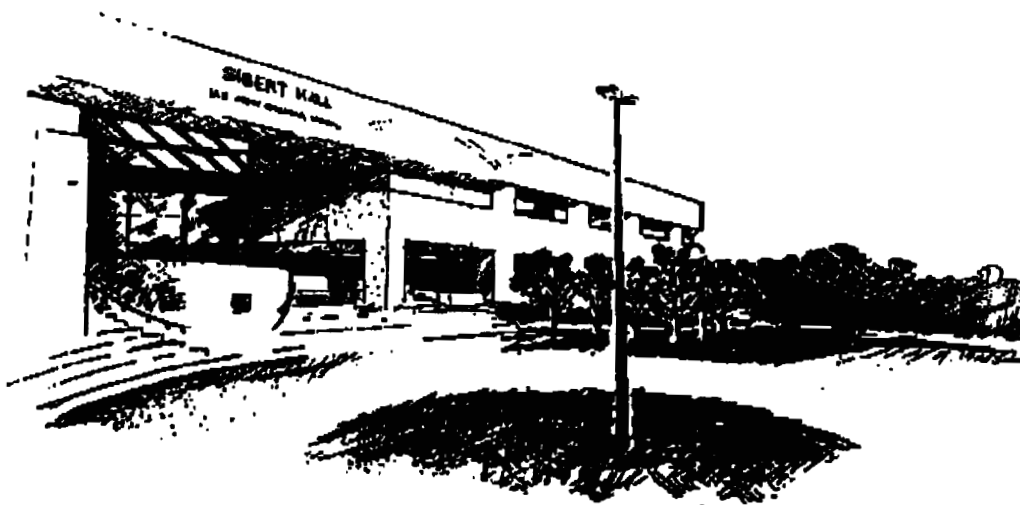


# Facsimile Transmittal Header Sheet



## U.S. ARMY CHEMICAL SCHOOL



<p><b>TO:</b> <u>U.S. NRC</u>  <b>ATTN:</b> <u>ORYSIA BAILEY</u></p> <hr/> <p><b>FAX #</b> <u>404-562-4955</u></p>	<p><b>FROM:</b> <u>John May</u>  <b>ATTN:</b> <u>ATZN-CMA-HP</u>  <b>FT McCLELLAN, AL 36205</b>  <b>DSN:</b> <u>865-5737</u>  <b>FAX: COMM</b> <u>256-848-4615</u>  <b>DSN</b> <u>865-4615</u></p>
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CLASSIFICATION	PRECEDENCE	# OF PAGES (+ HEADER)
<u>UNCLAS</u>	<u>Routine</u>	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">3</div>

**SIGNATURE OF AUTHORITY** John May

**REMARKS**

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**Health Physics Instrumentation****Laboratory Counting Equipment**

Efficiency, LLD,  $L_C$ ,  $L_D$ , and  $L_Q$  will be run weekly during decommissioning.

**Tennelec LB-5100 Gas Proportional Counting System**

alpha and beta counting

gas flow proportional counter

gamma counting

NaI scintillation counter

**Canberra-Packard LSA 1900CA**

Low energy beta counting

liquid Scintillation

**Formulas Used:**

$$\text{LLD (Lower Limit of Detection)} = 4.66 \sqrt{R_B / t}$$

$$L_C \text{ (Critical Level)} = 2.33 \sqrt{R_B / t}$$

$$L_D \text{ (Detection Limit)} = 2.71 + 4.65 \sqrt{R_B / t}$$

$$L_Q \text{ (Determination Limit)} = 50 * (1 + \sqrt{(1 + \sqrt{R_B / t}) / 12.5})$$

**Portable Survey Instruments**

These instruments are normally used for dose rate measurements.

**Bicron MicroRem Survey Meter.**

Low energy gamma scans

**Eberline E-520 survey meter with HP-260 pancake probe.**

Probe area = 15.5 cm<sup>2</sup>      Eff (Sr-Y 90) = 40%      Background = 72 cpm

$$\text{MDA} = \frac{(3 * R_B)}{\text{Eff} * (A/100)}$$

$$\text{MDA} = 3483.87 \text{ dpm}/100\text{cm}^2$$

HEALTH PHYSICS INSTRUMENT DATA											
	EFFICIENCY %		BKGRND(cpm)		INSTRUMENT/EQUIPMENT INFORMATION						
	at 2 Pi	at 4 Pi	at 2 Pi	at 4 Pi							
ALPHA	61.35	NA	0.20	NA	(2 Pi) Tennelec LB5100, S/N 64169						
H-3 BETA 1	NA	varies	NA	9.90	(4 Pi) LSC Packard 1900CA, S/N 102105						
C-14 BETA 2	NA	varies	NA	9.90	LSC Computations for Each Individual Sample						
Gross BETA 3	16.41	NA	2.00	NA	tSIE	Beta 1	%	tSIE	Beta 2	0	%
GAMMA	25.41	NA	58.90	NA	296.17	equals	16.77	150.96	equals		82.94
	SENSITIVITY (cpm)				sample	unkwn	x	sample	unkwn		x
	Lc	LLD	Lb	Lq	146.00	equals	8.80	52.89	equals		55.10
ALPHA	0.33	0.66	3.37	100.28							
H-3 BETA 1	2.32	4.64	7.34	101.95	Meter Type: Eberline E-520 w/HP-260, S/N3813						
C-14 BETA 2	2.32	4.64	7.34	101.95	Calib.Due: 8 JUN 99; Background 0.02 mR/hr						
Gross BETA 3	1.04	2.08	4.79	100.88							
GAMMA	5.65	11.31	14.00	104.64							

TENNELEC LB-5100

DATE	PERCENT EFFICIENCY			BACKGROUND CPM		
	ALPHA <sup>1</sup>	BETA <sup>2</sup>	GAMMA <sup>3</sup>	ALPHA <sup>1</sup>	BETA <sup>2</sup>	GAMMA <sup>3</sup>
TENNELEC REPAIR						
11-Mar-99	59.94%	16.25%	24.96%	0.04	1.58	52.2
8-Apr-99	59.09%	16.27%	25.12%	0.16	2.06	50.64
3-May-99	58.13%	16.12%	25.13%	0.08	1.26	50.76
12-May-99	55.49%	16.26%	24.98%	0.04	1.76	52.52
AVERAGE	58.16%	16.22%	25.04%	0.08	1.67	51.53
<sup>1</sup> Pu-239				ALPHA	BETA	GAMMA
<sup>2</sup> C-14			LLD (CPM)	0.29	1.95	10.68
<sup>3</sup> Cs-137			(DPM)	0.51	12.13	42.49