

SAMPLE: LUPIN B1: ULU ORE (Slide 97-2223)

Estimated mode

Quartz	25
Plagioclase	20
K-feldspar	1
Hornblende	28
Biotite	12
Sphene	4
Ilmenite	5
Carbonate	0.5
Pyrrhotite	2
Arsenopyrite	2
Pyrite	0.5
Chalcopyrite	trace

This sample consists of rock fragments 0.2 - 6.0 mm in size.

These are varigranular (but dominantly fine-grained) intergrowths of quartz, plagioclase, hornblende and biotite in various proportions, having the aspect of metamorphic amphibolites or metasediments.

The prevalent grain size of these fresh, unfractured, unfoliated to weakly foliated rocks is in the 20 - 200 micron range, but there are occasional variants consisting of segregations of hornblende and/or quartz in which the grain size is in the 0.5 - 1.0 mm range.

Fine-grained sphene and ilmenite are prominent accessories, as even disseminations and wispy concentrations.

Carbonate is rare, being seen as a few, sporadic, small clumps, and as a partial alteration of coarse amphibole.

Sulfides consist dominantly of pyrrhotite and arsenopyrite, as individual disseminated grains 20 - 200 microns in size. They occur strongly concentrated in a relatively few specific rock fragments - mostly biotite-bearing quartzo-feldspathic variants. The majority of the amphibole-rich fragments are essentially devoid of sulfides.

The sulfides appear completely fresh.

SAMPLE: LUPIN B2: ULU WASTE (Slide 97-2224)

Estimated mode

Quartz	15
Plagioclase	28
Hornblende	40
Biotite	5
Sericite	trace
Epidote	2
Chlorite	trace
Magnetite	2
Ilmenite	3
Rutile)	2
Sphene)	2
Pyrite	2.5
Pyrrhotite	0.5

This sample is made up of rock fragments in a dominant size range of 0.2 - 3.0 mm.

The lithologies represented are of a generally similar type (equigranular metamorphic amphibolites) to those noted in the previous sample, but there are some systematic differences.

The proportion of biotite-rich variants is much lower, and most of the constituent fragments are intergrowths of varigranular hornblende with plagioclase and/or quartz. Epidote is a sporadic accessory not seen in sample B1, as is magnetite.

Carbonate appears to be absent.

Sulfides are present in roughly similar (or only slightly lower) total abundance as in the ore sample (B1), but they differ in consisting dominantly of pyrite, plus minor accessory pyrrhotite - arsenopyrite being essentially absent.

The sulfides occur as random disseminations of individual grains. In the case of the pyrrhotite these are anhedral, and typically range in size from 10 - 200 microns. In the case of the dominant pyrite, the form of the grains is cubic subhedral, and grain size ranges up to 0.5 mm. There is also a single rock fragment in which the pyrite occurs as peripheral segregations of coalescent grains up to several mm in size.

All sulfides appear fresh.

SAMPLE: LUPIN B3: TAILINGS (Slide 97-2225)

Estimated mode

Quartz	22
Plagioclase	25
K-feldspar	1
Hornblende	28
Biotite	14
Pyroxene	trace
Garnet	trace
Epidote	trace
Sphene	2
Ilmenite	2
Carbonate	0.5
Pyrrhotite	2
Arsenopyrite	2
Pyrite	1
Chalcopyrite	trace

This sample consists of rock fragments and disaggregated mineral grains ranging from 10 microns up to 1 mm or so in size.

Dominant constituents are quartz, plagioclase, hornblende and biotite, with accessory sphene, ilmenite and sulfides, and the sample clearly represents comminuted rock of similar types to those making up sample B1.

Carbonate is of low abundance, occurring as sporadic, small, fine-grained flecks and pockets, and as one or two liberated fragments of sparry aspect.

Sulfides consist of arsenopyrite, pyrrhotite and pyrite, as discrete, mutually unassociated grains in the size range 10 - 200 microns. Rare aggregated clusters of slightly larger size are also seen.

The sulfides typically appear fresh, and the silicate host rock clean and free of limonite staining.

International Metallurgical and Environmental Inc.

Acid-Base Accounting

(Pre-humidity-cell testing.)

Project : Klohn Crippen
Mine: Lupin
Date: Feb 5, 1997

Sample	Paste pH	Total S %	S as SO ₄ ⁻² %	Acid Pot. kg/t CaCO ₃	Neut. Pot. kg/t CaCO ₃	Net Neut. Pot kg/t CaCO ₃	NP: AP Ratio
B1 ULU Ore	8.70	1.14	<.01	35	32	-3	0.9
B2 ULU Waste	9.32	1.17	<.01	36	28	-8	0.8
B3 Tailings	8.12	1.63	<.01	51	49	-2	1.0
B4 OC8	7.97	1.02	0.01	32	13	-19	0.4
B5 ULU Waste XD1	9.61	0.29	<.01	9	30	21	3.4

CO ₂ kg/t CaCO ₃
6
4
9
2
11

Sample	Paste pH	Total S %	S as SO ₄ ⁻² %	Acid Pot. kg/t CaCO ₃	Neut. Pot. kg/t CaCO ₃	Net Neut. Pot kg/t CaCO ₃	NP: AP Ratio
Check Samples							
B2 ULU Waste			<.01				
B5 ULU Waste XD1							

CO ₂ kg/t CaCO ₃
12

Certified Reference Material	Measured Value	Reference Value
Std. UTS-4	1.86 % S	1.80 % S
Std. UTS-1	2.92 % SO ₄	2.65 % SO ₄
Std. NBM - 1	53 kg/t CaCO ₃	52 kg/t CaCO ₃

International Metallurgical and Environmental Inc.
Acid-Base Accounting

(Post Humidity-cell Testing)

Project : Klohn Crippen

Mine: Lupin

Date: Dec 2, 1997

Sample	Paste pH	Total S %	S as SO ₄ ⁻² %	Acid Pot. kg/t CaCO ₃	Neut. Pot. kg/t CaCO ₃	Net Neut. Pot kg/t CaCO ₃	NP: AP Ratio
B1 ULU Ore	8.97	1.22	<0.01	38	25	-13	0.7
B2 ULU Waste	9.16	1.17	<0.01	36	25	-11	0.7
B3 Tailings	8.56	1.55	<0.01	48	45	-3	0.9
B1 @4C	9.31	1.19	<0.01	37	28	-9	0.8
B2 @4C	9.21	1.14	<0.01	35	31	-4	0.9

CO ₂ kg/t CaCO ₃
5
4
8
6
5

Sample	Paste pH	Total S %	S as SO ₄ ⁻² %	Acid Pot. kg/t CaCO ₃	Neut. Pot. kg/t CaCO ₃	Net Neut. Pot kg/t CaCO ₃	NP: AP Ratio
Check Samples							
B1 ULU Ore							
B2 ULU Waste		1.17	<0.01				
B3 Tailings							
B1 @4C							
B2 @4C							

CO ₂ kg/t CaCO ₃
5
8
6
5

Certified Reference Material	Measured Value	Reference Value
Std. GZN-1	29.5 % S	30.2 % S
Std. LS2	0.09 % SO ₄	0.10 % SO ₄
Std. NBM - 1	54 kg/t CaCO ₃	52 kg/t CaCO ₃

International Metallurgical and Environmental Inc.
ICP Analysis

(Pre Humidity - cell testing)

Project: Kohn Crippen
Mine: Lupin
Date: Feb 5, 1997

Sample	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm
B1 ULU Ore	<0.2	1.53	7780	90	<0.5	<2	1.03	<0.5	31	38	60	4.71	<10	<1	0.67	10	0.68	395	1
B2 ULU Waste	<0.2	1.52	556	70	<0.5	<2	1.07	<0.5	37	59	103	4.58	<10	<1	0.29	10	1.16	345	1
B3 Tailings	0.8	1.66	>10000	90	<0.5	<2	1.17	<0.5	37	47	75	5.77	<10	<1	0.68	10	0.75	470	<1
B4 OC8	<0.2	2.9	2220	20	<0.5	<2	0.23	<0.5	17	83	45	9.16	<10	<1	0.16	20	1.41	410	1
B5 ULU Waste XD1	<0.2	1.26	76	130	<0.5	<2	1.21	<0.5	23	60	109	2.56	<10	<1	0.56	<10	0.65	245	1

International Metallurgical and Environmental Inc.
ICP Analysis

Project: K'ohn Crippen
Mine: Lupin
Date: Feb 5, 1997

Sample	Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr %	Ti %	Ti ppm	U ppm	V ppm	W ppm	Zn ppm
B1 ULU Ore	0.07	11	690	2	<2	10	8	0.14	<10	10	119	10	86
B2 ULU Waste	0.04	36	630	<2	<2	8	20	0.17	<10	<10	120	<10	44
B3 Tailings	0.28	13	620	6	<2	10	12	0.14	<10	<10	132	20	84
B4 OC8	<0.01	50	450	8	<2	3	13	0.02	<10	10	35	<10	52
B5 ULU Waste XD1	0.04	33	450	<2	<2	6	12	0.13	<10	<10	58	<10	76

International Metallurgical and Environmental Inc.
Sample Analysis Summary

Project: Kiohn Crippen
Mine: Lupin
Date: Feb 5, 1997

Sample	Al ₂ O ₃ %	CaO %	Cr ₂ O ₃ %	Fe ₂ O ₃ %	K ₂ O %	MgO %	MnO %	Na ₂ O %	P ₂ O ₅ %	SiO ₂ %	TiO ₂ %	LOI %	Total %
B1 ULU Ore	11.98	6.54	<0.01	15.77	1.34	3.07	0.21	2.3	0.21	55.05	1.88	1.39	99.74
B2 ULU Waste	13.34	8.24	<0.01	14.80	0.79	5.46	0.21	2.33	0.17	50.56	1.46	1.57	98.93
B3 Tailings	10.48	5.91	<0.01	15.30	1.46	2.94	0.20	2.17	0.18	56.36	1.66	2.00	98.66

International Metallurgical and Environmental Inc.

ICP Analysis

(Port Moresby - cell testing)

Project: Kiohn Crippen

Mine: Lupin

Date: Dec 2, 1987

Sample	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Hg ppm	K %	Mg %	Mn ppm	Mo ppm
B 1	<1	1.66	9870	100	<5	<10	1.09	10	35	60	75	5.64	<10	0.67	0.75	510	<5
B 2	<1	1.43	90	80	<5	<10	1.04	<5	40	80	125	4.89	<10	0.27	1.11	440	5
B 3	<1	1.56	10670	100	<5	<10	1.07	10	35	50	80	6.03	<10	0.66	0.72	530	<5
B 1 @4C	<1	1.55	9590	100	<5	<10	1.06	10	35	50	60	5.37	<10	0.62	0.72	470	<5
B 2 @4C	<1	1.42	90	80	<5	<10	1.07	<5	35	60	110	4.71	<10	0.26	1.11	430	<5

International Metallurgical and Environmental Inc.
ICP Analysis

Project: Kohn Crippen
Mine: Lupin
Date: Dec 2, 1997

Sample	Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Ti ppm	U ppm	V ppm	W ppm	Zn ppm
B 1	0.12	12	1000	5	<10	5	10	0.26	<20	<20	140	<20	90
B 2	0.10	37	900	<5	10	5	20	0.23	<20	<20	120	<20	40
B 3	0.10	14	900	10	<10	5	5	0.25	<20	<20	120	<20	90
B 1 @ 4C	0.11	20	900	<5	<10	5	10	0.26	<20	<20	120	<20	65
B 2 @ 4C	0.10	40	900	<5	<10	5	20	0.23	<20	<20	120	<20	40

International Metallurgical and Environmental Inc.
Sample Analysis Summary

Project: Klohn Crippen
Mine: Lupin
Date: December 17, 1997

Sample	Al ₂ O ₃ %	CaO %	Cr ₂ O ₃ %	Fe ₂ O ₃ %	K ₂ O %	MgO %	MnO %	Na ₂ O %	P ₂ O ₅ %	SiO ₂ %	TiO ₂ %	LOI %	Total %
B1	11.58	6.58	<0.01	15.82	1.40	3.38	0.20	2.19	0.18	54.81	1.87	0.67	98.68
B2	12.99	8.17	<0.01	15.01	0.74	5.58	0.22	2.56	0.19	50.22	1.47	1.65	98.80
B3	10.78	6.04	<0.01	15.71	1.35	2.99	0.20	1.97	0.19	56.45	1.69	1.28	98.65
B 1 @ 4°C	11.70	6.54	<0.01	15.98	1.33	3.23	0.21	2.39	0.20	54.60	1.87	0.72	98.77
B 2 @ 4°C	13.16	8.40	<0.01	14.96	0.69	5.56	0.22	2.49	0.16	50.43	1.44	1.56	99.07

International Metallurgical and Environmental Inc.
Humidity Cell Test Data

Project Name: Lupin
Test Sample: B1 @ 4 C
Sample Weight: 2001.5g
Start Date: Feb 25, 1997

Cycle	Days	Weight Added (g)	Weight Rec. (g)	pH	Acidity (mg CaCO ₃ /l)	Alkalinity (mg CaCO ₃ /l)	SO ₄ (mg/l)	Conductivity (µmhos)	Redox Potential (mV)
0	0	500	334	7.39	3.4	21	9	2510	121
1	7	500	506	7.67	9.7	31	16	3200	114
2	14	500	517	7.73	4.1	32	7.4	960	108
3	21	500	479	7.60	2.6	34	8.0	290	96
4	28	500	507	7.90	1.7	35	7.7	175	167
5	35	500	502	7.64	1.3	30	6.7	100	140
6	42	500	502	7.63	1.6	26	7.0	68	132
7	49	500	499	7.65	1.4	26	7.3	61	124
8	56	500	494	7.72	2.1	24	6.5	60	160
9	63	500	496	7.67	2.2	23	6.9	61	115
10	70	500	543	7.74	1.8	23	5.1	58	132
11	77	500	457	7.60	0.94	20	4.5	53	104
12	84	500	506	7.63	1.2	20	6.6	56	108
13	91	500	528	7.58	1.5	21	5.2	46	120
14	98	500	491	7.66	1.1	20	5.0	51	125
15	105	500	497	7.54	1.3	15	4.1	39	138
16	112	500	500	7.36	1.3	16	4.1	43	N/A
17	119	500	505	7.48	1.5	19	4.1	47	151
18	126	500	497	7.46	1.3	17	3.8	36	127
19	133	500	496	7.51	1.5	17	3.3	39	156
20	140	500	506	7.52	1.3	17	4.3	40	166
22	154	1000	1000	7.51	1.9	16	5.1	38	107
24	168	1000	1004	7.52	1.9	14	5.2	44	221
26	182	1000	1001	7.66	2.1	15	5.3	46	228
28	196	1000	1009	7.54	1.9	16	4.7	44	139
30	210	1000	1007	7.37	3.4	16	3.8	43	197
40	280	500	500	7.32	3.1	14	26	120	167

International Metallurgical and Environmental Inc.
Humidity Cell Test Data

Project Name: Lupin

Test Sample: B1 @ 4 C

Sample Weight: 2001.5g

Start Date: Feb 25, 1997

Cycle	Days	Ag	Al	As	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Sr	Ti	V	Zn
0	0	<0.01	<1	0.20	<0.1	<0.001	31	0.003	<0.02	<0.02	0.01	<1	15	3.4	0.07	<0.01	590	<0.01	<1	<0.05	0.05	0.07	<1	<0.01	0.01
1	7	<0.01	<1	0.05	<0.1	<0.001	49	0.004	<0.02	<0.02	<0.01	<1	15	6.20	1.10	* 0.01	550	<0.01	<1	<0.05	<0.05	0.14	<1	<0.01	0.01
2	14	<0.01	<1	0.20	<0.1	<0.001	13.0	<0.001	<0.02	<0.02	<0.01	<1	5	2.0	0.45	<0.01	175	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	<0.01
3	21	<0.01	<1	0.25	<0.1	<0.001	5.5	0.003	<0.02	<0.02	<0.01	<1	<5	1.05	0.16	<0.01	49	0.01	<1	0.10	<0.05	<0.01	<1	<0.01	<0.01
4	28	<0.01	<1	0.25	<0.1	<0.001	5.0	<0.001	<0.02	<0.02	<0.01	<1	<5	<0.05	0.14	<0.01	24	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	<0.01
5	35	<0.01	<1	0.10	<0.1	<0.001	4.5	<0.001	<0.02	<0.02	<0.01	<1	<5	<0.05	0.14	<0.01	11	<0.01	<1	0.05	<0.05	0.01	<1	<0.01	<0.01
6	42	<0.01	<1	0.10	<0.1	<0.001	6.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.14	<0.01	7	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.03
7	49	<0.01	<1	0.15	<0.1	<0.001	6.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.17	<0.01	5	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.01
8	56	<0.01	<1	<0.05	<0.1	<0.001	7.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.21	<0.01	4	<0.01	<1	<0.05	<0.05	0.06	<1	<0.01	0.01
9	63	<0.01	<1	0.05	<0.1	<0.001	7.5	<0.001	<0.02	<0.02	<0.01	<1	<5	1.10	0.22	<0.01	3	0.01	<1	<0.05	<0.05	0.04	<1	<0.01	0.14
10	70	<0.01	<1	0.10	<0.1	<0.001	7.5	0.022	<0.02	<0.02	<0.01	<1	<5	1.05	0.20	<0.01	2	<0.01	<1	0.65	<0.05	<0.01	<1	<0.01	<0.01
11	77	<0.01	<1	0.15	<0.1	<0.001	7.5	<0.001	<0.02	<0.02	<0.01	<1	<5	<0.05	0.16	<0.01	2	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	<0.01
12	84	<0.01	<1	0.15	<0.1	<0.001	9.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.22	0.02	2	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.01
13	91	<0.01	<1	0.05	<0.1	<0.001	7.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.18	<0.01	2	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.01
14	98	<0.01	<1	0.10	<0.1	<0.001	8.5	<0.001	<0.02	<0.02	<0.01	<1	<5	<0.05	0.18	<0.01	2	0.02	<1	<0.05	<0.05	0.01	<1	<0.01	0.05
15	105	<0.01	<1	0.10	<0.1	<0.001	7.0	0.01	<0.02	<0.02	<0.01	<1	<5	<0.05	0.18	<0.01	1	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.05
16	112	<0.01	<1	0.10	<0.1	<0.001	7.5	<0.001	<0.02	<0.02	<0.01	<1	<5	<0.05	0.18	<0.01	1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.08
17	119	<0.01	<1	<0.05	<0.1	<0.001	7.5	0.003	<0.02	<0.02	<0.01	<1	<5	<0.05	0.19	<0.01	1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.11
18	126	<0.01	<1	0.05	<0.1	<0.001	6.5	<0.001	<0.02	<0.02	<0.01	<1	<5	<0.05	0.17	<0.01	1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.01
19	133	<0.01	<1	0.05	<0.1	<0.001	6.0	<0.001	<0.02	<0.02	<0.01	<1	<5	<0.05	0.17	<0.01	1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.05
20	140	<0.01	<1	0.05	<0.1	<0.001	7.5	0.002	<0.02	<0.02	<0.01	<1	<5	<0.05	0.18	<0.01	1	0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.38
22	154	<0.01	<1	0.05	<0.1	<0.001	6.5	0.007	<0.02	<0.02	<0.01	<1	<5	<0.05	0.18	<0.01	1	<0.01	<1	0.10	<0.05	<0.01	<1	<0.01	0.11
24	168	<0.01	1	<0.05	<0.1	<0.001	7.5	<0.001	<0.02	<0.02	<0.01	<1	<5	<0.05	0.17	0.03	<1	<0.01	<1	<0.05	0.02	<1	<0.01	0.02	
26	182	<0.01	<1	<0.05	<0.1	<0.001	8.0	<0.001	<0.02	<0.02	<0.01	<1	<5	<0.05	0.19	<0.01	1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.02
28	196	<0.01	<1	0.05	<0.1	<0.001	7.0	<0.001	<0.02	<0.02	0.14	<1	<5	<0.05	0.15	<0.01	<1	<0.01	<1	0.05	<0.05	<0.01	<1	<0.01	0.02
30	210	<0.01	<1	<0.05	<0.1	<0.001	7.0	<0.001	<0.02	<0.02	0.01	<1	<5	<0.05	0.16	<0.01	<1	<0.01	<1	<0.05	0.02	<1	<0.01	0.05	
Final Filtr	280	<0.01	<1	<0.05	<0.1	<0.001	13.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.32	<0.01	1	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.01

International Metallurgical and Environmental Inc.
Humidity Cell Test Data

Project Name: Lupin

Test Sample: B1 @ room temp.

Sample Weight: 2001.3g

Start Date: Feb 18, 1997

Cycle	Days	Ag	Al	As	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Sr	Ti	V	Zn
0	D	<0.01	<1	0.45	<0.1	<0.001	110	<0.001	<0.02	<0.02	<0.01	<1	20	10.0	0.71	<0.01	850	<0.01	<1	0.05	<0.05	0.27	<1	<0.01	0.02
1	7	<0.01	<1	0.60	<0.1	<0.001	47	0.001	<0.02	<0.02	<0.01	<1	15	6.70	0.85	<0.01	540	<0.01	<1	<0.05	0.05	0.13	<1	<0.01	0.03
2	14	<0.01	<1	0.45	<0.1	<0.001	115.0	0.007	<0.02	<0.02	<0.01	<1	5	2.1	0.27	0.01	160	0.01	<1	<0.05	<0.05	0.03	<1	<0.01	<0.01
3	21	<0.01	<1	0.55	<0.1	<0.001	7.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.15	<0.01	62	0.01	<1	<0.05	<0.05	0.02	<1	<0.01	0.12
4	28	<0.01	<1	0.40	<0.1	<0.001	6.5	0.002	<0.02	<0.02	0.01	<1	<5	1.05	0.12	<0.01	25	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.03
5	35	<0.01	<1	0.50	<0.1	<0.001	5.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.05	0.15	<0.01	16	<0.01	<1	<0.05	0.05	0.06	<1	<0.01	<0.01
6	42	<0.01	<1	0.30	<0.1	<0.001	7.5	0.002	<0.02	<0.02	<0.01	<1	<5	1.10	0.13	<0.01	8	<0.01	<1	0.05	0.05	<0.01	<1	<0.01	0.01
7	49	<0.01	<1	0.25	<0.1	<0.001	9.0	0.001	<0.02	<0.02	0.01	<1	<5	1.00	0.13	<0.01	7	<0.01	<1	0.15	<0.05	0.03	<1	<0.01	0.13
8	56	<0.01	<1	0.25	<0.1	<0.001	9.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.13	<0.01	5	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	0.02
9	63	<0.01	<1	0.20	<0.1	<0.001	10.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.16	<0.01	4	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	<0.01
10	70	<0.01	<1	0.10	<0.1	<0.001	11.5	<0.001	<0.02	<0.02	<0.01	<1	<5	1.10	0.13	<0.01	3	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	<0.01
11	77	<0.01	<1	0.20	<0.1	<0.001	11.5	<0.001	<0.02	<0.02	<0.01	<1	<5	1.05	0.16	<0.01	3	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.03
12	84	<0.01	<1	0.15	<0.1	<0.001	10.5	<0.001	<0.02	<0.02	<0.01	<1	<5	1.05	0.14	<0.01	2	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	<0.01
13	91	<0.01	<1	0.15	<0.1	<0.001	10.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.15	<0.01	2	<0.01	<1	0.05	<0.05	0.01	<1	<0.01	0.15
14	98	<0.01	1	0.15	<0.1	<0.001	10.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.15	<0.01	3	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.07
15	105	<0.01	<1	0.15	<0.1	<0.001	10.5	<0.001	<0.02	<0.02	<0.01	<1	<5	1.10	0.14	<0.01	2	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	0.39
16	112	<0.01	1	0.10	<0.1	<0.001	10.0	0.002	<0.02	<0.02	<0.01	<1	<5	1.00	0.15	<0.01	2	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.05
17	119	<0.01	<1	0.15	<0.1	<0.001	9.5	0.004	<0.02	<0.02	<0.01	<1	<5	1.15	0.14	<0.01	1	<0.01	<1	<0.05	<0.05	0.02	<1	<0.01	0.02
18	126	<0.01	<1	0.05	<0.1	<0.001	9.5	0.001	<0.02	<0.02	<0.01	<1	<5	1.10	0.14	<0.01	1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.11
19	133	<0.01	<1	0.20	<0.1	<0.001	9.5	<0.001	<0.02	<0.02	<0.01	<1	<5	1.10	0.12	<0.01	1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.02
20	140	<0.01	<1	0.15	<0.1	<0.001	10.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.16	0.01	1	0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.43
22	154	<0.01	<1	0.10	<0.1	<0.001	13.0	0.004	<0.02	<0.02	<0.01	<1	<5	1.15	0.16	<0.01	2	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	<0.01
24	168	<0.01	<1	0.10	<0.1	<0.001	8.0	0.004	<0.02	<0.02	<0.01	<1	<5	1.00	0.13	<0.01	<1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.03
26	182	<0.01	<1	0.05	<0.1	<0.001	12.0	0.001	<0.02	<0.02	<0.01	<1	<5	1.10	0.16	<0.01	1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.01
28	198	<0.01	<1	0.05	<0.1	<0.001	18.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.23	<0.01	<1	<0.01	<1	0.10	<0.05	0.01	<1	<0.01	0.03
30	210	<0.01	<1	0.05	<0.1	<0.001	16.0	0.001	<0.02	<0.02	<0.01	<1	5	1.00	0.20	0.01	<1	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.02
Final/Runse	287	<0.01	<1	<0.05	<0.1	<0.001	47.0	<0.001	<0.02	<0.02	<0.01	<1	5	2.00	0.49	<0.01	2	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	0.03

International Metallurgical and Environmental Inc.
Humidity Cell Test Data

Project Name: Lupin
Test Sample: B1 @ room temp.
Sample Weight: 2001.3g
Start Date: Feb 18, 1997

Cycle	Days	Weight Added (g)	Weight Rec. (g)	pH	Acidity (mg CaCO ₃ /l)	Alkalinity (mg CaCO ₃ /l)	SO ₄ (mg/l)	Conductivity (μmhos)	Redox Potential (mV)
0	0	500	322	7.47	0.96	24	26	5100	207
1	7	500	512	7.44	4.6	33	24	2700	117
2	14	500	492	7.67	2.4	32	29	950	71
3	21	500	503	7.56	1.8	31	28	355	76
4	28	500	504	7.44	2.5	28	28	200	55
5	35	500	501	7.62	1.8	24	20	130	186
6	42	500	494	7.28	1.9	20	19	105	135
7	49	500	505	7.53	1.8	18	21	110	112
8	56	500	496	7.48	1.3	19	18	75	116
9	63	500	500	7.59	1.7	19	15	77	159
10	70	500	505	7.46	1.4	16	22	91	103
11	77	500	505	7.48	2.1	16	21	85	120
12	84	500	492	7.48	1.1	15	23	80	96
13	91	500	494	7.48	0.94	16	18	75	99
14	98	500	498	7.51	1.0	19	15	70	107
15	105	500	496	7.60	1.4	18	14	67	106
16	112	500	503	7.59	1.3	16	14	63	116
17	119	500	504	7.34	1.5	15	14	65	N/A
18	126	500	501	7.34	1.5	18	15	75	200
19	133	500	500	7.24	1.6	15	13	59	125
20	140	500	494	7.29	1.8	18	16	66	164
22	154	1000	1002	7.44	1.6	15	10	59	185
24	168	1000	996	7.36	1.9	15	12	62	200
26	182	1000	999	7.43	1.8	14	21	90	231
28	196	1000	1013	7.33	1.8	13	38	125	220
30	210	1000	997	7.40	1.9	15	36	117	247
41	287	500	464	7.15	2.1	11	145	380	156

International Metallurgical and Environmental Inc.
Humidity Cell Test Data

Project Name: Lupin
Test Sample: B2 @ 4 C
Sample Weight: 2001.5g
Start Date: Feb 25, 1997

Cycle	Days	Weight Added (g)	Weight Rec. (g)	pH	Acidity (mg CaCO ₃ /l)	Alkalinity (mg CaCO ₃ /l)	SO ₄ (mg/l)	Conductivity (umhos)	Redox Potential (mV)
0	0	500	252	7.04	0.63	17	8.6	54	120
1	7	500	510	7.63	2.6	19	18	190	118
2	14	500	502	7.60	2.4	29	16	145	119
3	21	500	509	7.54	3.1	16	17	110	103
4	28	500	506	7.70	1.9	26	13	100	160
5	35	500	488	7.47	1.7	23	11	79	140
6	42	500	514	7.49	2.8	25	10	70	137
7	49	500	505	7.65	1.6	23	9.4	59	133
8	56	500	504	7.67	1.7	21	7.7	59	163
9	63	500	488	7.65	1.9	23	7.8	63	119
10	70	500	501	7.74	1.9	23	6.5	60	130
11	77	500	488	7.57	1.6	21	4.9	54	114
12	84	500	517	7.58	1.4	21	6.1	58	112
13	91	500	477	7.61	1.5	22	7.1	53	111
14	98	500	485	7.76	1.6	24	5.5	60	123
15	105	500	489	7.65	1.5	23	4.6	50	129
16	112	500	495	7.46	1.6	22	3.7	52	N/A
17	119	500	496	7.53	1.5	25	3.9	55	161
18	126	500	494	7.50	1.8	20	3.1	45	126
19	133	500	498	7.60	1.5	24	2.8	50	162
20	140	500	499	7.63	1.2	22	3.2	46	181
22	154	1000	998	7.62	2.1	21	3.6	46	105
24	168	1000	997	7.52	2.1	22	3.0	50	206
26	182	1000	1006	7.70	2.2	21	3.4	45	218
28	196	1000	1009	7.49	1.9	20	3.7	47	127
30	210	1000	996	7.43	3.4	20	2.8	47	193
40	280	500	449	7.40	3.1	17	11.0	55	167

International Metallurgical and Environmental Inc.
Humidity Cell Test Data

Project Name: Lupin
Test Sample: B2 @ 4 C
Sample Weight: 2001.5g
Start Date: Feb 25, 1997

Cycle	Days	Ag	Al	As	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Sr	Ti	V	Zn
0	0	<0.01	<1	0.05	<0.1	<0.001	5.0	0.003	<0.02	<0.02	<0.01	<1	<5	1.10	0.01	<0.01	7	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.03
1	7	<0.01	<1	<0.05	<0.1	<0.001	14.0	0.001	<0.02	<0.02	<0.01	<1	5	3.1	0.30	<0.01	12	0.01	<1	<0.05	<0.05	0.03	<1	<0.01	<0.01
2	14	<0.01	<1	<0.05	<0.1	<0.001	10.0	<0.001	<0.02	<0.02	<0.01	<1	<5	3.0	0.32	<0.01	9	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	<0.01
3	21	<0.01	<1	<0.05	<0.1	<0.001	9.5	<0.001	<0.02	<0.02	<0.01	<1	<5	2.2	0.33	<0.01	5	<0.01	<1	<0.05	<0.05	0.04	<1	<0.01	0.01
4	28	<0.01	<1	<0.05	<0.1	<0.001	10.0	0.001	<0.02	<0.02	<0.01	<1	<5	2.1	0.36	<0.01	4	<0.01	<1	<0.05	<0.05	0.06	<1	<0.01	<0.01
5	35	<0.01	<1	<0.05	<0.1	<0.001	7.5	<0.001	<0.02	<0.02	<0.01	<1	<5	2.3	0.29	<0.01	2	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	<0.01
6	42	<0.01	<1	<0.05	<0.1	<0.001	8.0	<0.001	<0.02	<0.02	0.01	<1	<5	2.0	0.30	<0.01	2	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	0.02
7	49	<0.01	<1	<0.05	<0.1	<0.001	8.0	<0.001	<0.02	<0.02	<0.01	<1	<5	2.0	0.28	<0.01	2	<0.01	<1	<0.05	<0.05	0.02	<1	<0.01	<0.01
8	56	<0.01	<1	<0.05	<0.1	<0.001	8.0	<0.001	<0.02	<0.02	<0.01	<1	<5	2.1	0.27	<0.01	2	<0.01	<1	<0.05	<0.05	0.04	<1	<0.01	<0.01
9	63	<0.01	<1	<0.05	<0.1	<0.001	7.5	<0.001	<0.02	<0.02	<0.01	<1	<5	2.2	0.28	<0.01	1	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	<0.01
10	70	<0.01	<1	<0.05	<0.1	<0.001	8.5	<0.001	<0.02	<0.02	<0.01	<1	<5	2.1	0.30	<0.01	1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.01
11	77	<0.01	<1	<0.05	<0.1	<0.001	7.5	<0.001	<0.02	<0.02	<0.01	<1	<5	1.05	0.27	<0.01	1	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	<0.01
12	84	<0.01	<1	<0.05	<0.1	<0.001	8.0	<0.001	<0.02	<0.02	<0.01	<1	<5	2.0	0.30	0.02	1	<0.01	<1	0.05	<0.05	0.03	<1	<0.01	<0.01
13	91	<0.01	<1	0.05	<0.1	<0.001	7.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.27	<0.01	2	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.03
14	98	<0.01	<1	0.05	<0.1	<0.001	7.5	<0.001	<0.02	<0.02	<0.01	<1	<5	1.10	0.28	<0.01	1	0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.06
15	105	<0.01	<1	<0.05	<0.1	<0.001	7.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.32	<0.01	1	<0.01	<1	0.05	<0.05	0.01	<1	<0.01	0.05
16	112	<0.01	<1	<0.05	<0.1	<0.001	7.5	<0.001	<0.02	<0.02	<0.01	<1	<5	1.15	0.31	<0.01	1	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.05
17	119	<0.01	<1	<0.05	<0.1	<0.001	8.5	<0.001	<0.02	<0.02	<0.01	<1	<5	1.10	0.35	<0.01	1	0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	23
18	126	<0.01	<1	<0.05	<0.1	<0.001	7.5	<0.001	<0.02	<0.02	<0.01	<1	<5	1.10	0.31	0.01	1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	<0.01
19	133	<0.01	<1	0.05	<0.1	<0.001	7.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.32	<0.01	1	0.01	<1	<0.05	<0.05	0.02	<1	<0.01	0.08
20	140	<0.01	<1	<0.05	<0.1	<0.001	9.0	0.009	<0.02	<0.02	<0.01	<1	<5	1.15	0.33	<0.01	1	0.01	<1	0.15	<0.05	0.01	<1	<0.01	0.10
22	154	<0.01	<1	<0.05	<0.1	<0.001	7.5	0.004	<0.02	<0.02	<0.01	<1	<5	1.15	0.34	<0.01	1	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.13
24	168	<0.01	1	<0.05	<0.1	<0.001	8.5	<0.001	<0.02	<0.02	<0.01	<1	<5	1.10	0.35	0.01	<1	0.01	<1	<0.05	0.05	0.01	<1	<0.01	0.01
26	182	<0.01	<1	<0.05	<0.1	<0.001	7.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.32	<0.01	<1	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.01
28	196	<0.01	<1	0.05	<0.1	<0.001	7.0	<0.001	<0.02	<0.02	0.85	<1	<5	1.00	0.28	<0.01	<1	0.10	<1	0.05	<0.05	<0.01	<1	<0.01	0.02
30	210	<0.01	<1	<0.05	<0.1	<0.001	7.0	<0.001	<0.02	<0.02	0.11	<1	<5	1.00	0.30	<0.01	<1	0.04	<1	<0.05	<0.05	<0.01	<1	<0.01	0.01
Final Rinse	280	<0.01	<1	<0.05	<0.1	<0.001	7.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.29	<0.01	1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	<0.01

International Metallurgical and Environmental Inc.
Humidity Cell Test Data

Project Name: Lupin
Test Sample: B2 @ room temp.
Sample Weight: 2001.5g
Start Date: Feb 18, 1997

Cycle	Days	Weight Added (g)	Weight Rec. (g)	pH	Acidity (mg CaCO ₃ /l)	Alkalinity (mg CaCO ₃ /l)	SO ₄ (mg/l)	Conductivity (μmhos)	Redox Potential (mV)
0	0	500	278	7.13	0.24	20	32	212	120
1	7	500	477	7.29	3.6	23	54	225	127
2	14	500	484	7.40	2.1	21	45	180	96
3	21	500	484	7.39	2.2	19	37	150	81
4	28	500	487	7.31	2.3	18	34	125	90
5	35	500	488	7.46	1.6	16	26	124	191
6	42	500	483	7.27	1.4	18	23	100	142
7	49	500	486	7.46	1.9	16	23	100	129
8	56	500	481	7.40	1.3	16	21	75	130
9	63	500	498	7.60	2.1	17	20	80	157
10	70	500	504	7.44	1.6	16	21	85	105
11	77	500	490	7.45	1.3	16	24	90	125
12	84	500	469	7.44	1.3	13	21	79	110
13	91	500	486	7.49	1.4	16	20	75	100
14	98	500	491	7.53	1.0	18	19	79	111
15	105	500	486	7.57	1.4	17	16	69	124
16	112	500	484	7.49	1.6	15	16	65	122
17	119	500	496	7.41	1.0	17	21	76	N/A
18	126	500	493	7.28	1.1	17	18	70	200
19	133	500	497	7.31	1.3	16	16	65	121
20	140	500	502	7.36	1.1	17	17	69	176
22	154	1000	988	7.42	1.8	15	15	64	186
24	168	1000	995	7.38	1.9	16	16	70	181
26	182	1000	996	7.40	1.4	16	19	85	225
28	196	1000	1002	7.34	1.9	15	15	67	217
30	210	1000	1004	7.45	2.2	15	13	64	229
41	287	500	440	7.10	2.8	10	69	220	158

International Metallurgical and Environmental Inc.
Humidity Cell Test Data

Project Name: Lupin
Test Sample: B2 @ room temp.
Sample Weight: 2001.5g
Start Date: Feb 18, 1997

Cycle	Days	Ag	Al	As	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Sr	Ti	V	Zn
0	0	<0.01	<1	<0.05	<0.1	<0.001	18.5	<0.001	<0.02	<0.02	<0.01	<1	5	2.8	0.04	<0.01	10	<0.01	<1	<0.05	<0.05	0.05	<1	<0.01	<0.01
1	7	<0.01	<1	0.05	<0.1	<0.001	17.5	0.002	<0.02	<0.02	<0.01	<1	5	4.5	0.48	<0.01	14	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	<0.01
2	14	<0.01	<1	<0.05	<0.1	<0.001	14.0	0.002	<0.02	<0.02	<0.01	<1	5	4.2	0.42	<0.01	8	<0.01	<1	<0.05	<0.05	0.05	<1	<0.01	<0.01
3	21	<0.01	<1	<0.05	<0.1	<0.001	12.0	0.001	<0.02	<0.02	<0.01	<1	5	4.0	0.40	<0.01	6	0.01	<1	<0.05	<0.05	0.05	<1	<0.01	<0.01
4	28	<0.01	<1	<0.05	<0.1	<0.001	10.5	0.003	<0.02	<0.02	<0.01	<1	<5	3.2	0.33	<0.01	4	<0.01	<1	<0.05	<0.05	0.04	<1	<0.01	<0.01
5	35	<0.01	<1	<0.05	<0.1	<0.001	11.0	<0.001	<0.02	<0.02	<0.01	<1	<5	3.2	0.33	<0.01	4	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	<0.01
6	42	<0.01	<1	<0.05	<0.1	<0.001	9.0	0.002	<0.02	<0.02	<0.01	<1	<5	2.3	0.25	<0.01	2	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	<0.01
7	49	<0.01	<1	<0.05	<0.1	<0.001	9.0	<0.001	<0.02	<0.02	<0.01	<1	<5	2.0	0.23	<0.01	2	<0.01	<1	<0.05	<0.05	0.02	<1	<0.01	<0.01
8	56	<0.01	<1	<0.05	<0.1	<0.001	9.0	<0.001	<0.02	<0.02	<0.01	<1	<5	2.0	0.22	<0.01	2	<0.01	<1	<0.05	<0.05	0.04	<1	<0.01	<0.01
9	63	<0.01	<1	<0.05	<0.1	<0.001	11.0	<0.001	<0.02	<0.02	<0.01	<1	<5	2.1	0.28	<0.01	2	<0.01	<1	<0.05	<0.05	0.04	<1	<0.01	<0.01
10	70	<0.01	<1	<0.05	<0.1	<0.001	8.5	<0.001	<0.02	<0.02	<0.01	<1	<5	2.2	0.21	<0.01	2	<0.01	<1	<0.05	<0.05	0.04	<1	<0.01	<0.01
11	77	<0.01	<1	<0.05	<0.1	<0.001	11.5	0.001	<0.02	<0.02	<0.01	<1	<5	2.1	0.23	<0.01	2	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	<0.01
12	84	<0.01	<1	<0.05	<0.1	<0.001	8.5	0.001	<0.02	<0.02	<0.01	<1	<5	1.05	0.16	<0.01	1	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	<0.01
13	91	<0.01	<1	<0.05	<0.1	<0.001	10.0	0.003	<0.02	<0.02	<0.01	<1	<5	2.0	0.21	<0.01	2	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	<0.01
14	98	<0.01	<1	<0.05	<0.1	<0.001	9.0	<0.001	<0.02	<0.02	<0.01	<1	<5	2.0	0.19	<0.01	2	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	<0.01
15	105	<0.01	<1	<0.05	<0.1	<0.001	9.5	0.002	<0.02	<0.02	<0.01	<1	<5	1.10	0.17	<0.01	1	0.01	<1	<0.05	<0.05	0.03	<1	<0.01	0.34
16	112	<0.01	<1	<0.05	<0.1	<0.001	10.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.18	<0.01	1	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.09
17	119	<0.01	<1	<0.05	<0.1	<0.001	12.0	<0.001	<0.02	<0.02	<0.01	<1	<5	2.3	0.20	<0.01	1	<0.01	<1	<0.05	<0.05	0.02	<1	<0.01	0.03
18	126	<0.01	<1	<0.05	<0.1	<0.001	9.5	0.003	<0.02	<0.02	<0.01	<1	<5	1.10	0.17	<0.01	1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	<0.01
19	133	<0.01	<1	<0.05	<0.1	<0.001	10.5	<0.001	<0.02	<0.02	<0.01	<1	<5	1.10	0.18	<0.01	1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	<0.01
20	140	<0.01	<1	<0.05	<0.1	<0.001	8.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.15	<0.01	1	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	<0.01
22	154	<0.01	<1	<0.05	<0.1	<0.001	11.0	0.004	<0.02	<0.02	<0.01	<1	<5	1.15	0.16	<0.01	<1	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	<0.01
24	168	<0.01	<1	<0.05	<0.1	<0.001	9.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.15	<0.01	<1	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	<0.01
26	182	<0.01	<1	<0.05	<0.1	<0.001	11.0	0.001	<0.02	<0.02	<0.01	<1	<5	1.10	0.15	<0.01	<1	<0.01	<1	<0.05	<0.05	0.02	<1	<0.01	0.09
28	196	<0.01	<1	<0.05	<0.1	<0.001	19.0	<0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.12	<0.01	<1	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.09
30	210	<0.01	<1	<0.05	<0.1	<0.001	9.0	0.001	<0.02	<0.02	<0.01	<1	<5	1.00	0.10	<0.01	<1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.03
Final Rinse	287	<0.01	<1	<0.05	<0.1	<0.001	24.0	<0.001	<0.02	<0.02	<0.01	<1	<5	2.00	0.23	<0.01	1	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	0.02

International Metallurgical and Environmental Inc.
Humidity Cell Test Data

Project Name: Lupin
Test Sample: B3
Sample Weight: 2001.3g
Start Date: Feb 18, 1997

Cycle	Days	Weight Added (g)	Weight Rec. (g)	pH	Addity (mg CaCO ₃ /l)	Alkalinity (mg CaCO ₃ /l)	SO ₄ (mg/l)	Conductivity (µmhos)	Redox Potential (mV)
0	0	500	39	7.4	Ins	Ins	Ins	>10000	75
1	7	500	498	7.93	8.1	159	161	>10000	75
2	14	500	487	8.44	<1	182	78	875	81
3	21	500	485	8.22	3.8	103	46	655	89
4	28	500	488	8.02	5.1	90	49	350	75
5	35	500	485	8.12	3.3	76	31	280	160
6	42	500	484	7.93	3.1	63	31	245	136
7	49	500	481	7.97	2.8	67	32	245	116
8	56	500	484	8.01	1.9	58	38	230	126
9	63	500	483	8.10	2.1	54	36	220	148
10	70	500	489	8.06	2.8	59	39	225	107
11	77	500	481	8.08	2.8	60	40	225	126
12	84	500	476	7.96	2.1	60	43	235	86
13	91	500	485	8.01	1.4	53	37	210	114
14	98	500	490	8.01	1.4	55	32	200	116
15	105	500	479	8.10	1.9	54	33	200	117
16	112	500	491	8.06	1.8	54	30	200	125
17	119	500	498	7.90	1.4	54	30	190	N/A
18	126	500	494	7.90	1.7	51	28	190	142
19	133	500	498	7.76	1.3	48	36	180	117
20	140	500	498	7.90	1.8	49	40	215	146
22	154	1000	1002	7.96	2.6	46	53	230	171
24	168	1000	991	7.85	2.8	47	61	251	172
26	182	1000	998	7.89	1.6	51	70	275	220
28	196	1000	1004	7.85	2.2	48	50	225	190
30	210	1000	999	7.97	2.3	47	53	228	224
41	287	500	471	7.72	5.0	41	857	1700	160

International Metallurgical and Environmental Inc.
Humidity Cell Test Data

Project Name: Lupin
Test Sample: B3
Sample Weight: 2001.3g
Start Date: Feb 10, 1997

Cycle	Days	Ag	Al	As	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Sr	Ti	V	Zn
0	0	<0.01	<1	1.85	1.3	0.001	1030	0.019	<0.02	<0.02	0.03	<1	470	150	22	0.07	>5000	0.12	1	<0.05	0.35	3.2	<1	<0.01	0.45
1	7	<0.01	<1	2.1	0.3	0.002	300	<0.001	<0.02	<0.02	0.47	1	165	51	6.9	0.11	>5000	0.08	1	0.75	0.05	0.91	<1	0.01	0.84
2	14	<0.01	<1	2.5	<0.1	<0.001	7.5	0.003	<0.02	<0.02	<0.01	<1	15	1.05	0.24	0.07	150	0.01	<1	<0.05	<0.05	0.02	<1	<0.01	0.01
3	21	<0.01	<1	2.1	<0.1	<0.001	10.0	<0.001	<0.02	<0.02	<0.01	<1	20	2.0	0.38	0.01	105	0.01	<1	<0.05	<0.05	0.03	<1	<0.01	0.03
4	28	<0.01	<1	2.0	<0.1	<0.001	11.5	0.001	<0.02	<0.02	<0.01	<1	10	2.2	0.41	0.01	37	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.01
5	35	<0.01	<1	2.2	<0.1	<0.001	17.5	0.001	<0.02	<0.02	<0.01	<1	15	3.2	0.53	<0.01	22	<0.01	<1	<0.05	0.05	<0.01	<1	<0.01	<0.01
6	42	<0.01	<1	1.85	<0.1	<0.001	17.5	0.001	<0.02	<0.02	0.01	<1	10	3.4	0.48	0.01	10	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.01
7	49	<0.01	<1	1.55	<0.1	<0.001	23	<0.001	<0.02	<0.02	<0.01	<1	10	3.0	0.58	<0.01	8	<0.01	<1	<0.05	<0.05	0.05	<1	<0.01	0.02
8	56	<0.01	<1	1.90	<0.1	<0.001	22	<0.001	<0.02	<0.02	<0.01	<1	10	3.0	0.51	0.01	7	<0.01	<1	<0.05	<0.05	0.02	<1	<0.01	0.02
9	63	<0.01	<1	2.0	<0.1	<0.001	28	<0.001	<0.02	<0.02	<0.01	<1	10	3.1	0.56	<0.01	6	<0.01	<1	<0.05	<0.05	0.08	<1	<0.01	0.01
10	70	<0.01	<1	1.80	<0.1	<0.001	26	<0.001	<0.02	<0.02	<0.01	<1	10	3.3	0.62	<0.01	5	0.01	<1	<0.05	<0.05	0.02	<1	<0.01	0.10
11	77	<0.01	<1	1.95	<0.1	<0.001	30	<0.001	<0.02	<0.02	<0.01	<1	10	4.3	0.67	<0.01	4	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	0.01
12	84	<0.01	<1	1.75	<0.1	<0.001	28	<0.001	<0.02	<0.02	<0.01	<1	10	3.2	0.61	<0.01	4	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.01
13	91	<0.01	<1	1.95	<0.1	<0.001	27	<0.001	<0.02	<0.02	<0.01	<1	10	3.0	0.52	0.01	4	<0.01	<1	0.05	<0.05	0.03	<1	<0.01	0.02
14	98	<0.01	<1	1.70	<0.1	<0.001	25	<0.001	<0.02	<0.02	<0.01	<1	10	3.0	0.44	<0.01	4	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.03
15	105	<0.01	<1	1.80	<0.1	<0.001	25	<0.001	<0.02	<0.02	<0.01	<1	5	2.2	0.46	<0.01	3	0.01	<1	<0.05	<0.05	0.02	<1	<0.01	0.24
16	112	<0.01	<1	1.70	<0.1	<0.001	28	<0.001	<0.02	<0.02	<0.01	<1	10	2.0	0.50	<0.01	3	0.01	<1	0.05	<0.05	0.02	<1	<0.01	0.07
17	119	<0.01	<1	1.85	<0.1	<0.001	25	<0.001	<0.02	<0.02	<0.01	<1	10	2.3	0.41	<0.01	2	<0.01	<1	<0.05	<0.05	0.02	<1	<0.01	0.09
18	126	<0.01	<1	2.1	<0.1	<0.001	27	0.001	<0.02	<0.02	<0.01	<1	10	2.2	0.42	<0.01	3	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.40
19	133	<0.01	<1	1.70	<0.1	<0.001	23	0.004	<0.02	<0.02	<0.01	<1	5	2.2	0.34	<0.01	3	<0.01	<1	<0.05	<0.05	<0.01	<1	<0.01	<0.01
20	140	<0.01	<1	1.50	<0.1	<0.001	26	0.007	<0.02	<0.02	<0.01	<1	10	2.0	0.39	0.01	2	<0.01	<1	0.35	<0.05	0.02	<1	<0.01	0.06
22	154	<0.01	<1	1.45	<0.1	<0.001	34	0.008	<0.02	<0.02	<0.01	<1	10	2.4	0.44	<0.01	2	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	0.31
24	168	<0.01	<1	1.20	<0.1	<0.001	33	<0.001	<0.02	<0.02	<0.01	<1	15	2.0	0.46	<0.01	1	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	0.07
26	182	<0.01	<1	1.40	<0.1	<0.001	42	0.003	<0.02	<0.02	<0.01	<1	15	2.3	0.48	0.01	2	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	0.02
28	196	<0.01	<1	1.10	<0.1	<0.001	32	<0.001	<0.02	<0.02	<0.01	<1	10	1.00	0.29	<0.01	1	<0.01	<1	<0.05	<0.05	0.01	<1	<0.01	0.03
30	210	<0.01	<1	1.20	<0.1	<0.001	33	<0.001	<0.02	<0.02	<0.01	<1	15	1.00	0.26	<0.01	<1	<0.01	<1	<0.05	<0.05	0.03	<1	<0.01	0.02
Final Rinse	287	<0.01	<1	0.35	<0.1	<0.001	280	<0.001	<0.02	<0.02	<0.01	<1	45	12	2.4	0.01	6	<0.01	<1	<0.05	<0.05	0.19	<1	<0.01	0.03

Water samples from field columns

Coulmn #	Ulu #1	Ulu #2	Occ 8
Set up date	97/01/15	97/01/15	97/01/15
Sample weight (kg)	15	15	12
Composition	Ore samples from V5/V6 Zone, 25-m Level 0.25 oz/t Au; only >1.5 mm particles used	Duplicate of Ulu #1	1/2 KC-2 and 1/2 KC-4 >1.5 mm material used
Date of collection	97/06/18	97/08/27	97/09/12
Sample #	Ulu-1A	Ulu-1B	Ulu-1C
Volume of leachate (ml)	1400	450 (est)	400 (est)
Temperature (deg. C)	11.4	11.3	nd
Leachate pH	7.67	7.26	nd
Conductivity (uS/cm)	9.14	3250	nd
		97/06/18	97/09/12
	Ulu-2A	Ulu-2B	Ulu-2C
	1650	450 (est)	400 (est)
	11.3	11.3	nd
	7.72	7.62	nd
	10.1	2220	nd

International Metallurgical and Environmental Inc.

Project Name: Kiohn Crippen -Lupin

Date: December 5, 1997

Sample	pH	Acidity (mg CaCO ₃ /l)	Alkalinity (mg CaCO ₃ /l)	SO ₄ (mg/l)	Conductivity (μmhos)
ULU-1A	7.67	16	49	84	8500
ULU-2A	7.59	19	39	88	9000
ULU-1B	7.74	7.1	40	192	3200
ULU-2B	7.46	9.0	23	151	2100
ULU-1C	7.70	7.5	45	240	4750
ULU-2C	7.81	21	54	209	3700
OCC 8	7.03	4.8	7.7	229	540

ICP Analysis Summary

Sample	Al mg/l	As mg/l	Ba mg/l	Be mg/l	Ce mg/l	Cd mg/l	Co mg/l	Cr mg/l	Cu mg/l	Fe mg/l	K mg/l	Mg mg/l	Mn mg/l	Mo mg/l	Nb mg/l	Ni mg/l	P mg/l	Pb mg/l	Sb mg/l	Sr mg/l	Tl mg/l	V mg/l	Zn mg/l
ULU-1A	<0.01	<1	0.25	<0.01	130	0.003	<0.02	<0.02	<0.01	<1	40	19.0	4.1	0.01	1510	<0.01	<1	<0.05	0.05	0.41	<1	<0.01	0.16
ULU-2A	<0.01	<1	0.20	<0.01	135	0.002	<0.02	<0.02	<0.01	<1	45	20	4.9	<0.01	1630	<0.01	<1	<0.05	0.05	0.42	<1	<0.01	0.04
ULU-1B	<0.01	<1	0.40	<0.01	96	<0.001	<0.02	<0.02	<0.01	<1	20	11.0	1.80	<0.01	560	<0.01	<1	<0.05	0.05	0.19	<1	<0.01	0.05
ULU-2B	<0.01	<1	0.45	<0.01	71	<0.001	<0.02	<0.02	<0.01	<1	15	8.0	1.95	<0.01	360	<0.01	<1	<0.05	0.10	0.11	<1	<0.01	0.01
ULU-1C	<0.01	<1	0.30	<0.01	165	<0.001	<0.02	<0.02	<0.01	<1	30	3.0	3.0	0.01	850	<0.01	<1	<0.05	0.05	0.34	<1	<0.01	0.07
ULU-1C	<0.01	<1	0.30	<0.01	120	<0.001	<0.02	<0.02	<0.01	<1	20	15.0	3.3	<0.01	660	<0.01	<1	<0.05	0.10	0.21	<1	<0.01	0.03
ULU-2C	<0.01	<1	0.25	<0.01	120	<0.001	<0.02	<0.02	<0.01	<1	30	15.0	3.3	<0.01	860	<0.01	<1	<0.05	0.10	0.21	<1	<0.01	0.03
OCC-8	<0.01	<1	<0.05	<0.01	44	<0.001	<0.02	<0.02	<0.01	<1	30	24	9.19	<0.01	11	0.01	<1	<0.05	0.05	0.11	<1	<0.01	<0.01