

ENCLOSURE 5 ANALYSIS OF WRAMC UNDERGROUND TANKS ANL 1687

Analysis Number	LSC (pCi/g)	GPC (pCi/g)	GPC (pCi/g)	Gamma Spectroscopy (pCi/g)			
				Cr-51	Co-57	Co-60	Cs-137
1687	H-3	Alpha	Beta				
B-0 Background	< MDA	< MDA	< MDA	< MDA	< MDA	< MDA	< MDA
B-1 Tank 1	ND	30 ± 5	300 ± 30	200 ± 5%	3 ± 4%	0.1 ± 9%	0.2 ± 10%
B-2 Tank 2	ND	< MDA	< MDA	< MDA	< MDA	0.1 ± 15%	0.3 ± 13%
B-3 Tank 3	ND	< MDA	< MDA	< MDA	< MDA	0.1 ± 8%	0.2 ± 8%

$MDA_{LSC} = 5 \text{ pCi/g}$

$MDA_{GPC\alpha} = 0.3 \text{ pCi/g}$ $MDA_{GPC\beta} = 0.5 \text{ pCi/g}$

Co-57 $MDA_{ASpec} = 0.1 \text{ pCi/g}$

Cr-51 $MDA_{ASpec} = 0.9 \text{ pCi/g}$

Co-60 $MDA_{ASpec} = 0.09 \text{ pCi/g}$

Cs-137 $MDA_{ASpec} = 0.09 \text{ pCi/g}$

ND = Not Detected

MDA = Minimum Detectable Activity

Encl. 5

**ENCLOSURE 2, CANBERRA GAMMA SPECTROSCOPY SYSTEM RESULTS
RESULTS OF WRAMC UNDERGROUND TANKS**

1. The sludge samples were transferred to a 0.5 liter Marinelli beaker and counted for 12 hours on the Canberra Gamma Spectroscopy Systems.

2. The results of the samples and the MDA determined by the Sampo 90 software package are given below:

RESULTS OF THE MIXED GAMMA SURVEY - CANBERRA

ANL #	DESCRIPTION	Cr-51 ACTIVITY (pCi/g)	Co-57 ACTIVITY (pCi/g)	Co-60 ACTIVITY (pCi/g)	Cs-137 ACTIVITY (pCi/g)
1687-B-1	WRAMC Tank 1	200 ± 5%	3 ± 4%	0.1 ± 9%	0.2 ± 10%
1687-B-2	WRAMC Tank 2	< MDA	< MDA	0.1 ± 15%	0.3 ± 13%
1687-B-3	WRAMC Tank 3	< MDA	< MDA	0.1 ± 8%	0.2 ± 8%
	MDA	0.9	0.1	0.09	0.09

NRC Reg Guide 1500 NUREC-1500, 199

External Exposure max dose

4.98 mR/1000 hr 1 pCi/g

7.56 x 10⁻³ mR/1000 hr

1.17 x 10⁻¹ mR/1000 hr

1.28 x 10⁻¹ mR/1000 hr

60
Co
51
Cr
137
Cs
57
Co



Jim Sims

Howard Bell
295-7433 Ph
(410) 324-5836

<http://chppm-www.apgea.army.mil/lehpbattlebook/nbc.html>

DRAFT

ANALYSIS OF WRAMC UNDERGROUND TANKS ANL 1687 PROJECT DEVELOPMENT AND RADIATION RESERCH OFFICE USATA, AMCOM

Analysis Number	LSC (pCi/L)	GPC (pCi/L)	Gamma Spectroscopy (pCi/L)		
			Co-57	Cr-51	K-40
	H-3	Beta other than H-3			
T-0-1	< MDA	< MDA	< MDA	< MDA	< MDA
T-1-1	14,600	< MDA	< MDA	< MDA	< MDA
T-1-2	15,000	< MDA	< MDA	< MDA	< MDA
T-2-1	24,700	< MDA	< MDA	< MDA	< MDA
T-2-2	25,800	< MDA	< MDA	< MDA	< MDA
T-3-1	211,000	1,730	< MDA	3,370	< MDA
T-3-2	297,000	5,160	20	1,470	110

MDA_{LSC} = 343 pCi/L

MDA_{GPC} = 7 pCi/L

NRC Release Limit 1×10^7 pCi/L 3×10^5 pCi/L 6×10^5 pCi/L 5×10^6 pCi/L 4×10^4 pCi/L
for L-14 or J-35
Co-57 MDA_{Spec} = 4 pCi/L Cr-51 MDA_{Spec} = 36 pCi/L K-40 MDA_{Spec} = 21 pCi/L
to Sanitary Sewer

DRAFT

$10^{-3} \mu\text{Ci}$	10^6 pCi	10^3 mL
mL	μCi	L

$$\frac{\text{pCi}}{\text{L}}$$

$$3 \times 10^{-3}$$

$$5 \times 10^6$$

$$2 \times 10^{-8} \frac{10^6 \text{ pCi}}{\mu\text{Ci}}$$

$$2 \times 10^{-2} \frac{\text{pCi}}{\text{g}} = .02$$