carbon-14	<i>In vitro</i> studies: bacterial metabolic, enzymatic and diagnostic studies.
C	Iodine-131	<i>In vitro</i> protein labeling, bacterial metabolic, enzymatic and diagnostic studies.
D	Iodine-125	<i>In vitro</i> protein labeling for immunologic and diagnostic studies.
E	Phosphorus-32	DNA labeling for DNA sequencing.
F	Sulfur-35	Protein labeling for electrophoretic analysis of proteins.
G	Chromium-51	<i>In vitro</i> cell labeling, chemotaxis, phagocytosis studies.
H	Calcium-45	<i>In vitro</i> labeling of eukaryotic cells for subsequent measurement of Ca^{+2} release from internal cellular pools.
I	Cesium-137	Sealed source for calibration of gamma counter.
J	Cesium-137	Sealed source for calibration of LS 6000 IC instrument.
K	Cesium-137	Sealed source for calibration of LS 5801 instrument.

Item 9. **STORAGE OF SEALED SOURCES**

Item	A. Container and/or device	B. Name of manufacturer	C. Model Number
Cesium-137 Standard (0.1 uCi)	Lead cylinder	Beckman Instruments	N/A
Cesium-137 Standard (30 uCi)	Liquid scintillation counter	Beckman Instruments	LS 6000IC
Cesium-137 Standard (30 uCi)	Liquid scintillation counter	Beckman Instruments	LS 5801

Item 10. **RADIATION DETECTION INSTRUMENTS**

Item	Type of Instrument	Manufacturer's Name	Model Number	Number Available	Radiation Detected	Sensitivity Range
1	Survey meter	Ludlum	3449, 44-9 3447 44-7	2	Beta, gamma	0-200 mr/hr (survey)
2	Gamma counter	Beckman	4000	1	Gamma	0-1,000,000 CPM (measuring, survey)
3	Liquid scintillation counter	Beckman	5801	1	Beta	0-1,000,000 CPM (measuring, survey)
4	Liquid scintillation counter	Beckman	6000 IC	1	Beta	0-1,000,000 CPM (measuring, survey)

Item 11. **CALIBRATION OF INSTRUMENTS LISTED IN ITEM 10.**

11a. Ludlum Survey Meters (#1 above) - Calibrated every 6 months by:

Mr. Richard Teague
LSU Radiation Safety Office
Louisiana State University
Baton Rouge, LA 70894 Tel: 504-388-2163

License #: LA-0001-L01 (Complete calibration method filed with license)

11b. Liquid Scintillation Counters (#3,4), and Gamma Counter(#2)

1. For calibration of Ludlum Survey Meters, item 1, we convert counts per minute (CPM) to disintegrations per minute (DPM) by dividing the percentage number that the survey meter was calibrated with, into the CPM reading, and this will equal DPM. Example: if the CPM = 250 and the survey meter was calibrated with 38% then the DPM = $250/0.38 = 658$.
2. Gamma Counter, Beckman Model 4000, is a dual channel counter. The instrument is calibrated before each use for proper gain setting (using sealed source Cs^{137} [0.1 uCi] provided by the manufacturer), window settings and maximum efficiency for a given isotope are set as per instruction manual.
- 3.&4. Liquid Scintillation Counter, Beckman Models 5801 and 6000 IC, are auto-calibrated models using a 30 uCi (1.11 uBq) ^{137}Cs sealed source provided with the scintillation counter by the manufacturer. Calibration is checked before each use. If autocalibration is not successful, a service call is made to Beckman to remedy the problem. In addition, maintenance and service checks by Beckman service people are performed on the LSC 5801 and 6000 IC at regular intervals, as per manufacturer's instructions.

Item 12. **PERSONNEL MONITORING DEVICES:**

Personnel monitoring is conducted with film badges (ring badge for P-32) which are exchanged and tested quarterly. The name and address of the service company is as follows:

Radiation Detection Co.
P.O. Box 3414
Sunnyvale, CA 94088-3414

Our routine use of isotopes, such as I-125, I-131 and H-3 are at the level not requiring a bioassay program

(Regulatory Guide 10.7, page 10-7-3, Revision 1, August, 1979). Quantities of these isotopes used in studies are all below 1.0 mCi and in the case of I-125 and I-131 all procedures which could result in a release of volatile isotope are performed in a fume hood. Gloves, safety glasses, lab coats and appropriate shielding are used for all procedures. Procedures performed outside the fume hood utilize dilute concentrations (I-250 uCi) of the iodine- or tritium-containing compounds, again not requiring routine bioassay monitoring.

Item 13. **FACILITIES AND EQUIPMENT - See APPENDIX A and APPENDIX 1-7**

Item 14. **WASTE DISPOSAL**

Louisiana State University School of Veterinary Medicine handles all aspects of radioactive waste disposal for GW Long Hansen's Disease Center, Laboratory Research Branch. Disposal of our waste by LSU is regulated by the current Louisiana State Radiation License #LA-0001-L01 which is in compliance with all Federal Regulations pertaining to radioactive waste disposal.

Item 15. **RADIATION PROTECTION PROGRAM**

A. Procedures for opening packages containing radioactive material.

1. Packages are transferred unopened from the receiving dock to the appropriate department of the Research Branch.
2. For all packages, the following additional procedures for opening packages will be carried out:
 - a. Put on gloves to prevent hand contamination.
 - b. Visually inspect package for any sign of damage (e.g. wetness, crushed). If damage is noted, stop procedure and notify Radiation Safety Officer.
 - c. Measure exposure rate at 3 feet (or 1 m) from package surface and record. If > 10 mR/hr stop procedure and notify Radiation Safety Officer.
 - d. Measure surface exposure rate and record. If > 200 mR/hr stop procedure and notify Radiation Safety Officer.
 - e. Open the package with the following precautionary steps:
 - (1) Open the outer package (following manufacturer's directions) and remove packing slip.

- (2) Open inner package and verify that contents agree with those on packing slip. Compare requisition, packing slip, and label on bottle.
 - (3) Check integrity of final source container (i.e., inspect for breakage of seals or vials, loss of liquid, and discoloration of packaging material).
 - (4) Check also that shipment does not exceed possession limits.
- f. Monitor the packing material and packages for contamination before discarding.
 - (1) If contaminated, treat as radioactive waste.
 - (2) If not contaminated, obliterate radiation labels before discarding in regular trash.
3. Remove the packing slip and record the date, survey results, and surveyor's name on the slip. Place in the permanent file.

B. Control measures.

1. No radioactive materials or shipments of any kind are received after normal working hours. The GWL Hansen's Disease Center at the LSU-SVM is a secure area, and access is through a controlled entrance which is manned continuously. All after hours deliveries are turned away at the door.
2. Compliance with subpart C and subpart D of 10 CFR Part 20, exposures to individuals in restricted areas and effluents to unrestricted areas, will be assured by the prohibition of open bench top work with volatile radioactive materials. Such work will be done in chemical fume hoods utilizing bound isotopes. Engineering controls are in place to ensure that any releases which do occur will be below the limits given in Appendix B, Table 1, 2 and 3 of 10 CFR Part 20.
3. Environmental surveys will be performed by the investigators at least monthly and, in the immediate area of the experiment, at the conclusion of each experiment. Surveys will be done with the Ludlum Model 3449/3447 survey meter where appropriate or by wipe testing surface, and the readings in counts per minute compared to background. Readings less than 10 times background level will be considered acceptable.
4. All personnel working with radioactive materials as well as those who are employed to work in the immediate area are kept informed as to where such materials are stored and what areas

are utilized for working with radioactive materials. All persons while working with radioactive materials are required to wear laboratory coats and a personal film badge. They are also required to use rubber gloves, remote pipetting devices and to take all precautions necessary to minimize exposure to such radioactive materials or radiation. Housekeeping personnel are informed as to where radioactive materials are stored; in addition, these areas are posted with signs according to regulations specified in subpart G, 20.1601, 20.1902, 10 CFR (Control of Exposures from External Sources in Restricted Areas). Also, these areas are not cleaned by housekeeping personnel, but are cleaned by the individual users of radioactive materials. All individuals working in or frequenting these areas have been instructed in the health protection problems associated with exposure to radioactive materials.

5. Special safety procedures to be followed when using P-32:

- a. Keep the work behind low-density shielding such as plexiglass.
- b. Radiation survey with Ludlum Survey Meter must be made of the work area after each experiment.
- c. Always wear finger-ring monitors for procedures.
- d. A dry-run will be performed prior to initiating unfamiliar procedures to preclude unexpected complications.

C. Survey program.

Area survey programs will include storage areas in which work has been done with radioactive material. Comprehensive surveys and wipe tests will be done at the end of each experiment for the experiment area only. Area wipes will be removed to a low background location for measurement. The area surveyed will be cleaned if the contamination level exceeds 200 dpm/100 cm². In addition, deep sinks, lab benches, hoods, floors, well counters, etc., are also surveyed. At monthly intervals, routine wipe tests are made of the above areas. All records of tests and any decontamination of working areas are recorded in a Radiation Safety Laboratory Log Book held in each laboratory using isotopes. Maintenance of each log book is the responsibility of the isotope-user with periodic review by the Radiation Safety Officer.

D. Research animals.

1. Radioactive materials are not presently being used in research animals. However, when used, animals will be held for only a few days between introduction of the radioactive material and sacrifice. They will be kept in cages in the laboratory during this period and will not be

returned to our Animal Care Area. The animals will be cared for by the researchers using them for this period and will not be handled by our regular animal caretakers. These researchers, who are listed above, will treat the animals and their cages as radioactive material. The General Rules for Safe Use of Radioactive Material (see below) will apply.

2. Animal waste carcasses will contain less than 0.05 microcuries of hydrogen-3 or carbon-14 per gram of animal tissue. Carcasses will be disposed of by LSU under license LA-0001-L01.
3. Cage cleaning and decontamination will be done in our automatic cage washer which is connected to the LSU-SVM's sanitary sewer system.
4. The laboratories and buildings are locked after normal working hours, and security for any research animals temporarily housed therein are not expected to pose any problems.

E. Emergency procedures.

1. Emergency procedures to be followed in case of spills, fires, explosions, etc., involving radioactive materials: In an emergency, the primary concern must always be the protection of laboratory personnel from radiation hazards. Second should be the confinement of the contamination to the local areas of the accident, if possible.
 - a. Storage in anticipation of natural catastrophe. In the event of hurricane, flooding or other disaster, all radioactive material should be returned to the storage site. Each container should be labeled giving the radionuclide, its chemical form and activity present at a specified date. The storage site should be locked and sealed with waterproof tape.
 - b. In the event of an emergency, e.g., spills, bodily injury, fire, etc., the Radiation Safety Officer should be notified immediately (6-5780). In case of a fire notify the fire department (8-HELP or 8-4357).

c. In case of a spill:

- (1) Notify all personnel in the laboratory.
- (2) Seal off the area.
- (3) Confine the spill.
- (4) Don protective gloves and drop absorbent paper on spill.
- (5) If the spill is on clothing, discard outer or protective clothing at once.
- (6) If the spill is on the skin, flush with water thoroughly.
- (7) Notify the Radiation Safety Officer (6-5780).
- (8) Take immediate steps to decontaminate personnel involved as necessary.
- (9) Decontaminate the area using radioactivity decontaminant solution (e.g., Count-Off).
- (10) Monitor all personnel involved in spill and cleaning to determine adequacy of decontamination.

d. Injuries to personnel involving radiation hazard.

- (1) Wash minor wounds immediately under running water.
- (2) Notify a physician (Dr. Bruce Clements, 642-4788).
- (3) Notify Radiation Safety Officer (6-5780).

e. Fires or other major emergencies

- (1) Notify all other personnel in the laboratory.
- (2) Notify the fire department (8-HELP or 8-4357).
- (3) Attempt to put out fires if radiation hazard is not immediately present.

- (4) Notify the Radiation Safety Officer (6-5780).
 - (5) Following the emergency, monitor the area and determine the protective devices necessary for safe decontamination.
 - (6) Decontaminate.
 - (7) Monitor all personnel involved in combating the emergency.
- f. Notification will be made to the proper authorities. This notice is posted in several conspicuous areas throughout the Laboratory Research Branch.

F. General rules for safe use of radioactive material:

- 1. Wear laboratory coats or other protective clothing at all times in areas where radioactive materials are used.
- 2. Wear disposable gloves at all times while handling radioactive materials.
- 3. Monitor hands and clothing for contamination after each procedure or before leaving the area.
- 4. Do not eat, drink, smoke, or apply cosmetics in any area where radioactive material is stored or used.
- 5. Do not store food, drink, or personal effects with radioactive material.
- 6. Wear personnel monitoring devices (film badge) at all times while in areas where radioactive materials are used or stored. These devices should be worn at chest or waist level. Personnel monitoring devices, when not being worn to monitor occupational exposures, should be stored in a designated low background area.
- 7. Dispose of radioactive waste only in specially designated and properly shielded receptacles.
- 8. Never pipet by mouth.
- 9. Confine radioactive solutions in covered containers plainly identified and labeled with name of compound, radionuclide, date, activity, and radiation level, if applicable.

10. Always transport radioactive material in shielded containers.

Duties and Responsibilities of Radiation Safety Officer: (under item 15)

1. General surveillance of all Health Physics activities including both personnel and environmental monitoring.
2. Provide consulting services to personnel on all aspects of radiation protection and proper use of radioactive materials.
3. Monitoring of equipment capable of producing penetrating radiation and calibration of output as requested.
4. Supervision and coordination of radioactive waste disposal program.
5. Distribution and processing of personnel monitoring equipment including the keeping of records of personnel exposure and notifying individuals and their supervisors of exposure limits along with recommending any action to be taken if needed.
6. Supervision of decontamination procedures when called for.
7. Maintaining a continuous program of environmental radiation hazard evaluation and hazard elimination.

Items 16. **FORMAL TRAINING IN RADIATION SAFETY FOR INDIVIDUALS WORKING IN OR**
& 17. **FREQUENTING RESTRICTED AREAS.**

EXPERIENCE:

Formal Training in Radiation Safety.

- a. Principles and practices of radiation protection.
- b. Radioactivity measurement standardization and monitoring techniques and instruments.
- c. Mathematics and calculations basic to the use and measurement of radioactivity.
- d. Biological effects of radiation.

✓ 1. **James L. Krahenbuhl, Ph.D.,** Chief, Laboratory Research Branch

Training: Received a graduate course in the Biochemistry Department at the University of Wisconsin in radiation training.

Louisiana. From 1972-76 Dr. Krahenbuhl was the Radiation Safety Officer at the Palo Alto Medical Research Foundation and was responsible for supervising all aspects of ordering, receipt, storage, monitoring and disposal of radioactive materials. The following is a list of the radioisotopes used by Dr. Krahenbuhl in his research: tritium labeled thymidine (1 mCi), carbon-14 labeled thymidine (1 mCi), chromium-51 sodium salt (< 1 mCi), phosphorous-32, ¹¹¹Indium Oxine.

✓ 2. **Scott G. Franzblau, Ph.D.,** Chief Pharmacology Research Department

Training: Received formal training for 2 hr credit course in health physics at Rutgers University, New Brunswick, New Jersey. Course work covered areas **a, c, and d** listed above.

Experience: Has employed radioisotopes in research since 1978. Had work experience and on-the-job training in the Department of Microbiology, University of Arizona from 1978-1980 using approximately 1 mCi of carbon-14 glucose in studies of yeast metabolism and from 1980-1982 using approximately 100 uCi carbon-14 glucose. Since 1985, in the Pharmacology Research Department of the GWL Hansen's Disease Center, has used 1.0 millicurie amounts of carbon-14 carbohydrates, organic acids and fatty acids in the study of mycobacterial metabolism, as well as iodine-125 (< 1.0 mCi) for the labeling of mycobacterial surface proteins.

✓ 3. **Thomas P. Gillis, Ph.D.,** Chief, Molecular Biology Research Department

Training: Received formal training for 3 hr credit course in radiation physics and numeration at University of New Orleans, New Orleans, Louisiana. Course work covered areas **a-d** listed above. Received formal training for a 1 hr credit course in mathematics pertaining to the use and measurement of radioactivity and a 10 hr credit course in radiation biology at Louisiana State University, School of Medicine, New Orleans, Louisiana. Course work covered items **a-d** listed above. Radiation Safety Officer, Gillis W. Long Hansen's Disease Center, January, 1992 to November, 1995.

Experience: Has employed radioisotopes in his research since 1976. Had work experience and on-the-job-training at Marshall University, Huntington, West Virginia using < 1 mCi sulphur-35 from 1981-1984, < 1 mCi iodine-125 from 1978-1981 and < 1 mCi carbon-14 from 1984- present for the labeling of mycobacterial surface proteins and < 1 mCi chromium-51 for mammalian cell lysis studies. Since 1987 has used phosphorus-32 and hydrogen-3 (< 1 several millicurie amounts) for DNA labeling.

✓ 4. **David M. Scollard, M.D., Ph.D.,** Chief, Pathology Research Department

Training: Argonne Hospital, University of Chicago, 1072 - 1973, using ³H, ⁵¹Cr.

Experience: Thymidine uptake assays, ⁵¹Cr-release assays and ³H -autoradiography at the University of Chicago, 1980, University of Illinois, 1981 through 1984, University of Hawaii, 1984 - 1992, and GWL Hansen's Disease Center, 1993 - present for a total of approximately 17 years. Amount of isotopes did not exceed 1.0 mCi.

✓ 5. **Kochukunju Prabhakaran, Ph.D.,** Chief, Biochemistry Research Department

Training: No formal training.

Experience: Has had work experience and on-the-job training in the Biochemistry Department, GWL Hansen's Disease Center, since 1973, working with tritium and C-14 labeled amino acids, carbohydrates, lipids, nucleosides and catecholamines. Maximum quantity used is 100 - 500 uCi. Experience is with *in vitro* enzyme kinetics, cell labeling and tissue culture related to metabolism of *M. leprae*.

✓6. **Diana L. Williams, Ph.D., Molecular Biologist**

Training: Nuclear Science Course at Louisiana State University "Tracer Methodology for Biological Sciences", 1979; principles and practices of radioisotope use and protection; radioactivity measurement and calculations, standardization, and monitoring techniques; and biological effects of radiation.

Experience: Thirteen years experience using radioisotopes in research laboratory environment. Isotopes used: phosphorus-32, Iodine-131, Carbon-14 and Hydrogen-3, all < 1.0 mCi amounts.

✓7. **Linda B. Adams, Ph.D., Microbiologist**

Training: Received instruction in basic radiation principles and practice as part of an immunobiology course taught in the Department of Veterinary Microbiology and Parasitology, LSU-SVM, 1983.

Experience: Eight years experience in the Laboratory Research Branch of the GWL Hansen's Disease Center working with ³H (³H-thymidine use in lymphocyte transformation test), ¹⁴C (¹⁴C-palmitic acid used in BACTEC and Buddemeyer assays), and ⁵¹Cr (Na₂⁵¹CrO₄ used in cell lysis assays), all < 1.0 mCi amounts.

✓8. **E.J. Shannon, Ph.D., Microbiologist**

Training: Received formal training for 3 hr credit course in 1968, at Purdue University, West Lafayette, Indiana. Course work covered areas **a**, **b**, **c**, and **d** listed above.

Experience: Has had work experience during 1968 in the Biochemistry Department, University of Illinois, while a graduate student, using 0.9 mCi of iodine-125 for *in vitro* experiments. Has had work experience and on-the-job training in the Pharmacology Research Department, GWL Hansen's Disease center, since 1973, working with tritium, carbon-14, iodine-125 and iodine-131. Past experience includes 1) tritiated thymidine (100 uCi) for *in vitro* lymphocyte blast transformation studies and cell harvesting; 2) carbon-14 labeled thalidomide (1 uCi) for blood level studies in mice and rats; 3) carbon-14 labeled amino acid mixture (250 uCi) for labeling mycobacterial cellular constituents; and 4) use of iodine-125 (0.9 mCi) and iodine-131 (0.9 mCi) in the labeling of various protein fractions for antigen-antibody reaction studies.

✓9. **Melvyn J. Morales, M.S., Microbiologist**

Training: Received formal training during military service in the U.S. Navy in 1961 - 1963 period.

Training was for pharmacy technician and x-ray technician at the Naval Air Station, Johnsville, Pennsylvania. Training covered areas **a** and **d** listed above. Formal training also received at Tulane Medical School, Department of Biochemistry, New Orleans, Louisiana, for 3 hr credit course during 1970.

Experience: Has had work experience with radiation during 1961 - 1963 while serving in the U.S. Navy as x-ray technician and in 1970 work with P-32 (50 uCi) in biochemistry studies while a graduate student at Tulane University. Has had work experience and on-the-job training in the Pharmacology Research Department, GWL Hansen's Disease Center, since 1973, working with tritium, carbon-14, iodine 125, and

iodine-131. Past experience includes use of 1) tritiated thymidine (100 uCi) for *in vitro* lymphocyte blast transformation studies and cell harvesting; 2) carbon-14 labeled thalidomide (1 uCi) for blood level studies in mice and rats; 3) carbon-14 labeled amino acid mixture (250 uCi) for labeling mycobacterial cellular constituents; and 4) use of iodine-125 (0.9 uCi) and iodine-131 (0.9 mCi) in the labeling of various protein fractions for antigen-antibody reaction studies.

✓10. **Eugene Harris, M.S.**

Training: Received formal training for 3 hr credit course in 1964, at the University of Oklahoma School of Medicine, Department of Biochemistry, Oklahoma City, Oklahoma. Course work covered areas **a**, **b**, **c**, and **d** listed above. Has had work experience during 1965 - 1967, while working in the Chemistry Department at Oklahoma City University, using 1 mCi of carbon-14 for *in vitro* experiments involving fatty acid synthesis.

Experience: Has had working experience and on-the-job training in the Biochemistry Department, GWL Hansen's Disease Center since 1973, working with tritium and carbon-14 labeled amino acids, carbohydrates, lipids, nucleosides and catecholamines. Maximum quantity used is 100 - 500 uCi. Experience is with *in vitro* enzyme kinetics, cell labeling and tissue culture related to metabolism of *M. leprae*.

APPENDIX A

The following table indicates the specific room numbers, special equipment for that room, and the isotopes to be used in that room:

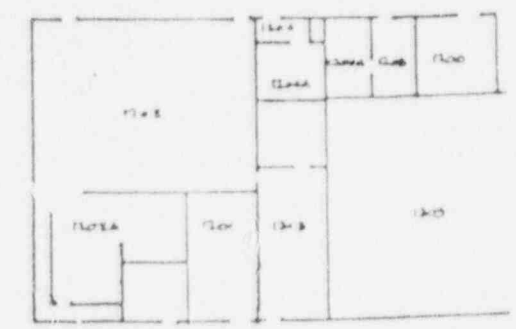
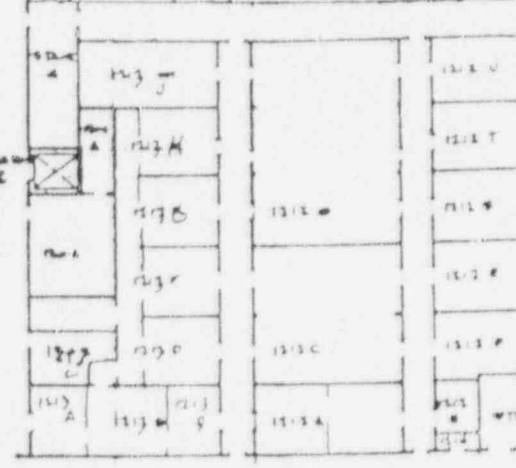
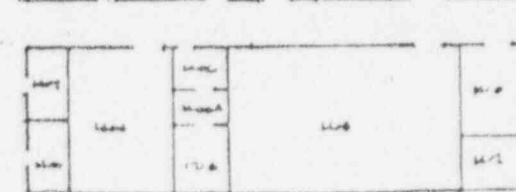
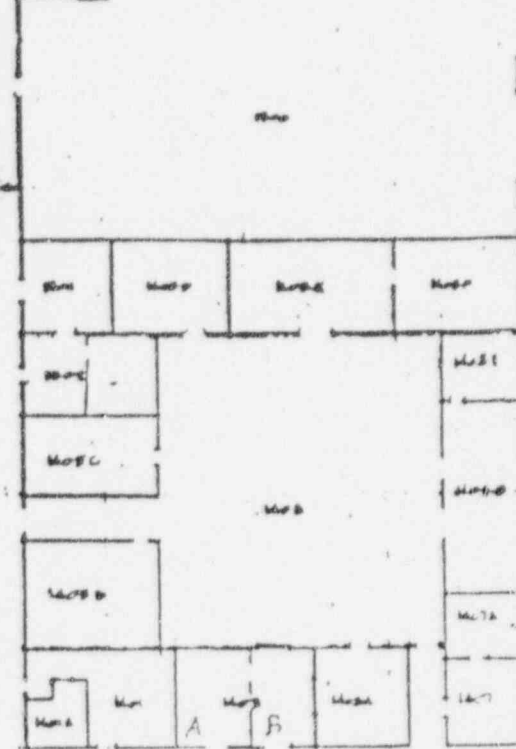
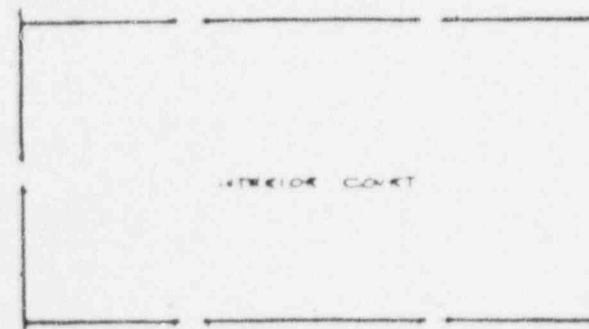
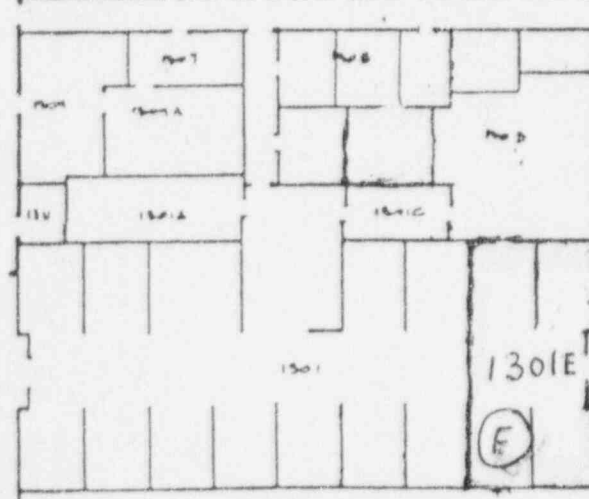
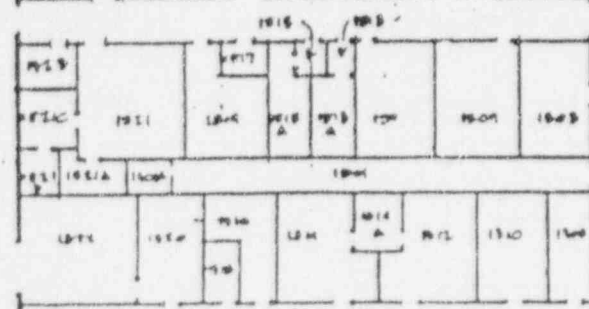
Room	Equipment	Isotope
1301E	Refrigerators, -20°C Freezer Shielding and waste receptacles for β -emitter	^{32}P ^{35}S
3205	Refrigerator, waste receptacle	^3H ^{14}C
3435	Refrigerator, waste receptacle and shielding for ^{51}Cr	^3H ^{14}C ^{51}Cr
3506	Refrigerator, waste receptacle and shielding for ^{51}Cr	^3H ^{14}C ^{51}Cr
3520C	Refrigerator, waste receptacle	^{14}C ^3H
3520	Refrigerators, two fume hoods with appropriate shielding, scintillation counters, gamma counter and waste receptacle	^3H ^{14}C ^{125}I

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A hand-drawn floor plan of a building, likely a school or institutional structure, showing various rooms and corridors. The plan is oriented with a north arrow pointing towards the top right. The rooms are labeled with numbers and letters, often followed by 'A' or 'B' to indicate different sections or wings. The layout includes a central corridor system connecting various rooms. The drawing is done in black ink on a white background.

Room labels include:

- Top row: 10-10, 10-11, 10-12, 10-13, 10-14, 10-15, 10-16, 10-17, 10-18, 10-19, 10-20, 10-21, 10-22, 10-23, 10-24, 10-25, 10-26, 10-27, 10-28, 10-29, 10-30, 10-31, 10-32, 10-33, 10-34, 10-35, 10-36, 10-37, 10-38, 10-39, 10-40, 10-41, 10-42, 10-43, 10-44, 10-45, 10-46, 10-47, 10-48, 10-49, 10-50, 10-51, 10-52, 10-53, 10-54, 10-55, 10-56, 10-57, 10-58, 10-59, 10-60, 10-61, 10-62, 10-63, 10-64, 10-65, 10-66, 10-67, 10-68, 10-69, 10-70, 10-71, 10-72, 10-73, 10-74, 10-75, 10-76, 10-77, 10-78, 10-79, 10-80, 10-81, 10-82, 10-83, 10-84, 10-85, 10-86, 10-87, 10-88, 10-89, 10-90, 10-91, 10-92, 10-93, 10-94, 10-95, 10-96, 10-97, 10-98, 10-99, 10-100, 10-101, 10-102, 10-103, 10-104, 10-105, 10-106, 10-107, 10-108, 10-109, 10-110, 10-111, 10-112, 10-113, 10-114, 10-115, 10-116, 10-117, 10-118, 10-119, 10-120, 10-121, 10-122, 10-123, 10-124, 10-125, 10-126, 10-127, 10-128, 10-129, 10-130, 10-131, 10-132, 10-133, 10-134, 10-135, 10-136, 10-137, 10-138, 10-139, 10-140, 10-141, 10-142, 10-143, 10-144, 10-145, 10-146, 10-147, 10-148, 10-149, 10-150, 10-151, 10-152, 10-153, 10-154, 10-155, 10-156, 10-157, 10-158, 10-159, 10-160, 10-161, 10-162, 10-163, 10-164, 10-165, 10-166, 10-167, 10-168, 10-169, 10-170, 10-171, 10-172, 10-173, 10-174, 10-175, 10-176, 10-177, 10-178, 10-179, 10-180, 10-181, 10-182, 10-183, 10-184, 10-185, 10-186, 10-187, 10-188, 10-189, 10-190, 10-191, 10-192, 10-193, 10-194, 10-195, 10-196, 10-197, 10-198, 10-199, 10-200, 10-201, 10-202, 10-203, 10-204, 10-205, 10-206, 10-207, 10-208, 10-209, 10-210, 10-211, 10-212, 10-213, 10-214, 10-215, 10-216, 10-217, 10-218, 10-219, 10-220, 10-221, 10-222, 10-223, 10-224, 10-225, 10-226, 10-227, 10-228, 10-229, 10-230, 10-231, 10-232, 10-233, 10-234, 10-235, 10-236, 10-237, 10-238, 10-239, 10-240, 10-241, 10-242, 10-243, 10-244, 10-245, 10-246, 10-247, 10-248, 10-249, 10-250, 10-251, 10-252, 10-253, 10-254, 10-255, 10-256, 10-257, 10-258, 10-259, 10-260, 10-261, 10-262, 10-263, 10-264, 10-265, 10-266, 10-267, 10-268, 10-269, 10-270, 10-271, 10-272, 10-273, 10-274, 10-275, 10-276, 10-277, 10-278, 10-279, 10-280, 10-281, 10-282, 10-283, 10-284, 10-285, 10-286, 10-287, 10-288, 10-289, 10-290, 10-291, 10-292, 10-293, 10-294, 10-295, 10-296, 10-297, 10-298, 10-299, 10-300, 10-301, 10-302, 10-303, 10-304, 10-305, 10-306, 10-307, 10-308, 10-309, 10-310, 10-311, 10-312, 10-313, 10-314, 10-315, 10-316, 10-317, 10-318, 10-319, 10-320, 10-321, 10-322, 10-323, 10-324, 10-325, 10-326, 10-327, 10-328, 10-329, 10-330, 10-331, 10-332, 10-333, 10-334, 10-335, 10-336, 10-337, 10-338, 10-339, 10-340, 10-341, 10-342, 10-343, 10-344, 10-345, 10-346, 10-347, 10-348, 10-349, 10-350, 10-351, 10-352, 10-353, 10-354, 10-355, 10-356, 10-357, 10-358, 10-359, 10-360, 10-361, 10-362, 10-363, 10-364, 10-365, 10-366, 10-367, 10-368, 10-369, 10-370, 10-371, 10-372, 10-373, 10-374, 10-375, 10-376, 10-377, 10-378, 10-379, 10-380, 10-381, 10-382, 10-383, 10-384, 10-385, 10-386, 10-387, 10-388, 10-389, 10-390, 10-391, 10-392, 10-393, 10-394, 10-395, 10-396, 10-397, 10-398, 10-399, 10-400, 10-401, 10-402, 10-403, 10-404, 10-405, 10-406, 10-407, 10-408, 10-409, 10-410, 10-411, 10-412, 10-413, 10-414, 10-415, 10-416, 10-417, 10-418, 10-419, 10-420, 10-421, 10-422, 10-423, 10-424, 10-425, 10-426, 10-427, 10-428, 10-429, 10-430, 10-431, 10-432, 10-433, 10-434, 10-435, 10-436, 10-437, 10-438, 10-439, 10-440, 10-441, 10-442, 10-443, 10-444, 10-445, 10-446, 10-447, 10-448, 10-449, 10-450, 10-451, 10-452, 10-453, 10-454, 10-455, 10-456, 10-457, 10-458, 10-459, 10-460, 10-461, 10-462, 10-463, 10-464, 10-465, 10-466, 10-467, 10-468, 10-469, 10-470, 10-471, 10-472, 10-473, 10-474, 10-475, 10-476, 10-477, 10-478, 10-479, 10-480, 10-481, 10-482, 10-483, 10-484, 10-485, 10-486, 10-487, 10-488, 10-489, 10-490, 10-491, 10-492, 10-493, 10-494, 10-495, 10-496, 10-497, 10-498, 10-499, 10-500, 10-501, 10-502, 10-503, 10-504, 10-505, 10-506, 10-507, 10-508, 10-509, 10-510, 10-511, 10-512, 10-513, 10-514, 10-515, 10-516,

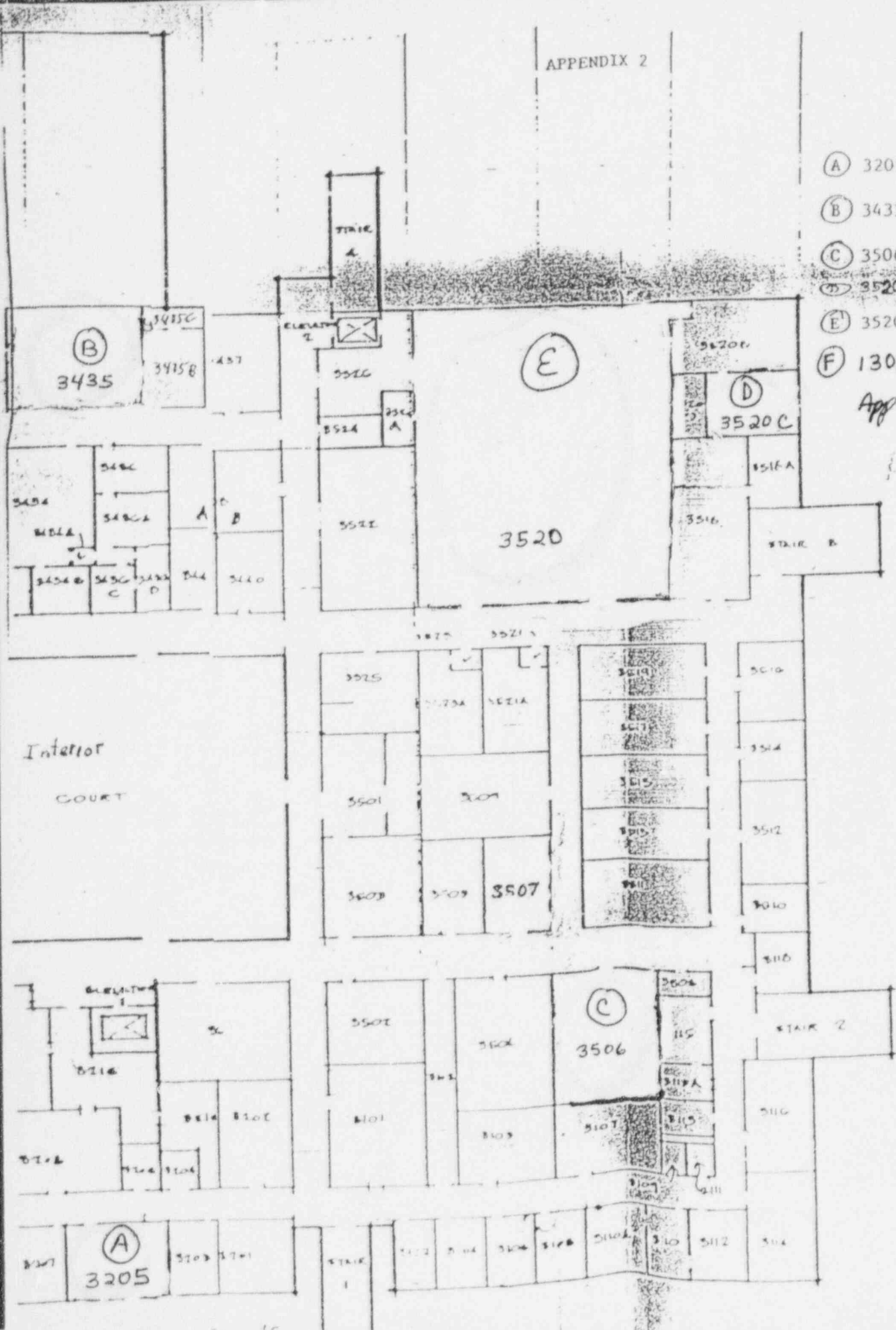


(F) 1301E (see Appendix 3)

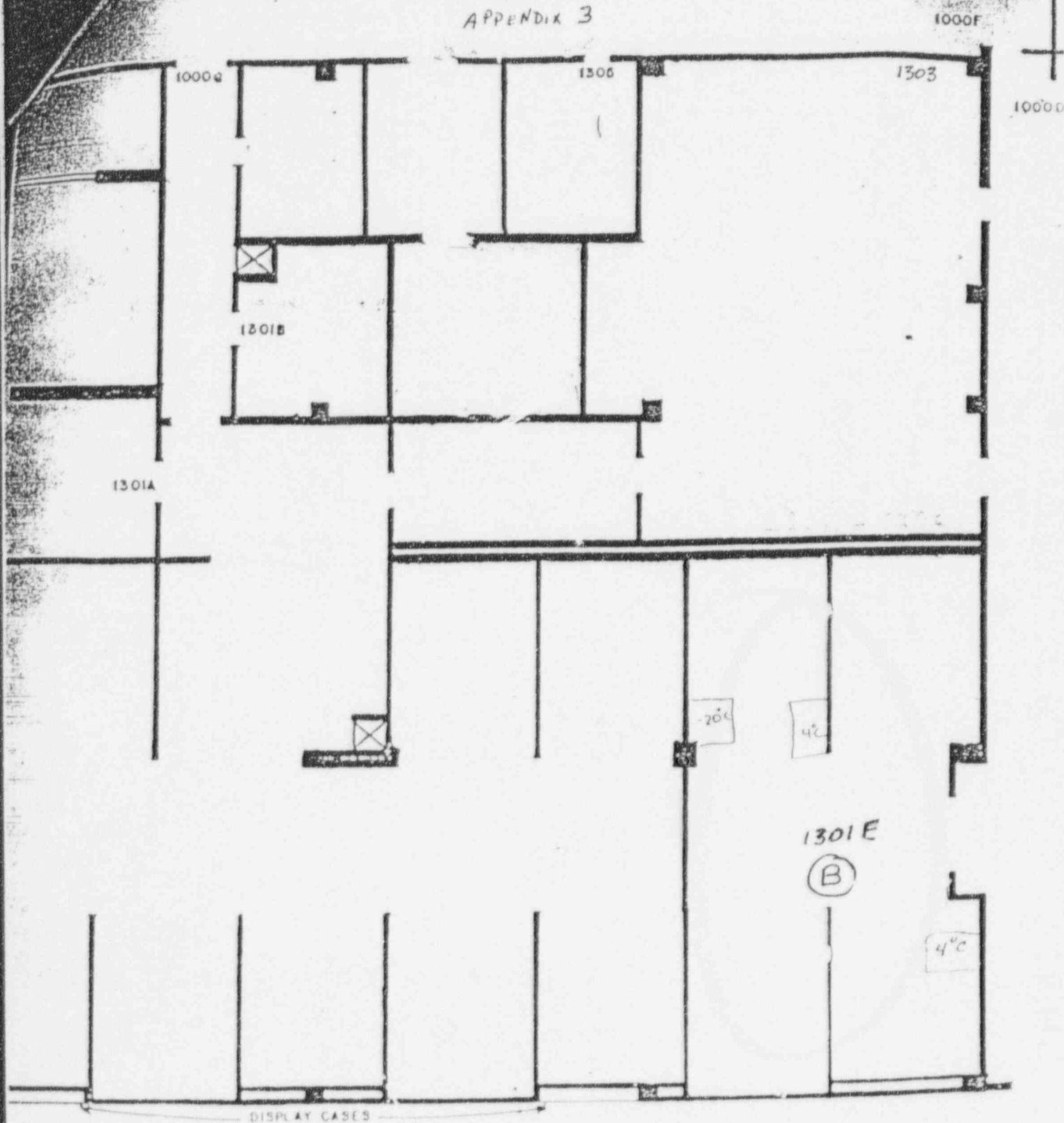
APPENDIX 2

North
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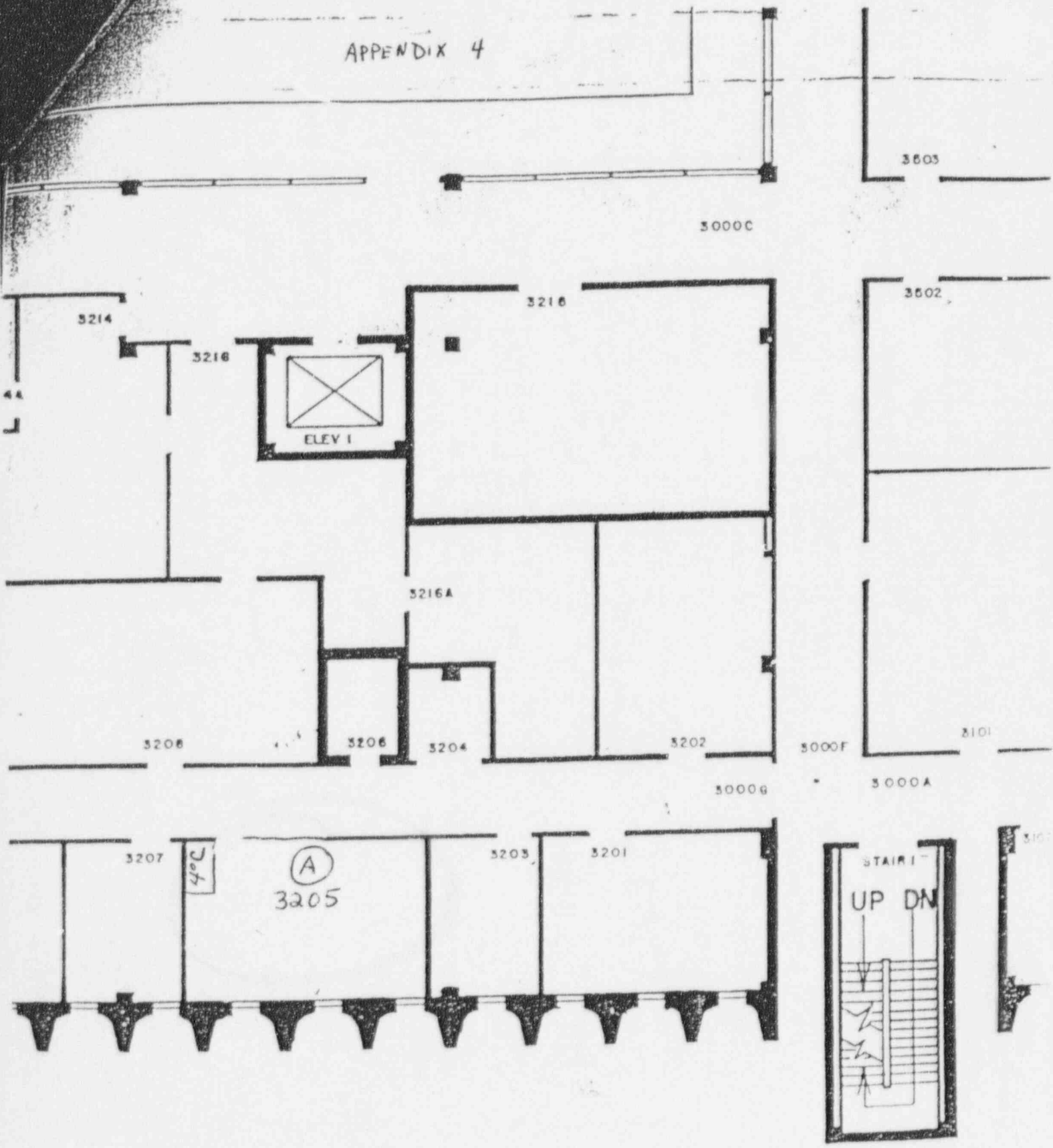
- (A) 3205 (see Apper 4)
- (B) 3435 (see Apper 5)
- (C) 3506 (see Apper 6)
- (D) 3520C (see Apper 7)
- (E) 3520 (see Apper 7)
- (F) 1301E (see Appendix 1 and 3)



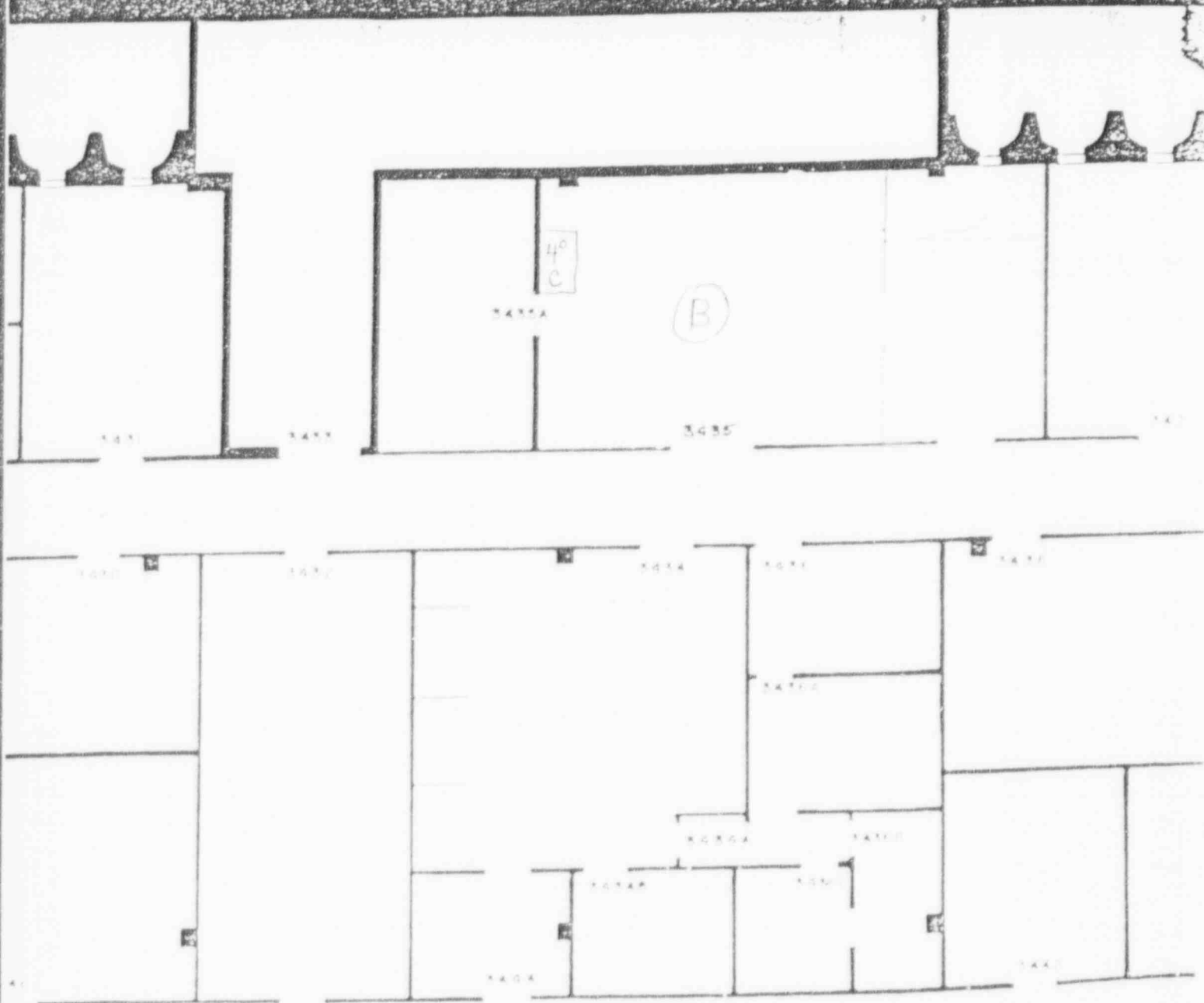
APPENDIX 3



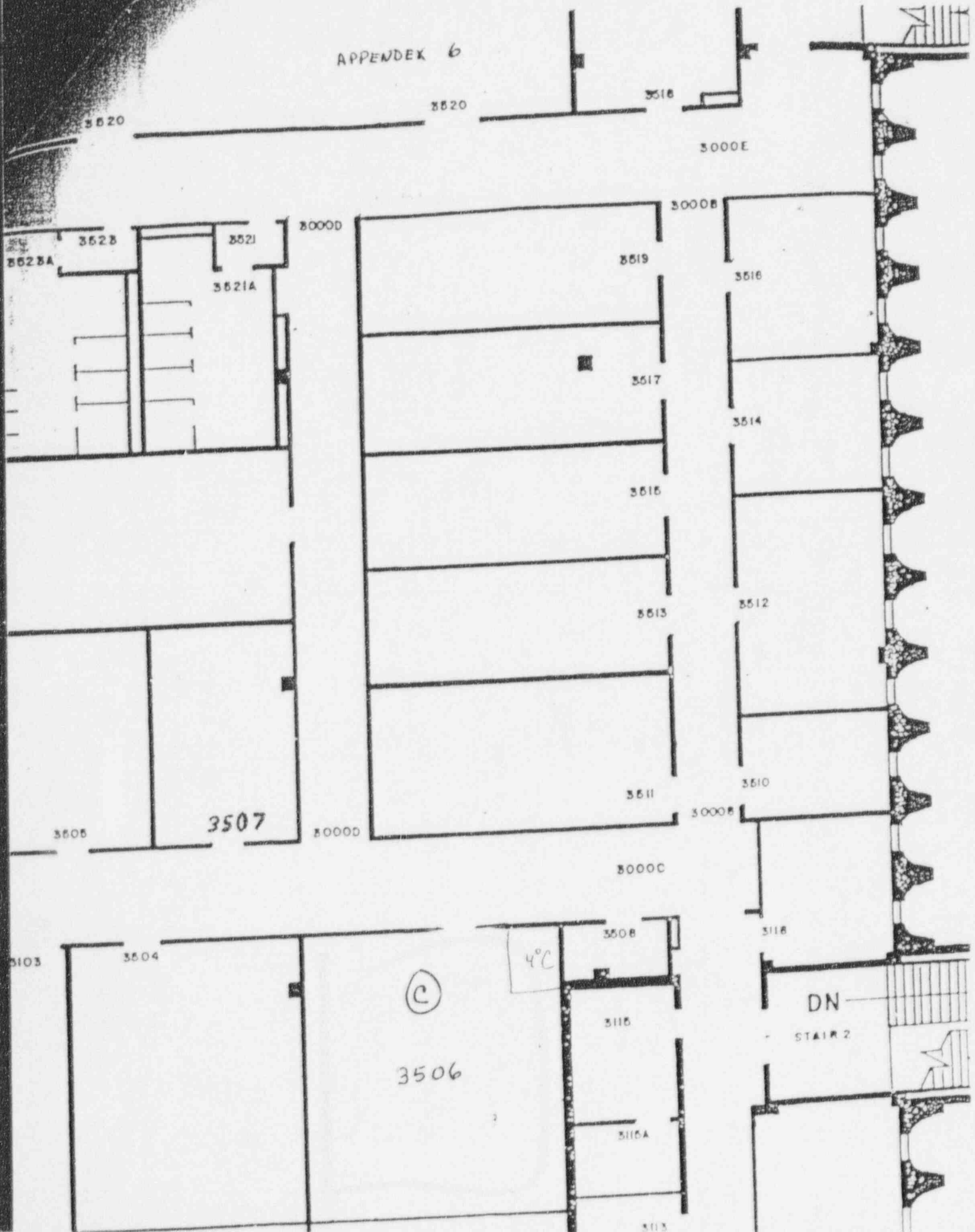
APPENDIX 4



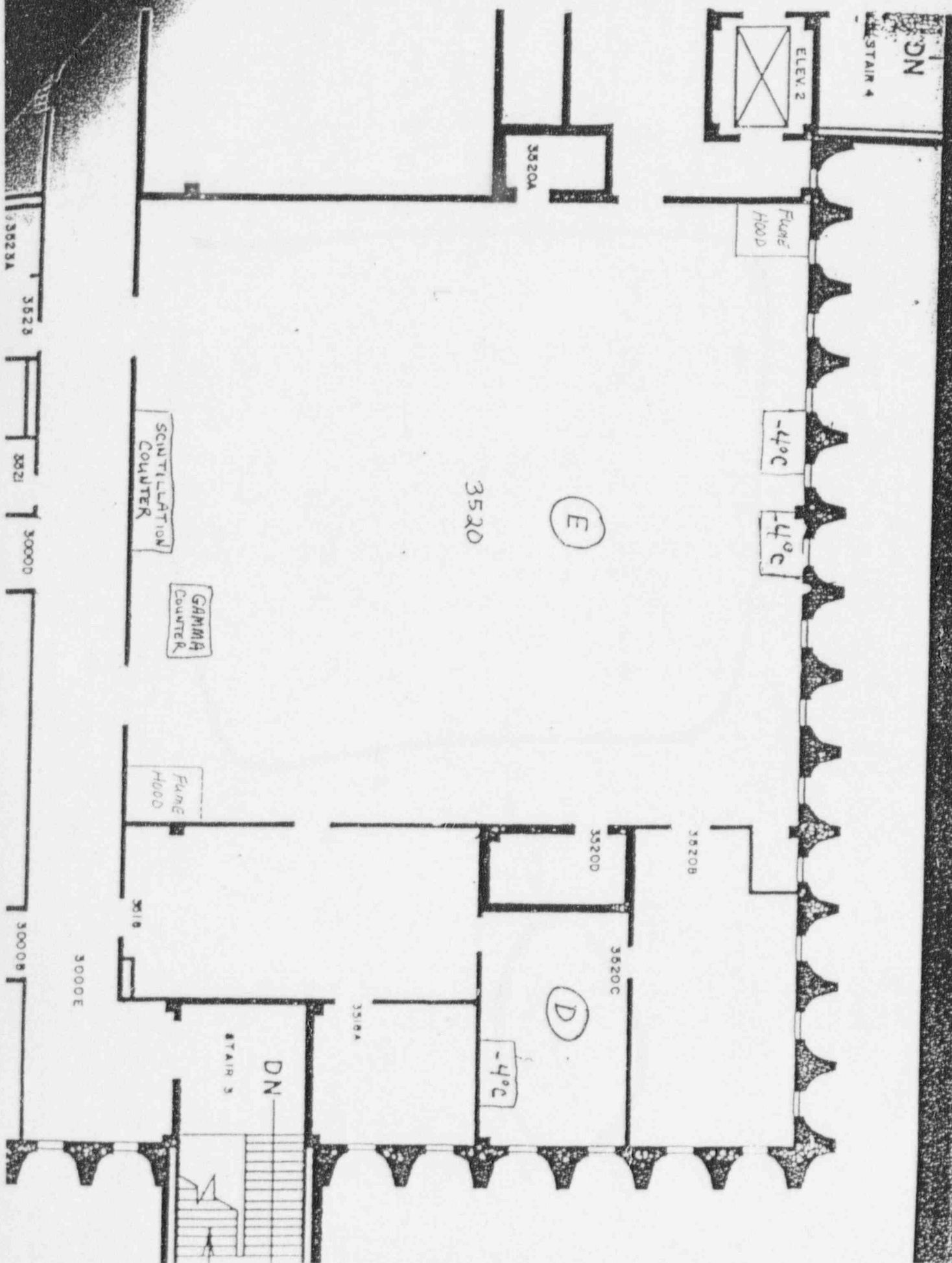
APPENDIX 5



APPENDEK 6



Appendix 7





UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV

Walnut Creek Field Office
1450 Maria Lane
Walnut Creek, California 94596-5368

JUL 26 1996

Department of Health & Human Services
GWL Hansen's Disease Center
ATTN: J.P. Pasqua
Radiation Safety Officer
Louisiana State University
P.O. Box 25072
Baton Rouge, Louisiana 70894

SUBJECT: NRC LICENSE RENEWAL

Dear Mr. Pasqua:

This is in reference to your request dated June 24, 1993, for renewal of your byproduct material license. In order to complete our review, we need the following additional information:

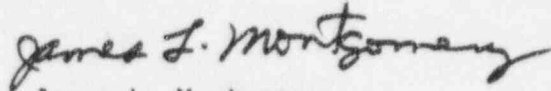
1. As discussed with you and Elizabeth Wright, the Carville, Louisiana site will remain on your renewed license. As the Radiation Safety Officer for this license, you are responsible for the Carville site in addition to your laboratory at LSU. The control or ownership of the Carville burial property must not be transferred to anyone without NRC approval as required by 10 CFR 30.34(b). The NRC staff will be sending you additional information concerning requirements for characterizing and decommissioning this former low level radioactive waste burial site.
2. Your renewal application makes several references to the old 10 CFR Part 20. Part 20 (copy enclosed) was extensively revised effective January 1, 1994, and you need to revise your application by referencing the correct revised Part 20 paragraphs.
3. You need to describe how you will convert counts per minute (CPM) to disintegrations per minute (DPM) on your survey instruments used to measure radioactivity. A conversion factor should be available from your consultant who performs the calibration of your instruments.
4. Describe the check source you use with your radiation survey instruments at the beginning of each day of use to insure proper and consistent operation. The correct instrument reading with the source needs to be determined at the time of calibration.
5. Confirm that all radiation survey results will be recorded and maintained for inspection.
6. Your bioassay program needs to be described in more detail. Enclosed is a copy of NRC Regulatory Guides 8.20 and 10.7 that should be of assistance.

Department of Health
& Human Services

-2-

We will continue the review of your renewal request upon receipt of this information. In order to complete our review in a timely manner, we request that you submit your response to this letter within 30 days from the date of this letter. Please reply in duplicate and refer to Mail Control Number 564789.

Sincerely,

A handwritten signature in dark ink, reading "James L. Montgomery". The signature is written in a cursive style with a large, stylized "J" and "M".

James L. Montgomery
Senior Health Physicist
Materials Branch

Docket: 030-08380
License: 17-14996-01
Control: 564789

Enclosures: As stated

Department of Health
& Human Services

-3-

bcc:

Docket File
WCFO Inspection File
LFDCB, T-9 E10

DOCUMENT NAME: G:\564789

To receive copy of document, indicate in box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

RIV-MB								
JLMontgomery <i>JL</i>								
07/25/96								

OFFICIAL RECORD COPY



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

19 July 1996

96 JUL 24 PM 12:17

Laboratory Research Branch
GWL Hansen's Disease Center at
Louisiana State University
P.O. Box 25072
Baton Rouge, LA 70894

Tel: 504-346-5785

FAX: 504-346-5786

United States Nuclear Regulatory Commission
Region IV
ATTN: James L. Montgomery
Senior Health Physicist
Material Branch
1450 Maria Lane
Walnut Creek, CA 94596-5368

Dear Mr. Montgomery:

We receive each month 100 cases of BACTEC vials containing a total of 40 millicuries of carbon-14. Sometimes we do not use all of this each month, therefore we would like to increase the maximum amount of carbon-14 that we may possess at any one time under our license to 200 millicuries.

Sincerely yours,

J.P. Pasqua
Radiation Safety Officer

Docket: 030-08380
License: 17-14996-01
Control: 540038

564789

October 19, 1994

Gillis W. Long Hansen's Disease Center
5445 Point Clair Road
Carville, LA 70721-9607

Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, Texas 76011-8064
Attn: Bob Brown

Dear Mr. Brown:

As we discussed in our phone conversation, the GWL Hansen's Disease Center intends to take the necessary actions to close an onsite radiological waste burial site. The following is provided in response to your request for information concerning this burial site.

The radiological waste burial site was approved by the Nuclear Regulatory Commission in accordance with federal licensing regulations. The site was operated from 1973 until 1983. The waste materials were generated by the Center's Laboratory Research Branch. A log of exactly what materials were buried with quantities and the marked location of each individual burial site was maintained. Unfortunately, this log cannot be located. A 1991 report containing information about this site had been drafted based upon the information in the log, and our current knowledge about the site is by and large based upon this report.

Reportedly, most of the buried material was from experiments with tritiated thymidine and is comprised of contaminated liquid scintillation fluids. Waste materials were buried in separate trenches 6' to 8' deep with 6' separation between trenches. Each trench area was marked with red marker posts. These marker posts still stand. Waste was composed of (1) paper, gloves, pipettes, etc.; (2) liquid scintillation fluids and aqueous cell materials in glass vials; (3) gamma counter monitoring vials; (4) used shipping containers with and without radioactive materials; and (5) animal carcasses.

Generally, only 3 to 10 microcuries were buried at any one time, and usually, only 6 - 10 burials took place per year. The radioactive materials disposed of in this manner included: 3-Hydrogen, 14-Carbon, 32-Phosphorus, 51-Chromium, and 125/131-Iodine. The report indicates that no 35-Sulfur was buried at the site.

The report made the following points and conclusions concerning

the radiological waste site:

(1) The radiological and scintillation fluids which were buried are known to be composed of a variety of hazardous chemical compounds, including alcohol, toluene, and various acids.

(2) No radiological, bacteriological, or chemical contamination of the aquifer from which the Center gets drinking water has been detected based upon analyses conducted by the State of Louisiana.

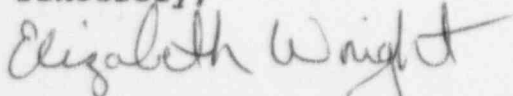
(3) Direct disposal (following autoclaving and label defacing) of scintillation vials containing 3-H or 14-C into any public landfill is acceptable practice today per NRC regulations, as the level of radiation is equivalent to naturally occurring radioactive sources.

(4) Isotopes used at the Center were relatively low energy level forms and present no undue hazard to man or the environment in their present land disposal site. Their half-life properties are: 3H = 12 days; 14-C = 5730 years; 32-P = 14 days; 51 Cr = 28 days; 125-I = 60 days; and 131-I = 8 days. Only 51-Chromium and the Iodine isotopes are gamma emitters; the remainder emit only alpha and beta energy.

Mark Shaffer of the NRC conducted a survey of the Center's Laboratory Research Branch for license renewal purposes in August 1993. The radioactive waste site was inspected as part of the survey. Mr. Shaffer used a sodium iodide crystal meter at the disposal site, and no radiation was detected. He informed me that the crystal will only detect specific isotopes.

The above is the extent of the information I have about the disposal site. I appreciate your guidance in the steps we need to take to close it. If you have any questions, please contact me at (504) 642-4770.

Sincerely,



Elizabeth Wright, R.S., MPH
Chief, Environmental Health

cc: Chief, FMB
Radiation Safety Officer
file



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION IV

611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

AUG 5 1993

Department of Health & Human Services
ATTN: Thomas P. Gillis, Ph.D., RSO
P. O. Box 25072
Baton Rouge, Louisiana 70894

Docket No. 030-08380
License No. 17-14996-01
Control No. 464789

Gentlemen:

This is to acknowledge receipt of your application for renewal of the byproduct material license identified above. Your application is deemed timely filed and, accordingly, the license will not expire until final action has been taken by this office.

Any correspondence regarding the renewal application should reference the control number specified and your license number.

Sincerely,

Original Signed By
Billie Gruszynski

Billie Gruszynski (Ms.)
Nuclear Materials Licensing Section

AUG 5 1993

RIV:NMLS
BGruszynski
8/5/93