'04 [illegible] :10

Carolyn S. Bentivegna, Ph.D.
Seton Hall University
400 South Orange Ave.
South Orange, NJ 07079
December 14, 2004

Sattar Lodhi, Ph. D.
Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety
Region I
King of Prussia, Pa 19406

29-09831-01
03000886

Dear Dr. Lodhi:
This letter is to provide documentation for the decommissioning of Dr. Friedman's laboratory in room 81 of Duffy Hall at Seton Hall University. Dr. Friedman is leaving the university and her laboratory space will be used for other purposes not involving radioisotopes.

Dr. Friedman has used ^{3}H, ^{45}Ca and ^{35}S at Seton Hall. She last used ^{3}H on 12-10-04 just before I performed the laboratory swab tests. She last used ^{35}S on 4-01-02. She last used ^{45}Ca on 1-20-04. All sources and waste were removed from her laboratory and put into our radioactive materials storage area under my authority.

A comprehensive swab test was run on her lab. Samples were counted for ^{3}H, ^{45}Ca and ^{35}S. ^{45}Ca (250 keV) has a similar emission spectrum to ^{35}S (168 keV), so both isotopes were counted together with the emission window set from 0 – 250 keV. A reference for ^{3}H and background were run with the ^{3}H samples to verify counter efficiency. A reference for ^{14}C and background were run for $^{35}S/^{45}Ca$ as there are no current stocks of these isotopes at Seton Hall and ^{14}C has a similar emission, 156 keV. The scintillation counter (TRI-CARB 19000CA, serial # 102312) was professionally set-up and calibrated on 4-6-04 by Tritech Field Engineering, Inc. Efficiencies of ^{3}H and ^{14}C were found to be within acceptable limits for sensitivity (see calculations below). All swab tests were negative.

Enclosed are the following:
1. Map of Dr. Friedman's lab showing areas where swab tests were performed.
2. Beta counter printout of swab test for ^{3}H including standards for ^{3}H and Background at positions 34 and 35, respectively.

Standard H-3 UNQ
S/N HMQ0212
DPM 101700
REF 31Oct01 to 31Oct06

136137

NMSS/RGN1 MATERIALS-002

Standard BKG
S/N BMQ4604
REF 31Oct01 to 31Oct06

3. Beta counter printout of swab test $^{35}S/^{45}Ca$ including ^{14}C standard and background as above in positions 34 and 35, respectively.

Standard C-14 UNQ
S/N CMQ3008
DPM 98900
REF 31Oct01 to 31Oct06

4. Swap test for the trap in the sink where equipment coming in contact with radioisotopes was washed.
5. Calculations for counting efficiency.
6. Service record for TRI-CARB scintillation counter

In addition, there is a Beckman scintillation counter in Dr. Friedman's laboratory, Model LS-5000TD, ser # 7050993. The source was removed on Tuesday, 12-14-04 by a local representative of Beckman Coulter, Inc., Mr. Henry McManus. The Beckman Coulter, Inc. license # is 0441-30. The serial # for the source is 598860 lot #1401. A letter of receipt is pending.

Address: Beckman Coulter
4300 N. Harbour Blvd.
Fullerton, CA 92834-3100
Telephone: McMannus 732-432-0056

The counter without the source will be moved to:

Muhlenberg Regional Medical Center
Park Avenue and Randolph Road
Plainfield, NJ 07060

The counter will be under the care of:

Martin Gizzi, MD, PhD
New Jersey Neuroscience Institute
69 James Street
Edison, NJ 08818
(732) 321-7950

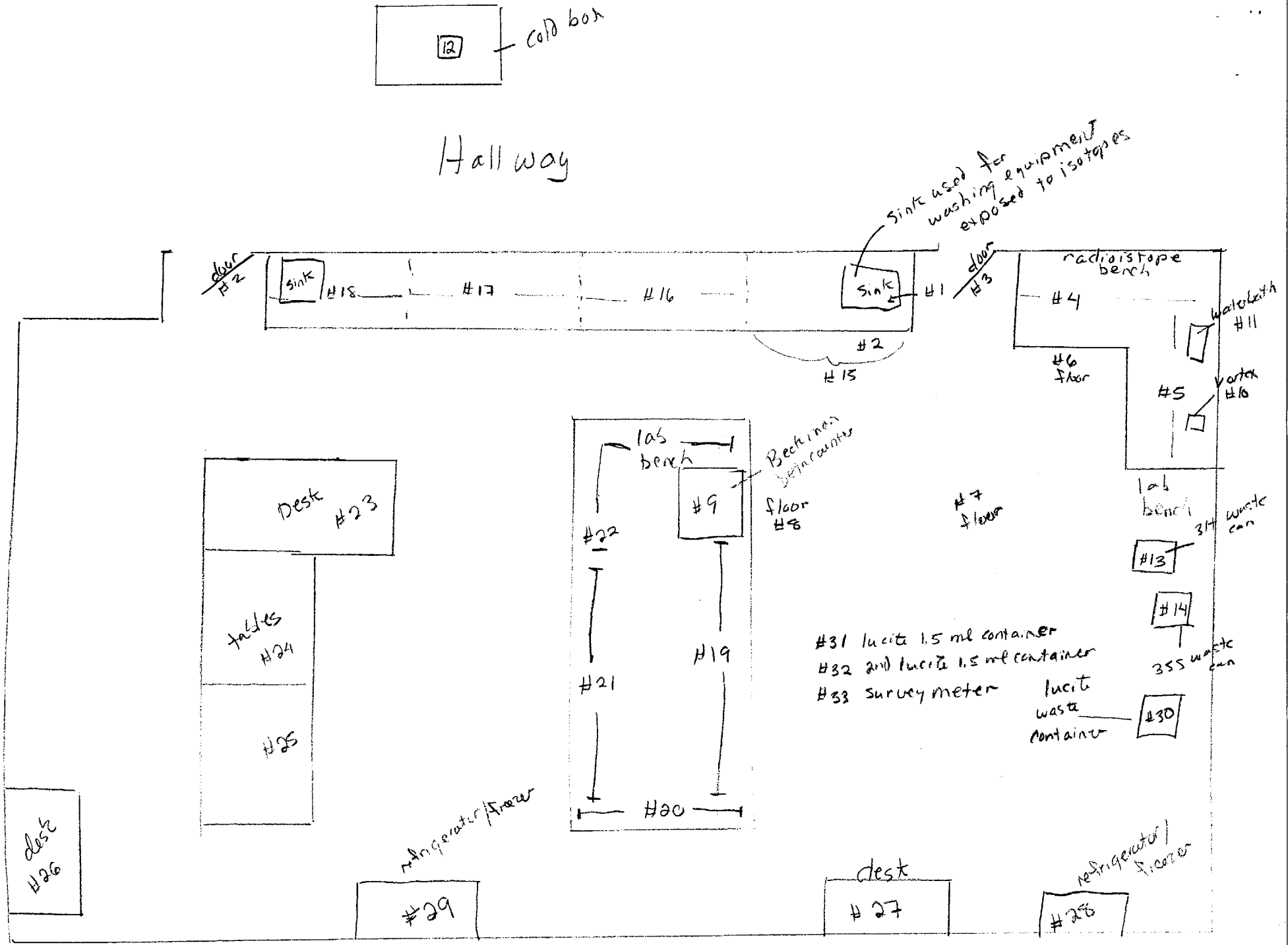
Please contact me if you have any questions about these documents: e-mail address is bentivca@shu.edu and telephone number is 973-275-2113.

Thank you for your attention,

Carolyn S. Bentivegna

Carolyn S. Bentivegna, Ph.D.
Radiation Safety Officer
Seton Hall University

Document #1


12
cold box
Hallway
sink used for washing equipment exposed to isotopes
door #2
sink
#18
#17
#16
sink
#1
door #3
radioisotope bench
#4
#2
#15
#6 floor
#5
#11
#10
lab bench
#9
floor #8
#22
#19
#21
#20
#7 floor
lab bench
#13
#14
#31 lucite 1.5 ml container
#32 2nd lucite 1.5 ml container
#33 survey meter
lucite waste container
#30
desk #23
tables #24
#25
desk #26
refrigerator freezer
#29
desk #27
refrigerator freezer
#28

Document #2

```
Protocol #:12        Name:Tritium                        10-Dec-2004 00:39
Region A: LL-UL= 0.0-12.0  Lcr=    0  Bkg= 0.00  %2 Sigma=0.00
Region B: LL-UL=12.0-156.  Lcr=    0  Bkg= 0.00  %2 Sigma=0.00
Region C: LL-UL= 0.0- 0.0  Lcr=    0  Bkg= 0.00  %2 Sigma=0.00
Time =  1.00      QIP = tSIE          ES Terminator = Count
Conventional DPM
Nuclide 1 =       0      Nuclide 2 =       0

  S#    TIME     CPMA     SIS     DPM1 FLAG
   1    1.00    14.00 69.274
   2    1.00    11.00 99.161

RS232 Output Format
  No Spectrum Data
  Protocol Heading
  Format:P#,PID,S#,TIME,CPMA,DPM1,CPMB,DPM2
  No IPA Data Transmission
   3    1.00    14.00 54.072
   4    1.00    13.00 82.791
   5    1.00    21.00 77.380
   6    1.00    14.00 91.714
   7    1.00    10.00 75.182
   8    1.00    12.00 72.319
   9    1.00    14.00 68.664
  10    1.00    13.00 71.308
  11    1.00    12.00 50.214
  12    1.00    36.00 37.097
  13    1.00    13.00 103.89
  14    1.00    17.00 53.864
  15    1.00    15.00 61.525
  16    1.00    17.00 65.755
  17    1.00    11.00 69.907
  18    1.00    14.00 68.896
  19    1.00    13.00 61.621
  20    1.00    19.00 60.119
  21    1.00    14.00 56.251
  22    1.00    12.00 106.31
  23    1.00    17.00 64.898
  24    1.00    19.00 53.607
  25    1.00    14.00 60.990
  26    1.00    14.00 62.595
  27    1.00    14.00 76.383
  28    1.00    12.00 70.411
  29    1.00    16.00 93.304
  30    1.00    17.00 78.702
  31    1.00    29.00 41.556
  32    1.00    22.00 46.094
  33    1.00    12.00 88.007
  34    1.00    12.00 82.287
  35    1.00 51137.0 20.214
FRONT PIN JAM FWD
```

See Swab positions on map

Reference Background

3H Standard

Document #3

Protocol #: 2 Name:3SS 12-Dec-2004 22:03
Region A: LL-UL= 0.0-250. Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region B: LL-UL= 4.0-250. Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region C: LL-UL= 0.0- 0.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Time = 1.00 DIP = SIS

S#	TIME	CPMA	SIS	FLAG
1	1.00	29.00	108.20	
2	1.00	27.00	35.013	
3	1.00	41.00	82.207	
4	1.00	32.00	72.977	
5	1.00	36.00	112.97	
6	1.00	32.00	54.068	
7	1.00	39.00	36.257	
8	1.00	28.00	102.32	
9	1.00	28.00	80.422	
10	1.00	42.00	74.136	
11	1.00	35.00	87.771	
12	1.00	43.00	60.579	
13	1.00	33.00	83.655	
14	1.00	34.00	78.450	
15	1.00	32.00	90.883	
16	1.00	30.00	60.027	
17	1.00	21.00	103.48	
18	1.00	32.00	31.398	
19	1.00	35.00	43.656	
20	1.00	27.00	97.548	
21	1.00	706.00	9.337	
22	1.00	38.00	45.827	
23	1.00	35.00	70.207	
24	1.00	32.00	101.37	
25	1.00	37.00	75.392	
26	1.00	34.00	58.771	
27	1.00	37.00	51.707	
28	1.00	39.00	75.435	
29	1.00	48.00	50.591	
30	1.00	35.00	103.36	
31	1.00	32.00	58.131	
32	1.00	297.00	27.933	
33	1.00	42.00	31.794	
34	1.00	33.00	79.326	— Background
35	1.00	95507.0	159.70	— ^{14}C Reference

See Swabs positions on map

98900 156 ± 8

95%

Document 4

Protocol #:12 Name:Tritium 13-Dec-2004 03:00
Region A: LL-UL= 0.0-12.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region B: LL-UL=12.0-156. Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region C: LL-UL= 0.0- 0.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Time = 1.00 QIP = tSIE ES Terminator = Count
Conventional DPM
Nuclide 1 = 0 Nuclide 2 = 0

S#	TIME	CPMA	SIS	DPM1	FLAG
1	1.00	15.00	60.434		1st trap sample
2	1.00	13.00	59.896		2nd trap sample } sink #1 positive

Protocol #: 2 Name:35S 13-Dec-2004 03:04
Region A: LL-UL= 0.0-250. Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region B: LL-UL= 4.0-250. Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region C: LL-UL= 0.0- 0.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Time = 1.00 QIP = SIS

S#	TIME	CPMA	SIS	FLAG
1	1.00	36.00	95.828	1st trap
2	1.00	34.00	80.590	2nd trap } sink #1 positive

Document # 5

TRI-CARB 1900 CA Sensitivity

Minimum acceptable efficiency for ^{3}H equals ≥ 58%.

$$EM = \% \frac{cpm}{\text{corrected DPM of } ^{3}H}$$

$$= \% \frac{51137}{85235} = 60\% \checkmark$$

Corrected DPM: 101700 x .8381 (decay)

= 85235

Minimum acceptable efficiency for ^{14}C equals 95%

$$EM = \% \frac{cpm}{\text{DPM of } ^{14}C \text{ standard}}$$

$$= \% \frac{95507}{98900} = 96.6\% \checkmark$$

Acceptable SIS equals 156 ± 8.

Results: 159.7 ✓

Document #6

ENTERED

TRITECH Field Engineering, Inc.

600 Central Avenue East
Edgewater, Maryland 21037
800-886-7004 www.tritechinc.com

Field Service Report

Call Number	Manufacturer	Model	Serial Number	Engineer
040406-001	Packard	1900CA	102312	Lou Demetra

Date Arrived	Time	Date Completed	Time	Service Type: PMC ☐ Contract ☐ Warranty ☐ Reimburs. ☒	P.O. Number
4/6/04	11:30	4/6/04	13:30	Reimburs.	Tom Brackie Payless

Institution	Department	Room No.	User
Seton Hall	McNulty Hall	307	Dave Edwards

Address	State	ZIP	Phone	FAX
Orange	NJ			

Comments: Recalibrate

Resolution Description		Contract	Reimb	Assist	Unit Rate	Amount
Recalibrate unit &	Travel Hours		1.0		140	140 00
check out Ra	Labor Hours		2.0		280	280 00

Resolution Description	Part Description	Part Number	Qty	Unit Price	Amount
performance check					
unground eff.					
C14H = 95.94					
H3 = 63.77					
Bkg normal.					
	For office use only: 7928		Total Net		
			Tax		
			Invoice Amount		420 00

RECEIVED APR 19 2004 By

Customer Signature: Carolyn S Bentivegna Date: 4/06/04

This is to acknowledge the receipt of your letter/application dated

12/14/2004, and to inform you that the initial processing which includes an administrative review has been performed.

☑ AMEND. 29-09831-01
There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

☐ Please provide to this office within 30 days of your receipt of this card

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A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned **Mail Control Number** 136137.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.

NRC FORM 532 (RI)
(6-96)

Sincerely,
Licensing Assistance Team Leader

BETWEEN:

License Fee Management Branch, ARM
and
Regional Licensing Sections

(FOR LFMS USE)
INFORMATION FROM LTS

Program Code: 03620
Status Code: 0
Fee Category: EX 3M
Exp. Date: 20060228
Fee Comments: 170.11(A)(4)
Decom Fin Assur Reqd: N

LICENSE FEE TRANSMITTAL

A. REGION I

1. APPLICATION ATTACHED
   Applicant/Licensee: SETON HALL UNIVERSITY
   Received Date: 20041215
   Docket No: 3000886
   Control No.: 136137
   License No.: 29-09831-01
   Action Type: Amendment

2. FEE ATTACHED
   Amount: ____/____
   Check No.: ____/____

3. COMMENTS

Signed M. A. Perkins
Date 12/15/2004

B. LICENSE FEE MANAGEMENT BRANCH (Check when milestone 03 is entered /__/)

1. Fee Category and Amount: _____

2. Correct Fee Paid. Application may be processed for:
   Amendment _____
   Renewal _____
   License _____

3. OTHER _____
   _____

Signed _____
Date _____