



**UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE**

Center for Coastal Fisheries and Habitat Research
101 Pivers Island Road
Beaufort, North Carolina 28516-9722

December 05, 2008

2008 DEC -9 AM 10:36

RECEIVED
REGION 1

J-6
MS-16

Mr. Dennis R. Lawyer
U.S. Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, Pennsylvania 19406-1415

32-00426-02
03005594

Dear Sir:

We are responding to your letter dated October 14, 2008 "U.S. DEPARTMENT OF COMMERCE, REQUEST FOR ADDITIONAL INFORMATION CONCERNING APPLICATION FOR AMENDMENT TO LICENSE, CONTROL NO. 14293."

The Center for Coastal Fisheries and Habitat Research submits the information below, in accordance with the requests of our letter, to facilitate your efforts to amend our Nuclear Regulatory Commission license to a "Terminated" status for license number 32-00426-02.

1. Prior to termination of a license, 10 CFR 30.35(g), 30.36(k)(4) and 30.51 and 40.36(f), 40.42(k)(4) and 40.62 require that you submit certain records to the NRC. Please submit the following records, or explain why such records are not applicable to your licensed activities.
 - a. **Request:** For unsealed materials with half-lives greater than 120 days.
Response: Enclosure (2) contains our records for unsealed materials with half lives greater than 120 days.
 - b. **Request:** Records for disposal made pursuant to 10 CFR 20.2002 (alternate disposal procedures, including burial authorized prior to January 28, 1981).
Response: A search of our records for disposal made pursuant to 10 CFR 20.2002 did not discover any alternate disposal procedures, including burial authorized prior to January 28, 1981.
 - c. **Request:** 10 CFR 20.2003 (disposals to the sanitary sewerage system).
Response: Enclosure (3) provides relevant records of our NRC conversation with Mr. John Potter that contains permission to use the sanitary sewerage system for isotope disposal.
 - d. **Request:** 10 CFR 20.2004 (incineration of wastes).

142793
NRCSS/RGNL MATERIALS-002



Response: Enclosure (4) contains initial receipt and final disposition Hazardous Waste Manifests for the incineration of subject wastes.

- e. **Request:** 10 CFR 20.2005 (disposal of specific wastes including liquid scintillation cocktail and animal tissue).
Response: Enclosure (5) provides records of our disposal of specific wastes including liquid scintillation cocktails that were disposed of in a manner consistent with the requirements of 20.2005.
- f. **Request:** 10 CFR 20.2103(b)(4) evaluations of effluent releases.
Response: Records of our evaluations of effluent releases are contained in enclosure (6).
- g. **Request:** Records important for decommissioning as described in 30.35(g), 40.36(f). Examples of such records include but are not limited to the following: records of contamination, identifying the radionuclides, quantities and concentrations; as-built drawings and modifications of structures and equipment in restricted areas and locations of inaccessible contamination such as buried pipes; a single list, updated at least every 2 years, of areas to which access is limited for the purpose of radiation protection (restricted areas).
Response: Records applicable to the requested information can be found in enclosure (7).
- h. **Request:** Records related to the provision of financial assurance.
Response: Records related to the provision of financial assurance, as required by 30.35, are found in enclosure (8) of this package.

No license will be terminated until the required records are received by the NRC. Records may be transferred to the U.S. Nuclear Regulatory Commission, Region I, 475 Allendale Road, King of Prussia, Pennsylvania 19406, or to the new licensee if licensed activities will continue at the same location under another Commission license.

2. **Request:** Please submit the enclosed Form NRC 314 including all information requested by the form. Written confirmation from the recipient listed on NRC Form 314 that the material has been transferred to them should be attached to the Form 314. Guidance on required survey information can be obtained from NUREG-1757, Volume 1, "Decommissioning Process for Materials Licensees." You may qualify for a simplified survey see page 8-2.
Response: Form NRC 314 including all information requested by the form can be found in enclosure (9).
3. **Request:** Submit a Final Status Survey Report, or demonstrate that the facility, or portion of the facility, meets NRC criteria for unrestricted use by using the dose screening methodology described in Section 6.6 of NUREG-1757, Volume 1,

“Decommissioning Process for Materials Licensees.” Guidance on surveys is found in Figure 8.1 and Section 15.4 of this volume and Volume 2 of this NUREG-1757. The report should give a description of long lived isotope used, locations used, and any spread of contamination outside of buildings or leaking sealed sources that were detected.

Response: The Final Status Survey Report for our Facility is contained in enclosure (10) of this package.

4. **Request:** For all sealed sources, including sources no longer in your possession, provide the most recent leak test results.

Response: Enclosure (11) contains our most recent leak test results for all sealed sources, including those no longer in our possession.

5. In support of an environmental assessment related to the release of your facility, please see enclosure (12).

a) **Request:** Provide the name of the facility to be released.

Response: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Center for Coastal Fisheries and Habitat Research.

b) **Request:** Provide the size of the complex (in acres), building in square feet, and area to be released in square feet.

Response: The complex is approximately 13 acres, buildings total approximately 50,000 square feet, and the area to be released is approximately 14,583 square feet.

c) **Request:** Describe the type of building use such as “general office and laboratory”.

Response: It is a two story building with general office spaces and research laboratory spaces.

d) **Request:** Describe the surrounding area, such as “residential”, “industrial”, “commercial”, “mixed residential/commercial”, etc.

Response: The immediate surrounding area is educational with a University situated close by. Further away is a mix of residential/commercial areas.

e) **Request:** Describe the general type of activities authorized on the license, such as “laboratory procedures typically performed on bench tops and in hoods.”

Response: The general type of activities authorized on our license included research and development as defined in 10 CFR 30.4, calibration and checking of our instruments, and possession and storage of materials only incidental to disposal as performed on bench tops and in ventilation hoods.

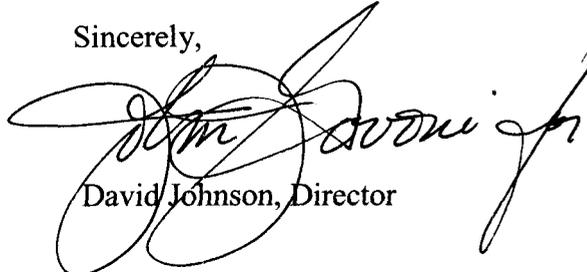
f) **Request:** State when you ceased licensed activities.

Response: Our Laboratory ceased Nuclear Regulatory Commission activities in July 2007.

Please let us know if we can be of further assistance to you on this matter.

Your point of contact for additional information or clarification of information is John J. Govoni, (252) 728-8727, or jeff.govoni@noaa.gov.

Sincerely,



David Johnson, Director

Enclosures:

- (1) Nuclear Regulatory Commission Letter Dated October 14, 2008;
- (2) Records for unsealed materials with half-lives greater than 120 days;
- (3) Disposals to the sanitary sewage system per 20.2003;
- (4) Disposal of liquid scintillation cocktail and animal tissue per 20.2004;
- (5) Disposal of specific wastes per 20.2005;
- (6) Records of survey evaluations of effluent releases per 20.2103;
- (7) Records of contamination, identifying the radionuclide(s) quantities and concentrations and as-built drawings and modifications of structures and equipment in restricted areas;
- (8) Records related to the provision of financial assurance;
- (9) Completed Form NRC 314 with Decommissioning Survey;
- (10) Decommissioning Survey with Final Status Survey Report;
- (11) Recent leak test results for sealed sources no longer in our possession;
- (12) Environmental assessment related to the release of our facility.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

October 14, 2008

Docket No. 03005594
Control No. 142793

License No. 32-00426-02

Joseph Bizzell
Safety Officer
U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service
Center for Coastal Fisheries and Habitat Research
101 Pivers Island Road
Beaufort, NC 28516-9722

SUBJECT: U.S. DEPARTMENT OF COMMERCE, REQUEST FOR ADDITIONAL
INFORMATION CONCERNING APPLICATION FOR AMENDMENT TO
LICENSE, CONTROL NO. 142793

Dear Mr. Bizzell:

This is in reference to your letter dated September 10, 2008 requesting to amend Nuclear Regulatory Commission License No. 32-00426-02. In order to continue our review, we need the following additional information:

1. Prior to termination of a license, 10 CFR 30.35(g), 30.36(k)(4) and 30.51 and 40.36(f), 40.42(k)(4) and 40.62 require that you submit certain records to the NRC. Please submit the following records, or explain why such records are not applicable to your licensed activities.
 - a. for unsealed materials with half-lives greater than 120 days, records for disposal made pursuant to 10 CFR 20.2002 (alternate disposal procedures, including burial authorized prior to January 28, 1981), 20.2003 (disposals to the sanitary sewerage system), 20.2004 (incineration of wastes), 20.2005 (disposal of specific wastes including liquid scintillation cocktail and animal tissue), and 20.2103(b)(4), evaluations of effluent releases.
 - b. records important for decommissioning as described in 30.35(g), 40.36(f). Examples of such records include but are not limited to: records of contamination, identifying the radionuclides, quantities and concentrations; as-built drawings and modifications of structures and equipment in restricted areas and locations of inaccessible contamination such as buried pipes; a single list, updated at least every 2 years, of areas to which access is limited for the purpose of radiation protection (restricted areas); and records related to the provision of financial assurance.

No license will be terminated until the required records are received by the NRC. Records may be transferred to the U.S. Nuclear Regulatory Commission, Region I, 475 Allendale Road, King of Prussia, Pennsylvania 19406, or to the new licensee if licensed activities will continue at the same location under another Commission license.

2. Please submit the enclosed Form NRC 314 including all information requested by the Form. Written confirmation from the recipient listed on NRC Form 314 that the material has been transferred to them should be attached to the Form 314. Guidance on required survey information can be obtained from NUREG-1757, Volume 1, "Decommissioning Process for Materials Licensees." You may qualify for a simplified survey see page 8-2.
3. Submit an Final Status Survey Report, or demonstrate that the facility, or portion of the facility, meets NRC criteria for unrestricted use by using the dose screening methodology described in Section 6.6 of NUREG-1757, Volume 1, "Decommissioning Process for Materials Licensees." Guidance on surveys is found in Figure 8.1 and Section 15.4 of this volume and Volume 2 of this NUREG-1757. The report should give a description of long lived isotope used, locations used, and any spread of contamination outside of buildings or leaking sealed sources that were detected.
4. For all sealed sources, including sources no longer in your possession, provide the most recent leak test results.
5. In support of an environmental assessment related to the release of your facility:
 - a) Provide the name of the facility to be released
 - b) Provide the size of the complex (in Acres), building in square feet, and area to be released in square feet.
 - c) Describe the type of building use such as "general office and laboratory"
 - d) Describe the surrounding area, such as "residential", "industrial", "commercial", "mixed residential/commercial", etc.
 - e) Describe the general type of activities authorized on the license, such as "laboratory procedures typically performed on bench tops and in hoods."
 - f) State when you ceased licensed activities.

Current NRC regulations and guidance are included on the NRC's website at www.nrc.gov; select **Nuclear Materials; Medical, Academic, and Industrial Uses of Nuclear Material**; then **Regulations, Guidance, and Communications**. You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-888-293-6498. The GPO is open from 7:00 a.m. to 8:00 p.m. EST, Monday through Friday (except Federal holidays).

J. Bizzell

3

We will continue our review upon receipt of this information. Please reply to my attention at the Region I Office and refer to Mail Control No. 142793. If you have any technical questions regarding this deficiency letter, please call me at (610) 337-5366.

If we do not receive a reply from you within 30 calendar days from the date of this letter, we will assume that you do not wish to pursue your application.

Sincerely,

Original signed by Dennis R. Lawyer

Dennis R. Lawyer
Health Physicist
Commercial and R&D Branch
Division of Nuclear Materials Safety

cc:

~~Rance Hardison, Radiation Safety Officer~~

INVENTORY

<u>Vault No.</u>	<u>Isotope</u>	<u>Date Rcvd.</u>	<u>Investigator</u>	<u>Half Life</u>	<u>Half Life Passed</u>	<u>Comments</u>
1	137 Cs Std	84		30 y		1 m Ci enclosed gtd.
1	14C	3-27-68		5730y		50 uci std.
1	137Cs	7-2-64		30 y		counting std.
2	14C Napthalene, Benzene, Hexadecane	3-14-73 8-21-72	MRT RLF			
2	60Co	6-18-65		5.26 y		stock
3	137Cs	6-11-63		30 y	<1	dilution
3	137Cs	5-12-70		30 y	~ 1/2	.3 uCi (?)
3	60Co	12-3-73		5.26 y		dilution
3	36Cl	10-6-69		x 10 ⁵ y		
4	144Ce	5-27-75		284 d		stock (?)
5	60Co	3-2-65		5.26 y	~4	dilution
5	137Cs	6-8-65		30 y	< 1	dilution
5	*MFP ¹ (a)	8-27-63		?		stock
	" (b)	7-9-65				stock
	" (c)	9-25-65				stock
6	3H (H2O)	6-16-70		12.3 y	1.3	
	54Mn	6-17-83		303 d	4.3	
	54Mn	5-17-81		303 d	6.7	
7	54Mn	12-13-76	Hanson	303 d	13.4	looks empty?
	65Zn	8-15-80	Hanson	245 d	10	1 mCi
8	63Ni	12-13-76	Hanson	92 y		
	65Zn		Hanson	245 d		Experiment spikes and containers
9	109Cd	11-1-81	DWE	453 d	5	
	22Na	8-20-81	DWE	2.6 y	>2	

^{disposal}
disposal in order

* MFP = mixed fission products

Inventory (Contd)

<u>Vault No.</u>	<u>Isotope</u>	<u>Date Rcvd.</u>	<u>Investigator</u>	<u>Half Life</u>	<u>Half Life Passed</u>	<u>Comments</u>
10	¹³⁷ Cs	72-63		30 y		3 diluted stocks
11	⁶⁵ Zn ⁵⁴ Mn ⁶⁵ Zn (1 mCi)	Sue will check 2/25 8-6-86				Sunda's current vault not inventoried
12,13,14	²² Na	12-26-69 1-7-70	DWE	2.6 y	6.5	1 mCi
(one vault opening)	²³² Th ⁶⁵ Zn ¹⁴⁴ Ce	11-11-68 4-7-74 6-8-8;	FAC DP	1.41 x 10 ¹⁰ y 245 d 284 d		dilution
15,16,17 (one opening)	⁶⁰ Co	9-16-65		5.26 y		dilution
	¹³⁷ Cs	9-16-65		30 y		dilution
	¹³⁷ Cs			30 y		ref. std.
	²⁰⁷ Th			3.8 y		ref. std.
	⁶⁰ Co			5.26 y		ref. std.
	¹³³ Ba			7.2 y		ref. std.
	¹¹⁰ Ag	8-20-79	DWE			
	¹³⁷ Cs	4-12-65	DWE	30 y		counting std.
	⁶⁵ Zn	9-1-77		245 d		dilution
	⁵⁵ Fe	4-16-79		2.6 y		
18	⁶⁰ Co	3-8-76	Nakamura Naka, para	5.26 y		stock 5 mCi

90
+ 12.83
12.83
3.55
1.18

get rid

get rid

Ag 110m $T_{1/2}$ 253d
Ag 110 24.4s 24.4 seconds?

8/12/80
984 mCi

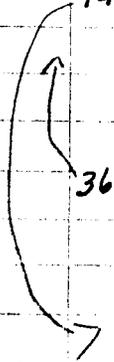
make critical of activity after " can remove
70. (8)

(6) Inventory (7)

(8) (6) (20)

Vault No.	Isotope	Date R'cd	Half Life Passed	Investigator	Half life	Comments
1	¹³⁷ Cs Std		64		30 y	1 mCi enclosed etc
1	¹⁴ C	3-27-68			5730 y	50.001 std
1	¹³⁷ Cs	7-2-64			30 y	counting std
* 2	¹⁴ C Naphthalene, Benzene, Hexadecane	3-14-73? 8/21/72				MRT? RLF
* 2	⁶⁰ Co	6/18/65	24		5.26 y	stock
* 3	¹³⁷ Cs	6/11/63	41		30 y	dilution
* 3	¹³⁷ Cs	5/12/70	~ 1/2		30 y	fuel (?)
* 3	⁶⁰ Co	12/3/73			5.26 y	dilution
* 3	¹⁴⁴ Ce	5/27/75			284 d	Stock (?) (hot)
	³⁶ Cl	10/6/69			x 10 ⁵ y	110000 to 3

Storage vault for disposal of



* list to Eng'd that can be disposed of

MICROFILMED IN U.S.A. - ADDRESS SERVICE BUREAU - PARS. INC. READING MASS. 01061

Vault No.	Isotope	Date Rec'd	Half Life (years)	Investigator	1/2 Life	Comments
* 5	^{60}Co	3/2/65	~ 4		5.26 y	dilution
* 5	^{137}Cs	6/8/65	~ 1		30 y	dilution
* 5	* MFP^{I} (a)	8/27/63		Nitrate in HNO_3 (20 mci)		stock
	" (b)	7/9/65		Nitrate in HNO_3 (12.5 mci)		stock
	" (c)	9/25/65		" "	(5 mci)	
* 6	$^3\text{H} (\text{H}_2\text{O})$	6/16/70	1.3		12.3 y	
*	^{54}Mn	6/17/83	4.3		303 d	
*	^{54}Mn	5/17/81	6.7		303 d	
* 7	^{54}Mn	12/13/76	13.4	Hanson	303 d	looks empty
*	^{65}Zn	8/15/80	10	"	245 d	1 mci
8	^{63}Ni	12/13/76		Hanson	92 y	
	^{65}Zn			Hanson	245 d	Experiment SPI. Kes & Cont
9	^{109}Cd	11/1/81	5	PWE	453 d	
	^{22}Na	8/20/81	7.2	PWE	2.6 y	

1 ~~is~~ disposed in order

MFP ...

THIS PUBLISHED IN U.S.A. BY JOHN WILEY & SONS, INC. PRINTING MADE IN U.S.A.

Vault No.	isotope	Date Rec'd	Half Life Passed	Investigator	1/2 Life	Comments
* 10	^{137}Cs	72-63			30y	3 diluted sto
11	^{65}Zn 50 M μ	2w	will check	2/25 lc		Sund's curr Vault NOT inventor
	^{65}Zn (1mci)	8/6/66				
12, 13, 14 (one vault opening)	^{22}Na	12/26/69	117/70 6.5	DWE	2.6y	1mci
* (one vault opening)	^{232}Tl (Thallium)	11/11/68		JAC	1.41×10^{10} y	
* (one vault opening)	^{65}Zn	4/7/74			245d	dilution
* (one vault opening)	^{144}Ce	6/8/81		DP	284d	

LITHOGRAPHED IN U.S.A. - PRINSON-WENLEY TUBING INC. READING, MASS. 01061

NOAA Beaufort Lab updated to 1/22/03
 Use of Radioactive isotopes

average waste water flow = 2000 gal/day

1994 Expt	Tracer	half life(d)	date rec'd	date used	days decayed till used	initial uCi/ml	u/ci/ml when used	vol (ml) used	uCi used	dates disposed	(uCi) Disposed	method disposal	allowed down drain uCi/gal	gallons needed	gallons available	Elapsed days total till today	uCi in storage today	BRC?			
150	Zn 65	245	08/02/93	01/07/94	158	100	63.95	0.275	17.6	1/9-11	14.1	drain	0.019	741	6,000	3459	0.0002				
	Co 57	267	01/27/93	01/07/94	345	100	40.83	0.43	17.6		3.5 decay										
	Cd 109	330	05/31/91	01/07/94	952	50	6.77	0.24	1.6		14.0 drain	0.227	62						3646	0.0003	
											3.5 decay					4253	0.0000				
150 B	Zn 65	245	08/02/93	01/20/94	171	100	61.64	0.075	4.6	1/23-24	3.7	drain	0.019	195	4,000	3459	0.0001				
											0.9 decay										
152 A	Zn 65	245	08/02/93	03/10/94	220	100	53.66	0.1	5.4	3/13-18	4.3	drain	0.019	226	12,000	3459	0.0001				
	Co 57	267	01/27/93	03/10/94	407	100	34.76	0.5	17.4		1.1 decay										
	C 14	2E+06	06/25/91	03/11/94	990	125	125	2	250		13.9 drain	0.227	61						3646	0.0003	
											3.5 decay					4228	49.9111				
											199.9 drain	0.114	1754								
											50.0 decay										
152 B	Zn 65	245	08/02/93	03/16/94	226	100	52.8	0.1	5.3	3/19-24	4.2	drain	0.019	222	12,000	3459	0.0001				
	Co 57	267	01/27/93	03/16/94	413	100	34.2	0.5	17.1		1.1 decay										
	C 14	2E+06	06/25/91	03/16/94	995	125	125	2	250		13.7 drain	0.227	60						3646	0.0003	
											3.4 decay					4228	49.9110				
											199.9 drain	0.114	1754								
											50.0 decay										
153	Cd 109	330	05/31/91	03/27/94	1031	50	5.73	3.5	20	3/28-31	16.1	drain	0.023	698	8,000	4253	0.0005				
	Mn 54	310	10/22/93	03/27/94	156	100	70.6	1.891	133		4.0 decay										
											106.7 drain	0.114	936			3378	0.0140				
											26.7 decay										
155	Cd 109	330	05/10/94	05/16/94	6	100	98.7	0.265	26	5/26-6/2	20.9	drain	0.023	910	16,000	3178	0.0066				
	Zn 65	245	08/02/93	05/16/94	287	100	44.4	1.375	61		5.2 decay										
	Co 57	267	01/27/93	05/16/94	474	100	29.2	1.25	37		48.8 drain	0.019	2570						3459	0.0007	
											12.2 decay					3646	0.0006				
											29.2 drain	0.227	129								
											7.3 decay										
157	Fe 59	45	06/06/94	06/09/94	3	100	95.5	0.84	80	6/13-17	64.2	drain	0.038	1689	10,000	3151	0.0000				
											16.0 decay										
158	Fe 59	45	06/06/94	06/20/94	14	100	80.6	0.725	58	7/5-7/15	46.7	drain	0.038	1230	22,000	3151	0.0000				
	C 14	2E+06	06/25/91	06/20/94	1091	500	500	1.2	600		11.7 decay										
											479.8 drain	0.114	4209			4228	119.8				
											120.0 decay										
159	C 14	2E+06	06/25/91	07/08/94	1109	500	500	0.11	55	7/20	44.0	drain	0.114	386	2,000	4228	10.9800				
											11.0 decay										

Expt	Tracer	half life(d)	date rec'd	date used	days decayed till used	initial uCi/ml	u/ci/ml when used	vol (ml) used	uCi used	dates disposed	(uCi) Disposed	method disposal	allowed down drain uCi/gal	gallons needed	gallons available	Elapsed days total till today	uCi in storage today	BRC?
161	Fe 59	45	06/06/94	07/22/94	46	100	49.2	0.55	27	8/1-5	21.7	drain	0.038	570	10,000	3151	0.0000	
	C 14	2E+06	06/25/91	07/22/94	1123	500	499.8	1	500	7/23-8/7	5.4 399.8 100.0	decay drain decay	0.114	3507	32,000			
162	Fe 59	45	06/06/94	08/17/94	72	100	33.0	0.55	18	9/1-5	14.5 3.6	drain decay	0.038	382	12,000	3151	0.0000	
163	Fe 59	45	06/06/94	09/09/94	95	100	23.1	0.54	12	9/9	10.0 2.5	drain decay	0.038	263	2,000	3151	0.0000	
164	Fe 59	45	06/06/94	09/15/94	101	100	21.1	1	21	9/19-22	16.9 4.2	drain decay	0.038	444	8,000	3151	0.0000	
165	Zn 65	245	08/02/93	09/11/94	405	100	31.8	2.24	71	9/16-18	57.0 14.2	drain decay	0.019	2999	6,000	3459	0.0008	
166	Fe 59	45	06/06/94	09/23/94	109	100	18.7	0.04	1	9/23	0.6 0.1	drain decay	0.038	16	2,000	3151	0.0000	
167	Zn 65	245	08/02/93	10/11/94	435	100	29.2	2.05	60	10/14-27	47.9 12.0	drain decay	0.019	2521	8,000	3459	0.0007	
	Co 57	267	01/27/93	10/11/94	622	100	19.9	0.8	16		12.7 3.2	drain decay	0.227	56		3646	0.0002	
168	Fe59	45	06/06/94	10/05/94	121	100	15.5	0.79	12	10/6	9.8 2.5	drain decay	0.038	258	2,000	3151	0.0000	
169	Cd 109	330	05/10/94	10/25/94	168	100	70.3	0.9	63	10/26	50.6 12.6	drain decay	0.023	2200	2,000	3178	0.0160	
	Mn 54	310	10/22/93	10/25/94	368	100	43.9	0.536	24		18.8 4.7	drain decay	0.114	165		3378	0.0025	
170	Cd 109	330	05/10/94	11/08/94	182	100	68.2	1.4	96	11/9	76.4 19.1	drain decay	0.023	3323	2,000	3178	0.0241	
	Mn 54	310	10/22/93	11/08/94	382	100	42.6	1.125	48		38.3 9.6	drain decay	0.114	336		3378	0.0050	
171a	Cd 109	330	05/10/94	11/14/94	188	100	67.4	1.4	94	11/15	75.5 18.9	drain decay	0.023	3281	2,000	3178	0.0238	
	Mn 54	310	10/22/93	11/14/94	388	100	42.0	1.99	84		66.9 16.7	drain decay	0.114	586		3378	0.0088	
171b	Cd 109	330	05/10/94	11/24/94	198	100	66.0	1.4	92	11/25	73.9 18.5	drain decay	0.023	3213	2,000	3178	0.0233	
	Mn 54	310	10/22/93	11/24/94	398	100	41.1	1.99	82		65.4 16.3	drain decay	0.114	574		3378	0.0086	
172	Cd 109	330	05/10/94	12/05/94	209	100	64.5	0.62	40	12/5-13	32.0 8.0	drain decay	0.023	1390	18,000	3178	0.0101	
	Mn 54	310	10/22/93	12/05/94	409	100	40.1	0.08	3		2.6 0.6	drain decay	0.114	22		3378	0.0003	

Expt	Tracer	half life(d)	date rec'd	date used	days decayed till used	initial uCi/ml	u/ci/ml when used	vol (ml) used	uCi used	dates disposed	(uCi) Disposed	method disposal	allowed down drain uCi/gal	gallons needed	gallons available	Elapsed days total till today	uCi in storage today	BRC?
173a	Zn 65	245	12/05/94	12/06/94	1	100	99.7	0.12	12	12/6-16	9.6	drain	0.019	504	22,000	2969	0.0005	
	Co 57	267	01/27/93	12/06/94	678	100	17.2	0.09	2		2.4	decay						
173b	Zn 65	245	12/05/94	12/15/94	10	100	97.2	0.12	12	12/15-24	9.3	drain	0.019	491	20,000	2969	0.0005	
	Co 57	267	01/27/93	12/15/94	687	100	16.8	0.09	2		2.3	decay						

1995 Expt	isotope	life(d)	date rec'd	date used	days decaye till used	initial uCi/ml	remaining uCi/ml	vol (ml) used	uCi used	dates disposed	(uCi) Disposed	method	allowed di uCi/gal	#gallons needed	#gallons available	elapsed days	uCi remain after decay
174	Zn 65	245	12/05/94	01/14/95	40	100	89.3	1.65	147	1/14-2	117.9 29.5	drain decay	0.019	6204	16,000	2969	0.0066
175a	Zn 65	245	01/25/95	01/26/95	1	100	99.7	0.625	62	1/26-2/2	49.9 12.5	drain decay	0.019	2624	16,000	2918	0.0032
	Cd 109	330	05/10/94	01/26/95	261	100	57.8	0.16	9		7.4 1.8	drain decay	0.023	322		3178	0.0023
175b	Zn 65	245	01/25/95	01/26/95	1	100	99.7	0.75	75	1/26-2/6	59.8 15.0	drain decay	0.019	3149	24,000	2918	0.0039
	Cd 109	330	05/10/94	01/26/95	261	100	57.8	0.28	16		12.9 3.2	drain decay	0.023	563		3178	0.0041
176	Zn 65	245	01/25/95	02/12/95	18	100	95.0	0.72	68	2/12-15	54.7 13.7	drain decay	0.019	2881	8,000	2918	0.0036
	Cd 109	330	05/10/94	02/12/95	278	100	55.8	0.21	12		9.4 2.3	drain decay	0.023	407		3178	0.0030
177	Zn 65	245	01/25/95	03/02/95	36	100	90.3	1.745	158	3/2-3/8	126.1 31.5	drain decay	0.019	6636	14,000	2918	0.0082
178a	Mn 54	310	10/22/93	03/03/95	497	100	32.9	0.633	21	3/3-3/8	16.7 4.2	drain decay	0.114	146	12,000	3378	0.0022
	Cd109	330	05/10/94	03/03/95	297	100	53.6	0.0195	1		0.8 0.2	drain decay	0.023	36		3178	0.0003
178b	Mn 54	310	10/22/93	03/03/95	497	100	32.9	0.375	12	3/3-3/17	9.9 2.5	drain decay	0.114	87	30,000	3378	0.0013
	Cd109	330	05/10/94	03/03/95	297	100	53.6	0.0195	1		0.8 0.2	drain decay	0.023	36		3178	0.0003
179a	Mn 54	310	10/22/93	04/11/95	536	100	30.2	0.633	19	4/11-12	15.3 3.8	drain decay	0.114	134	4,000	3378	0.0020
	Cd109	330	05/10/94	04/11/95	336	100	49.4	0.415	20		16.4 4.1	drain decay	0.023	713		3178	0.0052
179b	Mn 54	310	03/24/95	04/13/95	20	100	95.6	0.56	54	4/13-15	42.8 10.7	drain decay	0.114	376	6,000	2860	0.0179
	Cd109	330	03/27/95	04/13/95	17	100	96.5	0.3	29		23.2 5.8	drain decay	0.023	1007		2857	0.0143
179c	Mn 54	310	03/24/95	04/21/95	28	100	93.9	0.56	53	4/13-16	42.1 10.5	drain decay	0.114	369	8,000	2860	0.0176
	Cd109	330	03/27/95	04/21/95	25	100	94.9	0.3	28		22.8 5.7	drain decay	0.023	990		2857	0.0141
181	Zn 65	245	12/05/94	07/14/95	221	100	53.5	1.64	88	7/14-17	79.0 8.8	drain decay	0.019	4157	8,000	2969	0.0020
181	Cd109	330	03/27/95	07/14/95	109	100	79.5	0.214	17		15.3 1.7	drain decay	0.023	666		2857	0.0042
182	Zn 65	245	12/05/94	08/02/95	240	100	50.7	0.97	49	8/2-10	44.3 4.9	drain decay	0.019	2330	18,000	2969	0.0011

Expt	Tracer	half life(d)	date rec'd	date used	days decayed till used	initial uCi/ml	u/ci/ml when used	vol (ml) used	uCi used	dates disposed	(uCi) Disposed	method disposal	allowed down drain uCi/gal	gallons needed	gallons available	Elapsed days total till today	uCi in storage today	BRC?
184	Zn 65	245	12/05/94	08/12/95	250	100	49.3	1	49	8/12-15	44.4	drain	0.019	2335	8,000			
											4.9	decay				2975	0.0011	
185	Zn 65	245	12/05/94	09/15/95	284	100	44.8	1	45	9/15-18	40.3	drain	0.019	2121	8,000			
											4.5	decay				2975	0.0010	
186	Zn 65	245	12/05/94	11/02/95	332	100	39.1	0.6	23	11/2-5	21.1	drain	0.019	1111	8,000			
											2.3	decay				2975	0.0005	

1996 Expt	isotope	half life(d)	date rec'd	date used	days decayed till used	initial uCi/ml	remaining uCi/ml	vol (ml) used	uCi used	disposal dates	(uCi) Disposed	method disposal	allowed dil uCi/gal	#gallons needed	#gallons available	elapsed days	uCi remain after deca	BRC?
187	Zn 65	245	08/24/95	01/10/96	139	100	67.5	1.025	69	1/10-16	62.3	drain	0.019	3277	14,000			
											6.9	decay				2713	0.0032	
	Cd109	330	03/27/95	01/10/96	289	100	54.5	0.05	3		2.5	drain	0.023	107				
											0.3	decay				2863	0.0007	
188	Zn 65	245	12/05/94	01/18/96	409	100	31.4	3	94	1/18-22	84.9	drain	0.019	4468	10,000			
											9.4	decay				2975	0.0021	
	Zn 65	245	08/24/95	01/18/96	147	100	66.0	0.355	23		21.1	drain	0.019	1109				
											2.3	decay				2713	0.0011	
	Cd109	330	03/27/95	01/18/96	297	100	53.6	1.78	95		85.8	drain	0.023	3733				
											9.5	decay				2863	0.0233	
189	Zn 65	245	08/24/95	03/06/96	195	100	57.6	0.1	6	3/5-10	5.2	drain	0.019	273	12,000			
											0.6	decay				2713	0.0003	
190	Zn 65	245	08/24/95	04/10/96	230	100	52.2	0.375	20	4/10-15	17.6	drain	0.019	927	12,000			
											2.0	decay				2713	0.0009	
190	Cd109	330	03/27/95	04/10/96	380	100	45.0	2.2	99		89.1	drain	0.023	3875				
											9.9	decay				2863	0.0242	
191	Mn 54	310	03/24/95	04/19/96	392	100	41.6	0.0225	1	4/19-25	0.8	drain	0.114	7	14,000			
											0.1	decay				2866	0.0002	
	Cd109	330	03/27/95	04/19/96	389	100	44.2	0.412	18		16.4	drain	0.023	712				
											1.8	decay				2863	0.0045	
192	C 14	2E+06	06/25/91	05/24/96	1795	500	500	0.2	100	5/25-30	89.9	drain	0.114	789	12,000			
											10.0	decay				4234	9.9795	
193	C 14	2E+06	06/25/91	06/03/96	1805	500	500	0.05	25	6/3-10	22.5	drain	0.114	197	16,000			
											2.5	decay				4234	2.4949	
194	Fe 59	45	05/31/96	06/11/96	11	100	84.4	0.303	26	6/11-19	23.0	drain	0.038	606	18,000			
											2.6	decay				2432	0.0000	
195	Fe 59	45	05/31/96	07/05/96	35	100	58.3	0.11	6	7/11-13	5.8	drain	0.038	152	6,000			
											0.6	decay				2432	0.0000	

1997 Expt	isotope	h. life(d)	date rec'd	date used	days decayed till used	initial uCi/ml	remaining uCi/ml	vol (ml) used	uCi used	disposal date	(uCi) Disposed	method	allowed di uCi/gal	#gallons needed	#gallons available	elapsed days	uCi remain after deca	BRC?
196	Zn 65	245	10/14/96	07/11/97	270	100	46.6	1.33	62	7/11-17	55.8	drain	0.019	2935	14,000			
	C 14	2E+06	06/25/91	07/11/97	2208	500	499.6	0.12	60		6.2	decay				2296	0.0094	
196B	Zn 65	245	10/14/96	08/22/97	312	100	41.4	0.865	36	8/22-30	54.0	drain	0.114	473				
	C 14	2E+06	10/23/94	08/22/97	1034	100	100.0	0.3	30		6.0	decay				4234	5.9868	
197	Zn 65	245	10/14/96	09/12/97	333	100	39.0	0.865	34	9/12-20	32.2	drain	0.019	1695	18,000			
	C 14	2E+06	10/23/94	08/22/97	1034	100	100.0	0.3	30		3.6	decay				2296	0.0054	
198	Fe 59	45	11/07/97	11/07/97	0	100	100.0	0.14	14	11/7-13	27.0	drain	0.114	237				
	C 14	2E+06	10/23/94	11/07/97	1111	100	100.0	0.2	20		3.0	decay				3018	3.00	
199	Fe 59	45	11/07/97	12/03/97	26	100	67.0	0.208	14	12/3-19	30.3	drain	0.019	1597	18,000			
	C 14	2E+06	10/23/94	12/03/97	1137	100	100.0	0.12	12		3.4	decay				2296	0.0051	
199	Fe 59	45	11/07/97	12/03/97	26	100	67.0	0.208	14	12/3-19	12.6	drain	0.038	332	14,000			
	C 14	2E+06	10/23/94	12/03/97	1137	100	100.0	0.12	12		1.4	decay				1907	0.0000	
199	Fe 59	45	11/07/97	12/03/97	26	100	67.0	0.208	14	12/3-19	18.0	drain	0.114	158				
	C 14	2E+06	10/23/94	12/03/97	1137	100	100.0	0.12	12		2.0	decay				3018	1.9972	
199	Fe 59	45	11/07/97	12/03/97	26	100	67.0	0.208	14	12/3-19	12.5	drain	0.038	330	34,000			
	C 14	2E+06	10/23/94	12/03/97	1137	100	100.0	0.12	12		1.4	decay				1907	0.0000	
199	Fe 59	45	11/07/97	12/03/97	26	100	67.0	0.208	14	12/3-19	10.8	drain	0.114	95				
	C 14	2E+06	10/23/94	12/03/97	1137	100	100.0	0.12	12		1.2	decay				3018	1.1983	

1998 Expt #	isotope	h. life (d)	date rec'd	date used	days decayed till used	initial uCi/ml	remaining uCi/ml	vol (ml) used	uCi used	date disposed	(uCi) Disposed	method	allowed di uCi/gal	#gallons needed	#gallons available	elapsed days	uCi today after deca	BRC?
200	Fe 59	45	11/07/97	01/06/98	60	100	39.7	0.84	33	1/16-24	25.7	drain	0.038	677	38,000	1907	0.0000	
	C 14	2E+06	10/23/94	01/06/98	1171	100	100	0.12	12		2.9 10.8 1.2	decay drain decay	0.114	95				
202	Cd109	330	04/13/98	04/22/98	9	50	49.1	1.55	76	1/17-24	68.4	drain	0.023	2976	14,000	1750	0.1926	
	Mn54	310	04/13/98	04/22/98	9	50	49.0	0.13	6	1/17-24	7.6 5.7 0.6	decay drain decay	0.114	50	14,000	1750	0.0127	
203	C 14	2E+06	10/23/94	07/02/98	1348	100	100	0.32	32	7/8-12	28.8	drain	0.114	253	10,000	3018	3.2	
	Cd109	330	04/13/98	07/02/98	80	50	42.3	1.065	45	7/8-12	3.2 40.5	decay drain	0.023	1761	10,000	1750	0.1140	
	Zn 65	245	10/14/96	07/02/98	626	100	17.0	5.625	96	7/8-12	4.5 86.1 9.6	decay drain decay	0.019	4534	10,000	2296	0.0145	
206A	Fe 59	45	11/01/98	11/01/98	0	100	100.0	0.4	40	11/5-7	32.8	drain	0.038	864	38,000	1548	0.0000	
	C 14	2E+06	10/23/94	11/01/98	1470	100	100	0.12	12	11/5-7	3.6 10.8 1.2	decay drain decay	0.114	95	38,000	3018	1.1982	
206b	Fe 59	45	11/01/98	11/18/98	17	100	77.0	0.55	42	11/23	35.3	drain	0.038	928	38,000	1548	0.0000	
206c	Fe 59	45	11/01/98	12/03/98	32	100	61.1	0.934	57	12/8-10	46.8	drain	0.038	1232	38,000	1548	0.0000	
											5.2	decay						

1999 Expt #	isotope	h. life (d)	date rec'd	date used	days decayed till used	initial uCi/ml	remaining uCi/ml	vol (ml) used	uCi used	date disposed	(uCi) Disposed	method	allowed di uCi/gal	#gallons needed	#gallons available	elapsed days	uCi today after deca	BRC?
Si 52	Fe 59	45	11/01/98	01/21/99	81	5	1.4	0.5	1	01/23	0.6 0.1	drain decay	0.038	15	2,000	1548	0.0000	
208	Fe 59	45	02/24/99	02/24/99	0	100	100.0	0.095	10	3/6-16	7.6 0.8	drain decay	0.038	199	38,000	1433	0.0000	
209a	Fe55	1073	03/03/99	03/16/99	13	200	198.3	0.95	188	3/26-4/8	169.1 18.8	drain decay	0.379	446	38,000	1426	7.4803	
	Fe 59	45	02/24/99	03/16/99	20	100	73.5	0.442	32	3/26-4/8	25.1 2.8	drain decay	0.038	659	38,000	1433	0.0000	
	C 14	2E+06	03/03/99	03/16/99	13	100	100	0.02	2	3/26-4/8	1.8 0.2	drain decay	0.114	16	38,000	1426	0.200	
209b	Fe 59	45	02/24/99	05/03/99	68	100	35.1	0.661	23	3/26-4/8	18.2 2.0	drain decay	0.038	478	38,000	1433	0.0000	
	C 14	2E+06	03/03/99	05/03/99	61	100	100	0.08	8	5/9-15	7.2 0.8	drain decay	0.114	63	12,000	1426	0.80	
SP54	Fe 59	45	02/24/99	03/03/99	7	5	4.5	2	9	3/9	7.0 0.8	drain decay	0.038	185	2,000	1433	0.0000	
Sp55	Fe 59	45	07/06/99	07/06/99	0	5	5.0	0.04	0	7/13	0.2 0.0	drain decay	0.038	4	2,000	1301	0.0000	
SP 56	Fe 59	45	02/16/00	03/13/00	26	5	3.3	0.05	0	3/20	0.1 0.0	drain decay	0.038	3	2,000	1076	0.0000	

Expt	Tracer	half life(d)	date rec'd	date used	days decayed till used	initial uCi/ml	u/ci/ml when used	vol (ml) used	uCi used	dates disposed	(uCi) Disposed	method disposal	allowed down drain uCi/gal	gallons needed	gallons available	Elapsed days total till today	uCi in storage today	BRC?			
Elizabeth River study 1999																					
sta 3	Zn 65	245	07/05/99	07/28/99	23	100	93.7	0.1	9	08/04/99	8.2	drain	0.019	433	2,000	1302	0.0289				
		Cd109	330	04/13/98	07/28/99	471	50	18.6	6	08/04/99	1.1	decay									
												4.9	drain	0.023	214				2,000	1750	0.0165
	C 14	2E+06	03/03/99	07/28/99	147	100	100	0.1	10	08/04/99	0.7	decay									
											9.0	drain	0.114	79	2,000	1426	1.00				
											1.0	decay									
sta 6	Zn 65	245	07/05/99	07/28/99	23	100	93.7	0.1	9	08/04/99	8.2	drain	0.019	433	2,000	1302	0.0289				
		Cd109	330	04/13/98	07/28/99	471	50	18.6	6	08/04/99	1.1	decay									
												4.9	drain	0.023	214				2,000	1750	0.0165
	C 14	2E+06	03/03/99	07/28/99	147	100	100	0.1	10	08/04/99	0.7	decay									
											9.0	drain	0.114	79	2,000	1426	1.00				
											1.0	decay									
sta4	Zn 65	245	07/05/99	07/29/99	24	100	93.4	0.1	9	08/04/99	8.2	drain	0.019	431	2,000	1302	0.0288				
		Cd109	330	04/13/98	07/29/99	472	50	18.6	2	08/04/99	1.1	decay									
												1.6	drain	0.023	71				2,000	1750	0.0055
	C 14	2E+06	03/03/99	07/29/99	148	100	100	0.1	10	08/04/99	0.2	decay									
											9.0	drain	0.114	79	2,000	1426	1.00				
											1.0	decay									
sta5	Zn 65	245	07/05/99	07/29/99	24	100	93.4	0.05	5	08/04/99	4.1	drain	0.019	216	2,000	1302	0.0144				
		Cd109	330	04/13/98	07/29/99	472	50	18.6	19	08/04/99	0.6	decay									
												16.4	drain	0.023	712				2,000	1750	0.0549
	C 14	2E+06	03/03/99	07/29/99	148	100	100	0.1	10	08/04/99	2.2	decay									
											9.0	drain	0.114	79	2,000	1426	1.00				
											1.0	decay									
sta 7	Zn 65	245	07/05/99	07/30/99	25	100	93.2	0.02	2	08/04/99	1.6	drain	0.019	86	2,000	1302	0.0057				
		Cd109	330	04/13/98	07/30/99	473	50	18.5	19	08/04/99	0.2	decay									
												16.4	drain	0.023	711				2,000	1750	0.0548
	C 14	2E+06	03/03/99	07/30/99	149	100	100	0.1	10	08/04/99	2.2	decay									
											9.0	drain	0.114	79	2,000	1426	1.00				
											1.0	decay									
sta 8	Zn 65	245	07/05/99	07/30/99	25	100	93.2	0.02	2	08/04/99	1.6	drain	0.019	86	2,000	1302	0.0057				
		Cd109	330	04/13/98	07/30/99	473	50	18.5	19	08/04/99	0.2	decay									
												16.4	drain	0.023	711				2,000	1750	0.0548
	C 14	2E+06	03/03/99	07/30/99	149	100	100	0.1	10	08/04/99	2.2	decay									
											9.0	drain	0.114	79	2,000	1426	1.00				
											1.0	decay									

Expt	Tracer	half life(d)	date rec'd	date used	days decayed till used	initial uCi/ml	u/ci/ml when used	vol (ml) used	uCi used	dates disposed	(uCi) Disposed	method disposal	allowed down drain uCi/gal	gallons needed	gallons available	Elapsed days total till today	uCi in storage today	BRC?
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1999

210a	Co 57	267	07/06/99	11/03/99	120	100	73.2	0.155	11	11/11	10.0 1.1	drain decay	0.227	44	2,000	1301	0.0379	
213a	Zn 65	245	07/05/99	12/17/99	165	100	62.7	1.025	64	12/25-31	56.5 7.7	drain decay	0.019	2976	12,000	1302	0.1941	
	Cd109	330	04/13/98	12/17/99	613	50	13.8	0.4	6	12/25-31	4.9 0.6	drain decay	0.023	212	12,000	1750	0.0161	
	C 14	2E+06	03/03/99	12/17/99	289	100	100	0.1	10	12/25-31	9.0 1.0	drain decay	0.114	79	12,000	1426	1.00	

2000 Expt #	isotope	half life (d)	date rec'd	date used	days decayed before using	initial uCi/ml	remaining uCi/ml	vol (ml) used	uCi used	date disposed	(uCi) Disposed	method disposal	allowed di uCi/gal	#gallons needed	#gallons available	elapsed days	uCi today after deca	BRC?
213b	Zn 65	245	07/05/99	01/24/00	203	100	56.3	1.2	68	2/1-2/6	59.3 8.3	drain decay	0.019	3120	12,000	1302	0.2082	
	Cd109	330	01/10/00	01/24/00	14	50	48.6	0.34	17	2/1-2/6	14.6 1.9	drain decay	0.023	634	12,000	1113	0.1862	
	C 14	2E+06	03/03/99	01/24/00	327	100	100	0.1	10	2/1-2/6	9.0 1.0	drain decay	0.114	79	12,000	1426	1.00	
213c	Zn 65	245	07/05/99	02/04/00	214	100	54.6	1.8	98	2/8-10	86.4 11.8	drain decay	0.019	4550	6,000	1302	0.2967	
	Cd109	330	01/10/00	02/04/00	25	50	47.4	0.3	14	2/8-10	12.6 1.6	drain decay	0.023	548	6,000	1113	0.1580	
	C 14	2E+06	03/03/99	02/04/00	338	100	100	0.05	5	2/8-10	4.5 0.5	drain decay	0.114	39	6,000	1426	0.50	

2000 Expt	Tracer	half life(d)	date rec'd	date used	days decayed till used	initial uCi/ml	u/ci/ml when used	vol (ml) used	uCi used	dates disposed	(uCi) Disposed	method disposal	allowed down drain uCi/gal	gallons needed	gallons available	Elapsed days total till today	uCi in storage today	BRC?			
Elizabeth River study 2000																					
sta 8	Zn 65	245	04/11/00	05/09/00	28	100	92.4	0.03	3	05/16/00	2.4	drain	0.019	128	2,000	1021	0.0189				
	Cd109	330	04/19/00	05/09/00	20	100	95.9	0.3	29	05/16/00	0.3 25.4	decay drain	0.023	1105	2,000				1013	0.4004	
	C 14	2E+06	03/03/99	05/09/00	433	100	100	0.2	20	05/16/00	3.4 18.0 2.0	decay drain decay	0.114	158	2,000				1426	2.00	
sta 7	Zn 65	245	07/05/99	05/09/00	309	100	41.7	0.03	1	05/16/00	1.1	drain	0.019	58	2,000	1302	0.0039				
	Cd109	330	04/19/00	05/09/00	20	100	95.9	0.3	29	05/16/00	0.2 25.4	decay drain	0.023	1105	2,000				1013	0.4004	
	C 14	2E+06	03/03/99	05/09/00	433	100	100	0.2	20	05/16/00	3.4 18.0 2.0	decay drain decay	0.114	158	2,000				1426	2.00	
sta 6	Zn 65	245	07/05/99	05/10/00	310	100	41.6	0.06	2	05/16/00	2.2	drain	0.019	115	2,000	1302	0.0077				
	Cd109	330	04/19/00	05/10/00	21	100	95.7	0.6	57	05/16/00	0.3 50.7	decay drain	0.023	2204	2,000				1013	0.7990	
	C 14	2E+06	03/03/99	05/10/00	434	100	100	0.2	20	05/16/00	6.7 18.0 2.0	decay drain decay	0.114	158	2,000				1426	2.00	
sta 5	Zn 65	245	07/05/99	05/10/00	310	100	41.6	0.05	2	05/16/00	1.8	drain	0.019	96	2,000	1302	0.0064				
	Cd109	330	04/19/00	05/10/00	21	100	95.7	0.8	77	05/16/00	0.3 67.6	decay drain	0.023	2939	2,000				1013	1.0654	
	C 14	2E+06	03/03/99	05/10/00	434	100	100	0.2	20	05/16/00	8.9 18.0 2.0	decay drain decay	0.114	158	2,000				1426	2.00	
sta 3	Zn 65	245	07/05/99	05/11/00	311	100	41.5	0.03	1	05/16/00	1.1	drain	0.019	57	2,000	1302	0.0038				
	Cd109	330	04/19/00	05/11/00	22	100	95.5	0.6	57	05/16/00	0.2 50.6	decay drain	0.023	2200	2,000				1013	0.7974	
	C 14	2E+06	03/03/99	05/11/00	435	100	100	0.2	20	05/16/00	6.7 18.0 2.0	decay drain decay	0.114	158	2,000				1426	2.00	
sta 4	Zn 65	245	07/05/99	05/11/00	311	100	41.5	0.03	1	05/16/00	1.1	drain	0.019	57	2,000	1302	0.0038				
	Cd109	330	04/19/00	05/11/00	22	100	95.5	0.6	57	05/16/00	0.2 50.6	decay drain	0.023	2200	2,000				1013	0.7974	
	C 14	2E+06	03/03/99	05/11/00	435	100	100	0.2	20	05/16/00	6.7 18.0 2.0	decay drain decay	0.114	158	2,000				1426	2.00	

Expt	Tracer	half life(d)	date rec'd	date used	days decayed till used	initial uCi/ml	u/ci/ml when used	vol (ml) used	uCi used	dates disposed	(uCi) Disposed	method disposal	allowed down drain uCi/gal	gallons needed	gallons available	Elapsed days total till today	uCi in storage today	BRC?
2000																		
217	C 14	2E+06	03/03/99	07/07/00	492	100	100	0.02	2	7/12-15	1.8 0.2	drain decay	0.114	16	8,000	1426	0.20	
218	C 14	2E+06	03/03/99	07/20/00	505	100	100	0.39	39	7/25-26	35.1 3.9	drain decay	0.114	308	4,000	1426	3.90	
219	C 14	2E+06	03/03/99	09/15/00	562	100	100	0.625	62	9/20-21	56.2 6.2	drain decay	0.114	493	4,000	1426	6.25	
220	C 14	2E+06	03/03/99	09/28/00	575	100	100	0.14	14	10/5-6	12.6 1.4	drain decay	0.114	111	4,000	1426	1.40	
223	C 14	2E+06	03/03/99	11/02/00	610	100	100	0.42	42	11/2-12	37.8 4.2	drain decay	0.114	332	20,000	1426	4.20	
2001																		
Expt #	isotope	half life (d)	date rec'd	date used	days decayed before using	initial uCi/ml	remaining uCi/ml	vol (ml) used	uCi used	date disposed	(uCi) Disposed	method disposal	allowed di uCi/gal	#gallons needed	#gallons available	elapsed days	uCi today after deca	BRC?
256	C 14	2E+06	03/03/99	09/27/01	939	100	100	0.05	5	10/1-4	4.5 0.5	drain decay	0.114	39	10,000	1426	0.50	

U.S. NRC

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§ 20.2003 Disposal by release into sanitary sewerage.

(a) A licensee may discharge licensed material into sanitary sewerage if each of the following conditions is satisfied:

(1) The material is readily soluble (or is readily dispersible biological material) in water; and

(2) The quantity of licensed or other radioactive material that the licensee releases into the sewer in 1 month divided by the average monthly volume of water released into the sewer by the licensee does not exceed the concentration listed in table 3 of appendix B to part 20; and

(3) If more than one radionuclide is released, the following conditions must also be satisfied:

(i) The licensee shall determine the fraction of the limit in table 3 of appendix B to part 20 represented by discharges into sanitary sewerage by dividing the actual monthly average concentration of each radionuclide released by the licensee into the sewer by the concentration of that radionuclide listed in table 3 of appendix B to part 20; and

(ii) The sum of the fractions for each radionuclide required by paragraph (a)(3)(i) of this section does not exceed unity; and

(4) The total quantity of licensed and other radioactive material that the licensee releases into the sanitary sewerage system in a year does not exceed 5 curies (185 GBq) of hydrogen-3, 1 curie (37 GBq) of carbon-14, and 1 curie (37 GBq) of all other radioactive materials combined.

(b) Excreta from individuals undergoing medical diagnosis or therapy with radioactive material are not subject to the limitations contained in paragraph (a) of this section.

[56 FR 23403, May 21, 1991, as amended at 60 FR 20185, Apr. 25, 1995]

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Monday, November 03, 2008

As per my conversation with Mr. John Potter, NRC, on April 30, 1985, the disposal of the following isotopes into the septic tank system should be handled as to the unrestricted environment (Pt. 20.106, Appendix B, Table II) limits are:

<u>Isotope</u>	<u>μci/ml</u>	<u>Not to exceed total μ ci/day for lab</u>
Carbon 14	8×10^{-4}	100
Cadmium 109	2×10^{-4}	10
Copper 64	3×10^{-4}	100
Iron 55	8×10^{-4}	
Manganese 54	1×10^{-4}	10
Zinc 65	1×10^{-4}	10

The total disposal for all isotopes for the lab cannot exceed 1 curie/year. Please keep accurate records and provide me with the information so our limits may be coordinated and not exceeded.

Zinc 65

1×10^{-4}

10

The total disposal for all isotopes for the lab cannot exceed 1 curie/year. Please keep accurate records and provide me with the information so our limits may be coordinated and not exceeded.

Report of acquisition and disposal of radiotracers - Sunda/Huntsman

Isotope T _{1/2}	Date	Acquired/ Disposed	Amount (μ Ci)	Form	Method of Disposal
Zn-65 270days	7-91	A	500	dissolved in .01N HCl	
	7-91	D	200	dissolved in seawater	SS*
	7-91	D	160	particulate on filters	H**
Cd-109 470days	5-91	A	1000	dissolved in 0.01N HCl	
	7-91	D	60	dissolved in seawater	SS
	7-91	D	30	particulate on filters	H
Fe-55 2.7years	3-90	A	2000	dissolved in 0.01N HCl	
	3-90	D	300	dissolved in seawater	SS
	3-90	D	100	particulate on filters	H
	1-91	D	300	dissolved in seawater	SS
C-14 5700years	7-91	A	5000	Na ₂ CO ₃ in dilute NaOH	
	7-91	D	25	basic solution	SS
	7-91	D	10	Particulate in Ecolume	H

* Disposed in sanitary sewer at a daily amount of less than 10 μ Ci
Held in laboratory storage for future disposal or until radioactive decay
is sufficient to render samples harmless.

In no case were samples used in a hood which is vented to the outside.
Lab bench tops and all areas where tracers had been in use were
monitored at the end of each experiment with an appropriate radiation
detector, and were brought to within specified limits when necessary.

Dates checked:

- Jan 15, 1991
- Feb. 7, 1991
- Feb 14, 1991
- Apr. 23, 1991
- Apr. 28, 1991
- June 3, 1991
- June 12, 1991
- June 22, 1991
- July 13, 1991
- July 31, 1991

Southeast Fisheries Science Center
Beaufort Laboratory
101 Pivers Island Rd.
Beaufort, N.C. 28516

June 11, 1994

Mr. David J. Collins
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street NW
Atlanta GA 30323

Dear Mr. Collins:

Our laboratory will comply with the restrictions on discharge of radioactive waste to our septic system and subsequent disposal of sludge from that system as described in your memo of June 8, 1994. I understand that radioactive discharges into the septic system must not exceed levels permitted to the unrestricted environment and, further, that sludge pumped from the septic system will be disposed in the municipal sewage facility only if its levels of radioactivity does not exceed levels allowed for the unrestricted environment.

Sincerely,


Dr. Ford A Cross
Laboratory Director

cc: Sue Huntsman

Purchase and disposal of radioactive isotopes 1994-pres

average waste water flow = 2000 gal/c

1994 Expt	isotope	half life(d)	date rec'd	date used	elapsed days	initial uCi/ml	remainin uCi/ml	fraction remain	vol (r used)	uCi used	date	(uCi) Disposed	method	allowed disc uCi/gal	#gallons needed
70	Zn 65	245	08/02/93	1/7/94	158	100	63.95	0.005	0.275	17.59	1/9-11	15.83 drain 1.76 decay		0.019	426
	Co 57	267	01/27/93	1/7/94	345	100	40.83	0.408	0.43	17.56		15.80 drain 1.76 decay		0.227	77
	Cd 109	330	05/31/91	1/7/94	951	50	6.78	0.136	0.24	1.63		1.47 drain 0.16 decay		0.023	71
150 B	Zn 65	245	08/02/93	1/20/94	171	100	61.64	0.616	0.075	4.62	1/23-24	4.16 drain 0.46 decay		0.019	243
152 A	Zn 65	245	08/02/93	3/10/94	220	100	53.66	0.537	0.1	5.37	3/13-18	4.83 drain 0.54 decay		0.019	282
	Co 57	267	01/27/93	3/10/94	407	100	34.76	0.348	0.5	17.38		15.64 drain 1.74 decay		0.227	77
	C 14	2E+06	06/25/91	3/11/94	989	125	124.96	1.000	2	250		225.00 drain 24.92 decay		0.114	2,192
152 B	Zn 65	245	08/02/93	3/16/94	226	100	52.76	0.528	0.1	5.28	3/19-24	4.75 drain 0.53 decay		0.019	278
	Co 57	267	01/27/93	3/16/94	413	100	34.23	0.342	0.5	17.11		15.40 drain 1.71 decay		0.227	75
	C 14	2E+06	06/25/91	3/16/94	994	125	124.96	1.000	2	249.92		225.00 drain 24.92 decay		0.114	2,192
153	Cd 109	330	05/31/91	3/27/94	1029	50	5.76	0.115	3.5	20.15	3/28-31	18.14 drain 2.01 decay		0.023	876
	Mn 54	310	10/22/93	3/27/94	156	100	70.55	0.706	1.891	133.42		120.00 drain 13.42 decay		0.114	1,170
155	Cd 109	330	05/10/94	5/16/94	6	100	98.75	0.987	0.265	26.17	5/26-6/2	23.60 drain 2.57 decay		0.023	1,138
	Zn 65	245	08/02/93	5/16/94	287	100	44.40	0.444	1.375	61.05		54.94 drain 6.11 decay		0.019	3,213
	Co 57	267	01/27/93	5/16/94	448	100	31.25	0.313	1.25	39.07		35.20 drain 3.87 decay		0.227	172
157	Fe 59	45	06/06/94	6/9/94	3	100	95.48	0.955	0.84	80.21	6/13-17	72.20 drain 8.01 decay		0.038	2,111
158	Fe 59	45	06/06/94	6/20/94	14	100	80.60	0.806	0.725	58.44	7/5-7/15	52.60 drain 5.84 decay		0.038	1,538
	C 14	2E+06	06/25/91	6/20/94	1090	500	499.81	1.000	1.2	599.78		540.00 drain 59.78 decay		0.114	5,251
159	C 14	2E+06	06/25/91	7/8/94	1108	500	499.81	1.000	0.11	54.98	7/20	49.00 drain 5.98 decay		0.114	482
161	Fe 59	5E+01	06/06/94	7/22/94	46	100	49.24	0.492	0.55	27.08	8/1-5	24.40 drain 2.68 decay		0.038	713
	C 14	2E+06	06/25/91	7/22/94	1122	500	499.81	1.000	1	499.81	7/23-8/7	450.00 drain 49.81 decay		0.114	4,384
162	Fe 59	45	06/06/94	8/17/94	74	100	31.99	0.320	0.55	17.59	9/1-5	15.80 drain 1.79 decay		0.038	463
163	Fe 59	45	06/06/94	9/9/94	95	100	23.15	0.231	0.54	12.50	9/9	11.20 drain 1.30 decay		0.038	329
164	Fe 59	45	06/06/94	9/15/94	101	100	21.10	0.211	1	21.10	9/19-22	19.00 drain 2.10 decay		0.038	555
165	Zn 65	245	08/02/93	9/11/94	405	100	31.80	0.318	2.24	71.22	9/16-18	64.10 drain 7.12 decay		0.019	3,749
166	Fe 59	45	06/06/94	9/23/94	109	100	18.66	0.187	0.04	0.75	9/23	0.70 drain 0.05 decay		0.038	20
167	Zn 65	245	08/02/93	10/11/94	435	100	29.21	0.292	2.05	59.88	10/14-27	54.00 drain 5.88 decay		0.019	3,152
	Co 57	267	01/27/93	10/11/94	622	100	19.89	0.199	0.8	15.92		14.30 drain 1.62 decay		0.227	70
	Fe59	45	06/06/94	10/5/94	121	100	15.51	0.155	0.79	12.25	10/6	11.00 drain 1.25 decay		0.038	322
169	Cd 109	330	05/10/94	10/25/94	168	100	70.27	0.703	0.9	63.24	10/26	57.00 drain 6.24 decay		0.023	2,750
	Mn 54	310	10/22/93	10/25/94	368	100	43.92	0.439	0.536	23.54		21.20 drain 2.34 decay		0.114	206
170	Cd 109	330	05/10/94	11/8/94	182	100	68.23	0.682	1.4	95.52	11/9	86.00 drain 9.52 decay		0.023	4,153
	Mn 54	310	10/22/93	11/8/94	382	100	42.57	0.426	1.125	47.89		43.00 drain 4.89 decay		0.114	420

171a	Cd 109	330	05/10/94	11/14/94	188	100	67.38	0.674	1.4	94.33	11/15	83.00 drain 11.33 decay	0.023	4,101
	Mn 54	310	10/22/93	11/14/94	388	100	42.00	0.420	1.99	83.58		83.00 drain 0.58 decay	0.114	733
171b	Cd 109	330	05/10/94	11/24/94	198	100	65.98	0.660	1.4	92.37	11/25	83.10 drain 9.27 decay	0.023	4,016
	Mn 54	310	10/22/93	11/24/94	398	100	41.07	0.411	1.99	81.73		-9.27 drain 90.99 decay	0.114	717
172	Cd 109	330	05/10/94	12/5/94	209	100	64.47	0.645	0.62	39.97	12/5-13	36.00 drain 3.97 decay	0.023	1,738
	Mn 54	310	10/22/93	12/5/94	409	100	40.07	0.401	0.08	3.21		2.90 drain 0.31 decay	0.114	28
173a	Zn 65	245	12/05/94	12/6/94	1	100	99.72	0.997	0.12	11.97	12/6-16	10.80 drain 1.17 decay	0.019	630
	Co 57	267	01/27/93	12/6/94	313	100	44.37	0.444	0.09	3.99		3.60 drain 0.39 decay	0.227	18
173b	Zn 65	245	12/05/94	12/15/94	15	100	95.85	0.958	0.12	11.50	12/15-24	10.35 drain 1.15 decay	0.019	605
	Co 57	267	01/27/93	12/15/94	322	100	43.35	0.433	0.09	3.90		3.51 drain 0.39 decay	0.227	17

Use of Radioactive isotopes

1995 Expt	isotope	half life(d)	date rec'd	date used	elapsed days	initial uCi/ml	remaining uCi/ml	fraction remainin	vol (ml) used	uCi used	date	(uCi) Disposed	method	isotope	#gallons needed
174	Zn 65	245	12/05/94	1/14/95	40	100	89.30	0.893	1.65	147.35	1/14-21	132.61 drain 14.73 decay	0.019	7,755	
175a	Zn 65	245	01/25/95	1/26/95	1	100	99.72	0.997	0.625	62.32	1/26-2/2	56.091 drain 6.23 decay	0.019	3,280	
	Cd 109	330	05/10/94	1/26/95	261	100	57.80	0.578	0.16	9.25		8.3229 drain 0.92 decay	0.023	402	
175b	Zn 65	245	01/25/95	1/26/95	1	100	99.72	0.997	0.75	74.79	1/26-2/6	67.309 drain 7.48 decay	0.019	3,936	
	Cd 109	330	05/10/94	1/26/95	261	100	57.80	0.578	0.28	16.18		14.565 drain 1.62 decay	0.023	704	
176	Zn 65	245	01/25/95	2/12/95	18	100	95.03	0.950	0.72	68.43	2/12-15	61.583 drain 6.84 decay	0.019	3,601	
	Cd 109	330	05/10/94	2/12/95	278	100	55.77	0.558	0.21	11.71		10.541 drain 1.17 decay	0.023	509	
77	Zn 65	245	01/25/95	03/02/95	37	100	90.06	0.901	1.745	157.16	3/2-3/8	141.44 drain 15.72 decay	0.019	8,271	
178a	Mn 54	310	10/22/93	03/03/95	497	100	32.91	0.329	0.633	20.83	3/3-3/8	18.751 drain 2.08 decay	0.114	183	
	Cd109	330	05/10/94	03/03/95	298	100	53.48	0.535	0.02	1.04		0.9385 drain 0.10 decay	0.023	45	
178b	Mn 54	310	10/22/93	03/03/95	497	100	32.91	0.329	0.375	12.34	3/3-3/17	11.108 drain 1.23 decay	0.114	108	
	Cd109	330	05/10/94	03/03/95	298	100	53.48	0.535	0.02	1.04		0.9385 drain 0.10 decay	0.023	45	
179a	Mn 54	310	10/22/93	04/11/95	534	100	30.30	0.303	0.633	19.18	4/11-12	17.262 drain 1.92 decay	0.114	168	
	Cd109	330	05/10/94	04/11/95	334	100	49.58	0.496	0.415	20.58		18.519 drain 2.06 decay	0.023	895	
179b	Mn 54	310	03/24/95	04/13/95	20	100	95.63	0.956	0.56	53.55	4/13-15	48.196 drain 5.36 decay	0.114	470	
	Cd109	330	03/27/95	04/13/95	17	100	96.49	0.965	0.3	28.95		26.053 drain 2.89 decay	0.023	1,259	
179c	Mn 54	310	03/24/95	04/21/95	28	100	93.93	0.939	0.56	52.60	4/13-16	47.341 drain 5.26 decay	0.114	461	
	Cd109	330	03/27/95	04/21/95	25	100	94.88	0.949	0.3	28.47		25.619 drain 2.85 decay	0.023	1,258	
181	Zn 65	245	12/05/94	07/14/95	221	100	53.51	0.535	1.64	87.76	7/14-17	78.985 drain 8.78 decay	0.019	4,619	
	Cd109	330	03/27/95	07/14/95	109	100	79.54	0.795	0.214	17.02		15.319 drain 1.70 decay	0.023	740	
182	Zn 65	245	12/05/94	08/02/95	240	100	50.71	0.507	0.97	49.19	8/2-10	44.272 drain 4.92 decay	0.019	2,589	
184	Zn 65	245	12/05/94	08/12/95	250	100	49.30	0.493	1	49.30	8/12-15	44.368 drain 4.93 decay	0.019	2,595	
95	Zn 65	245	12/05/94	09/15/95	284	100	44.78	0.448	1	44.78	9/15-18	40.299 drain 4.48 decay	0.019	2,357	
186	Zn 65	245	12/05/94	11/02/95	332	100	39.09	0.391	0.6	23.45	11/2-5	21.109 drain 2.35 decay	0.019	1,234	
	Zn 65	245	08/24/95	11/02/95	70	100	82.03	0.820	0.17	13.95		12.551 drain	0.019	734	

1996 Expt	isotope	half life(d)	date rec'd	date used	elapsed days	initial uCi/ml	remaining uCi/ml	fraction remainin	vol (ml) used	uCi used	date	(uCi) Dispose method	method	allowed uCi/gallon	#gallons needed
187	Zn 65	245	08/24/95	01/10/96	139	100	67.49	0.675	1.025	69.17	1/10-16	62.256 drain 6.92 decay	0.019	3,641	
	Cd109	330	03/27/95	01/10/96	289	100	54.50	0.545	0.05	2.72		2.4524 drain 0.27 decay	0.023	118	
188	Zn 65	245	12/05/94	01/18/96	409	100	31.44	0.314	3	94.32	1/18-22	84.884 drain 9.43 decay	0.019	4,964	
	Zn 65	245	08/24/95	01/18/96	147	100	65.98	0.660	0.355	23.42		21.079 drain 2.34 decay	0.019	1,233	
	Cd109	330	03/27/95	01/18/96	297	100	53.59	0.536	1.78	95.39		85.849 drain 9.54 decay	0.023	4,147	
189	Zn 65	245	08/24/95	03/06/96	195	100	57.60	0.576	0.1	5.76	3/5-10	5.1838 drain 0.58 decay	0.019	303	
190	Zn 65	245	08/24/95	04/10/96	230	100	52.17	0.522	0.375	19.56	4/10-15	17.607 drain 1.96 decay	0.019	1,030	
190	Cd109	330	03/27/95	04/10/96	380	100	45.02	0.450	2.2	99.03		89.13 drain 9.90 decay	0.023	4,306	
191	Mn 54	310	03/24/95	04/19/96	392	100	41.62	0.416	0.023	0.94	4/19-25	0.8429 drain 0.09 decay	0.114	8	
	Cd109	330	03/27/95	04/19/96	389	100	44.17	0.442	0.412	18.20		16.379 drain 1.82 decay	0.023	791	
192	C 14	2E+06	06/25/91	05/24/96	1795	500	499.69	0.999	0.2	99.94	5/25-30	89.945 drain 9.99 decay	0.114	877	
193	C 14	2E+06	06/25/91	06/03/96	1805	500	499.69	0.999	0.05	24.98	6/3-10	22.486 drain 2.50 decay	0.114	219	
194	Fe 59	45	05/31/96	06/11/96	11	100	84.41	0.844	0.303	25.58	6/11-19	23.02 drain 2.56 decay	0.038	673	
195	Fe 59	45	05/31/96	07/05/96	35	100	58.33	0.583	0.11	6.42	7/11-13	5.7743 drain	0.038	169	

ISOTOPE	DATE REC'D	ON HAND AT START	LOSS TO DECAY	S.V. DISPOSED IN DRAIN	DRAIN DISPOSED IN SOME VIALS	ON HAND AT END
<i>July 1985 - Dec 31, 1985</i>						
Zn ⁶⁵	12/83	21 μ Ci	3 μ Ci	15 3	3 15	0
	10/84	25 μ Ci	5 μ Ci	0	0	20 μ Ci
Mn ⁵⁴	2/84	17 μ Ci	4 μ Ci	0	0	13 μ Ci
	2/85	680 μ Ci	10 μ Ci	70 μ Ci	350	250
Cd ¹⁰⁹	4/83	180	58 58	8	35	109 109
C-14		1000				1000
Fe ⁵⁵	11/84	870	90			780
<i>Jan 86 - Sept 86</i>						
Zn ⁶⁵	10/84	20	2	15 3	3 15	0
	1/86	1000	200	100 80	710	10
	8/86	1000	80	0	0	920
Mn ⁵⁴	-	13 μ Ci	3 μ Ci	0	0	10 μ Ci
	250 μCi	250	35	50	110	55
		1000	70	0	0	930
Cd ¹⁰⁹		109	35 35	0	0	74
C-14		1000				1000
Fe ⁵⁵		780	85 85			695

Turned in to L.C.
 9/8/86

Period	Isotope	On hand at start	Received	Loss to Decay	Disposed in scint vials	Disp. in Drain	On hand at end of period
June 85 - Dec 85-86	Cd 109	180 180 97	-	370 117 43	5 μ ci	8 μ ci	97 197 54
6-85 - 12/85	Zn 65	220 μ ci	-	2 μ ci	-	-	15 μ ci
12/85 - 9/86		25 μ ci 15 μ ci		70 μ ci	-	-	10 μ ci 920 μ ci
			1 mCi-86 1000 μ ci	200 200 80	80	710	
6-85 \rightarrow 12/85 1-86 \rightarrow 9/86	Fe 55	870 870 780	-	90			650 780 650
6/85 - 12/85 1/86 - 9/86	C-14	1000 1000					1000 1000
6/85 - 12/85	Mn 54	17 μ ci 680 μ ci 1000 μci		4 μ ci 10 μ ci	0 70 μ ci	0 350 μ ci	13 9 μ ci 250 μ ci 600 μ ci
1/85 - 9/86	Mn 54	130 μ ci 250 μ ci 1000 μ ci		25 μ ci 35 μ ci 70 μ ci	0 50	0 110	6.5 55 μ ci 930 μ ci

330
6 mes = 680 μ ci

1986 - Zn65

	Date	Tracer	Amt Received	μCi Loss to Decay	Disposed in drain	Disposed in Scint. Vials/Tubes	On hand at end of month
Jan	1-7-86	Zn65	1mCi	80			
EXP 87	1-6-86	Zn65			10	2	
	1-7-86	↓			12	5	
	1-8-86				10	2	
	1-9-86				12	5	
EXP 87B	1-20-86				15	7	
	1-21-86				10	2	
	1-22-86				10	2	
	1-23-86				10	2	
	1-24-86				12	3	
	1-25-86				11	3	
	1-31				80		
EXP 88	2-4				10	3	
	2-5				12	5	
	2-6				10	2	
	2-7				11	4	
	2-8						

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Materials](#)[Radioactive
Waste](#)[Nuclear
Security](#)[Public Meetings
& Involvement](#)

[Home](#) > [Electronic Reading Room](#) > [Document Collections](#) > [NRC Regulations \(10 CFR\)](#) > [Part Index](#) > [§ 20.2004 Treatment or disposal by incineration.](#)

§ 20.2004 Treatment or disposal by incineration.

(a) A licensee may treat or dispose of licensed material by incineration only:

- (1) As authorized by paragraph (b) of this section; or
- (2) If the material is in a form and concentration specified in § 20.2005; or
- (3) As specifically approved by the Commission pursuant to § 20.2002.

(b) (1) Waste oils (petroleum derived or synthetic oils used principally as lubricants, coolants, hydraulic or insulating fluids, or metalworking oils) that have been radioactively contaminated in the course of the operation or maintenance of a nuclear power reactor licensed under part 50 of this chapter may be incinerated on the site where generated provided that the total radioactive effluents from the facility, including the effluents from such incineration, conform to the requirements of appendix I to part 50 of this chapter and the effluent release limits contained in applicable license conditions other than effluent limits specifically related to incineration of waste oil. The licensee shall report any changes or additions to the information supplied under §§ 50.34 and 50.34a of this chapter associated with this incineration pursuant to § 50.71 of this chapter, as appropriate. The licensee shall also follow the procedures of § 50.59 of this chapter with respect to such changes to the facility or procedures.

(2) Solid residues produced in the process of incinerating waste oils must be disposed of as provided by § 20.2001.

(3) The provisions of this section authorize onsite waste oil incineration under the terms of this section and supersede any provision in an individual plant license or technical specification that may be inconsistent.

[57 FR 57656, Dec. 7, 1992]

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Monday, November 03, 2008

01703 Returned form 8/10
Signed

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. N.C.3.13.1.4.30.1.8.0.8.1.9.C.3		Manifest Document No.		2. Page 1 of		Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address U.S. DEPT OF COMMERCE NOAA, N.O.S. CENTER FOR COASTAL FISHERIES 101 PIVERS ISLAND RD WHALEPORT NC 28514		A. State Manifest Document Number		B. State Generator's ID		C. State Transporter's ID		D. Transporter's Phone (843) 882-0457	
4. Generator's Phone (843) 762-8842		5. Transporter 1 Company Name TAG TRANSPORT		6. US EPA ID Number N.C.45D01		7. Transporter 2 Company Name		8. US EPA ID Number	
9. Designated Facility Name and Site Address PERMA-FIX 1940 NW 67TH PL GAINESVILLE FL 32653		10. US EPA ID Number FLD980711071		G. State Facility's ID FLD980711071		H. Facility's Phone (352) 373-6060			
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)		12. Containers		13. Total Quantity		14. Unit Wt/Vol		1. Waste No.	
a. X WASTE FLAMMABLE LIQUID, N.O.S., 3, UN1993, II (D00), TOXENE) PF# 19		0.01 DM		600.0 L				D001 F005	
b. X HAZARDOUS WASTE, SOLID, N.O.S., 9, NA3077, III (D008), RC "LIMITED QUANTITY RADIOACTIVE MATERIAL" PF# 57, 60, 81, 82		0.04 DM		2421 7.500 P				D008	
c.									
d.									
Additional Descriptions for Materials Listed Above 113. NRC-EXEMPT SCINT. VIALS. 116. LEAD; SEE RADIOACTIVE SHIPMENT MANIFEST		K. Handling Codes for Wastes Listed Above A- H04 B- H132 S01/H04							
15. Special Handling Instructions and Additional Information a.) PF# 00116 b.) PF# RS3687 24 HOUR EMERGENCY # (843) 376-0913 HQ FRG # 128, 116 FRG #									
16. GENERATOR'S CERTIFICATION: 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 government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.									
Printed/Typed Name Richard A. Meitzler		Signature Richard A. Meitzler		Month Day Year 10/8/19/03					
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name BRYAN KIRK		Signature B. Kirk		Month Day Year 10/8/19/03					
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name		Signature		Month Day Year					
19. Discrepancy Indication Space									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. Printed/Typed Name Jason Potter		Signature Jason Potter		Month Day Year 10/2/03					



ORIGINAL-RETURN TO GENERATOR

rec'd 4-17-03

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. <i>MS01111111</i>	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.		
3. Generator's Name and Mailing Address <i>MS01111111</i>				A. State Manifest Document Number			
4. Generator's Phone ()				B. State Generator's ID			
5. Transporter 1 Company Name		6. US EPA ID Number		C. State Transporter's ID			
7. Transporter 2 Company Name		8. US EPA ID Number		D. Transporter's Phone			
9. Designated Facility Name and Site Address		10. US EPA ID Number		E. State Transporter's ID			
				F. Transporter's Phone			
				G. State Facility's ID			
				H. Facility's Phone			
GENERATOR	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)			12. Containers	13. Total	14. Unit	
				No.	Quantity	Wt/Vol	
				Type			
Additional Descriptions for Materials Listed Above				K. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information							
<p>16. GENERATOR'S CERTIFICATION: 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 government regulations.</p> <p>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.</p>							
Printed/Typed Name			Signature		Month Day Year		
<i>Richard A. ...</i>			<i>[Signature]</i>		<i>11/11/11</i>		
TRANSPORTER	17. Transporter 1 Acknowledgement of Receipt of Materials						
	Printed/Typed Name			Signature		Month Day Year	
FACILITY	18. Transporter 2 Acknowledgement of Receipt of Materials						
	Printed/Typed Name			Signature		Month Day Year	
19. Discrepancy Indication Space							
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.							
Printed/Typed Name			Signature		Month Day Year		



*Zionomics,
Inc.*

P.O. Box 817 — Kingston, TN 37763 — (865) 376-0053

February 27, 2004

Mr. Rick Meitzler
U.S. Dept of Commerce/ NOAA
NOS, Center for Coastal Fisheries
101 Pivers Island Rd.
Beaufort, NC 28516

RE: Shipment 8/19/03 on Manifest #81903B

Dear Mr. Meitzler:

Please find the attached form from Thermo Measure Tech certifying they have accepted ownership of your radioactive material you shipped on August 19, 2003.

If you have any questions please feel free to contact me at (865) 376-0053.

Thank you,



Mia Hammonds
Administrative Assistant

cc: File



P.O. Box 817 — Kingston, TN 37763 — (865) 376-0053

November 21, 2003

Mr. Rick Meitzler
US Dept of Commerce/ NOAA
NOS, Center for Coastal Fisheries
101 Pivers Island Rd.
Beaufort, NC 28516

RE: Manifest #81903-D picked up on 8/19/03

Dear Mr. Meitzler:

This is to certify that the radioactive material picked up at your facility on August 19, 2003 on manifest number 81903-D has been processed at Duratek and sent to the Envirocare Waste Disposal Facility in Clive, Utah.

Please reference the following table for detailed disposal information.

cu. ft.

Manifest Number	Container Number	Disposal Volume	Disposal Shipment Number	Disposal Date
81903-D	NOA-1	1.8	T034235	10/16/03
81903-D	NOA-2	2.7	T034235	10/16/03
81903-D	NOA-3	1.8	T034235	10/16/03
81903-D	NOA-4	2.1	T034235	10/16/03
81903-D	NOA-5	3.0	T034235	10/16/03
81903-D	NOA-6	1.8	T034235	10/16/03
81903-D	NOA-7	2.1	T034235	10/16/03

If you have any questions please feel free to contact me at (865)

*cubic feet
15.3 ft³*

Thank you,

Mia Hammonds
Mia Hammonds
Administrative Assistant



P.O. Box 817 — Kingston, TN 37763 — (865) 376-0053

January 7, 2004

Mr. Rick Meitzler
U.S. Dept of Commerce/ NOAA
NOS, Center for Coastal Fisheries
101 Pivers Island Rd.
Beaufort, NC 28516

RE: Manifest #81903-D picked-up 8/19/03

Dear Mr. Meitzler,

This is to certify that the radioactive material picked up at your facility August 19, 2003 on manifest number 81903-D has been disposed of at the Envirocare Waste Management Facility in Clive, Utah.

Please reference the following table for detailed disposal information.

Manifest Number	Container Number	Disposal Volume (ft ³)	Disposal Shipment Number	Disposal Date
81903-D	NOAB-1	.01989	T035033	12/9/03

If you have any questions please feel free to contact me at (865) 376-0053.

Thank you,

Mia Hammonds
Administrative Assistant

Cc: File



P.O. Box 817 — Kingston, TN 37763 — (865) 376-0053

March 22, 2004

Mr. Rick Meitzler
U.S. Dept of Commerce/ NOAA
NOS, Center for Coastal Fisheries
101 Pivers Island Rd.
Beaufort, NC 28516

RE: Manifest #81903-D shipment picked-up on 8/19/03

Dear Mr. Meitzler:

This is to certify that the radioactive material picked up at your facility on August 19, 2003 on manifest number 81903-D has been processed at Duratek in Oak Ridge, TN and disposed of at the Envirocare Disposal Site in Clive, Utah.

ase reference the following table for detailed disposal information.

Manifest Number	Container Number	Disposal Volume (ft ³)	Disposal Shipment Volume	Disposal Date
81903-D	NOAB-2	.35299	T040524	2/2/04

If you have any questions please feel free to contact me at (865) 376-0053.

Thank you,


Mia Hammonds
Administrative Assistant

Cc: File



P.O. Box 817 — Kingston, TN 37763 — (865) 220-8501

October 26, 2004

Mr. Rick Meitzler
U.S. Dept of Commerce/ NOAA
NOS, Center for Coastal Fisheries
101 Pivers Island Rd.
Beaufort, NC 28516

RE: Manifest #81903-D picked-up on 8/19/03

Dear Mr. Meitzler:

This is to certify that the liquid radioactive material picked up at your facility on August 19, 2003 on manifest number 81903-D has been processed by incineration with no residual ash for disposal.

ase reference the following table for detailed disposal information.

Manifest Number	Container Number	Incineration Date
81903-D	NOAW-1	Sept. 2003

If you have any questions please feel free to contact me at (865) 376-0053.

Thank you,


Mia Hammonds
Administrative Assistant

Cc: File

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[Home](#) > [Electronic Reading Room](#) > [Document Collections](#) > [NRC Regulations \(10 CFR\)](#) > [Part Index](#) > § 20.2005 Disposal of specific wastes.

§ 20.2005 Disposal of specific wastes.

(a) A licensee may dispose of the following licensed material as if it were not radioactive:

(1) 0.05 microcurie (1.85 kBq), or less, of hydrogen-3 or carbon-14 per gram of medium used for liquid scintillation counting; and

(2) 0.05 microcurie (1.85 kBq), or less, of hydrogen-3 or carbon-14 per gram of animal tissue, averaged over the weight of the entire animal.

(b) A licensee may not dispose of tissue under paragraph (a)(2) of this section in a manner that would permit its use either as food for humans or as animal feed.

(c) The licensee shall maintain records in accordance with § 20.2108.

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Monday, November 03, 2008

Disposal of Radioactive Waste Feb 2003

1. Record of Disposal of Radioactive Waste into Sanitary Sewer system , Jan 13-Feb7, 2003

All samples were checked with a calibrated Ludlum pancake-type survey meter and demonstrated no activity that was discernable as being above background (about .05mr/hr)

I. Trays of liquid scintillation vials. Vials contained approximately 5 ml of the non-toxic, biodegradable scintillant, "Ecolume"(ICN Corp). C^{14} concentrations in the fluid were in all cases, well below the level of $1.2 \times 10^{-2} \mu\text{Ci/liter}$ allowable for disposal in scintillation as non-radioactive waste. Disposed into Sanitary Sewer System. Each vial was rinsed 3 times in tap water and disposed with normal laboratory waste. Two trays contained Fe^{55} collected in Feb, 1992 (half life = 2.9 years). As with C^{14} , the activity had decayed to a level well below that allowable for discharge into the sanitary sewer.

Disposed in sewer: 5500 vials containing C^{14}
180 vials containing Fe^{55}

II. Trays of tubes used for assays of gamma emitting isotopes. Tubes contained small amounts of isotope dispersed in approximately 10ml of seawater. Isotopes consisted of Fe^{59} , Fe^{55} , Mn^{54} , Co^{57} , Cd^{109} and Zn^{65} . All had achieved activity levels well below the maximum allowed for disposal in the sanitary sewer system.

Disposed in sewer: 3400 tubes collected containing BRC levels of Fe^{59} ($T_{1/2}=45\text{d}$), Fe^{55} ($T_{1/2}=1073\text{d}$), Mn^{54} ($T_{1/2}=310\text{d}$), Co^{57} ($T_{1/2}=45\text{d}$), Cd^{109} ($T_{1/2}=330\text{d}$), and Zn^{65} ($T_{1/2}=245\text{d}$)

III. Carboys of radioactive material that had decayed below regulatory concern.

Carboys contained isotopes in dilute sea water or distilled water solution left over from experiments.

C^{14} levels disposed to sewer system were far below the allowable $60 \mu\text{Ci/liter}$ in the total lab waste stream as specified in Appendix B to CFR part 20. All other isotopes (Fe^{59} , Mn^{54} , Co^{57} , Cd^{109} and Zn^{65}) had decayed to undetectable levels. A 5 gal carboy, containing 1.25 mCi of C^{14} will be disposed in a subsequent month to avoid any chance of exceeding the allowable maximum

Disposed into sewer:

- 5 gal of C^{14} nominally about $30 \mu\text{Ci/liter}$
- 5 gal of C^{14} nominally about $25 \mu\text{Ci/liter}$
- 5 gal of C^{14} nominally about $2.5 \mu\text{Ci/liter}$
- 5 gal of C^{14} nominally about $2.5 \mu\text{Ci/liter}$
- 5 gal Zn^{65} waste initially 10uCi/liter collected 5/90, now decayed BRC
- 5 gal Mn^{54} waste, initially 5uCi/liter , collected 2/93, now BRC
- 5 gal Mn^{54} waste, initially 5uCi/liter , collected 4/98, now BRC
- 5 gal Ca^{45} , initially 500uCi , collected 5/87, now BRC
- 1 gl Fe^{59} initially 100uCi . Now brc

IV. Stock solutions that had decayed below regulatory concern

Disposed in sewer:

Mn⁵⁴ (purchased 10/1993) initial activity 0.1mCi, decayed for >>10 half lives, now BRC

Ca⁴⁵ (purchased 10/1987, T_{1/2}=145d), initial activity 1mCi, decayed for >>10 half lives, now BRC

H³ (purchased 10/1965, T_{1/2}=12.7 years) initial activity 0.01mCi, decayed for about 4 half lives, now BRC.

Co 60 (purchased 9/1965, T_{1/2}=5.5 years) initially .011mCi, decayed for about 7 half lives, now BRC.

2. Isotopes Still being held for decay:

two carboys, one that contained 90uCi/l Ca⁴⁵ and the other containing 150uCi Fe⁵⁵.

3. Record of Radioactive Waste in drums for disposal at a certified facility, Jan 13-Feb7, 2003.

Although most of these isotopes could be stored for decay, the volumes involved are small so they were discarded.. All samples were checked with a calibrated Ludlum pancake-type survey meter and demonstrated activity that was discernable as being above background (about .05mr/hr)

H³ amino acids stock solution (purchased 10/1982, T_{1/2}=12.7 years) initial activity 3x1mCi, still in original containers. decayed for about 2 half lives.

H³ standards for LSC (purchased 3/81, T_{1/2}=12.7 yrs) initial activity 9@2.7x10⁷ dpm, decayed for about 2 half lives.

H³ thymidine (purchased 10/92, T_{1/2}=12.7 yrs) initial activity 0.25mCi in 0.25ml, decayed for about 1 half life

H³ water (purchased 12/88, T_{1/2}=12.7 years) initial activity 1mCi, still in original containers. decayed for about 1 half life

H³ leucine (purchased 8/88, T_{1/2}=12.7 yrs), initial activity 1mCi in 1ml, decayed for about 1 half life

Cd¹⁰⁹ chloride (purchased 5/98, T_{1/2}=330 days) initial activity 0.15mCi in 3ml, decayed for about 5 half lives.

Cd¹⁰⁹ chloride (purchased 5/95, T_{1/2}=330 days) initial activity 0.2mCi in 2ml, decayed for about 9 half lives.

C¹⁴ glucose (purchased 3/90). Activity about 1 mCi in 10ml. No decay.

Fe⁵⁵ chloride (purchased 3/90, T_{1/2}=1073 days) initial activity 1mCi, decayed for about 4 half lives.

Fe⁵⁵ chloride (purchased 5/92, T_{1/2}=1073 days) initial activity .2mCi in 2 ml, decayed for about 3.5 half lives.

Mn⁵⁴ chloride (purchased 5/98, T_{1/2}=310 days) initial activity 1mCi in 10ml, decayed for about 4 half lives.

Mn⁵⁴ chloride (purchased 4/95, T_{1/2}=310 days) initial activity 0.8mCi in 8ml, decayed for about 10 half-lives

Zn⁶⁵ chloride (purchased 12/94, T_{1/2}=245 days) initial activity 1mCi in 10ml, decayed for about 11 half lives.

S³⁵ cystine (purchased 8/88,) initial activity 1mCi in 0.10ml.

Co⁶⁰ (purchased 3/76, t_{1/2}=5yrs) initial activity 5mCi in 10ml, decayed for about 5 half lives.

C¹⁴ labeled sea grass leaves and rhizomes: One tray of 88 vials

Empty original containers that had held:

S³⁵ leucine purchased 6/89

Ca⁴⁵ Cl 1mCi purchased 2/87

Ca⁴⁵ Cl2 1mCi purchased 2/91

S³⁵ Tran 1mCi purchased 7/89

C¹⁴ glucose 1Ci purchased 3/90

C¹⁴ standard activity purchased 2/83

H³ standard water purchased 6/78

H³ cortisol purchased 8/88

C¹⁴ DDT .05mCi purchased 6/72

Other waste to be disposed of in disposal at a certified facility:

1.5 drums of contaminated terrazzo tile flooring, identity of contaminants not known

2 large garbage cans, 1 small garbage cans and the remaining half drum with dry waste such as absorbent paper, gloves, pipette tips, etc. Probably mostly no longer radioactive, but was deemed to be risky to handle in case of broken glass, etc

1 gallon jug of "mixed waste" not identified

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& Involvement](#)

[Home](#) > [Electronic Reading Room](#) > [Document Collections](#) > [NRC Regulations \(10 CFR\)](#) > [Part Index](#) > § 20.2103 Records of surveys.

§ 20.2103 Records of surveys.

(a) Each licensee shall maintain records showing the results of surveys and calibrations required by §§ 20.1501 and 20.1906(b). The licensee shall retain these records for 3 years after the record is made.

(b) The licensee shall retain each of the following records until the Commission terminates each pertinent license requiring the record:

(1) Records of the results of surveys to determine the dose from external sources and used, in the absence of or in combination with individual monitoring data, in the assessment of individual dose equivalents. This includes those records of results of surveys to determine the dose from external sources and used, in the absence of or in combination with individual monitoring data, in the assessment of individual dose equivalents required under the standards for protection against radiation in effect prior to January 1, 1994; and

(2) Records of the results of measurements and calculations used to determine individual intakes of radioactive material and used in the assessment of internal dose. This includes those records of the results of measurements and calculations used to determine individual intakes of radioactive material and used in the assessment of internal dose required under the standards for protection against radiation in effect prior to January 1, 1994; and

(3) Records showing the results of air sampling, surveys, and bioassays required pursuant to § 20.1703(c)(1) and (2). This includes those records showing the results of air sampling, surveys, and bioassays required under the standards for protection against radiation in effect prior to January 1, 1994; and

(4) Records of the results of measurements and calculations used to evaluate the release of radioactive effluents to the environment. This includes those records of the results of measurements and calculations used to evaluate the release of radioactive effluents to the environment required under the standards for protection against radiation in effect prior to January 1, 1994.

[56 FR 23404, May 21, 1991, as amended at 60 FR 20185, Apr. 25, 1995; 66 FR 64737, Dec. 14, 2001]

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Monday, November 03, 2008

9/29/88

See Huntman counted ^{65}Zn std
for calculating efficiency of LKB

1 mci / 10 ml

↓ ~~200~~

= 100 μCi / ml

↓ 2.15

13.33 μCi / ml

.2667 μCi / 20 μl

6400 cpm / .2667 μCi

adjusted for decay = 24,000 cpm / .25 μCi

$(24,000 \times 4) / \mu\text{Ci}$

96,000 / μCi

1 mci / 10 ml

↓ =

= 100 μCi / ml
dilution

13.33 μCi / ml

.2667 μCi / 20 μl

6400 cpm / .2667 μCi

24000 cpm / .25 μCi

Zn^{65}

$(24,000 \times 4) / \mu\text{Ci}$

9/29/88 xcc

⁶⁵Zn eff. on LKB = 4.4%

Carboys = 5 gal
or ± 19 lit

5 ml samples counted

Sample	CPM corrected for bkg	DPM	$\mu\text{Ci/ml}$	Total μCi in Carboy
A ⁶⁵ Zn	1096	34,909	2.26×10^{-3}	4.30
B ⁶⁵ Zn + ⁵⁴ Mn	837	18,795	1.71×10^{-3}	3.25
E ⁶⁵ Zn	6602	151,818	1.38×10^{-2}	262.2 μCi
Total				269.75 μCi

allowable disposable amounts = 1×10^{-4} $\mu\text{Ci/ml}$

A ⁶⁵Zn in Carboy + 10 gal water = 7.54×10^{-5} $\mu\text{Ci/ml}$

B ⁶⁵Zn in carboy + 5 gal water = 8.55×10^{-5} $\mu\text{Ci/ml}$

E

9/29/88 LKB ^{65}Zn ebf = 4.4%

5 ml samples

Sample	CPMS connected to BKG	10 PMS	$\mu\text{Ci/ml}$	Total in Jug μCi
A ^{65}Zn	1096	34909	3.26×10^{-3}	4.30
B ^{65}Zn + ^{54}Mn	827	18795	1.71×10^{-3}	3.25
E ^{65}Zn	6680	151818	1.38×10^{-2}	262.2

^{54}Mn - needs to have eff. done

Total μCi

4.30
3.25
262.20
<hr/>
269.75 μCi or

269.75 μCi or

Total 57×10^3 ml 4.73×10^{-3} $\mu\text{Ci/ml}$

$$19 \times 10^3 \times 5 = 95 \times 10^3$$

$$19 \times 10^3 \times 4 = 76 \times 10^3$$

$$19 \times 10^3 \times 3 = 57 \times 10^3$$

$$1 \mu\text{Ci} = 2.2 \times 10^6 \text{ DPMs} = 100\%$$

Actual counts for .25 μCi = 24,000 cpm
or 1 μCi = 96,000 cpm

$$\therefore \frac{96,000 \text{ cpm}}{2.2 \times 10^6 \text{ DPM}} = 4.36 \times 10^{-2}$$

or 4.36%
(.044)

See recalculation
 E eff on 9/29/80

last carbonyl = 5.9 uCi
 5 ml sample in vials

sample	CPMs Corrected for BKG	net	uCi/ml	
A ^{65}Zn	1096	4.95×10^{-4}	9.6×10^{-5}	.000096
B ^{65}Zn	837	3.80×10^{-4}	7.61×10^{-5}	.0000761
C ^{54}Mn	153	6.95×10^{-5}	1.39×10^{-5}	.0000139
D Mn	641	2.91×10^{-4}	5.82×10^{-5}	.0000582
E ^{65}Zn	6682	3.04×10^{-3}	6.07×10^{-4}	.000607

Total microcuries (approximate volume)

A ^{65}Zn 19 liters $\times 9.6 \times 10^{-5}$ uCi/ml = 1.824 uCi

B ^{65}Zn 19 l 1.446 uCi

C ^{54}Mn 19 l 0.264 uCi

D Mn 19 l 1.105 uCi

E ^{65}Zn 19 l 11.533 uCi

Total Mn

3.815 uCi in 57 l

or
 4.939×10^{-5} uCi/ml

Total Zn

14.803 uCi in 57 l

or
 2.60×10^{-4} uCi/ml

(if diluted with
 another 57 l
 would be
 1.459×10^{-4} uCi/ml)

Can be referred to unrelaxed environment:

^{65}Zn 2×10^{-4} uCi/ml or .0002

^{54}Mn 1×10^{-4} uCi/ml or .0001

7/22/88 lc

Samples for Count

Window 190-215

I Tubes with papers inside
 ^{137}Cs you leak test on 1 mci std

II Liquid samples from Carboys in Waste Rm

A ^{65}Zn pH = 2

B (9) ^{65}Zn + ^{54}Mn pH neutral

C ^{54}Mn pH 2

D not labelled See? ^{54}Mn pH neutral

E plastic jug not labelled - yellow liquid
pH 2 Zn^{65}

* F ^{55}Fe in scintillation fluid

0

ACC
7/14/08

Carboys containing liquid waste.
Samples taken

A - 65 Zn p.H. = 2 (litmus - magenta - pink)

B - (9) 65 Zn + 54 Mn in ~~air~~ p^H neutral

C 54 Mn 65 Zn p^H 2

D not labelled sure? p^H neutral

E Plastic jug not labelled p^H - yellow liquid? p^H 2

F 55 Fe in scintillation fluid -

and contents -

7/13/88 le

Carboys of liquid waste in waste storage room

A- $^{54}\text{Mn} + ^{65}\text{Zn}$ in acid } probably before 84 } full
 Jerg - ^3H 2.98×10^{-6} uci/ml (.00000298) uci/ml } full

21 gal (acid jerg) \leftarrow $^{2+}\text{Pt}^{20}$
 " " " 2.5 uci ^{54}Mn 2.5×10^{-3} uci/ml
 " " " 3 uci ^{54}Mn 3×10^{-3} uci/ml

^{65}Zn Hanson 3/21/81 3.03×10^{-3} uci/ml .00303

Mark Hairbach

$T_{1/2}$			TOT	Can release to environment uci/ml
^{65}Zn	245d	^{45}Ca	165d	liq 2×10^{-4} (.0002)
^{54}Mn	303d			l 1×10^{-4} uci/ml (.0001)
^{55}Fe	2.6y			S ? $\times 10^{-4}$ uci/ml
				liq 6×10^{-3} ? (.006)

Counts in LK 6
by Joe A
7/27/80

```

ID(MAX 20 CHAR)      ONEIDA BLKS
MODE(0,1)            1
LINE(1-20)          ->? 2
2 TIME              600      ->? 60
3 COUNTS 1          900000   ->? 2000
4 COUNTS 2          900000   ->? 0
5 LCR COUNTS        0        ->? 880
***ERROR 64
5 LCR COUNTS        0        ->? 1
6 LCR TIME          0        ->? 1
7 BACKGROUND 1      29      ->? 1
8 BACKGROUND 2      31      ->? 1
9 WINDOW 1          210-216   ->? 190-215
10 WINDOW 2         000-000   ->? 0
***ERROR 67
10 WINDOW 2         000-000   ->? 190-214
11 HALF LIFE 1      0        ->? 1
12 HALF LIFE 2      0        ->? 1
13 FACTOR 1         1        ->? 1
14 FACTOR 2         1        ->? 1
15 SUMMATION        N        ->?
16 REPLICATE        1        ->?
17 REPEAT           1        ->?
18 LABELS(1/2)     1        ->?
19 CODING            POS-CODE   POS-CODE
                        001-BKG   ->?
                        002-UNKS   ->?
                        003-UNKS   ->?
                        004-UNKS   ->?
                        000-       ->?
20 PRINT            -1-4-6-7-8
                        ->? 1
                        ->? 1
                        ->? 0
                        ->? 8
                        ->? 1
                        ->? 1
                        ->? 0

```

```

READY->? A
PARAMETER GROUP (1-99) ->? 1
ID:CS 137 LEAK TEST
MODE 0

```

SPECTRUM PLOT:POS 1

LEVEL NO	% OT	CPM 0	30	60	90	120
180-181	1.02	12	I----	*		
181-182	2.04	24	I-----	*		
182-183	2.55	30	I-----	*		
3-184	1.02	12	I----	*		
184-185	0.51	6	I--	*		
185-186	2.04	24	I-----	*		
186-187	2.55	30	I-----	*		
187-188	2.55	30	I-----	*		
188-189	2.04	24	I-----	*		
189-190	2.04	24	I-----	*		
190-191	3.57	42	I-----	*		
191-192	4.76	48	I-----	*		

CS = 190-215
MIN = 210-216
MAX = 210-216

193-194	2.55	30	I-----*
194-195	0.51	6	I--*
195-196	2.55	30	I-----*
196-197	1.02	12	I----*
197-198	0.00	0	I
198-199	0.51	6	I--*
199-200	0.51	6	I--*
200-201	0.51	6	I--*
201-202	0.51	6	I--*
202-203	0.00	0	I
203-204	0.51	6	I--*
204-205	1.53	18	I-----*
205-206	0.51	6	I--*
206-207	1.02	12	I----*
207-208	2.55	30	I-----*
208-209	6.63	78	I-----*
209-210	7.65	91	I-----*
210-211	11.22	133	I-----*
211-212	6.63	78	I-----*
212-213	8.67	103	I-----*
213-214	4.08	48	I-----*
214-215	2.04	24	I-----*
215-216	0.00	0	I
216-217	0.51	6	I--*
217-218	0.51	6	I--*
218-219	1.02	12	I----*
219-220	0.51	6	I--*
220-221	0.00	0	I
221-222	0.00	0	I
222-223	0.00	0	I
223-224	0.51	6	I--*
224-225	0.00	0	I
225-226	0.00	0	I
226-227	1.02	12	I----*
227-228	1.02	12	I----*
228-229	0.51	6	I--*
229-230	0.00	0	I
230-231	0.00	0	I
231-232	0.51	6	I--*
232-233	0.51	6	I--*
233-234	0.00	0	I
234-235	1.02	12	I----*
235-236	1.02	12	I----*
236-237	1.02	12	I----*
237-238	0.51	6	I--*
238-239	1.02	12	I----*
239-240	0.51	6	I--*
240-241	0.51	6	I--*
241-242	0.51	6	I--*
242-243	0.00	0	I
243-244	0.00	0	I
244-245	0.51	6	I--*
=====			
180-245	100.00	1183	

SPECTRUM PLOT: POS 2

LEVEL NO	% OT	CPM D	700	1400	2100	2800
180-185	5.40	424	I-----*			
186-190	2.22	177	I-----*			

195-200	6.25	490	I-----*
200-205	7.02	551	I-----*
205-210	10.34	811	I-----*
210-215	9.72	762	I-----*
215-220	4.24	333	I-----*
220-225	37.50	2941	I-----*
225-230	4.32	339	I-----*
230-235	0.69	54	I*
235-240	0.46	36	I*
240-245	0.08	6	I
=====			
180-245	100.00	7842	

SPECTRUM PLOT: POS 6

LEVEL NO	% OT	CPM D	140	280	420	560
180-185	7.52	121	I-----*			
185-190	7.52	121	I-----*			
190-195	8.65	139	I-----*			
195-200	7.14	115	I-----*			
200-205	5.64	91	I-----*			
205-210	8.27	133	I-----*			
210-215	6.01	97	I-----*			
215-220	3.38	54	I-----*			
220-225	36.47	585	I-----*			
225-230	4.51	72	I-----*			
230-235	1.50	24	I*			
235-240	2.26	36	I*			
240-245	1.13	18	I*			
=====						
180-245	100.00	1605				

SPECTRUM PLOT: POS 7

LEVEL NO	% OT	CPM D	110	220	330	440
180-185	6.57	84	I-----*			
185-190	7.04	91	I-----*			
190-195	3.76	48	I-----*			
195-200	4.69	60	I-----*			
200-205	5.63	72	I-----*			
205-210	23.47	302	I-----*			
210-215	36.62	471	I-----*			
215-220	2.82	36	I-----*			
220-225	3.76	48	I-----*			
225-230	1.41	18	I*			
230-235	1.88	24	I*			
235-240	0.47	6	I*			
240-245	1.88	24	I*			
=====						
180-245	100.00	1285				

LEVEL NO	% OT	CPM D	30	60	90	120
180-185	12.35	60	I	-----*		
185-190	11.11	54	I	-----*		
190-195	4.94	24	I	-----*		
195-200	2.47	12	I	-----*		
200-205	1.23	6	I	-----*		
205-210	16.05	78	I	-----*		
210-215	27.16	133	I	-----*		
215-220	1.23	6	I	-----*		
220-225	11.11	54	I	-----*		
225-230	1.23	6	I	-----*		
230-235	6.17	30	I	-----*		
235-240	3.70	18	I	-----*		
240-245	1.23	6	I	-----*		
180-245	100.00	489				

*END OF ASSAY

Handwritten notes:
 180-245
 489

READY->? READY->?
 READY->?
 ID:CS 137 LEAK TEST
 MODE 1

Handwritten note:
 5 ml per sample

			Count Time	Count	CPM	Error (%)		
Blank	001	BGND	0.02	60	0.5	199	200	7.1
		MEAN					200	7.1
A	002	LINKS	0.04	60	0.6	1289	1096	3.5
B	003		0.06	60	0.6	1031	837	4.2
C	004		0.08	60	0.5	351	153	15.4
D	005		0.10	60	0.6	836	641	5.0
E	006		0.12	60	0.8	6824	6682	1.3
Paper	007		0.14	60	0.5	185	-14	-139.9
Paper	008		0.16	60	0.5	208	9	224.2
inrel	009		0.18	60	0.5	168	-31	-61.8
Paper	010		0.19	60	0.5	190	-9	-219.2

*END OF ASSAY

Record of isotope disposal by month

Assume 500gpd effluent to septic tank

Year	Month	Disposed by					Disposed by					
		Isotope	Decay	Drain	uCi/gal	%max	Month	Isotope	Decay	Drain	uCi/gal	%max
1990	March	Fe 55	20.56	185.11	0.012	3.2	Sept	Zn 65	1.07	9.67	0.001	3.4
	April	Fe 55	14.9	134	8.65E-03	2.28						
		C 14	0.700	6.29	4.06E-04	0.36						

1991	Jan	Fe 55	15.96	144	9.27E-03	2.45	July	Zn 65	25.1	226	1.51E-02	79.30
		C 14	0.400	3.60	2.32E-04	0.20		Cd 109	3.36	30.2	2.01E-03	8.75
	Feb	Fe 55	13.17	119	8.47E-03	2.23	August	C 14	0.31	2.8	1.87E-04	0.16
		C 14	1.200	10.78	7.70E-04	0.68		Zn 65	21.9	197	1.31E-02	69.12
	March	C 14	8.99	80.9	5.22E-03	4.58	Cd 109	2.15	19.3	1.29E-03	5.59	
			8.99	80.9	5.22E-03	4.58	C 14	0.12	1.1	7.47E-05	0.07	
	April	Fe 55	5.99	94.4	6.29E-03	1.66	Dec	Fe 55	6.94	62	4.46E-03	1.18
		C 14	8.3	74.6	4.98E-03	4.36		C 14	1.250	11.25	8.04E-04	0.70
	June	Zn 65	11.7	106	7.04E-03	37.03						
		Cd 109	7.78	70.1	4.67E-03	20.31						
		C 14	1.5	13.5	8.99E-04	0.79						

1992	Jan	Fe 55	17.06	153.55	0.010	2.61	August	Cd 109	0.56	5.04	3.25E-04	1.41
		C 14	3.12	28.12	0.002	1.59						
	Feb	Fe 55	0.13	1.15	7.9E-05	0.02	Sept	Fe 55	19.45	175.0	1.17E-02	3.08
		C 14	4.37	39.37	0.003	2.38		Cd 109	9.37	84.4	0.005	23.67
	March	Fe 55	23.5	211.61	0.014	3.60	Oct	Fe 55	12.67	114.1	7.61E-03	2.01
		C 14	7.5	67.49	0.004	3.82		Cd 109	4.37	39.4	0.003	11.05
	June	Zn 65	5.57	50.11	0.003	17.58	Nov	Fe 55	5.62	50.6	3.37E-03	0.89
			5.57	50.11	0.003	17.58		Cd 109	6.25	56.2	0.004	15.76
	July	Fe 55	11.92	107.32	0.007	1.83	Dec	Zn 65	5.8	52	3.47E-03	18.25
		Cd 109	0.21	1.09	0.000	0.31		Fe 55	4.26	38.3	2.55E-03	0.67
								Cd 109	12.2	109.8	0.007	30.80

Year	Month	Isotope	Decay	Drain	uCi/gal	%max	Month	Isotope	Decay	Drain	uCi/gal	%max
1993	Feb	Fe 59	0.13	1.15	8.2E-05	0.22	July	Cd 109	6.36	57.2	0.004	16.04
		C 14	4.37	39.37	0.003	2.47		Sept	Co57	4.12	37.1	0.002
	March	Fe 59	23.5	211.61	0.014	36.0	Zn 65		10.81	97.3	0.006	34.14
		C 14	7.5	67.49	0.004	3.82	C 14		10	90	0.006	5.09
	April	Fe 59	40.8	367.19	0.024	64.6	Oct	Co57	1.6	14.4	0.001	0.41
		C 14	18.75	168.71	0.011	9.87		Zn 65	9.06	81.5	0.005	28.60
	May	Fe 59	40.43	363.93	0.023	62.0		C 14	6.25	56.2	0.004	3.18
		C 14	46.24	416.15	0.027	23.6	Nov	Co57	9.57	86.2	0.006	2.45
	June	Fe 59	16.87	151.77	0.010	26.7		Cd 109	1.04	12.6	0.001	3.53
			C 14	25.93	233.28	0.016	13.6	Dec	Mn54	0.0003	0.030	1.9E-06
		Zn 65	10.26	92.38	0.006	32.4	Co57		6.77	60.96	0.004	1.73
						Zn 65	4.68		42.2	0.003	14.81	
						Cd 109	3.09		27.78	0.002	7.79	

1994	Jan	Zn 65	2.22	19.99	1.3E-03	6.79	Sept	Fe 59	3.43	30.9	0.002	5.44
		Co 57	1.76	15.8	1.0E-03	0.45		Zn 65	7.12	64	4.1E-03	21.73
		Cd 109	0.16	1.47	9.5E-05	0.41		Oct	Zn65	5.99	53.89	0.003
	March	Zn 65	1.07	9.58	0.001	3.25	Co57		1.59	14.3	0.001	0.41
		Co 57	3.45	31.04	0.002	0.88	Fe 59		1.23	11	0.001	1.93
		C 14	49.98	449.84	0.029	25.46	Cd109		6.32	56.9	0.004	15.96
		Cd 109	2.02	18.14	0.001	5.09	Mn54		2.35	21.19	0.0014	1.20
	Mn 54	13.34	120.07	0.0077	6.80	Nov	Cd 109	32.22	352	2.3E-02	98.74	
	May	Cd 109	2.62	23.6	1.5E-03		6.62	Mn 54	31.66	194.9	0.0126	11.03
		Zn 65	6.1	54.94	3.5E-03		18.66	Zn 65	0.3	2.692	1.7E-04	0.91
	Co 57	3.91	35.2	2.3E-03	1.00	Co 57	0.15	1.39	9.0E-05	0.04		
	June	Fe 59	9.86	124.8	0.008	21.95	Dec	Cd109	4	36	2.3E-03	10.10
		C 14	60	540	0.036	31.58		Mn 54	0.032	2.885	0.0002	0.16
	July	C 14	30.5	274	0.018	15.51		Zn 65	2.35	21.12	1.4E-03	7.17
								Co 57	0.79	7.1	4.6E-04	0.20
	August	Fe 59	4.46	40.2	0.003	6.84						
		C 14	25	225	0.015	12.73						

Record of isotope disposal by month

Assume 500gpd effluent to septic tank

Year	Month	Isotope	Decay	Drain	uCi/gal	%max	Month	Isotope	Decay	Drain	uCi/gal	%max
1995	Jan	Zn 65	28.44	256	1.7E-02	86.93	July	Zn 65	8.8	79.6	5.1E-03	27.02
		Cd 10	2.54	22.9	1.5E-03	6.42		Cd 109	1.7	15.3	9.9E-04	4.30
	Feb	Zn 65	6.84	61.583	4.0E-03	20.91	August	Zn 65	9.8	88.7	5.7E-03	30.12
		Cd 10	1.17	10.5	6.8E-04	2.95		Sept	Zn 65	4.5	40.3	2.6E-03
	March	Zn 65	141.4	15.7	1.0E-03	5.34	Nov	Zn 65	3.7	33.7	2.2E-03	11.44
		Cd 10	3.8	0.4	2.7E-05	0.12						
		Mn54	37.5	4.2	2.7E-04	0.24						
	April	Cd 10	70.2	7.8	5.0E-04	2.19						
		Mn54	112.8	12.6	8.1E-04	0.71						

1996	Jan	Zn 65	18.6	168.3	1.1E-02	57.15	May	C 14	10	89.9	0.006	5.3
		Cd 10	9.8	88.3	5.7E-03	24.77		June	C14	2.5	22.5	0.002
	March	Zn 65	0.6	5.2	3.4E-04	1.77	July	Fe 59	2.6	23	1.6E-03	4.33
	April	Zn 65	2.0	17.6	1.1E-03	5.98		Fe 59	0.6	5.8	4.1E-04	1.09
		Cd 10	11.7	105.5	6.8E-03	29.59						
		Mn54	0.1	0.8	5.2E-05	0.05						

1997	July	Zn 65	12.2	109.8	7.1E-03	37.28	Nov	Fe 59	1.4	12.6	9.0E-04	2.37
		C14	6	54	0.004	3.2		C14	10	90	0.006	5.3
	Aug	Zn 65	3.6	32.2	2.1E-03	10.93	Dec	Fe 59	1.4	12.5	8.9E-04	2.36
		C14	15	135	0.009	7.9		C14	6	54	0.004	3.2
	Sept	Zn 65	3.4	30.3	2.0E-03	10.29						
		C14	10	90	0.006	5.3						

1998	Jan	Fe 59	3.3	30	2.1E-03	5.65	Nov	Fe 59	1.4	12.6	9.0E-04	2.37
		C14	6	54	0.004	3.2		C14	10	90	0.006	5.3
	Aug	Zn 65	3.6	32.2	2.1E-03	10.93	Dec	Fe 59	1.4	12.5	8.9E-04	2.36
		C14	15	135	0.009	7.9		C14	6	54	0.004	3.2
	Sept	Zn 65	3.4	30.3	2.0E-03	10.29						
		C14	10	90	0.006	5.3						



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Fisheries Science Center
Beaufort Laboratory
101 Pivers Island Road
Beaufort, North Carolina 28516

March 16, 1993

MEMORANUM FOR: Staff Ecology Division
FROM: *Susan A. Huntsman*
Susan A. Huntsman, Radiation Safety Officer
SUBJECT: ^{59}Fe Spill in Clean Room

A small quantity of ^{59}Fe was spilled on the floor of the Clean Room. The contaminated area has been covered with plastic and outlined with warning tape. The residual radioactivity will be allowed to decay through at least three half-lives (half life = 45 days), or until measured radiation level at background. The contaminated area poses no health or safety threat to individuals working in the room.

This room has been designated a radioactive area, since radioisotopes are used in the room.

Cleaned up w/ Radiscand

max on floor = 17 mR/D ~~###~~

Recheck 1/94

no excess activity measurable





SCIENTIFIC ECOLOGY GROUP, INC.

RADIOLOGICAL ENGINEERING AND
DECOMMISSIONING SERVICES

Phone: (615) 376-8206

FAX: (615) 376-6247

August 28, 1995

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Beaufort Laboratory
101 Pivers Island Road
Beaufort, NC 28516-9722

Attention: Dr. Susan Huntsman

Subject: POST DECONTAMINATION SURVEY DATA FOR ROOM 112

Reference: P.O. No. 401 ETNF500080

Dear Dr. Huntsman:

Scientific Ecology Group, Inc. (SEG) has completed the decontamination and final survey of the floor, wall and ceiling surfaces of Room 112 at the National Marine Fisheries Service at Beaufort Laboratory. The project engineer's report is attached. The data shows the floor, wall and ceiling surfaces meet the current NRC criteria for unrestricted release. Fixed contamination above the release criteria was found in the hallway adjacent to Room 112 and in a drain line in Room 112.

This complete the authorized scope of work, except for refinishing the floor. This task will be performed by an SEG subcontractor, Willis Construction Co., at your convenience. Please call me at (615) 376-8246 if you have any questions, or if I can be of any further service.

Sincerely,

David M. Hall
Manager, Decommissioning Contract Services
Radiological Engineering and
Decommissioning Services

DMH/tko

cc: D. Neely
A. Johnson

M. Lynch (NMFS)
P. Jones

082895-DAT\MEM\DAVE\SIGN\0650.L

MEMORANDUM

TO: Dave Hall

FROM: Paul Jones *PJ*

DATE: August 21, 1995

SUBJECT: NATIONAL MARINE FISHERIES SERVICES PROJECT RESULTS

=====

The following is a review of the National Marine Fisheries Service Room 112 final survey:

SEG has completed the project within the technical approach defined in the original proposal.

A characterization survey was performed for room 112 and surrounding areas. Results of the room 112 survey showed direct survey results of <MDA to 210,000 dpm/100cm² and removable survey results of <MDA to 2,275 dpm/100cm². The surrounding area showed direct survey results of <MDA to 31,591 dpm/100cm² and removable survey results <MDA.

The remediation of the contaminated floor in room 112 was performed using vacuum shrouded scabbling equipment. Air samples taken during remediation activities showed there was no release of airborne radioactivity. One 55 gallon drum of waste was generated during the remediation (1/3 drum of scabbling dust and 2/3 of a drum of DAW). The waste was released to Susan Huntsman, RSO of the NMFS at Beaufort, NC.

Following remediation of room 112, 1 meter grids were established on the floor and walls up to 2 meters. The room was surveyed using these grids for fixed and removable surface contamination, and exposure rate measurements. Surveys were performed in accordance with DRAFT NUREG/CR-5849.

Based upon information provided by NMFS, the only nuclide present in the project remediation area was cesium-137. The following guideline values for cesium-137 were taken from, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material", August 1987.

Nuclides	Average	Maximum	Removable
Beta-gamma emitters	5000 dpm $\beta\gamma$ /100 cm ²	15,000 dpm $\beta\gamma$ /100 cm ²	1000 dpm $\beta\gamma$ /100 cm ²

A direct beta reading taken at the opening of a drain pipe penetrating from the North wall of room 112 indicated activity levels in excess of 5000 dpm/100cm², (5242 dpm/100cm² max). The drain survey was performed using a shielded G-M pancake detector. Results of the smears taken on the inside of the drain showed <MDA.

With the above exception, the results of surveys performed in room 112 for both fixed and removable contamination were below the guideline values.

Gamma dose rates in room 112 were slightly elevated, (21.7 uR/hr to 28.2uR/hr) due to the ceramic tile covering the walls of the room.

Enclosure 1 Characterization Survey Data and Map.

Enclosure 2 Termination Survey Data, Room 112 Grid Map, and Room 112 Survey Graphs

National Marine Fisheries Service
Southeast Fisheries Science Center
101 Pivers Island Rd
Beaufort, NC 28516
September 7, 1995

David J. Collins
US New Clear Regulatory Commission
101 Marietta Street, NW
Atlanta, GA 30323

Dear David,

As you requested, I am enclosing a copy of the final report from SEG on the decontamination of room 112 done on August 15-18, 1995. The original report will be maintained in the Radiation Safety Officer's permanent files (currently in room 204 of the National Marine Fisheries Laboratory, Beaufort, NC.).

Regarding the contaminated drain pipe in the wall of room 112, the SEG team obtained two measurements at the end of the pipe: one was 4,839dpm, the other 5,240dpm (for an average of 5,040). Clearly, this is not statistically different than 5,000dpm. This activity is well below the acceptable maximum (15,000 dpm) for an area not exceeding 100 cm² (the cross sectional area of the pipe is about 11cm²). There was no removable activity. Given these circumstances, and the fact that, as Cs¹³⁷, even 5240dpm would decay to below 5000dpm in 2 years, I do not believe it is necessary to remove the pipe.

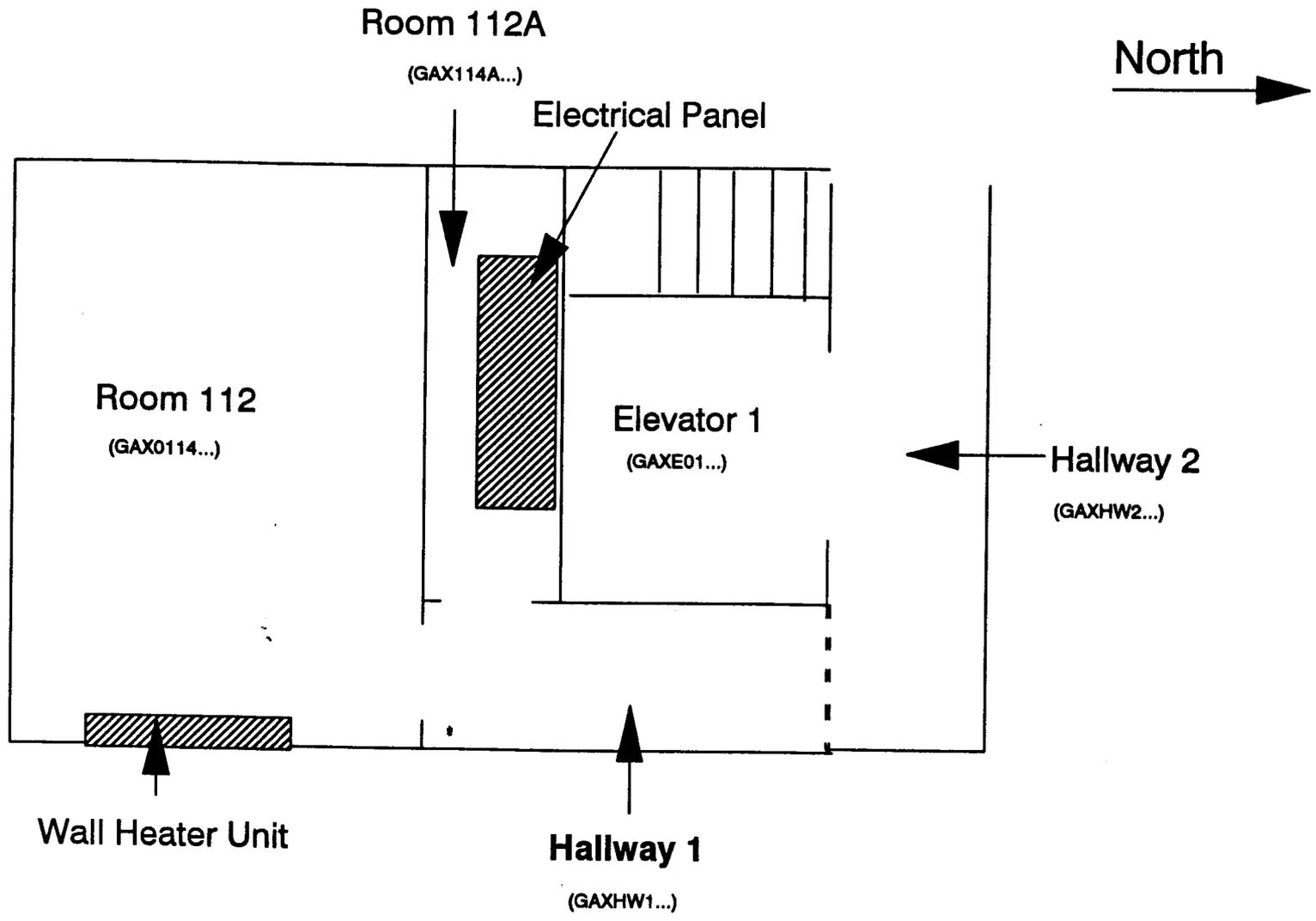
There is a small spot in the hall that gave a reading of 31,590dpm/100cm², about twice the acceptable level of unremovable contamination. This spot is less than 2 inches across, (i.e., is completely covered by the GM pancake detector), and has no removable activity. It is located just outside the door of room 112, near the wall. The SEG team said they did not have time to remove it and stay within the agreed time to complete their contract (which specified only the floor of room 112). Since this spot is in a hall that is used only for access to room 112, and furthermore, is not in a heavily trafficked portion of the floor, I'm wondering if we could allow it to remain? If not, what are the guidelines for removing it ourselves?

As usual, I appreciate your advice.

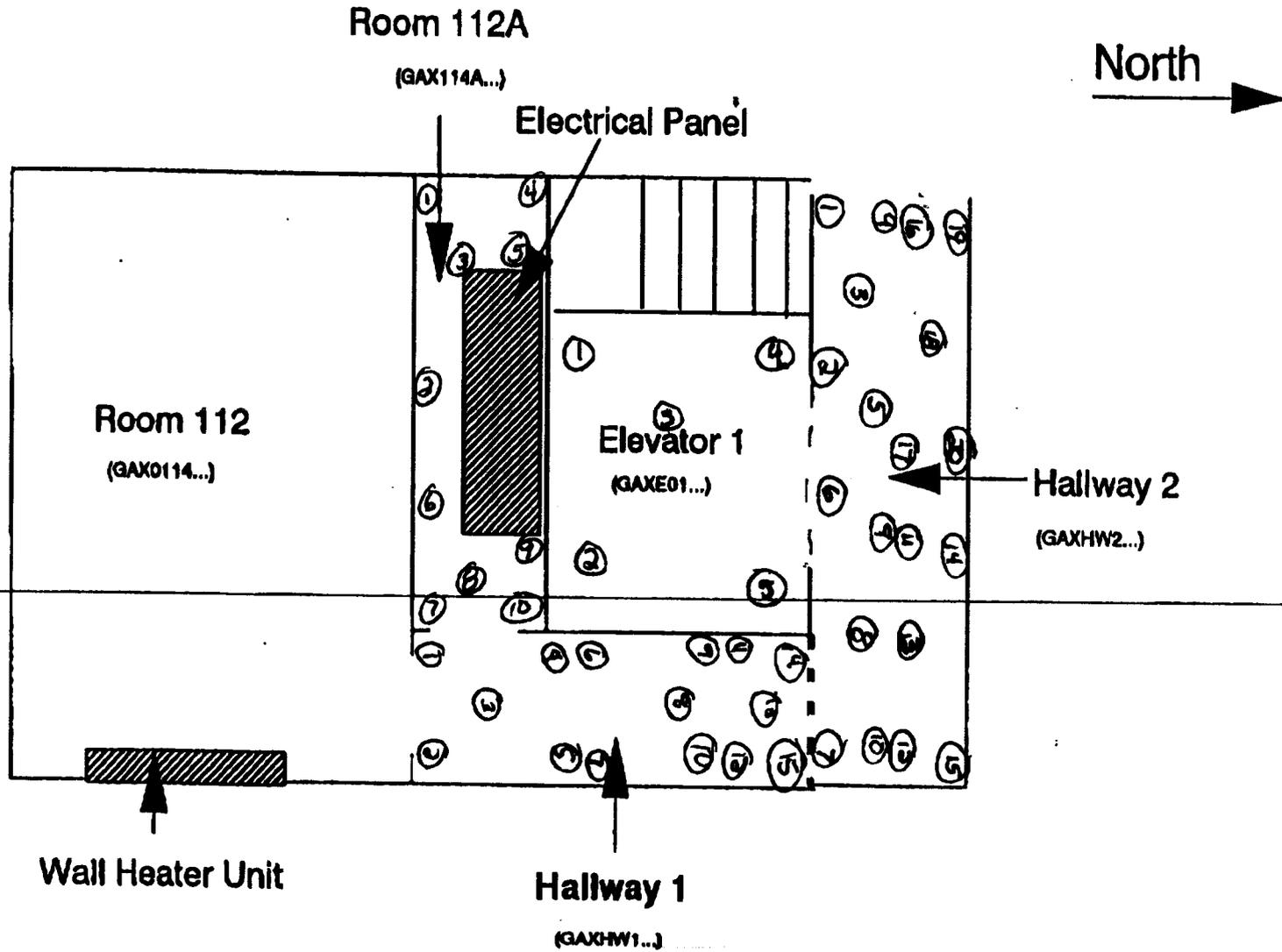
Sincerely,

Susan A. Huntsman
Radiation Safety Officer

Ecology Wing Room 112 Characterization Areas



Ecology Wing Room 112 Characterization Areas



Called Dave Collins on August 18, 1995 to determine if we can go ahead with the floor replacement before getting the final report from SEG. He, in consultation with Doug Collins said that it would be ok. He asked me to send him a floor plan of the building with the vault room identified for his records which I did.

Aug 31. pointed out to Don that the old vault room no longer has a room number and the number that had been used to designate it (112) is now assigned to the seawater room. We decided to restore this number to the old vault room to avoid any future confusion as to which room was decontaminated.



Handwritten: Has → in ...
UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Fisheries Center
Beaufort Laboratory
Beaufort, NC 28516
February 28, 1988

U.S. Nuclear Regulatory Commission
Region II
ATTN: Mr. Earl Wright
101 Marietta Street, N.W.
Atlanta, Georgia 30323

Dear Mr. Wright:

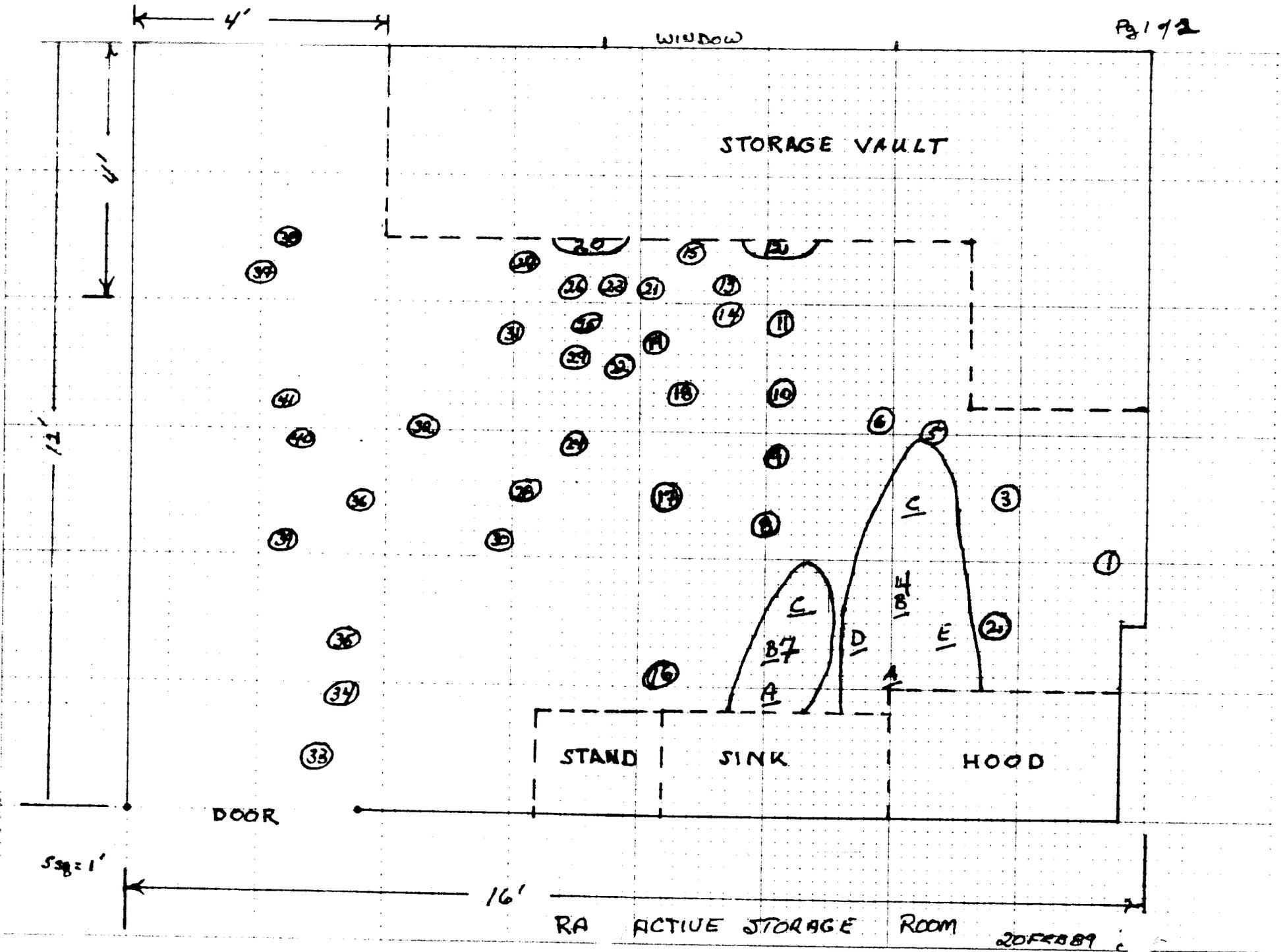
SUBJECT: DECONTAMINATION PROCEDURE (REFERENCE MAIL CONTROL NUMBER: 220449)

Enclosed is a drawing of the radioactive spots on the floor of the room where the isotope vault was previously located. Also, the readings obtained with a GSM-10 survey meter are included. As we discussed on the phone, I have secured the room and will wait until I hear from you to proceed with the decontamination procedure.

Sincerely Yours,

Linda C. Clements
Radiation Safety Officer





Spot number	mrh at 1cm	mrh at 1 meter	Spot number	mrh at 1cm	m 10
1	0.18	43 kg	20	0.7	0.
2	0.6	18 kg	21	14.0	0.
3	2.0	13 kg	22	0.5	0.
4A	6.0	18 kg	23	1.3	0.
B	0.3	0.03	24	0.8	0.
C	4.0	0.03	25	4.0	0.
D	0.08	0.07	26	0.8	0.
E	0.4	0.04	27	0.3	0.0
5	0.11	0.02	28	2.0	0.
6	0.4	0.04	29	1.1	0.
7A	0.15	0.04	30	0.6	0.
B	0.3	0.05	31	1.4	0.
C	0.07	0.04	32	4.0	0.
8	0.4	0.05	33	0.5	0.
9	18.0	0.04	34	4.0	0.0
10	1.0	0.03	35	1.0	0.
11	0.14	0.02	36	1.3	0.0
12	0.12	0.04	37	0.1	0.
13	0.2	0.02	38	1.5	0.0
14	3.0	0.02	39	6.0	0.
15	0.6	0.03	40	3.0	0.0
16	2.0	0.03	41	2.0	0.
17	8.0	0.04			
18	0.3	0.03			
19	0.3	0.03			

measurements with GSU-1
 Survey meter by Christ
 and Bowen 2/22/89

U.S. NRC

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Home > [Electronic Reading Room](#) > [Document Collections](#) > [NRC Regulations \(10 CFR\)](#) > [Part Index](#) > § 30.35 Financial assurance and recordkeeping for decommissioning.

§ 30.35 Financial assurance and recordkeeping for decommissioning.

(a)(1) Each applicant for a specific license authorizing the possession and use of unsealed byproduct material of half-life greater than 120 days and in quantities exceeding 10^5 times the applicable quantities set forth in appendix B to part 30 shall submit a decommissioning funding plan as described in paragraph (e) of this section. The decommissioning funding plan must also be submitted when a combination of isotopes is involved if R divided by 10^5 is greater than 1 (unity rule), where R is defined here as the sum of the ratios of the quantity of each isotope to the applicable value in appendix B to part 30.

(2) Each holder of, or applicant for, any specific license authorizing the possession and use of sealed sources or plated foils of half-life greater than 120 days and in quantities exceeding 10^{12} times the applicable quantities set forth in appendix B to part 30 (or when a combination of isotopes is involved if R , as defined in § 30.35(a)(1), divided by 10^{12} is greater than 1), shall submit a decommissioning funding plan as described in paragraph (e) of this section. The decommissioning funding plan must be submitted to NRC by December 2, 2005.

(b) Each applicant for a specific license authorizing possession and use of byproduct material of half-life greater than 120 days and in quantities specified in paragraph (d) of this section shall either--

(1) Submit a decommissioning funding plan as described in paragraph (e) of this section; or

(2) Submit a certification that financial assurance for decommissioning has been provided in the amount prescribed by paragraph (d) of this section using one of the methods described in paragraph (f) of this section. For an applicant, this certification may state that the appropriate assurance will be obtained after the application has been approved and the license issued but before the receipt of licensed material. If the applicant defers execution of the financial instrument until after the license has been issued, a signed original of the financial instrument obtained to satisfy the requirements of paragraph (f) of this section must be submitted to NRC before receipt of licensed material. If the applicant does not defer execution of the financial instrument, the applicant shall submit to NRC, as part of the certification, a signed original of the financial instrument obtained to satisfy the requirements of paragraph (f) of this section.

(c)(1) Each holder of a specific license issued on or after July 27, 1990, which is of a type described in paragraph (a) or (b) of this section, shall provide financial assurance for decommissioning in accordance with the criteria set forth in this section

(2) Each holder of a specific license issued before July 27, 1990, and of a type described in paragraph (a) of this section shall submit a decommissioning funding plan as described in paragraph (e) of this section or a certification of financial assurance for decommissioning in an amount at least equal to \$1,125,000 in accordance with the criteria set forth in this section. If the licensee submits the certification of financial assurance rather than a decommissioning funding plan, the licensee shall include a decommissioning funding plan in any application for license renewal.

(3) Each holder of a specific license issued before July 27, 1990, and of a type described in paragraph (b) of this section shall submit, on or before July 27, 1990, a decommissioning funding plan as described, in paragraph (e) of this section, or a certification of financial assurance for decommissioning in accordance with the criteria set forth in this section.

(4) Any licensee who has submitted an application before July 27, 1990, for renewal of license in accordance with § 30.37 shall provide financial assurance for decommissioning in accordance with paragraphs (a) and (b) of this section. This assurance must be submitted when this rule becomes effective November 24, 1995.

(5) Waste collectors and waste processors, as defined in 10 CFR part 20, Appendix G, must provide financial assurance in an amount based on a decommissioning funding plan as described in paragraph (e) of this section. The decommissioning funding plan must include the cost of disposal of the maximum amount (curies) of radioactive material permitted by license, and the cost of disposal of the maximum quantity, by volume, of radioactive material which could be present at the licensee's facility at any time, in addition to the cost to remediate the licensee's site to meet the license termination criteria of 10 CFR part 20. The decommissioning funding plan must be submitted by December 2, 2005.

(d) Table of required amounts of financial assurance for decommissioning by quantity of material. Licensees required to submit the \$1,125,000 amount must do so by December 2, 2004. Licensees required to submit the \$113,000 or \$225,000

amount must do so by June 2, 2005. Licensees having possession limits exceeding the upper bounds of this table must base financial assurance on a decommissioning funding plan.

Greater than 10^4 but less than or equal to 10^5 times the applicable quantities of appendix B to part 30 in unsealed form. (For a combination of isotopes, if R, as defined in § 30.35(a)(1), divided by 10^4 is greater than 1 but R divided by 10^5 is less than or equal to 1.)	\$1,125,000
Greater than 10^3 but less than or equal to 10^4 times the applicable quantities of appendix B to part 30 in unsealed form. (For a combination of isotopes, if R, as defined in § 30.35(a)(1), divided by 10^3 is greater than 1 but R divided by 10^4 is less than or equal to 1.)	225,000
Greater than 10^{10} but less than or equal to 10^{12} times the applicable quantities of appendix B to part 30 in sealed sources or plated foils. (For a combination of isotopes, if R, as defined in § 30.35(a)(1), divided by 10^{10} is greater than, 1, but R divided by 10^{12} is less than or equal to 1)	113,000

(e) Each decommissioning funding plan must contain a cost estimate for decommissioning and a description of the method of assuring funds for decommissioning from paragraph (f) of this section, including means for adjusting cost estimates and associated funding levels periodically over the life of the facility. Cost estimates must be adjusted at intervals not to exceed 3 years. The decommissioning funding plan must also contain a certification by the licensee that financial assurance for decommissioning has been provided in the amount of the cost estimate for decommissioning and a signed original of the financial instrument obtained to satisfy the requirements of paragraph (f) of this section.

(f) Financial assurance for decommissioning must be provided by one or more of the following methods:

(1) Prepayment. Prepayment is the deposit prior to the start of operation into an account segregated from licensee assets and outside the licensee's administrative control of cash or liquid assets such that the amount of funds would be sufficient to pay decommissioning costs. Prepayment may be in the form of a trust, escrow account, government fund, certificate of deposit, or deposit of government securities.

(2) A surety method, insurance, or other guarantee method. These methods guarantee that decommissioning costs will be paid. A surety method may be in the form of a surety bond, letter of credit, or line of credit. A parent company guarantee of funds for decommissioning costs based on a financial test may be used if the guarantee and test are as contained in appendix A to this part. A parent company guarantee may not be used in combination with other financial methods to satisfy the requirements of this section. For commercial corporations that issue bonds, a guarantee of funds by the applicant or licensee for decommissioning costs based on a financial test may be used if the guarantee and test are as contained in appendix C to this part. For commercial companies that do not issue bonds, a guarantee of funds by the applicant or licensee for decommissioning costs may be used if the guarantee and test are as contained in appendix D to this part. For nonprofit entities, such as colleges, universities, and nonprofit hospitals, a guarantee of funds by the applicant or licensee may be used if the guarantee and test are as contained in appendix E to this part. A guarantee by the applicant or licensee may not be used in combination with any other financial methods used to satisfy the requirements of this section or in any situation where the applicant or licensee has a parent company holding majority control of the voting stock of the company. Any surety method or insurance used to provide financial assurance for decommissioning must contain the following conditions:

(i) The surety method or insurance must be open-ended or, if written for a specified term, such as five years, must be renewed automatically unless 90 days or more prior to the renewal date, the issuer notifies the Commission, the beneficiary, and the licensee of its intention not to renew. The surety method or insurance must also provide that the full face amount be paid to the beneficiary automatically prior to the expiration without proof of forfeiture if the licensee fails to provide a replacement acceptable to the Commission within 30 days after receipt of notification of cancellation.

(ii) The surety method or insurance must be payable to a trust established for decommissioning costs. The trustee and trust must be acceptable to the Commission. An acceptable trustee includes an appropriate State or Federal government agency or an entity which has the authority to act as a trustee and whose trust operations are regulated and examined by a Federal or State agency.

(iii) The surety method or insurance must remain in effect until the Commission has terminated the license.

(3) An external sinking fund in which deposits are made at least annually, coupled with a surety method or insurance, the value of which may decrease by the amount being accumulated in the sinking fund. An external sinking fund is a fund established and maintained by setting aside funds periodically in an account segregated from licensee assets and outside the licensee's administrative control in which the total amount of funds would be sufficient to pay decommissioning costs at the time termination of operation is expected. An external sinking fund may be in the form of a trust, escrow account, government fund, certificate of deposit, or deposit of government securities. The surety or insurance provisions must be as stated in paragraph (f)(2) of this section.

(4) In the case of Federal, State, or local government licensees, a statement of intent containing a cost estimate for decommissioning or an amount based on the Table in paragraph (d) of this section, and indicating that funds for decommissioning will be obtained when necessary.

(5) When a governmental entity is assuming custody and ownership of a site, an arrangement that is deemed acceptable by such governmental entity.

(g) Each person licensed under this part or parts 32 through 36 and 39 of this chapter shall keep records of information important to the decommissioning of a facility in an identified location until the site is released for unrestricted use. Before licensed activities are transferred or assigned in accordance with § 30.34(b), licensees shall transfer all records described in this paragraph to the new licensee. In this case, the new licensee will be responsible for maintaining these records until the license is terminated. If records important to the decommissioning of a facility are kept for other purposes, reference to these records and their locations may be used. Information the Commission considers important to decommissioning consists of--

(1) Records of spills or other unusual occurrences involving the spread of contamination in and around the facility, equipment, or site. These records may be limited to instances when contamination remains after any cleanup procedures or when there is reasonable likelihood that contaminants may have spread to inaccessible areas as in the case of possible seepage into porous materials such as concrete. These records must include any known information on identification of involved nuclides, quantities, forms, and concentrations.

(2) As-built drawings and modifications of structures and equipment in restricted areas where radioactive materials are used and/or stored, and of locations of possible inaccessible contamination such as buried pipes which may be subject to contamination. If required drawings are referenced, each relevant document need not be indexed individually. If drawings are not available, the licensee shall substitute appropriate records of available information concerning these areas and locations.

(3) Except for areas containing only sealed sources (provided the sources have not leaked or no contamination remains after any leak) or byproduct materials having only half-lives of less than 65 days, a list contained in a single document and updated every 2 years, of the following:

(i) All areas designated and formerly designated restricted areas as defined in 10 CFR 20.1003 (For requirements prior to January 1, 1994, see 10 CFR 20.3 as contained in the CFR edition revised as of January 1, 1993.);

(ii) All areas outside of restricted areas that require documentation under § 30.35(g)(1).

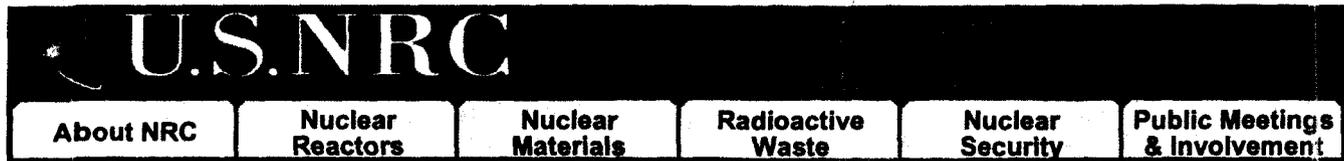
(iii) All areas outside of restricted areas where current and previous wastes have been buried as documented under 10 CFR 20.2108; and

(iv) All areas outside of restricted areas that contain material such that, if the license expired, the licensee would be required to either decontaminate the area to meet the criteria for decommissioning in 10 CFR part 20, subpart E, or apply for approval for disposal under 10 CFR 20.2002.

(4) Records of the cost estimate performed for the decommissioning funding plan or of the amount certified for decommissioning, and records of the funding method used for assuring funds if either a funding plan or certification is used.

[53 FR 24044, June 27, 1988, as amended at 56 FR 23471, May 21, 1991; 58 FR 39633, July 26, 1993; 58 FR 67659, Dec. 22, 1993; 58 FR 68730, Dec. 29, 1993; 59 FR 1618, Jan. 12, 1994; 60 FR 38238, July 26, 1995; 61 FR 24673, May 16, 1996; 62 FR 39090, July 21, 1997; 63 FR 29541, June 1, 1998; 68 FR 57335, Oct. 3, 2003]

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Monday, November 03, 2008



[Home](#) > [Electronic Reading Room](#) > [Document Collections](#) > [NRC Regulations \(10 CFR\)](#) > [Part Index](#) > [§ 40.36 Financial assurance and recordkeeping for decommissioning.](#)

§ 40.36 Financial assurance and recordkeeping for decommissioning.

Except for licenses authorizing the receipt, possession, and use of source material for uranium or thorium milling, or byproduct material at sites formerly associated with such milling, for which financial assurance requirements are set forth in appendix A of this part, criteria for providing financial assurance for decommissioning are as follows:

- (a) Each applicant for a specific license authorizing the possession and use of more than 100 mCi of source material in a readily dispersible form shall submit a decommissioning funding plan as described in paragraph (d) of this section.
- (b) Each applicant for a specific license authorizing possession and use of quantities of source material greater than 10 mCi but less than or equal to 100 mCi in a readily dispersible form shall either--
- (1) Submit a decommissioning funding plan as described in paragraph (d) of this section; or
 - (2) Submit a certification that financial assurance for decommissioning has been provided in the amount of \$225,000 by June 2, 2005 using one of the methods described in paragraph (e) of this section. For an applicant, this certification may state that the appropriate assurance will be obtained after the application has been approved and the license issued but before the receipt of licensed material. If the applicant defers execution of the financial instrument until after the license has been issued, a signed original of the financial instrument obtained to satisfy the requirements of paragraph (e) of this section must be submitted to NRC prior to receipt of licensed material. If the applicant does not defer execution of the financial instrument, the applicant shall submit to NRC, as part of the certification, a signed original of the financial instrument obtained to satisfy the requirements of paragraph (e) of this section.
- (c)(1) Each holder of a specific license issued on or after July 27, 1990, which is covered by paragraph (a) or (b) of this section, shall provide financial assurance for decommissioning in accordance with the criteria set forth in this section.
- (2) Each holder of a specific license issued before July 27, 1990, and of a type described in paragraph (a) of this section shall submit a decommissioning funding plan as described in paragraph (d) of this section or a certification of financial assurance for decommissioning in an amount at least equal to \$1,125,000 in accordance with the criteria set forth in this section. If the licensee submits the certification of financial assurance rather than a decommissioning funding plan, the licensee shall include a decommissioning funding plan in any application for license renewal. Licensees required to submit the \$1,125,000 amount must do so by December 2, 2004.
- (3) Each holder of a specific license issued before July 27, 1990, and of a type described in paragraph (b) of this section shall submit, on or before July 27, 1990, a decommissioning funding plan, as described in paragraph (d) of this section, or a certification of financial assurance for decommissioning in accordance with the criteria set forth in this section.
- (4) Any licensee who has submitted an application before July 27, 1990, for renewal of license in accordance with § 40.43 shall provide financial assurance for decommissioning in accordance with paragraphs (a) and (b) of this section. This assurance must be submitted when this rule becomes effective November 24, 1995.
- (d) Each decommissioning funding plan must contain a cost estimate for decommissioning and a description of the method of assuring funds for decommissioning from paragraph (e) of this section, including means for adjusting cost estimates and associated funding levels periodically over the life of the facility. Cost estimates must be adjusted at intervals not to exceed 3 years. The decommissioning funding plan must also contain a certification by the licensee that financial assurance for decommissioning has been provided in the amount of the cost estimate for decommissioning and a signed original of the financial instrument obtained to satisfy the requirements of paragraph (e) of this section.
- (e) Financial assurance for decommissioning must be provided by one or more of the following methods:
- (1) Prepayment. Prepayment is the deposit prior to the start of operation into an account segregated from licensee assets and outside the licensee's administrative control of cash or liquid assets such that the amount of funds would be sufficient to pay decommissioning costs. Prepayment may be in the form of a trust, escrow account, government fund, certificate of deposit, or deposit of government securities.

(2) A surety method, insurance, or other guarantee method. These methods guarantee that decommissioning costs will be paid. A surety method may be in the form of a surety bond, letter of credit, or line of credit. A parent company guarantee of funds for decommissioning costs based on a financial test may be used if the guarantee and test are as contained in appendix A to part 30. A parent company guarantee may not be used in combination with other financial methods to satisfy the requirements of this section. For commercial corporations that issue bonds, a guarantee of funds by the applicant or licensee for decommissioning costs based on a financial test may be used if the guarantee and test are as contained in appendix C to part 30. For commercial companies that do not issue bonds, a guarantee of funds by the applicant or licensee for decommissioning costs may be used if the guarantee and test are as contained in appendix D to part 30. For nonprofit entities, such as colleges, universities, and nonprofit hospitals, a guarantee of funds by the applicant or licensee may be used if the guarantee and test are as contained in appendix E to part 30. A guarantee by the applicant or licensee may not be used in combination with any other financial methods used to satisfy the requirements of this section or in any situation where the applicant or licensee has a parent company holding majority control of the voting stock of the company. Any surety method or insurance used to provide financial assurance for decommissioning must contain the following conditions:

(i) The surety method or insurance must be open-ended or, if written for a specified term, such as five years, must be renewed automatically unless 90 days or more prior to the renewal date, the issuer notifies the Commission, the beneficiary, and the licensee of its intention not to renew. The surety method or insurance must also provide that the full face amount be paid to the beneficiary automatically prior to the expiration without proof of forfeiture if the licensee fails to provide a replacement acceptable to the Commission within 30 days after receipt of notification of cancellation.

(ii) The surety method or insurance must be payable to a trust established for decommissioning costs. The trustee and trust must be acceptable to the Commission. An acceptable trustee includes an appropriate State or Federal government agency or an entity which has the authority to act as a trustee and whose trust operations are regulated and examined by a Federal or State agency.

(iii) The surety method or insurance must remain in effect until the Commission has terminated the license.

(3) An external sinking fund in which deposits are made at least annually, coupled with a surety method or insurance, the value of which may decrease by the amount being accumulated in the sinking fund. An external sinking fund is a fund established and maintained by setting aside funds periodically in an account segregated from licensee assets and outside the licensee's administrative control in which the total amount of funds would be sufficient to pay decommissioning costs at the time termination of operation is expected. An external sinking fund may be in the form of a trust, escrow account, government fund, certificate of deposit, or deposit of government securities. The surety or insurance provision must be as stated in paragraph (e)(2) of this section.

(4) In the case of Federal, State, or local government licensees, a statement of intent containing a cost estimate for decommissioning or an amount based on paragraph (b) of this section, and indicating that funds for decommissioning will be obtained when necessary.

(5) When a governmental entity is assuming custody and ownership of a site, an arrangement that is deemed acceptable by such governmental entity.

(f) Each person licensed under this part shall keep records of information important to the decommissioning of a facility in an identified location until the site is released for unrestricted use. Before licensed activities are transferred or assigned in accordance with § 40.41(b) licensees shall transfer all records described in this paragraph to the new licensee. In this case, the new licensee will be responsible for maintaining these records until the license is terminated. If records important to the decommissioning of a facility are kept for other purposes, reference to these records and their locations may be used. Information the Commission considers important to decommissioning consists of--

(1) Records of spills or other unusual occurrences involving the spread of contamination in and around the facility, equipment, or site. These records may be limited to instances when contamination remains after any cleanup procedures or when there is reasonable likelihood that contaminants may have spread to inaccessible areas as in the case of possible seepage into porous materials such as concrete. These records must include any known information on identification of involved nuclides, quantities, forms, and concentrations.

(2) As-built drawings and modifications of structures and equipment in restricted areas where radioactive materials are used and/or stored, and of locations of possible inaccessible contamination such as buried pipes which may be subject to contamination. If required drawings are referenced, each relevant document need not be indexed individually. If drawings are not available, the licensee shall substitute appropriate records of available information concerning these areas and locations.

(3) Except for areas containing depleted uranium used only for shielding or as penetrators in unused munitions, a list contained in a single document and updated every 2 years, of the following:

(i) All areas designated and formerly designated as restricted areas as defined under 10 CFR 20.1003;

(ii) All areas outside of restricted areas that require documentation under § 40.36(f)(1);

(iii) All areas outside of restricted areas where current and previous wastes have been buried as documented under 10 CFR 20.2108; and

(iv) All areas outside of restricted areas that contain material such that, if the license expired, the licensee would be required to either decontaminate the area to meet the criteria for decommissioning in 10 CFR part 20, subpart E, or apply for approval for disposal under 10 CFR 20.2002.

(4) Records of the cost estimate performed for the decommissioning funding plan or of the amount certified for decommissioning, and records of the funding method used for assuring funds if either a funding plan or certification is used.

[53 FR 24047, June 27, 1988, as amended at 58 FR 39633, July 26, 1993; 58 FR 67661, Dec. 22, 1993; 58 FR 68731, Dec. 29, 1993; 59 FR 1618, Jan. 12, 1994; 60 FR 38238, July 26, 1995; 61 FR 24674, May 16, 1996; 62 FR 39090, July 21, 1997; 63 FR 29543, June 1, 1998; 68 FR 57336, Oct. 3, 2003]

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Monday, November 03, 2008



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-3415

September 3, 1998

U. S. Department of Commerce
National Oceanic and Atmospheric
Administration
National Fisheries Center
ATTN: Susan Huntsman, Ph.D.
Radiation Safety Officer
Beaufort Laboratory
Beaufort, NC 28516-9722

SUBJECT: DECOMMISSIONING FINANCIAL ASSURANCE STATEMENT OF INTENT
(REFERENCE: LICENSE NO. 32-00426-02; DOCKET NO. 030-05594)

Dear Dr. Huntsman:

During a recent audit of our files it was discovered that your financial assurance submittal dated April 2, 1993, had a typographical error. In the second paragraph you stated that "...Within this authority, I intend to have funds made available when necessary in an amount up to \$150.00 to decommission the National Fisheries Service, Beaufort Laboratory..." The correct amount should read "\$150,000.00."

As discussed during our telephone conversation on September 2, 1998, I am requesting that you submit a corrected copy of your "Statement of Intent" letter dated April 2, 1993, to reflect a correct amount of "\$150,000.00."

If you have any questions regarding this matter, please feel free to contact me at (404)562-4727. Thank you for your time and assistance with this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Wade T. Loo".

Wade T. Loo, License Reviewer
Division of Nuclear Materials Safety



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-3415

October 2, 1998

U. S. Department of Commerce
National Oceanic and Atmospheric
Administration
National Fisheries Center
ATTN: Susan Huntsman, Ph.D.
Radiation Safety Officer
Beaufort Laboratory
Beaufort, NC 28516-9722

SUBJECT: DECOMMISSIONING FINANCIAL ASSURANCE STATEMENT OF INTENT
(REFERENCE: LICENSE NO. 32-00426-02; DOCKET NO. 030-05594)

Dear Dr. Huntsman:

This is in regards to your letter dated September 4, 1998, in response to our letter dated September 3, 1998, to address the correct amount of funds in your financial assurance letter dated April 3, 1993.

Within the scope of our review, no further questions were identified. If any additional information is required, we will contact you. Thank you for your time and assistance with this matter.

Sincerely,

A handwritten signature in cursive script that reads "Wade T. Loo".

Wade T. Loo, License Reviewer
Division of Nuclear Materials Safety

CERTIFICATE OF DISPOSITION OF MATERIALS

Estimated burden per response to comply with this mandatory collection request: 30 minutes. This submittal is used by NRC as part of the basis for its determination that the facility is released for unrestricted use. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0028), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE NAME AND ADDRESS

U.S. Department of Commerce
Center for Coastal Fisheries and Habitat Research (CCFHR)
101 Pivers Island Road

LICENSE NUMBER

32-00426-02

DOCKET NUMBER

03005594

LICENSE EXPIRATION DATE

09/30/2008

A. LICENSE STATUS (Check the appropriate box)

- This license has expired. This license has not yet expired; please terminate it.

B. DISPOSAL OF RADIOACTIVE MATERIAL

(Check the appropriate boxes and complete as necessary. If additional space is needed, provide attachments)

The licensee, or any individual executing this certificate on behalf of the licensee, certifies that:

- 1. No radioactive materials have ever been procured or possessed by the licensee under this license.
- 2. All activities authorized by this license have ceased, and all radioactive materials procured and/or possessed by the licensee under this license number cited above have been disposed of in the following manner:
 - a. Transfer of radioactive materials to the licensee listed below:
 - b. Disposal of radioactive materials:
 - 1. Directly by the licensee:
By use of drains and sea dumping.
 - 2. By licensed disposal site:
 - 3. By waste contractor:
Manifest documents were received from the contractor and the licensed disposal site operator via the contractor.
- c. All radioactive materials have been removed such that any remaining residual radioactivity is within the limits of 10 CFR Part 20, Subpart E, and is ALARA.

C. SURVEYS PERFORMED AND REPORTED

- 1. A radiation survey was conducted by the licensee. The survey confirms:
 - a. the absence of licensed radioactive materials
 - b. that any remaining residual radioactivity is within the limits of 10 CFR 20, Subpart E, and is ALARA.
- 2. A copy of the radiation survey results:
 - a. is attached; or b. is not attached (Provide explanation); or c. was forwarded to NRC on: _____ Date _____
- 3. A radiation survey is not required as only sealed sources were ever possessed under this license, and
 - a. The results of the latest leak test are attached; and/or
 - b. No leaking sources have ever been identified.

The person to be contacted regarding the information provided on this form:

NAME John J. Govoni	TITLE Assistant Center Director	TELEPHONE (Include Area Code) (252) 728-8726	E-MAIL ADDRESS
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Mail all future correspondence regarding this license to:

Center for Coastal Fisheries and Habitat Research, 101 Pivers Island Road, Beaufort, NC 28516

C. CERTIFYING OFFICIAL

I CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND CORRECT

PRINTED NAME AND TITLE

David Johnson, Center Director

SIGNATURE

DATE

5 November 2008
11/19/2008

WARNING: FALSE STATEMENTS IN THIS CERTIFICATE MAY BE SUBJECT TO CIVIL AND/OR CRIMINAL PENALTIES. NRC REGULATIONS REQUIRE THAT SUBMISSIONS TO THE NRC BE COMPLETE AND ACCURATE IN ALL MATERIAL RESPECT. 18 U.S.C. SECTION 1001 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.

Glenn H. Goudy
Health Physics Consultants, LLC
2471 Birkenhead Dr.
Charleston, SC 29414

October 18, 2008

National Oceanographic Atmospheric Association
National Ocean Services
Attention: Jeannette Boyer
101 Pivers Island Road
Beaufort, NC 28516-9722

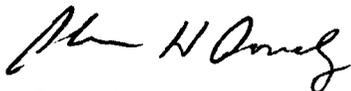
Dear Ms. Boyer,

Please find enclosed the Decommissioning Survey report and surveys that were requested by the NRC in order to close out the license for your facility. The areas were surveyed by taking the existing facility diagram and drawing scale depictions of each laboratory. The current facility is a renovated version of the previous facility and the survey results did not find any residual contamination from previous use of Radioactive Materials at the facility. All wipes were counted on a Wallac Guardian Scintillation Counter, Model 1414-003, SN: 4140472.

Included with this letter are all surveys for all labs that were listed in the decommissioning request and Statement of Work.

If I can provide you with additional information or be of further assistance please feel free to contact me at 843-270-6588.

Sincerely,



Glenn H. Goudy
Health Physics Consultants, LLC

NOAA National Ocean Services
Beaufort Laboratory
101 Pivers Island Road
Beaufort, NC 28516-9722

**INSPECTION AND DECOMMISSIONING
SURVEY**

October 5, 2008

**GLENN H. GOUDY
HEALTH PHYSICS CONSULTANT
SC LICENSE # 527
2471 Birkenhead Dr.
CHARLESTON, SC 29414
(843) 270-6588**

NOAA National Ocean Services
101 Pivers Island Road
Beaufort, NC 28516-9722

INSPECTION AND DECOMMISSIONING
SURVEY
October 5, 2008

An inspection and decommissioning survey was conducted for the purpose of a decommissioning sweep for termination of the NRC License for the NOAA National Ocean Services, Beaufort Facility on October 5, 2008. The survey was conducted for the purpose of confirming that the exit surveys performed by the licensee were true and correct and to provide information for the decommissioning of the facility as required by the Nuclear Regulatory Commission (NRC) and State Bureau of Radiological Health, North Carolina. The inspection and survey were performed to determine if any unusual radiation hazards exist which may endanger personnel or general public prior to release of the facility without restrictions. The facility had been cleaned and all radioactive materials have been removed and properly disposed of per the NRC Regulations. The facility has also been renovated to include painting, replacement of tile floors, acoustic tile ceilings, cabinet counters, sinks and other related items. All walls have been repainted and some laboratory areas have been converted to other uses. The following listed items were checked and found in compliance and free of contamination. Comments and recommendations follow each section with an overall summary following the end of the report.

EQUIPMENT:

All Equipment the was previously used for conducting experiments utilizing radioactive material have been removed, decontaminated, and sent to surplus or sold. No equipment that was remaining was found to be contaminated.

SURVEY INSTRUMENTS

All survey instruments have been sent to surplus or sold to the general public

SEALED SOURCES:

All Sealed sources have been removed or properly disposed of by the facility.

RADIONUCLIDES PREVIOUSLY USED REGULARLY:

Carbon 14

A.	DOCUMENTS ON HAND/ POSTED AND CURRENT	COMPLIANCE
	1. Authorized Radioactive Materials on Hand	Disposed
	2. Radioactive Material License from NRC with amendments	Yes
	3. Inventory on hand	NA
	4. Use and Disposal Records accurate	NA
	5. Posted Signs removed and defaced	All signs removed
C.	POSTING AND LABELING	
	1. Containers and labels all have been removed	Y
	2. All entrances previously labeled have had signage removed	Y
	3. Current Notice to Employees sign removed	Y
D.	RAM WASTE, INCLUDING RETURNED WASTE	
	1. All Radioactive waste removed and areas surveyed for residual contamination	Y
E.	FLOOR PLAN	
	1. Floor plan complies to license decommissioning	Y
F.	HEALTH PHYSICS EVALUATION:	COMMENTS
	1. Refrigerators containing RAM have been adequately decontaminated. No food or drink stored in refrigerators	Y
	2. All Sinks and bench tops have been adequately decontaminated	Y
G.	SURVEYS	
	1. Wipe test smear technique used for surveys and decommissioning	Y
	2. Daily area and wipe test survey performed and results documented. Corrective action taken and follow up survey taken when necessary	Y
	3. Scintillation counter used for counting wipe test.	Y
	4. Background consistency low and LLD sufficient to detect regulatory limits	Y
	5. Neighboring areas monitored if necessary	

H. LEAK TESTS

- | | | |
|----|---|---|
| 1. | All sealed sources with activity levels above exempt quantities were leak tested semi-annually and documented | Y |
| 2. | Sealed source inventory performed quarterly and documented. All sources accounted for | Y |

I. INDEPENDENT SURVEY

COMMENTS

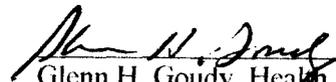
Area Survey; See attached documentation

COMMENTS:

SUMMARY:

The survey performed found no residual contamination. All areas had been previously surveyed and renovated. Some areas were no longer representative of the previous area where radioactive materials had been used.

This facility was in compliance and no contaminated areas were found. The facility is safe for reuse by the National Oceans Services as a general use laboratory or research facility.


Glenn H. Goudy, Health Physicist
SC DHEC LICENSE # 527

**National Marine Fisheries
Beaufort, NC
Decommissioning Survey**

Location: Room 2-107

Date: 10/05/08

Radionuclides:							
Limit:							
		YES	NO	NA	YES	NO	NA
1. Authorized RAM on hand:				x	12. "Hot" Sink for disposal and cleaning		X
2. Quantity on hand within limits:				X	13. Fume Hood for volatile materials		X
3. Inventory on hand current:				X	14. Isotope work area properly covered		X
4. Use & Disposal records Accurate				X	15. Storage facilities adequate		X
5. Radiation Manual available:				X	16. Signs posted:		
6. Training:				X	a. Door		x
a. Familiar with Radiation Safety Manual					b. Refrigerator/freezer		X
b. Aware of Precautions					c. Work Area		X
c. Training certification on file					d. Fume Hood		X
d. Annual Training documented					e. "hot" sink		X
7. Wipe tests performed	x				f. Radionuclide containers		x
8. Protective Clothing used (gloves, lab coats, etc.)				X	g. Storage area		x
9. Survey Meter:				X	h. "Notice to Employees"		X
a. Available					i. Emergency Procedures		X
b. Functioning					j. Precautions		X
c. Calibrated					17. RAM/facility secure		
10. Labels on containers removed/defaced prior to disposal				X	a. Laboratory		x
11. Violations:				X	b. Waste storage**		x
a. Smoking, drinking, eating:					18. Acceptable Radiation Levels		X
b. Food Storage:					19. Presence of Contamination	X	
c. Improper use of precaution sign					a. Removable	x	
					b. Fixed	x	
					c. Decontamination recommended	x	

Comments The room has been renovated. All Radioactive materials were previously removed. The walls have been painted, ceiling tiles replaced, and floor replaced. No residual contamination was found. The facility is being used as a general laboratory.

Signature 

RADIATION SAFETY SURVEY

Laboratory Area

Bldg 2 rm 107

Scintillation Counter: Wallac 1400 DE sn:P14AS033

Survey Meter: Ludlum 14C Sn: 155122 Calibrated:6/25/08

Initial Rdg: 1.0 mR/hr on x1 SCALE

Bkg 0.1

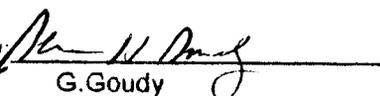
Standard:	CPM	uCi	Bkg(CPM)	Date	
C-14	126500	n/a	2.2	10/05/2008	
Wipe Test Results				Area Survey	Trigger Level
Location#	CPM	uCi	DPM	mR/hr	mR/hr
21. Bench	10	8.78378E-06	19.50	0.1	0.2
22. Bench	1.4	0	0.00	0.1	0.2
23. Bench	0	0	0.00	0.1	0.2
24. Bench	0	0	0.00	0.1	0.2
25. Bench	0	0	0.00	0.1	0.2
26. Bench	0	0	0.00	0.1	0.2
27. Bench	0	0	0.00	0.1	0.2
28. Bench	0	0	0.00	0.1	0.2
29. Bench	0	0	0.00	0.1	0.2
30. Bench	0.7	0	0.00	0.1	0.2
31. Bench	0	0	0.00	0.1	0.2
32. sink	0	0	0.00	0.1	0.2
33. Bench	3.7	1.68919E-06	3.72	0.1	0.2
34. Bench	5.6	3.82883E-06	8.42	0.1	0.2
35. Bench	5.6	3.82883E-06	8.42	0.1	0.2
36. Bench	0	0	0.00	0.1	0.2
37. Bench	0	0	0.00	0.1	0.2
38. Bench	0	0	0.00	0.1	0.2
39. Bench	7.2	5.63063E-06	12.39	0.1	0.2
40. Bench	0	0	0.00	0.1	0.2
41. Floor	0	0	0.00	0.1	0.2
42. Floor	0	0	0.00	0.1	0.2
43. Floor	0	0	0.00	0.1	0.2
44. Floor	0	0	0.00	0.1	0.2
45. Floor	0	0	0.00	0.1	0.2
46. Floor	3.1	1.01351E-06	2.23	0.1	0.2
47. Floor	0	0	0.00	0.1	0.2
48. Floor	8.3	6.86937E-06	15.11	0.1	0.2
49. Floor	2.9	7.88288E-07	1.73	0.1	0.2
50. Floor	0	0	0.00	0.1	0.2
51. Floor	0	0	0.00	0.1	0.2
52. Floor	6	4.27928E-06	9.41	0.1	0.2
53. Floor	0	0	0.00	0.1	0.2
54. Drain	0	0	0.00	0.1	0.2

ACTION LEVELS:

UNRESTRICTED AREAS

200

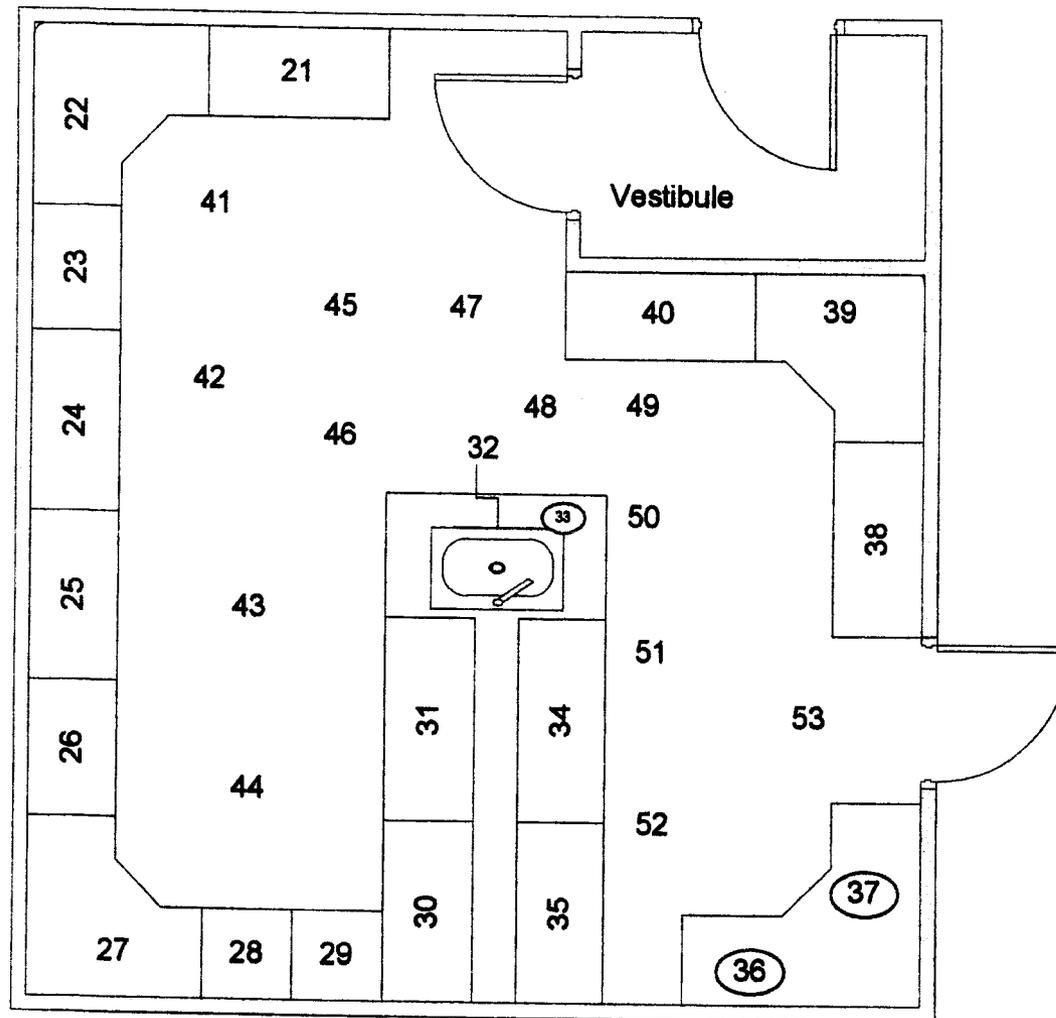
Decontaminate if DPM>200

Survey by: 
G. Goudy

Comments: No residual contamination was detected

National Marine Fisheries
NOAA
101 Rivers Island Drive
Beaufort, NC

Room 2-107



Legend
32-Sink
33-Bench
54-Drain

1/4" = 1 Foot

**National Marine Fisheries
Beaufort, NC
Decommissioning Survey**

Location: Room 2-112

Date: 10/05/08

Radionuclides:							
Limit:							
		YES	NO	NA	YES	NO	NA
1. Authorized RAM on hand:				X	12. "Hot" Sink for disposal and cleaning		X
2. Quantity on hand within limits:				X	13. Fume Hood for volatile materials		X
3. Inventory on hand current:				X	14. Isotope work area properly covered		X
4. Use & Disposal records Accurate				X	15. Storage facilities adequate		X
5. Radiation Manual available:				X	16. Signs posted:		
6. Training:				X	a. Door		X
a. Familiar with Radiation Safety Manual					b. Refrigerator/freezer		X
b. Aware of Precautions					c. Work Area		X
c. Training certification on file					d. Fume Hood		X
d. Annual Training documented					e. "hot" sink		X
7. Wipe tests performed	X				f. Radionuclide containers		X
8. Protective Clothing used (gloves, lab coats, etc.)				X	g. Storage area		X
9. Survey Meter:				X	h. "Notice to Employees"		X
a. Available					i. Emergency Procedures		X
b. Functioning					j. Precautions		X
c. Calibrated					17. RAM/facility secure		X
10. Labels on containers removed/defaced prior to disposal				X	a. Laboratory		X
11. Violations:				X	b. Waste storage**		
a. Smoking, drinking, eating:					18. Acceptable Radiation Levels		X
b. Food Storage:					19. Presence of Contamination		X
c. Improper use of precaution sign					a. Removable		X
					b. Fixed		X
					c. Decontamination recommended		X

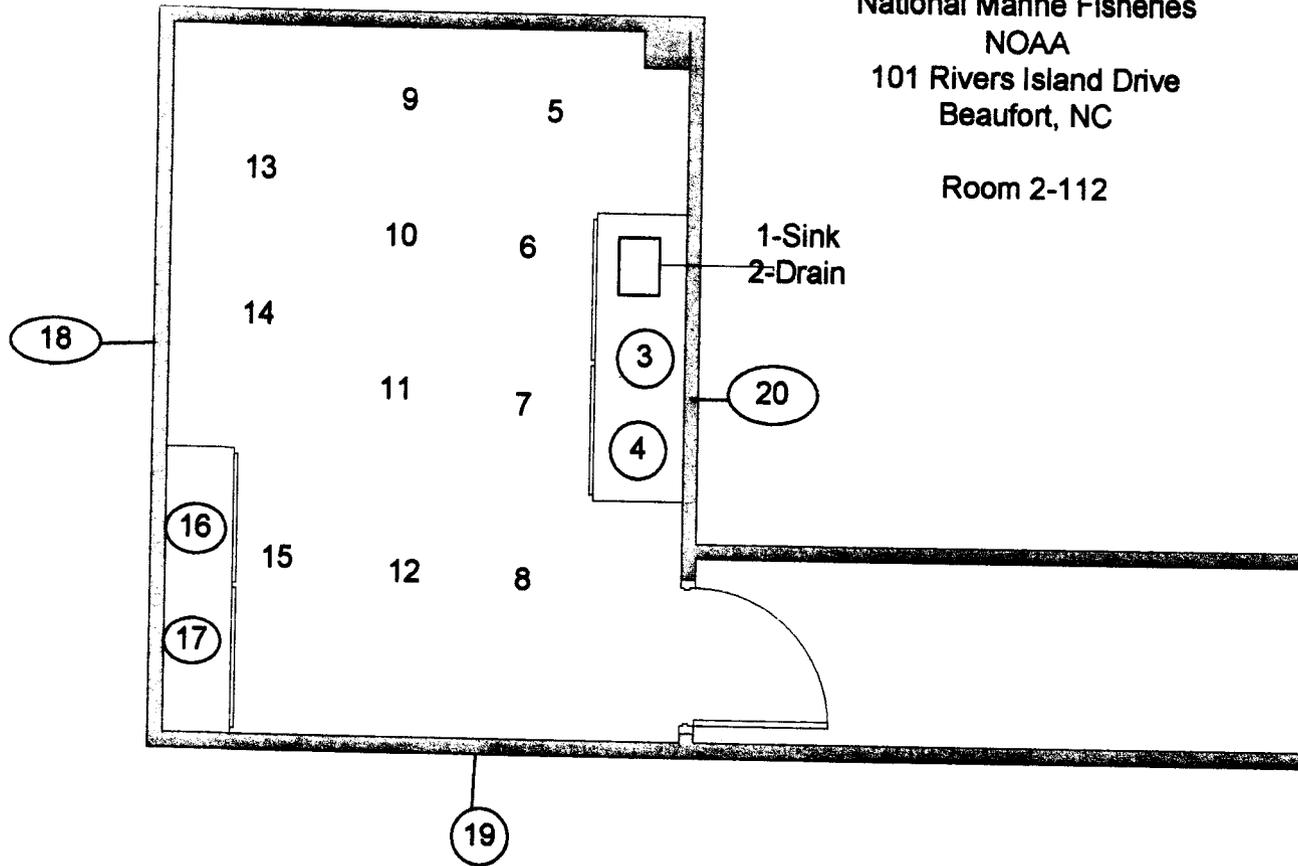
Comments The room has been renovated. All Radioactive materials were previously removed. The walls have been painted, ceiling tiles replaced, and walls have been repainted. No residual contamination was found. The facility is being used as an office.

Signature 

Legend

- 1-Sink
- 2-Drain
- 3-Bench
- 4-Bench
- 16-Bench
- 17-Bench
- 18- Walls
- 19-walls
- 20-walls

¼" = 1 foot



National Marine Fisheries
NOAA
101 Rivers Island Drive
Beaufort, NC
Room 2-112

RADIATION SAFETY SURVEY

Laboratory Area

Bldg 2 rm 112

Scintillation Counter: Wallac 1400 Ds sn:P14AS033

Survey Meter: Ludlum 14C Sn: 155122 Calibrated:6/25/08

Initial Rdg: 1.0 mR/hr on x1 SCALE

Bkg 0.1

Standard:	CPM	uCi	Bkg(CPM)	Date	
C-14	126500	n/a	0	10/05/2008	
Wipe Test Results				Area Survey	Trigger Level
Location#	CPM	uCi	DPM	mR/hr	mR/hr
1. Sink	3.9	4.39189E-06	9.75	0.1	0.2
2. Drain	5.4	6.08108E-06	13.38	0.1	0.2
3. Bench	0.7	7.88288E-07	1.73	0.1	0.2
4. Bench	0	0	0.00	0.1	0.2
5. Floor	15	1.68919E-05	37.16	0.1	0.2
6. Floor	0	0	0.00	0.1	0.2
7. Floor	11.4	1.28378E-05	28.24	0.1	0.2
8. Floor	5	5.63063E-06	12.39	0.1	0.2
9. Floor	3.3	3.71622E-06	8.18	0.1	0.2
10. Floor	4.8	5.40541E-06	11.89	0.1	0.2
12. Floor	15.4	1.73423E-05	38.15	0.1	0.2
13. Floor	12.4	1.3964E-05	30.72	0.1	0.2
14. Floor	31.7	3.56982E-05	78.54	0.1	0.2
15. Floor	0	0	0.00	0.1	0.2
16. Floor	9.3	1.0473E-05	23.04	0.1	0.2
17. Floor	23.6	2.65766E-05	58.47	0.1	0.2
18. Wall	4.8	5.40541E-06	11.89	0.1	0.2
19. Wall	14	1.57658E-05	34.68	0.1	0.2
20. Wall	5.8	6.53153E-06	14.37	0.1	0.2

ACTION

UNRESTRICTED

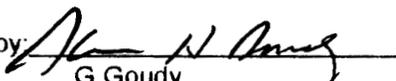
LEVELS:

AREAS

200

Decontaminate if DPM>200

Survey by:


G. Goudy

Comments: No residual contamination was detected

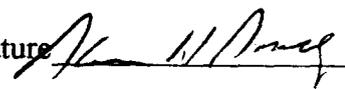
**National Marine Fisheries
Beaufort, NC
Decommissioning Survey**

Location: Room 2-202

Date: 10/05/08

Radionuclides:							
Limit:							
		YES	NO	NA	YES	NO	NA
1. Authorized RAM on hand:				X	12. "Hot" Sink for disposal and cleaning		X
2. Quantity on hand within limits:				X	13. Fume Hood for volatile materials		X
3. Inventory on hand current:				X	14. Isotope work area properly covered		X
4. Use & Disposal records Accurate				X	15. Storage facilities adequate		X
5. Radiation Manual available:				X	16. Signs posted:		
6. Training:				X	a. Door		X
a. Familiar with Radiation Safety Manual					b. Refrigerator/freezer		X
b. Aware of Precautions					c. Work Area		X
c. Training certification on file					d. Fume Hood		X
d. Annual Training documented					e. "hot" sink		X
7. Wipe tests performed	X				f. Radionuclide containers		X
8. Protective Clothing used (gloves, lab coats, etc.)				X	g. Storage area		X
9. Survey Meter:				X	h. "Notice to Employees"		X
a. Available					i. Emergency Procedures		X
b. Functioning					j. Precautions		X
c. Calibrated					17. RAM/facility secure		
10. Labels on containers removed/defaced prior to disposal				X	a. Laboratory		X
11. Violations:				X	b. Waste storage**		X
a. Smoking, drinking, eating:					18. Acceptable Radiation Levels		X
b. Food Storage:					19. Presence of Contamination		X
c. Improper use of precaution sign					a. Removable	X	
					b. Fixed	X	
					c. Decontamination recommended	X	

Comments The room has been renovated. All Radioactive materials were previously removed. The walls have been painted, ceiling tiles replaced, and floor tiles replaced. No residual contamination was found. The facility is being used as a general laboratory.

Signature 

RADIATION SAFETY SURVEY

Laboratory Area

Bldg 2 rm 202

Scintillation Counter: Wallac 1400 DS sn:P14AS033

Survey Meter: Ludlum 14C Sn: 155122 Calibrated:6/25/08

Initial Rdg: 1.0 mR/hr on x1 SCALE

Bkg 0.1

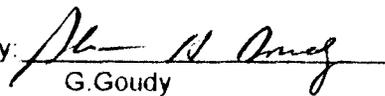
Standard:	CPM	uCi	Bkg(CPM)	Date	
C-14	126500	n/a	3.3	10/05/2008	
Wipe Test Results				Area Survey	Trigger Level
Location#	CPM	uCi	DPM	mR/hr	mR/hr
55. Bench	4.8	1.68919E-06	3.75	0.1	0.2
56. Bench	0	0	0.00	0.1	0.2
57. Bench	24.1	2.34234E-05	51.53	0.1	0.2
58. Bench	0	0	0.00	0.1	0.2
59. Bench	2.2	0	0.00	0.1	0.2
60. Bench	2.1	0	0.00	0.1	0.2
61. Bench	0	0	0.00	0.1	0.2
62. Bench	12.9	1.08108E-05	23.78	0.1	0.2
63. Bench	0	0	0.00	0.1	0.2
64. Bench	5.8	2.81532E-06	6.19	0.1	0.2
65. Bench	3.4	1.12613E-07	0.25	0.1	0.2
66. Bench	0	0	0.00	0.1	0.2
67. Bench	3.1	0	0.00	0.1	0.2
68. Bench	0	0	0.00	0.1	0.2
69. Bench	0	0	0.00	0.1	0.2
70. Bench	0	0	0.00	0.1	0.2
71. Floor	0	0	0.00	0.1	0.2
72. Floor	0	0	0.00	0.1	0.2
73. Floor	0.1	0	0.00	0.1	0.2
74. Floor	0	0	0.00	0.1	0.2
75. Floor	0	0	0.00	0.1	0.2
76. Floor	1.1	0	0.00	0.1	0.2
77. Floor	0	0	0.00	0.1	0.2
78. Sink	5.7	2.7027E-06	5.95	0.1	0.2
79. Drain	0	0	0.00	0.1	0.2

**ACTION
LEVELS:**

**UNRESTRICTED
AREAS**

200

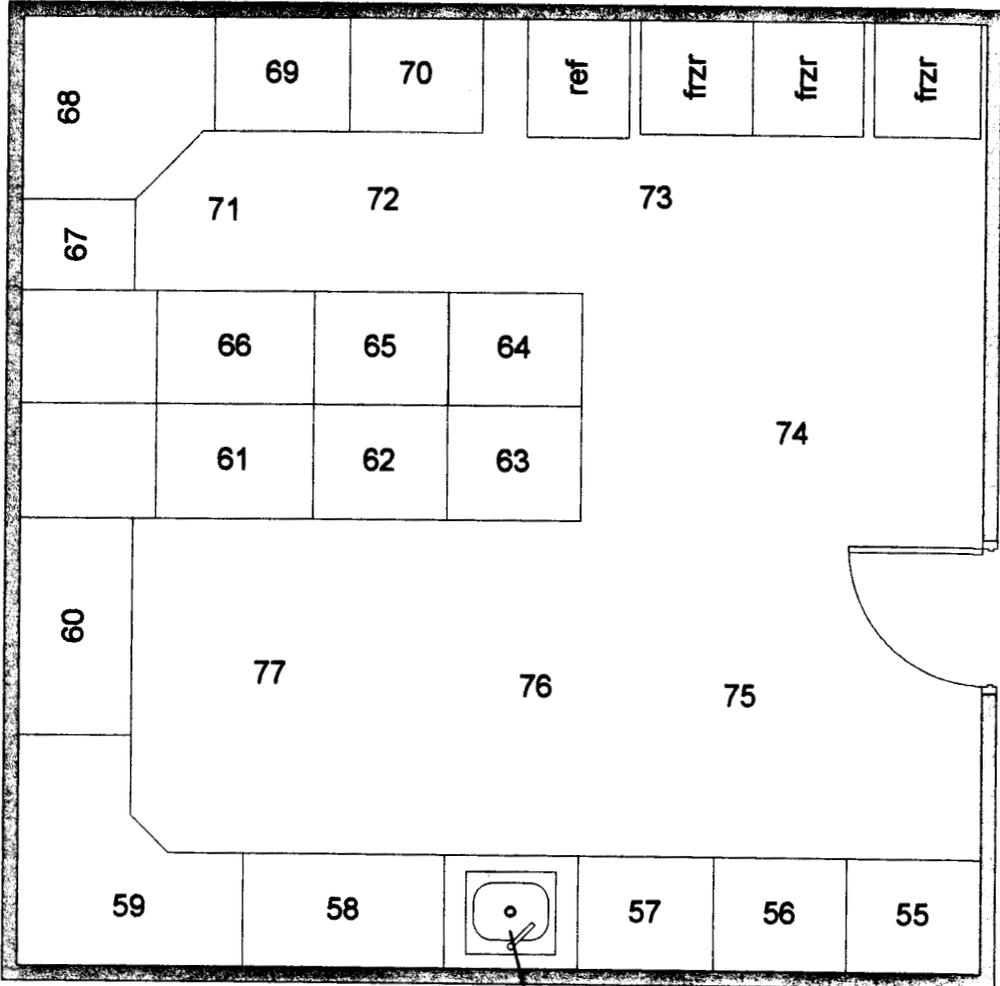
Decontaminate if DPM>200

Survey by: 
G. Goudy

Comments: No residual contamination was detected

National Marine Fisheries
NOAA
101 Rivers Island Rd.
Beaufort, NC

Room 2-202



1/4" = 1 foot

78-Sink
79-Drain

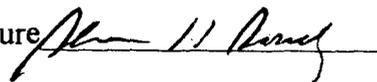
**National Marine Fisheries
Beaufort, NC
Decommissioning Survey**

Location: Room 2-204

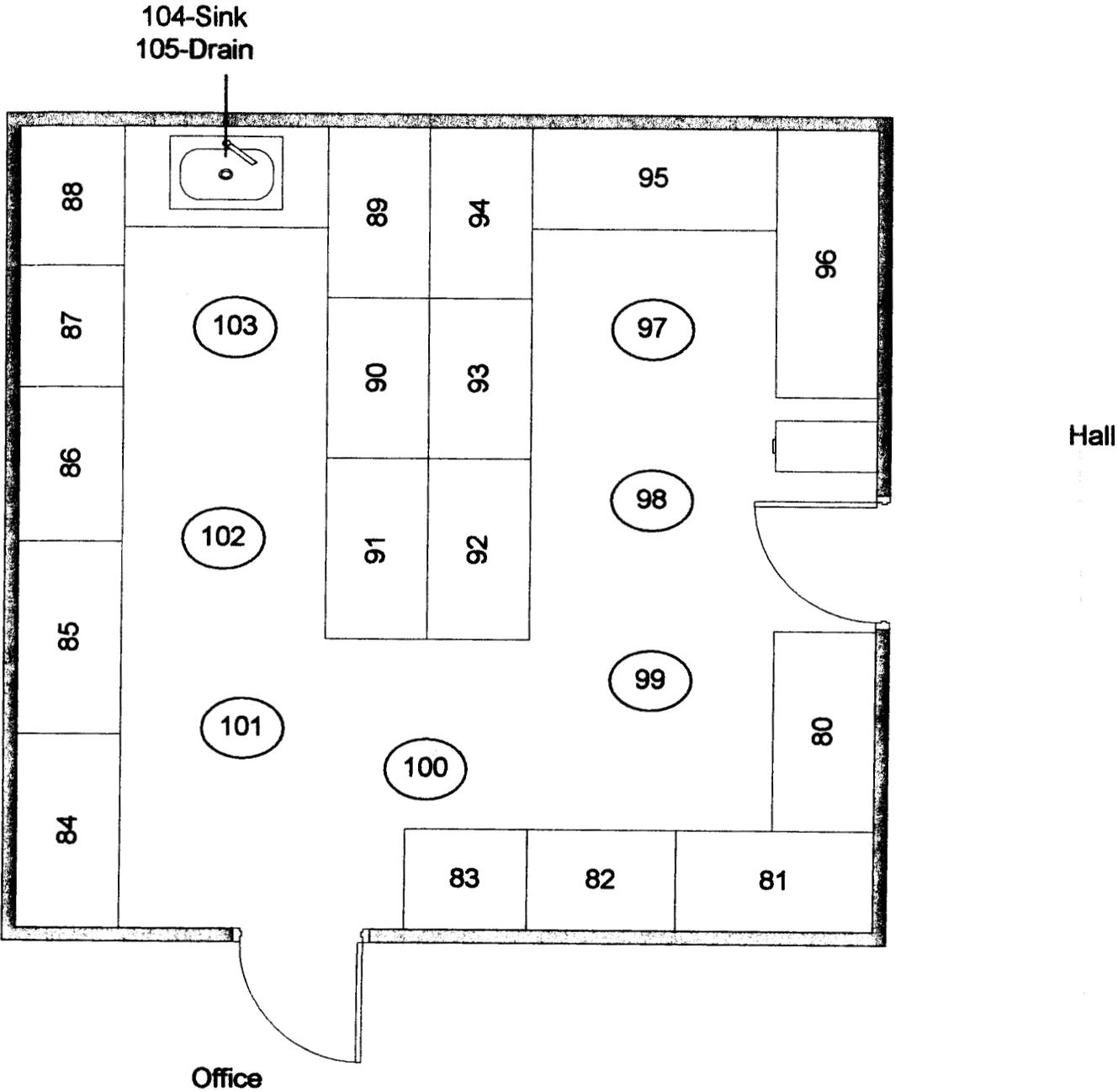
Date: 10/05/08

Radionuclides:									
Limit:									
		YES	NO	NA			YES	NO	NA
1. Authorized RAM on hand:				x	12. "Hot" Sink for disposal and cleaning				X
2. Quantity on hand within limits:				X	13. Fume Hood for volatile materials				X
3. Inventory on hand current:				X	14. Isotope work area properly covered				X
4. Use & Disposal records Accurate				X	15. Storage facilities adequate				X
5. Radiation Manual available:				X	16. Signs posted:				
6. Training:				X	a. Door				x
a. Familiar with Radiation Safety Manual					b. Refrigerator/freezer				X
b. Aware of Precautions					c. Work Area				X
c. Training certification on file					d. Fume Hood				X
d. Annual Training documented					e. "hot" sink				X
7. Wipe tests performed		x			f. Radionuclide containers				x
8. Protective Clothing used (gloves, lab coats, etc.)				X	g. Storage area				x
9. Survey Meter:				X	h. "Notice to Employees"				X
a. Available					i. Emergency Procedures				X
b. Functioning					j. Precautions				X
c. Calibrated					17. RAM/facility secure				
10. Labels on containers removed/defaced prior to disposal				X	a. Laboratory				x
11. Violations:				X	b. Waste storage**				x
a. Smoking, drinking, eating:					18. Acceptable Radiation Levels				X
b. Food Storage:					19. Presence of Contamination			X	
c. Improper use of precaution sign					a. Removable			x	
					b. Fixed			x	
					c. Decontamination recommended			x	

Comments The room has been renovated. All Radioactive materials were previously removed. The walls have been painted, ceiling tiles replaced, and floor tiles replaced. No residual contamination was found. The facility is being used as a general laboratory.

Signature 

National Marine Fisheries
NOAA Facility
101 Rivers Island Rd
Beaufort, NC
Room 2-204



Scale
1/2" = 1 Foot

RADIATION SAFETY SURVEY

Laboratory Area

Bldg 2 rm 204

Scintillation Counter: Wallac 1400 DS Sn: P14AS033

Survey Meter: Ludlum 14C Sn: 155122 Calibrated: 6/25/08

Initial Rdg: 1.0 mR/hr on x1 SCALE

Bkg 0.1

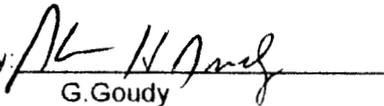
Standard:	CPM	uCi	Bkg(CPM)	Date	
C-14	126500	n/a	3.3	10/05/2008	
Wipe Test Results				Area Survey	Trigger Level
Location#	CPM	uCi	DPM	mR/hr	mR/hr
80. Bench	8.4	5.74324E-06	12.75	0.1	0.2
81. Bench	0	0	0.00	0.1	0.2
82. Bench	0.1	0	0.00	0.1	0.2
83. Bench	0	0	0.00	0.1	0.2
84. Bench	4.7	1.57658E-06	3.47	0.1	0.2
85. Bench	7.3	4.5045E-06	9.91	0.1	0.2
86. Bench	0	0	0.00	0.1	0.2
87. Bench	2	0	0.00	0.1	0.2
88. Bench	4.7	1.57658E-06	3.47	0.1	0.2
89. Bench	0	0	0.00	0.1	0.2
90. Bench	0.8	0	0.00	0.1	0.2
91. Bench	0	0	0.00	0.1	0.2
92. Bench	0	0	0.00	0.1	0.2
93. Bench	31	3.11937E-05	68.63	0.1	0.2
94. Bench	0.9	0	0.00	0.1	0.2
95. Bench	0.4	0	0.00	0.1	0.2
96. Bench	19	1.76802E-05	38.90	0.1	0.2
97. Floor	8.1	5.40541E-06	11.89	0.1	0.2
98. Floor	8	5.29279E-06	11.64	0.1	0.2
99. Floor	0	0	0.00	0.1	0.2
100. Floor	18.4	1.70045E-05	37.41	0.1	0.2
101. Floor	24.4	2.37613E-05	52.27	0.1	0.2
102. Floor	0	0	0.00	0.1	0.2
103. Floor	0	0	0.00	0.1	0.2
104. Sink	0	0	0.00	0.1	0.2
105. Drain	0	0	0.00	0.1	0.2

**ACTION
LEVELS:**

**UNRESTRICTED
AREAS**

200

Decontaminate if DPM > 200

Survey by: 
G. Goudy

Comments: No residual contamination was detected

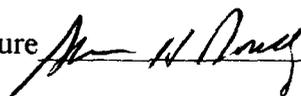
**National Marine Fisheries
Beaufort, NC
Decommissioning Survey**

Location: **Room 2-205**

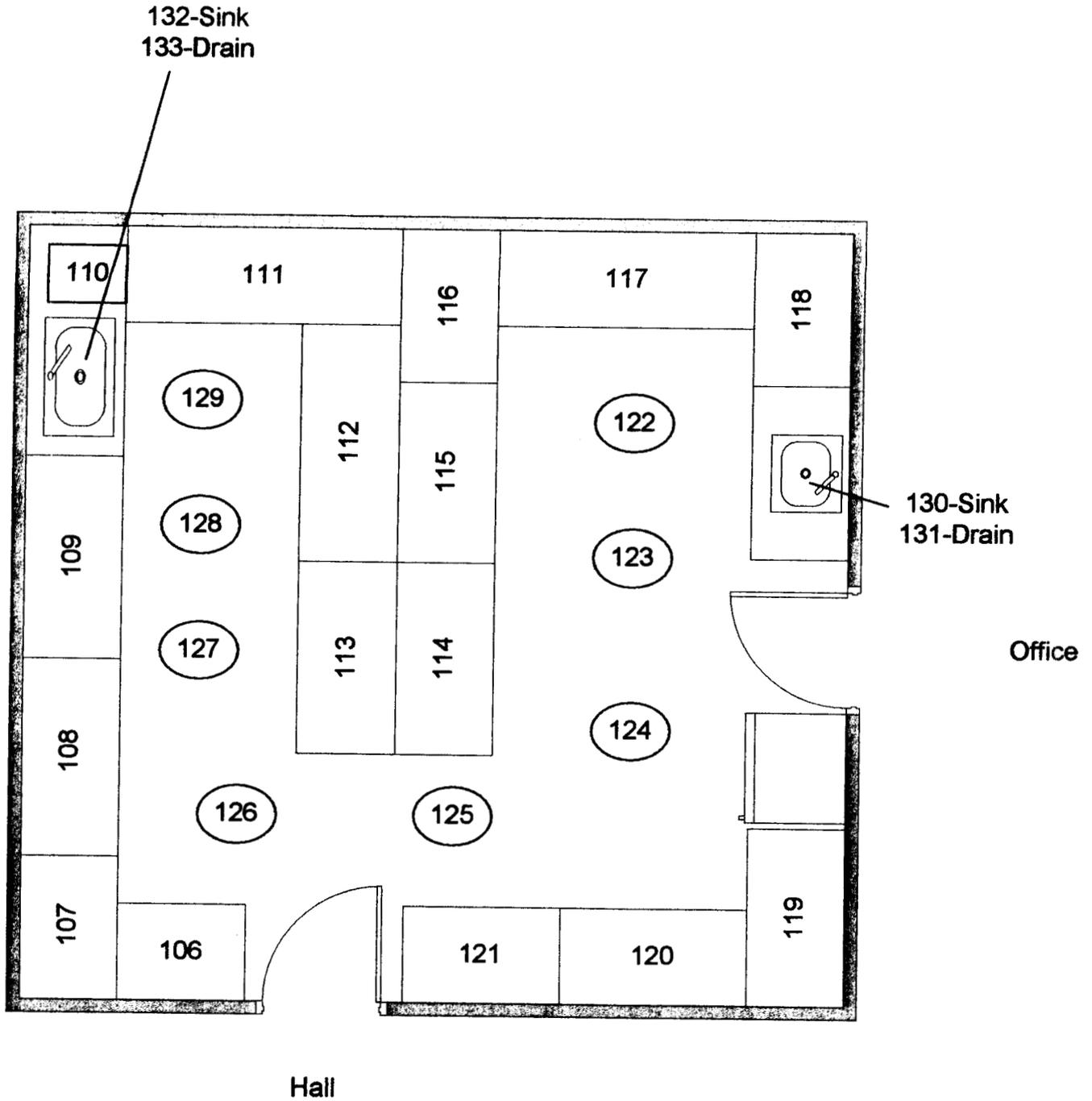
Date: **10/05/08**

Radionuclides:									
Limit:									
		YES	NO	NA			YES	NO	NA
1. Authorized RAM on hand:				x	12. "Hot" Sink for disposal and cleaning				X
2. Quantity on hand within limits:				X	13. Fume Hood for volatile materials				X
3. Inventory on hand current:				X	14. Isotope work area properly covered				X
4. Use & Disposal records Accurate				X	15. Storage facilities adequate				X
5. Radiation Manual available:				X	16. Signs posted:				
6. Training:				X	a. Door				x
a. Familiar with Radiation Safety Manual					b. Refrigerator/freezer				X
b. Aware of Precautions					c. Work Area				X
c. Training certification on file					d. Fume Hood				X
d. Annual Training documented					e. "hot" sink				X
7. Wipe tests performed		x			f. Radionuclide containers				x
8. Protective Clothing used (gloves, lab coats, etc.)				X	g. Storage area				x
9. Survey Meter:				X	h. "Notice to Employees"				X
a. Available					i. Emergency Procedures				X
b. Functioning					j. Precautions				X
c. Calibrated					17. RAM/facility secure				
10. Labels on containers removed/defaced prior to disposal				X	a. Laboratory				x
11. Violations:				X	b. Waste storage**				
a. Smoking, drinking, eating:					18. Acceptable Radiation Levels				X
b. Food Storage:					19. Presence of Contamination			X	
c. Improper use of precaution sign					a. Removable			x	
					b. Fixed			x	
					c. Decontamination recommended			x	

Comments The room has been renovated. All Radioactive materials were previously removed. The walls have been painted, ceiling tiles replaced, and floor tiles replaced. No residual contamination was found. The facility is being used as a general laboratory.

Signature 

National Marine Fisheries
NOAA Facility
101 Rivers Island Rd
Beaufort, NC
Room 2-205



RADIATION SAFETY SURVEY

Laboratory Area

Bldg 2 rm 205

Scintillation Counter: Wallac 1400 DE sn:P14AS033

Survey Meter: Ludlum 14C Sn: 155122 Calibrated:6/25/08

Initial Rdg: 1.0 mR/hr on x1 SCALE

Bkg 0.1

Standard:	CPM	uCi	Bkg(CPM)	Date	
C-14	126500	n/a	8	10/05/2008	
Wipe Test Results				Area Survey	Trigger Level
Location#	CPM	uCi	DPM	mR/hr	mR/hr
106. Bench	0	0	0.00	0.1	0.2
107. Bench	8.8	9.00901E-07	1.98	0.1	0.2
108. Bench	7.4	0	0.00	0.1	0.2
109. Bench	14.4	7.20721E-06	15.86	0.1	0.2
110. Bench	7.9	0	0.00	0.1	0.2
111. Bench	3.5	0	0.00	0.1	0.2
112. Bench	5.4	0	0.00	0.1	0.2
113. Bench	3.1	0	0.00	0.1	0.2
114. Bench	5	0	0.00	0.1	0.2
115. Bench	2.2	0	0.00	0.1	0.2
116. Bench	2.8	0	0.00	0.1	0.2
117. Bench	0	0	0.00	0.1	0.2
118. Bench	3	0	0.00	0.1	0.2
119. Bench	27.6	2.20721E-05	48.56	0.1	0.2
120. Bench	18.5	1.18243E-05	26.01	0.1	0.2
121. Bench	10.7	3.04054E-06	6.69	0.1	0.2
122. Bench	14	6.75676E-06	14.86	0.1	0.2
123. Floor	3.7	0	0.00	0.1	0.2
124. Floor	0.6	0	0.00	0.1	0.2
125. Floor	6.5	0	0.00	0.1	0.2
126. Floor	5.9	0	0.00	0.1	0.2
127. Floor	19.2	1.26126E-05	27.75	0.1	0.2
128. Floor	5.6	0	0.00	0.1	0.2
129. Floor	0	0	0.00	0.1	0.2
130. Sink	0	0	0.00	0.1	0.2
131. Drain	0	0	0.00	0.1	0.2
132. Sink	0	0	0.00	0.1	0.2
133. Drain	0	0	0.00	0.1	0.2

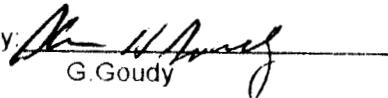
ACTION

LEVELS: UNRESTRICTED AREAS

200

Decontaminate if DPM>200

Survey by:


G. Goudy

Comments: No residual contamination was detected

**National Marine Fisheries
Beaufort, NC
Decommissioning Survey**

Location: Room 2-208

Date: 10/05/08

Radionuclides:				Limit:					
YES			NO	NA	YES			NO	NA
1. Authorized RAM on hand:				X	12. "Hot" Sink for disposal and cleaning				X
2. Quantity on hand within limits:				X	13. Fume Hood for volatile materials				X
3. Inventory on hand current:				X	14. Isotope work area properly covered				X
4. Use & Disposal records Accurate				X	15. Storage facilities adequate				X
5. Radiation Manual available:				X	16. Signs posted:				
6. Training:				X	a. Door				X
a. Familiar with Radiation Safety Manual					b. Refrigerator/freezer				X
b. Aware of Precautions					c. Work Area				X
c. Training certification on file					d. Fume Hood				X
d. Annual Training documented					e. "hot" sink				X
7. Wipe tests performed			X		f. Radionuclide containers				X
8. Protective Clothing used (gloves, lab coats, etc.)				X	g. Storage area				X
9. Survey Meter:				X	h. "Notice to Employees"				X
a. Available					i. Emergency Procedures				X
b. Functioning					j. Precautions				X
c. Calibrated					17. RAM/facility secure				
10. Labels on containers removed/defaced prior to disposal				X	a. Laboratory				X
11. Violations:				X	b. Waste storage**				X
a. Smoking, drinking, eating:					18. Acceptable Radiation Levels				X
b. Food Storage:					19. Presence of Contamination				X
c. Improper use of precaution sign					a. Removable				X
					b. Fixed				X
					c. Decontamination recommended				X

Comments The room has been renovated. All Radioactive materials were previously removed. The walls have been painted, ceiling tiles replaced, and floor tiles replaced. No residual contamination was found. The facility is being used as a general laboratory.

Signature 

RADIATION SAFETY SURVEY

Laboratory Area

Bldg 2 rm 208

Scintillation Counter: Wallac 1400 DS Sn: P14AS033

Survey Meter: Ludlum 14C Sn: 155122 Calibrated: 6/25/08

Initial Rdg: 1.0 mR/hr on x1 SCALE

Bkg 0.1

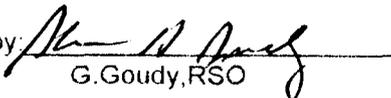
Standard:	CPM	uCi	Bkg(CPM)	Date	
C-14	126500	n/a	9	10/05/2008	
Wipe Test Results				Area Survey	Trigger Level
Location#	CPM	uCi	DPM	mR/hr	mR/hr
134. Bench	0	0	0.00	0.1	0.2
135. Bench	4	0	0.00	0.1	0.2
136. Bench	3.5	0	0.00	0.1	0.2
137. Bench	8.4	0	0.00	0.1	0.2
138. Bench	1.6	0	0.00	0.1	0.2
139. Bench	6.7	0	0.00	0.1	0.2
140. Bench	0	0	0.00	0.1	0.2
141. Bench	2.4	0	0.00	0.1	0.2
142. Bench	2	0	0.00	0.1	0.2
143. Bench	8.1	0	0.00	0.1	0.2
144. Bench	0	0	0.00	0.1	0.2
145. Bench	0.8	0	0.00	0.1	0.2
146. Bench	0	0	0.00	0.1	0.2
147. Bench	0	0	0.00	0.1	0.2
148. Bench	23.1	1.58784E-05	34.93	0.1	0.2
149. Floor	0	0	0.00	0.1	0.2
150. Floor	9.6	6.75676E-07	1.49	0.1	0.2
151. Floor	19.3	1.15991E-05	25.52	0.1	0.2
152. Floor	14.3	5.96847E-06	13.13	0.1	0.2
153. Floor	13.3	4.84234E-06	10.65	0.1	0.2
154. Floor	6.6	0	0.00	0.1	0.2
155. Sink	11.5	2.81532E-06	6.19	0.1	0.2
156. Drain	14.5	6.19369E-06	13.63	0.1	0.2
157. Sink	4.5	0	0.00	0.1	0.2
158. Drain	0	0	0.00	0.1	0.2

ACTION

LEVELS: UNRESTRICTED AREAS

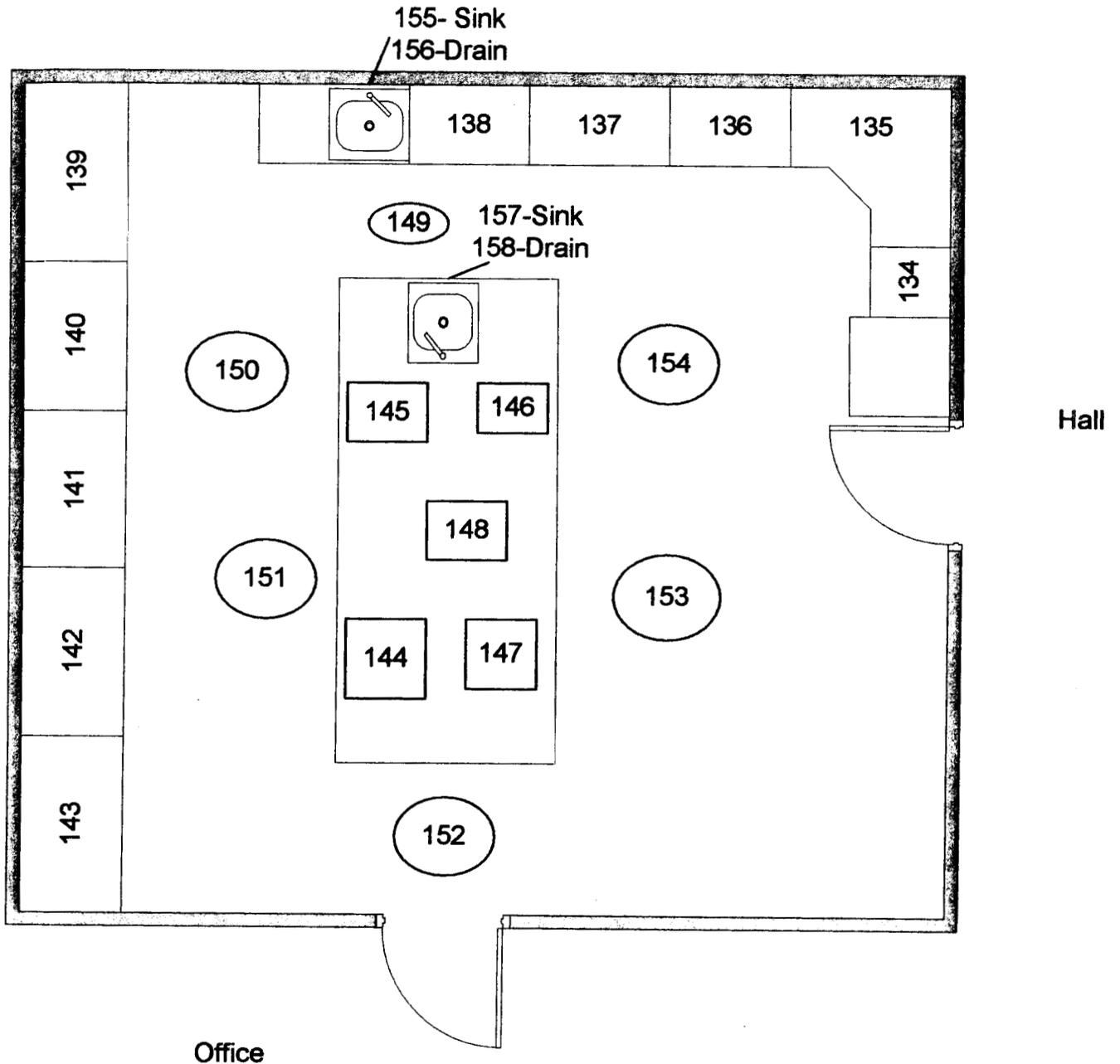
200

Decontaminate if DPM>200

Survey by: 
G. Goudy, RSO

Comments: No residual contamination was detected

National Marine Fisheries
NOAA Facility
101 Rivers Island Rd
Beaufort, NC
Room 2-208



Scale
1/4" = 1 Foot

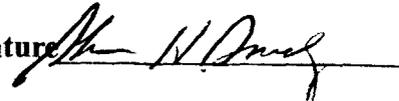
**National Marine Fisheries
Exit Survey**

Location: Waste storage area RM 9-902

Date: 10/05/08

Radionuclides:									
Limit:									
		YES	NO	NA			YES	NO	NA
1. Authorized RAM on hand:				x	12. "Hot" Sink for disposal and cleaning				X
2. Quantity on hand within limits:				X	13. Fume Hood for volatile materials				X
3. Inventory on hand current:				X	14. Isotope work area properly covered				X
4. Use & Disposal records Accurate				X	15. Storage facilities adequate				X
5. Radiation Manual available:				X	16. Signs posted:				
6. Training:				X	a. Door				
a. Familiar with Radiation Safety Manual					b. Refrigerator/freezer				X
b. Aware of Precautions					c. Work Area				X
c. Training certification on file					d. Fume Hood				X
d. Annual Training documented					e. "hot" sink				X
7. Wipe tests performed	x				f. Radionuclide containers				
8. Protective Clothing used (gloves, lab coats, etc.)				X	g. Storage area				
9. Survey Meter:				X	h. "Notice to Employees"				X
a. Available					i. Emergency Procedures				X
b. Functioning					j. Precautions				X
c. Calibrated					17. RAM/facility secure				
10. Labels on containers removed/defaced prior to disposal				X	a. Laboratory				
11. Violations:				X	b. Waste storage**				
a. Smoking, drinking, eating:					18. Acceptable Radiation Levels				X
b. Food Storage:					19. Presence of Contamination			X	
c. Improper use of precaution sign					a. Removable			x	
					b. Fixed			x	
					c. Decontamination recommended			x	

Comments Waste Storage area has been emptied and all wastes shipped by vendor for disposal. A wipe test and survey were performed to check for residual contamination. No residual contamination was found. The facility is being used as a general storage facility.

Signature 

RADIATION SAFETY SURVEY

Laboratory Area

Bldg 9 rm 902

Scintillation Counter: Wallac 1400 DS Sn:P14AS033

Survey Meter: Ludlum 14C Sn: 155122 Calibrated:6/25/08

Initial Rdg: 1.0 mR/hr on x1 SCALE Bkg 0.1

Standard:	CPM	uCi	Bkg(CPM)	Date	
C-14	126500	n/a	2.3	10/05/2008	
Wipe Test Results				Area Survey	Trigger Level
Location#	CPM	uCi	DPM	mR/hr	mR/hr
1. Wall	0	0	0.00	0.1	0.2
2. Wall	0	0	0.00	0.1	0.2
3. Wall	0	0	0.00	0.1	0.2
4. Floor	11.3	1.01351E-05	22.30	0.1	0.2
5. Wall	0	0	0.00	0.1	0.2
6. Wall	10.4	9.12162E-06	20.07	0.1	0.2
7. Wall	0.1	0	0.00	0.1	0.2
8. Wall	5.8	3.94144E-06	8.67	0.1	0.2

ACTION

LEVELS:

UNRESTRICTED

AREAS 200

Decontaminate if DPM>200

RESTRICTED

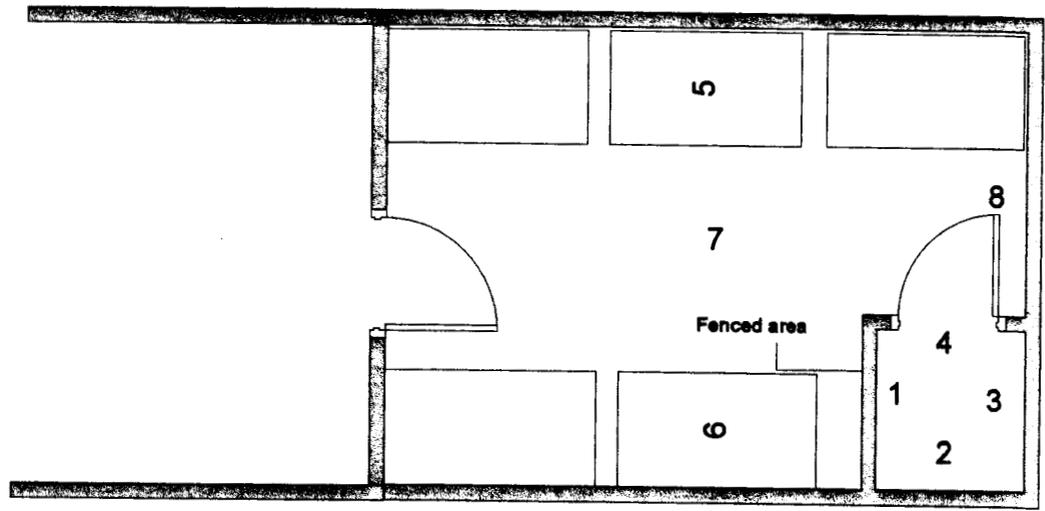
AREAS 2,000

Decontaminate if DPM>2,000

Survey by: 
G. Goudy, RSO

Comments: No residual contamination was detected

Room 9-902
Waste Storage Area
(Fenced Area only)



1/4" = 1 foot

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.

<p style="text-align: center;">Licensee</p> <p>1. U. S. Department of Commerce National Oceanic and Atmospheric Administration National Ocean Service Center for Coastal Fisheries and Habitat Research</p> <p>2. 101 Pivers Island Road Beaufort, North Carolina 28516</p>	<p>In accordance with the letter dated June 18, 2008,</p> <p>3. License number 32-00426-02 is amended in its entirety to read as follows:</p> <hr/> <p>4. Expiration date October 31, 2014</p> <hr/> <p>5. Docket No. 030-05594 Reference No.</p>
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<p>6. Byproduct, source, and/or special nuclear material</p> <p>.. Hydrogen 3</p> <p>B. Carbon 14</p> <p>C. Sulfur 35</p> <p>D. Iron 59</p> <p>E. Zinc 65</p> <p>F. Iodine 129</p> <p>G. Cesium 137</p>	<p>7. Chemical and/or physical form</p> <p>A. Any</p> <p>B. Any</p> <p>C. Any</p> <p>D. Non-volatile Compounds</p> <p>E. Non-volatile Compounds</p> <p>F. Any</p> <p>G. Sealed Source (Beckman Model Nos. 16770, 585255, 598860 and 501095)</p> <p>H. Any (C-14-DDT and C-14-hexadecane)</p> <p>I. Non-volatile Compounds</p> <p>J. Non-volatile Compounds</p>	<p>8. Maximum amount that licensee may possess at any one time under this license</p> <p>A. 3 millicuries</p> <p>B. 12 millicuries</p> <p>C. 4 millicuries</p> <p>D. 4 millicuries</p> <p>E. 4 millicuries</p> <p>F. 30 nanocuries</p> <p>G. 40 microcuries</p> <p>H. 1 millicurie</p> <p>I. 26 grams</p> <p>J. 26 grams</p>
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9. Authorized use:

A. through G. Research and development as defined in 10 CFR 30.4; animal studies; teaching and training of students; and calibration and checking of the licensee's instruments.

H. through J. Possession and storage only, incident to disposal.

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**License Number
32-00426-02Docket or Reference Number
030-05594

Amendment No. 50

CONDITIONS

10. Licensed material may be used or stored only at the licensee's facilities located at the NOAA Center for Coastal Fisheries and Habitat Research, 101 Pivers Island Road, Beaufort, North Carolina.
11. The Radiation Safety Officer for this license is Rance Hardison.
12. Licensed material shall be used by, or under the supervision of, Carolyn Currin, Ph. D., William Sunda, Ph. D., Pat Tester, Ph. D., and Rance Hardison.
13. The licensee shall not use licensed material in or on human beings.
14. The licensee shall not use licensed material in field applications where it is released except as provided otherwise by specific condition of this license.
15. Experimental animals, or the products from experimental animals, that have been administered licensed materials shall not be used for human consumption.
16.
 - A. Sealed sources shall be tested for leakage and/or contamination at intervals not to exceed six months or at the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or under equivalent regulations of an Agreement State.
 - B. Notwithstanding Paragraph A of this Condition, sealed sources designed to primarily emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed 3 months.
 - C. In the absence of a certificate from a transferor indicating that a leak test has been made within the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or under equivalent regulations of an Agreement State, prior to the transfer, a sealed source received from another person shall not be put into use until tested and the test results received.
 - D. Sealed sources need not be tested if they contain only hydrogen-3; or they contain only a radioactive gas; or the half-life of the isotope is 30 days or less; or they contain not more than 100 microcuries of beta- and/or gamma-emitting material or not more than 10 microcuries of alpha-emitting material.
 - E. Sealed sources need not be tested if they are in storage and are not being used; however, when they are removed from storage for use or transferred to another person and have not been tested within the required leak test interval, they shall be tested before use or transfer. No sealed source shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**License Number
32-00426-02Docket or Reference Number
030-05594

Amendment No. 50

- F. The leak test shall be capable of detecting the presence of 0.005 microcurie (185 becquerels) of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie (185 becquerels) or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 30.50(c)(2), and the source shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations.
- G. Tests for leakage and/or contamination, limited to leak test sample collection, shall be performed by the licensee or by other persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services. The licensee is not authorized to perform the analysis; analysis of leak test samples must be performed by persons specifically licensed by U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.
- H. Records of leak test results shall be kept in units of microcuries and shall be maintained for 5 years.
7. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.
18. The licensee shall conduct a physical inventory every six months, or at other intervals approved by the U.S. Nuclear Regulatory Commission, to account for all sources and/or devices received and possessed under the license. Records of inventories shall be maintained for 5 years from the date of each inventory and shall include the radionuclides, quantities, manufacturer's name and model numbers, and the date of the inventory.
19. The licensee is authorized to hold byproduct material with a physical half-life of less than or equal to 120 days for decay-in-storage before disposal without regard to its radioactivity if the licensee:
- A. Monitors byproduct material at the surface before disposal and determines that its radioactivity cannot be distinguished from the background radiation level with an appropriate radiation detection survey meter set on its most sensitive scale and with no interposed shielding; and
 - B. Removes or obliterates all radiation labels, except for radiation labels on materials that are within containers and that will be managed as biomedical waste after they have been released from the licensee; and
 - C. Maintains records of the disposal of licensed materials for 3 years. The record must include the date of disposal, the survey instrument used, the background radiation level, the radiation level measured at the surface of each waste container, and the name of the individual who performed the disposal.

The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**License Number
32-00426-02Docket or Reference Number
030-05594

Amendment No. 50

21. 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 U.S. 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 May 17, 2004 [ML041560224]
 - B. Letter dated June 18, 2007 [ML071770550]
 - C. Facsimile dated July 12, 2007 [ML071940327]

For the U.S. Nuclear Regulatory Commission

Date July 30, 2008

By

Original signed by Elizabeth UllrichElizabeth Ullrich
Commercial and R&D Branch
Division of Nuclear Materials Safety
Region I
King of Prussia, Pennsylvania 19406

Wednesday, July 30, 2008 08:09:06

Date 5/11/94
Tape Col 109
radiation unit 1,000 mCi
Rn

Radiation field unshielded \rightarrow 150 mR/hr

No seals broken but glass vial top was on loosely. The label on the glass vial was slightly stained don't know if it's from leakage or something else.

Wipe test

Counts on
CPM

Outer box

2

Inner packing

5

Can

6

Can packing

5

Lead shield

3

Glass vial

8

Rn

h
h
1

8
3

5/25/94 Counted 13 bottles
I did not have any counts
above Bkg. after work.
- Lisa Young

5/26/94 Counted 10 bottles
I did not have any radioactivity
above Bkg. & neither did She.
- Lisa Young

5/27/94 Counted 14 bottles
I did not have any radioactivity
above Bkg.
Lisa Young

5/31/94 Counted 13 Bottles
No counts above Bkg. on my
person, coat, shoes, gloves.

Lisa Young

6/2/94 Counted 13 Bottles
Bkg. 0.03-0.04. Counts for both
my person and the deer stored
in room 202 were within 5x bkg.
I had no counts above bkg. on my
person or clothes.

D. K. K. K. K.

5/14/94 Counted 14 bottles
that used radioactive isotopes
as tracers. Both the room
& I were cold (Background
0.003-0.004); Background lower
after the counting.
- Lisa Lowrey

5/25

abs

5/26,
d
above

5/19/94 Counted 14 bottles
using radioactive isotopes.
Both room & I had background
or lower after counting.
- Lisa Lowrey

5/27,
d
above

5/21/94 Counted 14 bottles
Room & d Bkg or lower after
counting.
- Lisa Lowrey

5/31/9
A
persor

5/23/94 Counted 14 bottles
Room & d Bkg after counting.
- Lisa Lowrey

6/2/9
Bk.
my pe
in R
I ha
perro

5/21/94 counted 9 bottles
I was cold after counting, wiped
down clean hood and counter
counter with radio-wiper
- Lisa Lowrey



Date 6/23/94
 Tso tope
 Fe 59
 Radiation Units
 1 m C
 Specific Act 36.19 mC/mg
 Activity 0.4107 C/Bq

Radiation field unshielded \rightarrow 190 mR/hr

The sample appears to be in good condition none of the seals were broken. The vial had a special snap cap that seems more effective than the break cap.

Wipe Test

Counts on 8 counter

Outer Box

Inner Packing

Ledd Can

Inner Packing Ledd Can

Class Vial

8/23/94
 Bkg 0.02-0.03. Counts on both my person and the area in which the radiation was used were very close to background. Nothing was above 0.05 counts.
 Lisa Young

8/24/94
 Bkg 0.02-0.03. Counts on me, my clothing and the area used (exposed to radiation) did not exceed 5X background most were near background.
 Lisa Young

8/25/94
 m/hr
 Bkg 0.02-0.03^v. Counts on me, my clothing and floor did not exceed 0.04. Counts in the hood were 0.15 and background was used to bring the count down to 0.05. Counts on counter were also higher than 5X background. The sample stand, external electrodes and the little plastic tube were brought down to 0.05 counts though working with 0.15 m/hr. The internal electrodes

extensive work with
RadiaWash. All main labile
were placed on the counter
counter warning that it was
radioactive.

Lisa Young

5/26/94

Background 0.02-0.03 mcp/hr. I had
no counts on my person or clothing
above background. Susan Hunter
had no counts above background on
her person either. All areas were
cleaned with RadiaWash. The
clean hood, trays and sample stand
(for counter counter) were all Bkg
or slightly higher (nothing above
0.05 mcp/hr). The Apertures, tubes
and electrodes were above 5x Bkg
but not above 1,000 cpm. As there
is an experiment in progress no
remediation can be done at this
point.

Lisa Young

STANDARD Op Proc

- ① Wipe down all areas
in which radiative materials
were used.
- ② Count areas
- ③ If areas are 5x Bkg
then wash them with more
RadiaWash until they
fall below that limit.

Bkg 0.02-0.03

5/29/94

- ① She + I had no counts on
our person above bkg.
- ② Counter counter & Tray 0.03-0.04
- ③ Hood 0.04-0.05
- ④ Tips Bag 0.15
- will be removed to radiaWash
storage when experiment is done
- ⑤ Counter 0.03-0.05

Lisa Young

94 Bk = 0.02-0.03 mR/hr 8/31/94

① D.A. counts higher than background on either Sue or me.

② Counter Counter

03
7
09
007
01) ② Sample stand 0.04-0.05
 ③ Bottles 0.02-0.03
 ④ Tray 0.02-0.03
 ⑤ A particle tube (on radio) 0.04-0.09

03
07
05) ③ Filter rig
 ④ Tray 0.03-0.04
 ⑤ Filter rig 0.03-0.04
 ⑥ Bottle 0.03-0.04

→ Change drier paper under filter rig area, but spills.

④ Hood
 ① Tape box 0.1
 ② Hood 0.04-0.05

⑤ Counter top 0.02-0.03

Less Lowrey

Bkg 0.02-0.04

1/30/94

① No counts higher than bkg on either 5u or d.

② Coulter counter

ⓐ Sample Stand 0.02-0.03

ⓑ bottle 0.04-0.07

ⓒ Tray 0.02-0.04

ⓓ Aperture Tube (on the inside) 0.07-0.09
(Coulter counter marked handwashing)

③ Filter rig

ⓐ Tray 0.02-0.03

ⓑ Filter rig itself 0.05-0.07

ⓒ bottle 0.03-0.05

④ Hood

ⓐ Tips Box 0.12-0.14

* (will be stored at end of experiment)

ⓑ Hood paper 0.02-0.04

ⓒ Counter top 0.03-0.04

Lisa Lowrey

Bkg

① No either

② C

ⓐ Sc

ⓑ Bi

ⓒ T

ⓓ A

③ Fil

ⓐ T

ⓑ f

ⓒ B

→ Char

are

④ H.

ⓐ T

ⓑ

⑤ C.

Bkg 0.02-0.04 ml/hr 9/1/94

D No counts on me or my clothing

D Counter Counter

(a) Sample stand 0.04-0.06

(b) Bottles 0.03-0.05

(c) Tray 0.04-0.05

(d) Machine 0.09-0.15

~~B~~ Hood

(a) Tips Bag (Mn bag) 0.02-0.03

(b) Hood 0.02-0.04

- Lisa Young

Bkg 0.02-0.04 9/2/94

D No counts on me or see above Bkg

D Counter Counter

(a) Sample stand 0.03-0.04

(b) Bottles 0.04-0.05

(c) Tray 0.03-0.04

(d) Machine 0.07-0.09

~~B~~ Filter bag 0.02-0.04

(a) Tray 0.03-0.04

(b) Bottle 0.03-0.05

(c) Filter bag 0.03-0.04

D Hood 0.03-0.04

(a) Tips Bag 0.05-0.06

(b) Hood 0.03-0.04

D Counter Top 0.04-0.05

Bkg 0.02-0.03 ml/hr 9/6/94

C No counts on me or my clothing over Bkg

(a) Counter Counter

(b) Sample stand 0.03-0.04

(c) Bottles 0.03-0.04

(d) Tray 0.02-0.03

(e) Machine 0.07-0.09

~~B~~ Hood

(a) Tips Bag 0.04-0.05

(b) Hood 0.02-0.03

- Lisa Young

Bkg 0.02-0.03 ml/hr 9/9/94

C No counts on me or see above Bkg

(a) Counter Counter

(b) Sample stand 0.03-0.04

(c) Bottles 0.03-0.05

(d) Tray 0.03-0.04

(e) Machine 0.07-0.09

~~B~~ Hood

(a) Tips Bag 0.04-0.05

(b) Hood 0.03-0.04

(c) Filter bag

(a) Tray 0.04-0.05

(b) Bottle 0.03-0.05

(c) Counter top 0.03-0.04

(d) Counter Top 0.04-0.05

Bkg 0.02 - 0.04 n.R./hr 9/20/94

- ① No counts on me or See above Bkg.
- ② Counter counter
- ⓐ Sample stand 0.04 - 0.06
 - ⓑ Bottle 0.03 - 0.04
 - ⓒ Tray
 - ⓓ machine (No Ap + Tray) 0.08 - 0.12
- ③ Filter bag
- ⓐ Tray 0.02 - 0.04
 - ⓑ Bottle 0.04 - 0.09
 - ⓒ Filter bag 0.04 - 0.1
- ④ Hood
- ⓐ Taps 0.2 - 0.3
 - ⓑ Hood 0.02 - 0.03
 - ⓒ Counter top 0.04 - 0.05

- Zinc 4 tubes

Bkg 0.02 - 0.03 n.R./hr 9/21/94

- ① No counts above Bkg on me or my clothing.
- ② Counter counter
- ⓐ Sample stand 0.02 - 0.03
 - ⓑ bottles 0.03 - 0.05
 - ⓒ Tray 0.02 - 0.03
 - ⓓ machine (No Ap + Tray) 0.28 - 0.3
- ③ Hood
- ⓐ Taps bag (New Bag) 0.03 - 0.05
 - ⓑ Hood 0.02 - 0.04

- Zinc 4 tubes

Bkg 0.02 - 0.03 n.R./hr 9/22/94

- ① No counts on me or See
- ② Counter counter
- ⓐ Sample stand 0.05 - 0.09
 - ⓑ Bottle 0.03 - 0.05
 - ⓒ Tray 0.03 - 0.04
 - ⓓ machine (No Ap + Tray) 0.1 - 0.12
- ③ Filter bag
- ⓐ Tray 0.02 - 0.04
 - ⓑ Bottle 0.03 - 0.05
 - ⓒ Filter bag 0.04 - 0.06
- ④ Hood
- ⓐ Taps 0.04 - 0.06
 - ⓑ Hood 0.03 - 0.05
 - ⓒ Counter top 0.03 - 0.04

- Paper used filter bag was
 ① 2 of them, I was in front
 put it into storage
 - Zinc 4 tubes

Background 0.02-0.04 mR/hr 3/26/94

1) No counts above Bkg on me

2) Counter

(a) Sample Stand 0.03-0.05

(b) Bottles 0.02-0.04

(c) Tray 0.02-0.03

(d) Machine 0.13-0.15

3) Filter Rig ~~0.05-0.06~~

(a) Tray 0.02-0.03

(b) Bottle 0.04-0.05

(c) Filter Rig 0.05-0.06

4) Hood

(a) Tips 0.05-0.06

(b) Hood 0.02-0.04

(c) Counter 0.04-0.06

- Less Young

Background 0.02-0.03 mR/hr 9/27/94

1) No counts above Bkg on me

2) Counter

(a) Bottles 0.04-0.06

(b) Tray 0.04-0.05

(c) Sample stand 0.02-0.03

(d) Machine 0.15-0.18

3) Hood

(a) Tips 0.04-0.06

(b) Hood 0.03-0.04

Background 0.02-0.04 mR/hr 9/29/94

1) No counts above Bkg on me on 500 g

2) Counter

(a) Machine 0.11-0.14

(b) Sample stand 0.03-0.04

(c) Bottle 0.04-0.05

(d) Tray 0.02-0.03

3) Filter Rig 0.02-0.03

(a) Filter Rig 0.02-0.03

(b) Tray 0.02-0.03

(c) Bottle 0.03-0.04

4) Hood

(a) Hood 0.02-0.04

(b) Tips 0.06-0.07

(c) Counter 0.05-0.06

- check for water detector in glass

over time

→ Less Young

Background 0.02 mR/hr 7/20/94

1) Counter on back of bottle 0.02-0.04

2) Hood 0.02-0.04

3) Tips 0.05-0.07

4) Counter for 0.05-0.11

Sample stand 0.02-0.03

Bottles 0.02-0.03

Tray 0.02-0.03

- Less Young

Background 0.02-0.03 10/31/94

① No counts on Me above Bkg

② Counter Counter 0.12-0.14

 a) Sample Stand 0.03-0.04

 b) Bottles 0.02-0.04

 c) Tray 0.02-0.04

③ Hood 0.02-0.04

 a) Tip3 bag 0.07

Lisa Lowrey

Background 0.02-0.03 m/hr 10/9/94

① No counts Higher than Bkg on Me.

② Counter Counter 0.13-0.15

 a) Sample Stand 0.03-0.04

 b) Bottles 0.03-0.05

 c) Tray 0.03-0.05

③ Hood 0.03-0.05

 a) Tip3 bag 0.04-0.07

Lisa Lowrey

Background 0.02-0.03 m/hr 10/5/94

① No counts above Bkg on Me.

② Counter Counter 0.14-0.16

 a) Sample Stand 0.03-0.04

 b) Bottles 0.03-0.04

 c) Tray 0.03-0.04

③ Hood 0.02-0.03

Background 0.02-0.04 10/6/94

① No counts on Me above Bkg

② Counter Counter 0.12-0.16

 a) Sample Stand 0.03-0.04

 b) Bottles 0.04-0.06

 c) Tray 0.03-0.04

③ Hood 0.03-0.05

 a) Tip3 bag 0.03-0.04

Lisa Lowrey

Background 0.02-0.03 10/14/94

① No counts Higher than Bkg on Me

② Counter Counter (marked) 0.4 m/hr

 a) Sample Stand 0.03-0.05

 b) Bottles 0.04-0.05

 c) Tray 0.02-0.03

③ Hood 0.03-0.04

 a) Tip3 bag 0.05-0.06

Lisa Lowrey

Background 0.02-0.03 10/15/94

① No counts above Bkg on me or my stuff

② Counter Counter 0.3-0.4

 a) Sample Stand 0.03-0.04

 b) Bottles 0.04-0.05

 c) Tray 0.03-0.04

③ Hood 0.02-0.03

Date 10/17/94 Isotope C^{14} Radiation units 1,000 mCi

Radiation field unshielded \rightarrow 0.25 mR/hr

No seals were broken, glass ampule is in good shape. No leakage is obvious and no crystals in the ampule.

Wipe Test	Count on Sint counter CPM
Outer Box	80.2
Outer Tube	40.9
Inner Tube	61.3
Packing material	53.4
On Metal Rod	64.5
Glue Ampule	53.4

Background 0.02-0.03 10/17/94

① No counts over Bkg on me

② Counter counter (marked) 0.4

③ Sample stand 0.04-0.05

④ Bottle 0.03-0.05

⑤ Tray 0.03-0.04

⑥ Hood 0.03-0.04

⑦ Tips 0.06-0.07

Bkg 0.02-0.04 mR/hr 10/18/94

- ① No counts higher than Bkg on me or Sue.
- ② Counter counter 0.25
- ③ Sample stand 0.03-0.05
- ④ Bottle 0.02-0.03
- ⑤ Tray 0.02-0.03
- ⑥ Filter bag 0.03-0.04
- ⑦ Bottle 0.02-0.03
- ⑧ Tray 0.02-0.03
- ⑨ Hood 0.02-0.03
- ⑩ Tips 0.04-0.05
- ⑪ Counter Top 0.04-0.05

Bkg 0.02-0.04 mR/hr Lisa Lowrey 10/19/94

- ① No counts higher than background on Sue H. or me (Lisa Lowrey).
- ② Counter counter 0.25
- ③ Sample stand 0.03-0.04
- ④ Bottle 0.04-0.05
- ⑤ Tray 0.02-0.03
- ⑥ Hood Filter bag 0.03-0.06
- ⑦ ~~Tray~~ Bottle 0.03-0.04
- ⑧ Tray 0.03-0.04
- ⑨ Hood 0.02-0.05
- ⑩ Tips 0.05-0.06

Bkg 0.02-0.03 mR/hr 10/20/94

① No count higher than Bkg on
See Histogram or Lisa Lowrey

- ② Coulter Counter 0.25
 - a) Sample Stand 0.02-0.03
 - b) Bottle 0.02-0.03
 - c) Tray 0.02-0.03
- ③ Filter Rig 0.01-0.06
 - a) Bottle 0.03-0.04
 - b) Tray 0.02-0.03
- ④ Hood 0.02-0.03
 - a) Tupper bag (will change at end of Expt) 0.13
- ⑤ pH meter 0.02-0.03
 - a) Counter Top 0.03-0.05

Lisa Lowrey

Bkg 0.02-0.03 mR/hr 10/21/94

① No count higher than Bkg on either
See Histogram or Lisa Lowrey

- ② Coulter Counter 0.20
 - a) Sample Stand 0.02-0.03
 - b) Bottle 0.03-0.04
 - c) Tray 0.03-0.04
- ③ Filter Rig 0.03-0.04
 - a) Bottle 0.03-0.04
 - b) Tray 0.02-0.03
- ④ Hood 0.02-0.03
 - a) Tupper Bag (will change at end of Expt) 0.04-0.09

Bkg 0.02-0.03 mR/hr 10/22/94

① No count higher than Bkg on me

- ② Coulter Counter 0.20
 - a) Sample Stand 0.03-0.04
 - b) Bottle 0.02-0.03
 - c) Tray 0.03-0.04
- ③ Hood 0.02-0.03
 - a) Tupper bag 0.06-0.04

Lisa Lowrey

Bkg 0.02-0.03 mR/hr 10/24/94

① No count higher than Bkg on me

- ② Coulter Counter 0.20
 - a) Sample Stand 0.02-0.03
 - b) Bottle 0.03-0.04
 - c) Tray 0.02-0.03
- ③ Filter Rig 0.02-0.03
 - a) Bottle 0.01-0.05
 - b) Tray 0.02-0.03
- ④ Hood 0.02-0.03
 - a) Tupper Bag 0.06-0.05
- ⑤ pH meter 0.02-0.03
 - a) Counter Top 0.04-0.05

Lisa Lowrey

Bkg 0.02-0.03 mR/hr 10/25/94

① No count above Bkg on me

- ② Coulter Counter 0.20
 - a) Sample Stand 0.02-0.03

- ③ Hood
a) Tape bag

10/25/94
0.02-0.03
0.06-0.07

Lisa Young
10/26/94

Background 0.02-0.03 mR/hr

- ① No count above Bkg on Sre or Me
② Counter Counter
a) Sample Stand
b) Bottle
c) Tray
③ Filter pig
a) Bottle
b) Tray
④ Hood
a) Tape bag
⑤ pH meter
a) Counter

0.12
0.03-0.05
0.03-0.04
0.03-0.04
0.05-0.06
0.04-0.05
0.04-0.05
0.02-0.03
0.10-0.12
0.05-0.05
0.03-0.04

Lisa Young
10/27/94

Bkg 0.02-0.03

① No count above Bkg on Me

- ② Counter Counter (NO Tube)
a) Sample Stand
b) Bottle
c) Tray
d) Hood
a) Taps bag

0.5-0.6
0.4-0.5
0.03-0.04
0.02-0.03
0.02-0.04
0.05-0.06

Blank 0.02-0.03

11/23/94

- ① No count on Me or Sre
② Counter Counter
a) Sample Stand
b) Bottle
c) Tray
③ Filter pig
a) Bottle
b) Tray
④ Hood
a) Tape bag
⑤ pH meter
⑥ Counter Tap
(After I replaced filter paper)

0.08-0.09
0.02-0.03
0.02-0.03
0.02-0.03
0.04-0.05
0.03-0.04
0.03-0.04
0.03
0.06-0.08
0.03-0.04
0.02-0.03

Lisa Young

Date	Isotope	Reduction factor
12/6/94	^{65}Zn	1 mC
Specific Activity		25.26 mC/mC

Radiation Field Unshielded 125 nR/hr

Wipe test	counts
Counter Box	2
Tape bag	1
Lead shield	3

Bkg 0.02-0.03 12/7/94
 ① My back = 0.15 but the gloves were only 0.05
 ② Counter counter 0.12
 ③ Sample stand 0.04-0.05
 ④ Bottles 0.03-0.04
 ⑤ Tray 0.02-0.03
 ⑥ Hood 0.04-0.05
 ⑦ Tissue bag 0.05-0.06
 Lisa Lowrey

Radiation Building 12/7/94

Bkg 0.05-0.11 very jumpy
 Rt hood was contaminated
 with some sort of radioactive
 in one spot. 5,000 cpm of
 non-removable counts were
 left after remediation. The
 plastic coating was then removed
 from the hot spot & replaced.

The plastic liner paper had
 3510 cpm of Zn 65 counts
 near in (counter) in the hot spot
 after the plastic was removed
 and replaced the counts were
 300 cpm.

Lisa's Hand (0.15 mB/hr) & Tongs
 (0.4 mB/hr) were contaminated.

Bkg 0.02-0.03 12/8/94
 ① Haven't done too 0.05 from yesterday
 clean and clothing not above Bkg.
 ② Counter counter 0.10
 Sample stand 0.03-0.04
 Bottles 0.03-0.04
 Tray 0.02-0.03
 ③ Hood 0.02-0.03
 Tissue bag 0.03-0.06
 Lisa Lowrey

Bkg 0.03-0.04 mB/hr 12/7/94

① Gloves 0.04-0.07, Lab coat 0.04-0.05
 My back are still 0.05 from Zn 65 spill,
 The floor contaminated in the Zn 65 spill
 are now 0.09-0.1 mB/hr or 2300 cpm
 - Lisa Lowrey

② Site contamination: No counts along
 bkg on her, her gloves, or her counter
 ③ Counter counter 0.15
 Sample stand 0.03-0.04
 Bottles 0.03-0.04
 Tray 0.02-0.03
 ④ Hood 0.05
 Tissue bag 0.07
 ⑤ Celler bag 0.04-0.05
 Bottle 0.03-0.04

0.02 - 0.04 MP/hr 12/14/49

- ① counter higher than Bkz on
my power, clutter, or me (Lisa)
② No counter higher than Bkz on
She Hawkins, her clutter, folder
etc.

- ③ Counter counter 0.07
Sample Stand 0.03-0.04
Bottle/Trey 0.04 / 0.02-0.03
④ Wood 0.03-0.04
Tape Box 0.04
⑤ pH meter counter 0.02-0.03
0.03-0.04
⑥ Filter rig 0.04-0.05
Trey 0.03
Bottle 0.03

Lisa Young

- ⑥ Counter top
- ④ pH meter

12/9/14
 0.01-0.02
 0.01-0.05

Bkg 0.02-0.03

12/12/14

① My back are still about 0.05
 but glove and clothes are Bkg

- ② Coulter Counter
- Sample Stand
- Bottle
- Trey

0.12
 0.03-0.04
 0.03-0.04
 0.02-0.03
 0.03-0.04
 0.07-0.08

- ③ Hood
- Top Bag

Lin Young

Bkg 0.02-0.03

12/13/14

① Hood 0.03-0.04, Glove
 clothes (except jeans - 0.1 from 65
 suits) are Bkg or below.

- ② Coulter Counter
- Sample Stand
- Bottle

0.09-0.1
 0.02-0.03
 0.03-0.04
 0.03-0.04
 0.04
 0.08-0.09

- ③ Hood
- Top Bag

Lin Young

Bkg 0.0

- ④ NO
- my spec
- ⑤ NO
- She H
- etc.

- ③ Cool
- San
- Bot

- ④ Hoe
- Tip

- ⑤ pH
- con

- ⑥ Kit
- Tra
- Bot

Background 0.02-0.03 1/18/95

① No counts above background on me or my clothes

- ② Counter/Counter Sample Stand 0.1
 - Tray 0.03-0.04
 - Bottle 0.02-0.03
 - ③ Hood 0.04
 - Tray Bag 0.05
- Lisa Lowry

Background 0.02-0.03 1/19/95

① No counts above background on me or my clothes

- ② Counter/Counter Sample Stand 0.07-0.08
 - Tray 0.03
 - Bottle 0.03-0.04
 - ③ Filter Rig 0.04
 - Tray 0.03
 - Bottle 0.03-0.04
 - ④ Hood 0.02-0.03
 - Tray Bag 0.07
 - ⑤ PH meter Counter 0.05
- Lisa Lowry

Background 0.03-0.04 mK/hr 1/20/95

① No counts above background on me or Sue Huntington

- ② Counter/Counter Sample Stand 0.05
 - Tray 0.03-0.03
 - Bottle 0.02-0.03
 - ③ Hood 0.04-0.05
 - Tray Bag 0.02-0.03
 - ④ Filter Rig 0.05
 - Tray 0.03-0.06
 - Bottle 0.04-0.05
 - ⑤ PH meter Counter 0.04
- Lisa Lowry

Background 0.03 mK/hr 1/23/95

① No counts above Bkg on me.

- ② Counter/Counter Sample Stand 0.06-0.07
 - Tray 0.03-0.04
 - Bottle 0.02-0.03
 - ③ Hood 0.03-0.04
 - Tray Bag 0.02-0.03
- Lisa Lowry

back ground 0.02-0.03
↳ No counts higher than
my clothes or gloves.

1/17/95
0.03 on me

① Counter counter

0.05-0.07

Sample stand

0.04

Bottles

0.03

Tray

0.02-0.03

② Hood

0.03

Tips Bag

0.04

Lisa Young

Date

Isotope

Radiation units

1/12/94

^{90}Sr

1,000 mCi

Radiation field unshielded: 5.6×10^5 CPM

Glass vial in incubation, none of
the seals on the packing were broken,
no signs of a leak

Wipe Test

Counter counter

CPM

Outside Box

7

Inside Box

8

Can

16

Lead shield

9

Lead shield Rack

6

Bkg 0.02-0.03 MR/hr 1/24/95

① No count above Bkg on me

② Coulter Counter 0.06
Sample Stand 0.03
Tray 0.02-0.04
Bottles 0.04

③ Filter Rig 0.04-0.05
Tray 0.05
Bottle 0.04-0.05

④ Hood 0.02-0.03
Tape Bag 0.04

⑤ pH meter Counter 0.04-0.05
0.02-0.03

Lin Young

Bkg 0.02-0.03 MR/hr 1/25/95

① No count above Bkg on me

② Coulter Counter 0.05-0.07
Sample Stand 0.03
Tray 0.02-0.03
Bottles 0.03-0.04

③ Hood 0.02-0.03
Tape Bag 0.03-0.06

Lin Young

Bkg 0.02-0.03 MR/hr 1/26/94

① No count higher than Bkg on me

② Coulter Counter 0.03
Sample Stand 0.03-0.04
Tray 0.02-0.03
Bottles 0.03-0.04
③ Hood 0.02-0.03
Tape Bag 0.04-0.05

Lin Young

Bkg 0.02-0.03 MR/hr 1/27/95

① No count higher than Bkg on me & see H.

② Coulter Counter 0.04-0.05
Sample Stand 0.04
Tray 0.02-0.03
Bottles 0.03-0.04
③ Filter Rig 0.03-0.05
Tray 0.03-0.04
Bottle 0.03-0.04

④ Hood 0.03
Tape Bag 0.04-0.06
⑤ pH meter Counter 0.03-0.04
0.02-0.03

Lin Young

Bkg 0.03 mR/hr

1/31/95

- ① No counts above Bkg on me
- ② Counter Counter 0.05-0.06
- Sample Stand 0.03-0.04
- Tray 0.02-0.03
- Bottle 0.02-0.03
- ③ Hood 0.04-0.05
- Type Bag 0.05-0.06

Lisa Young

Bkg 0.02-0.03 mR/hr

2/17/95

- ① No counts above Bkg on me
- ② Counter Counter 0.1
- Sample Stand 0.03-0.04
- Tray 0.02-0.03
- Bottle 0.04-0.05
- ③ Hood 0.03-0.04
- Type Bag 0.03
- ④ Counter 0.03-0.04

Lisa Young

Bkg 0.02-0.03

2/22/95

- ① No counts above Bkg on Lisa Young
- ② Counter Counter 0.09
- Sample Stand 0.05
- Tray 0.03
- Bottle 0.03-0.04
- ③ Hood 0.04-0.05

Bkg 0.02-0.03 mR/hr

2/24/95

- ① No counts above bkg on me
- ② Counter Counter 0.04
- Sample Stand 0.03
- Tray ~~0.02-0.03~~
- Bottle 0.03-0.03
- ③ Hood 0.03-0.04
- Type Bag 0.04-0.05
- ④ Pump 0.06-0.07
- Tray 0.04-0.05
- Bottle 0.04-0.05
- ⑤ Counter 0.02-0.03
- pH meter 0.03-0.04

Lisa Young

3/24/95 Received Mn⁵⁰ from NEN
no contamination of packaging

3/30/95 Received Col¹⁰⁹ from
Amersham (1 mCi) no contamination
in packaging

4/7/95 Monthly check of all areas
All + faces at background.

5/8/95 No radioactivity used
no contamination

6/10 " " " - no
contamination

July - no usage in June

8/8/95 no contamination. (Bought)
mL ^{204}Pb - packing clean

10/5/95 no contamination

11/5/95 low contamination on tray
to under filter req (0.12 mCi/hr)
Cleaned up with Radialac wash

12/3 no contamination

no use in Dec

2/1/96 clean

3/4/96 no contam

4/5/96 no contamination

5/3/96 no contamination

Date 5/11/94 Isotope ^{137}Cs radiation unit
Cel 109 1000 mCi

Radiation field unshielded \rightarrow 150 mR/hr

No seals broken but glass vial top was on loosely. The table on the glass vial was slightly stained don't know if it's from leakage or something else.

Wipe test

counts on $\frac{1}{2}$ center
CPM

Outer box

2

Inner packing

5

Can

6

Can packing

5

Lead shield

3

Glass vial

8

Date
6/4/94

Isotope
Fe⁵⁹

Radiation Units
1 m. C

Specific Act
Activity + .04107 CBq

36.19 mC/m

Radiation field unshielded → 190 mR/hr

The sample appears to be in good condition now if the seals were broken. The vial had a special snap cap that seems more effective than the break cap.

Wipe Test

Counts on 8 count

Outer Box

Inner Packing

Lead Can

Inner Packing Lead Can

Glass Vial

Date	Isotope	Radiation units
10/17/94	C ¹⁴	1.000 m Ci

Radiation field unshielded → 0.25 mR/hr

No seals were broken, glass ampule is in good shape. No leakage is obvious and none is in the ampule.

Wipe Test	Counts on 5 cent counter
	CPM
Outer Box	80.2
Outer Tube	40.9
Inner Tube	61.3
Packing material	53.4
On Metal Rod	64.5
Calom Ampule	53.4

Background	0.02-0.03	10/17/94
① No counts over Bkg on me		
② Counter Counter (marked)	0.4	
④ Sample Stand	0.04-0.05	
⑤ Bottle	0.03-0.05	
⑥ Tray	0.03-0.04	
③ Hood	0.03-0.04	
⑨ Taps	0.06-0.07	

Zera Zoway

Blank 0.02-0.03

11/23/94

- ① No counts on me or Sue
- ② Counter Counter 0.08-0.09
 - a) Sample Stand 0.02-0.03
 - b) Bottles 0.02-0.03
 - c) Tray 0.02-0.03
- ③ Filter Niz 0.04-0.06
 - a) Bottle 0.03-0.04
 - b) Tray 0.03-0.04
- ④ Hood 0.03
- ⑤ Tape bag 0.06-0.08
- ⑥ pH meter 0.03-0.04
- ⑦ Counter Top 0.02-0.03
(After I replaced filter paper)

Yair Young

Date	Isotope	Rad. Int. on Lids
12/6/94	Zn 65	1 mCi
Specific Activity		25.26 mCi/mCi

Radiation field unshielded 125 nR/hr

Wipe test	counts
Counter Box	2
Tape bag	1
Lead shield	3

Friday 2/22/06 0.05 10/10

① No count above by on me

② Counter Counter

Sample Stand

Turn ~~over~~

Bottle

③ Bezel

Turn Bag

④ Pump

Turn

Bottle

⑤ Counter

pH meter

4/7/06

0.03

0.02-0.03

0.03-0.03

0.03-0.04

0.04-0.05

0.06-0.07

0.07-0.08

0.04-0.05

0.02-0.03

0.03-0.04

Lisa Yelway

#12/15 Received 10⁵ from NEX
no explanation of packaging

#3/20/06 Received 10⁵ from
NEX (1, ml) no explanation
in packaging

In support of an environmental assessment related to the release of our facility the following information is provided as requested:

a) Provide the name of the facility to be released.

Response: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Center for Coastal Fisheries and Habitat Research;

b) Provide the size of the complex (in Acres), building in square feet, and area to be released in square feet.

Response: The complex is approximately 13 acres, buildings total approximately 50, 000 square feet, and the area to be released is approximately 14, 583 square feet;

c) Describe the type of building use such as "general office and laboratory".

Response: It is a two story building with general office spaces and research laboratory spaces;

d) Describe the surrounding area, such as "residential", "industrial", "commercial", "mixed residential/commercial", etc.

Response: The immediate surrounding area is educational with a University situated close by. Further away is a mix of residential/commercial areas;

e) Describe the general type of activities authorized on the license, such as "laboratory procedures typically performed on bench tops and in hoods."

Response: The general type of activities authorized on our license included research and development as defined in 10 CFR 30.4, calibration and checking of our instruments, and possession and storage of materials only incidental to disposal as performed on bench tops and in ventilation hoods;

f) State when you ceased licensed activities.

Response: Our Laboratory ceased Nuclear Regulatory Commission activities in July 2007.