ANGENICS

Angenics, Inc. 100 Inman Street Cambridge Massachusetts 02139
617 876-6468 Telex: 4974826 Fax: 617 876-7965

September 15, 1989

Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406

RE: Termination of license and decontamination of
100 Inman Street
Cambridge, Massachusetts 02139
License number: 20-19856-01

To Whom It May Concern:

The attached documents reflect the steps taken by Angenics to decontaminate our facility for release by the NRC for unrestricted use. The NRC Guidelines (dated May 1987) were used in preparing this report.

Please find:

1. Facilities plan with areas corresponding to the Key column in the Radiation Survey.

2. Radiation Survey (ref: SOG 86-004/4) identifying isotopes counted, DPM of samples, and locations of wipe samples. These locations represent the only areas of our facility, and incidental "traffic" areas, where use of isotopes has been permitted and rules enforced.

3. Printout of counts of vials (1 minute @ .2% sigma) treated as separate isotopes, 14C, 3H, 32P, 125I.

4. Printout of counts of standards used to calculate the efficiency of the Packard Tricarb Beta Counter used to count the samples, and the calculation of the efficiencies for 14C and 3H.

5. Copy of Waste Manifest dated Sept 12, 1989

All radioactive material was transferred to our broker, Adco Services of Tinley Park, Illinois on Tuesday, September 12. The wipe surveys were performed on Wednesday, September 13.

Should you require further information or clarification, please contact me.

Sincerely,

Donald Y. Tenney

Donald Y. Tenney
Radiation Safety Officer
Work phone: (617) 876-6468
Home phone: (617) 545-5339

Beta Counter Efficiency Check

Date: September 13, 1989
By: D.Y.Tenney, RSO
Device: Packard Model Tricarb 460C Scintillation Counter

Standards: Packard ^{14}C Catalog #6008500
Serial #249-326
DPM = 107,900
Date: March 2, 1981

Average CPM of 10(ten) one minute counts (see attached) = 102,231

Calculated efficiency 102,231CPM/107,900DPM=0.9475 or **94.75%**

Packard ^{3}H Catalog #6908500
Serial # 249-326
DPM = 256,200
Date: January 20, 1981
Decay factor as of 9-13-89 = 0.6148

Average CPM of 10 (ten) one minute counts (see attached) = 97,380

Calculated efficiency: 256,200x0.6148=157,511DPM as of 9-15-89. 97,380CPM/157,511DPM = **61.82%**

DYT
9-15-89

PACKARD TRICARB BETA COUNTER

[14C] 2-Mar-81 DPM = 103900

[redacted]

[3H] 20-JAN-81 DPM = 256,200

PROGRAM #: 4
REGION B: LL-UL= 0- 19 LCR= 0 BKG= 0 % 2 SIGMA= .2
REGION E: LL-UL= 2- 19 LCR= 0 BKG= 0 % 2 SIGMA= .2
REGION C: LL-UL= 0- 0 LCR= 0 BKG= 0 % 2 SIGMA= .2
TIME= 1.00 DIP= SIS SCR= B/A K= 1.000

P#	S#	TIME	CPMA/K	%DEV	CPMB/K	%DEV	CPMC/K	%DEV	DIP	FLAGS	SCR	MIN
4	1	1.00	97457.0	.64	81261.0	.70	.00	.00	17.6		.834	8
4	1	1.00	97496.0	.64	81213.0	.70	.00	.00	17.5		.833	9
4	1	1.00	97370.0	.64	81063.0	.70	.00	.00	17.6		.833	4
4	1	1.00	96899.0	.64	80895.0	.70	.00	.00	17.6		.835	6
4	1	1.00	96922.0	.64	80867.0	.70	.00	.00	17.7		.834	7
4	1	1.00	97311.0	.64	80975.0	.70	.00	.00	17.7		.832	8
4	1	1.00	97601.0	.64	81442.0	.70	.00	.00	17.6		.834	9
4	1	1.00	97278.0	.64	81131.0	.70	.00	.00	17.5		.834	10
4	1	1.00	97459.0	.64	81357.0	.70	.00	.00	17.5		.835	12
4	1	1.00	98008.0	.64	81718.0	.70	.00	.00	17.5		.834	13
			97380.1		81192.2		.00		17.6		.834	

RADIATION SURVEY

Date: Sept 15, 1989

Ref: SOG 86-004/4

By: D. J. TENNEY
Radiation Safety Officer

Log# _____

Location Key: See accompanying building floor plans (Exhibits 1,2 &3).

Methods: Wipe Test ✓ Survey Meter _____
Other _____

Code: B= Bench F= Floor O= Other (Specify)

Micro
Lab

Sample Number/Location	Key	Isotope DPM ^{3}H	Isotope DPM ^{14}C	Isotope DPM $^{32}P/^{125}I$
1 Bench	1	29	14.77	13 / 4
2 "	2	27	33	12 / 7
3 "	3	25	26	16 / 5
4 "	4	22.6	14	24 / 2
5 Floor	A	12.9	17	15 / 2
6 "	B	17	24	22 / 4
7 "	C	29	59	22 / 5
8 "	D	35	27	20 / 13
9 "	E	19	23	12 / 3
10 "	F	33	23	15 / 2
11 Other: Phone	1	19	27	10 / 2
12 " Sink	3	42	18	14 / 12
13 Lab Door Kob	c	29	20	20 / 6
14 Fridge Handle	d	12	14	14 / 7
15 Microfuge	3	35	19	19 / 9
16 Shaker Handles	a,b	32	21	21 / 8
17 Darkroom bench	27	17	26	19 / 3
18 Darkroom Floor	Y	17	26	19 / 6

Ref: SOG 86-004/3
Log# _____

First Floor Labs

Sample #/ Name	Key	Isotope DPM ^{3}H	Isotope DPM ^{14}C	Isotope CPM $^{32}P/^{125}I$
1 Don's Bench	S	16.7	21.1	20 / 8
2 Cutting bench	6	34	28	17 / 6
3 Gamma Keypad	7	26	23	13 / 3
4 Don's Floor	P	13	19	14 / 5
5 Cutting Floor	Q	32	19	17 / 6
6 Gamma 800 Floor	R	29	18	20 / 3
7 ^{125}I Bench	11	29	27	17 / 8
8 ^{14}C Bench	10	23	24	10 / 4
9 ^{14}C Floor	G	32	24	8 / 3
10 ^{125}I Floor	H	19	26	16 / 5
11 P-200	10	N/A	NA	NA / NA
12 Titertech	10	N/A	NA	NA / NA
13 Brick	10	N/A	NA	NA / NA
14 Waste/RIA Tubes	H	N/A	35	35 / 10
15 Waste/^{125}I	H	N/A	21	20 / 1
16 Rear Bench L.	12	32	18	12 / -
17 Rear Bench R.	13	19	21	18 / 1
18 Rear Floor L.	J	17	22	14 / 7
19 Rear Floor R.	K	25	31	6 / 4
20 Fume Hood	15	29	16	18 / 4
21 Jordon Handles	16	35	18	22 / 7
22 Hood Floor	L	18	28	14 / 9
23 Jordon Floor	M	23	21	11 / 8
24 -22°C Handle	17	29	22	23 / 5
25 Sink/Drainboard	14	30	26	16 / 9
26 -22°C Floor	N	21	27	17 / 2

Ref. SOG
86-004/4
Log # _____

First Floor Labs, Cont.

Sample #/Name	Key	Isotope CPM 3H	Isotope CPM 14C	Isotope CPM 32P/125I	
27 Sink Area Floor	O	21	30	19	4
28 High Bench	18	27	17	8	4
29 Low Bench	19	24	24	15	5
30 Floor L.	S	27	25	17	4
31 Floor R.	T	37	25	10	4
32 Beta Keypad	9	29	25	14	7
33 Beta Ctr.Floor	U	22	19	15	4
34 LKB Keypad	8	40	19	17	10
35 LKB Floor	V	24	31	18	4
36 Beta Ctr Waste	U	N/A	N/A	N/A	5
37 Freezer Handle	Z	24	24	9	8
38 High Bench	20	24	25	15	5
39 Low Bench	21	27	22	19	4
40 Floor R	W	30	24	17	3
41 Floor L	X	25	20	15	6
42Green Microfuge	28	24	26	20	4
43 Phone	22	19	15	21	5
44 Men's Door	23	16	16	19	5
45 Women's Door	23	24	16	10	4
46 Hall Doorknob	24	30	29	18	6
47 StairwyDoorknb	25	17	17	19	6
48 FoyerDoorknob	26	21	25	24	3

Ref: SOG
86-004/4
Log# _____

Garage Storage Area

Sample #/ Name	Key	Isotope CPM ^{3}H	Isotope CPM ^{14}C	Isotope CPM ^{32}P / ^{125}I
49 Door/Lock VAULTED/EMPTY?		10	27	16 7
50 BARREL #1		24	25	12 5
51 BARREL #2		29	25	15 3
52 " BARREL #3		29	23	9 6
53 " " 4		34	17	14 6
54 " " 5		24	27	19 6
55 " " 6		32	34	15 7
56 " " 7		36	24	12 5

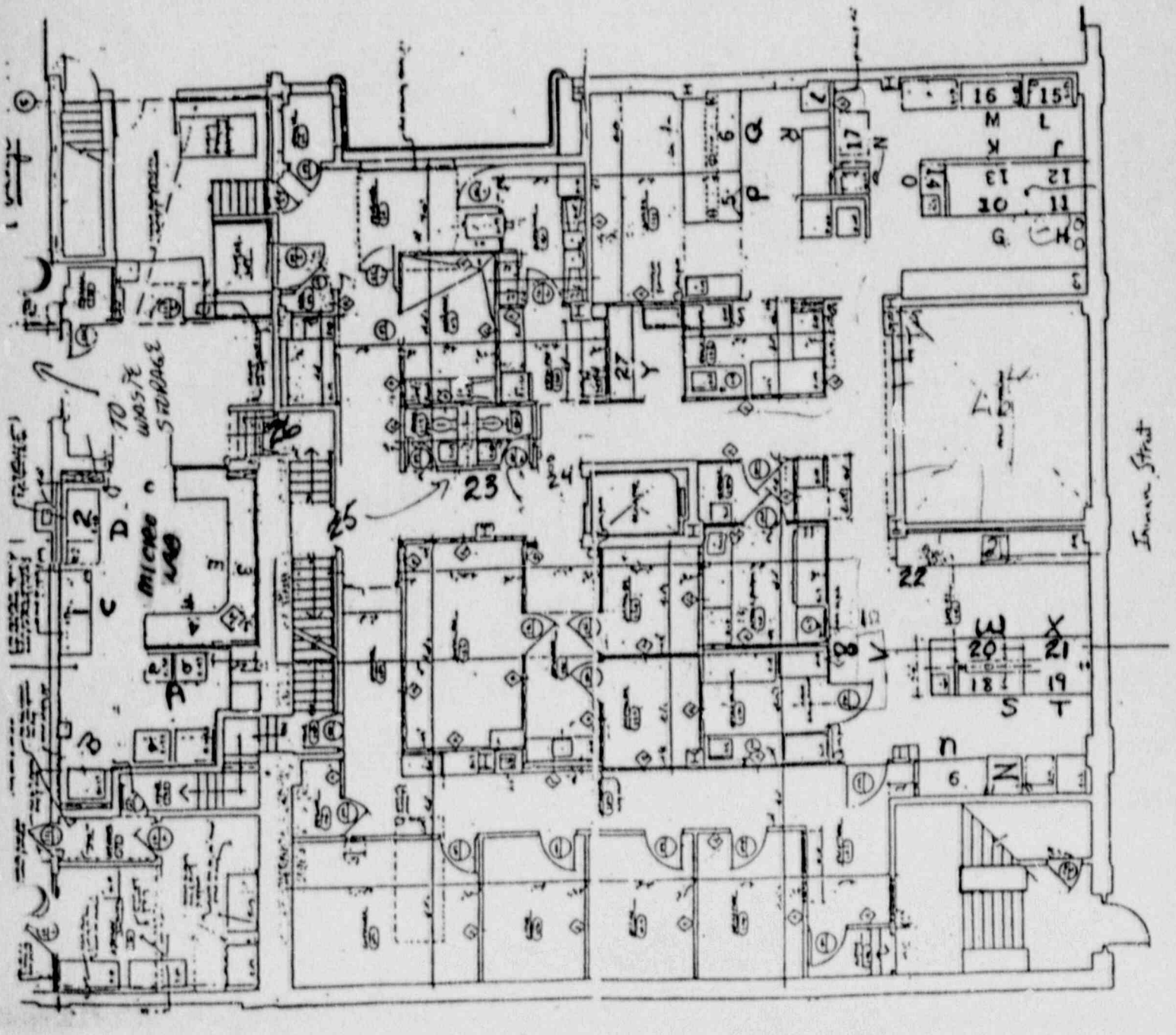
Donald J. Kenney
RSO

Sept 15, 1989

EXHIBIT 1

FIRST FLOOR LABS

MICRO LAB



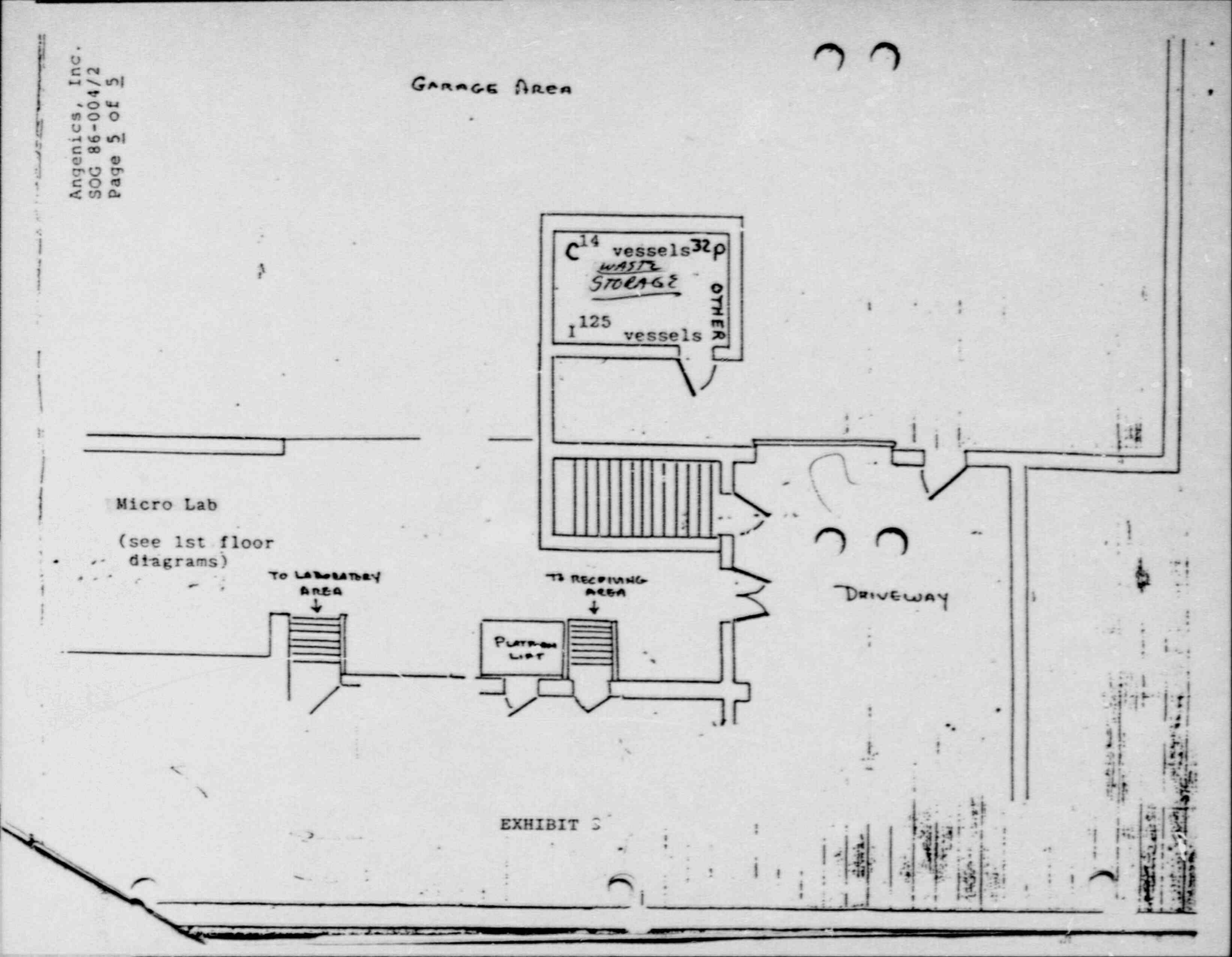

GARAGE AREA
C14 vessels 32P
WASTE STORAGE
I125 vessels
OTHER
Micro Lab
(see 1st floor diagrams)
TO LABORATORY AREA
TO RECEIVING AREA
PUTTMAN LIFT
DRIVEWAY

EXHIBIT 3

PACKARD TRICARB BETA COUNTER

[14C] 2-Mar-81 DPM = 103900

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PROGRAM #:   5
REGION A:    LL-UL=    0- 156  LCR=     0  BKG=     0  3 SIGMA=     .2
REGION B:    LL-UL=    4- 156  LCR=     0  BKG=     0  3 SIGMA=     .2
REGION C:    LL-UL=    0-   0  LCR=     0  BKG=     0  3 SIGMA=     .2
TIME=    1.00  DIP= SIS     SCR= E/A    K= 1.000

P#   S#   TIME   CPMA/K  %DEV   CPMB/K  %DEV   CPMC/K  %DEV  DIP FLAGS   SCR   MIN
 5    1   1.00  102661.   .62  98499.0   .64     .00   .00  155.          .959     2
 5    1   1.00  102303.   .63  98084.0   .64     .00   .00  156.          .959     3
 5    1   1.00  101570.   .63  97351.0   .64     .00   .00  156.          .958     5
 5    1   1.00  101730.   .63  97565.0   .64     .00   .00  155.          .958     6
 5    1   1.00  102537.   .62  98297.0   .64     .00   .00  155.          .959     7
 5    1   1.00  102372.   .62  98226.0   .64     .00   .00  156.          .960     8
 5    1   1.00  101632.   .63  97383.0   .64     .00   .00  155.          .958     9
 5    1   1.00  102540.   .62  98166.0   .64     .00   .00  155.          .959    11
 5    1   1.00  102242.   .63  98120.0   .64     .00   .00  155.          .960    12
 5    1   1.00  102114.   .63  98080.0   .64     .00   .00  155.          .960    13
                 102231.        98019.8           .00        155.          .959
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[3H] 20-JAN-81 DPM = 256,200

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PROGRAM #:   4
REGION A:    LL-UL=    0-  19  LCR=     0  BKG=     0  3 SIGMA=     .2
REGION B:    LL-UL=    2-  19  LCR=     0  BKG=     0  3 SIGMA=     .2
REGION C:    LL-UL=    0-   0  LCR=     0  BKG=     0  3 SIGMA=     .2
TIME=    1.00  DIP= SIS     SCR= E/A    K= 1.000

P#   S#   TIME   CPMA/K  %DEV   CPMB/K  %DEV   CPMC/K  %DEV  DIP FLAGS   SCR   MIN
 4    1   1.00  97457.0   .64  81261.0   .70     .00   .00  17.6          .834     2
 4    1   1.00  97496.0   .64  81213.0   .70     .00   .00  17.6          .833     3
 4    1   1.00  97370.0   .64  81063.0   .70     .00   .00  17.6          .833     4
 4    1   1.00  96899.0   .64  80895.0   .70     .00   .00  17.6          .835     6
 4    1   1.00  96921.0   .64  80867.0   .70     .00   .00  17.7          .834     7
 4    1   1.00  97311.0   .64  80975.0   .70     .00   .00  17.7          .832     8
 4    1   1.00  97601.0   .64  81442.0   .70     .00   .00  17.6          .834     9
 4    1   1.00  97278.0   .64  81131.0   .70     .00   .00  17.5          .834    10
 4    1   1.00  97459.0   .64  81357.0   .70     .00   .00  17.5          .835    12
 4    1   1.00  98088.0   .64  81715.0   .70     .00   .00  17.5          .834    13
                 97380.1        81192.2           .00        17.6          .834
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[3M]

Final Survey
FIRST FLOOR LABS

PROGRAM #: 2
REGION A: LL-UL= 0- 19 LCR= 0 BKG= 0 K 2 SIGMA= .2
REGION B: LL-UL= 2- 15 LCR= 0 BKG= 0 K 2 SIGMA= .2
REGION C: LL-UL= 0- 0 LCR= .0 BKG= 0 K 2 SIGMA= .2
TIME= 1.00 QIP= SIS SCR= B/A K= 1.000

P#	S#	TIME	CPMA/K	%DEV	CPMB/K	%DEV	CPMC	DEV	QIP	FLAGS	SCR	MIN
2	1	1.00	10.00	63.2	5.00	89.4	.00	.00	16.8		.500	1
2	2	1.00	21.00	43.6	14.00	53.4	.00	.00	21.9		.667	3
2	3	1.00	16.00	50.0	8.00	70.7	.00	.00	14.9		.500	4
2	4	1.00	8.00	70.7	4.00	100.	.00	.00	9.56		500	5
2	5	1.00	20.00	44.7	13.00	55.4	.00	.00	17.5		.650	7
2	6	1.00	18.00	47.1	8.00	70.7	.00	.00	15.6		444	8
2	7	1.00	19.00	47.1	9.00	66.6	.00	.00	12.2		.500	9
2	8	1.00	14.00	53.4	7.00	75.5	.00	.00	11.9		.500	10
2	9	1.00	20.00	44.7	9.00	66.6	.00	.00	12.5		.450	11
2	10	1.00	12.00	57.7	5.00	89.4	.00	.00	11.1		.417	13
2	11	1.00	19.00	45.8	13.00	55.4	.00	.00	20.0		.684	14
2	12	1.00	17.00	48.5	6.00	70.7	.00	.00	8.39		.471	15
2	13	1.00	26.00	39.2	14.00	53.4	.00	.00	16.4		.538	16
2	14	1.00	29.00	37.8	17.00	48.5	.00	.00	20.4		.607	18
2	15	1.00	12.00	41.7	9.00	66.6	.00	.00	13.6		.391	19
2	16	1.00	20.00	44.7	10.00	63.2	.00	.00	14.1		.500	20
2	17	1.00	12.00	57.7	6.00	81.6	.00	.00	14.4		.500	21
2	18	1.00	11.00	60.3	7.00	75.5	.00	.00	13.5		.636	22
2	19	1.00	16.00	50.0	9.00	66.6	.00	.00	20.7		.563	24
2	20	1.00	13.00	47.1	8.00	70.7	.00	.00	10.2		.444	25
2	21	1.00	22.00	42.6	11.00	60.3	.00	.00	16.8		500	26
2	22	1.00	11.00	60.3	6.00	81.6	.00	.00	16.4		545	27
2	23	1.00	14.00	53.4	8.00	70.7	.00	.00	17.8		.571	1
2	24	1.00	18.00	47.1	7.00	75.5	.00	.00	13.9		389	30
2	25	1.00	19.00	45.8	11.00	60.3	.00	.00	12.3		579	31
2	26	1.00	15.00	51.6	6.00	81.6	.00	.00	11.2		.400	3
2	27	1.00	13.00	55.4	7.00	75.5	.00	.00	20.2		.538	34
2	28	1.00	17.00	48.5	10.00	63.2	.00	.00	14.0		.588	35
2	29	1.00	15.00	51.6	7.00	75.5	.00	.00	13.5		467	36
2	30	1.00	17.00	48.5	6.00	81.6	.00	.00	14.1		.353	7
2	31	1.00	23.00	41.7	17.00	48.5	.00	.00	19.9		.739	39
2	32	1.00	18.00	47.1	11.00	60.3	.00	.00	22.8		.611	40
2	33	1.00	14.00	53.4	10.00	63.2	.00	.00	15.9		.714	41
2	34	1.00	25.00	40.0	14.00	53.4	.00	.00	17.0		.560	42
2	35	1.00	15.00	51.6	6.00	81.6	.00	.00	13.8		.400	43
2	36	1.00	18.00	47.1	7.00	75.5	.00	.00	14.3		.389	45
2	37	1.00	15.00	51.6	10.00	63.2	.00	.00	23.2		.667	46
2	38	1.00	15.00	51.6	6.00	70.7	.00	.00	18.6		.533	47
2	39	1.00	17.00	48.5	7.00	75.5	.00	.00	11.6		.412	48
2	40	1.00	19.00	45.8	7.00	75.5	.00	.00	7.17		368	49
2	41	1.00	16.00	50.0	8.00	70.7	.00	.00	16.5		.500	51

SI
APERTURE
CARD

[3H]

FINAL SURVEY
MICRO LAB

Also Available On
Aperture Card

8911080103-01

FINAL SURVEY

PROGRAM #: 2
REGION A: LL-UL= 0- 156 LCR= 0 BKG= 0 % 2 SIGMA= .2
REGION B: LL-UL= 4- 156 LCR= 0 BKG= 0 % 2 SIGMA= .2
REGION C: LL-UL= 0- 0 LCR= 0 BKG= 0 % 2 SIGMA= .2
TIME= 1.00 DIP= 515 SCR= B/A K= 1.000

[4C]

FIRST FLOOR LABS

#	S#	TIME	CPMA/K	%DEV	CPMB/K	%DEV	CPMC/K	%DEV	DIP	FLAGS	SCR	MIN
2	1	1.00	20.00	44.7	10.00	63.2	.00	.00	50.5		.500	1
2	2	1.00	27.00	38.4	16.00	47.1	.00	.00	77.1		.667	3
2	3	1.00	22.00	42.6	13.00	55.4	.00	.00	64.6		.591	4
2	4	1.00	18.00	47.1	9.00	66.6	.00	.00	25.6		.500	6
2	5	1.00	16.00	47.1	13.00	55.4	.00	.00	40.4		.722	7
2	6	1.00	17.00	46.5	10.00	63.2	.00	.00	55.7		.588	8
2	7	1.00	24.00	39.2	17.00	48.5	.00	.00	46.6		.654	9
2	8	1.00	23.00	41.7	10.00	63.2	.00	.00	57.2		.435	11
2	9	1.00	23.00	41.7	13.00	55.4	.00	.00	43.8		.565	12
2	10	1.00	25.00	40.0	15.00	51.6	.00	.00	53.0		.600	13
2	11	1.00	21.00	43.6	14.00	53.4	.00	.00	55.5		.667	14
2	12	1.00	21.00	43.6	11.00	58.3	.00	.00	53.0		.524	16
2	13	1.00	24.00	40.8	14.00	53.4	.00	.00	26.7		.583	17
2	14	1.00	33.00	34.8	23.00	41.7	.00	.00	73.2		.697	18
2	15	1.00	26.00	44.7	12.00	57.7	.00	.00	74.5		.600	19
2	16	1.00	17.00	48.5	9.00	66.6	.00	.00	52.6		.529	21
2	17	1.00	20.00	44.7	10.00	63.2	.00	.00	23.5		.500	22
2	18	1.00	21.00	43.6	13.00	55.4	.00	.00	66.5		.619	23
2	19	1.00	29.00	37.1	15.00	51.6	.00	.00	32.8		.517	24
2	20	1.00	16.00	50.0	9.00	66.6	.00	.00	60.4		.563	26
2	21	1.00	17.00	48.5	9.00	66.6	.00	.00	37.9		.529	27
2	22	1.00	27.00	38.4	14.00	53.4	.00	.00	43.0		.519	28
2	23	1.00	20.00	44.7	9.00	66.6	.00	.00	74.1		.450	29
2	24	1.00	22.00	42.6	14.00	53.4	.00	.00	64.0		.636	31
2	25	1.00	25.00	40.0	15.00	51.6	.00	.00	64.1		.600	32
2	26	1.00	26.00	39.2	12.00	57.7	.00	.00	46.5		.462	33
2	27	1.00	29.00	37.1	16.00	47.1	.00	.00	42.2		.621	34
2	28	1.00	16.00	50.0	8.00	70.7	.00	.00	59.1		.500	36
2	29	1.00	23.00	41.7	11.00	60.3	.00	.00	85.7		.478	37
2	30	1.00	24.00	40.8	19.00	45.8	.00	.00	89.9		.792	38
2	31	1.00	24.00	40.8	18.00	47.1	.00	.00	70.4		.750	39
2	32	1.00	24.00	40.8	16.00	50.0	.00	.00	106.		.667	41
2	33	1.00	18.00	47.1	13.00	55.4	.00	.00	38.4		.722	42
2	34	1.00	10.00	47.1	11.00	60.3	.00	.00	109.		.611	43
2	35	1.00	29.00	37.1	19.00	45.8	.00	.00	73.0		.655	44
2	36	1.00	16.00	50.0	8.00	70.7	.00	.00	27.7		.500	46
2	37	1.00	23.00	41.7	8.00	70.7	.00	.00	31.4		.348	47
2	38	1.00	24.00	40.8	17.00	48.5	.00	.00	68.4		.708	48
2	39	1.00	21.00	42.6	16.00	50.0	.00	.00	81.9		.762	49
2	40	1.00	23.00	41.7	13.00	55.4	.00	.00	68.4		.565	51
2	41	1.00	19.00	45.8	13.00	55.4	.00	.00	99.4		.684	52
2	42	1.00	25.00	40.0	19.00	45.8	.00	.00	46.5		.760	53
2	43	1.00	14.00	53.4	7.00	75.5	.00	.00	30.5		.500	54
2	44	1.00	15.00	51.6	12.00	57.7	.00	.00	67.4		.800	56

P#	S#	TIME	CPMA/K	%DEV	CPMB/K	%DEV	CPMC/K	%DEV	OIP	FLAGS	SCR	MIN
2	45	1.00	15.00	51.6	10.00	63.2	.00	.00	99.3		.500	58
2	46	1.00	28.00	37.8	14.00	53.4	.00	.00	99.3		.500	58

P#	S#	TIME	CPMA/K	%DEV	CPMB/K	%DEV	CPMC/K	%DEV	OIP	FLAGS	SCR	MIN
2	47	1.00	16.00	50.0	9.00	66.6	.00	.00	49.9		.563	59
2	48	1.00	24.00	40.8	13.00	55.6	.00	.00	47.2		.542	61
2	49	1.00	26.00	39.2	15.00	51.6	.00	.00	94.8		.577	62
2	50	1.00	24.00	40.8	17.00	48.5	.00	.00	70.0		.708	63
2	51	1.00	19.00	45.8	14.00	53.4	.00	.00	67.9		.737	64
2	52	1.00	23.00	41.7	15.00	51.6	.00	.00	57.4		.652	66
2	53	1.00	17.00	48.5	11.00	60.3	.00	.00	66.9		.647	67
2	54	1.00	26.00	39.2	15.00	51.6	.00	.00	44.3		.577	68
2	55	1.00	32.00	35.3	21.00	43.5	.00	.00	110.		.656	69
2	56	1.00	23.00	41.7	10.00	63.2	.00	.00	42.2		.435	71

[14C] FINAL SURVEY MICRO LAB

PROGRAM #: 3
REGION A: LL-UL= 0- 156 LCR= 0 BKG= 0 ½ 2 SIGMA= 2
REGION B: LL-UL= 4- 156 LCR= 0 BKG= 0 ½ 2 SIGMA= 2
REGION C: LL-UL= 0- 0 LCR= 0 BKG= 0 ½ 2 SIGMA= 2
TIME= 1.00 OIP= EIS SCR= B/A K= 1.000

P#	S#	TIME	CPMA/K	%DEV	CPMB/K	%DEV	CPMC/K	%DEV	OIP	FLAGS	SCR	MIN
3	1	1.00	14.00	53.4	7.00	75.5	.00	.00	38.4		.500	1
3	2	1.00	32.00	35.3	19.00	45.8	.00	.00	29.4		.594	3
3	3	1.00	25.00	40.0	16.00	50.0	.00	.00	56.3		.640	4
3	4	1.00	14.00	53.4	7.00	75.5	.00	.00	93.5		.500	5
3	5	1.00	16.00	50.0	10.00	63.2	.00	.00	96.0		.625	6
3	6	1.00	27.00	41.7	14.00	53.4	.00	.00	44.8		.609	8
3	7	1.00	56.00	26.7	18.00	47.1	.00	.00	53.1		.321	9
3	8	1.00	26.00	39.2	15.00	51.6	.00	.00	49.8		.577	10
3	9	1.00	12.00	42.6	16.00	50.0	.00	.00	90.0		.727	11
3	10	1.00	22.00	42.6	13.00	55.4	.00	.00	44.0		.591	13
3	11	1.00	26.00	39.2	12.00	57.7	.00	.00	52.2		.462	14
3	12	1.00	17.00	48.5	14.00	53.4	.00	.00	75.9		.824	15
3	13	1.00	19.00	45.8	12.00	57.7	.00	.00	63.7		.632	16
3	14	1.00	12.00	55.4	9.00	66.6	.00	.00	56.3		.692	18
3	15	1.00	19.00	47.1	10.00	63.2	.00	.00	43.4		.556	19
3	16	1.00	20.00	44.7	11.00	60.3	.00	.00	81.9		.550	20
3	17	1.00	25.00	40.0	16.00	50.0	.00	.00	74.3		.640	21
3	18	1.00	25.00	40.0	13.00	55.4	.00	.00	33.3		.520	23

8911080103-02

[32p]

FINAL SURVEY
FIRST FLOOR LABS

PROGRAM #: 2
REGION A: LL-UL= 5-1700 LCR= 0 BKG= 0 % 2 SIGMA= .2
REGION B: LL-UL= 50-1700 LCR= 0 BKG= 0 % 2 SIGMA= .2
REGION C: LL-UL= 0- 0 LCR= 0 BKG= 0 % 2 SIGMA= .2
TIME= 1.00 DIP= SIS SCR= B/A K= 1.000

P#	S#	TIME	CPMA/K	%DEV	CPMB/K	%DEV	CPMC/K	%DEV	DIP	FLAGS	SCR	MIN
2	1	1.00	20.00	44.7	10.00	63.2	.00	.00	264.		.500	1
2	2	1.00	17.00	48.5	5.00	89.4	.00	.00	345.		.294	3
2	3	1.00	13.00	55.4	3.00	115.	.00	.00	195.		.231	4
2	4	1.00	14.00	53.4	5.00	89.4	.00	.00	172.		.357	5
2	5	1.00	17.00	48.5	9.00	66.6	.00	.00	562.		.529	6
2	6	1.00	20.00	44.7	7.00	75.5	.00	.00	459.		.350	8
2	7	1.00	17.00	48.5	7.00	75.5	.00	.00	422.		.412	9
2	8	1.00	10.00	63.2	5.00	89.4	.00	.00	214.		.500	10
2	9	1.00	8.00	70.7	5.00	89.4	.00	.00	97.1		.625	12
2	10	1.00	16.00	50.0	8.00	70.7	.00	.00	222.		.500	13
2	11	1.00	15.00	51.6	5.00	89.4	.00	.00	256.		.333	14
2	12	1.00	18.00	47.1	9.00	66.6	.00	.00	900.		.500	15
2	13	1.00	16.00	50.0	8.00	70.7	.00	.00	297.		.500	17
2	14	1.00	35.00	33.8	13.00	55.4	.00	.00	514.		.371	18
2	15	1.00	20.00	44.7	8.00	70.7	.00	.00	319.		.400	19
2	16	1.00	12.00	57.7	5.00	89.4	.00	.00	192.		.417	21
2	17	1.00	18.00	47.1	8.00	70.7	.00	.00	213.		.444	22
2	18	1.00	14.00	53.4	4.00	100.	.00	.00	224.		.286	23
2	19	1.00	6.00	81.6	1.00	200.	.00	.00	19.1		.167	24
2	20	1.00	18.00	47.1	8.00	70.7	.00	.00	225.		.444	26
2	21	1.00	22.00	42.6	13.00	55.4	.00	.00	424.		.591	27
2	22	1.00	14.00	53.4	7.00	73.5	.00	.00	313.		.500	28
2	23	1.00	11.00	60.3	4.00	100.	.00	.00	135.		.364	30
2	24	1.00	23.00	41.7	12.00	57.7	.00	.00	374.		.522	31
2	25	1.00	16.00	50.0	8.00	70.7	.00	.00	679.		.500	32
2	26	1.00	17.00	48.5	11.00	60.3	.00	.00	781.		.647	34
2	27	1.00	19.00	45.8	8.00	70.7	.00	.00	417.		.421	35
2	28	1.00	8.00	70.7	4.00	100.	.00	.00	661.		.500	36
2	29	1.00	15.00	51.6	4.00	81.6	.00	.00	262.		.400	37
2	30	1.00	17.00	48.5	9.00	66.6	.00	.00	398.		.529	39
2	31	1.00	10.00	63.2	4.00	100.	.00	.00	155.		.400	40
2	32	1.00	14.00	53.4	3.00	115.	.00	.00	134.		.214	41
2	33	1.00	15.00	51.6	6.00	81.6	.00	.00	242.		.400	43
2	34	1.00	17.00	48.5	5.00	89.4	.00	.00	274.		.294	44
2	35	1.00	13.00	47.1	9.00	66.6	.00	.00	549.		.590	45
2	36	1.00	15.00	51.6	4.00	100.	.00	.00	79.5		.267	46
2	37	1.00	9.00	66.6	3.00	115.	.00	.00	139.		.333	48
2	38	1.00	15.00	51.6	2.00	141.	.00	.00	158.		.133	49
2	39	1.00	19.00	45.8	10.00	63.2	.00	.00	519.		.526	50
2	40	1.00	17.00	48.5	6.00	81.6	.00	.00	651.		.353	52
2	41	1.00	15.00	51.6	6.00	81.6	.00	.00	504.		.400	53
2	42	1.00	19.00	45.8	6.00	81.6	.00	.00	69.		.300	54

2	43	1.00	11.00	43.6	9.00	66.6	.00	.00	532.		.429	56
2	44	1.00	19.00	45.8	3.00	115.	.00	.00	82.1		.158	57
2	45	1.00	10.00	63.2	2.00	115.	.00	.00	242.		.300	58
2	46	1.00	18.00	47.1	5.00	89.4	.00	.00	204.		.278	59

SI APERTURE CARD

P#	S#	TIME	CPMA/K	%DEV	CPMB/K	%DEV	CPMC/K	%DEV	DIP	FLAGS	SCR	MIN
2	47	1.00	19.00	45.8	11.00	60.3	.00	.00	612.		.579	61
2	48	1.00	24.00	40.8	10.00	63.2	.00	.00	202.		.417	62
2	49	1.00	16.00	50.0	7.00	75.5	.00	.00	230.		.438	63
2	50	1.00	12.00	57.7	5.00	89.4	.00	.00	76.0		.417	65
2	51	1.00	15.00	51.6	6.00	81.6	.00	.00	387.		.400	66
2	52	1.00	9.00	66.6	5.00	89.4	.00	.00	419.		.556	67
2	53	1.00	14.00	53.4	2.00	141.	.00	.00	43.3		.143	69
2	54	1.00	19.00	45.8	7.00	75.5	.00	.00	382.		.368	70
2	55	1.00	15.00	51.6	7.00	75.5	.00	.00	482.		.467	71
2	56	1.00	12.00	57.7	4.00	100.	.00	.00	102.		.333	72

Also Available On Aperture Card

[32P] FINAL SURVEY MICRO LAB

PROGRAM # 3
REGION A: LL-UL= 5-1700 LCR= 0 BKG= 0 % 2 SIGMA= .2
REGION B: LL-UL= 50-1700 LCR= 0 BKG= 0 % 2 SIGMA= .2
REGION C: LL-UL= 0- 0 LCR= 0 BKG= 0 % 2 SIGMA= .2
TIME= 1.00 DIP= SIS SCR= B/A K= 1.000

P#	S#	TIME	CPMA/K	%DEV	CPMB/K	%DEV	CPMC/K	%DEV	DIP	FLAGS	SCR	MIN
3	1	1.00	13.00	55.4	5.00	89.4	.00	.00	512.		.385	2
3	2	1.00	12.00	57.7	5.00	89.4	.00	.00	190.		.417	3
3	3	1.00	16.00	50.0	5.00	89.4	.00	.00	265.		.312	5
3	4	1.00	24.00	40.8	9.00	66.6	.00	.00	250.		.375	6
3	5	1.00	15.00	51.6	3.00	115.	.00	.00	73.0		.200	7
3	6	1.00	22.00	42.6	6.00	81.6	.00	.00	381.		.273	9
3	7	1.00	22.00	42.6	11.00	60.3	.00	.00	443.		.500	10
3	8	1.00	20.00	44.7	14.00	53.4	.00	.00	566.		.700	11
3	9	1.00	12.00	57.7	4.00	100.	.00	.00	148.		.333	12
3	10	1.00	15.00	51.6	4.00	100.	.00	.00	318.		.267	14
3	11	1.00	10.00	63.2	4.00	100.	.00	.00	237.		.400	15
3	12	1.00	14.00	53.4	9.00	66.6	.00	.00	621.		.643	16
3	13	1.00	20.00	44.7	11.00	60.3	.00	.00	462.		.550	18
3	14	1.00	14.00	53.4	6.00	81.6	.00	.00	636.		.429	19
3	15	1.00	19.00	45.8	8.00	70.7	.00	.00	262.		.421	20
3	16	1.00	21.00	43.6	3.00	115.	.00	.00	116.		.143	21
3	17	1.00	19.00	45.8	9.00	62.6	.00	.00	311.		.474	23
3	18	1.00	19.00	45.8	6.00	81.6	.00	.00	117.		.316	24

8911080103-03

1

[125 I] FIRST FLOOR LABS FINAL SURVEY

PROGRAM #: 1
REGION A: LL-UL= 0- 70 LCR= 0 BKG= 0 ½ 2 SIGMA= .2
REGION B: LL-UL= 6- 70 LCR= 0 BKG= 0 ½ 2 SIGMA= .2
REGION C: LL-UL= 0- 0 LCR= 0 BKG= 0 ½ 2 SIGMA= .2
TIME= 1.00 DIP= SIS SCR= B/A K= 1.000

P#	S#	TIME	CPMA/K	%DEV	CPMB/K	%DEV	CPMC/K	%DEV	DIP	FLAGS	SCR	MIN
1	1	1.00	5.00	70.7	5.00	89.4	.00	.00	90.8		.625	1
1	2	1.00	6.00	81.6	4.00	100.	.00	.00	79.1		.667	3
1	3	1.00	3.00	115.	2.00	141.	.00	.00	65.6		.667	4
1	4	1.00	5.00	89.4	2.00	141.	.00	.00	71.2		.400	6
1	5	1.00	6.00	81.6	3.00	115.	.00	.00	38.2		.500	7
1	6	1.00	3.00	115.	3.00	115	.00	.00	159.		1.000	8
1	7	1.00	5.00	70.7	3.00	115.	.00	.00	61.7		.375	9
1	8	1.00	4.00	100.	2.00	141.	.00	.00	61.7		.500	10
1	9	1.00	3.00	115.	1.00	200.	.00	.00	53.3		.333	12
1	10	1.00	5.00	89.4	4.00	100.	.00	.00	104.		.800	13
1	11	1.00	4.00	100.	2.00	141.	.00	.00	77.2		.500	14
1	12	1.00	3.00	66.6	3.00	115.	.00	.00	40.8		.333	16
1	13	1.00	5.00	89.4	4.00	100.	.00	.00	134.		.800	17
1	14	1.00	10.00	63.2	2.00	115.	.00	.00	54.3		.300	18
1	15	1.00	1.00	200.	.00	.00	.00	.00	.797	?	.000	19
1	16	1.00	.00	.00	.00	.00	.00	.00	.000	?	.000	20
1	17	1.00	1.00	200.	.00	.00	.00	.00	797	?	.000	22
1	18	1.00	7.00	75.5	3.00	115.	.00	.00	50.6		.429	23
1	19	1.00	4.00	100.	2.00	141.	.00	.00	79.6		.500	24
1	20	1.00	4.00	100.	2.00	141.	.00	.00	74.5		.500	25
1	21	1.00	7.00	75.5	2.00	141.	.00	.00	35.1		.286	27
1	22	1.00	9.00	66.6	3.00	115.	.00	.00	46.6		.333	28
1	23	1.00	8.00	70.7	4.00	100.	.00	.00	66.9		.500	29
1	24	1.00	5.00	89.4	3.00	115.	.00	.00	78.2		.600	30
1	25	1.00	9.00	66.6	4.00	100.	.00	.00	66.6		444	32
1	26	1.00	2.00	141.	1.00	200.	.00	.00	73.3		.500	33
1	27	1.00	4.00	100.	1.00	200.	.00	.00	19.1		.250	34
1	28	1.00	4.00	100.	4.00	100.	.00	.00	134.		1.000	35
1	29	1.00	5.00	89.4	2.00	141.	.00	.00	83.9		.400	36
1	30	1.00	4.00	100.	2.00	141.	.00	.00	37.0		.500	38
1	31	1.00	4.00	100.	3.00	115.	.00	.00	88.4		.750	39
1	32	1.00	7.00	75.5	4.00	100.	.00	.00	83.2		.571	40
1	33	1.00	4.00	100.	1.00	200.	.00	.00	35.4		.250	41
1	34	1.00	10.00	63.2	2.00	141.	.00	.00	36.8		.200	43
1	35	1.00	4.00	100.	3.00	115.	.00	.00	92.4		.750	44
1	36	1.00	5.00	89.4	4.00	100.	.00	.00	82.0		.800	45
1	37	1.00	6.00	70.7	5.00	89.4	.00	.00	74.7		.625	46
1	38	1.00	5.00	89.4	1.00	200.	.00	.00	35.2		.200	48
1	39	1.00	4.00	100.	1.00	200.	.00	.00	49.0		.250	49
1	40	1.00	3.00	115.	1.00	200.	.00	.00	68.7	?	.333	50
1	41	1.00	6.00	81.6	.00	.00	.00	.00	.797	?	.000	51
1	42	1.00	4.00	100.	3.00	115.	.00	.00	118.		.750	53
1	43	1.00	5.00	89.4	4.00	100.	.00	.00	103.		.800	54
1	44	1.00	5.00	89.4	3.00	115.	.00	.00	77.2		.600	55
1	45	1.00	4.00	100.	3.00	115.	.00	.00	105.		.750	56
1	46	1.00	6.00	81.6	4.00	100.	.00	.00	59.3		.667	57

SI

P#	S#	TIME	CPMA/K	%DEV	CPMB/K	%DEV	CPMC/K	%DEV	DIP	FLAGS	SCR	MIN
1	47	1.00	6.00	81.6	2.00	141.	.00	.00	72.7		.333	59
1	48	1.00	3.00	115.	2.00	141.	.00	.00	127.		.667	60
1	49	1.00	7.00	75.5	6.00	81.6	.00	.00	84.1		.857	61
1	50	1.00	5.00	89.4	2.00	141.	.00	.00	76.6		.400	62
1	51	1.00	2.00	115.	2.00	141.	.00	.00	72.5		.667	64
1	52	1.00	6.00	81.6	3.00	115.	.00	.00	76.5		.500	65
1	53	1.00	6.00	81.6	2.00	141.	.00	.00	42.8		.333	66
1	54	1.00	6.00	81.6	3.00	115.	.00	.00	75.4		.500	67
1	55	1.00	7.00	75.5	4.00	100.	.00	.00	88.2		.571	69
1	56	1.00	5.00	89.4	3.00	115.	.00	.00	56.5		.600	70

[125 I] MICRO LAB FINAL SURVEY

PROGRAM #: 7
REGION A: LL-UL= 0- 70 LCR= 0 BKG= 0 % 2 SIGMA= .2
REGION B: LL-UL= 6- 70 LCR= 0 BKG= 0 % 2 SIGMA= .2
REGION C: LL-UL= 0- 0 LCR= 0 BKG= 0 % 2 SIGMA= .2
TIME= 1.00 DIP= SIS SCR= B/A K= 1.000

P#	S#	TIME	CPMA/K	%DEV	CPMB/K	%DEV	CPMC/K	%DEV	DIP	FLAGS	SCR	MIN
7	1	1.00	4.00	100.	3.00	115.	.00	.00	37.8		.750	1
7	2	1.00	7.00	75.5	4.00	100.	.00	.00	59.7		.571	3
7	3	1.00	5.00	89.4	2.00	141.	.00	.00	72.1		.400	4
7	4	1.00	2.00	141	.00	00	.00	.00	.797	?	.000	6
7	5	1.00	2.00	141.	2.00	141.	.00	.00	67.7		1.000	7
7	6	1.00	4.00	100.	2.00	141.	.00	.00	100.		.500	8
7	7	1.00	3.00	89.4	4.00	100.	.00	.00	117.		.300	9
7	8	1.00	13.00	55.4	7.00	75.5	.00	.00	79.0		.538	11
7	9	1.00	3.00	115.	1.00	200.	.00	.00	66.6		.333	12
7	10	1.00	2.00	141	1.00	200.	.00	.00	16.7		.500	13
7	11	1.00	2.00	141.	1.00	200.	.00	.00	93.2		.500	14
7	12	1.00	12.00	57.7	7.00	75.5	.00	.00	81.1		.583	16
7	13	1.00	6.00	81.6	3.00	115.	.00	.00	62.1		.500	17
7	14	1.00	7.00	75.5	5.00	89.4	.00	.00	70.6		.714	18
7	15	1.00	9.00	66.6	6.00	81.6	.00	.00	92.8		.667	19
7	16	1.00	8.00	70.7	7.00	75.5	.00	.00	117.		.875	20
7	17	1.00	3.00	115.	2.00	141.	.00	.00	101.		.667	22
7	18	1.00	6.00	81.6	2.00	141.	.00	.00	27.3		.333	23

ADCO SERVICES, INC.

RADIOACTIVE WASTE SHIPMENT & DISPOSAL MANIFEST

P.O. BOX 35 • TINLEY PARK, IL 60477 • 312-429-1660

MASS

GENERATOR NUMBER: N/A

GENERATOR NAME: ANGENICS

ADDRESS: 100 INMAN ST.

CITY: CAMBRIDGE STATE: MA ZIP: 02139

CONTACT: DON TENNEY PHONE: 617-876-6468

USER PERMIT #: APP. FOR SHIPMENT #:

BILL DISPOSAL CHARGES TO:

NAME:

ADDRESS:

CITY: ST: PURCHASE ORDER #:

MANIFEST NO. 89 1111

DATE 9/12/89

DISCLAIMER: Upon acceptance of shipment, the materials therein become the sole property of ADCO SERVICES, INC.

Barnwell

TOTAL FOR EACH CLASS: # OF PACKAGES	WEIGHT (POUNDS)	REPORTABLE QUANTITY NAME	PROPER SHIPPING NAME & HAZARD CLASS (PER 49 CFR 172.101)	ID NUMBER
			Radioactive Material, [illegible]	[illegible]
	4		Radioactive Material, [illegible]	[illegible]
2	404		Radioactive Material, n.o.s. – Radioactive Material	[illegible]
			Radioactive Material, [illegible]	[illegible]
			Radioactive Material, [illegible]	[illegible]
			Radioactive Material, [illegible]	[illegible]
			Uranyl Acetate [illegible]	[illegible]
1			[illegible]	[illegible]

1	Drum	7.5	200	[illegible]	22	[illegible]	[illegible]	H-3 / C-14	.100 / .300	–	–	A		.03			.03		Radioactive – WHITE I
2	Drum	7.5	200	[illegible]	22	[illegible]	[illegible]	H-3	.050	–	–	A	U	.03		.03	.03		Radioactive – WHITE I
3	Drum	7.5	200	Liquid Vial	13	U	Toluene	H-3 / C-14	.050 / .050	–	–	A	U	0		0	0		[illegible]

SHIPMENT TOTALS

VOLUME cu. ft.	TOTAL # OF PACKAGES	SOURCE MATERIAL kgs	SPECIAL NUCLEAR MATERIAL (grams): U-233	U-235	PLUTONIUM	TOTAL

SUPPLIES DELIVERED: X

ACTIVITY

ACTIVITY TOTALS (Curies / Millicuries X)	TRITIUM	C-14	Tc-99	I-129	ALL ISOTOPES
	.150	.350	–	–	.650

RECEIVED AT ADCO SERVICES, INC. ON:

NOTE #1: [illegible]

NOTE #2: [illegible]

Customer represents and warrants that data and facts in the Radioactive Waste Shipment & Disposal Manifest is true and correct in all respects. [signature]

I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. [signature]