J-3

NRC FORM 314 (6-2004) 10 CFR 30.36(j)(1); 40.42(j)(1); 70.38(j)(1); and 72.54(j)(1)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0028 EXPIRES: 06/30/2007

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.

CERTIFICATE OF DISPOSITION OF MATERIALS

LICENSEE NAME AND ADDRESS	LICENSE NUMBER	DOCKET NUMBER
Northern Virginia Community Hospital 601 Carlin Springs Road Arlington, Virginia 22204	45-16222-01	030-09932
	LICENSE EXPIRATION DATE: May 31, 2014	

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:

☐ 2. By licensed disposal site:

☐ 3. By waste 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	TITLE	TELEPHONE (Include Area Code)	E-MAIL ADDRESS
Terika Richardson	Associate Administrator	(703) 481-2834	see below*

Mail all future correspondence regarding this license to:

*e-mail: Terika.Richardson@hcahealthcare.com

C. CERTIFYING OFFICIAL

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

PRINTED NAME AND TITLE	SIGNATURE	DATE
Terika Richardson		4/10/07

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.

140365

NMSS/RGN1 MATERIALS-002

NRC FORM 374 U.S. NUCLEAR REGULATORY COMMISSION PAGE 1 of 3 PAGES

Amendment No. 30

MATERIALS LICENSE

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

Licensee	In accordance with the letter dated August 17, 2004,
1. Northern Virginia Community Hospital	3. License No. 45-16222-01 is amended in its entirety to read as follows:
2. 601 South Carlin Springs Road Arlington, Virginia 22204	4. Expiration Date: May 31, 2014
	5. Docket No. 030-09932

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Any byproduct material permitted by 10 CFR 35.100	A. Any	A. As needed
B. Any byproduct material permitted by 10 CFR 35.200	B. Any	B. As needed
C. Any byproduct material permitted by 10 CFR 35.300	C. Any	C. As needed (not to exceed 10 curies of iodine 131)
D. Strontium 90	D. Sealed source (Tracor Lab Model 939)	D. 59 millicuries

9. Authorized use:

A. Any uptake, dilution and excretion study permitted by 10 CFR 35.100.
B. Any imaging and localization study permitted by 10 CFR 35.200.
C. Any diagnostic study or therapy procedure permitted by 10 CFR 35.300.
D. Possession and storage only.

CONDITIONS

10. Licensed material may be used or stored only at the licensee's facilities located at 601 South Carlin Springs Road, Arlington, Virginia.

VDH VIRGINIA DEPARTMENT OF HEALTH

VIRGINIA DEPARTMENT OF HEALTH
RADIOLOGICAL HEALTH PROGRAM

RADIOACTIVE MATERIAL LICENSE
SUPPLEMENTARY SHEET

LICENSE NUMBER: VA-039-01	AMENDMENT No. 06

Northern Virginia Community Hospital
601 S. Carlin Springs Road
Arlington, VA 22204 Phone: (703) 578-2237 Fax: (703) 578-2331

Radioactive Materials License #VA-039-01 is amended this date in accordance with a request received April 12, 2004.

Condition 4, License Expiration Date, is amended to read:

May 1, 2008

All other conditions will remain the same.

PAGE 1 of 1 Page(s)

DATE OF ISSUANCE:
April 12, 2004

FOR THE COMMISSIONER
VIRGINIA DEPARTMENT OF HEALTH

BY:
RADIOLOGICAL HEALTH AGENT
James A. deKrafft

MID-ATLANTIC RADIATION PHYSICS
7233-D HANOVER PARKWAY
GREENBELT, MD 20770
(301) 345-6803 FEIN 52-1238803

INVOICE

DATE:	INVOICE NO.:
03/27/'07	2842

BILL TO:
P.O. Accounts Payable Northern Virginia Community Hospital 601 S. Carlin Springs Road Arlington, VA 22204

DATE OF SERVICES:
February/March 2007 POC: 703-578-2237

Interest Penalty:
1.5%/MO NET 30

DESCRIPTION	SUBTOTAL
Radiological Physics Services:	
Close-out and Final Clearance Survey with preparation of final report 12 hours at $140.00 per hour	
Services for: 5 total hours onsite time @ $140 hr (discounted rate for contract customer)	700.00
Services for: 2 hours travel time @ $140 hr (discounted rate for contract customer) Initial Visit Trip 1 - additional sources found in basement storage room/second visit required	280.00
Services for: 2 hours travel time @ $140 hr (discounted rate for contract customer) Return Trip 2 - final survey for basement storage room	280.00
Services for: 3 hours report time @ $140 hr (discounted rate for contract customer)	420.00
MAKE Checks payable to"RSO, Inc." or submit Credit Card Form REMIT to RSO, Inc., P.O. Box 1450, Laurel MD 20725-1450	
CUSTOMER COPY	**TOTAL** $1,680.00

MID-ATLANTIC RADIATION PHYSICS
7233-D HANOVER PARKWAY • GREENBELT, MD 20770
Phone (301) 345-6803 Fax 301-345-6804

March 27, 2007

Tirika Richardson
1858 Town Center Parkway
Reston, VA 20190

Re: Final Radiological StatusReport for NRC License Number 45-16222-01

Dear Ms. Richardson:

Enclosed, please find the Final Radiological Report to support the license termination at 601 S. Carlin Springs Rd, Arlington, VA 22204.

Please feel free to call me at (301) 953-2482, ext. 321 if you have any questions.

Sincerely,

Paul Madairy
Health Physicist
RSO, Inc.

Enclosures

MID-ATLANTIC RADIATION PHYSICS
7233-D HANOVER PARKWAY • GREENBELT, MD 20770
Phone (301) 345-6803 Fax 301-345-6804

1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

The Northern Virginia Community Hospital has changed ownership and will be terminating their NRC License (# 45-16222-01) at 601 S. Carlin Springs Rd, Arlington, VA 22204. All radioactive material was transferred or disposed of as radioactive waste and a final radiation survey was performed. Mid-Atlantic Radiation Physics (MARP) was contracted to perform a Final Radiological Survey and prepare this survey report.

This report includes the information regarding the transfer of licensed radioactive materials and the results of the final survey.

1.2 Purpose and Scope

To allow removal of the former hospital facility from the above referenced license, a final survey of use/storage rooms and adjacent non-use/storage rooms was performed by MARP.

This survey report presents the results and a summary of the final radiological status of the above referenced areas. This report also includes a limited review of the use of radioactive material in the former facility.

Final surveys were conducted in the scan room, treadmill area, and hot lab.

1.3 Background Site Information

The Nuclear Medicine department used short half-life radioactive material for diagnostic procedures and sealed sources of long half-life (Cs-137, Co-57, Ba-133, Ra-226, and Sr-90) for instrument calibrations.

1.4 Summary of Decommissioning

Prior to the Final Survey

Use/storage of radioactive material was discontinued and all radioactive material, and radioactive waste was removed from the facility. See Attachment 3 for the Bill of Lading showing transfer of the sealed sources.

2.0 FINAL SURVEY APPROACH

2.1 Survey Plan Design and Implementation

The potential for residual contamination was considered to be very low (indistinguishable

from background. This was due to the short radioactive half-life of the unsealed radioactive material used in Nuclear Medicine, and that no areas of contamination were reported in the routine surveys.

2.2 Survey Approach

The Final Survey included scans of floors and wall surfaces, wipe tests for removable contamination; gamma scans for elevated radiation levels and exposure rate measurements.

The approach to the final survey identified the potential residual contamination radionuclides in the use areas. These radionuclides emit beta and/or gamma radiation. The survey meters selected have good sensitivity to both beta and/or gamma radiation (depending on the particular probe). Wipe test analysis using a combination of first gamma counting the wipe test sample followed by liquid scintillation analysis has excellent sensitivity for all of the radionuclides identified as well as other alpha, beta, or gamma emitters.

Survey meter scans of floor surfaces; benches and other accessible areas were conducted using a Ludlum Model 3 coupled to a Ludlum Model 44-9 "pancake" GM detector and a Ludlum Model 44-3 NaI low-energy gamma scintillation detector. Exposure-rate measurements were taken using a Victoreen 450P pressurized ion chamber.

Wipe tests were used for evaluation of removable contamination. Loose contamination on the floor or other surfaces would be transferred to the wipe and detected using a gamma screen and liquid scintillation counting techniques.

Surveys were performed as follows:

- Assessment of beta/gamma contamination on floor surfaces was accomplished by performing scans using a survey meter with an analog and digital display (and audio).
- The evaluation of removable surface contamination was accomplished using wipe samples at the locations indicated on the enclosed drawings and data sheets. These wipe samples were first analyzed for gross gamma activity using an automatic gamma counter then they were analyzed for gross beta activity by using a liquid scintillation counter.
- Exposure rate measurements were made using a Victoreen 450P survey meter.

2.3 Survey Methods

Wipe Locations

Survey/diagram maps were established for each room for the purpose of referencing locations of wipes and other survey activities.

Removable Contamination

The amount of removable radioactive material was determined by wiping 100 cm^2 of the surface with a dry paper, using moderate pressure and assessing the amount of radioactive material on the wipe area with an appropriate instrument of known efficiency (e.g.: liquid scintillation counter).

Scan Surveys

Scans were performed using a pancake GM (Ludlum 44-9), and a low-energy gamma scintillation detectors (Ludlum 44-3). To optimize detection of elevated radiation levels (1.5 to 3 times background) during scanning, audible indicators were used in addition to noting the fluctuations in the analog meter reading.

Exposure Rate Measurements

Gamma exposure rates were measured, at 1 m above floor surfaces.

Quality Assurance

Survey meters used to perform the Final Survey had been calibrated using radioactive standards traceable to NIST.

The laboratory instruments used by MARP to analyze the wipe tests were maintained under RSO's laboratory quality assurance program, which includes a service agreement with the manufacturer, daily quality control performance charts.

Sample results provided by the laboratory were matched to the data collection sheets, which served as chain of custody forms for the sample.

3.0 SURVEY INSTRUMENTATION

3.1 Description of Instrumentation

The survey instruments that were used to perform the Final Survey are shown in Table 1 below:

Table 1. Survey meters used to conduct the Final Survey.

Survey Meter	Probe Model	Probe Type	Probe Area/Size	Description
Victoreen 450P	Internal	Pressurized Ion Chamber	300 cc	Exposure Rates
Ludlum Model 3	Ludlum 44-9, 44-3	GM, NaI	15 cm^2, 5 cm^2	Scans of Surfaces

3.2 Instrument Calibration and Efficiency Data

The calibration and efficiency data for the survey meters that were used during the Final Survey are summarized in Table 2. See Attachment 1 for copies of the calibration certificates.

Table 2. Survey meter calibration information.

Meter w/ Probe	Serial Number	Calibration Date	Radionuclide	Efficiency/Sensitivity (% cpm/dpm)
Victoreen 450P	583	10/27/06	Cs-137 Beam	N/A – Exposure Rate

Ludlum Model 3	31357	08/08/06	129I, 90Sr, 14C, 99Tc	16%, 21%, 7%, 12%

3.3 Wipe Test Sample Analysis

Determinations of the removable surface activity were based on analyses of wipe samples collected over areas of approximately 100 cm^2. The wipe tests were analyzed using a gamma counter and a liquid scintillation counter (LSC). Beta activity was determined for 3 channels, which correspond to low, medium, and high-energy beta energies. For each analysis gross counts were converted into net activity per sample by the LSC analysis software using quench correction and the following method of data reduction:

4.0 SURVEY RESULTS

4.1 Results

Survey method and survey unit reports the results for the surveys conducted at the facility. Attachments contain survey diagrams, survey data sheets, and wipe test results for each area surveyed.

Data sheets include location of swipe, gross gamma and beta counts in dpm, background exposures.

4.2 Exposure Rate Measurements

The exposure rates measured indoors in various areas of the facility were consistent with normal background, and the surveys showed no areas that varied from normal background.

4.3 Gamma and Beta Scans

No areas of residual radioactivity were found during the gamma or beta scans.

4.4 Removable Contamination

Attachments include results of the removable surface activity from the wipe test surveys. None of the wipe tests detected removable contamination.

4.5 Summary

- All radioactive material had been removed prior to the survey of each area.
- The survey techniques had sufficient sensitivity to detect low levels of residual contamination at standard operation contamination limits.
- Beta and Gamma scans showed no detectable levels of residual contamination.
- Wipe tests for removable contamination were all less than 100 dpm/100 cm^2.
- Gamma exposure rates in all areas were consistent with normal natural background level.

- No radioactive material or radioactive waste was observed during the final survey.
- No residual contamination was detected during the final survey above the selected guideline levels.

5.0 REFERENCES

NUREG-1575, Rev. 1, EPA 402-R-97-016, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), August 2000.

6.0 ATTACHMENTS

Attachment 1	**Survey Meter Calibration Reports**
Attachment 2	**Survey Reports with Maps and Data Analysis**
Attachment 3	**Bill of Lading**

Attachment 1

Survey Meter Calibration Reports

RSO, Inc.
P.O. Box 1450
Laurel, MD 20725
(301) 953-2482

Certificate of Calibration

RSO Job No. R6711

ISSUED TO: RSO, Inc.
5206 Minnick Road
Laurel, MD 20707

CONTACT: Paul Madairy
PHONE: (301) 953-2482

PO NO: RSO 370

INSTRUMENT: LUDLUM
MODEL: 3
TYPE: RATEMETER
SN: 91842

RSO, Inc. certifies that on 08/08/2006 the above described instrument was calibrated using a radioactive source to determine the efficiency for a specific radionuclide(s) and using electronically generated pulse for the linearity. Pulsed using Ludlum 500-2, S/N 159110.

The results are tabulated below. Calibration is traceable to NIST.

Calibration Data

	RANGE	EXPECTED	OBSERVED		C.F.
X	0.1	100	110	cpm	0.91
		400	410	cpm	0.98
X	1	1000	1100	cpm	0.91
		4000	4000	cpm	1.00
X	10	10000	10500	cpm	0.95
		40000	40000	cpm	1.00
X	100	100000	105000	cpm	0.95
		400000	400000	cpm	1.00
			C.F. AVERAGE		0.96

Probe type(s) Probe1: PANGM Probe2: SWGM Probe3: SCINTILLATOR

MODEL	SER#	WINDOW	GEOMETRY	VOLT	ISOTOPE 1	EFF.(%)	ISOTOPE 2	EFF.(%)	ISOTOPE 3	EFF.(%)	ISOTOPE 4	EFF.(%)
44-9	PR005505	FIXED	CONTACT	899	C14	7	Tc99	12	Sr90	21		
44-38	PR079970	CLOSED	PERPEND.	899								
44-3	RSO000457	FIXED	CONTACT	899	I129	16						

INSTRUMENT CHECKS

1 mR/hr CHECK: PROBE 2 1300 cpm
BATTERY CHECK: NORMAL
CHECK SOURCE 1: N/A READING:
CHECK SOURCE 2: N/A READING:

ENVIRONMENTAL

TEMP: 26°C
PRESS: 760 mmHg
HUMID: 47 %

THE SUGGESTED RECALIBRATION DATE FOR THIS INSTRUMENT IS 08/08/2007

Calibrated By: Donney Austin

Reviewed By:

Cal Date: 08/08/2006

Maryland License MD-33-021-01

14549

RSO, Inc.
P.O. Box 1450
Laurel, MD 20725
(301) 953-2482

Certificate of Calibration

RSO Job No. **R6864**

ISSUED TO: RSO, Inc.
5206 Minnick Road
Laurel, MD 20707

CONTACT: Greg Smith
PHONE: (301) 953-2482 PO NO:

INSTRUMENT: VICTOREEN
MODEL: 450P
TYPE: ION CHAMBER
SN: 583

RSO, Inc. certifies that on 10/30/2006 the above described instrument was calibrated in a known radiation field using Cs-137 (662keV) beam calibrators J.L. Shepherd Model 28-6A, S/N 10056 and Atomchem Corp. Model 1032, S/N 038.

The results are tabulated below. Calibration is traceable to NIST.

Calibration Data

	RANGE	EXPECTED	OBSERVED		C.F.
AUTO		1	1.03	mR/hr	0.97
		4	4.07	mR/hr	0.98
RANGING		10	9.8	mR/hr	1.02
		40	38.3	mR/hr	1.04
SCALE		100	93	mR/hr	1.08
		400	364	mR/hr	1.10
		1	0.95	R/hr	1.05
		4	4.15	R/hr	0.96
			C.F. AVERAGE		1.03

Probe type(s) Probe1: ION CHAMBER Probe2: Probe3:

MODEL	SER#	WINDOW	GEOMETRY	VOLT	ISOTOPE 1 EFF.(%)	ISOTOPE 2 EFF.(%)	ISOTOPE 3 EFF.(%)	ISOTOPE 4 EFF.(%)
INTERNAL		NONE	FRONT					

INSTRUMENT CHECKS

1 mR/hr CHECK: N/A
BATTERY CHECK: NORMAL
CHECK SOURCE 1: N/A READING:
CHECK SOURCE 2: N/A READING:

ENVIRONMENTAL

TEMP: 20°C
PRESS: 761 mmHg
HUMID: 39 %

THE SUGGESTED RECALIBRATION DATE FOR THIS INSTRUMENT IS 10/30/2007

Calibrated By: Richard Emmons Reviewed By: Cal Date: 10/30/2006

Maryland License MD-33-021-01

3875

Attachment 2

Survey Reports with Maps and Data Analysis

Site: Northern Va Community Hospital Building Main Lab/Room: Nuclear Medicine

Start Date: 01/12/07 Finish Date: 03/01/07

Surveyor: Paul Madairy Surveyor:

Area Survey Results		Wipe Tests		Direct Measurements			β Scan Measurements				γ Scan Measurements				Dose Rate	
Wipe Number	Description	Gross β (dpm/100 cm^2)	β (dpm C14)	Survey Meter #	Gross (cpm)	dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm^2 (C14)	Survey Meter #	Gross High (cpm)	Gross Avg (cpm)	γ dpm/100 cm2 (I-125)	Survey Meter #	Gross (μRem/hr)
1	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
2	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
3	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
4	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
5	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
6	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
7	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
8	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
9	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
10	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
11	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
12	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
13	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
14	Patient Table	< 100	< 100				2	75	50	0	1	175	150	0	5	10
15	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
16	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
17	Patient Table	< 100	< 100				2	75	50	0	1	175	150	0	5	10
18	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
19	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
20	Patient Table	< 100	< 100				2	75	50	0	1	175	150	0	5	10
21	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
22	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
23	Benchtop, Shelves	< 100	< 100				2	75	50	0	1	175	150	0	5	10
24	Benchtop, Shelves	< 100	< 100				2	75	50	0	1	175	150	0	5	10
25	Benchtop, Shelves	< 100	< 100				2	75	50	0	1	175	150	0	5	10
26	Hood	< 100	< 100				2	75	50	0	1	175	150	0	5	10
27	Benchtop, Shelves	< 100	< 100				2	75	50	0	1	175	150	0	5	10
28	Sink	< 100	< 100				2	75	50	0	1	175	150	0	5	10
29	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10
30	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10

Site: Northern Va Community Hospital Building Main Lab/Room: Nuclear Medicine

Start Date: 01/12/07 Finish Date: 03/01/07

Surveyor: Paul Madairy Surveyor:

Area Survey Results		Wipe Tests		Direct Measurements			β Scan Measurements				γ Scan Measurements				Dose Rate	
Wipe Number	Description	Gross β (dpm/100 cm²)	β (dpm C14)	Survey Meter #	Gross (cpm)	dpm/100 cm² (C14)	Survey Meter #	Gross High (cpm)	Gross Average (cpm)	β dpm/100 cm² (C14)	Survey Meter #	Gross High (cpm)	Gross Avg (cpm)	γ dpm/100 cm2 (I-125)	Survey Meter #	Gross (μRem/hr)
31	Shelves	< 100	< 100				2	75	50	0	1	175	150	0	5	10
32	Shelves	< 100	< 100				2	75	50	0	1	175	150	0	5	10
33	Floor	< 100	< 100				2	75	50	0	1	175	150	0	5	10

Survey Meter Information

Site: Northern Va Community Hospital Building: Main Lab/Room: Nuclear Medicine

	Meter 1		Meter 2		Meter 3	Meter 4	Meter 5	
Date:	1/12/2007		1/12/2007		Not In Service	Not In Service	1/12/2007	
Make:	Ludlum		Ludlum				Victoreen	
Model:	3		3				450	
SN:	91842		91842				583	
Probe Make:	Ludlum		Ludlum				NA	
Probe Model:	44-3		44-9				NA	
Probe SN:	000457		000506				NA	
Probe Area (cm^2):	100		15				NA	
Next Cal. Date:	8/8/2007		8/8/2007				10/27/2007	
Background Surface Material	Air		Air				Air	
Background(c) - Time(Min)):	150	1	50	1			10	µRem/hr
CS Isotope - Activity(µCi):	Side of Meter	?	Side of Meter	?			NA	
CS Source(cpm)	6000		4100				Good	
L_c, L_d (Counts)	29	60	16	36			NA	NA
Direct MDC, Scan MDC (dpm/100cm^2)	375	1157	1993	5939			NA	NA
MDCR , MDC Count Rate	281	210	126	289			NA	NA
Efficiency, Isotope:	16.0%	I-129	12.0%	T-99			NA	NA

Please See MARSSIM Chapter 6 for a more detailed explanation of equations.

Lc= Critical Detection Level
Ld= a priori Detection limit
MDC= Minimum Detectable Concentration
MDCR= Minimum Detectable Count Rate

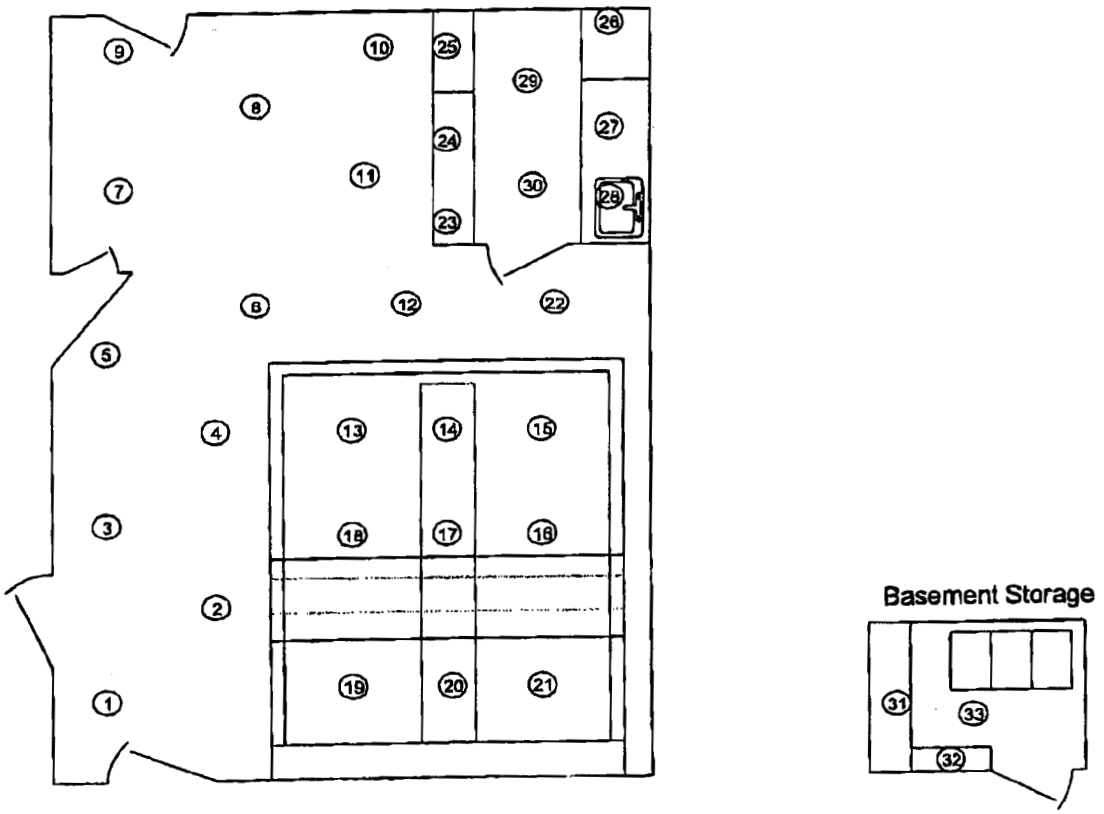
Direct MDC= $\frac{3+4.65*SQRT(B)}{T*e_i*A*C}$

Scan MDC= $\frac{MDCR}{SQRT(E_{hf})*e_i*e_s*A*C}$

MDCR= $s_i * (60/i)$

B = Background Counts
T = Counting Time In Minutes
ε_i = Total Detector Efficiency in Counts/Disintegration
A = Physical Probe Area in cm^2
C = Other Constants and Factors When Needed
E_{hf} = Human Factor Efficiency
ε_s = Source Efficiency $s_i = 1.38*SQRT(B_r)$
i = Counting Interval

Radiological Survey	Northern Va Community Hospital 601 S. Carlin Springs Rd, Arlington, Va 22204	RSO,Inc.		
		Building: Main	Room: Nuclear Medicine	Lab Type:
Surveyors	Name: Paul Madairy	Name		Date: 1/12/2007
Contact	Name: Carol Crawford	Phone No.: 703-578-2175		



Remarks:

Attachment 3

Sealed Sources Transfer Bill of Lading

FORM 540 — **Radiation Service Organization, Inc.**

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST
SHIPPING PAPER

1. EMERGENCY TELEPHONE NUMBER (Include Area Code): 1-800-424-9300

ORGANIZATION: Crenshaw

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT? ☑ YES ☐ NO

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST: 2

4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? ☐ YES ☑ NO
If "Yes," provide Manifest Number ==>>

EPA MANIFEST NUMBER

5. SHIPPER – NAME AND FACILITY
Northern Virginia Community Hospital
601 South Carlin Springs Road
Arlington, VA 22204-1698

NA | SHIPMENT NUMBER 16847

CONTACT: Carol Crawford

6. CARRIER – Name and Address
RSO, Inc.
5204 Mirrick Road
Laurel, MD 20707
Truck #: 99223
Trailer #: NA

CONTACT: David Weilner

SIGNATURE – Authorized carrier acknowledging waste receipt

DATE: 1-11-07

SHIPPER I.D. NUMBER: NA
☐ COLLECTOR
☐ PROCESSOR
☑ GENERATOR TYPE (Specify): III

TELEPHONE NUMBER (Include Area Code): (703)579-2289

EPA I.D. NUMBER: MDD-06-027-6963

SHIPPING DATE: 01/11/2007

TELEPHONE (Include Area Code): (301)953-2482

SIGNATURE – Authorized carrier acknowledging waste receipt

DATE: 1-11-07

7. FORM 540 AND 540A — PAGE 1 OF 1 PAGE(S)
FORM 541 AND 541A — 1 PAGE(S)
FORM 542 AND 542A — None PAGE(S)
ADDITIONAL INFORMATION — None PAGE(S)

8. CONSIGNEE - Name and Facility
RSO, Inc.
5204 Mirrick Road
Laurel, MD 20707

SIGNATURE – Authorized consignee acknowledging waste receipt

9. MANIFEST NUMBER (Use this number on all continuation pages): 16847

CONTACT: David Weilner
TELEPHONE (Include Area Code): (301)953-2482
DATE: 1-11-07

10. CERTIFICATION
This is to certify that the herein-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, marked, and labeled and are in proper condition for transportation and disposal as described in accordance with the requirements of 10 CFR Parts 20 and 61, or equivalent state regulations.

AUTHORIZED SIGNATURE: Carol J. Crawford | TITLE: ACTING DIRECTOR | DATE: 1/11/07

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (including proper shipping name, hazard class, UNID number, and any additional information)	12. DOT LABEL "RADIOACTIVE"	13. TRANSPORT INDEX	14. PHYSICAL AND CHEMICAL FORM	15. INDIVIDUAL RADIONUCLIDES				16. TOTAL PACKAGE ACTIVITY MBq	16. TOTAL PACKAGE ACTIVITY Ci	17. LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Radioactive material, Type A package, 7, UN 2916	Yellow II	0.1	Solid Sealed Sources	Sr-90	Co-57	Cs-137	Ra-226	7.0825E+02	2.1551E+01	NA	400 LBS; 4.1 FT3	56844
Radioactive material, excepted package-limited quantity of material, 7, UN 2910	NA	NA	Solid Plastic and Metal Disks		Co-57			1.0760E-08	2.9000E-10	NA	65 LBS; 7.5 FT3	56847

FOR CONSIGNEE USE ONLY

TENNESSEE "LICENSE FOR DELIVERY" NO: _____

SOUTH CAROLINA TRANSPORT PERMIT NO: _____

US ECOLOGY GENERATOR NO: _____

US ECOLOGY PERMIT NO: _____

20.

Form 540 (10.99)

FORM 541 — Radiation Service Organization, Inc.

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

CONTAINER AND WASTE DESCRIPTION

Additional Nuclear Regulatory Commission (NRC) Requirements for Control, Transfer and Disposal of Radioactive Waste

1. MANIFEST TOTALS

NUMBER OF PACKAGES/ DISPOSAL CONTAINERS	NET WASTE VOLUME	NET WASTE WEIGHT	SPECIAL NUCLEAR MATERIALS (grams) U-233	U-235	Pu	Total
2	m3 0.3285 / ft3 11.6000	kg 210.9205 / lb 466.0000	NP	NP	NP	NP

ACTIVITY

	ALL NUCLIDES	TRITIUM	C-14	Tc-99	I-129	SOURCE Gal	
MBq	7.9888E+02	NP	NP	NP	NP	(kg)	NA
mCi	2.1591E+01	NP	NP	NP	NP	(lbs)	NA

2. MANIFEST NUMBER 15847

3. PAGE 1 **OF** 1 **PAGE(S)**

4. SHIPPER NAME Northern Virginia Community Hospital

SHIPMENT ID NUMBER NA

DISPOSAL CONTAINER DESCRIPTION / **WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER**

5. CONTAINER IDENTIFICATION NUMBER/ GENERATOR ID NUMBER	6. CONTAINER DESCRIPTION (See Note 1) PROCESS REQUESTED (See Note 1A) BURIAL/DISPOSITION (See Note 2d)	7. VOLUME (m3) (ft3)	8. WASTE AND CONTAINER WEIGHT (kg) (lb)	9. SURFACE RADIATION LEVEL (mSv/hr) (mrem/hr)	10. SURFACE CONTAMINATION (MBq/100 cm2) (dpm/100cm2) ALPHA	BETA-GAMMA	11. WASTE DESCRIPTOR (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER (m3) (FT3)	13. SOLIDIFICATION OR STABILIZATION MEDIA (See Note 3)	14. CHEMICAL DESCRIPTION: CHEMICAL FORM/ CHELATING AGENT	WEIGHT % CHELATING AGENT (F > 0.1%)	15. RADIOLOGICAL DESCRIPTION: INDIVIDUAL RADIONUCLIDES AND ACTIVITY (MBq) AND CONTAINER TOTAL OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT	MBq	mCi	16. WASTE CLASSIFICATION A-Class A Stable, AU-Class A Unstable B-Class B C-Class C
55844INVCH	4	0.1161	191.4370	1.0200E-02	<1.5700E-06	<1.5700E-06	35	0.1161	01 Cellulose	Sealed Sources/NP	NP	Ra-133	2.9245E+00	7.9040E-02	C
		4.1000	480.0000	1.0200E+00	<1.5000E+02	<1.5000E+02		4.1000				Co-57	1.5555E+01	4.1044E-01	
												Cs-137	5.3939E+00	1.4667E-01	
												Ra-226	5.5932E-01	1.5360E-02	
												Sr-90	7.7196E+02	2.0870E+01	
												Subtotal	7.9888E+02	2.1591E+01	
												Total	7.9888E+02	2.1591E+01	
55847INVCH	4 C E	0.2194	29.4635	3.0000E-04	<1.5700E-06	<1.5700E-06	38	0.2194	NA	Plastic and Metal Disks/NP	NP	Co-57	1.0360E-08	2.8000E-10	AU
		7.5000	66.9903	2.9000E-02	<1.5000E+02	<1.5000E+02		7.5000				Subtotal	1.0360E-08	2.8000E-10	
												Total	1.0360E-08	2.8000E-10	
Shipment Totals		0.3285	210.9205										7.9888E+02	2.1591E+01	
		11.6000	466.0000												

Note 1: Container Description Codes. For containers of waste requiring disposal in approved structural overpacks the numerical code must be followed by "-OP."

1. Wooden Box or Crate
2. Metal Box
3. Plastic Drum or Pail
4. Metal Drum or Pail
5. Metal Tank or Liner
6. Concrete Tank or Liner
7. Polyethylene Tank or Liner
8. Fiberglass Tank or Liner
9. Demineralizer
10. Resin Cylinder
11. Soft, Unpackaged Waste
12. Unpackaged Components
13. High Integrity Container
98. Other. Describe in Item 13 or additional page

Note 1A: Process Requested

C	Compaction
SR	Steam Reforming
DI	Direct Incineration
SI	Sort & Incinerate
D	Decon
G	Grind to Class
M	Metal Melt
T	Trans-Stor
L	Liquid for Incineration
OI	Oil for Incineration
O	Other (describe)

NOTE 2: Waste Descriptor Codes. (Choose up to three which predominate by volume.)

20. Charcoal	29. Demolition Rubble	38. Evaporator Bottoms/Sludges/ Concentrates
21. Incinerator Ash	30. Cation Ion-exchange Media	39. Compactible Trash
22. Soil	31. Anion Ion-exchange Media	40. Noncompactible Trash
23. Gas	32. Mixed Bed Ion-exchange Media	41. Animal Carcass
24. Oil	33. Contaminated Equipment	42. Biological Material (except animal carcass)
25. Aqueous Liquid	34. Organic Liquid (except oil)	43. Activated Material
26. Filter Media	35. Glassware or Labware	98. Other. Describe in Item 11, or additional page
27. Mechanical Filter	36. Sealed Source/Device	
28. EPA or State Hazardous	37. Paint or Plating	

NOTE 2A: Burial/Disposition Site

B	Barnwell Waste Management
E	Envirocare
R	Richland, WA
PR	Process and Return
O	Other

Note 3: Solidification and Stabilization Media Codes. (Choose up to three which predominate by volume. For media meeting disposal site structural stability requirements, the numerical code must be followed by "-S," and the media vendor and brand name must also be identified in Item 13. Code 100—NONE REQUIRED

Solidification

80. Cement	84. Vinyl Ester Styrene
81. Concrete (encapsulation)	99. Other. Describe in Item 13, or additional page
82. Bitumen	
83. Vinyl Chloride	100. None Required.

FORM 541 (10-99)

FORM 540 — **Radiation Service Organization, Inc.**

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST
SHIPPING PAPER

1. EMERGENCY TELEPHONE NUMBER (Include Area Code): 1-800-424-9300

ORGANIZATION: Chemtrec

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT? ☑ YES ☐ NO

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST: 1

4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? ☐ YES ☑ NO
If "Yes," provide Manifest Number ⟹

EPA MANIFEST NUMBER

5. SHIPPER – NAME AND FACILITY
Northern Virginia Community Hospital
601 South Carlin Springs Road
Arlington, VA 22204-1099

SHIPMENT NUMBER: 15893

CONTACT: Fred Wright

6. CARRIER – Name and Address
RSO, Inc.
5284 Minnick Road
Laurel, MD 20707
Truck #: 98233
Trailer #: NA

CONTACT: David Wellner

SIGNATURE – Authorized representative acknowledging waste receipt: David Wellner

DATE: 2-6-07

SHIPPER I.D. NUMBER: NA
☐ COLLECTOR
☐ PROCESSOR
☑ GENERATOR TYPE (Specify): 4

TELEPHONE NUMBER (Include Area Code): (703)558-3861

EPA I.D. NUMBER: MDD-05-997-9999

SHIPPING DATE: 02/06/2007

TELEPHONE (Include Area Code): (301)953-3662

DATE: 2-6-07

7. FORM 540 AND 540A — PAGE 1 OF 1 PAGE(S)
FORM 541 AND 541A — 1 PAGE(S)
FORM 542 AND 542A — None PAGE(S)
ADDITIONAL INFORMATION — None PAGE(S)

8. CONSIGNEE - Name and Facility
RSO, Inc.
5284 Minnick Road
Laurel, MD 20707

CONTACT: David Wellner

TELEPHONE (Include Area Code): (301)953-3662

SIGNATURE – Authorized representative acknowledging waste receipt: David Wellner

DATE: 2-6-07

9. MANIFEST NUMBER (Use this number on all continuation pages): 15892

10. CERTIFICATION

This is to certify that the herein-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. I/We also certify that the contents are classified, packaged, marked, and labeled and are in proper condition for transportation and disposal as described in accordance with the requirements of 10 CFR Parts 20 and 61, or equivalent state regulations.

AUTHORIZED SIGNATURE: David D Wright Jr | TITLE: Supply Chain Coordinator | DATE: 2/6/07

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (including proper shipping name, hazard class, UN ID number, and any additional information)	12. DOT LABEL "RADIOACTIVE"	13. TRANSPORT INDEX	14. PHYSICAL AND CHEMICAL FORM	15. INDIVIDUAL RADIONUCLIDES	16. TOTAL PACKAGE ACTIVITY MBq	16. TOTAL PACKAGE ACTIVITY mCi	17. LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Radioactive material, low specific activity (LSA-II), 7, UN 3321	NA	NA	Liquid Liquid in Plastic	Sr-123 Co-57	8.8184E+00	1.6320E-01	LSA-II	37 L;66; 3.9 FT3	15893

FOR CONSIGNEE USE ONLY

TENNESSEE "LICENSE FOR DELIVERY" NO: _____

SOUTH CAROLINA TRANSPORT PERMIT NO: _____

US ECOLOGY GENERATOR NO: _____

US ECOLOGY PERMIT NO: _____

20.

FORM 540 (10-96)

FORM 541 — Radiation Service Organization, Inc.

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

CONTAINER AND WASTE DESCRIPTION

Additional Nuclear Regulatory Commission (NRC) Requirements for Control, Transfer and Disposal of Radioactive Waste

1. MANIFEST TOTALS

NUMBER OF PACKAGES/ DISPOSAL CONTAINERS	NET WASTE VOLUME	NET WASTE WEIGHT	SPECIAL NUCLEAR MATERIAL (grams) U-233	U-235	Pu	Total
1	m3 0.1104	kg 16.7829	NP	NP	NP	NP
	ft3 3.9000	lb 37.0000				

ACTIVITY	ALL NUCLIDES	TRITIUM	C-14	Tc-99	I-129	SOURCE (kg)	
MBq	5.6684E+00	NP	NP	NP	NP	(kg)	NA
mCi	1.5320E-01	NP	NP	NP	NP	(lbs)	NA

2. MANIFEST NUMBER 16852

3. PAGE 1 OF 1 PAGE(S)

4. SHIPPER NAME
Northern Virginia Community Hospital

SHIPMENT ID NUMBER
NA

DISPOSAL CONTAINER DESCRIPTION

5. CONTAINER IDENTIFICATION NUMBER/ GENERATOR ID NUMBER	6. CONTAINER DESCRIPTION (See Note 1) PROCESS REQUESTED (See Note 1A) BURIAL/DISPOSITION (See Note 2A)	7. VOLUME (m3)/(ft3)	8. WASTE AND CONTAINER WEIGHT (kg)/(lb)	9. SURFACE RADIATION LEVEL (mSv/hr)/(mrem/hr)	10. SURFACE CONTAMINATION (MBq/100 cm2)/(dpm/100cm2) ALPHA	BETA-GAMMA
[illegible]NVCH	19 FIBERBOARD BOX DI E	0.1104	16.7[illegible]	6.0000E-03	<1.6700E-08	<1.6700E-06
		3.9000	37.0000	6.0000E-01	<1.0000E+02	<1.0000E+03
Shipment Totals		0.1104	16.7829			
		3.9000	37.0000			

WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER

11. WASTE DESCRIPTOR (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER (m3)/(FT3)	13. SOLIDIFICATION OR STABILIZATION MEDIA (See Note 3)	14. CHEMICAL FORM/ CHELATING AGENT	WEIGHT % CHELATING AGENT (if > 0.1%)	15. RADIONUCLIDES	MBq	mCi	16. WASTE CLASSIFICATION AS-Class A Stable AU-Class A Unstable B-Class B C-Class C
40-INCINERABLE TRASH	0.1104	NA	Liquid in Plastic/NP	NP	Ba-133	5.6314E+00	1.5220E-01	AU
	3.9000				Co-57	3.7000E-02	1.0000E-03	
					Subtotal	5.6684E+00	1.5320E-01	
					Total	5.6684E+00	1.5320E-01	
						5.6684E+00	1.5320E-01	

15. RADIOLOGICAL DESCRIPTION: INDIVIDUAL RADIONUCLIDES AND ACTIVITY (MBq) AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT

Note 1: Container Description Codes. For containerized waste requiring disposal in approved structural overpacks the numerical code must be followed by "-OP."

1. Wooden Box or Crate
2. Metal Box
3. Plastic Drum or Pail
4. Metal Drum or Pail
5. Metal Tank or Liner
6. Concrete Tank or Liner
7. Polyethylene Tank or Liner
8. Fiberglass Tank or Liner
9. Demineralizer
10. Gas Cylinder
11. Bulk, Unpackaged Waste
12. Unpackaged Components
13. High Integrity Container
19. Other. Describe in Item 6, or additional page

Note 1A: Process Requested

C	Compaction
SR	Steam Reforming
DI	Direct Incineration
SI	Sort & Incinerate
D	Decon
G	Green is Clean
M	Metal Melt
T	Trans-Ship
U	Liquid for Incineration
OI	Oil for Incineration
O	Other (describe)

NOTE 2: Waste Descriptor Codes. (Choose up to three which predominate by volume.)

20. Charcoal
21. Incinerator Ash
22. Soil
23. Gas
24. Oil
25. Aqueous Liquid
26. Filter Media
27. Mechanical Filter
28. EPA or State Hazardous
29. Demolition Rubble
30. Cation Ion-exchange Media
31. Anion Ion-exchange Media
32. Mixed Bed Ion-exchange Media
33. Contaminated Equipment
34. Organic Liquid (except oil)
35. Glassware or Labware
36. Sealed Source/Device
37. Paint or Plating
38. Evaporator Bottoms/Sludges/ Concentrates
39. Compactible Trash
40. Noncompactible Trash
41. Animal Carcass
42. Biological Material (except animal carcass)
43. Activated Material
99. Other. Describe in Item 11, or additional page

NOTE 2A: Burial/Disposition Site

B	Barnwell Waste Management
E	Envirocare
R	Richland, WA
PR	Process and Return
O	Other

Note 3: Solidification and Stabilization Media Codes. (Choose up to three which predominate by volume. For media meeting disposal site structural stability requirements, the numerical code must be followed by "-S," and the media vendor and brand name must also be identified in Item 13. Code 100=NONE REQUIRED

Solidification

90. Cement
91. Concrete (encapsulation)
92. Bitumen
93. Vinyl Chloride
94. Vinyl Ester Styrene
99. Other. Describe in Item 13, or additional page
100. None Required.

FORM 541 (10-06)

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

4/10/2007, and to inform you that the initial processing which includes an administrative review has been performed.

☑ TERM 45-16222-01 (NORTHERN VIRGINIA COMMUNITY HOSPITAL)
There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

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

---

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

Your action has been assigned **Mail Control Number** 140365.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.

NRC FORM 532 (RI)
(6-96)

Sincerely,
Licensing Assistance Team Leader