

Ground check of airborne geophysical anomalies and regional rust zones in Inglefield Land, North- West Greenland

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Abstract

Field work was carried out in 1995 over the Precambrian crystalline basement in Inglefield Land as a follow-up on an airborne geophysical survey the previous year. This report covers the geological field checks of selected geophysical anomalies and rust zones.

The strongest magnetic anomaly in Inglefield Land, located near Minturn Elv (Map 1), is only betrayed by an abundance of magnetite float. A thin layer of magnetite was observed in nearby outcrop of a mafic-ultramafic complex, and modelling of the geophysical data suggests that such layers may reach thicknesses of 200-300 m.

Among numerous electromagnetic (EM) anomalies, 24 high priority targets were geologically checked during helicopter stops. The anomalies are often covered by surficial deposits. Outcropping mineralisation consisted of disseminated to semi-massive iron sulphides hosted in a silicious, often graphitic, gneiss.

Rust zones several kilometres long are common in central and north-east Inglefield Land. They are reflected as regional EM anomalies and consist of siliceous gneiss with disseminated to massive pyrrhotite, minor pyrite and traces of chalcopyrite. The highest analytical values from the sampled regional rust zones are 294 ppb Au, 4216 ppm Cu and 2935 ppm Zn. Other minor sulphide mineralisation returned up to 1188 ppb Au and 1.3% Cu.

It is concluded that the best mineral potential in Inglefield Land is for copper and gold. In addition, the area has a significant potential for magmatic magnetite occurrences.



Fig. 1. Major rust zone in north-east Inglefield Land (no. 4 on Map 3). Top: aerial view towards the north. Bottom: ground view towards the north of a 500 m wide section.

Introduction

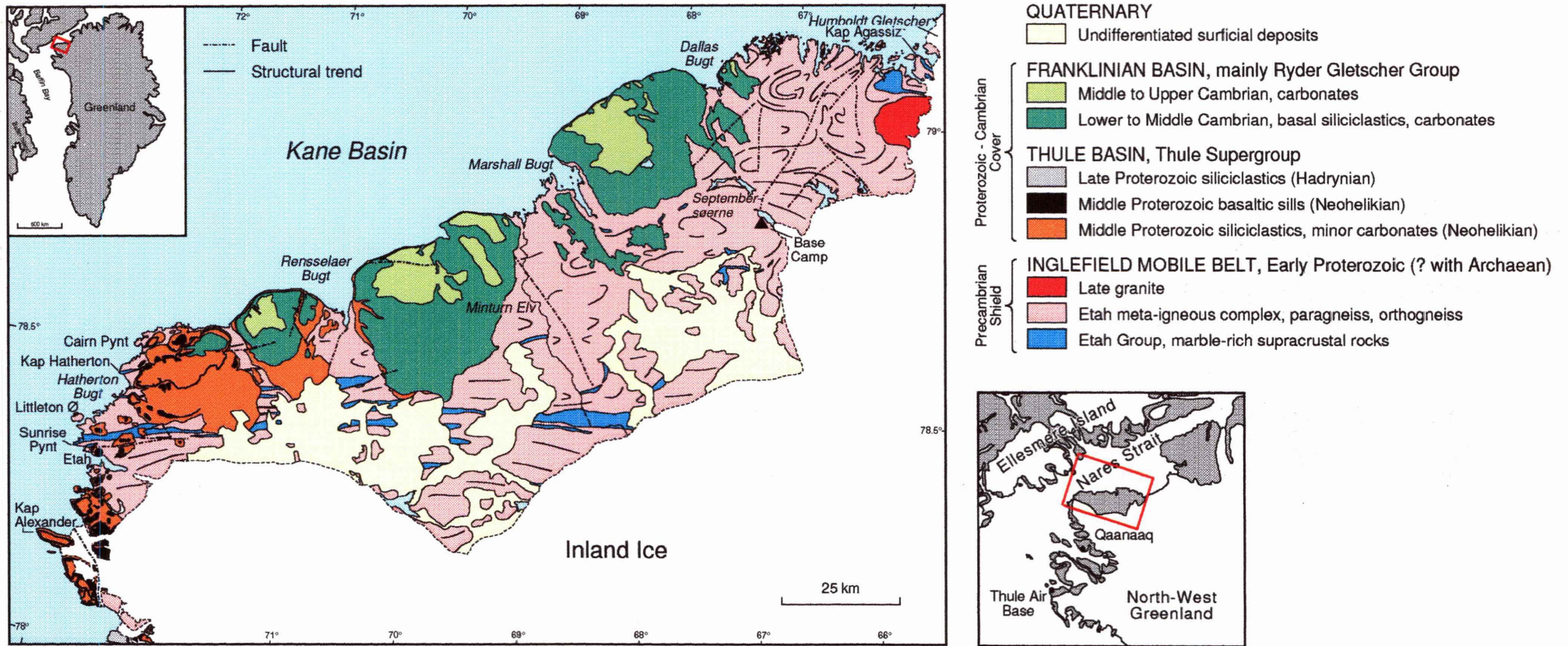
Field work in Inglefield Land, North-West Greenland (Map 1) in 1995 was a geological and geochemical programme following on an airborne magnetic and electromagnetic survey - AEM Greenland 1994 (Stemp & Thorning, 1995) carried out the previous summer. This survey not only delineated a large number of magnetic and electromagnetic anomalies in the Precambrian basement indicating a potential for massive sulphide mineralisation, but also revealed numerous circular structures of unknown origin in central Inglefield Land (Bengaard, 1995; Stemp & Thorning, 1995). Both the 1994 and 1995 programmes were funded by the Minerals Office of the Government of Greenland and managed by the Geological Survey of Denmark and Greenland (GEUS).

The main objectives of the 1995 programme were to explain the geophysical anomalies and the circular structures. The programme also comprised regional geochemical reconnaissance exploration and geological mapping. The field work included visits to selected anomalies and relating the sites to the regional geology, as well as ore geology studies and geochemical mapping. The work was carried out by helicopter reconnaissance supplemented by traverses from fly camps. It was accomplished during five weeks in July-August by a team of five GEUS geologists, three assistants and a Grønlandsfly helicopter crew.

General accounts of the 1995 programme have been presented by Thomassen (1995) and Thomassen & Dawes (1996). Specific results about surficial circular structures, bedrock geology, drainage geochemistry and a magnetite mineralisation have been published by Appel (1996), Dawes (1996), Steenfelt & Dam (1996) and Appel *et al.* (1995), respectively. Further, a collection of thematic maps over Inglefield Land has been compiled by Schjøth *et al.* (1996).

This report covers the geological checks of selected geophysical anomalies and rust zones, and briefly describes the encountered mineralisation. It contains a list of analytical results for elements of economic interest, as well as a locality map for the analysed samples.

A report on the general geological results obtained is planned for a later date.



Map 1. Geological map of Inglefield Land. Modified from Thomassen and Dawes (1996).

Outline of the geology

The following geological summary is mainly based on Thomassen & Dawes (1996) and Dawes (1996), where to the reader is referred for a more comprehensive account.

Inglefield Land is an uninhabited 7000 km² area situated some 100 km north of Qaanaaq (Danish Thule) and 200 km north of Thule Air Base (Pituffik). It is bordered by the Inland Ice to the south and east, and by Kane Basin and Nares Strait to the north and west. Geomorphologically, the area forms a gently northwards dipping plateau of rolling relief dissected by streams running from the Inland Ice to the sea. There are no permanent ice caps, but extensive areas are covered by glacial drift that is especially profuse in southern parts.

The main geological elements of the region: a Precambrian crystalline basement of varied lithology overlain by an undeformed Proterozoic and Lower Palaeozoic cover restricted to the outer coast was first recognised by Koch (1933) (Map 1).

Most of the early geological work was concentrated on coastal districts and on the sedimentary cover. Information on the Precambrian shield remained very sporadic, as summarized by Dawes (1988).

Three main complexes make up the shield: the Etah Group supracrustal rocks, the Etah meta-igneous rocks and a variable gneiss group. All three complexes show wide lithological diversity and they have been metamorphosed under high amphibolite to granulite facies conditions.

The 1995 field work demonstrated that the three complexes, all well known from south-western Inglefield Land and part of a regionally conspicuous linear belt, can be recognised farther eastwards across Inglefield Land to Humboldt Gletscher.

The Etah Group is composed of marble, calc-silicate rocks, pelitic schists and gneisses and psammitic rocks including siliceous garnet gneisses. The Group is of Early Proterozoic (Late Aphebian) and/or Archaean age. Metasediments in conspicuous linear tracts dominate the geology in south-western Inglefield Land. In central Inglefield Land, marble and calc-silicate rocks form small, scattered outcrops; their broken-up and isolated form is due to disintegration and assimilation by magmatic rocks. In north-eastern Inglefield Land, highly-deformed pale marble and calc-silicate rocks occur as part of coherent supracrustal belts, as well as isolated tracts and inclusions within igneous rocks.

The Etah meta-igneous complex is a multiphase plutonic suite containing a range from ultramafic and basic rocks to syenites, and granites. The complex has yielded Early Proterozoic ages from 1960 Ma to 1850 Ma (Dawes *et al.*, 1988). During the 1995 field work, it

was discovered that large areas of meta-igneous rocks and orthogneisses in central Inglefield Land, east and west of Minturn Elv, contain important basic, intermediate and syenitic components.

The variable gneiss group contains both paragneisses and orthogneisses, derived from the above-mentioned complexes, as well as other migmatitic rocks. Quartzo-feldspathic, garnet (sillimanite) gneisses, outcropping over large areas of central and eastern Inglefield Land are part of this group. Some of the gneisses are of early Proterozoic age, but it is unknown whether older material is represented.

A large porphyritic granite massif occurs adjacent to the Inland Ice, south of Kap Agassiz (see Map 1).

Outline of the airborne geophysical survey

The airborne geophysical survey was greatly facilitated by the flat topography of Inglefield Land. It was a low altitude survey (75 m) with high sampling rate resulting in very detailed total magnetic field data as well as detailed EM information. Regular traverses were oriented north-south and spaced at 400 m intervals with a set of orthogonal tie lines at 4000 m intervals. For full details of the geophysical survey see Stemp & Thorning (1995).

The magnetic data reveals a fine magnetic fabric reflecting varying lithology and multiple linear patterns in this poorly exposed country. No signs of reverse magnetism were observed. Of significance is a strong magnetic anomaly, which can be traced for many tens of kilometres from central Inglefield Land at Minturn Elv to more or less Etah.

The EM survey was highly successful in denoting well over 4600 individual anomalies. It should be noted that these are essentially bedrock anomalies since overburden is thin and no salt water anomalies have been included. Most of the EM anomalies are formational and reflect the major rust zones seen in the area. In addition to the formational anomalies, many local EM conductors were identified, and several of these were geologically ground checked during 1995.

Follow-up on magnetic anomalies

Two magnetic anomalies were ground checked.

The most prominent magnetic anomaly in Inglefield Land is a narrow, very strong anomaly traced from the Minturn Elv area in the east across virtually unexposed ground to Etah in the west (Map 1). The magnetic anomaly is caused by high magnetite contents in the host rocks belonging to the Etah meta-igneous complex, and sometimes revealed by magnetite

float. At the most anomalous locality west of Minturn Elv (anomaly 35, Appendix 1.), abundant magnetite float occurs as angular to weakly rounded up to 10 cm sized cobbles in an area completely covered by overburden. This locality was initially noted by Coppard (1996).

The second largest magnetic anomaly is an isolated anomaly located south-east of Marshall Bugt. The ground check revealed that it originates from a gabbro, which is several hundred metres long and well exposed on the south side of a major river valley. The gabbro is cut by several generations of pegmatites, quartz veins and metre-wide granite sheets. Late non-deformed sheeted quartz veins up to 0.5 m wide and several tens of metres long cut the gabbro.

The gabbro contains abundant magnetite as small disseminated grains. Chalcopyrite and malachite occur on joints, especially related to minor pegmatitic pockets in the gabbro, and malachite-stained samples yielded up to 1644 ppm Cu (samples 406929, 32: the six digit sample numbers refer to the files of the Geological Survey of Denmark and Greenland).

Follow-up on electromagnetic anomalies

The EM survey was designed primarily to detect massive sulphide mineralisation. In their report on the results of the airborne survey, Stemp & Thorning (1995) distinguish between formational EM conductors (extensive bedrock conductors which are conformable to the geology), and localized EM conductors.

The formational EM conductors mainly reflect a unit of grey, often siliceous, paragneisses with variable contents of garnet, biotite, graphite and pyrrhotite which cover large parts of central and north-eastern Inglefield Land. This unit hosts most of the widespread rust zones which occur in the basement rocks, as reported on in the following section.

The localized EM conductors are considered to be the obvious targets to check for massive sulphide mineralisation; consequently Stemp & Thorning (1995) listed 75 specific localities recommended as mineral exploration targets. A short list of the 24 most promising targets was prepared by R. W. Stemp for the field party. In the field the localities were checked mainly by helicopter stops of ½-2 hours duration. The sites were determined by GPS-navigation, an extremely important tool in the flat and monotonous landscape of Inglefield Land. Comments on the individual localities are given in Appendix 1.

Approximately half the anomalous sites are completely covered by regolith or moraine from which yellow or red weathered blocks often could be sampled. Where the anomalies exhibit *in situ* bedrock, outcropping iron-sulphide mineralisation was often encountered, but appreciable amounts of base metal sulphides were not detected. The outcropping mineralisation consists mainly of disseminated pyrrhotite hosted in siliceous gneiss, but at two localities (anomalies 22 and 72) semi-massive pyrrhotite was also found. For a more

thorough evaluation of the anomalies, ground geophysics, soil geochemistry and diamond drilling would be needed.

Mineralisation

Reconnaissance-type mineral exploration was carried out in Inglefield Land in the period 1969-1973 by Greenarctic Consortium and International Mineselskab A/S and again two decades later in 1991 and 1995 by Rio Tinto Zinc (RTZ) Mining and Exploration Limited (Sharp, 1991; Coppard, 1996), and also in 1995 by Nunaoil A/S (Gowen & Kelly, 1996). This work concentrated on the investigation of conspicuous gossans in the crystalline basement rocks caused by iron sulphides. Mineralised surface samples showed elevated trace amounts of gold and base metals: maximum reported values are 207 ppb Au, 3767 ppm Cu and 2565 ppm Zn (Sharp, 1991), 391 ppb Au, 5000 ppm Cu and 410 ppm Zn (Coppard, 1996) and 440 ppb Au, 4634 ppm Cu and 5437 ppm Zn (Gowen & Kelly, 1996).

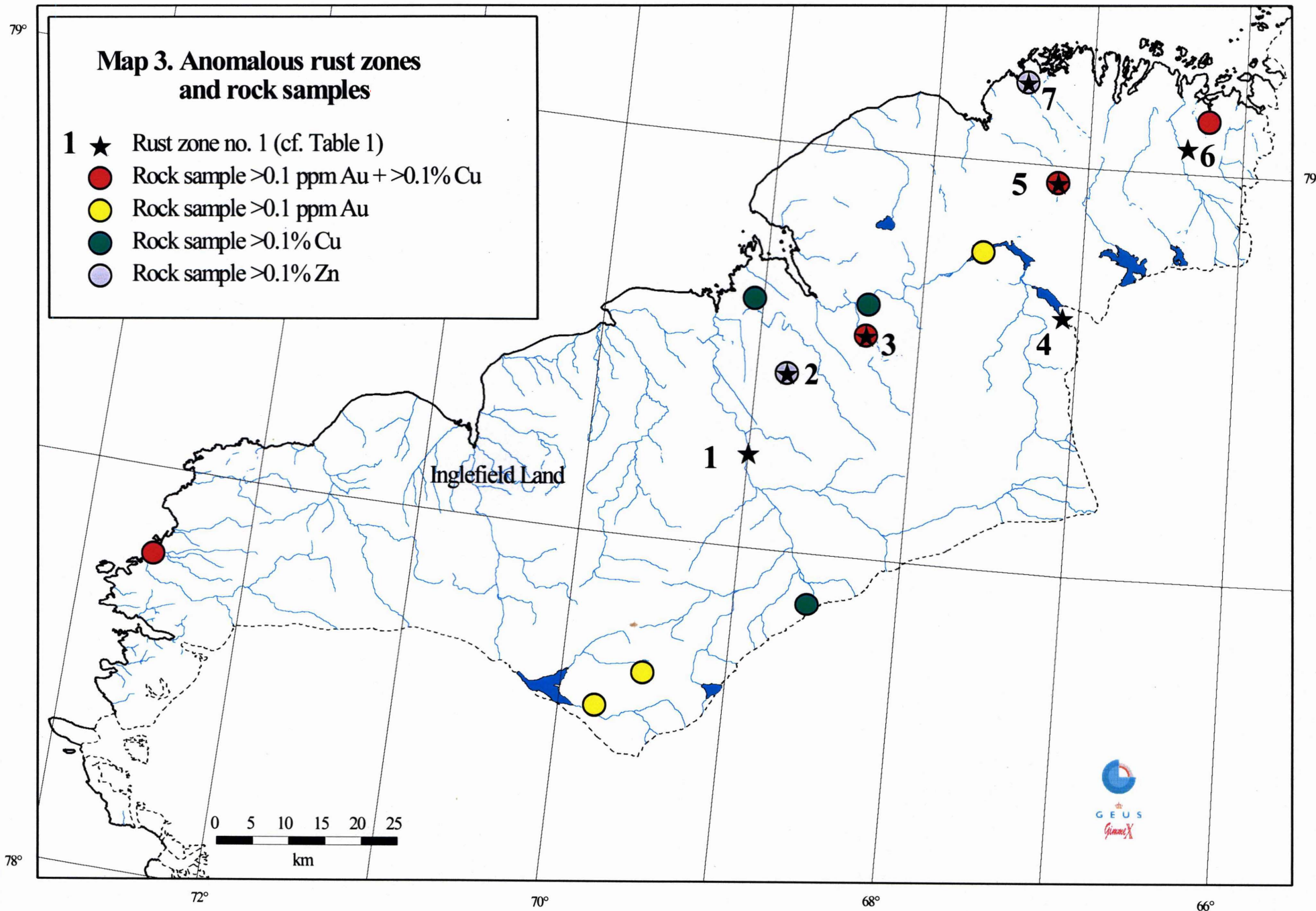
The mineralisation sites investigated by the Survey in 1995 fall conveniently into two main groups: (1) sulphide mineralisation, characterised by pyrrhotite with minor pyrite and traces of chalcopyrite; and (2) oxide mineralisation dominated by magnetite. The two groups may be intermixed.

Short sample descriptions are given in Table 2 and analytical results are presented in Table 3. A sample locality map is enclosed as Map 2 and anomalous samples and rust zones are indicated on Map 3.

Rust zones

Sulphide mineralisation is widespread in central and north-eastern Inglefield Land as evidenced by impressive rust zones several kilometres long with widths of more than a hundred metres (Fig. 1). These rust zones are formed by oxidation of biotite and sulphides, typically hosted by siliceous, often graphitic grey gneisses, and clearly registered on the geophysical maps as electromagnetic anomalies. They vary in colour from deep red to bright yellow. Locally a well-developed gossan is seen.

The host rock to the major rust zones is mostly a garnet-rich siliceous gneiss or psammite with varying amounts of biotite, feldspar, sillimanite, graphite, sulphides and magnetite. The latter is mostly in small amounts as scattered grains. Often the medium-grained garnet



psammite with magnetite has been discordantly replaced by patches of slightly coarser grained, sometimes bluish quartz and pyrrhotite.

The sulphides are disseminated grains of pyrrhotite and pyrite with traces of chalcopyrite, as well as semi-massive to massive lenses of metre size. In the major rust zone north-east of Dallas Bugt (no. 7, Map 3), a peculiar textural feature with pebble-shaped quartz occurs in a matrix of pyrrhotite and pyrite. The 'pebbles' range in size from 5 mm to sand-sized particles. These beds with 'pebbles' in sulphides can be traced for several hundred metres along strike, and are up to about 10 m thick. In other major rust zones similar textures with generally smaller pebbles have been observed.

Several major rust zones were investigated in some detail during the field work and 23 zones were sampled. Grab, chip and composite samples were taken. Seven of the investigated rust zones yielded slightly anomalous samples with maximum values of 294 ppb Au, 4216 ppm Cu and 2935 ppm Zn (Table 1, Map 3).

Table 1. Anomalous samples from major rust zones, cf. Map 3. Samples with more than 70 ppb Au or 500 ppm Cu or 500 ppm Zn are regarded as anomalous.

Rust zone	Au ppb	Cu ppm	Zn ppm	Sample type	GGU no.
1	23	903	67	Grab	406950
1	11	638	34	Grab	406951
2	36	285	2935	Grab	425358
3	71	858	32	Composite	406955
3	274	1026	52	Grab	406956
3	74	2609	150	Chip/2m	406958
4	83	106	72	Chip/3m	406943
4	14	580	51	Grab	406945
5	245	2066	333	Grab	425371
5	294	4216	345	Grab	425372
6	14	639	91	Grab	425330
6	8	980	120	Grab	425332
7	4	521	94	Grab	406963
7	<2	561	50	Grab	406969
7	<2	543	358	Grab	406971
7	<2	496	1395	Grab	406974

The origin of the mineralisation is not obvious. The graphite of the host gneisses indicates a marine origin, perhaps as cherty, sulphidic iron formations.

Another tentative explanation of the major rust zones is that they started as sandy sediments with small amounts of magnetite and local black sand accumulations of magnetite. At a later stage brines caused sulphuridation of the magnetite, resulting in the formation of iron sulphides. It is not known when this sulphuridation have taken place, but it is most likely that it predates the major tectonic events in the area.

Other sulphide mineralisation

Minor sulphide mineralisation, revealed by malachite staining, occurs in gneisses at gneiss/marble contacts. At the best investigated locality, some 9 km south-west of Kap Agassiz, such mineralisation was followed over 300 m along strike. Two chip samples collected 100 m apart average 36 ppb Au and 2382 ppm Cu over 0.8 m, whereas four grab samples contain up to 1188 ppb Au and 1.3% Cu (425317-22). The ore minerals are chalcopyrite, bornite and magnetite along with minor pyrrhotite and pyrite.

A poorly outcropping, half a metre wide lens or discontinuous band of semi-massive sulphides was encountered at the south-west coast of Inglefield Land. A grab sample consisting of pyrrhotite with minor chalcopyrite and a single 15 microns sized grain of gold returned 1134 ppb Au and 1014 ppm Cu (425304). The lateral extent of the occurrence is not known.

Furthermore, scattered, disseminated sulphides have been observed in mafic-ultramafic rocks and in a few quartz veins of decimetre thickness. The quartz veins yielded up to 27 ppb Au and 1051 ppm Cu, whereas the ultramafic rocks returned up to 230 ppb Au, 9 ppb Pt and 898 ppm Ni (425312, 425718).

South of Marshall Bugt, a rust zone consisting of massive to semi-massive pyrrhotite is situated in a structural 'high' on the Precambrian basement. This rust zone is discordantly overlain by about one metre of unexposed rocks overlain by 1.5 m sandstone followed by dark, slightly pyrrhotiferous schists. Above come conglomerates and sandstones. These sediments are probably of basal Cambrian age. The lower sandstone contains small amounts of chalcopyrite and exhibits frequent malachite staining. Two analysed samples returned up to 5569 ppm Cu and 160 ppm As (406927-28). This mineralisation was discovered by RTZ (Coppard, 1996).

Oxide mineralisation

The abundant magnetite float located west of Minturn Elv at anomaly 35, consists of pure magnetite without any silicates. At places a high proportion of hematite is seen (425378).

The hematite is clearly secondary after magnetite. Tiny exsolutions of spinel are seen in the magnetite. Samples of magnetite float were analysed for major and selected trace elements, the most interesting results being up to 0.14 % V and 0.1 % Ni (Appel *et al.*, 1995).

Outcropping magnetite mineralisation was encountered east of Minturn Elv, where a band of massive magnetite up to 20 cm thick, with minor spinel and olivine (425340) occurs in a sequence of mafic and ultramafic rocks which is cut by syenite. Some of the ultramafic rocks consist of a peculiar mineral assemblage of forsterite, phlogopite, spinel, tourmaline and warwickite (425359-60). The two latter boron-rich minerals constitute up to 10% of the rock. The forsterite has been altered to an assemblage of serpentine and magnetite. The warwickite has been altered to an assemblage of unknown boron-rich minerals and magnetite (Appel, 1997). The ultramafic rock contains less than 5 ppb Pt.

Modelling of the airborne geophysical data suggests that magnetic layers or lenses may reach thicknesses of 200-300 m in areas completely covered by overburden (Appel *et al.*, 1995).

Concluding remarks

Most of the abundant and distinct electromagnetic anomalies detected by the airborne geophysical survey stem from a graphitic and sulphidic gneiss unit, that shows slightly elevated amounts of gold and base metals. Although no economic grades were encountered, the best mineral potential seems to be for copper and gold. It should, however, be born in mind that, because of the deep weathering and frequent extensive moraine cover of the anomalous sites, a proper check of their economic potential should involve ground geophysics and drilling. Magmatic magnetite occurrences with a significant tonnage potential have been demonstrated around Minturn Elv.

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Appendix 1

Airborne electromagnetic anomalies checked in 1995

The following list of 24 high priority mineral exploration targets was compiled by R. W. Stemp from the 75 "Suggested Ground Follow-up Targets" presented in Stemp & Thorning (1995), and recommended for follow-up checks by the field parties in 1995. The original anomaly descriptions by Stemp & Thorning (1995) are repeated in this appendix, together with brief comments on the field checks (*italics*).

Individual anomalies are listed by serial number in brackets, flight line, anomaly letter and fiducial number in brackets. If EM anomaly or flight line maps are available to the reader, locations can be identified using the line number and anomaly letter. If digital data are being used, the flight line number and fiducial number are required.

- | | |
|------------------|---|
| (4) 73 A (51435) | <ul style="list-style-type: none">• an excellent geophysical prospect• high conductivity• localized• 20 nT coincident magnetic anomaly |
|------------------|---|

Comments: Totally covered by surficial deposits.

- | | |
|-------------------|---|
| (6) 136 I (53456) | <ul style="list-style-type: none">• the area containing prospects 6, 7 and 8 should be examined in detail, as the geology is complex with local intrusions.• geophysical signatures are excellent, but line to line correlation is difficult |
| (7) 142 K (50292) | |
| (8) 144 J (48250) | |

Comments: (6) and (7) consist of rusty, garnet-bearing graphitic gneiss and schist intruded by ultramafic and granitic rocks. (8) is located in a boulder field of red granite with ultramafic rocks nearby.

Samples: 425309-10, 425703.

- | | |
|-------------------|--|
| (12) 62 D (57553) | <ul style="list-style-type: none">• sharp, local EM and magnetic anomaly |
|-------------------|--|

Comments: Marble, granite and gabbro.

- | | |
|--------------------|---|
| (15) 117 J (60243) | <ul style="list-style-type: none">• a very sharp, single-line EM response associated with a weak magnetic feature |
|--------------------|---|

Comments: Slightly rusty gneiss.

(17) 152 E (54156)

- narrow, isolated EM anomaly possibly hosted by carbonate rocks

Comments: Garnet-biotite schist.

Sample: 425748.

(20) 157 Q (49499)

- localized 12-channel GEOTEM response within high magnetic unit (basic rocks)

Comments: Banded and sheared magnetic orthogneiss.

Nearby mafic rocks.

Sample: 425747.

(22) 209 U (52514)

- part of a long, arcuate conductive zone
- very high EM anomaly amplitudes
- associated 500 nT magnetic feature

Comments: Disseminated and massive pyrrhotite in graphitic gneiss.

Samples: 425357-58.

(25) 216 E (58822)

- a massive EM anomaly with coincident magnetics > 1000 nT
- part of a larger SW trend

Comments: Scattered rusty weathering of regolithe with blocks of paragneiss with disseminated graphite and pyrrhotite.

Sample: 425329

(26) 214 D (47443)

- single line EM and positive magnetic anomaly

Comments: Vegetation-covered, swampy area.

(32) 222 L (52469)

- part of a very high amplitude NE trending conductor
- the associated magnetic feature is believed to be caused by mineralization

Comments: Circular, yellow spot in regolithe, 200-300 m in diameter. Regolithe blocks of siliceous gneiss with disseminated graphite and pyrrhotite.

Sample: 425328.

- (33) 205 H (56142)
- very strong, multiple EM anomaly in a region that exhibits both near surface and deep magnetic signatures together with visible pipe structures
- Comments: Colour anomaly in regolith of granitic gneiss.*
Sample: 425349.
- (34) 208 J (53319)
- the strongest individual GEOTEM response in the survey area, but within a wide zone of conductors
 - same geology ? as (33)
 - this area needs to be better understood structurally
- Comments: Large colour anomaly in garnet-gneiss with disseminated pyrrhotite, mainly as regolith.*
Sample: 425348.
- (35) 192 S (58335)
- weak EM associated with the strongest magnetic feature mapped in the survey area
- Comments: Extensive surficial cover with abundant magnetite float.*
Samples: 406953, 86-87, 425378.
- (36) 181 K (48700)
- a strong EM response in a localized geological setting
 - one of the highest priority targets
- Comments: Alluvial plain, no exposure.*
- (37) 516 A (55463)
- isolated EM anomaly associated with magnetic low
 - confirmed on both a tie line and regular flight line
- Comments: River bed with total alluvial cover.*
- (42) 286 R (57999)
- strong EM anomaly coincident with a very sharp magnetic anomaly
 - an excellent prospect
- Comments: Regolith covered plain.*
- (43) 293 B (49624)
- high conductivity
 - situated east of a NE-trending dyke feature
 - minor magnetic association

Comments: Discordant amphibolite in graphitic paragneiss.

(46) 290 P (54002)

- strong local EM anomaly with minor magnetic feature
- near intersection of NE dyke and cross cutting NW fault

Comments: Dioritic gneiss with pyrrhotite and semi-outcropping ultramafic rocks.

Samples: 425350-51.

(55) 259 M (48049)

- single line EM response
- in the sedimentary cap rock area, but associated with a river valley which could expose basement rocks
- no indication of salt water

Comments: Gravel plain, no signs of mineralisation.

(72) 347 E (48122)

- low amplitude massive sulphide prospect on local intrusive contact

Comments: 200 m wide rust zone in biotite-gneiss with disseminated to semi-massive pyrrhotite and disseminated graphite.

Samples: 425330-32.

(74) 299 N (55222)

- sharp, isolated EM anomaly on major geological contact
- possible intersecting fault structure

Comments: Boulder field of siliceous gneiss with disseminated graphite and pyrrhotite.

Samples: 425353, 425739.

(75) 297 L (57101)

- very sharp EM anomaly
- also on tie line
- relationship to nearby conductors uncertain

Comments: Anomaly covered by surficial deposits. Nearby rust zone in pelitic gneiss with disseminated graphite and pyrrhotite.

Sample: 425740.

Table 2. Rock sample list

GGU no.	Grab	Sample type		Boulder	Rock type	Ore minerals
		Chip m	Composite			
406927	x				psammite	chalcopyrite and malachite
406928	x				psammite	chalcopyrite and malachite
406929	x				metagabbro	chalcopyrite and magnetite
406932	x				metagabbro	chalcopyrite and magnetite
406935		3.0			psammite	pyrrhotite
406936		2.0			psammite	pyrrhotite
406938		3.0			psammite	pyrrhotite
406943		3.0			psammite	pyrrhotite
406945	x				psammite	pyrrhotite
406946		20.0			psammite	pyrrhotite
406947	x				psammite	pyrrhotite
406949		4.0			psammite	pyrrhotite
406950	x				psammite	pyrrhotite
406951	x				psammite	pyrrhotite
406955			x		psammite	pyrrhotite
406956	x				psammite	pyrrhotite
406958		2.0			psammite	pyrrhotite
406961			x		psammite	pyrrhotite
406962	x				psammite	pyrrhotite
406963	x				psammite	pyrrhotite
406964	x				psammite	pyrrhotite
406965			x		psammite	pyrrhotite
406966			x		psammite	pyrrhotite
406967	x				psammite	pyrrhotite
406968	x				psammite	pyrrhotite
406969	x				psammite	pyrrhotite
406970	x				psammite	pyrrhotite
406971	x				psammite	pyrrhotite
406972	x				psammite	pyrrhotite
406973	x				psammite	pyrrhotite
406974			x		psammite	pyrrhotite
406975			x		psammite	pyrrhotite
406976			x		psammite	pyrrhotite
406977			x		psammite	pyrrhotite
406978	x				psammite	pyrrhotite
406979	x				psammite	pyrrhotite
406980	x				massive sulphides	pyrrhotite
406981	x				massive sulphides	pyrrhotite
406982	x				massive sulphides	pyrrhotite
406983			x		psammite	pyrrhotite
406984			x		psammite	pyrrhotite
406992		5.0			psammite	pyrrhotite
406993		5.0			psammite	pyrrhotite
406994			x		psammite	pyrrhotite
406995		5.0			psammite	pyrrhotite
406996		5.0			psammite	pyrrhotite
406997		5.0	.		psammite	pyrrhotite
406998		5.0			psammite	pyrrhotite
406999		5.0			psammite	pyrrhotite
425301	x				melanogneiss	magnetite, pyrite
425302		2.0			shear zone in gneiss	Fe-sulphides
425303	x				siliceous gneiss	pyrrhotite
425304	x				semi-massive sulphides	pyrrhotite, chalcopyrite, gold
425305	x				siliceous gneiss	pyrite

Table 2. Rock sample list

GGU no.	Sample type			Rock type	Ore minerals
	Grab	Chip m	Composite		
425306	x			siliceous gneiss	pyrrhotite, magnetite
425307	x			vein quartz	malachite
425308	x			hornblendite	
425309	x			gneiss	graphite
425310	x			granite	graphite
425311	x			vein quartz	
425312	x			hornblendite	
425313	x			siliceous gneiss	pyrrhotite
425314	x			siliceous gneiss	pyrrhotite
425315	x			diopside marble	
425316				x granite	malachite
425317	x			pyribole	chalcopryite, bornite, magnetite
425318		0.7		pyribole	chalcopryite, bornite, magnetite
425319	x			pyribole	chalcopryite, pyrite, magnetite
425320		1.0		pyribole	chalcopryite, pyrite, magnetite
425321	x			granite	chalcopryite, bornite, magnetite
425322	x			granite	pyrrhotite, chalcopryite
425323	x			gneiss	pyrrhotite
425324	x			hornblendite	pyrrhotite
425325	x			breccia	Fe-sulphides
425326	x			breccia	Fe-sulphides
425327				x vein quartz	molybdenite
425328				x paragneiss	pyrrhotite, graphite
425329				x paragneiss	pyrrhotite, graphite
425330	x			biotite gneiss	pyrrhotite, graphite
425331	x			gneiss	pyrrhotite
425332	x			gneiss	pyrrhotite, graphite
425333	x			marble	
425334	x			gneiss	pyrite, molybdenite
425335	x			gneiss	pyrrhotite
425336				x granite	magnetite, malachite
425337	x			semi-massive sulphides	pyrrhotite, graphite
425338	x			siliceous gneiss	pyrrhotite
425339	x			siliceous gneiss	pyrrhotite
425340	x			massive oxides	magnetite
425341	x			metagabbro	
425342	x			ultramafic rock	magnetite
425343	x			granite	Fe-sulphides
425344	x			marble	pyrrhotite
425345	x			vein quartz	malachite
425346	x			gneiss	malachite
425347	x			marble/gneiss	malachite
425348	x			garnet-gneiss	pyrrhotite
425349				x gneiss	
425350	x			ultramafic rock	
425351	x			gneiss	pyrrhotite, magnetite
425352	x			ultramafic rock	
425353				x gneiss	pyrrhotite
425354	x			gneiss	pyrrhotite, graphite
425355	x			metagabbro	Fe-sulphides
425356	x			semi-massive sulphides	pyrrhotite, graphite
425357	x			siliceous gneiss	pyrrhotite, magnetite
425358	x			massive sulphides	pyrrhotite, sphalerite
425359	x			serpentinite	magnetite

Table 2. Rock sample list

GGU no.	Grab	Sample type		Rock type	Ore minerals
		Chip m	Composite		
425360	x			serpentinite	magnetite
425361	x			hornblendite	
425362	x			metagabbro	magnetite
425363	x			granite	
425364	x			massive oxides	magnetite
425365	x			amphibolite	magnetite
425366	x			granitic gneiss	
425367	x			gneiss	pyrrhotite, graphite
425368	x			amphibolite	magnetite, pyrite
425369	x			amphibolite	
425370	x			semi-massive sulphides	pyrrhotite
425371	x			massive sulphides	pyrrhotite
425372	x			semi-massive sulphides	pyrrhotite, pyrite, magnetite
425373	x			siliceous gneiss	pyrrhotite, graphite
425374	x			granite	magnetite, Fe-sulphides
425375	x			vein quartz	malachite
425376	x			marble/gneiss	malachite
425377	x			siliceous gneiss	pyrrhotite
425378	x			massive oxides	hematite, magnetite
425504	x			garnet-gneiss	
425506	x			breccia	
425513	x			garnet gneiss	graphite
425514	x			ultramafic rock	
425517	x			granulite	
425526	x			mica schist	
425536	x			pyribole	
425540	x			pyribole	
425543	x			granite	
425546	x			psammite	sulphides
425555	x			dolerite	
425556	x			granite	
425561	x			granite	
425562	x			rapakivi granite	
425566	x				sulphates
425571	x			syenite	
425584	x			biotite gneiss	
425587	x			granite	
425588	x			dolerite	
425590	x			granite	
425704	x			gneiss	
425707	x			granulite	
425709	x			quartzmonzonite	
425711	x			quartzmonzonite	
425712	x			dolerite	
425715	x			diopside marble	
425718	x			metagabbro	
425721	x			calc-silicate rock	
425728	x			gabbro	
425730	x			tonalite	
425749	x			amphibolite	

Table 3. Analytical results

All analyses are by Activation Laboratories Ltd., Ontario. The methods used are given below:

(1) Instrumental neutron activation analysis

Element	Detection limit	Element	Detection limit
Au	2 ppb	Na	0.01 pct
Ag	5 ppm	Ni	20 ppm
As	0.5 ppm	Nd	5 ppm
Ba	50 ppm	Rb	5 ppm
Br	0.5 ppm	Sb	0.1 ppm
Ca	1 pct	Sc	0.1 ppm
Ce	3 ppm	Se	5 ppm
Co	1 ppm	Sm	0.1 ppm
Cr	5 ppm	Sn	100 ppm
Cs	1 ppm	Sr	500 ppm
Eu	0.2 ppm	Ta	0.5 ppm
Fe	0.01 pct	Th	0.2 ppm
Hf	1 ppm	Tb	0.5 ppm
Hg	1 ppm	U	0.5 ppm
Ir	5 ppb	W	1 ppm
La	0.5 ppm	Zn	50 ppm
Lu	0.05 ppm	Yb	0.2 ppm

(2) Aqua regia extraction/inductively coupled plasma emission spectrometry (icp)

Element	Detection limit	Element	Detection limit
Ag	0.4 ppm	Mo	1 ppm
Al	0.01 pct	Ni	1 ppm
Be	2 ppm	P	0.001 pct
Bi	5 ppm	Pb	5 ppm
Ca	1 pct	Sr	1 ppm
Cu	1 ppm	Ti	0.01 pct
K	0.01 pct	V	2 ppm
Mg	0.01 pct	Y	2 ppm
Mn	1 ppm	Zn	1 ppm

(3) Lead fire assay/icp analysis (fa)

Element	Detection limit
Au	1 ppb
Pd	3 ppb
Pt	5 ppb

Note. 0 or 0.0 in the analytical results indicates a value below the detection limit.

Table 3. Analytical results

GGU no.	Au ppb	Au ppb (fa)	Ag ppm	Ag ppm (icp)	Pt ppb	Pd ppb	Ir ppb	As ppm	Sb ppm	Se ppm	Hg ppm
406927.1	14		0	0.4			0	160	1.3	3	0
406928	7		0	0.4			0	53	2.3	0	0
406929.1	20		0	0.5			0	3	0.3	0	0
406932	7		0	0.0			0	5	0.0	0	0
406935	21		0	0.0			0	0	0.0	0	0
406936	0		0	0.0			0	2	0.0	0	0
406938	15		0	0.0			0	0	0.0	0	0
406943	83		0	0.0			0	48	0.3	0	0
406945	14		0	2.5			0	7	0.0	18	0
406946	0		0	0.0			0	8	0.0	0	0
406947	0		0	0.5			0	13	0.4	0	0
406949	13		0	0.6			0	19	0.2	4	0
406950	23		0	2.3			0	18	0.0	3	0
406951	11		0	2.2			0	15	0.0	9	0
406952	0		0	0.9			0	2	0.6	0	0
406955.1	71		0	1.9			0	47	0.4	16	0
406955.2	24		0	1.4			0	51	0.1	13	0
406956	274		0	1.4			0	29	0.3	9	0
406958	74		0	1.2			0	23	0.2	18	0
406961	0		0	0.7			0	10	0.0	10	0
406962	4		0	0.5			0	2	0.2	0	0
406963	4		0	0.6			0	2	0.0	0	0
406964	0		0	0.8			0	6	0.1	9	1
406965	0		0	0.9			0	44	0.0	11	0
406966	0		0	0.9			0	22	0.1	12	0
406967	2		0	1.0			0	22	0.0	9	0
406968	0		0	1.1			0	1	0.0	8	0
406969	0		0	1.2			0	1	0.0	11	0
406970	4		0	1.6			0	33	0.4	10	0
406971	0		0	1.7			0	1	0.2	5	0
406972	4		0	2.6			0	2	0.4	0	0
406973	9		0	2.0			0	28	0.3	0	0
406974	0		0	0.8			0	4	0.2	10	0
406975	0		0	1.2			0	4	0.3	9	1
406976	0		0	0.6			0	4	0.5	6	0
406977	4		0	0.5			0	4	0.3	7	0
406978	0		0	2.2			0	9	0.2	9	0
406979	5		0	2.7			0	3	0.0	9	0
406980	0		0	2.2			0	1	0.0	6	0
406981	2		0	1.8			0	2	0.0	5	0
406982	0		0	1.9			0	0	0.0	0	0
406983	0		0	1.4			0	2	0.2	7	0
406984	0		0	2.0			0	7	0.2	3	0
406992	13		0	0.0			0	2	0.0	0	0
406993	8		0	0.0			0	0	0.0	0	0
406994	9		0	1.0			0	38	0.0	17	0
406995	0		0	0.0			0	0	0.0	0	0
406996	7		0	0.0			0	2	0.0	0	0
406997	0		0	0.9			0	14	0.2	5	0

Table 3. Analytical results

GGU no.	Au ppb	Au ppb (fa)	Ag ppm	Ag ppm (icp)	Pt ppb	Pd ppb	Ir ppb	As ppm	Sb ppm	Se ppm	Hg ppm
406998	7		0	1.2			0	12	0.0	0	0
406999	0		0	0.6			0	7	0.0	7	0
425301	10		0	0.0			0	2	0.0	0	0
425302	0		0	0.0			0	7	0.0	0	0
425303	19		0	0.0			0	0	0.0	0	0
425304	1760	1217/1134	0	0.4	5/0	21/17	0	3	0.1	20	0
425305	18		0	0.0			0	3	0.9	0	0
425306	2		0	0.0			0	0	0.0	0	0
425307	0		0	0.0			0	1	0.0	0	0
425308	13	8	0	0.0	5	4	0	3	0.0	0	0
425309	0		0	0.0			0	0	0.0	0	0
425310	0		0	0.0			0	0	0.0	0	0
425311	0		0	0.0			0	0	0.0	0	0
425312	11	17/230	0	0.0	9/0	15/0	0	0	0.0	0	0
425313	10		0	0.0			0	0	0.0	0	0
425314	11		0	0.0			0	0	0.0	0	0
425315	0		0	0.0			0	130	25.0	0	0
425316	0		0	0.0			0	3	0.0	0	0
425317	47	32	0	3.4	0	24	0	11	0.4	8	0
425318	71	46	0	0.6	0	20	0	8	0.8	0	0
425319	185	101/121	0	1.9	5/0	16/16	0	3	0.4	12	0
425320	0	17	0	0.6	0	16	0	4	0.4	0	0
425321	1760	1002/1188	0	2.2	6/6	24/24	0	16	1.2	47	0
425322	0	18	0	0.0	0	9	0	4	0.3	6	0
425323	31	23	0	1.1	0	7	0	7	0.2	13	0
425324	13	14	0	0.4	0	0	0	41	0.0	0	0
425325	27		0	0.4			0	14	0.3	0	0
425326	23		0	0.0			0	5	0.4	0	0
425327	0		0	0.0			0	10	0.1	0	0
425328	21		0	0.0			0	0	0.0	0	0
425329	14		0	0.5			0	17	2.7	7	0
425330	14		0	0.4			0	5	0.0	0	0
425331	0		0	0.0			0	2	0.2	0	0
425332	11	8	0	0.0	0	6	0	6	0.0	11	0
425333	9		0	0.0			0	140	3.8	0	0
425334	25		0	0.0			0	0	0.0	0	0
425335	6		0	0.0			0	2	0.0	0	0
425336	30		0	0.5			0	0	0.0	0	0
425337	16		0	1.2			0	2	0.0	16	0
425338	0		0	0.0			0	0	0.0	0	0
425339	0		0	0.0			0	6	0.7	0	0
425340	2	2	0	0.0	0	0	0	0	0.0	0	1
425341	0		0	0.0			0	0	0.0	0	0
425342	0	2	0	0.0	5	5	0	11	0.7	0	0
425343	5		0	0.0			0	1	0.2	0	0
425344	0		0	0.0			0	2	0.2	0	0
425345	31	27	0	0.0	0	0	0	0	0.0	0	0
425346	0		0	0.5			0	0	0.0	0	0
425347	0		0	0.0			0	1	0.3	0	0

Table 3. Analytical results

GGU no.	Au ppb	Au ppb (fa)	Ag ppm	Ag ppm (icp)	Pt ppb	Pd ppb	Ir ppb	As ppm	Sb ppm	Se ppm	Hg ppm
425348	0		0	0.0			0	0	0.0	0	0
425349	14		0	0.0			0	0	0.0	0	0
425350	0	5	0	0.0	7	7	0	2	0.0	0	0
425351	18		0	0.0			0	0	0.0	0	0
425352	23	30/223	0	0.0	9/5	9/6	0	37	1.0	0	0
425353	15		0	0.0			0	6	0.2	0	0
425354	5		0	0.0			0	0	0.0	0	0
425355	92	60	0	0.0	0	0	0	0	0.3	0	0
425355.1		82			0	0					
425355.2		148			0	0					
425356	17	16	0	1.7	0	9	0	300	0.0	12	0
425357	5		0	0.5			0	9	0.6	0	0
425358	46	36	0	2.7	0	0	0	65	1.4	0	0
425359	0	2	0	0.0	0	0	0	4	0.1	0	0
425360	0	1	0	0.0	0	0	0	1	0.2	0	0
425361	4	3	0	0.0	0	0	0	17	0.3	0	0
425362	2		0	0.0			0	1	0.1	0	0
425363	0		0	0.0			0	0	0.0	0	0
425364	7	1	0	0.0	0	0	0	10	0.7	0	0
425365	9		0	0.0			0	2	0.0	0	0
425366	0		0	0.0			0	0	0.0	0	0
425367	0		0	0.0			0	0	0.0	0	0
425368	9		0	0.0			0	4	0.3	0	0
425369	2		0	0.0			0	2	0.4	0	0
425370	54	41	5	0.9	0	12	0	64	0.0	11	0
425371	350	186/245	12	4.3	0/0	6/6	0	0	0.0	0	0
425372	319	240/294	0	11.9	5/7	11/13	0	0	0.0	13	0
425373	19		0	0.4			0	8	0.0	14	0
425374	10		0	0.0			0	0	0.0	0	0
425375	6	5	0	0.0	0/0	4/4	0	0	0.0	0	0
425376	0		0	0.0			0	0	0.0	0	0
425377	5		0	0.0			0	11	0.2	0	0
425378	0		0	0.0			0	0	0.8	0	0
425504	0		0	0.4			0	2	0.2	0	0
425506	0		0	0.0			0	11	0.0	0	0
425513	0		0	0.0			0	0	0.2	0	0
425514	5	5	0	0.0	5	5	0	0	0.0	0	0
425517	2		0	0.5			0	1	0.0	0	0
425526	0		0	0.0			0	110	5.0	0	0
425536	0	1	0	0.0	0	0	0	10	0.9	0	0
425540	0	3	0	0.0	0	14	0	33	3.9	0	0
425543	6		0	0.0			0	0	0.0	0	0
425546	0		0	0.0			0	0	0.0	0	0
425555	0		0	0.0			0	0	0.0	0	0
425556	4		0	0.0			0	0	0.0	0	0
425561	0		0	0.0			0	8	0.4	0	0
425562	0		0	0.0			0	0	0.0	0	0
425566	7		0	0.6			0	2	0.2	0	0
425567	0		0	0.0			0	0	0.0	0	0

Table 3. Analytical results

GGU no.	Au ppb	Au ppb (fa)	Ag ppm	Ag ppm (icp)	Pt ppb	Pd ppb	Ir ppb	As ppm	Sb ppm	Se ppm	Hg ppm
425571	0		0	0.0			0	2	0.0	0	2
425584	0		0	0.0			0	0	0.0	0	0
425587	0		0	0.0			0	0	0.0	0	0
425588	0		0	0.0			0	1	0.0	0	0
425590.1	0		0	0.0			0	1	0.0	0	0
425704	0		0	0.0			0	0	0.0	0	0
425707	0		0	0.0			0	0	0.0	0	0
425709	0		0	0.0			0	0	0.0	0	0
425711	3		0	0.0			0	0	0.0	0	0
425712	0		0	0.0			0	1	0.0	0	0
425715	0		0	0.0			0	0	0.2	0	0
425718	0	1	0	0.0	0	0	0	0	0.0	0	0
425721	4		0	0.0			0	0	0.0	0	0
425728	0		0	0.0			0	0	0.0	0	0
425730	2		0	0.0			0	0	0.4	0	0
425749	2		0	0.0			0	0	0.0	0	0
Samples	161	34	161	161	34	34	161	161	161	161	161
Minimum	0	1	0	0.0	0	0	0	0	0.0	0	0
Maximum	1760	1217	12	11.9	9	24	0	300	25.0	47	2

Table 3. Analytical results

GGU no.	Cu ppm	Zn ppm	Zn ppm (icp)	Pb ppm	Bi ppm	Mo ppm	Ni ppm	Ni ppm icp	Co ppm	Cr ppm	Fe pct
406927.1	1821	0	23	11	0	9	100	57	45	190	1.4
406928	5569	0	7	5	0	22	0	38	13	390	9.8
406929.1	766	62	71	5	0	0	0	33	37	18	7.8
406932	1644	84	55	12	0	0	0	11	17	8	4.5
406935	78	123	42	16	0	0	0	5	5	120	6.3
406936	58	78	17	18	0	0	0	7	3	45	3.2
406938	94	0	51	29	0	0	0	14	6	75	4.8
406943	106	91	72	25	0	0	0	22	9	100	5.5
406945	580	72	51	5	10	25	390	319	33	51	27.8
406946	70	142	107	20	0	4	130	50	7	57	7.4
406947	143	323	257	34	0	7	100	97	17	59	6.3
406949	214	72	61	21	0	7	280	144	19	55	12.8
406950	903	105	67	17	0	18	480	352	62	39	26.0
406951	638	0	34	5	0	19	740	619	99	41	30.4
406952	10	0	6	5	0	0	1300	674	75	250	59.8
406955.1	828	0	32	19	0	35	600	489	77	27	37.7
406955.2	858	63	38	32	0	34	400	422	67	23	30.3
406956	1026	52	52	45	0	20	420	349	46	35	22.7
406958	2609	165	150	0	0	62	780	766	170	90	31.0
406961	265	256	254	0	0	26	460	489	79	38	35.0
406962	193	126	116	25	0	12	460	349	4	30	19.9
406963	521	103	94	5	11	17	680	578	14	23	34.9
406964	335	263	227	5	6	25	360	363	160	38	27.4
406965	281	172	158	7	0	41	370	316	5	52	25.8
406966	279	384	347	20	0	35	480	485	51	45	32.7
406967	280	379	338	6	0	32	730	611	3	45	29.3
406968	245	60	45	5	0	23	670	525	1	33	25.7
406969	661	53	50	10	0	31	900	780	4	49	31.8
406970	498	54	54	20	0	27	710	573	66	41	25.5
406971	543	376	358	22	0	38	900	608	4	44	39.1
406972	298	104	106	28	0	35	710	597	7	42	34.7
406973	222	540	518	31	0	38	600	553	1	32	31.5
406974	496	1410	1395	39	0	39	420	388	15	42	18.1
406975	429	150	160	22	0	32	400	435	14	49	26.2
406976	263	409	354	13	0	30	360	316	4	63	21.7
406977	148	327	299	29	0	19	300	243	4	40	14.7
406978	390	0	37	16	0	39	640	488	12	60	32.1
406979	376	141	75	5	0	46	670	554	26	32	40.3
406980	338	55	38	10	0	28	620	479	5	37	38.4
406981	403	0	7	8	0	45	640	508	13	33	39.1
406982	263	0	9	14	0	41	500	506	2	33	39.1
406983	239	246	63	0	0	53	400	383	25	46	30.4
406984	386	77	67	0	0	30	480	446	120	27	38.2
406992	46	128	39	20	0	8	0	20	8	82	6.5
406993	34	101	45	19	0	9	0	13	4	72	4.3
406994	437	398	132	0	0	58	590	450	40	39	28.8
406995	26	143	57	27	0	11	0	17	5	56	5.6
406996	45	226	132	25	0	15	0	30	4	64	5.5
406997	131	279	215	27	0	26	170	96	10	69	9.9

Table 3. Analytical results

GGU no.	Cu ppm	Zn ppm	Zn ppm (icp)	Pb ppm	Bi ppm	Mo ppm	Ni ppm	Ni ppm icp	Co ppm	Cr ppm	Fe pct
406998	298	751	641	20	0	69	300	184	24	59	32.0
406999	238	221	206	25	0	30	230	135	16	49	26.1
425301	43	166	91	0	0	0	160	153	44	380	9.6
425302	95	0	18	15	0	0	180	31	11	54	2.8
425303	522	78	30	0	0	0	140	141	34	130	7.7
425304	1014	0	3	0	13	51	520	386	44	32	25.3
425305	268	0	51	13	0	32	130	117	46	160	10.8
425306	124	0	126	20	0	0	250	83	13	74	7.3
425307	171	0	15	0	0	0	0	22	7	31	1.8
425308	116	100	70	0	0	0	1100	733	88	2000	11.2
425309	33	123	48	23	0	0	0	12	9	120	5.0
425310	4	82	24	20	0	0	0	8	3	14	1.7
425311	4	0	2	0	0	11	110	6	2	15	0.3
425312	262	159	88	0	0	4	790	582	77	2100	9.7
425313	216	0	33	10	0	0	210	40	17	84	3.8
425314	68	90	70	22	0	0	150	52	14	92	3.6
425315	6	114	94	12	0	0	0	50	14	100	2.9
425316	583	0	36	13	0	4	0	65	14	130	3.9
425317	8811	0	20	19	0	0	0	96	49	130	7.2
425318	2829	0	22	29	0	0	0	83	42	140	7.0
425319	8381	0	47	11	0	0	110	74	34	48	8.0
425320	1935	0	43	0	0	0	0	64	33	83	8.3
425321	13278	0	34	40	53	11	0	73	49	130	2.6
425322	1108	0	19	5	0	0	0	45	24	14	5.6
425323	432	331	249	0	0	7	360	248	39	48	18.3
425324	65	228	199	0	0	0	0	14	6	48	25.4
425325	11	0	43	6	0	0	0	4	6	6	3.5
425326	17	115	58	0	0	0	0	5	17	11	6.9
425327	13	0	6	6	0	82	0	14	2	13	1.9
425328	24	0	70	19	0	0	0	25	10	88	3.7
425329	162	314	262	37	0	8	140	114	10	34	3.2
425330	639	190	91	17	0	10	180	116	29	110	11.4
425331	188	213	149	20	0	1	0	61	11	39	7.0
425332	980	120	120	0	6	21	330	234	38	44	19.1
425333	17	0	10	34	0	0	0	4	3	17	0.7
425334	345	0	19	14	0	105	0	15	12	91	3.6
425335	146	130	96	21	0	0	0	27	6	44	3.5
425336	759	299	98	10	0	0	220	44	32	200	10.3
425337	430	796	294	8	0	22	350	276	26	74	14.6
425338	42	395	329	16	0	14	140	130	5	13	6.4
425339	60	0	45	10	0	0	200	66	22	150	5.8
425340	14	88	49	0	0	0	770	539	51	35	53.2
425341	6	0	11	5	0	0	210	96	15	440	5.1
425342	5	135	38	15	0	0	800	481	16	1800	6.9
425343	10	0	23	15	0	0	190	111	33	190	5.3
425344	25	0	16	6	0	0	95	35	12	130	3.8
425345	387	0	31	0	0	0	60	47	19	98	3.3
425346	850	115	72	26	0	0	160	80	23	150	5.2
425347	508	117	85	22	0	16	0	20	14	160	5.2

Table 3. Analytical results

GGU no.	Cu ppm	Zn ppm	Zn ppm (icp)	Pb ppm	Bi ppm	Mo ppm	Ni ppm	Ni ppm icp	Co ppm	Cr ppm	Fe pct
425348	17	0	73	13	0	0	0	4	4	83	2.0
425349	53	91	59	14	0	0	0	45	16	120	6.3
425350	28	0	60	0	0	0	1100	813	79	2000	9.4
425351	156	67	80	0	0	0	80	71	60	170	10.2
425352	156	97	67	0	0	0	1100	834	86	2100	9.9
425353	83	265	122	26	0	13	70	67	15	67	7.0
425354	17	135	91	17	0	0	0	12	8	62	3.8
425355	101	194	145	0	0	0	0	28	42	86	12.8
425355.1											
425355.2											
425356	725	0	33	5	0	10	250	222	21	43	17.3
425357	95	170	151	16	0	0	0	19	26	11	3.6
425358	285	3380	2935	22	0	32	310	284	44	54	26.2
425359	11	76	28	6	0	0	770	575	14	750	3.7
425360	5	66	19	0	0	0	1300	798	12	360	3.6
425361	5	93	41	0	0	0	460	387	17	540	5.4
425362	5	0	10	0	0	0	80	76	10	260	4.3
425363	24	217	154	29	0	0	0	2	6	14	4.2
425364	10	94	27	0	0	0	300	174	23	210	38.6
425365	4	218	97	15	0	0	150	142	30	240	8.1
425366	4	0	16	12	0	0	0	2	0	8	0.8
425367	68	199	79	23	0	0	0	38	11	68	4.7
425368	27	215	127	29	0	0	0	18	53	26	9.5
425369	2	0	53	0	0	0	0	23	39	64	8.5
425370	378	271	226	17	0	14	300	219	21	50	21.4
425371	2066	470	333	17	6	12	200	39	53	55	16.9
425372	4216	387	345	0	6	13	0	43	75	87	21.8
425373	147	303	212	29	0	18	210	124	11	86	12.9
425374	8	0	35	6	0	0	0	5	7	6	3.2
425375	1051	0	61	8	0	12	140	129	32	150	5.8
425376	813	88	49	8	0	0	70	58	17	400	4.0
425377	230	312	226	32	0	0	0	43	14	100	5.7
425378	25	0	3	5	0	4	740	390	5	15	61.4
425504	268	140	100	36	0	15	0	105	22	86	6.4
425506	11	0	29	7	0	7	0	44	12	88	3.5
425513	13	143	95	20	0	0	0	39	19	170	7.1
425514	101	0	91	5	0	0	540	628	64	1500	10.1
425517	15	175	208	28	0	0	0	20	11	39	6.8
425526	4	0	84	5	0	5	0	44	11	230	4.3
425536	4	128	79	14	0	8	240	298	32	1900	7.8
425540	7	105	99	0	0	0	800	750	42	2000	6.0
425543	12	0	92	6	0	0	0	34	16	110	5.3
425546	44	138	137	6	0	0	0	23	10	17	6.5
425555	506	199	153	8	0	0	0	55	37	26	12.2
425556	15	0	71	0	0	11	0	25	12	52	3.8
425561	12	0	12	0	0	0	0	28	5	180	4.6
425562	13	0	100	26	0	0	0	15	9	32	4.4
425566	105	189	142	8	0	16	0	40	12	31	29.6
425567	47	93	85	0	0	0	0	75	43	250	9.5

Table 3. Analytical results

GGU no.	Cu ppm	Zn ppm	Zn ppm (icp)	Pb ppm	Bi ppm	Mo ppm	Ni ppm	Ni ppm icp	Co ppm	Cr ppm	Fe pct
425571	7	0	26	0	0	0	0	3	4	7	4.5
425584	177	0	71	21	0	0	190	176	31	400	7.4
425587	21	0	92	28	0	0	0	13	10	30	5.3
425588	19	66	130	9	0	0	0	19	35	11	10.6
425590.1	56	186	121	0	0	0	150	108	39	310	8.7
425704	24	0	60	20	0	4	0	29	10	110	4.0
425707	18	50	86	0	0	13	0	43	25	100	6.9
425709	13	70	50	7	0	0	0	26	9	41	3.2
425711	2	0	9	12	0	0	0	23	6	50	4.5
425712	17	115	130	7	0	0	0	20	35	10	10.3
425715	2	75	60	0	0	0	78	73	16	140	4.6
425718	6	97	59	0	0	0	680	898	92	3000	9.2
425721	109	116	96	11	0	7	110	182	23	350	5.7
425728	202	150	123	7	0	0	0	60	45	9	12.1
425730	17	0	12	9	0	0	0	64	12	210	2.2
425749	138	0	101	0	0	0	0	48	47	92	12.7
Samples	161	161	161	161	161	161	161	161	161	161	161
Minimum	2	0	2	0	0	0	0	2	0	6	0.3
Maximum	13278	3380	2935	45	53	105	1300	898	170	3000	61.4

Table 3. Analytical results

GGU no.	W ppm	Ta ppm	Sn ppm	Be ppm	Br ppm	Rb ppm	Sc ppm	Cs ppm	Hf ppm	Y ppm	V ppm
406927.1	0	0	0	0	1	31	6.0	0	2	11	172
406928	9	2	0	0	4	62	17.0	0	10	23	210
406929.1	0	0	0	0	0	0	52.0	0	7	59	131
406932	0	0	0	2	0	29	19.0	0	12	28	85
406935	8	0	0	0	0	150	17.0	2	8	16	52
406936	5	0	0	0	0	81	5.8	1	5	7	22
406938	8	0	0	0	0	130	14.0	1	7	18	22
406943	0	0	0	0	0	120	18.0	2	5	22	28
406945	0	0	0	0	0	40	6.9	0	2	13	237
406946	5	0	0	0	0	93	9.6	5	6	16	33
406947	0	0	0	0	0	130	12.0	5	6	17	20
406949	0	0	0	0	0	100	14.0	2	4	13	60
406950	0	0	0	0	0	81	6.1	0	2	8	69
406951	0	1	0	0	0	25	4.4	0	1	11	72
406952	11	0	0	0	0	0	6.0	0	0	5	733
406955.1	5	0	0	0	0	52	3.1	0	2	8	74
406955.2	5	0	0	0	0	43	2.3	1	2	6	70
406956	0	1	0	0	0	77	4.6	2	3	11	122
406958	3	0	0	0	1	28	6.6	0	4	4	115
406961	51	2	0	0	0	45	3.4	3	2	5	97
406962	8	0	0	0	0	75	5.9	10	4	11	60
406963	15	0	0	0	0	36	1.4	1	0	2	70
406964	44	3	0	0	0	36	4.5	1	2	6	128
406965	48	3	0	2	0	88	7.0	3	4	7	159
406966	38	1	0	0	0	55	4.2	2	2	7	122
406967	31	0	0	0	0	0	1.9	2	1	6	140
406968	21	0	0	0	0	29	4.1	2	2	4	99
406969	27	0	0	0	0	43	1.8	1	0	2	119
406970	23	1	0	0	1	40	3.7	3	2	7	112
406971	9	0	0	0	0	31	2.3	5	2	7	125
406972	7	0	0	0	0	31	6.6	3	2	6	124
406973	4	0	0	0	0	27	7.6	2	1	11	104
406974	27	0	0	4	0	54	4.8	4	3	6	176
406975	20	1	0	2	0	49	4.5	3	2	6	153
406976	36	0	0	5	0	130	8.9	11	4	8	126
406977	12	1	0	7	0	200	8.4	9	4	8	68
406978	26	0	0	0	0	23	3.0	2	3	4	173
406979	10	0	0	0	0	59	5.0	2	0	5	136
406980	9	0	0	0	0	26	0.9	1	1	4	49
406981	46	0	0	0	0	26	3.3	0	1	5	47
406982	12	0	0	0	0	28	0.6	0	2	4	46
406983	15	1	0	0	0	70	3.6	2	3	7	57
406984	24	0	0	0	0	29	3.0	1	2	6	38
406992	0	2	0	0	0	110	7.8	2	8	8	39
406993	5	0	0	0	0	110	8.3	1	9	11	41
406994	24	0	0	0	0	75	8.2	3	3	10	135
406995	8	0	0	0	0	160	8.7	1	8	16	30
406996	8	0	0	0	0	120	6.4	2	7	13	30
406997	12	1	0	0	0	120	7.2	0	6	14	56

Table 3. Analytical results

GGU no.	W ppm	Ta ppm	Sn ppm	Be ppm	Br ppm	Rb ppm	Sc ppm	Cs ppm	Hf ppm	Y ppm	V ppm
406998	9	1	0	0	0	49	5.0	0	3	12	145
406999	5	0	0	0	0	62	4.8	0	4	11	113
425301	0	0	0	0	0	100	43.0	0	2	22	184
425302	16	0	0	0	0	0	7.1	0	4	6	40
425303	0	0	0	0	0	120	18.0	2	7	7	81
425304	0	0	0	0	0	0	3.4	0	1	20	18
425305	0	0	0	0	0	130	19.0	4	6	8	154
425306	0	0	0	0	0	130	13.0	4	11	16	109
425307	3	0	0	0	0	28	9.0	0	0	6	27
425308	0	0	0	0	2	0	28.0	8	2	11	157
425309	2	0	0	0	0	99	20.0	1	6	18	69
425310	0	0	0	0	0	82	3.5	0	4	7	6
425311	3	1	0	0	1	0	4.5	0	5	2	15
425312	0	0	0	0	0	0	38.0	0	3	13	235
425313	0	0	0	0	0	120	14.0	0	6	12	71
425314	0	4	0	2	0	140	13.0	1	8	10	43
425315	4	0	0	0	0	73	9.6	11	3	11	32
425316	0	0	0	0	0	40	15.0	0	5	20	62
425317	0	0	0	0	0	120	40.0	2	2	8	273
425318	4	0	0	0	0	100	41.0	3	5	13	235
425319	0	0	0	0	0	57	35.0	3	2	8	216
425320	4	0	0	0	0	0	44.0	3	1	10	265
425321	35	3	0	0	0	68	16.0	6	2	7	81
425322	0	0	0	0	0	0	25.0	0	3	10	99
425323	3	0	0	4	0	0	8.3	0	2	29	104
425324	0	0	0	0	0	0	1.3	0	0	26	27
425325	0	0	0	0	3	0	5.6	0	0	11	24
425326	0	1	0	0	0	51	19.0	0	0	19	107
425327	0	0	0	0	0	0	1.1	0	2	2	10
425328	6	0	0	0	0	0	13.0	0	8	28	57
425329	0	1	0	2	0	110	3.5	2	9	16	34
425330	12	0	0	0	1	120	7.8	4	7	12	100
425331	13	15	0	57	0	150	1.8	3	8	5	17
425332	14	4	0	14	0	49	2.7	0	6	5	143
425333	6	3	0	3	0	260	2.2	83	0	4	16
425334	10	0	0	0	0	81	10.0	0	8	14	74
425335	3	2	0	2	1	140	8.5	2	6	12	6
425336	0	1	0	0	0	140	27.0	0	9	26	148
425337	3	0	0	0	0	48	9.8	2	3	58	165
425338	6	0	0	2	0	160	6.5	4	9	14	36
425339	0	0	0	0	0	92	21.0	10	4	18	111
425340	0	2	0	3	0	29	3.3	0	0	5	1256
425341	0	0	0	5	0	0	26.0	0	4	11	127
425342	0	0	0	7	3	220	87.0	32	4	41	318
425343	0	0	0	0	2	0	17.0	0	2	11	94
425344	1	0	0	0	4	120	17.0	8	4	11	72
425345	19	0	0	0	1	29	17.0	0	2	13	64
425346	6	2	0	2	1	110	16.0	1	3	20	83
425347	0	2	0	0	0	280	21.0	8	4	18	118

Table 3. Analytical results

GGU no.	W ppm	Ta ppm	Sn ppm	Be ppm	Br ppm	Rb ppm	Sc ppm	Cs ppm	Hf ppm	Y ppm	V ppm
425348	0	1	0	2	0	120	11.0	1	8	4	77
425349	0	0	0	0	0	170	24.0	0	5	25	73
425350	0	1	0	0	0	0	31.0	0	2	12	156
425351	0	0	0	0	0	0	48.0	0	2	24	346
425352	0	1	0	0	7	0	29.0	5	2	10	142
425353	6	1	0	0	0	120	13.0	0	7	16	55
425354	9	0	0	0	0	67	15.0	1	6	23	49
425355	0	0	0	0	0	23	75.0	0	1	30	327
425355.1											
425355.2											
425356	0	0	0	0	0	0	2.3	0	0	32	73
425357	0	0	0	2	0	0	33.0	2	4	12	148
425358	0	0	0	0	0	0	28.0	0	2	16	247
425359	0	0	0	0	5	19	9.6	2	0	2	108
425360	2	0	0	0	2	31	18.0	4	1	2	140
425361	0	0	0	6	0	26	36.0	0	4	23	258
425362	0	1	0	6	0	0	21.0	0	3	16	97
425363	0	0	0	2	0	130	10.0	0	22	25	61
425364	0	0	0	0	0	0	7.5	0	0	4	182
425365	0	0	0	0	0	140	28.0	3	5	8	125
425366	7	0	0	0	0	72	2.6	0	11	10	3
425367	0	0	0	0	0	110	11.0	0	7	20	41
425368	0	0	0	0	0	47	59.0	3	0	10	290
425369	0	0	0	0	0	0	54.0	0	2	10	217
425370	0	0	0	2	0	0	6.0	0	4	13	92
425371	0	0	0	4	0	94	56.0	9	1	4	269
425372	8	0	0	3	0	59	44.0	11	0	13	223
425373	0	0	0	0	0	53	14.0	2	4	22	160
425374	0	0	0	0	0	0	7.6	0	3	5	26
425375	11	0	0	0	0	33	12.0	0	3	8	108
425376	12	0	0	0	0	27	16.0	1	2	16	55
425377	0	0	0	0	0	250	15.0	3	6	17	48
425378	0	0	0	0	5	0	2.2	0	0	2	298
425504	0	0	0	0	0	130	16.0	1	6	12	70
425506	0	1	0	0	0	140	10.0	0	3	8	72
425513	0	0	0	0	2	82	33.0	0	8	26	114
425514	0	0	0	0	0	28	28.0	0	3	14	199
425517	0	0	0	0	0	0	18.0	0	16	44	118
425526	0	0	0	0	0	88	14.0	0	4	22	63
425536	0	0	0	0	0	32	43.0	1	2	11	161
425540	2	0	0	0	0	0	5.5	0	0	5	36
425543	0	0	0	0	0	0	24.0	0	5	28	90
425546	0	0	0	0	0	0	16.0	0	5	49	48
425555	0	0	0	0	0	0	27.0	0	14	53	248
425556	0	2	0	4	0	130	13.0	2	5	13	63
425561	0	0	0	0	2	90	5.5	0	7	8	74
425562	0	2	0	2	0	140	15.0	0	11	25	53
425566	10	0	0	0	0	20	1.5	0	0	2	29
425567	0	0	0	0	0	0	55.0	0	2	23	241

Table 3. Analytical results

GGU no.	W ppm	Ta ppm	Sn ppm	Be ppm	Br ppm	Rb ppm	Sc ppm	Cs ppm	Hf ppm	Y ppm	V ppm
425571	0	0	0	0	0	210	4.9	0	0	7	6
425584	0	2	0	0	0	160	27.0	0	6	11	136
425587	0	0	0	2	0	66	16.0	0	10	20	89
425588	0	0	0	0	0	37	34.0	2	7	29	260
425590.1	0	0	0	0	0	0	27.0	0	2	11	107
425704	0	1	0	0	0	85	14.0	0	6	13	78
425707	0	0	0	0	0	0	32.0	0	2	20	140
425709	0	0	0	0	0	45	7.7	0	4	8	47
425711	0	0	0	0	0	0	11.0	0	3	8	46
425712	0	0	0	0	0	45	33.0	1	6	29	278
425715	3	3	0	10	3	0	21.0	0	3	18	86
425718	0	0	0	2	6	0	38.0	0	0	6	53
425721	0	0	0	0	0	50	24.0	0	5	23	102
425728	0	0	0	0	0	0	40.0	0	5	25	328
425730	0	2	0	0	0	0	19.0	0	3	8	87
425749	0	0	0	0	0	0	64.0	0	2	24	255
Samples	161	161	161	161	161	161	161	161	161	161	161
Minimum	0	0	0	0	0	0	0.6	0	0	2	3
Maximum	51	15	0	57	7	280	87.0	83	22	59	1256

Table 3. Analytical results

GGU no.	U ppm	Th ppm	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Lu ppm	P pct
406927.1	3.2	8.7	29	54	18	2.7	0.5	0.0	1.9	0.32	0.066
406928	13.0	26.0	78	150	67	5.9	1.2	1.2	5.5	0.93	0.043
406929.1	0.0	1.0	27	60	39	9.9	2.3	2.0	5.9	0.82	0.252
406932	1.2	4.7	27	60	27	6.4	1.7	0.9	2.5	0.40	0.185
406935	3.9	18.0	64	120	36	7.9	1.5	0.0	1.4	0.23	0.028
406936	2.0	10.0	42	80	26	4.5	1.2	0.0	0.7	0.12	0.023
406938	5.2	25.0	70	130	51	8.8	1.8	1.4	2.5	0.43	0.036
406943	4.6	21.0	65	130	48	8.9	1.3	1.4	2.7	0.46	0.025
406945	6.9	8.7	25	36	16	2.8	1.1	0.0	1.8	0.36	0.050
406946	5.5	13.0	44	84	33	6.0	1.2	0.9	2.8	0.48	0.044
406947	5.5	15.0	48	87	35	5.7	1.5	0.9	3.0	0.51	0.048
406949	3.6	16.0	39	74	28	5.0	1.1	0.0	2.6	0.45	0.035
406950	1.5	5.7	13	22	7	1.9	0.6	0.0	1.2	0.22	0.036
406951	1.5	18.0	24	52	20	4.2	0.3	0.0	1.4	0.23	0.070
406952	0.0	1.9	11	24	9	1.4	0.0	0.0	0.0	0.00	0.064
406955.1	3.0	3.8	15	27	13	2.1	0.7	0.0	1.2	0.26	0.022
406955.2	0.0	2.8	11	19	12	1.4	0.7	0.0	0.8	0.15	0.018
406956	3.7	5.9	21	33	8	2.3	1.0	0.6	1.2	0.22	0.022
406958	1.2	6.6	23	43	16	2.5	0.7	0.0	0.5	0.14	0.006
406961	2.4	4.6	13	28	14	1.8	0.5	0.0	1.1	0.19	0.040
406962	5.2	8.8	27	44	16	3.1	0.8	0.9	2.1	0.34	0.073
406963	0.0	1.0	6	9	0	0.7	0.2	0.0	0.3	0.00	0.006
406964	3.7	8.4	15	26	10	1.9	0.4	0.0	0.6	0.09	0.034
406965	3.8	6.1	20	38	16	2.4	0.6	0.7	1.3	0.21	0.025
406966	3.4	4.6	17	36	14	2.3	0.6	0.0	1.7	0.32	0.025
406967	2.7	1.8	9	15	5	1.4	0.3	0.0	1.2	0.19	0.011
406968	1.7	3.7	15	24	12	1.6	0.4	0.0	0.7	0.11	0.011
406969	1.6	2.3	7	10	6	0.7	0.2	0.0	0.6	0.10	0.009
406970	3.3	4.6	15	27	11	1.9	0.4	0.0	1.3	0.22	0.020
406971	4.7	4.2	14	30	9	1.8	0.0	0.0	1.4	0.29	0.021
406972	3.3	4.0	12	23	9	1.3	0.0	0.0	1.2	0.25	0.016
406973	6.0	2.6	13	26	9	1.8	0.3	0.0	2.9	0.55	0.077
406974	3.3	4.2	20	35	10	2.3	0.9	0.0	1.1	0.17	0.020
406975	3.0	4.6	18	35	16	2.2	0.6	0.0	1.4	0.26	0.025
406976	5.8	8.8	32	70	21	4.9	0.8	1.0	2.7	0.42	0.035
406977	6.4	6.9	28	59	17	4.3	1.2	0.8	3.7	0.67	0.033
406978	1.7	3.2	14	27	11	1.8	0.6	0.0	0.5	0.11	0.011
406979	2.1	2.8	9	12	8	0.9	0.0	0.0	0.5	0.13	0.021
406980	1.2	1.8	5	10	0	0.6	0.3	0.0	0.5	0.12	0.006
406981	5.3	2.4	7	9	0	0.9	0.2	0.0	0.6	0.10	0.008
406982	1.4	2.1	6	12	0	0.6	0.3	0.0	0.5	0.11	0.004
406983	3.6	8.7	23	48	18	2.8	0.5	0.0	1.2	0.27	0.026
406984	4.8	3.0	11	23	10	1.3	0.4	0.0	1.0	0.21	0.012
406992	2.2	16.0	51	100	39	5.4	1.4	0.0	1.0	0.11	0.027
406993	1.9	18.0	54	110	37	5.8	1.4	0.0	1.4	0.23	0.027
406994	8.8	9.1	26	59	19	3.4	0.9	0.0	2.6	0.52	0.018
406995	2.1	28.0	65	150	48	7.3	1.5	0.0	2.8	0.40	0.040
406996	5.3	17.0	50	100	40	5.8	1.5	0.0	1.5	0.19	0.044
406997	5.6	16.0	41	91	29	5.1	1.4	0.0	2.1	0.37	0.042

Table 3. Analytical results

GGU no.	U ppm	Th ppm	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Lu ppm	P pct
406998	6.1	7.1	20	43	14	2.5	0.8	0.0	1.5	0.25	0.015
406999	3.7	9.8	26	59	17	3.2	0.9	0.0	1.7	0.37	0.020
425301	0.0	0.0	8	23	7	2.6	1.0	0.7	2.9	0.44	0.027
425302	2.0	21.0	46	100	38	6.8	1.2	0.0	1.5	0.21	0.025
425303	2.4	17.0	61	130	37	7.6	1.0	0.0	0.8	0.16	0.022
425304	4.8	1.5	20	50	23	5.6	0.0	0.0	2.4	0.41	0.229
425305	1.9	26.0	44	91	33	7.6	1.6	0.0	1.0	0.17	0.038
425306	8.8	45.0	79	160	54	8.3	1.3	0.0	3.2	0.58	0.027
425307	0.0	1.1	3	9	0	0.5	0.0	0.0	1.0	0.20	0.003
425308	0.0	1.4	13	31	0	3.0	0.8	0.0	1.3	0.19	0.046
425309	2.5	13.0	38	70	23	4.6	1.4	0.0	2.2	0.37	0.022
425310	0.0	4.0	23	44	18	2.8	0.9	0.0	0.5	0.07	0.021
425311	0.6	0.4	1	0	0	0.0	0.0	0.0	0.3	0.07	0.002
425312	0.0	1.0	11	30	12	3.6	1.7	0.0	1.5	0.23	0.033
425313	0.0	17.0	61	130	46	8.5	2.0	0.0	1.0	0.20	0.039
425314	3.3	29.0	71	140	57	9.8	1.4	1.6	0.8	0.11	0.023
425315	1.5	2.6	29	56	18	3.4	0.8	0.0	1.0	0.16	0.023
425316	0.0	4.5	44	88	26	4.8	1.4	0.0	2.9	0.50	0.029
425317	0.0	0.3	5	9	0	1.4	0.6	0.0	1.5	0.17	0.042
425318	0.0	3.5	12	30	11	2.9	0.8	0.6	1.7	0.31	0.037
425319	0.0	0.0	4	10	7	1.2	0.7	0.0	1.0	0.20	0.047
425320	0.0	0.0	5	11	0	1.3	0.6	0.0	1.1	0.23	0.046
425321	14.0	8.5	26	44	11	2.4	1.1	0.0	0.7	0.15	0.060
425322	0.0	0.0	6	13	8	2.0	0.9	0.0	1.8	0.25	0.051
425323	1.7	2.5	22	48	23	4.6	1.1	0.9	3.5	0.58	0.166
425324	3.0	1.2	14	17	8	2.7	0.8	0.6	2.3	0.40	0.609
425325	0.0	0.3	5	11	5	1.5	0.6	0.0	1.2	0.20	0.048
425326	8.1	0.0	11	31	16	4.0	0.8	0.0	2.1	0.33	0.160
425327	0.7	0.3	1	0	0	0.2	0.0	0.0	0.0	0.00	0.010
425328	2.7	19.0	55	110	38	7.2	1.2	1.1	3.8	0.60	0.051
425329	4.0	14.0	63	120	41	7.0	0.6	0.9	3.5	0.64	0.021
425330	6.1	15.0	47	94	34	6.3	1.3	0.0	3.0	0.49	0.035
425331	2.5	8.6	43	86	33	4.1	1.0	0.0	0.8	0.13	0.027
425332	1.7	2.6	27	51	17	2.4	0.8	0.0	0.6	0.13	0.014
425333	9.4	5.3	34	45	13	1.1	0.0	0.0	0.4	0.00	0.122
425334	0.0	15.0	49	96	31	6.3	1.4	0.0	1.6	0.28	0.034
425335	4.4	18.0	49	100	33	7.0	1.1	0.9	3.1	0.54	0.033
425336	0.0	17.0	76	150	48	10.0	1.7	1.6	2.7	0.45	0.019
425337	10.0	4.3	27	55	29	7.6	1.4	1.6	6.2	0.93	0.488
425338	5.3	14.0	50	100	41	6.6	1.1	0.8	2.7	0.42	0.019
425339	5.8	16.0	72	150	51	8.1	2.0	0.0	2.0	0.26	0.202
425340	0.0	2.9	2	3	0	0.4	0.0	0.0	0.5	0.12	0.009
425341	0.0	0.0	8	23	11	2.7	0.9	0.0	1.3	0.19	0.009
425342	7.0	8.3	35	88	36	11.0	3.4	1.7	4.2	0.64	0.208
425343	1.0	1.7	33	68	27	4.8	1.1	0.0	1.3	0.23	0.066
425344	6.2	8.1	10	27	13	2.9	0.7	0.0	1.4	0.22	0.044
425345	0.8	2.7	12	32	15	3.9	0.5	0.6	1.7	0.26	0.050
425346	7.9	12.0	38	74	26	5.2	1.1	0.5	1.7	0.31	0.077
425347	5.4	11.0	29	57	24	4.8	1.3	0.0	2.1	0.37	0.070

Table 3. Analytical results

GGU no.	U ppm	Th ppm	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Lu ppm	P pct
425348	1.8	6.8	38	72	27	3.8	1.7	0.0	0.7	0.12	0.021
425349	1.6	7.8	32	60	15	4.7	1.0	0.9	4.0	0.63	0.016
425350	0.0	1.1	7	17	10	2.5	0.9	0.0	1.3	0.22	0.038
425351	0.0	0.0	11	31	18	5.2	1.6	0.9	3.2	0.43	0.082
425352	0.0	0.9	7	16	7	2.1	0.7	0.0	1.2	0.19	0.027
425353	2.3	14.0	48	96	35	6.1	1.5	0.0	3.0	0.50	0.023
425354	1.6	11.0	40	89	27	5.9	1.4	0.0	4.4	0.73	0.022
425355	0.0	0.0	1	7	0	2.7	1.0	1.2	4.1	0.68	0.037
425355.1											
425355.2											
425356	5.6	2.3	11	16	10	3.2	0.8	0.9	3.2	0.54	0.370
425357	5.9	0.0	12	28	17	4.9	1.4	1.1	3.1	0.44	0.122
425358	21.0	1.1	11	21	0	2.6	1.2	0.0	2.1	0.38	0.055
425359	0.6	1.4	5	6	0	0.4	0.0	0.0	0.0	0.05	0.093
425360	0.0	0.5	3	4	0	0.4	0.0	0.0	0.2	0.07	0.050
425361	2.6	3.5	33	71	26	5.6	2.0	0.0	2.2	0.36	0.207
425362	0.0	0.4	11	35	16	4.9	1.3	0.0	1.8	0.27	0.008
425363	1.8	6.0	120	280	110	17.0	2.3	1.3	2.0	0.31	0.240
425364	0.0	0.0	2	4	0	0.6	0.4	0.0	0.2	0.06	0.086
425365	0.0	9.4	45	88	35	5.8	1.7	0.0	2.0	0.32	0.026
425366	2.7	6.8	40	71	26	4.3	1.1	0.0	1.2	0.20	0.017
425367	0.0	16.0	57	110	44	7.5	1.4	0.0	2.7	0.44	0.025
425368	0.0	1.1	11	18	8	2.2	0.9	0.0	1.3	0.25	0.051
425369	0.0	0.0	3	6	5	1.3	0.7	0.0	1.5	0.20	0.027
425370	8.6	41.0	44	75	27	5.0	1.3	0.0	1.6	0.27	0.079
425371	3.0	0.0	5	11	7	0.6	0.6	0.0	0.6	0.12	0.020
425372	0.0	0.0	12	22	10	2.1	0.9	0.0	1.2	0.20	0.013
425373	5.4	9.5	31	57	27	5.1	1.3	0.0	3.7	0.70	0.030
425374	2.0	0.9	25	40	14	1.6	0.9	0.0	0.6	0.14	0.033
425375	1.5	11.0	28	61	21	3.7	0.8	0.0	0.8	0.16	0.033
425376	2.6	4.1	21	41	16	3.4	1.0	0.0	2.0	0.28	0.069
425377	4.8	18.0	57	110	40	7.7	1.7	1.1	2.3	0.37	0.047
425378	0.0	2.4	2	3	0	0.2	0.0	0.0	0.0	0.00	0.009
425504	0.0	24.0	58	130	49	8.9	1.6	0.0	2.5	0.49	0.038
425506	0.0	4.8	17	37	11	2.3	0.6	0.0	1.3	0.17	0.026
425513	3.2	43.0	86	170	58	11.0	1.6	0.0	3.7	0.63	0.029
425514	0.0	2.1	21	45	20	4.4	1.5	0.0	1.4	0.23	0.059
425517	2.1	3.5	160	310	140	24.0	3.0	1.5	3.5	0.57	0.488
425526	0.0	6.9	37	84	35	6.7	1.3	0.0	2.2	0.39	0.056
425536	0.0	2.5	13	27	6	2.2	0.7	0.0	1.7	0.23	0.018
425540	2.9	3.0	14	31	8	1.3	0.0	0.0	0.5	0.10	0.005
425543	1.4	0.7	24	56	24	5.9	1.4	1.0	3.8	0.58	0.070
425546	3.1	7.0	50	100	42	8.5	1.5	0.0	7.1	1.09	0.031
425555	0.0	3.7	47	130	76	18.0	5.9	2.5	5.1	0.74	0.296
425556	2.0	2.9	30	60	28	4.8	1.0	0.0	1.3	0.21	0.106
425561	0.0	1.1	28	50	19	3.4	1.2	0.0	0.9	0.13	0.085
425562	0.0	18.0	110	220	92	14.0	3.1	1.4	2.4	0.35	0.171
425566	1.0	0.9	5	8	0	0.6	0.0	0.0	0.0	0.00	0.007
425567	0.0	0.0	3	10	8	2.2	0.9	0.8	3.3	0.58	0.029

Table 3. Analytical results

GGU no.	U ppm	Th ppm	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Lu ppm	P pct
425571	0.0	1.2	10	17	8	1.8	1.6	0.0	1.2	0.24	0.032
425584	0.0	14.0	61	120	46	7.9	2.0	0.0	1.4	0.25	0.027
425587	1.6	15.0	120	230	80	14.0	3.9	0.0	2.0	0.35	0.187
425588	1.8	8.8	52	100	36	7.4	2.0	0.0	3.2	0.39	0.185
425590.1	0.0	1.8	14	29	16	2.9	1.1	0.0	1.3	0.24	0.058
425704	0.0	8.6	35	67	21	3.8	1.2	0.0	1.8	0.30	0.022
425707	0.0	0.4	11	23	12	2.6	0.9	0.0	2.5	0.42	0.042
425709	0.0	2.4	32	57	16	2.9	1.2	0.0	1.0	0.15	0.068
425711	0.0	0.0	33	66	25	3.9	1.1	0.0	1.0	0.18	0.086
425712	0.0	7.6	47	94	36	6.8	1.9	0.0	3.5	0.55	0.181
425715	2.5	5.7	31	80	37	7.0	1.4	0.8	1.6	0.29	0.069
425718	0.0	0.6	3	8	0	1.2	0.4	0.0	0.8	0.15	0.010
425721	0.0	1.5	29	63	29	6.0	1.4	0.8	3.0	0.50	0.067
425728	1.4	4.0	18	43	17	4.8	1.8	0.0	3.1	0.46	0.065
425730	0.0	1.3	15	41	17	3.6	1.5	0.0	1.7	0.21	0.040
425749	0.0	0.0	10	24	16	3.7	1.2	0.0	3.7	0.60	0.066
Samples	161	161	161	161	161	161	161	161	161	161	161
Minimum	0.0	0.0	1	0	0	0.0	0.0	0.0	0.0	0.00	0.002
Maximum	21.0	45.0	160	310	140	24.0	5.9	2.5	7.1	1.09	0.609

Table 3. Analytical results

GGU no.	Al pct	Ba ppm	Na pct	K pct	Ca pct	Ca pct (icp)	Sr ppm	Sr ppm (icp)	Mg pct	Mn ppm	Ti pct
406927.1	1.79	110	0.07	0.69	0	0	0	30	0.82	40	0.04
406928	8.60	250	0.03	2.50	0	0	0	115	4.17	38	0.04
406929.1	8.56	370	2.72	0.51	7	7	0	300	2.01	1090	1.12
406932	9.97	290	3.18	1.07	5	6	0	338	1.20	664	0.59
406935	7.24	1000	1.15	3.18	0	0	0	124	1.07	153	0.30
406936	6.40	640	1.61	2.37	0	1	920	155	0.44	50	0.10
406938	7.28	920	1.17	3.25	0	1	0	121	0.92	206	0.09
406943	7.18	880	0.52	2.79	0	0	0	74	1.31	181	0.16
406945	3.45	190	0.97	0.75	1	1	0	67	0.38	157	0.14
406946	6.63	790	1.28	2.96	0	1	0	139	0.75	217	0.05
406947	6.74	700	1.31	3.24	0	1	0	99	0.95	580	0.05
406949	6.93	540	1.37	2.71	0	1	0	129	0.60	175	0.11
406950	3.27	300	0.56	1.63	0	0	0	44	0.48	72	0.07
406951	2.03	0	0.47	0.23	0	0	0	21	0.35	96	0.07
406952	0.84	0	0.15	0.04	0	1	0	10	2.83	1284	0.16
406955.1	2.19	250	0.17	1.02	0	0	0	21	0.22	55	0.04
406955.2	2.16	410	0.16	1.27	0	0	0	28	0.18	53	0.03
406956	5.13	470	0.38	2.23	0	1	0	47	0.48	107	0.07
406958	4.19	220	0.39	0.29	0	0	0	71	1.03	114	0.11
406961	1.83	350	0.41	0.62	0	0	0	42	0.30	423	0.01
406962	4.30	230	0.88	1.77	0	1	0	85	0.58	476	0.01
406963	1.28	170	0.36	0.27	0	0	0	43	0.10	102	0.01
406964	2.04	190	0.28	0.59	0	0	0	24	0.33	1758	0.02
406965	3.36	280	1.05	1.25	0	0	0	59	0.48	417	0.04
406966	2.61	26	0.61	0.90	0	0	0	40	0.40	514	0.02
406967	1.54	97	0.26	0.62	0	0	0	22	0.25	352	0.01
406968	2.10	190	0.49	0.37	0	0	0	61	0.31	191	0.02
406969	1.70	120	0.25	0.67	0	0	0	25	0.12	308	0.01
406970	2.39	180	0.38	0.81	0	0	0	23	0.30	419	0.01
406971	1.69	0	0.20	0.73	0	0	0	24	0.19	343	0.01
406972	1.68	280	0.30	0.77	0	0	0	34	0.15	138	0.03
406973	1.96	0	0.45	0.65	0	0	0	29	0.16	209	0.01
406974	3.63	360	0.63	1.48	0	0	0	89	0.43	378	0.05
406975	3.13	320	0.60	1.31	0	0	0	60	0.44	398	0.05
406976	3.94	280	0.84	1.67	0	0	0	60	0.77	373	0.04
406977	5.41	440	0.99	2.90	0	0	0	81	0.86	327	0.02
406978	2.77	180	0.51	0.59	0	0	0	53	0.39	426	0.06
406979	1.20	0	0.15	0.61	0	0	0	24	0.31	176	0.06
406980	0.89	180	0.05	0.52	0	0	0	26	0.06	48	0.01
406981	1.16	180	0.08	0.39	0	0	0	13	0.15	60	0.01
406982	0.93	150	0.07	0.54	0	0	0	24	0.06	55	0.01
406983	3.24	370	0.58	0.85	0	1	0	124	0.41	99	0.02
406984	1.95	220	0.27	0.63	0	0	0	47	0.16	58	0.01
406992	6.55	740	1.57	2.66	0	1	0	181	0.64	123	0.11
406993	6.52	750	1.45	2.92	1	1	0	183	0.73	132	0.14
406994	3.75	440	0.70	1.55	0	0	0	69	0.46	147	0.14
406995	6.83	800	1.96	3.06	0	1	0	183	0.67	190	0.15
406996	6.87	830	1.42	3.46	3	1	0	176	0.55	98	0.08
406997	5.68	810	1.18	2.83	0	1	0	142	0.44	95	0.06

Table 3. Analytical results

GGU no.	Al pct	Ba ppm	Na pct	K pct	Ca pct	Ca pct (icp)	Sr ppm	Sr ppm (icp)	Mg pct	Mn ppm	Ti pct
406998	3.16	390	0.64	1.36	0	0	0	85	0.27	145	0.04
406999	3.96	500	0.96	1.73	0	1	0	115	0.26	110	0.05
425301	7.45	540	0.30	2.64	5	5	0	129	5.20	1463	0.35
425302	4.84	410	1.20	1.75	0	1	0	72	0.82	139	0.18
425303	8.40	970	0.92	2.94	0	0	0	66	1.71	76	0.14
425304	0.97	90	0.04	0.26	0	1	0	3	0.30	369	0.08
425305	9.75	0	2.05	1.96	0	2	0	284	2.36	756	0.39
425306	7.26	0	2.45	2.41	0	1	0	108	1.16	110	0.17
425307	1.87	120	0.33	0.50	0	0	0	24	0.53	232	0.04
425308	3.53	0	0.50	0.42	8	6	0	288	11.29	1141	0.62
425309	7.26	720	1.16	2.79	0	1	0	122	1.40	459	0.10
425310	7.17	580	2.27	2.34	0	2	0	172	0.19	318	0.11
425311	4.75	0	0.03	0.01	0	0	0	5	0.01	13	0.02
425312	2.88	0	0.46	0.31	11	10	0	330	8.13	1459	0.77
425313	9.68	820	1.83	3.37	4	2	0	117	1.20	76	0.32
425314	7.97	910	0.85	2.92	0	1	1100	112	1.24	147	0.16
425315	4.12	1300	0.87	1.63	21	18	0	569	3.01	900	0.18
425316	7.46	410	1.76	1.16	0	2	0	274	1.24	334	0.24
425317	7.68	0	1.82	4.59	0	1	0	65	3.47	660	0.51
425318	7.02	480	1.76	2.97	5	5	0	159	3.84	780	0.39
425319	7.79	66	2.78	0.57	4	2	0	117	3.24	947	0.46
425320	7.96	430	2.09	1.09	3	4	0	149	3.73	930	0.46
425321	9.23	220	3.01	1.79	4	5	0	266	1.71	296	0.41
425322	6.68	0	2.25	0.64	4	2	0	93	1.56	570	0.49
425323	3.49	0	0.41	0.16	4	5	0	87	0.99	755	0.08
425324	0.24	0	0.02	0.01	3	3	0	45	1.91	3900	0.01
425325	1.63	180	0.28	0.45	19	18	0	107	0.46	1011	0.12
425326	2.78	350	0.07	1.66	7	7	0	45	1.28	737	0.55
425327	0.12	0	0.01	0.01	0	0	0	2	0.10	105	0.02
425328	7.23	350	1.66	1.24	2	2	0	144	1.20	421	0.17
425329	6.63	900	1.25	4.39	0	0	0	53	0.55	262	0.02
425330	7.26	820	1.31	2.58	0	1	0	137	1.08	132	0.22
425331	7.43	490	1.60	2.19	0	1	510	110	0.90	357	0.10
425332	5.76	170	1.04	0.67	0	1	0	87	0.71	162	0.17
425333	7.10	1200	2.26	4.60	0	2	0	341	0.14	175	0.02
425334	6.02	730	1.21	2.97	0	1	0	155	0.94	143	0.35
425335	7.67	1100	0.88	4.00	0	0	0	83	1.21	283	0.03
425336	8.59	690	0.68	2.31	1	1	0	109	2.95	488	0.88
425337	4.13	330	0.77	0.91	0	2	0	89	0.52	405	0.12
425338	6.58	840	2.10	2.15	0	1	0	152	1.20	214	0.07
425339	7.65	670	0.38	1.41	5	5	1800	1098	3.62	937	0.34
425340	0.41	0	0.12	0.01	0	1	0	5	1.25	1288	0.30
425341	7.34	0	4.17	0.24	5	4	0	138	5.17	544	0.51
425342	7.33	560	0.46	1.68	0	2	0	47	12.66	1695	0.62
425343	4.81	210	1.79	0.37	2	1	0	179	3.14	260	0.30
425344	6.73	320	0.65	3.21	15	14	0	286	2.51	285	0.30
425345	1.88	220	0.50	0.88	3	2	0	193	1.52	531	0.16
425346	7.55	920	0.98	3.75	9	9	0	600	2.03	441	0.33
425347	7.47	830	1.73	6.18	4	4	0	572	2.37	546	0.35

Table 3. Analytical results

GGU no.	Al pct	Ba ppm	Na pct	K pct	Ca pct	Ca pct (icp)	Sr ppm	Sr ppm (icp)	Mg pct	Mn ppm	Ti pct
425348	7.32	1200	1.06	2.73	0	1	0	196	1.75	130	0.18
425349	7.69	880	0.63	3.42	0	0	0	48	2.02	644	0.41
425350	4.12	0	0.68	0.25	5	5	0	103	12.52	1094	0.60
425351	7.06	0	1.52	0.33	10	8	0	247	3.70	1383	1.38
425352	3.76	0	0.56	0.04	4	5	0	184	13.05	1221	0.48
425353	7.43	830	1.05	3.33	0	0	0	145	1.22	170	0.14
425354	7.58	300	1.77	1.11	1	2	0	169	1.44	484	0.20
425355	6.58	0	0.97	0.28	7	8	0	80	4.83	1981	0.81
425355.1											
425355.2											
425356	1.07	0	0.01	0.01	0	1	0	14	0.49	84	0.02
425357	9.68	150	1.27	0.59	2	2	0	202	2.16	204	0.23
425358	5.97	260	0.93	1.03	1	2	0	126	0.77	292	0.32
425359	1.35	0	0.04	0.14	0	0	0	8	22.82	1881	0.26
425360	1.71	0	0.07	0.31	0	0	0	8	20.15	1318	0.32
425361	6.94	0	1.32	0.74	8	9	0	49	9.08	1400	0.57
425362	7.96	0	4.33	0.33	4	4	0	227	3.65	392	0.45
425363	7.76	2000	1.67	3.74	0	2	0	297	0.93	492	0.95
425364	1.18	0	0.07	0.01	4	5	0	8	3.67	1820	0.14
425365	8.88	730	1.28	3.12	0	1	0	157	3.63	536	0.40
425366	6.22	410	2.60	1.79	2	1	0	117	0.17	120	0.06
425367	7.16	990	1.09	2.97	0	1	0	141	0.99	180	0.15
425368	9.30	500	0.50	1.97	10	10	0	273	2.41	1851	0.36
425369	9.06	320	2.43	0.76	8	7	0	152	3.44	1525	0.28
425370	3.89	660	0.78	1.54	0	1	0	105	0.70	249	0.11
425371	6.68	600	1.62	2.09	2	2	0	221	3.90	862	0.38
425372	6.69	0	0.92	1.11	2	3	0	167	3.80	709	0.31
425373	5.14	450	1.37	2.07	0	1	0	71	0.86	255	0.20
425374	7.58	680	2.60	1.41	2	2	0	462	0.88	495	0.17
425375	6.18	360	0.68	0.70	5	3	0	422	1.68	771	0.27
425376	6.28	250	0.43	1.42	4	4	0	267	2.35	903	0.30
425377	8.09	1000	0.81	4.37	1	0	0	84	1.15	232	0.30
425378	0.09	0	0.00	0.01	0	0	0	3	0.54	136	0.01
425504	8.08	910	1.51	2.59	0	1	0	97	1.21	397	0.30
425506	4.20	420	0.45	1.73	0	0	0	52	1.20	183	0.18
425513	6.87	380	1.76	1.27	0	1	0	115	1.76	722	0.34
425514	4.23	370	1.30	0.52	13	10	0	364	7.71	1273	0.98
425517	7.67	1500	3.90	1.53	4	4	0	565	1.54	807	1.46
425526	5.93	1600	2.30	2.62	10	8	0	376	2.16	755	0.28
425536	5.66	930	1.62	0.73	11	10	0	334	5.61	1024	0.26
425540	0.31	130	0.24	0.03	13	11	0	179	6.95	1107	0.01
425543	8.29	490	2.78	1.42	3	4	0	251	2.16	906	0.42
425546	8.24	0	1.13	0.24	11	9	0	112	2.02	2218	0.13
425555	6.68	0	1.76	1.66	5	5	0	444	2.90	1502	2.24
425556	8.18	1100	2.42	2.29	1	2	0	338	1.68	519	0.35
425561	6.85	3500	1.96	4.75	0	1	0	338	0.24	189	0.16
425562	7.79	1400	2.41	2.86	3	2	0	294	0.71	396	0.55
425566	0.62	190	0.21	0.20	0	0	0	18	0.10	55	0.01
425567	8.23	0	1.51	0.23	9	8	0	134	4.66	1388	0.54

Table 3. Analytical results

GGU no.	Al pct	Ba ppm	Na pct	K pct	Ca pct	Ca pct (icp)	Sr ppm	Sr ppm (icp)	Mg pct	Mn ppm	Ti pct
425571	9.28	720	2.93	5.62	2	2	0	487	0.27	574	0.11
425584	8.73	1300	2.51	2.56	4	2	0	373	3.78	415	0.58
425587	9.72	3300	3.12	3.83	4	4	2700	1903	1.45	991	0.38
425588	7.06	880	2.28	1.83	0	4	0	369	1.73	1230	0.81
425590.1	7.81	410	2.55	0.48	6	5	0	379	3.86	1086	0.42
425704	6.17	850	0.94	2.36	0	0	0	104	1.08	219	0.29
425707	7.84	260	2.13	0.62	5	6	0	97	3.03	1191	0.38
425709	7.85	1000	2.63	1.93	2	3	0	511	1.07	406	0.21
425711	8.44	1100	3.11	2.08	2	3	1600	791	0.48	162	0.18
425712	7.13	890	2.22	1.55	4	4	0	288	1.94	1255	0.84
425715	7.51	0	1.13	0.31	15	14	0	272	3.17	541	0.51
425718	1.11	0	0.13	0.08	5	5	0	66	14.57	1169	0.11
425721	8.10	670	1.96	1.51	6	5	740	321	3.14	523	0.42
425728	6.80	410	1.62	1.01	5	6	0	187	2.74	1617	0.97
425730	8.54	670	6.35	0.61	0	3	0	483	2.35	147	0.10
425749	7.88	0	2.73	0.28	7	6	0	196	4.50	1759	0.57
Samples	161	161	161	161	161	161	161	161	161	161	161
Minimum	0.09	0	0.00	0.01	0	0	0	2	0.01	13	0.01
Maximum	9.97	3500	6.35	6.18	21	18	2700	1903	22.82	3900	2.24

Map 2. Rock sample sites

