HSA BUILDING FACT SHEET

Building Number / Name: 516 / Former Diamond Ordnance Radiation Facility (DORF)

Current Tenant / Use: Health Physics Office Temporary Radioactive Waste Decay and Storage Facility

Original / Former Use: DORF Experiments

Date of Construction: 1963

Construction Materials: Unknown

Total Sq. Footage: 3051; outdoor former underground storage tank area covered 2335 sq. ft.

Renovation Status: Never fully renovated; when DORF was removed in 1977, new concrete was placed in reactor pool

Floors: 2 ½ (Main Floor and Lower Floor with Mezzanine Level)

Current Building Status: Existing, in-use

Sources of Information: *(References, Interviews)*
Document Reviews – CHAMMP Report, 1997; Rockwell Decommissioning Report, 1980; ARO Permit DORF-97-1; RAM Inventory Maintained by HPO; UST Closure, 10/20/1999
Site Visit and Interviews – Interview with Mr. Burton

Radiological Data Summary *(RCOPCs, Impacted Room(s) / Area(s), etc.)*:
• Radionuclides Used/Potential RCOPCs: Am-241, Ba-133, C-14, Ca-45, Cd-109, Ce-141, Cl-36, Co-57, Co-60, Cr-51, Cs-137, Eu-152, Eu-154, Fe-59, Ga-67, Gd-153, H-3, I-123, I-125, I-129, I-131, In-111, Ir-192, Mn-54, Mo-99, Na-22, Nb-95, Ni-63, P-32, P-33, Pu-239, Ra-226, Rb-86, Ru-103, S-35, Sb-125, Sc-46, Se-75, Sr-85, Sr-89, Sr-90, Ta-182, Tc-99m, Tl-201, Tl-204, U-NAT, Xe-127, Xe-133, Yb-169, Zn-65

• Potentially Impacted Rooms: Lower Floor, Main Floor, Mezzanine Level, Truck, Exposure Room

• Preliminary Dose Rate Survey (May 9, 2008): Both contact and general area (~1 meter above floor at least 30 cm from any wall) dose rate measurements were collected using a Bicron MicroRem meter provided by the WRMC HPO. Contact dose rates as high as 80 µrem/hr were measured on the north and south walls adjacent to the new freezer. These surfaces appeared to be in the direct exposure fan pattern from the reactor pool opening and thus were likely irradiated at higher primary neutron fluence rates. No access was available along the western wall behind the Rad Storage Freezer. The gamma dose rates dropped on the walls and floor with distance to the former pool shield door (which was removed in 1977 and is now a solid concrete wall). No elevated dose rates were observed outside of the Exposure Room.

Current Radiological Status: Radionuclides currently being stored include Iodine-125,-131 (I-125, I-131), Chromium-51 (Cr-51), Phosphorus-32 (P-32), Sulfur-35 (S-35), Technicium-99m (Tc-99m), among others. These wastes are stored in drums, laboratory overpack containers, i.e. 'labpacks', plastic trash bags, and boxes. Typical waste products also contain longer-lived nuclides like Carbon-14 (C-14, T1/2 = 5700 yrs) and Tritium (H-3, T1/2 = 12.3 yrs), but at the time of our visit neither of these nuclides were present in the inventory.

Site Visit Information: (*Date Toured, Site Contact, Security Issues)*
Site Contact – Dave Burton
A tour of the building was conducted on May 9, 2008 by Joe Weismann, Mike Barsa, and Dave Burton. The various rooms on the basement level are used to decay short-lived hospital and research nuclides until they may be shipped offsite as purely bio-medical wastes.

In addition to the containerized wastes, the DORF also has the following waste processing equipment that is known (or suspected) to be contaminated:
(2) Drum Compactors, an active unit on the Main Floor (blue) and a retired unit on the basement level. The retired unit is suspected to only have contamination on the impact head.
(1) Vial Crusher, which is used to separate the scintillation fluids from the glass and plastic vials. This unit is assumed to be contaminated and will require disposal. The exhaust of the crusher is vented through a series of filters (HEPA and charcoal) prior to its release outdoors.
(1) Inactive Radioactive Hood on the Main Floor. The exhaust from the hood was also vented through dual HEPA filters located on top of the hood assembly.

Water from the reactor pool was stored in 3 5000-gal underground storage tanks, but these tanks found to be free of contamination and removed by October 1999.

In addition to the waste processing equipment, there is an assortment of hazardous waste issues present within Bldg 516 primarily from the presence of lead. These include:
• Stacks of lead bricks that were previously used for shielding purposes within the facility.
• Several storage 'pigs', either in the form of enclosed solid lead or containing lead shot. The versions containing lead shot previously were filled with oil to fill the void space, but have since been drained. One of these units has damage resulting in loss of lead shot from the shield.
• Lead-lined drums used (or unused) by hospital staff for gamma-emitting treatment or diagnostic radionuclides.
• Lead-lined penetrations in the ceiling of the Exposure Room. These lines were used to run cabling for electronics and other reactor support components. Any additional remedial activities on the ceiling of the exposure room must include consideration for this lead.

Preliminary MARSSIM Classification(s): Impacted, MARSSIM Class 1

Recommendations:
Remove and package all legacy radioactive wastes and processing equipment for disposal at a licensed or permitted radioactive waste disposal facility. This includes the compactors, crusher, hoods, and legacy containerized wastes that remain at the DORF.

Given the current state of the Exposure Room, additional remediation will be required in this area to support termination of the ARO permit in the near future, i.e. within the next 5-10 years.

A decay-in-place option should only be considered if the ARL/ARO determines that permit termination is not a time-critical priority. The three principal activation products remaining have half-lives measured in years (Co-60, T1/2 = 5.2 yrs; Eu-152, T1/2 = 13.5 yr, and Eu-154, T1/2 = 8.6 yr), so this decision would require upkeep of the current ARO permit conditions until that time when conditions fall below 25 mrem/yr (current dose estimate is 57 – 70 mrem/yr from direct exposure alone)

Remediation of the activated surfaces in the Exposure Room will be far more cost-effective than demolition of the entire Building 516 as radioactive waste. Concrete removal in the Exposure Room may be accomplished using penetrating hammers, scabblers, or diamond-tipped cutting devices.

Removal should continue until the ambient exposure rates fall below a nominal 12 μrem/yr above background, which would allow a 2000 hr/year occupation by a critical group receptor and still fall below 25 mrem/yr. Provided that an average depth of 1-ft of additional concrete must be removed from all surfaces of the Exposure Room, this would lead to a waste volume of less than 50 cubic yards (assuming room dimensions of 20' x 15' x 8'). It must be noted that the actual volume will likely be far less than this value, given the previous remediation that has occurred and the uneven activation profile present.

Independent of the Exposure Room, a full characterization/final status survey (FSS) should be performed in all other areas on the Main Level and Basement Level (after waste removal has occurred) using the guidance provided in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). All surveys should be designed as a FSS to take advantage of the possibility that many areas will pass in their current condition. These surveys should include the following:

- All areas should be classified as MARSSIM Class 1;
- 100% coverage scans of all accessible floors and lower walls (up to 2 meters) with gas-flow proportional detectors as well as focused scans using sodium iodide (NaI) detectors. Scans of upper walls and ceilings should be performed using engineering judgment based on potential for contamination;
- Static measurements at predetermined locations (assume 15 per survey unit) using gas-flow proportional detectors;
- Swipes for removable alpha/beta contamination at predetermined and select biased locations based on scan survey results;
- Dose rate surveys.
- Swipes or swabs from all sinks, sink traps, hoods, and ventilation system components (including filter housings and ductwork) within Building 516 that had direct or potential contact with RAM. Positive identification of radioactive material in these areas will lead to further characterization and potential remediation. It is recommended that the NRC Indoor Building Surface and Surface Soil Screening Values found in NUREG-5512 Tables 5-19 and 6-91, respectively, be used as the derived concentration guideline levels (DCGLs) for this project. This would preclude the need for derivation of site-specific DCGLs for the DORF.

Perform a MARSSIM Class 1 FSS in the Exposure Room, post remediation. This FSS should include all of the components outlined above.

All final status survey (FSS) activities should be presented in a summary report that may be submitted to the WRAMC HPO, ARL, ARO, and the U.S. NRC for review and approval.

Photograph(s) Taken:

Outside

Entrance to Building

Truck

Location of Former Underground Water Retention Storage Tanks

Main Floor – Concrete Poured Into Pit Formerly Used to House Reactor

Main Floor – Vial Crusher

Main Floor – Waste Storage Drum Pallets

Main Floor – Refrigerator

Main Floor – Vial Crusher Ventilation (in "Equipment" Room)

Main Floor – Generator (in "Equipment" Room)

Main Floor – "Equipment" Room

Main Floor – Nuclear Medicine Waste Drums

Lower Floor - Entrance to Exposure Room (left) and Entrance to "Warm" Room (right)

Lower Floor – Lead Shielded Boxes and Entrance to "Warm" Room

Lower Floor – Nuclear Medicine Waste Storage

Lower Floor – Nuclear Medicine Waste Storage

"Warm" Room – Chromium Bottle

"Warm" Room – Rad Waste Sink

"Warm" Room – Chromium Bottle

"Warm" Room – Rad Waste Sink

Exposure Room – Concrete Cores and Scabbling (East Wall)

Exposure Room – Nuclear Medicine Clothing Waste (North Wall)

Exposure Room – Ceiling

Exposure Room – Titanium Pallets (South side of room, near entrance)

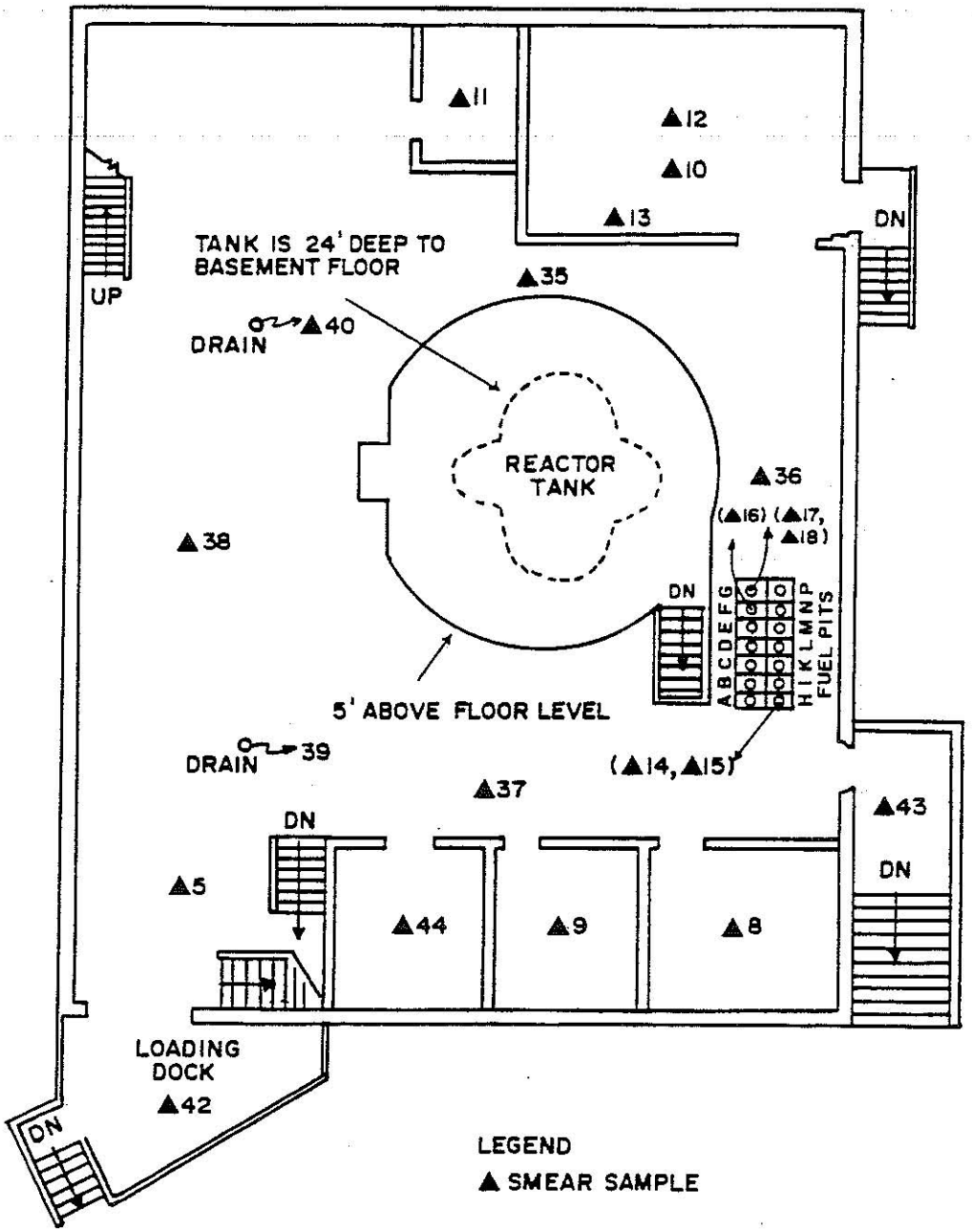
Exposure Room – Ceiling (steel bars)

Exposure Room – Freezer (West side of room)

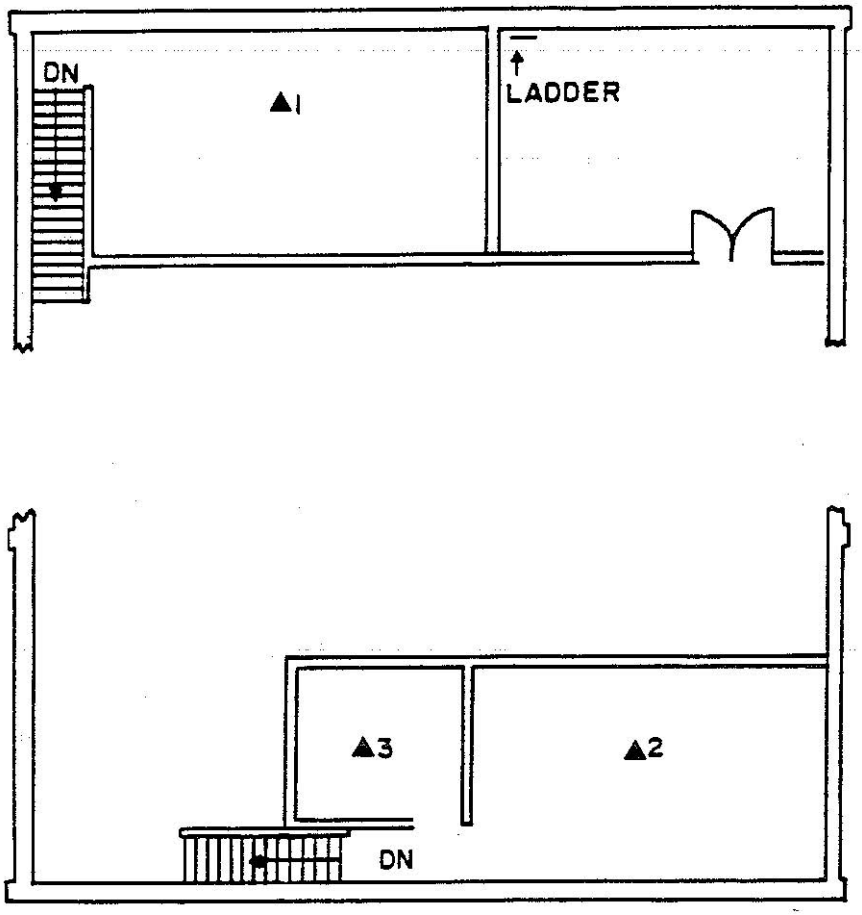
Exposure Room – Track for Former Door

Exposure Room – Behind Freezer

Floor Plan(s) / As-built Drawing(s): *(see below and attached)*
(At the time of DORF Decommissioning/Removal)



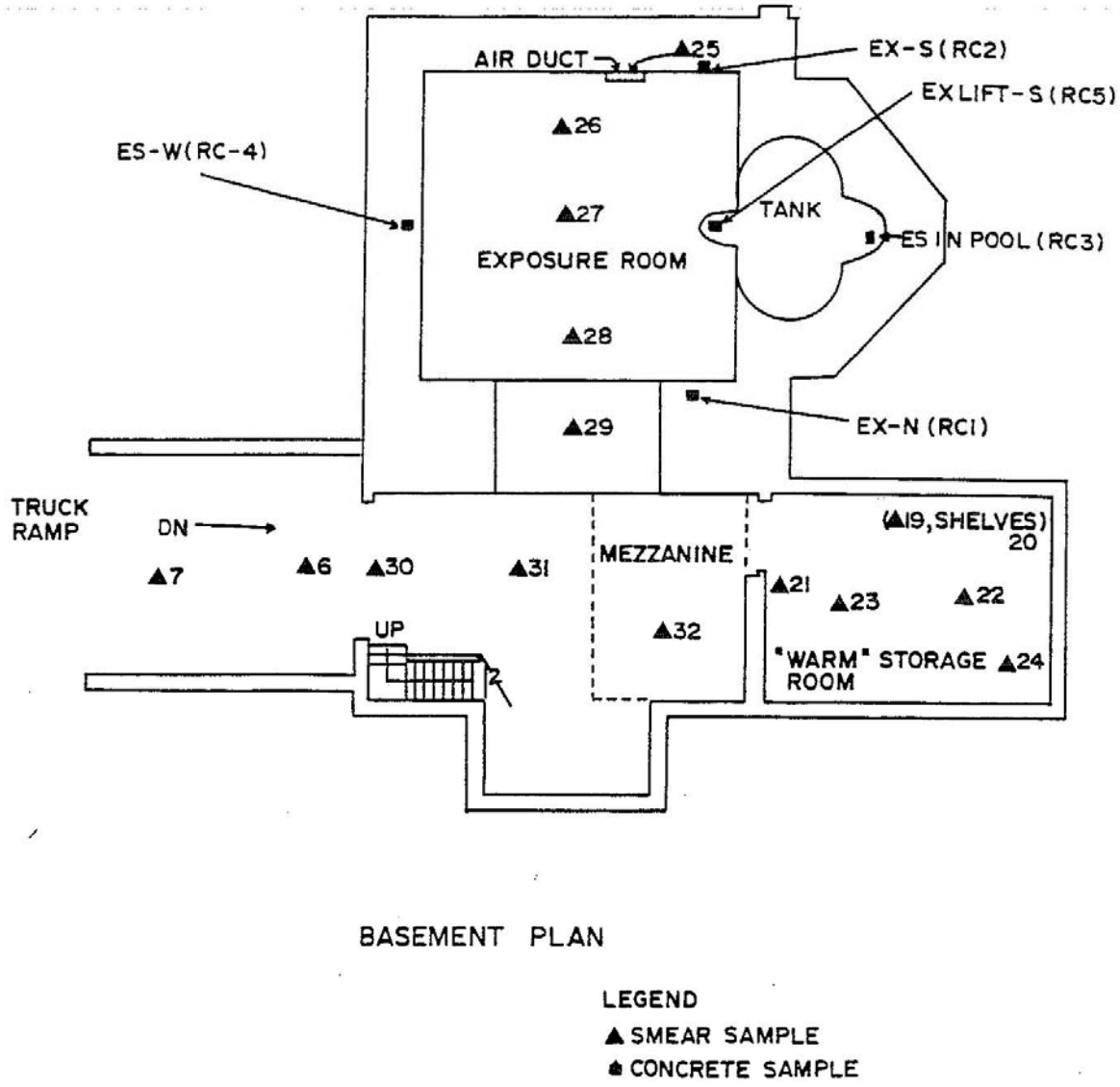
FIRST FLOOR PLAN



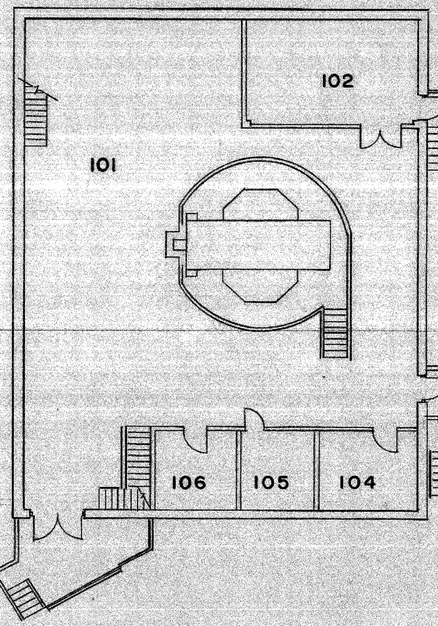
LEGEND

▲ SMEAR SAMPLE

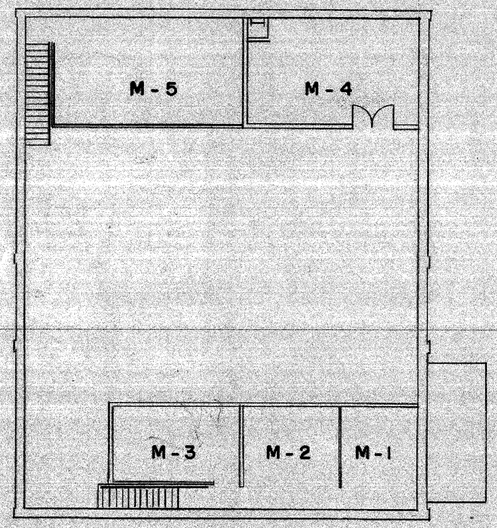
MEZZANINE PLAN



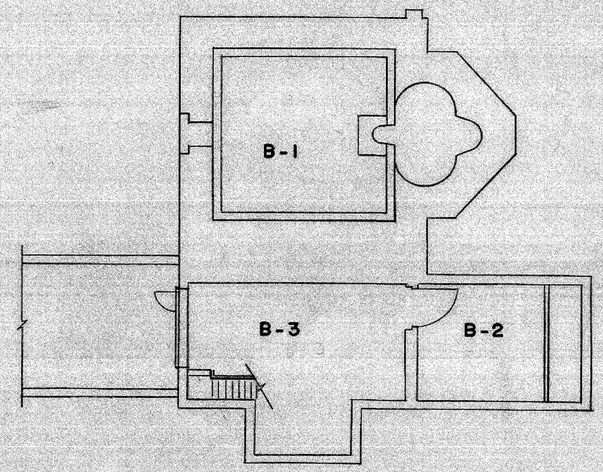
(See attached recent dose rate surveys)



FIRST FLOOR PLAN
1/8" = 1'-0"



MEZZANINE PLAN
1/8" = 1'-0"



BASEMENT PLAN
1/8" = 1'-0"

SYMBOL	DESCRIPTION	DATE	APPROVAL
	REVISION		

H.D.L. DWG. NO. D-003-35-08
DATE: 4 FEB 76
DRAFTSMAN: JCB
ENGR.
CHECKED
PROJECT ENGR.
APPROVED
SAFETY DIRECTOR
APPROVED
CHIEF ENGR. BRANCH
SATISFACTORY TO
CHIEF
DATE

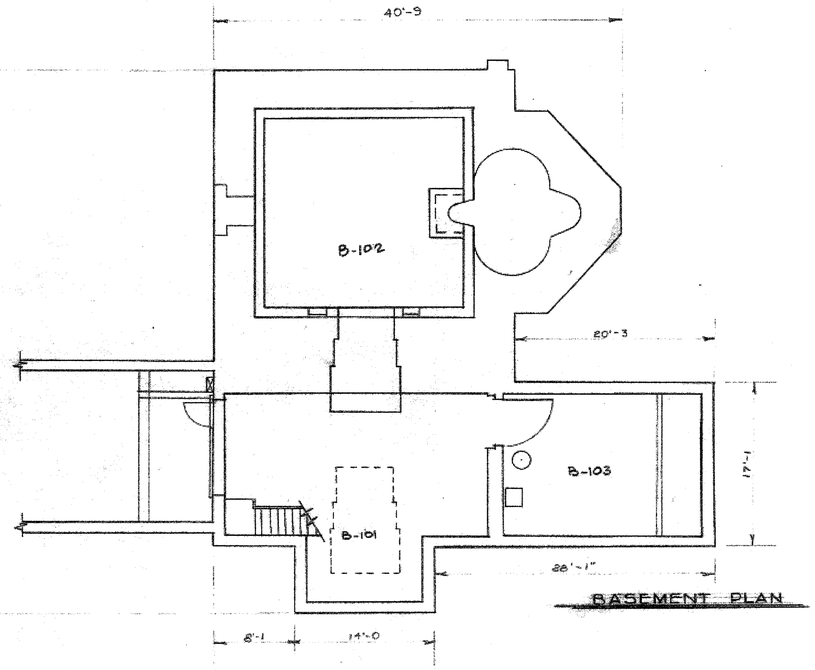
HARRY DIAMOND LABORATORIES
UNITED STATES ARMY MATERIEL COMMAND
ADELPHI, MARYLAND 20783

REACTOR BUILDING

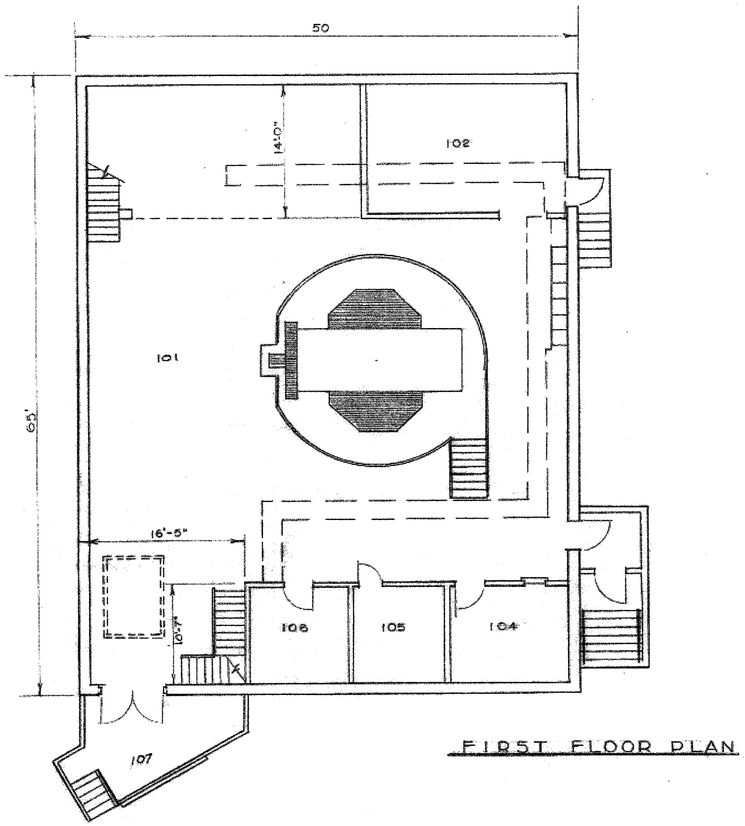
WALTER REED ARMY MEDICAL CENTER, MD.

APPROVED
COMMANDING OFFICER DATE
SCALE 1/8" = 1'-0" SPEC. NO.
CONTRACT NO.
DRAWING SIZE
SHEET OF

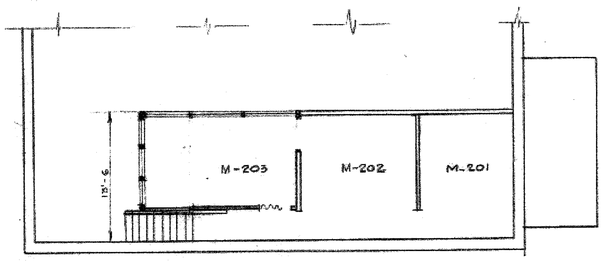
SORT # 76-C-0914



BASEMENT PLAN



FIRST FLOOR PLAN



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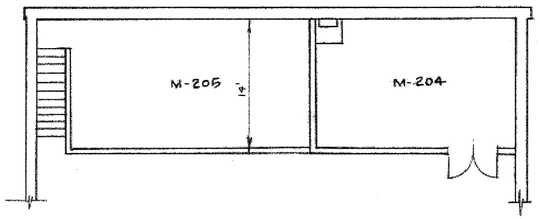
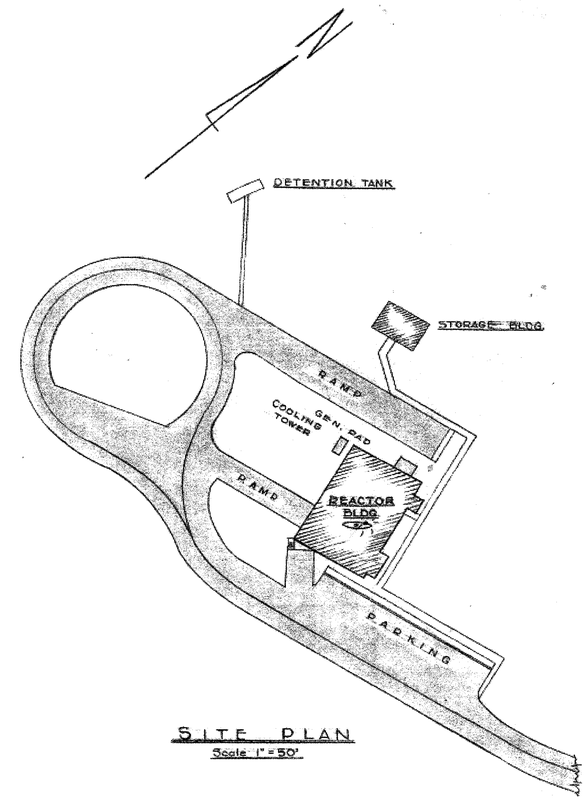


MEZZANINE PLAN



SITE PLAN

Scale 1" = 50'

SYMBOL	DESCRIPTION	DATE	APPROVAL
*	ROOM ENCLOSED (SEE HDL DWG No. 1257-2 SHEETS	9/20/63	VPC.

REVISION

D.O.F.L. DWG. NO.

D·002·35·08

DIAMOND ORDNANCE FUZE LABORATORIES
ORDNANCE CORPS — DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C.

DRAFTSMAN
TRACER
ENGR.
APPROVED
APPROVED CHIEF BRANCH
APPROVED SAFETY DIRECTOR

DIAMOND ORDNANCE RADIATION FACILITY

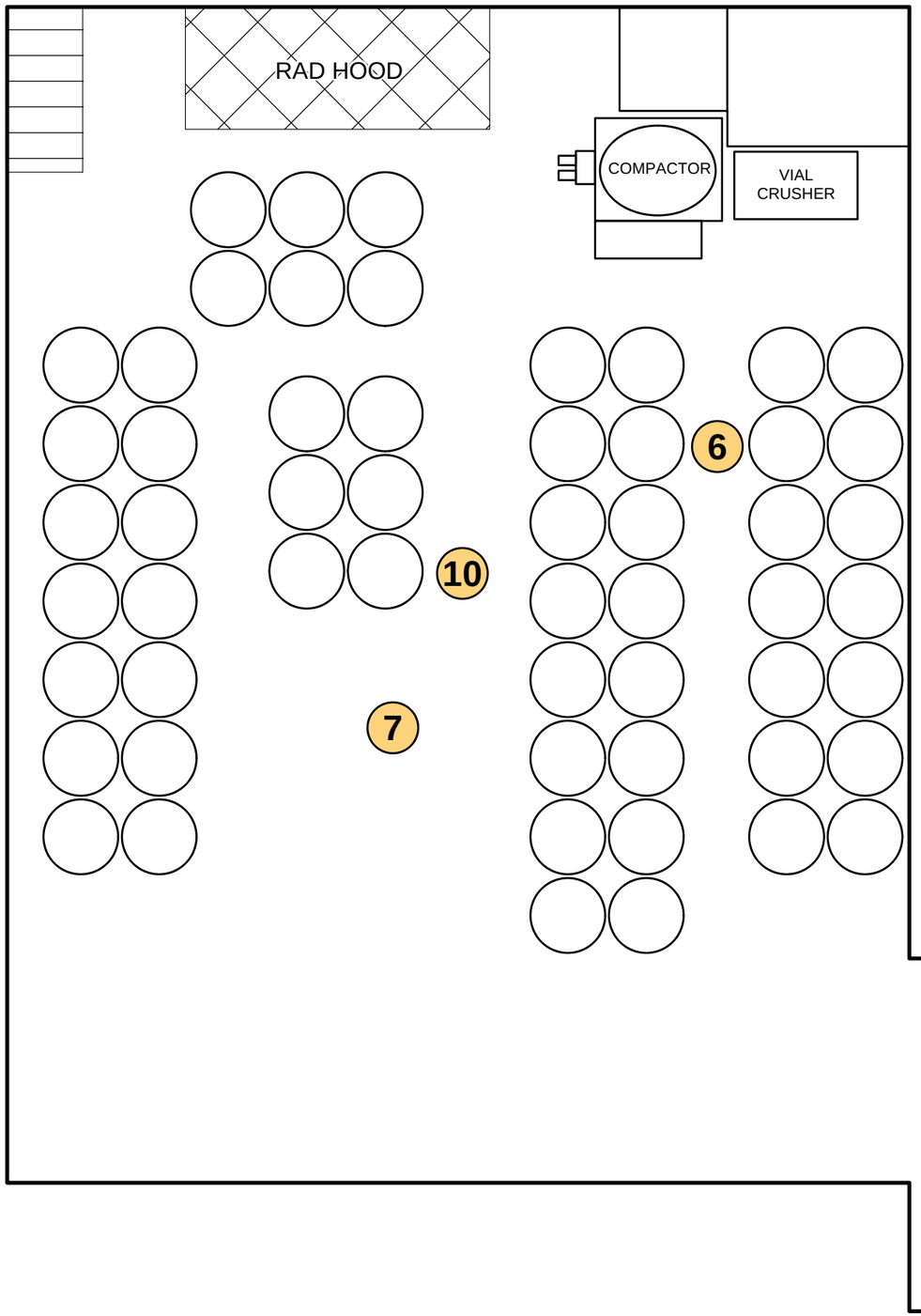
APPROVED COMMANDING OFFICER DATE

SATISFACTORY TO CHIEF
DATE

SCALE 1/8" = 1'-0" SPEC. NO.
CONTRACT NO.
SHEET 1 OF 1
DRAWING SIZE D

SORT # NA-C-0949

ORDTL FORM 1-AUG-60 471-D



DRAFT

7 **Survey Locations**
General area, 1 meter
(urem/hr)

REV	DATE	DESCRIPTION	BY

CABRERA SERVICES
103 E. MT ROYAL AVE.
BALTIMORE, MD 21202

U.S ARMY JOINT
MUNITIONS COMMAND
ROCK ISLAND ARSENAL, ILLINOIS

PREPARED BY: KJ

REVIEWED BY: MB

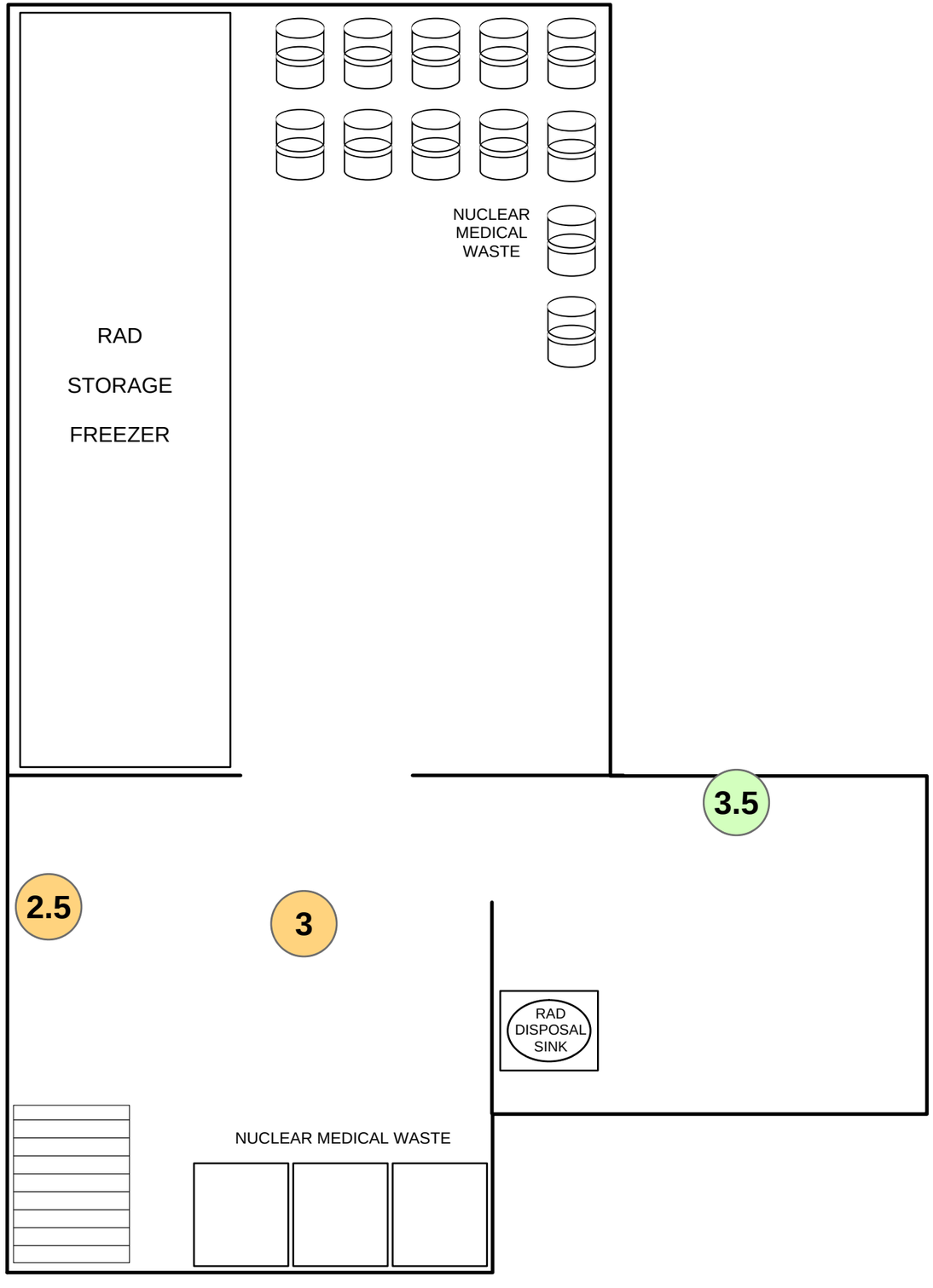
WALTER REED ARMY MEDICAL CENTER — FOREST GLEN ANNEX MARYLAND

PRELIMINARY DOSE RATE SURVEYS
DORF BUILDING 516
MAIN FLOOR

CONTRACT # W52P1J-07-D-0026 | PROJECT # 08-3030.03

SCALE: 0 0.5 1 2 3 Meters

DATE: 5/19/2008



DRAFT

3 Survey Locations
General area, 1 meter
(urem/hr)

3.5 Survey Locations
Walls 1 - 2 meters
(urem/hr)

REV	DATE	DESCRIPTION	BY

CABRERA SERVICES
103 E. MT ROYAL AVE.
BALTIMORE, MD 21202

U.S ARMY JOINT
MUNITIONS COMMAND
ROCK ISLAND ARSENAL, ILLINOIS

PREPARED BY: KJ

REVIEWED BY: MB

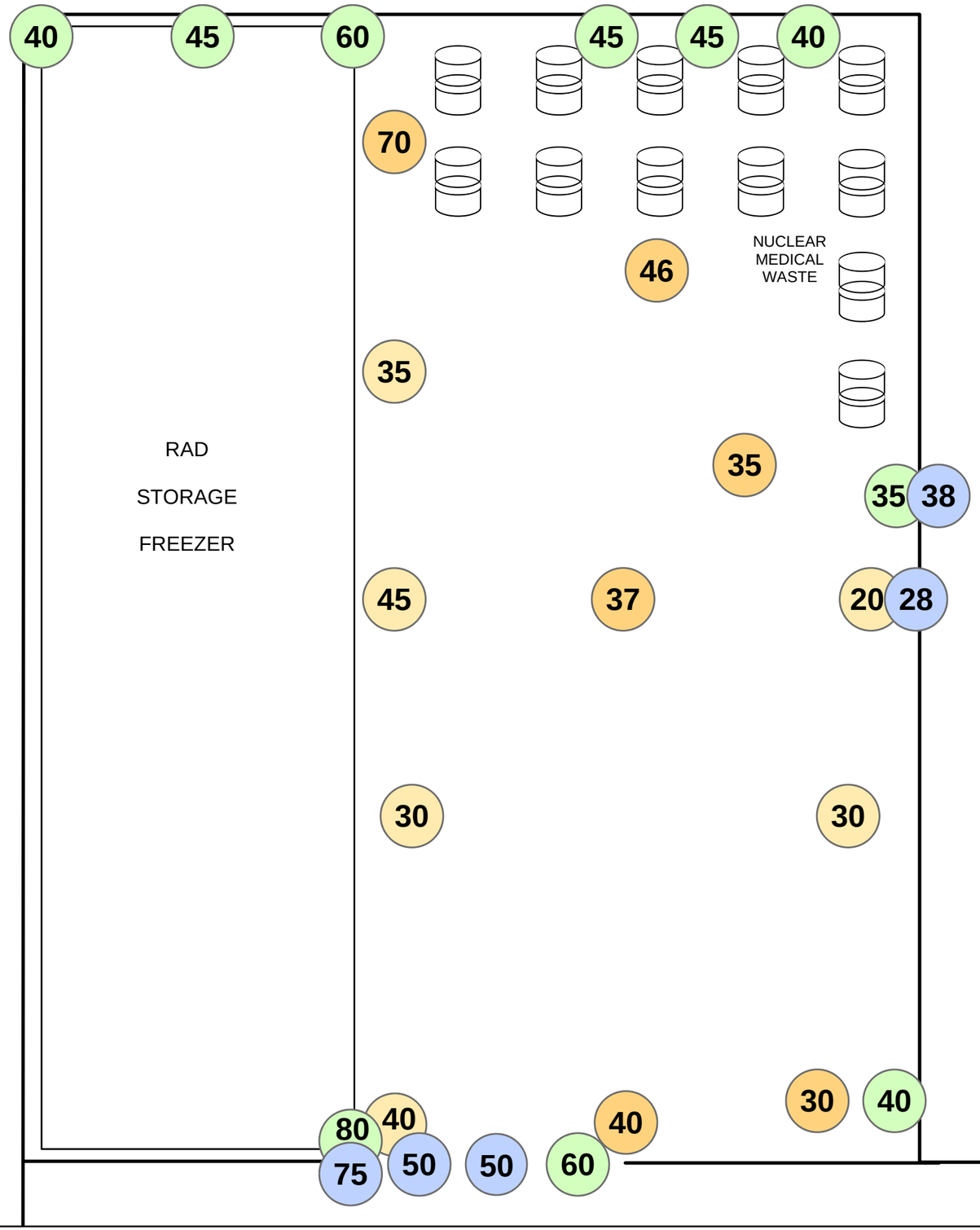
WALTER REED ARMY MEDICAL CENTER
FOREST GLEN ANNEX
MARYLAND

PRELIMINARY DOSE RATE SURVEYS
DORF BUILDING 516
BASEMENT FLOOR

CONTRACT # W52P1J-07-D-0026
PROJECT # 08-3030.03

SCALE: 0 0.375 0.75 1.5 2.25 Meters

DATE: 5/19/2008



DRAFT

30	Survey Locations on Floor (urem/hr)
35	Survey Locations, General area, 1 meter (urem/hr)
40	Survey Locations, Walls 1 - 2 meters (urem/hr)
75	Survey Locations, Walls > 2 meters (urem/hr)

REV	DATE	DESCRIPTION	BY

CABRERA SERVICES
103 E. MT ROYAL AVE.
BALTIMORE, MD 21202

U.S ARMY JOINT
MUNITIONS COMMAND
ROCK ISLAND ARSENAL, ILLINOIS

PREPARED BY: KJ

REVIEWED BY: MB

WALTER REED ARMY MEDICAL CENTER — FOREST GLEN ANNEX MARYLAND

PRELIMINARY DOSE RATE SURVEYS
DORF BUILDING 516
EXPOSURE ROOM

CONTRACT # W52P1J-07-D-0026

PROJECT # 08-3030.03

SCALE: 0 0.25 0.5 1 1.5 Meters

DATE: 5/19/2008

Radiation Lab Summary Report

Room: LOWER LEVEL **Building:** 516, DORF

Authorization: 221, Mr. David W. Burton

Department: HEALTH PHYSICS

Frequency: 7 DAYS

Radionuclide (s): All

HPO Surveyor: Torres

Inspection Date: 23 July 2008

Meter Model: L3

Meter Serial Number: 11872

Calibration Due Date: 5 Jan 09

Survey Checks

	Yes	NA	No
Are all radioactive materials secure?	✓		
Is the room posted?	✓		
Is the work area posted?	✓		
Is equipment for radioactive use posted?	✓		
Have user performed surveys?		✓	

Date Of Last User Survey: NA

User Inventory Log:

Isotope / Activity Used: N/A

Maximum Daily Use:

Lab Survey Meter:

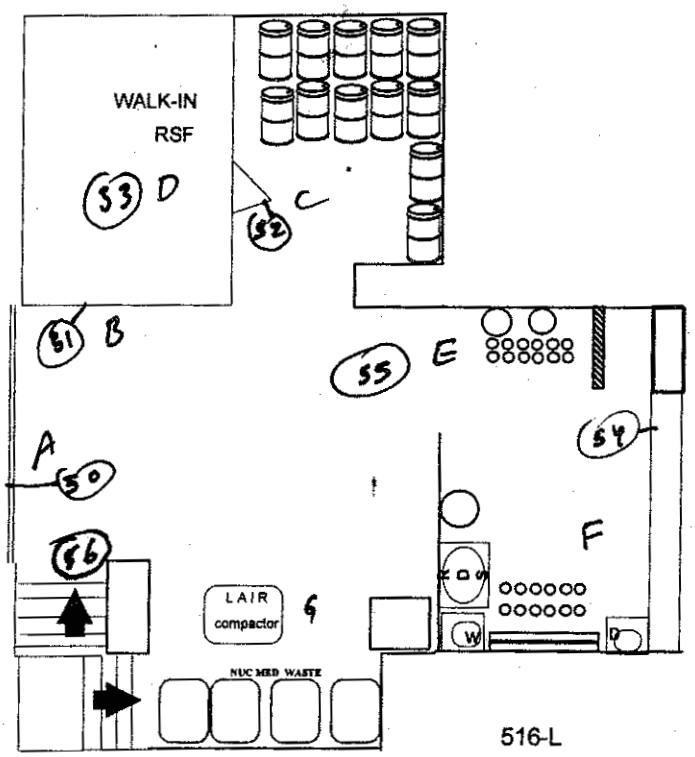
Model: L3

Meter Serial Number: 11872

Calibration Due Date: 5 Jan 09

Meter Readings

BKG	100	cpm mR/hr
A	40	cpm mR/hr
B	60	cpm mR/hr
C	60	cpm mR/hr
D	80	cpm mR/hr
E	60	cpm mR/hr
F	80	cpm mR/hr
G	40	cpm mR/hr



516-L

Laboratory Analysis

Date: 23 Jul 08

Swipe Numbers: S0-S6

Technician: Torres

Auto-gamma LSC (2)

Record any samples > 200dpm of removable contamination. If 2000 dpm, resurvey within 5 working days

Swipe	Isotope	Efficiency	MDA (dpm)	DPM	Comments

Completed

All swipes < 200 dpm

Surveyor Comments

Assay Definition-

Assay Description:
Routine survey, 2 minute counts

Assay Type: DPM (Dual)
Report Name: Contamination survey
Output Data Path: C:\Packard\Tricarb\Results\routine\routine surveys, 2 minute counts
\20080723_1757
Raw Results Path: C:\Packard\Tricarb\Results\routine\routine surveys, 2 minute counts
\20080723_1757\20080723_1757.results
Assay File Name: C:\Packard\TriCarb\Assays\routine surveys, 2 minute counts.lsa

Count Conditions-

Nuclide: 3H-14C+P32
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Sets:
  Low Energy: 3H
  Mid Energy: 14C
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.0	18.6	1st Vial
B	18.6	156.0	1st Vial
C	156.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: On
Colored Samples: On Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

S#	Count Time	CPMA	CPMB	CPMC	DPM1	DPM2	SIS	tSIE	MESSAGES
1	10.00	4	7	4	0	0	45.34	420.71	B
2	2.00	0	1	0	0	1	0.00	425.28	
3	2.00	0	1	0	0	1	0.00	414.26	
4	2.00	0	0	0	0	0	0.00	423.93	
5	2.00	0	0	0	1	0	0.00	419.01	
6	2.00	0	1	0	0	1	123.59	409.28	
7	2.00	1	0	1	3	0	142.31	417.46	
8	2.00	0	0	1	0	0	0.00	420.16	
9	2.00	0	0	0	1	0	0.00	416.71	

Radiation Lab Summary Report

Room: MAIN **Building:** 516, DORF **HPO Surveyor:** Torres

Authorization: BURTON, DAVID 221 **Inspection Date:** 23 Jul 08

Department: HEALTH PHYSICS **Meter Model:** L3

Frequency: 7 DAYS **Meter Serial Number:** 11872

Radionuclides: ALL **Calibration Due Date:** 5 Jan 09

Survey Checks

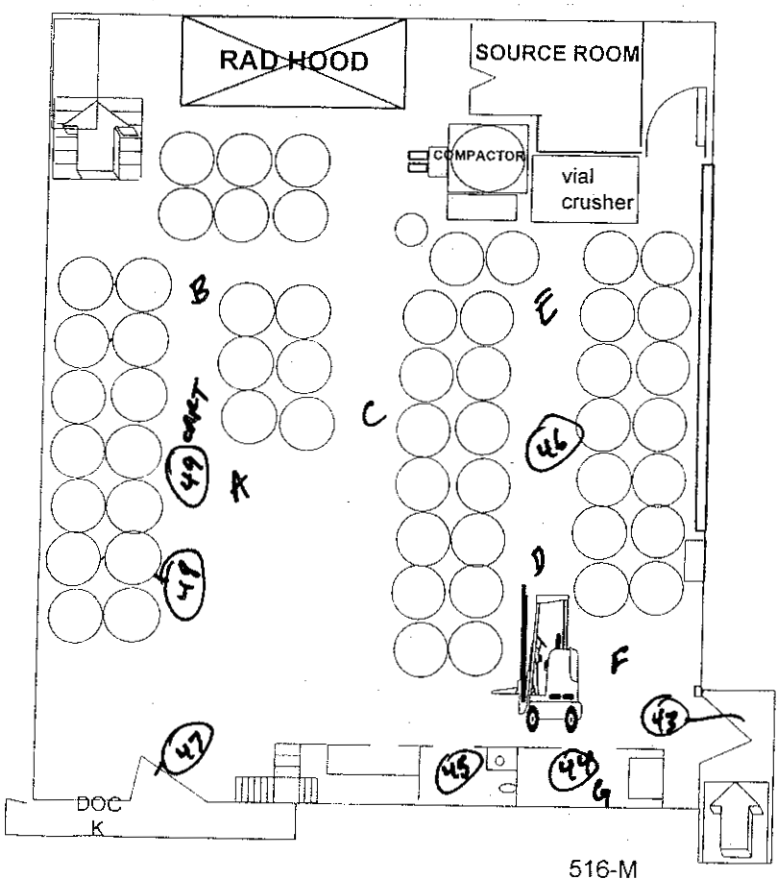
	Yes	No	NA
RAM Secure?	✓		
Room Posted?	✓		
Work Area Posted?	✓		
Equipment Posted?	✓		
User Surveys Performed?			✓

Date Of Last User Survey: NA

User Inventory Log:
Isotope / Activity Used: N/A
Max Daily Use:
Lab Survey Meter:
Model Number: L3
Serial Number: 11872
Calibration Due Date: 5 Jan 09

Meter Readings

BKG	100	cpm mR/hr
A		cpm mR/hr
B	80	cpm mR/hr
C	80	cpm mR/hr
D	60	cpm mR/hr
E	60	cpm mR/hr
F	60	cpm mR/hr
G	80	cpm mR/hr



516-M

Laboratory Analysis

Date: 23 Jul 08 Swipe Numbers: 43-99

Technician: Torres LSC: 16 - 22 Auto-gamma:

Record any samples > 200dpm of removable contamination. If 2000 dpm, resurvey within 5 working days

Swipe	Isotope	Efficiency	MDA (dpm)	DPM	Swipe	Isotope	Efficiency	MDA (dpm)	DPM	Comments

Completed

All swipes < 200 dpm

Surveyor Comments

Assay Definition-

Assay Description:
Routine survey, 2 minute counts

Assay Type: DPM (Dual)
Report Name: Contamination survey
Output Data Path: C:\Packard\Tricarb\Results\routine\routine surveys, 2 minute counts\20080723_1757
Raw Results Path: C:\Packard\Tricarb\Results\routine\routine surveys, 2 minute counts\20080723_1757\20080723_1757.results
Assay File Name: C:\Packard\TriCarb\Assays\routine surveys, 2 minute counts.lsa

Count Conditions-

Nuclide: 3H-14C+P32
   Quench Indicator: tSIE/AEC
   External Std Terminator (sec): 0.5 2s%
   Pre-Count Delay (min): 0.00
Quench Sets:
   Low Energy: 3H
   Mid Energy: 14C
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.0	18.6	1st Vial
B	18.6	156.0	1st Vial
C	156.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: On
Colored Samples: On Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

S#	Count Time	CPMA	CPMB	CPMC	DPM1	DPM2	SIS	tSIE	MESSAGES
1	10.00	4	7	4	0	0	45.34	420.71	B
2	2.00	0	1	0	0	1	0.00	425.28	
3	2.00	0	1	0	0	1	0.00	414.26	
4	2.00	0	0	0	0	0	0.00	423.93	
5	2.00	0	0	0	1	0	0.00	419.01	
6	2.00	0	1	0	0	1	123.59	409.28	
7	2.00	1	0	1	3	0	142.31	417.46	
8	2.00	0	0	1	0	0	0.00	420.16	
9	2.00	0	0	0	1	0	0.00	416.71	

Radiation Lab Summary Report

Room: MEZZANINE **Building:** 516, DORF

Authorization: 221 / Mr. David Burton

Department: HEALTH PHYSICS

Frequency: 90 DAYS

Radionuclide: ALL

HPO Surveyor: Torres

Inspection Date: 12 May 08

Meter Model: L3

Meter Serial Number: 11872

Calibration Due Date: 5 Jan 09

Survey Checks

	Yes	No	NA
Are all radioactive materials secure?	✓		
Is the room posted?	✓		
Is the work area posted?	✓		
Is equipment used for rad use posted?	✓		
Have user performed surveys ?			✓

Date Of Last User Survey: NA

User Inventory Log:
Isotope / Activity Used: NA

Max Daily Use: NA

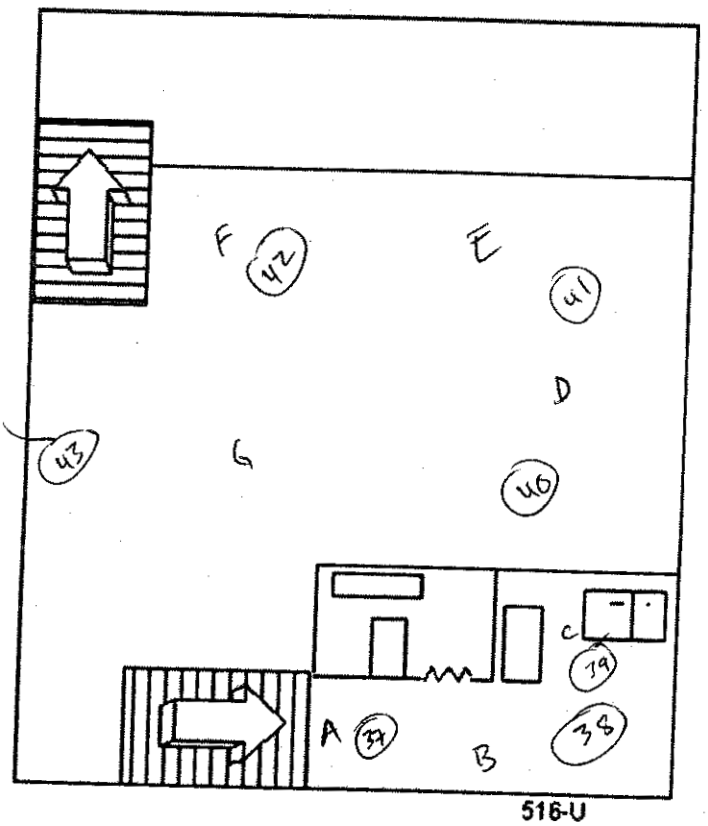
Lab Survey Meter:
Meter Model: L3

Meter Serial Number: 11866

Calibration Due Date: 15 Feb 09

Meter Readings

BKG	80	cpm ~~mR/hr~~
A	40	cpm mR/hr
B	40	cpm mR/hr
C	40	cpm mR/hr
D	40	cpm mR/hr
E	40	cpm mR/hr
F	60	cpm mR/hr
G	40	cpm ~~mR/hr~~



516-U

Laboratory Analysis

Date: 12 May 08

Swipe Numbers: 37-43

Technician: Torres

Auto-gamma: LG-15

LSC: LG-15

Record any samples > 200dpm of removable contamination. If 2000 dpm, resurvey within 5 working days

Swipe	Isotope	Efficiency	MDA (dpm)	DPM

Swipe	Isotope	Efficiency	MDA (dpm)	DPM

Comments

Completed

All swipes < 200 dpm

Surveyor Comments

COUNTING

1480, RiaCalc WIZ, program 3.6, serial #4800540

ASSAY 12-May-2008 18:01:39

Protocol id 1 ROUTINE2
Time limit 120
Count limit 99999999
Dual isotopes 15-1024 + 1k-2k
Protocol date 28-Mar-2008 09:32:23
Run id. 57

				15-1024			1k-2k		
POS	RACK	BATCH	TIME	COUNTS	CPM	ERROR %	COUNTS	CPM	ERROR %
1	1	1	120	298	3.0	181.08	55	1.6	252.64
2	1	2	120	275	-12.5	144.87	61	4.6	91.82
3	1	3	120	301	7.2	141.39	51	-0.4	979.25
4	1	4	120	293	7.3	347.27	45	-3.4	109.42
5	1	5	120	298	4.4	181.44	53	0.6	663.28
6	1	6	120	289	0.6	1317.75	52	0.1	4405.93
7	1	7	120	331	22.9	45.42	50	-0.9	436.78
8	1	8	120	287	-9.2	3052.96	65	6.6	65.95
9	1	9	120	257	-21.5	57.94	61	4.6	91.82
10	1	10	120	288	-0.6	4739.93	53	0.6	674.88
11	2	11	120	272	-5.9	116.30	49	-1.4	277.27
12	2	12	120	276	0.1	157.33	43	-4.4	83.01
13	2	13	120	300	4.1	152.33	55	1.6	254.25
14	2	14	120	274	-12.3	134.01	60	4.1	102.29
15	2	15	120	317	20.6	65.84	43	-4.4	83.01
16	2	16	120	285	0.6	709.60	49	-1.4	275.17
17	2	17	120	294	1.0	293.31	55	1.6	252.63
18	2	18	120	263	-11.8	72.75	51	-0.4	979.20
19	2	19	120	291	4.9	550.40	47	-2.4	157.79
20	2	20	120	295	-1.1	254.01	59	3.6	115.99
21	3	21	120	336	26.1	40.98	49	-1.4	273.10
22	3	22	120	270	-4.9	102.78	46	-2.9	129.44
23	3	23	120	269	-6.1	97.11	47	-2.4	157.78
24	3	24	120	277	0.6	172.41	43	-4.4	83.01
25	3	25	120	285	-3.4	709.60	55	1.6	254.25
26	3	26	120	276	-3.9	157.33	49	-1.4	275.17
27	3	27	120	278	-6.3	190.64	54	1.1	364.65
28	3	28	120	291	-5.2	550.39	62	5.1	83.40
29	3	29	120	307	4.9	98.45	59	3.6	115.99
30	3	30	120	278	-4.3	190.64	51	-0.4	979.15
31	4	31	120	296	6.1	224.04	49	-1.4	275.17
32	4	32	120	272	-3.2	116.46	45	-3.4	109.42
33	4	33	120	296	0.0	224.05	58	3.1	133.78
34	4	34	120	307	7.5	98.45	55	1.6	252.63
35	4	35	120	280	-5.3	241.48	54	1.1	364.65
36	4	36	120	294	1.7	292.38	54	1.1	364.65

END OF ASSAY

END OF COUNTING

Assay Definition-

Assay Description:
Routine survey, 2 minute counts

Assay Type: DPM (Dual)
Report Name: Contamination survey
Output Data Path: C:\Packard\Tricarb\Results\routine\routine surveys, 2 minute counts
\20080513_0859
Raw Results Path: C:\Packard\Tricarb\Results\routine\routine surveys, 2 minute counts
\20080513_0859\20080513_0859.results
Assay File Name: C:\Packard\TriCarb\Assays\routine surveys, 2 minute counts.lsa

Count Conditions-

Nuclide: 3H-14C+P32
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Sets:
Low Energy: 3H
Mid Energy: 14C
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.0	18.6	1st Vial
B	18.6	156.0	1st Vial
C	156.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: On
Colored Samples: On Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

S#	Count Time	CPMA	CPMB	CPMC	DPM1	DPM2	SIS	tSIE	MESSAGES
1	10.00	3	8	5	0	0	65.64	416.49	B
2	2.00	0	1	0	0	2	0.00	407.89	
3	2.00	3	1	2	5	1	27.52	417.67	
4	2.00	4	0	0	12	0	0.00	410.48	
5	2.00	4	0	1	11	0	0.00	435.36	
6	2.00	4	0	2	10	0	0.00	425.52	
7	2.00	0	0	0	0	0	0.00	427.03	
8	2.00	0	0	0	1	0	727.47	438.14	
9	2.00	4	0	1	10	0	0.00	459.82	

10	2.00	1	0	0	3	0	0.00	443.05
11	2.00	2	0	0	7	0	0.00	419.22
12	2.00	0	0	1	1	0	0.00	440.16
13	2.00	2	0	0	6	0	0.00	426.70
14	2.00	1	0	0	3	0	0.00	415.23
15	2.00	1	0	0	2	0	0.00	420.17
16	2.00	1	0	2	3	0	140.08	425.12
17	2.00	2	0	0	7	0	0.00	422.88
18	2.00	3	0	2	7	0	0.00	420.88
19	2.00	3	1	0	7	1	16.89	408.87
20	2.00	0	0	0	0	0	0.00	460.94
21	2.00	1	1	0	3	1	0.00	418.13
22	2.00	0	0	2	0	0	0.00	407.86
23	2.00	1	0	0	4	0	0.00	408.09
24	2.00	0	0	0	0	0	0.00	416.48
25	2.00	0	0	0	2	0	0.00	427.65
26	2.00	2	0	0	6	0	0.00	419.66
27	2.00	3	0	1	6	0	0.00	389.86
28	2.00	0	0	0	0	0	0.00	391.28
29	2.00	2	0	1	6	0	0.00	406.65
30	2.00	1	0	1	4	0	0.00	418.11
31	2.00	3	0	0	9	0	0.00	410.49
32	2.00	3	0	0	9	0	0.00	416.98
33	2.00	0	0	0	2	0	0.00	433.67
34	2.00	0	0	0	1	0	0.00	409.50
35	2.00	0	0	1	2	0	0.00	424.55
36	2.00	0	0	1	2	0	0.00	416.46

AUTHORITY FOR SELECTED RADIOACTIVE MATERIALS NOT CONTROLLED BY NUCLEAR REGULATORY COMMISSION (NRC)

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, possess, use and store the material(s) designated in Item 4. This authority is subject to conditions specified in Item 8 below.

1. ACTIVITY GRANTED AUTHORITY (Give name and address)	2. AUTHORIZATION NUMBER
Department of the Army Walter Reed Army Medical Center Washington, DC 20307	A 08-17-01
	3. EXPIRATION DATE 31 JUL 1987

4. MATERIAL AND MASS NUMBER	5. CHEMICAL AND/OR PHYSICAL FORM	6. QUANTITY LIMITATION
a. Atomic numbers 1 through 84, inclusive	a. Any accelerator produced or naturally occurring radioactive material	a. 2 curies total with no more than 400 millicuries of any element on hand at any one time
b. Ra-D(210-Pb) plus daughters	b. Sealed sources	b. 250 millicuries

7. AUTHORIZED USE

Medical purposes, research and development, instrument check and calibration as authorized by the Walter Reed Army Medical Center Radiation Control Committee

CONDITIONS

8. UNLESS OTHERWISE SPECIFIED, THE AUTHORIZED PLACE OF USE IS THE ADDRESS STATED IN ITEM 1 ABOVE.

Users will be approved individually by the Walter Reed Medical Center Radiation Committee

1. Walter Reed Army Medical Center, Washington, DC 20307
2. Forest Glen Section, Walter Reed Army Medical Center, Washington, DC 20307
3. Fort Detrick, MD 21701
4. Fort Myer, VA 22208
5. Fort Meade, MD 20755
6. Pentagon, Washington, DC 20301

PSP

SIGNATURE (Director, ~~HCO~~ and Chairman AMEDD Radioisotope Committee)
THOMAS M. GEER, BG, MC
DIRECTOR, PROFESSIONAL SERVICES

DATE
9 JUL 1984

OTSG FORM 1 FEB 76 348

AUTHORITY FOR SELECTED RADIOACTIVE MATERIALS NOT CONTROLLED BY NUCLEAR REGULATORY COMMISSION (NRC)

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, possess, use and store the material(s) designated in Item 4. This authority is subject to conditions specified in Item 8 below.

1. ACTIVITY GRANTED AUTHORITY *(Give name and address)*	2. AUTHORIZATION NUMBER
	3. EXPIRATION DATE

4. MATERIAL AND MASS NUMBER	5. CHEMICAL AND/OR PHYSICAL FORM	6. QUANTITY LIMITATION
c. 222-Rn plus daughters	c. Sealed sources	c. 500 millicuries
d. 226-Ra plus daughters	d. Sealed sources	d. 300 millicuries

7. AUTHORIZED USE

CONDITIONS

8. UNLESS OTHERWISE SPECIFIED, THE AUTHORIZED PLACE OF USE IS THE ADDRESS STATED IN ITEM 1 ABOVE.

SIGNATURE *(Director, HCO and Chairman AMEDD Radioisotope Committee)*	DATE

Radiation Lab Summary Report

Room: TRUCK **Building:** 516, DORF **HPO Surveyor:** Torres

Authorization: Mr. David Burton / Authorization 221 **Inspection Date:** 23 July 08

Department: HEALTH PHYSICS

Frequency: 7 DAYS **Meter Model:** L3

Radionuclides: All **Meter Serial Number:** 11872

Calibration Due Date: 5 Jan 09

Initial Checks

	Yes	No	NA
RAM Secure?	✓		
Room Posted?	✓		
Work Area Posted?	✓		
Equipment Posted?	✓		
User Surveys Performed?			✓

Date Of Last User Survey: _____

User Inventory Log:

Isotope / Activity Used: N/A

Max Daily Use: _____

Lab Survey Meter:

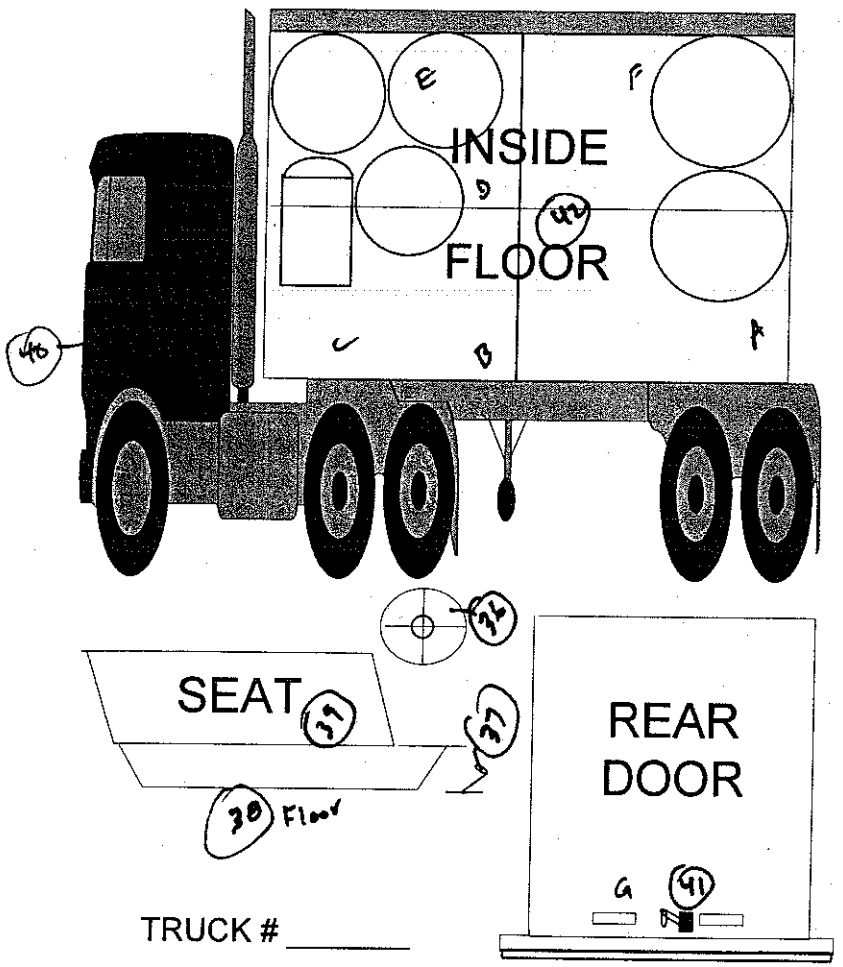
Meter Model: L3

Serial Number: 11872

Calibration Due Date: 5 Jan 09

Meter Readings

BKG	100	cpm ~~mR/hr~~
A	80	cpm mR/hr
B	40	cpm mR/hr
C	100	cpm mR/hr
D	40	cpm mR/hr
E	40	cpm mR/hr
F	60	cpm mR/hr
G	40	cpm ~~mR/hr~~



TRUCK # _____

Date: 23 Jul 08

Swipe Numbers: 36-42

Laboratory Analysis

Technician: Torres

Auto-gamma: LSC 9-15

Swipe	Isotope	Efficiency	MDA (dpm)	DPM	Comments

Record any samples > 200dpm of removable contamination. If 2000 dpm, resurvey within 5 working days

Completed

All swipes < 200 dpm

Surveyor Comments

Assay Definition-

Assay Description:
Routine survey, 2 minute counts

Assay Type: DPM (Dual)
Report Name: Contamination survey
Output Data Path: C:\Packard\Tricarb\Results\routine\routine surveys, 2 minute counts\20080723_1757
Raw Results Path: C:\Packard\Tricarb\Results\routine\routine surveys, 2 minute counts\20080723_1757\20080723_1757.results
Assay File Name: C:\Packard\TriCarb\Assays\routine surveys, 2 minute counts.lsa

Count Conditions-

Nuclide: 3H-14C+P32
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Sets:
  Low Energy: 3H
  Mid Energy: 14C
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.0	18.6	1st Vial
B	18.6	156.0	1st Vial
C	156.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: On
Colored Samples: On Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

S#	Count Time	CPMA	CPMB	CPMC	DPM1	DPM2	SIS	tSIE	MESSAGES
1	10.00	4	7	4	0	0	45.34	420.71	B
2	2.00	0	1	0	0	1	0.00	425.28	
3	2.00	0	1	0	0	1	0.00	414.26	
4	2.00	0	0	0	0	0	0.00	423.93	
5	2.00	0	0	0	1	0	0.00	419.01	
6	2.00	0	1	0	0	1	123.59	409.28	
7	2.00	1	0	1	3	0	142.31	417.46	
8	2.00	0	0	1	0	0	0.00	420.16	
9	2.00	0	0	0	1	0	0.00	416.71	

Radiation Lab Summary Report

Room: LOWER LEVEL **Building:** 516, DORF

Authorization: 221, Mr. David W. Burton

Department: HEALTH PHYSICS

Frequency: 7 DAYS

Radionuclide (s): All

HPO Surveyor: TORRES

Inspection Date: 2 MAY 08

Meter Model: L3

Meter Serial Number: 11872

Calibration Due Date: 5 Jan 09

Survey Checks

	Yes	NA	No
Are all radioactive materials secure?	✓		
Is the room posted?	✓		
Is the work area posted?	✓		
Is equipment for radioactive use posted?	✓		
Have user performed surveys?		✓	

Date Of Last User Survey: NA

User Inventory Log:

Isotope / Activity Used: NA

Maximum Daily Use: NA

Lab Survey Meter:

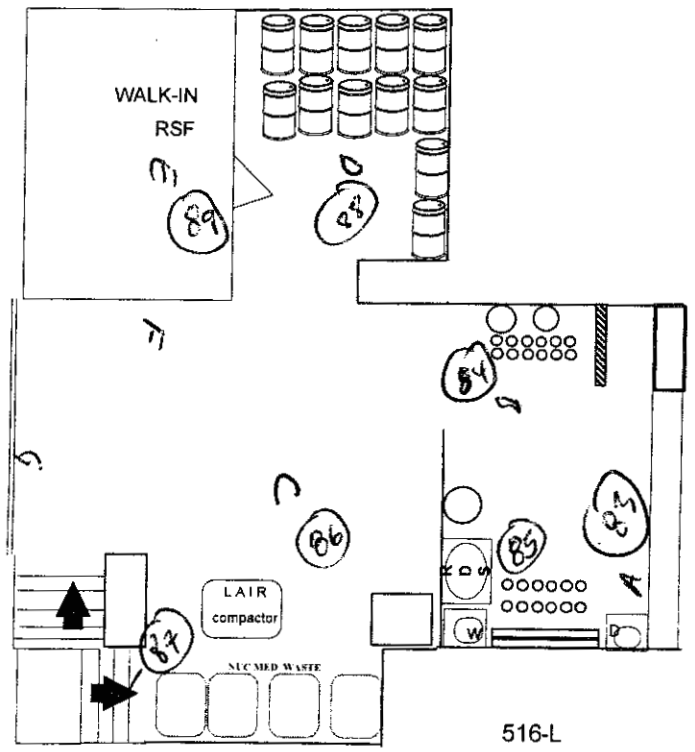
Model: L3

Meter Serial Number: 11866

Calibration Due Date: 15 Feb 09

Meter Readings

BKG	50	cpm mR/hr
A	80	cpm mR/hr
B	70	cpm mR/hr
C	60	cpm mR/hr
D	50	cpm mR/hr
E	60	cpm mR/hr
F	50	cpm mR/hr
G	45	cpm mR/hr



Laboratory Analysis

Technician: SSG Torres LSC: 9-15

Auto-gamma: 9-15

Date: 2 MAY 08 Swipe Numbers: 83 - 89

Record any samples > 200dpm of removable contamination. If 2000 dpm, resurvey within 5 working days

Swipe	Isotope	Efficiency	MDA (dpm)	DPM	Swipe	Isotope	Efficiency	MDA (dpm)	DPM

Comments

Completed

All swipes < 200 dpm

Surveyor Comments

COUNTING

1480, RiaCalc WIZ, program 3.6, serial #4800540

ASSAY 02-May-2008 12:19:09

Protocol id	1 ROUTINE2
Time limit	120
Count limit	99999999
Dual isotopes	15-1024 + 1k-2k
Protocol date	28-Mar-2008 09:32:23
Run id.	54

				---------15-1024---------			---------1k-2k----------		
POS	RACK	BATCH	TIME	COUNTS	CPM	ERROR %	COUNTS	CPM	ERROR %
1	1	1	120	275	-11.2	144.63	59	3.6	115.67
2	1	2	120	279	-5.8	213.10	54	1.1	364.66
3	1	3	120	271	-7.8	109.13	51	-0.4	979.18
4	1	4	120	260	-20.0	64.59	61	4.6	91.82
5	1	5	120	284	-7.3	512.17	60	4.1	102.79
6	1	6	120	278	-6.3	190.65	54	1.1	364.65
7	1	7	120	255	-16.5	54.21	52	0.1	3577.03
8	1	8	120	300	5.4	152.58	53	0.6	663.28
9	1	9	120	308	22.9	93.76	33	-9.4	35.03
10	1	10	120	293	9.3	347.24	42	-4.9	73.67
11	2	11	120	308	10.8	93.75	51	-0.4	930.47
12	2	12	120	278	-11.0	191.06	61	4.6	91.82
13	2	13	120	242	-29.0	37.95	61	4.6	91.82
14	2	14	120	278	-3.6	190.64	50	-0.9	431.62
15	2	15	120	294	7.1	293.34	46	-2.9	129.44
16	2	16	120	279	-5.1	213.09	53	0.6	674.97
17	2	17	120	286	-9.0	1152.60	64	6.1	70.68
18	2	18	120	283	-3.8	400.44	54	1.1	364.66
19	2	19	120	270	-11.0	102.78	55	1.6	252.64
20	2	20	120	272	-10.0	116.30	55	1.6	252.64
21	3	21	120	296	0.7	224.05	57	2.6	157.83
22	3	22	120	282	-0.9	328.57	49	-1.4	275.17

END OF ASSAY

END OF COUNTING

Assay Definition-

Assay Description:
Routine survey, 2 minute counts

Assay Type: DPM (Dual)
Report Name: Contamination survey
Output Data Path: C:\Packard\Tricarb\Results\routine\routine surveys, 2 minute counts \20080502_1627
Raw Results Path: C:\Packard\Tricarb\Results\routine\routine surveys, 2 minute counts \20080502_1627\20080502_1627.results
Assay File Name: C:\Packard\TriCarb\Assays\routine surveys, 2 minute counts.lsa

Count Conditions-

Nuclide: 3H-14C+P32
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Sets:
Low Energy: 3H
Mid Energy: 14C
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.0	18.6	1st Vial
B	18.6	156.0	1st Vial
C	156.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: On
Colored Samples: On Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

S#	Count Time	CPMA	CPMB	CPMC	DPM1	DPM2	SIS	tSIE	MESSAGES
1	10.00	5	9	5	0	0	61.54	445.05	B
2	2.00	0	0	0	0	0	0.00	454.28	
3	2.00	2	0	0	3	0	16.05	423.81	
4	2.00	3	0	0	8	0	61.08	447.38	
5	2.00	2	0	0	6	0	0.00	400.15	
6	2.00	0	0	0	0	0	0.00	416.89	
7	2.00	1	0	0	5	0	0.00	424.99	
8	2.00	0	0	0	1	0	0.00	426.67	
9	2.00	0	0	0	0	0	0.00	426.09	

10	2.00	2	0	0	5	0	0.00	420.17	
11	2.00	1	0	0	5	0	0.00	406.21	
12	2.00	0	0	0	0	0	0.00	417.17	
13	2.00	1	0	0	2	0	0.00	435.75	
14	2.00	0	0	0	1	0	0.00	419.34	
15	2.00	1	0	0	3	0	0.00	420.32	
16	2.00	0	0	0	0	0	0.00	413.02	
17	2.00	0	0	0	0	0	0.00	420.41	
18	2.00	0	0	0	0	0	0.00	414.06	
19	2.00	0	0	0	184	0	0.00	14.49	E

Radiation Lab Summary Report

Room: MAIN **Building:** 516, DORF **Surveyor:** TORRES

Authorization: BURTON, DAVID 221 **Inspection Date:** 2 MAY 08

Department: HEALTH PHYSICS **Meter Model:** 11872/ L3

Last Inspection: **Frequency:** 7 DAYS **Meter SN:** 11872

Radio-Nuclides: **Cal Due:** 5 Jan 09

Initial Checks

	Yes	No	NA
RAM Secure?	✓		
Room Posted?	✓		
Work Area Posted?	✓		
Equipment Posted?	✓		
User Surveys Performed?			✓

Date Of Last User Survey: N/A

User Inventory Log: Isotope / Activity Used: NA

Max Daily Use: NA

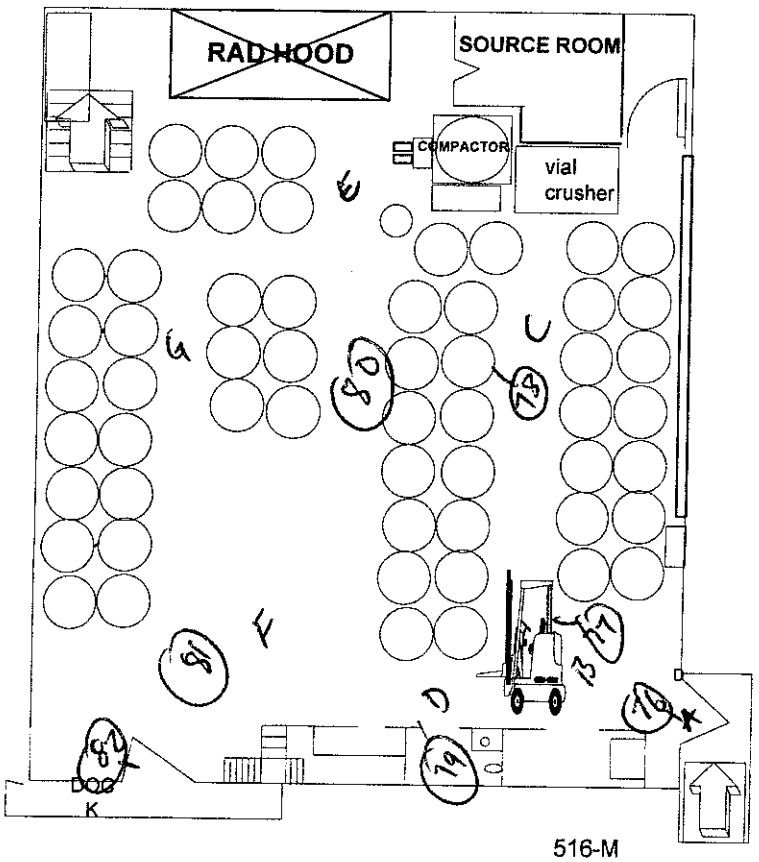
Lab Survey Meter: Model: L3

SN: 11866

Cal Due: 15 Feb 09

Meter Readings

BKG	90	cpm ~~mR/hr~~
A	90	cpm mR/hr
B	90	cpm mR/hr
C	70	cpm mR/hr
D	60	cpm mR/hr
E	60	cpm mR/hr
F	60	cpm mR/hr
G	60	cpm ~~mR/hr~~



Date: 2 MAY 08 Swipe Numbers: 76-82

Laboratory Analysis

Technician: SSG Torres LSC: 2-8

Auto-gamma: 2-8

Record any samples > 200dpm of removable contamination. If 2000 dpm, resurvey within 5 working days

Swipe	Isotope	Efficiency	MDA (dpm)	DPM	Swipe	Isotope	Efficiency	MDA (dpm)	DPM	Comments

Completed

All swipes < 200 dpm

Surveyor Comments

COUNTING

1480, RiaCalc WIZ, program 3.6, serial #4800540

ASSAY 02-May-2008 12:19:09

Protocol id	1 ROUTINE2
Time limit	120
Count limit	99999999
Dual isotopes	15-1024 + 1k-2k
Protocol date	28-Mar-2008 09:32:23
Run id.	54

				15-1024			1k-2k		
POS	RACK	BATCH	TIME	COUNTS	CPM	ERROR %	COUNTS	CPM	ERROR %
1	1	1	120	275	-11.2	144.63	59	3.6	115.67
2	1	2	120	279	-5.8	213.10	54	1.1	364.66
3	1	3	120	271	-7.8	109.13	51	-0.4	979.18
4	1	4	120	260	-20.0	64.59	61	4.6	91.82
5	1	5	120	284	-7.3	512.17	60	4.1	102.79
6	1	6	120	278	-6.3	190.65	54	1.1	364.65
7	1	7	120	255	-16.5	54.21	52	0.1	3577.03
8	1	8	120	300	5.4	152.58	53	0.6	663.28
9	1	9	120	308	22.9	93.76	33	-9.4	35.03
10	1	10	120	293	9.3	347.24	42	-4.9	73.67
11	2	11	120	308	10.8	93.75	51	-0.4	930.47
12	2	12	120	278	-11.0	191.06	61	4.6	91.82
13	2	13	120	242	-29.0	37.95	61	4.6	91.82
14	2	14	120	278	-3.6	190.64	50	-0.9	431.62
15	2	15	120	294	7.1	293.34	46	-2.9	129.44
16	2	16	120	279	-5.1	213.09	53	0.6	674.97
17	2	17	120	286	-9.0	1152.60	64	6.1	70.68
18	2	18	120	283	-3.8	400.44	54	1.1	364.66
19	2	19	120	270	-11.0	102.78	55	1.6	252.64
20	2	20	120	272	-10.0	116.30	55	1.6	252.64
21	3	21	120	296	0.7	224.05	57	2.6	157.83
22	3	22	120	282	-0.9	328.57	49	-1.4	275.17

END OF ASSAY

END OF COUNTING

Assay Definition-

Assay Description:
Routine survey, 2 minute counts

Assay Type: DPM (Dual)
Report Name: Contamination survey
Output Data Path: C:\Packard\Tricarb\Results\routine\routine surveys, 2 minute counts \20080502_1627
Raw Results Path: C:\Packard\Tricarb\Results\routine\routine surveys, 2 minute counts \20080502_1627\20080502_1627.results
Assay File Name: C:\Packard\TriCarb\Assays\routine surveys, 2 minute counts.lsa

Count Conditions-

Nuclide: 3H-14C+P32
   Quench Indicator: tSIE/AEC
   External Std Terminator (sec): 0.5 2s%
   Pre-Count Delay (min): 0.00
Quench Sets:
   Low Energy: 3H
   Mid Energy: 14C
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.0	18.6	1st Vial
B	18.6	156.0	1st Vial
C	156.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: On
Colored Samples: On Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

S#	Count Time	CPMA	CPMB	CPMC	DPM1	DPM2	SIS	tSIE	MESSAGES
1	10.00	5	9	5	0	0	61.54	445.05	B
2	2.00	0	0	0	0	0	0.00	454.28	
3	2.00	2	0	0	3	0	16.05	423.81	
4	2.00	3	0	0	8	0	61.08	447.38	
5	2.00	2	0	0	6	0	0.00	400.15	
6	2.00	0	0	0	0	0	0.00	416.89	
7	2.00	1	0	0	5	0	0.00	424.99	
8	2.00	0	0	0	1	0	0.00	426.67	
9	2.00	0	0	0	0	0	0.00	426.09	