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

Customer ID: TRNX26
 Customer PO: 2027.001
 Received: 6/18/2010 9:56AM
 EMS LAB No: 138491
 Date Prepared: 8/27/2010 8AM
 Analysis Date: 8/30/2010 10AM

Phone: (947) 375-7004

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

Report Date:

Date Sampled: 6/16/2010 15:52

NIOSH 7402/ISO

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

EMS Laboratory Number: 138491	Mass of Respirable Dust on Filter: 157	µg
Customer Sample Number: RSAM7-1.00BPC	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: 95	
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-77.8g	Soil % Moisture	2.9	%
Not Used	Air Flow Rate Through ME Opening of Dust Generator:	1370	
Used in Tumbler	Air Flow Rate Through IST Opening of Dust Generator:	100	
	Estimate Total Air Flow Through Elutriator:	1470	

Analytical Sensitivity: 2.75E+06 Structure /g PM 10 Limit of Detection: 8.22E+06 Structure /g PM 10

Test For Uniformity (Chi-Square results)

Structure Class	Min ID Level Required	Counts		Poisson 95% Confidence Interval			
		Primary Str.	Total Str.	Density Str/mm ²	Conc. Str/g PM10	Lower Limit Str/g PM10	Upper Limit Str/g PM10
Asbestos Structures >5um, ≤10um	ADX/CD	1	1	1.12	2.75E+06	6.9E+04	1.53E+07
Asbestos Structures >5um, ≤10um (Chrys)	CD	0	0	0	0	0	8.22E+06
Asbestos Structures >5um, ≤10um (Amph)	ADX	1	1	1.12	2.75E+06	6.9E+04	1.53E+07
Asbestos Structure >10um (Long)	ADX/CD	0	0	0	0	0	8.22E+06
Asbestos Structure >10um (Chrys)	CD	0	0	0	0	0	8.22E+06
Asbestos Structure >10um (Amph)	ADX	0	0	0	0	0	8.22E+06
Total Protocol Asbestos Structures	ADX/CD	1	1	1.12	2.75E+06	6.9E+04	1.53E+07
Protocol Asbestos Structures (Chrys)	CD	0	0	0	0	0	8.22E+06
Protocol Asbestos Structures (Amph)	ADX	1	1	1.12	2.75E+06	6.9E+04	1.53E+07
Total Protocol Non Asbestos Structures	NAM	0	0	0	0	0	8.22E+06


 Approved by Technical Director



Client:	Derrick Willis, Tronox LLC-Henderson	Filter Type:	PC 385 mm ²
Report number :	138491	Magnification:	9200
Sample number:	RSAM7-1.00BPC	Grid Opening Dimension: mm²	0.0094
Project:	2027.001/Tronox LLC Henderson, 560 W. Lake Mead Dr.,	Grid Loading:	Moderate

Elutriation Date: 8/27/2010 by Joel Paruli
Preparation Date: 8/30/2010 by Joel Paruli
Analysis Date: 8/30/2010 by Radha Singh

Grid Openings 95
Mass - ug 157
Anlytical sensitivity [REDACTED]

Asbestos Structures >5um, ≤10um (Chrys) 0
 Asbestos Structures >5um, ≤10um (Amph) 1
 Asbestos Structure >10um (Chrys) 0
 Asbestos Structure >10um (Amph) 0
 Protocol Asbestos Structures (Chrys) 0
 Protocol Asbestos Structures (Amph) 1

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	C23	None Detected										
	C26	None Detected										
	E23	None Detected										
	E26	None Detected										
	E34	None Detected										
	F31	None Detected										
	F34	None Detected										
	G33	None Detected										
	G34	None Detected										
	H33	None Detected										
	H36	None Detected										
	C41	None Detected										
	C44	None Detected										
	E41	None Detected										
	F43	None Detected										
	F46	None Detected										
	C54	None Detected										
	C56	None Detected										
	C61	None Detected										
	1B	F61	None Detected									
C23		None Detected										
C26		None Detected										
E23		None Detected										
E26		None Detected										
G31		None Detected										
G34		None Detected										
H31		None Detected										
C41		None Detected										
C44		None Detected										
E41		None Detected										
E43		None Detected										
F46		None Detected										
G51		None Detected										
H51		None Detected										
H54	None Detected											
1C	E53	None Detected										
	E56	None Detected										
	F53	None Detected										
	F64	None Detected										
	C23	None Detected										
	C26	None Detected										
	E23	F			12.5	360	1.36	39.13		Actinolite		Double

137865
137491

MOISTURE CONTENT

8-27-10

137865 - SSAL6-01-0.33 BPC

dish wt:	31.47g	
sample + dish	131.72	- 31.47 = 100.25g (initial wt.)
9:15 - 10:15	126.45	- 31.47 = 94.98g
11:00 - 12:00	126.44	- 31.47 = 94.97g (Final wt.)

$$\% \text{ moisture} = 100 \times \frac{100.25 - 94.97}{94.97} = 5.56\%$$

137491 - RSAM7-1.00 BPC

dish wt. C -	31.45g	
sample + dish	131.86	- 31.45 = 100.41g (initial wt.)
9:15 - 10:15	129.08	- 31.45 = 97.63g
11:00 - 12:00	129.04	- 31.45 = 97.59g (Final wt.)

$$\% \text{ moisture} = 100 \times \frac{100.41 - 97.59}{97.59} = 2.9\%$$

9-1-10

BT

139930

SSAM7-08-0.00 BPC

dish wt.	19.24g	
dish + samp.	119.18	(initial wt. 99.94)
6:50 - 7:50	118.28	(99.04g)
10 - 11	118.24	(99.00g) Final wt.
$100 \times \frac{99.94 - 99.00}{99.00} = 0.95\%$		

139930

SSAQ5-07-0.00 BPC

dish wt.	31.47	
dish + samp.	131.22	(int. wt. 99.75)
	124.34	(92.81)
	124.31	(92.84)
$100 \times \frac{99.75 - 92.84}{92.84} = 7.44\%$		

139931 - # SSAQ6-01-0.00 BPC

dish wt.	31.44	
dish + samp.	131.98	(initial wt. 100.54)
6:50 - 7:50	125.24	(93.7)
10-11	124.11	(92.67) Final

139931 - # SSAL5-07-0.00 BPC

	35.11	
	135.72	(100.61)
	128.38	(93.27)
	128.35	(93.24)

$$100 \times \frac{100.54 - 92.67}{92.67} = 8.49\% \quad 100 \times \frac{100.61 - 93.24}{93.24} = 7.90\%$$

Elutriator Data

Lab #: 138491

Date: 8/27/10

Client: Northgate

Sample ID: PSAM7 - 1.00 PPC

Sample weight (g): 77.8

Time air flow started: 8:00

Tumbler rpm: 30 / 45% * raise to 45 @ 11:12
* 60 at 11:40 (Raise RPM to 60)

IST Flowmeter (mL/min): 100

ME Flowmeter (mL/min): 1370

loss 50%
loss 10%
loss 15%
loss 30%
loss 3%

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	10:00	190	0.02865	0.02420	0.02865	30		
2	10:30		0.02708	0.02424	2.84	15		
3	10:45		0.02624	0.02408	2.16	20		
4	11:05		0.02769	0.02485	2.84	25		
5	11:30		0.02846	0.02517	3.29	30		
6	12:00		0.03139	0.02426	7.13	45		
7	12:45		0.02758	0.02409	3.49	20		
8	13:05		0.02685	0.02430	2.55	15		
S. TIME								
	11:17						Dep. Rate	Estimate
2	11:27			4.444		10		
3	11:55			4.386		20		
4	12:17			4.435		20		
5								
6								
7								
8								

1 2 3 4 5 6 7 8

9090

Copy

Count (Page of) NIOSH 7402/ISO

Prep Time: 800-1030

Report number: 138491
Sample number: 2SAM7-1.00 BPC
Site name: Northgate
Sample Description: 157 mg

Filter Type: PC 385 mm2
Date Sample was Run: 8/27/10
Magnification: 9,200 X

Preparation date: 8/30/10
Analysis date: 8/30/10
By: JAP
By: RJ
(A): ADX, ADQ
Condition of Grid: Moderate

Grid opening dimension: 0.0094 mm²
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
1A	C2-3							
	C2-6							
	F2-3							
	F2-6							
	F3-4							
	F3-1							
	F3-4							
	G3-3							
	G3-4							
	H3-3							
	H3-6							
	C4-1							
	C4-4							
	F4-1							
	F4-3							
	F4-6							
	G5-4							
	C5-6							
	C6-1							
	F6-1							
1B	C2-3							
	C2-6							
	F2-3							
	F2-6							
	G3-1							
	G3-4							
	H3-1							
	C4-1							
	C4-4							
	F4-1							

TEM Asbestos Structure Count (Page of)

Report number: 136491

SAMPLE NO: RSAM7-100 BPC

X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	F-3							
	F-6							
	H-1							
	H-1							
	H-4							
	E-3							
	E-6							
	J-3							
	F-6-4							
1C	C-3							
	C-6							
	E-3				F	12.5	360	Eds double ac holoite
	E-6							
	F-3							
	F-4				F	2.1	82	Fib ac holoite # 35699
	G-3-1							
	G-3-4							
	H-1				R	8.2	55	nan ab.
	I-3							
	I-4							
	J-1							
	J-4							
	K-3							
	K-6							
	E-1							
	E-4							
	E-1							
1D	C-3							
	C-6							
	E-3							
	E-6							
	C-1							

TEM Asbestos Structure Count (Page of)

Report number: 158491

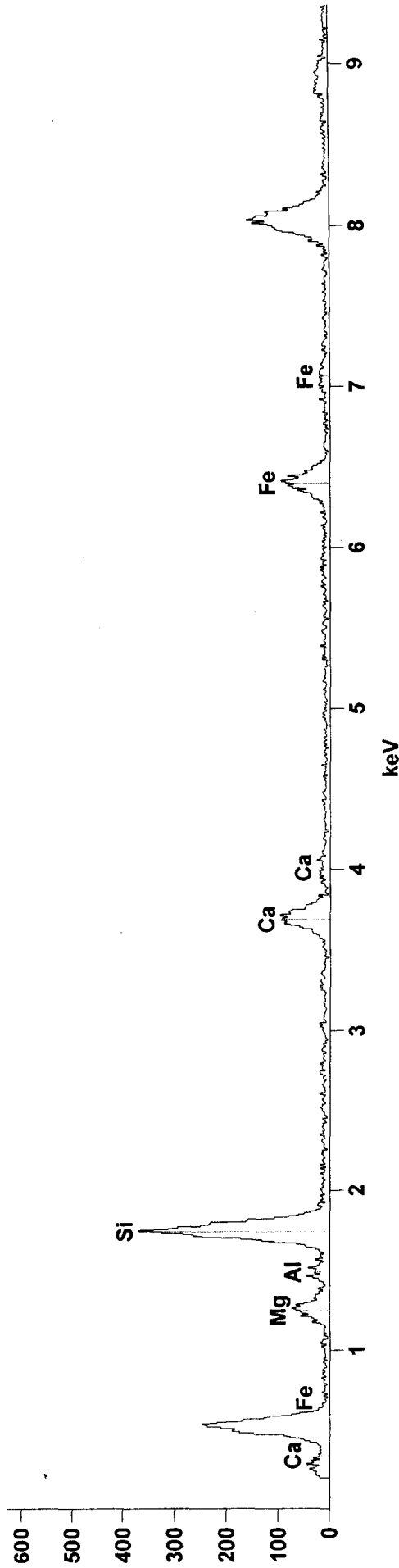
SAMPLE NO: 26AM7-1.00 BPC

X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width	Length	Comments
						Mm	Mm	
	C3-4							
	E3-1							
	E3-4							
	E3-3							
	F3-6							
	G3-3							
	G3-8							
	G14-4							
	H4-1							
	H4-2							
	H4-1							
	F5-4							
	H5-1							
	G5-4							
	E23							
	F26							
	E23							
	C3-1							
	C3-4							
	E3-1							
	F3-3							
	F3-6							
	G3-3							
	F4-1							
	F4-4							
	G4-1							
	H4-3				E 13	150"		double achnolite
	H4-6							
	H4-1							
	F5-1							
	F5-4							
	E6-4							
	E6-1							

Full scale counts: 578

138491-RSAM7-100 BPC-C-F3-14



Mon Aug 30 12:02:22 2010
 Gaussian Fit With Standards Chi Squared:4.310
 Correction Method: Cliff-Lorimer (MBTS) w/o Absorbance

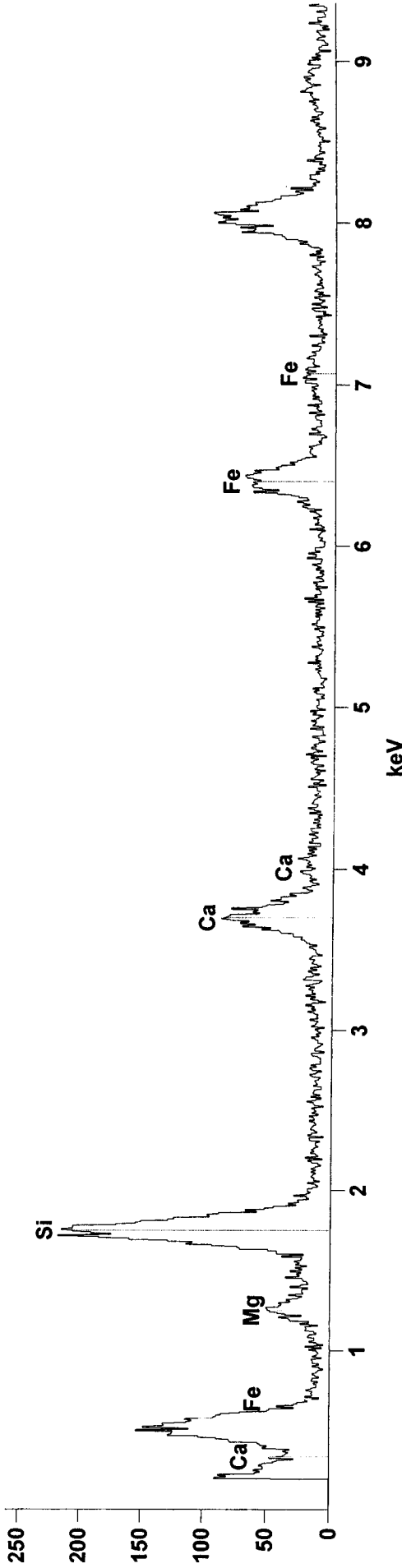
Live Time:82.6 sec.
 Acc.Voltage: 100.0 kV
 Take Off Angle: 35.0 deg.
 Detector: Det B- Quantum

Quantitative Results 138491-RSAM7-100 BPC-C-F3-1

Element Line	Net Counts	Weight % Error	Atom % Error	Atom % Error
Mg K	731	0.00	0.00	+/- 0.00
Si K	3917	0.00	0.00	+/- 0.00
Ca K	1211	0.00	0.00	+/- 0.00
Fe K	1176	0.00	0.00	+/- 0.00

138491-RSAM7-100 BPC-C-E2-3

Full scale counts: 239



Mon Aug 30 11:51:00 2010

Gaussian Fit With Standards Chi Squared:4.504

Correction Method: Cliff-Lorimer (MBTS) w/o Absorbance

Live Time:29.6 sec.

Acc.Voltage: 100.0 kV

Take Off Angle: 35.0 deg.

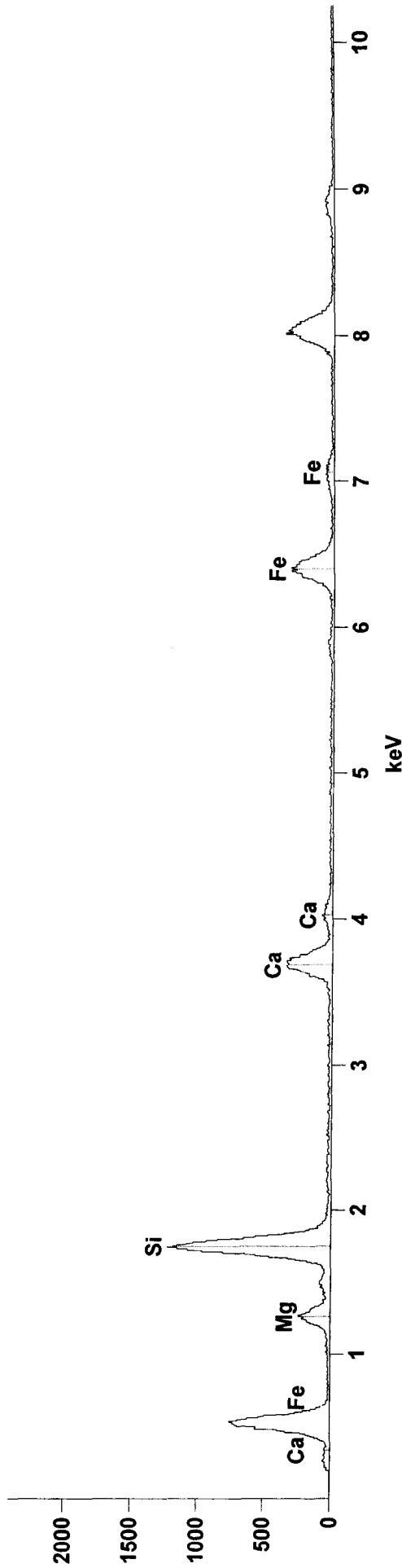
Detector: Det B- Quantum

Quantitative Results 138491-RSAM7-100 BPC-C-E2-3

Element Line	Net Counts	Weight %	Weight % Error	Atom %	Atom % Error
Mg K	814	18.29	---	23.97	+/- 0.91
Si K	3570	44.57	---	50.55	+/- 0.91
Ca K	1180	19.15	---	15.22	+/- 0.59
Fe K	1108	17.98	---	10.26	+/- 0.42
Total		100.00		100.00	

Full scale counts: 2213

138491-RSAM7-100 BPC E-H4-3



Mon Aug 30 13:42:41 2010

Gaussian Fit With Standards Chi Squared:10.582

Correction Method: Cliff-Lorimer (MBTS) w/o Absorbance

Live Time:50.7 sec.

Acc.Voltage: 100.0 kV

Take Off Angle: 35.0 deg.

Detector: Det B- Quantum

Quantitative Results 138491-RSAM7-100 BPC E-H4-3

Element Line	Net Counts	Weight %	Weight % Error	Atom %	Atom % Error
Mg K	2647	14.02	---	18.83	+/- 0.38
Si K	15418	45.37	---	52.73	+/- 0.45
Ca K	5347	20.45	---	16.66	+/- 0.25
Fe K	5271	20.16	---	11.79	+/- 0.18
Total		100.00		100.00	

Filter Lot Blank

Count (Page of) NIOSH 7402/ISO

Prep Time: NA

Report number: 137822 Filter Blank 1
 Sample number: 00105200
 File name: Northgate
 Sample Description: NA mg

Filter Type: NCE 385 mm²
 Date Sample was Run: NA
 Magnification: 9,200 X

Preparation date: 6/8/10 By JAP
 Analysis date: 7/9/10 By AV
 (A): ADX, ADQ

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

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
	C26							
	E27							
	E28							
	F23							
	F26							
	G27							
	C31							
	C34							
	E31							
	E34							
	F31							
	F34							
	G31							
	G34							
	H31							
	B34							
	C41							
	C44							
	E41							
	E44							
	F41							
	F44							
	G41							
	G44							
	H41							
	H44							
	V41							
	V44							
	C51							
	C54							
	E51							
	E54							

Count (Page 2 of 2) 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 mm²
 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
	F 51							
	F 54							
	G 51							
	G 54							
	H 51							
	H 54							
	K 51							
	G 61							
B	C 26							
	E 23							
	E 26							
	F 23							
	F 26							
	G 23							
	G 26							
	D 36							
	C 33							
	C 36							
	E 33							
	E 36							
	F 33							
	F 36							
	H 33							
	H 36							
	K 33							
	K 36							
	B 46							
	C 43							
	C 46							
	E 43							
	E 46							
	F 43							

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 mm²
 Analysis date: By (A): ADX, ADQ Level of Analysis: (C): CD, CDX
 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
	F46							
	G43							
	G46							
	H43							
	H46							
	K43							
	K46							
	C53							
	C56							
	E53							
	E56							
	F53							
	F56							
	G53							
	G56							
	H53							
C	B24							
	C31							
	C34							
	E31							
	E34							
	F31							
	F34							
	G31							
	G34							
	H31							
	H34							
	B41							
	B44							
	C41							
	C44							
	E41							
	E44							

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 mm²
 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
	E44							
	F41							
	F44							
	G41							
	G44							
	H41							
	H44							
	K41							
	B51							
	B54							
	C51							
	C54							
	E51							
	E54							
	F51							
	F54							
	G51							
	G54							
	H51							
	H54							
	C61							
	C64							
	E64							
	E61							
	C23							
	C26							
	E23							
	E26							
	F23							
	G23							
	G26							
	H23							

TEM-10A (2002)

0 grid torn structure replaced in grid bag

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 mm²
 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
	B36							
	C33							
	C36							
	E33							
	E36							
	F33							
	F36							
	G33							
	G36							
	H33							
	H36							
	H46							
	C43							
	C46							
	E43							
	E46							
	F43							
	F46							
	G43							
	G46							
	H43							
	H46							
	K43							
	K46							
	B56							
	C53							
	C56							
	E53							
	E56							
	F53							
	F56							
	G53							

Count (Page 1 of 1) 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 mm²
 Analysis date: By Level of Analysis: (C): CD, CDX

Grid loading *Very light* (A): ADX, ADO Condition of Grid *Best*

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
E	B31							
	B34							<i>orig. blank</i>
	C21							
	C34							
	E31							
	K34							
	K31							
	E34							
	C31							
	C34							
	H31							
	H34							
	A41							
	B44							
	C41							
	C44							
	E41							
	E44							
	F41							
	F44							
	G41							
	G44							
	H41							
	H44							
	K41							
	K44							
	B54							
	C51							
	C54							
	E51							
	E54							
	F51							
	F54							

Count (Page 7 of 7) 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 mm²
Level of Analysis: (C): CD, CDX

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

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	F54							
	G51							
	E54							
	H51							
	H54							
	K51							
	E61							
	E64							

TEM ASBESTOS ANALYSIS

Client San D blank
 Sample No. 5-12-10

EMS Lab No. _____ of _____
 Page _____ of _____

RECEIVING

TYPE OF SAMPLE
 Air Water Bulk Soil Other Sand

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

LEVEL OF ANALYSIS
 Chromic Amphibole

ASPECT RATIO
 3:1 5:1 100:1 100:2

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

FILTER TYPE / AREA (µm±)
 MCE 365 PC 3µ MCN 107 Other _____

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

GO Area (µm²) 0.094
 No. of GO to Analyze 200
6/7/92

PREP

DIRECT PREP
INDIRECT PREP

Volume _____ liters
 Working Volume _____ ml
 Weight 5.0 grams
 Ashel Area _____ %

Prepared By JTP
 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: 9820 X
Screen Magnification: 285
Camera Constant: _____
Accelerating Voltage: 10 100KV
Beam Current: _____ µA
K-Factor: 1.4
Analyst: Redh Date 5/13/10

TEM - 1A (1-08)

Grid Opening	Structure Number	Structure	Dimensions (µm)		Fiber Classification												EDS Analyze				Comments							
			Width	Length	NA	TM	CM	CD	OQ	CMQ	CDQ	UF	AD	AX	ADK	AQ	ADQ	AZQ	AZZ	Na		Mg	Si	Ca	Fe			
C23		NPD																										
C26																												
E23																												
E26																												
E23																												
E28																												
G23																												
G26																												
H23																												
C3-1																												
C34																												
E31																												
E34																												

OBSERVATIONS:

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

TEM ASBESTOS ANALYSIS

Client Sand Blank
 Sample No. S-12-10

EMS Lab No. _____
 Page 2 of _____

MICROSCOPE

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

ENERGY DISPERSIVE X-RAY SYSTEM

- Everet - Model No. 2200-0106-0365
 - Everet - Model No. 3600-0206-0146
- Quantum System

RECEIVING

ANALYSIS

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

TEM - 1B (1-08)

Grid Opening	Structure Number	Structure	Dimensions (mm)		Fiber Classification												EDS Analysis					Comments					
			Width	Length	NAW	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	Na	Mg		Si	Ca	Fe		
U3-1		N20																									
U3-4																											
1B-1																											
1B-4																											
G3-3																											
E3-6																											
E3-3																											
E3-8																											
U3-3																											
U3-2																											
1B-5																											
1B-6																											
U3-3																											

OBSERVATIONS:

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

TEM ASBESTOS ANALYSIS

Client Sawd blewk
 Sample No. S-12-10

EMS Lab No. _____ of _____
 Page 3

RECEIVING

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
- Error - Model No. 390-0106-0365
- Error - Model No. 390-0206-0146
- Quantum System

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

TEM - 1B (1-08)

Grid Opening	Structure Number	Structure	Dimensions (mm)		Fiber Classification										EDS Analysis					Comments						
			Width	Length	NAW	TM	CM	CD	CQ	CNQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ		Na	Mg	Si	Ca	Fe	
24-1		PSY																								
24-2																										
24-3																										
24-4																										
24-5																										
24-6																										
24-7																										
24-8																										
24-9																										
24-10																										
24-11																										
24-12																										
24-13																										

OBSERVATIONS:

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

TEM ASBESTOS ANALYSIS

Client Scrub blk
Sample No. 5-12-10

EMS Lab No. _____
Page 5 of _____

RECEIVING

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
- Everex - Model No. 3200-0106-0365
- Everex - Model No. 3600-0206-0146

Quantum System

Grid Address: A
Screen Magnification: X
Camera Constant: 100KV
Accelerating Voltage: 100KV
Beam Current: 10A
K-Factor: _____
Analyst: R. J. Lee

Date: 5-13-10

TEM - 1B (1-08)

Grid Opening	Structure Number	Structure
ES-3		W19
ES-6		
ES-3		
ES-6		
ES-3		
ES-6		
ES-3		
ES-6		
ES-3		
ES-6		

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

OBSERVATIONS:

- Clean Debris:
Gypsum: Very Light: Light: Moderate: Heavy: Very Heavy:
Condition of the Grid: Very Light: Light: Moderate: Heavy: Very Heavy:

TEM ASBESTOS ANALYSIS

Client Sand blank
 Sample No. S-12-10

EMS Lab No. _____ of _____
 Page 1

RECEIVING

ANALYSIS

Grid Address: B
 Screen Magnification: 9200 X
 Camera Constant: 28.2
 Accelerating Voltage: 100KV
 Beam Current: 10 μ A
 E-Factor: 1.4
 Analyst: Radhr

MICROSCOPE

H600A - Serial No. 542-36-01
 H600B - Serial No. 542-05-06
 H600C - Serial No. 542-24-03
 ENERGY DISPENSIVE X-RAY SYSTEM
 Error - Model No. 3200-0106-0365
 Error - Model No. 3600-0206-0146
 Quantum System

Date: 5/18/10

TEM - 1B (1-08)

Grid Opening	Structure Number	Structure	Dimensions (mm)		Fiber Classification													EDS Analysis					Comments					
			Width	Length	NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADK	AQ	ADQ	AZQ	AZZ	Na	Mg	Si		Ca	Fe			
L23		W20																										
L26																												
E23																												
E26																												
E23																												
L26																												
A23																												
G26																												
H23																												
G31																												
G34																												
E31																												
E34																												
E31																												
E34																												
E34																												

OBSERVATIONS:

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

TEM ASBESTOS ANALYSIS

Client Sand blank EMS Lab No. _____
 Sample No. S-12-10 Page 7 of _____

RECEIVING

ANALYSIS

Grid Address: B
 Stage Magnification: 9,200 X
 Camera Constant: 28.2
 Accelerating Voltage: 100KV
 Beam Current: 10 μ A
 K-Factor: 1.4
 Analyte: Radly

MICROSCOPE
 H600A - Serial No. 542-36-01
 H600B - Serial No. 542-05-06
 H600C - Serial No. 542-24-03
 ENERGY DISPERSIVE X-RAY SYSTEM
 Evera - Model No. 3200-0106-0365
 Evera - Model No. 3000-0205-0146
 Quantum System

Date 5/18/10

TEM - 1B (1-08)

Grid Opening	Structure Number	Structure	Dimensions (mm)		Fiber Classification													EDS Analysis				Comments					
			Width	Length	NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADK	AQ	ADQ	AZQ	AZZ	Na	Mg		Si	Ca	Fe		
C41		N59																									
C44																											
E47																											
E49																											
F41																											
P44																											
Q41																											
Q44																											
H41																											
H44																											
V41																											
V44																											
C46																											
E43																											
E46																											

OBSERVATIONS:

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

TEM ASBESTOS ANALYSIS

Client Sand blank EMS Lab No. _____
 Sample No. S-12-10 Page 1 of _____

MICROSCOPE

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

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

RECEIVING

ANALYSIS

Grid Address: B
 Screen Magnification: 9200 X
 Camera Constant: 28.2
 Accelerating Voltage: 100KV
 Beam Current: 10 μ A
 K-Factor: 1.4
 Analyte: Radon

Date: 5/18/10

TEM - 1B (1-08)

Grid Opening	Structure Number	Structure	Dimensions (mm)		Fiber Classification													EDS Analysis					Comments					
			Width	Length	NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADK	AQ	ADQ	AZQ	AZK	Na	Mg	Si		Ca	Fe			
FEU3		W>N																										
FEU6																												
CU3																												
CU6																												
1-13																												
1-14																												
1-15																												
1-16																												
1-17																												
1-18																												
1-19																												
1-20																												
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1-45																												
1-46																												
1-47																												
1-48																												
1-49																												
1-50																												

OBSERVATIONS:

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

S1

TEM ASBESTOS ANALYSIS

Client Sand blank EMS Lab No. _____ of _____
 Sample No. S-12-10 Page 5

RECEIVING

ANALYSIS

Grid Address: B
 Screen Magnification: 9,200 X
 Camera Constant: 28.2
 Accelerating Voltage: 100KV
 Beam Current: 10 µA
 E-Factor: 1.4
 Analyt: Radi
 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
 Ertec - Model No. 300-0106-0365
 Ertec - Model No. 360-0206-0146
 Quantum System

TEM - 1B (1-08)

Grid Opening	Structure Number	Structure	Dimensions (mm)		Fiber Classification												EDS Analysis					Comments					
			Width	Length	NAM	TM	CM	CD	CD	CMQ	CDQ	UF	AD	AX	ADK	AD	ADQ	AZQ	AZZ	Na	Mg		Si	Ca	Fe		
U53A		N/D																									
H5-1																											
H5G																											
V5-1																											
E6-1																											
E6-1																											
E6-1																											
E6-1																											
E6-1																											
E6-1																											
E6-1																											

OBSERVATIONS:

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

TEM ASBESTOS ANALYSIS

Client SENIOR DOWK
 Sample No. S-12-10

EMS Lab No. _____ of _____
 Page 1 of _____

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. 3200-0106-0965
 Kevex • Model No. 3600-0206-0146
 Quantum System

RECEIVING

ANALYSIS

Grid Address: C
 Screen Magnification: 9200 X
 Camera Constant: 2872
 Accelerating Voltage: 100KV
 Beam Current: 10 μ A
 F-Factor: 1.9
 Analyst: Reddy

Date: 5/13/10

Grid Opening	Structure Number	Structure	Dimensions (mm)		NAME	Fiber Classification							EDS Analysis					Comments										
			Width	Length		TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AD	ADQ		AZQ	AZZ	Na	Mg	Si	Ca	Fe			
E23																												
E24																												
E23																												
E24																												
E23																												
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E24																												

OBSERVATIONS:

Clean Debris:
 Gypsum: Very Light
 Condition of the Grid: Very Light
 Light Moderate
 Heavy Very Heavy
 Indirectional Error

TEM ASBESTOS ANALYSIS

Client Sand Bank
 Sample No. S-12-10

EMS Lab No. _____
 Page 2 of _____

RECEIVING

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 C
 Screen Magnification 9200 X
 Camera Constant 282
 Accelerating Voltage 100KV
 Beam Current 10 μ A
 K-Factor 1.19
 Analyst Reddy Date 5/13/10

TEM - 1B (1-08)

Grid Opening	Structure Number	Structure	Dimensions (mm)		Fiber Classification										EDS Analysis				Comments								
			Width	Length	NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADK	AQ	ADQ	AZD		AZZ	Na	Mg	Si	Ca	Fe		
S3-4		RSD																									
13-1																											
A3-1																											
K3-1																											
3-3																											
E3-2																											
E3-6																											
E3-7																											
F3-8																											
M3-2																											
M3-8																											
13-3																											
B3-6																											

OBSERVATIONS:

- Clean
- Debris: General
- Very Light Very Light
- Light Light
- Moderate Moderate
- Heavy Heavy
- Very Heavy Very Heavy

TEM ASBESTOS ANALYSIS

Client Sand Bank
 Sample No. S-12-10

EMS Lab No. _____
 Page 3 of _____

MICROSCOPE

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

ENERGY DISPERSIVE X-RAY SYSTEM

- Error - Model No. 3304-0106-0365
- Error - Model No. 3600-0206-0146
Quantum System

RECEIVING

ANALYSIS

Grid Address: C
 Screen Magnification: 9200 X
 Camera Constant: 2872
 Accelerating Voltage: 100 KV
 Beam Current: 10 μ A
 K-Factor: 1.9

Analyst: Redu Date: 5/13/10

TEM - 1B (1-08)

Grid Opening	Structure Number	Structure	Dimensions (mm)		Fiber Classification										EDS Analysis				Comments								
			Width	Length	NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADK	AQ	ADQ	AZQ		AZZ	Na	Mg	Si	Ca	Fe		
K3B		N310																									
K3C																											
CH1																											
CH4																											
EA7																											
EA9																											
EA11																											
EA14																											
EA17																											
EA19																											
EA21																											
EA24																											
EA27																											
EA30																											
EA33																											
EA36																											
EA39																											
EA42																											
EA45																											
EA48																											
EA51																											
EA54																											
EA57																											
EA60																											
EA63																											
EA66																											
EA69																											
EA72																											
EA75																											

OBSERVATIONS:

- Clean
- Debris:
- Very Light
- Light
- Moderate
- Heavy
- Very Heavy

TEM ASBESTOS ANALYSIS

Client Sand Bank
 Sample No. 5-12-10

EMS Lab No. _____ of _____
 Page 11

RECEIVING

ANALYSIS

Grid Address: C
 Screen Magnification: 9200 X
 Camera Constant: 282
 Accelerating Voltage: 100KV
 Beam Current: 10 μ A
 E-Factor: 1.9
 Analyst: Pedh Date: 5/13/10

MICROSCOPE

H600A - Serial No. 542-36-01
 H600B - Serial No. 542-05-06
 H600C - Serial No. 542-24-03
 ENERGY DISPENSIVE X-RAY SYSTEM
 Enerx - Model No. 320-0105-0365
 Enerx - Model No. 360-0206-0146
 Quantax System

Grid Opening	Structure Number	Structure	Dimensions (mm)		Fiber Classification										EDS Analysis					Comments							
			Width	Length	RAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	AUX	AQ	ADQ	AZQ	AZZ		Na	Mg	Si	Ca	Fe		
Ku3		R29																									
Ku3																											
Ku3																											
Ku3																											
Ku3																											
Ku3																											
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Ku3																											
Ku3																											

OBSERVATIONS:
 Clean
 Debris: Gummium.
 Very Light
 Very Heavy
 Light
 Moderate
 Heavy
 Very Heavy

TEM - 1B (1-08)

TEM ASBESTOS ANALYSIS

Client Sand Bank
 Sample No. S-12-10

EMS Lab No. _____
 Page 3 of _____

RECEIVING

Grid Opening	Structure Number	Structure
US-14		0030
US-1		
US-14		
US-1		
US-3		
US-6		
US-3		
US-6		
US-3		
US-6		

Dimensions (mm)	
Width	Length

Fiber Classification														
NAM	TM	CM	CD	CO	CMQ	CDQ	UF	AD	AX	ADK	AQ	ADQ	AZQ	AZZ

EDS Analysis				
Na	Mg	Si	Ca	Fe

Comments

ANALYSIS

Grid Address: C
 Screen Magnification: 9200 X
 Camera Constant: 2872
 Accelerating Voltage: 100KV
 Beam Current: 10 μ A
 K-Factor: 1.4
 Analyst: Redh
 Date: 5/13/10

MICROSCORE

- HE00A - Serial No. 542-36-01
- HE00B - Serial No. 542-05-06
- HE00C - Serial No. 542-24-03

- ENERGY DISPERSIVE X-RAY SYSTEM
- Exra - Model No. 320-0106-036
- Exra - Model No. 300-0205-0146
- Quantum System

OBSERVATIONS:

- Clean
- Debris: Tunnel
- Very Light
- Light
- Moderate
- Heavy
- Very Heavy

: Count (Page/ of) NIOSH 7402/ISO

Report number : 137822 Filter Blank2 Filter Type: MCE 385 mm2 Prep Time: NA
 Sample number: LOT 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 mm²
 Analysis date: 7/9/10 By (A): ADX, ADQ Level of Analysis: (C): CD, CDX

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	C23							
	C26							
	F23							
	F26							
	F23							
	F26							
	G23							
	G26							
	H23							
	H26							
	B36							
	C33							
	C36							
	E33							
	E36							
	F33							
	F36							
	G33							
	G36							
	H33							
	H36							
	K33							
	K36							
	E43							
	E46							
	F43							
	F46							
	G43							
	G46							
	H43							
	H46							
	K43							

TEM-10A (2002)

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 mm²
 Analysis date: By (A): ADX, ADQ Level of Analysis: (C): CD, CDX
 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
	V49							
	B36							
	C53							
	C56							
	E33							
	E56							
	F53							
	F56							
B	C23							
	C26							
	E23							
	E26							
	F23							
	F26							
	C31							Boycott
	E34							
	E31							
	F34							
	E31							
	F34							
	B36							
	C33							
	C56							
	E33							
	E56							
	F33							
	F36							
	B44							
	C41							
	C44							
	E41							
	E44							

TEM -10A (2002)

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 mm²
 Analysis date: By (A): ADX, ADQ Level of Analysis: (C): CD, CDX
 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							
	E23							
	E26							
	F23							
	F26							
	G23							
	G26							
	H23							
	H26							
	B33							
	B36							
	C33							

TEM -10A (2002)

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 mm²
 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
	C36							
	E33							
	E36							
	F33							
	F36							
	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 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 mm²
 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
	F34							
	F31							
	F34							
	G31							
	G34							
	H31							
	H34							
	B41							
	E41							
	E44							
	F41							
	F44							
	G41							
	G44							
	H41							
	H44							
	K41							
	K44							
	B54							
	C51							
	C54							
	E51							
	E54							
	F51							
	F54							
	B56							
	C53							
	C56							
	F53							
	E56							
	F53							
	E56							

TEM-10A (2002)

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 mm²
 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
6	C13							
	C21							
	E23							
	E26							
	F23							
	F26							
	G23							
	G26							
	H23							
	H26							
	B33							
	C36							
	E33							
	E36							
	F33							
	F36							
	G33							
	B41							
	C46							
	E43							
	E46							
	F43							
	F46							
	G43							
	C46							
	H43							
	H46							
	K43							
	F56							
	F53							
	F56							

TEM-10A (2002)

Copy 1

Count (Page of) NIOSH 7402/ISO

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

Preparation date: 7/9/2010 By JAP Grid opening dimension: 0.0094 mm²
 Analysis date: 7/10 By MK, RS. Level of Analysis: (C): CD, CDX
 (A): ADX, ADQ

Grid loading Right 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	E21							
	E24							
	F21							
	F24							
	G21							
	G24							
	B26							
	C23							
	C26							
	E23							
	E26							
	F23							
	F26							
	G23							
	G26							
	F34							
	G31							
	G34							
	H31							
	H34							
	K34							
	F36							
	G33							
	G36							
	H33							
	H36							
	K33							
	K36							
	B46							
	C43							
	C46							
	E43							

Count (Page of) NIOSH 7402/ISO

Report number : 137822 ^{rust} Filter Blank2
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

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

Preparation date: 6/8/2010 By JAP
Analysis date: 9-10 By BK
(A): ADX, ADQ
Condition of Grid

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

Grid loading

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	E41							
	P56							
	C53							
	C56							
	E37							
	E56							
	G61							
	F64							
10	E26							
	F22							
	F26							
	G23							
	G21							
	C34							
	E31							
	E34							
	F31							
	F34							
	G31							
	G34							
	F33							
	F36							
	G33							
	G36							
	H32							
	F44							
	G41							
	G44							
	H41							
	H44							
	K41							
	K44							

Removal letter

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 Grid opening dimension: 0.0094 mm²
 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
	G46							
	H46							
	H46							
	K43							
	K46							
	E51L							
	E51							
	G51							
	G54							
	H51							
	H54							
	K51							
	K54							
	E51							
	G53							
	G54							
C	C2-6							
	F23							
	F26							
	V23							
	F2-6							
	G2-3							
	H26							
	H23							
	C3-7							
	C3-4							
	E3-4							
	E3-6							
	E2-4							
	F3-4							

137822

00105200

Norhgate

TEM Asbestos Structure Count (Page of)

Report number:

SAMPLE NO:

X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
C	63-4							
	63-4							
	1B-4							
	1A-4							
	63-3							
	C2-6							
	E3-3							
	E2-6							
	E2-3							
	F2-6							
	63-3							
	63-6							
	1A-3							
	1B-6							
	C4-1							
	C4-4							
	E4-1							
	E4-4							
	1C4-1							
39	E4-4							
	54-1							
	64-4							
	E4-3							
	E4-6							
	1E4-3							
	1E4-6							
	64-3							
	64-6							
1D	C2-6							
	E2-3							
	E2-6							
	F2-3							
	1E2-6							
	62-3							
	62-6							

137822

00105200

Northgate

5

TEM Asbestos Structure Count (Page of)

Report number:

SAMPLE NO:

X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
D6k	C3-1							
	C3-4							
	E3-1							
	E3-4							
	F3-1							
	F3-4							
	h3-1							
	h3-4							
	I3-1							
	I3-4							
	C3-2							
	C3-6							
	E3-3							
	E3-6							
	F3-3							
	F3-6							
	h3-3							
	h3-6							
	I3-3							
	I3-6							
	C4-1							
	C4-4							
	E4-1							
	E4-4							
	F4-1							
	F4-4							
	h4-1							
	h4-4							
	I4-1							
	I4-4							
	F4-3							
	F4-6							
	h4-3							
	h4-6							
	I4-3							
	I4-6							
IE	C2-6							

137822

00105200

Norwidge

TEM Asbestos Structure Count (Page of)

Report number:

SAMPLE NO:

X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
E Intd	E23							
	E26							
	F23							
	F26							
	G23							
	G26							
	H23							
	E31							
	E34							
	F31							
	F34							
	G31							
	G34							
	H31							
	H34							
	C32							
	C36							
	E33							
	E36							
	G33							
	C41							
	C44							
	E41							
	E44							
	F41							
	F44							
	G41							
	G44							
	C51							
	C54							
	E51							
	F51							
	F54							
	G51							
	G54							
	H51							
	H54							

K51

Spot Size Measurements

Scope: H:60B
Date: May 2010
Name: R_s

Conditions of Measurements

High Voltage: 100K
Beam Current: 10 μ A
Magnification: 19,200
Condenser Aperture Size: #2

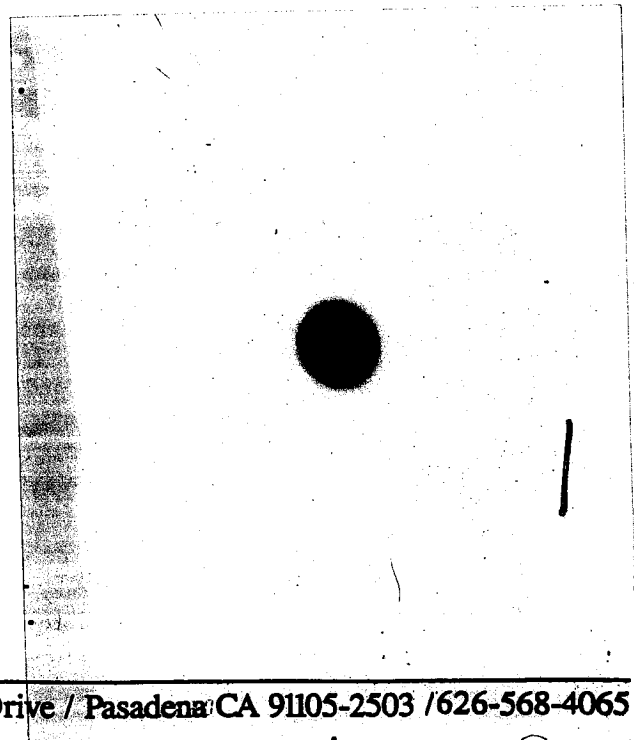
Measurements from a photo 8.5

Shortest diameter: 8.5 mm
Longest diameter: 9 mm
Average: 8.75 mm

Spot Size Calculation

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

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



TEM CAMERA CONSTANT DETERMINATION

TEM H600B

Measured and Calculated by LS 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

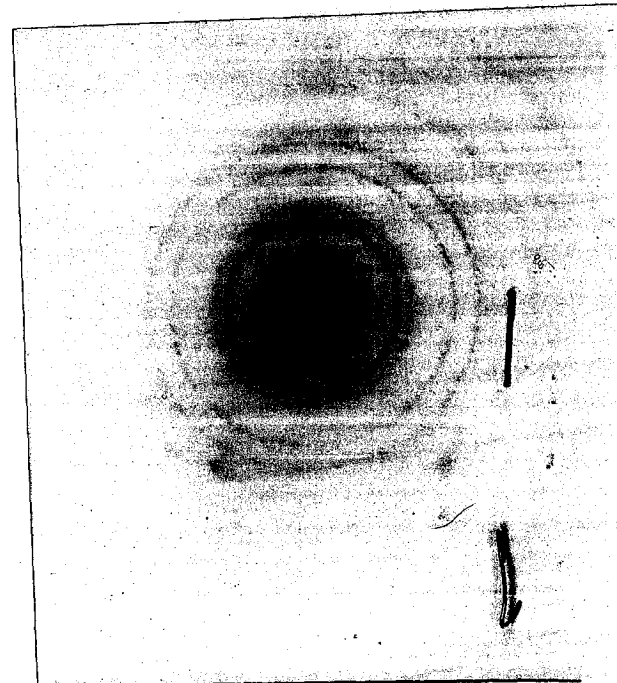
Average Camera Constant = $\sqrt{28.3}$

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

Average Camera Constant = $(CC<1> + \dots + CC<n>) \times 1/n$

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
 WEEKLY CALIBRATION 3m
 MONTHLY CALIBRATION 3mch
 AFTER SERVICE CALIBRATION _____

A-600/B-600/C-600

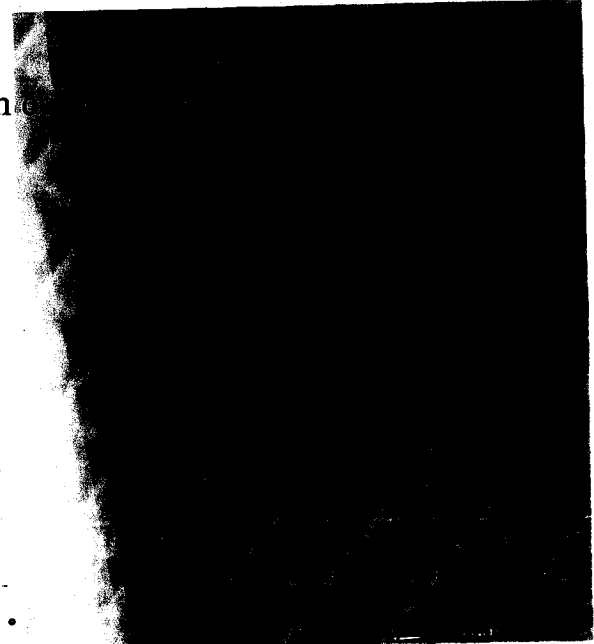
BY: R

Measurement	Number of Spacing Flourescent Screen Magnification	Distance (mm)	Number of Spacing Film Magnification
1	25,600x 53/6 - 19,260	12,000x 51/12 -	9,180
2	53/6 - 19,260	51.5/12 -	9,270
3	53/6 - 19,080	51.5/12 -	9,270
4	53/6 - 19,180	51/12 -	9,180
5	53.5/6 - 19,260	51/12 -	9,180
6		51/12 -	9,180
7	ave 19,100		
8		avg	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

IM CALIBRATION 2
 92)



SCOPE B

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

n	Cn	RUN 1		RUN 2		RUN 3		RUN 4		RUN 5		RUN 6	
		I(Si)=	Kn	I(Si)=	Kn	I(Si)=	Kn	I(Si)=	Kn	I(Si)=	Kn	I(Si)=	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

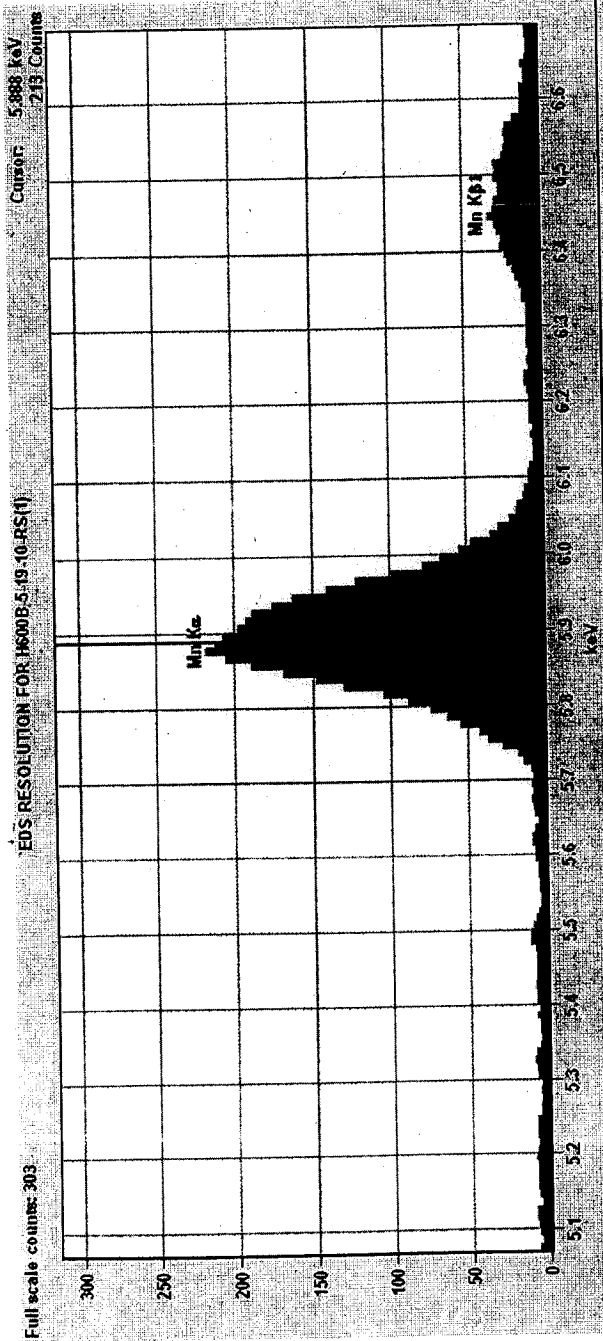
** NVLAP REQUIREMENTS **
 1.0 < K(Na) wrt Si < 4.0
 1.0 < K(Mg) & K(Fe) wrt Si < 2.0
 1.0 < K(Al) & K(Ca) wrt Si < 1.75

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)=	In	I(Si)=	In	I(Si)=	In	I(Si)=	In	I(Si)=	In	I(Si)=	In	I(Si)=	In
12627	4491	15830	14684	25368	25374	4628							
Kn	Kn	Kn	Kn	Kn	Kn	Kn	Kn	Kn	Kn	Kn	Kn	Kn	Kn
849	1.4365	950	1.6094	982	1.4442	1543	1.5879	1542	1.5893				
3523	1.4478	4331	1.4765	4325	1.3715	7480	1.37	7479	1.3705	1213	1.5412		
4458	0.9885	5717	0.9863	5043	1.0162	9260	0.9561	9260	0.9563	1556	1.038		
12627	1	15830	1	14684	1	25368	1	25374	1	4628	1		
1099	0.5947	1505	0.5444	1185	0.6414	2315	0.5672	2318	0.5666	363	0.6599		
4553	1.2224	6257	1.1151	4602	1.4064	9813	1.1394	9832	1.1375	1754	1.163		
1480	1.3749	1994	1.2794	1703	1.3895	3188	1.2823	3196	1.2794	510	1.4624		
4	23.583	7	16.894			25	7.5806			6	5.7624		
3889	1.6477	5899	1.3618	4371	1.7048	8840	1.4563	8884	1.4494	1497	1.5689		
6102	4.8398	5950	6.2225	9471	3.6262	35609	1.8662	13315	4.4571	2045	5.293		



Auto | Manual | FWHM | FSS Bench Test

Elements

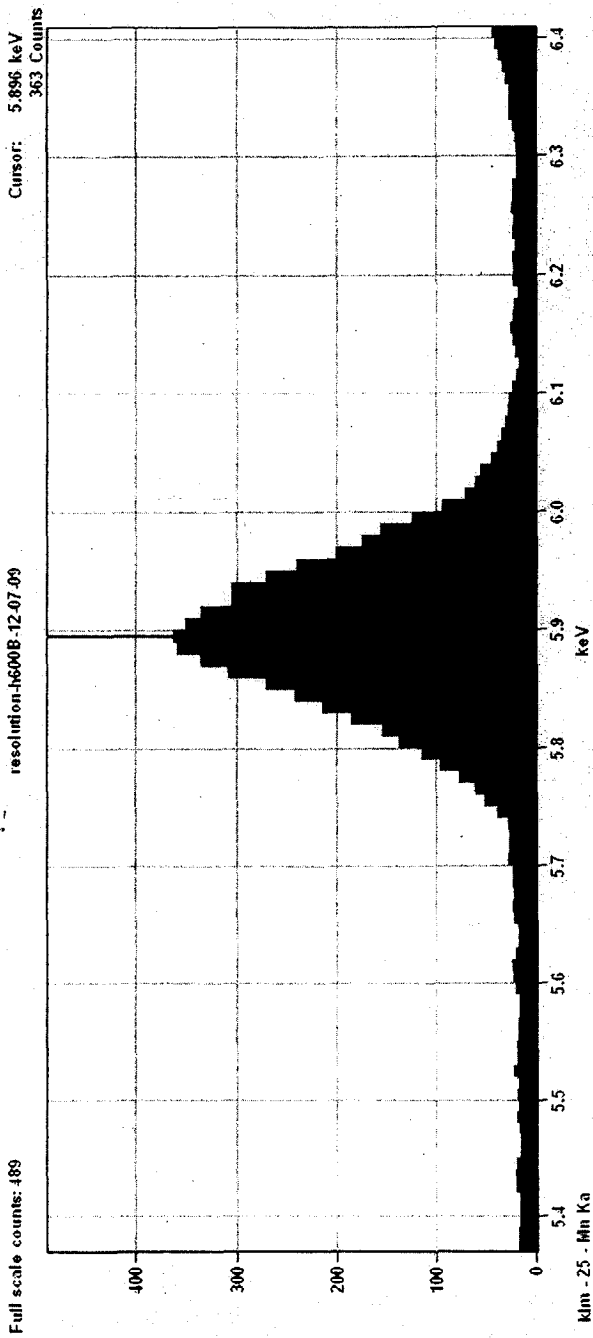
Trial #	Element	Net Counts	FWHM (eV)	Avg. FWHM
1	5.895	3991	146.79	146.79
2	5.895	3930	155.00	151.89
3	5.894	3178	155.83	153.21
4	5.892	3379	149.17	152.20
5	5.891	3438	155.40	152.84

Avg: 5.893
Sigma: 0.002
RMS: 10.0%

Additional Measurements: Measure Measure Zero Peak FWHM/Std FWHM

Acquisition Criteria: LiveTime [s] Max Time: 45 Peak Count No. Trials: 5

Time Constant: 50 (Slow)



Auto | Manual FWHM | Fe55 Bench Test

Elements

Atomic Symbol Min Line K

Atomic Symbol Min Line K

Ratio Peaks

Additional Measurements

Measure Zero Peak Measure FWHM 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	5860	146.26	142.54
5	5.899	5291	133.62	140.76
	Avg:	4776	140.76	
	Sigma:	2014	10.52	
	RMS:	42.2%	7.5%	