MAR 20100020: BAD HEART SANDSTONE

Received date: Nov 02, 2010

Public release date: Dec 06, 2011

A Report and Background Information Pertinent To the Exploration and Analysis of the Bad Heart Sandstone on Permit 9396110003

Ronald T. Owens

October 13, 2010

NOV 0 2 2010

1 Part A
(Removed & put in separate folder)

2 Part B- Map Summary of Work & Loring Assays

3 Western Environmental Work Outline

4 Curriculum Vitae of Robert McGrew

5 X R F Analysis Conducted at Colorado School of Mines

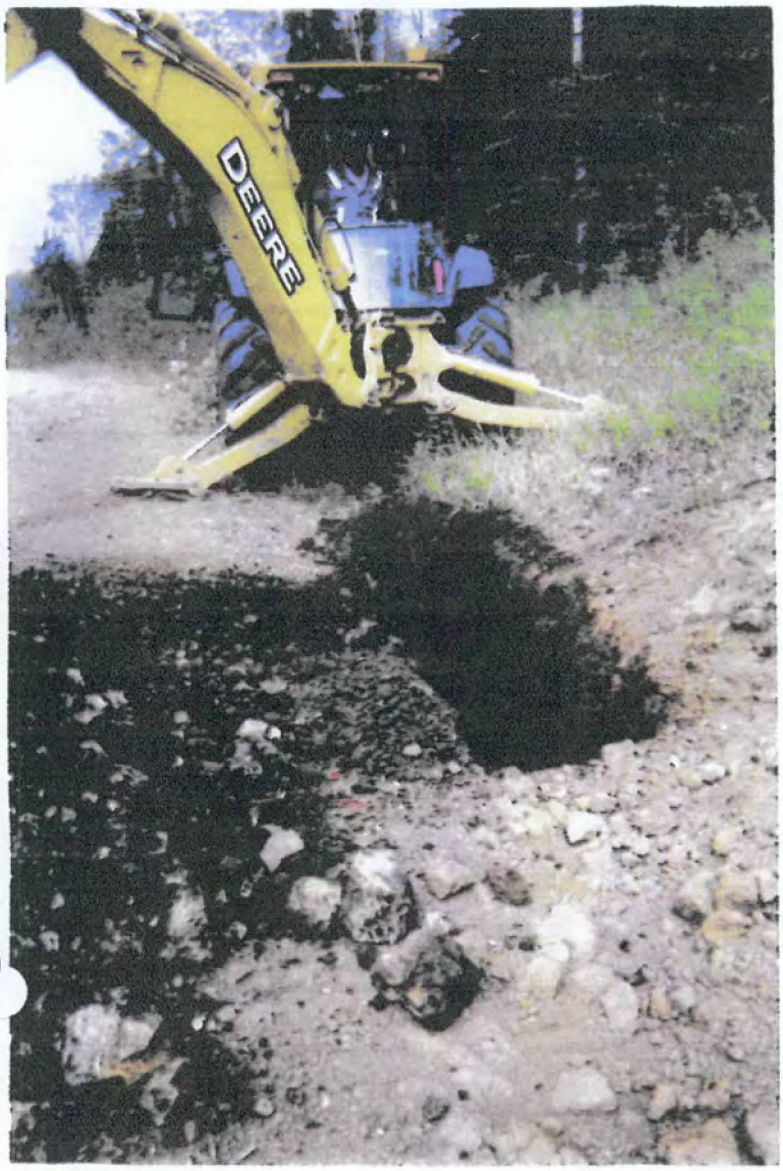
6 Chain of Custody Programs Terry Christopher Ph.D.

7 Action Mining Services Wave Table Results

8 Part C- Critical Points on Fire Assaying

9 Gold Transport by Complex Metal Chloride Vapors

10 Misc. Pictures of Beads from this Property



A Report and Background Information Pertinent To the Exploration and Analysis of the Bad Heart Sandstone on Permit 9396110003

PART - B

Ronald T. Owens

October 13, 2010

A. The legal subdivisions 10, 11, 14 and 15 are shown in yellow and are excluded in this lease application.

B. The area shown in blue is a lower elevation than the iron deposit.

C. The area shown in orange is iron bearing and appears quite consistent in its thickness based on backhoe pits 1, 2, 3 and 4, piling drill hole 6 and road cut 5.
Sample sites 7 and 8 are outcrops exposed during pipeline excavations. Sample site 9 is a hand auger site that did show iron material, but couldn't penetrate to depth.

D. The area shown in magenta are LSD's 1, 8, 9 and 16 - section 27-6-09-079, and require drilling.

Summary of Work

Much of the work done for me by Western Environmental Services Inc. is of a proprietary nature and is protected by a confidentiality agreement. Therefore, I cannot provide more than an outline and summary of their reports.

Some of the lab work that I have personally completed in the interim includes:

1) Seventeen thio-sulfide leaches (December 23, 2009 to January 25, 2010).

2) Tabling of nineteen, one pound (454 gram) tests between January 27, 2009 and February 11, 2010.

3) Nineteen thio-sulfide leaches between February 11, 2010 and April 22, 2010.

4) Fifty-eight leaches using saturated salt and nitric acid between January 18, 2008 and June 23, 2008.

5) Thirty-three, one pound (454 gram) magnetic separations.

6) Twenty-seven, thirty gram leaches using thio-sulfide between May 29, 2010 and August 7, 2010.

7) Fifteen, thirty gram leaches using T6, a sulphur compound, between August 11, 2010 and September 9, 2010.

8) Nine, fifteen gram fusions using the temperature controls published by ASAT.

A total of 197 tests of materials from separate and or blended horizons of the Bad Heart formations.

The iron component of this deposit makes analysis for precious metals very difficult. This requires time and effort that many commercial laboratories are not inclined to invest. Also, leaching successfully requires a procedure that eliminates the iron first.

Fire assaying can be successful if methods described in the A.S.A.T paper in Part C of this report are followed along with additional techniques.

May I draw attention to the Action Mining tabling results, shown in Section Seven. I intend to observe more tests of ore from the pit one location in early November, and will include the results at that time.

Precious metals have been recovered from the various locations described in the Chain of Custody Report by Dr. Terry Christopher. This encompasses an area that indicates a commercially viable recovery program should be possible at present metal prices.

Loring Laboratories (Alberta) Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541
loringlabs@telus.net

ISO9001:2008 Certified

TO: ALBERTA METALLICS LTD.
4507-52 St. Ponoka, AB
T4J 1J6
E-mail: mcm1@telus.net
Ph: 403-783-6487; Fax403-783-6586

Attn:Ron Owens

File No : 53616
Date : Sept. 24/2010

Certificate of Assay

Sample No.	Bead WT. mg	Au WT. mg
"Assay Analysis"		
# 9	28.281	0.004
# 10	35.580	0.003
# 11	42.851	0.005

All are ½ A.T. fusions

Bead WT: As received bases

Received date: Sept. 23/2010

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples.

[redacted]

Assayer : Alex Tamaian

Rejects and pulps are retained for one month unless specific arrangements are made in advance

FORM ASYC-015

Loring Laboratories (Alberta) Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541
loringlabs@telus.net

ISO9001:2008 Certified

TO: ALBERTA METALLICS LTD.
4507-52 St. Ponoka, AB
T4J 1J6
E-mail: mcm1@telus.net
Ph: 403-783-6487; Fax403-783-6586

Attn:Ron Owens

File No : 5 3 4 9 6
Date : Aug. 27/2010

Certificate of Assay

Sample No.	Sample WT. g	Au WT. mg
"Assay Analysis"		
Au+Ag Bit, Aug.13	0.095505	25.031 a inquart was used.
Precipitate Aug. 17	12.25	0.006
Precipitate Aug. 19	10.05	0.004
Precipitate Aug. 21(1)	30.92	0.003
Precipitate Aug. 21(2)	28.16	0.008
Precipitate Aug. 22	5.44	0.004
Sample WT:	As received bases	

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

[redacted]

Assayer : Alex Tamaian

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

FORM ASYC-015

Loring Laboratories (Alberta) Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541
loringlabs@telus.net

ISO9001:2008 Certified

TO: ALBERTA METALLICS LTD.
4507-52 St. Ponoka, AB
T4J 1J6
E-mail: mcm1@telus.net
Ph: 403-783-6487; Fax403-783-6586

Attn:Ron Owens

File No : 5 3 4 9 6
Date : Aug. 27/2010

Certificate of Assay

Sample No.	Sample WT. g	Au WT. mg
"Assay Analysis"		
Au+Ag Bit, Aug.13	0.095505	25.031
Precipitate Aug. 17	12.25	0.006
Precipitate Aug. 19	10.05	0.004
Precipitate Aug. 21(1)	30.92	0.003
Precipitate Aug. 21(2)	28.16	0.008
Precipitate Aug. 22	5.44	0.004
Sample WT:	As received bases	

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

[redacted]

Assayer : Alex Tamaian

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

FORM ASYC-015

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541
loringlabs@telus.net

TO: ALBERTA METALLICS LTD.
4507-52 St. Ponoka, AB
T4J 1J6
E-mail: mcm1@telus.net
Ph: 403-783-6487; Fax403-783-6586

Attn:Ron Owens

File No : 5 1 4 1 1
Date : Nov.11/2008
Samples : Au-Bit

Certificate of Assay

Sample No.	Bit WT. mg	Au WT. mg	Au %
"Assay Analysis"			
# 3	21.365	21.268	**99.54**
# 4	119.198	25.068	**21.03**

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

[redacted]

Assayer : Alex Tamaian

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541
loringlabs@telus.net

COPY.

TO: ALBERTA METALLICS LTD.
4507-52 St. Ponoka, AB
T4J 1J6
E-mail: mcm1@telus.net
Ph: 403-783-6487; Fax403-783-6586

Attn:Ron Owens

File No : 5 1 4 1 1
Date : Nov.11/2008
Samples : Au-Bit

Certificate of Assay

Sample No.	Bit WT. mg	Au WT. mg	Au %
"Assay Analysis"			
# 3	21.365	21.268	**99.54**
# 4	119.198	25.068	**21.03**

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

[redacted]

Assayer : Alex Tamaian

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541
loringlabs@telus.net

TO: ALBERTA METALLICS LTD.
4507-52 St. Ponoka, AB
T4J 1J6
E-mail: mcm1@telus.net
Ph: 403-783-6487; Fax403-783-6586

Attn:Ron Owens

File No : 5 1 0 8 4
Date : aug.07/2008
Samples : Ag

Certificate of Assay

Sample No.	Bit WT. mg	Au WT. mg	Au %
"Assay Analysis"			
Rec # 1A Assay C	113.532	0.029	**0.025**
Rec # 2 Assay B	224.691	0.030	**0.013**

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

[redacted]

Assayer : Alex Tamaian

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541
loringlabs@telus.net

TO: ALBERTA METALLICS LTD.
4507-52 St. Ponoka, AB
T4J 1J6
E-mail: mcm1@telus.net
Ph: 403-783-6487; Fax403-783-6586

Attn:Ron Owens

File No : 5 0 7 2 3
Date : April 23/2008
Samples : Ag

Certificate of Assay

Sample No.	Bit WT. mg	Au WT. mg	Au %
"Assay Analysis"			
Mar. 26 A	9.437	0.056	**0.59**
I 10-20-6	15.765	0.020	**0.13**
K 10-20-6	16.618	0.047	**0.28**

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

[redacted]

Assayer : Alex Tamaian

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel. 274-2777 Fax: 276-0541
loringlabs@telus.net

TO: ALBERTA METALLICS LTD.
4507-52 St. Ponoka. AB
T4J 1J6
E-mail: mcm1@telus.net
Ph: 403-783-6487, Fax403-783-6586

File No : 5 0 7 2 3
Date : April 23/2008
Samples : Ag

Attn Ron Owens

Certificate of Assay

Sample No.	Bit WT. mg	Au WT. mg	Au %
"Assay Analysis"			
Mar. 26 A ✳	9.437	0.056	**0.59**
I 10-20-6	15.765	0.020	**0.13**
K 10-20-6	16.618	0.047	**0.28**

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples.

[redacted]

Assayer : Alex Tamalen

Rejects and pulps are retained for one month unless specific arrangements are made in advance

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541
loringlabs@telus.net

TO: ALBERTA METALLICS LTD.
4507-52 St. Ponoka, AB
T4J 1J6
E-mail: mcm1@telus.net
Ph: 403-783-6487; Fax403-783-6586

Attn:Ron Owens

File No : 5 0 7 2 3
Date : April 23/2008
Samples : Ag

Certificate of Assay

Sample No.	Blt WT. mg	Au WT. mg	Au %
"Assay Analysis"			
Mar. 26 A	9.437	0.056	**0.59**
I 10-20-6	15.765	0.020	**0.13**
K 10-20-6	16.618	0.047	**0.28**

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

[redacted]

Assayer : Alex Tamaian

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541
loringlabs@telus.net

TO: ALBERTA METALLICS LTD.
4507-52 St. Ponoka, AB
T4J 1J6
Ph: 403-783-6487; Fax403-783-6586

Attn:Ron Owens

File No : 5 0 6 1 4
Date : March 12/2008
Samples : Gold

Certificate of Assay

Sample No.	Au %	Ag %
"Assay Analysis"		
# 1	**83.75**	**15.95**

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

[redacted]

Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 276-0541
loringlabs@telus.net

TO: ALBERTA METALLICS LTD.
4507-52 St. Ponoka, AB
T4J 1J6
Ph. 403-783-6487; Fax403-783-6586

Attn:Ron Owens

File No : 50614
Date : March 12/2008
Samples : Gold

Certificate of Assay

Sample No.	Au %	Ag %
"Assay Analysis"		
# 1	83.75	15.95

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples.

[redacted]

Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

To : MR. RON OWENS
4507 - 52nd Street
Ponoka, Alberta
T4J 1J6

File No : **50018**
Date : October 18, 2007
Samples :
Project :
P.O.#

Certificate of Assay
Loring Laboratories Ltd.

629 Beaverdam Road, NE Calgary Alberta T2K 4W7
Tel: (403)274-2777 Fax: (403)275-0541

Sample No.	ppb Gold	ppm Ag
"Assay Analysis"		
# 1	< 5	< 0.5

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples :

[redacted]
Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541
loringlabs@telus.net

TO: RON OWENS
4507 - 52 St.
Ponoka, Alberta
T4J 1J6

File No : 49709
Date : May 3, 2007
Samples : Beads

Certificate of Assay

Sample No.	Gold mg.	Platinum mg,	Palladium mg,	Rhodium mg,
Silverish Bead	0.051	<0.005	<0.005	<0.005
Blackish Bead	0.041	<0.005	<0.005	<0.005

NOTE: Due to the large amount of silver present, normal detection limits could not be attained.

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

[redacted]
Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 276-0541
loringlabs@telus.net

TO: RON OWENS
4507 - 52 St.
Ponoka, Alberta
T4J 1J6

File No : 49709
Date : May 3, 2007
Samples : Beads

Certificate of Assay

Sample No.	Gold mg.	Platinum mg.	Palladium mg.	Rhodium mg.
Silverish Bead	0.051	<0.005	<0.005	<0.005
Blackish Bead	0.041	<0.005	<0.005	<0.005

NOTE: Due to the large amount of silver present, normal detection limits could not be attained.

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

[redacted]
Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

To : MR. RON OWENS
202, 5201 - 52nd Avenue
Ponoka, Alberta
T4J 1H6

File No : 45317
Date : January 29, 2003
Samples : Rock Chip
Project :
P.O.#

Certificate of Assay

Loring Laboratories Ltd.

629 Beaverdam Road, NE Calgary Alberta T2K 4W7
Tel: (403)274-2777 Fax (403)275-0541

Sample No.	Au ppb
"Assay Analysis"	
Rock Chips	< 5

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples :

[redacted]
Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

To : MR. RON OWENS
201, 5201 - 52nd Avenue
Ponoka, Alberta
T4J 1H6

File No : 44127
Date : September 6, 2001
Samples :
Project :
P.O.#

Certificate of Assay

Loring Laboratories Ltd.

629 Beaverdam Road, NE Calgary Alberta T2K 4W7
Tel: (403)274-2777 Fax: (403)275-0541

Sample No.	Au mg/l	Pd mg/l	Pt mg/l	Rh mg/l
"PGM Analysis"				
01-03-01	< 0.01	< 0.01	< 0.01	< 0.01
01-03-02	1.12	< 0.01	< 0.01	< 0.01

NOTE: High iron content of solutions caused interferences at some wavelengths.

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples :

[redacted]
Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541

TO:MINERAL RECOVERY SYSTEMS
201 - 5201 - 52 Ave.
Ponoka, Alberta
T4J 1H6

FILE:43639

DATE:Feb.02, 2001

Attn: Ron Owens

PGM ANALYSIS

Cupel No.	Au ug	Pt ug	Pd ug	Rh ug
003C	<0.15	<0.15	<0.15	<0.15
RO-009D	30.70	<0.15	<0.15	<0.15
219	0.19	<0.15	<0.15	<0.15
210C	<0.15	<0.15	<0.15	<0.15
11F	<0.15	<0.15	<0.15	<0.15
Vial Ron NV (2 Beads)	3.350	<0.15	<0.15	<0.15

Note: Results expressed in Micrograms detected in beads received from Mineral Recovery Systems.

Certified by: [redacted]

Loring Laboratories Ltd.

629 Beaverdam Road N.E.,
Calgary Alberta T2K 4W7
Tel: 274-2777 Fax: 275-0541

TO:MINERAL RECOVERY SYSTEMS
201 - 5201 - 52 Ave.
Ponoka, Alberta
T4J 1H6

FILE:43639

DATE:Feb.02, 2001

Attn: Ron Owens

PGM ANALYSIS

Cupel No.	Au ug	Pt ug	Pd ug	Rh ug
003C	<0.15	<0.15	<0.15	<0.15
RO-009D	30.70	<0.15	<0.15	<0.15
219	0.19	<0.15	<0.15	<0.15
210C	<0.15	<0.15	<0.15	<0.15
11F	<0.15	<0.15	<0.15	<0.15
Vial Ron NV (2 Beads)	3.350	<0.15	<0.15	<0.15

Note: Results expressed in Micrograms detected in beads received from Mineral Recovery Systems.

Certified by: [redacted]

Western
Environmental
Services, Inc.
Watertreatment / Mineral Recovery / Mineral testing

2442 Petersen Dr.
Cheyenne WY 82009
307-421-3711

Ronald Owens
45075 2nd St.
Ponoka, Alberta Canada t-4J1J6

Bench scale testing using a WES proprietary process
Conglomerate ore two kilo per batch

Client	Ronald Owens
Sample	Conglomerate
Test size	two kilo per batch
Test	$FeSO_4$ Manufacturing and Recovery of Noble Metals

The outline and results of the test are:

Starting with two kilo of <60 Mesh ore

1. Digest the Fe
   a. crystallize and recovery of $FeSO_4$ (Copperas)
2. Testing acid ensuring a proper iron barrier is maintained
3. PGM ion shift leach
   a. Copper cementation
4. Aqua regia digest
   a. gold recovery
   b. PGM recovery
5. Silver leach
   a. Ag recovery
   b. Ag refining wash
   c. Ag digest
   d. PGM recovery
   e. Ag metal recovery
6. Concentrating table
   a. High-line recovery

Summery

WES tested the ore on a bench scaled recovery process that was developed by Robert J. Van Risseghem This process recovered metal from Mr. Owens Alberta ore with out the use of any inquart. That recovered concentrates need to be re-refined to be commercially sold. I was able to repeat the process with consistency. I also feel that a competent metals lab can certify the process.

Sincerely,

[redacted]

Robert J. Van Risseghem
Western Environmental Services, Inc

To: Robert VanRisseghem
From: Robert McGrew.
Subject: Material Characterization and Operator information

About the Operator:
Robert A. McGrew BSEE, from University of Colorado .
I have spent thirty-three years running Research Laboratories at the University of Colorado and the Colorado School of Mines. As the Director of the Electron Microscope Laboratories, I have extensive knowledge in the use of both Transmission and Scanning Electron Microscopes employing Wavelength and Energy Dispersive X-Ray analysis.

Material Characterization:
The material is removed from the envelopes and placed on a three centimeter carbon mount that has had double stick carbon tape affixed. Loose residue is removed and the sample is placed in a JEOL-840 Scanning Electron Microscope with Energy Dispersive X-Ray analytical capability. Using 25 KV accelerating voltage the microscope is focused on a small area (20 square micrometers) these characteristic X-Rays are gathered and identified and placed in their individual channels with a 10 ev per channel sensitivity in the Noran detection system. These elements as well as the PGM's are set up in a table of elements. The computer then compares their channel intensities to known element channel intensities resulting in counts per channel. These intensities are put thru a ZAF (Z=atomic number, A=absorption factor, F=florescent) factor resulting in an atomic percent, Weight percent and a 1-Sigma (figure of merit) amount given. Depending on the 1-Sigma value one can give a good approximation of the content of the sampling. A number of sampled areas are looked at and characterized in this manner.
This method is a qualitative analysis and has been used by other Researchers in their efforts to refine their processing techniques in recovery of PGM's. The values have usually been accurate in detection and conservative when the final product is forthcoming

EDX

Robert A. McGrew

[redacted]

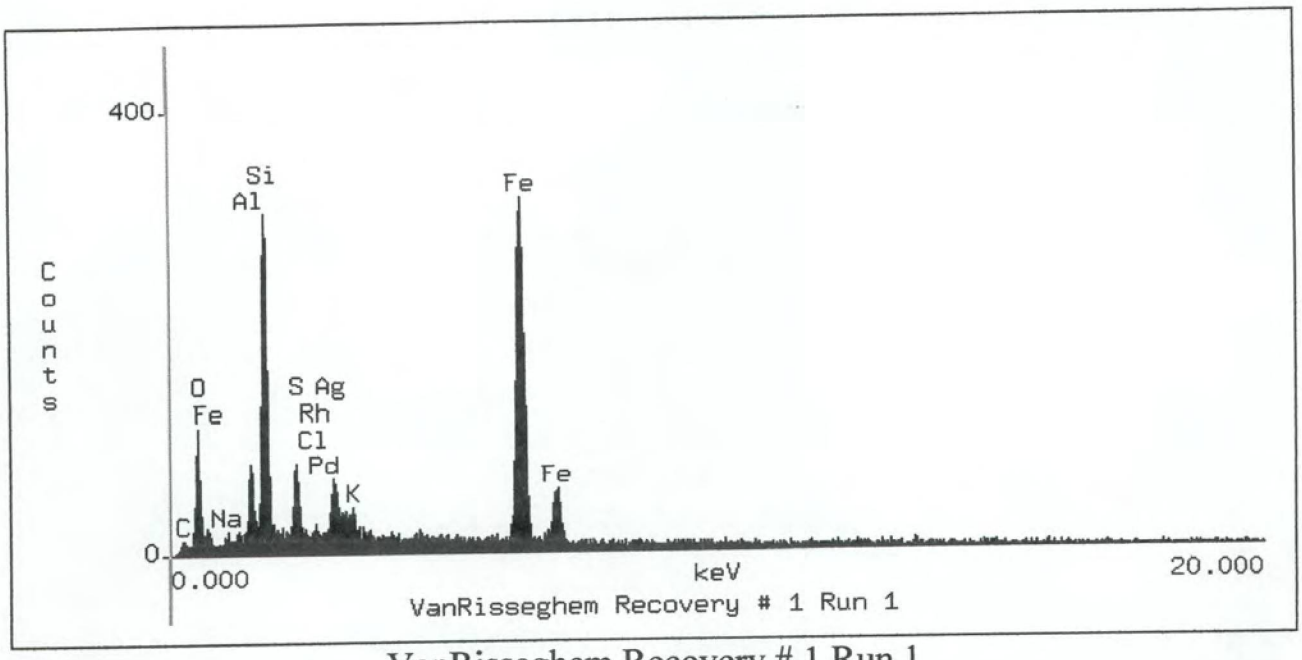
Mineral Sample Material

All the following tests were conducted on material from Site-01, 356 600 Easting and 6182 200 Northing, UTM coordinates.

In August of 2003, a backhoe pit was excavated at this site and 25 pound samples were collected , in one-foot increments. Leach-fusion tests are therefore identified as 1' - 2', 2' - 3', etc.

The sample material is a twelve foot thickness of the Bad Heart Sandstone, in which the upper seven feet contain some oolites. The next one and one-half feet are a cemented conglomerate.

The remaining three and one-half feet degrade into an iron poor sandstone which bottoms in a mudstone.



VanRisseghem Recovery # 1 Run 1

Accelerating Voltage: 25 KeV
Live Time: 30 seconds

Take Off Angle: 37.8797°
Dead Time: 13.168

Wed Oct 11 09:14:00 2006

VanRisseghem Recovery # 1 Run 1

Refit _Na-K' _Na-K" _Mg-K' _Mg-K" _Cl-K' _Cl-K" _K -K' _K -K" _Au-L' _Au-L" _Pt-
Refit _O -K" _Fe-L" _Al-K" _S -K" _Au-L _Os-L _Re-L
Refit _Ru-L
Filter Fit Method
Chi-sqd = 1.58 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	184	+/- 26
O -K	---	---	1701	+/- 41
Fe-L	---	---	382	+/- 47
Na-K	0.00399	+/- 0.00057	154	+/- 22
Mg-K	0.00269	+/- 0.00066	116	+/- 28
Al-K	0.02629	+/- 0.00099	1243	+/- 47
Si-K	0.14093	+/- 0.00291	6545	+/- 135
S -K	0.03483	+/- 0.00126	1493	+/- 54
Cl-K	0.00365	+/- 0.00099	140	+/- 38
K -K	0.01208	+/- 0.00139	410	+/- 47
Fe-K	0.65415	+/- 0.01154	11114	+/- 196
Au-L	0.00000	+/- 0.00001	0	+/- 0
Pt-L	0.00483	+/- 0.00998	30	+/- 63
Ir-L	0.00402	+/- 0.00879	27	+/- 60
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.00000	+/- 0.00001	0	+/- 0
Ag-L	0.08475	+/- 0.00568	1805	+/- 121
Pd-L	0.01367	+/- 0.00557	297	+/- 121
Rh-L	0.01411	+/- 0.00427	324	+/- 98
Ru-L	0.00000	+/- 0.00001	0	+/- 0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0030	5.539	3.14	1.65	+/- 0.24
Mg-K	0.0020	3.626	1.31	0.73	+/- 0.18
Al-K	0.0197	2.626	8.35	5.17	+/- 0.20
Si-K	0.1054	2.046	33.49	21.58	+/- 0.45
S -K	0.0261	1.698	6.02	4.42	+/- 0.16
Cl-K	0.0027	1.555	0.52	0.42	+/- 0.12
K -K	0.0090	1.252	1.26	1.13	+/- 0.13
Fe-K	0.4894	1.076	41.10	52.66	+/- 0.93
Au-L	0.0000	1.366	0.00	0.00	+/- 0.00
Pt-L	0.0036	1.381	0.11	0.50	+/- 1.03
Ir-L	0.0030	1.378	0.09	0.41	+/- 0.91
Os-L	0.0000	1.374	0.00	0.00	+/- 0.00
Re-L	0.0000	1.366	0.00	0.00	+/- 0.00
Ag-L	0.0634	1.322	3.39	8.38	+/- 0.56
Pd-L	0.0102	1.389	0.58	1.42	+/- 0.58
Rh-L	0.0106	1.437	0.64	1.52	+/- 0.46
Ru-L	0.0000	1.435	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Wed Oct 11 09:15:40 2006

VanRisseghem Recovery # 1 Run 2

Refit _Na-K' _Na-K" _Mg-K' _Mg-K" _Cl-K' _Cl-K" _K -K' _K -K" _Au-L' _Au-L" _Pt-
Refit _C -K' _Al-K" _S -K" _Pt-L _Ir-L
Filter Fit Method
Chi-sqd = 1.33 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	221	+/- 23
O -K	---	---	1921	+/- 65
Fe-L	---	---	546	+/- 80
Na-K	0.00505	+/- 0.00057	204	+/- 23
Mg-K	0.00281	+/- 0.00062	126	+/- 28
Al-K	0.02606	+/- 0.00099	1294	+/- 49
Si-K	0.14194	+/- 0.00287	6918	+/- 140
S -K	0.03970	+/- 0.00129	1786	+/- 58
Cl-K	0.00435	+/- 0.00109	175	+/- 44
K -K	0.01168	+/- 0.00140	417	+/- 50
Fe-K	0.62336	+/- 0.01116	11114	+/- 199
Au-L	0.00373	+/- 0.00949	22	+/- 56
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.00191	+/- 0.00861	14	+/- 65
Re-L	0.01253	+/- 0.00764	101	+/- 61
Ag-L	0.09624	+/- 0.00613	2151	+/- 137
Pd-L	0.01864	+/- 0.00684	425	+/- 156
Rh-L	0.01050	+/- 0.00635	253	+/- 153
Ru-L	0.00151	+/- 0.00570	37	+/- 139

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0037	5.394	3.85	2.02	+/- 0.23
Mg-K	0.0021	3.562	1.34	0.74	+/- 0.16
Al-K	0.0193	2.586	8.13	5.00	+/- 0.19
Si-K	0.1053	2.019	33.20	21.25	+/- 0.43
S -K	0.0294	1.695	6.83	4.99	+/- 0.16
Cl-K	0.0032	1.564	0.62	0.50	+/- 0.13
K -K	0.0087	1.261	1.23	1.09	+/- 0.13
Fe-K	0.4623	1.077	39.13	49.80	+/- 0.89
Au-L	0.0028	1.372	0.08	0.38	+/- 0.97
Pt-L	0.0000	1.364	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.362	0.00	0.00	+/- 0.00
Os-L	0.0014	1.376	0.05	0.20	+/- 0.88
Re-L	0.0093	1.365	0.30	1.27	+/- 0.77
Ag-L	0.0714	1.335	3.88	9.53	+/- 0.61
Pd-L	0.0138	1.401	0.80	1.94	+/- 0.71
Rh-L	0.0078	1.447	0.48	1.13	+/- 0.68
Ru-L	0.0011	1.530	0.07	0.17	+/- 0.65
Total			100.00	100.00	

Wed Oct 11 09:17:10 2006

nRisseghem Recovery # 1 Run 3

Refit _Na-K' _Na-K" _Mg-K' _Mg-K" _Cl-K' _Cl-K" _K -K' _K -K" _Au-L' _Au-L" _Pt-
Refit _C -K' _O -K" _Fe-L' _Fe-L" _S -K" _Au-L _Pt-L _Ir-L _Os-L _Re-L _Ru-
Filter Fit Method
Chi-sqd = 2.05 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	156	+/- 20
O -K	---	---	1938	+/- 41
Fe-L	---	---	442	+/- 48
Na-K	0.00452	+/- 0.00055	189	+/- 23
Mg-K	0.00292	+/- 0.00071	136	+/- 33
Al-K	0.02783	+/- 0.00207	1437	+/- 107
Si-K	0.13257	+/- 0.00298	6721	+/- 151
S -K	0.03800	+/- 0.00126	1778	+/- 59
Cl-K	0.00514	+/- 0.00098	216	+/- 41
K -K	0.01531	+/- 0.00140	568	+/- 52
Fe-K	0.64854	+/- 0.01116	12027	+/- 207
Au-L	0.00000	+/- 0.00001	0	+/- 0
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.00000	+/- 0.00001	0	+/- 0
Ag-L	0.10023	+/- 0.00572	2331	+/- 133
Pd-L	0.01585	+/- 0.00552	376	+/- 131
Rh-L	0.00910	+/- 0.00423	228	+/- 106
Ru-L	0.00000	+/- 0.00001	0	+/- 0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0034	5.555	3.55	1.88	+/- 0.23
Mg-K	0.0022	3.646	1.42	0.79	+/- 0.19
Al-K	0.0208	2.641	8.86	5.49	+/- 0.41
Si-K	0.0991	2.063	31.68	20.44	+/- 0.46
S -K	0.0284	1.669	6.44	4.74	+/- 0.16
Cl-K	0.0038	1.536	0.72	0.59	+/- 0.11
K -K	0.0114	1.237	1.58	1.42	+/- 0.13
Fe-K	0.4846	1.078	40.72	52.25	+/- 0.90
Au-L	0.0000	1.366	0.00	0.00	+/- 0.00
Pt-L	0.0000	1.370	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.369	0.00	0.00	+/- 0.00
Os-L	0.0000	1.374	0.00	0.00	+/- 0.00
Re-L	0.0000	1.366	0.00	0.00	+/- 0.00
Ag-L	0.0749	1.310	3.96	9.81	+/- 0.56
Pd-L	0.0118	1.377	0.67	1.63	+/- 0.57
Rh-L	0.0068	1.420	0.41	0.97	+/- 0.45
Ru-L	0.0000	1.418	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Wed Oct 11 09:18:36 2006

[redacted]nRisseghem Recovery # 1 Run 4

Refit _Mg-K' _Mg-K" _Cl-K' _Cl-K" _Au-L' _Au-L" _Pt-L' _Pt-L" _Ir-L' _Ir-L" _Os-
Refit _C -K' _Fe-L" _Na-K" _Pt-L _Ir-L _Re-L _Rh-L _Ru-L
Filter Fit Method
Chi-sqd = 1.33 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	299	+/- 21
O -K	---	---	2073	+/- 54
Fe-L	---	---	451	+/- 47
Na-K	0.00524	+/- 0.00049	212	+/- 20
Mg-K	0.00197	+/- 0.00066	89	+/- 30
Al-K	0.02910	+/- 0.00150	1453	+/- 75
Si-K	0.14824	+/- 0.00249	7273	+/- 122
S -K	0.03910	+/- 0.00188	1770	+/- 85
Cl-K	0.00578	+/- 0.00091	234	+/- 37
K -K	0.01747	+/- 0.00259	626	+/- 93
Fe-K	0.65937	+/- 0.01081	11832	+/- 194
Au-L	0.00286	+/- 0.00926	17	+/- 56
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.01317	+/- 0.00774	97	+/- 57
Re-L	0.00000	+/- 0.00001	0	+/- 0
Ag-L	0.07108	+/- 0.00453	1599	+/- 102
Pd-L	0.00662	+/- 0.00366	152	+/- 84
Rh-L	0.00000	+/- 0.00001	0	+/- 0
Ru-L	0.00000	+/- 0.00001	0	+/- 0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0039	5.447	3.90	2.11	+/- 0.20
Mg-K	0.0015	3.587	0.91	0.52	+/- 0.18
Al-K	0.0216	2.590	8.78	5.59	+/- 0.29
Si-K	0.1099	2.038	33.82	22.39	+/- 0.38
S -K	0.0290	1.726	6.62	5.00	+/- 0.24
Cl-K	0.0043	1.589	0.81	0.68	+/- 0.11
K -K	0.0129	1.252	1.76	1.62	+/- 0.24
Fe-K	0.4887	1.077	39.97	52.63	+/- 0.86
Au-L	0.0021	1.385	0.06	0.29	+/- 0.95
Pt-L	0.0000	1.377	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.375	0.00	0.00	+/- 0.00
Os-L	0.0098	1.388	0.30	1.35	+/- 0.80
Re-L	0.0000	1.372	0.00	0.00	+/- 0.00
Ag-L	0.0527	1.348	2.79	7.10	+/- 0.45
Pd-L	0.0049	1.421	0.28	0.70	+/- 0.39
Rh-L	0.0000	1.384	0.00	0.00	+/- 0.00
Ru-L	0.0000	1.463	0.00	0.00	+/- 0.00
Total			100.00	100.00	

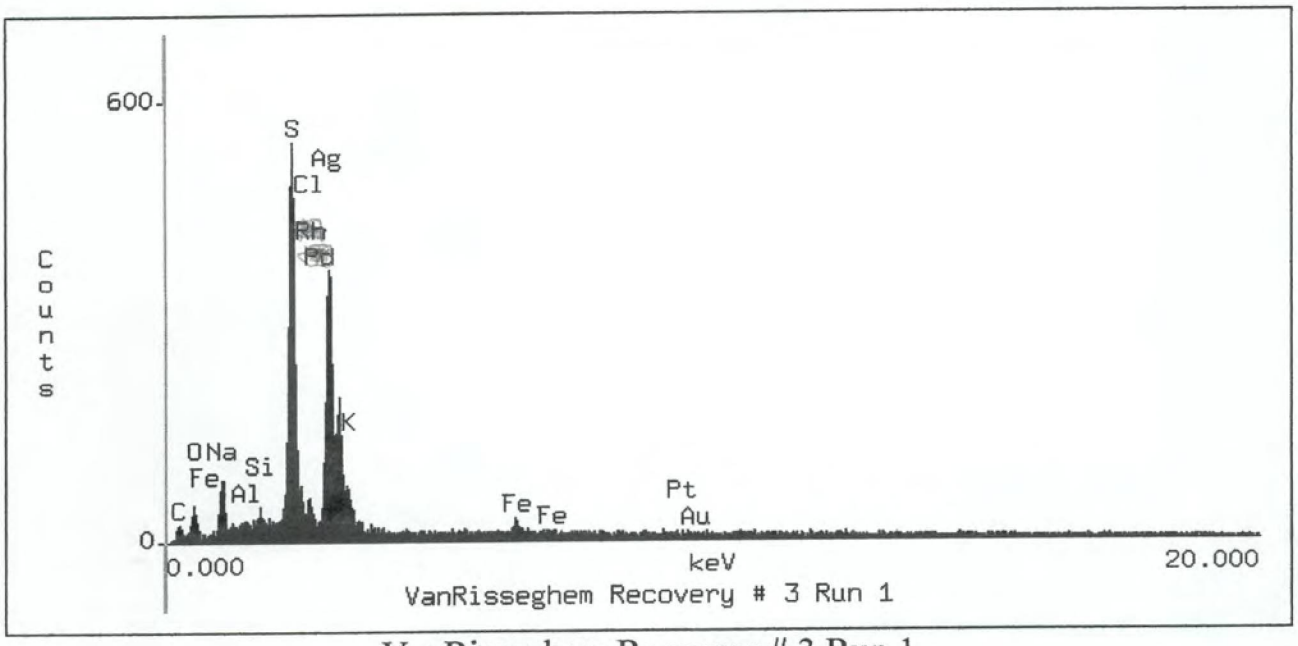
Wed Oct 11 09:20:02 2006

VanRisseghem Recovery # 1 Run 5

Refit _Na-K' _Na-K" _Mg-K' _Mg-K" _Cl-K' _Cl-K" _K -K' _K -K" _Au-L' _Au-L" _Pt-
Refit _C -K' _O -K" _Al-K" _S -K" _Pt-L _Ir-L _Os-L _Re-L _Ru-L
Filter Fit Method
Chi-sqd = 1.45 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	343	+/- 26
O -K	---	---	2450	+/- 49
Fe-L	---	---	652	+/- 86
Na-K	0.00647	+/- 0.00059	287	+/- 26
Mg-K	0.00481	+/- 0.00067	239	+/- 33
Al-K	0.03396	+/- 0.00102	1860	+/- 56
Si-K	0.17796	+/- 0.00301	9571	+/- 162
S -K	0.03738	+/- 0.00125	1855	+/- 62
Cl-K	0.00311	+/- 0.00099	138	+/- 44
K -K	0.01145	+/- 0.00130	451	+/- 51
Fe-K	0.61027	+/- 0.01042	12005	+/- 205
Au-L	0.00061	+/- 0.00937	5	+/- 69
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.00000	+/- 0.00001	0	+/- 0
Ag-L	0.09095	+/- 0.00535	2244	+/- 132
Pd-L	0.01069	+/- 0.00533	270	+/- 134
Rh-L	0.01233	+/- 0.00414	328	+/- 110
Ru-L	0.00000	+/- 0.00001	0	+/- 0

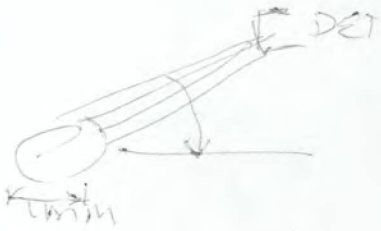
Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0046	5.171	4.29	2.39	+/- 0.22
Mg-K	0.0034	3.437	2.00	1.18	+/- 0.16
Al-K	0.0243	2.523	9.35	6.13	+/- 0.18
Si-K	0.1273	2.013	37.58	25.62	+/- 0.43
S -K	0.0267	1.737	5.97	4.64	+/- 0.16
Cl-K	0.0022	1.589	0.41	0.35	+/- 0.11
K -K	0.0082	1.266	1.09	1.04	+/- 0.12
Fe-K	0.4364	1.088	35.01	47.46	+/- 0.81
Au-L	0.0004	1.390	0.01	0.06	+/- 0.93
Pt-L	0.0000	1.378	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.376	0.00	0.00	+/- 0.00
Os-L	0.0000	1.380	0.00	0.00	+/- 0.00
Re-L	0.0000	1.371	0.00	0.00	+/- 0.00
Ag-L	0.0650	1.345	3.34	8.75	+/- 0.51
Pd-L	0.0076	1.415	0.42	1.08	+/- 0.54
Rh-L	0.0088	1.466	0.52	1.29	+/- 0.43
Ru-L	0.0000	1.461	0.00	0.00	+/- 0.00
Total			100.00	100.00	



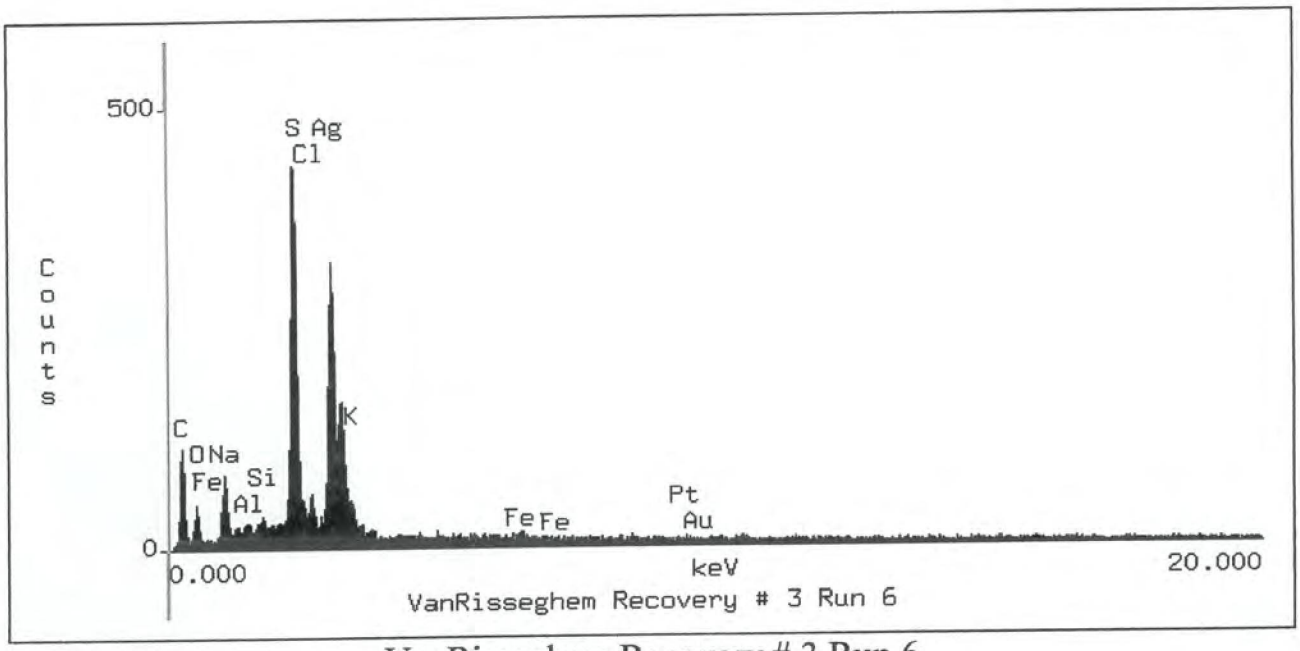
VanRisseghem Recovery # 3 Run 1

Accelerating Voltage: 25 KeV
Live Time: 30 seconds

Take Off Angle: 37.8797°
Dead Time: 19.917



1mm → 100um particle size -
TA is somewhat compromised
Au & Pd showing but NOT ABOVE THE 1-sigma



VanRisseghem Recovery # 3 Run 6

Accelerating Voltage: 25 KeV
Live Time: 30 seconds

Take Off Angle: 37.8797°
Dead Time: 18.465

Wed Oct 11 09:23:07 2006

VanRisseghem Recovery # 3 Run 1

Refit _Fe-L' _Fe-L" _Mg-K' _Mg-K" _Al-K' _Al-K" _Cl-K' _Cl-K" _K -K' _K -K" _Fe-
Refit _C -K' _Fe-L _Ir-L _Os-L _Re-L _Pd-L _Rh-L _Ru-L
Filter Fit Method
Chi-sqd = 1.44 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	345 +/-	24
O -K	---	---	620 +/-	35
Fe-L	---	---	0 +/-	0
Na-K	0.03016 +/-	0.00121	1251 +/-	50
Mg-K	0.00026 +/-	0.00067	12 +/-	31
Al-K	0.00188 +/-	0.00059	97 +/-	30
Si-K	0.00661 +/-	0.00113	333 +/-	57
S -K	0.29613 +/-	0.00386	13722 +/-	179
Cl-K	0.01182 +/-	0.00135	491 +/-	56
K -K	0.00316 +/-	0.00183	116 +/-	67
Fe-K	0.02155 +/-	0.00267	397 +/-	49
Au-L	0.00806 +/-	0.01118	50 +/-	69
Pt-L	0.00357 +/-	0.01057	25 +/-	74
Ir-L	0.00000 +/-	0.00001	0 +/-	0
Os-L	0.00000 +/-	0.00001	0 +/-	0
Re-L	0.00000 +/-	0.00001	0 +/-	0
Ag-L	0.61681 +/-	0.01285	14209 +/-	296
Pd-L	0.00000 +/-	0.00001	0 +/-	0
Rh-L	0.00000 +/-	0.00001	0 +/-	0
Ru-L	0.00000 +/-	0.00001	0 +/-	0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0220	4.004	20.37	8.83	+/- 0.35
Mg-K	0.0002	3.092	0.13	0.06	+/- 0.15
Al-K	0.0014	2.295	0.62	0.31	+/- 0.10
Si-K	0.0048	1.707	1.56	0.82	+/- 0.14
S -K	0.2165	1.231	44.08	26.64	+/- 0.35
Cl-K	0.0086	1.479	1.91	1.28	+/- 0.15
K -K	0.0023	1.214	0.38	0.28	+/- 0.16
Fe-K	0.0158	1.133	1.70	1.79	+/- 0.22
Au-L	0.0059	1.275	0.20	0.75	+/- 1.04
Pt-L	0.0026	1.277	0.09	0.33	+/- 0.99
Ir-L	0.0000	1.264	0.00	0.00	+/- 0.00
Os-L	0.0000	1.267	0.00	0.00	+/- 0.00
Re-L	0.0000	1.257	0.00	0.00	+/- 0.00
Ag-L	0.4509	1.307	28.97	58.91	+/- 1.23
Pd-L	0.0000	1.380	0.00	0.00	+/- 0.00
Rh-L	0.0000	1.414	0.00	0.00	+/- 0.00
Ru-L	0.0000	1.463	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Wed Oct 11 09:29:54 2006

VanRisseghem Recovery # 3 Run 2

Refit _Fe-L' _Fe-L" _Mg-K' _Mg-K" _Al-K' _Al-K" _Si-K' _Si-K" _Cl-K' _Cl-K" _K -
Refit _K -K _Pt-L _Os-L _Re-L _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 0.98 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	1282 +/-	47
O -K	---	---	638 +/-	65
Fe-L	---	---	17 +/-	49
Na-K	0.03138 +/-	0.00170	1271 +/-	69
Mg-K	0.00113 +/-	0.00089	52 +/-	41
Al-K	0.00316 +/-	0.00070	158 +/-	35
Si-K	0.00367 +/-	0.00080	181 +/-	39
S -K	0.29543 +/-	0.00440	13366 +/-	199
Cl-K	0.01539 +/-	0.00161	624 +/-	65
K -K	0.00000 +/-	0.00001	0 +/-	0
Fe-K	0.00563 +/-	0.00273	102 +/-	49
Au-L	0.00438 +/-	0.01162	27 +/-	71
Pt-L	0.00000 +/-	0.00001	0 +/-	0
Ir-L	0.00973 +/-	0.01044	70 +/-	75
Os-L	0.00000 +/-	0.00001	0 +/-	0
Re-L	0.00000 +/-	0.00001	0 +/-	0
Ag-L	0.62396 +/-	0.01480	14036 +/-	333
Pd-L	0.00000 +/-	0.00001	0 +/-	0
Rh-L	0.00614 +/-	0.00482	150 +/-	118
Ru-L	0.00000 +/-	0.00001	0 +/-	0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0228	3.949	20.86	9.01	+/- 0.49
Mg-K	0.0008	3.067	0.55	0.25	+/- 0.20
Al-K	0.0023	2.287	1.04	0.53	+/- 0.12
Si-K	0.0027	1.706	0.86	0.46	+/- 0.10
S -K	0.2148	1.228	43.80	26.38	+/- 0.39
Cl-K	0.0112	1.477	2.48	1.65	+/- 0.17
K -K	0.0000	1.224	0.00	0.00	+/- 0.00
Fe-K	0.0041	1.133	0.44	0.46	+/- 0.23
Au-L	0.0032	1.272	0.11	0.40	+/- 1.07
Pt-L	0.0000	1.264	0.00	0.00	+/- 0.00
Ir-L	0.0071	1.269	0.25	0.90	+/- 0.96
Os-L	0.0000	1.263	0.00	0.00	+/- 0.00
Re-L	0.0000	1.253	0.00	0.00	+/- 0.00
Ag-L	0.4536	1.308	29.28	59.34	+/- 1.41
Pd-L	0.0000	1.381	0.00	0.00	+/- 0.00
Rh-L	0.0045	1.403	0.32	0.63	+/- 0.49
Ru-L	0.0000	1.462	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Wed Oct 11 09:32:43 2006

VanRisseghem Recovery # 3 Run 3

Refit _Fe-L' _Fe-L" _Mg-K' _Mg-K" _Al-K' _Al-K" _Si-K' _Si-K" _Cl-K' _Cl-K" _K -
Refit _C -K' _Fe-L _Au-L _Ir-L _Os-L _Re-L
Filter Fit Method
Chi-sqd = 1.10 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	377	+/- 27
O -K	---	---	551	+/- 41
Fe-L	---	---	0	+/- 0
Na-K	0.03580	+/- 0.00158	1405	+/- 62
Mg-K	0.00190	+/- 0.00082	83	+/- 36
Al-K	0.00289	+/- 0.00066	140	+/- 32
Si-K	0.00536	+/- 0.00078	256	+/- 37
S -K	0.29452	+/- 0.00449	12924	+/- 197
Cl-K	0.01115	+/- 0.00196	439	+/- 77
K -K	0.00233	+/- 0.00207	81	+/- 72
Fe-K	0.01282	+/- 0.00293	224	+/- 51
Au-L	0.00000	+/- 0.00001	0	+/- 0
Pt-L	0.01021	+/- 0.01084	65	+/- 69
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.00000	+/- 0.00001	0	+/- 0
Ag-L	0.61137	+/- 0.02049	13338	+/- 447
Pd-L	0.00022	+/- 0.01496	5	+/- 343
Rh-L	0.00876	+/- 0.01288	206	+/- 303
Ru-L	0.00266	+/- 0.01206	63	+/- 285

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0258	3.933	22.93	10.14	+/- 0.45
Mg-K	0.0014	3.104	0.91	0.42	+/- 0.18
Al-K	0.0021	2.315	0.93	0.48	+/- 0.11
Si-K	0.0039	1.723	1.23	0.67	+/- 0.10
S -K	0.2122	1.233	42.42	26.16	+/- 0.40
Cl-K	0.0080	1.478	1.74	1.19	+/- 0.21
K -K	0.0017	1.224	0.27	0.21	+/- 0.18
Fe-K	0.0092	1.134	0.97	1.05	+/- 0.24
Au-L	0.0000	1.265	0.00	0.00	+/- 0.00
Pt-L	0.0074	1.278	0.25	0.94	+/- 1.00
Ir-L	0.0000	1.264	0.00	0.00	+/- 0.00
Os-L	0.0000	1.266	0.00	0.00	+/- 0.00
Re-L	0.0000	1.256	0.00	0.00	+/- 0.00
Ag-L	0.4404	1.307	27.74	57.56	+/- 1.93
Pd-L	0.0002	1.368	0.01	0.02	+/- 1.47
Rh-L	0.0063	1.406	0.45	0.89	+/- 1.30
Ru-L	0.0019	1.452	0.14	0.28	+/- 1.26
Total			100.00	100.00	

Wed Oct 11 09:35:12 2006

VanRisseghem Recovery # 3 Run 4

Refit _Fe-L' _Fe-L" _Mg-K' _Mg-K" _Al-K' _Al-K" _Si-K' _Si-K" _Cl-K' _Cl-K" _K -
Refit _Fe-L _Na-K" _K -K _Pd-L _Rh-L _Ru-L
Filter Fit Method
Chi-sqd = 1.11 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	627 +/-	35
O -K	---	---	632 +/-	47
Fe-L	---	---	0 +/-	0
Na-K	0.03169 +/-	0.00098	1129 +/-	35
Mg-K	0.00151 +/-	0.00078	60 +/-	31
Al-K	0.00230 +/-	0.00071	102 +/-	31
Si-K	0.00646 +/-	0.00083	279 +/-	36
S -K	0.27792 +/-	0.00444	11070 +/-	177
Cl-K	0.01046 +/-	0.00163	374 +/-	58
K -K	0.00000 +/-	0.00001	0 +/-	0
Fe-K	0.01349 +/-	0.00304	214 +/-	48
Au-L	0.00134 +/-	0.01301	7 +/-	72
Pt-L	0.00052 +/-	0.01333	3 +/-	83
Ir-L	0.00737 +/-	0.01186	47 +/-	75
Os-L	0.02298 +/-	0.01157	149 +/-	75
Re-L	0.01344 +/-	0.01004	95 +/-	71
Ag-L	0.61052 +/-	0.01550	12090 +/-	307
Pd-L	0.00000 +/-	0.00001	0 +/-	0
Rh-L	0.00000 +/-	0.00001	0 +/-	0
Ru-L	0.00000 +/-	0.00001	0 +/-	0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0227	3.931	21.05	8.92	+/- 0.28
Mg-K	0.0011	3.051	0.74	0.33	+/- 0.17
Al-K	0.0016	2.281	0.75	0.38	+/- 0.12
Si-K	0.0046	1.700	1.52	0.79	+/- 0.10
S -K	0.1990	1.272	42.84	25.31	+/- 0.40
Cl-K	0.0075	1.509	1.73	1.13	+/- 0.18
K -K	0.0000	1.230	0.00	0.00	+/- 0.00
Fe-K	0.0097	1.125	1.06	1.09	+/- 0.24
Au-L	0.0010	1.265	0.03	0.12	+/- 1.18
Pt-L	0.0004	1.267	0.01	0.05	+/- 1.21
Ir-L	0.0053	1.263	0.19	0.67	+/- 1.07
Os-L	0.0165	1.265	0.59	2.08	+/- 1.05
Re-L	0.0096	1.255	0.35	1.21	+/- 0.90
Ag-L	0.4371	1.325	29.14	57.94	+/- 1.47
Pd-L	0.0000	1.398	0.00	0.00	+/- 0.00
Rh-L	0.0000	1.436	0.00	0.00	+/- 0.00
Ru-L	0.0000	1.489	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Wed Oct 11 09:38:38 2006

nRisseghem Recovery # 3 Run 5

Refit _Fe-L' _Fe-L" _Mg-K' _Mg-K" _Al-K' _Al-K" _Si-K' _Si-K" _Cl-K' _Cl-K" _K -
Refit _O -K" _Pt-L _Ir-L _Re-L _Pd-L _Rh-L _Ru-L
Filter Fit Method
Chi-sqd = 1.00 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	315 +/-	31
O -K	---	---	734 +/-	33
Fe-L	---	---	50 +/-	48
Na-K	0.03641 +/-	0.00152	1889 +/-	79
Mg-K	0.00035 +/-	0.00076	20 +/-	44
Al-K	0.00306 +/-	0.00058	196 +/-	37
Si-K	0.00288 +/-	0.00067	181 +/-	42
S -K	0.26794 +/-	0.00369	15532 +/-	214
Cl-K	0.00598 +/-	0.00133	311 +/-	69
K -K	0.00196 +/-	0.00187	90 +/-	86
Fe-K	0.00792 +/-	0.00235	182 +/-	54
Au-L	0.00499 +/-	0.01012	38 +/-	78
Pt-L	0.00000 +/-	0.00001	0 +/-	0
Ir-L	0.00000 +/-	0.00001	0 +/-	0
Os-L	0.00806 +/-	0.00890	77 +/-	85
Re-L	0.00000 +/-	0.00001	0 +/-	0
Ag-L	0.66045 +/-	0.01332	19034 +/-	384
Pd-L	0.00000 +/-	0.00001	0 +/-	0
Rh-L	0.00000 +/-	0.00001	0 +/-	0
Ru-L	0.00000 +/-	0.00001	0 +/-	0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0265	3.993	24.76	10.60	+/- 0.44
Mg-K	0.0003	3.163	0.18	0.08	+/- 0.18
Al-K	0.0022	2.344	1.04	0.52	+/- 0.10
Si-K	0.0021	1.741	0.70	0.37	+/- 0.08
S -K	0.1953	1.238	40.49	24.17	+/- 0.33
Cl-K	0.0044	1.449	0.96	0.63	+/- 0.14
K -K	0.0014	1.193	0.23	0.17	+/- 0.16
Fe-K	0.0058	1.130	0.63	0.65	+/- 0.19
Au-L	0.0036	1.267	0.13	0.46	+/- 0.93
Pt-L	0.0000	1.255	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.252	0.00	0.00	+/- 0.00
Os-L	0.0059	1.267	0.21	0.74	+/- 0.82
Re-L	0.0000	1.245	0.00	0.00	+/- 0.00
Ag-L	0.4814	1.280	30.68	61.61	+/- 1.24
Pd-L	0.0000	1.342	0.00	0.00	+/- 0.00
Rh-L	0.0000	1.380	0.00	0.00	+/- 0.00
Ru-L	0.0000	1.423	0.00	0.00	+/- 0.00
Total			100.00	100.00	

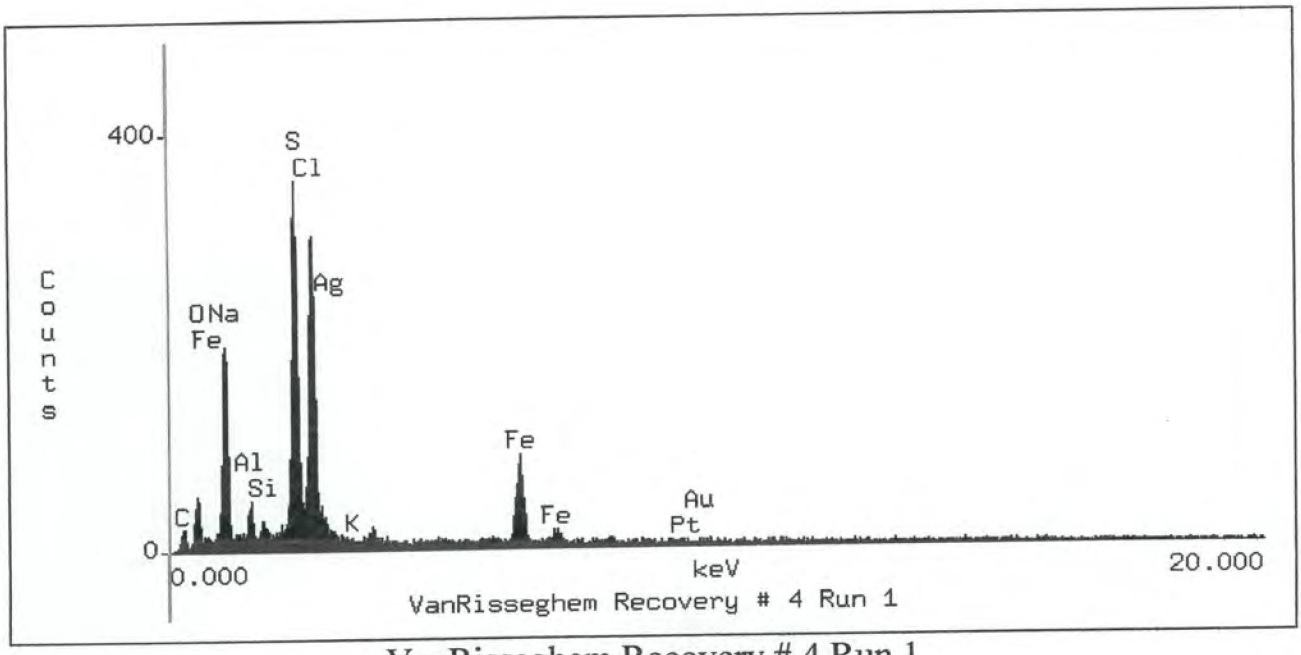
Wed Oct 11 09:41:09 2006

JonRisseghem Recovery # 3 Run 6

Refit _Fe-L' _Fe-L" _Mg-K' _Mg-K" _Al-K' _Al-K" _Si-K' _Si-K" _Cl-K' _Cl-K" _K -
Refit _K -K _Ir-L _Os-L _Pd-L _Rh-L _Ru-L
Filter Fit Method
Chi-sqd = 1.06 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	1896 +/-	54
O -K	---	---	715 +/-	71
Fe-L	---	---	14 +/-	50
Na-K	0.03799 +/-	0.00201	1360 +/-	72
Mg-K	0.00163 +/-	0.00100	66 +/-	40
Al-K	0.00417 +/-	0.00077	185 +/-	34
Si-K	0.00562 +/-	0.00090	244 +/-	39
S -K	0.28402 +/-	0.00465	11368 +/-	186
Cl-K	0.01856 +/-	0.00179	666 +/-	64
K -K	0.00000 +/-	0.00001	0 +/-	0
Fe-K	0.01058 +/-	0.00290	168 +/-	46
Au-L	0.00933 +/-	0.01218	49 +/-	64
Pt-L	0.01223 +/-	0.01223	71 +/-	71
Ir-L	0.00000 +/-	0.00001	0 +/-	0
Os-L	0.00000 +/-	0.00001	0 +/-	0
Re-L	0.01014 +/-	0.00971	73 +/-	70
Ag-L	0.60573 +/-	0.01638	12054 +/-	326
Pd-L	0.00000 +/-	0.00001	0 +/-	0
Rh-L	0.00000 +/-	0.00001	0 +/-	0
Ru-L	0.00000 +/-	0.00001	0 +/-	0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0268	3.881	23.59	10.42	+/- 0.55
Mg-K	0.0012	3.085	0.76	0.35	+/- 0.22
Al-K	0.0029	2.302	1.31	0.68	+/- 0.13
Si-K	0.0040	1.721	1.27	0.68	+/- 0.11
S -K	0.2007	1.265	41.22	25.39	+/- 0.42
Cl-K	0.0131	1.496	2.88	1.96	+/- 0.19
K -K	0.0000	1.233	0.00	0.00	+/- 0.00
Fe-K	0.0075	1.131	0.79	0.85	+/- 0.23
Au-L	0.0066	1.274	0.22	0.84	+/- 1.10
Pt-L	0.0086	1.275	0.29	1.10	+/- 1.10
Ir-L	0.0000	1.259	0.00	0.00	+/- 0.00
Os-L	0.0000	1.262	0.00	0.00	+/- 0.00
Re-L	0.0072	1.262	0.25	0.90	+/- 0.87
Ag-L	0.4281	1.327	27.42	56.82	+/- 1.54
Pd-L	0.0000	1.401	0.00	0.00	+/- 0.00
Rh-L	0.0000	1.429	0.00	0.00	+/- 0.00
Ru-L	0.0000	1.475	0.00	0.00	+/- 0.00
Total			100.00	100.00	



VanRisseghem Recovery # 4 Run 1

Accelerating Voltage: 25 KeV
Live Time: 30 seconds

Take Off Angle: 37.8797°
Dead Time: 13.006

THE Rh(L) IS INFLUENCED BY S(K)& Cl(K) lines.
Au(L) & Pt(L) ARE STARTING TO SHOW.

Wed Oct 11 09:45:54 2006

VanRisseghem Recovery # 4 Run 1

Refit _Fe-L' _Fe-L" _Mg-K' _Mg-K" _Si-K' _Si-K" _Cl-K' _Cl-K" _K -K' _K -K" _Au-
Refit _C -K' _Al-K" _S -K" _Os-L _Re-L _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 1.88 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	301 +/-	24
O -K	---	---	846 +/-	53
Fe-L	---	---	170 +/-	51
Na-K	0.10829 +/-	0.00254	3711 +/-	87
Mg-K	0.00191 +/-	0.00097	73 +/-	37
Al-K	0.01431 +/-	0.00076	606 +/-	32
Si-K	0.00836 +/-	0.00077	347 +/-	32
S -K	0.21556 +/-	0.00287	8256 +/-	110
Cl-K	0.21232 +/-	0.00309	7279 +/-	106
K -K	0.00155 +/-	0.00092	47 +/-	28
Fe-K	0.18112 +/-	0.00764	2752 +/-	116
Au-L	0.00935 +/-	0.01015	47 +/-	51
Pt-L	0.01458 +/-	0.01062	81 +/-	59
Ir-L	0.00383 +/-	0.00900	23 +/-	55
Os-L	0.00000 +/-	0.00001	0 +/-	0
Re-L	0.00000 +/-	0.00001	0 +/-	0
Ag-L	0.04023 +/-	0.00399	767 +/-	76
Pd-L	0.00000 +/-	0.00001	0 +/-	0
Rh-L	0.18858 +/-	0.00945	3872 +/-	194
Ru-L	0.00000 +/-	0.00001	0 +/-	0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0686	3.281	36.51	22.50	+/- 0.53
Mg-K	0.0012	3.246	0.60	0.39	+/- 0.20
Al-K	0.0091	2.377	2.98	2.15	+/- 0.11
Si-K	0.0053	1.801	1.27	0.95	+/- 0.09
S -K	0.1365	1.312	20.84	17.91	+/- 0.24
Cl-K	0.1344	1.499	21.21	20.15	+/- 0.29
K -K	0.0010	1.573	0.15	0.15	+/- 0.09
Fe-K	0.1147	1.129	8.65	12.94	+/- 0.55
Au-L	0.0059	1.364	0.15	0.81	+/- 0.88
Pt-L	0.0092	1.364	0.24	1.26	+/- 0.92
Ir-L	0.0024	1.357	0.06	0.33	+/- 0.77
Os-L	0.0000	1.346	0.00	0.00	+/- 0.00
Re-L	0.0000	1.333	0.00	0.00	+/- 0.00
Ag-L	0.0255	1.518	1.34	3.87	+/- 0.38
Pd-L	0.0000	1.622	0.00	0.00	+/- 0.00
Rh-L	0.1194	1.389	6.01	16.58	+/- 0.83
Ru-L	0.0000	1.461	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Wed Oct 11 09:49:08 2006

VanRisseghem Recovery # 4 Run 2

Refit _Fe-L' _Fe-L" _Mg-K' _Mg-K" _Si-K' _Si-K" _Cl-K' _Cl-K" _K -K' _K -K" _Au-
Refit _C -K' _S -K" _Pt-L _Ir-L _Os-L _Pd-L _Ru-L
Refit _O -K"
Filter Fit Method
Chi-sqd = 2.42 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	197 +/-	23
O -K	---	---	754 +/-	31
Fe-L	---	---	182 +/-	47
Na-K	0.10825 +/-	0.00258	3776 +/-	90
Mg-K	0.00193 +/-	0.00123	76 +/-	49
Al-K	0.01868 +/-	0.00156	805 +/-	67
Si-K	0.00825 +/-	0.00083	350 +/-	35
S -K	0.21079 +/-	0.00285	8220 +/-	111
Cl-K	0.22612 +/-	0.00315	7892 +/-	110
K -K	0.00042 +/-	0.00094	13 +/-	29
Fe-K	0.17846 +/-	0.00757	2760 +/-	117
Au-L	0.01075 +/-	0.00899	55 +/-	46
Pt-L	0.00000 +/-	0.00001	0 +/-	0
Ir-L	0.00000 +/-	0.00001	0 +/-	0
Os-L	0.00000 +/-	0.00001	0 +/-	0
Re-L	0.00607 +/-	0.00766	43 +/-	54
Ag-L	0.03445 +/-	0.00402	669 +/-	78
Pd-L	0.00000 +/-	0.00001	0 +/-	0
Rh-L	0.19583 +/-	0.00957	4095 +/-	200
Ru-L	0.00000 +/-	0.00001	0 +/-	0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0688	3.256	36.00	22.41	+/- 0.53
Mg-K	0.0012	3.226	0.60	0.40	+/- 0.25
Al-K	0.0119	2.363	3.84	2.81	+/- 0.23
Si-K	0.0053	1.810	1.25	0.95	+/- 0.10
S -K	0.1341	1.297	20.02	17.38	+/- 0.23
Cl-K	0.1438	1.483	22.21	21.32	+/- 0.30
K -K	0.0003	1.571	0.04	0.04	+/- 0.09
Fe-K	0.1135	1.131	8.49	12.83	+/- 0.54
Au-L	0.0068	1.368	0.18	0.93	+/- 0.78
Pt-L	0.0000	1.354	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.348	0.00	0.00	+/- 0.00
Os-L	0.0000	1.349	0.00	0.00	+/- 0.00
Re-L	0.0039	1.345	0.10	0.52	+/- 0.66
Ag-L	0.0219	1.519	1.14	3.33	+/- 0.39
Pd-L	0.0000	1.622	0.00	0.00	+/- 0.00
Rh-L	0.1245	1.370	6.12	17.07	+/- 0.83
Ru-L	0.0000	1.441	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Wed Oct 11 09:51:48 2006

VanRisseghem Recovery # 4 Run 3

Refit _Fe-L' _Fe-L" _Mg-K' _Mg-K" _Si-K' _Si-K" _Cl-K' _Cl-K" _K -K' _K -K" _Au-
Refit _C -K' _O -K" _Na-K" _S -K" _K -K _Ir-L _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 2.80 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	637 +/-	32
O -K	---	---	832 +/-	32
Fe-L	---	---	117 +/-	46
Na-K	0.11473 +/-	0.00164	4193 +/-	60
Mg-K	0.00108 +/-	0.00106	45 +/-	44
Al-K	0.01413 +/-	0.00149	637 +/-	67
Si-K	0.00641 +/-	0.00081	285 +/-	36
S -K	0.20230 +/-	0.00274	8263 +/-	112
Cl-K	0.24047 +/-	0.00315	8792 +/-	115
K -K	0.00000 +/-	0.00001	0 +/-	0
Fe-K	0.14470 +/-	0.00698	2344 +/-	113
Au-L	0.00317 +/-	0.00970	17 +/-	53
Pt-L	0.00270 +/-	0.00928	16 +/-	56
Ir-L	0.00000 +/-	0.00001	0 +/-	0
Os-L	0.01188 +/-	0.00812	80 +/-	55
Re-L	0.02552 +/-	0.00786	186 +/-	57
Ag-L	0.03836 +/-	0.00414	779 +/-	84
Pd-L	0.00000 +/-	0.00001	0 +/-	0
Rh-L	0.19454 +/-	0.00964	4261 +/-	211
Ru-L	0.00000 +/-	0.00001	0 +/-	0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0726	3.137	37.13	22.78	+/- 0.33
Mg-K	0.0007	3.163	0.33	0.22	+/- 0.21
Al-K	0.0089	2.319	2.88	2.07	+/- 0.22
Si-K	0.0041	1.764	0.96	0.72	+/- 0.09
S -K	0.1281	1.307	19.57	16.74	+/- 0.23
Cl-K	0.1522	1.491	23.98	22.69	+/- 0.30
K -K	0.0000	1.628	0.00	0.00	+/- 0.00
Fe-K	0.0916	1.128	6.93	10.33	+/- 0.50
Au-L	0.0020	1.358	0.05	0.27	+/- 0.83
Pt-L	0.0017	1.357	0.04	0.23	+/- 0.80
Ir-L	0.0000	1.337	0.00	0.00	+/- 0.00
Os-L	0.0075	1.349	0.20	1.02	+/- 0.69
Re-L	0.0162	1.335	0.43	2.16	+/- 0.66
Ag-L	0.0243	1.544	1.30	3.75	+/- 0.40
Pd-L	0.0000	1.654	0.00	0.00	+/- 0.00
Rh-L	0.1232	1.382	6.20	17.02	+/- 0.84
Ru-L	0.0000	1.455	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Wed Oct 11 09:55:56 2006

[redacted]nRisseghem Recovery # 4 Run 4

Refit _Fe-L' _Fe-L" _Mg-K' _Mg-K" _Cl-K' _Cl-K" _K -K' _K -K" _Au-L' _Au-L" _Pt-
Refit _Pt-L _Ir-L _Os-L _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 2.29 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	347	+/- 23
O -K	---	---	628	+/- 39
Fe-L	---	---	87	+/- 40
Na-K	0.11583	+/- 0.00236	3731	+/- 76
Mg-K	0.00003	+/- 0.00089	1	+/- 39
Al-K	0.01190	+/- 0.00121	474	+/- 48
Si-K	0.01222	+/- 0.00133	477	+/- 52
S -K	0.16165	+/- 0.00364	5821	+/- 131
Cl-K	0.24239	+/- 0.00313	7813	+/- 101
K -K	0.00133	+/- 0.00081	38	+/- 23
Fe-K	0.13739	+/- 0.00721	1962	+/- 103
Au-L	0.00698	+/- 0.00952	34	+/- 46
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.01408	+/- 0.00798	91	+/- 51
[redacted]Ag-L	0.04184	+/- 0.00357	749	+/- 64
[redacted]Pd-L	0.00000	+/- 0.00001	0	+/- 0
[redacted]Rh-L	0.24124	+/- 0.00938	4658	+/- 181
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cu-K	0.01311	+/- 0.00348	128	+/- 34
Cu-L	---	---	87	+/- 48

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0741	3.242	39.46	24.01	+/- 0.49
Mg-K	0.0000	3.350	0.01	0.01	+/- 0.19
Al-K	0.0076	2.398	2.56	1.82	+/- 0.19
Si-K	0.0078	1.806	1.90	1.41	+/- 0.15
S -K	0.1033	1.299	15.83	13.43	+/- 0.30
Cl-K	0.1550	1.429	23.60	22.14	+/- 0.29
K -K	0.0009	1.588	0.13	0.14	+/- 0.08
Fe-K	0.0878	1.126	6.69	9.89	+/- 0.52
Au-L	0.0045	1.355	0.12	0.60	+/- 0.82
Pt-L	0.0000	1.337	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.332	0.00	0.00	+/- 0.00
Os-L	0.0000	1.331	0.00	0.00	+/- 0.00
Re-L	0.0090	1.331	0.24	1.20	+/- 0.68
Ag-L	0.0267	1.487	1.39	3.98	+/- 0.34
Pd-L	0.0000	1.582	0.00	0.00	+/- 0.00
Rh-L	0.1542	1.325	7.50	20.43	+/- 0.79
Ru-L	0.0000	1.373	0.00	0.00	+/- 0.00
Cu-K	0.0084	1.131	0.56	0.95	+/- 0.25
[redacted]Total			100.00	100.00	

Wed Oct 11 09:59:37 2006

[redacted]Risseghem Recovery # 4 Run 5

Refit _Fe-L' _Fe-L" _Mg-K' _Mg-K" _Cl-K' _Cl-K" _K -K' _K -K" _Au-L' _Au-L" _Pt-
Refit _C -K' _O -K" _Al-K" _S -K" _K -K _Fe-K" _Os-L _Pd-L _Ru-L
Refit _Si-K"
Filter Fit Method
Chi-sqd = 2.15 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	279 +/-	23
O -K	---	---	505 +/-	26
Fe-L	---	---	28 +/-	39
Na-K	0.11595 +/-	0.00316	2787 +/-	76
Mg-K	0.00149 +/-	0.00123	41 +/-	33
Al-K	0.01464 +/-	0.00094	435 +/-	28
Si-K	0.01116 +/-	0.00100	326 +/-	29
S -K	0.19977 +/-	0.00331	5369 +/-	89
Cl-K	0.23265 +/-	0.00378	5596 +/-	91
K -K	0.00000 +/-	0.00001	0 +/-	0
Fe-K	0.16478 +/-	0.00601	1757 +/-	64
Au-L	0.00397 +/-	0.01219	15 +/-	46
Pt-L	0.01103 +/-	0.01232	44 +/-	49
Ir-L	0.01306 +/-	0.01069	56 +/-	45
Os-L	0.00000 +/-	0.00001	0 +/-	0
Re-L	0.00755 +/-	0.00944	36 +/-	45
Ag-L	0.03204 +/-	0.00464	428 +/-	62
Pd-L	0.00000 +/-	0.00001	0 +/-	0
Rh-L	0.18230 +/-	0.01152	2626 +/-	166
Ru-L	0.00000 +/-	0.00001	0 +/-	0
Cu-K	0.00961 +/-	0.00412	70 +/-	30
Cu-L	---	---	21 +/-	48

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0728	3.202	37.46	23.33	+/- 0.64
Mg-K	0.0009	3.243	0.46	0.30	+/- 0.25
Al-K	0.0092	2.372	2.98	2.18	+/- 0.14
Si-K	0.0070	1.800	1.66	1.26	+/- 0.11
S -K	0.1255	1.325	19.16	16.64	+/- 0.28
Cl-K	0.1462	1.499	22.81	21.91	+/- 0.36
K -K	0.0000	1.610	0.00	0.00	+/- 0.00
Fe-K	0.1035	1.127	7.71	11.67	+/- 0.43
Au-L	0.0025	1.365	0.06	0.34	+/- 1.05
Pt-L	0.0069	1.365	0.18	0.95	+/- 1.06
Ir-L	0.0082	1.357	0.21	1.11	+/- 0.91
Os-L	0.0000	1.344	0.00	0.00	+/- 0.00
Re-L	0.0047	1.341	0.13	0.64	+/- 0.79
Ag-L	0.0201	1.539	1.06	3.10	+/- 0.45
Pd-L	0.0000	1.645	0.00	0.00	+/- 0.00
Rh-L	0.1145	1.388	5.70	15.90	+/- 1.01
Ru-L	0.0000	1.459	0.00	0.00	+/- 0.00
Cu-K	0.0060	1.135	0.40	0.68	+/- 0.29
[redacted]Total			100.00	100.00	

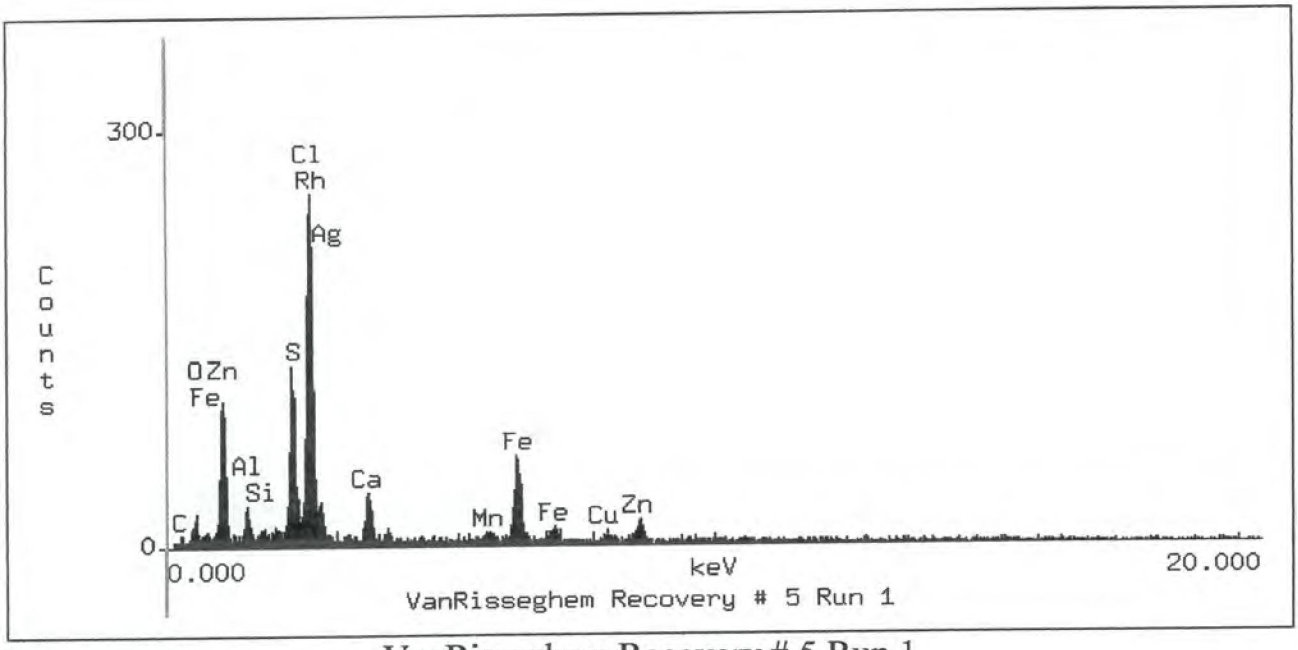
Wed Oct 11 10:01:11 2006

VanRisseghem Recovery # 4 Run 6

Refit _Fe-L' _Fe-L" _Mg-K' _Mg-K" _Si-K' _Si-K" _Cl-K' _Cl-K" _K -K' _K -K" _Au-
Refit _K -K _Pt-L _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 1.81 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	951	+/- 31
O -K	---	---	391	+/- 33
Fe-L	---	---	56	+/- 32
Na-K	0.11400	+/- 0.00317	2088	+/- 58
Mg-K	0.00108	+/- 0.00127	22	+/- 26
Al-K	0.01576	+/- 0.00159	357	+/- 36
Si-K	0.00802	+/- 0.00104	178	+/- 23
S -K	0.17497	+/- 0.00498	3582	+/- 102
Cl-K	0.22290	+/- 0.00399	4083	+/- 73
K -K	0.00000	+/- 0.00001	0	+/- 0
Fe-K	0.14821	+/- 0.00961	1203	+/- 78
Au-L	0.01563	+/- 0.01191	43	+/- 32
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00655	+/- 0.01091	22	+/- 36
Os-L	0.02852	+/- 0.01201	95	+/- 40
Re-L	0.01817	+/- 0.01046	66	+/- 38
Ag-L	0.03734	+/- 0.00501	381	+/- 51
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.20488	+/- 0.01221	2249	+/- 134
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cu-K	0.00396	+/- 0.00414	22	+/- 24
Cu-L	---	---	44	+/- 38

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0715	3.185	38.06	22.76	+/- 0.63
Mg-K	0.0007	3.195	0.34	0.22	+/- 0.26
Al-K	0.0099	2.343	3.30	2.32	+/- 0.23
Si-K	0.0050	1.786	1.23	0.90	+/- 0.12
S -K	0.1097	1.358	17.85	14.89	+/- 0.42
Cl-K	0.1397	1.504	22.78	21.02	+/- 0.38
K -K	0.0000	1.627	0.00	0.00	+/- 0.00
Fe-K	0.0929	1.120	7.16	10.40	+/- 0.67
Au-L	0.0098	1.347	0.26	1.32	+/- 1.01
Pt-L	0.0000	1.329	0.00	0.00	+/- 0.00
Ir-L	0.0041	1.340	0.11	0.55	+/- 0.92
Os-L	0.0179	1.338	0.48	2.39	+/- 1.01
Re-L	0.0114	1.325	0.31	1.51	+/- 0.87
Ag-L	0.0234	1.533	1.28	3.59	+/- 0.48
Pd-L	0.0000	1.638	0.00	0.00	+/- 0.00
Rh-L	0.1285	1.390	6.67	17.85	+/- 1.06
Ru-L	0.0000	1.464	0.00	0.00	+/- 0.00
Cu-K	0.0025	1.124	0.17	0.28	+/- 0.29
Total			100.00	100.00	



VanRisseghem Recovery # 5 Run 1

Accelerating Voltage: 25 KeV
Live Time: 30 seconds

Take Off Angle: 37.8797°
Dead Time: 7.947

Wed Oct 11 10:14:25 2006

nnRisseghem Recovery # 5 Run 1

Refit _C -K' _C -K" _Fe-L' _Fe-L" _Si-K' _Si-K" _Cl-K' _Cl-K" _Au-L' _Au-L" _Pt-
Refit _O -K" _Au-L _Pt-L _Ir-L _Os-L _Pd-L _Ru-L _Cu-L
Refit _S -K"
Filter Fit Method
Chi-sqd = 6.80 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	70	+/- 11
O -K	---	---	268	+/- 21
Fe-L	---	---	21	+/- 34
Al-K	0.01551	+/- 0.00149	428	+/- 41
Si-K	0.00391	+/- 0.00085	107	+/- 23
S -K	0.10656	+/- 0.00260	2664	+/- 65
Cl-K	0.26995	+/- 0.00411	6041	+/- 92
Fe-K	0.16048	+/- 0.00928	1592	+/- 92
Au-L	0.00000	+/- 0.00001	0	+/- 0
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.05702	+/- 0.02479	253	+/- 110
Ag-L	0.02390	+/- 0.00459	298	+/- 57
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.22191	+/- 0.01261	2974	+/- 169
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cu-K	0.02094	+/- 0.00487	143	+/- 33
Cu-L	---	---	0	+/- 0
Mn-K	0.01833	+/- 0.00307	191	+/- 32
Zn-K	0.05194	+/- 0.01277	306	+/- 75
Zn-L	---	---	1725	+/- 47
Ca-K	0.04955	+/- 0.00341	900	+/- 62

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0121	2.147	4.73	2.59	+/- 0.25
Si-K	0.0030	1.664	0.89	0.51	+/- 0.11
S -K	0.0829	1.266	16.11	10.50	+/- 0.26
Cl-K	0.2100	1.367	39.84	28.69	+/- 0.44
Fe-K	0.1248	1.099	12.09	13.71	+/- 0.79
Au-L	0.0000	1.321	0.00	0.00	+/- 0.00
Pt-L	0.0000	1.314	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.310	0.00	0.00	+/- 0.00
Os-L	0.0000	1.308	0.00	0.00	+/- 0.00
Re-L	0.0444	1.298	1.52	5.76	+/- 2.50
Ag-L	0.0186	1.503	1.27	2.79	+/- 0.54
Pd-L	0.0000	1.572	0.00	0.00	+/- 0.00
Rh-L	0.1726	1.276	10.53	22.02	+/- 1.25
Ru-L	0.0000	1.332	0.00	0.00	+/- 0.00
Cu-K	0.0163	1.110	1.40	1.81	+/- 0.42
Mn-K	0.0143	1.160	1.48	1.65	+/- 0.28
Zn-K	0.0404	1.092	3.32	4.41	+/- 1.09
Ca-K	0.0385	1.439	6.81	5.55	+/- 0.38
Total			100.00	100.00	

Wed Oct 11 10:12:04 2006

Risseghem Recovery # 5 Run 2

Refit _O -K' _O -K" _Fe-L' _Fe-L" _Si-K' _Si-K" _Cl-K' _Cl-K" _Au-L' _Au-L" _Pt-
Refit _C -K' _Pt-L _Ir-L _Os-L _Pd-L _Ru-L _Cu-L
Filter Fit Method
Chi-sqd = 1.59 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	197 +/-	19
O -K	---	---	216 +/-	19
Fe-L	---	---	18 +/-	28
Al-K	0.01421 +/-	0.00157	334 +/-	37
Si-K	0.00234 +/-	0.00091	55 +/-	21
S -K	0.10233 +/-	0.00465	2180 +/-	99
Cl-K	0.24362 +/-	0.00430	4646 +/-	82
Fe-K	0.16938 +/-	0.01030	1432 +/-	87
Au-L	0.01180 +/-	0.01359	33 +/-	38
Pt-L	0.00000 +/-	0.00001	0 +/-	0
Ir-L	0.00000 +/-	0.00001	0 +/-	0
Os-L	0.00000 +/-	0.00001	0 +/-	0
Re-L	0.06956 +/-	0.02592	263 +/-	98
Ag-L	0.02502 +/-	0.00500	265 +/-	53
Pd-L	0.00000 +/-	0.00001	0 +/-	0
Rh-L	0.22127 +/-	0.01331	2528 +/-	152
Ru-L	0.00000 +/-	0.00001	0 +/-	0
Cu-K	0.02423 +/-	0.00554	140 +/-	32
Cu-L	---	---	0 +/-	0
Mn-K	0.02488 +/-	0.00349	222 +/-	31
Zn-K	0.04976 +/-	0.01379	249 +/-	69
Zn-L	---	---	1648 +/-	62
Ca-K	0.04160 +/-	0.00362	645 +/-	56

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0110	2.173	4.52	2.39	+/- 0.26
Si-K	0.0018	1.675	0.55	0.30	+/- 0.12
S -K	0.0791	1.309	16.49	10.36	+/- 0.47
Cl-K	0.1884	1.396	37.88	26.30	+/- 0.46
Fe-K	0.1310	1.089	13.04	14.26	+/- 0.87
Au-L	0.0091	1.310	0.31	1.20	+/- 1.38
Pt-L	0.0000	1.304	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.300	0.00	0.00	+/- 0.00
Os-L	0.0000	1.298	0.00	0.00	+/- 0.00
Re-L	0.0538	1.288	1.90	6.93	+/- 2.58
Ag-L	0.0193	1.502	1.38	2.90	+/- 0.58
Pd-L	0.0000	1.567	0.00	0.00	+/- 0.00
Rh-L	0.1711	1.304	11.07	22.30	+/- 1.34
Ru-L	0.0000	1.363	0.00	0.00	+/- 0.00
Cu-K	0.0187	1.101	1.66	2.06	+/- 0.47
Mn-K	0.0192	1.150	2.06	2.21	+/- 0.31
Zn-K	0.0385	1.082	3.25	4.16	+/- 1.15
Ca-K	0.0322	1.439	5.90	4.63	+/- 0.40
Total			100.00	100.00	

Wed Oct 11 10:16:08 2006

nRisseghem Recovery # 5 Run 3

Refit _C -K' _C -K" _Fe-L' _Fe-L" _Si-K' _Si-K" _Cl-K' _Cl-K" _Au-L' _Au-L" _Pt-
Refit _O -K" _Al-K" _S -K" _Au-L _Pt-L _Os-L _Pd-L _Ru-L _Cu-L
Filter Fit Method
Chi-sqd = 1.70 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	58	+/- 9
O -K	---	---	259	+/- 18
Fe-L	---	---	88	+/- 32
Al-K	0.01215	+/- 0.00084	305	+/- 21
Si-K	0.00468	+/- 0.00085	115	+/- 21
S -K	0.09927	+/- 0.00265	2250	+/- 60
Cl-K	0.25669	+/- 0.00419	5207	+/- 85
Fe-K	0.17489	+/- 0.00979	1573	+/- 88
Au-L	0.00000	+/- 0.00001	0	+/- 0
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00929	+/- 0.01098	34	+/- 40
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.06687	+/- 0.02536	269	+/- 102
Ag-L	0.02050	+/- 0.00470	231	+/- 53
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.22748	+/- 0.01292	2764	+/- 157
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cu-K	0.02668	+/- 0.00504	165	+/- 31
Cu-L	---	---	0	+/- 0
Mn-K	0.01323	+/- 0.00317	125	+/- 30
Zn-K	0.03306	+/- 0.01315	176	+/- 70
Zn-L	---	---	1711	+/- 66
Ca-K	0.05520	+/- 0.00370	910	+/- 61

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0094	2.132	3.76	2.01	+/- 0.14
Si-K	0.0036	1.641	1.07	0.60	+/- 0.11
S -K	0.0770	1.287	15.58	9.91	+/- 0.26
Cl-K	0.1991	1.379	39.05	27.45	+/- 0.45
Fe-K	0.1356	1.096	13.42	14.86	+/- 0.83
Au-L	0.0000	1.313	0.00	0.00	+/- 0.00
Pt-L	0.0000	1.309	0.00	0.00	+/- 0.00
Ir-L	0.0072	1.307	0.25	0.94	+/- 1.11
Os-L	0.0000	1.303	0.00	0.00	+/- 0.00
Re-L	0.0519	1.293	1.82	6.71	+/- 2.54
Ag-L	0.0159	1.499	1.11	2.38	+/- 0.55
Pd-L	0.0000	1.564	0.00	0.00	+/- 0.00
Rh-L	0.1764	1.288	11.13	22.72	+/- 1.29
Ru-L	0.0000	1.345	0.00	0.00	+/- 0.00
Cu-K	0.0207	1.105	1.82	2.29	+/- 0.43
Mn-K	0.0103	1.157	1.09	1.19	+/- 0.28
Zn-K	0.0256	1.088	2.15	2.79	+/- 1.11
Ca-K	0.0428	1.439	7.75	6.16	+/- 0.41
Total			100.00	100.00	

Wed Oct 11 10:17:23 2006

VanRisseghem Recovery # 5 Run 4

Refit _C -K' _C -K" _Fe-L' _Fe-L" _Si-K' _Si-K" _Cl-K' _Cl-K" _Au-L' _Au-L" _Pt-
Refit _O -K" _S -K" _Au-L _Pt-L _Os-L _Pd-L _Ru-L _Cu-L _Ca-K"
Filter Fit Method
Chi-sqd = 5.56 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	62	+/- 10
O -K	---	---	314	+/- 21
Fe-L	---	---	8	+/- 34
Al-K	0.01945	+/- 0.00167	511	+/- 44
Si-K	0.00670	+/- 0.00097	174	+/- 25
S -K	0.11361	+/- 0.00281	2705	+/- 67
Cl-K	0.23450	+/- 0.00394	4997	+/- 84
Fe-K	0.21086	+/- 0.01017	1991	+/- 96
Au-L	0.00000	+/- 0.00001	0	+/- 0
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.01260	+/- 0.01072	47	+/- 40
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.05064	+/- 0.02579	215	+/- 109
Ag-L	0.02847	+/- 0.00465	337	+/- 55
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.19218	+/- 0.01214	2453	+/- 155
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cu-K	0.02571	+/- 0.00527	166	+/- 34
Cu-L	---	---	0	+/- 0
Mn-K	0.02398	+/- 0.00322	239	+/- 32
Zn-K	0.05257	+/- 0.01341	294	+/- 75
Zn-L	---	---	1505	+/- 45
Ca-K	0.02873	+/- 0.00179	497	+/- 31

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0150	2.218	6.08	3.32	+/- 0.29
Si-K	0.0052	1.727	1.57	0.89	+/- 0.13
S -K	0.0875	1.315	17.73	11.51	+/- 0.28
Cl-K	0.1806	1.416	35.63	25.57	+/- 0.43
Fe-K	0.1624	1.088	15.63	17.67	+/- 0.85
Au-L	0.0000	1.322	0.00	0.00	+/- 0.00
Pt-L	0.0000	1.316	0.00	0.00	+/- 0.00
Ir-L	0.0097	1.313	0.33	1.27	+/- 1.08
Os-L	0.0000	1.310	0.00	0.00	+/- 0.00
Re-L	0.0390	1.300	1.34	5.07	+/- 2.58
Ag-L	0.0219	1.505	1.51	3.30	+/- 0.54
Pd-L	0.0000	1.564	0.00	0.00	+/- 0.00
Rh-L	0.1480	1.318	9.36	19.51	+/- 1.23
Ru-L	0.0000	1.380	0.00	0.00	+/- 0.00
Cu-K	0.0198	1.110	1.71	2.20	+/- 0.45
Mn-K	0.0185	1.147	1.90	2.12	+/- 0.28
Zn-K	0.0405	1.094	3.34	4.43	+/- 1.13
Ca-K	0.0221	1.418	3.87	3.14	+/- 0.20
Total			100.00	100.00	

Wed Oct 11 10:18:48 2006

VanRisseghem Recovery # 5 Run 5

Refit _C -K' _C -K" _Fe-L' _Fe-L" _Si-K' _Si-K" _Cl-K' _Cl-K" _Au-L' _Au-L" _Pt-
Refit _O -K" _Pt-L _Ir-L _Os-L _Pd-L _Ru-L _Cu-L
Filter Fit Method
Chi-sqd = 1.71 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	34	+/- 10
O -K	---	---	297	+/- 21
Fe-L	---	---	97	+/- 35
Al-K	0.01588	+/- 0.00150	434	+/- 41
Si-K	0.00623	+/- 0.00090	168	+/- 24
S -K	0.09689	+/- 0.00421	2395	+/- 104
Cl-K	0.26816	+/- 0.00412	5931	+/- 91
Fe-K	0.20778	+/- 0.01000	2036	+/- 98
Au-L	0.01141	+/- 0.01203	37	+/- 39
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.03329	+/- 0.02394	146	+/- 105
Ag-L	0.02165	+/- 0.00456	266	+/- 56
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.21962	+/- 0.01268	2909	+/- 168
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cu-K	0.02418	+/- 0.00507	163	+/- 34
Cu-L	---	---	0	+/- 0
Mn-K	0.01252	+/- 0.00301	130	+/- 31
Zn-K	0.04962	+/- 0.01223	288	+/- 71
Zn-L	---	---	2008	+/- 70
Ca-K	0.03275	+/- 0.00312	589	+/- 56

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0125	2.216	5.04	2.77	+/- 0.26
Si-K	0.0049	1.711	1.47	0.84	+/- 0.12
S -K	0.0762	1.277	14.92	9.73	+/- 0.42
Cl-K	0.2110	1.356	39.67	28.62	+/- 0.44
Fe-K	0.1635	1.094	15.74	17.89	+/- 0.86
Au-L	0.0090	1.326	0.30	1.19	+/- 1.25
Pt-L	0.0000	1.318	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.314	0.00	0.00	+/- 0.00
Os-L	0.0000	1.312	0.00	0.00	+/- 0.00
Re-L	0.0262	1.303	0.90	3.41	+/- 2.45
Ag-L	0.0170	1.492	1.16	2.54	+/- 0.54
Pd-L	0.0000	1.557	0.00	0.00	+/- 0.00
Rh-L	0.1728	1.262	10.42	21.81	+/- 1.26
Ru-L	0.0000	1.317	0.00	0.00	+/- 0.00
Cu-K	0.0190	1.113	1.64	2.12	+/- 0.44
Mn-K	0.0099	1.153	1.02	1.14	+/- 0.27
Zn-K	0.0390	1.093	3.21	4.27	+/- 1.05
Ca-K	0.0258	1.428	4.51	3.68	+/- 0.35
Total			100.00	100.00	

Wed Oct 11 10:20:02 2006

nRisseghem Recovery # 5 Run 6

Refit _C -K' _C -K" _Fe-L' _Fe-L" _Si-K' _Si-K" _Cl-K' _Cl-K" _Au-L' _Au-L" _Pt-
Refit _Pt-L _Ir-L _Os-L _Pd-L _Ru-L _Cu-L
Refit _Fe-L
Filter Fit Method
Chi-sqd = 1.86 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	22	+/- 7
O -K	---	---	220	+/- 21
Fe-L	---	---	0	+/- 0
Al-K	0.01337	+/- 0.00128	325	+/- 31
Si-K	0.00302	+/- 0.00080	73	+/- 19
S -K	0.11349	+/- 0.00404	2500	+/- 89
Cl-K	0.23149	+/- 0.00386	4562	+/- 76
Fe-K	0.16857	+/- 0.00928	1472	+/- 81
Au-L	0.01246	+/- 0.01246	36	+/- 36
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.11924	+/- 0.02303	466	+/- 90
Ag-L	0.02247	+/- 0.00411	247	+/- 45
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.22305	+/- 0.01169	2633	+/- 138
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cu-K	0.02043	+/- 0.00502	123	+/- 30
Cu-L	---	---	0	+/- 0
Mn-K	0.01601	+/- 0.00294	148	+/- 27
Zn-K	0.01701	+/- 0.01218	88	+/- 63
Zn-L	---	---	1706	+/- 54
Ca-K	0.03938	+/- 0.00306	630	+/- 49

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0101	2.049	4.02	2.07	+/- 0.20
Si-K	0.0023	1.591	0.68	0.36	+/- 0.10
S -K	0.0855	1.343	18.82	11.49	+/- 0.41
Cl-K	0.1744	1.451	37.48	25.31	+/- 0.42
Fe-K	0.1270	1.087	12.99	13.81	+/- 0.76
Au-L	0.0094	1.294	0.32	1.21	+/- 1.21
Pt-L	0.0000	1.292	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.288	0.00	0.00	+/- 0.00
Os-L	0.0000	1.287	0.00	0.00	+/- 0.00
Re-L	0.0899	1.278	3.24	11.48	+/- 2.22
Ag-L	0.0169	1.541	1.27	2.61	+/- 0.48
Pd-L	0.0000	1.609	0.00	0.00	+/- 0.00
Rh-L	0.1681	1.360	11.67	22.87	+/- 1.20
Ru-L	0.0000	1.425	0.00	0.00	+/- 0.00
Cu-K	0.0154	1.093	1.39	1.68	+/- 0.41
Mn-K	0.0121	1.151	1.33	1.39	+/- 0.26
Zn-K	0.0128	1.074	1.11	1.38	+/- 0.99
Ca-K	0.0297	1.463	5.69	4.34	+/- 0.34
Total			100.00	100.00	

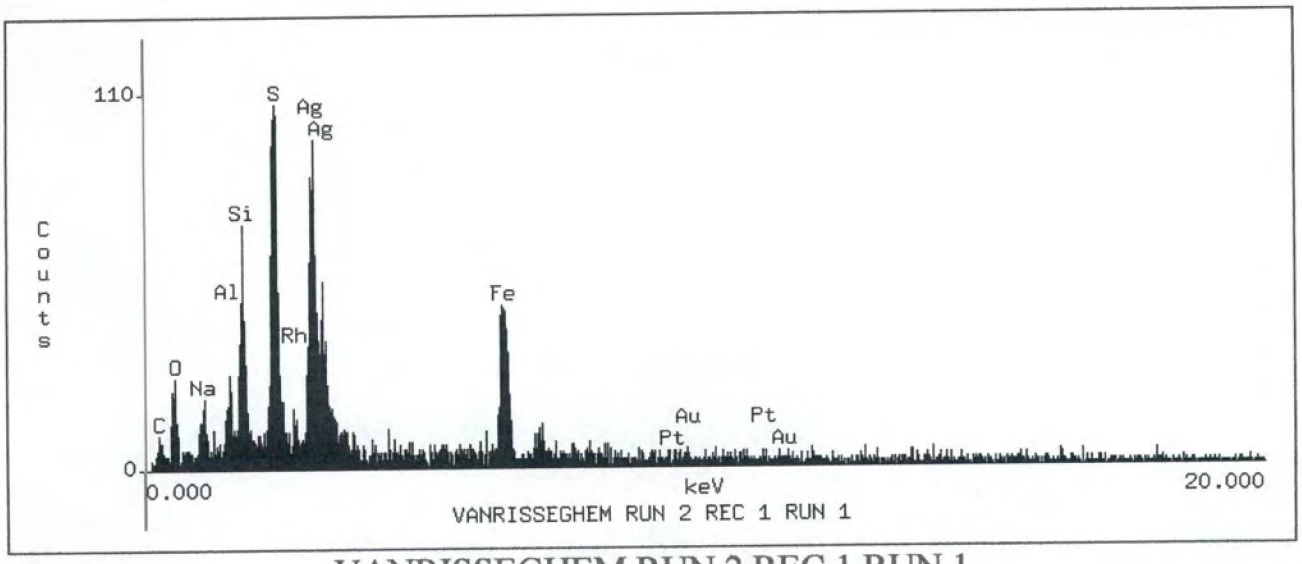
Mon Nov 20 17:30:33 2006

RISSEGHEM RUN 2 REC 4 RUN 1

Refit _Al-K' _Al-K" _Au-L' _Au-L" _Pt-L' _Pt-L" _Ir-L' _Ir-L" _Os-L' _Os-L" _Re-
Refit _C -K' _O -K' _Ir-L _Os-L _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 1.56 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	99	+/- 12
O -K	---	---	196	+/- 18
Na-K	0.08763	+/- 0.00304	1008	+/- 35
Al-K	0.00785	+/- 0.00106	111	+/- 15
Si-K	0.04470	+/- 0.00267	620	+/- 37
S -K	0.09790	+/- 0.00509	1250	+/- 65
Fe-K	0.18857	+/- 0.01269	951	+/- 64
Au-L	0.02215	+/- 0.01557	37	+/- 26
Pt-L	0.02113	+/- 0.01517	39	+/- 28
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.00575	+/- 0.01195	14	+/- 29
Ag-L	0.02431	+/- 0.00565	156	+/- 36
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.23647	+/- 0.01584	1628	+/- 109
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cl-K	0.24469	+/- 0.00517	2795	+/- 59
Cu-K	0.01885	+/- 0.00609	66	+/- 21

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0576	3.437	34.23	19.79	+/- 0.69
Al-K	0.0052	2.336	1.78	1.21	+/- 0.16
Si-K	0.0294	1.754	7.29	5.15	+/- 0.31
S -K	0.0643	1.372	10.95	8.83	+/- 0.46
Fe-K	0.1239	1.110	9.80	13.76	+/- 0.93
Au-L	0.0146	1.346	0.40	1.96	+/- 1.38
Pt-L	0.0139	1.346	0.38	1.87	+/- 1.34
Ir-L	0.0000	1.324	0.00	0.00	+/- 0.00
Os-L	0.0000	1.322	0.00	0.00	+/- 0.00
Re-L	0.0038	1.324	0.11	0.50	+/- 1.04
Ag-L	0.0160	1.482	0.87	2.37	+/- 0.55
Pd-L	0.0000	1.563	0.00	0.00	+/- 0.00
Rh-L	0.1554	1.320	7.92	20.51	+/- 1.37
Ru-L	0.0000	1.349	0.00	0.00	+/- 0.00
Cl-K	0.1608	1.409	25.42	22.67	+/- 0.48
Cu-K	0.0124	1.119	0.87	1.39	+/- 0.45
Total			100.00	100.00	



VANRISSEGHEM RUN 2 REC 1 RUN 1

Accelerating Voltage: 25 KeV
Live Time: 30 seconds

Take Off Angle: 39.3073°
Dead Time: 4.993

Mon Nov 20 17:19:59 2006

V[redacted]RISSEGHEM RUN 2 REC 1 RUN 1
Filter Fit Method
Chi-sqd = 0.79 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	55	+/- 8
O -K	---	---	199	+/- 17
Na-K	0.01932	+/- 0.00230	151	+/- 18
Al-K	0.01291	+/- 0.00156	125	+/- 15
Si-K	0.05890	+/- 0.00403	556	+/- 38
S -K	0.16084	+/- 0.00646	1395	+/- 56
Fe-K	0.24957	+/- 0.01810	855	+/- 62
Au-L	0.02820	+/- 0.02379	33	+/- 28
Pt-L	0.01914	+/- 0.02472	25	+/- 32
Ir-L	0.01772	+/- 0.02067	25	+/- 29
Os-L	0.00639	+/- 0.01989	10	+/- 31
Re-L	0.00000	+/- 0.00001	0	+/- 0
Ag-L	0.40411	+/- 0.02448	1750	+/- 106
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.02289	+/- 0.00749	107	+/- 35
Ru-L	0.00000	+/- 0.00001	0	+/- 0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0139	4.379	13.87	6.08	+/- 0.72
Al-K	0.0093	2.346	4.23	2.18	+/- 0.26
[redacted]i-K	0.0423	1.787	14.12	7.56	+/- 0.52
S -K	0.1156	1.454	27.50	16.81	+/- 0.67
Fe-K	0.1794	1.095	18.45	19.65	+/- 1.42
Au-L	0.0203	1.289	0.70	2.61	+/- 2.21
Pt-L	0.0138	1.292	0.48	1.78	+/- 2.30
Ir-L	0.0127	1.289	0.45	1.64	+/- 1.91
Os-L	0.0046	1.292	0.16	0.59	+/- 1.85
Re-L	0.0000	1.273	0.00	0.00	+/- 0.00
Ag-L	0.2904	1.333	18.82	38.72	+/- 2.35
Pd-L	0.0000	1.376	0.00	0.00	+/- 0.00
Rh-L	0.0165	1.448	1.21	2.38	+/- 0.78
Ru-L	0.0000	1.476	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Mon Nov 20 17:22:43 2006

V[redacted]RISSEGHEM RUN 2 REC 1 RUN 2

Filter Fit Method
Chi-sqd = 0.93 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	55	+/- 7
O -K	---	---	198	+/- 13
Na-K	0.01911	+/- 0.00205	168	+/- 18
Al-K	0.01147	+/- 0.00148	124	+/- 16
Si-K	0.06405	+/- 0.00358	680	+/- 38
S -K	0.15227	+/- 0.00625	1486	+/- 61
Fe-K	0.21609	+/- 0.01660	833	+/- 64
Au-L	0.02115	+/- 0.02193	28	+/- 29
Pt-L	0.01205	+/- 0.02197	18	+/- 33
Ir-L	0.03280	+/- 0.01902	51	+/- 29
Os-L	0.02336	+/- 0.01831	38	+/- 30
Re-L	0.01563	+/- 0.01737	28	+/- 31
Ag-L	0.43201	+/- 0.02340	2105	+/- 114
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.00000	+/- 0.00001	0	+/- 0
Ru-L	0.00000	+/- 0.00001	0	+/- 0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0136	4.255	13.65	5.80	+/- 0.62
[redacted]l-K	0.0082	2.297	3.77	1.88	+/- 0.24
Si-K	0.0457	1.751	15.41	8.00	+/- 0.45
S -K	0.1087	1.486	27.25	16.15	+/- 0.66
Fe-K	0.1542	1.091	16.29	16.83	+/- 1.29
Au-L	0.0151	1.277	0.53	1.93	+/- 2.00
Pt-L	0.0086	1.279	0.30	1.10	+/- 2.01
Ir-L	0.0234	1.276	0.84	2.99	+/- 1.73
Os-L	0.0167	1.279	0.61	2.13	+/- 1.67
Re-L	0.0112	1.269	0.41	1.42	+/- 1.57
Ag-L	0.3083	1.355	20.94	41.77	+/- 2.26
Pd-L	0.0000	1.401	0.00	0.00	+/- 0.00
Rh-L	0.0000	1.448	0.00	0.00	+/- 0.00
Ru-L	0.0000	1.510	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Mon Nov 20 17:25:06 2006

V RISSEGHEM RUN 2 REC 1 RUN 3

Refit _Au-L' _Au-L" _Pt-L' _Pt-L" _Ir-L' _Ir-L" _Os-L' _Os-L" _Re-L' _Re-L" _Pd-
Refit _C -K' _Au-L _Pt-L _Pd-L _Rh-L _Ru-L
Filter Fit Method
Chi-sqd = 0.96 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	73	+/- 11
O -K	---	---	250	+/- 20
Na-K	0.02184	+/- 0.00212	228	+/- 22
Al-K	0.01362	+/- 0.00243	174	+/- 31
Si-K	0.07094	+/- 0.00383	889	+/- 48
S -K	0.15716	+/- 0.00572	1813	+/- 66
Fe-K	0.23438	+/- 0.01514	1068	+/- 69
Au-L	0.00000	+/- 0.00001	0	+/- 0
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00832	+/- 0.01720	16	+/- 33
Os-L	0.01976	+/- 0.01602	38	+/- 31
Re-L	0.02743	+/- 0.01469	56	+/- 30
Ag-L	0.44654	+/- 0.02170	2573	+/- 125
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.00000	+/- 0.00001	0	+/- 0
Ru-L	0.00000	+/- 0.00001	0	+/- 0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0156	4.316	15.02	6.74	+/- 0.65
Al-K	0.0097	2.337	4.32	2.28	+/- 0.41
Si-K	0.0507	1.785	16.51	9.05	+/- 0.49
S -K	0.1123	1.438	25.81	16.16	+/- 0.59
Fe-K	0.1675	1.099	16.89	18.42	+/- 1.19
Au-L	0.0000	1.279	0.00	0.00	+/- 0.00
Pt-L	0.0000	1.282	0.00	0.00	+/- 0.00
Ir-L	0.0060	1.293	0.21	0.77	+/- 1.59
Os-L	0.0141	1.296	0.49	1.83	+/- 1.48
Re-L	0.0196	1.285	0.69	2.52	+/- 1.35
Ag-L	0.3192	1.323	20.06	42.24	+/- 2.05
Pd-L	0.0000	1.359	0.00	0.00	+/- 0.00
Rh-L	0.0000	1.408	0.00	0.00	+/- 0.00
Ru-L	0.0000	1.462	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Mon Nov 20 17:26:25 2006

V RISSEGHEM RUN 2 REC 1 RUN 4

Refit _Au-L' _Au-L" _Pt-L' _Pt-L" _Ir-L' _Ir-L" _Os-L' _Os-L" _Re-L' _Re-L" _Pd-
Refit _C -K' _O -K" _Al-K" _Pt-L
Refit _Al-K'
Filter Fit Method
Chi-sqd = 0.84 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	113 +/-	12
O -K	---	---	251 +/-	15
Na-K	0.02291 +/-	0.00206	223 +/-	20
Al-K	0.01217 +/-	0.00143	146 +/-	17
Si-K	0.06881 +/-	0.00351	804 +/-	41
S -K	0.13666 +/-	0.00567	1470 +/-	61
Fe-K	0.26996 +/-	0.01648	1148 +/-	70
Au-L	0.00924 +/-	0.01990	13 +/-	29
Pt-L	0.00000 +/-	0.00001	0 +/-	0
Ir-L	0.00238 +/-	0.01905	4 +/-	33
Os-L	0.02521 +/-	0.01948	44 +/-	34
Re-L	0.00946 +/-	0.01628	19 +/-	32
Ag-L	0.44000 +/-	0.02849	2364 +/-	153
Pd-L	0.00182 +/-	0.02025	10 +/-	115
Rh-L	0.00104 +/-	0.01673	6 +/-	98
Ru-L	0.00035 +/-	0.01392	3 +/-	114

ment	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0165	4.459	16.38	7.36	+/- 0.66
Al-K	0.0088	2.408	4.01	2.11	+/- 0.25
Si-K	0.0496	1.824	16.48	9.04	+/- 0.46
S -K	0.0985	1.444	22.70	14.22	+/- 0.59
Fe-K	0.1945	1.096	19.54	21.33	+/- 1.30
Au-L	0.0067	1.297	0.22	0.86	+/- 1.86
Pt-L	0.0000	1.284	0.00	0.00	+/- 0.00
Ir-L	0.0017	1.296	0.06	0.22	+/- 1.78
Os-L	0.0182	1.299	0.63	2.36	+/- 1.82
Re-L	0.0068	1.289	0.24	0.88	+/- 1.51
Ag-L	0.3170	1.303	19.59	41.29	+/- 2.67
Pd-L	0.0013	1.369	0.09	0.18	+/- 2.00
Rh-L	0.0007	1.412	0.05	0.11	+/- 1.70
Ru-L	0.0003	1.473	0.02	0.04	+/- 1.48
Total			100.00	100.00	

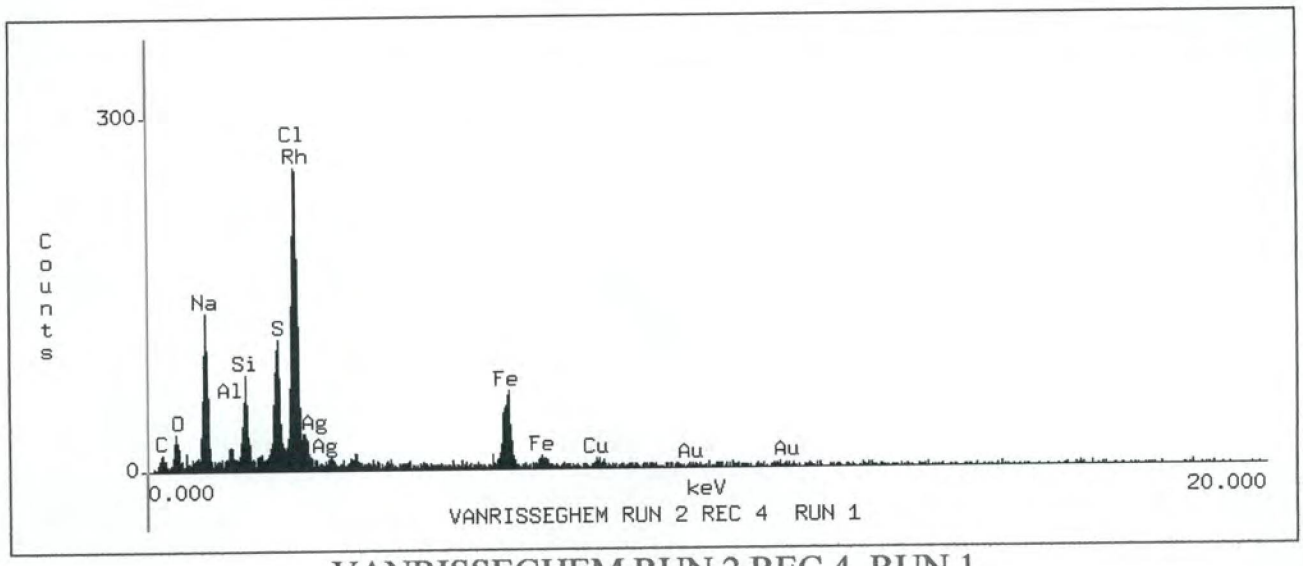
Mon Nov 20 17:27:37 2006

V[redacted]RISSEGHEM RUN 2 REC 1 RUN 5

Refit _Au-L' _Au-L" _Pt-L' _Pt-L" _Ir-L' _Ir-L" _Os-L' _Os-L" _Re-L' _Re-L" _Pd-
Refit _C -K' _Na-K' _Al-K" _Ir-L _Os-L _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 0.87 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	114 +/-	14
O -K	---	---	263 +/-	20
Na-K	0.02136 +/-	0.00223	182 +/-	19
Al-K	0.01203 +/-	0.00153	126 +/-	16
Si-K	0.07223 +/-	0.00419	742 +/-	43
S -K	0.14392 +/-	0.00634	1361 +/-	60
Fe-K	0.25539 +/-	0.01767	955 +/-	66
Au-L	0.02506 +/-	0.02102	32 +/-	27
Pt-L	0.01609 +/-	0.02121	22 +/-	30
Ir-L	0.00000 +/-	0.00001	0 +/-	0
Os-L	0.00000 +/-	0.00001	0 +/-	0
Re-L	0.01553 +/-	0.01733	27 +/-	30
Ag-L	0.42210 +/-	0.02372	1993 +/-	112
Pd-L	0.00000 +/-	0.00001	0 +/-	0
Rh-L	0.01629 +/-	0.00785	84 +/-	40
Ru-L	0.00000 +/-	0.00001	0 +/-	0

E[redacted]ment	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0153	4.397	15.08	6.73	+/- 0.70
Al-K	0.0086	2.369	3.90	2.04	+/- 0.26
Si-K	0.0518	1.799	17.08	9.31	+/- 0.54
S -K	0.1032	1.458	24.16	15.04	+/- 0.66
Fe-K	0.1831	1.097	18.52	20.09	+/- 1.39
Au-L	0.0180	1.294	0.61	2.33	+/- 1.95
Pt-L	0.0115	1.297	0.39	1.50	+/- 1.97
Ir-L	0.0000	1.280	0.00	0.00	+/- 0.00
Os-L	0.0000	1.284	0.00	0.00	+/- 0.00
Re-L	0.0111	1.286	0.40	1.43	+/- 1.60
Ag-L	0.3026	1.317	19.02	39.85	+/- 2.24
Pd-L	0.0000	1.353	0.00	0.00	+/- 0.00
Rh-L	0.0117	1.430	0.84	1.67	+/- 0.80
Ru-L	0.0000	1.445	0.00	0.00	+/- 0.00
Total			100.00	100.00	



VANRISSEGHEM RUN 2 REC 4 RUN 1

Accelerating Voltage: 25 KeV
Live Time: 30 seconds

Take Off Angle: 39.3073°
Dead Time: 5.042

Cl Kα overlap on the Rh Lα

Mon Nov 20 17:32:32 2006

RISSEGHEM RUN 2 REC 4 RUN 2

Refit _C -K' _C -K" _Al-K' _Al-K" _Au-L' _Au-L" _Pt-L' _Pt-L" _Ir-L' _Ir-L" _Os-
Refit _O -K' _O -K" _Si-K" _S -K" _Pt-L _Ir-L _Os-L _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 1.14   Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	43	+/- 7
O -K	---	---	124	+/- 11
Na-K	0.08736	+/- 0.00303	952	+/- 33
Al-K	0.00679	+/- 0.00105	92	+/- 14
Si-K	0.02321	+/- 0.00152	305	+/- 20
S -K	0.07135	+/- 0.00298	864	+/- 36
Fe-K	0.21350	+/- 0.01319	1020	+/- 63
Au-L	0.02970	+/- 0.01517	47	+/- 24
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.02102	+/- 0.01355	45	+/- 29
Ag-L	0.01772	+/- 0.00580	108	+/- 35
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.23320	+/- 0.01657	1520	+/- 108
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cl-K	0.27133	+/- 0.00536	2936	+/- 58
Cu-K	0.02480	+/- 0.00674	82	+/- 22

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0585	3.558	36.27	20.81	+/- 0.72
Al-K	0.0045	2.416	1.63	1.10	+/- 0.17
Si-K	0.0155	1.798	3.99	2.79	+/- 0.18
S -K	0.0478	1.356	8.10	6.48	+/- 0.27
Fe-K	0.1430	1.103	11.32	15.77	+/- 0.97
Au-L	0.0199	1.344	0.54	2.67	+/- 1.37
Pt-L	0.0000	1.326	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.322	0.00	0.00	+/- 0.00
Os-L	0.0000	1.319	0.00	0.00	+/- 0.00
Re-L	0.0141	1.322	0.40	1.86	+/- 1.20
Ag-L	0.0119	1.477	0.65	1.75	+/- 0.57
Pd-L	0.0000	1.555	0.00	0.00	+/- 0.00
Rh-L	0.1562	1.280	7.78	19.99	+/- 1.42
Ru-L	0.0000	1.306	0.00	0.00	+/- 0.00
Cl-K	0.1817	1.371	28.14	24.90	+/- 0.49
Cu-K	0.0166	1.120	1.17	1.86	+/- 0.51
Total			100.00	100.00	

Mon Nov 20 17:33:42 2006

RISSEGHEM RUN 2 REC 4 RUN 3

Refit _C -K' _C -K" _Al-K' _Al-K" _Au-L' _Au-L" _Pt-L' _Pt-L" _Ir-L' _Ir-L" _Os-
Refit _O -K" _S -K" _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 1.41 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	26	+/- 7
O -K	---	---	115	+/- 11
Na-K	0.08005	+/- 0.00294	873	+/- 32
Al-K	0.00426	+/- 0.00097	58	+/- 13
Si-K	0.02703	+/- 0.00228	356	+/- 30
S -K	0.06550	+/- 0.00281	793	+/- 34
Fe-K	0.18131	+/- 0.01256	866	+/- 60
Au-L	0.00822	+/- 0.01454	13	+/- 24
Pt-L	0.01831	+/- 0.01487	32	+/- 26
Ir-L	0.03388	+/- 0.01377	65	+/- 26
Os-L	0.02803	+/- 0.01427	55	+/- 28
Re-L	0.01589	+/- 0.01215	34	+/- 26
Ag-L	0.03462	+/- 0.00547	210	+/- 33
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.23557	+/- 0.01581	1536	+/- 103
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cl-K	0.24958	+/- 0.00518	2700	+/- 56
Cu-K	0.01777	+/- 0.00613	58	+/- 20

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0534	3.486	34.59	18.60	+/- 0.68
Al-K	0.0028	2.324	1.04	0.66	+/- 0.15
Si-K	0.0180	1.732	4.75	3.12	+/- 0.26
S -K	0.0437	1.405	8.18	6.14	+/- 0.26
Fe-K	0.1209	1.095	10.13	13.24	+/- 0.92
Au-L	0.0055	1.319	0.16	0.72	+/- 1.28
Pt-L	0.0122	1.319	0.35	1.61	+/- 1.31
Ir-L	0.0226	1.314	0.66	2.97	+/- 1.21
Os-L	0.0187	1.313	0.55	2.45	+/- 1.25
Re-L	0.0106	1.300	0.32	1.38	+/- 1.05
Ag-L	0.0231	1.494	1.37	3.45	+/- 0.54
Pd-L	0.0000	1.574	0.00	0.00	+/- 0.00
Rh-L	0.1570	1.325	8.64	20.81	+/- 1.40
Ru-L	0.0000	1.366	0.00	0.00	+/- 0.00
Cl-K	0.1664	1.415	28.39	23.55	+/- 0.49
Cu-K	0.0118	1.097	0.87	1.30	+/- 0.45
Total			100.00	100.00	

Mon Nov 20 17:34:45 2006

V RISSEGHEM RUN 2 REC 4 RUN 4

Refit _C -K' _C -K" _Al-K' _Al-K" _Au-L' _Au-L" _Pt-L' _Pt-L" _Ir-L' _Ir-L" _Os-
Refit _S -K" _Fe-K" _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 1.40 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	28	+/- 7
O -K	---	---	136	+/- 16
Na-K	0.08980	+/- 0.00298	1115	+/- 37
Al-K	0.00439	+/- 0.00085	68	+/- 13
Si-K	0.02420	+/- 0.00201	363	+/- 30
S -K	0.05984	+/- 0.00269	825	+/- 37
Fe-K	0.15536	+/- 0.00772	846	+/- 42
Au-L	0.03164	+/- 0.01332	58	+/- 24
Pt-L	0.00703	+/- 0.01306	15	+/- 27
Ir-L	0.00790	+/- 0.01302	18	+/- 29
Os-L	0.00537	+/- 0.01387	12	+/- 31
Re-L	0.00985	+/- 0.01190	24	+/- 29
Ag-L	0.02327	+/- 0.00524	160	+/- 36
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.27048	+/- 0.01604	2008	+/- 119
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cl-K	0.29632	+/- 0.00528	3649	+/- 65
Cu-K	0.01452	+/- 0.00619	55	+/- 23

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0606	3.382	36.43	20.49	+/- 0.68
Al-K	0.0030	2.332	1.05	0.69	+/- 0.13
Si-K	0.0163	1.736	4.12	2.83	+/- 0.23
S -K	0.0404	1.343	6.91	5.42	+/- 0.24
Fe-K	0.1048	1.108	8.49	11.61	+/- 0.58
Au-L	0.0213	1.331	0.59	2.84	+/- 1.20
Pt-L	0.0047	1.331	0.13	0.63	+/- 1.17
Ir-L	0.0053	1.326	0.15	0.71	+/- 1.16
Os-L	0.0036	1.324	0.10	0.48	+/- 1.24
Re-L	0.0066	1.311	0.19	0.87	+/- 1.05
Ag-L	0.0157	1.484	0.88	2.33	+/- 0.52
Pd-L	0.0000	1.569	0.00	0.00	+/- 0.00
Rh-L	0.1825	1.262	9.15	23.03	+/- 1.37
Ru-L	0.0000	1.284	0.00	0.00	+/- 0.00
Cl-K	0.1999	1.349	31.10	26.98	+/- 0.48
Cu-K	0.0098	1.108	0.70	1.09	+/- 0.46
Total			100.00	100.00	

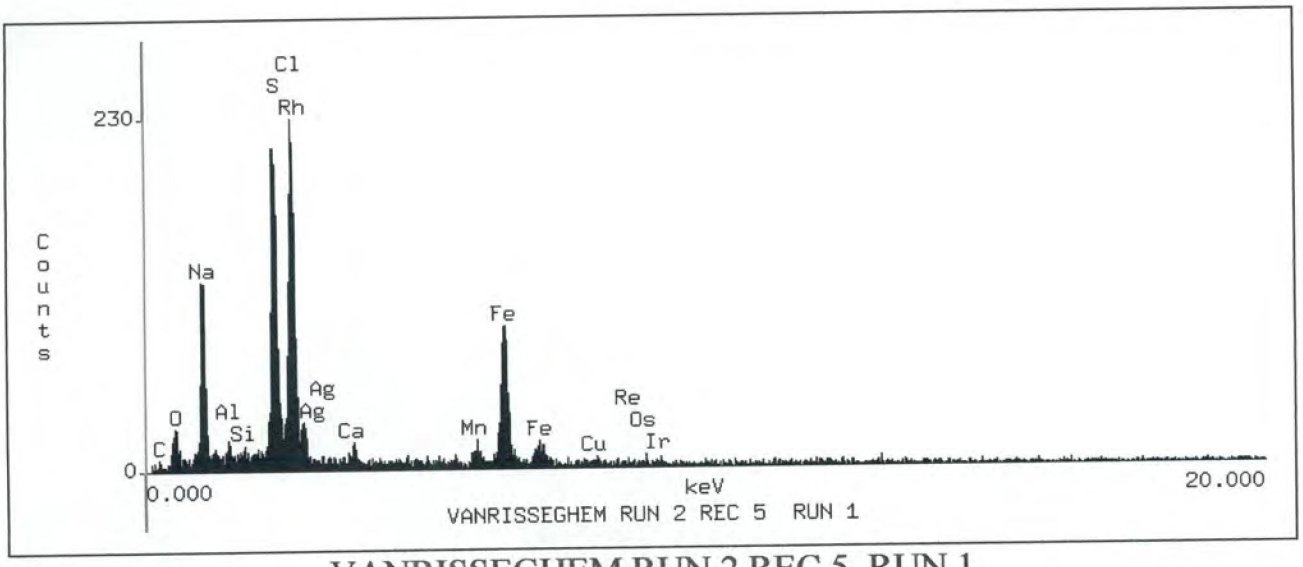
Mon Nov 20 17:36:00 2006

V[redacted]RISSEGHEM RUN 2 REC 4 RUN 5

Refit _C -K' _C -K" _Al-K' _Al-K" _Au-L' _Au-L" _Pt-L' _Pt-L" _Ir-L' _Ir-L" _Os-
Refit _O -K" _Fe-K" _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 1.58 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	38	+/- 7
O -K	---	---	170	+/- 13
Na-K	0.09051	+/- 0.00300	1177	+/- 39
Al-K	0.00758	+/- 0.00100	121	+/- 16
Si-K	0.04232	+/- 0.00243	663	+/- 38
S -K	0.07593	+/- 0.00444	1096	+/- 64
Fe-K	0.16220	+/- 0.00755	924	+/- 43
Au-L	0.01431	+/- 0.01166	27	+/- 22
Pt-L	0.00911	+/- 0.01247	20	+/- 27
Ir-L	0.01687	+/- 0.01332	38	+/- 30
Os-L	0.00684	+/- 0.01367	16	+/- 32
Re-L	0.03369	+/- 0.01254	87	+/- 32
Ag-L	0.01708	+/- 0.00514	124	+/- 37
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.21797	+/- 0.01531	1695	+/- 119
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cl-K	0.27478	+/- 0.00504	3545	+/- 65
Cu-K	0.03082	+/- 0.00565	121	+/- 22

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0594	3.335	34.50	19.79	+/- 0.66
Al-K	0.0050	2.301	1.70	1.14	+/- 0.15
Si-K	0.0278	1.731	6.85	4.81	+/- 0.28
S -K	0.0498	1.397	8.69	6.96	+/- 0.41
Fe-K	0.1064	1.103	8.42	11.74	+/- 0.55
Au-L	0.0094	1.339	0.26	1.26	+/- 1.02
Pt-L	0.0060	1.339	0.16	0.80	+/- 1.10
Ir-L	0.0111	1.333	0.31	1.47	+/- 1.16
Os-L	0.0045	1.329	0.13	0.60	+/- 1.19
Re-L	0.0221	1.315	0.63	2.91	+/- 1.08
Ag-L	0.0112	1.525	0.63	1.71	+/- 0.51
Pd-L	0.0000	1.611	0.00	0.00	+/- 0.00
Rh-L	0.1429	1.329	7.39	18.99	+/- 1.33
Ru-L	0.0000	1.365	0.00	0.00	+/- 0.00
Cl-K	0.1802	1.420	28.91	25.58	+/- 0.47
Cu-K	0.0202	1.111	1.42	2.25	+/- 0.41
Total			100.00	100.00	



VANRISSEGHEM RUN 2 REC 5 RUN 1

Accelerating Voltage: 25 KeV
Live Time: 30 seconds

Take Off Angle: 39.3073°
Dead Time: 5.546

Cl Ks overlap on Rh(-)

Mon Nov 20 17:39:16 2006

V RISSEGHEM RUN 2 REC 5 RUN 1

Refit _C -K' _C -K" _Al-K' _Al-K" _Si-K' _Si-K" _Au-L' _Au-L" _Pt-L' _Pt-L" _Ir-
Refit _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 1.46   Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	12	+/- 7
O -K	---	---	185	+/- 18
Na-K	0.08410	+/- 0.00269	1127	+/- 36
Al-K	0.00529	+/- 0.00085	88	+/- 14
Si-K	0.00266	+/- 0.00093	43	+/- 15
S -K	0.17671	+/- 0.00565	2626	+/- 84
Fe-K	0.25248	+/- 0.01278	1483	+/- 75
Au-L	0.00360	+/- 0.01183	7	+/- 24
Pt-L	0.00559	+/- 0.01257	12	+/- 27
Ir-L	0.02068	+/- 0.01249	49	+/- 29
Os-L	0.02281	+/- 0.01202	55	+/- 29
Re-L	0.01483	+/- 0.01065	39	+/- 28
Ag-L	0.01887	+/- 0.00472	140	+/- 35
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.17070	+/- 0.01274	1367	+/- 102
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cl-K	0.18683	+/- 0.00421	2483	+/- 56
u-K	0.00249	+/- 0.00474	10	+/- 20
Mn-K	0.02447	+/- 0.00389	151	+/- 24
Ca-K	0.00789	+/- 0.00149	85	+/- 16

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0554	3.611	34.72	20.02	+/- 0.64
Al-K	0.0035	2.402	1.24	0.84	+/- 0.13
Si-K	0.0018	1.782	0.44	0.31	+/- 0.11
S -K	0.1165	1.348	19.52	15.70	+/- 0.50
Fe-K	0.1664	1.104	13.12	18.38	+/- 0.93
Au-L	0.0024	1.351	0.06	0.32	+/- 1.05
Pt-L	0.0037	1.351	0.10	0.50	+/- 1.12
Ir-L	0.0136	1.345	0.38	1.83	+/- 1.11
Os-L	0.0150	1.345	0.42	2.02	+/- 1.07
Re-L	0.0098	1.333	0.28	1.30	+/- 0.94
Ag-L	0.0124	1.498	0.69	1.86	+/- 0.47
Pd-L	0.0000	1.579	0.00	0.00	+/- 0.00
Rh-L	0.1125	1.394	6.08	15.69	+/- 1.17
Ru-L	0.0000	1.466	0.00	0.00	+/- 0.00
Cl-K	0.1232	1.499	20.76	18.46	+/- 0.42
Cu-K	0.0016	1.130	0.12	0.19	+/- 0.35
Mn-K	0.0161	1.155	1.35	1.86	+/- 0.30
Ca-K	0.0052	1.371	0.71	0.71	+/- 0.13
Total			100.00	100.00	

Mon Nov 20 17:42:21 2006

RISSEGHEM RUN 2 REC 5 RUN 2

Refit _Al-K' _Al-K" _Si-K' _Si-K" _Au-L' _Au-L" _Pt-L' _Pt-L" _Ir-L' _Ir-L" _Os-
Refit _C -K' _O -K" _Au-L _Pt-L _Ir-L _Os-L _Re-L _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 1.38   Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	66	+/- 11
O -K	---	---	130	+/- 11
Na-K	0.10063	+/- 0.00353	970	+/- 34
Al-K	0.00380	+/- 0.00101	46	+/- 12
Si-K	0.00241	+/- 0.00103	28	+/- 12
S -K	0.14898	+/- 0.00636	1595	+/- 68
Fe-K	0.20869	+/- 0.01396	883	+/- 59
Au-L	0.00000	+/- 0.00001	0	+/- 0
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.00000	+/- 0.00001	0	+/- 0
Ag-L	0.03089	+/- 0.00618	165	+/- 33
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.22911	+/- 0.01682	1321	+/- 97
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cl-K	0.23764	+/- 0.00554	2274	+/- 53
Cu-K	0.01662	+/- 0.00623	48	+/- 18
Mn-K	0.01080	+/- 0.00405	48	+/- 18
Ca-K	0.01044	+/- 0.00181	82	+/- 14

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0670	3.539	39.31	23.71	+/- 0.83
Al-K	0.0025	2.488	0.89	0.63	+/- 0.17
Si-K	0.0016	1.826	0.40	0.29	+/- 0.13
S -K	0.0992	1.260	14.86	12.49	+/- 0.53
Fe-K	0.1389	1.118	10.60	15.53	+/- 1.04
Au-L	0.0000	1.346	0.00	0.00	+/- 0.00
Pt-L	0.0000	1.347	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.343	0.00	0.00	+/- 0.00
Os-L	0.0000	1.341	0.00	0.00	+/- 0.00
Re-L	0.0000	1.329	0.00	0.00	+/- 0.00
Ag-L	0.0206	1.438	1.05	2.96	+/- 0.59
Pd-L	0.0000	1.520	0.00	0.00	+/- 0.00
Rh-L	0.1525	1.283	7.25	19.56	+/- 1.44
Ru-L	0.0000	1.323	0.00	0.00	+/- 0.00
Cl-K	0.1582	1.376	23.40	21.76	+/- 0.51
Cu-K	0.0111	1.140	0.76	1.26	+/- 0.47
Mn-K	0.0072	1.167	0.58	0.84	+/- 0.31
Ca-K	0.0070	1.388	0.92	0.96	+/- 0.17
Total			100.00	100.00	

Mon Nov 20 17:44:05 2006

RISSEGHEM RUN 2 REC 5 RUN 3

Refit _C -K' _C -K" _Al-K' _Al-K" _Si-K' _Si-K" _Au-L' _Au-L" _Pt-L' _Pt-L" _Ir-
Refit _O -K' _Pt-L _Ir-L _Os-L _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 1.31 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	11	+/- 6
O -K	---	---	154	+/- 17
Na-K	0.10043	+/- 0.00310	1233	+/- 38
Al-K	0.00279	+/- 0.00093	42	+/- 14
Si-K	0.00277	+/- 0.00101	42	+/- 15
S -K	0.14461	+/- 0.00566	1970	+/- 77
Fe-K	0.21364	+/- 0.01246	1149	+/- 67
Au-L	0.00337	+/- 0.01347	6	+/- 25
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.00788	+/- 0.01079	20	+/- 27
Ag-L	0.01427	+/- 0.00515	98	+/- 35
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.21915	+/- 0.01526	1608	+/- 112
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cl-K	0.24990	+/- 0.00509	3043	+/- 62
Cu-K	0.00734	+/- 0.00490	28	+/- 19
Mn-K	0.01592	+/- 0.00371	91	+/- 21
Ca-K	0.01793	+/- 0.00314	177	+/- 31

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0669	3.496	38.63	23.40	+/- 0.72
Al-K	0.0019	2.455	0.64	0.46	+/- 0.15
Si-K	0.0018	1.802	0.45	0.33	+/- 0.12
S -K	0.0964	1.267	14.46	12.21	+/- 0.48
Fe-K	0.1424	1.119	10.82	15.93	+/- 0.93
Au-L	0.0022	1.366	0.06	0.31	+/- 1.23
Pt-L	0.0000	1.349	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.344	0.00	0.00	+/- 0.00
Os-L	0.0000	1.345	0.00	0.00	+/- 0.00
Re-L	0.0053	1.344	0.14	0.71	+/- 0.97
Ag-L	0.0095	1.459	0.49	1.39	+/- 0.50
Pd-L	0.0000	1.543	0.00	0.00	+/- 0.00
Rh-L	0.1461	1.288	6.94	18.81	+/- 1.31
Ru-L	0.0000	1.329	0.00	0.00	+/- 0.00
Cl-K	0.1666	1.381	24.62	23.01	+/- 0.47
Cu-K	0.0049	1.142	0.33	0.56	+/- 0.37
Mn-K	0.0106	1.168	0.86	1.24	+/- 0.29
Ca-K	0.0120	1.380	1.56	1.65	+/- 0.29
Total			100.00	100.00	

Mon Nov 20 17:45:38 2006

V RISSEGHEM RUN 2 REC 5 RUN 4

Refit _C -K' _C -K" _Al-K' _Al-K" _Si-K' _Si-K" _Au-L' _Au-L" _Pt-L' _Pt-L" _Ir-
Refit _O -K' _Ir-L _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 1.12 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	29	+/- 6
O -K	---	---	139	+/- 16
Na-K	0.09201	+/- 0.00368	851	+/- 34
Al-K	0.00326	+/- 0.00106	38	+/- 12
Si-K	0.00422	+/- 0.00117	48	+/- 13
S -K	0.17106	+/- 0.00673	1755	+/- 69
Fe-K	0.22319	+/- 0.01506	904	+/- 61
Au-L	0.00373	+/- 0.01938	6	+/- 30
Pt-L	0.00675	+/- 0.01821	10	+/- 27
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.01622	+/- 0.01622	28	+/- 28
Re-L	0.01488	+/- 0.01378	27	+/- 25
Ag-L	0.02383	+/- 0.00606	123	+/- 31
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.17826	+/- 0.01665	986	+/- 92
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cl-K	0.23271	+/- 0.00556	2135	+/- 51
Cu-K	0.00722	+/- 0.00650	20	+/- 18
Mn-K	0.01338	+/- 0.00446	58	+/- 19
Ca-K	0.00928	+/- 0.00202	69	+/- 15

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0608	3.492	35.73	21.23	+/- 0.85
Al-K	0.0022	2.391	0.74	0.51	+/- 0.17
Si-K	0.0028	1.766	0.68	0.49	+/- 0.14
S -K	0.1130	1.302	17.76	14.72	+/- 0.58
Fe-K	0.1475	1.113	11.37	16.42	+/- 1.11
Au-L	0.0025	1.360	0.07	0.33	+/- 1.74
Pt-L	0.0045	1.360	0.12	0.61	+/- 1.64
Ir-L	0.0000	1.341	0.00	0.00	+/- 0.00
Os-L	0.0107	1.352	0.29	1.45	+/- 1.45
Re-L	0.0098	1.339	0.27	1.32	+/- 1.22
Ag-L	0.0157	1.503	0.85	2.37	+/- 0.60
Pd-L	0.0000	1.594	0.00	0.00	+/- 0.00
Rh-L	0.1178	1.349	5.97	15.89	+/- 1.48
Ru-L	0.0000	1.409	0.00	0.00	+/- 0.00
Cl-K	0.1538	1.446	24.27	22.24	+/- 0.53
Cu-K	0.0048	1.137	0.33	0.54	+/- 0.49
Mn-K	0.0088	1.164	0.72	1.03	+/- 0.34
Ca-K	0.0061	1.386	0.82	0.85	+/- 0.18
Total			100.00	100.00	

Mon Nov 20 17:49:34 2006

[redacted]RISSEGHEM RUN 2 REC 5 RUN 5

Refit _Al-K' _Al-K" _Si-K' _Si-K" _Au-L' _Au-L" _Pt-L' _Pt-L" _Ir-L' _Ir-L" _Os-
Refit _C -K' _O -K" _Au-L _Pt-L _Ir-L _Os-L _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 1.30   Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	121	+/- 12
O -K	---	---	116	+/- 11
Na-K	0.09534	+/- 0.00374	790	+/- 31
Al-K	0.00383	+/- 0.00108	39	+/- 11
Si-K	0.00661	+/- 0.00140	67	+/- 14
S -K	0.15515	+/- 0.00707	1427	+/- 65
Fe-K	0.21608	+/- 0.01624	785	+/- 59
Au-L	0.00000	+/- 0.00001	0	+/- 0
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.01351	+/- 0.01597	23	+/- 27
Ag-L	0.01677	+/- 0.00675	77	+/- 31
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.21367	+/- 0.01796	1060	+/- 89
Ru-L	0.00000	+/- 0.00001	0	+/- 0
Cl-K	0.23306	+/- 0.00596	1918	+/- 49
[redacted]u-K	0.01570	+/- 0.00685	39	+/- 17
Mn-K	0.02173	+/- 0.00497	84	+/- 19
Ca-K	0.00855	+/- 0.00195	57	+/- 13

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Na-K	0.0634	3.550	37.45	22.51	+/- 0.88
Al-K	0.0025	2.455	0.89	0.63	+/- 0.18
Si-K	0.0044	1.807	1.08	0.79	+/- 0.17
S -K	0.1032	1.279	15.75	13.20	+/- 0.60
Fe-K	0.1437	1.114	10.97	16.02	+/- 1.20
Au-L	0.0000	1.348	0.00	0.00	+/- 0.00
Pt-L	0.0000	1.349	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.344	0.00	0.00	+/- 0.00
Os-L	0.0000	1.343	0.00	0.00	+/- 0.00
Re-L	0.0090	1.341	0.25	1.21	+/- 1.43
Ag-L	0.0112	1.457	0.58	1.62	+/- 0.65
Pd-L	0.0000	1.544	0.00	0.00	+/- 0.00
Rh-L	0.1421	1.309	6.92	18.60	+/- 1.56
Ru-L	0.0000	1.355	0.00	0.00	+/- 0.00
Cl-K	0.1550	1.404	23.48	21.77	+/- 0.56
Cu-K	0.0104	1.141	0.72	1.19	+/- 0.52
Mn-K	0.0145	1.163	1.17	1.68	+/- 0.38
Ca-K	0.0057	1.380	0.75	0.78	+/- 0.18
Total			100.00	100.00	

Thu Nov 02 10:02:24 2006

an Risseghem 4-5 mixed 50/50 Run 1

Refit _Cl-K' _Cl-K" _Mn-K' _Mn-K" _Fe-L' _Fe-L" _Zn-K' _Zn-K" _Pb-L' _Pb-L" _Au-
Refit _Os-L _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 1.88 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
O -K	---	---	705	+/- 36
Al-K	0.02099	+/- 0.00108	1207	+/- 62
Si-K	0.01487	+/- 0.00117	839	+/- 66
Cl-K	0.06087	+/- 0.00175	3746	+/- 81
Mn-K	0.01471	+/- 0.00219	316	+/- 47
Fe-K	0.25548	+/- 0.00754	5219	+/- 154
Fe-L	---	---	171	+/- 35
Zn-K	0.01075	+/- 0.00901	131	+/- 110
Pb-L	0.07441	+/- 0.01298	407	+/- 71
Pb-M	---	---	1180	+/- 141
Au-L	0.03694	+/- 0.01005	250	+/- 68
Pt-L	0.02607	+/- 0.00949	196	+/- 71
Ir-L	0.01695	+/- 0.00854	138	+/- 69
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.04859	+/- 0.01802	446	+/- 165
Ag-L	0.32508	+/- 0.01019	8426	+/- 264
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.07428	+/- 0.00554	2079	+/- 155
Ru-L	0.00000	+/- 0.00001	0	+/- 0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0166	2.311	10.31	3.84	+/- 0.20
Si-K	0.0118	1.795	5.45	2.11	+/- 0.17
Cl-K	0.0640	1.409	18.42	9.01	+/- 0.19
Mn-K	0.0116	1.108	1.70	1.29	+/- 0.19
Fe-K	0.2020	1.043	27.34	21.07	+/- 0.62
Zn-K	0.0085	1.007	0.95	0.86	+/- 0.72
Pb-L	0.0588	1.236	2.54	7.27	+/- 1.27
Au-L	0.0292	1.213	1.30	3.54	+/- 0.96
Pt-L	0.0206	1.216	0.93	2.51	+/- 0.91
Ir-L	0.0134	1.215	0.61	1.63	+/- 0.82
Os-L	0.0000	1.220	0.00	0.00	+/- 0.00
Re-L	0.0384	1.206	1.80	4.63	+/- 1.72
Ag-L	0.2571	1.335	23.06	34.32	+/- 1.08
Pd-L	0.0000	1.399	0.00	0.00	+/- 0.00
Rh-L	0.0587	1.348	5.58	7.92	+/- 0.59
Ru-L	0.0000	1.320	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Thu Nov 02 10:15:20 2006

n Risseghem 4-5 mixed 50/50 Run 2

Refit _Cl-K' _Cl-K" _Mn-K' _Mn-K" _Fe-L' _Fe-L" _Zn-K' _Zn-K" _Pb-L' _Pb-L" _Au-
Refit _Pt-L _Pd-L _Ru-L
Refit _Pb-M'
Filter Fit Method
Chi-sqd = 2.11 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
O -K	---	---	643	+/- 35
Al-K	0.02333	+/- 0.00119	1159	+/- 59
Si-K	0.01625	+/- 0.00129	792	+/- 63
Cl-K	0.08617	+/- 0.00189	3462	+/- 76
Mn-K	0.01124	+/- 0.00235	210	+/- 44
Fe-K	0.24690	+/- 0.00810	4389	+/- 144
Fe-L	---	---	130	+/- 34
Zn-K	0.02727	+/- 0.00988	287	+/- 104
Pb-L	0.08745	+/- 0.01535	417	+/- 73
Pb-M	---	---	1331	+/- 134
Au-L	0.00255	+/- 0.01088	15	+/- 65
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00854	+/- 0.00883	61	+/- 63
Os-L	0.01685	+/- 0.00973	123	+/- 71
Re-L	0.03392	+/- 0.02048	271	+/- 163
Ag-L	0.34632	+/- 0.01135	7750	+/- 254
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.09321	+/- 0.00630	2250	+/- 152
Ru-L	0.00000	+/- 0.00001	0	+/- 0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0185	2.402	11.45	4.43	+/- 0.23
Si-K	0.0129	1.868	5.96	2.40	+/- 0.19
Cl-K	0.0682	1.384	18.55	9.43	+/- 0.21
Mn-K	0.0089	1.121	1.26	1.00	+/- 0.21
Fe-K	0.1953	1.055	25.72	20.60	+/- 0.68
Zn-K	0.0216	1.020	2.35	2.20	+/- 0.80
Pb-L	0.0692	1.248	2.90	8.63	+/- 1.51
Au-L	0.0020	1.227	0.09	0.25	+/- 1.06
Pt-L	0.0000	1.225	0.00	0.00	+/- 0.00
Ir-L	0.0068	1.226	0.30	0.83	+/- 0.86
Os-L	0.0133	1.230	0.60	1.64	+/- 0.95
Re-L	0.0268	1.215	1.22	3.26	+/- 1.97
Ag-L	0.2739	1.302	23.06	35.68	+/- 1.17
Pd-L	0.0000	1.357	0.00	0.00	+/- 0.00
Rh-L	0.0737	1.309	6.54	9.65	+/- 0.65
Ru-L	0.0000	1.262	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
O -K	---	---	924	+/- 41
Al-K	0.02895	+/- 0.00077	1645	+/- 44
Si-K	0.01504	+/- 0.00122	839	+/- 68
Cl-K	0.07869	+/- 0.00170	3619	+/- 78
Mn-K	0.01702	+/- 0.00224	365	+/- 48
Fe-K	0.25743	+/- 0.00757	5236	+/- 154
Fe-L	---	---	214	+/- 40
Zn-K	0.01710	+/- 0.00922	207	+/- 111
Pb-L	0.07421	+/- 0.01323	404	+/- 72
Pb-M	---	---	1379	+/- 101
Au-L	0.01336	+/- 0.00980	91	+/- 67
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00759	+/- 0.00833	62	+/- 68
Os-L	0.00635	+/- 0.00946	54	+/- 80
Re-L	0.07213	+/- 0.01877	658	+/- 171
Ag-L	0.32878	+/- 0.01043	8420	+/- 267
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.08333	+/- 0.00568	2303	+/- 157
Ru-L	0.00000	+/- 0.00001	0	+/- 0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0227	2.365	13.84	5.37	+/- 0.14
Si-K	0.0118	1.866	5.45	2.20	+/- 0.18
Cl-K	0.0617	1.411	17.08	8.71	+/- 0.19
Mn-K	0.0134	1.116	1.89	1.49	+/- 0.20
Fe-K	0.2019	1.050	26.41	21.21	+/- 0.62
Zn-K	0.0134	1.020	1.46	1.37	+/- 0.74
Pb-L	0.0582	1.248	2.44	7.27	+/- 1.30
Au-L	0.0105	1.224	0.45	1.28	+/- 0.94
Pt-L	0.0000	1.223	0.00	0.00	+/- 0.00
Ir-L	0.0060	1.225	0.26	0.73	+/- 0.80
Os-L	0.0050	1.229	0.22	0.61	+/- 0.91
Re-L	0.0566	1.215	2.57	6.87	+/- 1.79
Ag-L	0.2579	1.324	22.01	34.14	+/- 1.08
Pd-L	0.0000	1.378	0.00	0.00	+/- 0.00
Rh-L	0.0654	1.338	5.91	8.75	+/- 0.60
Ru-L	0.0000	1.304	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Thu Nov 02 10:18:35 2006

n Risseghem 4-5 mixed 50/50 Run 4

Refit _Cl-K' _Cl-K" _Zn-K' _Zn-K" _Pb-L' _Pb-L" _Au-L' _Au-L" _Pt-L' _Pt-L" _Ir-
Refit _Pt-L _Pd-L _Ru-L
Filter Fit Method
Chi-sqd = 2.27 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
O -K	---	---	846	+/- 40
Al-K	0.02314	+/- 0.00122	1269	+/- 67
Si-K	0.01498	+/- 0.00128	806	+/- 69
Cl-K	0.09212	+/- 0.00192	4085	+/- 85
Mn-K	0.02677	+/- 0.00432	553	+/- 89
Fe-K	0.21809	+/- 0.00754	4278	+/- 148
Fe-L	---	---	291	+/- 51
Zn-K	0.00387	+/- 0.00913	46	+/- 107
Pb-L	0.09066	+/- 0.01390	476	+/- 73
Pb-M	---	---	1770	+/- 152
Au-L	0.01139	+/- 0.00955	75	+/- 63
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00284	+/- 0.00864	22	+/- 69
Os-L	0.00248	+/- 0.00968	21	+/- 80
Re-L	0.07593	+/- 0.01878	667	+/- 165
Ag-L	0.35116	+/- 0.01089	8673	+/- 269
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.08656	+/- 0.00604	2307	+/- 161
Ru-L	0.00000	+/- 0.00001	0	+/- 0

lement	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0181	2.317	11.12	4.19	+/- 0.22
Si-K	0.0117	1.808	5.40	2.12	+/- 0.18
Cl-K	0.0721	1.398	20.32	10.07	+/- 0.21
Mn-K	0.0209	1.120	3.05	2.35	+/- 0.38
Fe-K	0.1706	1.053	23.01	17.97	+/- 0.62
Zn-K	0.0030	1.012	0.34	0.31	+/- 0.72
Pb-L	0.0709	1.239	3.03	8.79	+/- 1.35
Au-L	0.0089	1.214	0.39	1.08	+/- 0.91
Pt-L	0.0000	1.216	0.00	0.00	+/- 0.00
Ir-L	0.0022	1.217	0.10	0.27	+/- 0.82
Os-L	0.0019	1.221	0.09	0.24	+/- 0.93
Re-L	0.0594	1.206	2.75	7.17	+/- 1.77
Ag-L	0.2747	1.327	24.16	36.45	+/- 1.13
Pd-L	0.0000	1.386	0.00	0.00	+/- 0.00
Rh-L	0.0677	1.328	6.25	9.00	+/- 0.63
Ru-L	0.0000	1.279	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Thu Nov 02 10:25:44 2006

an Risseghem 4-5 mixed 50/50 Run 5

Filter Fit Method
Chi-sqd = 2.13 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
O -K	---	---	637	+/- 26
Al-K	0.01866	+/- 0.00068	1011	+/- 37
Si-K	0.01609	+/- 0.00122	855	+/- 65
Cl-K	0.07718	+/- 0.00185	3382	+/- 81
Mn-K	0.01301	+/- 0.00226	266	+/- 46
Fe-K	0.29512	+/- 0.00805	5719	+/- 156
Fe-L	---	---	243	+/- 44
Zn-K	0.01107	+/- 0.00906	127	+/- 104
Pb-L	0.04704	+/- 0.01330	245	+/- 69
Pb-M	---	---	1252	+/- 113
Au-L	0.02696	+/- 0.00951	174	+/- 61
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Re-L	0.05785	+/- 0.01821	503	+/- 158
Ag-L	0.34103	+/- 0.01078	8320	+/- 263
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.08199	+/- 0.00654	2158	+/- 172
Ru-L	0.01399	+/- 0.00755	366	+/- 197

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0150	2.429	9.42	3.64	+/- 0.13
Si-K	0.0129	1.865	5.99	2.41	+/- 0.18
Cl-K	0.0620	1.353	16.52	8.39	+/- 0.20
Mn-K	0.0104	1.116	1.48	1.17	+/- 0.20
Fe-K	0.2370	1.052	31.19	24.94	+/- 0.68
Zn-K	0.0089	1.027	0.97	0.91	+/- 0.75
Pb-L	0.0378	1.254	1.60	4.74	+/- 1.34
Au-L	0.0217	1.231	0.95	2.67	+/- 0.94
Pt-L	0.0000	1.234	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.233	0.00	0.00	+/- 0.00
Os-L	0.0000	1.238	0.00	0.00	+/- 0.00
Re-L	0.0465	1.226	2.14	5.69	+/- 1.79
Ag-L	0.2739	1.297	23.00	35.54	+/- 1.12
Pd-L	0.0000	1.331	0.00	0.00	+/- 0.00
Rh-L	0.0659	1.286	5.75	8.47	+/- 0.67
Ru-L	0.0112	1.278	0.99	1.44	+/- 0.78
Total			100.00	100.00	

Thu Nov 02 10:29:28 2006

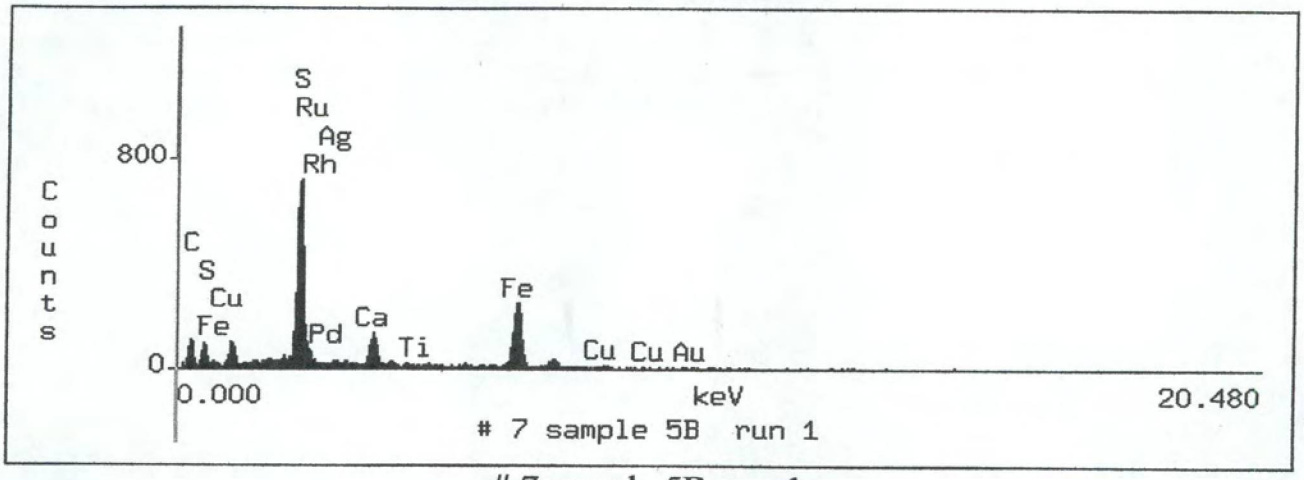
an Risseghem 4-5 mixed 50/50 Run 6

Filter Fit Method
Chi-sqd = 2.00 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
O -K	---	---	758	+/- 39
Al-K	0.02031	+/- 0.00111	1213	+/- 66
Si-K	0.01203	+/- 0.00118	706	+/- 69
Cl-K	0.08355	+/- 0.00180	4039	+/- 87
Mn-K	0.01415	+/- 0.00209	318	+/- 47
Fe-K	0.25852	+/- 0.00730	5528	+/- 156
Fe-L	---	---	187	+/- 39
Zn-K	0.01058	+/- 0.00893	134	+/- 113
Pb-L	0.06850	+/- 0.01276	392	+/- 73
Pb-M	---	---	1810	+/- 165
Au-L	0.00763	+/- 0.00975	54	+/- 69
Pt-L	0.01048	+/- 0.00946	82	+/- 74
Ir-L	0.01491	+/- 0.00817	126	+/- 69
Os-L	0.00672	+/- 0.00877	60	+/- 78
Re-L	0.05484	+/- 0.01828	526	+/- 175
Ag-L	0.34147	+/- 0.01055	9191	+/- 284
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.08403	+/- 0.00627	2441	+/- 182
Ru-L	0.01227	+/- 0.00667	354	+/- 193

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0161	2.376	10.19	3.83	+/- 0.21
Si-K	0.0095	1.837	4.48	1.75	+/- 0.17
Cl-K	0.0663	1.379	18.51	9.15	+/- 0.20
Mn-K	0.0112	1.116	1.64	1.25	+/- 0.19
Fe-K	0.2052	1.051	27.70	21.56	+/- 0.61
Zn-K	0.0084	1.018	0.94	0.86	+/- 0.72
Pb-L	0.0544	1.242	2.34	6.75	+/- 1.26
Au-L	0.0061	1.219	0.27	0.74	+/- 0.94
Pt-L	0.0083	1.222	0.37	1.02	+/- 0.92
Ir-L	0.0118	1.221	0.54	1.44	+/- 0.79
Os-L	0.0053	1.226	0.25	0.65	+/- 0.85
Re-L	0.0435	1.212	2.03	5.28	+/- 1.76
Ag-L	0.2711	1.318	23.76	35.72	+/- 1.10
Pd-L	0.0000	1.359	0.00	0.00	+/- 0.00
Rh-L	0.0667	1.312	6.10	8.75	+/- 0.65
Ru-L	0.0097	1.283	0.89	1.25	+/- 0.68
Total			100.00	100.00	

$(word picture c:/noran/vantage/bitmaps/csm_logo1.bmp)



7 sample 5B run 1

Accelerating Voltage: 25 KeV
Live Time: 30 seconds

Take Off Angle: 37.8797°
Dead Time: 11.23

Fri Jul 20 10:12:33 2007

7 sample 5B run 1

Refit _Fe-L' _Fe-L" _Cu-L' _Cu-L" _Ti-K' _Ti-K" _Cu-K' _Cu-K" _Au-L' _Au-L" _Au-
Refit _C -K" _Fe-L _Cu-L _Ti-K _Au-M _Ir-L _Ir-M _Ir-M" _Os-L _Os-M
Refit _Ir-M' _Re-M
Filter Fit Method
Chi-sqd = 7.91 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	1092	+/- 31
Fe-L	---	---	0	+/- 0
Cu-L	---	---	0	+/- 0
S -K	0.40168	+/- 0.00798	10928	+/- 217
Ti-K	0.00000	+/- 0.00001	0	+/- 0
Fe-K	0.42115	+/- 0.01362	4544	+/- 147
Cu-K	0.01369	+/- 0.00515	101	+/- 38
Au-L	0.01120	+/- 0.01400	40	+/- 50
Au-M	---	---	0	+/- 0
Pt-L	0.00583	+/- 0.01318	24	+/- 54
Pt-M	---	---	142	+/- 90
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Ir-M	---	---	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Os-M	---	---	0	+/- 0
Re-L	0.00311	+/- 0.01056	16	+/- 53
Re-M	---	---	0	+/- 0
Ag-L	0.02418	+/- 0.00680	327	+/- 92
Pd-L	0.00362	+/- 0.00906	50	+/- 126
Rh-L	0.01447	+/- 0.00939	212	+/- 138
Ru-L	0.01038	+/- 0.01128	151	+/- 164
Ca-K	0.09070	+/- 0.00496	1793	+/- 98

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
S -K	0.3271	1.278	56.13	41.80	+/- 0.83
Ti-K	0.0000	1.234	0.00	0.00	+/- 0.00
Fe-K	0.3429	1.118	29.54	38.32	+/- 1.24
Cu-K	0.0111	1.182	0.89	1.32	+/- 0.50
Au-L	0.0091	1.396	0.28	1.27	+/- 1.59
Pt-L	0.0047	1.397	0.15	0.66	+/- 1.50
Ir-L	0.0000	1.397	0.00	0.00	+/- 0.00
Os-L	0.0000	1.397	0.00	0.00	+/- 0.00
Re-L	0.0025	1.383	0.08	0.35	+/- 1.19
Ag-L	0.0197	1.506	1.18	2.96	+/- 0.83
Pd-L	0.0029	1.577	0.19	0.47	+/- 1.16
Rh-L	0.0118	1.649	0.81	1.94	+/- 1.26
Ru-L	0.0085	1.763	0.63	1.49	+/- 1.62
Ca-K	0.0739	1.274	10.11	9.41	+/- 0.51
Total			100.00	100.00	

Fri Jul 20 10:14:01 2007

7 sample 5B run 2

Refit _Fe-L' _Fe-L" _Cu-L' _Cu-L" _Ti-K' _Ti-K" _Cu-K' _Cu-K" _Au-L' _Au-L" _Au-
Refit _C -K' _Fe-L _Cu-L _Au-L _Au-M _Pt-L _Ir-L _Ir-M _Os-L _Os-M _Re-
Refit _Pt-M _Re-M
Filter Fit Method
Chi-sqd = 10.66 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	1353 +/-	50
Fe-L	---	---	0 +/-	0
Cu-L	---	---	0 +/-	0
S -K	0.38398 +/-	0.00711	11499 +/-	213
Ti-K	0.00011 +/-	0.00170	3 +/-	39
Fe-K	0.38188 +/-	0.01213	4536 +/-	144
Cu-K	0.00763 +/-	0.00493	62 +/-	40
Au-L	0.00000 +/-	0.00001	0 +/-	0
Au-M	---	---	0 +/-	0
Pt-L	0.00000 +/-	0.00001	0 +/-	0
Pt-M	---	---	0 +/-	0
Ir-L	0.00000 +/-	0.00001	0 +/-	0
Ir-M	---	---	0 +/-	0
Os-L	0.00000 +/-	0.00001	0 +/-	0
Os-M	---	---	0 +/-	0
Re-L	0.00000 +/-	0.00001	0 +/-	0
Re-M	---	---	0 +/-	0
Ag-L	0.01646 +/-	0.00631	245 +/-	94
Pd-L	0.00948 +/-	0.00843	144 +/-	128
Rh-L	0.02031 +/-	0.00903	326 +/-	145
Ru-L	0.02440 +/-	0.01069	389 +/-	170
Ca-K	0.15576 +/-	0.00556	3389 +/-	121

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
S -K	0.3150	1.226	51.45	38.60	+/- 0.72
Ti-K	0.0001	1.286	0.01	0.01	+/- 0.18
Fe-K	0.3132	1.133	27.16	35.49	+/- 1.13
Cu-K	0.0063	1.190	0.50	0.74	+/- 0.48
Au-L	0.0000	1.405	0.00	0.00	+/- 0.00
Pt-L	0.0000	1.407	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.403	0.00	0.00	+/- 0.00
Os-L	0.0000	1.404	0.00	0.00	+/- 0.00
Re-L	0.0000	1.393	0.00	0.00	+/- 0.00
Ag-L	0.0135	1.459	0.78	1.97	+/- 0.76
Pd-L	0.0078	1.498	0.47	1.16	+/- 1.04
Rh-L	0.0167	1.564	1.08	2.61	+/- 1.16
Ru-L	0.0200	1.667	1.41	3.34	+/- 1.46
Ca-K	0.1278	1.258	17.14	16.08	+/- 0.57
Total			100.00	100.00	

Fri Jul 20 10:15:07 2007

7 sample 5B run 3

Refit _Fe-L' _Fe-L" _Cu-L' _Cu-L" _Ti-K' _Ti-K" _Cu-K' _Cu-K" _Au-L' _Au-L" _Au-
Refit _Fe-L _Cu-L _Ti-K _Au-M _Pt-L _Ir-M _Ir-M" _Os-L _Os-M _Pd-L
Refit _Pt-M _Re-M
Filter Fit Method
Chi-sqd = 6.53 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	1270 +/-	51
Fe-L	---	---	0 +/-	0
Cu-L	---	---	0 +/-	0
S -K	0.36965 +/-	0.00772	8757 +/-	183
Ti-K	0.00000 +/-	0.00001	0 +/-	0
Fe-K	0.40010 +/-	0.01437	3760 +/-	135
Cu-K	0.00794 +/-	0.00560	51 +/-	36
Au-L	0.00354 +/-	0.01544	12 +/-	51
Au-M	---	---	0 +/-	0
Pt-L	0.00000 +/-	0.00001	0 +/-	0
Pt-M	---	---	0 +/-	0
Ir-L	0.00754 +/-	0.01401	28 +/-	52
Ir-M	---	---	0 +/-	0
Os-L	0.00000 +/-	0.00001	0 +/-	0
Os-M	---	---	0 +/-	0
Re-L	0.02878 +/-	0.01213	121 +/-	51
Re-M	---	---	0 +/-	0
Ag-L	0.03540 +/-	0.00552	417 +/-	65
Pd-L	0.00000 +/-	0.00001	0 +/-	0
Rh-L	0.02307 +/-	0.00661	294 +/-	84
Ru-L	0.01447 +/-	0.01009	182 +/-	127
Ca-K	0.10951 +/-	0.00575	1886 +/-	99

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
S -K	0.2968	1.295	53.38	38.44	+/- 0.80
Ti-K	0.0000	1.250	0.00	0.00	+/- 0.00
Fe-K	0.3213	1.116	28.57	35.84	+/- 1.29
Cu-K	0.0064	1.172	0.52	0.75	+/- 0.53
Au-L	0.0028	1.381	0.09	0.39	+/- 1.71
Pt-L	0.0000	1.387	0.00	0.00	+/- 0.00
Ir-L	0.0061	1.379	0.19	0.84	+/- 1.55
Os-L	0.0000	1.386	0.00	0.00	+/- 0.00
Re-L	0.0231	1.370	0.76	3.17	+/- 1.33
Ag-L	0.0284	1.497	1.76	4.25	+/- 0.66
Pd-L	0.0000	1.541	0.00	0.00	+/- 0.00
Rh-L	0.0185	1.627	1.30	3.01	+/- 0.86
Ru-L	0.0116	1.735	0.89	2.01	+/- 1.41
Ca-K	0.0879	1.284	12.54	11.29	+/- 0.59
Total			100.00	100.00	

Fri Jul 20 10:16:08 2007

7 sample 5B run 4

Refit _Fe-L' _Fe-L" _Cu-L' _Cu-L" _Ti-K' _Ti-K" _Cu-K' _Cu-K" _Au-L' _Au-L" _Au-
Refit _C -K" _Fe-L _Cu-L _Ti-K _Au-L _Au-M _Ir-L _Ir-M _Os-L _Os-M _Pd-
Refit _Pt-M
Filter Fit Method
Chi-sqd = 8.06 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	1549 +/-	36
Fe-L	---	---	0 +/-	0
Cu-L	---	---	0 +/-	0
S -K	0.40930 +/-	0.00830	10060 +/-	204
Ti-K	0.00000 +/-	0.00001	0 +/-	0
Fe-K	0.41539 +/-	0.01416	4050 +/-	138
Cu-K	0.01125 +/-	0.00555	76 +/-	37
Au-L	0.00000 +/-	0.00001	0 +/-	0
Au-M	---	---	0 +/-	0
Pt-L	0.00589 +/-	0.01375	22 +/-	51
Pt-M	---	---	0 +/-	0
Ir-L	0.00000 +/-	0.00001	0 +/-	0
Ir-M	---	---	0 +/-	0
Os-L	0.00000 +/-	0.00001	0 +/-	0
Os-M	---	---	0 +/-	0
Re-L	0.00413 +/-	0.01284	18 +/-	56
Re-M	---	---	41 +/-	80
Ag-L	0.02169 +/-	0.00532	265 +/-	65
Pd-L	0.00000 +/-	0.00001	0 +/-	0
Rh-L	0.01586 +/-	0.00630	209 +/-	83
Ru-L	0.01302 +/-	0.00981	170 +/-	128
Ca-K	0.10348 +/-	0.00560	1848 +/-	100

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
S -K	0.3358	1.254	55.80	42.10	+/- 0.85
Ti-K	0.0000	1.240	0.00	0.00	+/- 0.00
Fe-K	0.3408	1.122	29.10	38.25	+/- 1.30
Cu-K	0.0092	1.189	0.73	1.10	+/- 0.54
Au-L	0.0000	1.404	0.00	0.00	+/- 0.00
Pt-L	0.0048	1.403	0.15	0.68	+/- 1.58
Ir-L	0.0000	1.402	0.00	0.00	+/- 0.00
Os-L	0.0000	1.403	0.00	0.00	+/- 0.00
Re-L	0.0034	1.389	0.11	0.47	+/- 1.46
Ag-L	0.0178	1.499	1.05	2.67	+/- 0.65
Pd-L	0.0000	1.555	0.00	0.00	+/- 0.00
Rh-L	0.0130	1.637	0.88	2.13	+/- 0.85
Ru-L	0.0107	1.749	0.79	1.87	+/- 1.41
Ca-K	0.0849	1.265	11.39	10.74	+/- 0.58
Total			100.00	100.00	

Fri Jul 20 10:17:14 2007

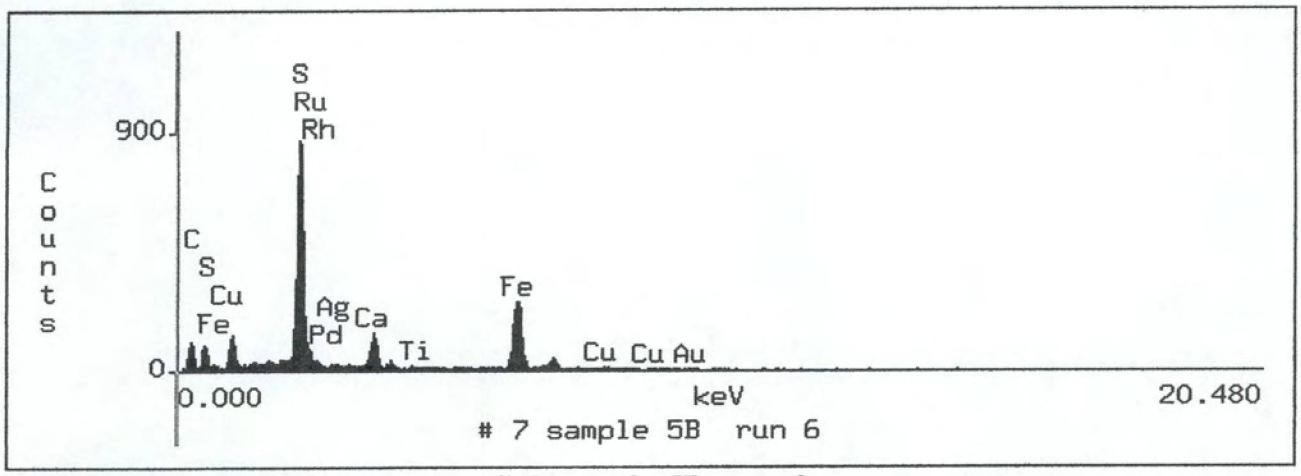
7 sample 5B run 5

Refit _Fe-L' _Fe-L" _Cu-L' _Cu-L" _Ti-K' _Ti-K" _Cu-K' _Cu-K" _Au-L' _Au-L" _Au-
Refit _C -K' _C -K" _Fe-L _Cu-L _Ti-K _Au-M _Ir-M _Ir-M" _Os-M
Refit _Pt-M _Re-M
Filter Fit Method
Chi-sqd = 7.28 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	1125	+/- 32
Fe-L	---	---	0	+/- 0
Cu-L	---	---	0	+/- 0
S -K	0.35409	+/- 0.00661	10614	+/- 198
Ti-K	0.00000	+/- 0.00001	0	+/- 0
Fe-K	0.45232	+/- 0.01304	5378	+/- 155
Cu-K	0.01452	+/- 0.00517	118	+/- 42
Au-L	0.01220	+/- 0.01271	48	+/- 50
Au-M	---	---	0	+/- 0
Pt-L	0.00920	+/- 0.01334	41	+/- 59
Pt-M	---	---	0	+/- 0
Ir-L	0.00170	+/- 0.01278	9	+/- 67
Ir-M	---	---	0	+/- 0
Os-L	0.00123	+/- 0.01312	7	+/- 72
Os-M	---	---	0	+/- 0
Re-L	0.00752	+/- 0.01109	41	+/- 60
Re-M	---	---	0	+/- 0
Ag-L	0.00738	+/- 0.00624	111	+/- 94
Pd-L	0.00256	+/- 0.00822	40	+/- 127
Rh-L	0.00865	+/- 0.00853	140	+/- 138
Ru-L	0.02123	+/- 0.01011	339	+/- 161
Ca-K	0.10739	+/- 0.00496	2340	+/- 108

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
S -K	0.2884	1.312	51.81	37.83	+/- 0.71
Ti-K	0.0000	1.219	0.00	0.00	+/- 0.00
Fe-K	0.3684	1.110	32.15	40.89	+/- 1.18
Cu-K	0.0118	1.180	0.96	1.39	+/- 0.50
Au-L	0.0099	1.391	0.31	1.38	+/- 1.44
Pt-L	0.0075	1.394	0.24	1.04	+/- 1.51
Ir-L	0.0014	1.390	0.04	0.19	+/- 1.45
Os-L	0.0010	1.391	0.03	0.14	+/- 1.49
Re-L	0.0061	1.380	0.20	0.84	+/- 1.25
Ag-L	0.0060	1.504	0.37	0.90	+/- 0.76
Pd-L	0.0021	1.552	0.13	0.32	+/- 1.04
Rh-L	0.0070	1.621	0.49	1.14	+/- 1.13
Ru-L	0.0173	1.730	1.30	2.99	+/- 1.42
Ca-K	0.0875	1.249	11.97	10.92	+/- 0.50
Total			100.00	100.00	

$(word picture c:/noran/vantage/bitmaps/csm_logo1.bmp)



7 sample 5B run 6

Accelerating Voltage: 25 KeV
Live Time: 30 seconds

Take Off Angle: 37.8797°
Dead Time: 12.15

Fri Jul 20 10:18:18 2007

7 sample 5B run 6

Refit _Fe-L' _Fe-L" _Cu-L' _Cu-L" _Ti-K' _Ti-K" _Cu-K' _Cu-K" _Au-L' _Au-L" _Au-
Refit _C -K' _C -K" _Fe-L _Cu-L _Pt-M _Os-M
Refit _Ir-M' _Ir-M" _Re-M'
Filter Fit Method
Chi-sqd = 9.21 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	1097	+/- 32
Fe-L	---	---	0	+/- 0
Cu-L	---	---	0	+/- 0
S -K	0.38860	+/- 0.00902	13362	+/- 310
Ti-K	0.00064	+/- 0.00148	13	+/- 31
Fe-K	0.38062	+/- 0.01107	5191	+/- 151
Cu-K	0.00912	+/- 0.00429	86	+/- 40
Au-L	0.02725	+/- 0.01197	124	+/- 54
Au-M	---	---	186	+/- 275
Pt-L	0.01604	+/- 0.01183	80	+/- 59
Pt-M	---	---	0	+/- 0
Ir-L	0.01077	+/- 0.01114	58	+/- 60
Ir-M	---	---	190	+/- 191
Os-L	0.00840	+/- 0.01090	48	+/- 62
Os-M	---	---	0	+/- 0
Re-L	0.00508	+/- 0.00901	31	+/- 56
Re-M	---	---	372	+/- 167
Ag-L	0.01726	+/- 0.00544	296	+/- 93
Pd-L	0.00287	+/- 0.00740	51	+/- 131
Rh-L	0.02235	+/- 0.00814	413	+/- 150
Ru-L	0.02979	+/- 0.00991	545	+/- 181
Ca-K	0.08122	+/- 0.00420	2029	+/- 105

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
S -K	0.3043	1.337	57.25	40.70	+/- 0.94
Ti-K	0.0005	1.276	0.06	0.06	+/- 0.15
Fe-K	0.2981	1.111	26.76	33.13	+/- 0.96
Cu-K	0.0071	1.155	0.59	0.82	+/- 0.39
Au-L	0.0213	1.369	0.67	2.92	+/- 1.28
Pt-L	0.0126	1.371	0.40	1.72	+/- 1.27
Ir-L	0.0084	1.368	0.27	1.15	+/- 1.19
Os-L	0.0066	1.369	0.21	0.90	+/- 1.17
Re-L	0.0040	1.358	0.13	0.54	+/- 0.96
Ag-L	0.0135	1.576	0.89	2.13	+/- 0.67
Pd-L	0.0022	1.616	0.15	0.36	+/- 0.94
Rh-L	0.0175	1.684	1.29	2.95	+/- 1.07
Ru-L	0.0233	1.801	1.87	4.20	+/- 1.40
Ca-K	0.0636	1.321	9.46	8.40	+/- 0.43
Total			100.00	100.00	

Fri Jul 20 10:21:50 2007

7 sample 6A run 1

Refit _Al-K' _Al-K" _P -K' _P -K" _Au-L' _Au-L" _Au-M' _Au-M" _Pt-L' _Pt-L" _Pt-
Refit _Fe-L" _Si-K" _Au-M _Os-M _Ag-L _Pd-L _Ru-L
Refit _Cr-L" _Ir-M
Filter Fit Method
Chi-sqd = 1.67 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	681	+/- 46
Cr-L	---	---	1267	+/- 68
Fe-L	---	---	735	+/- 58
Al-K	0.00371	+/- 0.00069	188	+/- 35
Si-K	0.11590	+/- 0.00194	5735	+/- 96
P -K	0.09590	+/- 0.00282	4864	+/- 143
Ti-K	0.03404	+/- 0.00364	916	+/- 98
V -K	0.06016	+/- 0.00513	1418	+/- 121
Cr-K	0.04944	+/- 0.00518	1116	+/- 117
Fe-K	0.58908	+/- 0.01111	10662	+/- 201
Au-L	0.00868	+/- 0.00935	53	+/- 57
Au-M	---	---	0	+/- 0
Pt-L	0.00650	+/- 0.00952	43	+/- 63
Pt-M	---	---	2403	+/- 143
Ir-L	0.01399	+/- 0.00881	101	+/- 63
Ir-M	---	---	0	+/- 0
Os-L	0.01144	+/- 0.00848	86	+/- 64
Os-M	---	---	0	+/- 0
Re-L	0.01074	+/- 0.00753	87	+/- 61
Re-M	---	---	657	+/- 232
Ag-L	0.00000	+/- 0.00001	0	+/- 0
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.00041	+/- 0.00262	10	+/- 64
Ru-L	0.00000	+/- 0.00001	0	+/- 0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0029	2.525	1.20	0.74	+/- 0.14
Si-K	0.0912	1.859	26.60	16.95	+/- 0.28
P -K	0.0755	1.962	21.06	14.80	+/- 0.44
Ti-K	0.0268	1.090	2.69	2.92	+/- 0.31
V -K	0.0473	1.059	4.34	5.01	+/- 0.43
Cr-K	0.0389	0.995	3.28	3.87	+/- 0.41
Fe-K	0.4635	1.081	39.53	50.10	+/- 0.94
Au-L	0.0068	1.375	0.21	0.94	+/- 1.01
Pt-L	0.0051	1.378	0.16	0.70	+/- 1.03
Ir-L	0.0110	1.374	0.35	1.51	+/- 0.95
Os-L	0.0090	1.379	0.29	1.24	+/- 0.92
Re-L	0.0085	1.369	0.27	1.16	+/- 0.81
Ag-L	0.0000	1.304	0.00	0.00	+/- 0.00
Pd-L	0.0000	1.371	0.00	0.00	+/- 0.00
Rh-L	0.0003	1.511	0.02	0.05	+/- 0.31
Ru-L	0.0000	1.508	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Fri Jul 20 10:25:14 2007

7 sample 6A run 2

Refit _Cr-L' _Cr-L" _Al-K' _Al-K" _Si-K' _Si-K" _P -K' _P -K" _Au-L' _Au-L" _Au-
Refit _P -K _Ir-L _Os-L _Os-M _Rh-L _Ru-L
Refit _Au-M
Filter Fit Method
Chi-sqd = 4.45 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	584	+/- 39
Cr-L	---	---	1118	+/- 62
Fe-L	---	---	413	+/- 80
Al-K	0.00619	+/- 0.00090	241	+/- 35
Si-K	0.12347	+/- 0.00234	4707	+/- 89
P -K	0.00000	+/- 0.00001	0	+/- 0
Ti-K	0.03975	+/- 0.00439	824	+/- 91
V -K	0.06025	+/- 0.00611	1094	+/- 111
Cr-K	0.05624	+/- 0.00627	978	+/- 109
Fe-K	0.68710	+/- 0.01384	9580	+/- 193
Au-L	0.00282	+/- 0.01170	13	+/- 54
Au-M	---	---	0	+/- 0
Pt-L	0.00549	+/- 0.01177	29	+/- 61
Pt-M	---	---	3762	+/- 130
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Ir-M	---	---	5137	+/- 180
Os-L	0.00000	+/- 0.00001	0	+/- 0
Os-M	---	---	0	+/- 0
Re-L	0.00705	+/- 0.00946	44	+/- 59
Re-M	---	---	2142	+/- 195
Ag-L	0.00509	+/- 0.00378	90	+/- 67
Pd-L	0.00656	+/- 0.00364	118	+/- 66
Rh-L	0.00000	+/- 0.00001	0	+/- 0
Ru-L	0.00000	+/- 0.00001	0	+/- 0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0051	2.826	2.47	1.45	+/- 0.21
Si-K	0.1028	2.063	34.55	21.20	+/- 0.40
P -K	0.0000	2.039	0.00	0.00	+/- 0.00
Ti-K	0.0331	1.042	3.29	3.45	+/- 0.38
V -K	0.0502	1.013	4.56	5.08	+/- 0.52
Cr-K	0.0468	0.950	3.91	4.45	+/- 0.50
Fe-K	0.5719	1.072	50.26	61.34	+/- 1.24
Au-L	0.0023	1.382	0.08	0.32	+/- 1.35
Pt-L	0.0046	1.386	0.15	0.63	+/- 1.36
Ir-L	0.0000	1.376	0.00	0.00	+/- 0.00
Os-L	0.0000	1.382	0.00	0.00	+/- 0.00
Re-L	0.0059	1.381	0.20	0.81	+/- 1.09
Ag-L	0.0042	1.268	0.23	0.54	+/- 0.40
Pd-L	0.0055	1.332	0.31	0.73	+/- 0.40
Rh-L	0.0000	1.311	0.00	0.00	+/- 0.00
Ru-L	0.0000	1.382	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Fri Jul 20 10:26:38 2007

#7 sample 6A run 3

Refit _Al-K' _Al-K" _P -K' _P -K" _Au-L' _Au-L" _Au-M' _Au-M" _Pt-L' _Pt-L" _Pt-
Refit _Fe-L' _Si-K" _Au-M _Pt-L _Os-M
Refit _Ir-M
Filter Fit Method
Chi-sqd = 2.52 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	498	+/- 53
Cr-L	---	---	1774	+/- 133
Fe-L	---	---	765	+/- 91
Al-K	0.01493	+/- 0.00113	610	+/- 46
Si-K	0.25221	+/- 0.00314	10109	+/- 126
P -K	0.07359	+/- 0.00314	3024	+/- 129
Ti-K	0.02913	+/- 0.00417	636	+/- 91
V -K	0.04221	+/- 0.00571	807	+/- 109
Cr-K	0.03500	+/- 0.00591	640	+/- 108
Fe-K	0.48698	+/- 0.01194	7141	+/- 175
Au-L	0.00762	+/- 0.01072	37	+/- 52
Au-M	---	---	0	+/- 0
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Pt-M	---	---	1626	+/- 122
Ir-L	0.01053	+/- 0.00984	62	+/- 58
Ir-M	---	---	0	+/- 0
Os-L	0.01878	+/- 0.01047	113	+/- 63
Os-M	---	---	0	+/- 0
Re-L	0.01052	+/- 0.00899	70	+/- 60
Re-M	---	---	388	+/- 265
Ag-L	0.00800	+/- 0.00446	147	+/- 82
Pd-L	0.00629	+/- 0.00555	118	+/- 104
Rh-L	0.00156	+/- 0.00535	31	+/- 106
Ru-L	0.00265	+/- 0.00433	53	+/- 86

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0108	2.202	3.54	2.39	+/- 0.18
Si-K	0.1832	1.719	44.80	31.49	+/- 0.39
P -K	0.0535	2.218	15.29	11.86	+/- 0.51
Ti-K	0.0212	1.146	2.02	2.42	+/- 0.35
V -K	0.0307	1.112	2.67	3.41	+/- 0.46
Cr-K	0.0254	1.047	2.04	2.66	+/- 0.45
Fe-K	0.3537	1.101	27.86	38.95	+/- 0.95
Au-L	0.0055	1.390	0.16	0.77	+/- 1.08
Pt-L	0.0000	1.382	0.00	0.00	+/- 0.00
Ir-L	0.0076	1.386	0.22	1.06	+/- 0.99
Os-L	0.0136	1.388	0.40	1.89	+/- 1.06
Re-L	0.0076	1.376	0.23	1.05	+/- 0.90
Ag-L	0.0058	1.446	0.31	0.84	+/- 0.47
Pd-L	0.0046	1.525	0.26	0.70	+/- 0.61
Rh-L	0.0011	1.590	0.07	0.18	+/- 0.62
Ru-L	0.0019	1.700	0.13	0.33	+/- 0.53
Total			100.00	100.00	

Fri Jul 20 10:27:45 2007

7 sample 6A run 4

Refit _Al-K' _Al-K" _P -K' _P -K" _Ti-K' _Ti-K" _Au-L' _Au-L" _Au-M' _Au-M" _Pt-
Refit _Si-K" _Au-M _Ir-L _Os-L _Os-M _Re-L _Ru-L
Refit _Ir-M
Filter Fit Method
Chi-sqd = 2.87 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	794	+/- 59
Cr-L	---	---	1983	+/- 205
Fe-L	---	---	1015	+/- 136
Al-K	0.01034	+/- 0.00099	482	+/- 46
Si-K	0.25615	+/- 0.00295	11708	+/- 135
P -K	0.08985	+/- 0.00310	4209	+/- 145
Ti-K	0.01271	+/- 0.00177	316	+/- 44
V -K	0.04579	+/- 0.00459	997	+/- 100
Cr-K	0.04614	+/- 0.00523	962	+/- 109
Fe-K	0.51195	+/- 0.01130	8559	+/- 189
Au-L	0.00199	+/- 0.00976	11	+/- 55
Au-M	---	---	0	+/- 0
Pt-L	0.01194	+/- 0.00965	74	+/- 59
Pt-M	---	---	1947	+/- 139
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Ir-M	---	---	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Os-M	---	---	0	+/- 0
Re-L	0.00000	+/- 0.00001	0	+/- 0
Re-M	---	---	706	+/- 286
Ag-L	0.00363	+/- 0.00391	77	+/- 83
Pd-L	0.00491	+/- 0.00430	105	+/- 92
Rh-L	0.00460	+/- 0.00363	104	+/- 82
Ru-L	0.00000	+/- 0.00001	0	+/- 0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0075	2.234	2.41	1.67	+/- 0.16
Si-K	0.1856	1.719	44.10	31.92	+/- 0.37
P -K	0.0651	2.196	17.91	14.30	+/- 0.49
Ti-K	0.0092	1.135	0.85	1.05	+/- 0.15
V -K	0.0332	1.104	2.79	3.66	+/- 0.37
Cr-K	0.0334	1.033	2.58	3.46	+/- 0.39
Fe-K	0.3710	1.107	28.55	41.09	+/- 0.91
Au-L	0.0014	1.406	0.04	0.20	+/- 0.99
Pt-L	0.0087	1.407	0.24	1.22	+/- 0.98
Ir-L	0.0000	1.393	0.00	0.00	+/- 0.00
Os-L	0.0000	1.397	0.00	0.00	+/- 0.00
Re-L	0.0000	1.387	0.00	0.00	+/- 0.00
Ag-L	0.0026	1.425	0.13	0.37	+/- 0.40
Pd-L	0.0036	1.508	0.20	0.54	+/- 0.47
Rh-L	0.0033	1.575	0.20	0.53	+/- 0.41
Ru-L	0.0000	1.571	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Fri Jul 20 10:28:46 2007

7 sample 6A run 5

Refit _Cr-L' _Cr-L" _Fe-L' _Fe-L" _Al-K' _Al-K" _Si-K' _Si-K" _P -K' _P -K" _Ti-
Refit _P -K _Pt-L _Pt-M _Ir-L _Os-M _Ru-L
Refit _Pd-L
Filter Fit Method
Chi-sqd = 6.02 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	3388	+/- 68
Cr-L	---	---	787	+/- 59
Fe-L	---	---	343	+/- 45
Al-K	0.00786	+/- 0.00173	146	+/- 32
Si-K	0.22278	+/- 0.00458	4038	+/- 83
P -K	0.00000	+/- 0.00001	0	+/- 0
Ti-K	0.01918	+/- 0.00375	189	+/- 37
V -K	0.04043	+/- 0.00498	349	+/- 43
Cr-K	0.03036	+/- 0.00532	252	+/- 44
Fe-K	0.61415	+/- 0.02112	4072	+/- 140
Au-L	0.02325	+/- 0.01960	52	+/- 44
Au-M	---	---	73	+/- 103
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Pt-M	---	---	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Ir-M	---	---	3327	+/- 176
Os-L	0.01323	+/- 0.01875	36	+/- 51
Os-M	---	---	0	+/- 0
Re-L	0.00169	+/- 0.01685	5	+/- 53
Re-M	---	---	1356	+/- 183
Ag-L	0.01336	+/- 0.00722	112	+/- 61
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.01373	+/- 0.00692	123	+/- 62
Ru-L	0.00000	+/- 0.00001	0	+/- 0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0061	2.513	2.43	1.53	+/- 0.34
Si-K	0.1726	1.887	49.72	32.58	+/- 0.67
P -K	0.0000	2.168	0.00	0.00	+/- 0.00
Ti-K	0.0149	1.105	1.47	1.64	+/- 0.32
V -K	0.0313	1.069	2.82	3.35	+/- 0.41
Cr-K	0.0235	0.996	1.93	2.34	+/- 0.41
Fe-K	0.4759	1.082	39.51	51.48	+/- 1.77
Au-L	0.0180	1.384	0.54	2.49	+/- 2.10
Pt-L	0.0000	1.378	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.376	0.00	0.00	+/- 0.00
Os-L	0.0103	1.387	0.32	1.42	+/- 2.02
Re-L	0.0013	1.378	0.04	0.18	+/- 1.80
Ag-L	0.0103	1.360	0.56	1.41	+/- 0.76
Pd-L	0.0000	1.364	0.00	0.00	+/- 0.00
Rh-L	0.0106	1.484	0.66	1.58	+/- 0.80
Ru-L	0.0000	1.492	0.00	0.00	+/- 0.00
Total			100.00	100.00	

Fri Jul 20 10:30:04 2007

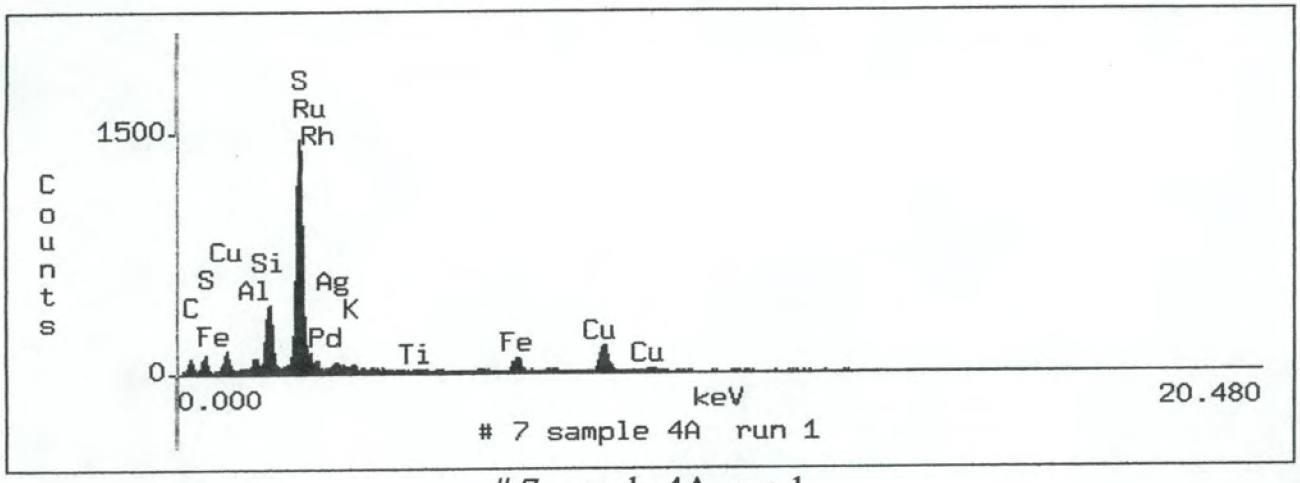
"7 sample 6A run 6

Refit _Al-K' _Al-K" _P -K' _P -K" _Au-L' _Au-L" _Au-M' _Au-M" _Pt-L' _Pt-L" _Pt-
Refit _Fe-L' _Au-M _Pt-L _Ir-L _Os-L _Os-M _Re-L _Pd-L _Ru-L
Refit _Ir-M
Filter Fit Method
Chi-sqd = 1.63 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	536	+/- 49
Cr-L	---	---	1286	+/- 124
Fe-L	---	---	809	+/- 83
Al-K	0.00580	+/- 0.00082	307	+/- 43
Si-K	0.12747	+/- 0.00297	6601	+/- 154
P -K	0.06351	+/- 0.00247	3371	+/- 131
Ti-K	0.03806	+/- 0.00351	1073	+/- 99
V -K	0.03656	+/- 0.00458	902	+/- 113
Cr-K	0.03594	+/- 0.00470	850	+/- 111
Fe-K	0.68509	+/- 0.01140	12979	+/- 216
Au-L	0.00207	+/- 0.00845	14	+/- 56
Au-M	---	---	0	+/- 0
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Pt-M	---	---	2038	+/- 132
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Ir-M	---	---	0	+/- 0
Os-L	0.00000	+/- 0.00001	0	+/- 0
Os-M	---	---	0	+/- 0
Re-L	0.00000	+/- 0.00001	0	+/- 0
Re-M	---	---	73	+/- 260
Ag-L	0.00253	+/- 0.00274	60	+/- 65
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.00297	+/- 0.00254	77	+/- 66
Ru-L	0.00000	+/- 0.00001	0	+/- 0

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0046	2.678	1.97	1.23	+/- 0.17
Si-K	0.1012	1.966	30.45	19.90	+/- 0.46
P -K	0.0504	2.070	14.49	10.44	+/- 0.41
Ti-K	0.0302	1.062	2.88	3.21	+/- 0.30
V -K	0.0290	1.028	2.52	2.99	+/- 0.37
Cr-K	0.0285	0.962	2.27	2.75	+/- 0.36
Fe-K	0.5441	1.078	45.13	58.65	+/- 0.98
Au-L	0.0016	1.396	0.05	0.23	+/- 0.94
Pt-L	0.0000	1.389	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.387	0.00	0.00	+/- 0.00
Os-L	0.0000	1.393	0.00	0.00	+/- 0.00
Re-L	0.0000	1.385	0.00	0.00	+/- 0.00
Ag-L	0.0020	1.317	0.11	0.26	+/- 0.29
Pd-L	0.0000	1.308	0.00	0.00	+/- 0.00
Rh-L	0.0024	1.441	0.14	0.34	+/- 0.29
Ru-L	0.0000	1.434	0.00	0.00	+/- 0.00
Total			100.00	100.00	

$(word picture c:/noran/vantage/bitmaps/csm_logo1.bmp)



7 sample 4A run 1

Accelerating Voltage: 25 KeV
Live Time: 30 seconds

Take Off Angle: 37.8797°
Dead Time: 18.568

Sulfur (Kα) overlap on Rh (Lα)
Trace Au

Fri Jul 20 09:41:18 2007

7 sample 4A run 1

Refit _Fe-L' _Fe-L" _Cu-L' _Cu-L" _Al-K' _Al-K" _Si-K' _Si-K" _Ti-K' _Ti-K" _Au-
Refit _C -K' _C -K" _Fe-L _Pt-L _Pt-M _Ir-L _Os-L _Os-M _Re-L
Filter Fit Method
Chi-sqd = 7.95 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	884	+/- 31
Fe-L	---	---	0	+/- 0
Cu-L	---	---	1377	+/- 51
Al-K	0.01341	+/- 0.00086	779	+/- 50
Si-K	0.09168	+/- 0.00193	5231	+/- 110
S -K	0.43980	+/- 0.00853	23146	+/- 449
Ti-K	0.00380	+/- 0.00129	119	+/- 40
Fe-K	0.07297	+/- 0.00599	1523	+/- 125
Cu-K	0.21573	+/- 0.01086	3079	+/- 155
Au-L	0.00347	+/- 0.00883	25	+/- 63
Au-M	---	---	1306	+/- 405
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Pt-M	---	---	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Ir-M	---	---	1430	+/- 351
Os-L	0.00000	+/- 0.00001	0	+/- 0
Os-M	---	---	0	+/- 0
Re-L	0.00000	+/- 0.00001	0	+/- 0
Re-M	---	---	1934	+/- 280
Ag-L	0.04628	+/- 0.00543	1211	+/- 142
Pd-L	0.00798	+/- 0.00697	213	+/- 186
Rh-L	0.03800	+/- 0.00734	1073	+/- 207
Ru-L	0.05860	+/- 0.00880	1639	+/- 246
K -K	0.00828	+/- 0.00122	345	+/- 51

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0096	2.134	3.16	2.05	+/- 0.13
Si-K	0.0656	1.655	16.09	10.86	+/- 0.23
S -K	0.3148	1.370	56.00	43.15	+/- 0.84
Ti-K	0.0027	1.319	0.31	0.36	+/- 0.12
Fe-K	0.0522	1.103	4.29	5.76	+/- 0.47
Cu-K	0.1544	1.129	11.41	17.43	+/- 0.88
Au-L	0.0025	1.381	0.07	0.34	+/- 0.87
Pt-L	0.0000	1.390	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.386	0.00	0.00	+/- 0.00
Os-L	0.0000	1.345	0.00	0.00	+/- 0.00
Re-L	0.0000	1.330	0.00	0.00	+/- 0.00
Ag-L	0.0331	1.670	2.13	5.53	+/- 0.65
Pd-L	0.0057	1.663	0.37	0.95	+/- 0.83
Rh-L	0.0272	1.747	1.92	4.75	+/- 0.92
Ru-L	0.0419	1.878	3.24	7.88	+/- 1.18
K -K	0.0059	1.575	0.99	0.93	+/- 0.14
Total			100.00	100.00	

Fri Jul 20 09:44:26 2007

7 sample 4A run 2

Refit _Fe-L' _Fe-L" _Al-K' _Al-K" _Si-K' _Si-K" _Ti-K' _Ti-K" _Au-L' _Au-L" _Au-
Refit _Fe-L _Au-L _Pt-L _Pt-M _Ir-L _Os-L _Os-M _Re-L _Pd-L
Filter Fit Method
Chi-sqd = 10.07 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	697	+/- 46
Fe-L	---	---	0	+/- 0
Cu-L	---	---	1748	+/- 84
Al-K	0.01274	+/- 0.00097	632	+/- 48
Si-K	0.09869	+/- 0.00214	4803	+/- 104
S -K	0.42235	+/- 0.00918	18960	+/- 412
Ti-K	0.00408	+/- 0.00147	108	+/- 39
Fe-K	0.08246	+/- 0.00668	1468	+/- 119
Cu-K	0.23493	+/- 0.01216	2860	+/- 148
Au-L	0.00000	+/- 0.00001	0	+/- 0
Au-M	---	---	1262	+/- 376
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Pt-M	---	---	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Ir-M	---	---	1445	+/- 329
Os-L	0.00000	+/- 0.00001	0	+/- 0
Os-M	---	---	0	+/- 0
Re-L	0.00000	+/- 0.00001	0	+/- 0
Re-M	---	---	2107	+/- 266
Ag-L	0.04848	+/- 0.00439	1083	+/- 98
Pd-L	0.00000	+/- 0.00001	0	+/- 0
Rh-L	0.03574	+/- 0.00515	861	+/- 124
Ru-L	0.05075	+/- 0.00793	1210	+/- 189
K -K	0.00979	+/- 0.00138	349	+/- 49

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0091	2.180	3.04	1.99	+/- 0.15
Si-K	0.0706	1.683	17.45	11.89	+/- 0.26
S -K	0.3023	1.392	54.13	42.09	+/- 0.91
Ti-K	0.0029	1.308	0.33	0.38	+/- 0.14
Fe-K	0.0590	1.098	4.78	6.48	+/- 0.53
Cu-K	0.1682	1.131	12.34	19.03	+/- 0.98
Au-L	0.0000	1.392	0.00	0.00	+/- 0.00
Pt-L	0.0000	1.394	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.390	0.00	0.00	+/- 0.00
Os-L	0.0000	1.345	0.00	0.00	+/- 0.00
Re-L	0.0000	1.331	0.00	0.00	+/- 0.00
Ag-L	0.0347	1.657	2.20	5.75	+/- 0.52
Pd-L	0.0000	1.666	0.00	0.00	+/- 0.00
Rh-L	0.0256	1.750	1.79	4.48	+/- 0.65
Ru-L	0.0363	1.880	2.79	6.83	+/- 1.07
K -K	0.0070	1.552	1.15	1.09	+/- 0.15
Total			100.00	100.00	

Fri Jul 20 09:46:25 2007

7 sample 4A run 3

Refit _Fe-L' _Fe-L" _Al-K' _Al-K" _Si-K' _Si-K" _Ti-K' _Ti-K" _Au-L' _Au-L" _Au-
Refit _C -K" _Fe-L _Pt-L _Pt-M _Ir-L _Os-L _Os-M
Filter Fit Method
Chi-sqd = 8.56 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	616	+/- 28
Fe-L	---	---	0	+/- 0
Cu-L	---	---	1866	+/- 90
Al-K	0.01014	+/- 0.00075	693	+/- 51
Si-K	0.08730	+/- 0.00171	5864	+/- 115
S -K	0.47085	+/- 0.00801	29171	+/- 496
Ti-K	0.00257	+/- 0.00112	95	+/- 41
Fe-K	0.06789	+/- 0.00521	1669	+/- 128
Cu-K	0.21224	+/- 0.00934	3566	+/- 157
Au-L	0.00504	+/- 0.00812	42	+/- 67
Au-M	---	---	1376	+/- 446
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Pt-M	---	---	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Ir-M	---	---	1762	+/- 379
Os-L	0.00000	+/- 0.00001	0	+/- 0
Os-M	---	---	0	+/- 0
Re-L	0.00382	+/- 0.00700	43	+/- 79
Re-M	---	---	2479	+/- 298
Ag-L	0.04415	+/- 0.00490	1360	+/- 151
Pd-L	0.00690	+/- 0.00630	218	+/- 199
Rh-L	0.03420	+/- 0.00668	1137	+/- 222
Ru-L	0.04492	+/- 0.00811	1478	+/- 267
K -K	0.00996	+/- 0.00108	490	+/- 53

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0073	2.108	2.35	1.54	+/- 0.11
Si-K	0.0630	1.627	14.98	10.26	+/- 0.20
S -K	0.3400	1.362	59.24	46.30	+/- 0.79
Ti-K	0.0019	1.322	0.21	0.25	+/- 0.11
Fe-K	0.0490	1.105	3.98	5.42	+/- 0.42
Cu-K	0.1533	1.132	11.20	17.35	+/- 0.76
Au-L	0.0036	1.387	0.11	0.50	+/- 0.81
Pt-L	0.0000	1.395	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.390	0.00	0.00	+/- 0.00
Os-L	0.0000	1.350	0.00	0.00	+/- 0.00
Re-L	0.0028	1.334	0.08	0.37	+/- 0.67
Ag-L	0.0319	1.682	2.04	5.36	+/- 0.60
Pd-L	0.0050	1.701	0.33	0.85	+/- 0.77
Rh-L	0.0247	1.789	1.76	4.42	+/- 0.86
Ru-L	0.0324	1.925	2.53	6.24	+/- 1.13
K -K	0.0072	1.578	1.19	1.14	+/- 0.12
Total			100.00	100.00	

Fri Jul 20 09:47:33 2007

#7 sample 4A run 4

Refit _Fe-L' _Fe-L" _Al-K' _Al-K" _Si-K' _Si-K" _Ti-K' _Ti-K" _Au-L' _Au-L" _Au-
Refit _C -K' _C -K" _Fe-L _Au-L _Pt-L _Pt-M _Os-M _Re-L
Filter Fit Method
Chi-sqd = 6.96 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	533 +/-	25
Fe-L	---	---	0 +/-	0
Cu-L	---	---	1650 +/-	81
Al-K	0.01159 +/-	0.00085	643 +/-	47
Si-K	0.09199 +/-	0.00193	5004 +/-	105
S -K	0.44150 +/-	0.00871	22153 +/-	437
Ti-K	0.00318 +/-	0.00128	95 +/-	38
Fe-K	0.06925 +/-	0.00598	1378 +/-	119
Cu-K	0.24083 +/-	0.01132	3277 +/-	154
Au-L	0.00000 +/-	0.00001	0 +/-	0
Au-M	---	---	1123 +/-	394
Pt-L	0.00000 +/-	0.00001	0 +/-	0
Pt-M	---	---	0 +/-	0
Ir-L	0.01018 +/-	0.00954	81 +/-	76
Ir-M	---	---	1582 +/-	338
Os-L	0.00490 +/-	0.01163	40 +/-	96
Os-M	---	---	0 +/-	0
Re-L	0.00000 +/-	0.00001	0 +/-	0
Re-M	---	---	1989 +/-	270
Ag-L	0.03941 +/-	0.00541	984 +/-	135
Pd-L	0.00475 +/-	0.00692	122 +/-	177
Rh-L	0.02792 +/-	0.00732	751 +/-	197
Ru-L	0.04548 +/-	0.00893	1213 +/-	238
K -K	0.00903 +/-	0.00118	360 +/-	47

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0083	2.158	2.74	1.79	+/- 0.13
Si-K	0.0660	1.665	16.09	10.98	+/- 0.23
S -K	0.3166	1.399	56.87	44.30	+/- 0.87
Ti-K	0.0023	1.310	0.26	0.30	+/- 0.12
Fe-K	0.0497	1.096	4.01	5.44	+/- 0.47
Cu-K	0.1727	1.128	12.61	19.47	+/- 0.91
Au-L	0.0000	1.392	0.00	0.00	+/- 0.00
Pt-L	0.0000	1.394	0.00	0.00	+/- 0.00
Ir-L	0.0073	1.383	0.22	1.01	+/- 0.95
Os-L	0.0035	1.346	0.10	0.47	+/- 1.12
Re-L	0.0000	1.329	0.00	0.00	+/- 0.00
Ag-L	0.0283	1.684	1.82	4.76	+/- 0.65
Pd-L	0.0034	1.699	0.22	0.58	+/- 0.84
Rh-L	0.0200	1.792	1.43	3.59	+/- 0.94
Ru-L	0.0326	1.930	2.56	6.29	+/- 1.24
K -K	0.0065	1.568	1.07	1.02	+/- 0.13
Total			100.00	100.00	

Fri Jul 20 09:48:45 2007

7 sample 4A run 5

Refit _Fe-L' _Fe-L" _Al-K' _Al-K" _Si-K' _Si-K" _Ti-K' _Ti-K" _Au-L' _Au-L" _Au-
Refit _Fe-L _Pt-M _Os-M _Pd-L
Filter Fit Method
Chi-sqd = 5.96 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	840 +/-	60
Fe-L	---	---	0 +/-	0
Cu-L	---	---	1547 +/-	89
Al-K	0.00893 +/-	0.00094	457 +/-	48
Si-K	0.08526 +/-	0.00209	4275 +/-	105
S -K	0.40516 +/-	0.00910	18740 +/-	421
Ti-K	0.00242 +/-	0.00139	66 +/-	38
Fe-K	0.07371 +/-	0.00660	1353 +/-	121
Cu-K	0.24172 +/-	0.01260	3033 +/-	158
Au-L	0.00939 +/-	0.00972	58 +/-	60
Au-M	---	---	1098 +/-	392
Pt-L	0.00880 +/-	0.01073	59 +/-	73
Pt-M	---	---	0 +/-	0
Ir-L	0.01366 +/-	0.01145	100 +/-	84
Ir-M	---	---	1196 +/-	346
Os-L	0.00651 +/-	0.01302	49 +/-	98
Os-M	---	---	0 +/-	0
Re-L	0.00889 +/-	0.00938	74 +/-	78
Re-M	---	---	1811 +/-	271
Ag-L	0.04488 +/-	0.00444	1033 +/-	102
Pd-L	0.00000 +/-	0.00001	0 +/-	0
Rh-L	0.03452 +/-	0.00553	857 +/-	137
Ru-L	0.04796 +/-	0.00822	1179 +/-	202
K -K	0.00819 +/-	0.00134	301 +/-	49

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0064	2.180	2.21	1.39	+/- 0.15
Si-K	0.0607	1.669	15.54	10.14	+/- 0.25
S -K	0.2886	1.440	55.84	41.57	+/- 0.93
Ti-K	0.0017	1.310	0.20	0.23	+/- 0.13
Fe-K	0.0525	1.088	4.41	5.71	+/- 0.51
Cu-K	0.1722	1.113	12.99	19.17	+/- 1.00
Au-L	0.0067	1.369	0.20	0.92	+/- 0.95
Pt-L	0.0063	1.371	0.19	0.86	+/- 1.05
Ir-L	0.0097	1.367	0.30	1.33	+/- 1.12
Os-L	0.0046	1.331	0.14	0.62	+/- 1.23
Re-L	0.0063	1.317	0.19	0.83	+/- 0.88
Ag-L	0.0320	1.684	2.15	5.38	+/- 0.53
Pd-L	0.0000	1.695	0.00	0.00	+/- 0.00
Rh-L	0.0246	1.785	1.84	4.39	+/- 0.70
Ru-L	0.0342	1.917	2.79	6.55	+/- 1.12
K -K	0.0058	1.574	1.01	0.92	+/- 0.15
Total			100.00	100.00	

Fri Jul 20 09:50:13 2007

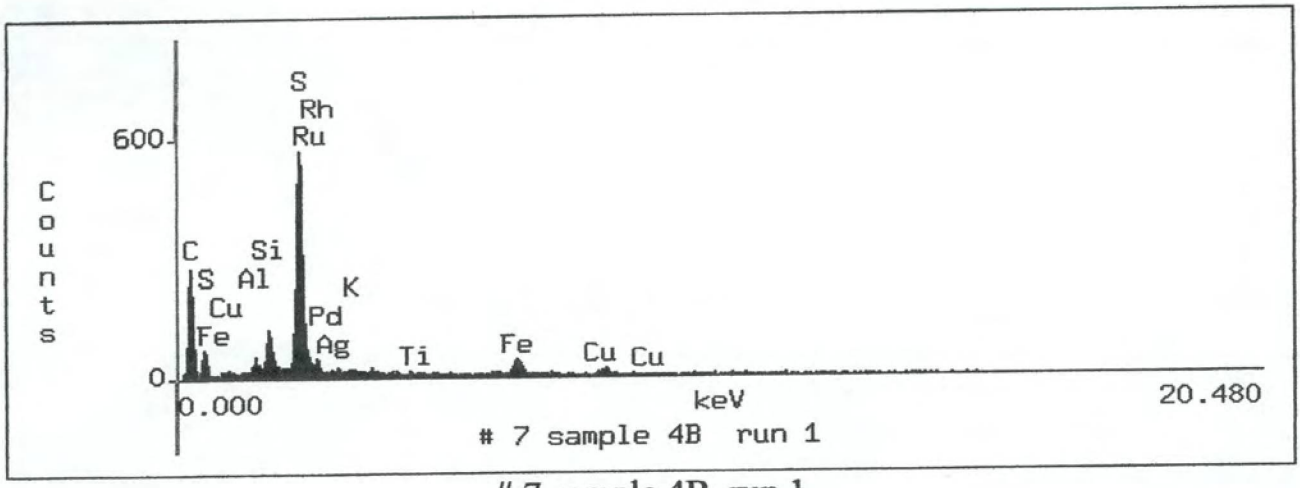
7 sample 4A run 6

Refit _Fe-L' _Fe-L" _Al-K' _Al-K" _Si-K' _Si-K" _Ti-K' _Ti-K" _Au-L' _Au-L" _Au-
Refit _C -K" _Fe-L _Pt-L _Pt-M _Ir-L _Os-L _Os-M _Re-L
Filter Fit Method
Chi-sqd = 8.03 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	512	+/- 25
Fe-L	---	---	0	+/- 0
Cu-L	---	---	1624	+/- 82
Al-K	0.01022	+/- 0.00080	616	+/- 48
Si-K	0.09622	+/- 0.00186	5689	+/- 110
S -K	0.39803	+/- 0.00787	21704	+/- 429
Ti-K	0.00373	+/- 0.00121	120	+/- 39
Fe-K	0.07944	+/- 0.00587	1718	+/- 127
Cu-K	0.23816	+/- 0.01048	3522	+/- 155
Au-L	0.00224	+/- 0.00838	17	+/- 63
Au-M	---	---	1664	+/- 392
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Pt-M	---	---	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Ir-M	---	---	2020	+/- 343
Os-L	0.00000	+/- 0.00001	0	+/- 0
Os-M	---	---	0	+/- 0
Re-L	0.00000	+/- 0.00001	0	+/- 0
Re-M	---	---	2402	+/- 279
Ag-L	0.05400	+/- 0.00527	1464	+/- 143
Pd-L	0.00983	+/- 0.00680	272	+/- 188
Rh-L	0.04009	+/- 0.00718	1172	+/- 210
Ru-L	0.05787	+/- 0.00836	1676	+/- 242
K -K	0.01016	+/- 0.00118	440	+/- 51

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0073	2.210	2.54	1.62	+/- 0.13
Si-K	0.0688	1.693	17.62	11.65	+/- 0.23
S -K	0.2848	1.393	52.54	39.66	+/- 0.78
Ti-K	0.0027	1.311	0.31	0.35	+/- 0.11
Fe-K	0.0568	1.095	4.73	6.22	+/- 0.46
Cu-K	0.1704	1.124	12.80	19.16	+/- 0.84
Au-L	0.0016	1.377	0.05	0.22	+/- 0.83
Pt-L	0.0000	1.385	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.381	0.00	0.00	+/- 0.00
Os-L	0.0000	1.337	0.00	0.00	+/- 0.00
Re-L	0.0000	1.322	0.00	0.00	+/- 0.00
Ag-L	0.0386	1.637	2.49	6.32	+/- 0.62
Pd-L	0.0070	1.632	0.46	1.15	+/- 0.79
Rh-L	0.0287	1.712	2.03	4.91	+/- 0.88
Ru-L	0.0414	1.837	3.20	7.60	+/- 1.10
K -K	0.0073	1.551	1.23	1.13	+/- 0.13
Total			100.00	100.00	

$(word picture c:/noran/vantage/bitmaps/csm_logo1.bmp)



7 sample 4B run 1

Accelerating Voltage: 25 KeV
Live Time: 30 seconds

Take Off Angle: 37.8797°
Dead Time: 9.512

S(K) overlap Ag(L) Rh(L)

Fri Jul 20 09:52:06 2007

#7 sample 4B run 1

Refit _Fe-L' _Fe-L" _Cu-L' _Cu-L" _Al-K' _Al-K" _Si-K' _Si-K" _Ti-K' _Ti-K" _Cu-
Refit _C -K" _Fe-L _Au-L _Pt-L _Pt-M _Ir-L _Os-L _Os-M
Filter Fit Method
Chi-sqd = 4.94 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	2586	+/- 44
Fe-L	---	---	0	+/- 0
Cu-L	---	---	124	+/- 25
Al-K	0.01253	+/- 0.00175	237	+/- 33
Si-K	0.06580	+/- 0.00335	1218	+/- 62
S -K	0.50390	+/- 0.01583	8598	+/- 270
Ti-K	0.00179	+/- 0.00278	18	+/- 28
Fe-K	0.12607	+/- 0.01330	853	+/- 90
Cu-K	0.04668	+/- 0.00908	217	+/- 42
Au-L	0.00000	+/- 0.00001	0	+/- 0
Au-M	---	---	375	+/- 254
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Pt-M	---	---	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Ir-M	---	---	466	+/- 220
Os-L	0.00000	+/- 0.00001	0	+/- 0
Os-M	---	---	0	+/- 0
Re-L	0.03203	+/- 0.01585	97	+/- 48
Re-M	---	---	456	+/- 164
Ag-L	0.02888	+/- 0.00990	245	+/- 84
Pd-L	0.01537	+/- 0.01363	134	+/- 119
Rh-L	0.07205	+/- 0.01531	659	+/- 140
Ru-L	0.08674	+/- 0.01766	787	+/- 160
K -K	0.00814	+/- 0.00244	111	+/- 33

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0091	1.876	2.73	1.71	+/- 0.24
Si-K	0.0477	1.482	10.88	7.07	+/- 0.36
S -K	0.3654	1.275	62.83	46.61	+/- 1.46
Ti-K	0.0013	1.353	0.16	0.18	+/- 0.27
Fe-K	0.0914	1.128	7.98	10.31	+/- 1.09
Cu-K	0.0339	1.134	2.61	3.84	+/- 0.75
Au-L	0.0000	1.370	0.00	0.00	+/- 0.00
Pt-L	0.0000	1.371	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.365	0.00	0.00	+/- 0.00
Os-L	0.0000	1.356	0.00	0.00	+/- 0.00
Re-L	0.0232	1.330	0.72	3.09	+/- 1.53
Ag-L	0.0209	1.716	1.44	3.59	+/- 1.23
Pd-L	0.0111	1.652	0.75	1.84	+/- 1.63
Rh-L	0.0523	1.737	3.81	9.08	+/- 1.93
Ru-L	0.0629	1.859	5.00	11.69	+/- 2.38
K -K	0.0059	1.674	1.09	0.99	+/- 0.30
Total			100.00	100.00	

Fri Jul 20 09:53:54 2007

7 sample 4B run 2

Refit _Fe-L' _Fe-L" _Cu-L' _Cu-L" _Al-K' _Al-K" _Si-K' _Si-K" _Ti-K' _Ti-K" _Cu-
Refit _Fe-L _Au-L _Pt-L _Pt-M _Ir-L _Os-M _Re-L
Filter Fit Method
Chi-sqd = 5.15 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	2608	+/- 61
Fe-L	---	---	0	+/- 0
Cu-L	---	---	82	+/- 24
Al-K	0.01292	+/- 0.00157	272	+/- 33
Si-K	0.08644	+/- 0.00325	1782	+/- 67
S -K	0.47891	+/- 0.01447	9101	+/- 275
Ti-K	0.00518	+/- 0.00259	58	+/- 29
Fe-K	0.15033	+/- 0.01261	1134	+/- 95
Cu-K	0.02852	+/- 0.00815	147	+/- 42
Au-L	0.00000	+/- 0.00001	0	+/- 0
Au-M	---	---	659	+/- 259
Pt-L	0.00000	+/- 0.00001	0	+/- 0
Pt-M	---	---	0	+/- 0
Ir-L	0.00000	+/- 0.00001	0	+/- 0
Ir-M	---	---	762	+/- 227
Os-L	0.01261	+/- 0.01649	40	+/- 52
Os-M	---	---	0	+/- 0
Re-L	0.00000	+/- 0.00001	0	+/- 0
Re-M	---	---	895	+/- 177
Ag-L	0.03927	+/- 0.00910	371	+/- 86
Pd-L	0.02946	+/- 0.01255	285	+/- 121
Rh-L	0.05281	+/- 0.01394	539	+/- 142
Ru-L	0.09472	+/- 0.01575	957	+/- 159
K -K	0.00884	+/- 0.00219	134	+/- 33

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0093	1.882	2.78	1.76	+/- 0.21
Si-K	0.0625	1.489	14.14	9.30	+/- 0.35
S -K	0.3461	1.279	58.97	44.28	+/- 1.34
Ti-K	0.0037	1.351	0.45	0.51	+/- 0.25
Fe-K	0.1086	1.135	9.43	12.33	+/- 1.03
Cu-K	0.0206	1.141	1.58	2.35	+/- 0.67
Au-L	0.0000	1.374	0.00	0.00	+/- 0.00
Pt-L	0.0000	1.374	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.368	0.00	0.00	+/- 0.00
Os-L	0.0091	1.350	0.28	1.23	+/- 1.61
Re-L	0.0000	1.351	0.00	0.00	+/- 0.00
Ag-L	0.0284	1.694	1.90	4.81	+/- 1.11
Pd-L	0.0213	1.620	1.38	3.45	+/- 1.47
Rh-L	0.0382	1.697	2.69	6.48	+/- 1.71
Ru-L	0.0685	1.820	5.26	12.46	+/- 2.07
K -K	0.0064	1.643	1.15	1.05	+/- 0.26
Total			100.00	100.00	

Fri Jul 20 09:55:00 2007

#7 sample 4B run 3

Refit _Fe-L' _Fe-L" _Cu-L' _Cu-L" _Al-K' _Al-K" _Si-K' _Si-K" _Ti-K' _Ti-K" _Cu-
Refit _Fe-L _Pt-M _Os-M
Filter Fit Method
Chi-sqd = 5.56 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	2644	+/- 64
Fe-L	---	---	0	+/- 0
Cu-L	---	---	189	+/- 27
Al-K	0.01072	+/- 0.00158	245	+/- 36
Si-K	0.07797	+/- 0.00317	1745	+/- 71
S -K	0.43036	+/- 0.01362	8880	+/- 281
Ti-K	0.00288	+/- 0.00247	36	+/- 31
Fe-K	0.13530	+/- 0.01186	1108	+/- 97
Cu-K	0.04790	+/- 0.00840	268	+/- 47
Au-L	0.01145	+/- 0.01699	31	+/- 46
Au-M	---	---	688	+/- 263
Pt-L	0.00936	+/- 0.01771	28	+/- 54
Pt-M	---	---	0	+/- 0
Ir-L	0.01052	+/- 0.01732	35	+/- 58
Ir-M	---	---	662	+/- 233
Os-L	0.01548	+/- 0.01727	52	+/- 58
Os-M	---	---	0	+/- 0
Re-L	0.02130	+/- 0.01420	79	+/- 52
Re-M	---	---	682	+/- 182
Ag-L	0.03354	+/- 0.00907	344	+/- 93
Pd-L	0.01290	+/- 0.01261	135	+/- 132
Rh-L	0.07631	+/- 0.01410	845	+/- 156
Ru-L	0.09564	+/- 0.01588	1049	+/- 174
K -K	0.00838	+/- 0.00208	137	+/- 34

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0076	1.909	2.43	1.44	+/- 0.21
Si-K	0.0550	1.499	13.31	8.25	+/- 0.34
S -K	0.3037	1.352	58.04	41.06	+/- 1.30
Ti-K	0.0020	1.349	0.26	0.27	+/- 0.23
Fe-K	0.0955	1.118	8.66	10.67	+/- 0.94
Cu-K	0.0338	1.116	2.69	3.77	+/- 0.66
Au-L	0.0081	1.337	0.25	1.08	+/- 1.60
Pt-L	0.0066	1.338	0.21	0.88	+/- 1.67
Ir-L	0.0074	1.333	0.23	0.99	+/- 1.63
Os-L	0.0109	1.327	0.35	1.45	+/- 1.62
Re-L	0.0150	1.314	0.48	1.98	+/- 1.32
Ag-L	0.0237	1.711	1.70	4.05	+/- 1.09
Pd-L	0.0091	1.639	0.64	1.49	+/- 1.46
Rh-L	0.0538	1.716	4.07	9.24	+/- 1.71
Ru-L	0.0675	1.835	5.55	12.39	+/- 2.06
K -K	0.0059	1.672	1.15	0.99	+/- 0.25
Total			100.00	100.00	

Fri Jul 20 09:56:05 2007

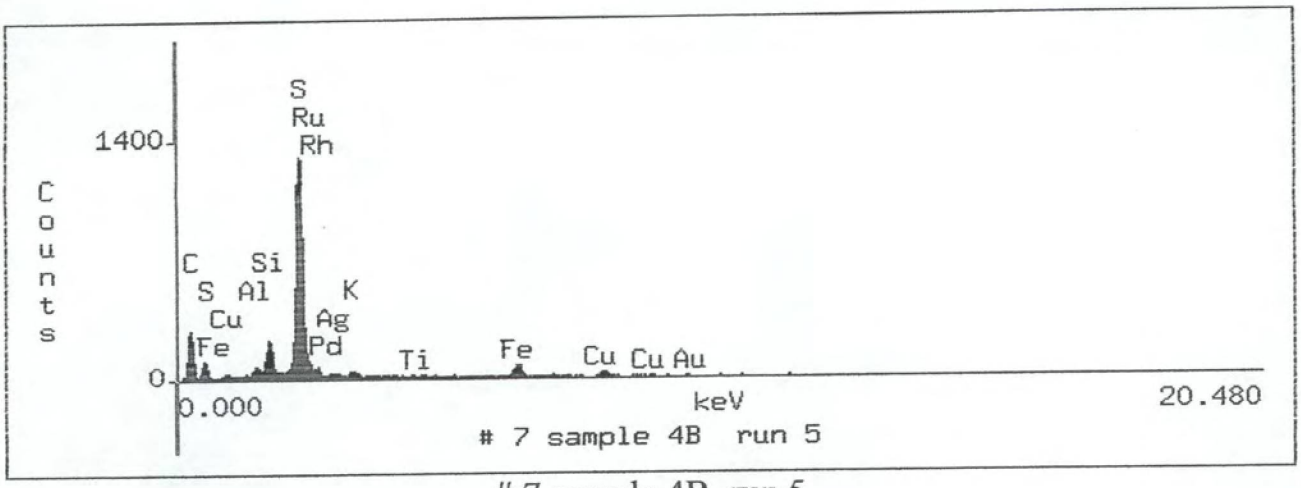
#7 sample 4B run 4

Refit _Fe-L' _Fe-L" _Cu-L' _Cu-L" _Al-K' _Al-K" _Si-K' _Si-K" _Ti-K' _Ti-K" _Cu-
Refit _Fe-L _Au-L _Pt-L _Pt-M _Ir-L _Os-L _Os-M _Re-L
Filter Fit Method
Chi-sqd = 6.25 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	2126 +/-	57
Fe-L	---	---	0 +/-	0
Cu-L	---	---	87 +/-	25
Al-K	0.01177 +/-	0.00157	248 +/-	33
Si-K	0.05667 +/-	0.00306	1169 +/-	63
S -K	0.50128 +/-	0.01499	9529 +/-	285
Ti-K	0.00803 +/-	0.00250	90 +/-	28
Fe-K	0.17947 +/-	0.01273	1354 +/-	96
Cu-K	0.04481 +/-	0.00873	231 +/-	45
Au-L	0.00000 +/-	0.00001	0 +/-	0
Au-M	---	---	419 +/-	265
Pt-L	0.00000 +/-	0.00001	0 +/-	0
Pt-M	---	---	0 +/-	0
Ir-L	0.00000 +/-	0.00001	0 +/-	0
Ir-M	---	---	503 +/-	227
Os-L	0.00000 +/-	0.00001	0 +/-	0
Os-M	---	---	0 +/-	0
Re-L	0.00000 +/-	0.00001	0 +/-	0
Re-M	---	---	485 +/-	167
Ag-L	0.03301 +/-	0.00921	312 +/-	87
Pd-L	0.00373 +/-	0.01265	36 +/-	124
Rh-L	0.07585 +/-	0.01452	773 +/-	148
Ru-L	0.07468 +/-	0.01684	754 +/-	170
K -K	0.01069 +/-	0.00213	161 +/-	32

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0088	1.964	2.70	1.72	+/- 0.23
Si-K	0.0422	1.535	9.77	6.48	+/- 0.35
S -K	0.3735	1.245	61.41	46.49	+/- 1.39
Ti-K	0.0060	1.333	0.70	0.80	+/- 0.25
Fe-K	0.1337	1.132	11.48	15.14	+/- 1.07
Cu-K	0.0334	1.147	2.55	3.83	+/- 0.75
Au-L	0.0000	1.384	0.00	0.00	+/- 0.00
Pt-L	0.0000	1.385	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.379	0.00	0.00	+/- 0.00
Os-L	0.0000	1.371	0.00	0.00	+/- 0.00
Re-L	0.0000	1.358	0.00	0.00	+/- 0.00
Ag-L	0.0246	1.661	1.60	4.08	+/- 1.14
Pd-L	0.0028	1.618	0.18	0.45	+/- 1.52
Rh-L	0.0565	1.697	3.95	9.59	+/- 1.84
Ru-L	0.0556	1.820	4.24	10.12	+/- 2.28
K -K	0.0080	1.622	1.40	1.29	+/- 0.26
Total			100.00	100.00	

$(word picture c:/noran/vantage/bitmaps/csm_logo1.bmp)



7 sample 4B run 5

Accelerating Voltage: 25 KeV
Live Time: 30 seconds

Take Off Angle: 37.8797°
Dead Time: 27.419

Fri Jul 20 10:08:14 2007

#7 sample 4B run 5

Refit _Fe-L' _Fe-L" _Cu-L' _Cu-L" _Al-K' _Al-K" _Si-K' _Si-K" _Ti-K' _Ti-K" _Cu-
Refit _Fe-L _Fe-K" _Pt-L _Pt-M _Ir-L _Os-L _Os-M _Re-L
Filter Fit Method
Chi-sqd = 4.62 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	1655 +/-	52
Fe-L	---	---	0 +/-	0
Cu-L	---	---	86 +/-	24
Al-K	0.01459 +/-	0.00172	272 +/-	32
Si-K	0.09264 +/-	0.00360	1698 +/-	66
S -K	0.47495 +/-	0.01557	8026 +/-	263
Ti-K	0.00642 +/-	0.00291	65 +/-	29
Fe-K	0.10849 +/-	0.00806	728 +/-	54
Cu-K	0.05499 +/-	0.00917	252 +/-	42
Au-L	0.03607 +/-	0.01849	81 +/-	41
Au-M	---	---	563 +/-	246
Pt-L	0.00000 +/-	0.00001	0 +/-	0
Pt-M	---	---	0 +/-	0
Ir-L	0.00000 +/-	0.00001	0 +/-	0
Ir-M	---	---	731 +/-	217
Os-L	0.00000 +/-	0.00001	0 +/-	0
Os-M	---	---	0 +/-	0
Re-L	0.00000 +/-	0.00001	0 +/-	0
Re-M	---	---	818 +/-	170
Ag-L	0.03690 +/-	0.01000	311 +/-	84
Pd-L	0.00828 +/-	0.01388	71 +/-	119
Rh-L	0.07761 +/-	0.01523	704 +/-	138
Ru-L	0.07433 +/-	0.01738	668 +/-	156
K -K	0.01472 +/-	0.00254	197 +/-	34

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0103	1.865	3.03	1.92	+/- 0.23
Si-K	0.0655	1.484	14.72	9.72	+/- 0.38
S -K	0.3359	1.331	59.31	44.71	+/- 1.47
Ti-K	0.0045	1.359	0.55	0.62	+/- 0.28
Fe-K	0.0767	1.134	6.62	8.70	+/- 0.65
Cu-K	0.0389	1.129	2.94	4.39	+/- 0.73
Au-L	0.0255	1.358	0.75	3.47	+/- 1.78
Pt-L	0.0000	1.371	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.365	0.00	0.00	+/- 0.00
Os-L	0.0000	1.355	0.00	0.00	+/- 0.00
Re-L	0.0000	1.342	0.00	0.00	+/- 0.00
Ag-L	0.0261	1.698	1.75	4.43	+/- 1.20
Pd-L	0.0059	1.666	0.39	0.98	+/- 1.64
Rh-L	0.0549	1.736	3.94	9.53	+/- 1.87
Ru-L	0.0526	1.865	4.13	9.81	+/- 2.29
K -K	0.0104	1.659	1.88	1.73	+/- 0.30
Total			100.00	100.00	

Fri Jul 20 09:59:54 2007

7 sample 4B run 6

Refit _Fe-L' _Fe-L" _Cu-L' _Cu-L" _Al-K' _Al-K" _Si-K' _Si-K" _Ti-K' _Ti-K" _Cu-
Refit _Fe-L _Pt-L _Pt-M _Ir-L _Os-L _Os-M _Re-L
Filter Fit Method
Chi-sqd = 4.66 Livetime = 30.0 Sec.
Standardless Analysis

Element	Relative k-ratio	Error (1-Sigma)	Net Counts	Error (1-Sigma)
C -K	---	---	1833 +/-	56
Fe-L	---	---	0 +/-	0
Cu-L	---	---	112 +/-	26
Al-K	0.01679 +/-	0.00170	336 +/-	34
Si-K	0.08867 +/-	0.00337	1739 +/-	66
S -K	0.46809 +/-	0.01471	8464 +/-	266
Ti-K	0.00563 +/-	0.00281	60 +/-	30
Fe-K	0.12580 +/-	0.01269	902 +/-	91
Cu-K	0.06282 +/-	0.00938	308 +/-	46
Au-L	0.01981 +/-	0.01770	48 +/-	42
Au-M	---	---	700 +/-	251
Pt-L	0.00000 +/-	0.00001	0 +/-	0
Pt-M	---	---	0 +/-	0
Ir-L	0.00000 +/-	0.00001	0 +/-	0
Ir-M	---	---	854 +/-	220
Os-L	0.00000 +/-	0.00001	0 +/-	0
Os-M	---	---	0 +/-	0
Re-L	0.00000 +/-	0.00001	0 +/-	0
Re-M	---	---	834 +/-	172
Ag-L	0.03515 +/-	0.00957	316 +/-	86
Pd-L	0.01330 +/-	0.01308	123 +/-	121
Rh-L	0.05757 +/-	0.01444	559 +/-	140
Ru-L	0.09081 +/-	0.01635	872 +/-	157
K -K	0.01557 +/-	0.00230	223 +/-	33

Element	k-ratio (calc.)	ZAF	Atom %	Element Wt %	Wt % Err. (1-Sigma)
Al-K	0.0120	1.903	3.57	2.28	+/- 0.23
Si-K	0.0632	1.515	14.43	9.58	+/- 0.36
S -K	0.3338	1.314	57.89	43.86	+/- 1.38
Ti-K	0.0040	1.349	0.48	0.54	+/- 0.27
Fe-K	0.0897	1.131	7.69	10.15	+/- 1.02
Cu-K	0.0448	1.134	3.38	5.08	+/- 0.76
Au-L	0.0141	1.362	0.41	1.92	+/- 1.72
Pt-L	0.0000	1.376	0.00	0.00	+/- 0.00
Ir-L	0.0000	1.370	0.00	0.00	+/- 0.00
Os-L	0.0000	1.359	0.00	0.00	+/- 0.00
Re-L	0.0000	1.345	0.00	0.00	+/- 0.00
Ag-L	0.0251	1.704	1.68	4.27	+/- 1.16
Pd-L	0.0095	1.639	0.62	1.56	+/- 1.53
Rh-L	0.0411	1.713	2.89	7.03	+/- 1.76
Ru-L	0.0648	1.838	4.98	11.90	+/- 2.14
K -K	0.0111	1.642	1.97	1.82	+/- 0.27
Total			100.00	100.00	

Report on the Chain of Custody Program Conducted for Mineral Recovery Systems

By Terry Christopher, Ph.D.
Oct 15, 1999

Introduction:

At the request of Mineral Recovery Systems (MRS), Auric Metallurgical Laboratories, LLC of Salt Lake City, Utah was contracted to complete a chain of custody sampling and assay program of MRS's property in Alberta. The author was contracted by Auric to carry out the chain of custody sampling program and to deliver the samples to its facility in Salt Lake City.

The project objective was to establish, under an independent analysis, the gold and platinum group metal (PGM) contents of an oolitic hematite unit which traverses the property.

The Property

MRS's property is located in northwestern Alberta, in the Peace River area, at approximately 55^0 55' North latitude and 119^0 20' West longitude. The property covers 9216 hectares encompassing the northern half of Township 79 and southern half Township 80. This property is covered by Metallic and Industrial Minerals Permits Nos. 9396110003 and 9396110004, issued by the province of Alberta, Canada. See Map 1 for the sample site locations.

Sampling Dates, Procedure and Preparation

The author travelled by vehicle to the property, near Spirit River, Alberta and completed a small sampling program on August 24 and 25, 1999.

Under strict chain of custody procedures the author collected all samples without any interference or assistance from the property owner. Both grab and pit samples were collected from the eastern portion of the claim covering Township 79.

Pit samples were taken with the aid of a backhoe. Two pits were dug to a depth of 10 to 12 feet, and in both cases were deep enough to penetrate the oolitic ironstone, exposing an underlying greyish green mudstone.

Four distinct units were exposed in each pit and sampling was conducted to obtain a representative sample from each unit. Approximately 40 lbs of sample was collected from the larger units (units I, II and IV) in each pit. A third unit (III), at the base of the ironstone bed, was not sampled in Pit #2, although a 10 lb sample was collected from the equivalent unit in Pit #1. Samples were placed in plastic lined bags and sealed.

Grab samples were collected from several other exposures throughout the property, including both the ironstone and the underlying mudstone. These samples were collected and stored in 'Ziplock' plastic storage bags.

Sample integrity and chain of custody protocol was achieved by placing all samples in a 'truck

locker', which was secured with a combination lock. Only the author has the combination to this lock. The samples were transported by the author, via truck, from the property to Salt Lake City.

At Auric's facility in Salt Lake City, all samples were crushed to -1/4" with a jaw crusher. Samples taken from the pits were then split with a sample splitter to a sub-sample of about 1 lb. These splits and all other samples were then further comminuted with a roller, and finally were pulverized using a Bico pulverizer. The final product was at least 90% of 80 to 100 mesh. This material was then further split to a sample size of 15 grams (one-half assay ton) which was used for the fire assay analysis.

Geologic Characteristics

Four distinct stratigraphic units were present in the sampled area. These included three units within the ironstone formation and an underlying greenish clay rich mudstone. Figure 1 exhibits the stratigraphic sequence encountered in each pit. For a description and additional notes for the samples collected, including pit and grab samples, see Appendix A.

In Pit #1, two primary ironstone units were noted and a third minor one. Unit I (sample RO-04) at the top of the section was distinguished from the underlying unit II (sample RO-02) as being more heavily oxidized. Unit II was dark greenish brown in colour. The third ironstone unit (unit III and sample RO-03) at the base of the ironstone bed, was relatively hard compared to units I and II, and possessed a deeper iron colour. Units I and II were matric supported oolitic beds, while unit III appeared to be a massive iron rich precipitate.

Pit #2 was located in a cleared field and the integrity of the upper portion of the stratigraphy was questionable. Thus, the upper 1.5 feet of this section was not sampled, as it exhibited possible disturbance. Sample RO-06 was collected from the lower undisturbed ironstone bed, and is believed to be equivalent to unit II in Pit #1. The stratigraphy observed in Pit #1 is believed to be equivalent to that observed in Pit #2.

Fire assay analysis

Fire assay analysis was performed by Auric's metallurgical engineer, Ahmet Altinay. An optimal fire assay flux was developed to suit this ore. Assays are listed at the end on the attached assay sheet.

Results and Discussion

As the attached assay sheet shows, all but one sample from the sampling program contained relatively high metal levels. On average, the ironstone units showed slightly lower grades than that of the underlying mudstone.

Within Pit #1, where each unit of the ironstone was sampled, the data showed relatively uniform grades throughout. In Pit #2, where only ironstone unit II was sampled (Fig 2), the assay data was much lower, recording the lowest metal content of all samples collected. To the west of Pit #1 where grab samples RO-08 and RO-10 were collected from other ironstone localities, precious metal grades were more consistent with that recorded in Pit #1. It is unclear if sample RO-08 represented undisturbed or disturbed material. It is possible that this material was pushed from the gentle slope between the road and the existing tree line, some 80 to 100 feet to the north.

The variation in precious metal content in the ironstone between pits #1 and #2 could be real, representing a natural decline in metal grades, or could represent random sampling variation. This decline should be investigated further, with infill sampling, to determine whether metal contents do decline.

Assays from the mudstone unit, at all sampled sites, showed precious metal contents of interest. The single highest assay was recorded from sample RO-09, collected along a road cut, where levels of 0.107 opt Au, 0.133 opt Pt and 0.141 opt Pd were recorded. Precious metal contents in the mudstone were more consistently uniform than those obtained from the ironstone units. Based on these findings, this mudstone unit should be investigated in full, both spatially and at depth.

Fire assay data from this chain of custody program show metal levels of interest in both the ironstone and underlying mudstone. These levels warrant additional study, as the potential for MRS's property to host a precious metal ore body is high.

Recommendations and Future Work

The oolitic ironstones in northwestern Alberta are known to be thin, having a thickness up to 30 feet (Kidd, 1959). On MRS's property the thickness of the ironstone at both pit localities was about 8 feet. It is unknown at this time if this ironstone bed is thicker at other localities within MRS's claimed area.

Based on colour alone, grab sample RO-10 may be equivalent to unit II observed in both pits. Visually, sample site RO-10 appeared slightly higher in elevation than the surface of Pit #1. This observation, however, needs to be examined more closely. If correct, however, this observation suggests the ironstone undulates, and thus probably contains areas of greater thickness and areas of pinching.

Mapping of ironstone bed to determine its spatial distribution should be a primary goal, especially in this study area. Based on the thin soil cover, sample hand augering could possibly map the ironstone unit, while at the same time provide additional sampling for precious metal determination. In areas of thick overburden, hand augering may ineffective and a geophysical method may be employed. Geophysical methods may not be needed in the immediate future, if auger sampling can identify a large enough area of interest.

Metal levels obtained in the mudstone were more consistent, and on average slightly higher than those from the ironstone. Additional mapping and sampling of this unit should also be conducted and be a priority. Although the ironstone unit on MRS property is knownwith respect to its thickness and regional distribution, these parameters of the mudstone are unknown. Depending on the thickness and spatial distribution as well as the metal content of the mudstone, this unit may be of more economic interest than the ironstone.

It is recommended that the property should be explored in a staged manner. Exploration should focus on the immediate area that was sampled in this program.

1. First, a systematic hand auger sampling program should be employed. This would satisfy a two-fold goal of mapping and sampling the units of interest. If the soil conditions permit augering should be conducted at several different depths per sampling site.

2. Once assay data from this program is obtained, a pitting and or trenching program in areas of interest should be conducted. Pitting and trenching would provide larger more representative samples and more detail on thickness of areas of interest. At this stage, or where convenient, several larger bulk samples should be collected for bench scale recovery tests. Auric is in the possession of several 40 to 50 lb samples, that were collected under this chain of custody program, which could be examined as well. These bulk tests would confirm which unit, if any is of more economic interest.

3. After a pitting and trenching program has been completed, areas of interest should be tested with drilling to a prescribed depth. Initially, a 5 to 10 shallow (50') hole drilling program over the area of interest should suffice. This would provide the data for a detailed drilling program to outline potential ore reserves.

Reference:

Kidd, D. J., 1959. Iron Occurrences in the Peace River Region, Alberta. Research Council of Alberta, Geological Division. Preliminary Report 59-3. 38 pages.

Map 1

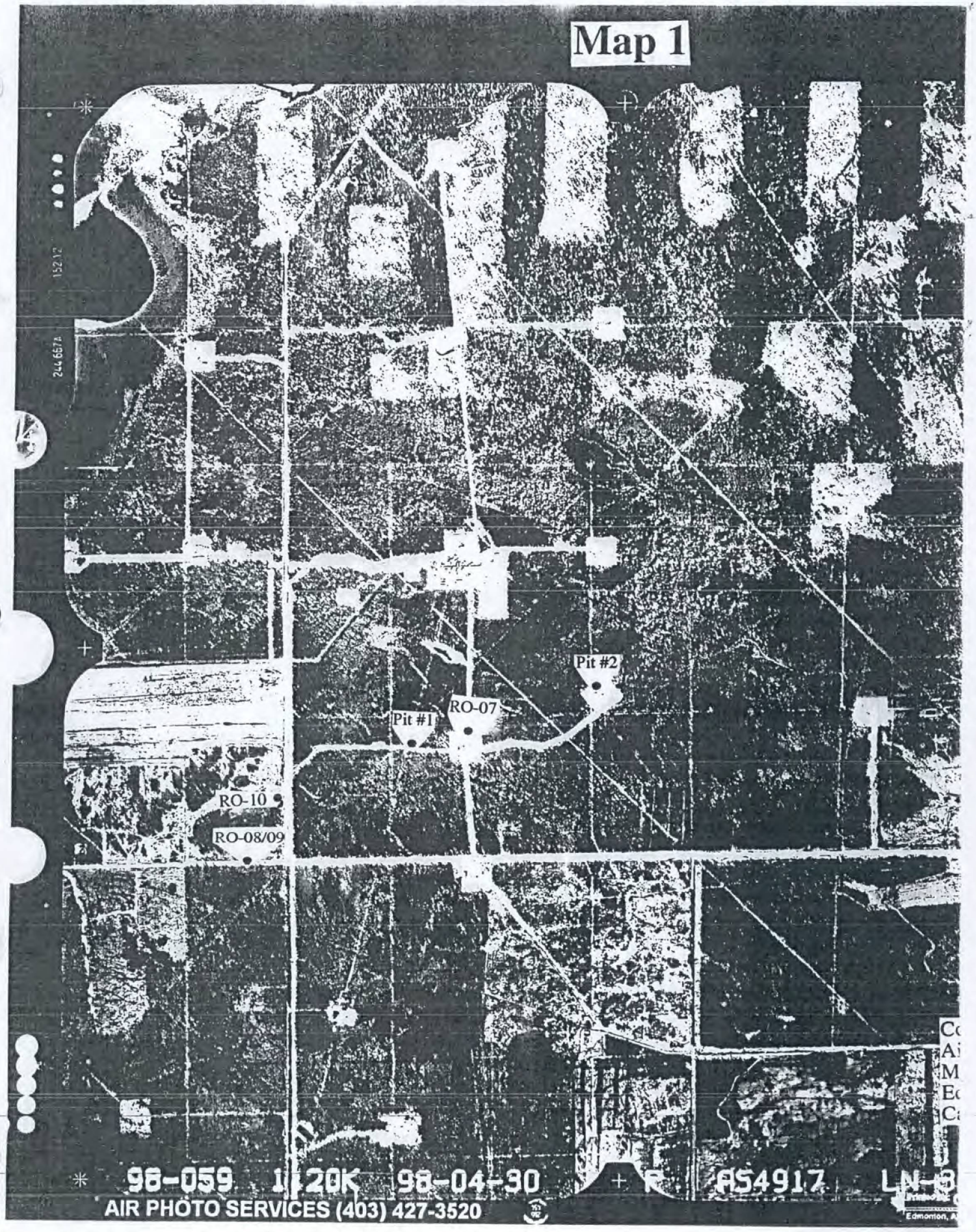
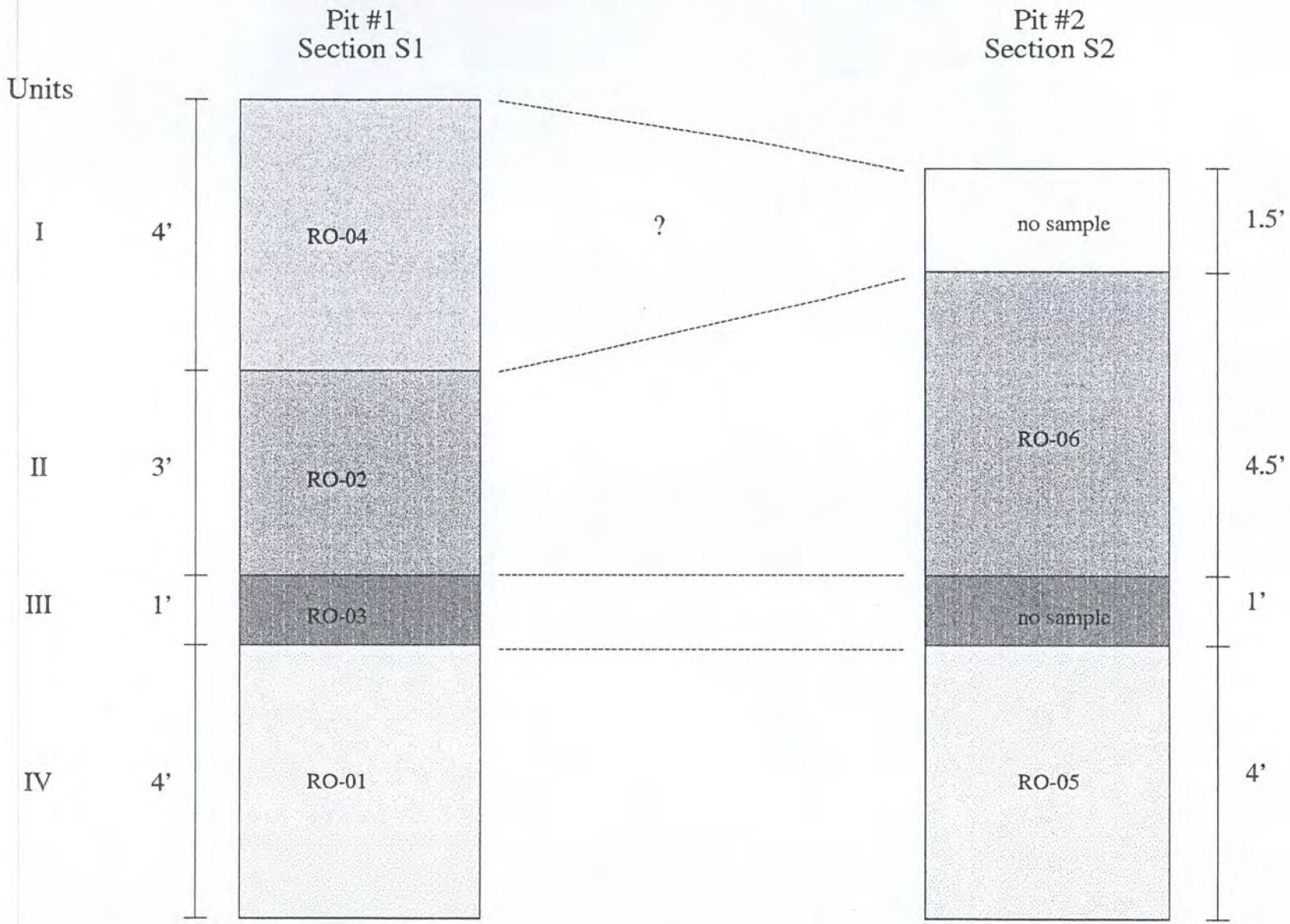

Pit #2
RO-07
Pit #1
RO-10
RO-08/09
98-059 1:20K 98-04-30 AS4917
AIR PHOTO SERVICES (403) 427-3520

Figure 1: Stratigraphic profiles from Pits #1 and #2.



Appendix A: 1999 field samples: for Mineral Recovery Systems.

Sample #	Location/ Property/ Map# (M:#) X-section (S#)	Notes
RO-01	Pit #1 (S1)	Sample is a composite, collected by the backhoe, through the bottom most exposed unit in Pit #1. This sample is composed of a very soft greenish grey mudstone. No visible oxidized iron or ooids. This unit had an exposure of 4' vertical.
RO-02	Pit #1 (S1)	Sample is composed of a composite of 3' oolitic ironstone, collected by the backhoe. This unit, dark greenish brown in colour, is less oxidized in appearance than the upper iron unit (see sample RO-04).
RO-03	Pit #1 (S1)	This sample was taken from a 'hard-pan' like material at the base of the ironstone units. This material appears to be an iron precipitate of some sort. Unit, which is about 1' in thickness, is very hard. This is a grab sample of a number of pieces that were dug out of the hole buy the backhoe.
RO-04	Pit #1 (S1)	This sample is a 4' trench sample from the upper oolitic ironstone unit. In appearance, this unit is more oxidized than the lower iron unit. The upper 2' of this sample seems slightly harder than the bottom 2' of the unit. A 50 lb (5 gallon) bucket of this material was collected as a bulk sample from this unit.
Notes	Pit #2 (S2)	On section 26-8, about 200' from an oil well and 860 metres to the east of Pit #1. The natural surface has been disturbed, with the vegetation cleared and surface levelled. It is possible that the upper 1.5' exposed in this pit is anthropogenicly disturbed and thus this upper material was not sampled. The 'hard-pan' surface at the bottom of the iron sandstone unit was present. The Pit was 11' deep, not including the upper 1.5' which was thought to have been disturbed.

RO-05	Pit #2 (S2)	Sample from the bottom 4' of the pit. Composed of greenish-grey mudstone, equivalent to R0-01 in Pit #1.
R0-06	Pit #2 (S2)	Oxidized oolitic material above the hard pan (there may be a few pieces of hard pan material in this sample, however, I am not positive of this). Sample was collected with the backhoe. It is less oxidized than the upper material, and thus probably equivalent to RO-02 in Pit #1.
RO-07	Grab	Grab sample of a greenish grey clay material collected from an exposed bank, near an oil well, between Pit sites #1 and #2. The material weathered from a greenish grey mudstone-shale, which is stratigraphicly below the iron units.
RO-08	Grab	Oxidized ironstone material along a road cut. Sample contains ooids. This material is from the iron units, however, I cannot be sure it is in-situ. The area along the road has been cleared of forest, though small hard woods now grow along the roadside. The sample site is believed to be lower in elevation than Pit #1 and sample RO-10. The sample was taken from a hand dug pit about 20' from the road cut. At the pit site, there was 4 to 5 inches of organic topsoil. If the ironstone collected is in-situ, it is from the bottom most of the iron units. There was no evidence of the hard pan unit suggesting it is a disturbed site, though this is not definitive either. If the sample is from a disturbed site, it may have been pushed from the gentle upward slope that extends from the road to the tree line, about 80' away.
R0-09	Grab	Sample was collected from the road cut, at the sample site of RO-08. This sample is composed of greenish grey mudstone that is stratigraphicly below RO-08. This material is in-situ.
RO-10	Grab	Oolitic sandstone from road cut. Material appears to be in-situ. Ore is less oxidized (dark greenish brown in colour), which may make it equivalent to RO-02 and R0-06. Although the exact elevation of this site is unknown, it is estimated that this site is 10'-15' higher in elevation than Pit #1.

AuRIC
Metallurgical Laboratories

Date: September 27, 1999

ASSAY REPORT:

To: Mr. Ron Owens
Mineral Recovery Systems
201-5201-52 Ave
Ponoka, Alberta
Canada T4J 1HD

AuRIC Sample No:	Customer Sample ID No:	Gold Tr oz/ton	Silver Tr oz/ton	Platinum Tr oz/ton	Palladium Tr oz/ton	Other Tr oz/ton
2180 A	RO - 01	0.050	0.076	0.038	N/D	122.29---
2181 A	RO – 02	0.037	0.127	0.059	N/D	153.46---
2182 A	RO – 03	0.040	0.139	0.057	N/D	152.36---
2183 A	RO – 04	0.038	0.110	0.051	N/D	138.07---
2184 A	RO – 05	0.059	0.147	0.088	0.017	239.25---
2185 A	RO – 06	0.007	0.094	0.033	N/D	23.92---
2186 A	RO – 07	0.040	0.130	0.061	0.003	160.21---
2187 A	RO – 08	0.039	0.111	0.058	N/D	152.98---
2188 A	RO – 09	0.107	0.250	0.233	0.141	630.14---
2189 A	RO – 10	0.017	0.098	0.071	0.016	166.17---

Analysis method: (for AuRIC Sample No.'s ending with A - FA/GFAA) average = 182.64

The results reported above are based on well known, accepted analytical procedures used solely on the sample submitted by the customer. No warranty as to the reproducibility or extractability of the material other than the sample is given. AuRIC Metallurgical Laboratories, LLC makes no representation express or implied on the material other than that represented by the assayed sample.

Ahmet B. Altinay
Metallurgical Engineer

[redacted]

3260 West Directors Row, Salt Lake City, Utah 84104 USA • Ph: 801-974-7677 • Fax: 801-974-9656
AuRIC Metallurgical Laboratories is a Limited Liability Company

Curriculum vitae

Terry K. Christopher

Present

[redacted]

Personal Background

Born	: [redacted]
Date of Birth	:
Martial Status	:
Health	:
Physical Limitations	:

Education Background

1992-1994 and 1996-1999 (p.t.)	Ph.D. in Geochemistry, Memorial University of and Newfoundland, St. John's, Newfoundland.
1991.	B.Sc. Honours in Earth Science, Memorial University of Newfoundland, St. John's, Newfoundland.

Work Experience

Full-time Employment

1999-present	Geologist with Auric Metallurgical Laboratories. Duties include field analysis, sample collection under chain of custody procedures, field mapping and other geological evaluations.
1998-1999	Head geologist/geochemist with LS Capital Corp. Duties included locating and testing conventional mining projects of merit, detailed sampling and mapping of prospective properties. Other duties included R&D into refractory ore leach methods.
1995-1997	Geologist. Co-founder and director of Imperial Venture Corp (IVC). As a director and geologist, I located promising exploration targets. This

resulted in the acquisition of 480,000 acres of promising targets, with combined potential in excess of 1 Billion barrels of recoverable oil.

1995-1996 Geologist. Extensively involved in the Labrador exploration play which included; locating, staking and vending properties to junior exploration companies.

Part-time Employment

July 1994. Soil and stream sediment sampler with Cominco.

1990-1995 Laboratory demonstrator for various courses at the Earth Science Department, Memorial University of Newfoundland. Courses included the first two introductory courses as well as Earth Science 2310 (Maps and Sections), 3600 (Environmental Geochemistry) and 3811 (Palaeontology). Earth Science 2310 includes a eight day field school in which I was the teaching assistant for two years.

Summer 1991 Junior field assistant with the local Department of Mines Energy and Resources; mapped an area of central Newfoundland for mineral aggregate resource; duties included many field and camp responsibilities.

Summer 1989 Junior field assistant with the local Department of Mines Energy and Resources; detailed mapping project in central Newfoundland; duties included mapping, sampling and field orientation along with numerous camp duties.

Religious Associations

Roman Catholic

Creative Products

Dissertation

Christopher, Terry K., 1999 "Paleolimnology in an urban environment: The history of environmental change in St. John's, Newfoundland".

Thesis

Christopher, T.K., 1991. "Mapping anthropogenic effects of urbanization in the St. John's area using the inorganic geochemistry of lake sediments". Unpublished B.Sc. Honours thesis, Memorial University of Newfoundland, 105 pages.

Publications and Presentations

Refereed:

Christopher, T.K., Davenport, P.H., and Burden, E.T., 1994. "The pollution history of a city from the sediment record of urban lakes." *In* Trace Substances, Environment and Health. Richard Cothern - editor. Proceedings from the Society for Environmental Geochemistry and Health, New Orleans, 1993 Conference, pages 145-152.

Davenport, P.H., Christopher, T.K., Vardy, S. and Nolan, L.W., 1993. "Geochemical mapping in Newfoundland and Labrador: its role in establishing geochemical baselines for the measurement of environmental change. Journal of Geochemical Exploration, volume 49, pages 177-200.

Non-Refereed:

Christopher, T.K., Davenport, P.H. and Burden, E.T., 1994. "Lake ecosystems in the urban environment; Can they be saved?" In Proceedings of the 9th Atlantic regional Hydrotechnical Conference, St. John's, Newfoundland, November 9-10.

Christopher, T.K., Davenport, P.H. and Burden, E.T., 1994. "The challenge of preserving urban lakes. *In* Programs with Abstracts, Geological Association of Canada Annual Meeting, Waterloo, Ontario, May 16-18.

Christopher, T.K., Davenport, P.H. and Burden, E.T., 1993. The effect of urban and industrial development on the geochemistry of the watersheds in the St. John's area: Preliminary Results. *In* Proceedings from The Scientific Challenge of our Changing Environment, St. John's, Newfoundland, March 3-5.

Christopher, T.K, Davenport, P.H. and Burden, E.T., 1993. The effect of urban and industrial development on the geochemistry of the watersheds in the St. John's area: Preliminary Results: *In* Current Research Newfoundland Department of Mines and Energy, Geological Survey Branch, Report 93-1, pages 419-433.

Ricketts, M.J. and Christopher, T.K., 1992. "Granular aggregate

resource mapping of the Grand Falls (NTS-2D/13) and Mount Peyton (NTS 2D/14) map areas. *In* Current Research Newfoundland Department of Mines and Energy, Geological Survey Branch, Report 92-1, pages 39-49.

Davenport, P.H., Christopher, T.K., Honarvar, 1991. Mapping anthropogenetic changes in the inorganic geochemistry of urban drainage system using organic lake sediments. *In* Proceedings from 2nd International symposium on Environmental Geochemistry including 3rd International Symposium on Environmental Geochemistry and Health and 9th European Meeting of the Society for Environmental Geochemistry and Health, Uppsala, Sweden, September 16-19.

Media Presentations

Radio: Interviewed on The Morning Show, February, 1993.

Awards and Honours

1991-95	Special Resource Scholarship to Pursue Studies related to Resource Development.
1993-95	Buchans ASARCO Scholarship.
1993-94	Fellow of the School of Graduate Studies.
1992-93	Academic All-Canadian.
1986	Harriet Curtis Collegiate Award.

References

Micron Mill Wave Table

Concentration Report

OCTOBER 4 2010

RON OWENS
4507 52ND ST.
PONOKA, ALE T4J 1J6
CANADA

ACTION
Mining Services Inc.
37482 Ruben Lane
Sandy OR 97055
503 826-9330

Sample name: OWENS T/T

Sample weight: 22 LBS

Particle size: -30 mesh

Screened: yes XX no

Impact Mill: yes XX no

Table height: 4½"

Surfactant used:

Soap

Action Mining's XX

Clay: yes XX no

Bump: light medium XX hard

Packing: no light medium XX heavy

Cons removed for inspection 45 gms

SEEN IN CONCENTRATES UNDER MICROSCOPE:
Sulfides: XX
Copper: XX
Garnets:
Free gold: 11 MG

FIRE ASSAY CONS-CONVERTED FIGURES TO HEAD ORE VALUE			
Estimated		Weighed GOLD	
gm/ton	toz/ton	gm/ton	toz/ton
1.1		N/A	N/A

gm=gram mg=millgram toz/ton=troy ounces per ton of ore PGM's=platinum group metals

NOTE: Estimated values are the result of microscope examination. The gold examined is compared with known samples and the technician gives his best estimate. The results are usually better than 70% accurate. Weighed values are values of gold that have been recovered and weighed on laboratory scales. Accuracy is better than 95%. Figures given are estimates of gold that can be recovered by actual production, based on the sample furnished. This report is submitted to the addressed client for his exclusive use. As a protection to the client, the public and this laboratory, this report may not be used in whole or in part for advertising, publicity or promotion without written authorization. Any "visible gold particles" in an ore are approximately 86% pure gold

[redacted]

Michael C. Glenn

Micron Mill Wave Table

Concentration Report

NOVEMBER 24 2008

RON OWENS
4507 52ND ST.
PONOKA, ALB T4J 1J6
CANADA

ACTION
Mining Services Inc.
37482 Ruben Lane
Sandy OR 97055
503 826-9330

Sample name: 3 FT HORIZON, SITE 01-20 LBS, -50 MESH
Sample weight: 15 LBS
Particle size: ran thru -30 mesh screen
Screened: yes XX no
Impact Mill: yes no

Table height: 4½"

Surfactant used:
Soap XX
Action Mining's

Clay: yes XX no

Bump: light medium XX hard
Packing: no light XX medium heavy

Cons removed for inspection XX

Cons returned to customer XX

Sulfides: XX

Copper:

Garnets:

Free gold: 5 MG

FIRE ASSAY CONS-CONVERTED FIGURES TO HEAD ORE VALUE			
Estimated		Weighed GOLD	
gm/ton	toz/ton	gm/ton	toz/ton
0.66	0.02		

gm=gram mg=milligram toz/ton=troy ounces per ton of ore PGM's=platinum group metals

NOTE: Estimated values are the result of microscope examination. The gold examined is compared with known samples and the technician gives his best estimate. The results are usually better than 70% accurate. Weighed values are values of gold that have been recovered and weighed on laboratory scales. Accuracy is better than 95%. Figures given are estimates of gold that can be recovered by actual production, based on the sample furnished. This report is submitted to the addressed client for his exclusive use. As a protection to the client, the public and this laboratory, this report may not be used in whole or in part for advertising, publicity or promotion without written authorization. Any "visible gold particles" in an ore are approximately 86% pure gold

[redacted]

Michael C. Glenn

A Report and Background Information Pertinent To the Exploration and Analysis of the Bad Heart Sandstone on Permit 9396110003

PART - C

Ronald T. Owens

October 13, 2010

Critical Points on Fire Assaying

By Walter C. Lashley, director of research
ASAT

Fire assaying may be the most misunderstood procedure in the minerals industry.

When an assayer boasts that he (or she) can fire an assay in twenty minutes, smile sweetly and take your sample to someone else.

Our previous statement may border upon dogmatic, but we assure you it is not, for during the past five years ASAT's staff has expended over 40,000 man hours, studying the identification and recovery of microfine gold. Several thousands of these hours were devoted to the budding science of fire assay.

In 1588 Lazarus Ercher published the first writing on the subject, and from that time until the present, every writing concerning fire assay has suggested that there was a personal touch provided by an assayer that was critical to successful recovery. These statements fostered the belief that fire assaying was an art, rather than a science.

Were we to present the full explanation and argument for the following statements, it would occupy the next two issues of Popular Mining to the exclusion of all other writings, so we will hit upon a few high points that should help PM's readers get better results from their fire assays.

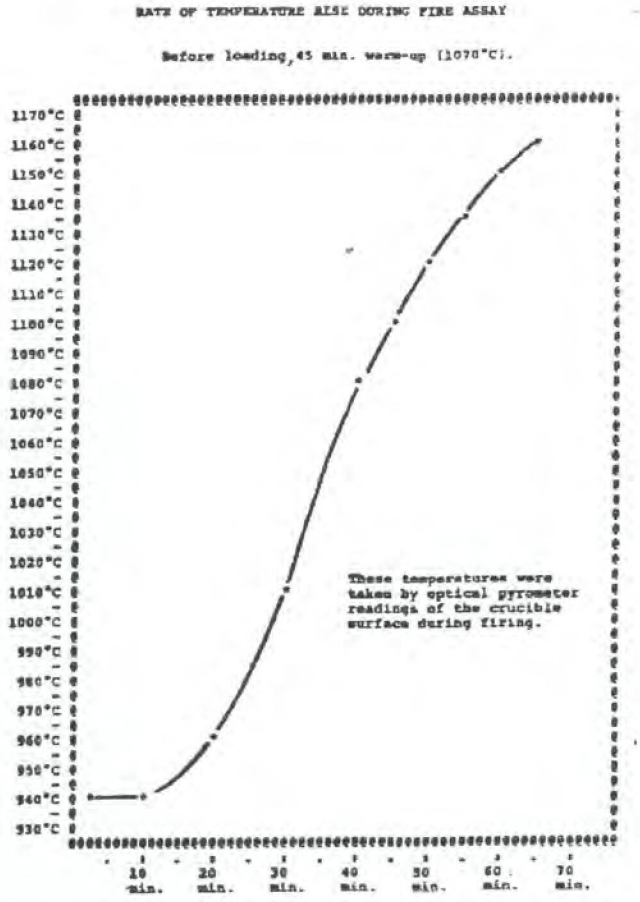


Fig. 1 This is a graph of the Rate of Temperature Rise that ASAT has found to be the most successful for assaying microfine gold.

Rate of Time Temperature Rise

Regardless of the flux that you may be using, there are certain phenomenon that must occur in the melt, and each stage will take an allocated amount of time.

Our first limiting factor is the gradation of the ore. It must be 100% passing a #100 mesh (U.S. standard) sieve. The ore must also be ground with the flux in a mortar, so as to assure intimate contact with the pyrometric chemistry. Should this preparation be ignored, you will halve your chances of recovering any gold under 40 microns (0.04 mm) in size.

Place the crucible with its charge in a furnace that has been preheated (starting from a cold furnace) to 940°C (1724°F which is visible orange) and adjust the fire to maintain this temperature for the next twenty minutes.

During this twenty minutes time period, the internal temperature of the melt will slowly rise to match the chamber temperature and the oxygen released by the litharge (or red lead oxide) will have time to react with the minerals in the ore, oxidizing <u>all</u> of the base metals, so that they may be combined with the fluxing agents.

By using this approach and Slag-master (a computerized method of balancing the fluxing agents to the needs of each ore), we have not witnessed base metal contamination in a single cupel in the last 2000 + firings.

Following the twenty minutes oxidation period, the throttle is opened, so that we may reach a chamber temperature of approximately 1050°C to 1100°C (1922°F to 2012°F, which is visible yellow heat) in the next twenty minutes.

This is the digestion period where the gangue minerals of the host rock are digested and become part of the slag.

Within the viscous melt, the lead mist formed by the reduction of the litharge (or red lead oxide) has the greater part of twenty minutes in which to contact the noble metals and collect them as they are freed from the dissolving gangue.

This would be an appropriate place to point out that if your ore does not carry silver in multiple ounces, then you must inquart silver if you are to collect the microfine gold. (Of the various methods used for inquart, we have found dilute (160 gm/liter) silver nitrate in 1% nitric acid to be" the most successful. Our normal inquart is one milliliter of this solution, added to the top of the melt just before firing. This gives us a 16 milligram bead of silver to part).

Placing a preweighed block of wood on top of the charge will create a blanket of carbon dioxide and assure you that the lead mist will be present throughout the whole melt, rather than in the bottom third as it would normally occur. This twenty minutes is a critical part of the firing, for if the fluxing were improper and the melt should become fluid too early, the lead mist will drop too soon and the noble metals will remain in the slag.

In this case, particle size is the factor that determines the amount of gold retained in the slag when the melt becomes fluid too soon; ie., the finer the particles of gold, the greater the amount retained in the slag. Should the gold be 10 microns or smaller, you will be lucky to collect 10% of the values in the lead button. A properly balanced flux combined with a well controlled rise of temperature will eliminate any need to re-fire the slag.

During the last twenty to twenty-five minutes of the firing cycle, the temperature is allowed to crawl-up to somewhere between 1150°C and 1200°C (2102°F to 2192°F), which is high yellow to white and difficult to look at without dark glasses).

Crucible temperature (internal) usually lags about fifteen to twenty minutes behind chamber temperature; e.g., it takes twenty minutes for the charge to absorb the heat that surrounds it. This means that over the last twenty minutes the melt becomes more and more fluid allowing even the smallest sphere of lead to settle to the bottom and collect in the button.

Plotting your Temperature Rise

Illustration #1 is the graphed function of ASAT's "Rate of Temperature Rise", and we suggest that you try to approximate it as closely as you can.

Within the minds ear, the author hears voices from potential readers saying "SO WHAT, you are a research laboratory with all kinds of expensive equipment to work with, and I am a starving prospector".

Take a look at ASAT's equipment in illustration #2 before you scream too loud. This shoddy little gas furnace has been in service for over fifteen years; it will handle five 40 gram crucibles at a time and one "L" crucible (for casting 500 ounce silver bars). It is constructed of loose laid K26 light weight fire brick within a simple angle iron frame. Asbestos board sides keep the brick in place. The real secret of this furnace is the 75,000 BTU venture burner that brings it to life.

Illustration #3 shows the burner, which costs $28 and can be bought at ceramic supply houses. If the furnace that you design is 1.3 cubic foot (inside volume) or smaller, the temperature rise that we have described presents little or no problem.

ASAT does have an edge on keeping track of the temperature, for we use a visual pyrometer as well as voltaic pyrometers.

By placing two valves in line, one to limit the maximum flow and the second to control the flow from 0 to maximum, you can trim these burners out to the point where you fire with a stop-watch and no longer have any need for pyrometric readings.

Should you use a bimetal, voltaic pyrometer, we would suggest that the cycle be determined with a brand new probe, for they oxidize over time and lessen the bimetal contact area, which in turn causes the millivolt meter to give an erroneous reading.

No. 2 ASAT's homemade furnace has fired thousands of samples over the years and has been rebuilt several times. It takes less than one hour to put a new deck in the furnace and replace any damaged brick in the walls.

No. 3 This 75,000 BTU venturi burner costs approximately $28, and may be purchased with an orifice for city gas or bottled gas.

If you do not have a pyrometer (about $100 buys one from a ceramic supply house) and/or wish to know exactly what is happening within your furnace, you should buy some pyrometric cones (once again from a ceramic supply house) and a few cone holders. (See illustration #4).

We would suggest that you use small cone 09 which will bend horizontal at 955°C, small cone 05 which bends at 1062°C and small cone 02, which is rated at 1148°C.

By viewing the cones through a peep hole (1/2") in the door of the furnace, you can time the advent of each temperature point during the plotting of your adjustments. Be sure to have charged crucibles in the furnace at the time, for they will alter the curve drastically.

Is it worth it?

Yes. The time and trouble of compounding a customized flux and firing it properly will pay off every time, for it will grant you the capability of producing repeatable results when firing the same sample multiple times.

At our laboratories, we have several samples that we use for control just to check-up upon our own assaying ability. One such sample (desert placer) has been fire assayed fifteen times to date and fourteen of the fifteen rendered 0.05 ounces per ton. The one that missed was used in an experiment to prove or disprove the importance of controlling the rate of temperature rise.

No. 4 Pyrometric cones, which are a standard means of measuring temperature in the ceramic industry, may be used as a means of checking the temperature in an assay furnace.

We performed three firings that day and allowed only one hour for the furnace to cool down. This meant that we were building residual heat deep within the fire brick and our rate of rise would increase with each firing. That is to say that the point of fluidity would be reached several minutes earlier with each following firing.

Firings #1 and #2 produced the anticipated 0.05 from the control sample, but firing #3 dropped to a visible trace, which could not be weighed.

We cannot help but wonder how many viable mining situations have been condemned because the assaying community is unaware of this phenomenon.

More, if you wish

We have tried to crowd a lot of information into one brief article. Hopefully, it has not been too much and too brief; however; if you would like more information about these subjects, we at ASAT publish bulletins and video tapes on our work and moreover, we would like to encourage you to join ASAT and support our efforts.

ASAT is a non -profit scientific foundation that is supported entirely by its membership and the projects that they fund. Not one cent of tax money is involved. That is except for the taxes that our members do not have to pay on the projects that ASAT is involved with, for they are covered under an IRS 5 01 (c) (3) exemption.

For membership information, write:
ASAT , P.O. Box 1705, Silver City, NM 88062, or call (505)388-5654

Report of Investigations 7489

Gold Transport by Complex Metal Chloride Vapors

By Judith A. Eisele, D. D. Fischer, H. J. Heinen, and D. G. Kesterke

UNITED STATES DEPARTMENT OF THE INTERIOR
Rogers C. B. Morton, Secretary

BUREAU OF MINES
Elburt F. Osborn, Director

CONTENTS

	Page
Abstract	1
Introduction and background	1
Experimental procedures	3
Results and discussion	4
Conclusions	10
References	11

ILLUSTRATIONS

1.	Electric tube furnace and charge	3
2.	Vapor pressures in the system Au-Cl	5
3.	Effect of temperature on the chloride volatilization of gold from a gold-silica mix using a chlorine sweep	7
4.	Structures of iron and gold chloride vapors	7
5.	Proposed structures of iron-gold chloride vapor	8

TABLES

1.	Gold volatilized using metal-bearing minerals and salts as additives.	6
2.	Effect of other metallic additives on gold volatilized	8
3.	Free energy of reaction for formation of $Fe_2Cl_{6(s)}$	9

GOLD TRANSPORT BY COMPLEX METAL CHLORIDE VAPORS

by

Judith A. Eisele,[1] D. D. Fischer,[2] H. J. Heinen,[3] and D. G. Kesterke[4]

ABSTRACT

The possibility of improving the volatilization of gold through the formation of a metal-gold chloride vapor complex was investigated. Gold-silica mixtures, containing ferrous and nonferrous minerals and salts as additives, were treated in a laboratory tube furnace with a flow of chlorine gas at various temperatures. The addition of pyrite (FeS_2) to a charge of gold-silica increased the volatility of the gold from 3, 20, and 62 percent of the total gold to 62, 93, and 100 percent at 200°, 300°, and 400° C, respectively. Chemical analyses of the condensate indicated the volatile species to be $FeAuCl_6$.

INTRODUCTION AND BACKGROUND

Since 1967, the Bureau of Mines has conducted extensive research to improve the extractive technology of gold and develop processes which may be applicable to refractory ores. Some metallurgists believe that the recovery of metallic values from ores and concentrates by vapor-transport techniques has great potential in the field of extractive metallurgy (10, 12).[5] The purpose of this phase of the Bureau's research was to study the volatilization of gold.

Chloride volatilization of gold has been known for about 90 years. The process is used to extract gold, silver, and other nonferrous metals from pyrite cinders (15), but it has never been successfully applied on a plant scale to gold ores. Early metallurgical operations involved salt-roasting refractory silver-gold ores with sodium chloride (NaCl) or calcium chloride ($CaCl_2$) to form soluble chlorides, which could then be leached. A major disadvantage of this process was that considerable gold was lost during the

---

[1] Chemist, Reno Metallurgy Research Center, Bureau of Mines, Reno, Nev.

[2] Former chemist, Reno Metallurgy Research Center, Bureau of Mines, Reno, Nev.; now with the United States Army.

[3] Metallurgist, Reno Metallurgy Research Center, Bureau of Mines, Reno, Nev.

[4] Supervisory metallurgist, Reno Metallurgy Research Center, Bureau of Mines, Reno, Nev.

[5] Underlined numbers in parentheses refer to items in the list of references at the end of this report.

roasting of some ores. In addition, the results obtained in these operations were unexplainably inconsistent, and the reaction mechanisms were never well defined. Christy (2) was the first to document the gold losses sustained by several operating metallurgists. For example, he recorded Aaron's loss of gold in salt-roasting a pyrite ore, and Stetefaldt's losses of 43 to 93 percent of the total gold in roasting a pyrite-chalcopyrite ($CuFeS_2$) ore. He similarly recorded that Butters volatilized 70 to 85 percent of the gold from a pyrite-bearing ore. Christy then investigated the effect of chlorine and temperature on the volatilization of gold and found a region of high volatility at 200° to 300° C, low volatility near 600° C, and increasing volatility above 600° C. The loss of gold was attributed to the formation of gold chloride.

Around 1900, a process was introduced that utilized the volatility of gold chloride instead of trying to suppress it. In the Pohle-Croasdale process (3), ore was roasted with sodium chloride at 750° to 1,050° C, and the volatile chlorides were separated from the gangue. Difficulties were encountered, however, in condensing the chlorides, and no successful means for doing so were found. Other metallurgists, studying salt roasting at lower temperatures, noted that their results varied from ore to ore and sometimes varied within an ore. In certain ores the gold volatilized below 600° C, whereas in others it did not. Hence, to insure consistent gold volatilization, it was necessary to go to high temperatures as in the Pohle-Croasdale method.

Mather (11), in 1903, claimed it was possible to volatilize gold from ores at temperatures well below 700° C. He claimed to have accomplished the sublimation of all values in a copper-gold-silver ore as compound chlorides at temperatures lower than 400° C. He also stated that under certain unexplainable conditions, a partial sublimation of some metal chlorides occurred at a temperature lower than the boiling point of water; however, this claim has never been verified. He theorized that metals volatilize as simple chlorides at high temperatures, but as compound metal chlorides at low temperatures.

In 1923, a group of investigators from the Bureau of Mines at Salt Lake City and the University of Utah studied the Pohle-Croasdale process. These investigators roasted a number of ores at 900° to 1,000° C with NaCl and applied the method on a bench and pilot plant scale (14). The Cottrell precipitator was used to effectively collect the volatile chlorides.

Biltz and coworkers (1, 7) studied the physical chemistry of gold chlorides in 1928 by passing chlorine gas over finely divided gold at various temperatures. They showed that gold chloride has a region of high volatility at 254° C, low volatility from 400° to 600° C, and increasing volatility between 600° C and the melting point of gold.

Further application of the chloride volatilization process to treat gold, silver, copper, and lead ores was made on a bench scale by the Bureau of Mines (5-6).

In the present research, the volatilization of gold as a chloride was investigated at low temperatures, in the range where results obtained by

previous investigators had been erratic and unreproducible. Preliminary investigations on the volatilization of gold from ores showed that the ores were too complex to permit effective control of all parameters. Therefore, major emphasis was directed toward the study of a gold-silica system, which yielded consistent results and permitted a more precise definition of the mechanism of low-temperature gold volatilization. The discovery of an iron-gold chloride species that was volatile at low temperatures explains why the early metallurgists could not obtain reproducible results with various ores under identical treatment conditions.

EXPERIMENTAL PROCEDURES

The chloride volatilization tests were conducted in a horizontal electric tube furnace containing a quartz tube, as shown in figure 1.

The gold-bearing charge was placed in a 1-inch-diameter quartz tube, which was inserted into the 1-1/2-inch-diameter tube of the preheated furnace. After the system was made airtight, the flow of chlorine was initiated. The charge was roasted 1 hour and rabbled every 15 minutes by rotating the inner quartz tube with attached wires that extended out through the rubber stopper. At the end of a run, the tube was withdrawn and allowed to air-cool before the charge was removed. A series of three traps was placed at the outlet of the furnace to condense fumes before they entered the exhaust system.

The initial tests were conducted on an oxide ore, ground to 100 mesh, which contained 0.40 oz gold/ton. The gold occurred as submicron-size particles in a porous gangue matrix.

The subsequent reaction studies were conducted on a pure gold-silica mixture in the presence of controlled amounts of additives. For these investigations, a master gold-silica mix containing ~40 oz gold/ton was prepared in the following manner: Silica flour was first purified by digesting with aqua regia and then washed with distilled water until free of acid. An aqueous solution of gold chloride was added to a slurry of the purified silica flour,

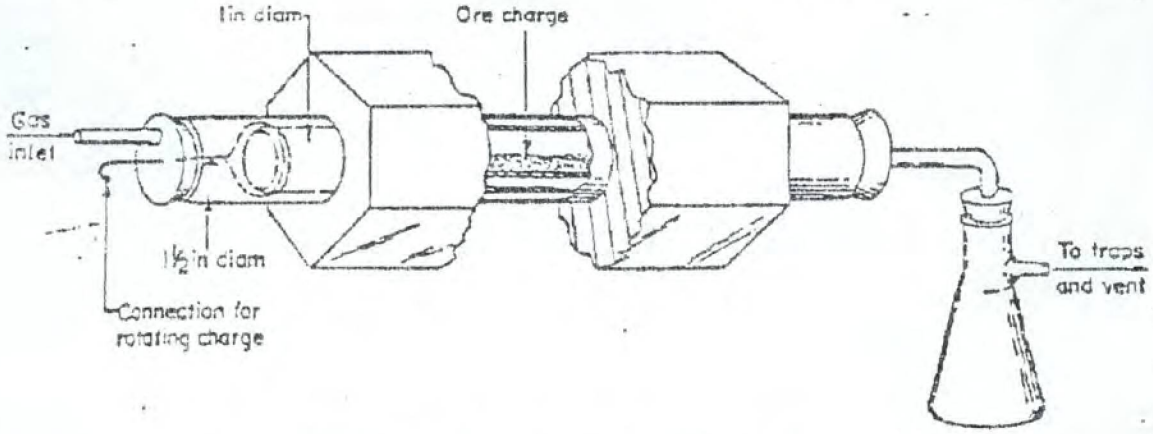


FIGURE 1. - Electric Tube Furnace and Charge.

and the gold was precipitated by adding oxalic acid solution, heating, and stirring. The resulting slurry was filtered, washed, and dried. Batches containing ~0.5 oz gold/ton were then prepared for use in the experiments by adding 10 grams of the master mix to 1 kg purified silica flour. The batch was tumbled for 24 hours; four assays made on each batch showed that this provided uniform mixing. The resulting mix was analogous to an ore containing finely disseminated gold in a porous siliceous gangue.

Minerals tested as sources of gold-complexing components were clean specimens ground to minus 100 mesh, including pyrite, galena (PbS), chalcocite (Cu_2S), chalcopyrite, bornite ($FeS \cdot 2Cu_2S \cdot CuS$), covellite (CuS), wurtzite (ZnS), pyrrhotite (FeS), and millerite (NiS). Chemicals used as promoters were ferrous sulfide (FeS), sulfur, arsenic sulfide (As_2S_3), sodium sulfide (Na_2S), ferric oxide (Fe_2O_3), and ferric chloride hexahydrate ($FeCl_3 \cdot 6H_2O$). The materials were of reagent-grade purity and were ground to minus 100 mesh. Other chemical additives included impure crystalline aluminum chloride ($AlCl_3$) and the sulfides of aluminum (Al_2S_3), gallium (Ga_2S_3), and indium (In_2S_3), which were added as lumps. Metal additives included chemically pure iron and aluminum powders, tin in the form of small shot, and electrorefined titanium metal crystals.

Reactions between the additives and the gold-bearing charge in the quartz tube were obtained by two techniques, which gave equally good results. In one method, a 20-gram charge, containing 0.2 to 0.3 mg gold, was mixed with the desired weight of additive (usually 0.25 gram) before being put in the quartz tube. In the other method, the additive was placed 3 inches in front of a 10-gram charge so that the stream of chlorine passing over the additive generated the desired vapor, which then passed over the charge. This was especially useful for additive materials that could not be finely ground.

Gold volatilization and transport were calculated by the difference in gold content of the starting material and the calcine as determined by fire assaying. Metallurgical balances were obtained in certain cases involving large amounts of gold by rinsing the traps at the furnace outlet and determining the gold content of the solution used to dissolve the condensed fume.

RESULTS AND DISCUSSION

Figure 2 is a graph showing the vapor pressure of gold chloride versus temperature. The region of gold volatility at 250° C is very evident; this is due to the formation of the volatile gold chloride, $Au_2Cl_6(g)$. As the stability of $Au_2Cl_6(g)$ decreases with increasing temperature, the vapor pressure of $Au_2Cl_6(g)$ becomes vanishingly small. There is an increase in vapor pressure, starting around 600° C, presumably because of a gold monochloride species.

When the oxide gold ore sample was chlorinated, there was no gold volatilization at 250° C and no appreciable volatilization below 600° C. Because of the large number of constituents in the ore and the variety of reactions that can occur, further work was done using the synthetic mixture, which contained only gold and silica, to simplify the study of the mechanism by which gold is volatilized.

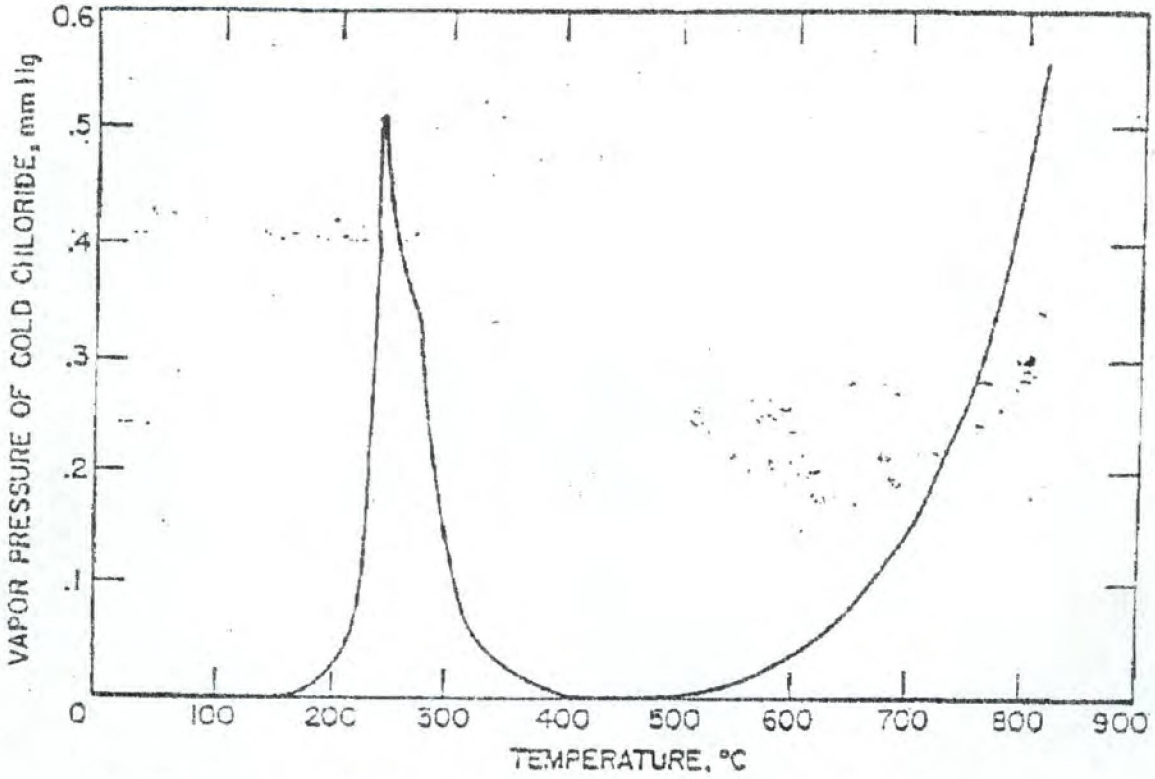


FIGURE 2. - Vapor Pressures in the System Au-Cl According to Hoger and Hill (9).

The results of chlorinating the gold-silica mixture are shown in figure 3 as the percent of gold in a charge volatilized in a 1-hour run. Although it would be expected that the most gold would volatilize at temperatures where the chloride has the highest vapor pressure, there was practically no gold volatilization near 250° C. Gold was volatilized, however, between 400° and 600° C, which is an area of nonvolatility according to figure 2. This would appear to be an anomaly; however, the results obtained for the gold-chlorine system cannot be applied to the gold-silica-chlorine system, especially where the gold concentration is very low as in low-grade ores. The different behavior of the two systems explains why gold has not been volatilized from ores via chlorination at 250° C, although it is well known that the metal chloride is volatile at this temperature. The basic chlorination behavior of the gold-silica mixture was established by repeated runs, which also showed that pure Cl_2 and a Cl_2-plus-air mixture gave the same results. In subsequent experiments, the effect of additives was studied, and the results attained with the first group of minerals and chemicals are given in table 1. Of particular interest were the iron compounds, which greatly lowered the temperature at which gold could be volatilized. Elemental sulfur, ferric oxide, and hydrated ferric chloride did not promote volatilization when used separately, but when sulfur and an iron compound were combined, anhydrous ferric chloride ($Fe_2Cl_{6(s)}$) was produced and volatilization was enhanced. The degree of gold

volatilization was not markedly dependent on the amount of pyrite used, as shown by the amount of gold volatilized under the following conditions:

Pyrite, g/20 g charge	Gold volatilized, percent	
	200° C	250° C
0.5	92	98
.25	92	99
.1	96	96
.05	87	95

TABLE 1. - Gold volatilized using metal-bearing minerals and salts as additives, percent

Additive	Temperature, °C			
	200	250	300	400
No additive	3	4	20	62
Pyrite (FeS_2)	92	99	97	99
Ferrous sulfide (FeS)	62	93	93	100
Pyrrhotite (FeS)	66	80	89	93
Sulfur	17	12	31	79
Chalcopyrite ($CuFeS_2$)	3	41	60	100
Bornite ($FeS \cdot 2Cu_2S \cdot CuS$)	1	29	54	93
Covellite (CuS)	0	12	34	91
Wurtzite (ZnS)	3	12	18	32
Galena (PbS)	5	8	25	17
Chalcocite (Cu_2S)	2	0	3	77
Millerite (NiS)	0	0	15	80
Arsenic sulfide (As_2S_3)	0	2	11	70
Sodium sulfide (Na_2S)	11	7	0	0
Ferric oxide (Fe_2O_3)	16	8	2	88
Hydrated ferric chloride ($FeCl_3 \cdot 6H_2O$)	0	0	24	89
$Fe_2O_3 + S$	0	8	90	98
$FeCl_3 \cdot 6H_2O + S$	86	98	100	100
Anhydrous ferric chloride (Fe_2Cl_6)[1]	78	94	100	100

[1] Prepared by passing Cl_2 over iron powder in the reaction tube.

To determine what elements were present in the condensate, a large amount of material was volatilized and collected. A charge consisting of 0.5 gram of minus 325-mesh gold metal powder and 1.0 gram of pyrite volatilized at 250° C gave a condensate of very hygroscopic, dark red crystals, which a qualitative X-ray fluorescence scan showed to contain gold, iron, and chlorine. The sulfur content was 0.002 percent. This suggested that a mixed iron-gold chloride complex was causing the volatilization of gold at the low temperatures.

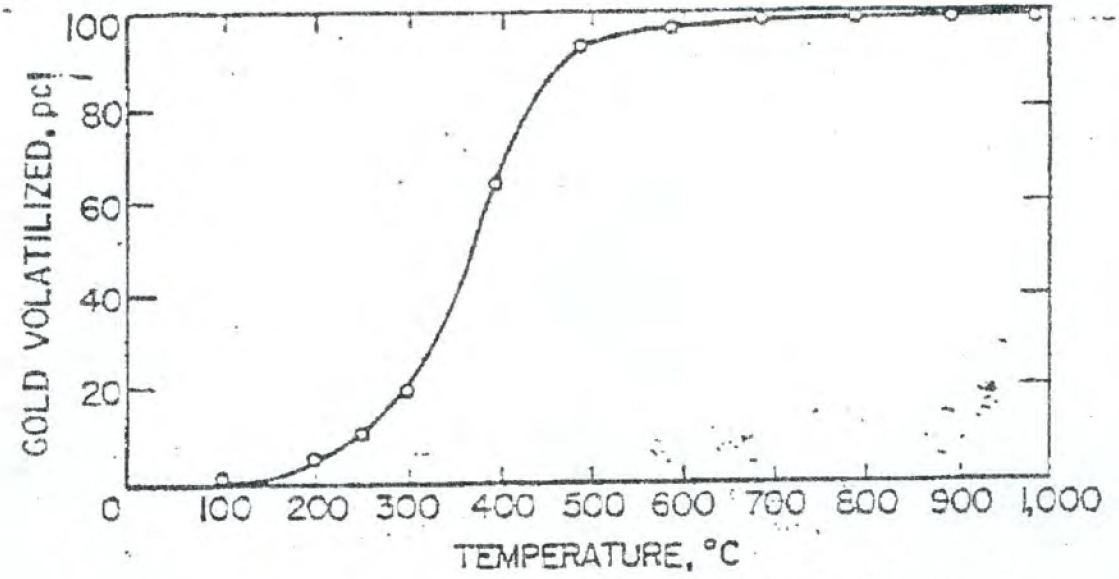


FIGURE 3. - Effect of Temperature on the Chloride Volatilization of Gold From a Gold-Silica Mix Using a Chlorine Sweep.

Substitution of pure iron powder for iron sulfides was equally effective for promoting gold volatilization in this temperature range (table 1).

As part of this project this conclusion was confirmed by Hager and Hill (9) in their mass spectrometric study of the vapor transport reactions involving gold. A sample of gold and iron heated in a Cl_2 atmosphere resulted in the detection of a number of iron-gold-chlorine ionic species, which were identified as originating from the parent species $FeAuCl_{3\,(g)}$.

The similarity between the vapor-phase species of iron and gold chlorides suggests that the iron-gold chloride may be formed by simple substitution of a gold for an iron atom. As shown in figure 4, both chlorides are dimers in the vapor phase with chlorine bridges between the metal atoms. In $Fe_2Cl_{6\,(g)}$ each iron bonds four chlorine atoms by a tetrahedral sd^3 configuration, with two tetrahedra sharing a common edge in the dimer (16, p. 356). In

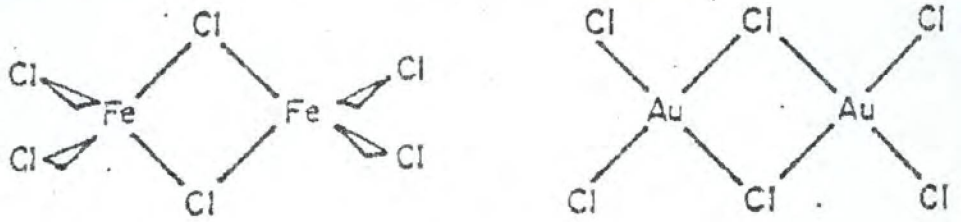


FIGURE 4. - Structures of Iron and Gold Chloride Vapors.

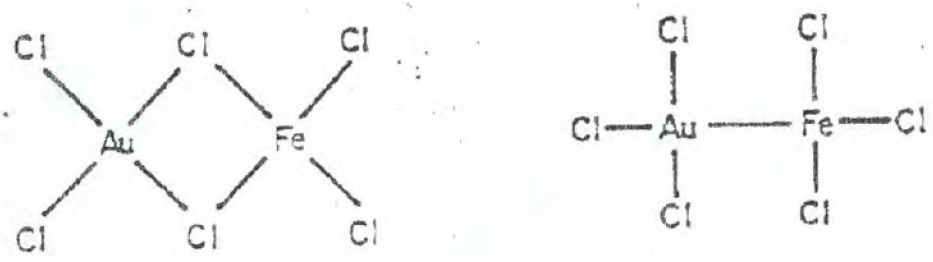


FIGURE 5. - Proposed Structures of Iron-Gold Chloride Vapor.

Au_2Cl_6, each gold bonds four chlorine atoms in a square planar dsp^2 configuration to form a planar dimer molecule (16, pp. 356-357, 884).

It is proposed that iron-gold chloride has structure I or II shown in figure 5. Structure I would be expected from known characteristics of gaseous iron and gold chlorides. However, the fragment $AuFe^+$ was detected in the mass spectrometer (9); this would presumably come from a structure such as II. It is possible that the molecule is predominantly chlorine bridged with some intermetallic bonding character.

Aluminum also forms a dimeric trichloride, which is volatile and very similar to Fe_2Cl_6 (4) in structure and may be capable of forming a mixed chloride with gold. Table 2 gives the results with a number of additives of the iron and aluminum families. All are effective promoters of gold volatilization at low temperatures. Indium sulfide is mainly monomeric in the vapor state rather than dimeric as are the aluminum and gallium sulfides; perhaps for this reason, it is a less effective promoter. Tin and titanium form extremely volatile tetrachlorides rather than trichlorides, but are found to aid gold volatilization.

TABLE 2. - Effect of other metallic additives on gold volatilized, percent

Additive	Temperature, °C			
	200	250	300	400
No additive	3	4	20	62
Iron (powder)	78	94	100	100
Aluminum (powder)	11	76	98	97
$AlCl_3$ (impure crystals)	55	69	57	93
Al_2S_3 (lumps)	92	96	100	100
Ga_2S_3 (lumps)	100	-	97	97
In_2S_3 (lumps)	39	76	96	97
Tin (shot)	20	43	67	83
Titanium (electrolytic)	37	57	62	79

An examination of thermodynamic values offers an explanation of why certain ferric salts do not promote volatilization except in the presence of sulfur. If we assume formation of $Fe_2Cl_{6(g)}$ is a necessary prerequisite to aid gold volatilization, calculation of the free energy change on formation should indicate which reactions will take place if the reaction rate is favorable. Table 3 gives the reactions and free energy changes involved in the formation of ferric chloride vapor from various materials. The ΔG° values are negative for iron and the sulfides and go from positive to negative on the addition of sulfur to Fe_2O_3 and $FeCl_3 \cdot 6H_2O$ to allow formation of SO_2 and sulfuryl chloride (SO_2Cl_2). Although $FeCl_3 \cdot 6H_2O$ might be expected to form Fe_2Cl_6 vapor by simply heating, this is not the case. Wells (16, p. 5) states that in ferric chloride hexahydrate the central iron atom is bound to the molecules of water rather than to chlorine, and anhydrous ferric chloride cannot be recovered by heating.

TABLE 3. - Free energy of reaction for formation of $Fe_2Cl_{6(g)}$[1]

	ΔG°_{298}
(1) $2FeS_{2(c)} + 3Cl_{2(g)} = Fe_2Cl_{6(g)} + 1/2\,S_{8(g)}$	-50.6 kcal
(2) $2FeS_{(c)} + 3Cl_{2(g)} = Fe_2Cl_{6(g)} + 1/4\,S_{8(g)}$	-86.8
(3) $2Fe_{(a)} + 3Cl_{2(g)} = Fe_2Cl_{6(g)}$	-136.6
(4) $Fe_2O_{3(c)} + 3Cl_{2(g)} = Fe_2Cl_{6(g)} + 3/2\,O_{2(g)}$	+40.5
(5) $Fe_2O_{3(c)} + 3Cl_{2(g)} + 3/2\,S_{(rh)} = Fe_2Cl_{6(g)} + 3/2\,SO_{2(g)}$	-67.2
(6) $2FeCl_3 \cdot 6H_2O_{(c)} = Fe_2Cl_{6(g)} + 12H_2O_{(g)}$	+208.
(7) $2FeCl_3 \cdot 6H_2O_{(c)} + 18Cl_{2(g)} + 6S_{(rh)} = Fe_2Cl_{6(g)} + 6SO_2Cl_{2(g)} + 24HCl_{(g)}$	-134.

[1]Standard free energy of formation values taken from reference works of K. K. Kelley and JANAF Tables. Although these values are not calculated for the temperature range of the experiments (473° to 673° K), the results are expected to be qualitatively the same because of the large absolute values involved.

Gold vapor transport remained constant over a wide temperature range with FeS_2 as a promoter; 97 to 100 percent of the gold was volatilized at temperatures from 300° to 1,000° C.

CONCLUSIONS

Although metallic gold reacts with chlorine at temperatures near 250° C to form a volatile chloride, $Au_2Cl_6(g)$, the amount of gold volatilized at this temperature from a gold-silica mixture with a chlorine sweep was small. It was established that iron and aluminum compounds enhance gold vapor transport in this temperature region by formation of a volatile complex metal chloride for which a structure is proposed. Tin and titanium also aid gold volatilization, although not as effectively as iron and aluminum, but whether they form similar complexes has not been determined.

In the recent literature, there are reports of vapor-phase complex chlorides for divalent transition metal, alkaline earth, lanthanide, and actinide chlorides (4, 8, 13). However, these have different stoichiometric compositions than the covalent complex chlorides described here.

The formation of a volatile iron-gold chloride species offers an explanation for the observations made by early metallurgists who applied the salt-roasting process to precious metal ores; namely, that gold was lost by volatilization from some ores, but not from others. Most of the recorded losses were from pyritic ores; pyrite reacts to form the volatile complex chloride at very low temperatures. As iron is present in virtually every ore, it may well have reacted with gold over the entire temperature range. The minimum temperature at which the reaction would proceed with any given iron compound would be limited by the reaction of the iron mineral with NaCl to produce $Fe_2Cl_6(g)$. On the other hand, compounds such as Na_2S and ZnS were shown to suppress low-temperature gold volatilization (carbon also effectively suppresses volatilization), and the presence of such materials would reduce gold losses at low temperatures.

The discovery of this type of volatile species offers interesting possibilities in extractive metallurgy for devising new methods or modifying existing processes for the recovery of metals from their ores through the formation of complex vapor transport species.

REFERENCES[6]

1. Biltz, W., W. Fischer, and R. Juza. (On the Pneumatolytic Transport of Gold by Chlorine.) Ztschr. anorg. allgem. Chem., v. 176, 1928, pp. 121-142.

2. Christy, Samuel B. The Losses in Roasting Gold Ores and the Volatility of Gold. Trans. AIME, v. 17, 1888-89, pp. 3-45.

3. Croasdale, Stuart. Volatilization of Metals as Chlorides. Eng. and Min. J., Aug. 29, 1903, pp. 312-314.

4. Dewing, Ernest W. Distillation of Complex Metal Chlorides. French Pat. 1,512,160, Feb. 2, 1968.

5. Engel, A. L., and H. J. Heinen. Chloride Volatilization and Other Tests on a Gold-Copper Ore. BuMines Rept. of Inv. 4612, 1949, 8 pp.

6. _____. Experimental Extraction of Gold and Silver From California and Nevada Ores. BuMines Rept. of Inv. 5790, 1961, 30 pp.

7. Fischer, W., and W. Biltz. (On the Relation of Chlorine and Other Halogens to Gold.) Ztschr. anorg. allgem. Chem., v. 176, 1928, pp. 81-111.

8. Gruen, Dieter M., and Robert L. McBeth. Uranium Tetra-Chloride-Aluminum Trichloride Vapor Complex. Inorg. Nucl. Chem. Letters, v. 4, 1968, pp. 299-303.

9. Hager, John P., and Robert B. Hill. Thermodynamic Properties of the Vapor Transport Reactions in the Au-Cl System by a Transpiration-Mass Spectrometric Technique. Met. Trans., v. 1, No. 10, October 1970, pp. 2723-2731.

10. Kellogg, H. H. Vaporization Chemistry in Extractive Metallurgy. Trans. AIME, v. 236, 1966, pp. 602-615.

11. Mather, Henry A. Volatilization of Metallic Chlorides. Eng. and Min. J., Sept. 5, 1903, pp. 344-345.

12. North, Oliver S. Trends. Eng. and Min. J., v. 168, No. 7, 1967, p. 158.

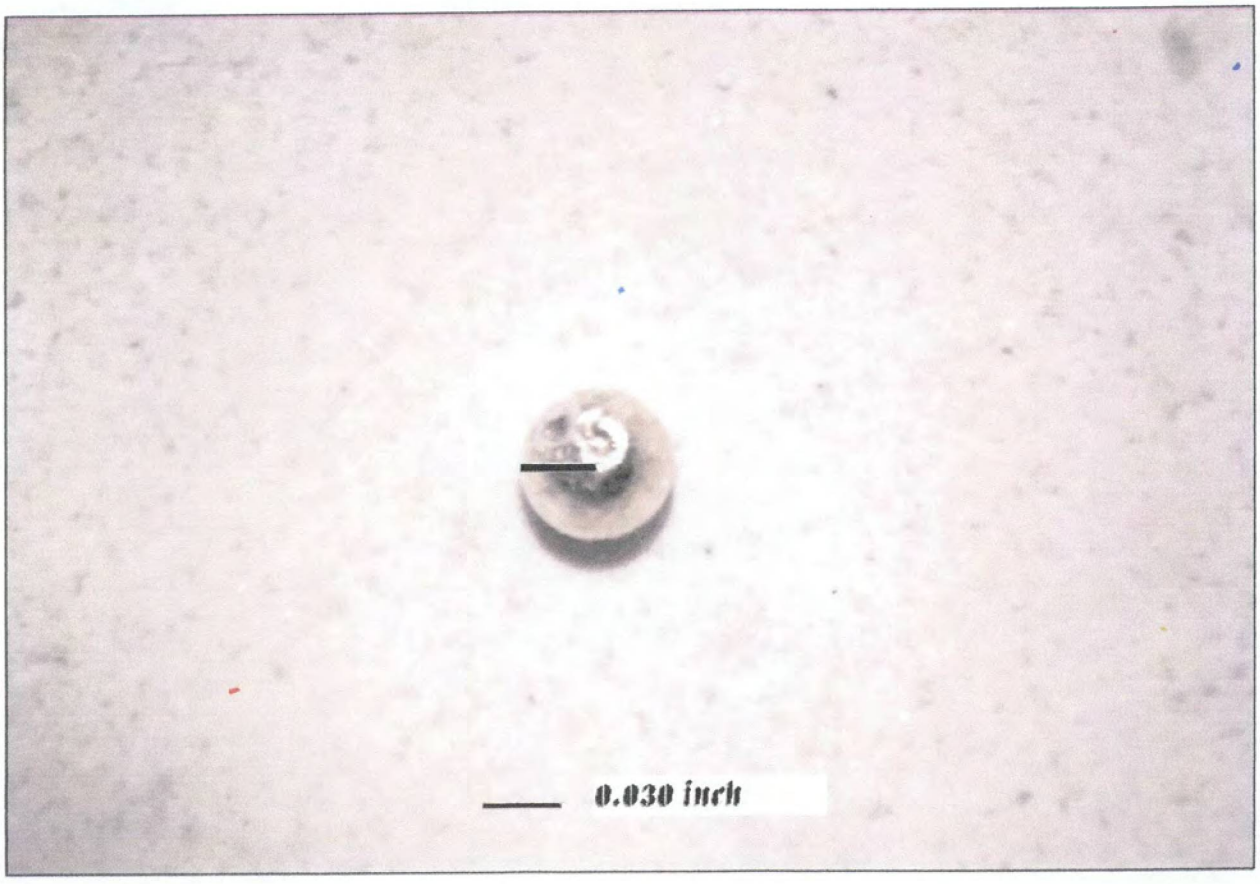
13. Øye, H. A., and D. M. Gruen. Neodymium Chloride-Aluminum Chloride Vapor Complexes. J. Am. Chem. Soc., v. 91, No. 9, 1969, pp. 2229-2236.

14. Varley, Thomas, E. P. Barrett, C. C. Stevenson, and Robert H. Bradford. The Chloride Volatilization Process of Ore Treatment. BuMines Bull. 211, 1923, p. 9.

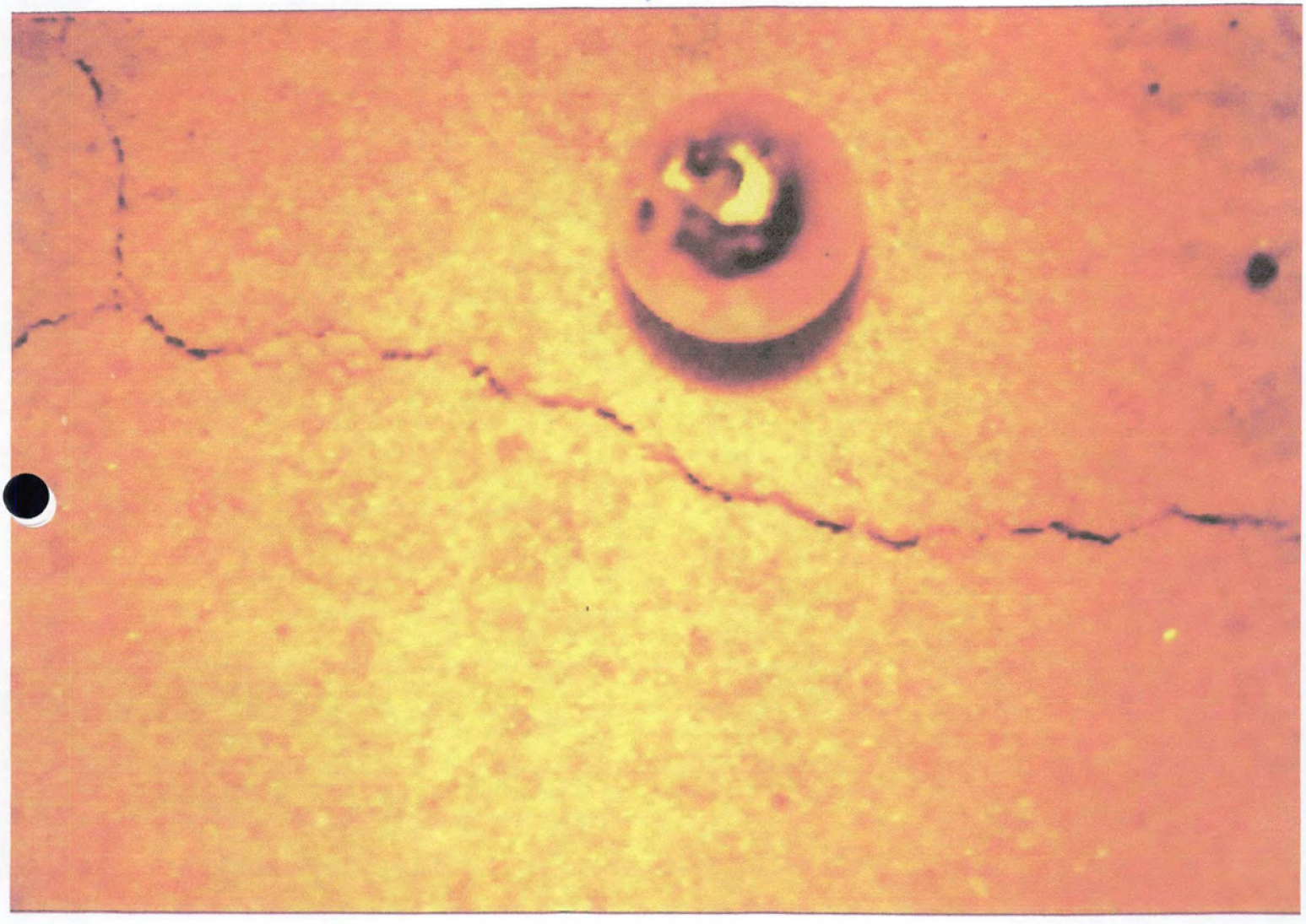
[6]Titles enclosed in parentheses are translations from the language in which the item was published.

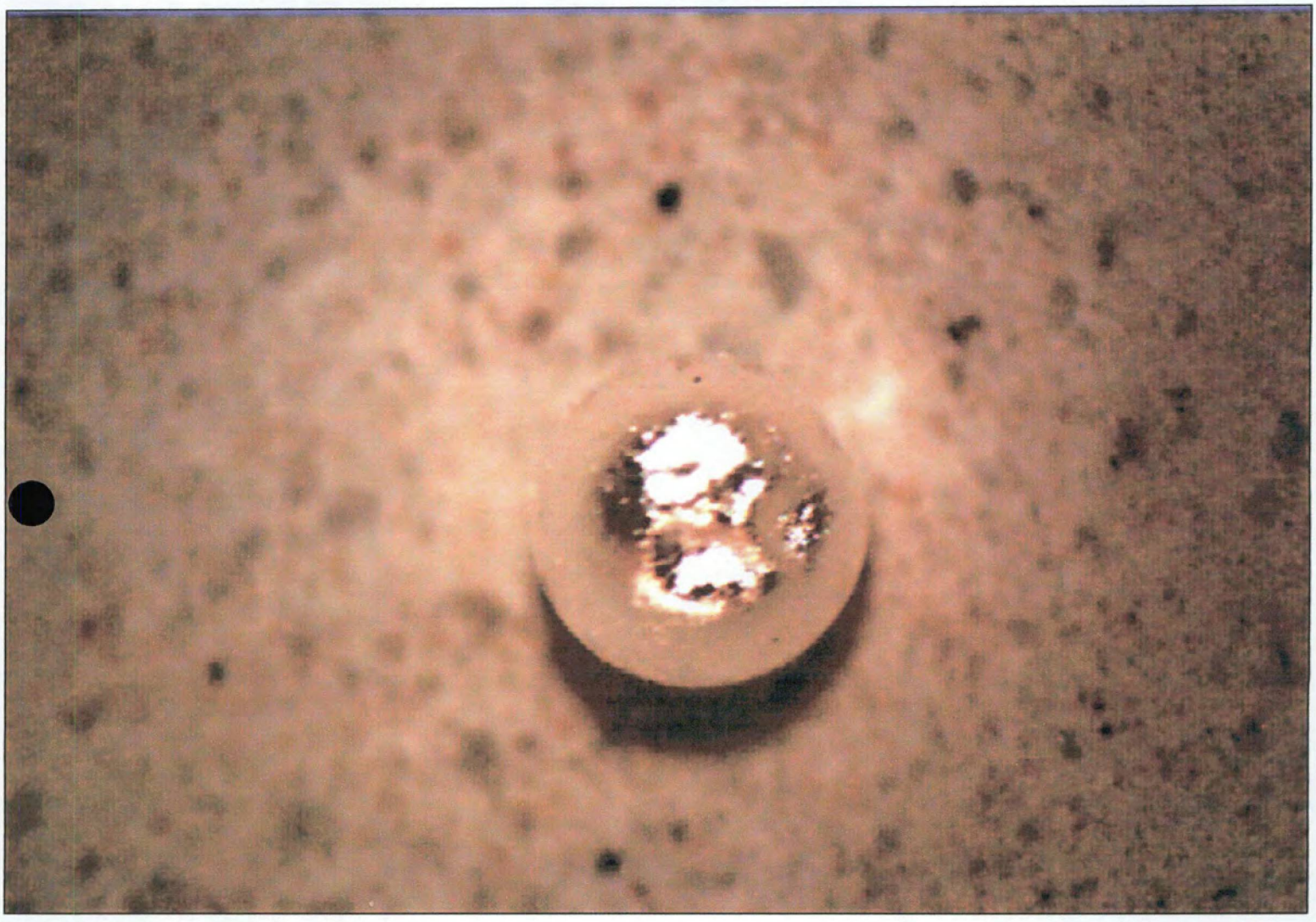
15. Walden, Heinz. Processing of Solutions Accruing in Connection With Chloridizing Volatilization Processes. AIME Metallurgical Society TMS Paper No. A69-15, February 1969, 22 pp.

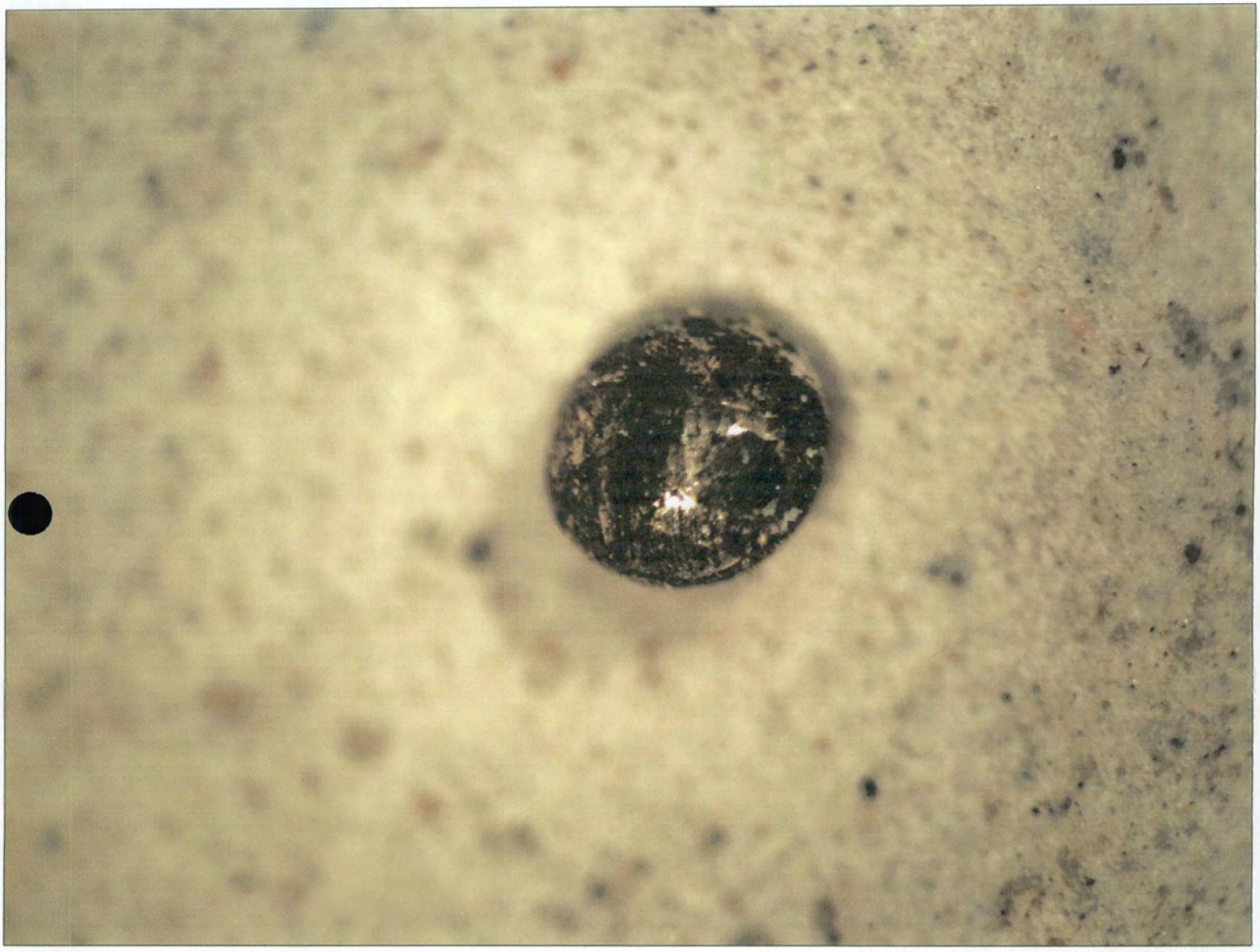
16. Wells, A. F. Structural Inorganic Chemistry. Oxford at the Clarendon Press, New York, 3d ed., 1962, pp. 5, 356-357, 884.

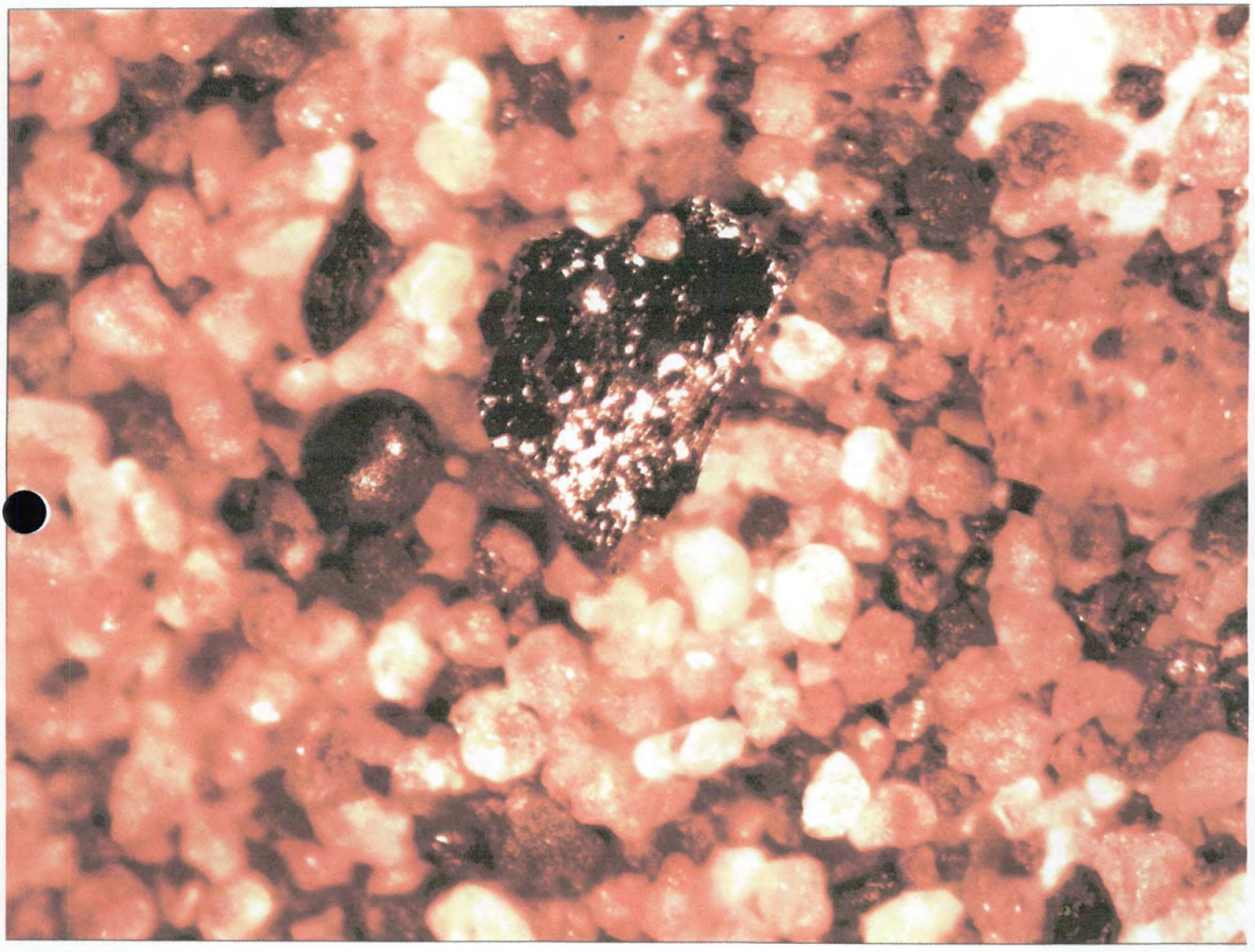


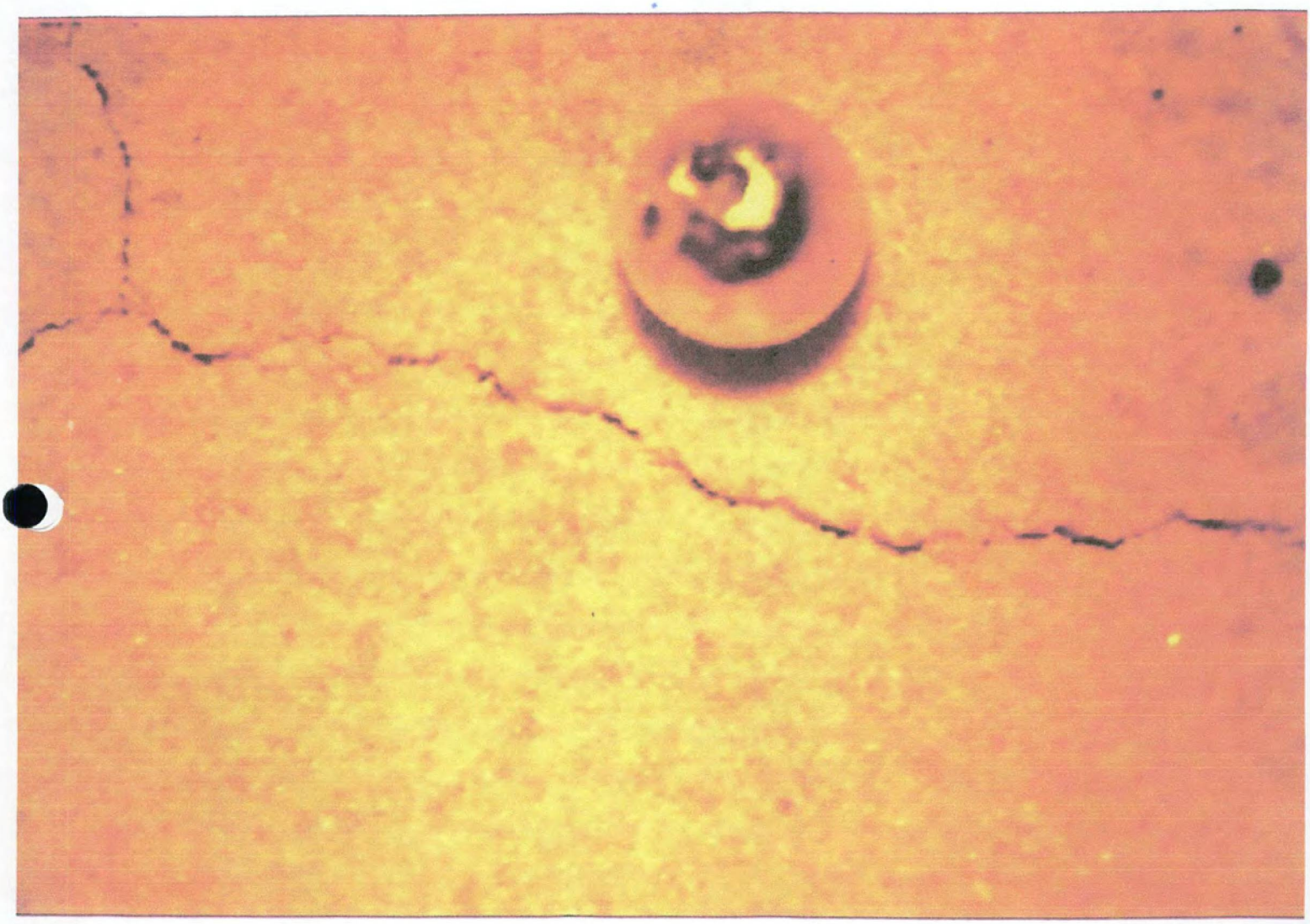
Combination Bead - Photo taken March 23, 2008

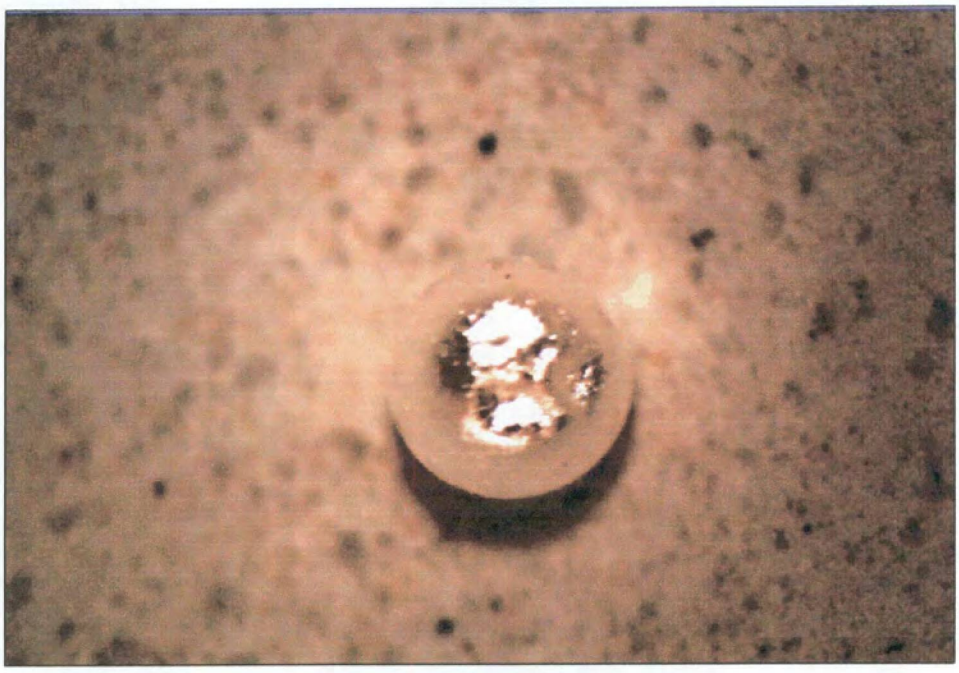












This is an example of a bead at 20.0 mag. Weight 7.86 mg