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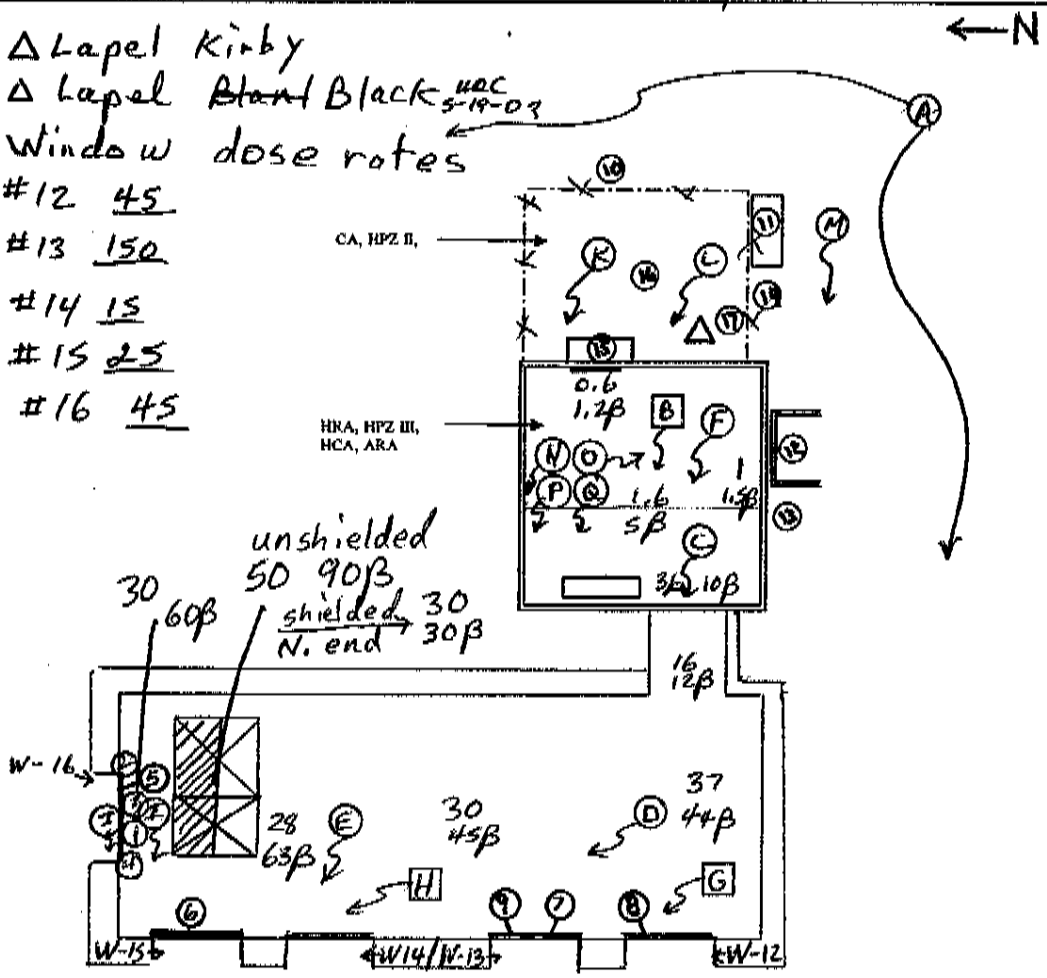
HPS #: J- 24884

HEALTH PHYSICS SURVEY REPORT

DATE 5-19-03	INSTRUMENTATION USED		
TIME 1530	MODEL	S/N	CAL. DATE DUE
SURVEYOR [illegible] / Ray Ethcart	RO20	3410	8-10-03
LOCATION JN1B HEC	Delta 3	93254	9-25-03
REVIEWED BY	Lud 3	93352	9-18-03
Smear locations circled; Dose Rates = mR/hr	WI # 1147	RWP # 03JN0-038 and 039	

PURPOSE OF SURVEY HEC window liner removal
Job Coverage

Δ Lapel Kirby
Δ Lapel ~~Blank~~ Black HEC 5-19-03
Window dose rates
#12 45
#13 150
#14 15
#15 25
#16 45



SMEAR RESULTS
RESULTS = DPM/100CM²
UNLESS NOTED

#	βγ	α
1) Window #16 Topweld	41β	35K
2) #16 eastweld	68β	8K
3) #16 bottom	27β	8K
4) #16 westweld	10β	1.6K
5) Post Decon Weld #16	68β	24K
6) Post Decon Weld #15	10.2β	32K
7) Pre-Decon Weld #13	238β	48K
8) Post Decon Weld #12	68β	64K
9) Post Decon Weld #13	119β	80K
10) O/S 2-II	<1K	ND
11) 2-II SOP	↓	↓
12) Cove		
13) ac Window		
14) O/S 2-II		
15) 2-III SOP		
16) 2-II Floor		
17) All's	↓	↓

CHECK IF APPLICABLE
☐ SEE ATTACHED DDO-134 FOR SMEAR RESULTS.
■ SEE ATTACHED DDO-103 FOR ADDITIONAL INFORMATION.
■ SEE ATTACHED DDO-057 FOR A/S RESULTS. NUMBER OF A/S(s) ATTACHED: 3
☐ RAL RESULTS ATTACHED

Gross Masslinn RESULTS
RESULTS = DPM/WIPE
UNLESS NOTED

A) High bay	<1K	ND
B) Clean side Cask wash	NDβ	N/A
C) Hot side Cask wash	180K	1K
D) HEC South	3β	N/A
E) HEC North	12β	N/A
F) Clean side Cask wash	90K	200
G) Tacky roller HEC south	NDβ	N/A
H) Tacky roller HEC North	NDβ	N/A

Area inside Posted: CAB/RA/ RWP/TLD/FSC/RM
☐ = Tacky roller
β– Dose Rates in mRad/Hr. Beta Correction Factor: 3.4/1.5*
☐L-3 /■DELTA 3 /☐ELECTRA BKG: 0 CPM α, 500 CPM β EFF: 26.5 % α 10.5 % β
Lud 3 BKG 0 CPMα EFF. 12.5 % α

DDO-138 5/93 (jw)

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HPS #: J- 24890

HEALTH PHYSICS SURVEY REPORT

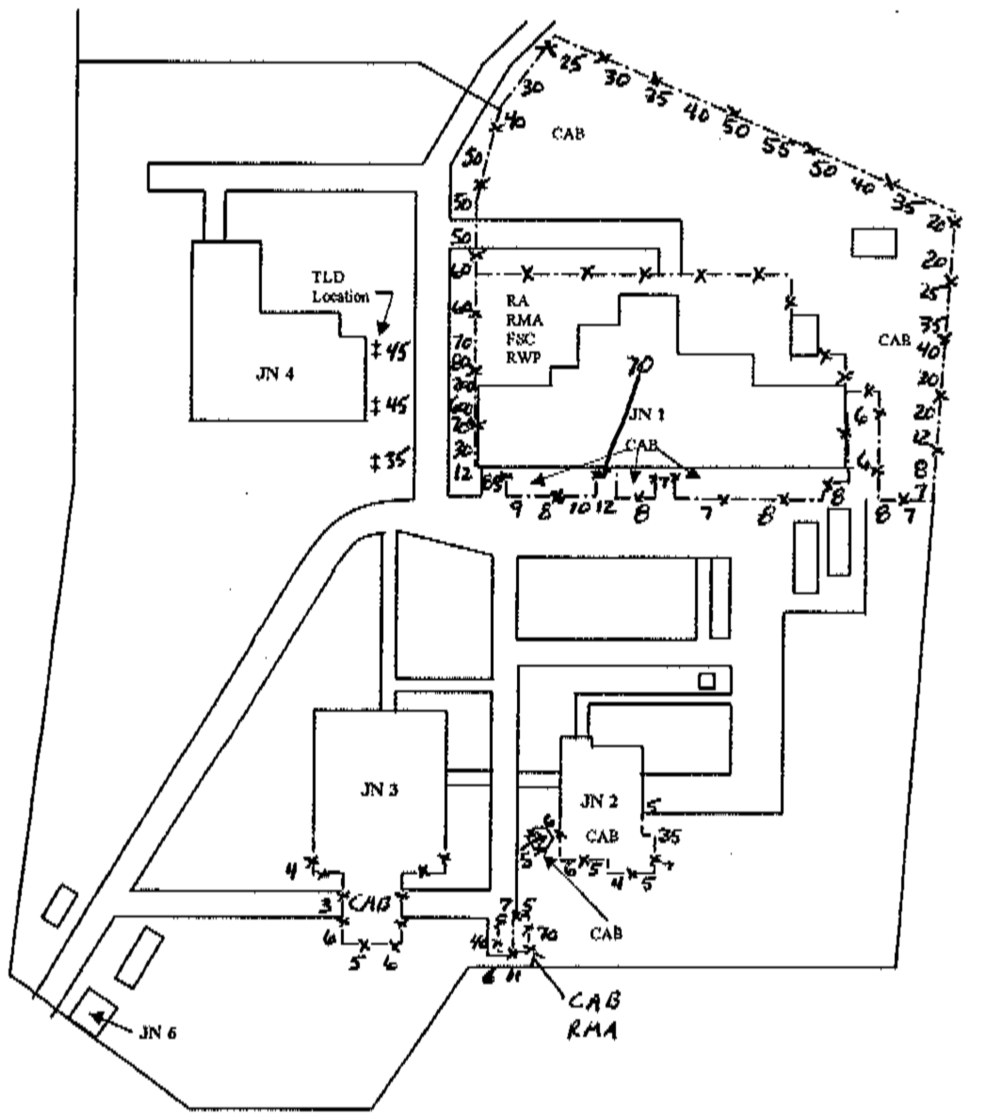
DATE 5-19-03
TIME 1400
SURVEYOR R.A. RAMAGE [signature]
LOCATION W.J. North Site
REVIEWED BY [signature] 5-20-03
Smear locations circled; Dose Rates = μRem/hr

INSTRUMENTATION USED

MODEL	S/N	CAL. DATE DUE
BICRON	B600H	6-7-03

WI # N/A RWP # 03-JN0-001

PURPOSE OF SURVEY Weekly Perimeter
N/A



SMEAR RESULTS
RESULTS= DPM/100CM²
UNLESS NOTED

#	βγ	α
N		
		A

CHECK IF APPLICABLE
☐ SEE ATTACHED DDO-134 FOR SMEAR RESULTS.
☐ SEE ATTACHED DDO-103 FOR ADDITIONAL INFORMATION.
☐ SEE ATTACHED DDO-057 FOR A/S RESULTS.
NUMBER OF A/S(s) ATTACHED: 0
☐ RAL RESULTS ATTACHED

Gross Masslinn RESULTS
RESULTS= DPM/WIPE
UNLESS NOTED

N		
		A

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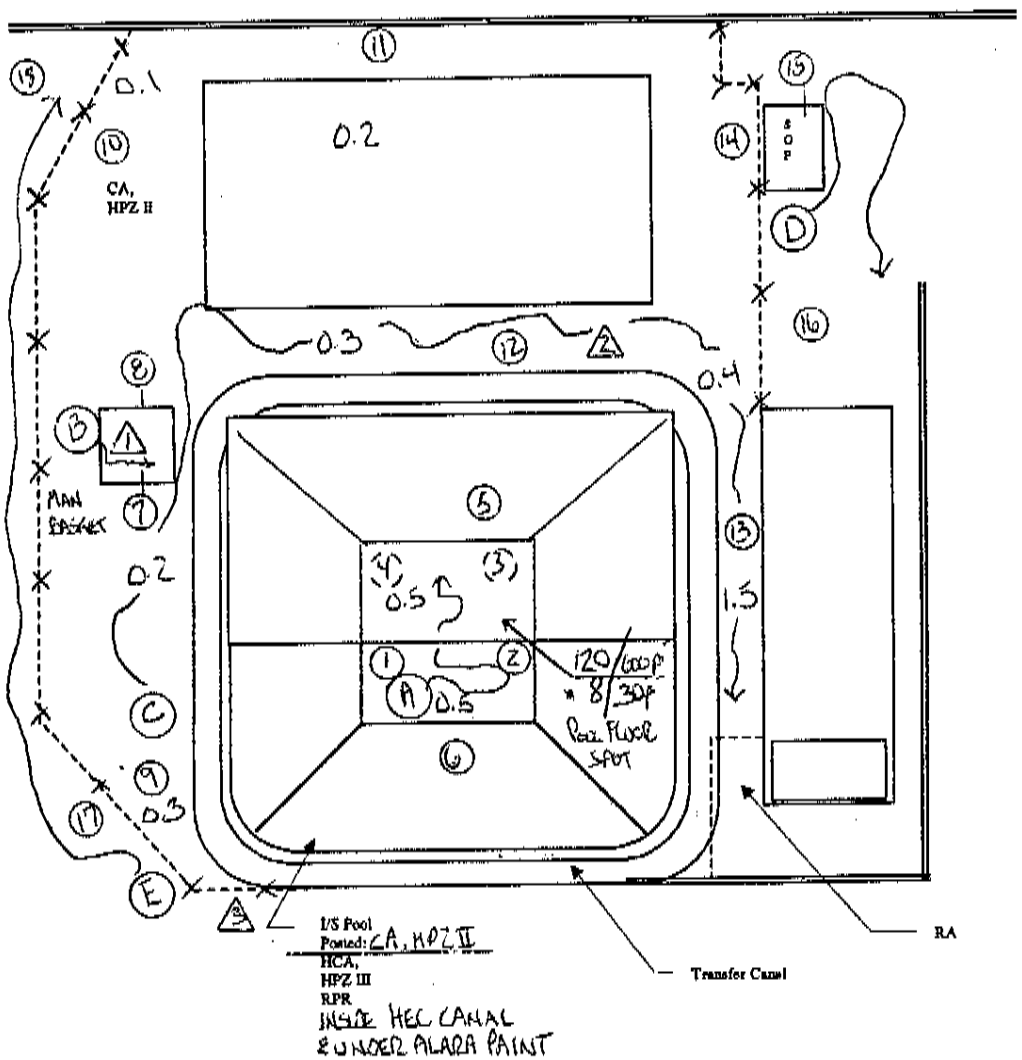
HPS #: J-17029

HEALTH PHYSICS SURVEY REPORT

DATE 12-3-99	INSTRUMENTATION USED		
TIME 1430	MODEL	S/N	CAL. DATE DUE
SURVEYOR B. Johns / W. O'Steen	RO-20	2789	1-6-00
LOCATION JN2 Spent Fuel Pool	Electra	93601	3-3-00
REVIEWED BY C. D. Chapman		N/A	
Smear locations circled; Dose Rates = mR/hr	WI # 924	RWP # 99-JNO-050	

PURPOSE OF SURVEY: Pool Liner Installation



SMEAR RESULTS
RESULTS = DPM/100CM²
UNLESS NOTED

#	βγ	α
1 I/S Liner	<1K	ND
2	<1K	ND
3	<1K	ND
4 I/S Liner	<1K	ND
5 WALL	<1K	ND
6 WALL	<1K	ND
7 I/S Basket	<1K	ND
8 O/S Basket	<1K	ND
9 North Floor	<1K	ND
10 North	<1K	ND
11 East	<1K	ND
12 East	<1K	ND
13 West	<1K	ND
14 @ SOP Floor	<1K	ND
~~15~~		

CHECK IF APPLICABLE
- ☒ SEE ATTACHED DDO-134 FOR SMEAR RESULTS.
- ☒ SEE ATTACHED DDO-103 FOR ADDITIONAL INFORMATION.
- ☒ SEE ATTACHED DDO-057 FOR A/S RESULTS. NUMBER OF A/S(s) ATTACHED: 23
- ☐ RAL RESULTS ATTACHED

Gross Masslinn RESULTS
RESULTS = DPM/WIPE
UNLESS NOTED

A) I/S Pool	<1K	ND
B) Man Basket	<1K	ND
C) HPZ-II Floor	<1K	ND
D) FLOOR	<1K	ND
E) FLOOR	<1K	ND
	N/A	

β - Dose Rates in mRad / Hr.
☐ L-3 / ☐ DELTA 3 / ☐ ELECTRA BKG: 1 CPM α, 514 CPM β EFF: 22.96 % α 10.2 % β

Beta Correction Factor: 3.4

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HPS # J- 17029

SUMMARY AND/OR SPECIAL REPORT FORM

Building No. JW-1 W.I. No. 924 Date 12-3-99

Entered by BARNEY D. JOHNS / [signature] Date 12-3-99
Print Name Signature

Reviewed by C.D. Chapman / [signature] Date [illegible]
Print Name Signature

WORKER	ZONE	TIME IN/OUT	DOSE	P.F.
W. Momenee	II	1240 / 1413	0	1
B. Johns	II	1240 / 1425	0	1
M. Beck	II	1240 / 1417	0	1
V. Wurtz	II	1240 / 1420	0	1
M. Berchtold	II	1244 / 1413	0	1

JOB EVOLUTION (changes in Rad conditions, breaches, unusual events etc.): POOL ENTERED BY MANBASKET. LINER WAS REMOVED FROM CRATE, SPREAD OUT ON POOL FLOOR. HEAVY CONDUIT WAS INSTALLED ON LINER TOP EDGE AREA SURVEYED. WORKERS EXITED. POOL COVERS WILL REMAIN OFF FOR THE WEEKEND. AN AIR SAMPLE WILL BE DRAWN ON THE NORTHWEST CORNER OF POOL.

PERSONNEL HOT PARTICLE MONITORING: NONE DETECTED

AREA HOT PARTICLE MONITORING: NONE DETECTED

REMARKS / ADDITIONAL INFORMATION: NONE DETECTED AFTER

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COUNTING ROOM ANALYSIS REPORT

Instrument ID: L2929/92994 Cal Due: 5-24-00 Analysis Performed By: B. Johns Date: 12-6-99

Bkgd cpm: α 0 β 25.1 Efficiency: α .364 β .182 MDA: α 8.22 β 141.91 Sample Count Time: 1 Min.

Sample Activity Reported In: ☒ DPM ☐ μci Reviewed By: C. D. Chapman Date: DEC 07

SAMPLE ID OR DESCRIPTION	GROSS COUNTS α	GROSS COUNTS β	NET COUNTS α	NET COUNTS β	ACTIVITY α	ACTIVITY β
BLANK	0	27	0	1.9	<MDA	<MDA
SMEAR # 15 SOP	0	29	0	3.9		
16 FLOOR	0	32	0	6.9		
17 FLOOR	0	28	0	2.9		
18 FLOOR	0	28	0	2.9		
BLANK	0	25	0	0	<MDA	<MDA

Remarks:

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AIR SAMPLE DATA AND ANALYSIS

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HPS # J. 17029

SECTION 1 - General Sampling Data

SAMPLING TECH: B. Johns	LOCATION: JN-1 SE corner Pool 2
DATE/TIME ON: 12-3-99 / 1241	JOB DESCRIPTION: Liner Installation.
DATE/TIME OFF: 12-3-99 / 1423	RWP #: 99-JNO-050
TOTAL TIME (min): 102	WI #: 924
SAMPLE TYPE: ☐ BZ ☒ GA ☐ Lapel	(Sample Time x Flow Rate x Conv. Fact.* = Volume in mL) 102 x 3 x 2.832 E4 = 8.67E6
SAMPLER MODEL/ID: LV 91625	*Conv. Fact. = 2.832E4 for Cu. Ft. or 1.0E3 for Liters
CAL. DUE DATE: 1-13-00 FLOW RATE: 3 ☒ cfm ☐ lpm	
Isotope/10% DAC value α: 3 E-13 μCi/ml	Isotope/10% DAC value β: Unknown/1E-11 μCi/ml

SECTION 2 - Initial Counting Data

First Field Count: 290 / 827 Date: 12-3-99 Time: 1428

COUNT TECH: [illegible]	COUNTER MODEL/ID: L2929/ 9095F
60 MIN. BACKGROUND TOTAL COUNTS: α: 13 β: 1724	CAL. DUE DATE: 12-18-99
COUNTER EFFICIENCIES α: 0.365 β: 0.165	MDC α (μCi / ml.): 1.33 E-13
TIME OF BKG COUNT: 0630	MDC β (μCi / ml.): 1.75 E-12

3 Hour

	Date/Time Counted	Gross Counts	Count time (min)	Gross CPM	Bkg CPM	Net CPM	Coll. fact.	Volume (mL)	Eff.	DPM/μCi	Activity (μCi/mL)**
α	12-6-99 / 0825	2	15	0.13	0.22	-0.09	*0.67	8.67E6	0.365	2.22E6	<MDC α -1.91 E-14
β	12-6-99 / 0825	515	15	34.33	28.73	5.6	0.95	8.67E6	0.165	2.22E6	β 1.9 E-12

*0.67 = (0.95)(0.7)
**(Net CPM ÷ Coll. Fact. ÷ Volume ÷ Eff. ÷ 2.22E6 = Activity)

SECTION 3 - Decayed Counting Data

COUNT TECH:	COUNTER MODEL/ID: 2929/
60 MIN. BACKGROUND TOTAL COUNTS: α: β:	CAL. DUE DATE:
COUNTER EFFICIENCIES α: β:	MDC α (μCi / ml.):
TIME OF BKG COUNT TIME:	MDC β (μCi / ml.):

20 Hour

	Date/Time Counted	Gross Counts	Count time (min)	Gross CPM	Bkg CPM	Net CPM	Coll. fact.	Volume (mL)	Eff.	DPM/μCi	Activity (μCi/mL)**
α							0.67			2.22E6	α
β							0.95			2.22E6	β

SECTION 4 - Long-Lived Activity Calculation

$$\frac{A_D^{\alpha} - A_I^{\alpha}(e^{-0.0555\Delta T})}{1 - e^{-0.0555\Delta T}} = A_{LL}\alpha = \_\_\_\_\_ \mu Ci/mL$$

0.044 DAC ALPHA
0.019 DAC BETA
0.063 DAC TOTAL

Remarks RESPIRATORY PROTECTION FACTOR (1): <10 % DAC PERSONNEL EXPOSURE

Reviewed By: C. D. Chapman Date [illegible] 1999

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AIR SAMPLE DATA AND ANALYSIS

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HPS # I 17029

SECTION 1 - General Sampling Data

SAMPLING TECH: B. Johns	LOCATION: JN-1 I/s Pool △1
DATE/TIME ON: 12-3-99 /1303	JOB DESCRIPTION: Liner Installation
DATE/TIME OFF: 12-3-99 /1400	RWP #: 99-JNO-050
TOTAL TIME (min): 57	WI #: 924
SAMPLE TYPE: ☐ BZ ☒ GA ☐ Lapel	(Sample Time x Flow Rate x Conv. Fact.* = Volume in mL) 57 x 5 x 2.832 E4 = 8.07E6
SAMPLER MODEL/ID: HV/ 92661	*Conv. Fact. = 2.832E4 for Cu. Ft. or 1.0E3 for Liters
CAL. DUE DATE: 2-12-00 FLOW RATE: 5 ☒ cfm ☐ lpm	
Isotope/10% DAC value α: 3 E-13 μCi/ml	Isotope/10% DAC value β: Unknown/1E-11 μCi/ml

SECTION 2 - Initial Counting Data

First Field Count: 505 /1476 Date: 12-3-99 Time: 1430

3 Hour

COUNT TECH: B. Johns	COUNTER MODEL/ID: L2929/ 92994
60 MIN. BACKGROUND TOTAL COUNTS: α: 11 β: 1526	CAL. DUE DATE: 5-24-00
COUNTER EFFICIENCIES α: .364 β: .182	MDC α (μCi / ml.): 1.34E-13
TIME OF BKG COUNT: 0620	MDC β (μCi / ml.): 1.60E-12

	Date/Time Counted	Gross Counts	Count time (min)	Gross CPM	Bkg CPM	Net CPM	Coll. fact.	Volume (mL)	Eff.	DPM/μCi	Activity (μCi/mL)**
α	12-6-99 0810	2	15	0.13	.18	-0.05	*0.67	8.07E6	.364	2.22E6	<MDC ~1.14E-14 α
β	12-6-99 0810	446	15	29.73	25.4	4.33	0.95	8.07E6	.182	2.22E6	1.40E-12 β

*0.67 = (0.95)(0.7)
**(Net CPM ÷ Coll. Fact. ÷ Volume ÷ Eff. ÷ 2.22E6 = Activity)

SECTION 3 - Decayed Counting Data

20 Hour

COUNT TECH:	COUNTER MODEL/ID: 2929/
60 MIN. BACKGROUND TOTAL COUNTS: α: β:	CAL. DUE DATE:
COUNTER EFFICIENCIES α: β:	MDC α (μCi / ml.):
TIME OF BKG COUNT TIME: N	MDC β (μCi / ml.):

	Date/Time Counted	Gross Counts	Count time (min)	Gross CPM	Bkg CPM	A Net CPM	Coll. fact.	Volume (mL)	Eff.	DPM/μCi	Activity (μCi/mL)**
α							0.67			2.22E6	α
β							0.95			2.22E6	β

SECTION 4 - Long-Lived Activity Calculation

$$\frac{A_D^* - A_i^* (e^{-0.06550T})}{1 - e^{-0.06550T}} = A_{1/2}\alpha = \_\_\_\_\_ \mu Ci/mL$$

0.04 DAC ALPHA MDC
0.02 DAC BETA MDC
0.06 DAC TOTAL

Remarks RESPIRATORY PROTECTION FACTOR (1): 40 % DAC PERSONNEL EXPOSURE

Reviewed By: C. D. Chapman Date DEC 07 [illegible]

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rls (9/99)

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AIR SAMPLE DATA AND ANALYSIS

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HPS # J 17029

SECTION 1 - General Sampling Data

SAMPLING TECH: O STEEN	LOCATION: JN-1 HIGHBAY NW POOL CORNER 3
DATE/TIME ON: 12-3-99 / 1430	JOB DESCRIPTION: SAMPLE FOR WEEKEND - COVERS REMOVED
DATE/TIME OFF: 12-6-99 / 0830	RWP #: 99 JNO 050
TOTAL TIME (min): 3960	WI #: 974
SAMPLE TYPE: ☐ BZ ☒ GA ☐ Lapel	(Sample Time x Flow Rate x Conv. Fact.* = Volume in mL) 3960 x 3 x 2.832 E4 = 3.36E8
SAMPLER MODEL/ID: LV 2145	*Conv. Fact. = 2.832E4 for Cu. Ft. or 1.0E3 for Liters
CAL. DUE DATE: 4-29-00 FLOW RATE: 3 ☐ cfm ☐ lpm	
Isotope/10% DAC value α: 3 E-13 μCi/ml	Isotope/10% DAC value β: Unknown/1E-11 μCi/ml

SECTION 2 - Initial Counting Data

First Field Count: 360/960 Date: 12-6-99 Time: 0920

3 Hour

COUNT TECH: O'Steen	COUNTER MODEL/ID: L2929/ 90558
60 MIN. BACKGROUND TOTAL COUNTS: α: 13 β: 1724	CAL. DUE DATE: 12-18-99
COUNTER EFFICIENCIES α: 0.365 β: 0.165	MDC α (μCi / ml.): 6.87E-15
TIME OF BKG COUNT: 0630	MDC β (μCi / ml.): 7.47E-14

	Date/Time Counted	Gross Counts	Count time (min)	Gross CPM	Bkg CPM	Net CPM	Coll. fact.	Volume (mL)	Eff.	DPM/μCi	Activity (μCi/mL)**
α	12-6-99 / 1335	356	5	71.2	0.22	70.98	*0.67	3.36E8	0.365	2.22E6	3.87E-13 α
β	12-6-99 / 1335	1055	5	211	28.73	182.27	0.95	3.36E8	0.165	2.22E6	1.56E-12 β

*0.67 = (0.95)(0.7)
**(Net CPM ÷ Coll. Fact. ÷ Volume ÷ Eff. ÷ 2.22E6 = Activity)

SECTION 3 - Decayed Counting Data

20 Hour

COUNT TECH: Ray Tatham	COUNTER MODEL/ID: 2929/ 92993
60 MIN. BACKGROUND TOTAL COUNTS: α: 14 β: 1267	CAL. DUE DATE: 12-25-99
COUNTER EFFICIENCIES α: 0.363 β: 0.177	MDC α (μCi / ml.): 7.04 E-15
TIME OF BKG COUNT TIME: 0620	MDC β (μCi / ml.): 6.04 ~~17.05~~ E-14

	Date/Time Counted	Gross Counts	Count time (min)	Gross CPM	Bkg CPM	Net CPM	Coll. fact.	Volume (mL)	Eff.	DPM/μCi	Activity (μCi/mL)**
α	12-8-99 / 0803	24	5	4.80	0.23	4.57	0.67	3.36E8	0.363	2.22E6	2.51E-14 α
β	12-8-99 / 0803	177	5	35.40	21.12	14.28	0.95	3.36E8	0.177	2.22E6	1.14E-13 β

SECTION 4 - Long-Lived Activity Calculation

$$A_p = \frac{-A_i * (e^{-0.06550T})}{1 - e^{-0.06550T}} = A_{LL}\alpha = \_\_\_\_\_ \mu Ci/mL$$

0.008 DAC ALPHA
0.001 DAC BETA
0.009 DAC TOTAL

Remarks RESPIRATORY PROTECTION FACTOR (1): <10 % DAC PERSONNEL EXPOSURE

Reviewed By: C. D. Chapman Date

DDO-057, Rev. 9 rls (9/99)