TCR. 97-3999

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379001

Annual Report of Exploration Activities
May 1996 to May 1997

EL 11/96

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12th April 1997

97-3999

ANNUAL REPORT - EL 11/96
N.R.ALLEN &J & S.K. MCCORMACK
PIONEER - N.R. ALLEN

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Location of Tenement and Summary of Geology

Location of tenement and access

EL 11/96, comprising an area of 6 square kilometers, is located approximately 3 km NE of Pioneer, as illustrated in figure 1.

Access is provided by 4-wheel-drive track from Tebrakunna Rd., approximately 1.5 km W of the junction with the Gladstone main road.

Summary of the geology of the area

All the outcropping rocks in the area are Devonian coarse-grained granite/adamellites, with some small fine-grained granite/adamellite areas. In the western half of the lease the areas of exposed granite are separated by deeply greisenised (mostly kaolinised) regions. Most of these greisenised areas show lines of surface quartz fragments with a trend of 340^0 (T). In at least three cases these lines of surface quartz fragments indicate quartz veins still in place within the greisenised granite. Silcrete is usually encountered near the indicated quartz veins.

Figure 2 shows the area of the lease, the exposed granites (mapped so far) and the indicated quartz veins.

Previous Exploration of the Area

Except for the old tin-mining excavations in the SW corner of the lease (Nolan's old mine), and Mr. McCormack's mining lease adjoining the N end of the lease, there are no records of any previous exploration activity in the area. Nevertheless some limited activity has occurred, and is evidenced by some surface clearing and test pits, indicated in figure 2, but this activity is very old.

Interest in the area, which led to the present exploration lease, commenced with the discovery of native metal particles in the ground immediately to the S of the lagoon on Mr. McCormack's mining lease. This was followed by the marking-out of two prospecting claims in 1995, which contained the two most obvious quartz veins in the hills immediately to the S of Mr. Mcormack's mining lease. The continuing discovery of native metals and alloys on these claims, and the apparent association of these native metals with the indicated quartz veins, led to an application for the present exploration lease.

Exploration Philosophy

The occurrence of the native metals and alloys of Fe, Cr, Ni, Pb, Cu, Zn and Pb in the area was considered very unusual, and in need of some explanation. Their presence, and their apparent association with the indicated quartz veins and the areas of greisenisation, does not immediately give much of a clue to their origins, except perhaps that they must be associated with some fluids rising through fractures within the granite.

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While one of the main reasons for exploring the area is simply to shed light on a geochemical puzzle, there is also the consideration that the presence of the native metals may be indicating some hidden deposit of economic value. The nature (or existence) of any such deposit can not be determined by the presence of the native metals alone, and for this reason it has not been possible to state firmly the type of deposit being sought.

Exploration so far has involved the mapping of native metal occurrences, while at the same time looking for minerals which would not normally be found within a granite environment. This has been supplemented by some geochemical sampling, and by geophysical methods such as magnetic, self-potential, electro-magnetic and radiation measurements.

Summary of Exploration Work Carried Out from May 1996 to May 1997

Five separate lines, totalling approximately 1.5 km in length have been pegged out and sampled at 25 m intervals (see figures 4 & 5). The depth of each sample was between 60 cm and 1 m, within clay. Approximately 2 kg samples were taken at each site. About a quarter of each sample was dried and ground for chemical analysis by neutron activation and AAS. The remainder of each sample was broken down by hand, and panned to a heavy mineral concentrate. After splitting the concentrate into rough magnetic fractions it was examined for native metals. Any native metals were mounted in epoxy for electron microprobe analysis, and most were later photographed. The magnetic fractions were then re-combined and subjected to a rotating magnetic field separation (method to be described in PhD thesis by N. R. Allen, due for submission in 1997). The non-rotating fraction was then examined for any chromites and high-Mg ilmenites, which were also mounted for analysis by electron microprobe.

The location of any silcrete along each sample line was also noted, as this may help to locate the centre for any rising fluids containing silica and metals in solution.

Magnetic field measurements and total gamma radiation measurements were made at 5 m intervals along each pegged line. Self-potential and electromagnetic measurements along each line have been commenced, but are yet to be completed.

The sampling programme has been carried out using small hand-dug pits, but several deeper holes have been dug by back-hoe in order to find and examine suspected quartz veins.

The sampling lines have been widely spaced at this stage, and two planned lines have not yet been commenced. Later it is hoped to expand some of the lines into a sampling grid.

Geochemical results, native metal analyses, and chromite and Mg-ilmenite analyses are given in appendices A, B, and C respectively.

Results

Geochemical

Full geochemical results for each line are given in appendix A. Note that the results for line 1 were obtained using PIXE/PIGME analysis at Lucas Heights. This analysis method will not be used in future, due to the very small sample required for analysis and the extra difficulty in producing a fine enough powder to minimise any "nugget effect". Line 1 will be re-analysed later using neutron activation.

The geochemical results for the 5 lines sampled so far are graphed in figures 6, 7, 8, 9 & 10. Only Ni, Cu, As & Cr have been plotted in these graphs, although the samples were analysed for a total of 33 elements. With the exception of the copper values for two samples from line 4, the geochemical results do not present any significant anomalies at the moment.

Magnetic

The magnetic measurements were taken without the aid of a base magnetic station, and must therefore be accepted with some caution. This is especially so because the maximum field variation was generally less than 5 gammas.

The only anomaly which is really greater than expected error occurs on line 5, where the magnetic field shows a 5 gamma increase between 300W and 325W. This magnetic anomally coincides with an SP anomally, comparatively low radiation, and with the presence of chromites and Mg-ilmenites.

Self Potential

SP measurements have so far only been carried out on line 5, and give a negative anomally of about 150 mV at about 300W. As the granite at this point on the line is deeply greisenised, such an SP anomally could just be indicating the presence of the resulting clay, but the presence of chromites, Mg-ilmenites, lower radiation, and a magnetic high may be pointing to something more significant.

Electro-magnetic

So far electromagnetic measurements have only been made along line 4. The equipment used a loop arranged in a vertical plane, and measurements of dip angle were made in the plane of the loop. The maximum dip angle roughly coincided with the geochemical Cu anomally, but the break-down of the generator prevented measurements further east.

Radiation

As might be expected, gamma radiation was high wherever granite outcropped. High radiation was also encountered over areas where there was high ground-water seepage. The rather high values of 2000 cpm at about 20W on line 5 and 210W on line 2 are interesting as these are high even for the granite, but are not directly on the granite, and are not associated with any significant known ground-water seepage.

Native metals

The distribution of native metals and their alloys is shown in figure 3, and includes native Fe, Cu, Sn, Pb, Zn, Ni, Cr, and alloys of these metals. Electron microprobe analyses for all native metal particles are given in appendix B. In figure 3 the alloy compositions have been given with the elements in order of decreasing concentration. Native iron has not been shown in figure 3 because of possible sample contamination from the shovel or crow-bar, and the difficulty in determining which iron is native and which is not. Figures 11 and 12 illustrate two of the particles, and show that some of the iron has to be native.

Native metals are associated with all three known quartz veins, and surface quartz fragments are always found near to any native metal occurrences. It seems probable that the latter are indicating quartz veins which have not yet been identified.

Chromites

Locations where chromites have been found are shown in figure 4, and the chromite compositions, determine by electron microprobe analysis, are given in appendix C.

Most of the chromite locations, similar to the native metal locations, appear to closely associated with known quartz veins. This is especially true for the ultramafic chromites. with a higher Cr/(Cr+Al) ratio. Figure 13 is a plot of the chromite compositions.

In all of the chromite locations shown on figure 4 the chromite particles are quite rare, with only two or three 100μm particles being found in a 2 kg soil sample, but at the time of writing a location immediately to the S of the occurrence shown on line 2 has produced chromites in approximately equal abundance to to normal Mn-ilmenites. These chromites have not yet been analysed, but some of them, unlike chromites found previously, are quite magnetic.

Mg-ilmenites

Locations where Mg-ilmenites have been found are shown on figure 5, and the ilmenite compostions are given in appandix C. Ilmenites with an MgO content above 6% have been referred to as picro-ilmenites in figures 6 to 10.

Although only a few of these particles have been found, their close association to the chromite locations is obvious.

Discussion and Conclusions

The most interesting information so far has come from the mineralogy, rather than from the geophysical or geochemical methods.

The high-Cr# chromites and the Mg-ilmenites indicate an ultramafic source. Their association with quartz veins with a recurring and constant trend of about 340^0 would indicate an intrusive source rather than an origin in a fragment of detatched rock within the granites. Any ultramafic rocks which may have once existed in the vicinity of the quartz veins have now weathered to some depth.

The native metals, and their apparent association with the quartz veins may be indicating a movement of fluids upwards through the same fractures which carried the chromites and Mg-ilmenites. These fluids would also be responsible for the alteration of the granite in the vicinity of the veins, and for the formation of the silcrete.

The source of the ions for the native metals is not determined yet.

Future Exploration

The geochemical sampling and the mineralogy are very patchy and incomplete at the moment. These will be expanded over the next year, in particular with emphasis on the areas around 8 lines 1, 2 & 5. One particular aim will be to expand the map of chromite, Mg-ilmenite and native metal occurrences.

Geophysical measurements will be continued, if only for completeness.

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Fig. 1

Location of EL 11/96

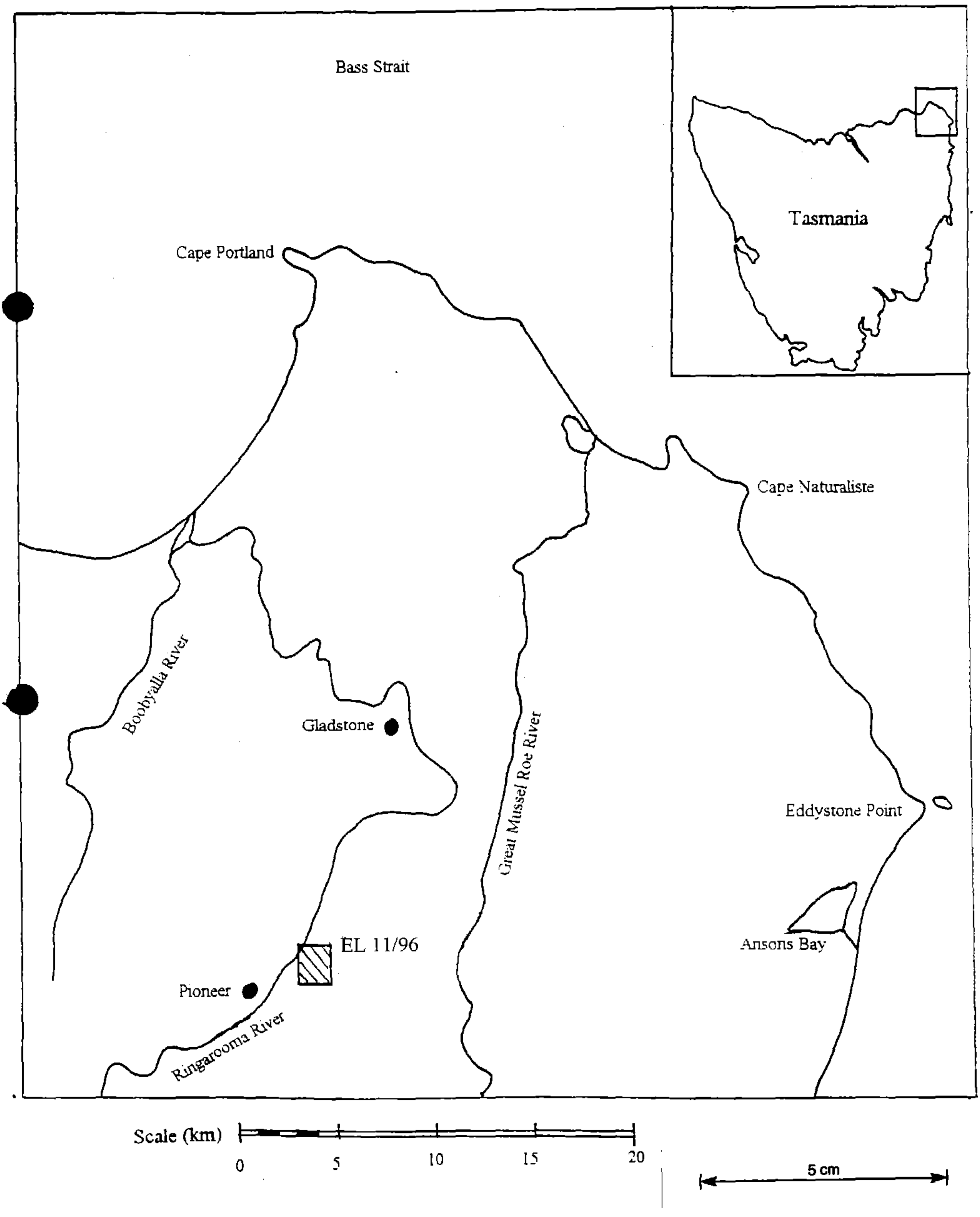

Figure 2

Granite Outcrop

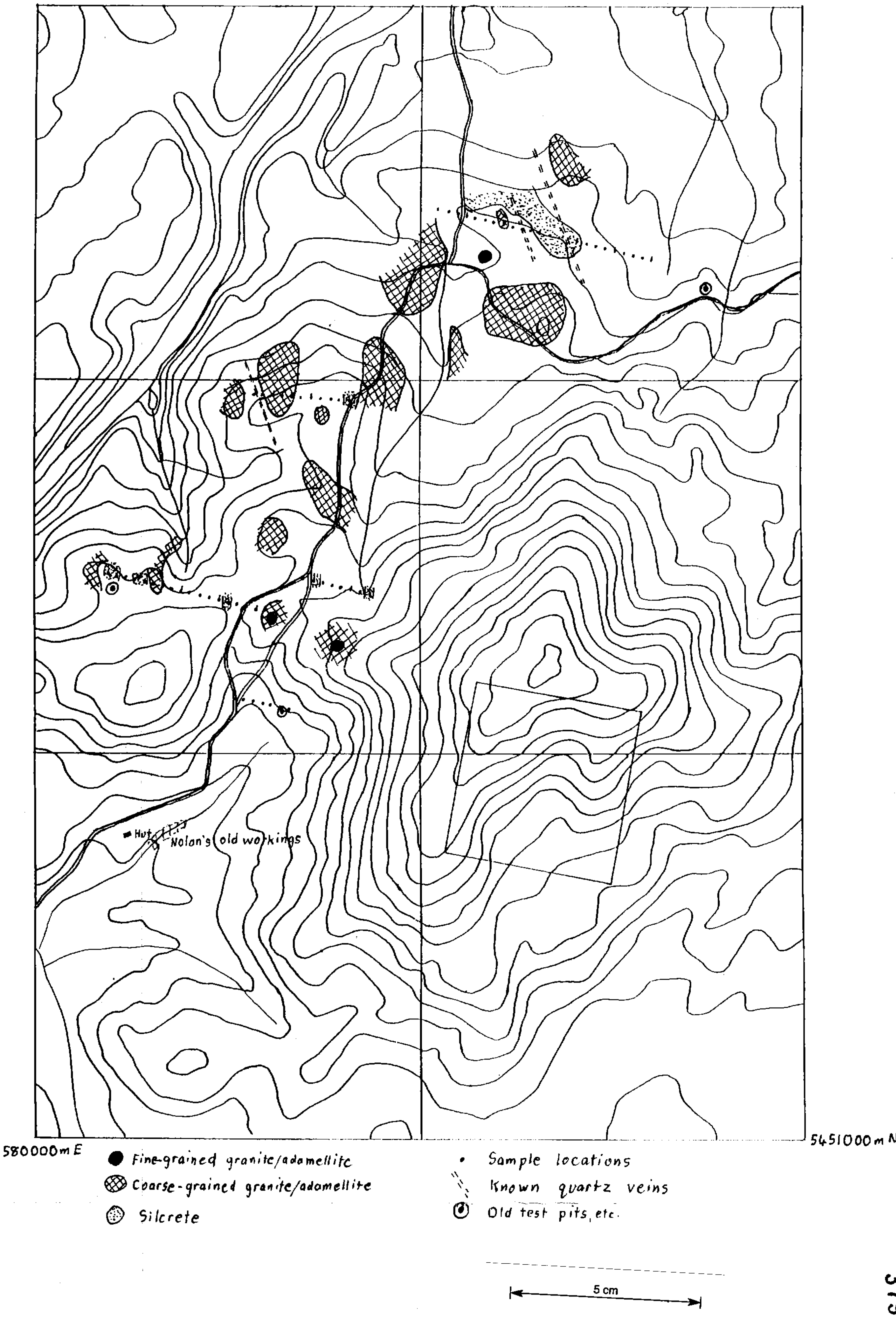

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Figure 3

Distribution of native metals, alloys and sulphides

Alloys are described as X+Y+Z..... etc., where metal concentrations are in the order X>Y>Z>..... Native iron has been omitted throughout, due to uncertainties about its origin at some locations.

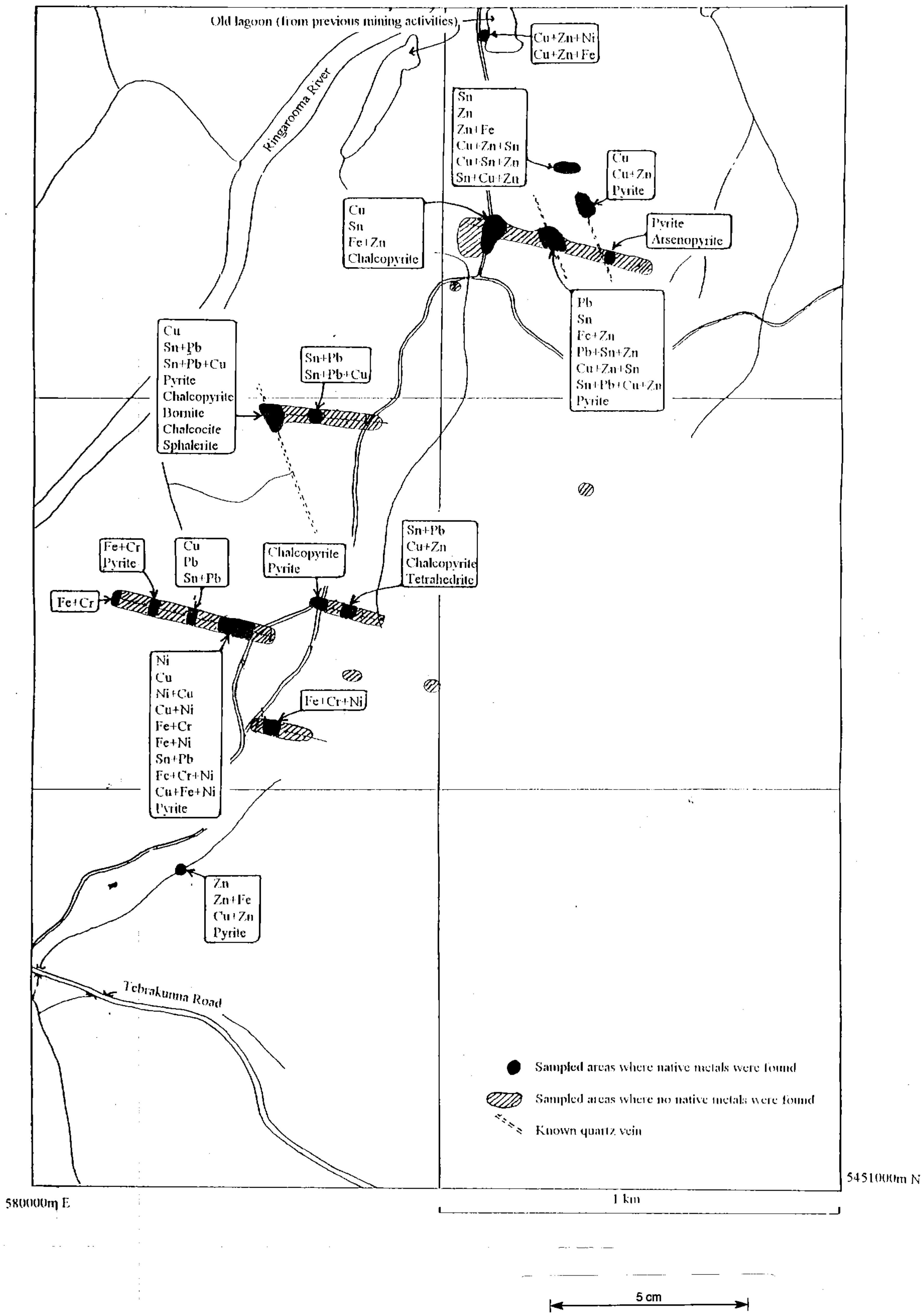

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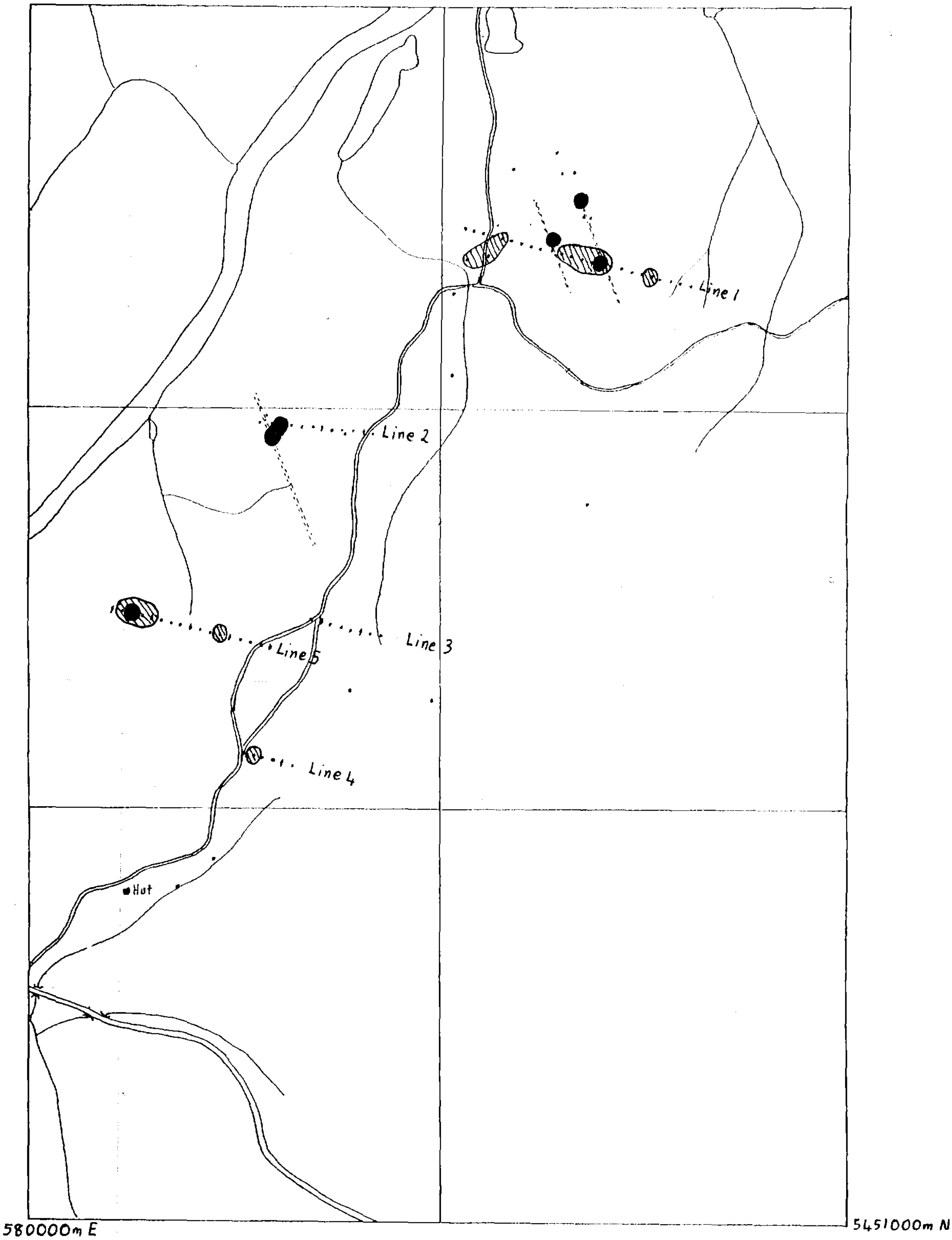
Figure 4
Chromites



Cr# >80

Cr# <80

Sample locations

Known quartz veins

5 cm

Figure 5

Mg Ilmenites

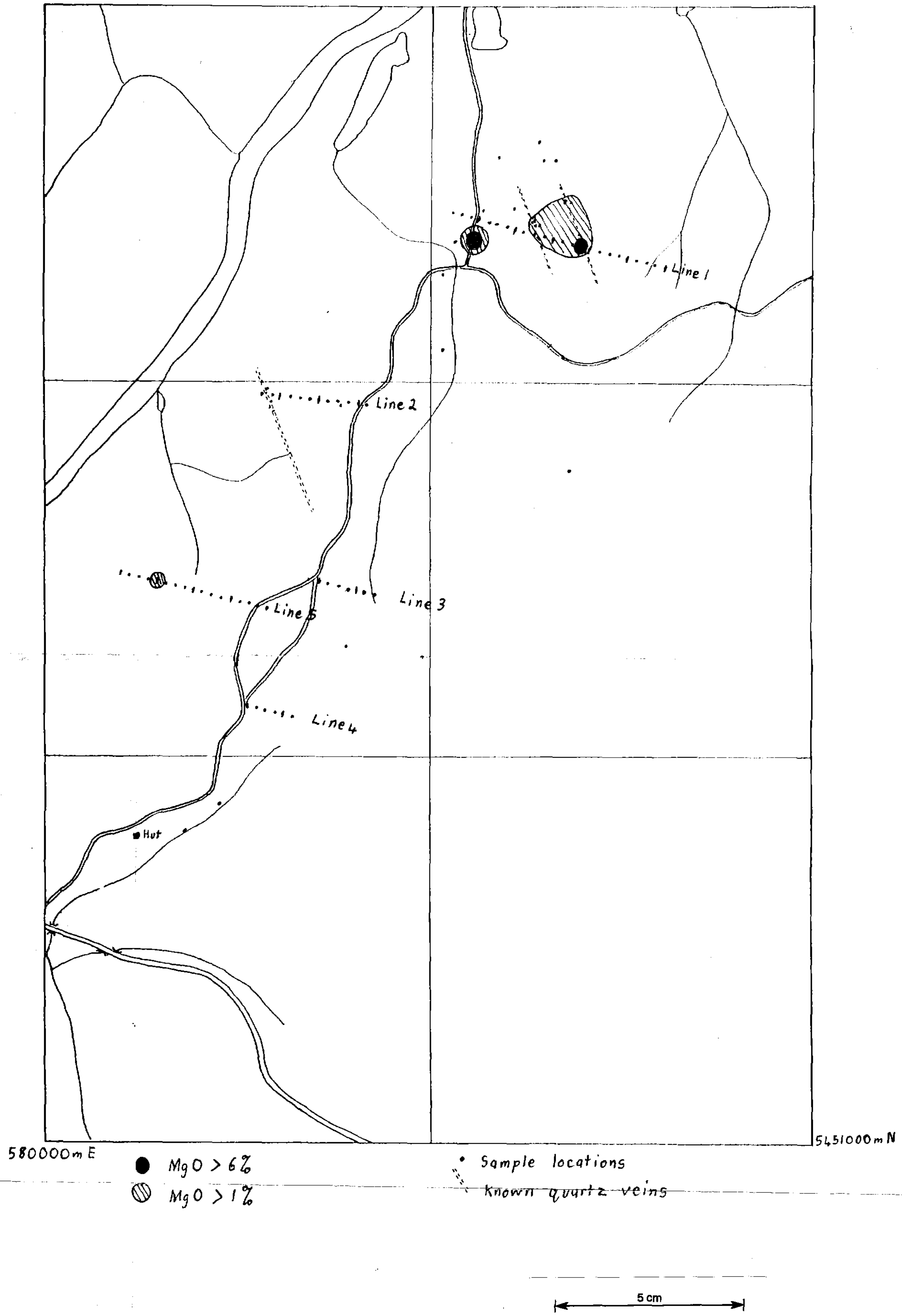


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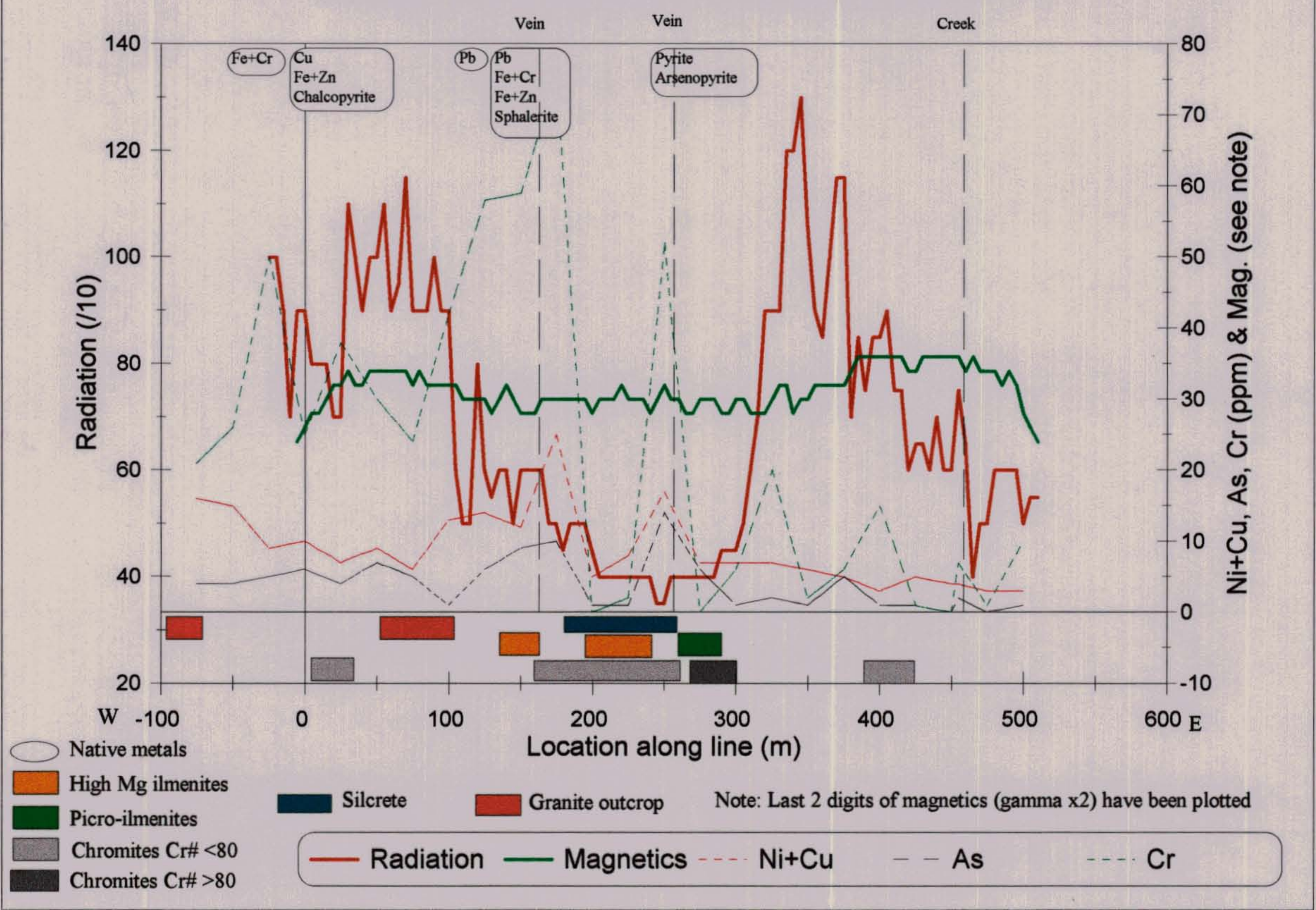
Figure 6. EL 11/96. Trends for Line 1



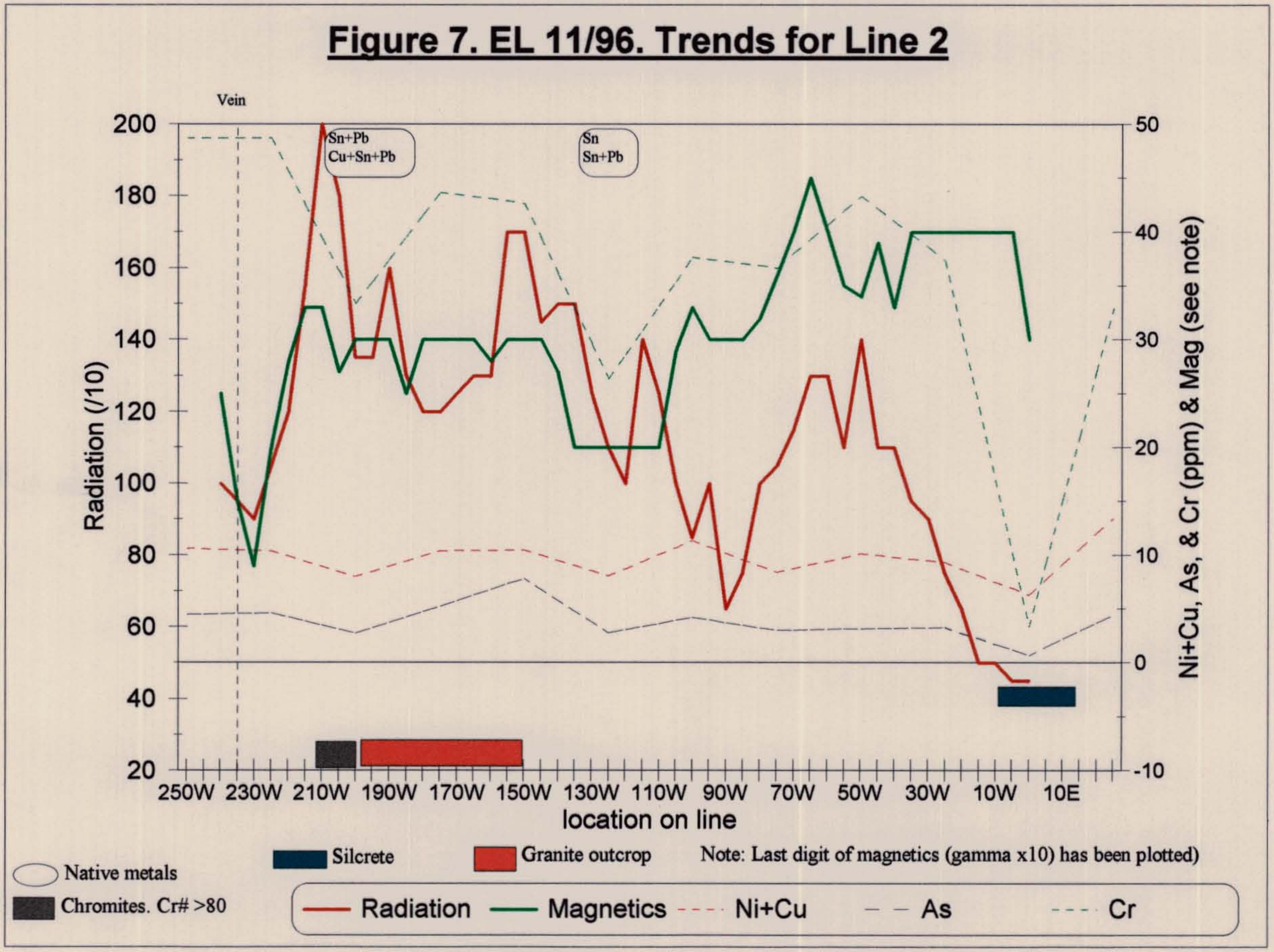


Figure 7. EL 11/96. Trends for Line 2
Vein
Sn+Pb
Cu+Sn+Pb
Sn
Sn+Pb
Radiation (/10)
Ni+Cu, As, & Cr (ppm) & Mag (see note)
200
180
160
140
120
100
80
60
40
20
50
40
30
20
10
0
-10
250W 230W 210W 190W 170W 150W 130W 110W 90W 70W 50W 30W 10W 10E
location on line
Native metals
Silcrete
Granite outcrop
Note: Last digit of magnetics (gamma x10) has been plotted)
Chromites. Cr# >80
Radiation
Magnetics
Ni+Cu
As
Cr

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Figure 8. EL 11/96. Trends for Line 3

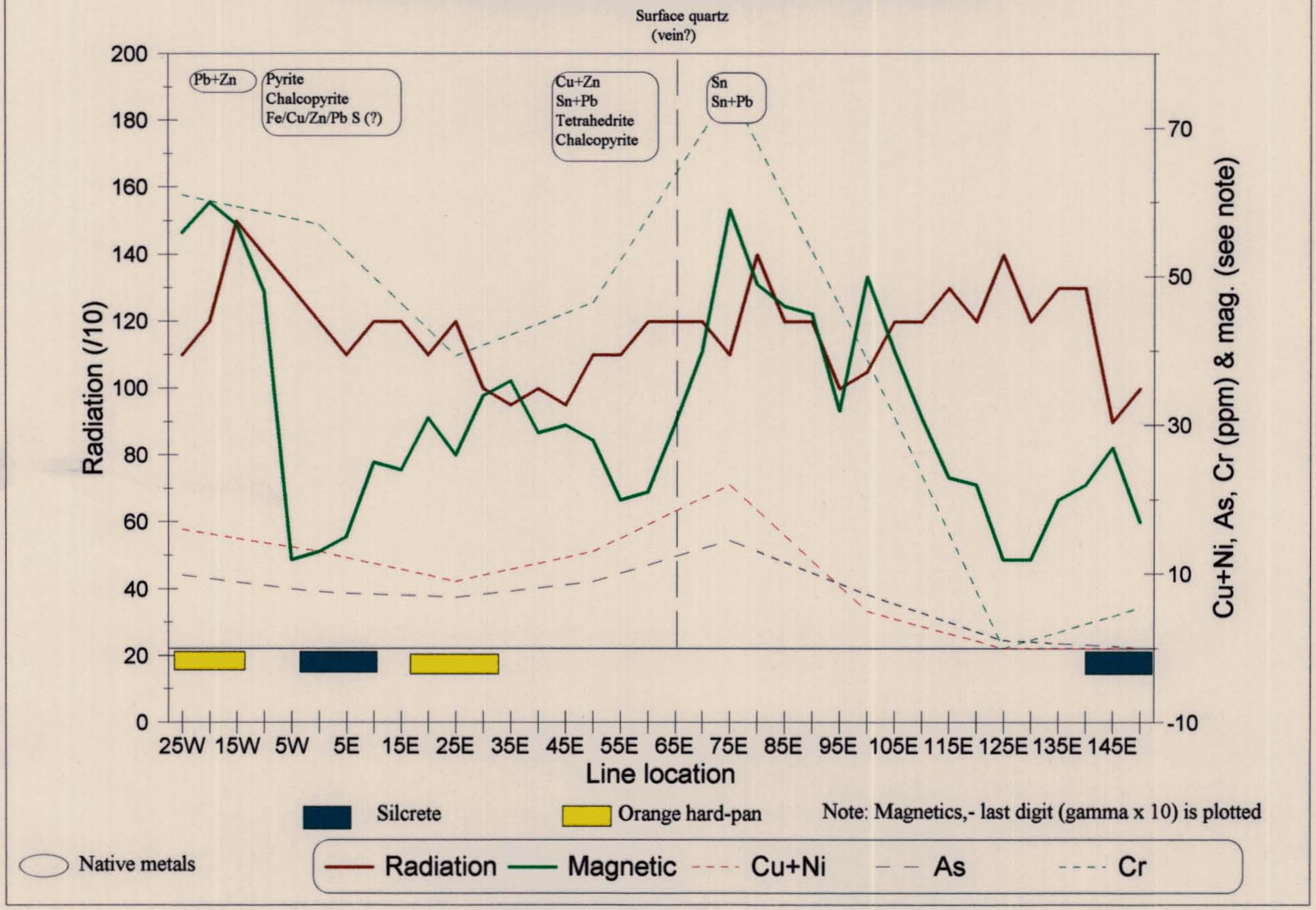

Figure 9. EL 11/96. Trends for Line 4

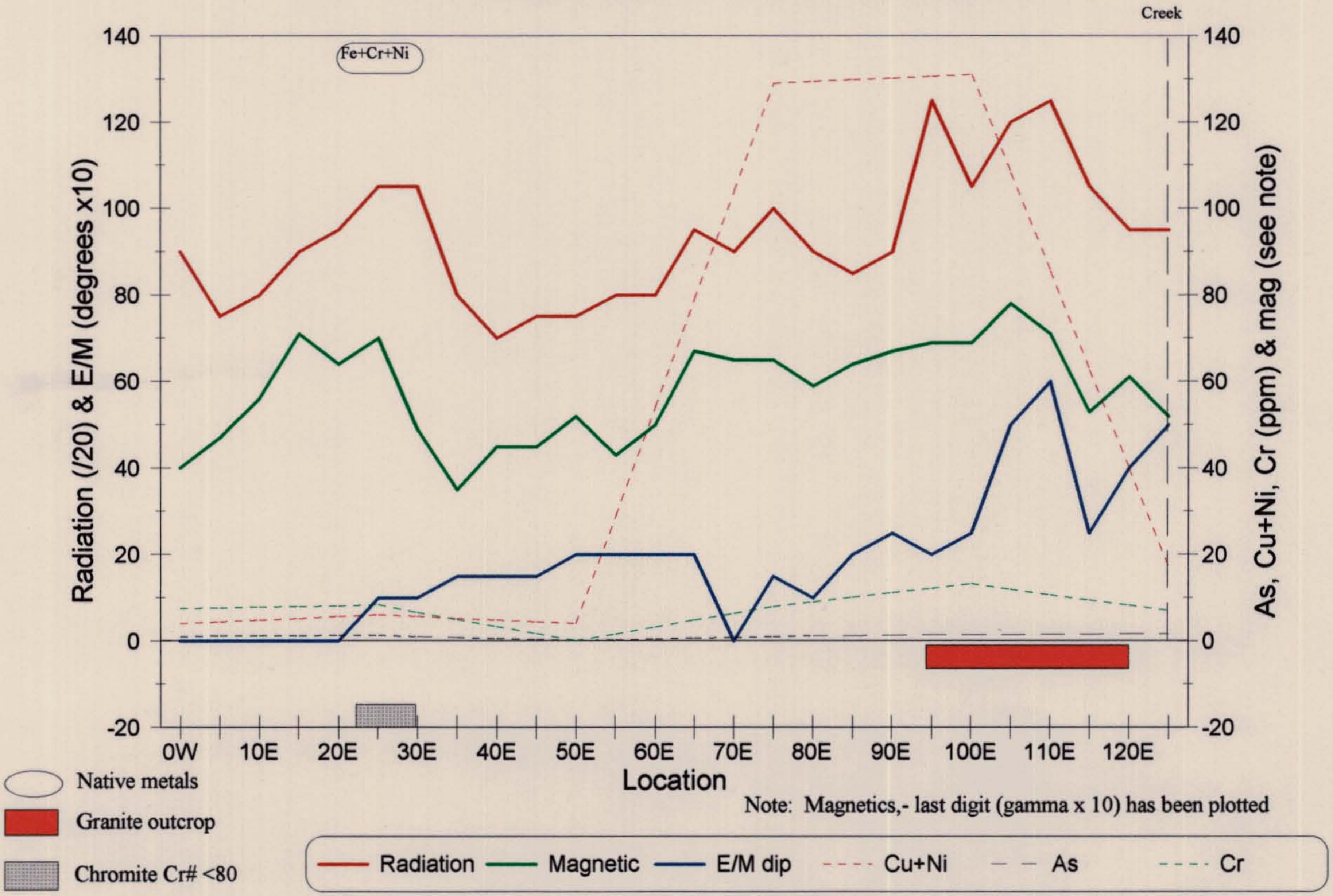

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Figure 10. EL 11/96. Trends at Line 5.

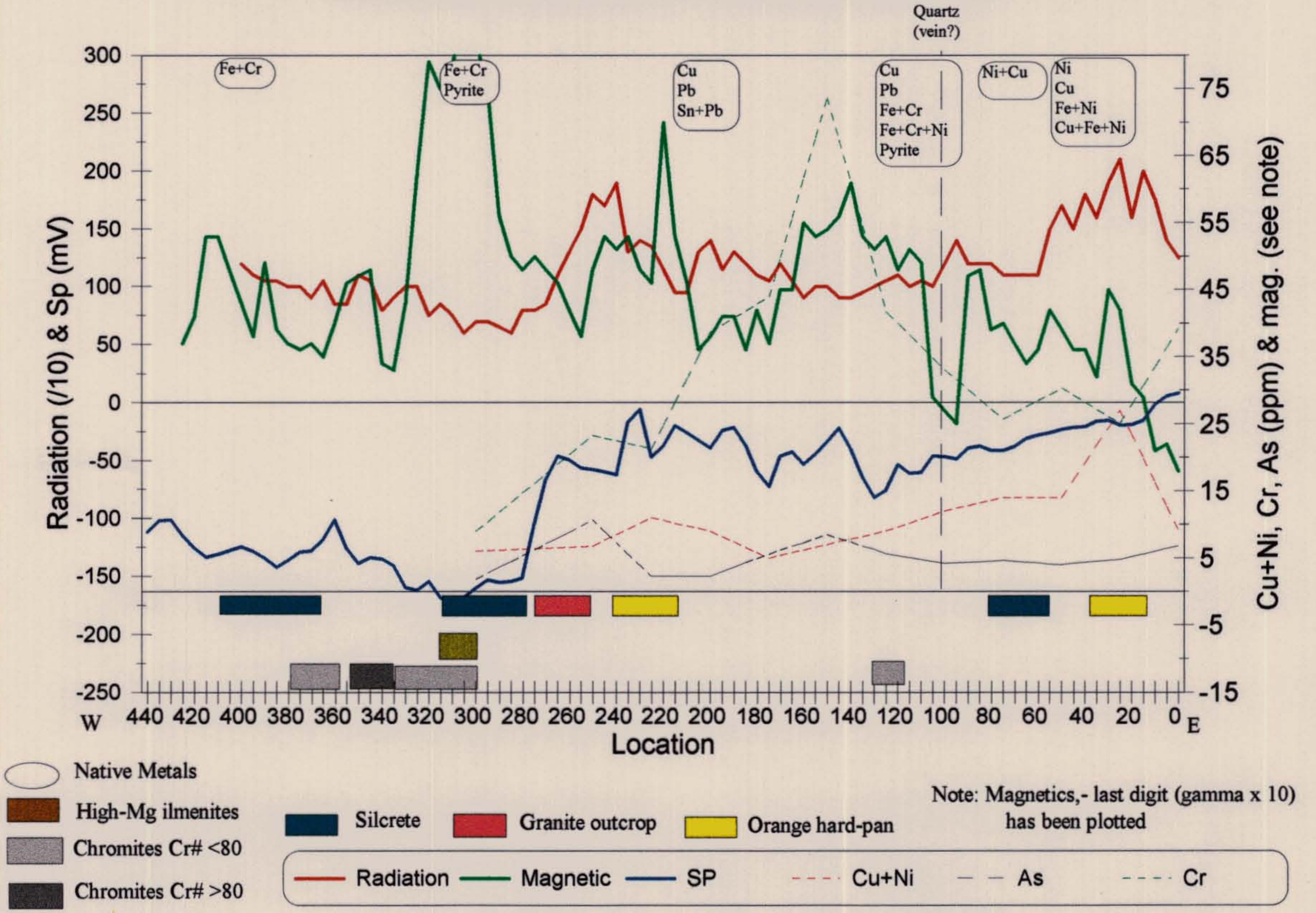

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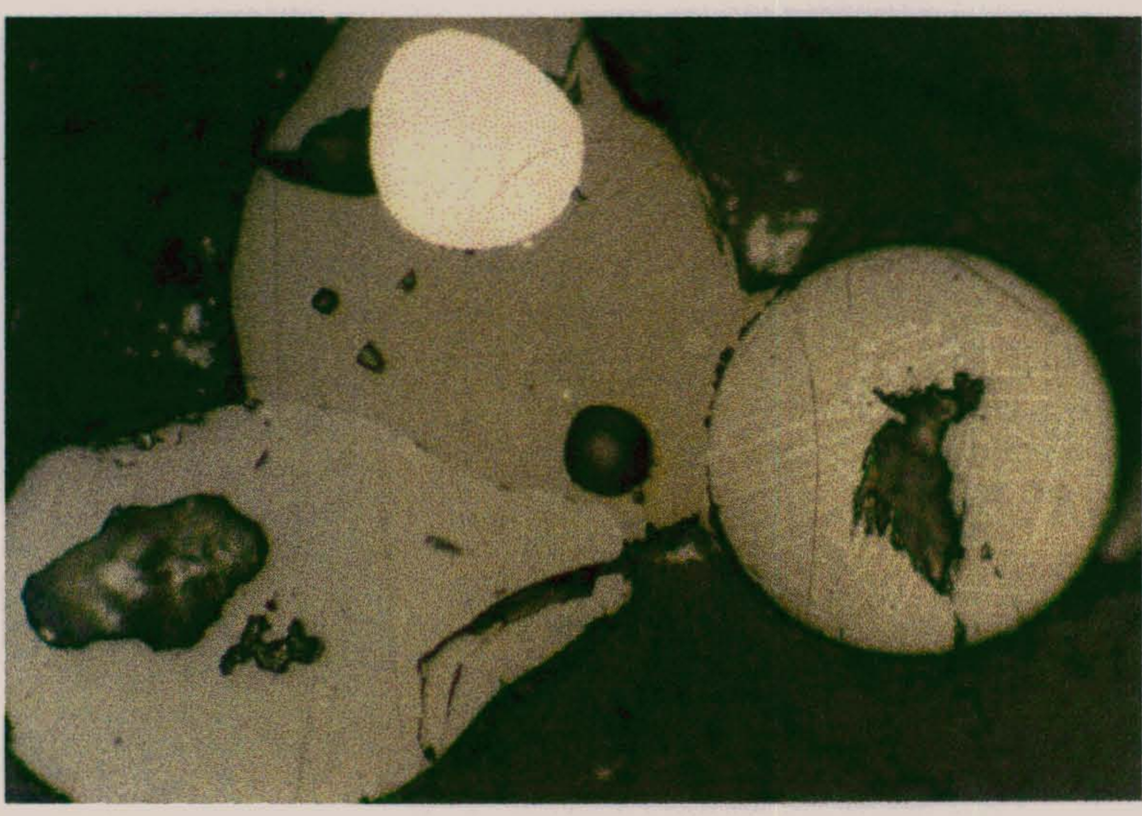
Figure 11

Native iron



Composition (%)

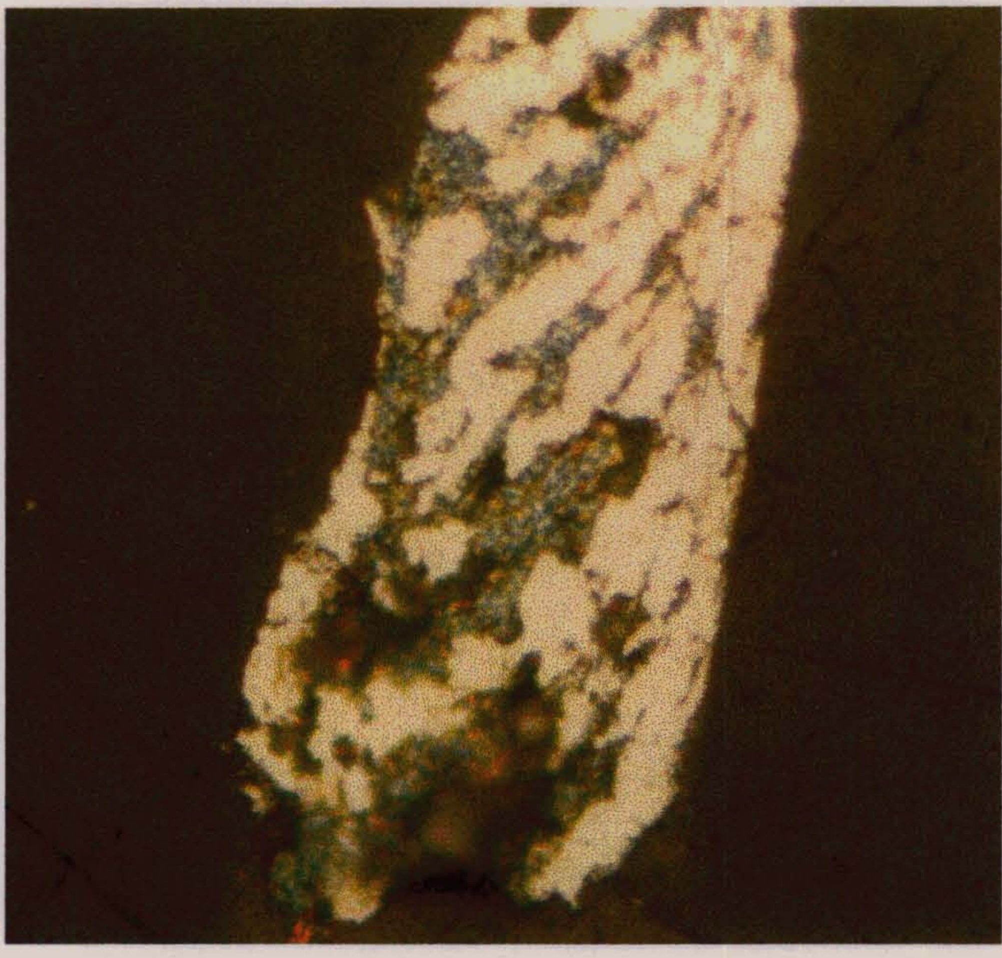
Metallic inclusion		Area around inclusion		Right sphere	
S	0.0	MgO	0.01	MgO	0.00
Cr	0.0	Al_2O_3	0.13	Al_2O_3	0.05
Mn	0.0	SiO_2	0.78	SiO_2	0.14
Fe	96.4	TiO_2	0.22	TiO_2	0.00
Ni	0.1	Cr_2O_3	0.02	Cr_2O_3	0.03
Cu	0.1	MnO	1.32	MnO	0.44
Zn	0.0	FeO	95.93	FeO	90.62
As	0.1	NiO	0.02	NiO	0.01
Sb	0.0	ZnO	0.06	ZnO	0.06
Pb	0.0	As	0.1	As	0.1
Bi	0.0	Pb	0.3	Pb	0.1

The right sphere appears to show some structure. It is possible that these represent magnetic domains.

Picture is approximately 100 μm across.

Figure 12

Native Pb-Sn-Zn alloy



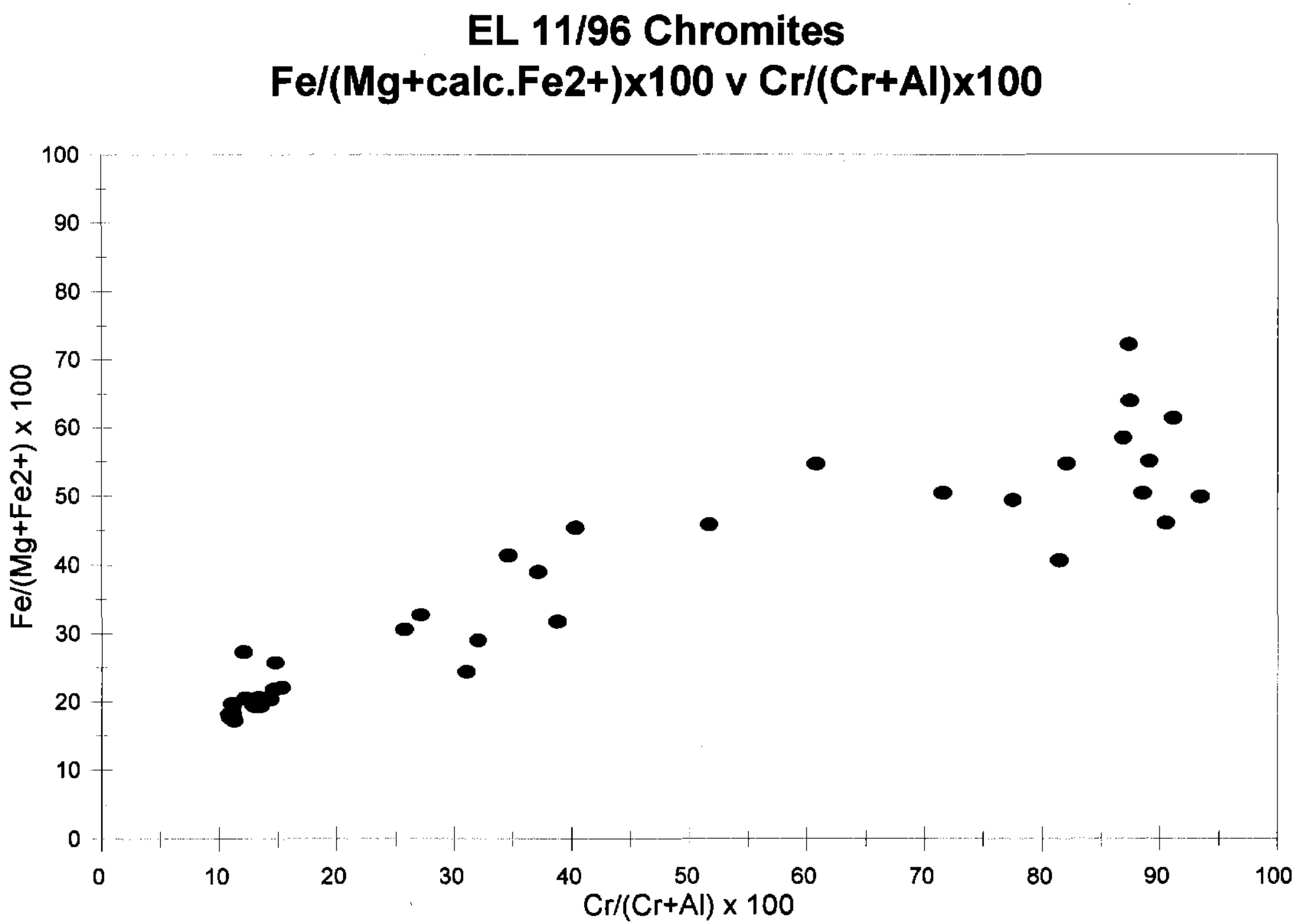
Composition (%)

Bright area	
S	0.0
Mn	0.0
Fe	0.0
Ni	0.0
Cu	0.0
Zn	6.9
As	0.0
Sn	37.2
Sb	0.0
Pb	56.4
Bi	0.3

Speckled greenish regions	
S	0.0
Mn	0.0
Fe	0.0
Ni	0.0
Cu	0.3
Zn	10.2
As	0.0
Sn	37.6
Sb	0.0
Pb	44.9
Bi	0.2

Width of particle is approximately 50 μm.

Figure 13



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Appendix A

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Line 1

PIXE/PIGME Analysis Results

Sample No. 40S line	Na ppm	Al %	Li ppm	Si %	S ppm	Cl ppm	K %	Ca ppm	Ti %	V ppm	Cr ppm	Mn ppm	Fe %	Co ppm	Ni ppm
70W							1.59				21	35	1.99	3	11
50W							1.38				26	89	2.12	2	9
25W	173	12.93	12	15.96	217	207	0.29	53	0.35	76	50	64	2.56	61	5
0W	113	12.75	11	15.49	201	156	0.35	53	0.36	96	25	53	2.09	58	5
25E	90	11.76	10	15.79	137	85	0.15	33	0.35	71	38	36	2.07	50	6
50E	164	11.90	16	17.67	73	128	0.32	37	0.37	102	30	31	1.55	49	6
75E	81	12.29	13	16.08	176	126	0.21	50	0.40	121	24	61	2.13	55	2
100E	105	12.93	12	13.80	123	148	0.15	35	0.50	137	42	57	2.89	57	10
125E	108	12.27	14	14.99	216	141	0.14	27	0.48	93	58	57	2.91	59	11
150E	82	12.54	16	15.24	186	138	0.21	48	0.48	131	59	107	2.94	74	9
175E	143	13.56	23	13.45	254	107	0.18	56	0.65	180	76	70	5.04	104	22
200E	53	0.20	8	30.79	95	63	0.01	39	0.29	25	0	8	0.15	13	2
225E	44	0.63	10	28.44	114	109	0.02	21	0.24	28	2	19	0.47	30	3
250E	242	10.91	18	14.07	534	321	0.71	103	0.56	192	52	82	5.16	85	12
275E	137	7.60	9	21.72	87	145	0.25	85	0.90	196	0	36	1.42	51	2
300E	53	2.55	7	25.47	235	104	0.06	100	0.25	32	6	14	0.22	14	4
325E	189	3.63	12	23.57	203	340	0.08	75	0.25	30	20	16	0.40	26	4
350E	295	3.57	14	26.45	165	230	0.50	120	0.17	12	2	17	0.42	21	2
375E	1379	3.74	23	22.50	291	257	0.92	253	0.23	30	6	20	0.37	16	3
400E	7714	8.81	14	19.83	477	276	1.50	280	0.34	85	15	32	1.81	55	0
425E	195	0.65	8	29.85	173	107	0.13	51	0.31	43	1	20	0.21	16	2
450E	296	2.62	11	26.49	121	137	0.30	64	0.25	14	0	9	0.34	16	1
456E	2787	3.91	25	25.25	659	69	1.32	821	0.25	67	7	31	0.31	23	2
475E	1390	1.59	10	29.96	109	57	1.04	289	0.16	0	1	15	0.11	13	1
500E	244	1.64	14	27.54	99	103	0.24	88	0.23	19	10	11	0.46	24	0

Sample No. 40S line	Cu ppm	Zn ppm	Ga ppm	Ge ppm	As ppm	Rb ppm	Sr ppm	Y ppm	Zr ppm	Nb ppm	Mo ppm	Pb ppm	Au ppb	Th ppm	U ppm
70W	5	6			4	127					0	20	0	15	7
50W	6	14			4	130					0	20	0	22	6
25W	4	15	26	0	5	52	4	11	78	10	0	22	0	24	0
0W	5	12	29	0	6	52	2	2	73	11	0	5	0	21	0
25E	1	7	24	1	4	27	9	7	80	14	0	20	2	19	2
50E	3	7	30	1	7	35	4	4	95	17	2	7	0	18	2
75E	4	10	29	0	5	37	5	10	202	14	5	5	0	23	3
100E	3	7	28	0	1	28	13	13	307	21	2	28	0	23	6
125E	3	8	25	1	6	15	9	5	121	15	4	11	0	19	2
150E	3	16	31	2	9	25	20	9	90	18	0	15	0	14	7
175E	3	10	29	0	10	9	19	19	208	22	8	22	0	12	0
200E	3	3	2	0	1	2	2	19	325	9	8	5	2	2	0
225E	5	3	4	0	1	6	5	4	118	6	1	6	0	4	2
250E	5	10	45	0	14	63	5	14	155	16	2	10	0	8	0
275E	5	8	45	1	6	30	30	15	271	22	1	13	1	8	0
300E	3	4	7	2	1	9	5	7	141	3	2	8	2	2	1
325E	3	4	10	1	2	18	8	2	162	9	2	13	3	12	0
350E	4	4	9	0	1	37	8	6	62	4	0	13	4	8	3
375E	2	4	11	1	5	63	15	12	70	7	0	10	3	10	0
400E	3	15	20	1	1	142	34	22	515	9	6	24	2	27	12
425E	3	3	2	1	1	10	6	6	98	3	1	13	0	4	0
450E	3	4	6	1	0	25	6	20	395	3	4	10	1	7	1
456E	2	3	10	0	2	81	27	25	495	12	11	36	1	12	7
475E	2	3	5	1	0	49	16	20	300	5	5	15	0	22	5
500E	3	3	4	0	1	19	6	11	171	5	1	8	0	3	4

Line 2

All values given in parts per million (ppm);- or grams per tonne (g/t)

Sample Number	Analysed by Neutron Activation												
	Antimony	Arsenic	Barium	Bromine	Cerium	Caesium	Chromium	Cobalt	Europium	Gold	Hafnium	Iridium	Iron
	Sb	As	Ba	Br	Ce	Cs	Cr	Co	Eu	Au	Hf	Ir	Fe
250W	0.0	4.5					48.7	6.0		0.0			
225W	0.0	4.6					48.7	5.2		0.0			
200W	0.0	2.7					33.3	4.2		0.0			
175W	0.0	5.2					43.7	5.9		0.0			
150W	0.0	7.8					42.7	6.5		0.0			
125W	0.0	2.8					26.3	3.5		0.0			
100W	0.0	4.2					37.7	5.5		0.0			
75W	0.0	3.0					36.7	4.5		0.0			
50W	0.0	3.1					43.3	4.5		0.0			
25W	0.0	3.3					37.3	4.2		0.0			
0W	0.0	0.7					3.3	0.5		0.0			
25E	0.0	4.4	0.0	11.2	26.5	3.4	33.0	4.8	0.0	0.0	7.8	0.0	27400.0

Sample Number	Analysed by Neutron Activation												
	Lanthanum	Lutetium	Molbdenum	Potassium	Rubidium	Samarium	Scandium	Selenium	Silver	Sodium	Tantalum	Thorium	Tungsten
	La	Lu	Mo	K	Rb	Sm	Sc	Se	Ag	Na	Ta	Th	W
250W													
225W													
200W													
175W													
150W													
125W													
100W													
75W													
50W													
25W													
0W													
25E	12.6	0.3	0.0	0	25.9	2.13	3.11	0	0	350	3.17	16.7	0

Sample Number	Analysed by Neutron Activation			Analysed by Atomic Absorption					
	Uranium	Ytterbium	Zinc	Copper	Lead	Manganese	Nickel	Silver	Zinc
	U	Yb	Zn	Cu	Pb	Mn	Ni	Ag	Zn
250W				1.9	22.3	5.2	8.7	0.0	3.1
225W				1.7	20.3	5.1	8.6	0.0	3.3
200W				1.8	18.7	7.1	6.2	0.0	3.7
175W				1.6	21.3	13.4	8.8	0.0	4.3
150W				1.9	19.7	28.7	8.5	0.0	7.0
125W				2.2	25.0	4.3	5.9	0.0	2.3
100W				1.9	30.3	6.7	9.4	0.0	3.1
75W				2.0	17.6	5.7	6.4	0.0	3.4
50W				2.1	17.0	6.2	8.0	0.0	3.4
25W				2.2	52.0	6.0	7.1	0.0	4.5
0W				3.5	6.0	13.7	2.8	0.0	2.7
25E	5.61	2.13	0	2.3	14.3	9.3	11.2	0.0	3.7

Line 3

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All values given in parts per million (ppm);- or grams per tonne (g/t)

Sample Number	Analysed by Neutron Activation												
	Antimony	Arsenic	Barium	Bromine	Cerium	Caesium	Chromium	Cobalt	Europium	Gold	Hafnium	Iridium	Iron
	Sb	As	Ba	Br	Ce	Cs	Cr	Co	Eu	Au	Hf	Ir	Fe
25W	0.4	9.8	0.0	15.1	41.8	8.0	61.0	3.9	0.0	0.0	8.6	0.0	43600.0
0W	0.3	7.6	0.0	17.4	37.6	8.9	57.0	4.1	0.0	0.0	4.4	0.0	36700.0
25E	0.4	6.8	0.0	21.0	42.1	9.4	39.3	2.7	0.0	0.0	6.5	0.0	30400.0
50E	0.3	8.9	0.0	17.2	34.1	7.0	46.5	3.4	0.0	0.0	7.6	0.0	38600.0
75E	0.4	14.5	107.0	20.8	26.0	9.2	75.1	5.4	0.0	0.0	6.7	0.0	55500.0
100E	0.3	7.3	0.0	49.0	37.9	4.2	38.8	2.2	0.0	0.0	9.4	0.0	27300.0
125E	0.0	1.0	0.0	2.4	39.8	1.8	0.0	0.0	0.0	0.0	9.3	0.0	2500.0
150E	0.2	0.0	164.0	2.6	33.6	2.9	5.4	0.0	0.0	0.0	6.9	0.0	1100.0

Sample Number	Analysed by Neutron Activation												
	Lanthanum	Lutetium	Molbdenum	Potassium	Rubidium	Samarium	Scandium	Selenium	Silver	Sodium	Tantalum	Thorium	Tungsten
	La	Lu	Mo	K	Rb	Sm	Sc	Se	Ag	Na	Ta	Th	W
25W	20.3	0.4	0.0	2500	34	2.77	6.1	0	0	270	2.1	27.8	2.09
0W	20.1	0.2	0.0	2200	40.4	2.6	6.5	0.0	0.0	180	1.9	28.6	0.0
25E	21.1	0.4	0.0	2500	28.8	3.1	5.6	0.0	0.0	220	3.5	19.4	2.2
50E	17.4	0.3	0.0	0	35.0	2.6	5.3	5.1	0.0	220	2.6	24.6	0.0
75E	14.4	0.3	0.0	2100	33.7	2.0	6.7	0.0	0.0	270	3.0	24.9	2.1
100E	18.1	0.5	0.0	0	0.0	3.1	3.8	0.0	0.0	150	2.6	17.1	2.2
125E	17.4	0.4	0.0	4700	22.1	3.1	1.6	0.0	0.0	450	1.3	10.0	0.0
150E	14.9	0.4	0.0	11200	53.9	2.7	1.1	0.0	0.0	1810	1.4	8.0	0.0

Sample Number	Analysed by Neutron Activation			Analysed by Atomic Absorption					
	Uranium	Ytterbium	Zinc	Copper	Lead	Manganese	Nickel	Silver	Zinc
	U	Yb	Zn	Cu	Pb	Mn	Ni	Ag	Zn
25W	4.6	2.5	0.0	9.0	26.0	14.0	7.0	0.0	9.0
0W	4.6	1.4	0.0	5.0	43.0	43.0	8.0	0.0	18.0
25E	5.1	2.2	0.0	4.0	29.0	34.0	5.0	0.0	16.0
50E	4.7	2.2	0.0	3.0	23.0	29.0	10.0	0.0	14.0
75E	5.5	2.0	0.0	5.0	27.0	31.0	17.0	0.0	15.0
100E	4.9	2.8	0.0	0.0	17.0	30.0	5.0	0.0	7.0
125E	3.7	2.7	0.0	0.0	6.0	18.0	0.0	0.0	2.0
150E	2.6	2.3	0.0	0.0	5.0	16.0	0.0	0.0	3.0

379025

Line 4

All values given in parts per million (ppm);- or grams per tonne (g/t)

Sample Number	Analysed by neutron activation												
	Antimony	**Arsenic**	**Barium**	**Bromine**	**Cerium**	**Caesium**	**Chromium**	**Cobalt**	**Europium**	**Gold**	**Hafnium**	**Iridium**	**Iron**
	Sb	As	Ba	Br	Ce	Cs	Cr	Co	Eu	Au	Hf	Ir	Fe
0W	0.3	1.0	274.0	13.7	52.3	7.8	7.5	1.1	0.0	0.0	7.1	0.0	6900
25E	0.0	1.2	242.0	11.9	51.3	9.3	8.3	1.1	0.0	0.0	7.2	0.0	6300
50E	0.0	0.0	266.0	0.0	55.1	5.3	0.0	0.0	0.0	0.0	7.2	0.0	2000
75E	0.0	1.0	239.0	0.0	72.5	5.4	8.0	1.3	0.0	0.0	7.5	0.0	4500
100E	0.2	1.4	261.0	15.3	58.2	11.8	13.2	2.0	0.0	0.0	6.7	0.0	12800
125E	0.0	1.6	279.0	14.1	33.4	9.0	7.0	1.1	0.0	0.0	4.5	0.0	7500

Sample Number	Analysed by neutron activation												
	Lanthanum	**Lutetium**	**Molbdenum**	**Potassium**	**Rubidium**	**Samarium**	**Scandium**	**Selenium**	**Silver**	**Sodium**	**Tantalum**	**Thorium**	**Tungster**
	La	Lu	Mo	K	Rb	Sm	Sc	Se	Ag	Na	Ta	Th	W
0W	22.0	0.4	0.0	21500	120.0	4.1	2.1	0.0	0.0	3210	1.6	12.3	0.0
25E	23.7	0.4	0.0	24300	125.0	4.1	2.7	0.0	0.0	3350	1.3	13.4	0.0
50E	25.1	0.4	0.0	25100	133.0	4.4	1.3	0.0	0.0	3240	1.1	12.5	0.0
75E	31.8	0.5	0.0	25700	136.0	5.4	3.6	0.0	0.0	3320	1.6	18.0	0.0
100E	26.5	0.5	0.0	26800	159.0	4.6	2.6	0.0	0.0	7950	2.2	17.1	0.0
125E	14.7	0.3	0.0	23200	130.0	2.6	1.9	0.0	0.0	4850	1.9	10.0	0.0

Sample Number	Analysed by Neutron Activation			Analysed by AAS					
	Uranium	**Ytterbium**	**Zinc**	**Copper**	**Lead**	**Manganese**	**Nickel**	**Silver**	**Zinc**
	U	Yb	Zn	Cu	Pb	Mn	Ni	Ag	Zn
0W	4.2	2.8	0.0	4.0	9.0	40.0	0.0	0.0	7.0
25E	5.3	2.9	0.0	6.0	19.0	26.0	0.0	0.0	6.0
50E	4.5	2.7	0.0	4.0	7.0	10.0	0.0	0.0	0.0
75E	7.2	3.4	0.0	121.0	38.0	65.0	8.0	0.0	30.0
100E	5.6	2.9	0.0	121.0	28.0	103.0	10.0	0.0	35.0
125E	3.5	1.9	0.0	9.0	12.0	47.0	8.0	0.0	12.0

379026

Line 5

All values given in parts per million (ppm);- or grams per tonne (g/t)

Sample Number	Analysed by Neutron Activation												
	Antimony	Arsenic	Barium	Bromine	Cerium	Caesium	Chromium	Cobalt	Europium	Gold	Hafnium	Iridium	Iron
	Sb	As	Ba	Br	Ce	Cs	Cr	Co	Eu	Au	Hf	Ir	Fe
400W													
375W													
350W													
325W													
300W	0.2	1.9	0.0	29.2	18.9	0.0	9.0	0.0	0.0	0.0	9.2	0.0	3700.0
275W	0.8	23.7	0.0	53.5	49.7	5.9	44.7	2.6	0.0	0.0	14.5	0.0	35600.0
250W	0.5	9.5	0.0	32.7	31.5	4.5	70.4	2.4	0.0	0.0	5.5	0.0	47400.0
225W	0.0	2.3	0.0	3.4	52.0	3.2	21.3	1.3	0.0	0.0	11.0	0.0	14000.0
200W	0.0	2.3	0.0	14.4	141.0	3.1	38.7	1.7	0.0	0.0	7.3	0.0	26800.0
175W	0.3	5.6	0.0	36.4	66.0	3.9	43.9	1.8	0.0	0.0	7.5	0.0	22000.0
150W	0.3	8.5	0.0	28.3	21.5	3.9	73.7	3.4	0.0	0.0	6.1	0.0	47100.0
125W	0.2	5.7	0.0	27.8	26.0	5.0	41.7	2.3	0.0	0.0	6.4	0.0	29200.0
100W	0.0	4.2	0.0	11.1	98.5	7.8	33.0	1.7	0.0	0.0	3.9	0.0	30100.0
75W	0.2	4.6	180.0	5.9	29.8	19.1	25.7	1.3	0.0	0.0	5.7	0.0	29100.0
50W	0.4	4.0	156.0	16.3	24.0	26.9	30.3	2.8	0.0	0.0	3.9	0.0	32800.0
25W	0.3	4.8	362.0	15.5	40.1	14.6	25.0	4.0	0.0	0.0	5.0	0.0	31900.0
0W	0.4	6.8	0.0	12.1	50.8	11.2	39.2	2.3	0.0	0.0	8.1	0.0	33100.0

Sample Number	Analysed by Neutron Activation												
	Lanthanum	Lutetium	Molbdenum	Potassium	Rubidium	Samarium	Scandium	Selenium	Silver	Sodium	Tantalum	Thorium	Tungsten
	La	Lu	Mo	K	Rb	Sm	Sc	Se	Ag	Na	Ta	Th	W
400W													
375W													
350W													
325W													
300W	8.0	0.3	0.0	0	0.0	1.5	1.5	0.0	0.0	0	0.0	4.7	0.0
275W	24.9	0.7	0.0	2800	33.6	3.4	8.0	0.0	0.0	270	6.4	13.3	6.9
250W	16.2	0.3	0.0	0	23.8	2.2	6.7	0.0	0.0	180	2.5	39.9	0.0
225W	23.7	0.5	0.0	0	0.0	3.7	3.8	0.0	0.0	170	2.6	18.1	0.0
200W	68.3	0.4	0.0	0	50.3	8.8	6.4	0.0	0.0	0	2.4	55.0	0.0
175W	31.9	0.4	0.0	0	0.0	4.3	7.3	0.0	0.0	130	3.6	43.7	2.4
150W	11.5	0.2	0.0	0	27.4	1.6	6.9	0.0	0.0	150	3.8	44.4	0.0
125W	13.1	0.3	0.0	0	31.0	1.9	5.0	0.0	0.0	150	3.0	21.9	0.0
100W	55.3	0.0	0.0	2800	31.6	4.3	6.6	0.0	0.0	120	1.9	23.4	0.0
75W	15.8	0.3	0.0	15400	143.0	2.1	8.1	0.0	0.0	660	3.2	14.1	0.0
50W	11.0	0.3	0.0	21200	224.0	2.1	8.0	0.0	0.0	2060	2.7	44.8	0.0
25W	18.0	0.4	0.0	26400	192.0	3.1	6.6	0.0	0.0	3670	3.9	28.4	0.0
0W	22.4	0.5	0.0	4100	50.3	3.8	6.2	0.0	0.0	510	3.8	25.1	2.9

Sample Number	Analysed by Neutron Activation			Analysed by Atomic Absorption					
	Uranium	Ytterbium	Zinc	Copper	Lead	Manganese	Nickel	Silver	Zinc
	U	Yb	Zn	Cu	Pb	Mn	Ni	Ag	Zn
400W									
375W									
350W									
325W									
300W	2.2	2.1	0.0	6.0	0.0	14.0	0.0	0.0	0.0
275W	6.6	4.5	0.0	0.0	22.0	12.0	8.0	0.0	5.0
250W	5.6	1.7	0.0	6.0	24.0	15.0	7.0	0.0	6.0
225W	4.9	3.3	0.0	6.0	14.0	10.0	5.0	0.0	4.0
200W	10.1	2.8	0.0	4.0	85.0	17.0	5.0	0.0	5.0
175W	7.7	2.5	0.0	5.0	60.0	11.0	0.0	0.0	5.0
150W	4.9	1.5	0.0	4.0	20.0	10.0	3.0	0.0	6.0
125W	4.0	1.7	0.0	4.0	16.0	10.0	5.0	0.0	7.0
100W	4.0	1.3	0.0	5.0	70.0	20.0	7.0	0.0	10.0
75W	3.3	2.1	0.0	7.0	29.0	28.0	7.0	0.0	14.0
50W	5.9	1.7	0.0	7.0	33.0	92.0	7.0	0.0	21.0
25W	9.7	2.3	0.0	18.0	37.0	88.0	9.0	0.0	27.0
0W	6.5	3.0	0.0	4.0	15.0	16.0	5.0	0.0	8.0

Appendix B

Native Metals

379027

Particles from line 1

Grain Number	Weight Percent												Total
	S	Cr	Mn	Fe	Ni	Cu	Zn	As	Sn	Sb	Pb	Bi	
DF-40S-25W1 M8 grain 2	0.0		0.0	0.0	0.0	0.0	59.4	0.0	0.8	0.1	0.0	0.0	60.4
DF-40S-25W2 M1 grain 1	0.0		1.3	86.5	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.5	88.6
DF-40S-25W2 M1 grain 2	0.0		0.6	91.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	92.0
DF-40S-25W2 M2 grain 1	0.0		0.7	69.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	70.2
DF-40S-0W1 M1 grain 1	0.0		1.2	86.5	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.3	88.3
DF-40S-0W1 M2 grain 1	0.0		0.8	89.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	90.7
DF-40S-0W1 M2 grain 2	0.0		0.3	84.1	0.0	0.0	10.3	0.1	0.0	0.0	0.5	0.1	95.4
DF-40S-0W1 M8 grain 3	34.7		0.0	29.3	0.0	33.0	0.0	0.0	0.0	0.0	0.0	0.0	97.1
DF-40S-0W2 Rotation M7 grain 46	0.0		0.0	0.0	0.0	0.0	0.0	0.0	97.4	0.0	0.8	0.0	98.2
DF-40S-0W2 M1 grain 1	0.0		0.6	95.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	96.0
DF-40S-25E1 M1 grain 2	0.0		0.5	94.4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	95.1
DF-40S-25E1 M2 grain 1	0.0		0.8	95.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	96.0
DF-40S-25E1 M8 grain 1	0.0		0.0	0.1	0.0	86.1	0.0	0.0	0.0	0.0	0.0	0.1	86.3
DF-40S-25E1 M8 grain 1 (blue patches)	0.0		0.0	0.1	0.0	86.3	0.0	0.0	0.0	0.0	0.0	0.4	86.8
DF-40S-25E2 M8 grain 1	34.7		0.0	29.5	0.0	33.8	0.0	0.0	0.0	0.0	0.0	0.0	98.0
DF-40S-50E1 M1 grain 1	0.0		1.3	89.6	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	91.1
DF-40S-125E1 M1 grain 1	0.0		0.0	0.1	0.0	0.2	4.3	0.0	0.5	0.1	59.4	0.2	64.7
DF-40S-125E1 M8 grain 4	0.0		0.0	0.0	0.0	0.0	1.8	0.0	0.8	0.1	90.6	0.1	93.5
DF-40S-125E2 M1 grain 1	0.0		0.8	95.4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	96.4
DF-40S-125E2 M2 grain 1	0.0		1.2	86.8	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.5	88.7
DF-40S-150E1 M1 grain 1	0.0		1.4	88.8	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.1	90.7
DF-40S-150E1 M3 grain 1	0.0		0.6	96.4	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.3	97.6
DF-40S-150E1 M8 grain 1	0.0		0.0	0.0	0.0	0.0	1.7	0.0	0.6	0.2	84.2	0.0	86.7
DF-40S-150E2 M1 grain 2 inclusion	0.0		0.4	84.3	0.0	0.0	13.8	0.1	0.0	0.0	0.3	0.0	99.0
DF-40S-150E2 M1 grain 2 body of grain	0.0		0.4	88.8	0.0	0.0	9.9	0.2	0.0	0.0	0.2	0.3	99.9
DF-40S0150E2 M5 grain 1	0.0		0.4	96.5	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.0	92.2
DF-40S-175E1 M1 grain 1	0.0		0.6	92.8	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.7	94.4
DF-40S-175E1 M8 grain 1	0.0		0.0	0.0	0.0	0.0	1.4	0.0	0.7	0.1	93.0	0.0	95.2
DF-40S-175E1 M8 grain 2 body of grain	0.2		0.0	0.0	0.0	0.0	57.9	0.0	0.5	0.2	1.6	0.0	60.4
DF-40S-175E1 M8 grain 2 outer coating	1.4		0.0	0.1	0.0	0.0	43.9	0.0	0.6	0.3	2.1	0.0	48.6
DF-40S-175E2 M1 grain 1	0.0		1.4	95.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	96.7
DF-40S-175E2 M2 grain 1	0.0		1.4	96.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	97.6
DF-40S-200E1 M1 grain 1	0.0		1.3	96.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.1	97.7
DF-40S-200E1 M1 grain 2	0.0		0.7	97.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	98.0
DF-40S-225E1 M1 grain 1	0.0		0.2	97.3	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.5	98.2
DF-40S-225E1 M1 grain 4	0.0		1.4	88.9	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.3	90.9
DF-40S-250E1 M1 grain 1	0.0		0.8	96.6	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	97.6
DF-40S-275E1 M1 grain 1	0.0		0.8	96.2	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	97.4
Df-40S-300E1 M1 grain 1	0.0		0.8	97.3	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.5	98.8
DF-40S-300E1 M1 grain 2 upper part of grain	0.1		0.6	95.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	96.4
DF-40S-300E1 M1 grain 2 lower part of grain	0.1		0.1	47.9	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.2	48.6
DF-40S-300E2, particle 1	0.0	0.1	0.8	95.9	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.3	97.3
DF-40S-300E2, particle 2	0.0	0.0	0.8	96.9	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	98.1
DF-40S-300E2, particle 3	51.0	0.0	0.0	46.6	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.0	98.1
DF-40S-300E2, particle 4	19.7	0.0	0.0	34.8	0.0	0.1	0.0	44.9	0.0	0.1	0.0	0.0	99.7
DF-40S-325E, particle 1	0.0	0.0	0.5	97.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.3	98.1

Particles from line 2

Grain Number	S	Cr	Mn	Fe	Ni	Cu	Zn	As	Sn	Sb	Pb	Bi	Total
	Weight Percent												
250W, particle 1	0.0		0.0	82.5	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.2	83.0
225W, particle 1	0.0		1.0	97.6	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	98.9
200W, particle 6	0.0		0.0	0.0	0.0	0.1	0.0	0.0	75.8	0.0	29.1	0.0	105.0
200W, particle 5 (right particle)	0.0		0.0	0.0	0.0	5.5	0.0	0.0	79.3	0.0	18.6	0.0	103.4
200W, particle 5 (left particle)	0.0		0.0	0.0	0.0	0.6	0.0	0.0	89.9	0.0	11.2	0.0	101.8
200W, particle 2	0.0		0.6	98.8	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	99.6
175W, particle 2	0.0		0.8	98.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	98.9
150W, particle 1	0.0		0.1	65.6	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	66.0
150W, particle 2	0.0		0.2	65.4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	65.8
125W, particle 3	0.0		0.0	0.0	0.0	0.1	0.2	0.0	88.2	0.0	11.9	0.0	100.5
125W, particle 5	0.0		0.0	0.0	0.0	0.0	0.1	0.0	95.4	0.0	1.6	0.0	97.2
125W, particle 7	0.3		0.0	0.1	0.0	1.6	1.1	0.0	67.6	0.0	24.5	0.4	95.6
25E, particle 1	0.0		0.8	97.6	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.3	99.02

Particles from line 3

Grain Number	S	Cr	Mn	Fe	Ni	Cu	Zn	As	Sn	Sb	Pb	Bi	Total
	Weight Percent												
0E, particle 1	0.0		0.2	99.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	99.5
0E, particle 2	0.0		0.3	99.2	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.4	100.0
0E, particle 3	0.0		0.2	98.8	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	99.3
0E, particle 4	0.0		0.8	97.6	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	98.5
0E, particle 6 (brown region of grain)	33.3		0.0	30.1	0.0	34.4	0.1	0.0	0.0	0.0	0.0	0.0	97.9
0E, particle 6 (yellow region of grain)	33.8		0.0	27.4	0.0	2.9	9.4	0.3	0.0	0.0	18.8	0.0	92.7
0E, particle 8 (brown portion of grain)	31.7		0.0	28.1	0.0	33.2	0.2	0.0	0.0	0.0	1.6	0.6	95.5
0E, particle 8 (yellow portion of grain)	47.9		0.0	43.4	0.0	0.2	0.1	0.1	0.0	0.0	2.0	0.3	94.1
25E, particle 1	0.0		0.8	97.3	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.1	98.5
50E, particle 1	0.0		0.8	97.3	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	98.4
50E, particle 2 (left particle)	0.0		0.5	95.7	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	96.4
50E, particle 2 (right particle)	0.0		0.4	97.2	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.1	98.1
50E, particle 3	0.0		0.0	0.0	0.0	63.6	45.4	0.0	0.0	0.0	0.0	0.0	109.2
50E, particle 4	0.0		0.0	0.0	0.0	70.2	38.5	0.0	0.1	0.0	0.0	0.1	108.9
50E, particle 6 (metallic-looking part)	0.0		0.0	0.0	0.0	0.0	0.0	0.0	89.3	0.0	1.7	0.0	91.0
50E, particle 6 (matrix of grain)	0.4		0.0	0.0	0.0	0.1	0.1	0.0	69.9	0.0	7.2	0.0	77.7
50E, particle 7	0.0		0.4	98.8	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	99.5
50E, particle 10 (inner part of grain)	30.1		0.0	27.3	0.0	32.1	0.3	0.0	0.0	0.0	1.8	0.0	91.7
50E, particle 10 (outer part of grain)	25.5		0.0	4.2	0.0	38.1	4.6	10.9	0.1	13.2	0.6	0.4	97.6
50E, particle 11	0.0		0.0	0.0	0.0	69.9	38.3	0.0	0.0	0.0	0.0	0.0	108.3
75E, particle 1 (metallic parts)	0.0		0.0	0.0	0.0	0.0	0.0	0.0	97.4	0.0	0.3	0.1	97.9
75E, particle 1 (matrix of grain)	0.1		0.0	0.0	0.0	0.1	0.1	0.0	86.5	0.0	2.2	0.0	89.0
100E, particle 1	0.2		0.9	97.5	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.4	99.3
100E, particle 2	0.1		0.6	97.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	98.2
100E, particle 3	0.0		0.4	97.7	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.3	98.6
125E, particle 1	0.0		0.4	97.3	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.0	97.9
125E, particle 2	0.0		0.4	97.9	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	98.7
150E, particle 1	0.0		0.8	97.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1	98.0
150E, particle 2	0.0		0.8	97.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	98.5

Particles from line 4

Grain Number	S	Cr	Mn	Fe	Ni	Cu	Zn	As	Sn	Sb	Pb	Bi	Total
	Weight Percent												
25E, particle 1	0.3		0.8	93.3	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	94.7
25E, particle 2	0.0		0.7	57.7	12.0	0.1	0.0	0.1	0.0	0.0	0.0	0.3	70.9
50E, particle 5	0.0		0.7	92.5	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.3	93.8

Particles from line 5

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Grain Number	Weight Percent												Total
	S	Cr	Mn	Fe	Ni	Cu	Zn	As	Sn	Sb	Pb	Bi	
25W, particle 1	0.0	0.0	0.5	97.8	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	98.5
25W, particle 2 (sphere)	0.0	0.0	0.5	64.8	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	65.6
25W, particle 3	0.0	0.0	0.8	97.4	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1	98.6
25W, particle 4	0.0	0.0	0.0	0.0	0.0	0.3	61.8	0.0	0.0	0.0	0.0	0.0	62.1
50W, particle 1,-lower darker area	0.0	0.4	0.2	61.5	36.1	0.6	0.1	0.1	0.0	0.0	0.0	0.2	99.1
50W, particle 1,- lower & paler area	0.0	0.4	0.1	41.5	9.8	45.1	0.0	0.0	0.0	0.0	0.0	0.1	97.1
50W, particle 1,- left brown area	0.1	0.8	0.0	0.5	95.7	0.2	0.0	0.0	0.0	0.0	0.0	0.1	97.3
50W, particle 1,- right body of grain	0.0	0.0	0.0	0.2	1.0	97.2	0.0	0.0	0.0	0.0	0.0	0.3	98.8
50W, particle 2	0.0	0.0	0.4	97.6	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.2	98.5
50W, particle 3	0.0	0.0	0.4	65.7	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	66.2
50W, particle 4	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	78.4	0.0	24.1	0.0	102.6
75W, particle 1	0.0	0.0	0.4	64.9	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	65.4
75W, particle 2	0.1	0.1	0.0	0.4	89.0	7.8	0.0	0.0	0.0	0.0	0.0	0.0	97.4
75W, particle 6	0.0	0.0	0.0	0.0	0.0	0.3	58.2	0.0	0.0	0.0	0.0	0.0	58.6
100W, particle 1	0.0	17.2	0.7	65.8	12.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	95.9
100W, particle 2	0.0	12.9	0.0	84.2	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	97.4
100W, particle 3	0.0	0.0	0.4	71.4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	72.0
100W, particle 4. Sphere	0.0	0.0	0.3	64.8	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	65.4
100W, particle 6	0.0	16.9	0.7	65.1	11.5	0.2	0.0	0.1	0.0	0.0	0.0	0.0	94.5
100W, particle 9. Body of particle	0.0	0.0	0.0	0.0	0.0	0.0	61.9	0.0	0.0	0.0	0.0	0.1	62.1
100W, particle 9. Blue centre	0.0	0.0	0.0	0.0	0.0	0.0	52.1	0.0	0.0	0.0	0.0	0.2	52.3
100W, particle 10	51.5	0.0	0.0	46.1	0.0	0.0	0.0	0.4	0.0	0.0	0.3	0.1	98.5
100W, particle 11	0.0	0.0	0.0	0.0	0.0	99.0	0.0	0.0	0.0	0.0	0.0	0.0	99.0
100W, particle 12	51.6	0.0	0.0	46.6	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	98.6
100W, particle 13	0.0	0.0	0.0	0.0	0.0	98.6	0.0	0.0	0.0	0.0	0.0	0.0	98.7

Appendix c

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Mg Ilmenites

Oxide weight %										
MgO	Al2O3	SiO2	TiO2	Cr2O3	MnO	FeO tot.	NiO	ZnO	FeO	Fe2O3
4.59	0.00	0.00	50.93	0.03	1.90	40.43	0.00	0.15	35.96	4.96
1.17	0.51	0.09	60.19	0.11	0.62	30.08	0.00	0.07	30.08	0.00
6.97	0.00	0.00	54.28	0.01	0.93	36.74	0.00	0.01	35.87	0.97
3.68	0.10	0.01	52.97	0.21	0.41	38.75	0.08	0.00	38.75	0.00
1.57	0.10	0.04	54.76	0.09	0.51	37.75	0.02	0.00	37.75	0.00
1.56	0.00	0.00	50.05	0.01	0.58	44.16	0.03	0.00	42.01	2.38
1.78	0.81	0.08	51.53	0.22	0.68	33.49	0.09	0.07	33.49	0.00
1.88	0.00	0.00	49.19	0.12	0.45	45.64	0.06	0.00	40.76	5.42
3.06	0.00	0.01	49.03	0.24	0.51	43.94	0.07	0.06	38.40	6.16
2.79	0.00	0.03	50.85	0.13	0.59	43.63	0.05	0.10	40.46	3.52
2.36	0.00	0.00	49.09	0.13	0.45	46.47	0.09	0.00	39.79	7.42
1.36	0.00	0.01	50.03	0.12	0.62	45.31	0.01	0.07	42.27	3.37
2.79	0.00	0.03	50.85	0.13	0.59	43.63	0.05	0.10	40.46	3.52
2.36	0.00	0.00	49.09	0.13	0.45	46.17	0.09	0.00	39.79	7.09
2.87	0.00	0.05	50.70	0.25	0.57	43.77	0.05	0.01	40.31	3.85
2.07	0.00	0.00	48.99	0.10	0.56	45.54	0.08	0.07	40.04	6.11
3.21	0.15	0.01	42.27	0.00	1.41	49.80	0.00	0.31	30.93	20.97
0.63	0.00	0.00	51.03	0.05	0.62	45.92	0.03	0.00	44.52	1.56
0.62	0.21	0.16	63.02	0.07	0.24	26.91	0.00	0.00	26.91	0.00
4.59	0.00	0.00	50.93	0.03	1.90	40.43	0.00	0.15	35.97	4.96
9.71	0.15	0.01	52.22	0.23	0.77	35.83	0.00	0.10	29.20	7.36
1.57	0.00	0.00	52.04	0.09	0.41	40.55	0.00	0.00	40.55	0.00
1.84	1.31	4.84	46.77	0.03	1.91	41.31	0.03	0.11	41.31	0.00
1.37	0.00	0.01	51.91	0.13	0.15	44.43	0.00	0.00	44.43	0.00

Spinels

Oxide weight %										
MgO	Al2O3	SiO2	TiO2	Cr2O3	MnO	FeO tot.	NiO	ZnO	FeO	Fe2O3
19.24	51.04	0.00	0.23	13.77	0.10	12.66	0.25	0.06	9.78	3.20
13.66	34.51	0.00	0.22	30.39	0.21	18.81	0.17	0.35	15.70	3.46
17.92	53.74	0.04	0.05	10.99	0.22	14.88	0.32	0.24	12.10	3.09
13.23	34.51	0.09	0.93	27.26	0.29	20.63	0.21	0.22	16.84	4.21
21.24	56.24	0.08	0.07	10.70	0.22	10.44	0.33	0.05	7.95	2.77
9.89	13.57	0.00	0.17	50.88	0.23	22.90	0.13	0.07	18.23	5.18
15.64	31.75	0.14	0.78	29.97	0.14	19.37	0.24	0.00	13.19	6.86
11.50	25.23	0.01	0.11	40.27	0.23	20.07	0.08	0.12	17.48	2.88
4.96	5.36	0.00	0.04	55.38	0.33	28.60	0.09	0.01	23.38	5.80
16.73	36.69	0.12	0.82	25.81	0.18	17.75	0.23	0.08	12.34	6.02
21.06	56.42	0.02	0.06	10.31	0.18	10.67	0.34	0.05	8.12	2.84
19.92	53.42	0.02	0.04	13.36	0.09	11.11	0.38	0.12	9.14	2.19
19.98	54.11	0.04	0.12	11.26	0.20	12.67	0.45	0.06	9.31	3.73
20.16	53.61	0.05	0.09	9.99	0.21	13.86	0.32	0.00	8.93	5.47
20.95	56.53	0.07	0.16	10.29	0.08	10.19	0.30	0.12	8.38	2.01
20.34	54.39	0.03	0.06	12.71	0.13	10.96	0.41	0.24	8.78	2.42
16.64	41.01	0.11	0.80	21.21	0.21	18.73	0.21	0.17	13.26	6.07
9.55	5.37	0.02	0.04	61.84	0.35	21.23	0.11	0.06	17.49	4.15
10.30	4.51	0.00	0.03	64.29	0.43	18.05	0.07	0.11	15.80	2.49
6.87	5.90	0.00	0.05	61.53	0.49	24.86	0.00	0.13	21.95	3.24
7.24	4.14	0.00	0.02	63.35	0.33	23.14	0.02	0.25	20.67	2.75
8.64	7.45	0.00	0.39	50.83	0.65	30.52	0.04	0.05	19.42	12.34
11.71	7.93	0.04	0.41	52.09	0.56	25.50	0.08	0.08	14.82	11.86
8.57	5.12	0.02	0.01	62.78	0.44	21.47	0.00	0.07	18.88	2.87
18.13	38.60	0.14	0.51	25.89	0.36	15.71	0.14	0.06	10.53	5.76
9.94	10.65	0.00	0.07	54.79	0.48	21.64	0.00	0.02	17.51	4.82
20.09	54.31	0.00	0.05	12.56	0.08	11.56	0.34	0.00	9.35	2.46
19.69	53.26	0.00	0.07	13.64	0.14	12.38	0.43	0.06	9.84	2.83
7.90	6.38	0.03	0.06	63.51	0.30	18.81	0.06	0.12	19.72	-1.02
18.25	51.67	0.05	0.05	13.38	0.07	13.92	0.36	0.10	11.35	2.86
20.23	55.83	0.03	0.10	10.52	0.12	10.19	0.35	0.15	8.77	1.58
20.04	53.60	0.01	0.03	11.90	0.10	11.06	0.32	0.06	8.65	2.68
20.62	54.56	0.08	0.18	10.22	0.10	10.98	0.36	0.03	8.14	3.15
15.71	39.70	0.08	0.70	22.11	0.13	18.02	0.23	0.05	13.74	4.76
20.66	55.26	0.07	0.15	10.40	0.12	10.66	0.35	0.12	8.24	2.68
9.57	3.17	0.05	0.00	67.52	0.34	17.36	0.03	0.12	16.95	0.46
9.21	18.86	0.01	0.19	43.46	0.38	26.26	0.13	0.14	20.22	6.72
20.09	54.10	0.00	0.04	12.17	0.08	10.84	0.34	0.20	8.76	2.32
12.04	31.79	0.02	0.17	32.05	0.32	22.14	0.09	0.17	18.04	4.56

97-3999
(Response to letter 26/5/97)

379031

14 Station Lane
Exton
Tas
7303
29th May 1997

Dear Ralph,

I have your comments on the recent report on exploration activity at EL 11/96.

Tabulated geophysical data

I enclose tables of data. I do not place much confidence in the magnetics data, for reasons I gave in the report, but in spite of this it does seem to indicate something on line 5. The line 4 results also include some SP measurements. I do not trust these measurements. This was the first attempt, and it rained, so that I did not do the measurements both ways to check them.

Difference between tabulated and graphed Cr values

Thank you for bringing up that difference in the plotted and tabulated chromium values. The tabulated values are the correct ones. This also applies to the Ni, Cu and As values. These have now been corrected and I include a corrected graph for line 5. It looks more interesting now than it did before.

What happened was that, in order to plot the magnetics & radiation data on the same graph, I got the computer to calculate proportional geochemical values between the sample points, and applied the calculations to the wrong cell block in the spreadsheet.

The possibility of Cr contamination

I am not sure if the grinding equipment uses chromium steel or not (I must analyse some of it,- the sample does get very contaminated with it during grinding). However, whatever the steel is, it is very magnetic, and I remove it with one of my rare-earth rotating field separators immediately after grinding. This may also remove other desired ferrimagnetic minerals and native iron, but I thought I could live with that. The rotating field separator is very good for removing any ferromagnetics from finely-ground powders, because it spins the magnetic particles at about 200 Hz and therefore prevents electrostatic or magnetic adhesion of particles. It also more effectively "digs" the particles out from under any overlying non-magnetics (that's a bit of an advertising plug for the new separators, in case you want one).

Some time ago I had some samples analysed with and without magnetic separation, but saw little difference. The Fe values may have been a little different, but the Fe level is normally high and I could not be sure. In all the samples I did ***without*** magnetic separation the Cr levels averaged about 15 ppm, with the highest being 65 ppm, *near* 50W on line 2 (50W on line 2 gave 43.3 ppm in later sampling where magnetic separation *was* used).

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Contouring of geochemical values

I want to do this, but thought that, at the moment there is not enough data to make it valid. In the future I plan to replace the line graphs with surface contours.

Radiation values

The lack of calibration here was an oversight. The values are cpm.

Corrundum etc.

Corrundum has been observed, but so far I've not paid it any attention. TiO_2 is also present, probably as anatase (I think) because it often fools me when I'm trying to pick out ilmenites and chromites for analysis.

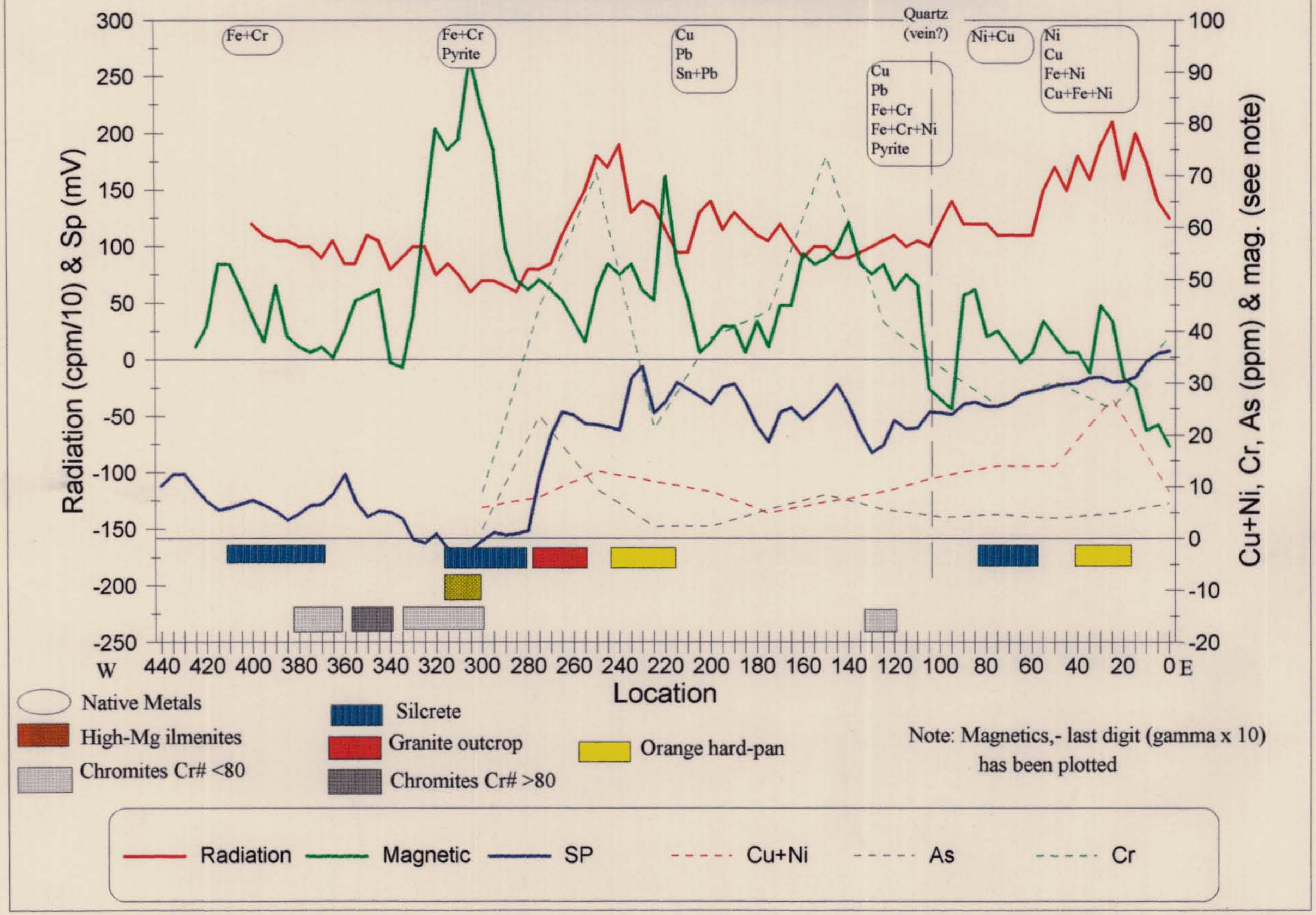
So far I've not analysed any zircons, but I would like to.

The first draft of the thesis is almost finished writing now, so maybe I can get back to that paper shortly. I haven't done anything on the lease for the past three months either.

Yours,

Neil Allen.

Figure 10. EL 11/96. Trends at Line 5.



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Geophysical Mearurements on Line 1

E grid	N grid	Line position 40S line	Radiation (cpm)	Magnetics
581047	5453448	-75		
581052	5453447	-70		
581057	5453446	-65		
581062	5453445	-60		
581067	5453443	-55		
581071	5453442	-50		
581076	5453441	-45		
581081	5453440	-40		
581086	5453438	-35		
581091	5453437	-30		
581096	5453436	-25	1000	
581101	5453435	-20	1000	
581105	5453434	-15	900	
581110	5453432	-10	700	
581115	5453431	-5	900	61512
581120	5453430	0	900	61513
581125	5453429	5	800	61514
581130	5453428	10	800	61514
581135	5453426	15	800	61515
581139	5453425	20	700	61516
581144	5453424	25	700	61516
581149	5453423	30	1100	61517
581154	5453422	35	1000	61516
581159	5453420	40	900	61516
581164	5453419	45	1000	61517
581169	5453418	50	1000	61517
581173	5453417	55	1100	61517
581178	5453415	60	900	61517
581183	5453414	65	950	61517
581188	5453413	70	1150	61517
581193	5453412	75	900	61516
581198	5453411	80	900	61517
581202	5453409	85	900	61516
581207	5453408	90	1000	61516
581212	5453407	95	900	61516
581217	5453406	100	900	61516
581222	5453405	105	600	61516
581227	5453403	110	500	61515
581232	5453402	115	500	61515
581236	5453401	120	800	61515
581241	5453400	125	600	61515
581246	5453399	130	550	61514
581251	5453397	135	600	61515
581256	5453396	140	600	61516
581261	5453395	145	500	61515
581266	5453394	150	600	61514
581270	5453393	155	600	61514
581275	5453391	160	600	61514
581280	5453390	165	600	61515
581285	5453389	170	500	61515
581290	5453388	175	500	61515
581295	5453386	180	450	61515
581300	5453385	185	500	61515
581304	5453384	190	500	61515
581309	5453383	195	500	61515
581314	5453382	200	450	61514
581319	5453380	205	400	61515
581324	5453379	210	400	61515
581329	5453378	215	400	61515
581333	5453377	220	400	61516
581338	5453376	225	400	61515
581343	5453374	230	400	61515
581348	5453373	235	400	61515
581353	5453372	240	400	61514
581358	5453371	245	350	61515
581363	5453370	250	350	61516
581367	5453368	255	400	61515
581372	5453367	260	400	61515
581377	5453366	265	400	61514
581382	5453365	270	400	61514
581387	5453363	275	400	61515
581392	5453362	280	400	61515
581397	5453361	285	400	61515
581401	5453360	290	450	61514
581406	5453359	295	450	61514
581411	5453357	300	450	61515
581416	5453356	305	500	61515
581421	5453355	310	600	61514
581426	5453354	315	700	61514
581430	5453353	320	900	61514
581435	5453351	325	900	61515
581440	5453350	330	900	61516
581445	5453349	335	1200	61516
581450	5453348	340	1200	61514
581455	5453347	345	1300	61515
581460	5453345	350	1050	61515
581464	5453344	355	900	61516
581469	5453343	360	850	61516
581474	5453342	365	1000	61516
581479	5453340	370	1150	61516
581484	5453339	375	1150	61516
581489	5453338	380	700	61517
581494	5453337	385	850	61518
581498	5453336	390	750	61518
581503	5453334	395	850	61518
581508	5453333	400	850	61518
581513	5453332	405	900	61518
581518	5453331	410	750	61518
581523	5453330	415	750	61518
581528	5453328	420	600	61517
581532	5453327	425	650	61517
581537	5453326	430	650	61518
581542	5453325	435	600	61518
581547	5453324	440	700	61518
581552	5453322	445	600	61518
581557	5453321	450	600	61518
581561	5453320	455	750	61518
581566	5453319	460	650	61517
581571	5453318	465	400	61518
581576	5453316	470	500	61517
581581	5453315	475	500	61517
581586	5453314	480	600	61517
581591	5453313	485	600	61516
581595	5453311	490	600	61517
581600	5453310	495	600	61516
581605	5453309	500	500	61514
581610	5453308	505	550	61513
581615	5453307	510	550	61512

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Geophysical Measurements on Line 2

E grid	N grid	Line location Line 2	Magnetics (gamma)	Radiation (cpm)
580561	5452967	-250		
580566	5452966	-245		
580571	5452966	-240	61503	1000.00
580576	5452965	-235	61502	950
580581	5452965	-230	61501	900
580586	5452965	-225	61502	1050
580591	5452964	-220	61503	1200
580596	5452964	-215	61503	1550
580601	5452963	-210	61503	2000
580606	5452963	-205	61503	1800
580611	5452962	-200	61503	1350
580616	5452962	-195	61503	1350
580621	5452962	-190	61503	1600
580626	5452961	-185	61503	1300
580631	5452961	-180	61503	1200
580636	5452960	-175	61503	1200
580641	5452960	-170	61503	1250
580646	5452959	-165	61503	1300
580651	5452959	-160	61503	1300
580656	5452959	-155	61503	1700
580661	5452958	-150	61503	1700
580666	5452958	-145	61503	1450
580671	5452957	-140	61503	1500
580676	5452957	-135	61502	1500
580680	5452956	-130	61502	1250
580685	5452956	-125	61502	1100
580690	5452955	-120	61502	1000
580695	5452955	-115	61502	1400
580700	5452955	-110	61502	1250
580705	5452954	-105	61503	1000
580710	5452954	-100	61503	850
580715	5452953	-95	61503	1000
580720	5452953	-90	61503	650
580725	5452952	-85	61503	750
580730	5452952	-80	61503	1000
580735	5452952	-75	61504	1050
580740	5452951	-70	61504	1150
580745	5452951	-65	61505	1300
580750	5452950	-60	61504	1300
580755	5452950	-55	61504	1100
580760	5452949	-50	61503	1400
580765	5452949	-45	61504	1100
580770	5452948	-40	61503	1100
580775	5452948	-35	61504	950
580780	5452948	-30	61504	900
580785	5452947	-25	61504	750
580790	5452947	-20	61504	650
580795	5452946	-15	61504	500
580800	5452946	-10	61504	500
580805	5452945	-5	61504	450
580810	5452945	0	61503	450
580815	5452945	5		
580820	5452944	10		
580825	5452944	15		
580830	5452943	20		
580835	5452943	25		

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Geophysical Measurements on Line 3

E grid	N grid	Line location Line 3	Radiation (cpm)	Magnetics (gamma)
580781	5452476	-25	1100	61486
580786	5452475	-20	1200	61486
580790	5452474	-15	1500	61486
580795	5452472	-10	1400	61485
580800	5452471	-5	1300	61481
580805	5452470	0	1200	61481
580810	5452469	5	1100	61482
580815	5452468	10	1200	61483
580820	5452466	15	1200	61482
580824	5452465	20	1100	61483
580829	5452464	25	1200	61483
580834	5452463	30	1000	61483
580839	5452462	35	950	61484
580844	5452460	40	1000	61483
580849	5452459	45	950	61483
580854	5452458	50	1100	61483
580858	5452457	55	1100	61482
580863	5452455	60	1200	61482
580868	5452454	65	1200	61483
580873	5452453	70	1200	61484
580878	5452452	75	1100	61486
580883	5452451	80	1400	61485
580887	5452449	85	1200	61485
580892	5452448	90	1200	61485
580897	5452447	95	1000	61483
580902	5452446	100	1050	61485
580907	5452445	105	1200	61484
580912	5452443	110	1200	61483
580917	5452442	115	1300	61482
580921	5452441	120	1200	61482
580926	5452440	125	1400	61481
580931	5452439	130	1200	61481
580936	5452437	135	1300	61482
580941	5452436	140	1300	61482
580946	5452435	145	900	61483
580951	5452434	150	1000	61482

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Geophysical Measurements on Line 4

E grid	N grid	Line location Line 4	Radiation (cpm)	Magnetics (gamma)	SP (mV)	E/M dip angle (to East)
580530	5452150	0	1800	61484	0.0	0
580535	5452149	5	1500	61485	-5.3	0
580540	5452148	10	1600	61486	-12.3	0
580545	5452146	15	1800	61487	-23.2	0
580549	5452145	20	1900	61486	-29.9	0
580554	5452144	25	2100	61487	-34.1	1
580559	5452143	30	2100	61485	-23.5	1
580564	5452142	35	1600	61484	-18.9	2
580569	5452140	40	1400	61485	-30.2	2
580574	5452139	45	1500	61485	-29.2	2
580579	5452138	50	1500	61485	-25.1	2
580583	5452137	55	1600	61484	-28.6	2
580588	5452135	60	1600	61485	-36.7	2
580593	5452134	65	1900	61487	-55.6	2
580598	5452133	70	1800	61487	-51.9	0
580603	5452132	75	2000	61487	-31.5	2
580608	5452131	80	1800	61486	-44.6	1
580612	5452129	85	1700	61486	-53.4	2
580617	5452128	90	1800	61487	-52.6	3
580622	5452127	95	2500	61487	-56.1	2
580627	5452126	100	2100	61487	-71.7	3
580632	5452125	105	2400	61488	-89.6	5
580637	5452123	110	2500	61487	-75.1	6
580642	5452122	115	2100	61485	-55.6	3
580646	5452121	120	1900	61486	-73.0	4
580651	5452120	125	1900	61485	-65.1	5

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Geophysical Measurements on Line 5

E grid	N grid	Line location Line 5	Magnetics (gamma)	Radiation (cpm)	SP (mV)
580133	5452496	-440			-111
580138	5452495	-435			-102
580143	5452494	-430			-101
580148	5452493	-425	61494		-115
580152	5452492	-420	61494		-125
580157	5452490	-415	61495		-133
580162	5452489	-410	61495		-131
580167	5452488	-405	61495		-128
580172	5452487	-400	61494	1200	-124
580177	5452486	-395	61494	1100	-128
580182	5452484	-390	61495	1050	-134
580186	5452483	-385	61494	1050	-142
580191	5452482	-380	61494	1000	-136
580196	5452481	-375	61494	1000	-129
580201	5452480	-370	61494	900	-128
580206	5452478	-365	61494	1050	-118
580211	5452477	-360	61494	850	-101
580216	5452476	-355	61495	850	-126
580220	5452475	-350	61495	1100	-139
580225	5452473	-345	61495	1050	-134
580230	5452472	-340	61493	800	-135
580235	5452471	-335	61493	900	-140
580240	5452470	-330	61494	1000	-159
580245	5452469	-325	61496	1000	-162
580250	5452467	-320	61498	750	-154
580254	5452466	-315	61498	850	-168
580259	5452465	-310	61498	750	-174
580264	5452464	-305	61499	600	-168
580269	5452463	-300	61498	700	-160
580274	5452461	-295	61498	700	-153
580279	5452460	-290	61496	650	-155
580283	5452459	-285	61495	600	-154
580288	5452458	-280	61495	800	-151
580293	5452457	-275	61495	800	-103
580298	5452455	-270	61495	850	-66
580303	5452454	-265	61495	1100	-46
580308	5452453	-260	61494	1300	-49
580313	5452452	-255	61494	1500	-56
580317	5452450	-250	61495	1800	-57
580322	5452449	-245	61495	1700	-60
580327	5452448	-240	61495	1900	-62
580332	5452447	-235	61495	1300	-16
580337	5452446	-230	61495	1400	-6
580342	5452444	-225	61495	1350	-47
580347	5452443	-220	61497	1150	-37
580351	5452442	-215	61495	950	-20
580356	5452441	-210	61495	950	-26
580361	5452440	-205	61494	1300	-32
580366	5452438	-200	61494	1400	-39
580371	5452437	-195	61494	1150	-24
580376	5452436	-190	61494	1300	-21
580380	5452435	-185	61494	1200	-37
580385	5452434	-180	61494	1100	-59
580390	5452432	-175	61494	1050	-72
580395	5452431	-170	61495	1200	-46
580400	5452430	-165	61495	1050	-42
580405	5452429	-160	61496	900	-53
580410	5452427	-155	61495	1000	-44
580414	5452426	-150	61495	1000	-34
580419	5452425	-145	61496	900	-22
580424	5452424	-140	61496	900	-40
580429	5452423	-135	61495	950	-64
580434	5452421	-130	61495	1000	-82
580439	5452420	-125	61495	1050	-76
580444	5452419	-120	61495	1100	-54
580448	5452418	-115	61495	1000	-61
580453	5452417	-110	61495	1050	-60
580458	5452415	-105	61493	1000	-46
580463	5452414	-100	61493	1200	-47
580471	5452412	-92	61493	1400	-48
580473	5452412	-90	61495	1200	-39
580478	5452411	-85	61495	1200	-37
580482	5452409	-80	61494	1200	-41
580487	5452408	-75	61494	1100	-41
580492	5452407	-70	61494	1100	-38
580497	5452406	-65	61493	1100	-31
580502	5452405	-60	61494	1100	-28
580507	5452403	-55	61494	1500	-26
580511	5452402	-50	61494	1700	-23
580516	5452401	-45	61494	1500	-21
580521	5452400	-40	61494	1800	-20
580526	5452398	-35	61493	1600	-16
580531	5452397	-30	61495	1900	-15
580536	5452396	-25	61494	2100	-20
580541	5452395	-20	61493	1600	-19
580545	5452394	-15	61493	2000	-15
580550	5452392	-10	61492	1750	-1
580555	5452391	-5	61492	1400	6
580560	5452390	0	61492	1250	8

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R. Bottrill 8359

23/05/97

Neil Allen
RSD772
EXTON, 7303, Australia.

Dear Neil,

Re EL11/96 Report

We have read your recent report with great interest, and have a few comments and requests.

1. With the geophysical data, the Dept would like tabulated data if possible (with grid refs, etc.).
2. On Line 5 the tabulated data and line plot for Cr do not correspond. Can you please check and amend.
3. In future the charts should all be at the same scale for easy comparisons of different lines. On Line 5 the Mag. intensity is off scale (probably an important spot to check). The graph should be adjusted to fit, or annotated with the peak height (We can do this if the above data is sent).
4. Cr is generally very anomalous (for granites). Did you check that the samples were not ground in Cr-steel? Plotting and contouring (extrapolation) of the data on the plans would be useful (eg at 20, 40 and 60 ppm Cr). The lines also need to be extended into background areas to define the anomalies.
5. It may not be a good idea to combine Cu and Ni on the graphs, as it is quite likely that they may have separate sources.
6. No units are shown on the graphs for radiation (cpm?).

Most of the above are recommendations for future reporting, but items 1 and 2 should be addressed for this report please.

The Cr contents are compatible with ultrabasic or basaltic source rocks, but the Mg-ilmenites are more typical of lamprophyric rocks. Have you looked for corundum? It may also be worth studing zircon (basaltic and granitic-derived zircons differ).

Hope the thesis is going well.