EMS Laboratories
117 W. Bellevue Drive
Pasadena, CA 91105

NARRATIVE

July 8, 2010

Derrick Willis
Tronox LLC-Henderson
560 West Lake Mead
Henderson, NV 89015

SDG/EMS# 137865
Project: 2027.01, Tronox LLC Henderson,
560 West Lake Mead Drive, Henderson, NV
Client COC ID: 02027.01.2129

REFERENCE:	DAS Case No. 0769F	TDD No.: 07-10-0012
	Task No. 0361	P. O. No.: 0063941
	Tronox Project# 2027.01	NGE Tracking# 03
	AUI Task# 6	

EMS REPORT NO.: 137865

When the samples are analyzed in the TEM the recorded data includes the dimensions of the respirable fibers of the regulated asbestos types, namely, chrysotile, Amosite (cummingtonite/grunerite), tremolite, actinolite, crocidolite, and anthophylite. The fibers of importance are those included in the protocol fiber classification. The width of the protocol fibers is <0.4 um and the length is divided into two groups, 5 to 10 um and long fibers >10 um. The 95% Poisson Confidence interval for the observed concentration of fibers is also calculated. Other asbestos fibers and non-asbestos fibers with protocol dimensions are noted in the counting sheet. The problem regarding the loss of particles on polycarbonate filters has been eliminated except for very alkaline particles. There is no evidence that asbestos fibers are lost.

EMS Laboratories Inc.
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Attn: Derrick Wills
Tronox-LLC-Henderson
PO Box 55
Henderson, NV 89009

Phone: (947) 375-7004

Project: Tronox LLX Henderson, 560 W. Lake Mead Dr., Henderson, NV/2027.001

Date Sampled: 5/18/2010 11:55

Customer ID: TRNX26
Customer PO: 2027.001
Received: 5/20/2010 9:50AM
EMS LAB No: 137865
Date Prepared: 7/2/2010 12:15PM
Analysis Date: 6/8&7/12 0:00

Report Date:

NIOSH 7402/ISO

DRAFT, MODIFIED ELUTRIATOR METHOD FOR THE DETERMINATION OF ASBESTOS IN SOILS AND BULK MATERIAL METHOD

EMS Laboratory Number:	137865		Mass of Respirable Dust on Fiber:	174	µg
Customer Sample Number:	SSAL6-02-0.00BPC		Area of collection filter:	385	mm^2
Minimum Level of Analysis (chrysotile):	CD		Grid openings area:	0.0094	mm^2
Minimum Level of Analysis (amphibole):	ADX		Grid Openings Analyzed:	96	
Magnification used for fiber counting:	9,200	x	Min. Str. Length/Max Str. Diameter:	>5/<0.4	microns
Aspect ratio for fiber definition:	3:1				
			Analyst(s):	Radha Singh	

Dust Generator - Total Dried Sample Weight-73.94g	Soil % Moisture	7.87	%
	Air Flow Rate Through ME Opening of Dust Generator:	1370	
Not Used	Air Flow Rate Through IST Opening of Dust Generator:	100	
Used in Tumbler	Estimate Total Air Flow Through Elutriator:	1470	

Analytical Sensitivity: 2.45E+06 Structure /g PM 10 Limit of Detection: 7.34E+06 Structure /g PM 10

Test For Uniformity (Chi-Square results)

(Note: Amended report per client request to reflect the EPA definition of greater than 10um and less than 0.4um)

Structure Class	Min ID Level Required	Counts Primary Str.	Counts Total Str.	Density St/mm^2	Conc. Str/g PM10	Poisson 95% Confidence Interval Lower Limit Str/g PM10	Poisson 95% Confidence Interval Upper Limit Str/g PM10
Asbestos Structures>5um, ≤10um	ADX/CD	0	0	0	0	0	7.34E+06
Asbestos Structures>5um, ≤10um (Chrys)	CD	0	0	0	0	0	7.34E+06
Asbestos Structures>5um, ≤10um (Amph)	ADX	0	0	0	0	0	7.34E+06
Asbestos Structure >10um (Long)	ADX/CD	0	0	0	0	0	7.34E+06
Asbestos Structure >10um (Chrys)	CD	0	0	0	0	0	7.34E+06
Asbestos Structure >10um (Amph)	ADX	0	0	0	0	0	7.34E+06
Total Protocol Asbestos Structures	ADX/CD	0	0	0	0	0	7.34E+06
Protocol Asbestos Structures (Chrys)	CD	0	0	0	0	0	7.34E+06
Protocol Asbestos Structures (Amph)	ADX	0	0	0	0	0	7.34E+06
Total Protocol Non Asbestos Structures	**NAM**	0	0	0	0	0	7.34E+06

Approved by Technical Director

EMS Laboratories

NIOSH 7402/ISO

117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Client:	Derrick Willis, Tronox LLC-Henderson	**Filter Type:**	MCE 385 mm^2
Report number :	137865	**Magnification:**	9200
Sample number:	SSAL6-02-0.00BPC	**Grid Opening Dimension:**	0.0094
Project:	2027.001/Tronox LLC Henderson, 560 W. Lake Mead Dr.,	**Grid Loading:**	Light Moderate

Elutriation Date: 7/2/2010 by Joel Paruli
Preparation Date: 7/7/2010 by Joel Paruli
Analysis Date: 7/8/10 and 7/12/10 by Radha Singh

Asbestos Structures>5um, ≤10um (Chrys)	0
Asbestos Structures>5um, ≤10um (Amph)	0
Asbestos Structure >10um (Chrys)	0
Asbestos Structure >10um (Amph)	0
Protocol Asbestos Structures (Chrys)	0
Protocol Asbestos Structures (Amph)	0

Grid Openings	96
Mass - ug	174
Anlytical sensitivity	[redacted]

Grid ID	Grid Opening	Structure Type	Structure Number		Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total	Width	Length				
1A	C26	None Detected								
1A	E26	None Detected								
1A	F26	None Detected								MD F>5µ Non Asbesto:
1A	G26	None Detected								
1A	C26	None Detected								
1A	E36	None Detected								
1A	F36	None Detected								
1A	G36	None Detected								
1A	H36	None Detected								
1A	B46	None Detected								
1A	C46	None Detected								
1A	E46	None Detected								
1A	F46	None Detected								
1A	G46	None Detected								
1A	H46	None Detected								
1A	K46	None Detected								
1A	E56	None Detected								
1A	F56	None Detected								
1B	C26	None Detected								
1B	E23	None Detected								
1B	E26	None Detected								
1B	F23	None Detected								
1B	F26	None Detected								
1B	G23	None Detected								
1B	C34	None Detected								
1B	E31	None Detected								
1B	E34	None Detected								
1B	F31	None Detected								
1B	F34	None Detected								
1B	G31	None Detected								
1B	G34	None Detected								
1B	H31	None Detected								
1B	E41	None Detected								
1B	E44	None Detected								
1B	F41	None Detected								
1B	G43	None Detected								
1B	G46	None Detected								
1C	C31	None Detected								
1C	C34	None Detected								
1C	E31	None Detected								
1C	E34	None Detected								
1C	F31	None Detected								
1C	F34	None Detected								

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NIOSH 7402/ISO
117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Report Number:	137865
Sample number:	SSAL6-02-0.00BPC

Analyzed by:	Radha Singh
Date of Analysis:	7/8/10 and 7/12/10

Grid ID	Grid Opening	Structure Type	Structure Number		Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total	Width	Length				
1C	G26	None Detected								
1C	H33	None Detected								
1C	E41	None Detected								
1C	E44	None Detected								
1C	F41	None Detected								
1C	F44	None Detected								
1C	G41	None Detected								
1C	G44	None Detected								
1C	H41	None Detected								
1C	G51	None Detected								
1C	G54	None Detected								
1C	H51	None Detected								
1C	H54	None Detected								
1D	C33	None Detected								
1D	C36	None Detected								
1D	E33	None Detected								
1D	E36	None Detected								
1D	F33	None Detected								
1D	F36	None Detected								
1D	F41	None Detected								
1D	F44	None Detected								
1D	G41	None Detected								
1D	G44	None Detected								
1D	H41	None Detected								
1D	H44	None Detected								
1D	K41	None Detected								
1D	G51	None Detected								
1D	G54	None Detected								
1D	H51	None Detected								
1D	H54	None Detected								
1D	F61	None Detected								
1D	F64	None Detected								
1D	G61	None Detected								
1D	G64	None Detected								
1E	C33	None Detected								
1E	C36	None Detected								
1E	E33	None Detected								
1E	E36	None Detected								
1E	F23	None Detected								
1E	F34	None Detected								
1E	G31	None Detected								
1E	G34	None Detected								
1E	H31	None Detected								
1E	H34	None Detected								
1E	C44	None Detected								
1E	E41	None Detected								
1E	E44	None Detected								
1E	F41	None Detected								
1E	F44	None Detected								
1E	G43	None Detected								
1E	G46	None Detected								
1E	H43	None Detected								
1E	H46	None Detected								

Elutriator Data

Date: 7/2/10 Client: Northgate

Lab #: 137865

Sample ID: SSALG-02-0.00 Bpz Sample weight (g): 73.94

Time air flow started: 800 Tumbler rpm: 30

IST Flowmeter (mL/min): 100 ME Flowmeter (mL/min): 1370

Filter No.	Start Time	Tested flow rate (mL/min)	Final Filter Wt (mg)	Initial Filter Wt (mg)	Dust Weight (mg)	Time Value (min)	Avg. rate of deposition (ug/min)	Optimal time (min)
1	800	170	0.03202	0.02432	7.70	30		
2	830		0.02658	0.02441	2.17	15		
3	845		0.02471	0.02423	2.48	15		
4	900		0.02935	0.02443	4.92	15		
5	915		0.03222	0.02430	7.92	25		
6	940		0.02791	0.02442	3.49	30		
7	210		0.03003	0.02527	4.76	25		
8	1235		0.02789	0.02595	1.94	30		
	Time			486	0.135		Dep. Rate	Estiimate
1	1126	1137	4.610	4.475	0.135	11		
2	1150	1205	4.615	4.405	0.210	15		
3	1215	1232	4.632	4.458	0.174	17		
4	1245	1302	4.612	4.492	0.120	17		
5								
6								
7								
8								

3% loss
65% loss
90% loss
OK
~~loss 60%~~ OK
loss 60%
loss 10 %
loss 90%

7/7/10 (prep)

139865 Moisture content

6-10-10

SSALG-02-00BPC

dish wt.	19.24 g	
dish + samp.	119.54 - 19.24 =	100.30 g (initial wt.)
11:30 - 12:30	119.40 - 19.24 =	93.16
12:45 - 1:45	111.98 - 19.24	92.74
1:45 - 2:40	111.94 - 19.24	92.70 (Final wt.)

$$\%\ \text{moist.}\quad 100 \times \frac{100 - 92.70}{92.70} = 7.87\%$$

SSALG-01-00BPC

dish wt.	31.47 g	
dish + samp.	131.40 - 31.47 =	99.93 g (initial wt.)
11:30 - 12:30	125.72 - 31.47 =	94.25
12:45 - 1:45	124.96 - 31.47 =	93.49
1:45 - 2:40	124.92 - 31.47	93.45 (Final wt.)

$$\%\ \text{moist.}\quad 100 \times \frac{99.93 - 93.45}{93.45} = 6.93\%$$

SSAP7-02-0.00BPC

dish wt.	31.44 g	
dish + samp.	131.83 - 31.44 =	100.39 (initial wt.)
11:30 - 12:30	131.08 - 31.44 =	99.64
12:45 - 1:45	131.04 - 31.44 =	99.60 (Final wt.)

$$\%\ \text{moist.}\quad 100 \times \frac{100.39 - 99.60}{99.60} = 0.79\%$$

BP

Copy 80 GD

Count (Page of) NIOSH 7402/ISO

Prep Time: 12^00 2^30

Report number: 137865
Sample number: SSAL6-02-0.00 BPC
File name: Northgate
Sample Description: 174 mg

Filter Type: 385 mm2
Date Sample was Run: 7/2/10
Magnification: 9,200 X

Preparation date: 7/7/10 By JAP
Analysis date: 7/8/10 + 7/12/10 By BK 1120
Grid loading Lt Moderate
Condition of Grid Good / Excellent

Grid opening dimension: 0.0094 mm^2
Level of Analysis: (C): CD, CDX
(A): ADX, ADQ

2 1/2 hr.

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
A	C26	NSD						
	E26	NSD						
	F26	NSD						MD F>5µ Non Carb No SAED
	G26	NSD						
	C26	NSD						
	E36	NSD						
	F26	NSD						
	G36	NSD						
	H36	NSD						
	B46	NSD						
	C46	NSD						
	E46	NSD						
	F46	NSD						
	G46	NSD						
	H46	NSD						
	K46	NSD						
	E56	NSD						
	F56	NSD						
B								
	C26	NSD						
	E23	NSD						
	E26	NSD						
	F23	NSD						
	F26	NSD						
	G23	NSD						
	C3-4	NSD						
	E37	NSD						
	E34	NSD						
	F37	NSD						
	F34	NSD						
	G37	NSD						
	G34	NSD						

TEM-10A (2002)

TEM Asbestos Structure Count (Page of)

Report number: 187865 SAMPLE NO: SSAL6-02-0.00BPCx 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	E4-4	N>0						
	G4-1	N>0						
	G4-4	N>0						
	H4-1	N>0						
	H4-4	N>0						
	K4-1	N>0						
	K5-1	N>0						
	K5-4	N>0						
	H5-1	N>0						
	H5-4	N>0						
	E6-1	N>0						
	E6-4	N>0						
	G6-4	N>0						
2	G6-4	N>0						
1E	C3-3	N>0						
	C3-6	N>0						
	E3-3	N>0						
	E3-6	N>0						
	F3-3	N>0						
	F3-4	N>0						
	G3-1	N>0						
	G3-4	N>0						
	H3-1	N>0						
	H3-4	N>0						
	C4-4	N>0						
	E4-1	N>0						
	E4-4	N>0						
	F4-1	N>0						
	F4-4	N>0						
	G4-3	N>0						
	G4-6	N>0						
	H4-3	N>0						
11	H4-6	N>0						

TEM Asbestos Structure Count (Page of)

Report number: 137865 SAMPLE NO: SSALG-02-0.00BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	1B-1	N>0						
	E4-1	N>0						
	E4-4	N>0						
	F4-1	N>0						
	G4-3	N>0						
19	G E1-6	N>0						
1C	C3-1	N>0						
	C3-4	N>0						
	E3-1	N>0						
	E3-4	N>0						
	F3-1	N>0						
	F3-6	N>0						
	G2-6	N>0						
	H1-3	N>0						
	E4-1	N>0						
	E4-4	N>0						
	F4-1	N>0						
	F4-4	N>0						
	G4-1	N>0						
	G4-4	N>0						
	H4-1	N>0						
	H4-4	N>0						
1D	C3-3	N>0						
	C3-6	N>0						
	E3-3	N>0						
	E3-6	N>0						
	F3-3	N>0						
	F3-6	N>0						
	F4-1	N>0						

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Attn: Derrick Wills
Tronox-LLC-Henderson
PO Box 55
Henderson, NV 89009

Phone: (947) 375-7004

Project: Tronox LLX Henderson, 560 W. Lake Mead Dr., Henderson, NV/2027.001

Date Sampled: 5/18/2010 9:10AM

Customer ID: TRNX26
Customer PO: 2027.001
Received: 5/20/2010 9:50AM
EMS LAB No: 137865
Date Prepared: 7/6/2010 2:05PM
Analysis Date: 7/21/2010 0:00

Report Date: August 9, 2010

NIOSH 7402/ISO

DRAFT, MODIFIED ELUTRIATOR METHOD FOR THE DETERMINATION OF ASBESTOS IN SOILS AND BULK MATERIAL METHOD

EMS Laboratory Number:	137865		Mass of Respirable Dust on Fiber:	132	µg
Customer Sample Number:	SSAL6-01-0.00BPC		Area of collection filter:	385	mm^2
Minimum Level of Analysis (chrysotile):	CD		Grid openings area:	0.0094	mm^2
Minimum Level of Analysis (amphibole):	ADX		Grid Openings Analyzed:	106	
Magnification used for fiber counting:	9,200	x	Min. Str. Length/Max Str. Diameter:	>5/<0.4	microns
Aspect ratio for fiber definition:	3:1				
			Analyst(s):	Radha Singh	
Dust Generator - Total Dried Sample Weight-75.8g			Soil % Moisture	6.9	%
			Air Flow Rate Through ME Opening of Dust Generator:	1370	
Not Used			Air Flow Rate Through IST Opening of Dust Generator:	133	
Used in Tumbler			Estimate Total Air Flow Through Elutriator:	1503	

Analytical Sensitivity: 2.93E+06 Structure /g PM 10 Limit of Detection: 8.77E+06 Structure /g PM 10

Test For Uniformity (Chi-Square results)

Structure Class	Min ID Level Required	Counts: Primary Str.	Counts: Total Str.	Density St/mm^2	Poisson 95% Confidence Interval: Conc. Str/g PM10	Lower Limit Str/g PM10	Upper Limit Str/g PM10
Asbestos Structures>5um, ≤10um	ADX/CD	18	18	17.9	5.27E+07	3.12E+07	8.34E+07
Asbestos Structures>5um, ≤10um (Chrys)	CD	18	18	17.9	5.27E+07	3.12E+07	8.34E+07
Asbestos Structures>5um, ≤10um (Amph)	ADX	0	0	0	0	0	8.78E+06
Asbestos Structure >10um (Long)	ADX/CD	15	15	14.9	4.37E+07	2.47E+07	7.25E+07
Asbestos Structure >10um (Chrys)	CD	15	15	14.9	4.37E+07	2.47E+07	7.25E+07
Asbestos Structure >10um (Amph)	ADX	0	0	0	0	0	8.78E+06
Total Protocol Asbestos Structures	ADX/CD	33	33	32.9	9.67E+07	6.66E+07	1.36E+08
Protocol Asbestos Structures (Chrys)	CD	33	33	32.9	9.67E+07	6.66E+07	1.36E+08
Protocol Asbestos Structures (Amph)	ADX	0	0	0	0	0	8.78E+06
Total Protocol Non Asbestos Structures	**NAM**	5	5	4.98	1.47E+07	4.75E+06	3.42E+07

Approved by Technical Director

EMS Laboratories

NIOSH 7402/ISO

117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Client:	Derrick Willis, Tronox LLC-Henderson	**Filter Type:**	PC 385 mm²
Report number :	137865	**Magnification:**	9200
Sample number:	SSAL6-01-0.00BPC	**Grid Opening Dimension: mm^2**	0.0094
Project:	2027.001/Tronox LLC Henderson, 560 W. Lake Mead Dr.,	**Grid Loading:**	Moderate

Elutriation Date: 7/6/2010 by Joel Paruli
Preparation Date: 7/15/2010 by Joel Paruli
Analysis Date: 7/21/2010 by Radha Singh

Asbestos Structures>5um, ≤10um (Chrys)	18
Asbestos Structures>5um, ≤10um (Amph)	0
Asbestos Structure >10um (Chrys)	15
Asbestos Structure >10um (Amph)	0
Protocol Asbestos Structures (Chrys)	33
Protocol Asbestos Structures (Amph)	0

Grid Openings	106
Mass - ug	132
Anlytical sensitivity	

Grid ID	Grid Opening	Structure Type	Structure Number Primary	Structure Number Total	Dimensions - mm Width	Dimensions - mm Length	Dimensions (µm) Width	Dimensions (µm) Length	Level of ID	Mineral Type	Image Number	Structure Comments
1A	E21	None Detected										
1A	F21	None Detected										
1A	G21	None Detected										
1A	C31	None Detected										
1A	E31	None Detected										
1A	F31	None Detected										
1A	G31	None Detected										
1A	H31	None Detected										
1A	K31	F	1	1	2.5	63	0.27	6.85	CD	CHRYSOTILE		
		F	2	2	0.5	50	0.05	5.43	CD	CHRYSOTILE		
1A	C41	F	3	3	2.5	78	0.27	8.48	CD	CHRYSOTILE		
		F	4	4	0.5	58	0.05	6.30	CD	CHRYSOTILE		
1A	E41	None Detected										
1A	F41	None Detected										
1A	G41	MD11	5		50	145	5.43	15.76				
		MF		5	1.5	110	0.16	11.96	CD	CHRYSOTILE		
		MD11	6		55	610	5.98	66.30				Crosses grid bar, Double
		MF		6	2.5	610	0.27	66.30	CD	CHRYSOTILE		
1A	H41	MD11	7		10	80	1.09	8.70				
		MF		7	2	80	0.22	8.70	CD	CHRYSOTILE		
1A	K41	None Detected										
1A	C51	None Detected										
1A	E51	F	8	8	2	74	0.22	8.04	CD	CHRYSOTILE		
1A	F51	None Detected										
1A	G51	MD11	9		45	65	4.89	7.07				
		MF		9	3	65	0.33	7.07	CD	CHRYSOTILE		
1A	H51	None Detected										
1A	K51	None Detected										
1B	F26	MD11	10		50	90	5.43	9.78				
		MF		10	0.5	75	0.05	8.15	CD	CHRYSOTILE		
1B	G26	None Detected										
1B	F36	None Detected										
1B	G21	MD11			5	170	0.54	18.48				Non Asbestos
		MF			18	90	1.96	9.78				Non Asbestos
1B	G36	None Detected										
1B	H36	None Detected										
1B	B46	None Detected										
1B	F46	None Detected										
1B	G46	None Detected										
1B	H41	None Detected										
1B	C56	None Detected										
1B	E56	F	11	11	1.5	96	0.16	10.43	CD	CHRYSOTILE		
1B	F56	None Detected										

EMS Laboratories

NIOSH 7402/ISO

117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Report Number:	
Sample number:	

Analyzed by:	
Date of Analysis:	

Grid ID	Grid Opening	Structure Type	Structure Number				Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total			Width	Length				
1B	G56	F	12	12	2.5	340	0.27	36.96	CD	CHRYSOTILE		Crosses grib bar
1B	H56	None Detected										
1B	C64	None Detected										
1B	E64	None Detected										
1B	F64	None Detected										
1B	G64	None Detected										
1B	E54	None Detected										
1B	F54	None Detected										
1B	G54	F			0.5	52	0.05	5.65				Non Asbestos Si
		MD11	13		20	135	2.17	14.67				
		MF		13	2	155	0.22	16.85	CD	CHRYSOTILE		
1C	F31	None Detected										
1C	C31	None Detected										
1C	E31	None Detected										
1C	F31	None Detected										
1C	G31	None Detected										
1C	H31	None Detected										
1C	C41	None Detected										
1C	E41	F	14	14	2	100	0.22	10.87	CD	CHRYSOTILE		
1C	F41	F			3	55	0.33	5.98				Non Asbestos Al, k, Fe. Si
		MD11	15		40	125	4.35	13.59				
		MF		15	1.5	115	0.16	12.50	CD	CHRYSOTILE		
		F	16	16	0.75	90	0.08	9.78	CD	CHRYSOTILE		
1C	G41	None Detected										
1C	K41	MD11	17		6	68	0.65	7.39				
		MF		17	1	68	0.11	7.39	CD	CHRYSOTILE		
1C	C51	None Detected										
1C	E51	None Detected										
1C	F51	None Detected										
1C	G51	None Detected										
1C	H51	F			2	89	0.22	9.67				Non Asbestos , Al
1C	K51	MD11	18		10	78	1.09	8.48				
		MF		18	1.5	78	0.16	8.48	CD	CHRYSOTILE		
		MD11	19		85	300	9.24	32.61				Crosses grid Bar (MD)
		MF		19	2.5	112	0.27	12.17	CD	CHRYSOTILE		F (Does not cross grid bar)
1C	C61	None Detected										
1C	E61	None Detected										
1C	F61	None Detected										
1C	G61	MD11			5	49	0.54	5.33				Non Asbestos
		MF			0.5	49	0.05	5.33				Non Asbestos
1D	E21	None Detected										
1D	G21	None Detected										
1D	B31	MD11	20		23	220	2.50	23.91				
		MB		20	4	220	0.43	23.91	CD	CHRYSOTILE		
		MD11	21		30	270	3.26	29.35				
		MF		21	1	270	0.11	29.35	CD	CHRYSOTILE		Crosses grid bar
1D	C31	F	22	22	2.5	130	0.27	14.13	CD	CHRYSOTILE		Crosses grid bar
1D	E31	None Detected										
1D	F31	None Detected										
1D	H31	None Detected										
1D	B41	None Detected										
1D	C41	None Detected										
1D	F41	MD11	23		6	110	0.65	11.96				
		MF		23	2.5	110	0.27	11.96	CD	CHRYSOTILE		
		F	24	24	0.3	55	0.03	5.98	CD	CHRYSOTILE		
		F	25	25	2	105	0.22	11.41	CD	CHRYSOTILE		

EMS Laboratories

NIOSH 7402/ISO

117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Report Number:	
Sample number:	

Analyzed by:	
Date of Analysis:	

Grid ID	Grid Opening	Structure Type	Structure Number Primary	Structure Number Total			Dimensions (µm) Width	Dimensions (µm) Length	Level of ID	Mineral Type	Image Number	Structure Comments
1D	G41	None Detected										
1D	H41	None Detected										
1D	K41	MD11	26		50	91	5.43	9.89				
		MF		26	2	91	0.22	9.89	CD	CHRYSOTILE		
1D	B51	None Detected										
1D	C51	None Detected										
1D	E51	None Detected										
1D	F51	None Detected										
1D	G51	None Detected										
1D	H51	MD11	27		25	85	2.72	9.24				
		MF		27	2.5	85	0.27	9.24	CD	CHRYSOTILE		
1D	B33	None Detected										
1D	C33	None Detected										
1D	E33	MD11	28		14	110	1.52	11.96				
		MB		28	1.5	100	0.16	10.87	CD	CHRYSOTILE		
1E	B21	None Detected										
1E	C31	None Detected										
1E	E31	None Detected										
1E	F31	MD11	29		90	115	9.78	12.50				
		MF		29	1.5	70	0.16	7.61	CD	CHRYSOTILE		
1E	B41	None Detected										
1E	C41	None Detected										
1E	E41	F	30	30	1.5	60	0.16	6.52	CD	CHRYSOTILE		
		MD11			140	160	15.22	17.39				
		MF			5.5	160	0.60	17.39	ADX	AMOSITE		
1E	F41	None Detected										
1E	G41	None Detected										
1E	B51	None Detected										
1E	C51	F	31	31	0.5	50	0.05	5.43	CD	CHRYSOTILE		
		MD11	32		50	92	5.43	10.00				
		MF		32	0.25	92	0.03	10.00	CD	CHRYSOTILE		
1E	E51	None Detected										
1E	F51	None Detected										
1E	G51	None Detected										
1E	B61	None Detected										
1E	C61	F			3	60	0.33	6.52				Non Asbestos
1E	E61	None Detected										
1E	F61	None Detected										
1E	G61	None Detected										
1E	E44	MD11	33		140	200	15.22	21.74				
		MF		33	2	120	0.22	13.04	CD	CHRYSOTILE		

Elutriator Data

Date: 7/6/10 Client: Northgate

Lab #: 137865

Sample ID: SSALG-01-0.00 BPG Sample weight (g): 75.8

Time air flow started: 815 Tumbler rpm: 30

IST Flowmeter (mL/min): 100 ME Flowmeter (mL/min): 1370

Filter No.	Start Time	Tested flow rate (mL/min)	Final Filter Wt (mg)	Initial Filter Wt (mg)	Dust Weight (mg)	Time Value (min)	Avg. rate of deposition (ug/min)	Optimal time (min)	
1	1015	185	0.02887	0.02540	3.47	30			loss 80%
2	1045		0.03165	0.02530	6.35	15			loss 5%
3	1100		0.03258	0.02491	7.67	20			loss 5%
4	1120		0.02822	0.02499	3.23	30			loss 75%
5	1150		0.03158	0.02536	6.22	25			loss 2%
6	1215		0.02791	0.02578	2.13	30			loss 95%
7	1245		0.03007	0.02549	4.58	25			loss 5%
8	1310		0.03333	0.02520	8.13	40			OK
Time							Dep. Rate	Estiimate	
1 1110	1118		4.577	4.502	0.075	8			
2 1132	1148		4.576	4.459	0.117	16			
3 1210	1242		4.539	4.489	0.050	22			
4 1250	1306		4.589	4.495	0.094	16			
5 1320	1346		~~4.725~~ 4.510	4.510	0.215	26			
6 1405	1425		4.707	4.575	0.132	20			Prep 7/15/10

* Change 1st flow 133 @ 1253 pm

Elutriator Data

Date: 07/06/10 Client: _____

Lab #: 1

Sample ID:

Sample weight (g):

Time air flow started:

Tumbler rpm:

IST Flowmeter (mL/min):

ME Flowmeter (mL/min):

Filter No.	Start Time	Tested flow rate (mL/min)	Final Filter Wt (mg)	Initial Filter Wt (mg)	Dust Weight (mg)	Time Value (min)	Avg. rate of deposition (ug/min)	Optimal time (min)
9	1350			0.02515	6.14	40		
10	1430			0.02520				
11								
Time							Dep. Rate	Estiimate

loss 10%

137865 Moisture content

6-10-10

SSALG-02-00BPC

dish wt.	19.24 g	
dish + samp.	119.54 − 19.24 =	100.30 g (initial wt.)
11:30 - 12:30	119.40 − 19.24 =	93.16
12:45 − 1:45	111.98 − 19.24	92.74
1:45 − 2:40	111.94 − 19.24	92.70 (Final wt.)

$$\%\ \text{moist.}\ 100 \times \frac{100 - 92.70}{92.70} = 7.87\ \%$$

SSALG-01-00BPC

dish wt.	31.47 g	
dish + samp.	131.40 − 31.47 =	99.93 g (initial wt.)
11:30 - 12:30	125.72 − 31.47 =	94.25
12:45 − 1:45	124.96 − 31.47 =	93.49
1:45 − 2:40	124.92 − 31.47	93.45 (Final wt.)

$$\%\ \text{moist.}\ 100 \times \frac{99.93 - 93.45}{93.45} = 6.93\ \%$$

SSAP7-02-0.00BPC

dish wt.	31.44 g	
dish + samp.	131.83 − 31.44 =	100.39 (initial wt.)
11:30 - 12:30	131.08 − 31.44 =	99.64
12:45 - 1:45	131.04 − 31.44 =	99.60 (Final wt.)

$$\%\ \text{moist.}\ 100 \times \frac{100.39 - 99.60}{99.60} = 0.79\ \%$$

BP

Count (Page of) NIOSH 7402/ISO

Prep Time: 10³⁰-13⁰⁰

Report number: 137565
Sample number: SSALG-01-0.00 BPC
File name: Northgate
Sample Description: 132 mg

Filter Type: PC 385 mm2
Date Sample was Run: 7/6/10
Magnification: 9,200 X

PO 10580

Preparation date: 7/15/10 By JAP
Analysis date: 7/21/10 By
(A): ADX, ADQ
Grid loading Mod
Condition of Grid Good

Grid opening dimension: 0.0094 mm^2
Level of Analysis: (C): CD, CDX

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
A	E21							
	F21							
	G21							Ca PO4
	C31							
	E31							
	F31							
	G31							
	H21							
	K31	1	1		F	2.5	63	ch SAED 3550
		2	2		F	0.5	53	Chr
	C41	3	3		F	2.5	78	chr
					F	0.5	58	chr
	E41							
	F41							
	G41	4			MD11	50	145	
			4		MF	1.5	110	ch
		5			MD11	55	610	x6 Bundled
			5		MF	2.5	610	ch
	H41	6			MD11	10	80	
			6		MF	2	80	ch
	K41							
	C51							
	E51	7	7		F	2	74	ch
	F61							
	G51	8			MD11	45	65	
			8		MF	2.5	65	ch EDS
A	H51	NSD						
	K51	NSD						
B	F26	9			MD11	50	90	
			9			0.5	75	Ch
	G26							
	F36							

1-10A (2002)

21 MD11 45x470 Blocky fiber
MF 18x90 CaPO4

TEM Asbestos Structure Count (Page 2 of 4)

Report number: 136865 SAMPLE NO: SSALG-01-0.00 BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	G36							
	H36							
	B46							
	F46							
	G46							
	H46							
	C56							
	E56	10	10		F	1.5	96	Chry
	F56							
	G56	11	11		F	2.5	340	Chry X G3
	H56							
	C64							
	E64							
	F64							
	G64							
	E54							
	F54							
	G54				F	0.5	52	Non-asb Si
		12			MDII	20	135	
			12		ME	2	155	Chry
	F31							
	C31							
	E31							
	F31							
	G31							
	H31							
	C41							
	E41	13	13		F	2	100	chrys
	F41				F	3	55	Nonasb Alk Fe Si O
		14			MDII	40	120	
			14		ME	1.5	115	chrys
		15	15		F	0.5	90	chrys
	G41							
	H41	16			MDII	6	68	
			16		MF	1	68	Chrys
	C51							
	E51							
	F51							

TEM **Asbestos Structure Count (Page 3 of 4)**

Report number: 136865 SAMPLE NO: SSAL6-01-0.00 BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	G51							
	H51				F	2	84	Hand Non crit
	K51	17			MD11	10	78	
			17		MF	1.5	78	chr
		18			MD11	85	300	MD XGB
			18		MF	2.5	112	F [illegible] XGB chry
	C61							
	E61							
	F61							
[illegible]	G61				MD11	5	49	
					MF	0.5	49	Desi Dx
[illegible]	E21							
	G21							
	B31	19			MD11	23	220	
			19		MB	4	220	chry
		20			MD11	30	270	
			20		MF	1	270	chry XGB
	C31	21	21		F	2.5	120	chry XGB
	E31							
	G31							
	H31							
	B41							
	C41							
	F41	22			MD11	6	110	
			22		MF	2.5	110	ch
		23	23		F	0.3	55	ch
	G41	24	24		F	2	65	chr
	H41							
	K41	25			MD11	50	91	
			25		MF	2	91	chr
	B51							
	C51							
	E51							
	F51							
	G51							
	H51	26			MD11	25	85	
			26		MF	2.5	85	chry
	B33							

TEM Asbestos Structure Count (Page 4 of 4)

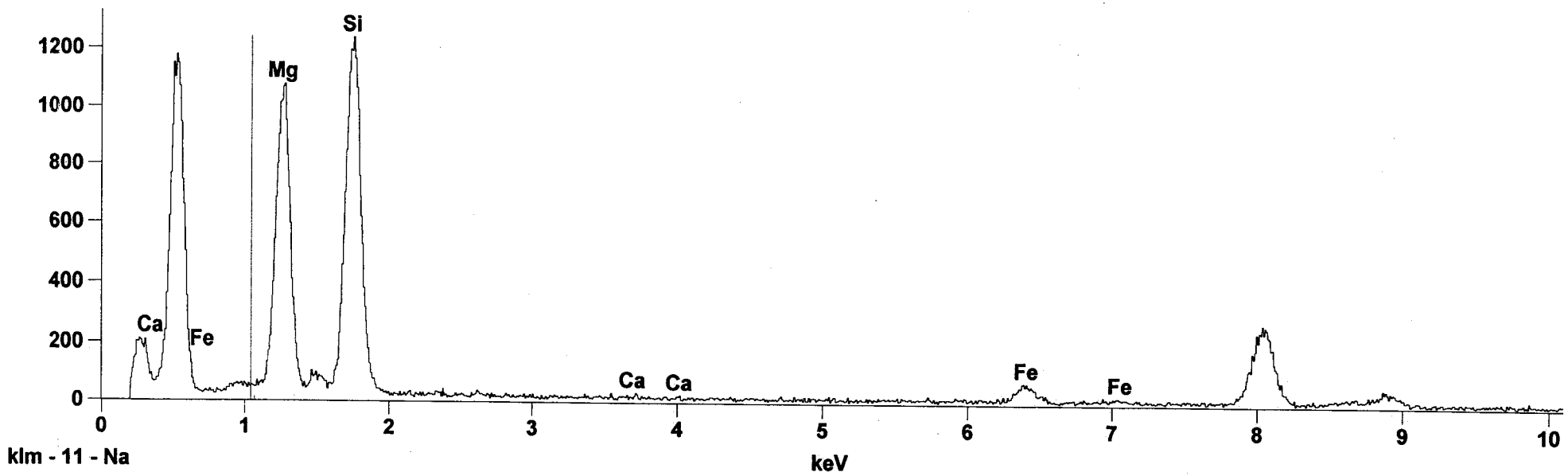
Report number: 136865 SAMPLE NO: SSAL6-01-0.00 BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	C33							
	E33	27			MD11	14	110	
			27		MB	1.5	100	chry
E	B31							
	C31							
	E31							
	F31	28			MD11	90	115	
			28		MF	1.7	70	ch
	B41							
	C41							
	E41	29	29		F	1.5	60	ch
		30			MD11	140	160	
			30		MF	5.5	160	[illegible]
	F41							
	G41							
	B51							
	C51	31	31		F	0.5	50	Ch
		32			MD11	50	92	
			32		MF	0.75	92	Ch
	E51							
	F51							
	F51							
	G51							
	B61							
	C61	33	33		F	3	60	Non [illegible]
	E61							
	F61							
	G61							
	E44	34			MD11	140	200	
			34		MF	2	120	Chr

Project: New Project

Full scale counts: 1241

137865 SSAL6-01-0.00BPC GRID A G51

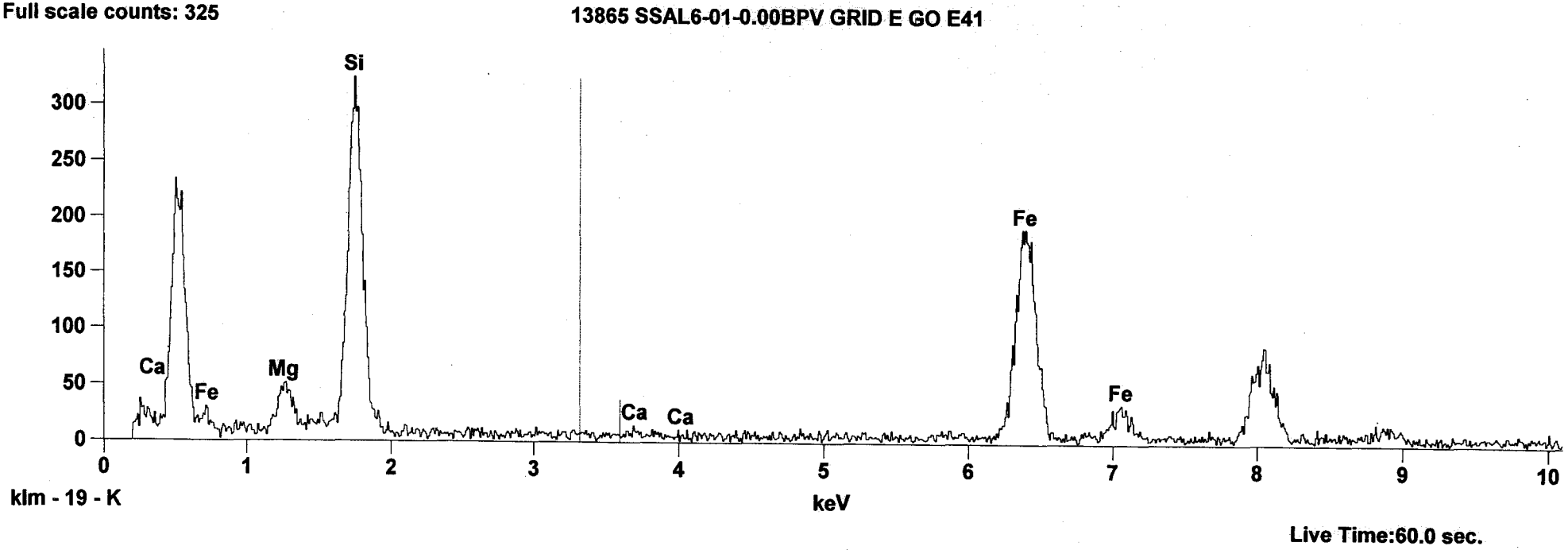


Live Time:50.4 sec.

Quantitative Results 137865 SSAL6-01-0.00BPC GRID A G51

Element Line	Net Counts	Weight %	Weight % Error	Atom %	Atom % Error
Mg K	11003	49.81	---	54.41	+/- 0.55
Si K	13250	46.14	---	43.62	+/- 0.40
Ca K	44	0.21	---	0.14	+/- 0.06
Fe K	762	3.85	---	1.83	+/- 0.09
Total		100.00		100.00	

Project: New Project

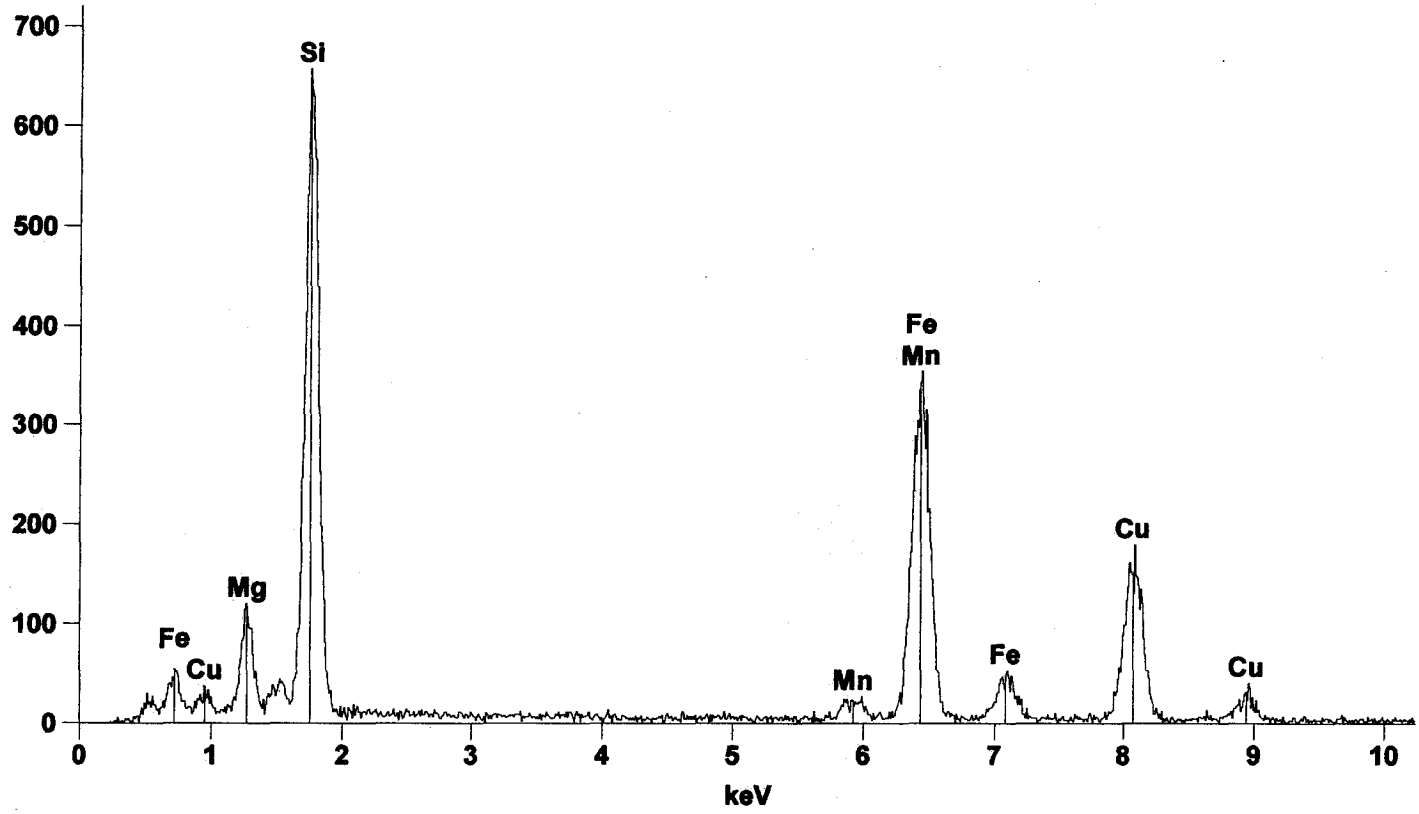


Quantitative Results 13865 SSAL6-01-0.00BPV GRID E GO E41

Element Line	Net Counts	Weight %	Weight % Error	Atom %	Atom % Error
Mg K	538	7.49	---	11.49	+/- 0.56
Si K	3777	40.46	---	53.69	+/- 0.91
Ca K	24	0.35	---	0.32	+/- 0.17
Fe K	3329	51.70	---	34.50	+/- 0.63
Total		100.00		100.00	

Project: Regular Clients

Full scale counts: 657 **SSAL6-01-000-BPC** GRID C #51



Live Time:45.3 sec.

EMS Laboratories Inc.
117 West Bellevue Drive, Pasadena, CA 91105
Phone: 626-568-4065 Fax: 626-796-5282
Email: akolk@emslabs.com

Attn: Derrick Wills
Tronox-LLC-Henderson
PO Box 55
Henderson, NV 89009

Phone: (947) 375-7004

Project: Tronox LLX Henderson, 560 W. Lake Mead Dr., Henderson, NV/2027.001

Date Sampled: 5/18/2010 8:30AM

Customer ID: TRNX26
Customer PO: 2027.001
Received: 5/20/2010 9:50AM
EMS LAB No: 137865
Date Prepared: 7/7/2010 12:26PM
Analysis Date: 7/21/2010 0:00

Report Date:

NIOSH 7402/ISO

DRAFT, MODIFIED ELUTRIATOR METHOD FOR THE DETERMINATION OF ASBESTOS IN SOILS AND BULK MATERIAL METHOD

EMS Laboratory Number:	137865		Mass of Respirable Dust on Fiber:	135	µg
Customer Sample Number:	SSAP7-02-0.00BPC		Area of collection filter:	385	mm^2
Minimum Level of Analysis (chrysotile):	CD		Grid openings area:	0.0094	mm^2
Minimum Level of Analysis (amphibole):	ADX		Grid Openings Analyzed:	106	
Magnification used for fiber counting:	9,200	x	Min. Str. Length/Max Str. Diameter:	>5/<0.4	microns
Aspect ratio for fiber definition:	3:1				
			Analyst(s):	Radha Singh	

Dust Generator - Total Dried Sample Weight-78.7g		Soil % Moisture	0.8	%
		Air Flow Rate Through ME Opening of Dust Generator:	1370	
Not Used		Air Flow Rate Through IST Opening of Dust Generator:	138	
Used in Tumbler		Estimate Total Air Flow Through Elutriator:	1508	

Analytical Sensitivity:	2.86E+06 Structure /g PM 10	Limit of Detection:	8.57E+06 Structure /g PM 10

Test For Uniformity (Chi-Square results)

		Counts		Poisson 95% Confidence Interval			
Structure Class	**Min ID Level Required**	**Primary Str.**	**Total Str.**	**Density** St/mm^2	**Conc.** Str/g PM10	**Lower Limit** Str/g PM10	**Upper Limit** Str/g PM10
Asbestos Structures>5um, ≤10um	ADX/CD	0	0	0	0	0	8.57E+06
Asbestos Structures>5um, ≤10um (Chrys)	CD	0	0	0	0	0	8.57E+06
Asbestos Structures>5um, ≤10um (Amph)	ADX	0	0	0	0	0	8.57E+06
Asbestos Structure >10um (Long)	ADX/CD	0	0	0	0	0	8.57E+06
Asbestos Structure >10um (Chrys)	CD	0	0	0	0	0	8.57E+06
Asbestos Structure >10um (Amph)	ADX	0	0	0	0	0	8.57E+06
Total Protocol Asbestos Structures	ADX/CD	0	0	0	0	0	8.57E+06
Protocol Asbestos Structures (Chrys)	CD	0	0	0	0	0	8.57E+06
Protocol Asbestos Structures (Amph)	ADX	0	0	0	0	0	8.57E+06
Total Protocol Non Asbestos Structures	**NAM**	1	1	1.00	2.86E+06	5.7E+04	1.59E+07

Approved by Technical Director

EMS Laboratories

NIOSH 7402/ISO

117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Client:	Derrick Willis, Tronox LLC-Henderson					**Filter Type:**	MCE 385 mm^2
Report number :	137865					**Magnification:**	9200
Sample number:	SSAP7-02-0.00BPC					**Grid Opening Dimension: mm^2**	0.0094
Project:	2027.001/Tronox LLC Henderson, 560 W. Lake Mead Dr.,					**Grid Loading:**	Moderate

Elutriation Date: 7/7/2010 by Joel Paruli
Preparation Date: 7/9/2010 by Joel Paruli
Analysis Date: 7/21/2010 by Bernadine Kolk

Asbestos Structures>5um, ≤10um (Chrys)	0	**Grid Openings**	106
Asbestos Structures>5um, ≤10um (Amph)	0	**Mass - ug**	135
Asbestos Structure >10um (Chrys)	0	**Anlytical sensitivity**	
Asbestos Structure >10um (Amph)	0		
Protocol Asbestos Structures (Chrys)	0		
Protocol Asbestos Structures (Amph)	0		

Grid ID	Grid Opening	Structure Type	Structure Number		Dimensions - mm		Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total	Width	Length	Width	Length				
1A	C31	F			0.5	55						Non Asbestos
1A	E31	None Detected										
1A	G31	None Detected										
1A	H31	None Detected										
1A	B41	None Detected										
1A	E41	None Detected										
1A	F41	None Detected										
1A	G41	None Detected										
1A	H41	None Detected										
1A	K41	None Detected										
1A	C51	None Detected										
1A	E51	None Detected										
1A	F51	None Detected										
1A	G51	None Detected										
1A	K51	None Detected										
1A	C64	None Detected										
1A	E64	None Detected										
1A	F64	None Detected										
1A	G64	None Detected										
1A	H64	None Detected										
1A	H53	None Detected										
1B	E23	None Detected										
1B	F23	None Detected										
1B	G23	None Detected										
1B	H23	None Detected										
1B	B33	None Detected										
1B	E33	None Detected										
1B	F33	None Detected										
1B	G33	None Detected										
1B	H33	None Detected										
1B	K33	None Detected										
1B	C43	None Detected										
1B	E43	None Detected										
1B	F43	None Detected										
1B	G43	None Detected										
1B	H43	None Detected										
1B	K43	None Detected										
1B	E53	None Detected										
1B	F53	None Detected										
1B	G53	None Detected										
1B	H53	None Detected										
1B	K53	None Detected										
1C	B34	None Detected										
1C	E34	None Detected										

EMS Laboratories

NIOSH 7402/ISO

117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Report Number:	
Sample number:	

Analyzed by:	
Date of Analysis:	

Grid ID	Grid Opening	Structure Type	Structure Number				Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total			Width	Length				
1C	F34	None Detected										
1C	G34	None Detected										
1C	H34	None Detected										
1C	B44	None Detected										
1C	C44	None Detected										
1C	E44	None Detected										
1C	F44	None Detected										
1C	G44	None Detected										
1C	H44	None Detected										
1C	B54	None Detected										
1C	C54	None Detected										
1C	E54	None Detected										
1C	F54	None Detected										
1C	G54	None Detected										
1C	H54	None Detected										
1C	C64	None Detected										
1C	E64	None Detected										
1C	F64	None Detected										
1C	G64	None Detected										
1D	C26	None Detected										
1D	E26	None Detected										
1D	F26	None Detected										
1D	G26	None Detected										
1D	H26	None Detected										
1D	B36	None Detected										
1D	C36	None Detected										
1D	E36	None Detected										
1D	F36	None Detected										
1D	G36	None Detected										
1D	H36	None Detected										
1D	K36	None Detected										
1D	B56	None Detected										
1D	C56	None Detected										
1D	E56	None Detected										
1D	F56	None Detected										
1D	G56	None Detected										
1D	H56	None Detected										
1D	C61	None Detected										
1D	E61	None Detected										
1D	F61	None Detected										
1E	E21	None Detected										
1E	G21	None Detected										
1E	B31	None Detected										
1E	C31	None Detected										
1E	E31	None Detected										
1E	F31	None Detected										
1E	G31	None Detected										
1E	H31	None Detected										
1E	B41	None Detected										
1E	C41	None Detected										
1E	E41	None Detected										
1E	F41	None Detected										
1E	G41	None Detected										
1E	H41	None Detected										
1E	C51	None Detected										
1E	E51	None Detected										
1E	F51	None Detected										

EMS Laboratories

NIOSH 7402/ISO
117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Report Number:	
Sample number:	

Analyzed by:	
Date of Analysis:	

Grid ID	Grid Opening	Structure Type	Structure Number Primary	Structure Number Total			Dimensions (µm) Width	Dimensions (µm) Length	Level of ID	Mineral Type	Image Number	Structure Comments
1E	G51	None Detected										
1E	H51	None Detected										
1E	C61	None Detected										
1E	E61	None Detected										
1E	F61	None Detected										

Elutriator Data

Date: 7/7/10 Client: Northgate

Lab #: 137865

Sample ID: SSAP7-02-0.00Bpc Sample weight (g): 78.7

Time air flow started: 800 Tumbler rpm: 30

IST Flowmeter (mL/min): 100 ME Flowmeter (mL/min): 1370

Filter No.	Start Time	Tested flow rate (mL/min)	Final Filter Wt (mg)	Initial Filter Wt (mg)	Dust Weight (mg)	Time Value (min)	Avg. rate of deposition (ug/min)	Optimal time (min)	
1	1000	180	0.02745	0.02520	2.25	30			loss 65%
2	1030	↓	0.02733	0.02494	2.39	15			
3	1045		0.02710	0.02490	2.20	15			loss 25%
4	1100		0.02795	0.02543	2.52	25			loss 60%
5	1125		0.02768	0.02517	2.51	30			loss 80%
6	1155		0.03005	0.02530	4.75	35			
7	1230								
8									
	Time						Dep. Rate	Estiimate	
1	1108	1121	4.649	4.574	0.075	13			
2	1140	1153	4.674	4.537	0.137	13			
3	1210	1226	4.631	4.496	0.135	16			prep 7/9/10
4									
5									
6									
7									
8									

Raise up 1st Flow to 130 @ 1138

6-10-10

SSALG-02-00BPC

dish wt.	19.24 g	
dish + samp.	119.54 - 19.24 =	100.30 g (initial wt.)
11:30 - 12:30	112.40 - 19.24 =	93.16
12:45 - 1:45	111.98 - 19.24	92.74
1:45 - 2:40	111.94 - 19.24	92.70 (Final wt.)

$$\%\ \text{moist.}\ 100 \times \frac{100 - 92.70}{92.70} = 7.87\ \%$$

SSALG-01-00BPC

dish wt.	31.47 g	
dish + samp.	131.40 - 31.47 =	99.93 g (initial wt.)
11:30 - 12:30	125.72 - 31.47 =	94.25
12:45 - 1:45	124.96 - 31.47 =	93.49
1:45 - 2:40	124.92 - 31.47	93.45 (Final wt.)

$$\%\ \text{moist.}\ 100 \times \frac{99.93 - 93.45}{93.45} = 6.93\ \%$$

SSAPT-02-0.00BPC

dish wt.	31.44 g	
dish + samp.	131.83 - 31.44 =	100.39 (initial wt.)
11:30 - 12:30	131.08 - 31.44 =	99.64
12:45 - 1:45	131.04 - 31.44 =	99.60 (Final wt.)

$$\%\ \text{moist.}\ 100 \times \frac{100.39 - 99.60}{99.60} = 0.79\ \%$$

BP

Count (Page of) NIOSH 7402/ISO

PrepTime: 12°° 230

Report number : 137865
Sample number: SSAP7-02-0.00 BFC
File name: Northgate
Sample Description: 135 mg

Filter Type: PC 385 mm2
Date Sample was Run: 7/7/10
Magnification: 9,200 X

DO 105GO

Preparation date: 7/9/10 By JAP
Analysis date: 7/21/10 By BK
Grid loading Mod
(A): ADX, ADQ
Condition of Grid Good

Grid opening dimension: 0.0094 mm^2
Level of Analysis: (C): CD, CDX

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
A	C31				F	0.5	55	No SAED Non Ast Mn fiber
	E31							
	G31							
	H31							
	B41							
	E41							
	F41							
	G41							
	H41							
	K41							
	C51							
	E51							
	F51							
	G51							
	K51							
	C64							
	E64							
	F64							
	G64							
	H64							
	H53							
B	E23							
	F22							
	G23							
	H23							
	B33							
	E33							
	F33							
	G33							
	H33							
	K33							
	C43							

TEM-10A (2002)

32

TEM Asbestos Structure Count (Page 2 of 3)

Report number: 137865 SAMPLE NO: SSAP7-02-0.00 BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	E43							
	F43				X			
	G43							
	H43							
	K43							
	E53							
	F53							
	G53		X				MB	Nonasb
	H53							MgAlCaMnFeSiO
	K53							
C	B34							
	E34							
	F34							
	G34							
	H34							
	B44							
	C44							
	E44							
	F44							
	G44							
	H44							
	B54							
	C54							
	E54							
	F54							
	G54							
	H54							
	C64							
	E64							
	F64							
	G64							
B	C26							
	E26							
	F26							
	G26							
	H26							
	B36							
	C36							

8

TEM Asbestos Structure Count (Page 3 of 3)

Report number: 137865 SAMPLE NO: SSAP7-02-0.00 BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	E36							
	F36							
	G36							
	H36							
	K36							
	B56							
	C56							
	E56							
	F56							
	G56							
	H56							
	C61							
	E61							
	F61							
E	E21							
	G21							
	B31							
	C31							
	E31							
	F31							
	G71							
	H71							
	B41							
	C41							
	E41						MD	Mg Al, Ca Mn Fe Si O
	F41							Non asb
	G41							
	H41							
	C51							
	E51							
	F51							
	G51							
	H51							
	C61							
	E61							
	F66							

Filter Lot Blank

Count (Page of) NIOSH 7402/ISO

Prep Time: NA

Report number: 137022 Filter Blank 1
Sample number: 0005200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2
Date Sample was Run: NA

Magnification: 9,200 X

Preparation date: 6/8/10 By JAP
Analysis date: 6/9/10 By BC
(A): ADX, ADQ

Grid opening dimension: 0.0094 mm²
Level of Analysis: (C): CD, CDX

Grid loading Very Light Condition of Grid Broke

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
A	C26							
	E27							
	E24							
	E23							
	F26							
	C32							
	C31							
	F34							
	E31							
	E34							
	F31							
	F34							
	G31							
	G34							
	H31							
	B44							
	C41							
	C44							
	F41							
	E44							
	F44							
	F44							
	G41							
	G44							
	H41							
	H44							
	K41							
	K44							
	C51							
30	C54							
	E51							
	C54							

Count (Page 2 of) NIOSH 7402/ISO

Report number :	137822	Filter Blank1	Filter Type: MCE 385 mm2	Prep Time: NA
Sample number:	00105200		Date Sample was Run: NA	
File name:	Northgate			
Sample Description:	NA	mg	Magnification: 9,200 X	

Preparation date: 6/8/2010 By JAP Grid opening dimension:0.0094 mm^2

Analysis date: By Level of Analysis: (C): CD, CDX

(A): ADX, ADQ

Grid loading Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	F51							
	F54							
	G51							
	G54							
	H51							
	H54							
	K51							
	G61							
B	C26							
	E23							
	E26							
	F23							
	F26							
	G23							
	G26							
	B36							
	C33							
	C36							
	E33							
	E36							
	F33							
	F36							
	H33							
	H36							
	K33							
	K36							
	B46							
	C43							
	C46							
	E43							
	E46							
	F43							

Count (Page 7 of) NIOSH 7402/ISO

Report number : 137822 Filter Blank1
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA
Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: By
Grid loading Condition of Grid

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX
(A): ADX, ADQ

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	F46							
	G43							
	G46							
	H43							
	H46							
	K43							
	K46							
	C53							
	C56							
	E53							
	E56							
	F53							
	F56							
	G53							
	G56							
	H53							
C	B34							
	C31							
	C34							
	E31							
	E34							
	F31							
	F34							
	G31							
	G34							
	H31							
	H34							
	B41							
	B44							
	C41							
	C44							
	E41							

TEM -10A (2002)

Count (Page 4 of) NIOSH 7402/ISO

Report number : 137822 Filter Blank1
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA

Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: By

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX

(A): ADX, ADQ
Condition of Grid

Grid loading

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	E44							
	F41							
	F44							
	G41							
	G44							
	H41							
	H44							
	K41							
	B51							
	B54							
	C51							
	C54							
	E51							
	E54							
	F51							
	F54							
	G51							
	G54							
	H51							
	H54							
	C61							
	C64							
	E64							
	E61							
13	C23							
	C26							
	E23							
	F26							
	F23							
	G23							
	G26							
	H23							

TEM -10A (2002)

0 grid torn where replaced in grid bag

Count (Page 5 of) NIOSH 7402/ISO

Report number :	137822	Filter Blank1	Filter Type: MCE 385 mm2	Prep Time: NA
Sample number:	00105200		Date Sample was Run: NA	
File name:	Northgate			
Sample Description:	NA	mg	Magnification: 9,200 X	

Preparation date: 6/8/2010 By JAP Grid opening dimension:0.0094 mm^2

Analysis date: By Level of Analysis: (C): CD, CDX

(A): ADX, ADQ

Grid loading Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	B3b							
	C3a							
	C3b							
	E3a							
	E3b							
	F3a							
	F3b							
	G3a							
	G3b							
	H2a							
	H2b							
	B4b							
	C4a							
	C4b							
	E4a							
	E4b							
	F4a							
	F4b							
	G4a							
	G4b							
	H4a							
	H4b							
	K4a							
	K4b							
	B5b							
	C5a							
	C5b							
	E5a							
	E5b							
	F5a							
	F5b							
	G5a							

Count (Page 6 of 7) NIOSH 7402/ISO

Report number :	137822 Filter Blank1	Filter Type: MCE 385 mm2	Prep Time: NA
Sample number:	00105200	Date Sample was Run: NA	
File name:	Northgate		
Sample Description:	NA mg	Magnification: 9,200 X	
Preparation date:	6/8/2010 By JAP	Grid opening dimension:0.0094 mm^2	
Analysis date:	By	Level of Analysis: (C): CD, CDX	
	(A): ADX, ADQ		

Grid loading Very Light Condition of Grid Good

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
E	B3 1							
	B3 4							(1) org fiber bundle < 5µ
	C3 1							
	C3 4							
	D3 1							
	D3 4							
	E3 1							
	E3 4							
	G3 1							
	G3 4							
	H3 1							
	H3 4							
	B4 1							
	B4 4							
	C4 1							
	C4 4							
	E4 1							
	E4 4							
	F4 1							
	F4 4							
	G4 1							
	G4 4							
	H4 1							
	H4 4							
	K4 1							
	K4 4							
	B5 4							
	C5 1							
	C5 4							
	E5 1							
	E5 4							
	F5 1							

TEM -10A (2002)

Count (Page 1 of 1) NIOSH 7402/ISO

Report number : 137822 Filter Blank1
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA

Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: By

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX

(A): ADX, ADQ
Grid loading Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	E54							
	G51							
	C54							
	H51							
	H54							
	K51							
	EG1							
	EG4							

TEM -10A (2002)

TEM ASBESTOS ANALYSIS

Client Sand blank
Sample No. 5-12-10

EMS Lab No. _____
Page _____ of _____

RECEIVING

TYPE OF SAMPLE
Air ☐ Water ☐
Soil ☐ Bulk ☐
Other Sand

METHOD OF ANALYSIS
EPA 600/4-83-043 ☑ ISO ☐

LEVEL OF ANALYSIS
Chrysotile _____
Amphibole _____

ASPECT RATIO
3:1 ☐ 5:1 ☐

EPA/600/R-94/134 100.1 ☐ 100.2 ☐

LENGTHS
All Sizes (EPA) ☐
(μm) ≥0.5 ☐
≥1.0 ☐
≥5.0 ☐
≥10.0 ☐
PCM Range* ☐
*(≥0.25 μm width ≥5.0 μm length)

FILTER TYPE / AREA (mm±)
MCE ☐ 385 ☐
PC ☐ 314 ☐
MCN ☐ 1017 ☐
Other _____

PORE SIZE
0.45 μm ☐ 0.8 μm ☐
0.1 μm ☐ 0.22 μm ☐
Other _____

G.O. Area (mm²) 0.0 0.094
No. of G.O. to Analyze 200
67/grid

PREP

DIRECT PREP ☐
INDIRECT PREP ☐

Volume _____ liters
Working Volume _____ ml
Weight 50 grams
Ashed Area _____ %

Prepared By JAP
Date 5/12/10

ANALYSIS

MICROSCOPE
H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☑
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☑

Grid Address: A
Screen Magnification: 9200 X
Camera Constant: 2x3
Accelerating Voltage: 100KV
Beam Current: 10 μA
K-Factor: 1.4
Analyst Kadh Date 5/13/10

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
C23		NM																							
C26		↓																							
E23																									
E26																									
G23																									
G26																									
H23																									
C3-1																									
C34		1=	4.5	75	✓																				Si
E31		↓																							
E34		NM																							
F31		↓																							
F34																									

TEM - 1A (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Condition of the Grid: ☐ Good ☐ Scrappy ☐ Undissolved Filter ☐ Folded ☐

EMS LABORATORIES 117 West Bellevue Drive • Pasadena, California 91105-2548 • (626) 568-4065

TEM ASBESTOS ANALYSIS

Client Sand blank
Sample No. 5-12-10

EMS Lab No. _____
Page 2 of _____

RECEIVING

ANALYSIS

Grid Address: A
Screen Magnification: _____ X
Camera Constant: _____
Accelerating Voltage: 100KV
Beam Current: _____ µA
K-Factor: _____

Analyst _____ Date _____

MICROSCOPE

H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☒
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM

Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
G3-1		NAD																							
G3-4																									
TB1-1																									
TB1-4																									
C3-3																									
C3-6																									
E3-3																									
E3-6																									
F3-3																									
F3-6																									
G3-3																									
G3-6																									
TB-3																									
TB6																									
K3-3		↓																							

TEM - 1B (1-06)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Condition of the Grid: ☐ Good ☐ Scrappy ☐ Undissolved Filter ☐ Folded ☐

TEM ASBESTOS ANALYSIS

Client Sand blank
Sample No. 5-1270

EMS Lab No. _____
Page 3 of _____

RECEIVING

ANALYSIS

Grid Address: A
Screen Magnification: _____ X
Camera Constant: _____
Accelerating Voltage: 100KV
Beam Current: _____ µA
K-Factor: _____
Analyst Rdk Date 5-13-10

MICROSCOPE
- H600A - Serial No. 542-36-01 ☐
- H600B - Serial No. 542-05-06 ☐
- H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
- Kevex - Model No. 3200-0106-0365 ☐
- Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
C4-1		N>4																							
C4-4																									
E4-1																									
E4-4																									
F4-1																									
F4-4																									
G4-1																									
G4-4																									
H4-1																									
H4-4																									
K4-1																									
K4-4																									
E43																									
E 43																									
E43		V																							

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Condition of the Grid: ☐ Good ☐ Scrappy ☐ Undissolved Filter ☐ Folded ☐

TEM ASBESTOS ANALYSIS

Client Sand blade
Sample No. S-12-10

EMS Lab No. _____
Page 4 of _____

RECEIVING

ANALYSIS

Grid Address: A
Screen Magnification: _____ X
Camera Constant: _____
Accelerating Voltage: 100KV
Beam Current: _____ µA
K-Factor: _____
Analyst Radle Date 5-13-10

MICROSCOPE

H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☐
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM

Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
G43		NF																							
G46																									
H43																									
H46																									
K43																									
K46																									
ESB																									
ES4																									
F51																									
F54																									
G51																									
G54																									
H51			F		6.5	80	✓																		Si
H54		NF																							
K51																									

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Condition of the Grid: ☐ Good ☐ Scrappy ☐ Undissolved Filter ☐ Folded ☐

TEM ASBESTOS ANALYSIS

Client: Sand blast
Sample No. 5-12-10

EMS Lab No. ______
Page 5 of ______

RECEIVING

ANALYSIS

Grid Address: A
Screen Magnification: ______ X
Camera Constant: ______
Accelerating Voltage: 100KV
Beam Current: ______ µA
K-Factor: ______
Analyst: Rodke
Date: 5-13-10

MICROSCOPE

- H600A - Serial No. 542-36-01 ☐
- H600B - Serial No. 542-05-06 ☐
- H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM

- Kevex - Model No. 3200-0106-0365 ☐
- Kevex - Model No. 3600-0206-0146 ☐ Quantum System

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
C5-3		ND																							
C5-6		↓																							
E5-3		↓																							
E5-6		↓																							
F5-3		↓																							
F5-6		↓																							
G5-3		↓																							
G5-6		↓																							

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Condition of the Grid: ☐ Good ☐ Scrappy ☐ Undissolved Filter ☐ Folded ☐

TEM ASBESTOS ANALYSIS

Client Sand blank
Sample No. S-12-10

EMS Lab No. _____
Page 1 of _____

RECEIVING

ANALYSIS

Grid Address: B
Screen Magnification: 9,200 X
Camera Constant: 28.3
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 14
Analyst Radh Date 5/18/10

MICROSCOPE
H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☐
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
C23		N/A																							
C26																									
E23																									
E26																									
I23																									
I26																									
M23																									
M26																									
P23																									
C34																									
C3-4																									
E34																									
E3-4																									
P34																									
P3-4			↓																						

TEM - 1B (1-06)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

TEM ASBESTOS ANALYSIS

Client Sand blank
Sample No. S-12-10

EMS Lab No. _____
Page 1 of _____

RECEIVING

ANALYSIS

Grid Address: B
Screen Magnification: 9,200 X
Camera Constant: 28.3
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Radh Date 5/18/10

MICROSCOPE
- H600A - Serial No. 542-36-01 ☐
- H600B - Serial No. 542-05-06 ☐
- H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
- Kevex - Model No. 3200-0106-0365 ☐
- Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
G3-1		NAM																							
G3-4																									
B3-1																									
B3-4																									
G3-3		F	2.5	13.0	V																				Si
G3-6		NAM																							
E33																									
E3-6																									
F33																									
F3-6																									
W3-3																									
W3-6																									
B3-3																									
B3-6																									
W3-1																									

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

TEM ASBESTOS ANALYSIS

Client Sand blank
Sample No. S-12-10

EMS Lab No. _____
Page 7 of _____

RECEIVING

ANALYSIS

Grid Address: B
Screen Magnification: 9,200 X
Camera Constant: 28.3
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Radh Date 5/18/10

MICROSCOPE
- H600A - Serial No. 542-36-01 ☐
- H600B - Serial No. 542-05-06 ☐
- H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
- Kevex - Model No. 3200-0106-0365 ☐
- Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
C4-1		NJ 1																							
C4-4																									
E4-1																									
E4-4																									
R4-1																									
R4-4																									
G4-1																									
G4-4																									
H4-1																									
H4-4																									
K4-1																									
K4-4																									
C4-3																									
E4-3																									
E4-6		4																							

TEM - 1B (1-06)

OBSERVATIONS:

Clean ☐									
Debris: ☐	Very Light ☐		Light ☐		Moderate ☐		Heavy ☐		Very Heavy ☐
Gypsum: ☐	Very Light ☐		Light ☐		Moderate ☐		Heavy ☐		Very Heavy ☐

TEM ASBESTOS ANALYSIS

Client Sand blank
Sample No. S-12-10

EMS Lab No. _____
Page 4 of _____

RECEIVING

ANALYSIS

Grid Address: B
Screen Magnification: 9,200 X
Camera Constant: 28.3
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Radh Date 5/18/10

MICROSCOPE -
- H600A - Serial No. 542-36-01 ☐
- H600B - Serial No. 542-05-06 ☐
- H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
- Kevex - Model No. 3200-0106-0365 ☐
- Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
E43		W>D																							
E46																									
G43																									
G46																									
I43																									
I46																									
K43																									
K46		F	25	130	✓																				S1
G5-1		W>D																							
G5-4																									
E5-1																									
E5-4																									
I5-1																									
I5-4																									
K5-1		D																							

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

TEM ASBESTOS ANALYSIS

Client Sand blank
Sample No. 5-12-10

EMS Lab No. _____
Page 5 of _____

RECEIVING

ANALYSIS

Grid Address: B
Screen Magnification: 9,200 X
Camera Constant: 28.3
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Radh Date 5/18/10

MICROSCOPE
H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☐
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
G5-4		NAD																							
B5-4																									
H5-4																									
K5-1																									
E6-1																									
E6-4																									
F6-1																									
F6-4																									
G6-1																									

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

TEM ASBESTOS ANALYSIS

Client Sand bank
Sample No. 5-12-10

EMS Lab No. _____
Page 1 of _____

RECEIVING

ANALYSIS

Grid Address: C
Screen Magnification: 9200 X
Camera Constant: 283
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Rodk Date 5/13/10

MICROSCOPE

H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☐
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM

Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
E23																									
E26																									
F23																									
F26																									
H23		F	1.8	52	✓																				5
H26																									
H2:3																									
H26																									
C34																									
C34																									
F634																									
F34																									
F34		F	3.5	55	✓																				5
F54																									
H37																									

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☒ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Condition of the Grid: ☐ Good ☐ Scrappy ☐ Undissolved Filter ☐ Folded ☐

TEM ASBESTOS ANALYSIS

Client Sand bank
Sample No. 5-1240

EMS Lab No. _____
Page 2 of _____

RECEIVING

ANALYSIS

Grid Address: C
Screen Magnification: 9200 X
Camera Constant: 283
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Rad Date 5/13/10

MICROSCOPE
- H600A - Serial No. 542-36-01 ☐
- H600B - Serial No. 542-05-06 ☐
- H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
- Kevex - Model No. 3200-0106-0365 ☐
- Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
G3-4		NSD																							
H3-1																									
H3-4																									
K3-1																									
K3-4																									
L3-3																									
L3-6																									
E3-3																									
F3-6																									
F3-3																									
F3-6																									
K3-3																									
K3-6																									
H3-3																									
H3-6																									

TEM - 1B (1-06)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

TEM ASBESTOS ANALYSIS

Client Sand Bank
Sample No. 5-12-10

EMS Lab No. _____
Page 3 of _____

RECEIVING

ANALYSIS

Grid Address: C
Screen Magnification: 9200 X
Camera Constant: 283
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Radu Date 5/13/10

MICROSCOPE
- H600A - Serial No. 542-36-01 ☐
- H600B - Serial No. 542-05-06 ☐
- H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
- Kevex - Model No. 3200-0106-0365 ☐
- Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
K33		NAM																							
K36																									
C4-4																									
C4-4																									
E4-1																									
E4-4																									
F4-1																									
F4-4																									
G4-1																									
G4-4																									
H4-1																									
H4-4																									
K4-1																									
K4-4																									
E3 3		↓																							

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

TEM ASBESTOS ANALYSIS

Client Sand Bank
Sample No. 5-12-10

EMS Lab No. _____
Page 4 of _____

RECEIVING

ANALYSIS

Grid Address: C
Screen Magnification: 9200 X
Camera Constant: 28.3
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Rodu Date 5/13/10

MICROSCOPE
H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☐
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
E4-6		NOM																							
F4-3		"																							
F4-6		"																							
G4-3		"																							
G4-6		"																							
H4-3		R	2	6S	V																				Si
H4-6		NOM																							
I4-3		"																							
I4-6		"																							
J4-3		"																							
J4-6		"																							
K4-3		"																							
K4-6		"																							
L4-3		"																							
L4-6		"																							
M4-3		"																							
M4-6		"																							
N4-3		"																							
N4-6		"																							
O4-3		"																							
O4-6		"																							
P4-3		"																							
P4-6		"																							
Q4-3		"																							
Q4-6		"																							
R4-3		"																							
R4-6		"																							
S4-3		"																							
S4-6		"																							
T4-3		"																							
T4-6		"																							
U4-3		"																							
U4-6		"																							
V4-3		"																							
V4-6		"																							
W4-3		"																							
W4-6		"																							
X4-3		"																							
X4-6		"																							
Y4-3		"																							
Y4-6		"																							
Z4-3		"																							
Z4-6		"																							
A5-3		"																							
A5-6		"																							
B5-3		"																							
B5-6		"																							
C5-3		"																							
C5-6		"																							
D5-3		"																							
D5-6		"																							
E5-3		"																							
E5-6		"																							
F5-3		"																							
F5-6		"																							
G5-3		"																							

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

TEM - 1B (1-08)

TEM ASBESTOS ANALYSIS

Client Sand Bank
Sample No. 5-12-10

EMS Lab No. _____
Page 5 of _____

RECEIVING

ANALYSIS

Grid Address: C
Screen Magnification: 9200 X
Camera Constant: 28.3
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Radu Date 5/13/10

MICROSCOPE
- H600A - Serial No. 542-36-01 ☐
- H600B - Serial No. 542-05-06 ☐
- H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
- Kevex - Model No. 3200-0106-0365 ☐
- Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
W5-4		ON 20																							
H5-1																									
H5-4																									
K5-1																									
E5-3																									
E5-6																									
F5-3																									
F5-6																									
W5-3																									
W5-6																									

TEM - 1B (1-06)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

: **Count (Page 1 of) NIOSH 7402/ISO**

Report number : 137822 Filter Blank2
Sample number: LOT 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA

Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: 7/9/10 By

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX

(A): ADX, ADQ

Grid loading Very Light Condition of Grid Good

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
A	C2 3							
	C2 6							
	E2 3							
	E2 6							
	F2 3							
	F2 6							
	G2 3							
	G2 6							
	H2 3							
	H2 6							
	B3 6							
	C3 3							
	C3 6							
	E3 3							
	E3 6							
	F3 3							
	F3 6							
	G3 3							
	G3 6							
	H3 3							
	H3 6							
	K3 3							
	K3 6							
	E4 3							
	E4 6							
	F4 3							
	F4 6							
	G4 3							
	G4 6							
	H4 3							
	H4 6							
	K4 3							

TEM-10A (2002)

Count (Page 1 of) NIOSH 7402/ISO

Report number :	137822	Filter Blank2	Filter Type: MCE 385 mm2	Prep Time: NA
Sample number:	00105200		Date Sample was Run: NA	
File name:	Northgate			
Sample Description:	NA	mg	Magnification: 9,200 X	
Preparation date:	6/8/2010	By JAP	Grid opening dimension:0.0094 mm^2	
Analysis date:		By	Level of Analysis: (C): CD, CDX	
		(A): ADX, ADQ		
Grid loading		Condition of Grid		

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	F4							
	B5							
	C5							
	C5							
	E5							
	E5							
	F5							
	F5							
B	C2							
	C2							
	E2							
	E2							
	F2							
	E2							
	C3							Organic
	E3							
	E3							
	E3							
	E3							
	F3							
	B3							
	C3							
	C3							
	E3							
	E3							
	F3							
	F3							
	B4							
	C4							
	C4							
	C4							
	E4							

TEM-10A (2002)

Count (Page 2 of) NIOSH 7402/ISO

Report number :	137822	Filter Blank2	Filter Type: MCE 385 mm2	Prep Time: NA
Sample number:	00105200		Date Sample was Run: NA	
File name:	Northgate			
Sample Description:	NA	mg	Magnification: 9,200 X	

Preparation date: 6/8/2010 By JAP Grid opening dimension:0.0094 mm^2

Analysis date: By Level of Analysis: (C): CD, CDX

(A): ADX, ADQ

Grid loading Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	F41							
	F44							
	G41							
	G44							
	H41							
	H44							
	B46							
	C43							
	C46							
	E43							
	E46							
	F43							
	F46							
	G43							
	G46							
	F56							
C	E21							
	E24							
	F21							
	B26							
	C23							
	C26							
	F23							
	E26							
	F23							
	F26							
	G23							
	G26							
	H23							
	B33							
	B36							
	C33							

TEM-10A (2002)

Count (Page 4 of) NIOSH 7402/ISO

Report number : 137822 Filter Blank2
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA
Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: By
Grid loading Condition of Grid

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX
(A): ADX, ADQ

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	C36							
	E33							
	E36							
	E33							
	E66							
	G33							
	G36							
	H33							
	H36							
	K33							
	B43							Org
	B46							
	C43							
	C46							
	E43							
	E46							
	F43							
	F46							
	G43							
	G46							
	H43							
	H46							
	K43							
	C52							
	C56							
D	E21							
	E24							
	F21							
	B34							
	C31							
	C34							
	E31							

TEM -10A (2002)

Count (Page of) NIOSH 7402/ISO

Report number : 137822 Filter Blank2
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA

Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: By

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX

(A): ADX, ADQ
Grid loading Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	E34							
	E31							
	E34							
	G31							
	G34							
	H31							
	H34							
	B44							
	E41							
	E44							
	F41							
	F44							
	G41							
	G44							
	H41							
	H44							
	K41							
	K44							
	B54							
	C51							
	C54							
	E51							
	E54							
	F51							
	E54							
	B56							
	C53							
	C56							
	E53							
	E56							
	E53							
	E54							

TEM-10A (2002)

Count (Page 1 of) NIOSH 7402/ISO

Report number : 137822 Filter Blank1
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA
Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: By
Grid loading Condition of Grid

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX
(A): ADX, ADQ

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
6	C23							
	C26							
	E23							
	E26							
	F23							
	F26							
	G23							
	G26							
	H23							
	H26							
	B33							
	C33							
	C36							
	E33							
	E36							
	F33							
	F36							
	G33							
	B46							
K	C46							
	E43							
	E46							
	F43							
	F46							
	G43							
	G46							
	H43							
	H46							
	K43							
	E56							
	F53							
	F56							

TEM-10A (2002)

Count (Page of) NIOSH 7402/ISO

Report number :	137822	Filter Blank2	Filter Type: MCE 385 mm2	Prep Time: NA
Sample number:	00105200		Date Sample was Run: NA	
File name:	Northgate			
Sample Description:	NA	mg	Magnification: 9,200 X	

Preparation date: 6/8/2010 By JAP Grid opening dimension:0.0094 mm^2
Analysis date: By Level of Analysis: (C): CD, CDX
(A): ADX, ADQ
Grid loading Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	G53							
	G56							
	H53							
	H56							
	K57							
	C64							
	E61							
	E64							
	F61							
	F64							

TEM -10A (2002)

Spot Size Measurements

Scope: #60B

Date: May 2010

Name: RS

Conditions of Measurements

High Voltage: 100K

Beam Current: 10 μA

Magnification: 19,200

Condenser Aperture Size: #2

Measurements from a photo 8.5

Shortest diameter: 8.5 mm

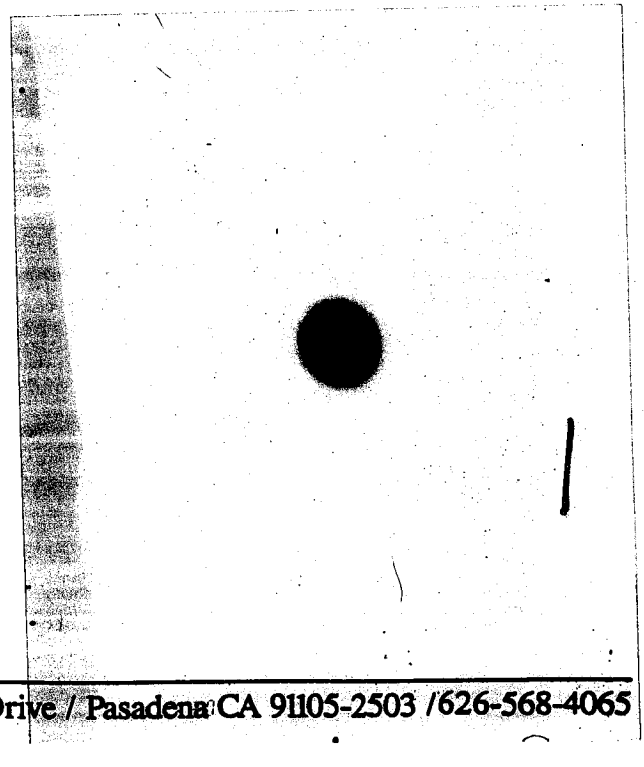
Longest diameter: 9 mm

Average: 8.75 mm

Spot Size Calculation

$$\text{Spot size in } \mu m = \frac{(\text{average spot size in mm}) \times 1000\ \mu m \times 0.4125}{\text{Magnification}}$$ 188

Note: 1.65/4 = 0.4125 (see the Hitachi Fax)



TEM CAMERA CONSTANT DETERMINATION

TEM H600B

Measured and Calculated by RJ Date May 2010

Camera Constant (mm A) = D (mm) X 1/2 X d (A)

where D (mm) is the diameter of a gold ring and

d (A) is the d-spacing in Angstroms for a particular reflection

CC (1*) = (24.1 mm) X 1/2 x 2.355 = 28.34

CC (2*) = (27.8 mm) X 1/2 x 2.039 = 28.34

CC (3*) = (39.3 mm) X 1/2 x 1.442 = 28.34

CC (4*) = (45.9 mm) X 1/2 x 1.230 = 28.23

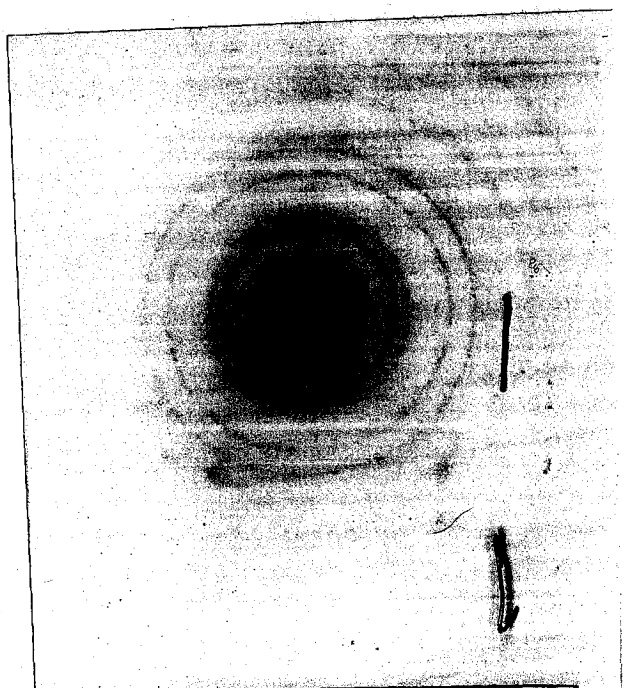
Average Camera Constant = 28.3

* 1 is the first largest diameter ring. 2 the second, etc.

Average Camera Constant = (CC<1> = ...= CC<n>) X 1/n

For gold:

d(A)	nk1
2.355	(111)
2.039	(200)
1.442	(220)
1.230	(311)
1.1774	(222)



08/07/01
csl

DATE: May 2010 A-600/B-600/C-600

WEEKLY CALIBRATION 3m

MONTHLY CALIBRATION 3mth

AFTER SERVICE CALIBRATION___

BY: R

Measurement	Number of Spacing Flourescent Screen Magnification	Distance (mm)	Number of Spacing Film Magnification
	25,000x	12,000x	
1	3 3/16 – 19,260	5 1/12 –	9180
2	3 15/16 – 19,260	5 15/12 –	9,270
3	3 1/6 – 19,080	5 1.5/12 –	9,270
4	3 1/6 – 19,080	5 1/12 –	9,180
5	3 3/16 – 19,260	5 1/12 –	9,180
6		5 1/12 –	9,180
7	ave 19,200		
8		ave	9,200
9			
10			
	AVERAGE:		

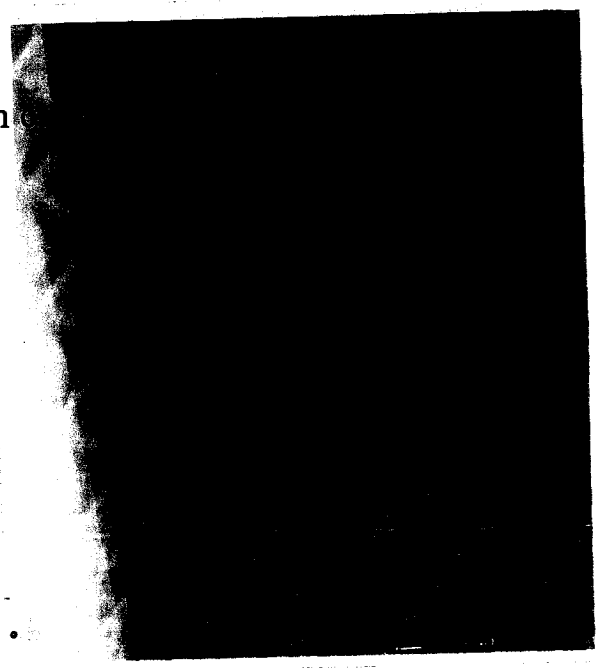
OPERATING VOLTAGE 100 KV

54, 864 lines/inch or 2,160 lines/mm or 0.463μm/line

28, 800 lines/inch or 1,134 lines/mm or 0.882μm/line

15, 240 lines/inch or 600 lines/mm or 1.67μm/line

16.94 μm for one bar and one opening for Ni screen on



EM CALIBRATION 2
992)

K= [Cn/C(Si)] / [In/I(Si)]
C(Si)= 18.74

n	Cn	RUN 1 I(Si)= 22860 In	Kn	RUN 2 I(Si)= 12101 In	Kn	RUN 3 I(Si)= 15953 In	Kn	RUN 4 I(Si)= 16554 In	Kn	RUN 5 I(Si)= 16203 In	Kn	RUN 6 I(Si)= 7464 In	Kn
Na	1.81	1694	1.3034	1095	1.0674	986	1.5627	1133	1.4112	1004	1.5587	395	1.8251
Mg	7.57	6992	1.3207	3738	1.3077	4447	1.4491	4902	1.3641	4714	1.3885	1983	1.5205
Al	6.54	7768	1.027	4152	1.0171	5455	1.0206	5761	1.0028	5708	0.9906	2576	1.0112
Si	18.74	22860	1	12101	1	15953	1	16554	1	16203	1	7464	1
K	0.97	1453	0.8144	827	0.7574	1311	0.6299	1333	0.6428	1195	0.7018	584	0.6615
Ca	8.26	6570	1.5336	3406	1.566	5845	1.203	5222	1.3973	4998	1.4289	2852	1.1535
Ti	3.02	2235	1.6483	1170	1.6668	1821	1.4118	1867	1.4289	1753	1.4895	928	1.2962
Mn	0.14	10	17.078	22	4.1092	12	9.9316	29	4.2645	2	60.523	22	2.5346
Fe	9.51	5898	1.9669	2935	2.0923	4934	1.6408	4856	1.73	4473	1.8383	2351	1.6111
O	43.83			7849	3.6059	7051	5.2917	10526	3.6783	9433	4.0174	3333	5.2377

** NVLAP REQUIREMENTS **
1.0 < K(Na) wrt Si < 4.0
1.0 < K(Mg) & K(Fe) wrt Si < 2.0
1.0 < K(Al) & K(Ca) wrt Si < 1.75

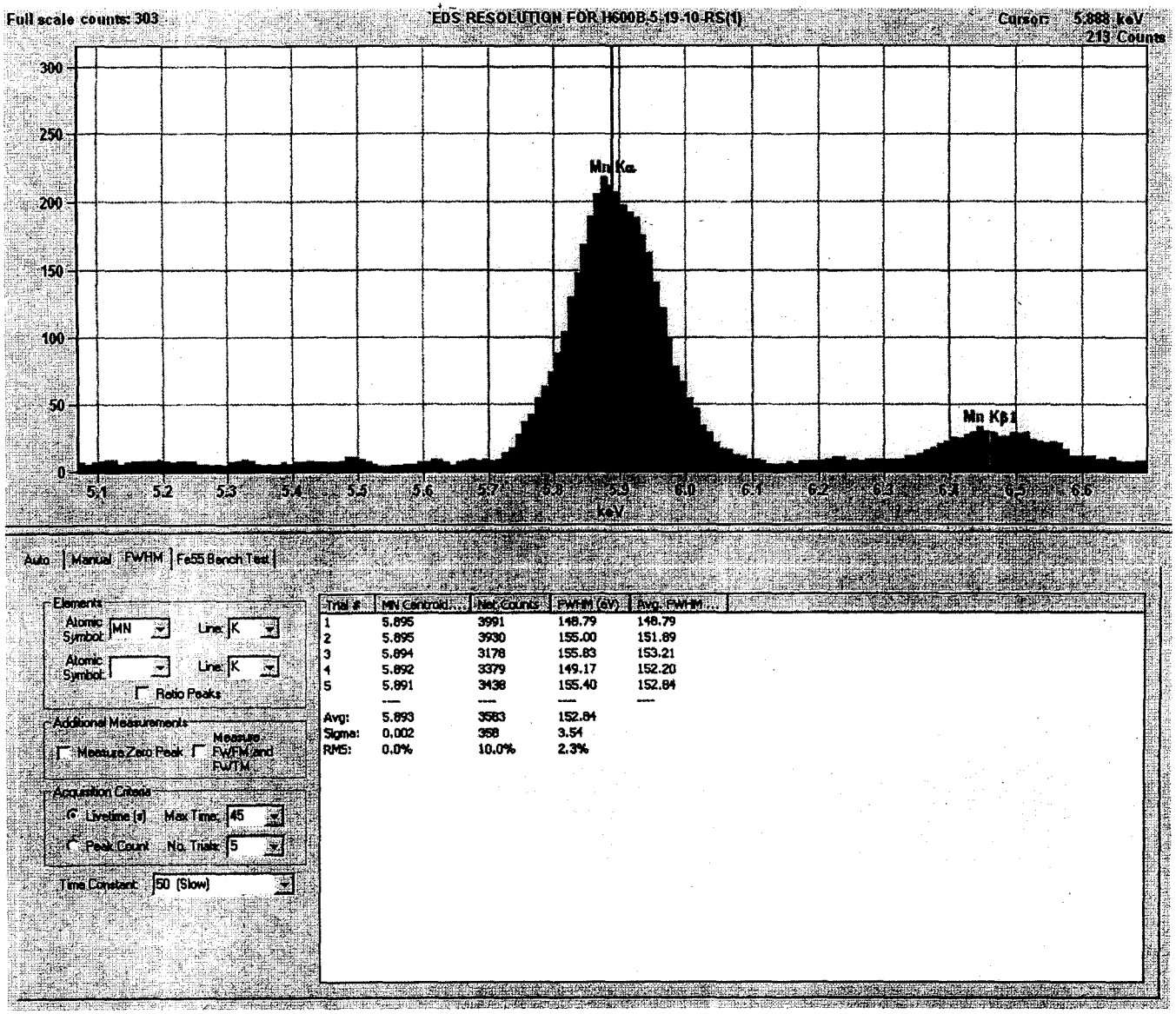
K(Mg)/K(Fe) < 1.5

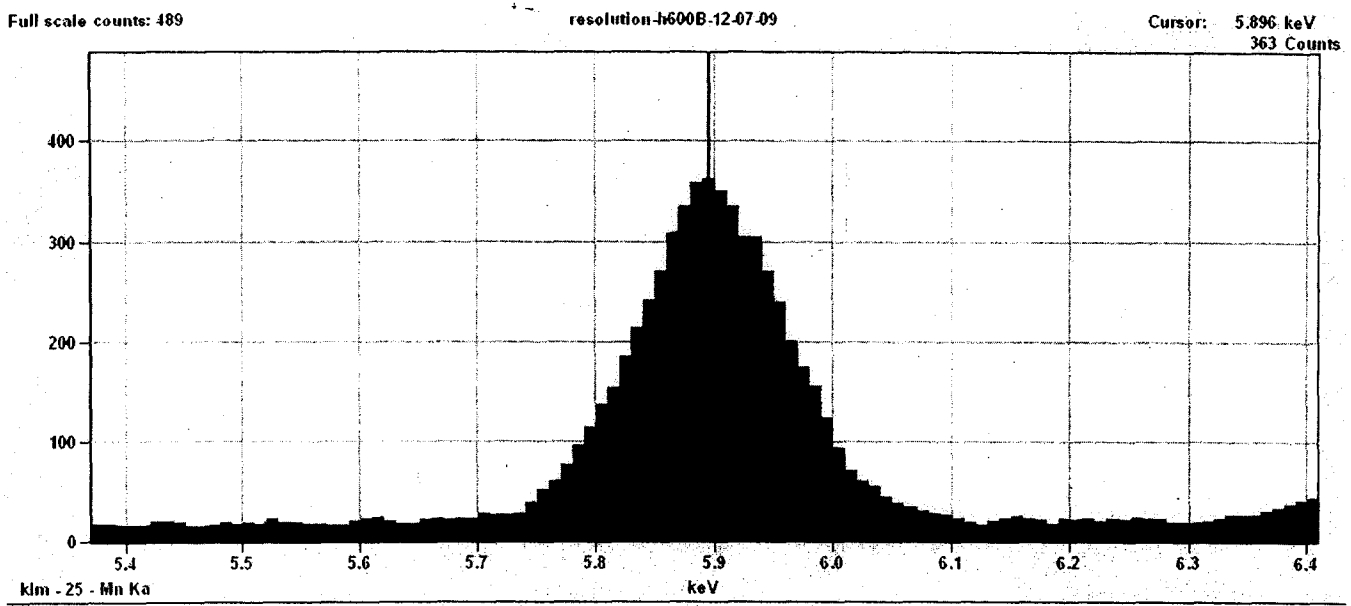
stdev <10% for Mg, Al, Si, Fe
stdev <20% for Na
wrt mean value of k-factor wrt Si

SCOPE B

RUN 7		RUN 8		RUN 9		RUN 10		RUN 11		RUN 12		RUN 13	
I(Si)=	12627	I(Si)=	4491	I(Si)=	15830	I(Si)=	14684	I(Si)=	25368	I(Si)=	25374	I(Si)=	4628
In	Kn	In	Kn	In	Kn	In	Kn	In	Kn	In	Kn	In	Kn
849	1.4365			950	1.6094	982	1.4442	1543	1.5879	1542	1.5893		
3523	1.4478	1332	1.362	4331	1.4765	4325	1.3715	7480	1.37	7479	1.3705	1213	1.5412
4458	0.9885	1569	0.9989	5717	0.9663	5043	1.0162	9260	0.9561	9260	0.9563	1556	1.038
12627	1	4491	1	15830	1	14684	1	25368	1	25374	1	4628	1
1099	0.5947	415	0.5601	1505	0.5444	1185	0.6414	2315	0.5672	2318	0.5666	363	0.6599
4553	1.2224	1818	1.0888	6257	1.1151	4602	1.4064	9813	1.1394	9832	1.1375	1754	1.163
1480	1.3749	563	1.2855	1994	1.2794	1703	1.3895	3188	1.2823	3196	1.2794	510	1.4624
4	23.583	13	2.5808	7	16.894			25	7.5806			6	5.7624
3889	1.6477	1422	1.6027	5899	1.3618	4371	1.7048	8840	1.4563	8884	1.4494	1497	1.5689
6102	4.8398	1894	5.5458	5950	6.2225	9471	3.6262	35609	1.6662	13315	4.4571	2045	5.293

SCOPE B


Full scale counts: 303
EDS RESOLUTION FOR H600B-5-19-10-RS(1)
Cursor: 5.888 keV
213 Counts
300
250
200
150
100
50
0
Mn Kα
Mn Kβ1
5.1
5.2
5.3
5.4
5.5
5.6
5.7
5.8
5.9
6.0
6.1
6.2
6.3
6.4
6.5
6.6
keV
Auto
Manual
FWHM
Fe55 Bench Test
Elements
Atomic Symbol: MN
Line: K
Atomic Symbol:
Line: K
Ratio Peaks
Additional Measurements
Measure Zero Peak
Measure FWFM and FWTM
Acquisition Criteria
Livetime [s]
Max Time: 45
Peak Count
No. Trials: 5
Time Constant: 50 (Slow)
Trial #
MN centroid
Net Counts
FWHM (eV)
Avg. FWHM
1 5.895 3991 148.79 148.79
2 5.895 3930 155.00 151.89
3 5.894 3178 155.83 153.21
4 5.892 3379 149.17 152.20
5 5.891 3438 155.40 152.84
Avg: 5.893 3583 152.84
Sigma: 0.002 358 3.54
RMS: 0.0% 10.0% 2.3%



Auto | Manual | FWHM | Fe55 Bench Test

Elements

Atomic Symbol: Mn Line: K

Atomic Symbol: Line: K

Ratio Peaks

Additional Measurements

Measure Zero Peak Measure FWFM and FWTM

Acquisition Criteria

Livetime (s) Max Time: 50

Peak Count No. Trials: 5

Time Constant: 50 (Slow)

Trial #	Mn Centroid ...	Net Counts	FWHM (eV)	Avg. FWHM ...
1	5.896	1277	126.16	126.16
2	5.900	5295	151.73	138.95
3	5.897	6460	146.02	141.30
4	5.898	5560	146.26	142.54
5	5.899	5291	133.62	140.76
	----	----	----	----
Avg:	5.898	4776	140.76	
Sigma:	0.001	2014	10.52	
RMS:	0.0%	42.2%	7.5%	

137865

Laboratory Submittal Form

Date:	Time:	Relinquished by:	
Client:	Northgate	Date of Shipment:	
Address:	1100 Quail Street, Suite 102	Shipped from:	Carrier:
	Newport Beach, CA 92660	Client P.O. No:	2027.01
Telephone:	949-260-9293	Client Project ID:	COC# 02027.01.2129
Contact:			

Results via: ☐ Fax No: ☐ Email address: ☐ Verbal

(Complete written reports will follow all analyses, in addition to any prior verbal, fax, or email results)

Turnaround Time:		Sample Preservatives:	
Number of Samples:	6	Sampler's Name:	
Date & Time of Sample Collection:		Holding Times:	Signature:

Type: ☐ Water ☐ Waste Water ☐ Soil ☐ Filter ☐ Impinger ☐ Sorbent Tube ☐ Other

EMS Only	Client Sample No.	Description/Location	Analysis	Volume/ Weight
137865-2-0 1	SSAL6-02-0.00BPC		Elutriator	
-6-2-33 2	SSAL6-02-0.33BPC			
-6-1-0 3	SSAL6-01-0.00BPC			
-6-1-33 4	SSAL6-01-0.33BPC			
-7-2-33 5	SSAP7-02-0.33BPC			
-7-2-0 6	SSAP7-02-0.00BPC			
7		SEE ATTACHMENT		
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				

137865

For EMS Only

Laboratory Number:		Received by:	Time: 9:50
Date of Package Delivery:	5/20/2010	Shipping Bill Retained?	YES
Condition of Package on Receipt:	OK	Condition of Custody Seal:	YES
Number of Samples:	6	Chain of Custody Signature:	
Disposition of Samples:	EMS LABS	Misc. Info:	SF 7/06

137865

northgate *environmental management, inc.*
1100 Quail Street, Suite 102
Newport Beach, CA 92660 (949) 260-9293

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC # 02027.01.2129
Total # of Samples: 6
Event Complete?

Required Ship to Lab:	
Lab Name:	EMS Laboratories, Inc.
Address:	117 W Bellevue Dr
	Pasadena, CA 91105
Lab PM:	Tony Kolk
Phone/Fax:	626-568-4065
Lab PM email	akolk@emslabs.com
Applicable Lab Quote #:	

Required Project Information:	
Site ID #:	TRONOX LLC. HENDERSON
Project #	2027.01
Site Address	560 W Lake Mead Drive
City	Henderson
State, Zip	NV, 89015
Site PM Name	Derrick Willis
Phone/Fax:	(949)375-7004
Site PM Email:	derrick.willis@ngem.com

Required Invoice Information:	
Send Invoice to:	
Address:	PO Box 55
City/State.	Henderson, NV 89009
Phone #:	(949) 260-9293
PO #	
Send EDD to	Frank.Hagar@ngem.com
CC Hardcopy report to	PDF Electronic Version Only – FTP Upload
CC Hardcopy report to	

Turnaround: Regular | Rush | X | Mark One

Filtered: N
Preservative: UNPRES

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	#OF CONTAINERS	Comments/Lab Sample I.D.	PhB-Asbestos
	SSAL6-02-0.00BPC	SSAL6-02	SO	C	N	05/18/2010	11:55	3		X
	SSAL6-02-0.33BPC	SSAL6-02	SO	C	N	05/18/2010	11:55	3		X
	SSAL6-01-0.00BPC	SSAL6-01	SO	C	N	05/18/2010	09:10	3		X
	SSAL6-01-0.33BPC	SSAL6-01	SO	C	N	05/18/2010	09:10	3		X
	SSAP7-02-0.33BPC	SSAP7-02	SO	C	N	05/18/2010	08:30	3		X
	SSAP7-02-0.00BPC	SSAP7-02	SO	C	N	05/18/2010	08:30	3		X

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
[signature]	05/18/10	1418	[signature]	5/18/10	1418
[signature]	5/18	1418	[signature] EMS Labs	5/19/10	0930

SHIPPING INFO: Company: / Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Francisco Barron
SIGNATURE of SAMPLER: [signature] DATE Signed: 5/18/10
Time: 1418

Sample Receipt Conditions			
Temp in OC	Samples on Ice?	Sample intact?	Trip Blank?
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N (N circled)	Y/N (Y circled)	Y/N (N circled)
	Y/N	Y/N	Y/N

northgate
environmental management, inc.
1100 Quail Street, Suite 102
Newport Beach, CA 92660 (949) 260-9293

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

COC # 02027.01.2129 Revised 2010-5-25

Total # of Samples: 6 Event Complete?

Required Ship to Lab:		Required Project Information:		Required Invoice Information:			
Lab Name:	EMS Laboratories, Inc.	Site ID #:	TRONOX LLC, HENDERSON	Send Invoice to:			
Address:	117 W Bellevue Dr	Project #	2027.01	Address:	PO Box 55		
	Pasadena, CA 91105	Site Address	560 W Lake Mead Drive	City/State:	Henderson, NV 89009	Phone #:	(949) 260-9293
Lab PM:	Tony Kolk	City	Henderson	State, Zip	NV, 89015	PO #	
Phone/Fax:	626-568-4065	Site PM Name	Derrick Willis	Send EDD to	Frank.Hagan@ngem.com		
Lab PM email	akolk@emslabs.com	Phone/Fax:	(949)375-7004	CC Hardcopy report to	PDF Electronic Version Only -- FTP Upload		
Applicable Lab Quote #:		Site PM Email:	derrick.willis@ngem.com	CC Hardcopy report to			

										Regular			Rush	X	Mark One
ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	#OF CONTAINERS	Comments/Lab Sample I.D.	Silanol					
										Preservative	UNPRES				
										Analysis	PHB-Asbestos				
	SSAL6-02-0.00BPC	SSAL6-02	SO	C	N	05/18/2010	11:55	3			X				
	SSAL6-02-0.33BPC	SSAL6-02	SO	C	N	05/18/2010	11:55	3	Hold		H				
	SSAL6-01-0.00BPC	SSAL6-01	SO	C	N	05/18/2010	09:10	3			X				
	SSAL6-01-0.33BPC	SSAL6-01	SO	C	N	05/18/2010	09:10	3	Hold		H				
	SSAP7-02-0.33BPC	SSAP7-02	SO	C	N	05/18/2010	08:30	3	Hold		H				
	SSAP7-02-0.00BPC	SSAP7-02	SO	C	N	05/18/2010	08:30	3			X				

Additional Comments/Special Instructions:

Modification by Joni Fisher NGEM; modifications shown in bold font

Sample Receipt Conditions			
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

Company:

Tracking #:

PRINT Name of SAMPLER: Francisco Barron

SIGNATURE of SAMPLER:

DATE Signed

Time:

Temp in OC	Samples on Ice?	Sample Intact?	Trip Blank?

SAMPLE LOG-IN SHEET

Lab Name	EMS Labs	Page 1 of 1	
Received By (Print name)	Meaghan Truong	Log in Date	5-20-10
Received By (Signature)	Meaghan Ong		
	Sample Delivery Group No. 5-20-10		

Remarks

1. Custody Seal(s) (Present) / Absent — Intact/Broken
2. Custody Seal Nos 580206, 580207
3. Chain of Cutody Records (Present) / Absent
4. Traffic Reports or Packing List (Present) / Absent
5. Air Bill — Air Bill Sticker (Present) / Absent
6. Air Bill No. 7935 5799 1441
7. Sample Tags (Present) / Absent
   Sample Tag Numbers (Listed) / Not Listed
8. Sample Condition (Intack) / Broken/Leaking — Chain of Custody
9. Does information on custody records, traffic reports and sample tags agree? (yes) / no
10. Date Received by Lab 5-20-10
11. Time Received 9:50

Sample Transfer	
Fraction	Fraction
Area	Area
By	By
On	On

EPA SAMPLE #	Corresponding Sample Tag#	Corresponding Assigned Tag#	Remarks Condition of Sample, Shipment etc.
137865	SSALG-02-0.00 BPC	137865-6-0	Good
137865	SSALG-02-0.33 BPC	137865-6-33	Good
137865	SSALG-01-0.00 BPC	137865-6-1-0	Good
137865	SSALG-01-0.33 BPC	137865-6-1-33	Good
137865	SSAPT-02-0.33 BPC	137865-7-2-33	Good
137865	SSAPT-02-0.00 BPC	137865-7-2-0	Good

Contract Client and Attach Records of Resolution

Received By — Logbook No.

Date — Logbook Page No.

FORM DC-1