Revision 7/01

CORRES. CONTROL
OUTGOING LTR NO.

DOE ORDER #

01 -RF-02178

DIST.	LTR	ENC
BRAILSFORD, M.D		
FERRERA, D.W.		
FERRI, M.S.	x	
FULTON, J.C.		
GIACOMINI, J..		
HALL, L.		
MARTINEZ, L.A.		
PARKER, A.M.		
POWERS, K.		
SCOTT, G.K.		
SHELTON, D.C.		
SPEARS, M.S.		
TRICE, K.D.		
TUOR, N.R.		
VOORHEIS, G.M.		
Chandler, G	x	
Dahlgren, S	x	
Druckman, H	x	
Hopkins, T	x	
Johnson, M	x	
Lesser, R	x	
McGinn, D	x	
Starkey, R	x	
COR. CONTROL	x	x
ADMN. RECORD	x	x
WASTE REC. CTR		
TRAFFIC		
PATS/130		
CLASSIFICATION:		
UCNI		
UNCLASSIFIED	X	X
CONFIDENTIAL		
SECRET		

AUTHORIZED CLASSIFIER SIGNATURE

Date 9/17/01

IN REPLY TO RFP CC NO:

ACTION ITEM STATUS

☐ PARTIAL/OPEN

☐ CLOSED

LTR APPROVALS:

ORIG & TYPIST INITIALS
RL:cms

1/12

KAISER•HILL
COMPANY

September 17, 2001

01-RF-02178

Gary Schuetz
Facility Closure
DOE, RFFO

SUPPLEMENTS TO PRE-DEMOLITION SURVEY REPORT FOR 776/777 COOLING TOWER DECOMMISSIONING – MSF-052-01

I appreciate your prompt review and approval of our cooling tower's Pre Demolition Survey Report. Attached please find the additional laboratory data needed to demonstrate that only naturally occurring radioisotopes are present in the infrastructure.

The 707/776/777 staff shares DOE's concerns that we must carefully distinguish between natural radioactivity and DOE - added radionuclides in wastes bound for local disposal. The general public need be confident that these determinations incorporate all necessary due diligence.

Please contact Ted Hopkins at 303-966-7652 or Richard Lesser at 303-966-2298 if you have any questions.

Mark S. Ferri

Mark S. Ferri
Vice President & Project Manager
Building 707/776/777 Closure Project
Kaiser-Hill Company, LLC

RL:cms

Attachment:
As stated

SEP 2001
RECEIVED
RECORDS CENTER

Kaiser Hill Company, L.L.C.
Rocky Flats Environmental Technology Site, 10808 Hwy. 93 Unit B, Golden CO 80403-8200 ◆ 303-966-7000

B776-A-000075

ADMIN RECORD

Sample ID: **082101 sample#9 bld 703** **Type:** **Unknown**

Batch ID: unknowns
Acquisition Start: August 21, 2001 17:14:46
Analysis Date: August 22, 2001 06:27:24
Procedure: Po210 count
Device: Oasis:01:02
Analysis Method: ROI Analysis
Spectrum File: 00007211.OXS LiveTime: 43,200.00

Calibrations:
Energy = -1.083E+01 +2.813E+00 * Chn Coeff. of Correlation: -0.998
Calibration Date: July 28, 2001 08:38:33 Std: TS4189
Shape not Calibrated.
Efficiency = 3.133E-01 ± 4.187E-03
Calibration Date: July 30, 2001 07:11:59 Std: TS4189b

External Recovery No Ext.Recovery

Original Sample Amount:
1.000 ± 0.000 samp
Aliquot Amount: 1.000 ± 0.000 samp

ROI DATA

ROI ID #		ASSOCIATED NUCLIDE	EXTENTS START	EXTENTS END	PK EN (keV)	FWHM (keV)
1	ROI # 2	Po218	5556.4	6103.7	6067.9	3.3
2	ROI # 3	Po214	6589.7	7877.5	7232.4	2.8
3	ROI # 4	Po212	8394.4	8749.3	8571.4	2.8
4	ROI # 4	Po210	2521.2	5333.5	5072.1	14.6

ROI ANALYSIS RESULTS

ROI ID	NET COUNTS	BKG/INTERF	CPM	ROI TYPE
ROI # 2	54.4 ± 7.6	2.60	0.076 ± 0.011	Unknown
ROI # 3	24.6 ± 5.1	1.40	0.034 ± 7.12E-03	Unknown
ROI # 4	21.0 ± 4.6	0.00	0.029 ± 6.36E-03	Unknown
ROI # 4	6,342.0 ± 79.8	17.00	8.808 ± 0.111	Unknown

NUCLIDE ANALYSIS RESULTS

ROI ID	ASSOC NUC	EMM. PROB	ACTIVITY (dpm/samp)	MDA (dpm)
ROI # 2	Po218	1.000	0.241 ± 0.034	3.78E-02
ROI # 3	Po214	1.000	0.109 ± 0.023	3.09E-02
ROI # 4	Po212	1.000	0.093 ± 0.020	1.20E-02
ROI # 4	Po210	1.000	28.111 ± 0.516	7.79E-02

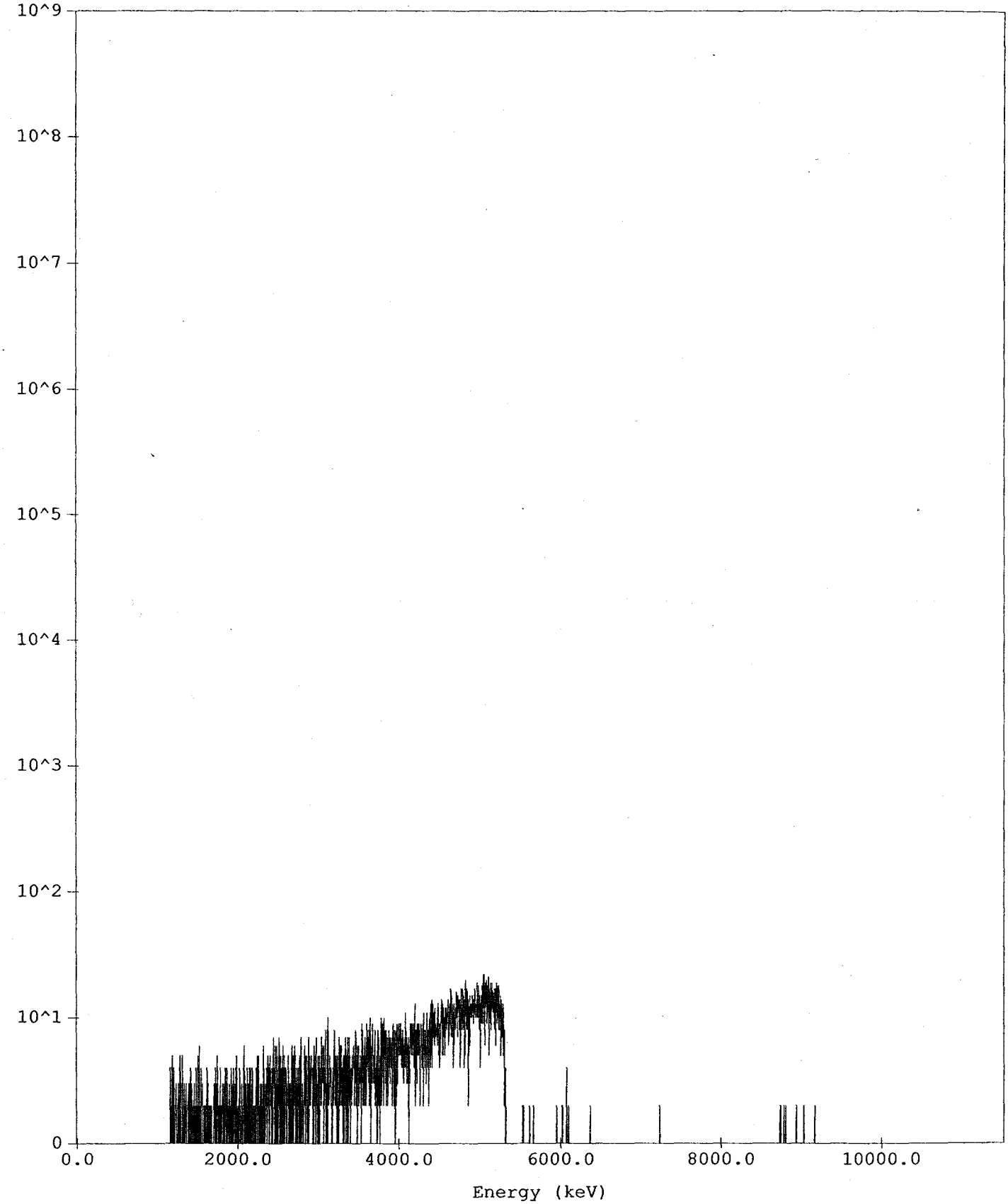
Activity reported as of August 21, 2001 17:14:46

ANALYSIS REVIEWED BY: G A HAAS 515855 Gary A Haas

APPROVED BY: C J BIANCONI 520358 CJB 8.22.01

DOE-added nuclides not indicated CJB 8.22.01

File(2): 00007211.OXS Date: 21-Aug-2001 17:14:46 LT: 43,200.00 RT: 43,200.81
ID(2): 082101 sample#9 bld 703



3

OASIS - MCA

File Edit View Acq Parms Tools Reports Close Help

Library: OAS_STD.MDB

Nuclide: Am241

Acq ALL

Acquire

Stop

4096

LOG

Lin Log

Sqrt

Peak

0

4095

Spectrum ID

082101 sample#9 bld 703

System Date

22-Aug-2001 06:14:41

Message Window

Presets

ROIs

Controls

Display

Info

Aux Disp

Channel: 1886 Elapsed Real Time: 43200.81 Elapsed Live Time: 43200.00 Dead Time: 0.0

Energy: 5295.4 Counts: 8 ROI: ROI # 4 Integral: 6,348 Peak: 5,072.10 FWHM: 5.34

4

Best Available Copy

Sample ID: **082101 sample#9 bld 702** **Type:** **Unknown**

Batch ID: unknowns
Acquisition Start: August 21, 2001 17:14:45
Analysis Date: August 22, 2001 06:29:09
Procedure: Po210 count
Device: Oasis:01:01
Analysis Method: ROI Analysis
Spectrum File: 00007210.OXS LiveTime: 43,200.00

Calibrations:
Energy = 4.873E+01 +2.768E+00 * Chn Coeff. of Correlation: -0.998
Calibration Date: July 05, 2001 13:47:16 Std: TS4189b
Shape not Calibrated.
Efficiency = 3.157E-01 ± 4.216E-03
Calibration Date: July 05, 2001 15:46:51 Std: TS4189b

External Recovery No Ext.Recovery

Original Sample Amount: 1.000 ± 0.000 samp
Aliquot Amount: 1.000 ± 0.000 samp

ROI DATA

ROI #	ID	ASSOCIATED NUCLIDE	EXTENTS START	EXTENTS END	PK EN (keV)	FWHM (keV)
1	ROI # 2	Po218	5556.4	6103.7	5828.9	2.8
2	ROI # 3	Po214	6589.7	7877.5	7232.4	2.8
3	ROI # 4	Po212	8394.4	8749.3	8735.5	5.5
4	ROI # 4	Po210	2521.2	5333.1	5064.8	467.8

ROI ANALYSIS RESULTS

ROI ID	NET COUNTS	BKG/INTERF	CPM	ROI TYPE
ROI # 2	41.8 ± 6.8	4.20	0.058 ± 9.51E-03	Unknown
ROI # 3	13.8 ± 4.1	2.20	0.019 ± 5.63E-03	Unknown
ROI # 4	37.2 ± 6.2	0.80	0.052 ± 8.58E-03	Unknown
ROI # 4	6,691.8 ± 81.9	15.20	9.294 ± 0.114	Unknown

NUCLIDE ANALYSIS RESULTS

ROI ID	ASSOC NUC	EMM. PROB	ACTIVITY (dpm/samp)	MDA (dpm)
ROI # 2	Po218	1.000	0.184 ± 0.030	4.44E-02
ROI # 3	Po214	1.000	0.061 ± 0.018	3.54E-02
ROI # 4	Po212	1.000	0.164 ± 0.027	2.61E-02
ROI # 4	Po210	1.000	29.436 ± 0.533	7.37E-02

Activity reported as of August 21, 2001 17:14:45

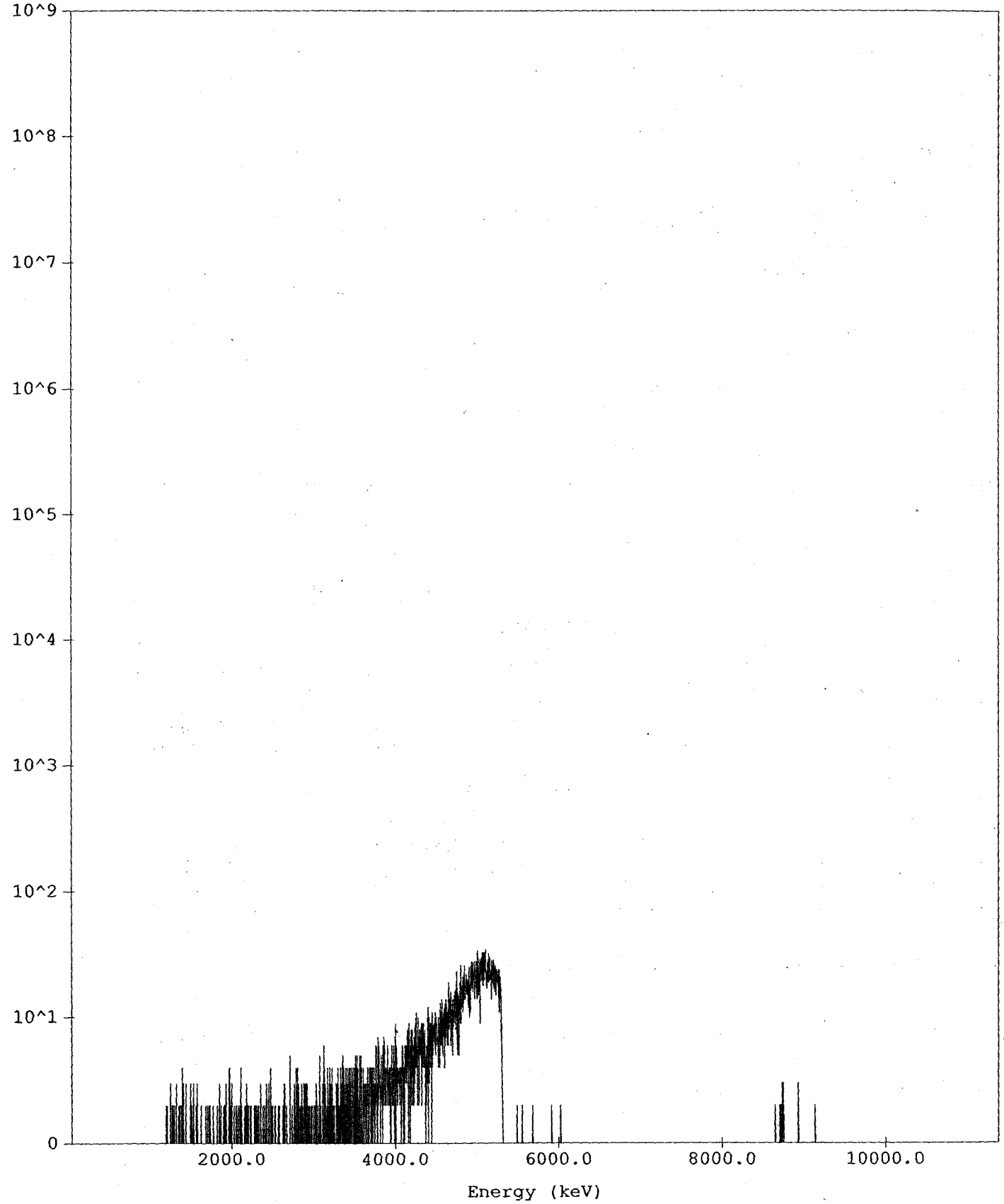
G A HAAS 515855 ANALYSIS REVIEWED BY: [signature]

DOE added nuclides not indicated CJB 8-22-01

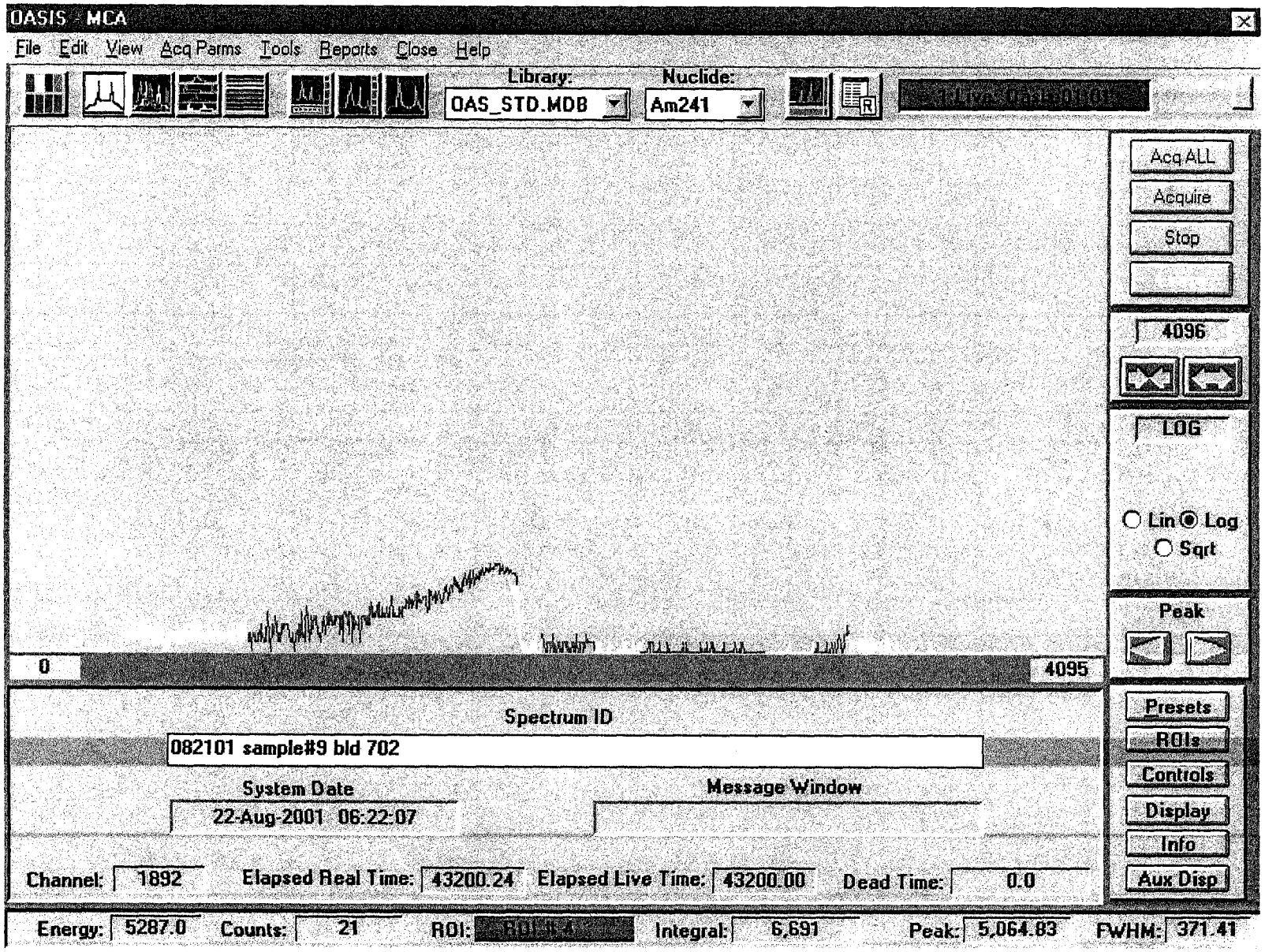
APPROVED BY: C J BIANCONI 520358 CJB 8-22-01

5

File(1): 00007210.OXS Date: 21-Aug-2001 17:14:45 LT: 43,200.00 RT: 43,200.24
ID(1): 082101 sample#9 bld 702



6



Best Available Copy

Probability Plots

Based on the distribution modeled here, there is no visual or statistical evidence of DOE-added materials.

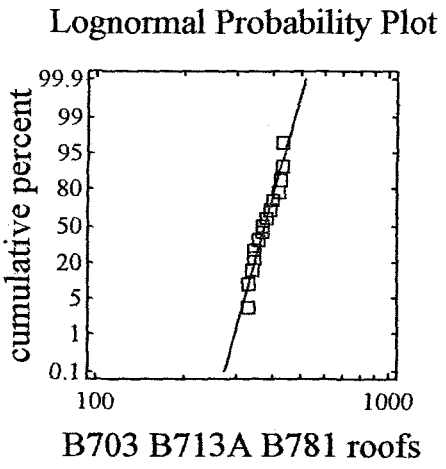
Probability Plots

Data variable: B703 B713A B781 roofs

Number of observations: 15
Number of values below minimum: 0
Number of values above maximum: 0

The StatAdvisor

This procedure creates seven different types of probability plots to help you determine whether B703 B713A B781 roofs comes from a particular type of distribution. After examining these plots, you may fit a distribution to the data by selecting the Distribution Fitting procedure.



Uncensored Data - B703 B713A B781 roofs

Goodness-of-Fit Tests for B703 B713A B781 roofs

Chi-Square Test

	Lower Limit	Upper Limit	Observed Frequency	Expected Frequency	Chi-Square
	at or below	344.247	3	2.50	0.10
	344.247	362.327	3	2.50	0.10
	362.327	377.521	2	2.50	0.10
	377.521	393.352	2	2.50	0.10
	393.352	414.01	1	2.50	0.90
above	414.01		4	2.50	0.90

Chi-Square = 2.20006 with 3 d.f. P-Value = 0.531933

Estimated Kolmogorov statistic DPLUS = 0.136711
Estimated Kolmogorov statistic DMINUS = 0.13489
Estimated overall statistic DN = 0.136711
Approximate P-Value = 0.941911

EDF Statistic	Value	Modified Form	P-Value
Kolmogorov-Smirnov D	0.136711	0.549769	>=0.10
Kuiper V	0.271601	1.11084	>=0.10
Cramer-Von Mises W^2	0.0475864	0.0251588	>=0.10
Watson U^2	0.0469878	0.0429398	>=0.10
Anderson-Darling A^2	0.359787	0.359787	>=0.10

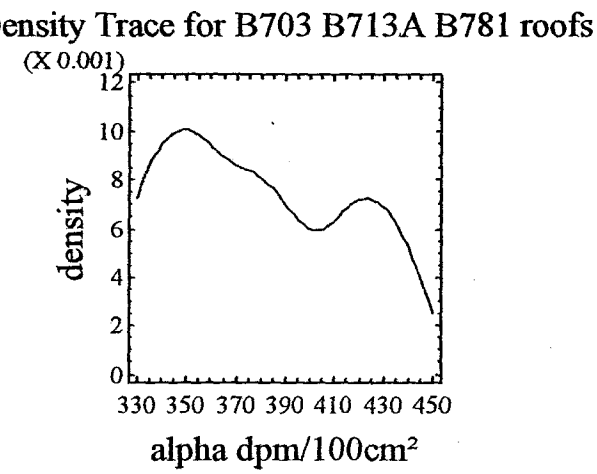
*Indicates that the P-Value has been compared to tables of critical values specially constructed for fitting the currently selected distribution. Other P-values are based on general tables and may be very conservative.

8

The StatAdvisor

This pane shows the results of tests run to determine whether B703 B713A B781 roofs can be adequately modeled by a lognormal distribution. The chi-square test divides the range of B703 B713A B781 roofs into nonoverlapping intervals and compares the number of observations in each class to the number expected based on the fitted distribution. The Kolmogorov-Smirnov test computes the maximum distance between the cumulative distribution of B703 B713A B781 roofs and the CDF of the fitted lognormal distribution. In this case, the maximum distance is 0.136711. The other EDF statistics compare the empirical distribution function to the fitted CDF in different ways.

Since the smallest P-value amongst the tests performed is greater than or equal to 0.10, we can not reject the idea that B703 B713A B781 roofs comes from a lognormal distribution with 90% or higher confidence.



9

Survey Unit 776005 B703 Total Surface Contamination Investigation Results for Measurement #9

Total Surface Activity Survey						Quality Control Survey				
Meter Model:	NE Electra w/ DP6 Probe				Local Area Bkgd (cpm)	NE Electra w/ DP6 Probe			Local Area Bkgd (cpm)	
Instrument #:	1280	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Cal. Due Date:	9/13/01	N/A	N/A	N/A		N/A	N/A	N/A		
Efficiency (c/d):	0.210	N/A	N/A	N/A		N/A	N/A	N/A		
	Total Surface Activity Measurements (Note 1)					Quality Control Measurements				
Sample Location Number	Instrument #	Date	(cpm)	MDA (dpm/100 cm^2)	(dpm/100 cm^2)	Instrument #	Date	(cpm)	MDA (dpm/100 cm^2)	(dpm/100 cm^2)
1	1280	06/13/01	72.7	N/A	**436.2**					
2	1280	06/13/01	66.7	N/A	**400.2**					
3	1280	06/13/01	60.0	N/A	**360.0**					
4	1280	06/13/01	55.6	N/A	**333.6**					
5	1280	06/13/01	65.5	N/A	**393.0**					
6	1280	06/13/01	62.0	N/A	**372.0**					
7	1280	06/13/01	55.3	N/A	**331.8**					
8	1280	06/13/01	57.7	N/A	**346.2**					
9	1280	06/13/01	58	N/A	**348.0**					
10	1280	06/13/01	71.8	N/A	**430.8**					
11	1280	06/13/01	56.7	N/A	**340.2**					
12	1280	06/13/01	62.0	N/A	**372.0**					
13	1280	06/13/01	70.7	N/A	**424.2**					
14	1280	06/13/01	70.0	N/A	**420.0**					
15	1280	06/13/01	63.3	N/A	**379.8**					
				MIN	331.8					
				MAX	**436.2**					
				MEAN	**379.2**					
				SD	36.5					
				Transuranic $DCGL_W$	**100**					

Note 1 - An elevated reading of 60.1 cpm was present at this survey measurement location. An investigation was performed, and the above 15 survey measurments were obtained in accordance with TBD-00156 to verify log-normal distribution. As requested, in addition to the log-normal evaluation, a coupon sample was obtained. The activity was verified by alpha spec. analysis to be Po-210 vs. transuranic activity.

Survey Unit 776005 Buildings 703/713A/781 Total Surface Contamination Results

Total Surface Activity Survey						Quality Control Survey			
Meter Model:	NE Electra w/ DP6 Probe				Local Area Bkgd (cpm)	NE Electra w/ DP6 Probe			Local Area Bkgd (cpm)
Instrument #:	1418	4064	3172	1264	7.3	4060	N/A	N/A	3.7
Cal. Due Date:	11/15/01	9/13/01	7/26/01	12/4/01		11/17/01	N/A	N/A	
Efficiency (c/d):	0.208	0.221	0.213	0.224		0.220	N/A	N/A	

Sample Location Number	Total Surface Activity Measurements					Quality Control Measurements				
	Instrument #	Date	(cpm)	MDA (dpm/100 cm²)	(dpm/100 cm²)	Instrument #	Date	(cpm)	MDA (dpm/100 cm²)	(dpm/100 cm²)
1	1418	06/05/01	10.7	58	**16.5**					
2	1418	06/05/01	10.7	58	**16.5**					
3	1418	06/05/01	8.7	58	**16.5**					
4	1418	06/05/01	9.3	58	**6.9**					
5	1418	06/05/01	11.3	58	**9.7**					
6	1418	06/05/01	10.7	58	**19.4**					
7	1264	06/10/01	4.7	58	**16.5**					
8	1264	06/10/01	3.3	58	**-12.4**					
9	4060	06/13/01	Note 1	Note 1	Note 1					
10	4064	06/06/01	29.5 Note 2	Note 2	Note 2					
11	1418	06/05/01	25.3	58	**86.7**	4060	06/12/01	13.3	41	**43.9**
12	1418	06/05/01	12.3	58	**24.2**					
13	3172	06/06/01	12.7	58	**26.1**	4060	06/12/01	9.2	41	**25.2**
14	1418	06/05/01	14.0	58	**32.3**					
15	4060	06/13/01	13.3	58	**29.0**					
				MIN	-12.4					
				MAX	**86.7**					
				MEAN	**22.1**					
				SD	22.5					
				Transuranic DCGL$_W$	***100***					

Note 1 - An elevated reading of 60.1 cpm was present at this survey measurement location. An investigation was performed, and a coupon sample was obtained. The activity was verified by alpha spec. analysis to be Po-210 vs. transuranic activity.

Note 2 - An investigation was performed, and eight additional readings were obtained to verify the 1m² average was less than 100 dpm/100 cm². The average value of the nine measurements was 29.5 cpm and 106.9 dpm/100 cm². A media sample was obtained at this location and an isotopic analysis was performed. The total transuranic alpha activity was 21.5 dpm/100 cm² and the total uranium activity was 458.9 dpm/100 cm².

Survey Unit 776002 Buildings 702/710/712A Total Surface Contamination Results

Total Surface Activity Survey						Quality Control Survey				
Meter Model:	NE Electra w/ DP6 Probe			Local Area Bkgd (cpm)		NE Electra w/ DP6 Probe			Local Area Bkgd (cpm)	
Instrument #:	4066	1264	2400	4.5		4060	N/A	N/A	3.7	
Cal. Due Date:	10/24/01	12/4/01	9/15/01			11/17/01	N/A	N/A		
Efficiency (c/d):	0.227	0.224	0.221			0.220	N/A	N/A		
	Total Surface Activity Measurements					Quality Control Measurements				
Sample Location Number	Instrument #	Date	(cpm)	MDA (dpm/100 cm^2)	(dpm/100 cm^2)	Instrument #	Date	(cpm)	MDA (dpm/100 cm^2)	(dpm/100 cm^2)
1	4066	06/07/01	3.3	43	**-5.2**					
2	4066	06/07/01	8.0	43	**15.5**					
3	4066	06/07/01	4.7	43	**0.9**					
4	4066	06/07/01	2.1	43	**-10.5**					
5	4066	06/07/01	3.3	43	**-5.2**					
6	4066	06/07/01	10.7	43	**27.4**					
7	4066	06/07/01	9.3	43	**21.2**					
8	4066	06/07/01	6.0	43	**6.7**					
9	2400	06/12/01	Note 1	43	Note 1					
10	1264	06/10/01	6.7	43	**9.8**					
11	2400	06/12/01	15.0	43	**46.3**					
12	1264	06/10/01	2.7	43	**-7.9**					
13	1264	06/10/01	14.7	43	**45.0**	4060	06/12/01	13.3	41	**43.6**
14	1264	06/10/01	14.0	43	**41.9**					
15	1264	06/10/01	21.3	43	**74.1**	4060	06/12/01	17.3	41	**61.8**
				MIN	-10.5					
				MAX	**74.1**					
				MEAN	**18.6**					
				SD	25.4					
				Transuranic $DCGL_W$	**100**					

Note 1 - An investigation was performed, and fifteen additional readings were obtained. The data was plotted in accordance with TBD-00156 and the elevated activity was verified to be attributable to Po-210. An elevated reading of 57.3 cpm was present at this survey measurement location. In addition to the TBD-00156 evaluation, a coupon sample was obtained. The activity was verified by alpha spec. analysis to be Po-210 vs. transuranic activity.