2005 Assessment Report

Takla - Redton Property

Claims CS001 – 128, HS001 – 135, EXT001-003,

King, Twin05, Twin 0502, HAL 1.

Geological Data Compilation, Geophysical Surveys, Prospecting,

Interpretation and Probabilistic Targeting for Porphyry Copper Deposits

Omineca Mining Division

NTS 93N/3,6,7,10,11

Claim Owners: Redton Resources Inc.

Claim Operators: Geoinformatics Exploration Inc.

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Executive Summary

The Redton Property is an alkali porphyry copper-gold project located in the Quesnellia region of northern British Columbia, Canada. The property is located within close proximity to known alkali porphyry copper-gold deposits at Mt Milligan (445Mt @ 0.215% Cu, 0.415g/t Au), Chuchi Lake (50Mt @ 0.21% Cu, 0.21g/t Au) and Lorraine (31.9Mt @ 0.66% Cu, 0.17g/t Au, 4.7g/t Ag).

The property is owned by Redton Resources Inc. with Geoinformatics Exploration Inc. currently earning an 85% interest by spending $4.75M on exploration over 5 years. Included in the option agreement is the Takla-Rainbow property, currently under option to Redton Resources Inc. from prospector Mr Lorne Warren.

Work on the property in 2005 comprised a thorough process of: digital data capture and integration, interpretation of geoscience data, and application of a rigorous process of generating targets for alkalic porphyry copper-gold deposits. Data was compiled from various open file sources for the project and included:

- 123 drill holes, including lithology logs and assays
- 26 geological outcrop and interpretation maps
- 15 geophysical datasets including magnetics, gravity, radiometrics and induced polarisation surveys
- 22,982 located geochemistry samples
- Mineral occurrence data from the BCGS Minfile database.

In addition to compiling historical data the entire project area was flown with detailed magnetics and radiometrics in two separate surveys in 2005.

The historical data compilation and detailed magnetics and radiometrics formed the basis of detailed lithological, geochemical and structural interpretations. These were subsequently used to generate targets using a Geoinformatics-refined targeting process known as MOCA. The MOCA targeting process is a model-driven method of targeting for mineral deposits using Monte Carlo probabilistic algorithms in order to incorporate uncertainty and risk into the targeting procedure.

A total of 32 areas were defined as targets and subsequently ranked according to MOCA probabilities and degree of previous exploration. Several of the high ranked targets also have complementary empirical anomalism, such as zoned multi-element geochemical anomalies, IP chargeability and magnetic anomalies. The highest ranked targets will form the basis for exploration in the 2006 field season, with an extensive field program planned including drilling of four to six targets.

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1.0 Introduction

1.1 Preamble

This report describes a major project of digital data capture, integration and interpretation of geoscience data in the Quesnellia region of northern British Columbia, Canada. The prime function of the project was to focus targeting for alkalic porphyry copper-gold deposits. The project commenced in June 2005, and is ongoing.

The Redton project is a joint venture between Geoinformatics Exploration Inc (Geoinformatics) and Redton Resources Inc (Redton).

1.2 Project History

Redton staked the claims comprising the Redton project on the 12th January 2005, at the initiation of online staking in British Columbia. In June 2005 Geoinformatics entered into a joint venture with Redton and commenced work on the project.

Prior to that numerous explorers have prospected various smaller parts of this large claim group. These include Teck Explorations Ltd., Placer Dome Inc., Imperial Metals Corp. and Eastfield Resources Ltd. Detailed descriptions of the area's exploration history are available in a number of reports including MacIntyre (2004), Buskas and Bailey (1992), and Morton (2001) (Lorraine area).

Mineral exploration in the Omenica district commenced with placer gold prospecting in 1869, with copper exploration commencing 100 years later in 1969 (Buskas, A and Bailey, D, 1992). Since that time at least 139 assessment reports have been submitted for work completed within and around the claim group. Some 123 drill holes, 24000 geochemistry sample points, numerous outcrop geology maps, ground geophysical surveys and other data were compiled by Geoinformatics. Despite this large volume of data, other than regional government surveys, large parts of the project area remain virtually unexplored.

The most significant work completed within the project area is at the Takla-Rainbow property. Much of this was completed by Imperial Metals Corporation between 1985 and 1988, and by Eastfield Resources Ltd. in 1990 and 1991 (MacIntyre, D.G, 2004). Work completed included extensive soil and rock sampling programs and diamond drilling (87 diamond drill holes totalling 16,813m). This work resulted in the discovery of a number of structurally controlled zones of gold-quartz veining that collectively have been estimated by Imperial Metals Corporation in 1988 to contain 321,101 tons grading 0.25 ounces per ton Au (MacIntyre, D.G, 2004).

1.3 Location and Access

The Redton project is located in northern British Columbia, approximately 36km east of Germansen Landing and 140km north-north-west of Fort St James (Figure 1.1).

Access to the Project is via sealed public roads from Fort St James, then via the Manson Creek-Takla Landing all weather gravel road. Numerous forestry roads and tracks provide limited access to some parts of the property but most areas require helicopter transport for access.

A field camp near the Takla-Rainbow gold resource in the north of the project area has provided a base for local exploration. The camp is accessible by a 4wd road from the Manson Creek-Takla Landing road.

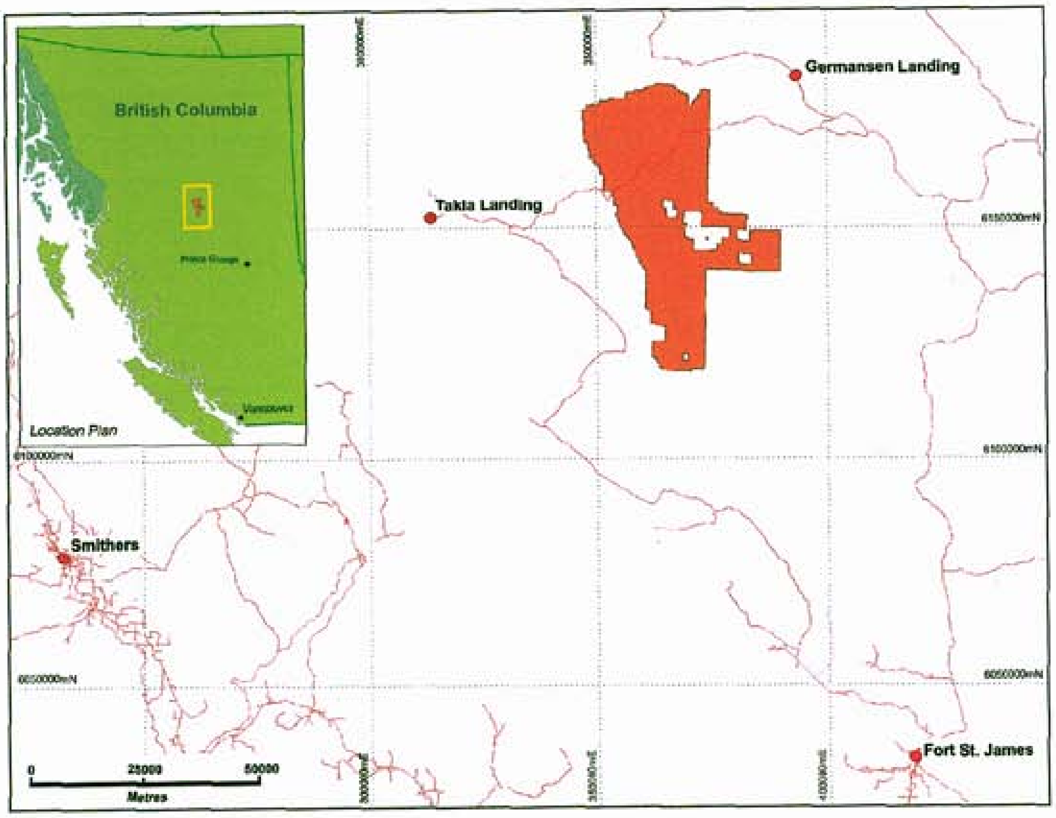


Figure 1.1 Redton Project Location Plan (Claim Area Shown in Orange)

1.4 Tenure

The Redton claim block consists of 272 contiguous claims covering an area of 121,846 hectares (Figure1.2). The claims are currently listed under Redton Resources Inc. Geoinformatics has an option agreement to earn an 85%

interest in the project by spending $4.75M on exploration over 5 years. Included in this agreement are a small group of claims owned by prospector Lorne Warren which are subject to a separate option agreement between Redton Resources and Mr Warren. Table 1.1 contains a summary of the project claim status. For an individual listing of the tenure see Appendix 12.

Table 1.1. Redton Project – Claim Status

Claim Name	Owner	Recording Date	Area (Hectares)	Earliest Expiry
CS001 – 128	Redton Resources	January 12/13 2005	57751.13	Jan. 12, 2007
EXT001 – 003	Redton Resources	January 12/13 2005	974.86	Jan. 20, 2007
HS001 – 135	Redton Resources	January 12/13 2005	60744.54	Jan. 12, 2007
King	Redton Resources	February 1, 2005	18.34	Feb. 1, 2012
Twin 05	Lorne Warren	January 19 2005	456.317	Jan. 19, 2008
Twin 0502	Lorne Warren	January 19 2005	346.815	Jan. 19, 2008
	Lorne Warren	February 10 2005	802.893	May 1, 2008
	Lorne Warren	February 10 2005	766.411	May 1, 2008
HAL 1	Geoinformatics Exploration Inc.	January 13,2006	440.421	Jan. 1, 2007
Total	272 claims for 121,846 Hectares			

2.0 Geological Setting

2.1 Regional Overview

Detailed descriptions of the regional geology are contained in various reports, with most of the section below derived from the British Columbian Geological Survey publication by Nelson and Bellefontaine (1996) (*The Geology and Mineral Deposits of North-Central Quesnellia; Tezzeron Lake to Discovery Creek, Central British Columbia*).

The Redton project is located within the Quesnel Trough or Quesnellia, a Mesozoic island arc terrane juxtaposed against the ancestral North American continental margin (Nelson and Bellefontaine, 1996). The Quesnel Trough largely comprises Upper Triassic and Lower Jurassic island arc volcanic and sedimentary units of the Takla Group (Triassic) and the Chuchi Lake and Twin Creek successions (Jurassic). The Hogem intrusive suite also features prominently, comprising Late Triassic and Early Jurassic composite plutons that are presumably the intrusive equivalents of the island arc volcanic units (Nelson and Bellefontaine, 1996).

The Quesnel Trough hosts several significant porphyry copper-gold deposits, with the Redton property located NE of Mt Milligan (445Mt @ 0.215% Cu; 0.415g/t Au) and south of the Kemess South (109Mt @ 0.234%Cu; 0.712g/t Au) and Kemess North (400Mt @ 0.224% Cu; 0.409g/t Au) (MINFILE database, 2005).

2.2 Stratigraphy

Descriptions for rock units pertaining to the project area are listed as follows and are based largely on the terminology of Nelson and Bellefontaine (1996).

Takla Group

The Takla Group is late Triassic in age and consists of a number of distinct (informal) units including the Slate Creek succession, the Plughat Mountain succession, the Witch Lake succession and the Willy George succession. Although there are variations to the sequence, broadly the Takla Group represents an upward transition from basinal sediments through epiclastic to pyroclastic components, and finally to thick volcanic piles (Nelson and Bellefontaine, 1996). Nelson and Bellefontaine (1996) imply the Takla Arc comprised a series of discrete basaltic centres.

Within the Redton project area, the Takla Group is predominantly represented by the Plughat Mountain succession, comprising augite-plagioclase porphyritic basalt flows and fragmentals, pillow basalt, amygdaloidal olivine basalt, heterolithic tuff, volcanic sandstone and limestone. There are also lesser amounts of porphyritic volcaniclastics and flows of the Witch Lake succession, and tuffaceous and sedimentary units of the Willy George succession on the property. The south-eastern portion of the property also contains significant areas of Inzana Lake succession, comprising tuffaceous and sedimentary rocks including lapilli tuffs, sandstone, argillite and sedimentary breccia.

Twin Creek Succession

Nelson and Bellefontaine (1996) describe the area in the northwest portion of the project area as the type locality for a sequence informally termed the Twin Creek succession. The succession is Early Jurassic in age and unconformably overlies the Plughat Mountain succession of the Takla Group (Nelson and Bellefontaine, 1996). The succession consists of heterolithic lapilli tuff, agglomerate, crystal tuff and heterolithic volcanic conglomerate, all with dominant plagioclase phenocrysts. Various porphyritic flows also occur, including augite-hornblende, plagioclase-augite and plagioclase-quartz porphyries. The succession is described as representing a progressive felsic differentiation of volcanic magmas through time (Nelson and Bellefontaine, 1996).

Slate Creek Succession

The Slate Creek succession is a middle – late Triassic sequence of grey slate and siltstone with lesser tuffaceous rocks and minor andesite and basalt. The succession occurs in the central eastern portion of the project area.

2.3 Intrusions

At least half of the project area is composed of intrusive rocks, with the Hogem intrusive suite predominating.

Hogem Intrusive Suite

The Hogem intrusive suite comprises several different plutons of varying age and composition. Within the project area, Jurassic monzonites predominate and form an elongate north-northwest trending batholith, with a number of early Cretaceous granites intruding into the older monzonite. Late Triassic to early Jurassic diorites also occur within the project area, generally on the margins of the monzonite batholith.

The alkalic porphyry copper gold deposits in the Quesnel Trough are hosted by early Jurassic components of the Hogem intrusive suite. Monzonitic "crowded porphyries" (Nelson and Bellefontaine, 1996) are commonly associated with porphyry copper deposits, including Mt Milligan and Chuchi Lake.

Valleau Creek Intrusive suite

The Valleau Creek intrusive suite comprises late Triassic to early Jurassic diorite, gabbro, pyroxenite and hornblendite. Within the project area, gabbros of this suite have been mapped along the south-eastern margin of the Hogem Suite Batholith. They have a prominent signature in the aeromagnetics.

Germansen Batholith

The Germansen Batholith is a large granite body situated along the eastern margin of the property. The batholith is early Cretaceous in age and is compositionally a coarse grained, generally equigranular or orthoclase megacrystic hornblende – biotite granite. The Germansen Batholith is not prospective for alkalic porphyry copper-gold mineralisation, however a number of molybdenite showings along its margins indicate it may be prospective for that mineral.

2.4 Structural Setting

The Quesnellia terrane is a structurally-emplaced island arc terrane which was later accreted on to the western margin of ancestral North America in the later part of the early Jurassic age (Nelson and Bellefontaine, 1996). Regional-scale dextral transcurrent faults bound and disrupt the Quesnellia, with the Pinchi fault forming the western boundary to the project area, with the Discovery Creek and Manson fault systems to the east.

Nelson and Bellefontaine (1996) suggest the tabular form of several intrusions indicate arc-parallel structures that were active during emplacement. Geoinformatics also interpreted deep-level, belt-parallel structures from the geophysics. Also recognised were relatively evenly spaced (20-30km spaced) deep-level north-east trending cross-arc structures. These appear to post-date the belt-parallel structures but may have also been active during the island arc formation of the Quesnel terrane. Within this regional framework, numerous smaller faults of north-west, north-east and west-north-west orientation occur within the project area. Less frequent north-trending faults also occur. Most prospect-scale faults appear to postdate intrusive emplacement, though some such as the Twin Creek fault clearly exhibit control on mineralisation emplacement.

Any folding present within the project area is thought to be gentle, with dips on bedding measurements generally less than 30 degrees except when close to intrusive margins or faults. Buskas and Bailey (1992) describe an open, southwesterly plunging syncline in the northern part of the Redton project. They suggest the syncline has regional extent and plunges at 25 – 30 degrees.

2.5 Metamorphism

Rocks within the project area have generally undergone metamorphism to prehnite-pumpellyite grade and locally, adjacent to the Germansen batholith, greenschist facies (Nelson and Bellefontaine, 1996).

2.6 Mineral Deposit Styles

The Redton project area is prospective for a number of deposit styles including alkalic porphyry copper-gold, gold and base metal skarn mineralisation, and structurally hosted epithermal gold mineralisation.

The principle style being targeted by Geoinformatics is alkalic porphyry copper-gold mineralisation. This style of mineralisation represents a very attractive target with potentially large tonnages and moderate gold and copper grades, such as occurs at Galore Creek (517.7Mt @ 0.59% Cu, 0.36g/t Au, 4.54g/t Ag). Other deposits of this type occur within 70km of the project such as Mt Milligan (445Mt @ 0.215% Cu, 0.415g/t Au), Chuchi Lake (50Mt @ 0.21% Cu, 0.21g/t Au) and Lorraine (31.9Mt @ 0.66% Cu, 0.17g/t Au, 4.7g/t Ag) (MINFILE database, 2005).

Skarn mineralisation is often associated with porphyry deposits where limestones exist adjacent to the intrusions. As limestones do exist in the Plughat Mountain succession on the property, it is possible that this style of mineralisation exists and will therefore be considered as part of Geoinformatics strategy of exploring for porphyry copper-gold deposits.

There is one known significant, structurally-controlled gold deposit occurring within the project area, the Takla-Rainbow deposit. It currently has a non 43-101 compliant resource of 321,101 tonnes grading 0.25 ounces per ton Au (MacIntyre, D.G, 2004). This style of mineralization is likely to occur elsewhere within the project however Geoinformatics has not targeted it due to the perceived small size potential and relatively high cost of drilling out a potential resource when compared to porphyry or skarn mineralization.

2.7 2005 Prospecting

From June 15 to June19, 2005 a six man crew carried out a small prospecting and field data review program on the property. The three days of fieldwork was undertaken by Gerry Bidwell of Geoinformatics Explor. Inc., Clinton Smyth of Redton Resources Inc., Steve Cook (geochemist) of Victoria, B.C., Lorne Warren, prospector of Smithers, B.C. and two field assistants (Bill Garner & Cory Degrassi) of Smithers, BC.

The crew prospected and reviewed the old Placer Dome's Tak property at 359700mE/6175070mN. The copper/gold soil anomaly on the east ridge was prospected. Minor disseminated chalcopyrite and malachite talus was located on the east facing slope off the main ridge. A moss mat sample was collected on the main northward flowing drainage immediately west of the above ridge. This sample at 359165mE/6176790mN assayed 84 ppb Au and 508 ppm copper. Minor prospecting was also undertaken on the ridge immediately to the west of this drainage (359010mE/6174840mN) near where anomalous copper/moly soils were located in earlier geochemical surveys.

Mt. Nation peak at 366475mE/6127895mN in the southern portion of the property was also prospected. The peak is underlain by large talus blocks of Hogem Batholith granite/granodiorite.

Two showings along a logging road just north of Tchentlo Lake were also prospected. At the Mike Showing (368928mE/6122050mN), on the north side of the logging road, large mafic boulders with up to 2% disseminated chalcopyrite and bornite and magnetite/hematite filled fractures, presumably of local origin, are located within the Hogem Batholith. Six hundred metres to the west a large pit (used for road fill) contains chalcopyrite/pyrite infilling a granitic breccia with volcanics to the west. This location (368290mE/6122035mN) is 40 metres west of a fork in the logging road.

Multiple stream sediment and moss mat samples were collected by Steve Cook at two locations in the southern portion of the property. These samples, at ~361400mE/6134020mN and ~370550mE/6130450mN both assayed at background levels.

Copper and gold soil anomalies from old assessment data in the east central part of property (~378000mE/614700mN, headwaters of Valleau Creek) were also investigated. The anomalies were found to be dominantly underlain by well sorted washed sandy material which would be unlikely to be have elevated gold and/or base metals values.

Some time was also spent reviewing mineralized intersections in the core stored at the old Takla Rainbow campsite. This drill core is from the Takla Rainbow Zone just to the east. The core is in reasonable shape. The observed mineralization was mainly brecciated quartz veins with variable sulphides. Some of the better intersections had been removed.

3.0 Data Compilation

3.1 Data Audit

Data for the project was available from a number of sources, including the following:

- British Columbia Ministry of Energy, Mines and Petroleum Resources assessment reports (ARIS reports).
- British Columbia Geological Survey (BCGS).
- Geological Survey of Canada (GSC).
- Landdata BC (British Columbia).

ARIS Reports: The ARIS metadata collection was audited, downloaded and spatial references established in a GIS for the purposes of identifying data pertinent to the project. The ARIS metadata was also loaded into an Access database to facilitate query-based review of the data. Key themes were established and included geology, geochemistry, geophysics, drilling and general prospecting.

ARIS reports with data falling within the Redton project area were subsequently identified for acquisition and copied by the BCGS in Victoria, BC. This entailed some 139 ARIS reports which were cut to CD and sent to Perth for more detailed review and data capture.

Online data: Internet searches of the BCGS and GSC websites as well as various links to other online data sources were undertaken and relevant data was either downloaded or purchased where necessary.

Library: All data obtained was catalogued and stored in the Geoinformatics library. Appendix 1 contains a list of all records in the library pertaining to the Redton project.

3.2 Data Capture

Data collected for the project included drill hole locations, lithology logs and assays, various surface geochemistry data, factual and interpretive geology maps, geophysical data, mineral occurrence locations, ASTER remote sensing data, topographic and cadastral data.

A geological coding system was designed to record geological map and drill hole information in digital form (Appendix 2). The principles on which this coding system is based are:

- A design based on a relational database format with data and reference tables for lithology, structure, veining and alteration.

- A coding system designed along a hierarchical, binary tree format amenable to standard query language in GIS and 3D-database systems.
- A clear separation of fact, from interpretation, and from speculation, with known rock types clearly separated from undifferentiated groupings.

A corresponding colour scheme was designed to best represent the lithology codes in map format. (Appendix 3).

3.2.1 Geology

A total of 26 geological outcrop and interpretation maps covering the project were digitally captured, 22 from ARIS reports, three from the BCGS and one from the GSC. A complete list of the maps captured is presented in Table 3.1.

Table 3.1 Sources of Compiled Geology Maps

Map Source	Library Number	Scale	Area Covered	Data Description
GSC Open File 3273	L3915	1:250,000	93N	Regional interpretive geology
BCGS Digital Geology	L3862	1:250,000	British Columbia	BC digital geology, version 1.0 2005
BCGS Bulletin 91	L3959	1:100,000	Germansen Landing-Manson Creek	Northeast corner of project area – *solid geology and fact mapping*
BCGS Bulletin 99	L4169	1:100,000	North-central Quesnellia	Solid geology and fact mapping – entire project area.
BCGS Open File 1992-4	L3960	1:50,000	Chuchi Lake-Klawli Lake	Cross sections only – east of project area
ARIS Report 12149	L4041	1:5000	Valleau Creek	Prospect scale outcrop mapping
ARIS Report 13342	L4041	1:5000	Valleau Creek	Prospect scale outcrop mapping and interpretation
ARIS Report 19131	L4041	1:5000	Swan-Kwah	Prospect scale outcrop mapping
ARIS Report 20552	L4041	1:10,000	Heath Claims	Prospect scale outcrop mapping and interpretation
ARIS Report 20943	L4041	1:10,000	Phil Claims	Prospect scale outcrop mapping
ARIS Report 21866	L3916	1:10,000	Lys Claims	Prospect scale outcrop mapping
ARIS Report 22757	L3916	1:10,000	Wudleau Claims	Prospect scale outcrop mapping
ARIS Report 24953	L3916	1:5000	Tchentlo Lake	Prospect scale outcrop mapping
ARIS Report 25116	L3916	1:1000	Silver Creek	Prospect scale outcrop mapping and interpretation
ARIS Report 22752	L3916	1:10,000	Kwanika-Valleau	Prospect scale outcrop mapping and interpretation

ARIS Report 19859	L4041	1:10,000	Valleau Creek	Prospect scale outcrop mapping and interpretation
ARIS Report 20838	L3916	1:10,000	Takla-Rainbow	Prospect scale outcrop mapping and interpretation
ARIS Report 14103	L3916	1:2,500	Takla-Rainbow	Float, trench and outcrop mapping
ARIS Report 15319	L3916	1:2,500	Takla-Rainbow	Float and outcrop mapping and interpretation
ARIS Report 16759	L3916	1:5,000 / 1:1000	Takla-Rainbow	2 maps - Prospect scale outcrop mapping and interpretation
ARIS Report 22079	L3971	1:20,000	Takla-Rainbow	Prospect scale outcrop mapping and interpretation
ARIS Report 22145	L3916	1:5,000 / 1:10,000	Takla-Rainbow	2 maps - Prospect scale outcrop mapping and interpretation
ARIS Report 22192	L3916	1:5,000 / 1:10,000	Takla-Rainbow	2 maps - Prospect scale outcrop mapping and interpretation

The maps were digitised by Magnasoft Consulting India Pvt. Ltd (Magnasoft) of Bangalore, India in MapInfo format and were fully attributed according to the information available.

Once digitized, the maps were recoded to the Geoinformatics Redton geological legend to allow for seamless integration of all geological mapping and also other data, particularly drill hole lithology data. The maps were subsequently registered to the best possible accuracy into map projection UTM NAD83, zone 10. Several of the maps from ARIS reports were in local grid projections and were difficult to register due to poor local grid controls. Field checking of local grids with a differential GPS in 2006 is planned and will probably improve the accuracy of the original GIS map registrations.

Once all factual maps were recoded and transformed to UTM NAD83 projection, they were compiled into one comprehensive fact map, comprising four separate layers; lithology, structure, alteration and structural point measurements. The final compilation geology fact map is presented in Figure 3.1.

3.2.2 Geophysics

A total of 15 geophysical datasets were captured from ARIS reports and BCGS publicly available surveys. In addition to these surveys the entire project area was flown with detailed magnetics and radiometrics in two separate surveys in 2005. A breakdown of the data captured is summarized in Table 3.2, while Figure 3.2 illustrates the coverage of the various surveys.

In 2005 Geoinformatics participated in the completion of two detailed heli-borne magnetics and radiometrics surveys to cover the entire project area.

Both surveys were flown on 250m east-west line spacing and 30 – 50m instrument height. The first survey completed was flown by Fugro and covered 1945 line kilometres over the central portion of the project area. The survey was initially commissioned by the British Columbia & Yukon Chamber of Mines "Rocks to Riches" program, with Geoinformatics and Serengeti Resources Inc (Serengeti) contributing to have the survey extended to cover part of the Redton project and several of Serengeti's claims. The second survey was commissioned solely by Geoinformatics for its own exclusive use. It was completed by Aeroquest Ltd and covered 4380 line kilometres in two blocks north and south of the first survey. Data from the two surveys was then stitched together to give seamless magnetic and radiometric coverage over the Redton project area. Appendices 4 and 5 are survey specification reports from Fugro and Aeroquest respectively on the work completed. Figure 3.3 presents an image of the reduced to pole magnetics, while Figure 3.4 to 3.6 present images of potassium, uranium and thorium intensity.

Table 3.2 Sources of Compiled Geophysical Datasets

Data Source	Library Number	Data Type	Area Covered	Data Description
GSC downloadable data	L3874	Magnetics	British Columbia	200m residual TMI aeromagnetic grid of Canada – 93N mapsheet extracted
GSC downloadable data	L3913	Gravity	British Columbia	~10km spaced gravity data for Canada – 93N mapsheet extracted
GSC – Open File 3273	L3915	Magnetics / Radiometrics	Quesnel Trough	Images from open file report
BCGS Open File 2005-9	L3963	Magnetics / Radiometrics	Mt Milligan & Quesnel Trough	Geosoft grids from open file report
ARIS Report 20511	L3916	Magnetics	Takla Rainbow	1990 survey TMI contours digitized
ARIS Report 20838	L3914/16	Magnetics	TAK claim	1990 survey TMI contours digitized – location suspect
ARIS Reports 16759, 17013, 19131, 20876, 22145, 22192, 22372	L3916, L4041	IP	Takla-Rainbow, Tak and Nell areas	IP grid lines digitized from reports. Digital data for 7 of these surveys were sourced from Scott Geophysics
BCGS/ Geoinformatics	L4118	Magnetics / Radiometrics	Project Area	Joint funded detailed heli-mag and radiometrics survey flown in 2005 over central portion of project
Geoinformatics	L4335	Magnetics / radiometrics	Project Area	Detailed heli-mag and radiometrics survey flown in 2005 over project area not covered by previous survey

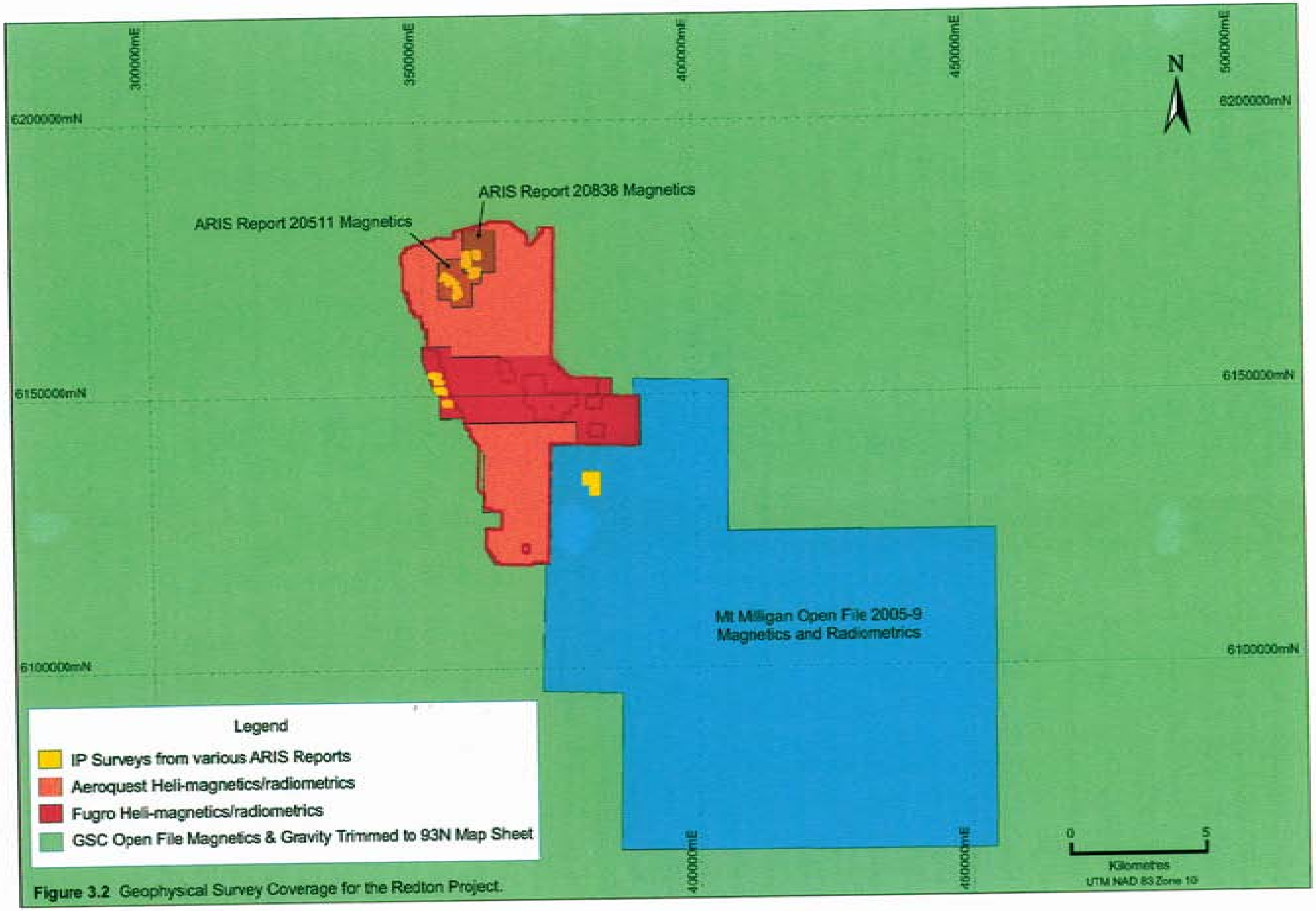


Figure 3.2 Geophysical Survey Coverage for the Redton Project.

3.2.3 Geochemistry

An extensive surface geochemistry database was accumulated from open file ARIS reports and BCGS open file data. The final database contains approximately 24,000 samples of which 22,982 contain assays and locations. Table 3.3 shows a breakdown of sample types within the database. An extract of the complete geochemistry database is attached as Appendix 6. Figure 3.7 shows the distribution of sample points covering the project area.

Table 3.3 Geochemistry Data Capture Summary

SAMPLE TYPE	No of Samples	No of Sources	Comments
Soil	17779	26	All from ARIS reports
Rock Chip	1361	22	Includes whole rock samples
Stream	1983	14	
Moss	165	1	
Till	1275	1	2 samples per site: -63um and 2mm size fractions
Float/Grab	375	13	
channel	2	1	
Trench	13	1	Some trenches captured as rock samples
Unknown	29	3	
Total	**22977**	**38**	Note this represents all samples with locations and containing assay values. An additional 1380 samples either have unknown locations or no captured assays
ARIS samples	20067	32	
BCGS/NGR samples	2890	5	Regional stream data plus till and whole rock samples
Other	20	1	Whole rock from journal article
Whole Rock samples	333	4	

For the ARIS reports and other hardcopy data the geochemistry capture process involved the following:

- Data entry of sample data from hardcopy reports.
- Digitizing sample data from plans.
- Loading to an Oracle database.
- Spatial and statistical validation.

The data entry function was performed by Magnasoft and checked by Geoinformatics personnel in Perth.

A critical aspect of the capture process was locating the samples accurately. Generally the samples were collected in the field using a local grid system and often displayed in this local grid in subsequent reports on the data. The local grids from these reports or hardcopy plans were then transformed by Geoinformatics personnel into UTM NAD83 zone 10 for compilation into the final geochemistry database. The remainder were captured directly in UTM from maps with UTM co-ordinates. Where possible registered maps where checked using the locations of streams, topography and in some cases claim boundaries to ensure their accuracy. It should be noted however that field validation of sample locations is required prior to conducting any follow-up work based on the geochemistry, such as drilling of geochemical anomalies.

Data was loaded to the Geoinformatics standard Oracle geochemistry database structure. Extracts from this were then checked for spatial accuracy. Additional statistical validation of sample values were performed by geochemical consultants IO Geochemistry. Appendix 7 is their summary presentation submitted to Geoinformatics on work undertaken by them.

3.2.4 Drilling

A comprehensive drilling database was compiled from ARIS reports and company data. The database contains 123 drill holes and includes all drilling available in ARIS assessment reports within the project. A number of holes are mentioned in reports but location and assay details were not found, such as 10 holes drilled by Falconbridge in 1971, containing intersections of up to 50 feet at 0.35% Cu (Buskas and Bailey, 1992). A summary of the data captured is presented in Table 3.4. Appendix 8 is a list of all holes captured, together with all collar information recorded in the drilling database. Figure 3.8 is a drill hole location plan for the project area.

Table 3.4 Drilling Data Capture Summary

Prospect	No of Holes	Total Metres	Owner/Operator	Date drilled	Comments
Takla-Rainbow	77	14939	Cathedral Gold / Imperial Metals	1985 – 1988	"Resource" of 321,101t @ 0.25oz/t Au
Eagle	6	1821	Birch Mountain Resources	1996	Southeast of project area
Phil Claims	6	1069	BP Resources	1990	Southeast of project area
Lorraine-JaJay Creek	5	352	Eastfield Resources	2000	North of project area
TRS Grid	4	635	Imperial Metals	1987	South of Takla Rainbow
Burn Claims	22	??	Placer Development	1979	Hole depths unknown – locations only
Tak	3	453	Placer Dome	1990	
Red Zone?	*10*	*141*	*Falconbridge*	*1971*	*Not in database – Locations unknown*
Total	**123**	**~20300m**			

Key steps in the capture process included the following:

- Locating available hard copy drill logs and related information (ARIS reports).
- Locating and validating collar location information for individual drill holes.
- Reviewing related hardcopy information (reports and plans) for holes that may not have been reported entirely in ARIS reports or company datasets (eg. Collars on plans but not referred to in a report).
- Recoding of original logs using the Geoinformatics coding system and database format.
- Loading of drill collars and recoded logs into the Geoinformatics drilling database.
- Validating the data in 3D and against hardcopy data such as drill logs and plans.

The recoded drilling database allows for full integration of the lithology logs with the geological maps.

3.2.5 Geographic Data

Geographical data captured for the project included the following:

- Topography – contours and digital elevation grids (DEMs).
- Drainage – streams, lakes.
- Transport – roads, tracks, rail etc.
- Cultural – towns, localities, government boundaries, mapsheets etc.
- Claims data

Table 3.5 outlines the various datasets captured for the project.

Table 3.5 Sources of Geographical data sets

Data Type	Source	Description
Localities	BCGS	Towns and localities within 93N map sheet
Drainage	BCGS	Streams and lakes within 93N map Sheet
Drainage	TRIM	Detailed streams and lakes over project area
Mapsheets	BCGS	1:50,000 map sheet index and 93N 1:250,000 map sheet
Parks/Reserves	BCGS	National parks and reserves within 93N map sheet
Claims	BCGS	Redton project claims and 93N map sheet claims
DEM	BCGS	Digital elevation model of topography of 93N – 3D grid and images
Topography Contours	TRIM	Detailed contours (20m) over project area.
Roads	BCGS	Roads and logging tracks within the project area
Forestry		Forestry blocks within the project area

3.2.6 Mineral Occurrence Data

The BCGS MINFILE database was downloaded and utilised for geospatial querying and as a regional indicator of prospective areas. It was also used in conjunction with the geochemistry database to help rank targets generated from the MOCA process.

4.0 Data Processing

4.1 Geology

Once the various maps were digitized, recoded and compiled, they were exported to geological software packages (MapInfo and FracSIS) where they could be easily integrated with other data for interpretations, modelling and targeting.

MapInfo GIS software was used for generating scaled hardcopy maps and plans of various datasets. MapInfo was also used to fully attribute the captured geology maps according to the information available. It was then used for querying, integrating (overlaying), and interpreting 2D data.

The Geoinformatics geological interpretation map was draped onto the DEM to create 3D tri-surfaces for 3D visualisation in FracSIS.

4.2 Geophysics

The captured digital geophysical datasets were processed depending on the survey type, to produce images, 2D and 3D grids.

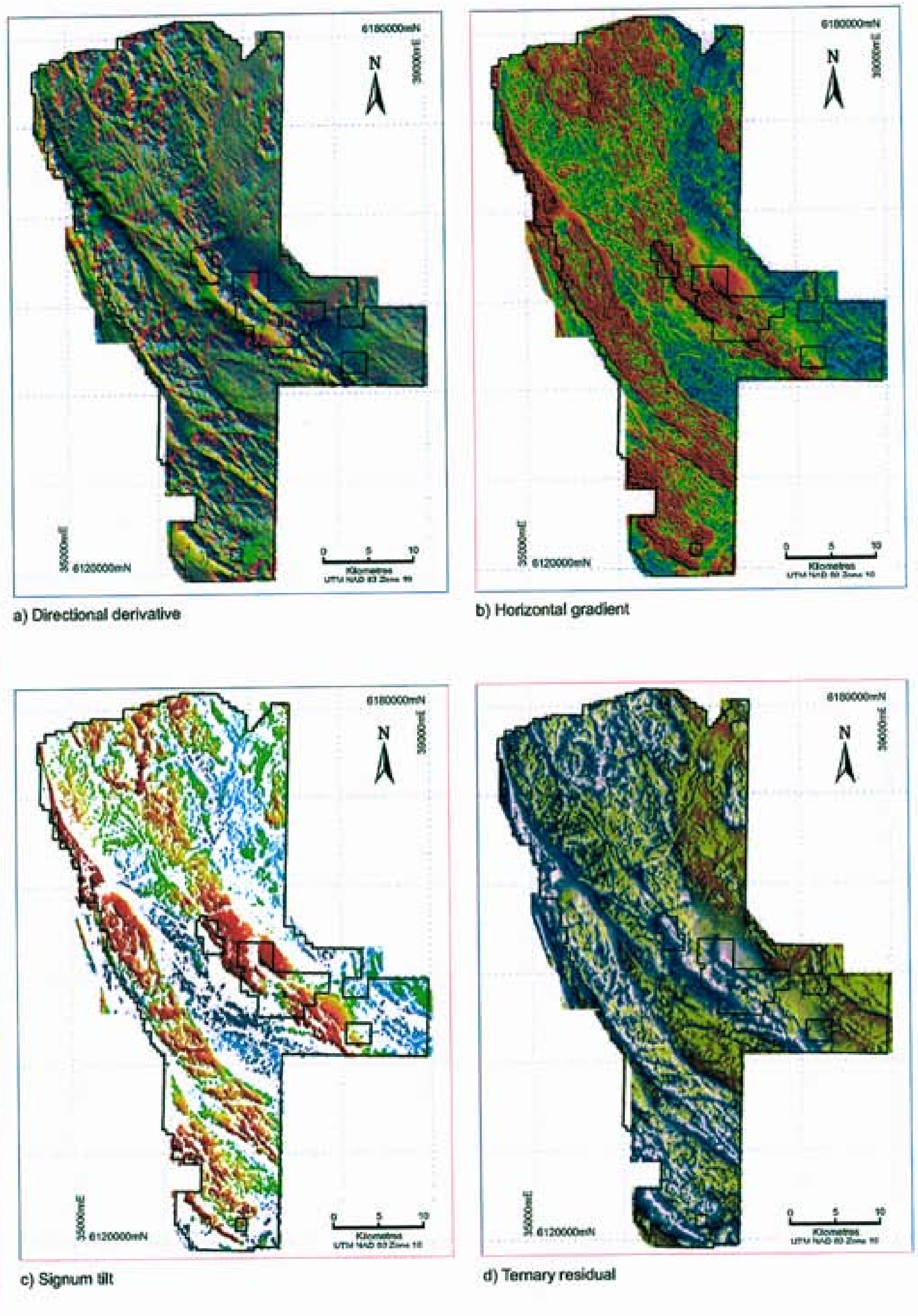
Magnetics

Geoinformatics applies various generic and proprietary filters and processing functions to magnetics data for it projects. The Redton magnetics data was processed to produce a number of products including the following:

- A suite of filtered magnetics images, including reduced to pole, 1st and 2nd vertical derivatives, horizontal gradient, directional derivative and ternary residual filters. Each filter provides advantages for interpreting different components of the magnetic data. For example the ternary residual and directional derivative filters are used for structural interpretations, while the 1st vertical derivative and horizontal gradient are better for mapping stratigraphic units. Figure 4.1 illustrates a number of filtered images of the detailed magnetics completed over the Redton project in 2005.
- "Worms" – a Geoinformatics in-house multi-scale wavelet based edge detection tool for analysis of potential field data. The magnetic worms are excellent for interpretation of 3D structure (dips), differentiating deep magnetic responses from shallow responses (eg. deep structures) and for highlighting subtle changes in magnetic intensity caused by alteration. A selection of worm layers are shown in Figure 4.2.
- "Auto-intrusion detector" filter – a Geoinformatics in-house filter designed to highlight circular features in potential field data. The filter has been successfully applied to other projects to detect concealed or previously unmapped intrusions and was used with

that purpose for the Redton project. Figure 4.3 illustrates the resulting circular features detected by this filter at Redton.

- Inversion modelling – Magnetic inversion models are three dimensional representations of magnetic bodies. They are useful in defining the orientation and shape of magnetic (lithological) contacts and depth extents of magnetic units. An example of a magnetic inversion model at Redton is shown in Figure 4.4.



a) Directional derivative

b) Horizontal gradient

c) Signum tilt

d) Ternary residual

Figure 4.1 Redton Project 2005 Detailed Magnetics Survey – Various Filtered Magnetic images.

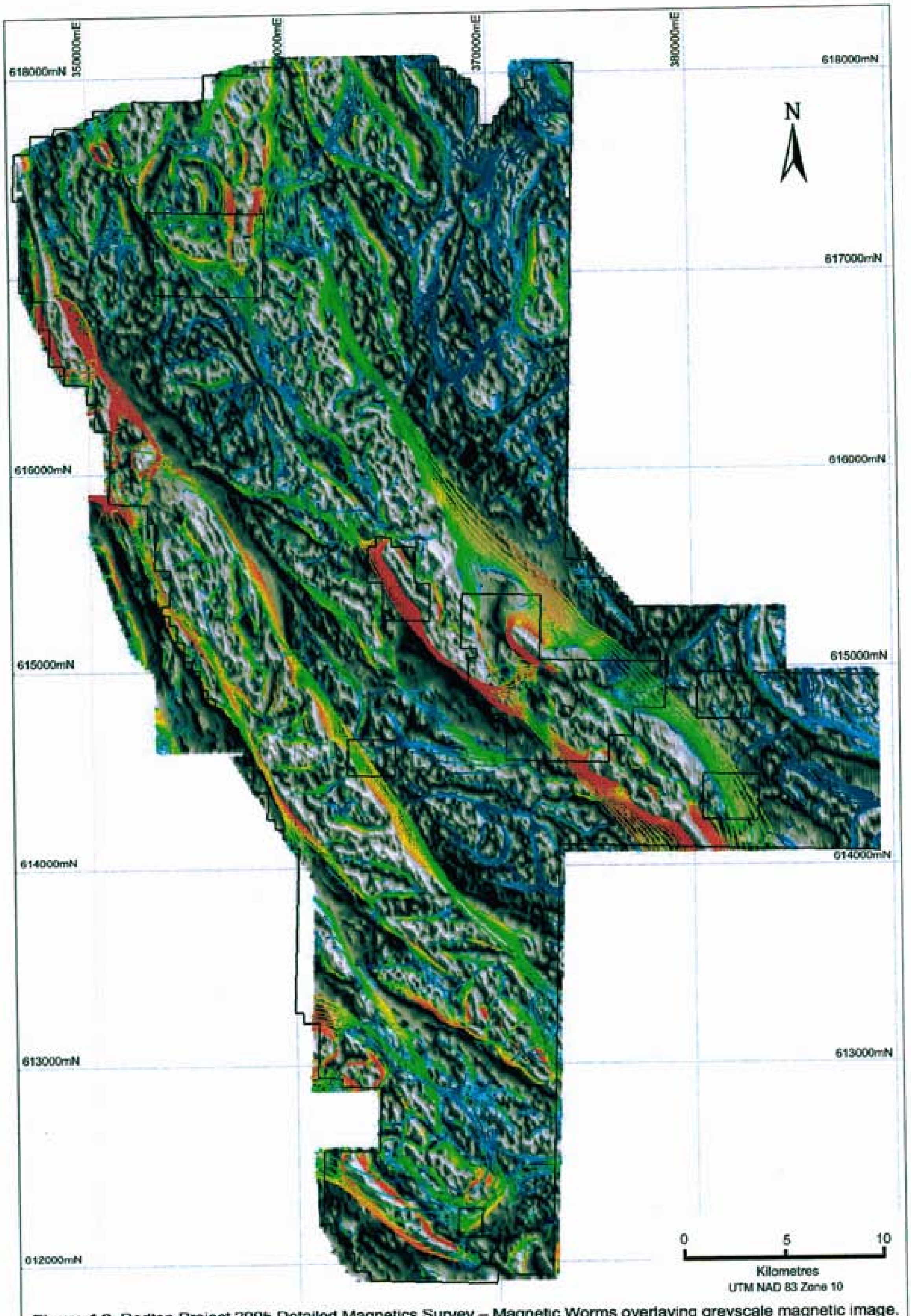
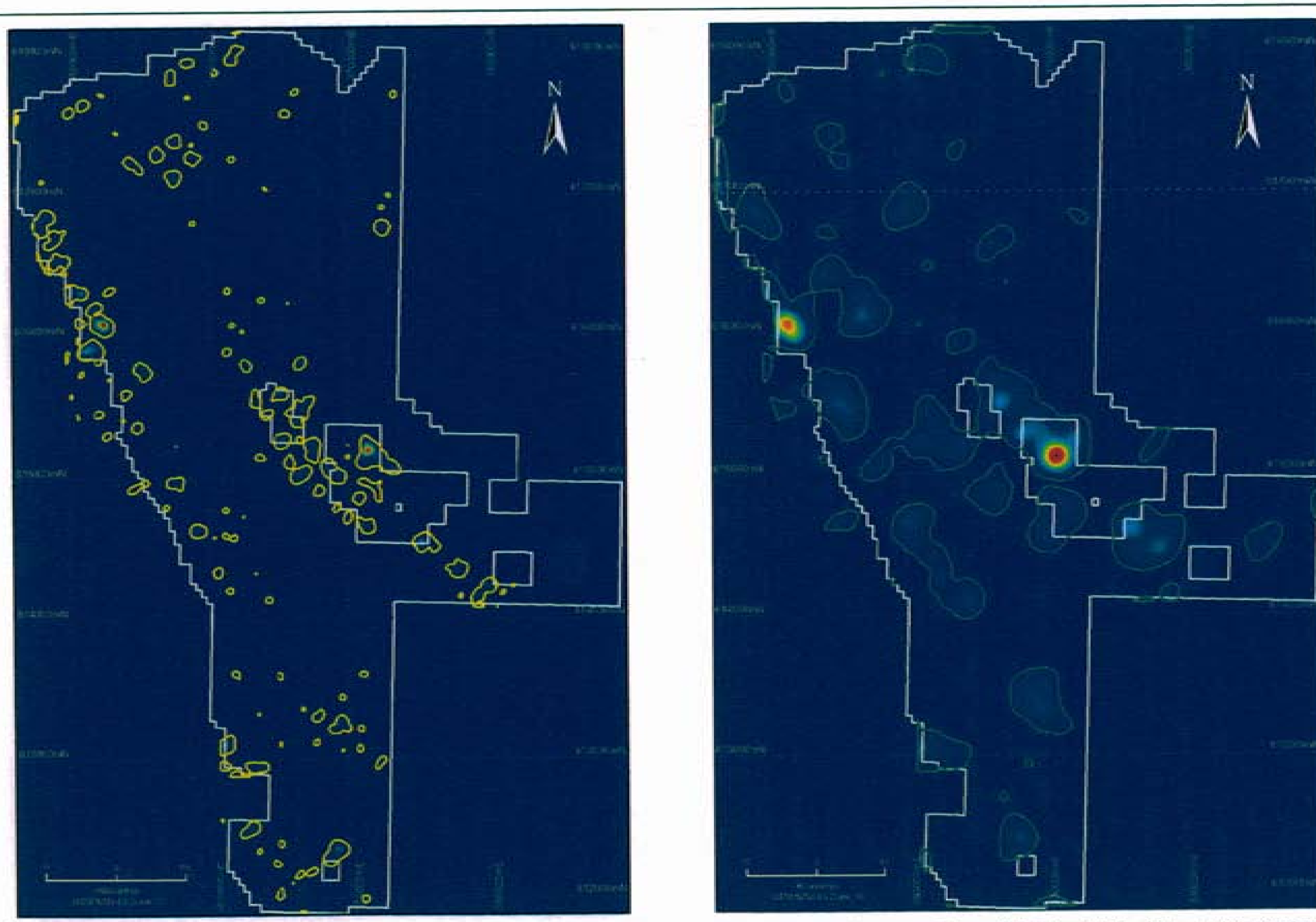


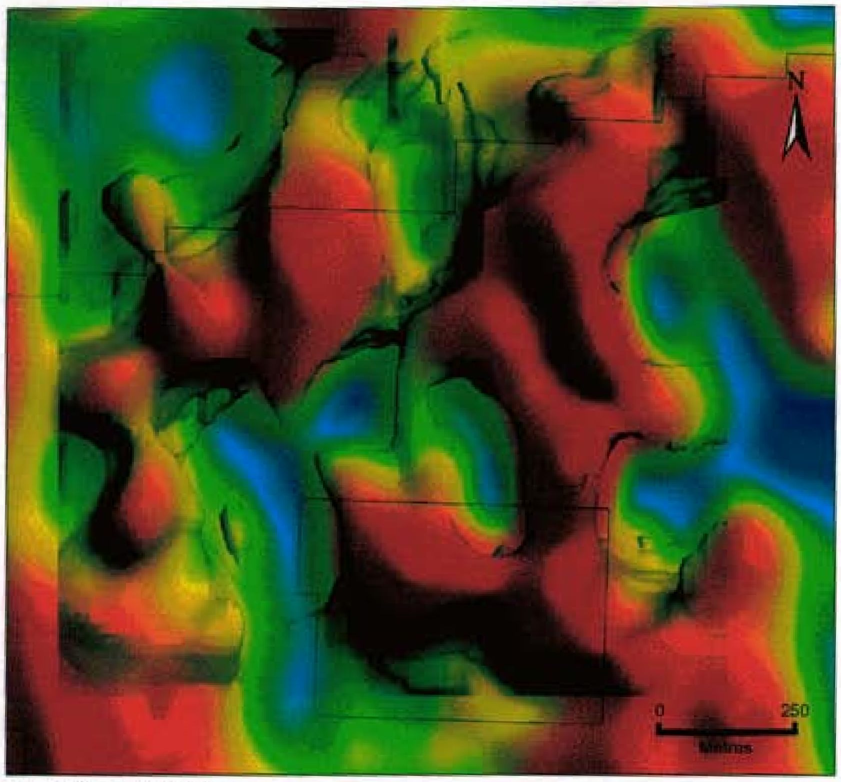
Figure 4.2 Redton Project 2005 Detailed Magnetics Survey – Magnetic Worms overlaying greyscale magnetic image.



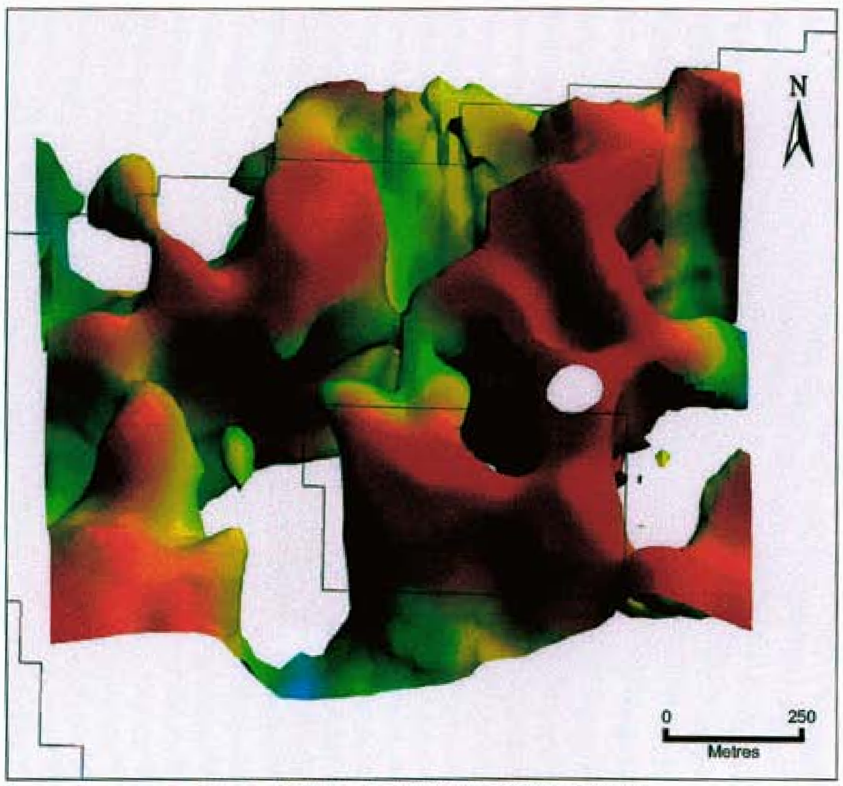
1) High Frequency (shallow magnetic source) intrusion detection filter and derived polygons

2) Low Frequency (deep magnetic source) intrusion detection filter and derived polygons

Figure 4.3 Redton Project 2005 Detailed Magnetics Survey – Polygons Derived from the Geoinformatics "Auto Intrusion" Filter.



1) Inversion model plan view with magnetic image underlain

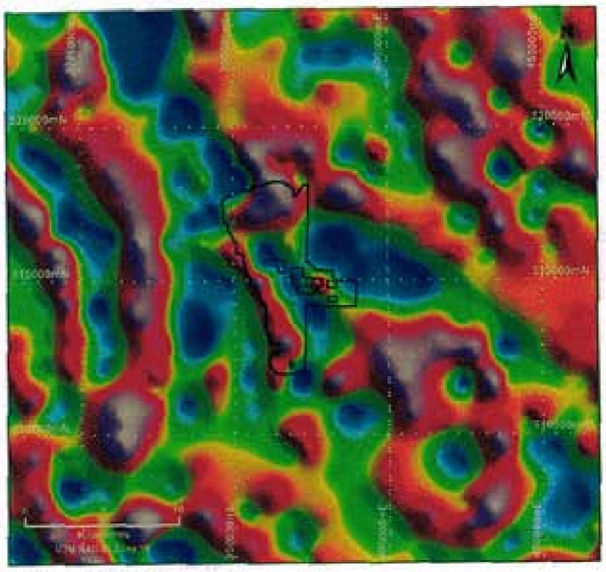


2) Inversion model tilted looking North to show 3D shape of magnetic highs

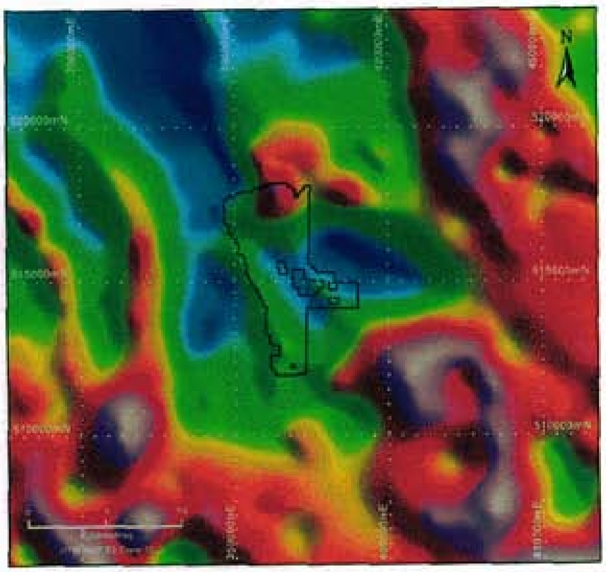
Figure 4.4 Redton Project 2005 Detailed Magnetics Survey – Example of a 3D Inversion Model.

Gravity

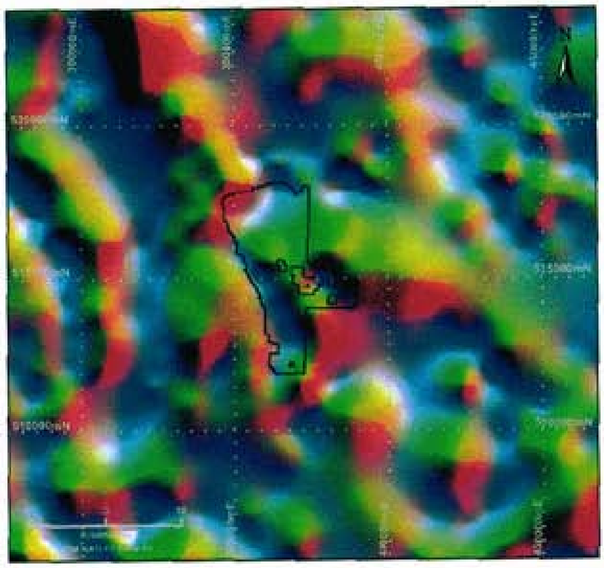
All of the processing applied to magnetic data can also be applied to gravity data. In the case of the Redton project various filtered images, worms and other specific edge detection filters were applied to the data. Figure 4.5 illustrates some of the filtered images produced for the gravity data.



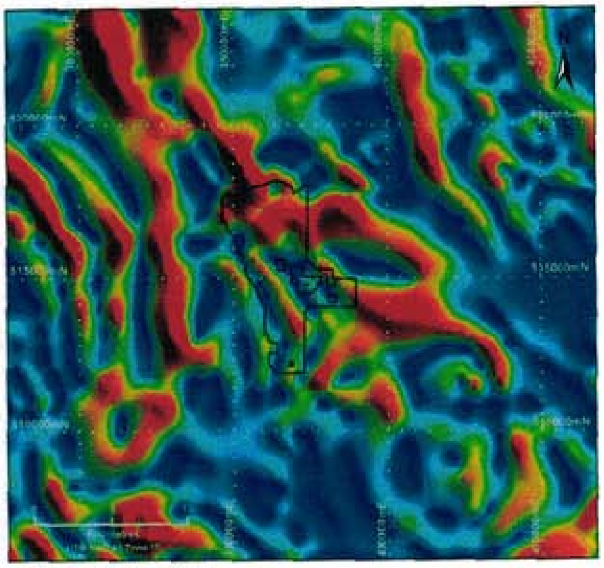
a) 1st vertical derivative



b) Bouger gravity



c) Directional derivative



d) Horizontal gradient

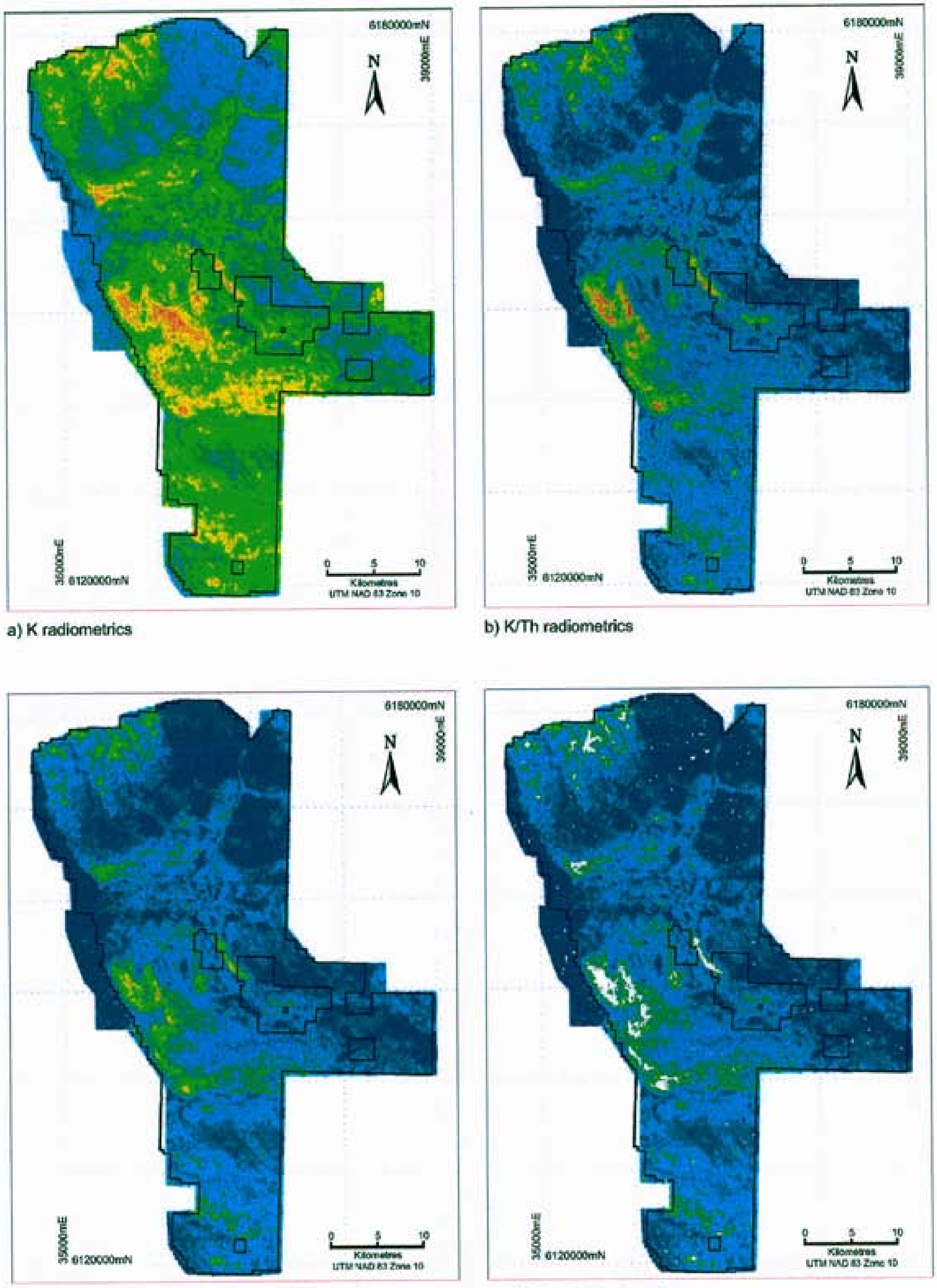
Figure 4.5 Redton Project Regional Gravity Data – Various Filtered images.

Radiometrics

Detailed radiometrics data was acquired in conjunction with the recent airborne magnetics surveys. The data was processed to produce a number of images including separate images for potassium, thorium and uranium, as well as potassium/thorium and potassium squared/thorium. The later two were used to highlight areas of potassic alteration. Polygons of the anomalous peaks were also produced from the potassium squared/thorium image. Figure 4.6 shows each of the radiometrics processed images.

Induced Polarisation (IP)

The data for a number of IP surveys were obtained and processed to produce sectional chargeability inversions. Figure 4.7 presents a 3D view of a number of IP surveys at Redton.



a) K radiometrics

b) K/Th radiometrics

c) K^2/Th radiometrics

d) K^2/Th radiometric polygons

Figure 4.6 Redton Project 2005 Detailed Radiometrics Survey – Processed Products, K/Th and K^2/Th Images, K^2/Th polygonised highs.

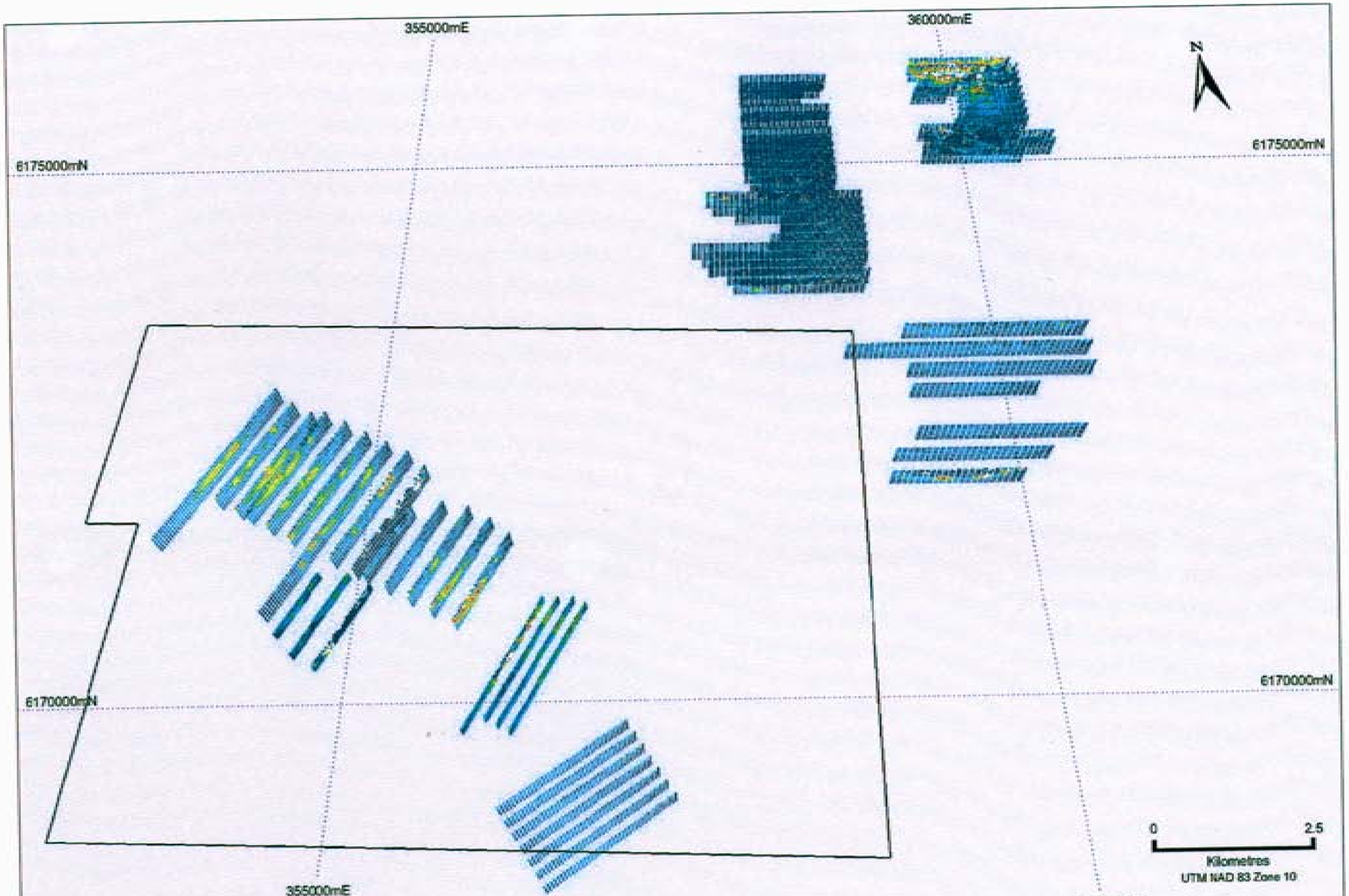


Figure 4.7 Compilation of IP Surveys for the Redton Project.

4.3 Geochemistry

Once all geochemistry data was compiled, the database was submitted to geochemical consultants IO geochemistry for detailed statistical analysis and processing to produce a series of levelled images and thematic products. These were then used to interpret anomalous geochemical trends and/or zoning. A summary presentation of the work completed by IO Geochemistry is attached as Appendix 7.

Sample points were assigned elevation (Z) values by draping the 2D point locations onto DEMs using FracSIS software. This enabled the 3D visualisation of the geochemistry data to assist in the interpretation process. Geochemistry images could also be "draped" onto DEMs in FracSIS for the same purpose.

A series of geochemistry maps for elements, gold, arsenic, copper, molybdenum, silver, lead and zinc are attached as Figures 4.8 to 4.14

4.4 Drilling Data

The drill hole data were imported to FracSIS for three dimensional visualisation of hole traces. Drill collars were assigned elevation (Z) values by draping the 2D collar locations onto a detailed DEM in FracSIS. The resulting 3D co-ordinates were then re-imported to the Oracle database for permanent storage. Hole traces in FracSIS can be attributed and colour coded by any of the recorded down-hole characteristics, such as lithology or assay values.

Isosurfaces were also produced for the gold assay data. Isosurfaces are created in FracSIS and represent directionally-unbiased 3D contours of raw grade information. The advantage of viewing assay data as isosurfaces is that it often more clearly highlights mineralisation trends and is therefore extremely useful for interpreting numeric data.

The drilling database was also imported to MapInfo for plotting hole locations on scaled maps (Figure 3.8).

4.5 Topographic Data

The topographic datasets were processed by Geoinformatics to produce digital elevation models (DEM) for 3D representation. Subsequent surficial data sets such as geochemistry and mapping could then be draped onto the DEMs for true 3D representation.

Detailed drainage patterns were also extracted from the DEMs, including calculated catchment areas for processing and interpreting stream geochemistry. This work was completed by IO Geochemistry.

4.6 Remote Sensing

At the request of Geoinformatics, ASTER remote sensing data was provided and processed by remote sensing consultant Dr Bob Agar of Australian Geological and Remote Sensing Services of Perth, Western Australia. His report is attached as Appendix 9. The processing of this data produced MapInfo polygons for the various mineral indices, as well as registered images. Figures 4.15 and 4.16 show examples of both the polygons and images produced.

The processed ASTER data was used to map alteration within the project area.

5.0 Interpretation

The culmination of the historical data compilation and processing phase of the project was the creation of a new geological interpretation map for the Redton Project. The interpretation utilised all available factual data, including the outcrop map compilation, drill data, geophysics and geochemistry, as well as drawing on previous map interpretations and published literature. The interpretation was completed at 1:50,000 scale and was designed to be used as a tool for porphyry copper exploration only. As such greater detail is paid to intrusive rocks within the project, while areas of younger cover rocks for example were not mapped in detail. The map also utilised the magnetics to a great extent in an effort to highlight potential intrusive bodies relevant to porphyry exploration. The interpretation map is attached to this report as Figures 5.1a (3D images) and 5.1b (conventional 2D, scaled map).

In conjunction with the geological interpretation, an alteration (fluid pathway) map was also produced using the ASTER remote sensing data and the radiometrics data, as well as previous mapping of alteration. This map also utilised the DEM and vegetation layer from the ASTER data to extrapolate alteration zones through areas of thick vegetation, as well as to eliminate false anomalies. The alteration interpretation map is attached to this report as Figure 5.2.

Geophysics, in particular magnetics, was used extensively to interpret the geology and structure of the project area. An interpretation of regional scale, deeply-penetrating structures was made using the worms interpreted to represent deep magnetic sources (Figure 5.1). The regional gravity data was also used in this interpretation. The interpretation was later used in the MOCA targeting to represent potential major pathways for mineralising fluids.

6.0 Targeting

The geological, geophysical, geochemical and alteration interpretation layers were combined to generate targets using a targeting process refined by Geoinformatics known as MOCA, that uses Monte Carlo probabilistic algorithms (refer to Appendix 10 for more detail).

The MOCA targeting software incorporates uncertainty and risk into the targeting procedure. It is directed by the geological soft model being applied and uses multiplicative probabilistic scoring, generating an estimate of the probability of success everywhere in the project area.

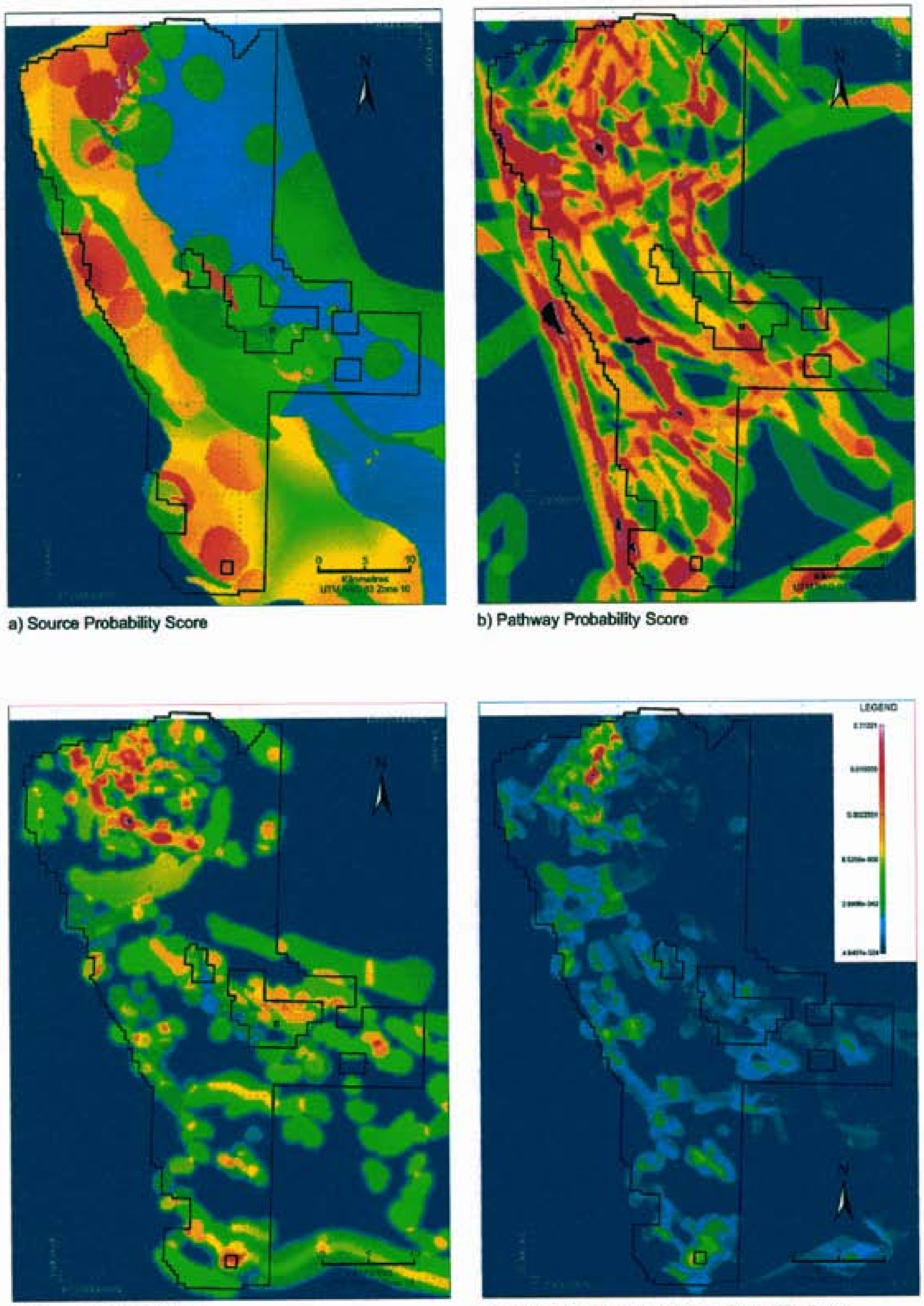
The MOCA targeting requires a geological soft model with defined stages of deposit formation. For the Redton project, a porphyry copper deposit model was used with the following stages of formation:

- Source: large, deep level intrusions of suitable age and litho-chemistry.
- Pathway: large deep seated structures capable of transporting mineralised fluids from deeper crustal levels to the appropriate level for porphyry intrusion development.
- Focus: structures and geological settings likely to focus mineralised fluids.
- Trap: evidence of mineral deposition such as anomalous geochemistry.

Table 6.1 outlines the layers used in the MOCA targeting for each stage, while Figure 6.1 shows the geographical representation of probability scores for each MOCA stage as well as the combined MOCA results for the project.

Table 6.1 Layers used in MOCA Targeting

MOCA Stages	Data Layer
Source	1) Geoinformatics Geology map – rock units scored on probability of providing mineralising fluids
	2) Magnetic interpretation of deep intrusive plutons
Path	1) Batholith margin – buffered 1.5km
	2) Deep worm structures
	3) Gravity high-low margins – buffered 1km
	4) Geoinformatics interpreted structures from mapping / mag interpretation
Focus	1) Geoinformatics interpreted alteration map – ASTER & radiometrics
	2) Magnetics interpretation of near surface intrusive cupolas
	3) Outcrop map of porphyritic rocks
Trap	Geochemistry – various layers / processed products. Note: not used in MOCA but used to rank MOCA results



a) Source Probability Score

b) Pathway Probability Score

c) Focus Probability Score

d) Combined Source-Path-Focus Probability Score

Figure 6.1 Redton MOCA Results Hot colours indicate higher probability scores.

A total of 32 areas were defined as targets and subsequently ranked according to their MOCA probability scores, geochemical signatures, degree of previous exploration, accessibility, degree of overburden / cover rocks etc. Appendix 11 contains a table of all targets with MOCA scores and descriptions for each layer that was used in the targeting process. Figure 6.2 shows the areas defined as targets.

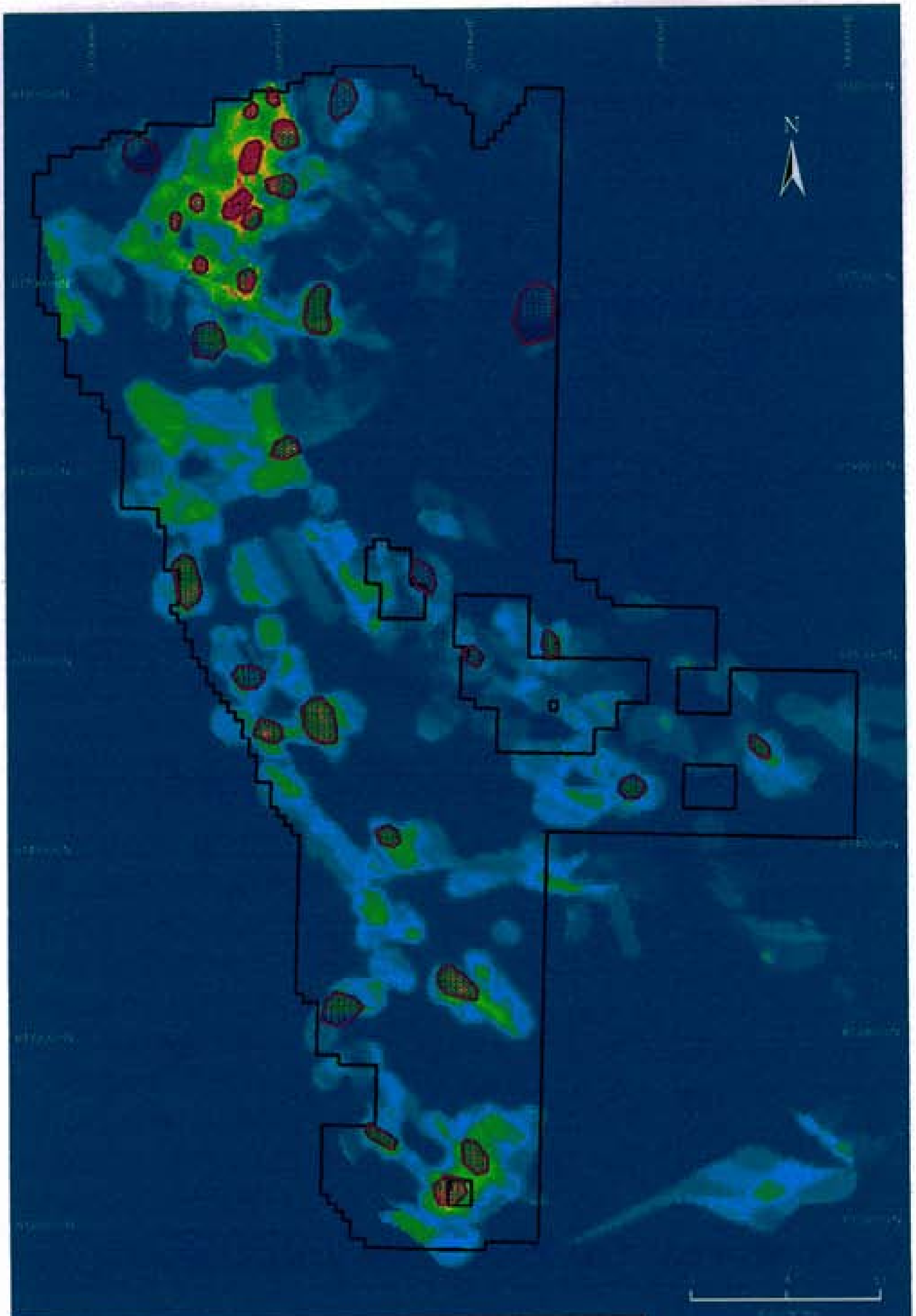


Figure 6.2 Redton Target Areas (Brown Polygons) defined by the MOCA Process.

In addition to the MOCA targets, a few areas were also selected as requiring field evaluation despite scoring poorly in the MOCA process. These areas contain significant empirical anomalism in one or more dataset, such as the following:

- Strong geochemical anomaly, such as at the Red Zone prospect

- Magnetic signature indicative of a possible intrusive, usually untested by geochemistry.

- ASTER or Radiometric anomalies in poorly tested areas of the project and surrounds.

These targets will be prioritised and assessed in the 2006 field season along with the MOCA targets.

The top six targets were all in the north of the project area, broadly in the Takla-Rainbow – Tak area (Figure 6.3). At least two to three of these targets are considered ready to drill, subject to preliminary field evaluation to confirm the locations of existing data and to satisfy Geoinformatics personnel that the litho-structural setting supports the current interpretations. A pre-drill phase of target evaluation will aim to map the density and orientation of the dominant fracture systems in order to locate the optimal drill sites and drill orientations. This work is scheduled to commence at the beginning of the 2006 field season.

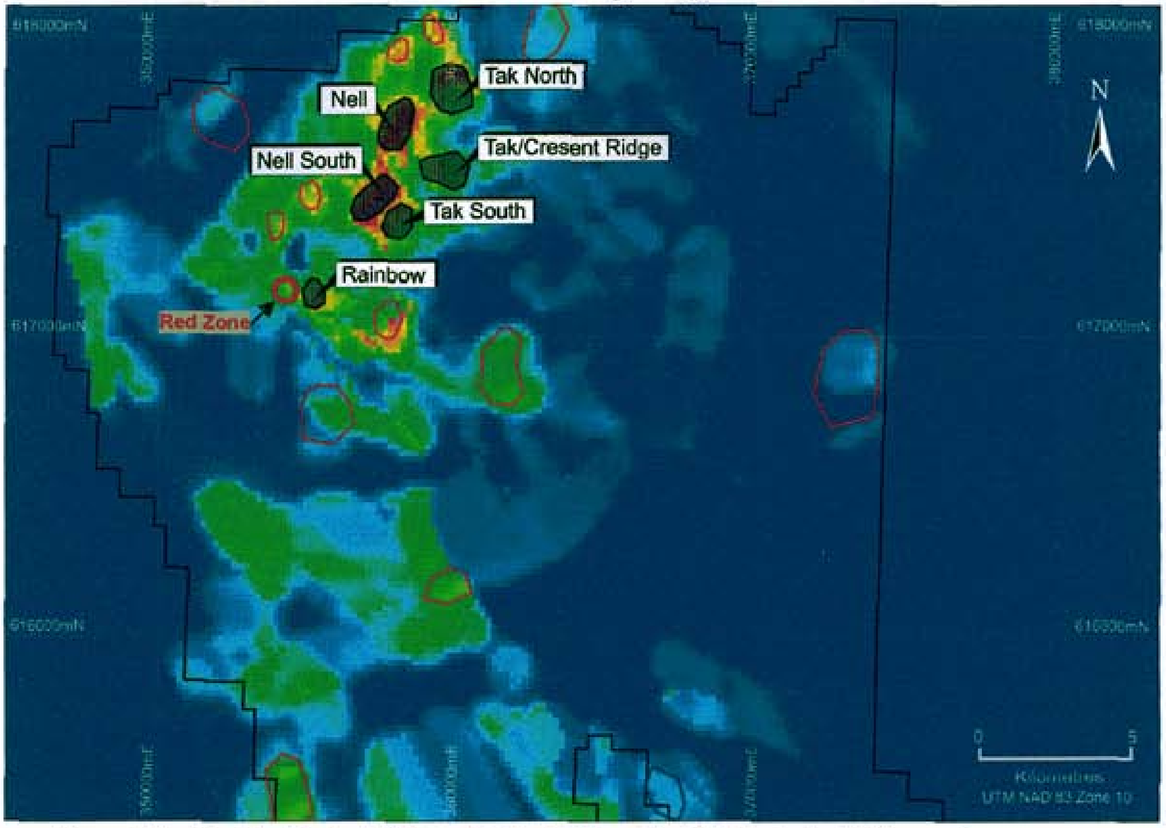


Figure 6.3. Redton Project Highest Priority Targets (Dark shaded Polygons)

7.0 Conclusions and Recommendations

The Geoinformatics Process has been implemented successfully to capture, validate and integrate large amounts of disparate data. The processing of this data has resulted in the development of rigorous geological interpretations and targeting criteria for porphyry copper-gold mineralisation. The MOCA targeting process has utilised the processed and interpreted data to generate a series of robust targets for exploration.

The highest ranked targets from the MOCA and empirical targeting will form the basis for exploration in the 2006 field season. An extensive field program is planned and includes:

- Validation of location data for the compiled geochemistry, drill collars and ground geophysics surveys.
- Mapping and prospecting utilising expert porphyry copper consultants and in-house personnel.
- Geochemical sampling of defined targets where necessary.
- Ground geophysics (IP) over defined targets where necessary.
- Approximately 6000m of diamond drilling at 4 – 6 targets.

8.0 References

Buskas, A.J. and Bailey, D.G., 1992. Geological, Geochemical and Geophysical Report on the Takla-Rainbow Property. B.C. Ministry of Energy, Mines and Petroleum Resources Assessment Report 22,372.

Morton, J.W., 2001. Report for the Year 2000 Diamond Drilling and Geochemical Reconnaissance Completed on a portion of the Lorraine-Jajay Creek Property. B.C. Ministry of Energy, Mines and Petroleum Resources Assessment Report 26508.

MacIntyre, D.G., 2004. Geological Report on the Takla Rainbow Property, Twin Creek Area, Omenica Mining Division, North Central British Columbia. Unpublished report prepared for Rainbow Gold Resources Ltd.

Nelson, J.L. and Bellefontaine, K.A., 1996. The Geology and Mineral Deposits of North-Central Quesnellia; Tezzeron Lake to Discovery Creek, Central British Columbia. B.C. Ministry of Employment and Investment, Energy and Minerals Division, Geological Survey Branch. Bulletin 99, 112 pages.

MINFILE Database, 2005. Ministry of Energy, Mines and Petroleum Resources: http://www.em.gov.bc.ca/Mining/Geolsurv/Minfile/search/default.htm

9.0 Statement of Qualifications

Antony W. Worth, Bsc

I, Tony Worth, Bsc., of 39 Godwin Avenue, Manning (Perth), Western Australia, do hereby certify the following:

- I am a geologist employed by Geoinformatics Exploration Australia Ltd.
- I have been practicing my profession continuously since graduation in 1992, as a geologist in Australia, Africa and Canada.
- I am a graduate of the University of Western Australia, with a Bachelor of Science degree (geology), 1992.
- I am a member of the Australasian Institute of Mining and Metallurgy (AusIMM).

I, **Gerald E. Bidwell,** P.Geo., of 5186-44th Avenue, Delta, BC V4K 1C3, do hereby certify the following:

I am a consulting geologist with G. Bidwell & Associates Ltd. of Delta, BC.

I have been practicing my profession continuously since graduation in 1967, as a geologist in Canada and the United States of America. I worked continuously from graduation to 1996 as a geoscientist for Hudson Bay Exploration and Development Company Limited (1967-87), Mingold Resources Inc. (1987-1990) and Noranda Exploration/Hemlo Gold Mines (1990-96). Since 1997 I have been a principal of G. Bidwell & Associates Ltd.

I am a graduate of the University of Saskatchewan, with a Bachelor of Arts and Science degree in Geology in 1967.

I am a Professional Geoscientist in good standing with the Association of Professional Engineers and Geoscientists of British Columbia and a fellow of the Geological Association of Canada.

I have been the Exploration Manager – North America for Geoinformatics Exploration Inc. since May, 2004.

I spent five days on the Takla Redton property in June 2005.

Respectfully submitted,
Gerald E. Bidwell, P. Geo.

Dated , 2006 in Vancouver, B.C.

TAKLA - REDTON PROJECT

2005 ASSESSMENT REPORT

Appendix I

Redton Project Library Index

	Title	Item Type	Date
1	The Geology and mineral deposits of north central Quesnellia: Tezzeron Lake to Discovery Creek, central British Columbia , Bulletin 99	Book Map published	November 1996
2	Porphyry deposits of the Canadian Cordillera: A volume dedicated to Charles S. Ney , CIM Special Volume No. 15	Book Map published Other data	1976
3	Fort St. James map - area, Cassiar and Coast Districts, British Columbia , GSC Memoir 252	Book Map published	1949
4	British Columbia Geological Survey Minfile database	Database	2004
5	Geology of the eastern Bella Coola map area (93 D), west - central British Columbia	Journal article	January 2003
6	Alkalic Cu-Au-Ag porphyry deposits in the Canadian Cordillera: Tectonic setting, magmatic affiliations and hydrothermal characteristics	Journal article	November 1998
7	Inversion of geophysical data over a copper gold porphyry deposit: a case history for Mount Milligan	Journal article	October 1997
8	Mineral resource estimation: an evaluation of responses from Notheast British Columbia	Journal article	January 1996
9	Grade and tonnage data for British Columbia mineral deposit models	Journal article	January 1995
10	Mineral Potential project - overview	Journal article	January 1995
11	Porphyry Cu - Au: Alkalic , L03	Journal article	1995
12	Comparative geology and mineralogy of mineralized and barren plutons of the Babine Lake igneous suite, west central British Columbia	Journal article	1995
13	Petrochemistry of shoshonitic rocks associated with porphyry copper - gold deposits of central Quesnellia, British Columbia, Canada	Journal article	July 1993
14	Mineral potential investigations in the Babine Mountains Recreation Area (Parts of 93L/14E, 15W and 93M/2W	Journal article	January 1992
15	Regional geological mapping near the Mount Milligan copper - gold deposit (93K/16, 93N/1)	Journal article	January 1991
16	Geology and alteration at the Mount Milligan gold - copper porphyry deposit, central British Columbia (93N/1E)	Journal article	January 1991
17	Trace element geochemistry of the Highland Valley and Guichon Creek Batholith in relation to porphyry copper mineralization	Journal article	July 1976
18	Fort St. James, British Columbia , GSC Memoir 252 - Map 907A	Map published	
19	British Columbia digital geology maps (version 1.0 2005)	Map published Other data	2005
20	Central Britsh Columbia topographic maps. Version 5.1.2: Etopo digital maps including Queen Charlotte Islands, Prince George, Prince Rupert and Bowron Lake Provincial Park (3 CDROMs) , Product No: E70004	Map published	2005

21	IMW Canada topographic maps (International Maps of the World). Version 5.1.1 : Etopo digital overview maps of Canada (1 CDROM) , Product No: E5001	Map published	2004
22	Bedrock geology Old Hogem (Western part) NTS 93N/11, 12, 13, British Columbia , BCGS OF 2000-33	Map published	2000
23	Geology, Mineral Occurrences and Geochemistry of the Kenny Creek - Mount Olsen Area , BCGS OF 1997-2	Map published	1997
24	Geology of the Manson Creek Map Area NTS (93N/9/6) , Geoscience Map 1994-1	Map published	1994
25	Geology of the Germansen Landing Area NTS (93N/10, 15) , Geoscience Map 1994-2	Map published	1994
26	Geology of the Nina Lake and Oslinka River, B.C. NTS (93N/15; 94C/2) , Geoscience Map 1994-3	Map published	1994
27	Geology and geochemistry of the Klawli Lake map area (NTS 93N/7W) , Open File 1993-3	Map published	1993
28	Geology and geochemistry of the Kwaniki Creek map area (NTS 93N/11E) , Open File 1993-4	Map published	1993
29	Geology and geochemistry of the Discovery Creek map area (NTS 93N/14E) , Open File 1993-5	Map published	1993
30	Redton property spring 2005 field trip video - Clinton Smyth, Gerry Bidwell, Steve Cook (2 CDs)	Movie	2005
31	ARIS reports covering the Redton tenements	Other data	
32	Canadian Digital Elevation Data, Level 1 (CDED1) covering Redton project area	Other data	
33	Data captured from ARIS reports covering the Redton tenements	Other data	
34	Spatial Index to Assessment Report Indexing System (ARIS) reports covering British Columbia	Other data	
35	Open file magnetic and radiometric data for the 093N Redton area - Mount Milligan, Inzana-Salmon Lake, Mount Sylvester, Mount Fran, Mount Polloy, Horsefly, and Tisdall Lake.	Other data	
36	ARIS report 22079 covering the Redton tenements - Geochemical and geological assessment report of the Kwanika Creek Property, Takla project.	Other data	
37	ARIS reports covering the Redton tenements, scanned by BCGS on request	Other data	
38	Redton district ASTER mineral mapping (3 DVDs)	Other data Report	December 2005
39	Forestry blocks and roads in the Redton area	Other data	October 2005
40	Airborne magnetic and radiometric survey for Redton	Other data	August 2005
41	British Columbia mineral tenure	Other data	August 2005
42	200m residual TMI aeromagnetic grid of Canada - extract for Yukon and British Columbia	Other data	June 2005
43	Gravity data extract for Yukon and British Columbia	Other data	June 2005
44	Yukon and British Columbia Regional Stream Sediment	Other data	May 2005

	Geochemical Reconnaissance Data from NGR - National Geochemical Reconnaissance Program of Canada	Database	
45	Yukon and British Columbia Regional Lake Sediment Geochemical Reconnaissance Data from NGR - National Geochemical Reconnaissance Program of Canada	Other data Database	May 2005
46	Yukon and British Columbia regional lake water geochemical reconnaissance data from NGR - National Geochemical Reconnaissance Program of Canada	Other data Database	May 2005
47	Yukon and British Columbia regional stream water geochemical reconnaissance data from NGR - National Geochemical Reconnaissance Program of Canada	Other data Database	May 2005
48	Canadian Geochronology Knowledgebase - Yukon and British Columbia extracts	Other data	2005
49	National road network - British Columbia and Yukon	Other data	2005
50	GeoFile 2005-14: BC Rock Geochemical Database , BCGS GF 2005-14	Other data	2005
51	Positional TRIM data covering 16 20K sheets within NTS block 093N - for Redton property	Other data	2003
52	Protected areas of British Columbia	Other data	December 2001
53	British Columbia regional geochemical survey (RGS) digital data	Other data	January 2001
54	Quesnel Trough: a digital suite of geoscience information , GSC Open File: 3273 BCGSB Open File: 1996-19	Other data	July 1996
55	Geology and mineral potential of the Chuchi Lake (east half) and Klawli Lake (east half) map areas, NTS 93N/2E and 93N/7E , BCGS OF 1992-4	Other data Map published	1992
56	Air photos of the Takla Redton area British Columbia	Photographs	September 1996
57	Mineral deposits of the northern Canadian Cordillera - Yukon - Northeastern British Columbia [Field Trip 14] , GSC Open File 2169	Report	
58	British Columbia, regional geochemistry surveys (RGS), regional till surveys and till geochemistry	Report Other data	
59	Report on a helicopter - borne gamma ray spectrometer and magnetic - gradiometer survey, Takla Redton Property, Mackenzie area, British Columbia	Report Map unpublished Other data	January 2006
60	The alkali gold project - a world class gold exploration opportunity in British Columbia - the Takla - Rainbow property and other surrounding properties	Report	April 2005
61	Alkali gold project, British Columbia - Preliminary note for the record on Placer Dome's 1991 gold, copper and potassium results [Redton]	Report	April 2005
62	Takla - Rainbow gold, copper and alteration maps	Report	[April 2005]
63	The alkali gold project - a world class gold exploration opportunity in British Columbia - summary report [Redton]	Report	February 2005
64	Redton documents - including geophysics, geochemistry and	Report Other	2005

	related reports	document	
65	Geological report on the Takla Rainbow property, Twin Creek Area, Omenica Mining Division, North Central British Columbia	Report	December 2004
66	Regional lake water geochemistry of parts of the Nechako Plateau, Central British Columbia , Open File 1999-5	Report Other data	January 1999
67	Phanerozoic tectonic evolution of the circum-North Pacific , USGS professional paper; 1626	Report	1999
68	Bedrock geology of the Germansen Landing - Manson Creek area, British Columbia (94N/9,10,15; 94C/2) , BCGS Bulletin 91	Report Other data Map published	April 1994
69	Summary report of 1990 and 1991 exploration programs on the Takla Rainbow property	Report	February 1992
70	Ore deposits, tectonics and metallogeny in the Canadian Cordillera , Paper 1991-4	Report	1991
71	Geological, geochemical and diamond drilling report, Takla Rainbow property	Report	February 1989

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Appendix 2

Redton Project Lithology coding System

GEOINFORMATICS REDTON STRUCTURE CODES

Drilling / hand specimen Data

CODE	STRUCTURE_1
	PRIMARY STRUCTURES
MAS	massive undeformed
SBO	bedding / bedded
SBOO	bedding overturned
SFB	Primary surface - flow banding or cumulate banding
YCH	Younging - scour marks
YDEN	Younging - density structures
YGB	Younging - graded bedding
YNG	Younging - undivided
YPIL	Younging - pillows
YXB	Younging - cross bedding
	DUCTILE STRUCTURES
SFO	undivided foliation -cleavage
SFS	schistosity
SFL	laminations
SFC	crenulation cleavage
SSC	S-C fabric
SMY	mylonite/mylonite zone
SHZ	**shear/ shear zone**
LIO	linear fabric (constrictional or stretched features)
LIX	lineation intersection(bed/clv, clv/clv)
LIM	lineation mineral
LIR	lineation rodding
LFA	lineation of fold axis
LFM	lineation of M vergent fold axis
LFZ	lineation of Z vergent fold axis
LFS	lineation of S vergent fold axis
FOL	folded lithologies
FAA	anticline
FAS	syncline
FAP	fold axial plane
	BRITTLE STRUCTURES
ZFO	fault
ZFZ	**fault zone**
ZFR	reverse fault
ZFN	normal fault
ZFT	thrust fault
ZFS	strike-slip fault
ZFG	fault gouge/ clay/pug
ZFL	fault lineations (e.g:slickensides/slickenlines/slickenfibres/slips)
ZFX	fault breccia
ZFC	cataclastic
ZRO	fracture
ZRZ	fracture zone
JOO	joints/ jointing

INTENSITY	
tr	trace
wk	weak
mod	moderate/medium
stg	strong
int	intense
unk	unknown intensity
When Recoding legacy data	
wk	weak
wk	poorly
wk	(+/-)
wk	some
wk	partly
mod	medium
mod	moderate
mod	well developed
mod	throughout
stg	strong
int	intense
unk	finely
mod	numerous
unk	unknown

Mapping Data

CODE	DESCRIPTION
FAA	Fold axis - anticline
FAAF	Fold axis - antiform
FAAO	Fold axis - overturned anticline
FAO	Fold axis - undivided
FAP	Fold - axial plane
FAS	Fold axis - syncline
FASF	Fold axis - synform
FASO	Fold axis - overturned syncline
FFA	Fold axis - undivided
FTAC	Fold - trace of anticline axial plane
FTAF	Fold - trace of antiform axial plane
FTAO	Fold - trace of overturned anticline axial plane
FTAS	Fold – trace of synformal anticline axial plane
FTO	Fold - trace of undivided axial plane
FTSA	Fold – trace of antiformal syncline axial plane
FTSC	Fold - trace of syncline axial plane
FTSF	Fold - trace of synform axial plane
FTSO	Fold - trace of overturned syncline axial plane
FV	Fold - vergence towards antiform
FVM	Fold - m vergence
FVS	Fold - s vergence
FVZ	Fold - z vergence
IFA	Dyke - aplite
IFGP	Dyke - pegmatite
IFO	Dyke - felsic
IFP	Dyke - porphyry
IMD	Dyke - dolerite/diabase
IOO	Dyke - igneous
JOO	Joint - undivided
LGO	Lineament - gravity
LGW	Lineament - gravity worms
LIM	Lineation - mineral
LIO	Lineation - undivided
LIR	Lineation - rodding
LIS	Lineation - slickengrooves on fault surface
LIX	Lineation - intersection
LMO	Lineament - magnetic
LMW	Lineament - magnetic worms
LTO	Lineament – topographic
SBO	Primary surface - bedding
SBOO	Primary surface - bedding overturned
SCC	Contact - interpretive caldera boundary
SCD	Contact - interpretive domain boundary
SCG	Contact - interpretive gravity boundary
SCI	Contact - intrusive
SCM	Contact - interpretive magnetic boundary
SCO	Contact - undivided
SCS	Contact - stratigraphic
SCT	Contact - interpretive terrane boundary
SCX	Contact - outcrop boundary
SFB	Primary surface - flow banding or cumulate banding
SFC	Secondary surface - cleavage
SFCC	Secondary surface - cleavage - crenulation
SFG	Secondary surface - gneissosity
SFL	Primary surface - laminations
SFO	Secondary surface - foliation
SFS	Secondary surface - schistosity
SFSC	Secondary surface - schistosity - crenulation
SKB	Secondary surface - kink band
STY	Secondary surface - stylolite
SUA	Unconformity - angular
SUD	Unconformity - disconformity
SUN	Unconformity - nonconformity
SUO	Unconformity - undivided
TLC	Trend line - geochemistry
TLM	Trend line - magnetics
TLO	Trend line - undivided
TLP	Trend line - airphotos
YCH	Younging - scour marks
YDEN	Younging - density structures
YGB	Younging - graded bedding
YNG	Younging - undivided
YPIL	Younging - pillows
YXB	Younging - cross bedding

Alt_minerals (AGSO codes)	Alt_minerals_Description
AB	albite
ACN	acanthite
ACT	actinolite
ADR	andradite
ADS	andesine
ADU	adularia
AEG	aegirine
AEN	aenigmatite
AG	silver
AGL	augelite
AGT	aegirine-augite
AIK	aikinite
AK	akermanite
AKT	aluminokataphorite
ALB	alabandite
ALG	allargentum
ALM	almandine
ALN	allanite
ALP	allophane
ALSI	aluminosilicate (unspecified)
ALT	altaite
ALU	alunite
AMB	amblygonite
AMPH	amphibole
AMS	amesite
AN	anorthite
AND	andalusite
ANG	anglesite
ANH	anhydrite
ANK	ankerite
ANL	analcime
ANN	annite
ANR	anorthoclase
ANT	anatase
AP	apatite
APO	apophyllite
APY	arsenopyrite
AR	Argillic
ARC	aurichalcite
ARF	arfvedsonite
ARG	aragonite
ARS	arsenolite
ART	artinite
AS	arsenic
ASOX	oxidised arsenopyrite
AST	aurostibite
ATC	atacamite
ATE	atheneite
ATG	antigorite
ATH	anthophyllite
ATL	antlerite
ATN	autunite
AU	gold
AUG	augite
AUS	austinite
AWR	awaruite
AX	axinite
AZ	azurite
BBT	babingtonite
BCT	boracite
BDL	baddeleyite
BDT	beudantite
BHM	boehmite
BI	bismuth
BKB	brackebuschite
BLN	berlinite
BLT	boulangerite
BMN	bismuthinite
BMT	bismutite
BN	bornite
BNN	bournonite
BNS	birnessite
BRA	brannerite
BRC	brucite
BRG	barringtonite
BRH	brochantite
BRK	brookite
BRL	beryl
BRN	braunite
BRS	barroisite
BRT	barite
BRV	bravoite
BRX	borax
BRY	bromargyrite
BRZ	berzelianite
BSM	bismite
BSN	bastnaesite
BST	bustamite
BT	biotite
BTF	betafite
BTP	breithauptite
BTR	bertrandite
BTW	bytownite
BXB	bixbyite
BZ	Biotization
CA	calcium
CAL	calcite
CAMP	clino-amphibole
CAP	chlorapatite
CARB	carbonate
CBE	chrysoberyl
CBN	cubanite
CBZ	chabazite
CC	chalcocite
CCH	clinochlore
CCL	chrysocolla
CCN	cancrinite
CCP	chalcopyrite
CCS	chalcosiderite
CD	Chalcedonic
CDL	crandallite
CDN	caledonite
CDR	calderite
CEL	celadonite
CEN	clinoenstatite
CER	cerussite

Alt_minerals (AGSO codes)	Alt_minerals_Description
CFS	clinoferrosilite
CHC	chalcanthite
CHE	chenevixite
CHM	chamosite
CHN	chondrodite
CHP	chapmanite
CHQ	clinoholmquistite
CHR	chromite
CHS	chalcostibite
CHT	churchite
CHU	clinohumite
CIN	cinnabar
CKT	cookite
CL	chlorite
CLA	clausthalite
CLAY	clay mineral
CLB	columbite
CLC	chalcedony
CLD	chloritoid
CLM	calomel
CLN	celsian
CLO	chloanthite
CLP	chalcophanite
CLR	coloradoite
CLS	celestine
CNA	chalconatronite
CNC	conichalcite
CNL	carnallite
CNT	carnotite
COAL	coal
COB	cobaltite
COE	coesite
COF	coffinite
COL	colemanite
COR	corundum
CPR	cooperite
CPT	clinoptilolite
CPX	clinopyroxene
CRB	carboydite
CRC	crocoite
CRD	cordierite
CRG	chlorargyrite
CRK	corkite
CRL	carrollite
CRM	cryptomelane
CRN	carnegieite
CRO	crossite
CRR	corrensite
CRS	cristobalite
CRT	cerite
CRV	cervantite
CRY	cryolite
CSB	costibite
CSL	cosalite
CST	cassiterite
CTE	cerianite
CTG	cuprotungstite
CTL	chrysotile
CTP	catapleiite
CU	copper
CUM	cummingtonite
CUOX	oxidised copper minerals
CUP	cuprite
CV	covellite
CVK	chevkinite
CVT	calaverite
CZO	clinozoisite
DCK	dickite
DCZ	descloizite
DFT	duftite
DG	digenite
DI	diopside
DMD	diamond
DNM	dannemorite
DOL	dolomite
DPT	dioptase
DRV	dravite
DSC	dyscrasite
DSP	diaspore
DTL	datolite
DVD	davidite
DWS	dawsonite
ECK	eckermannite
ED	edenite
EDL	eudialyte
ELB	elbaite
ELE	electrum
EMP	emplectite
EN	enstatite
ENG	enargite
EP	epidote
EPS	epsomite
ERT	erythrite
FAC	ferro-actinolite
FAN	ferri-annite
FAP	fluorapatite
FAT	ferro-anthophyllite
FAY	fluorapophyllite
FBG	freibergite
FBR	ferrobarroisite
FCH	ferroclinoholmquistite
FCL	ferrocolumbite
FDR	ferridravite
FE	iron
FECB	iron carbonate
FED	ferro-edenite
FEK	ferro-eckermannite
FELD	feldspar
FEMG	ferromagnesian mineral
FEOX	iron oxide
FFT	ferroferritschermakite
FGD	ferrogedrite
FGL	ferroglaucophane
FHB	ferrohornblende
FHQ	ferroholmquistite
FKR	ferrokaersutite

Alt_minerals (AGSO codes)	Alt_minerals_Description
FKT	ferrikataphorite
FL	fluorite
FLB	freieslebenite
FLL	fluellite
FLT	florencite
FMB	ferrimolybdite
FMT	famatinite
FO	forsterite
FPG	ferropargasite
FRB	ferberite
FRC	ferrorichterite
FRG	fergusonite
FRH	frohbergite
FRK	franklinite
FS	ferrosilite
FSPD	feldspathoid
FTS	ferrotschermakite
FTT	ferrotantalite
FUC	fuchsite
FWN	ferrowinchite
FY	fayalite
GARN	garnierite
GBM	galenobismutite
GBS	gibbsite
GCX	gorceixite
GDL	gadolinite
GED	gedrite
GEV	geversite
GH	gehlenite
GHN	gahnite
GKL	geikielite
GL	glass
GLB	glauberite
GLC	glaucodot
GLN	glaucophane
GLT	glauconite
GLX	galaxite
GML	gmelinite
GN	galena
GND	gonnardite
GNL	greenalite
GNT	garnet
GOS	goslarite
GP	gypsum
GR	graphite
GRK	greenockite
GRS	grossular
GRT	groutite
GRU	grunerite
GSD	gersdorffite
GSM	gismondine
GSP	gaspeite
GT	goethite
GTM	gatumbaite
GUD	gudmundite
GYZ	goyazite
HAP	hydroxylapatite
HBL	hornblende
HBN	hubnerite
HBS	hibschite
HC	hercynite
HD	hedenbergite
HDA	hydroxyapophyllite
HDC	hydrocerussite
HDL	hidalgoite
HDM	hydromagnesite
HDT	hydrotungstite
HDY	hedyphane
HDZ	hydrozincite
HED	hedleyite
HEM	hematite
HES	hessite
HL	halite
HLD	hollandite
HLR	hellyerite
HLY	halloysite
HMM	hemimorphite
HMQ	holmquistite
HNG	hingganite
HNT	huntite
HOP	hopeite
HRM	harmotome
HS	hastingsite
HSD	hinsdalite
HSM	hausmannite
HTN	huttonite
HTR	halotrichite
HU	humite
HUL	heulandite
HYL	hyalophane
HYN	hauyne
HZL	heazlewoodite
IDA	idaite
IDG	iodargyrite
IGD	ingodite
ILL	illite
ILM	ilmenite
ILS	ilsemannite
ILV	ilvaite
INE	inesite
IR	iridium
IRA	iridarsenite
IRO	iridosmine
IRS	irarsite
IXL	ixiolite
JAR	jarosite
JCB	jacobsite
JD	jadeite
JEP	jeppeite
JGF	jugoldite-fe2+
JH	johannsenite
JLP	jalpaite
JMS	jamesonite
JOS	joseite
JRD	jordanite
JUN	junoite

Alt_minerals (AGSO codes)	Alt_minerals_Description
KDC	kiddcreekite
KES	kesterite
KFS	k-feldspar
KLD	kullerudite
KLM	kleemanite
KLN	kaolinite
KLP	kaliophilite
KLS	kalsilite
KLY	kellyite
KMB	kambaldaite
KMC	kamacite
KNR	knorringite
KPK	krupkaite
KR	krennerite
KRH	kroehnkite
KRK	kirkiite
KRM	kuramite
KRN	kornerupine
KRS	kaersutite
KRT	krutaite
KST	kostovite
KTK	koutekite
KTN	kutnohorite
KTP	katophorite
KY	kyanite
KZL	kozulite
LAB	labradorite
LBB	liebenbergite
LCT	leucite
LFT	laffittite
LGB	lengenbachite
LLG	loellingite
LMN	limonite
LMT	laumontite
LNG	langisite
LNN	linnaeite
LOR	lorandite
LPC	lepidocrocite
LPD	lepidolite
LPL	lithiophilite
LRN	larnite
LRS	larsenite
LRT	laurite
LRZ	lorenzenite
LTH	lanthanite
LTP	lithiophorite
LTT	lautite
LVY	levyne
LVZ	lovozerite
LWS	lawsonite
LZ	lizardite
LZL	lazulite
LZN	luzonite
LZR	lazurite
MAF	magnesio-arfvedsonite
MAK	magnesio-aluminokataphorite
MAL	malachite
MAT	magnesio-anthophyllite
MAU	meta-autunite
MAX	magnesio-axinite
MBD	molybdite
MBL	mirabilite
MBY	montbrayite
MC	microcline
MCD	magnesiochloritoid
MCH	magnesioclinoholmquistite
MCK	mackinawite
MCM	magnesiocummingtonite
MCN	metacinnabar
MCS	marcasite
MCT	moncheite
MDC	madocite
MDN	mordenite
MDR	modderite
MEI	meionite
MEL	melilite
MFD	mansfieldite
MFK	magnesioferrikataphorite
MGC	magnesiochromite
MGD	magnesiogedrite
MGF	magnesioferrite
MGH	maghemite
MGN	manganite
MGR	mgriite
MGS	magnesite
MGT	magnetite
MGY	miargyrite
MHB	magnesiohornblende
MHQ	magnesioholmquistite
MHS	magnesiohastingsite
MICA	mica
MKT	magnesiokataphorite
MLD	maldonite
MLL	millerite
MLN	melonite
MLR	milarite
MLT	melanterite
MLY	malayaite
MMT	mimetite
MNC	manganochromite
MNG	meneghinite
MNOX	manganese oxides
MNS	minnesotaite
MNT	montmorillonite
MNZ	monazite
MOH	mohite
MOL	molybdenite
MOT	mottramite
MRB	magnesioriebeckite
MRC	minrecordite
MRG	margarite
MRK	merenskyite
MRL	marialite
MRS	miersite
MRW	merwinite
MS	muscovite

Alt_minerals (AGSO codes)	Alt_minerals_Description
MSB	moschellandsbergite
MSC	massicot
MSD	magnesiosadanagite
MSL	mesolite
MST	metastibnite
MTB	metatorbernite
MTC	monticellite
MTD	matildite
MTM	muthmannite
MTR	magnesiotaramite
MTT	mangantantalite
MTY	montroydite
MUL	mullite
MWS	mawsonite
MZC	monazite-(ce)
MZL	monazite-(la)
MZN	monazite-(nd)
NAT	natrite
NCL	niccolite
NE	nepheline
NGL	niggliite
NI	nickel
NKD	nukundamite
NLG	nullaginite
NMN	naumannite
NRB	norbergite
NRN	natron
NSB	nisbite
NSN	nosean
NST	norsethite
NSU	nsutite
NTA	natroalunite
NTK	nantokite
NTN	nontronite
NTR	natrolite
NYB	nyboite
OAMP	orthoamphibole
OCL	orcelite
OFR	offretite
OGC	oligoclase
OGN	oregonite
OL	olivine
OLT	olivenite
OME	omeiite
OMP	omphacite
OPL	opal
OPQ	opaque mineral
OPX	orthopyroxene
OR	orthoclase
ORP	orpiment
OS	osmium
OSA	osarsite
OSI	osmiridium
OSM	osumilite
OSZ	osarizawaite
OTM	ottemannite
OTV	otavite
OTW	otwayite
PAR	parisite
PAX	paxite
PB	lead
PBA	palladobismutharsenide
PBG	plumbogummite
PBJ	plumbojarosite
PBM	plumbomicrolite
PBOX	oxidised lead minerals
PBP	plumbopalladinite
PCK	pickeringite
PCL	pyrochlore
PCR	pecoraite
PCT	pectolite
PD	palladium
PDA	palladoarsenide
PEN	protoenstatite
PER	periclase
PFE	pumpellyite-fe2+
PFR	playfairite
PG	paragonite
PGT	pigeonite
PHK	phenakite
PHL	phlogopite
PHOS	phosphate
PIL	picro-ilmenite
PKN	paakkonenite
PKO	pekoite
PL	plagioclase
PLB	polybasite
PLC	pollucite
PLG	palygorskite
PLI	platiniridium
PLL	polylithionite
PLN	planerite
PLP	phillipsite
PLT	platarsite
PLV	paolovite
PMG	pumpellyite-mg
PMN	pumpellyite-mn
PMP	pumpellyite
PMT	piemontite
PN	pentlandite
PO	pyrrhotite
PPH	pyrophanite
PPS	phosphosiderite
PPU	phosphuranylite
PPY	plumbopyrochlore
PQT	pirquitasite
PRC	pearceite
PRG	pargasite
PRH	prehnite
PRL	pyrophyllite
PRM	pararammelsbergite
PRP	pyrope
PRR	pararealgar
PRS	proustite
PRV	perovskite
PSB	pseudobrookite

Alt_minerals (AGSO codes)	Alt_minerals_Description
PSC	parascholzite
PSG	phosgenite
PSI	psilomelane
PSM	pseudomalachite
PT	platinum
PTL	petalite
PTN	plattnerite
PTR	potarite
PTY	platynite
PTZ	petzite
PVN	pavonite
PWL	powellite
PXM	pyroxmangite
PY	pyrite
PYC	pyrochroite
PYD	polydymite
PYG	pyragyrite
PYL	pyrolusite
PYM	pyromorphite
PYOX	oxidised pyrite
PYRX	pyroxene
PYS	pyrosmalite
QND	qandilite
QZ	quartz
RAR	ruarsite
RBK	riebeckite
RBN	robinsonite
RCK	rucklidgeite
RCT	richterite
RDH	ramdohrite
RDL	rhodolite
RDN	rhodonite
RDS	rhodochrosite
RE	rhenium
RH	rhodium
RHN	rhonite
RIC	rickardite
RIO	rutheniridosmine
RLG	realgar
RMB	rammelsbergite
RMD	ramsdellite
RMN	romanechite
RSP	raspite
RSS	rosasite
RST	rhodostannite
RT	rutile
RTA	ruthenarsenite
RTH	rathite
RU	ruthenium
RZN	rozenite
SAL	sodium alum
SANI	sanidine
SAP	strontium-apatite
SAT	sodium anthophyllite
SAU	sodium autunite
SB	antimony
SBG	sternbergite
SBP	stibiopalladinite
SBV	sobelevskite
SBY	sudburyite
SCB	sphaerocobaltite
SCH	scheelite
SCL	scolecite
SCP	scapolite
SCR	scorodite
SCW	scawtite
SCZ	scorzalite
SD	siderite
SDB	serendibite
SDL	sodalite
SDN	sideronatrite
SDO	sudoite
SDP	siderophyllite
SDT	studtite
SE	selenium
SEP	sepiolite
SERI	sericite
SERP	serpentine
SFL	safflorite
SGD	sodium gedrite
SGL	senegalite
SGN	siegenite
SHC	shcherbakovite
SHN	shandite
SHT	shattuckite
SHZ	scholzite
SI	silica
SIL	sillimanite
SKD	sklodowskite
SKN	skinnerite
SKT	skutterudite
SLA	sellaite
SLE	saleeite
SLG	seligmannite
SLN	selenite
SLR	stellerite
SLV	sylvanite
SLW	slawsonite
SMEC	smectite
SMH	smithite
SMK	samarskite
SMN	smithsonite
SMP	stumpflite
SMR	sanmartinite
SMS	samsonite
SMT	smaltite
SMY	semseyite
SN	tin
SND	sanderite
SNG	sanadagite
SNJ	seinajokite
SNM	senarmontite
SP	sphalerite
SPC	sopcheite
SPD	spodumene
SPH	sodium phlogopite

Alt_minerals (AGSO codes)	Alt_minerals_Description
SPL	spinel
SPN	saponite
SPR	sapphirine
SPS	spessartine
SPT	spertiniite
SPY	sperrylite
SRD	serandite
SRL	schorl
SRM	schorlomite
SRT	sartorite
SRZ	strunzite
SSV	stishovite
ST	staurolite
STA	stibarsen
STB	stibnite
STC	stibiconite
STD	stannoidite
STE	stephanite
STG	strengite
STI	stilleite
STK	stokesite
STL	stilbite
STM	sulphotsumoite
STN	stannite
STP	stilpnomelane
STR	strontianite
STS	stistaite
STT	stichtite
STU	stutzite
STV	stevensite
STW	stillwaterite
STY	stromeyerite
STZ	stolzite
SUL	sulphur
SULP	sulphide
SVB	svanbergite
SVN	sulvanite
SWL	stillwellite
SWT	sweetite
SYL	sylvite
SYN	synchysite
TAE	taenite
TAN	tellurantimony
TBM	tellurobismuthite
TBR	torbernite
TCK	tucekite
TDK	todorokite
TE	tellurium
TELL	tellurides
TGR	tugarinovite
TGS	tungstite
TGT	tungstenite
THN	thenardite
THR	thorianite
THT	thorite
TIR	tirodite
TLC	talc
TLM	tulameenite
TLR	tellurite
TLT	teallite
TLV	tolovkite
TMP	thomsonite
TNK	tainakhite
TNL	taeniolite
TNR	tenorite
TNT	tennantite
TOUR	tourmaline
TOZ	topaz
TPH	tephroite
TPL	taplolite
TPY	triphylite
TR	tremolite
TRD	tridymite
TRL	trolleite
TRM	taramite
TRN	trona
TRO	troilite
TRP	triplite
TRQ	turquoise
TRV	trevorite
TS	tschermakite
TSD	trustedtite
TSM	tsumoite
TTD	tetradymite
TTH	tetrahedrite
TTL	tantalite
TTN	titanite
TWN	twinnite
TYL	tyrrellite
U	uranium
UBG	uytenbogaardtite
UMG	umangite
UMN	ullmannite
UNK	unknown
URC	uranocircite
URE	urea
URN	uraninite
UROX	uranium oxide mineral
URP	uranophane
USP	ulvospinel
UV	uvite
UVR	uvarovite
VAE	vaesite
VEN	veenite
VES	vesuvianite
VIO	violarite
VKG	vikingite
VLC	vulcanite
VLK	velikite
VLM	villamaninite
VLR	valleriite
VLT	valentinite
VND	vanadinite
VRM	vermiculite
VRN	vernadite
VRS	variscite

Alt_minerals (AGSO codes)	Alt_minerals_Description
VVT	vivianite
WDG	wodginite
WDH	woodhouseite
WFM	wolframite
WHT	whiteite
WKM	wilkmanite
WLF	wulfenite
WLK	wilkinsonite
WLM	willemite
WLS	willemseite
WLY	willyamite
WNC	winchite
WNS	wonesite
WO	wollastonite
WRD	wardite
WRK	wairakite
WRT	wurtzite
WRU	wairauite
WSB	weissbergite
WSH	weishanite
WSS	weissite
WSV	westerveldite
WTC	wittichenite
WTH	witherite
WTT	wittite
WUS	wustite
WVL	wavellite
XEN	xenotime
XNT	xonotlite
XTH	xanthoconite
YGW	yugawaralite
YRW	yarrowite
ZEOL	zeolite
ZKN	zinkenite
ZNC	zincite
ZNOX	oxidised zinc minerals
ZNW	zinnwaldite
ZO	zoisite
ZRK	zirkelite
ZRN	zircon
ZRT	zaratite
ZUN	zunyite

GEOINFORMATICS REDTON ALTERATION ASSEMBLAGE CODES

Alt_type	Alt_type_Description
AL	Albitic
AR	Argillic, undivided
ARA	Argillic, advanced
ARI	Argillic, intermediate
ASS	Mineral Assemblage (name not mentioned, but minerals given)
ASU	acid sulphate
BA	Barite
BLE	Bleached
BZ	Biotization
BZMT	biotite-magnetite
CD	Chalcedonic
CH	Chloritization
CN	Carbonatization
CLAY	clay alteration
EZ	Epidotization
EZCH	Epidote-chlorite
FD	Felspathization
FN	Fenitization
FU	Fuchsitic
GRA	Graphitic
GS	Greisen
HM	Hematization
ILL	illitic
ILSM	interlayered illite-smectite
JS	Jasperoidal
KA	Kaolinitic
KF	K-feldspathization
KO	Potassic
MI	Micaceous
MNOX	Manganese Oxide
MT	Magnetitic
NOT	Not altered, fresh rock
OX	Oxidised
PH	Phyllic
PO	Pyrrhotite
PP	Propylitic
PR	Pyritic
QAD	quartz-adularia
QIL	quartz-illite
QSK	quartz-smectite-kaolinite
SK	Skarn
SL	Silicic/Silicification
SMEC	smectite zone
SN	Sinter
SO	Sodic
SP	Spilitisation
SR	Sericitiziation
SRP	Sericte-paragonite
SS	Sausseritised
SU	Sulphidic
SUB	Sulphidic, Base Metals
SY	Syenitized
SZ	Serpentinization
TC	Talc
TOUR	Tourmalinisation
UND	Altered (undifferentiated)
UNK	Unknown
ZE	Zeolitization

Alt_intensity	
( )	*absolute %
tr	trace (<2%)
wk	weak (2-10%)
mod	moderate/medium (10-25%)
stg	strong (25-50%)
int	intense (>50%)
When Recoding legacy data	
wk	(+/-)
wk	minor
wk	partly
wk	patchy
wk	rare
wk	scattered
wk	some
unk	unknown

Alt_style	style, distribution, geometry
ana	anastomosing
bd	banded
blb	blebs
box	boxwork
ckd	cockade
cla	clasts
diss	disseminated
fil	fill
ff	fracture filling
fld	flooded
frag	fragments
fram	framboidal
fsel	fracture selvage
gran	granular
hal	halo/envelopes
hybx	hydrothermal breccia
lam	laminae
len	lenticular
mass	massive
mat	matrix
mot	mottled
nod	nodular
rep	replacement/overprint
pat	patches
pod	pod
pv	pervasive
rcry	recrystallised
rib	ribbon
spo	spotted
stain	staining
vsel	vein selvage
wrk	wall-rock
unk	no style mentioned

Alt_minerals (AGSO codes)	Alt_minerals_Description
AB	albite
ACN	acanthite
ACT	actinolite
ADR	andradite
ADS	andesine
ADU	adularia
AEG	aegirine
AEN	aenigmatite
AG	silver
AGL	augelite
AGT	aegirine-augite
AIK	aikinite
AK	akermanite
AKT	aluminokataphorite
ALB	alabandite
ALG	allargentum
ALM	almandine
ALN	allanite
ALP	allophane
ALSI	aluminosilicate (unspecified)
ALT	altaite
ALU	alunite
AMB	amblygonite
AMPH	amphibole
AMS	amesite
AN	anorthite
AND	andalusite
ANG	anglesite
ANH	anhydrite
ANK	ankerite
ANL	analcime
ANN	annite
ANR	anorthoclase
ANT	anatase
AP	apatite
APO	apophyllite
APY	arsenopyrite
	etc etc
ZUN	zunyite

GEOINFORMATICS REDTON VEINING CODES

Vein_style	
Code	includes: style-geometry-structure-size
BND	Boudinaged Vein
BRX	Vein Breccia
CKD	Cockade Vein
COL	Colloform Vein
CON	Conjugate Veins
CRC	Crackle Vein
DRU	Drusy
EEN	En Echelon Veins
EXT	Extensional Vein
FELD	Narrow felsic dyke/vein
FMV	Fine/micro-veins
FOL	Folded vein
FRV	Fracture Veins
FTV	Fault-related veins
HLN	Hairline Veins
INTD	Narow intermediate dyke/vein
IRR	Irregular / undeformed / segmented
LAC	Laced veinlets
LAM	Laminated Veins
LAMD	Narrow lamprophyre dyke/vein
LIND	Late intrusive dyke/stringer vein
MAS	Massive Veins
NET	Net-like veining
PEG	Pegmatite Veins
PLN	Planar Veins
PTY	Ptygmatic folded veins
RIB	Ribbon Veins
SHR	Sheared Veins
SHT	Sheeted Veins
SIG	Sigmoidal Veins
SMS	Seams
STK	Stockwork Veins
STR	Stringer Veins
STY	Stylolitic
SYND	Narrow syenitic dyke/vein
TEN	Tension Gashes
UND	Undifferentiated Veins / veinlets
WSP	Wispy

Vein_intensity	
code	
( )	*absolute %
tr	trace (<2%)
wk	weak (2-10%)
mod	moderate/medium (10-25%)
stg	strong (25-50%)
int	intense (>50%)
unk	unknown intensity
When Recoding legacy data	
wk	few
wk	minor
wk	(+/-)
wk	some
wk	partly
wk	rare
wk	scattered
wk	patchy
wk	irregular
mod	common
mod	numerous
mod	many
mod	regular

Vein_mineral	
code	use same code abbreviation as for AGSO minerals
UNK	unknown
ACN	acanthite
ACT	actinolite
ADU	adularia
AEG	aegirine
AGT	aegirine-augite
AEN	aenigmatite
AIK	aikinite
AK	akermanite
ALB	alabandite
AB	albite
ALN	allanite
ALG	allargentum
ALP	allophane
ALM	almandine
ALT	altaite
AKT	aluminokataphorite
ALSI	aluminosilicate (unspecified)
ALU	alunite
AMB	amblygonite
AMS	amesite
AMPH	amphibole
etc	etc etc etc

GEOINFORMATICS REDTON LITHOLOGY CODES

INTRUSIVE	lith code
Undifferentiated Intrusives	**IOO**
porphyry, undiff.	IOP
Undifferentiated Felsic Intrusives	**IFO**
Porphyritic felsic intrusive	IFP
Pegmatite, undivided	IFPG
Granite	**IFG**
Porphyritic granite	IFGP
adamellite	IFGA
albite granite	IFGB
aplite	IFA
charnockite	IFC
Granodiorite	**IFD**
Porphyritic granodiorite	IFDP
Trondjhemite	IFJ
Tonalite	IFT
Alkalic Intrusion, undivided	**IKO**
Syenite	**IKS**
Porphyritic syenite	IKSP
nepheline syenite	IKSN
quartz syenite	IKSQ
Albitite	IKA
Carbonatite	IKC
alkali feldspar granite / syenogranite	IKGF
Shoshonite	IKH
Undifferentiated Intermediate Intrusives	**IIO**
Porphyritic intermediate intrusive	IIP
Diorite	**IID**
Porphyritic diorite intrusive	IIDP
Monzonite	**IIM**
Porphyritic monzonite intrusive	IIMP
Quartz diorite	**IIQ**
Porphyritic quartz diorite intrusive	IIQP
Quartz monzonite	**IIZ**
Porphyritic quartz monzonite intrusive	IIZP
Monzodiorite	**III**
Porphyritic monzodiorite intrusive	IIIP
Undifferentiated Mafic Intrusives	**IMO**
Porphyritic mafic intrusive	IMP
Gabbro	**IMG**
hornblende gabbro	IMGH
gabbronorite	IMGN
olivine gabbro	IMGO
Norite	IMN
Troctolite	IMT
Dolerite / Diabase	**IMD**
Undifferentiated Ultramafic Intrusion	**IUO**
Peridotite	IUP
Picrite	IUR
Pyroxenite	IUX
clinopyroxenite	IUXC
orthopyroxenite	IUXO
Dunite	IUD
Hornblendite	IUH
Harzburgite	IUZ
Undifferentiated lamprophyre	**ILO**

VOLCANIC	lith code
Undifferentiated Volcanic Rocks	**VOO**
Undifferentiated Volcanic Rocks - porphyritic	VOP
Undifferentiated Felsic Volcanic Rocks	**VFO**
Undifferentiated Felsic Volcanic Rocks - porphyritic	VFP
Rhyolite	**VFR**
Rhyolite - quartz +/- feldspar phyric	VFRP
Dacite	**VFD**
Dacite - quartz +/- feldspar phyric	VFDP
Rhyodacite	**VFRD**
Undifferentiated Intermediate Volcanic Rocks	**VIO**
Intermediate Volcanics - quartz +/- feldspar phyric	VIOP
Intermediate Volcanics - vesicular/amygdaloidal	VIOV
Andesite	**VIA**
Andesite - quartz +/- feldspar phyric	VIAP
Andesite - amygdaloidal/vesicular	VIAV
basaltic andesite	VIB
trachyandesite	VIT
Alkalic volcanic, undivided	**VKO**
Alkalic volcanic - quartz +/- feldspar phyric	VKOP
Latite (porphyritic)	VKL
alkali feldspar rhyolite	VKR
Trachyte	VKT
Undifferentiated Mafic Volcanic Rocks	**VMO**
Mafic lava; amygdaloidal/vesicular	VMOV
Basalt	**VMB**
Basalt - amygdaloidal/vesicular	VMBV
Pillow basalt	VMBP
olivine basalt	VMBO
Tholeitic basalt	VMBT
komatiitic basalt	VMK
Undifferentiated Ultramafic Volcanic Rocks	**VUO**
Komatiite	VUK
Peridotite	VUP
Pyroxenite	VUX

SEDIMENTS	lith code
Undifferentiated Sediments	**SOO**
Conglomerate	**SCO**
Conglomerate - boulder	SCB
Conglomerate - pebble/cobble	SCC
Conglomerate - granule	SCG
Conglomerate - polymictic	SCP
Conglomerate - monomictic	SCM
Sedimentary Breccia (sharpstone Conglom.)	**SCX**
clastic sediments (coarser than siltsize)	**SSO**
Sandstone/Arenite	**SSA**
Calcareous arenite/sandstone	SSB
Carbonaceous arenite/sandstone	SSC
Sulphidic arenite/sandstone	SSZ
Arkose	SSK
Volcanic arenite/sandstone	SSV
Quartzite	SSQ
Wacke	**SWO**
Calcareous Greywacke	SWB
Carbonaceous/graphitic Greywacke	SWC
Sulphidic Greywacke	SWZ
Siltstone	**SIO**
Calcareous siltstone	SIB
Carbonaceous/graphitic siltstone	SIC
Quartzose/siliceous siltstone	SIQ
Sulphidic siltstone	SIZ
Argillite	**SAO**
Calcareous argillite/shale/mudstone	SAB
Carbonaceous/graphitic argillite/shale/mudstone	SAC
Quartzose/siliceous argillite	SAQ
Sulphidic argillite/shale/mudstone	SAZ
shale	SIH
mudstone	SIM
Chert	**STO**
Banded Iron Formation	STF
sulphidic chert	STZ
Carbonate sediments, undivided	**SLO**
Limestone	SLL
Dolomite/Dolostone	SLD
Biogenic rock, undifferentiated	**BOO**
Biogenic carbonaceous deposit, undiff	BCO

METAMORPHIC	lith code
Undifferentiated metamorphic rock	**XOO**
Amphibolite, undivided	**XAO**
Gneiss, undivided	**XGO**
granulite	XGG
Ortho-gneiss	XGI
Migmatite	XGM
quartzofeldspathic gneiss	XGQ
Para-gneiss	XGS
pelitic gneiss	XGSP
psammitic gneiss	XGSS
eclogite	XEO
Hornfels, undivided	**XHO**
dolomitic marble	XLD
marble	XLO
Schist, undivided	**XSO**
Phyllite/slate, undivided	XPO
Biotite schist	XSB
carbonate schist and calc-schist	XSC
feldspathic schist	XSF
schist - graphitic	XSG
Chlorite schist	XSH
sericite schist	XSK
muscovite schist	XSM
pelitic schist	XSP
psammitic schist	XSS
Psammite, undivided	XMO
meta-quartzite	XQO
Talc - Chlorite schist	XST
meta-ultramafic undivided	**XUO**
serpentinite	XUS

VOLCANICLASTIC	lith code
Undifferentiated Volcaniclastic Rocks	**YOO**
tuff - unknown composition	YOT
agglomerate - unknown composition	YOA
ignimbrite - unknown composition	YOI
Undiff Felsic Volcaniclastics	**YFO**
agglomerate felsic	YFA
ignimbrite - felsic	YFI
tuff - felsic	YFT
Rhyolite tuff	YFR
Dacite tuff	YFD
Undiff Intermediate Volcaniclastics	**YIO**
agglomerate - intermediate	YIA
ignimbrite - intermediate	YII
tuff - intermediate	YIT
andesite tuff	YIAT
Undiff Mafic Volcaniclastics	**YMO**
agglomerate - mafic	YMA
ignimbrite - mafic	YMI
tuff - mafic	YMT

ALTERED ROCKS (original rock type unidentifiable)	lith code
Altered Rock, Undivided	**AOO**
Altered intrusive rock	**AIO**
Altered volcanic rock	**AVO**
Altered sedimentary rock	**ASS**
Albite altered rock	AAO
Biotite alteration	ABO
Carbonate-chlorite	ACH
Carbonate altered rock	ACO
Fuchsite alteration	AFO
Chloritic alteration	AHO
K-spar alteration	AKO
Silica-carbonate	AQC
Silica-sericite	AQE
Silica-fuchsite	AQF
Silica-chlorite	AQH
Silica alteration	AQO
Sericite-Carbonate	ASC
Sericitic alteration	ASO
Sericite-chlorite	ASH
Sericite-clay	ASL
Clay alteration	ALO
Clay-chlorite	ALH
Dominantly sulphide rock	AZO

OTHER	lith code
Unknown rock type	OOO
Unknown, missing interval, lost sample	OMI
Unknown, not logged	ONL
Drill Casing	CASE
SURFICIAL	
Overburden	OVER
undivided regolith	ROO
soil	ROS
undivided residual regolith	RRO
Transported colluvium	RTC
undivided transported regolith	RTO
Unconsolidated alluvium	RTA
gravel	RTG
till	RTT
Gossan	RGO
FAULT ZONES	
Fault/Fault zone	ZFO
fault gouge	ZFG
fault breccia	ZFX
Mylonite/tectonite	ZMO
VEINS	
vein, undifferentiated	ZVO
carbonate-dominant vein	ZVC
quartz-dominant vein	ZVQ
quartz-carbonate dominant vein	ZVQC
quartz-feldspar dominant vein	ZVQF
sulphidic vein	ZVS

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Appendix 3

Redton Project Lithology Colour Legend

Redton Lithology Legend

- IFA - aplite
- IFD - Granodiorite
- IFDP - Porphyritic granodiorite
- IFG - Granite
- IFGP - Porphyritic granite
- IFO - Undifferentiated Felsic Intrusives
- IFP - Porphyritic felsic intrusive
- IID - Diorite
- IIDP - Porphyritic diorite intrusive
- III - Monzodiorite
- IIM - Monzonite
- IIMP - Porphyritic monzonite intrusive
- IIO - Undifferentiated Intermediate Intrusives
- IIP - Porphyritic intermediate intrusive
- IIQ - Quartz diorite
- IIZ - Quartz monzonite
- IKGF - alkali feldspar granite / syenogranite
- IKS - Syenite
- IKSQ - quartz syenite
- IMD - Dolerite / Diabase
- IMG - Gabbro
- IMO - Undifferentiated Mafic Intrusives
- IMP - Porphyritic mafic intrusive
- IOO - Undifferentiated Intrusives
- IOP - porphyry, undiff.
- IUO - Undifferentiated Ultramafic Intrusion
- IUP - Peridotite
- IUX - Pyroxenite
- OOO - Unknown rock type
- OVER - Overburden
- RGO - Gossan
- SAC - Carbonaceous/graphitic argillite/shale/mudstone
- SAO - Argillite
- SAQ - Quartzose/siliceous argillite
- SCO - Conglomerate
- SCP - Conglomerate - polymictic
- SCX - Sedimentary Breccia (sharpstone Conglom.)
- SIB - Calcareous siltstone
- SIH - shale
- SIM - mudstone
- SIO - Siltstone
- SIQ - Quartzose/siliceous siltstone
- SLD - Dolomite/Dolostone
- SLL - Limestone
- SOO - Undifferentiated Sediments
- SSA - Sandstone/Arenite
- SSK - Arkose
- SSO - clastic sediments (coarser than siltsize)
- SSQ - Quartzite
- SSV - Volcanic arenite/sandstone
- STO - Chert
- SWO - Wacke
- VFD - Dacite
- VFO - Undifferentiated Felsic Volcanic Rocks
- VFR - Rhyolite
- VFRP - Rhyolite - quartz +/- feldspar phyric
- VIA - Andesite
- VIAP - Andesite - quartz +/- feldspar phyric
- VIO - Undifferentiated Intermediate Volcanic Rocks
- VIOP - Intermediate Volcanics - quartz +/- feldspar phyric
- VKL - Latite (porphyritic)
- VKT - Trachyte
- VMB - Basalt
- VMBP - Pillow basalt
- VMBV - Basalt - amygdaloidal/vesicular
- VMO - Undifferentiated Mafic Volcanic Rocks
- VOO - Undifferentiated Volcanic Rocks
- VOP - Undifferentiated Volcanic Rocks - porphyritic
- XAO - Amphibolite, undivided
- XGQ - quartzofeldspathic gneiss
- XGS - Para-gneiss
- XHO - Hornfels, undivided
- XPO - Phyllite/slate, undivided
- XUS - serpentinite
- YFD - Dacite tuff
- YFR - Rhyolite tuff
- YFT - tuff - felsic
- YIA - agglomerate - intermediate
- YIO - Undiff Intermediate Volcaniclastics
- YIT - tuff - intermediate
- YMA - agglomerate - mafic
- YOA - agglomerate - unknown composition
- YOO - Undifferentiated Volcaniclastic Rocks
- YOT - tuff - unknown composition
- ZFO - Fault/Fault zone
- ZFX - fault breccia
- ZVQ - quartz-dominant vein
- ZVQC - quartz-carbonate dominant vein

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Appendix 4

Fugro Airborne Magnetics / Radiometrics

Survey Specifications

Fugro Airborne Magnetic/radiometric Survey – Redton Property, 2005

Flight lines: 250m spacing, E-W (UTM)
Control lines: 4000m spacing, N-S (UTM), with max of 10m diff. in altitude between flight and control lines
Terrain Clearance: 135m
Speed: 120 kph (65 knots) (33m/s)

Fugro Airborne Surveys equipment will by flown in a rented Eurocopter Astar AS350B2 from Questral Helicopters.
A Scintrex cesium split-beam total magnetic field sensor is carried in a ***skid-mounted stinger (NOT towed bird)****:*
Sample frequency = 0.1 seconds
Sensitivity = 0.01 nT
Absolute accuracy = +/-10 nT
Noise = 0.10 nT
Range = 20,000-100,000 nT
Heading Effect <2.0 nT
Mag Diurnal: max. of 3.0 nT (peak-peak) deviation from a long chord equivalant to a period of one minute for each base station

An Exploranium GR820 256-channel spectrometer with 33.6 litres downward and 4.2 litres upward NaI detectors will be used. Calibrations are done daily using Cs, U and Th samples. Sample rate is 1/second.
A test line is established and flown daily to monitor variations related to moisture and radon. Aircraft background and cosmic stripping coefficients are determined from multi-altitude test flights. Stripping ratios are determined on calibration pads, and sensitivities are measured using a test strip/hover site.
No flying until 3 hours after measurable rain; no flying until 12 hours after heavy rain.

Windows:

K	*1370-1570*
U	*1660-1860*
Th	*2410-2810*
TC	*400-2800*
Cosmic	*3000->6000*
Up U	*1660-1860*

Ancillary gear include:
RMS DGR-33 data acquisition system
radar altimtimeter (0-800m range, 2% accuracy)
baro altimeter (accuracy 2%)
laser altimeter (accuracy 30cm, 0.1Hz sampling)
GPS (realtime dual frequency Ashtech differential)
flight path video camera

Ground Base Station measures mag, baro, temperature, GPS

All data processing and generation of publication-ready products (maps) is done by Fugro using GeoSoft and some in-house proprietary software, to GSC specs.

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Appendix 5

Aeroquest Report on Helicopter-Borne Gamma Ray Spectrometer

And Magnetic Gradiometer Survey, Takla Redton Property

Fugro Airborne Magnetic/radiometric Survey – Redton Property, 2005

Flight lines: 250m spacing, E-W (UTM)
Control lines: 4000m spacing, N-S (UTM), with max of 10m diff. in altitude between flight and control lines
Terrain Clearance: 135m
Speed: 120 kph (65 knots) (33m/s)

Fugro Airborne Surveys equipment will by flown in a rented Eurocopter Astar AS350B2 from Questral Helicopters.
A Scintrex cesium split-beam total magnetic field sensor is carried in a ***skid-mounted stinger (NOT towed bird)****:*
Sample frequency = 0.1 seconds
Sensitivity = 0.01 nT
Absolute accuracy = +/-10 nT
Noise = 0.10 nT
Range = 20,000-100,000 nT
Heading Effect <2.0 nT
Mag Diurnal: max. of 3.0 nT (peak-peak) deviation from a long chord equivalant to a period of one minute for each base station

An Exploranium GR820 256-channel spectrometer with 33.6 litres downward and 4.2 litres upward NaI detectors will be used. Calibrations are done daily using Cs, U and Th samples. Sample rate is 1/second.
A test line is established and flown daily to monitor variations related to moisture and radon. Aircraft background and cosmic stripping coefficients are determined from multi-altitude test flights. Stripping ratios are determined on calibration pads, and sensitivities are measured using a test strip/hover site.
No flying until 3 hours after measurable rain; no flying until 12 hours after heavy rain.

Windows:

K	*1370-1570*
U	*1660-1860*
Th	*2410-2810*
TC	*400-2800*
Cosmic	*3000->6000*
Up U	*1660-1860*

Ancillary gear include:
RMS DGR-33 data acquisition system
radar altimtimeter (0-800m range, 2% accuracy)
baro altimeter (accuracy 2%)
laser altimeter (accuracy 30cm, 0.1Hz sampling)
GPS (realtime dual frequency Ashtech differential)
flight path video camera

Ground Base Station measures mag, baro, temperature, GPS

All data processing and generation of publication-ready products (maps) is done by Fugro using GeoSoft and some in-house proprietary software, to GSC specs.

TAKLA - REDTON PROJECT

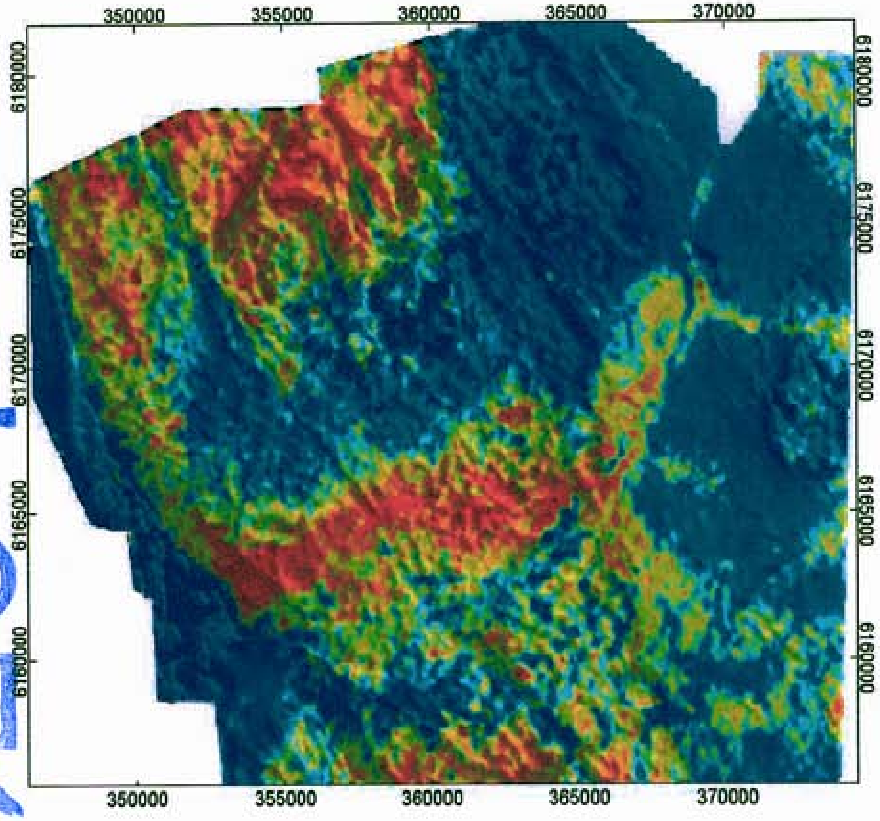
2005 ASSESSMENT REPORT

Appendix 5

Aeroquest Report on Helicopter-Borne Gamma Ray Spectrometer

And Magnetic Gradiometer Survey, Takla Redton Property

Report on a Helicopter-Borne Gamma Ray Spectrometer and Magnetic Gradiometer Survey



Aeroquest Job # 05037

Takla Redton Property

Mackenzie Area, British Columbia

for

Geoinformatics Exploration Inc

by

AEROQUEST LIMITED

4-845 Main Street East
Milton, Ontario, L9T 3Z3
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www.aeroquestsurveys.com

Report Date: January, 2006

Report on a Helicopter-Borne Gamma Ray Spectrometer and Magnetic-Gradiometer Survey

Aeroquest Job # 05037
Takla Redton Property
Mackenzie Area, British Columbia

for

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1. TABLE OF CONTENTS

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1.2. Appendices

1.3. List of Maps (1:20,000)

The report includes a set of twenty-four (24) 1:20,000 maps. The two survey areas are covered by six (6) map plates. Each map plate has four (4) geophysical data products. The data geophysical products are listed below.

- Coloured Total Magnetic Intensity (TMI) with line contours.
- Coloured Vertical Gradient (VG) with line contours.
- Coloured Potassium ground concentration (%K) with line contours.
- Coloured equivanlent Thorium to Potassium ratio with line contours (eTh/K).

2. INTRODUCTION

This report describes a helicopter-borne geophysical survey carried out on behalf of Geoinformatics Exploration Australia (hereafter Geoinformatics) on the Takla Redton Property, located in the Mackenzie area, British Columbia. The first principal geophysical sensor is Aeroquest's new TRI-DIRECTIONAL magnetic gradiometer system which employs four (4) optically pumped Potassium sensors. The second principal sensor was the Aeroquest's Airborne Gamma Ray Spectrometer (AGRS) system, which utilizes as 4 downward looking NaI crystals used as the main gamma-ray sensors and 1 upward looking crystal for monitoring non-geologic sources. Ancillary equipment includes a real-time differential GPS navigation system, radar altimeter, digital video acquisition system, and a base station magnetometer.

The airborne survey was flown at 250 m line spacing with a total survey coverage of 4380 line-km. The survey flying described in this report took place between November 12th and November 21st, 2005.

This report describes the survey logistics, the data processing, presentation, and provides a brief interpretation of the results.

3. SURVEY AREA

The Takla-Redton Property is situated in mountainous terrain of the Quesnel Trough, approximately 150 km east of the town of Mackenzie, British Columbia (Figure 1). The survey consisted of two blocks covering an area of 97,200 ha (972 km^2), and which covered a series of contiguous claims owned 100% by Redton Resources Inc. The claim boundaries and numbers are overlain on the included 1:20,000 maps. The area is highly prospective for alkalic-related deposits of copper-gold porphyry and epithermal gold affinity. The survey block boundary coordinates are tabulated in Appendix 1. The property ownership and claim information is outlined in Appendix 3.

The survey helicopter was based at the Germanson Landing approximately 15 km northeast of the northern survey block. The survey crew was accommodated at Webb's Lodge. Primary installation of the geophysical equipment was carried out at the in Prince George, B.C at the Vancouver Island Helicopters hanger. After installation, the complete system was ferried to the Germanson Landing base. Fuel was cached for surveying at the Germanson Narrows (55 41 01N / 124 57 22W).

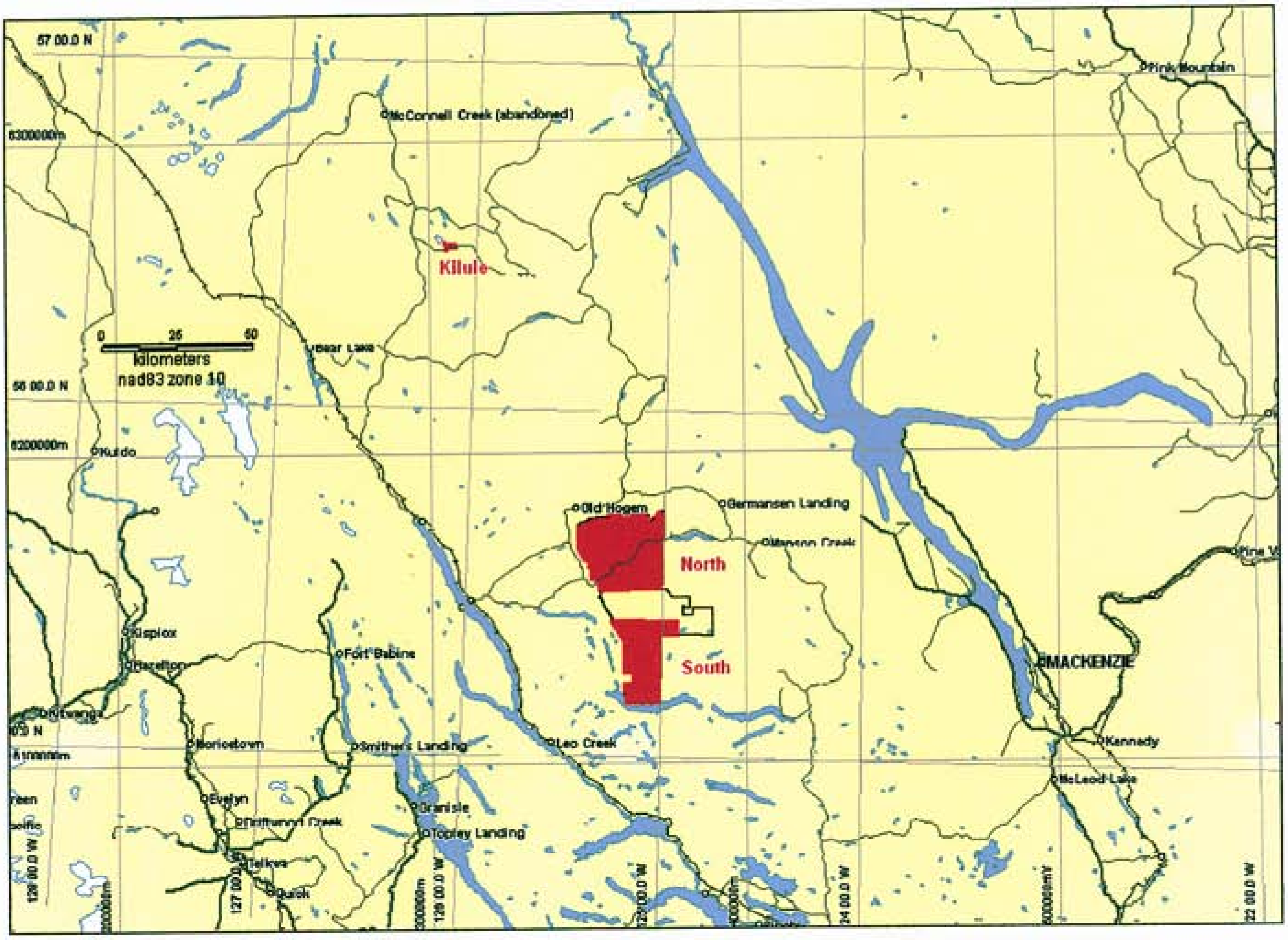


Figure 1. Regional location map of the project areas (North and South Blocks).

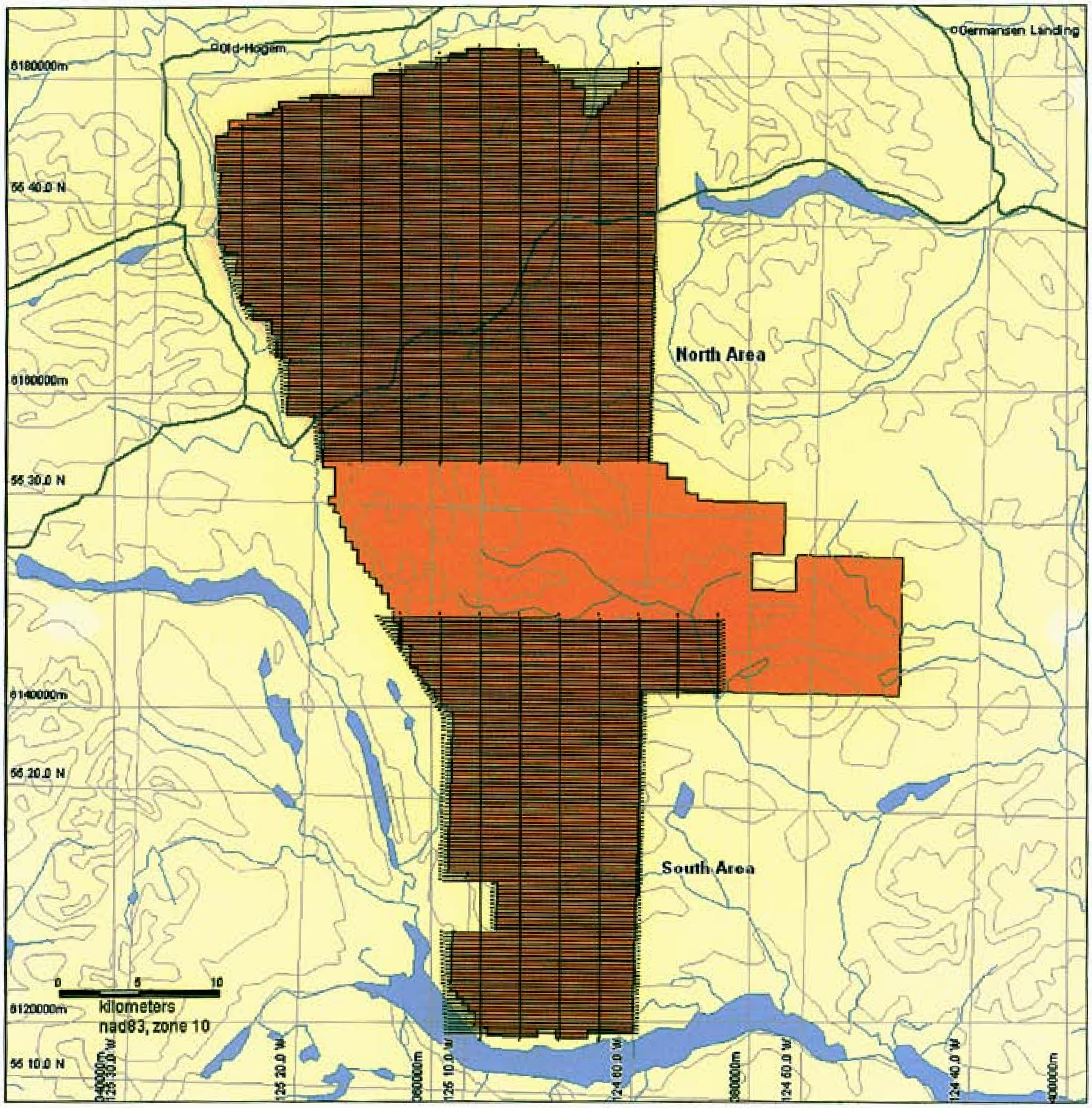


Figure 2. Takla Redton Project Area survey blocks showing planned flight path and claim boundaries.

4. GEOLOGICAL SETTING (From Geoinformatics Exploration Inc Press release, June 9, 2005)

"Approximately half of the project area is underlain by Jurassic to Triassic shallow-water island-arc volcanics, volcaniclastics and sediments intruded by plutonic rocks of the same age and tectonic setting.

The other half of the project area has a slightly deeper erosional level and is underlain by late Triassic to Cretaceous island arc intrusives of highly variable composition.

Redton initially focused on the area because it displayed a concentration of high gold values that corresponded with alkali intrusive and extrusive rocks. The last major phase of exploration in the area was undertaken in the period 1988 to 1992 when over $2.6 million was expended on and immediately adjacent to the property by a number of companies including Teck Resources, Golden Rule Resources, Cathedral Gold and Placer Dome. However the area has not been covered by modern-day geochemical and geophysical techniques which have proven effective at locating alkali porphyry copper and gold deposits elsewhere in the world.

Redton has put together a comprehensive GIS database of information on previous exploration programs in the project area. This compilation and interpretation of results has pointed to two immediately identifiable multi-element geochemical anomalies that are characteristic of porphyry copper-gold mineralisation. This is in addition to significant gold mineralization on the Takla Rainbow claims.

The immediate focus of exploration will be confirmation and follow-up of identified geochemical anomalies and scoping of an aeromagnetic and radiometric survey to cover the project area."

5. SURVEY SPECIFICATIONS AND PROCEDURES

5.1. Flight Path and Survey Coverage Specifications

The general survey flying specifications are summarised in the following table:

Survey / Map Area Name	Survey Block Name	Line Spacing (m)	Line/Tie Direction (azimuth)	Survey Coverage (line-km)	Date(s) Flown (2005)
Takla-Redton Property	North	250	090/000	2803	November 12-21
Takla-Redton Property	South	250	090/000	1577	November 12-21

The total survey coverage (4380 km) was calculated by adding up the survey and control (tie) line lengths as presented in the final Geosoft databases, after windowing the datasets to the survey block outlines.

The nominal gradiomter bird terrain clearance was 30 m but was periodically higher or lower over due to mountainous terrain and the capability of the aircraft. Nominal survey speed over relatively flat terrain is 75 km/hr and is generally lower in rougher terrain. Scan rates for ancillary data acquisition is 0.05 second for the gradiometer. The 20 samples per second translates to a gradiomter reading about every 75 centimters to 1.5 metres along the flight path. The gamma-ray spectrometer, radar altimeter, and GPS determined position were recorded at a 1 second sampling interval.

5.2. Navigation

Navigation is carried out using a GPS receiver, an AGNAV2 system for navigation control. The Pico Envirotec acquisition system is used for GPS data recording. The x-y-z position of the aircraft, as reported by the GPS, is recorded at 0.2 second intervals. The system has a published accuracy of under 3 metres. A recent static ground test of the Mid-Tech WAAS GPS yielded a standard deviation in x and y of under 0.6 metres and for z under 1.5 metres over a two-hour period.

6. AIRCRAFT AND EQUIPMENT

6.1. Aircraft

A Eurocopter (Aerospatiale) AS350B2 "A-Star" helicopter - registration C-FPTG was used as survey platform. The helicopter was owned and operated by Hi-Wood Helicopters, BC. Installation of the gamma ray spectrometer, gradiometer bird and ancillary equipment was carried out by AeroQuest Limited at the Vancouver Island Helicopters hanger in Prince George, B.C. After installation the complete system was ferried to the Germanson Landing base. The survey aircraft was flown at a nominal terrain clearance of 55 m.

Figure 3. Survey helicopter C-FPTG (Hi-Wood).

6.2. Magnetic Gradiometer System

The Aeroquest TRI-DIRECTIONAL magnetic gradiometer system employs four (4) GSMP-30[a] (optically pumped Potassium) sensors in a 3D sensor geometry (Figure 4). This allows for measurements of the total field, vertical gradient and horizontal gradients both along and cross lines. The magnetic data is collected at a rate of 20Hz, and recorded by a dedicated Windows-based computer. The specifications of this system are as follows:

- 0.001 nT/√Hz sensitivity
- +/- 0.1 nT absolute accuracy
- 5,000 nT/m gradient tolerance
- 10,000 - 125,000 nT dynamic range

- 10° to 80° and 100° to 170° orientation range
- Heading error less than 0.1 nT combined for sensor spins on all
- All orientations from 10° to 80° and 360° full rotation about axis
- 2 metre standoffs between axis and sensors


Figure 4. Magnetic Gradiometer Bird near Germansen Landing.

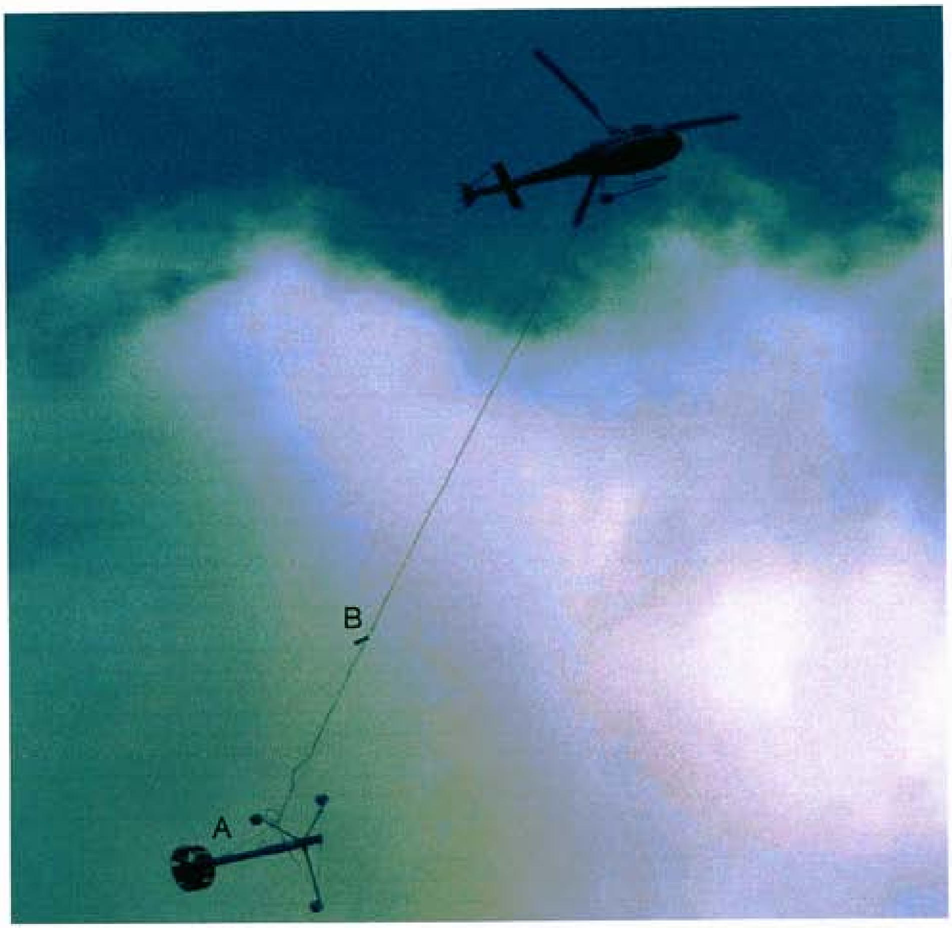


Figure 5. The gradiometer bird (A), and GPS antenna (B)

6.3. Airborne Gamma Ray Spectrometer (AGRS) System

The Aeroquest AGRS system consists of a GRS410 sensor pack (Figure 6), which is installed on the floor of the helicopter cabin and a acquisition system designed and manufactured by Pico Envirotec.

The system has 4 downward looking NaI crystals used as the main sensors and 1 upward looking crystal for monitoring non-geologic sources. The system features automatic peak detection and real-time calibration to ensure spectrum stability and a high quality final product. The full spectrum is recorded (256 or 512 channels) to allow for subsequent noise reduction processing such as NASVD. The data are processed to produce the standard IAGA ROI channels – Total Count, Potassium, Uranium and Thorium. The potassium, and equivalent uranium and thorium concentrations are also derived and ratios of these concentrations are computed to enhance the interpretation of the survey results.

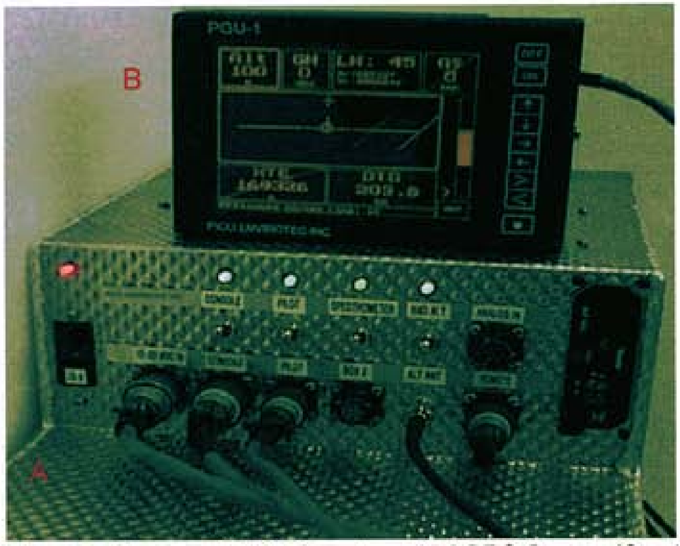


Figure 6. Aeroquest AGRS system. A. AGRS Sensor (Crystal Pack), B. Data acquisition computer.

6.4. Magnetometer Base Station

An integrated GPS and magnetometer base station is set up to monitor and record the diurnal variations of the Earth's magnetic field. The sensor, GPS and magnetic, receiver/signal processor is a dedicated unit for purposes of instrument control and/or data display and recording. The unit uses a common recording reference using the GPS clock.

The base station was a Geometrics G858 optically pumped Caesium gas magnetometer coupled with a Garmin GPS18 GPS sensor. Data logging and magnetometer control was provided by the unit's internal software. The logging was configured to measure at 1.0 second intervals. Digital recording resolution was 0.01 nT. The sensor was placed on a tripod away from potential noise sources near the camp. A continuously updated profile plot of the magnetometer value is available for viewing on the unit's display.

6.5. Radar Altimeter

A Terra TRA 3500/TRI-30 radar altimeter is used to record terrain clearance. The antenna was mounted on the outside of the helicopter beneath the cockpit. Therefore, the recorded data reflect the height of the helicopter above the ground. The Terra altimeter has an altitude accuracy of +/- 1.5 metres.

6.6. Video Tracking and Recording System

A high resolution digital colour video camera is used to record the helicopter ground flight path along the survey lines. The video is recorded digitally and annotated with GPS position and time and can be used to verify ground positioning information and cultural causes of anomalous geophysical responses.

6.7. GPS Navigation System

The navigation system consists of an Ag-Nav Incorporated AG-NAV2 GPS navigation system comprising a PC-based acquisition system, navigation software, a deviation indicator in front of the aircraft pilot to direct the flight, a full screen display with controls in front of the operator, a Mid-Tech RX400p WAAS-enabled GPS receiver mounted on the instrument rack and an antenna mounted on the magnetometer bird. WAAS (Wide Area Augmentation System) consists of approximately 25 ground reference stations positioned across the United States that monitor GPS satellite data. Two master stations, located on the east and west coasts, collect data from the reference stations and create a GPS correction message. This correction accounts for GPS satellite orbit and clock drift plus signal delays caused by the atmosphere and ionosphere. The corrected differential message is then broadcast through one of two geostationary satellites, or satellites with a fixed position over the equator. The corrected position has a published accuracy of under 3 metres. A recent static ground test of the Mid-Tech WAAS GPS yielded a standard deviation in x and y of under 0.6 metres and for z under 1.5 metres over a two-hour period.

Survey co-ordinates are set up prior to the survey and the information is fed into the airborne navigation system. The co-ordinate system employed in the survey design was WGS84 [World] using the UTM zone 10N projection. The real-time differentially corrected GPS positional data was recorded by the RMS DGR-33 in geodetic coordinates (latitude and longitude using WGS84) at 0.2 s intervals.

7. PERSONNEL

The following AeroQuest personnel were involved in the project:

- Manager of Operations: Bert Simon
- Field Data Processor: Emilio Schein, Johnathan Rudd
- Field Operator: Viktor Shevchenko
- Data Interpretation and Reporting: Matthew Pozza, Gord Smith, Marion Bishop

The survey pilot, Paul Kendall and AME, Brad Wagner were employed directly by the helicopter operator – Hi-Wood Helicopters Ltd.

8. DELIVERABLES

The report includes a set of twenty-four (24) 1:20,000 maps. The two survey areas are covered by six (6) map plates (Figure 7). Each map plate has four (4) geophysical data products. The data geophysical products are listed below:

- Coloured Total Magnetic Intensity (TMI) with line contours.
- Coloured Vertical Gradient with line contours.
- Coloured Potassium ground concentration (%K) with line contours.
- Coloured equivanlent Thorium to Potassium ratio with line contours (eTh/K).

All the maps show flight path trace and survey line and flight numbers. Topographic line contours, lake/ river outlines and Claim boundaries/ numbers are overlain for reference on all maps.

The geophysical profile data is archived digitally in Geosoft GDB binary format databases. A description of the contents of the individual channels in the database can be found in Appendix 3. A copy of this digital data is archived at the Aeroquest head office in Milton.

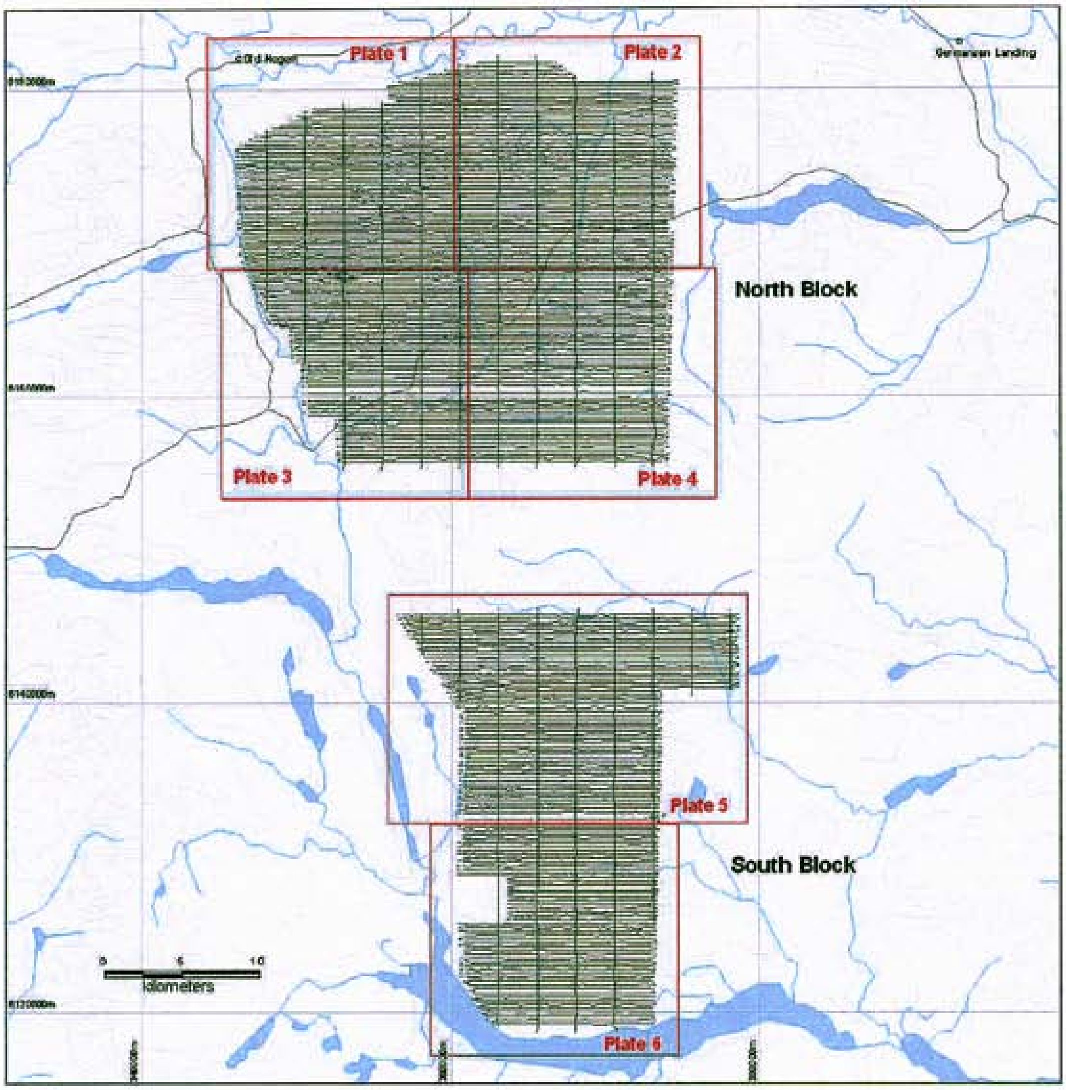


Figure 7. Map Plate locations in relation to the survey flight path.

9. DATA PROCESSING AND PRESENTATION

All in-field and post-field data processing was carried out using Aeroquest proprietary data processing software, and Geosoft Oasis montaj software. Maps were generated using a 48-inch wide Hewlett Packard 4000ps plotter.

9.1. Base Map

The geophysical maps accompanying this report are based on positioning in the NAD83 datum. The survey geodetic GPS positions have been projected using the Universal Transverse Mercator projection in Zone 10 north. A summary of the map datum and projection specifications is as follows:

- Datum: NAD83
- Ellipse major axis: 6378137m eccentricity: 0.08181919084
- Datum Shifts (x,y,z) : 0, 0, 0 metres
- Map Projection: Universal Transverse Mercator Zone 10 N
- Central Scale Factor: 0.9996
- False Easting, Northing: 500,000m, 0m

The base map contains topographic and land feature data derived from 1:20,000 For reference, the latitude and longitude in NAD83 are also noted on the maps. The skeletal topography that is overlain was supplied by the client. The shaded topographic background was produced from NASA SRTM data.

9.2. Flight Path & Terrain Clearance

The position of the survey helicopter was directed by use of the Global Positioning System (GPS). Positions were updated five times per second (5Hz) and expressed as WGS84 latitude and longitude calculated from the raw pseudo range derived from the C/A code signal. The instantaneous GPS flight path, after conversion to UTM co-ordinates, is drawn using linear interpolation between the x/y positions. The terrain clearance was maintained with reference to the radar altimeter.

9.3. Magnetic Gradient Data

Merging of the recorded magnetic data with the various recorded ancillary data was done post flight using the GPS time stamp as a reference. Prior to any leveling the magnetic data was subjected to a lag correction of -0.05 seconds and a spike removal filter. Then the magnetic gradients profile channels were produced (Vertical and Horizontal gradients) from the total-field sensor readings. The corrected profile data were interpolated on to a grid using a random grid technique (Minimum Curvature Gridding with tension) with a grid cell size of ¼ of the line spacing. The production of the total-field grid was carried out by first applying a correction for diurnal variations using the magnetic base station. and the intersections of the tie lines. No corrections for the regional reference field (IGRF) were applied.

9.4. Radiometric Data

Equipment and General Adherence to IAEA Standards

Aeroquest Limited generally adopts the standards for airborne gamma-ray spectrometry (the radiometric method) as laid out in the IAEA Technical Report 323 – Airborne Gamma-Ray Spectrometry Surveying.

Spectral Calibration

When calibrated (with thorium source about once a year) linearity of the each detector is measured and linearity correction coefficients are calculated. When operating in real time (collecting data), the linearity of each detector is mathematically corrected for each measurement. Individual detector tracking (tuning) and linearity correction provide better fit of the individual spectra that are being summed and therefore a sharper (better resolution) spectrum is obtained.

Calibration of the 5 detectors was carried out on April 27, 2005 as follows:

Crystal	S/N	Cs resolution (%)
1	SAM359	7.9
2	SAM358	8.4
3	SAM355	8.4
4	SAM357	8.4
5	SAM356	9.1

Data Quality Assurance and Control

The spectrometer data are referenced to the other ancillary data sets using the Pico Envirotec data acquisition system (Figure 6). After each flight, preliminary ROI channels are generated and profiles are then plotted from the digital data to check for any missing data, spikes or data corrupted by other noise sources. Where necessary, the data are corrected or flagged for re-flight depending on the severity or duration of the noise.

Dead-time Correction

Generally, the first data reduction step for radiometric data is dead-time correction. Because the GRS-10 dead time is virtually nil, this correction is only applied where the total count rates are extremely high. Dead-time correction is made to each window using the expression $N=n/(1-T)$ where N is the corrected count; n is the raw recorded count; and T is the dead-time.

Filtering to Prepare for Background Corrections

The radar altimeter data are filtered in order to ensure that no noise sources from the altimeter data are introduced to the radiometric data processing. The upward looking data are also filtered to improve the count statistics. A typical filter width ranges from 10 to 20s. In order to establish radon background levels from the upward-looking detector data, temporary heavily filtered upward and downward looking uranium and downward looking thorium data are utilized. The original unfiltered data are, of course, retained. All filtering will be carried out in consultation with the Client Representative if requested by the Client.

Cosmic and Aircraft Background

Cosmic and aircraft background expressions are determined for each spectral window as described in chapter 4 of the IAEA Technical Report 323. The general form of these expressions is $N = a + bC$, where N is the combined cosmic and aircraft background for each window; a is the aircraft background in the window; C is the cosmic channel count; and b is the cosmic stripping factor for the window.

The expressions are evaluated for each ROI window for each sample and used as a subtractive correction for the data.

Radon Background

Correction of the data for variations in background due to radon is a multi-step process. First, test flights at various elevations over water are carried out in the field to establish the contribution of atmospheric radon to the ROI windows. A least squares analysis of the data from these test flights yields the constants for equations 4.9 to 4.12 (IAEA Report 323). Second, the response of the upward looking detector to radiation from the ground is established. Here a departure from the IAEA Report has been recommended by Grasty and Hovgaard (1996). The expression for the radon component in the downward looking uranium window is given by $Ur =(u - a1U - a2T + a2bT - bu)/(au - a1 - a2aT)$ (see Eq. 4.3 – IAEA 323) where, Ur is the radon background detected in the downward U window; u is the measured count in the upward uranium window; U is the measured count in the downward uranium window; T is the measured count in the downward thorium window; a1, a2, au and aT are proportionality factors; and bu and bT are constants determined experimentally. Using a1 or a2 (see above) in this equation will result in a good estimate of Ur permitting correction of the other ROI windows.

Survey altitude test data will be collected and used to establish atmospheric background and calibrate the upward and downward looking detector systems. Variations in count rates due to soil moisture content and altimeter variations can largely be overcome by a normalization procedure using the thorium count. The procedure correlates the thorium count to the uranium count assuming the contribution to each ROI from the ground is proportional.

Computation of Effective Height Above Ground Level

Radar altimeter data are used in adjusting the stripping ratios for altitude and to carry out the height attenuation corrections. They are then converted to effective height (he) at STP by the expression $he = (h * 273.15)/(T + 273.15) * (P/1013)$, where h is the observed radar altitude; T is the temperature in degrees C; and P is the barometric pressure in mbars

Compton Stripping Correction

The stripping ratios α, β, γ, a, b and g are determined during tests over calibration pads. The principal ratios a, β and g should be adjusted for temperature, pressure and altitude (above ground) before stripping is carried out. These stripping ratios are used to remove the contribution in each of the three ROI windows from higher energy sources, leaving only the contribution from potassium, uranium and thorium.

Altitude Attenuation Correction

The altitude attenuation correction corrects the data in each of the ROI windows for the effects of altitude. The count rates decrease exponentially with altitude and therefore the counts are corrected to a constant altimeter datum at the nominal survey height of 30m.

Apparent Radioelement Concentrations

The corrected count rate data can be converted to estimate the ground concentrations of each of the three radioelements, potassium, uranium and thorium. The procedure assumes an infinite horizontal slab source geometry with a uniform radioelement concentration. The calculation assumes radioactive equilibrium in the U and Th decay series. Therefore the U and Th concentrations are assigned as equivalent concentrations using the nomenclature eU and eTh.

An estimate of the air absorbed dose rate can be made from the apparent concentrations, K%, eU ppm and eTh ppm.

Computation of Radioelement Ratios

Standard ratioing of the three radioelements (eU/eTh, eU/K and eTh/K) can be carried out and presented in profile or plan map form. In order to ensure statistical confidence in generating these ratios, we generally take the following precautions:

- Reject all data point where the apparent potassium concentration is less than 0.25% as these measurements are likely taken over water.
- Carry out cumulative summing along the survey line of each radioelement, rejecting areas where the summation does not exceed a certain threshold value (usually 100 counts for both numerator and denominator).
- Compute the ratios using the cumulative sums.

10. RESULTS AND INTERPRETATION

The survey was successful in mapping the magnetic and radioelement response of the geology throughout the survey area. The potassium, thorium/potassium, magnetic total field and magnetic vertical gradient maps can be used to help identify potassic alteration and magnetite enrichment/depletion zones associated with copper-gold mineralization, and also help in mapping lithologies and structures. The following is a brief summary and interpretation of the results. For a detailed interpretation of the survey data please contact Aeroquest Limited.

10.1. Magnetic Response

The magnetic data provide a high resolution map of the distribution of the magnetic mineral content of the survey area. The sources for anomalous magnetic responses are thought to be predominantly magnetite because of the relative abundance and strength of response (high magnetic susceptibility) of magnetite over other magnetic minerals such as pyrrhotite. The presented data can be used to interpret the location of geological contacts and other structural features such as faults and zones of magnetic alteration.

The total magnetic intensity data in the North Block (Figure 8A) shows that the magnetic response ranges from lows of approximately 56192 nT to highs of over 65427 nT, with an average background of 57050 nT. The magnetic pattern of the survey block is generally very active and complex, with the western half being more active than the east. The dominate magnetic trends are north-northwest which are likely related to the 'Quesnel Trough' trend in the area. The relatively quiescent nature of the magnetic response in the eastern portion of the survey block suggests that the area is overlain by a thicker sequence of nonmagnetic sedimentary units. The highest amplitude response is observed along the south-western boundary of the survey block and trends north northwest. The anomaly is a continuous linear feature but narrows as it hooks to the north and nearly pinches out (near the northwest boundary) before widening again. The high amplitude and heterogeneity of the response suggests the underlying source rocks have high magnetic mineral concentrations due to alteration or intrusion.

The most interesting magnetic feature is a crescent shaped magnetic response (5 km diameter), situated in the north-central portion of the survey block (Figure 8A,B). The crescent opens to the northwest where a strong magnetic low trends northeast, crosscutting the magnetic fabric direction. The negative magnetic response suggests that the rocks here may be remanently magnetized, which is more common in areas where there has been rapid quenching of magma. This feature is of particular interest due to the associated potassium radioelement response discussed below.

Faulting can also be identified by patterns in the magnetic data and often appear as linear magnetic lows with short spatial-wavelengths in the vertical gradient maps (i.e. Figure 8B). Offsets in narrow, magnetic stratigraphic trends can also delineate structure and sharp contrasts in magnetic lithologies may indicate large displacements along strike-slip or thrust faults. The dominant faulting trends are north northwest however subtle faults can be interpreted trending: north, north-northeast and northeast.

The magnetic data in the south block shows a considerably smaller magnetic range than the north block (lows from 56024 nT to highs of 61458 nT), however the general magnetic trends are similar to that described above with the exception that there are east-west magnetic trends in the area. The most prominent feature in the south block is a discrete magnetic package (approximately 5 km wide) which strikes northwest-southeast across the survey block (Figure 8C). The vertical gradient data (Figure 8D) shows several actuate linear magnetic lows which likely identify a series of thrust faults. A few interpreted faults have been sketched on Figure 8D as an example. Several oblate magnetic highs occurs in the Southern block as well. The arrow on Figure 8D indicates an anomalous area with fairly discrete and non-linear anomalies which could possibly represent a zone of magnetic alteration.

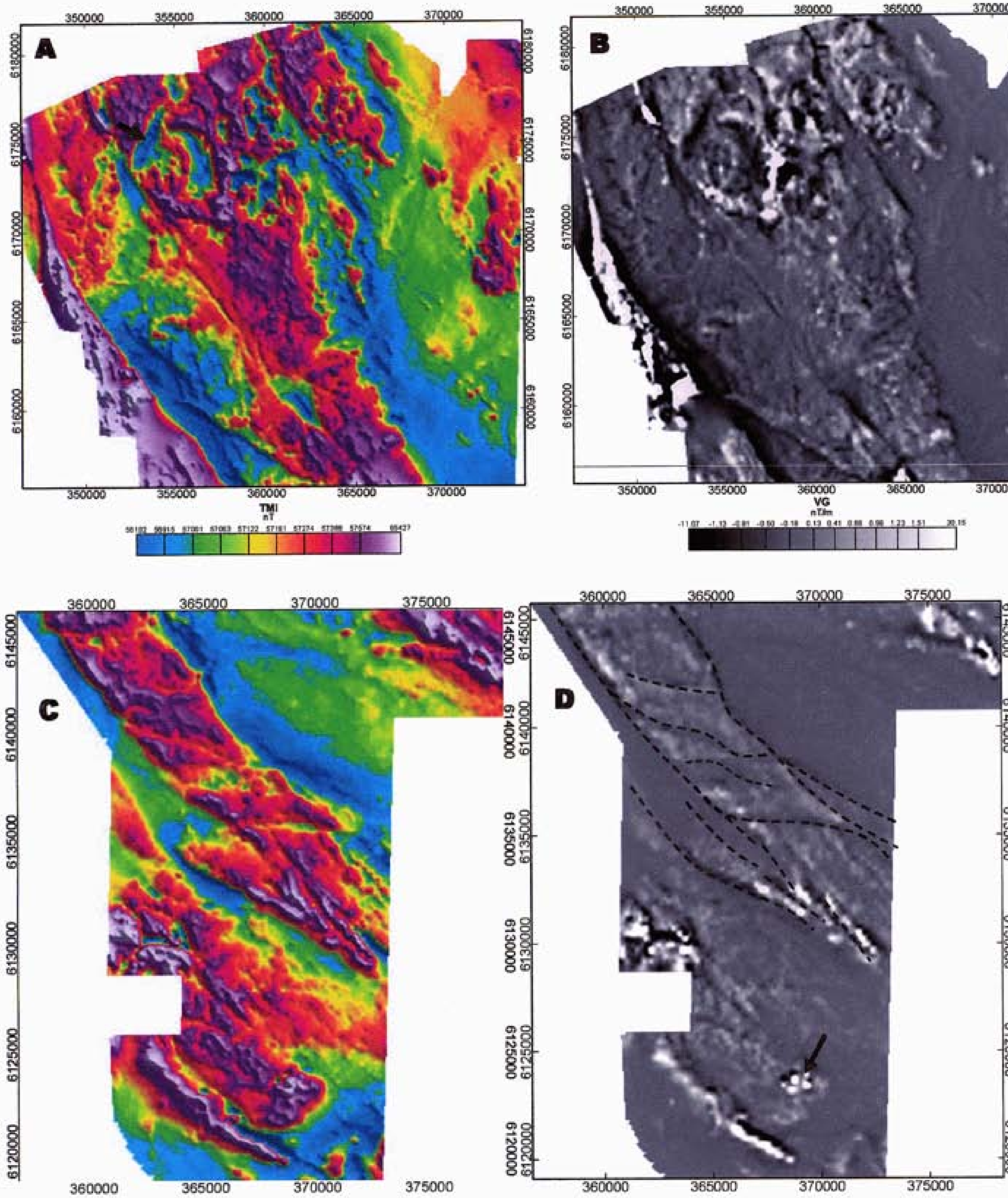


Figure 8. - A. Total magnetic intensity map (North Block). B. Vertical Gradient map (North Block) showing enhancement of magnetic lineaments. Same products for the South Block are presented in C and D. A few interpreted faults are sketched on D.

10.2. Radiometric response

The radiometric data indicate the apparent concentrations of potassium, uranium, and thorium in the rocks and soils at the surface. Because these elements are concentrated in the Earth's silicate crust, their concentrations tend to vary for different lithologic materials. The radiometric data therefore provide information on the lithologic characteristics and distribution of the overlying geologic materials. The depth of measurement is on the order of 30 cm and the circular area measured by the spectrometer has a diameter equal to approximately four times the altitude of the helicopter above the ground.

The potassium and thorium/potassium ratio maps were selected for presentation on the attached 1:20,000 maps in order to identify areas with possible potassic alteration associated with copper-gold mineralization. A Potassium ground concentration map of the North Block is presented below in Figure 9. Note that in Figure 9 the radiometric data is overlain on a shaded magnetic vertical gradient map in order to show association between magnetic and radiometric lineaments.

The most interesting radiometric response is observed in the north-northwest portion of the North survey block, where there is an elevated potassium response that appears to be bounded to the east and west by north northwest trending faults (See lineaments sketched on Figure 9). It is also of note that subtle

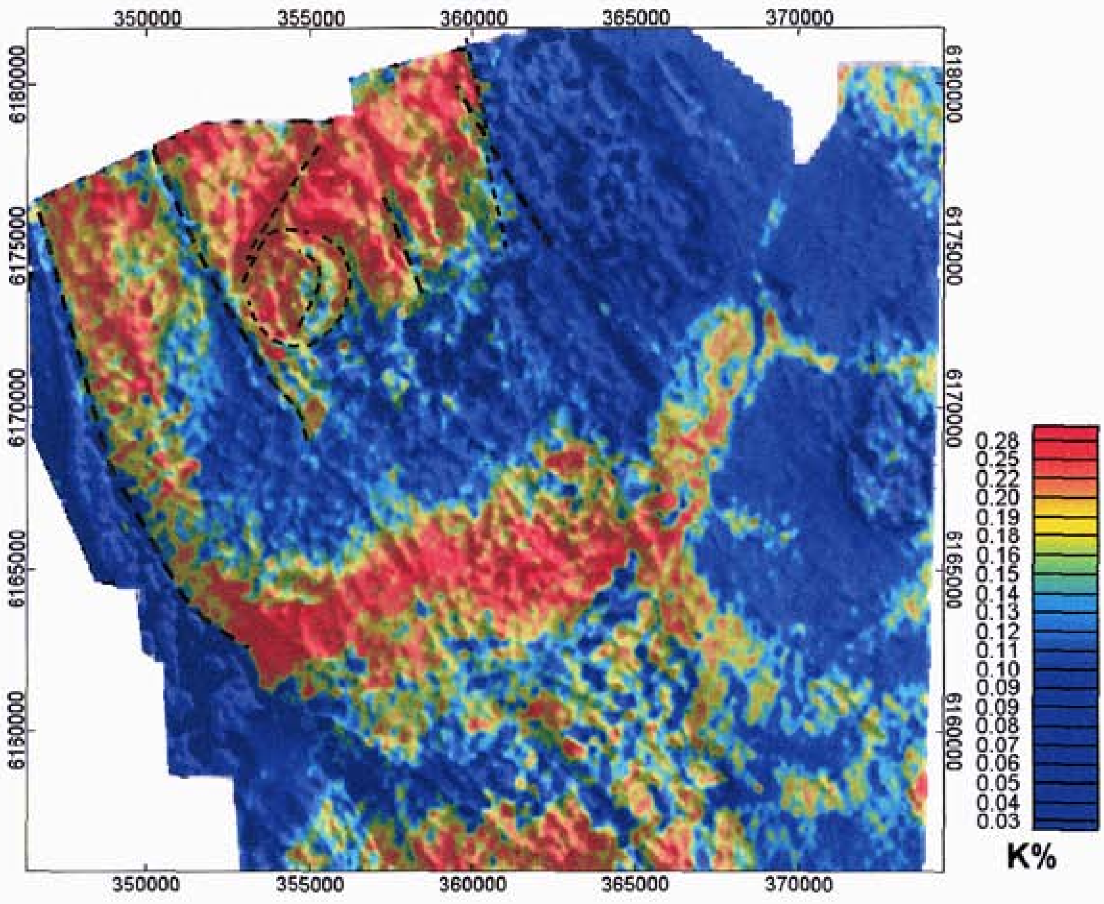


Figure 9. North Block - Potassium ground concentration grid overlain on vertical magnetic gradient grid (shading).

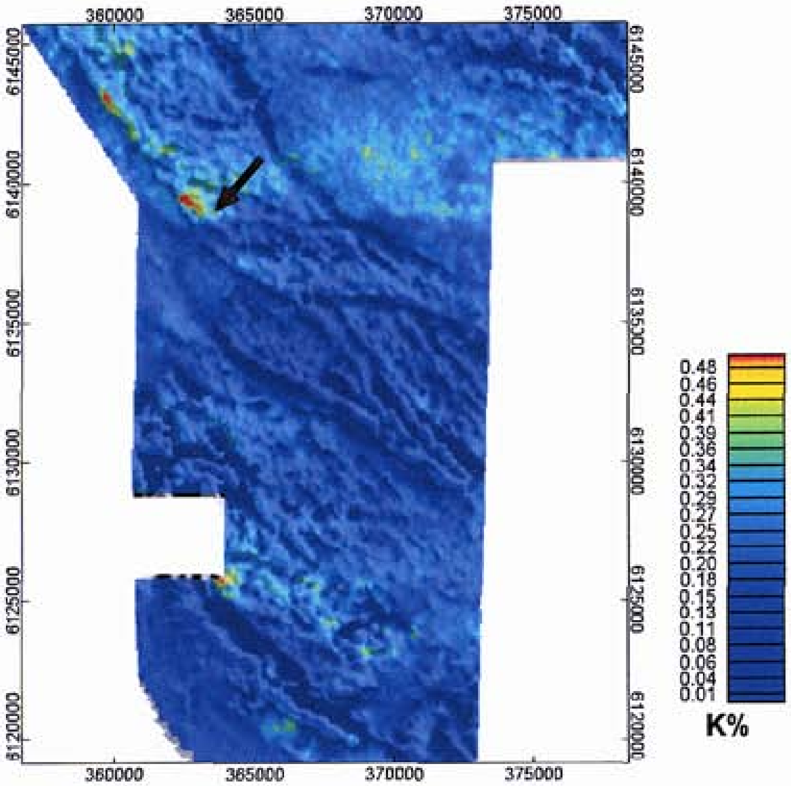


Figure 10. South Block - Potassium ground concentration grid overlain on vertical magnetic gradient grid (shading).

curvilinear potassium response (that correlate spatial with the magnetic response discussed above) are interpretable (Figure 9). The strongly magnetic geology of the western edge of the survey block (discussed above) is sharply defined by a lack of potassium radioelement response (Figure 9).

The most notable feature in the south survey block is an anomalous potassium radioelement response in the northwest portion of the survey block at 362550E/6139360N. Figure 10 show the potassium ground concentration (%) map with a linear stretched colour scale in order to highlight the amplitude of the response. Note that this anomalous response occurs on the edge of magnetic lineament interpreted as a fault, and could possibly represent a zone of potassic alteration along the contact. A similar but weaker potassium radioelement response is present to the north of this anomaly and is also situated on the edge of a magnetic lineament.

All of the magnetic and radioelement responses should be reviewed in conjuction with any available geological and geochemical information. Prioritization should be based on all available information.

Respectfully submitted,

Matt Pozza, M.Sc.
Geophysicist
Aeroquest Limited
January, 2006

APPENDIX 1 – SURVEY BLOCK CORNER COORDINATES

The approximate outline of the data collected for this project is defined in the following table. Positions are in WGS84 / UTM zone 10N.

NORTH BLOCK

Easting (m)	Northing (m)
346471.1	6176276.9
351805.1	6178766.1
356516.8	6178855.0
356339.0	6180188.6
362473.2	6181788.8
366384.8	6181788.8
369585.2	6179210.6
369674.1	6177432.6
370296.4	6177432.6
371286.8	6178913.6
371324.8	6180641.3
374324.8	6180641.3
373674.7	6155652.0
353049.7	6155474.2
352783.0	6158585.7
350827.2	6158674.6
350649.4	6162052.8
350027.1	6162497.3
349791.6	6164545.4
348604.7	6164630.9
346648.9	6169076.0

SOUTH BLOCK

Easting (m)	Northing (m)
356805.2	6145693.2
357093.6	6145765.3
378285.7	6145621.2
378285.7	6140791.7
373384.1	6140791.7
372807.5	6119022.8
361130.2	6118950.8
360841.8	6125798.6
364015.4	6125799.1
364084.5	6128825.0
360769.7	6128826.0
360986.0	6139277.9

APPENDIX 2 - DESCRIPTION OF DATABASE FIELDS

Due to the greatly different sample rates of the magnetic and radiometric data in the survey (20Hz vs. 1Hz) they are presented as separate databases for efficiency. In the database, the Survey lines and Tie Lines are prefixed with an "L" for "Line" and "T" for "Tie".

Database (05037_Mag_final.gdb):

Column	Units	Description
Fid		Geosoft fiducial
Line		Survey Line #
Flight		Helicopter Flight #
utctime	hh:mm:ss.s	UTC time
Distance	m	Distance from start of survey line
X	m	UTM Easting (NAD83)
Y	m	UTM Northing (NAD83)
ralt	m	radar altitude of aircraft
MagTf	nT	Top sensor magnetic field reading
MagLf	nT	Left sensor, magnetic field reading
MagRf	nT	Right sensor, magnetic field reading
Mag_HG	nT/m	Horizontal magnetic gradient
Mag_VG	nT/m	Vertical magnetic gradient

Database (05037_Spec_final.gdb):

Column	Units	Description
Fid		Geosoft fiducial
Line		Survey Line #
Flight		Helicopter Flight #
utctime	hh:mm:ss.s	UTC time
Distance	m	Distance from start of survey line
X	m	UTM Easting (NAD83)
Y	m	UTM Northing (NAD83)
ralt	m	radar altitude of aircraft
Balt	m	Barometric altitude of the aircraft
Galt_m	m	GPS altitude of the aircraft
dtm	m	digital terrain model
BaroT_deg	°C	Barometric air temperature
TC	µR/hr	AGRS Total Count
eTh	ppm	equivalent Thorium
eU	ppm	equivalent Uranium
K	%	Potassium ground concentration
eTh_K_ratio		Ratio of eTh to K
eU_K_ratio		Ratio of eU to K
eU_eTh_ratio		Ratio of eU to eTh

APPENDIX 3 – MINING TENURE INFORMATION

Tenure_Number	Claim_Name	Owner	Area (Ha)
501112	HS001	Redton Resources Inc.	456.824
501115	cs001	Redton Resources Inc.	456.826
501139	HS002	Redton Resources Inc.	456.82
501164	HS003	Redton Resources Inc.	456.816
501177	cs001	Redton Resources Inc.	456.826
501178	HS004	Redton Resources Inc.	456.813
501206	HS005	Redton Resources Inc.	456.806
501211	cs003	Redton Resources Inc.	456.823
501230	HS006	Redton Resources Inc.	456.803
501239	cs004	Redton Resources Inc.	456.821
501270	cs005	Redton Resources Inc.	456.821
501320	HS007	Redton Resources Inc.	456.585
501324	cs006	Redton Resources Inc.	456.587
501353	HS008	Redton Resources Inc.	456.579
501354	cs007	Redton Resources Inc.	456.586
501374	cs008	Redton Resources Inc.	456.582
501378	HS009	Redton Resources Inc.	456.576
501406	cs009	Redton Resources Inc.	456.58
501409	HS010	Redton Resources Inc.	456.572
501421	cs010	Redton Resources Inc.	456.577
501439	HS011	Redton Resources Inc.	456.564
501447	cs011	Redton Resources Inc.	456.573
501470	HS012	Redton Resources Inc.	456.561
501491	cs012	Redton Resources Inc.	420.038
501498	HS013	Redton Resources Inc.	456.346
501512	cs013	Redton Resources Inc.	456.348
501529	HS014	Redton Resources Inc.	456.339
501547	cs014	Redton Resources Inc.	419.887
501571	HS015	Redton Resources Inc.	456.336
501582	cs015	Redton Resources Inc.	456.314
501606	cs016	Redton Resources Inc.	438.052
501609	HS016	Redton Resources Inc.	456.331
501638	HS017	Redton Resources Inc.	456.323
501641	cs017	Redton Resources Inc.	438.048
501672	HS018	Redton Resources Inc.	456.32
501675	cs018	Redton Resources Inc.	437.824
501690	HS019	Redton Resources Inc.	456.101
501691	cs019	Redton Resources Inc.	437.818
501705	HS020	Redton Resources Inc.	456.092
501715	cs020	Redton Resources Inc.	456.105
501717	HS021	Redton Resources Inc.	456.09
501735	cs021	Redton Resources Inc.	455.861
501736	HS022	Redton Resources Inc.	456.085
501747	HS023	Redton Resources Inc.	456.075
501748	cs022	Redton Resources Inc.	455.962
501759	cs023	Redton Resources Inc.	455.86
501760	HS024	Redton Resources Inc.	456.07
501777	cs024	Redton Resources Inc.	455.859
501788	HS025	Redton Resources Inc.	455.857

501790	cs025	Redton Resources Inc.	455.857
501804	cs026	Redton Resources Inc.	455.852
501808	HS026	Redton Resources Inc.	455.851
501814	cs027	Redton Resources Inc.	455.846
501825	HS027	Redton Resources Inc.	455.848
501833	28	Redton Resources Inc.	455.619
501838	HS028	Redton Resources Inc.	455.843
501851	cs029	Redton Resources Inc.	455.62
501859	HS029	Redton Resources Inc.	455.83
501867	cs030	Redton Resources Inc.	455.618
501869	HS030	Redton Resources Inc.	455.826
501883	cs031	Redton Resources Inc.	455.617
501890	HS031	Redton Resources Inc.	455.614
501896	cs032	Redton Resources Inc.	455.616
501902	HS032	Redton Resources Inc.	455.61
501912	HS033	Redton Resources Inc.	455.608
501919	CS033	Redton Resources Inc.	455.375
501933	HS034	Redton Resources Inc.	455.603
501935	CS034	Redton Resources Inc.	455.378
501946	HS035	Redton Resources Inc.	455.587
501957		Redton Resources Inc.	455.377
501960	HS036	Redton Resources Inc.	455.582
501982	HS037	Redton Resources Inc.	455.371
501991	HS038	Redton Resources Inc.	455.369
502001	HS039	Redton Resources Inc.	455.368
502011	CS036	Redton Resources Inc.	455.483
502040	CS037	Redton Resources Inc.	455.196
502041	HS040	Redton Resources Inc.	437.151
502055	HS041	Redton Resources Inc.	455.389
502057	CS038	Redton Resources Inc.	455.601
502064	HS042	Redton Resources Inc.	455.241
502078	HS043	Redton Resources Inc.	436.953
502080	CS039	Redton Resources Inc.	455.639
502093	HS044	Redton Resources Inc.	455.17
502094	CS040	Redton Resources Inc.	437.589
502107	CS041	Redton Resources Inc.	456.056
502109	HS045	Redton Resources Inc.	455.762
502121	HS046	Redton Resources Inc.	456.376
502124	CS042	Redton Resources Inc.	456.317
502140	HS047	Redton Resources Inc.	456.982
502142	CS043	Redton Resources Inc.	456.763
502151	HS048	Redton Resources Inc.	457.585
502158	HS049	Redton Resources Inc.	457.069
502159	CS044	Redton Resources Inc.	456.972
502172	HS050	Redton Resources Inc.	457.066
502179	CS045	Redton Resources Inc.	457.474
502184	HS051	Redton Resources Inc.	457.062
502202	HS052	Redton Resources Inc.	457.057
502205	CS046	Redton Resources Inc.	439.299
502213	HS053	Redton Resources Inc.	457.05
502222	HS054	Redton Resources Inc.	457.045
502236	HS055	Redton Resources Inc.	457.334
502246	HS056	Redton Resources Inc.	457.331
502252	HS057	Redton Resources Inc.	457.323

502260	CS047	Redton Resources Inc.	457.865
502265	HS058	Redton Resources Inc.	457.314
502271	HS059	Redton Resources Inc.	457.302
502277	HS060	Redton Resources Inc.	457.291
502281	cs048	Redton Resources Inc.	457.07
502284	HS061	Redton Resources Inc.	457.573
502300	cs049	Redton Resources Inc.	457.07
502303	HS068	Redton Resources Inc.	457.8
502308	cs050	Redton Resources Inc.	457.572
502309	HS066	Redton Resources Inc.	457.533
502315	cs051	Redton Resources Inc.	457.589
502316	HS065	Redton Resources Inc.	457.544
502329	HS064	Redton Resources Inc.	439.231
502331	cs053	Redton Resources Inc.	457.813
502342	HS063	Redton Resources Inc.	219.711
502346	HS069	Redton Resources Inc.	366.209
502354	HS070	Redton Resources Inc.	366.2
502379	cs060	Redton Resources Inc.	457.069
502384	cs061	Redton Resources Inc.	457.066
502389	cs062	Redton Resources Inc.	457.068
502390	cs063	Redton Resources Inc.	457.331
502393	cs064	Redton Resources Inc.	457.329
502397	cs065	Redton Resources Inc.	457.327
502402	cs066	Redton Resources Inc.	457.323
502404	cs067	Redton Resources Inc.	457.325
502412	cs068	Redton Resources Inc.	457.571
502416	cs069	Redton Resources Inc.	457.569
502419	cs070	Redton Resources Inc.	457.567
502423	cs071	Redton Resources Inc.	457.811
502426	cs072	Redton Resources Inc.	457.809
502431	cs073	Redton Resources Inc.	457.807
502463	cs082	Redton Resources Inc.	458.69
502469	cs083	Redton Resources Inc.	458.928
502480	HS085	Redton Resources Inc.	440.391
502497	CS086	Redton Resources Inc.	458.885
502523	HS094	Redton Resources Inc.	440.537
502524	CS091	Redton Resources Inc.	458.762
502528	HS095	Redton Resources Inc.	440.576
502532	CS092	Redton Resources Inc.	348.631
502536	HS097	Redton Resources Inc.	459.112
502538	CS093	Redton Resources Inc.	458.983
502539	HS098	Redton Resources Inc.	459.136
502544	CS094	Redton Resources Inc.	458.989
502549	CS095	Redton Resources Inc.	459.119
502558	CS096	Redton Resources Inc.	459.218
502562	CS097	Redton Resources Inc.	459.222
502569	HS104	Redton Resources Inc.	440.488
502574	HS105	Redton Resources Inc.	458.884
502578	HS106	Redton Resources Inc.	440.709
502581	HS107	Redton Resources Inc.	459.072
502582	CS100	Redton Resources Inc.	458.725
502585	HS108	Redton Resources Inc.	459.104
502593	HS109	Redton Resources Inc.	440.658
502605	CS101	Redton Resources Inc.	459.194

502607	HS110	Redton Resources Inc.	459.649
502610	CS102	Redton Resources Inc.	459.43
502612	HS111	Redton Resources Inc.	459.652
502613	CS103	Redton Resources Inc.	441.06
502614	HS112	Redton Resources Inc.	459.656
502615	HS113	Redton Resources Inc.	459.664
502617	CS104	Redton Resources Inc.	441.066
502618	HS114	Redton Resources Inc.	459.672
502619	HS115	Redton Resources Inc.	459.68
502620	CS105	Redton Resources Inc.	441.076
502622	HS116	Redton Resources Inc.	459.895
502625	HS117	Redton Resources Inc.	459.897
502626	CS106	Redton Resources Inc.	293.921
502628	HS118	Redton Resources Inc.	459.901
502629	HS119	Redton Resources Inc.	459.908
502630	CS107	Redton Resources Inc.	441.084
502633	HS120	Redton Resources Inc.	459.915
502634	HS121	Redton Resources Inc.	459.921
502636	CS108	Redton Resources Inc.	440.914
502637	HS122	Redton Resources Inc.	460.158
502639	HS123	Redton Resources Inc.	460.157
502640	CS109	Redton Resources Inc.	275.577
502641	HS124	Redton Resources Inc.	460.157
502644	HS125	Redton Resources Inc.	460.161
502652	CS110	Redton Resources Inc.	460.644
502653	CS111	Redton Resources Inc.	460.642
502654	HS126	Redton Resources Inc.	460.164
502655	CS112	Redton Resources Inc.	460.639
502656	HS127	Redton Resources Inc.	460.166
502657	CS113	Redton Resources Inc.	460.637
502658	HS128	Redton Resources Inc.	405.139
502659	CS114	Redton Resources Inc.	460.883
502661	HS129	Redton Resources Inc.	460.396
502662	CS115	Redton Resources Inc.	460.881
502663	HS130	Redton Resources Inc.	460.397
502665	CS116	Redton Resources Inc.	460.879
502666	HS131	Redton Resources Inc.	460.4
502668		Redton Resources Inc.	460.876
502669	HS132	Redton Resources Inc.	460.403
502670	CS118	Redton Resources Inc.	461.121
502671	HS133	Redton Resources Inc.	460.405
502675	CS119	Redton Resources Inc.	461.108
502677	CS120	Redton Resources Inc.	442.668
502679	CS121	Redton Resources Inc.	461.36
502680	HS134	Redton Resources Inc.	442.343
502682	CS122	Redton Resources Inc.	461.369
502684	HS135	Redton Resources Inc.	460.966
502686	CS123	Redton Resources Inc.	461.379
502688	CS124	Redton Resources Inc.	461.117
502690	CS125	Redton Resources Inc.	461.121
502691	CS126	Redton Resources Inc.	461.278
502695	CS127	Redton Resources Inc.	424.435
502696	CS128	Redton Resources Inc.	461.449
504417	Ext01	Redton Resources Inc.	459.534

504420	Ext02	Redton Resources Inc.	459.95
504423	Ext03	Redton Resources Inc.	55.38

TAKLA - REDTON PROJECT

2005 ASSESSMENT REPORT

Appendix 6

Redton Project Geochemistry Database Extract

TAKLA - REDTON PROJECT

2005 ASSESSMENT REPORT

Appendix 7

IO Geochemistry

Redton Geochemical Summary

Redton Geochemical Summary

Mike Whitbread

Data Quality/Cleanup/QC

- Utilising Redton compilation sent by GEX on the 15th December 2005
- Dataset consists of a variety of sample types and sample sources
- New categorising variables created that allow separation of Rock/Gridded Soils/'Regional' samples
- Regional samples can be further subdivided into Moss, SSED, Contour-Source, Miscellaneous Soils (spots or limited lines)

DL replacement/ Data issues

- Au for till samples in report GSC_3273 (63micron) updated as it was found to be a duplicate of the As column (later found till data to need re-generating)
- Some negatives present, will be replaced my positive half of the absolute value e.g. '-2' replaced by 1
- Exceptions to this are large negatives e.g., Ta -15 for 0.5, Hg -1 to 0.05, Pb -20000 to 1, Ag -5 to 0.25, Au -5000 to 2.5
- Au has some special issues, some obvious unit problems e.g. values of 145000 ppb ARIS 20338 is the report with all these unusual values. I suspect 1000 times out due to ppb being converted as though it was ppm. A check of mineral occurrences shows no mine or major Au showing at the location of these samples, so the values have been divided by 1000
- Au in report ARIS 26451 for the contour samples was 1000 times too high. This has been corrected
- Sample K_01 Al ppm value changed from 100 to 10000

- **Update, 12th Jan: A few 'lines' Pb values in ARIS 21866 look to have a 10000 conversion error. These have been corrected**
- **Ag data for Lorne contour samples Sample IDs 77359 to 77376, ppb/ppm mixup corrected.**
- **Update 17th Jan: All till data replaced due to numerous column swaps (DL replacements normal, barring Ta -3 for 0.5)**
- **Update 18th Mn data in Till data multiplied by 10000 to fix percent ppm error**

'Zero' Problems

- Data has a large number of zeros, most of which are likely nulls, but at least some appear to be detection limit values which have been represented by zeros – these can be identified as zeros present in an otherwise continuous column of data for spatially coherent samples (ie obviously part of same survey)
- ROCK samples have very variable element suites, so impossible to pick out whether nulls or not in a reasonable timeframe.. Therefore all zeros assumed to be nulls
- GRID samples Report ARIS_20897 zeros look to be blanks for Pb, Zn (contiguous lack of data) Cu zeros are likely nulls too as they are in samples with only Au; ARIS_12149 is similar (a few Ag only samples in it).. Some sporadic zeros but not enough for cause concern for image/theme generation given time constraints
  - Au missing in report 22192 in regular 14-16 sample blocks – replaced with 0.5 (1 smallest in that report for Au), 7432 (replaced with 10),
  - Report ARIS_20338 has units problems in Au as well as gaps which look to be DLs for Au. ARIS_24871 also has DL gold judging by spotty gaps for 1 report value (replaced with 0.5).
  - As and Mo zeros for GRID samples look to be on report/grid scale and not DLs.

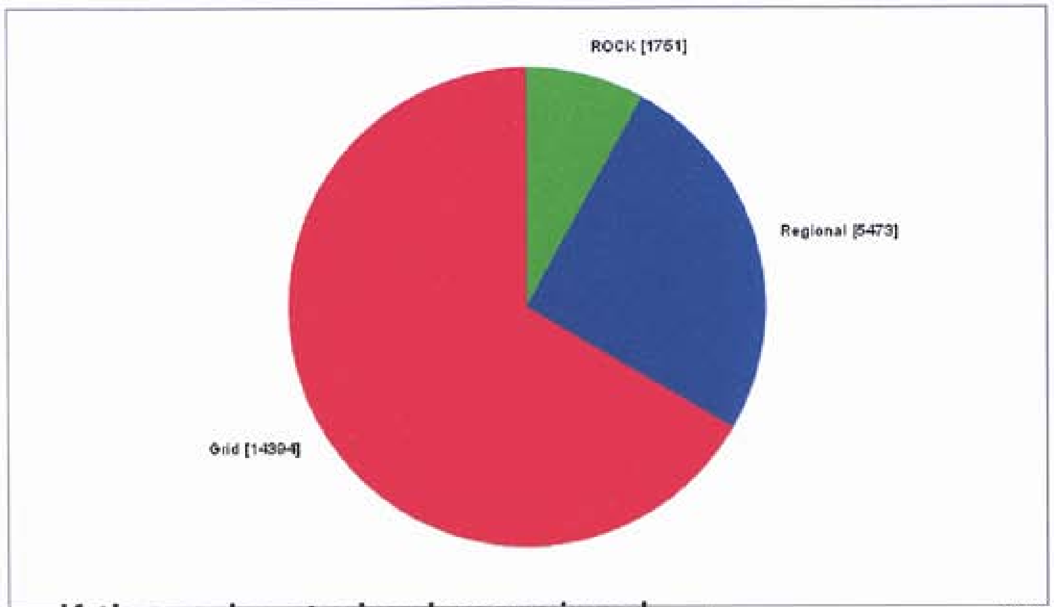
'Zero' Problems cont.

- No gold for 2 micron Till, some Cu etc zeros, but could be nulls as seem to have suites of elements absent when Cu absent, also negatives are present when there are zeros in the more relevant elements e.g. Pb, Zn, Cu, Au, As. Could be previous DLs replaced just for these elements, but not worth the effort of trying to work it out... BUT till has two samples on each point (2 and 63 micron) too which makes missing elements less of a problem, although still not ideal..
- Regional SSED have large numbers of Cu-Au only samples with the rest of the elements having zeros. While a few sets of samples are probably DLs, most are plausible nulls (esp in terms of spatial cluster)
- Regional data (NGR_GE04) has only a few zero values in key elements e.g. Au and these look like they are nulls
- SSED moss zeros are plausible nulls
- SOILS misc zeros are plausible nulls
- Contour data zeros are plausible nulls

- **Only zeros that are readily identified and replaced as DL values are in the GRID samples, and that is only in Au.**
- **The remainder of the zeros in the data have been made nulls!**

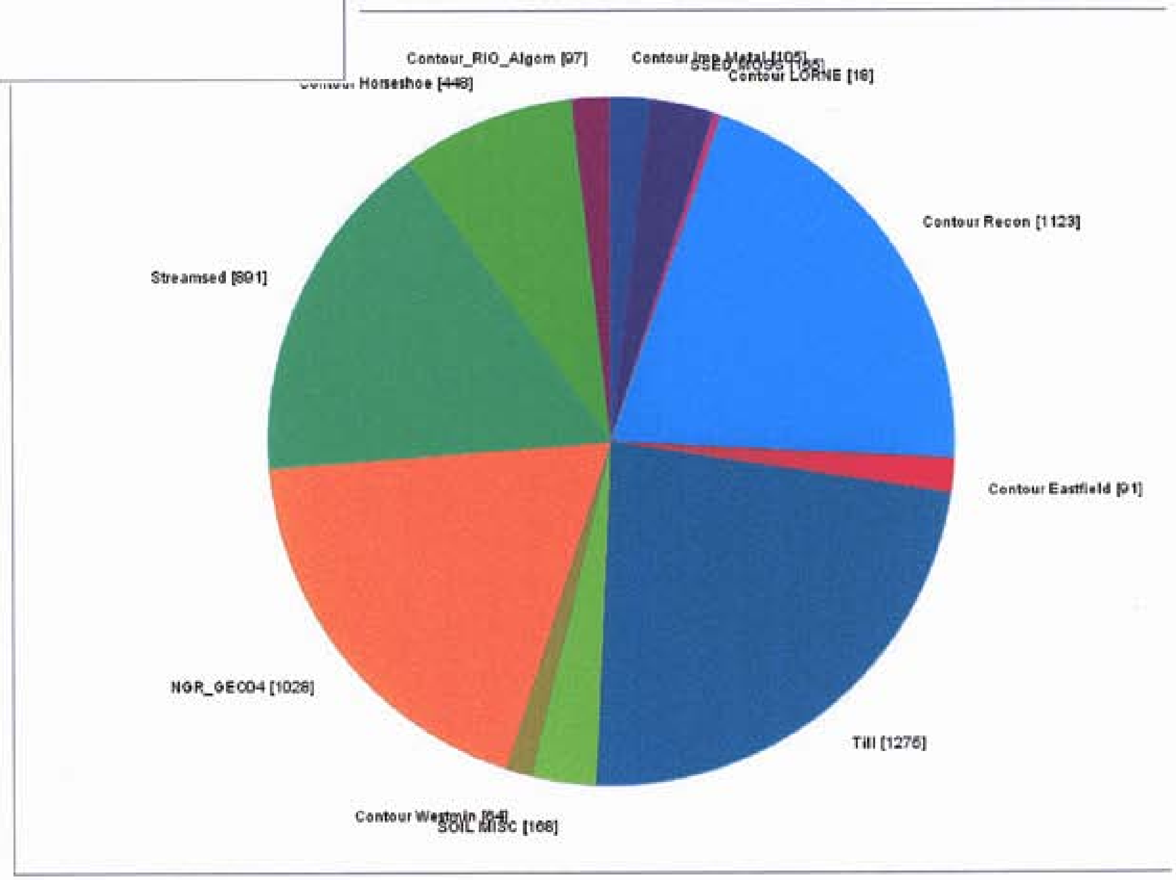
Categorised Variables

Colour Attribute



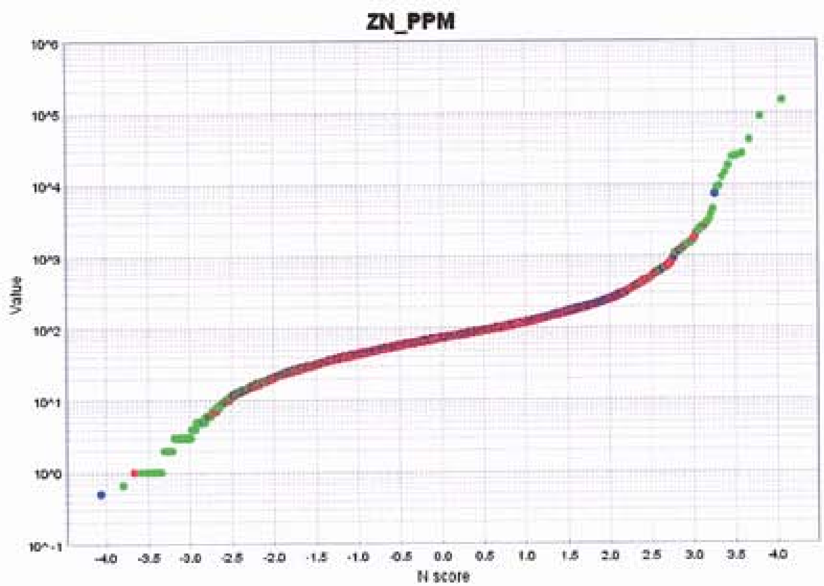
If the subsets had remained combined during interpretation, the differing sample media, sample density and resulting different element abundance distributions would have made interpretation difficult
Only the grid subset is suitable for imaging, the others are better suited for thematic representation

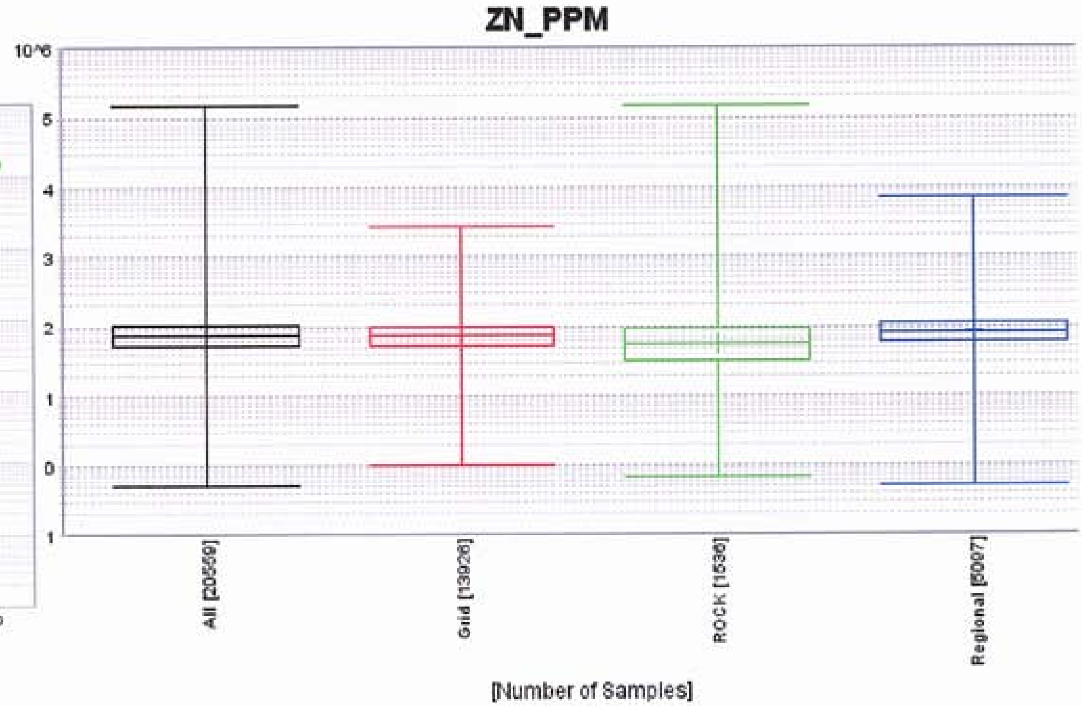
Colour Attribute



Categorised Variables cont.

- For example, in the plots below, rock samples dominate the extreme values (note the data displayed here is not the final cleaned data) and that the regional datasets have a slightly higher 3rd quartile than the grid values





Grid Samples

Summaries
No Selector

Variable	Count	Mean	Median	StdDev	Min	Max	IntQRange
AG_PPM	13743	0.349178	0.25	0.425095	0.01	13.1	0.3
AL_PPM	8944	20080.8	19200	7058.57	800	100000	9000
AS_PPM	11005	11.4909	6	38.2509	0.2	1445	7
AU_PPB	14286	27.7169	5	193.712	0.5	15000	16.5
B_PPM	8421	3.4085	3	2.32483	1	29	2
BA_PPM	8944	127.335	70	162.615	0.58	2216	69
BI_PPM	9480	2.25955	2	1.27479	0.2	23	0
CA_PPM	9131	4389.58	3200	4309.49	200	123400	3700
CO_PPM	12400	13.725	12	8.55791	0.5	399	9.5
CR_PPM	8944	43.175	36	32.5577	1	336	26
CU_PPM	14282	79.3342	45	215.215	0.5	10000	53
F_PPM	302	272.732	255	105.66	70	740	120
FE_PPM	11500	42505.6	41900	14201.5	1300	199100	17000
HG_PPM	536	0.0416978	0.03	0.0265018	0.03	0.22	0.01
K_PPM	8421	898.733	600	1192.94	100	50000	500
LA_PPM	8944	7.40195	6	59.4921	2	5610	4
MG_PPM	8944	8950.47	7800	5728.81	300	71500	7600
MN_PPM	11687	739.498	484	1103.02	25	70001	527
MO_PPM	12569	2.40196	1	8.18485	0.2	659	1
NA_PPM	8944	159.319	100	112.825	50	2000	100
NI_PPM	12587	18.6572	16	14.2282	1	556	11
P_PPM	8944	1171.84	1070	670.027	70	6650	800
PB_PPM	12756	858.463	8	7398.14	0.5	140000	7
SB_PPM	9480	2.18541	2	1.26798	0.2	57	0
SE_PPM	536	0.418657	0.2	0.670296	0.2	6.9	0
SN_PPM	523	10.0191	10	0.437269	10	20	0
SR_PPM	8944	44.8192	32	43.9585	3	629	33
TE_PPM	536	0.35597	0.2	0.252171	0.2	2.6	0.3
TH_PPM	8421	1.41355	1	0.885624	1	20	1
TI_PPM	8944	912.852	800	2669.36	50	190000	1000
U_PPM	9308	5.22372	5	3.57988	0.25	139	0
V_PPM	8944	96.7764	94	39.9296	5	1221	50
W_PPM	9833	1.38911	1	1.29359	0.2	43	0
Y_PPM	523	2.11377	0.5	8.82411	0.5	170	0
ZN_PPM	13926	85.8039	73	76.1709	1	2644	45

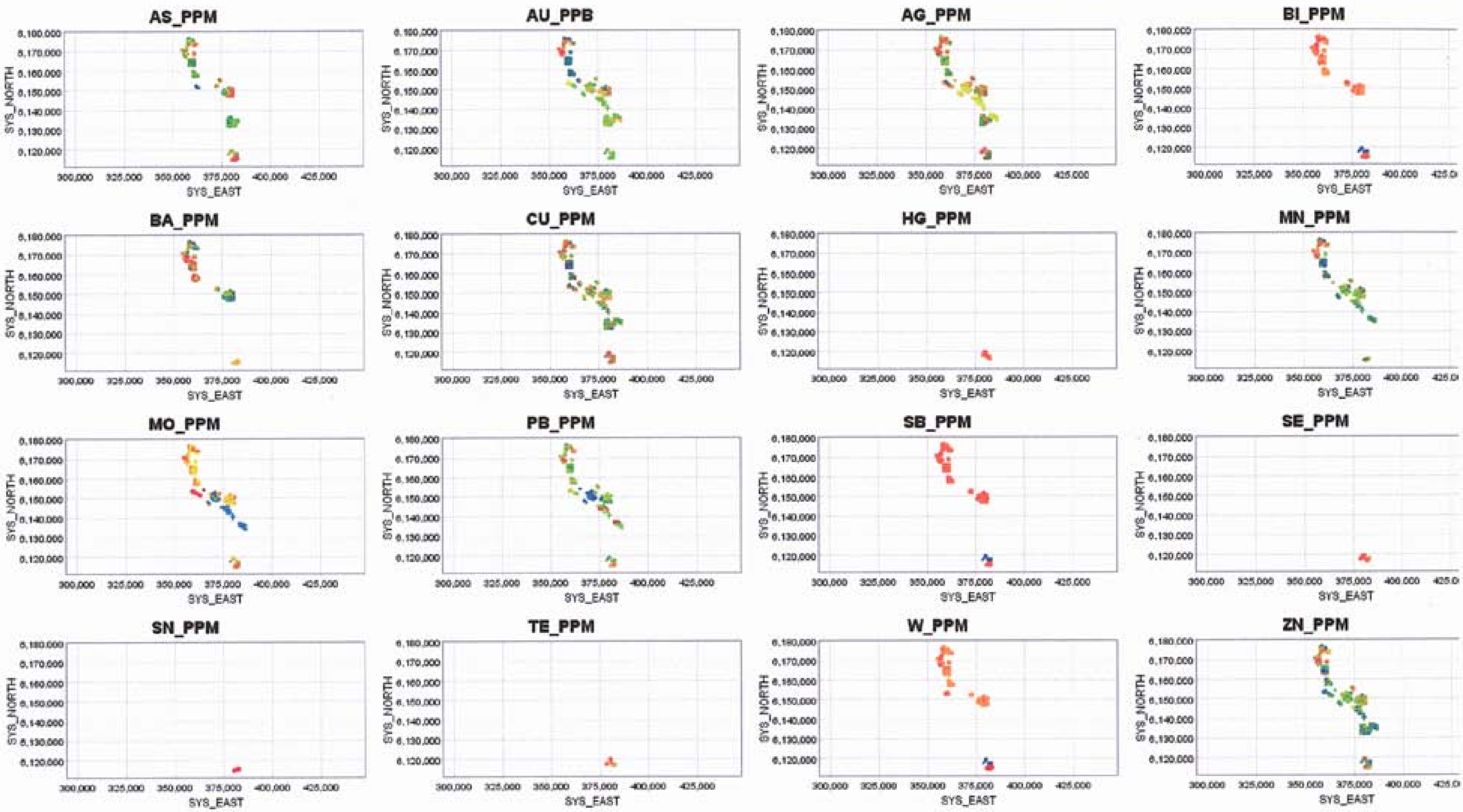
File trimmed to non-null variables

Summaries
No Selector

Variable	Count	Mean	Median	StdDev	Min	Max	IntQR
AG_PPM	13743	0.349178	0.25	0.425095	0.01	13.1	
AL_PPM	8944	20080.8	19200	7058.57	800	100000	900
AS_PPM	11005	11.4909	6	38.2509	0.2	1445	
AU_PPB	14286	27.7169	5	193.712	0.5	15000	1
B_PPM	8421	3.4085	3	2.32483	1	29	
BA_PPM	8944	127.335	70	162.615	0.58	2216	6
BE_PPM	0	•	•	•	∞	-∞	
BI_PPM	9480	2.25955	2	1.27479	0.2	23	
BR_PPM	0	•	•	•	∞	-∞	
CA_PPM	9131	4389.58	3200	4309.49	200	123400	370
CE_PPM	0	•	•	•	∞	-∞	
CO_PPM	12400	13.725	12	8.55791	0.5	399	
CR_PPM	8944	43.175	36	32.5577	1	336	2
CS_PPM	0	•	•	•	∞	-∞	
CU_PPM	14282	79.3342	45	215.215	0.5	10000	5
EU_PPM	0	•	•	•	∞	-∞	
F_PPM	302	272.732	255	105.66	70	740	12
FE_PPM	11500	42505.6	41900	14201.5	1300	199100	1700
GA_PPM	0	•	•	•	∞	-∞	
HF_PPM	0	•	•	•	∞	-∞	
HG_PPM	536	0.0416978	0.03	0.0265018	0.03	0.22	
IR_PPB	0	•	•	•	∞	-∞	
K_PPM	8421	898.733	600	1192.94	100	50000	50
LA_PPM	8944	7.40195	6	59.4921	2	5610	
LI_PPM	0	•	•	•	∞	-∞	
LU_PPM	0	•	•	•	∞	-∞	
MG_PPM	8944	8950.47	7800	5728.81	300	71500	760
MN_PPM	11687	739.498	484	1103.02	25	70001	52
MO_PPM	12569	2.40196	1	8.18485	0.2	659	
NA_PPM	8944	159.319	100	112.825	50	2000	10
NB_PPM	0	•	•	•	∞	-∞	
ND_PPM	0	•	•	•	∞	-∞	
NI_PPM	12587	18.6572	16	14.2282	1	556	1
P_PPM	8944	1171.84	1070	670.027	70	6650	80
PB_PPM	12756	858.463	8	7398.14	0.5	140000	
PD_PPB	0	•	•	•	∞	-∞	
PT_PPB	0	•	•	•	∞	-∞	
RB_PPM	0	•	•	•	∞	-∞	
S_PC	0	•	•	•	∞	-∞	
SB_PPM	9480	2.18541	2	1.26798	0.2	57	
SC_PPM	0	•	•	•	∞	-∞	
SE_PPM	536	0.418657	0.2	0.670296	0.2	6.9	
SM_PPM	0	•	•	•	∞	-∞	
SN_PPM	523	10.0191	10	0.437269	10	20	
SR_PPM	8944	44.8192	32	43.9585	3	629	3
TA_PPM	0	•	•	•	∞	-∞	
TB_PPM	0	•	•	•	∞	-∞	
TE_PPM	536	0.35597	0.2	0.252171	0.2	2.6	
TH_PPM	8421	1.41355	1	0.885624	1	20	
TI_PPM	8944	912.852	800	2669.36	50	190000	100
U_PPM	9308	5.22372	5	3.57988	0.25	139	
V_PPM	8944	96.7764	94	39.9296	5	1221	5
W_PPM	9833	1.38911	1	1.29359	0.2	43	
Y_PPM	523	2.11377	0.5	8.82411	0.5	170	
YB_PPM	0	•	•	•	∞	-∞	
ZN_PPM	13926	85.8039	73	76.1709	1	2644	4
ZR_PPM	0	•	•	•	∞	-∞	
SIO2_PC	0	•	•	•	∞	-∞	
TIO2_PC	0	•	•	•	∞	-∞	
AL2O3_PC	0	•	•	•	∞	-∞	
CR2O3_PC	0	•	•	•	∞	-∞	
FE2O3_PC	0	•	•	•	∞	-∞	
FEO_PC	0	•	•	•	∞	-∞	
MNO_PC	0	•	•	•	∞	-∞	
MGO_PC	0	•	•	•	∞	-∞	
CAO_PC	0	•	•	•	∞	-∞	
NA2O_PC	0	•	•	•	∞	-∞	
K2O_PC	0	•	•	•	∞	-∞	
P2O5_PC	0	•	•	•	∞	-∞	
H2O_PC	0	•	•	•	∞	-∞	
CO2_PC	0	•	•	•	∞	-∞	
SO3_PC	0	•	•	•	∞	-∞	
LOI_PC	0	•	•	•	∞	-∞	
TOTAL_PC	14394	0	0	0	0	0	

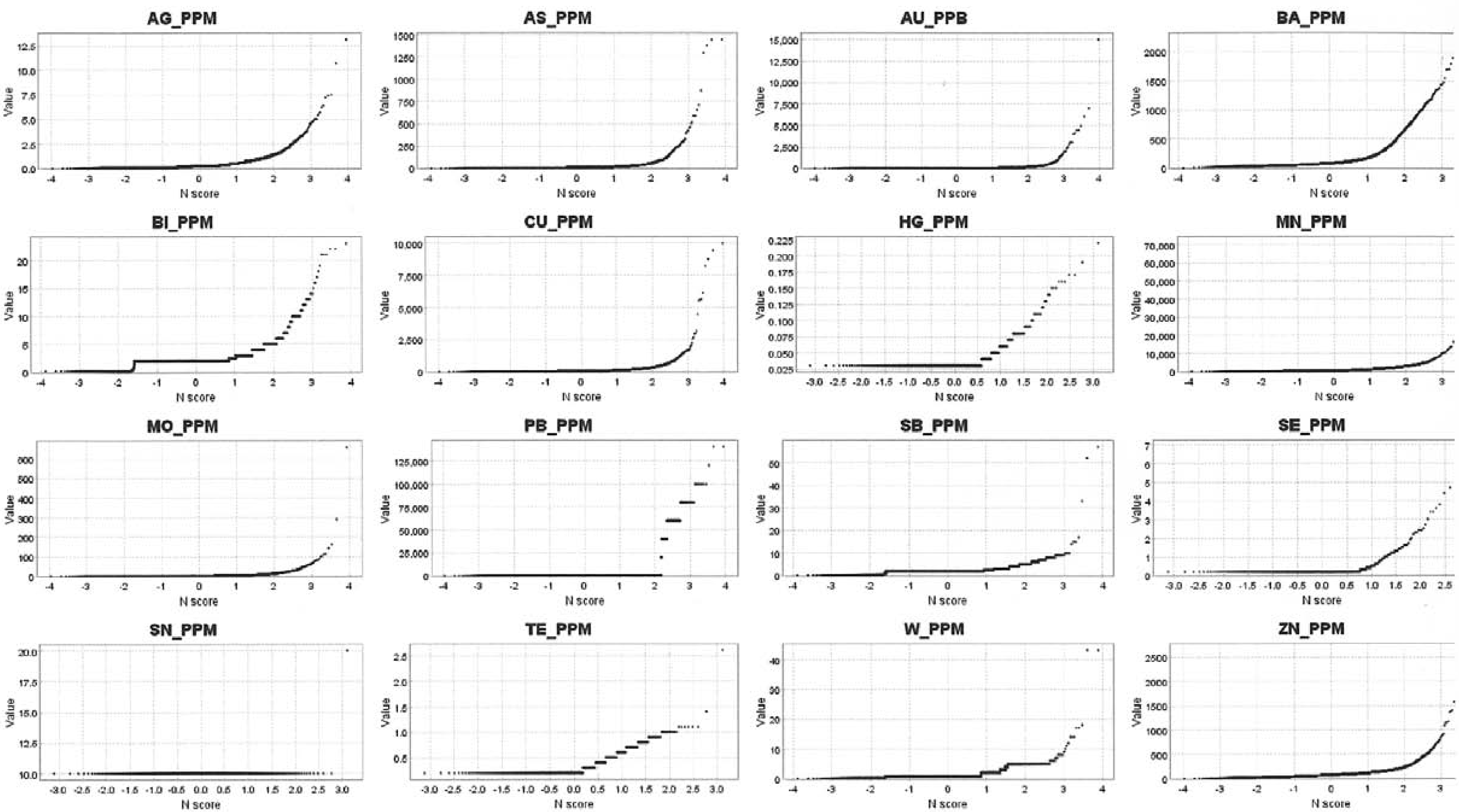
Spatial Coverage of 'Pathfinder' Elements for Grid Samples

Hg, Se, Sn, Te have limited coverage, while Bi, Sb, W have DL issues

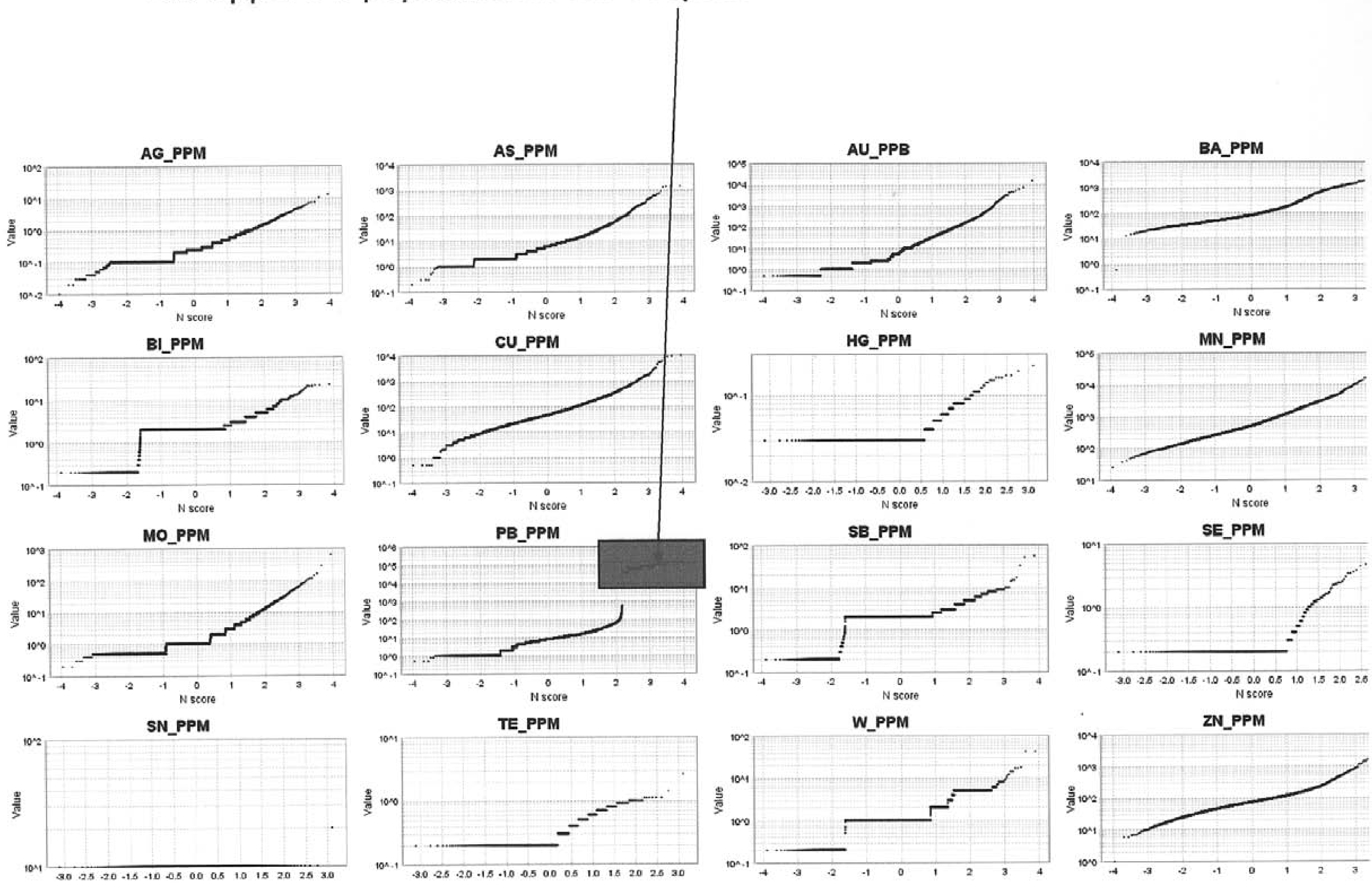


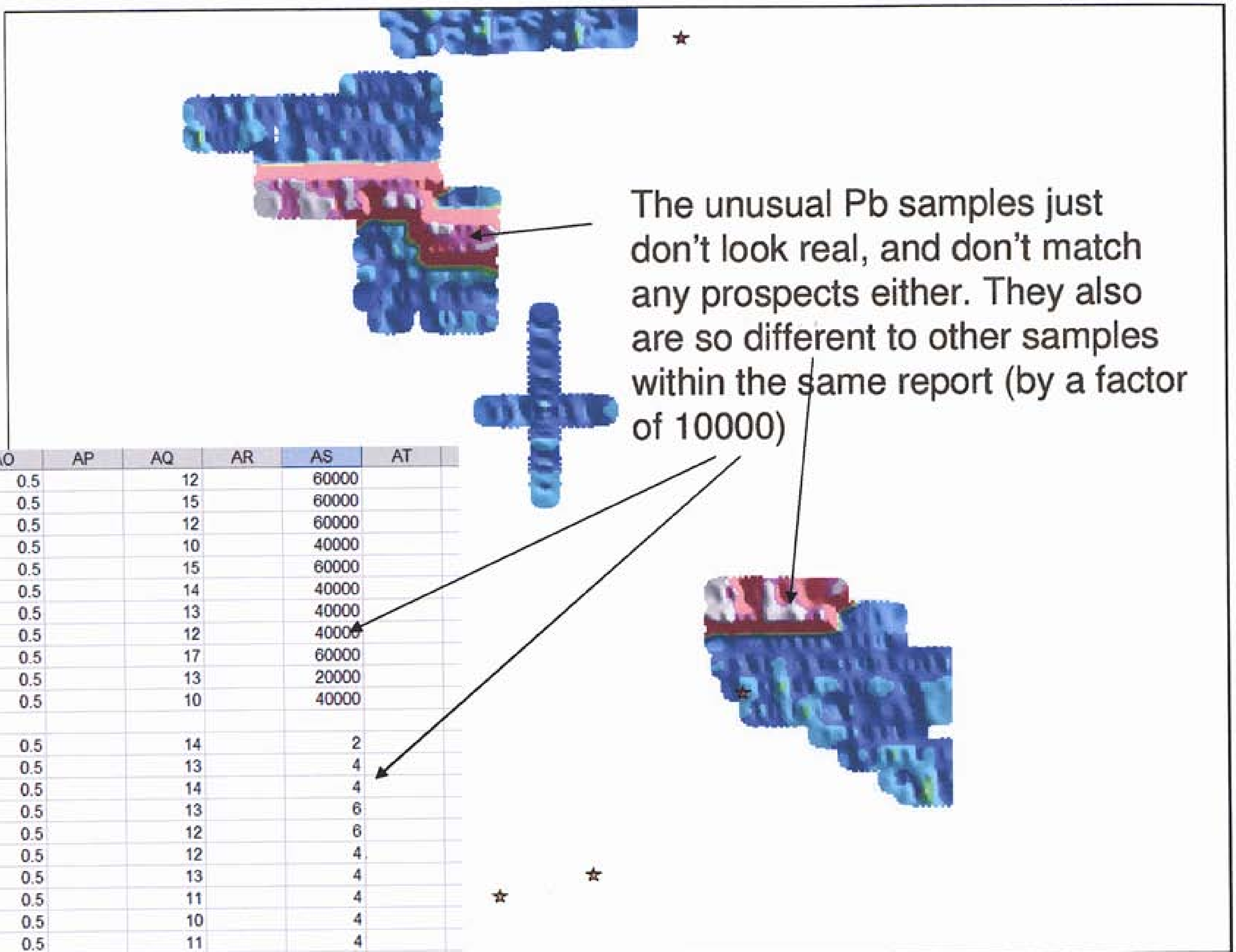
Distribution of pathfinder elements commonly better described by log-normal

Shown below are the normal probability plots



Log-normal probability plots, better describe many of the elements, although Detection Limit issues plague a few (W, Bi, Ag, As, Au, Se)
The upper Pb population looks suspect….

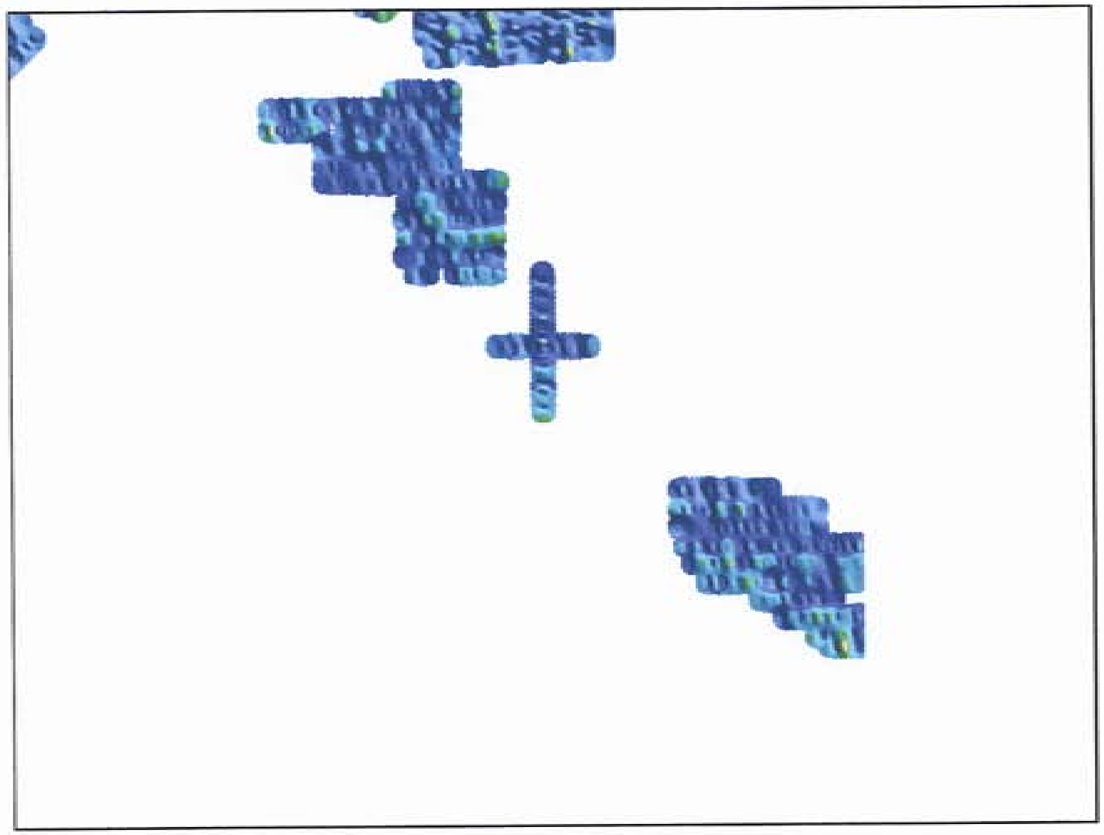




AN	AO	AP	AQ	AR	AS	AT
375	0.5		12		60000	
635	0.5		15		60000	
520	0.5		12		60000	
480	0.5		10		40000	
725	0.5		15		60000	
615	0.5		14		40000	
380	0.5		13		40000	
345	0.5		12		40000	
345	0.5		17		60000	
315	0.5		13		20000	
280	0.5		10		40000	
425	0.5		14		2	
565	0.5		13		4	
370	0.5		14		4	
595	0.5		13		6	
590	0.5		12		6	
625	0.5		12		4	
405	0.5		13		4	
320	0.5		11		4	
340	0.5		10		4	
370	0.5		11		4	
295	0.5		10		6	

Pb data problem

- These Pb values have been corrected assuming a 10000 conversion error, and the various subsets and data sets corrected, and the Pb image and levelling re-run

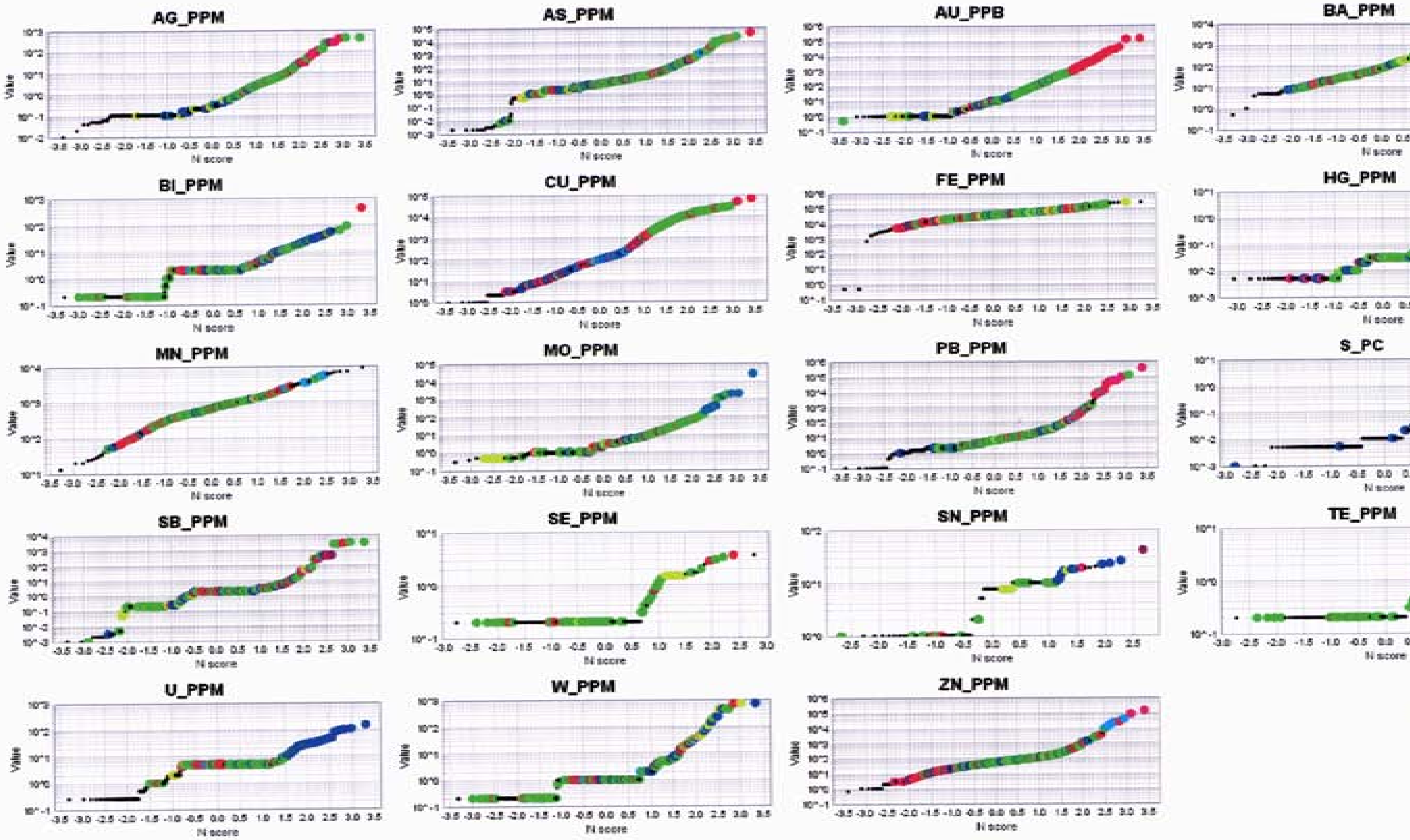


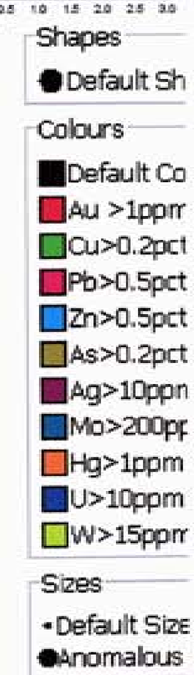
Grid Images

- 8-1-35 for images (search, smooth, cell size)

Rock Samples

- Some extraordinary values in pathfinders for some of the rocks (see next slide), will need to be checked against known occurrences – no easy to way to validate them at this time
- Using a 'If, then, else' approach to colouring the upper abundance rock samples, a thematic has been created

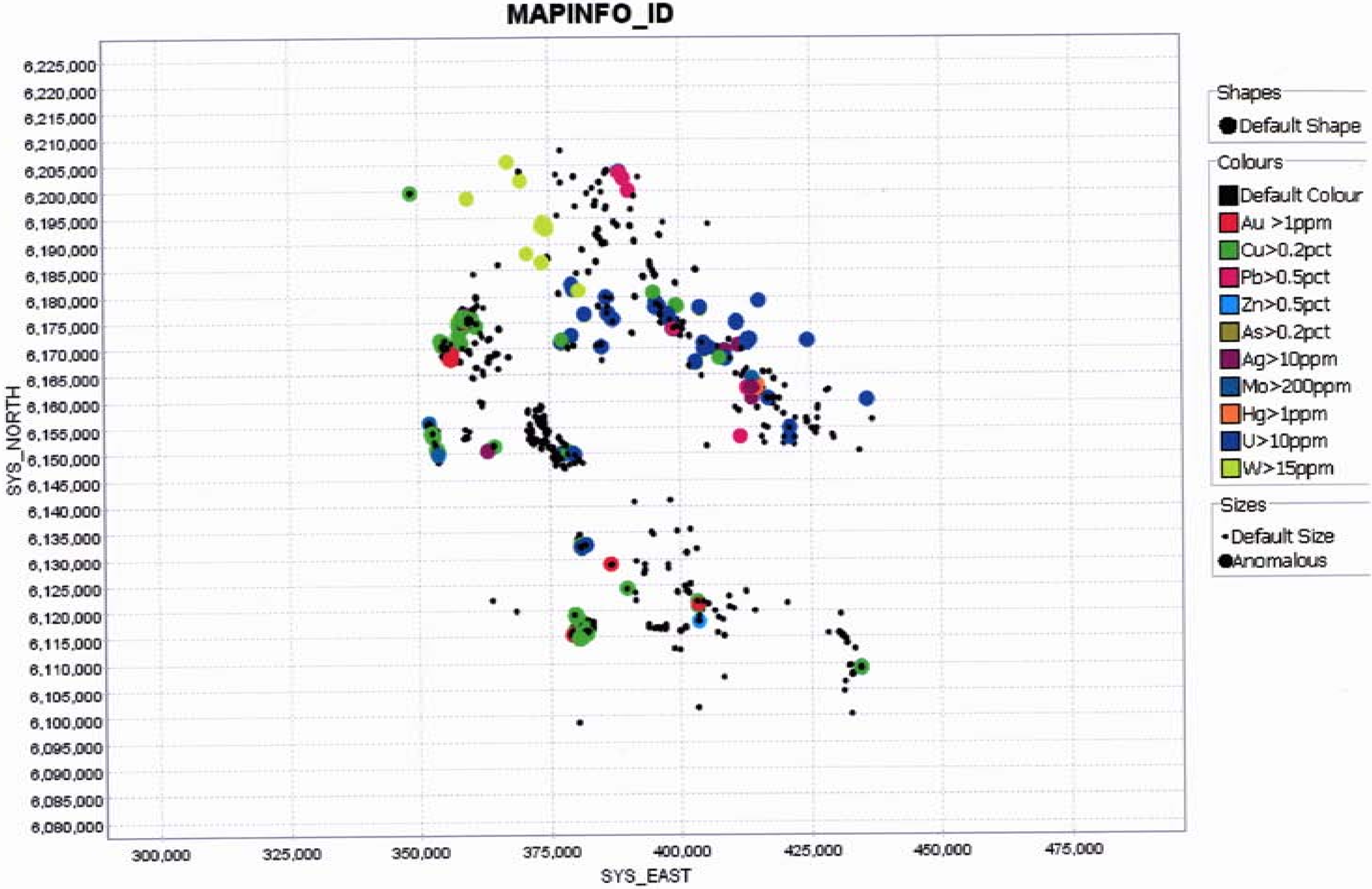




Log normal probability plots for various pathfinder elements,
The thematic is applied as Au anomalous samples coloured first,
Then any anomalous Cu not Au anomalous colour, then U, then Pb etc

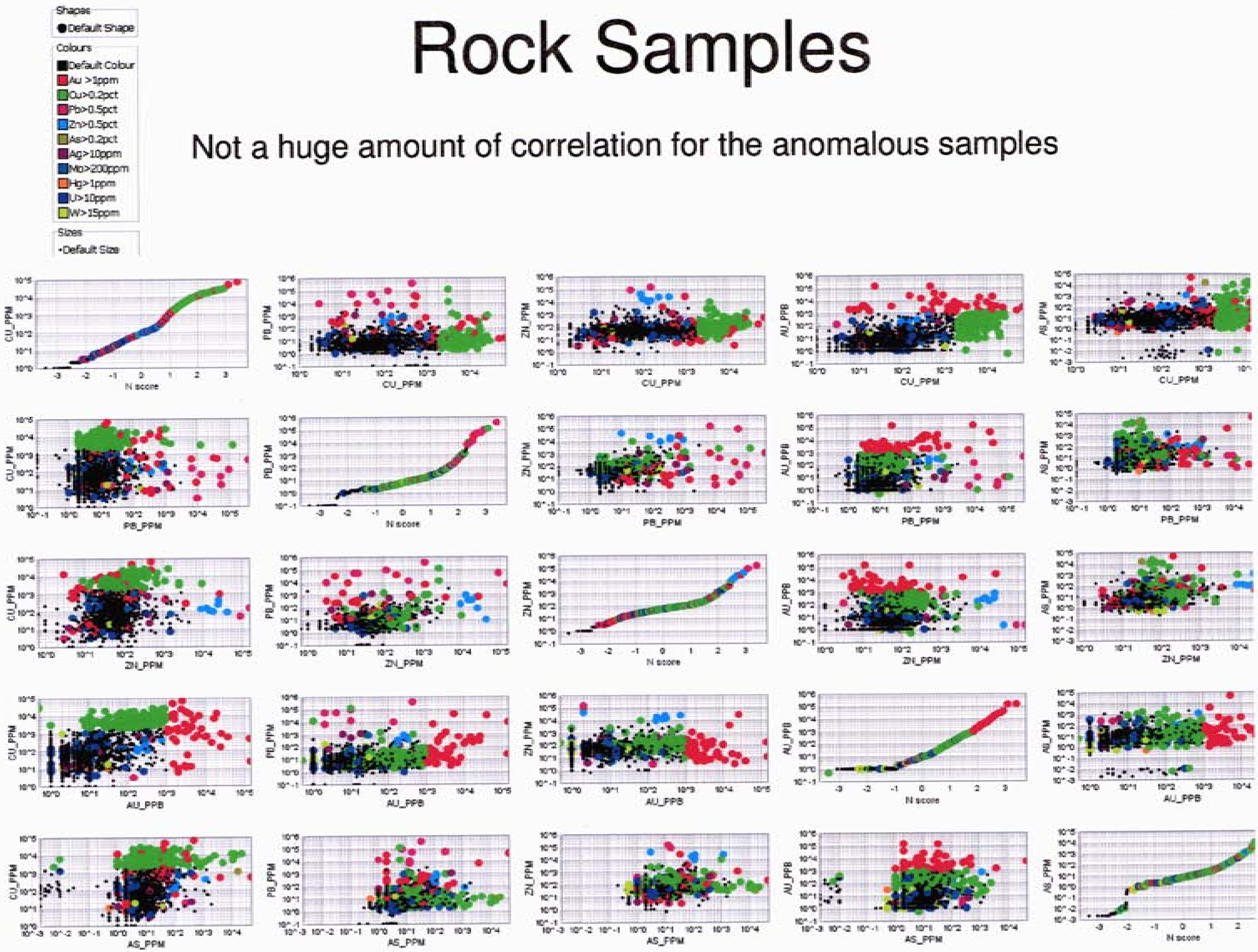
It's not an RGB type combined colour scheme.

Spatial Distribution of Anomalous Rock Samples
(If/then/else colour scheme)



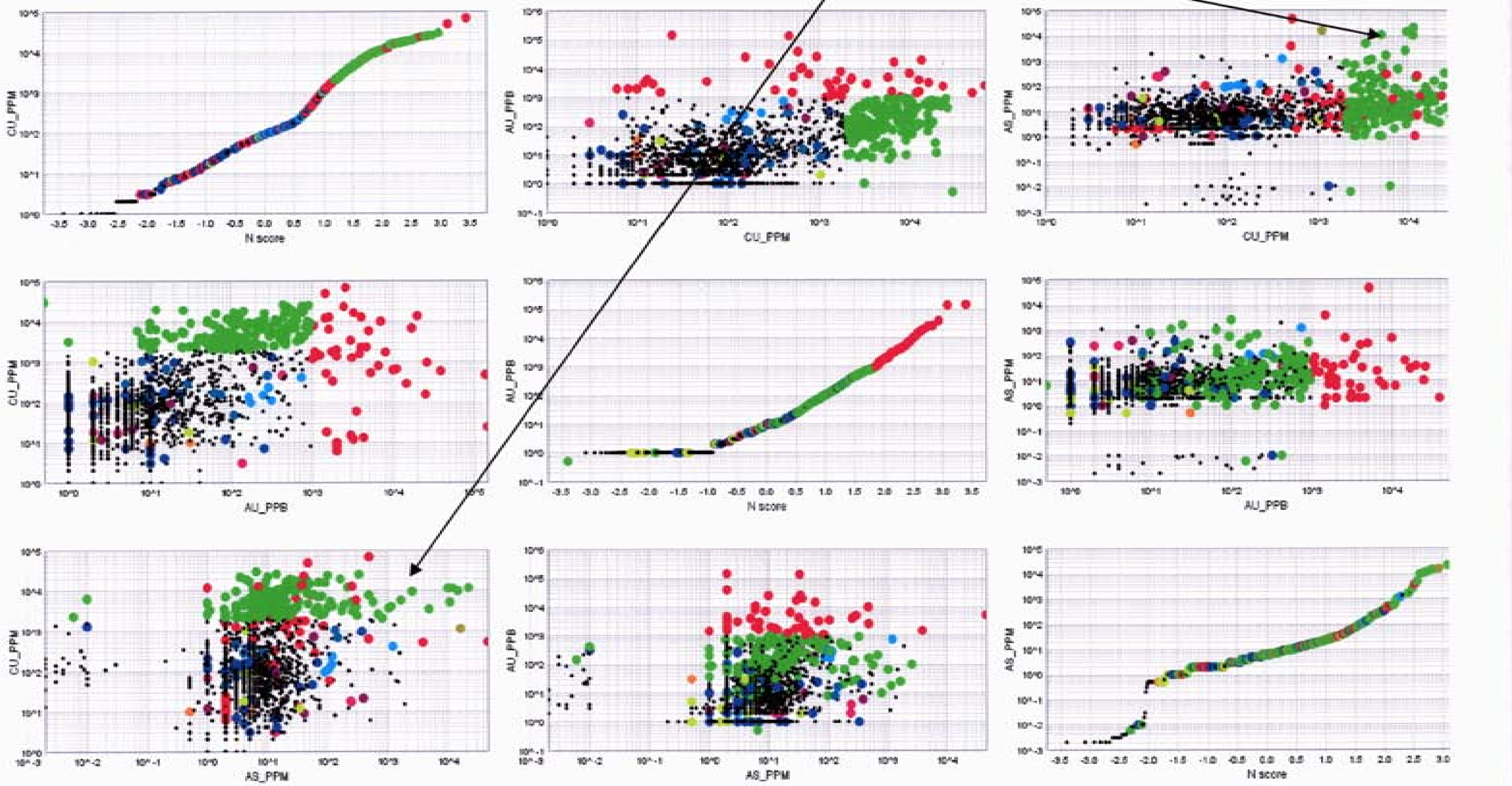
Rock Samples

Not a huge amount of correlation for the anomalous samples



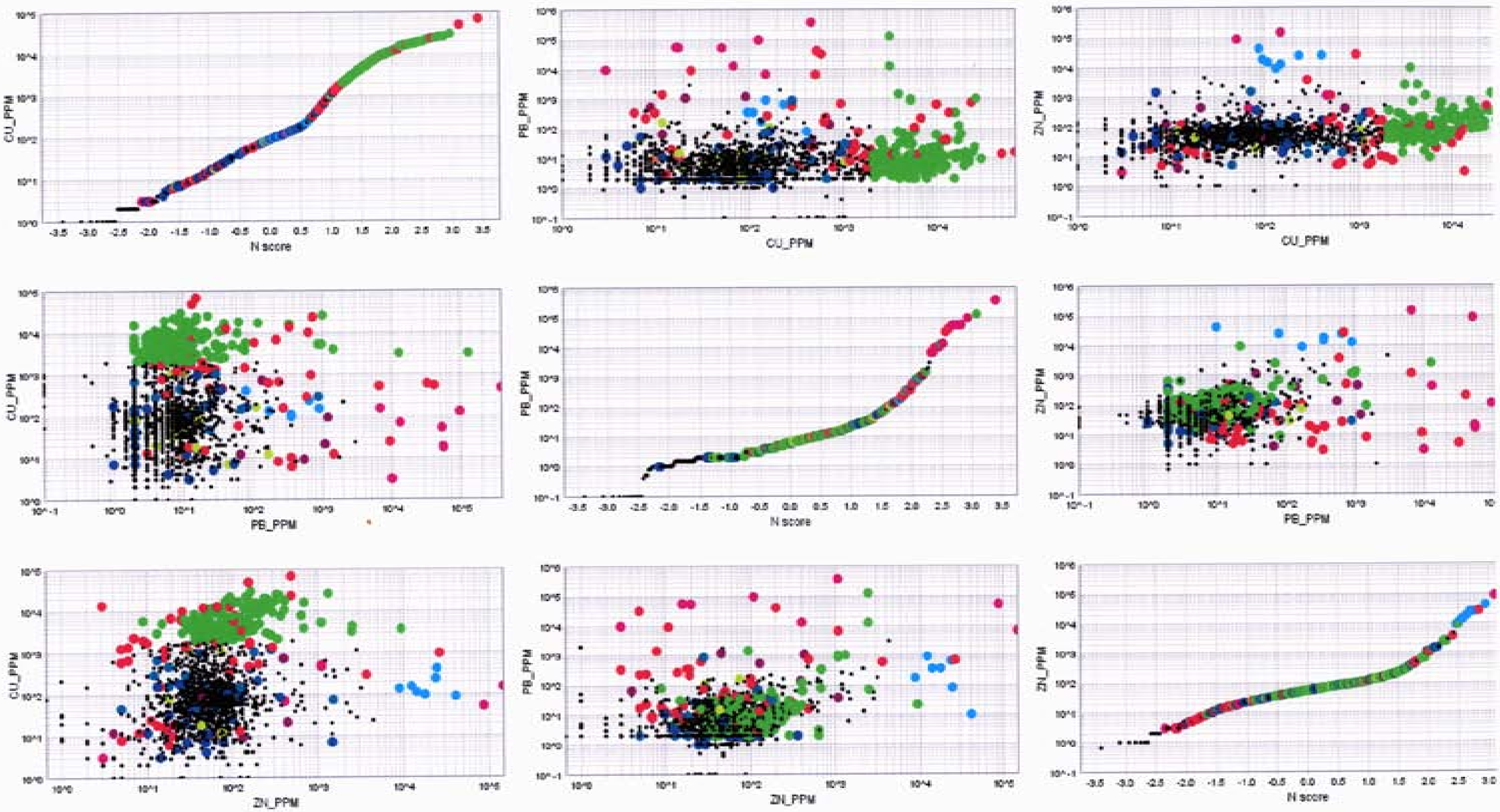
Rock Samples

Quadrant plots might be useful for various element pairs



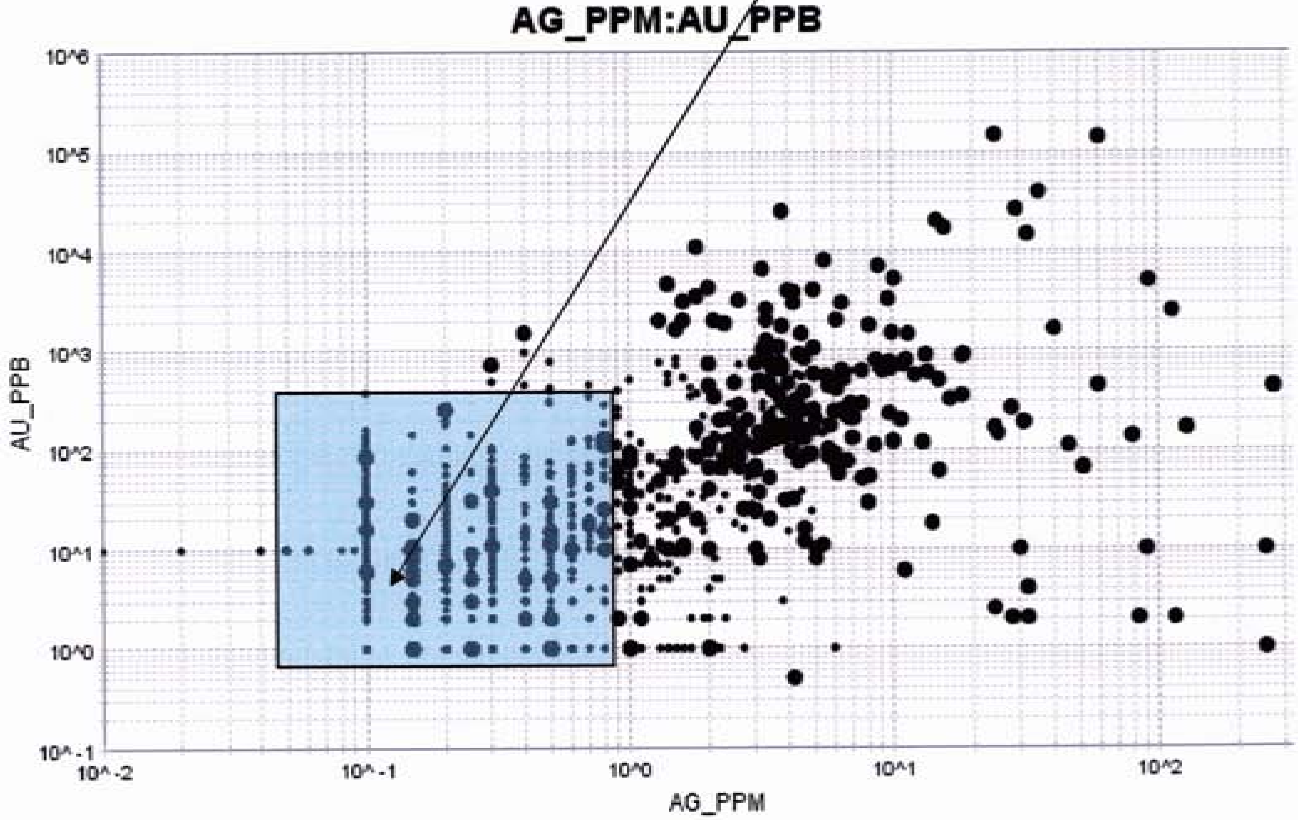
Rock Samples

Few multivariate highs in the CuPbZn data



Rock Samples

- Also calculated and themed (using percentiles) Ag/Au
- Requested by GEX because, ideally, if the ratio is ~1 or ~2, then the rock is more likely to come from the centre of a porphyry system, whereas greater ratios indicate more distal positions
- Remember DL samples will still have ratios like 60, (150/2.5 = 60) or 40 (1/2.5)
- Ratio only calculated for existing pairs. Nulls are ignored
- Needs to be used in context!



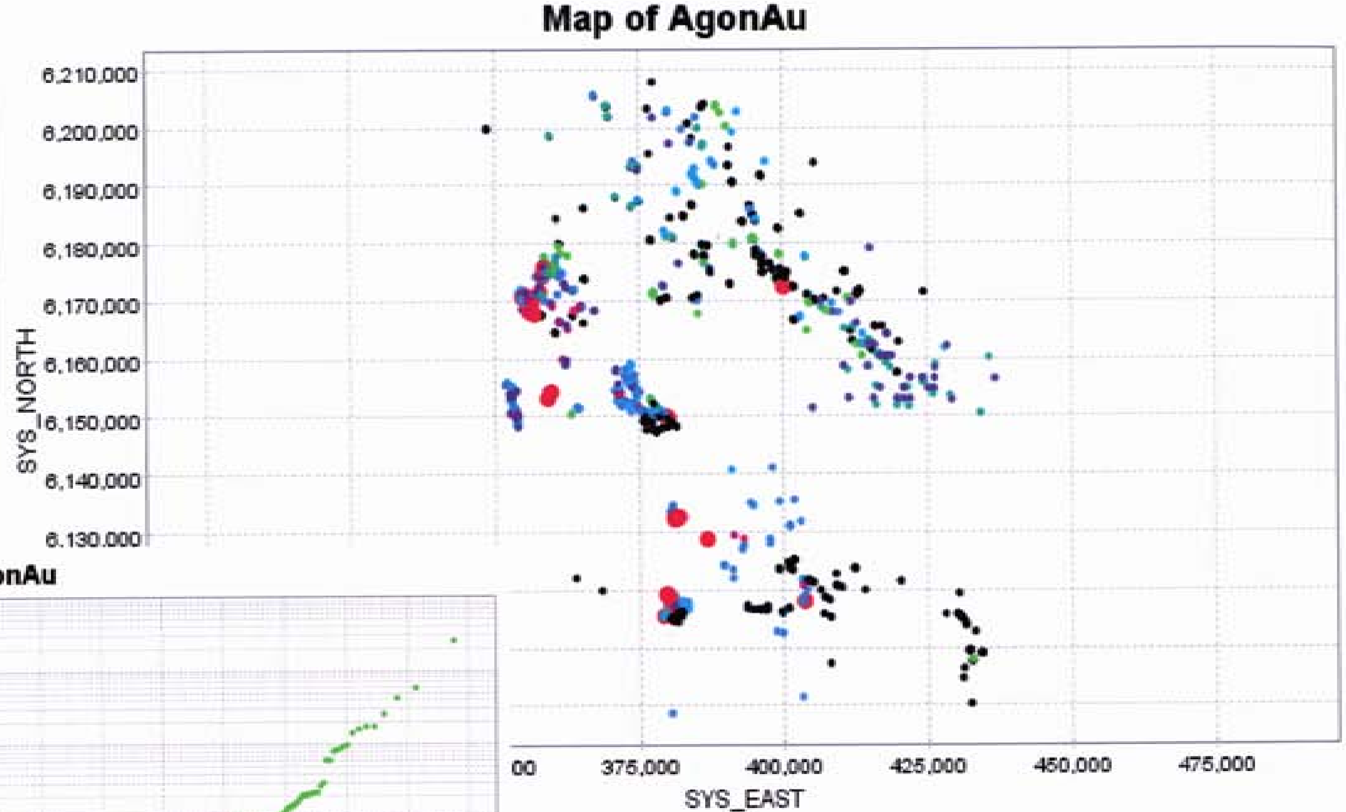
Rock Ag/Au ratio

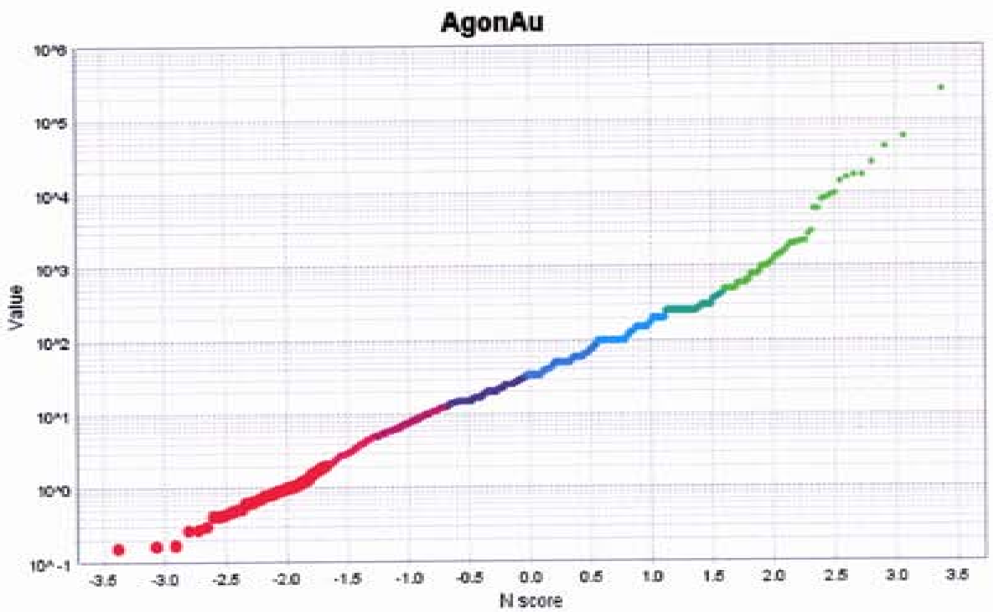
Shapes
- Default Shape

Colours

Default Colour		
AgonAu	0.00% ->	5.00%
AgonAu	5.00% ->	10.00%
AgonAu	10.00% ->	25.00%
AgonAu	25.00% ->	50.00%
AgonAu	50.00% ->	75.00%
AgonAu	75.00% ->	90.00%
AgonAu	90.00% ->	95.00%
AgonAu	95.00% ->	100.00%

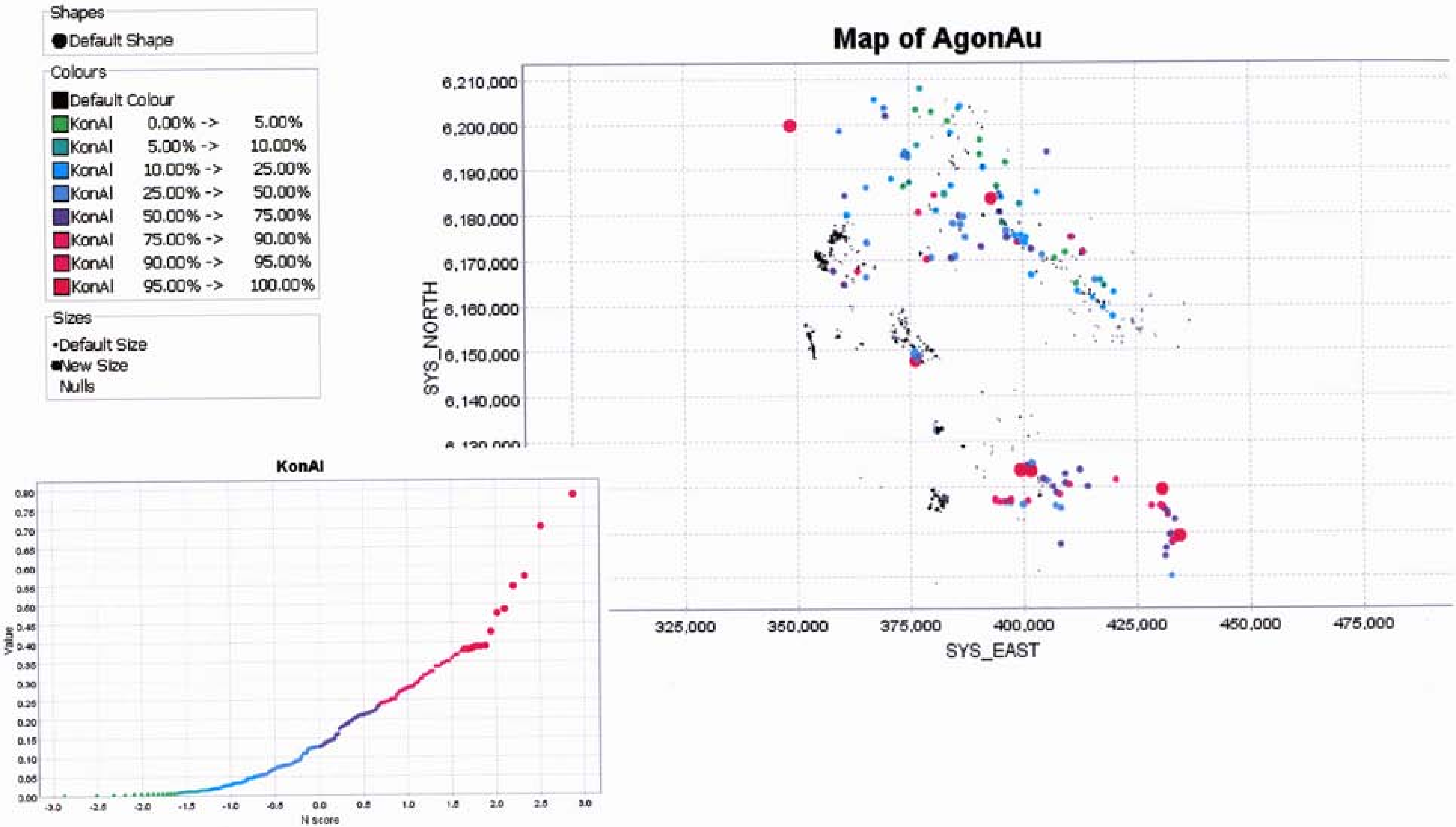
Sizes
- Default Size
- 'Inner' Samples





Rock K/Al Ratio

- High K/Al can reflect potassic alteration (commonly associated with the core of Cu-Au porphyry systems)
- No ratios higher than 1, which is that contained within K-feldspar and some biotites
- Ratio of 0.33 is muscovite (if the only K and Al bearing mineral present)
- Many null samples



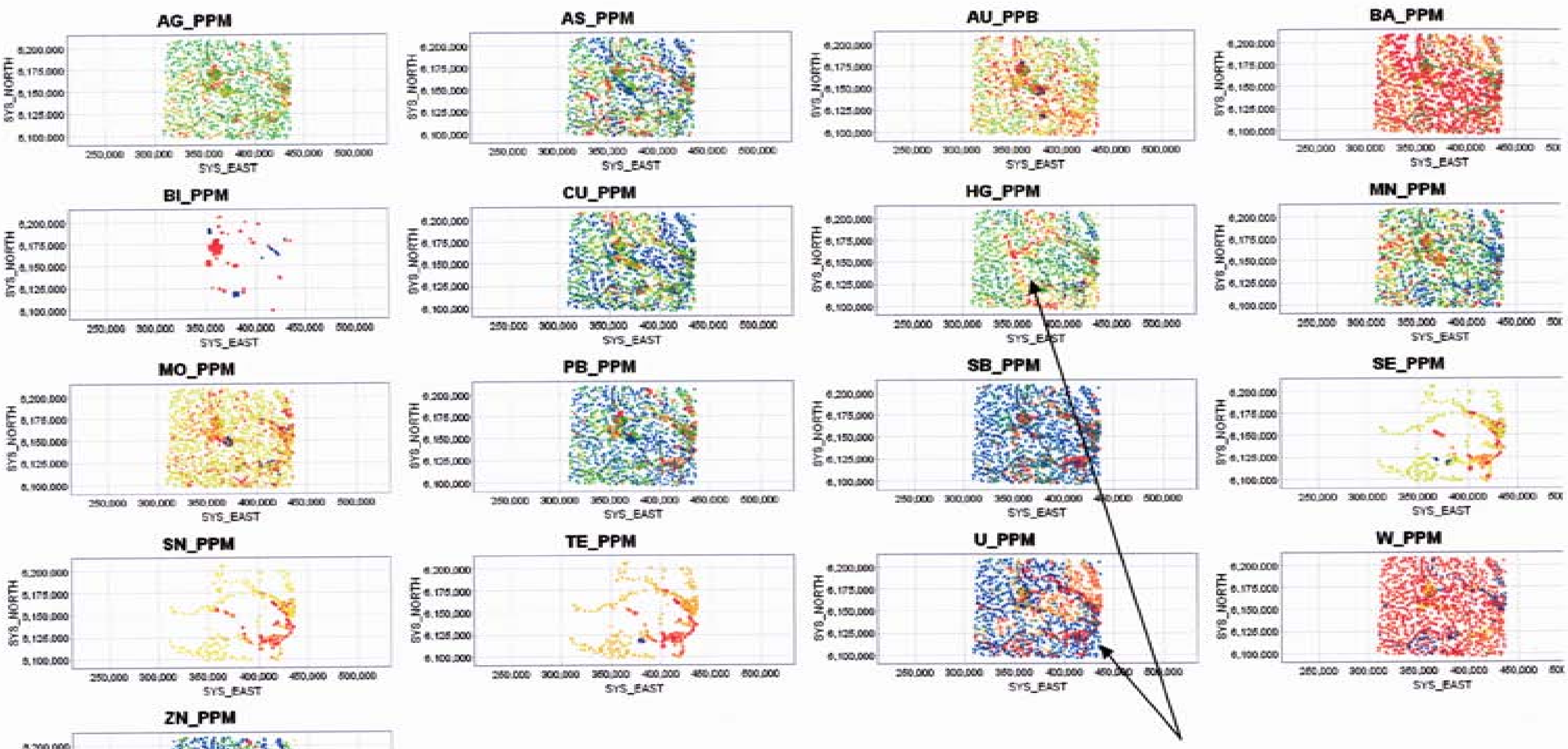
Rock Samples – Percentile Thematics and RGBs

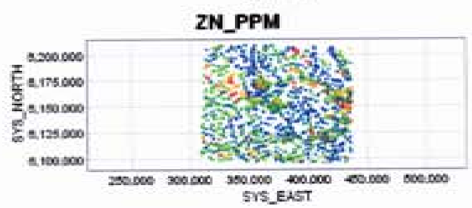
- Simple percentile thematics have been produced in ioGAS and imported into Mapinfo
- These are not modelled on any population analysis
- Default colour indicates a null sample

- RGBs for CuMoAs, CuMoAu and AsMoAu have been created, at the 95th Percentile
- Legends accompany each table (useful for interpreting RGB symbols)

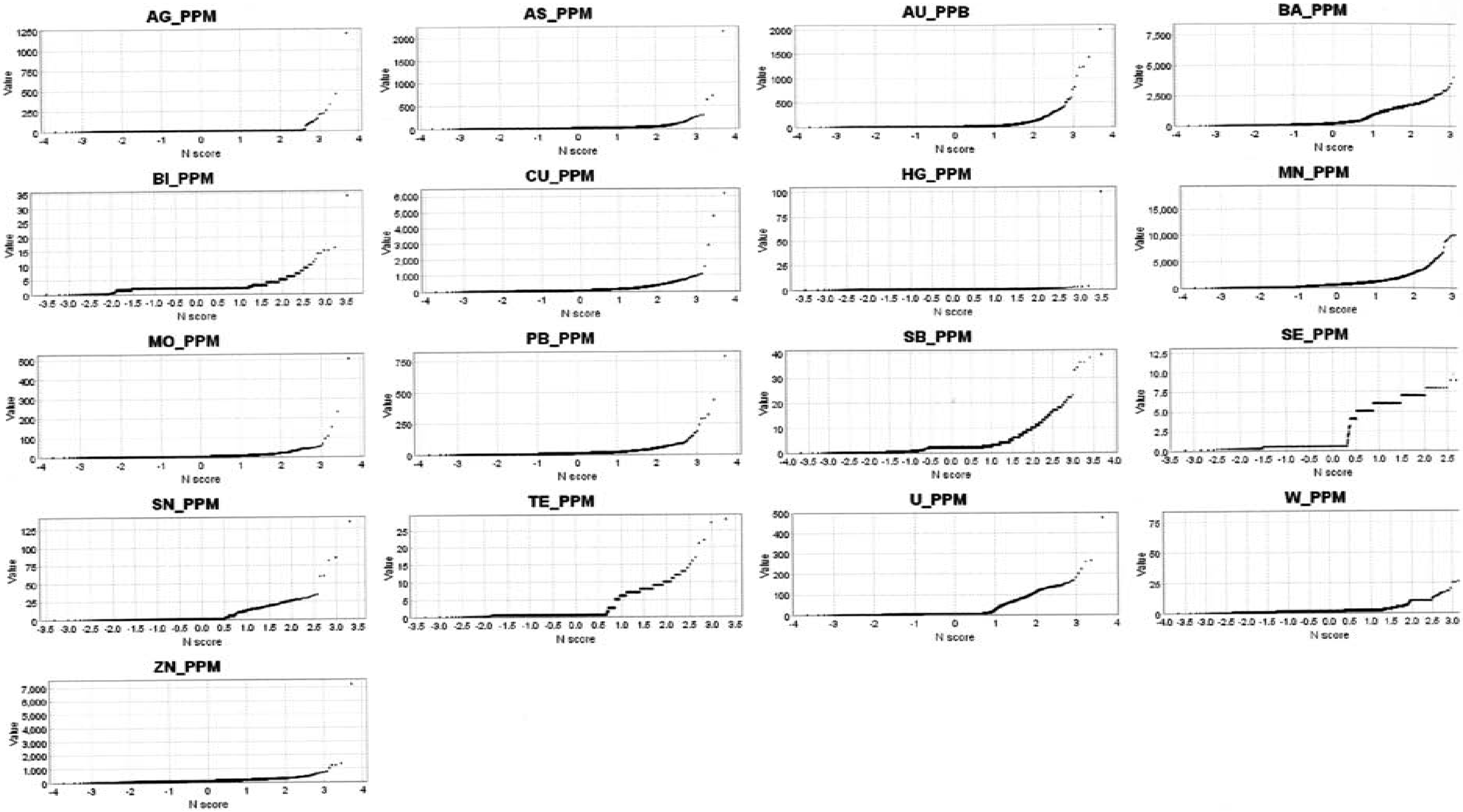
Regional Samples

Coverage and quality varies across the element suite of interest

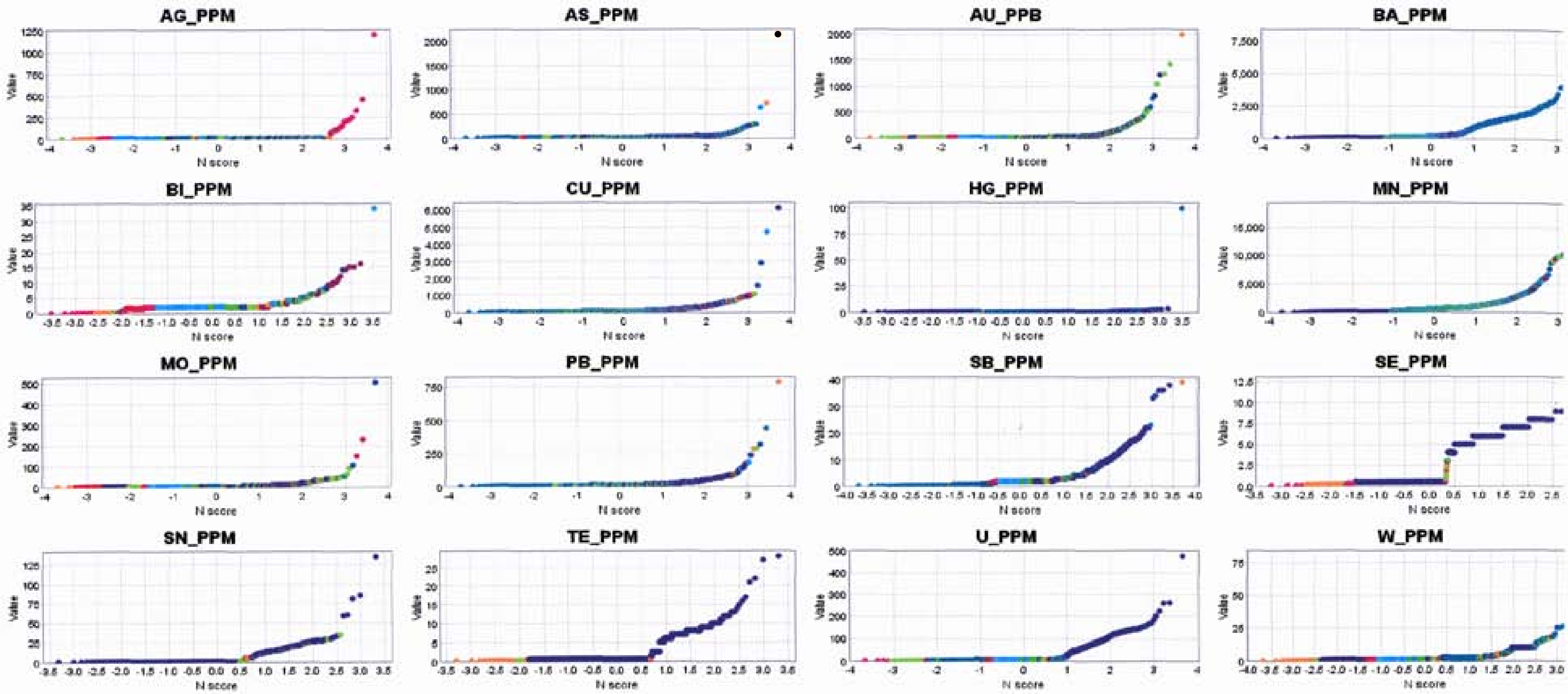


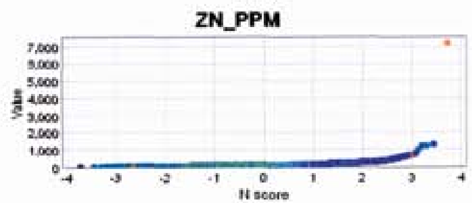


Some interesting trends e..g in the Hg, U, and Sb.. Look a littl
suspicous (redone later with new till data)



No ‘crazy’ individual highs in the regional data… except perhaps for the Ag values, which all belong to one source (see next slide)
Some upper populations are quite distinct e.g. Sb



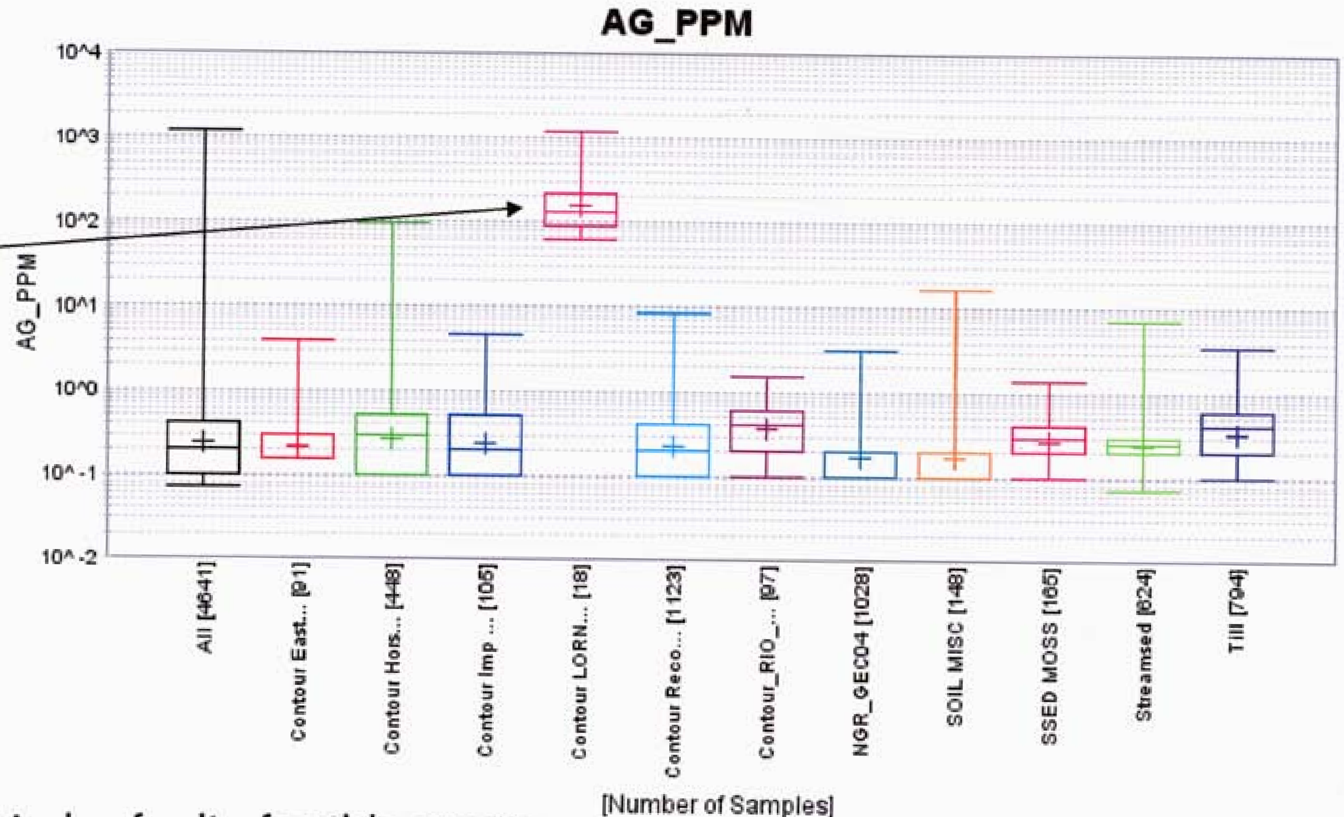


No 'crazy' individual highs in the regional data… **except perhaps for the Ag values, which all belong to one source (Lorne). However not possible to discount the magnitude of these responses, although they do seem high with no known mineral occurrence. I suggest a ppb in ppm column mixup**

Some upper populations are quite distinct e.g. Sb

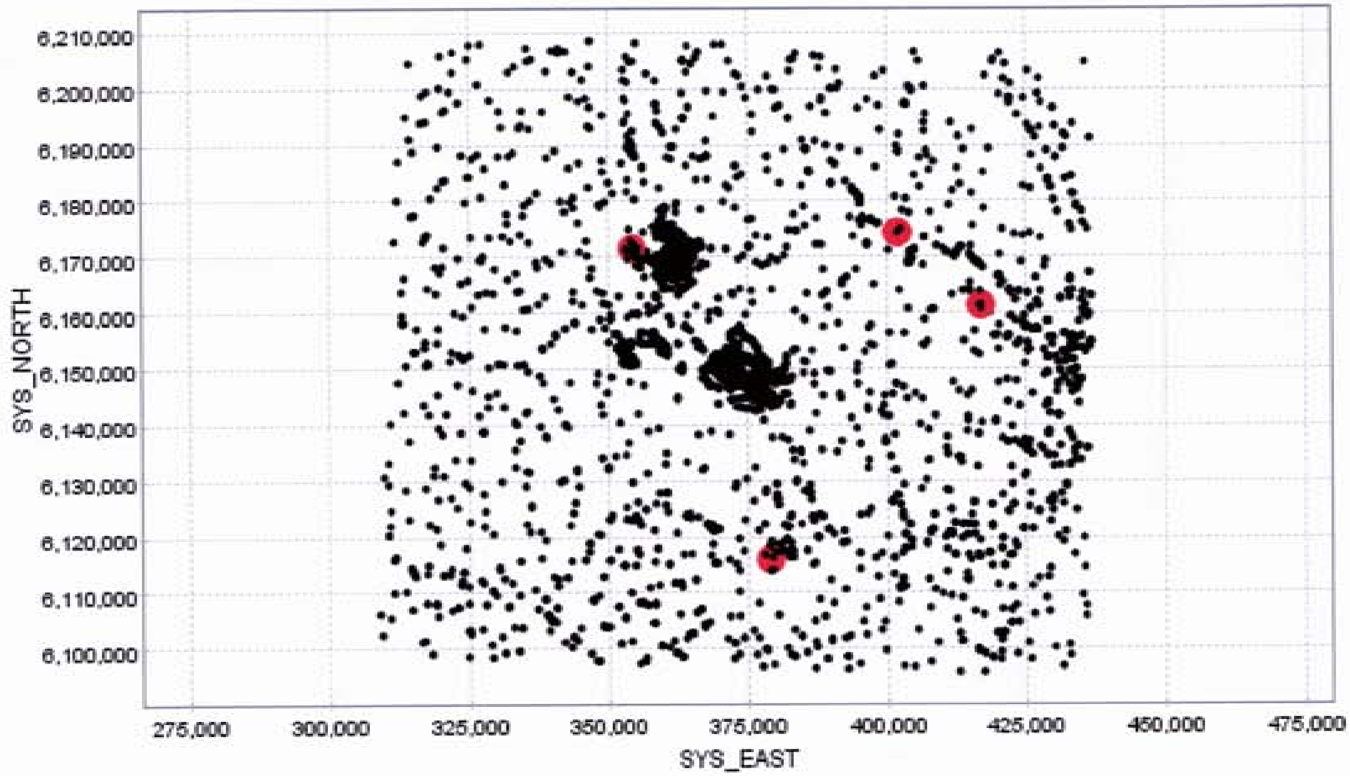
Ag in LORNE Contour Samples

Looks high…



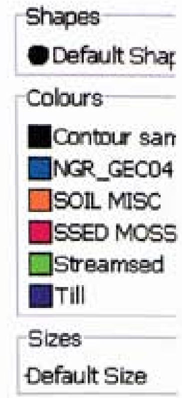
Ag data confirmed to be faulty for this group,
and has been edited to correct the problem (ppb in ppm)

Map of Sb Outliers



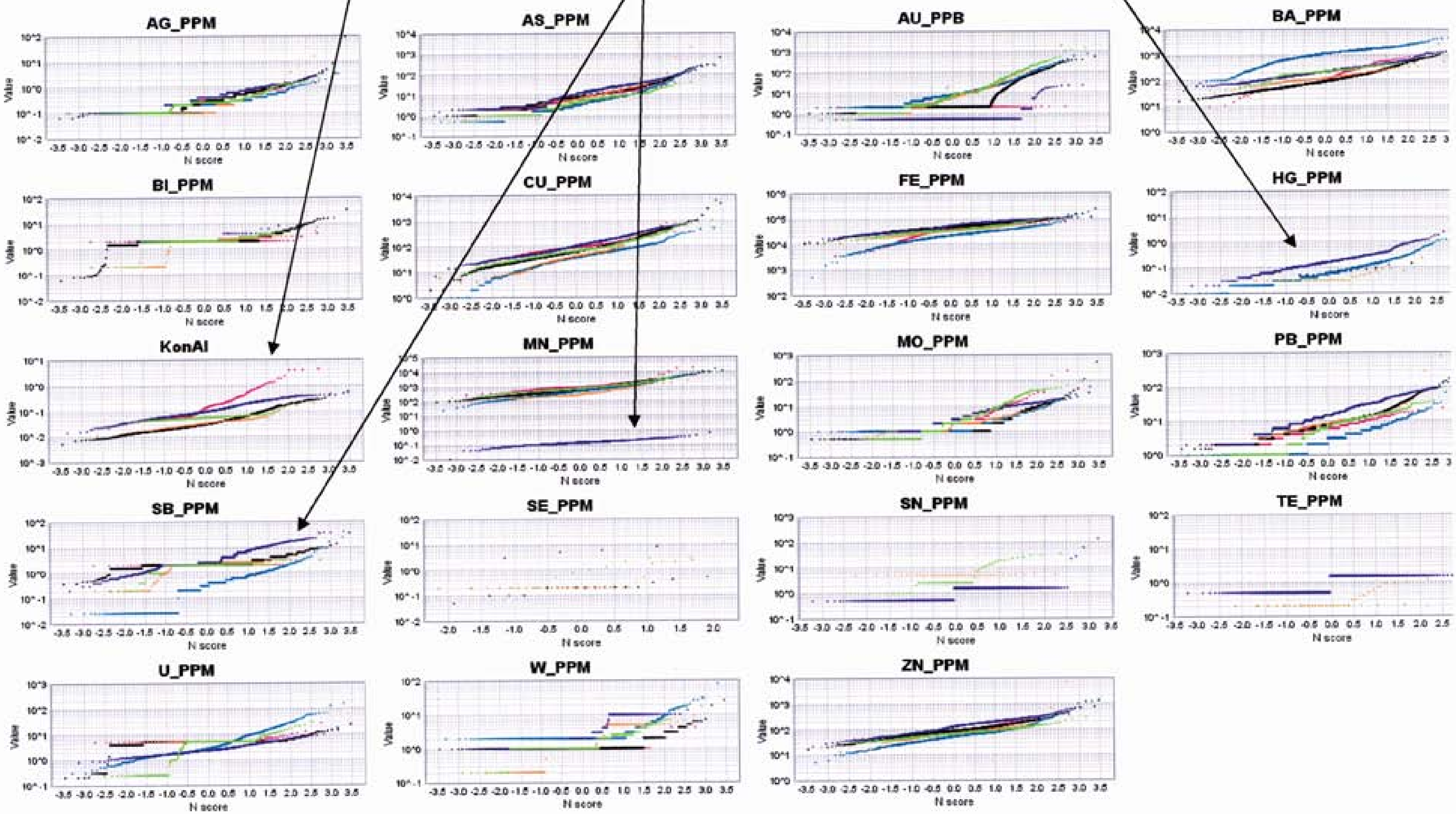
Sb highs do not belong to any particular group or spatial cluster. Probably real!

Regional Samples – updated Till



K or Al problem with moss samples

Problems with Till samples in Sb, Mn, perhaps Hg too



Regional Data - Updated Till Data Included..

- Some of the Al data appears to be former DL replacements e.g. 100 ppm values in amongst data with a minimum of 9900
- So high K/Al values should be checked before followup, particularly anything above a value of 1
- Mn values for Till seem implausible ie all <1, probably percent ppm mixup, all till Mn multiplied by 10000.

- Examples on the previous page of some problems

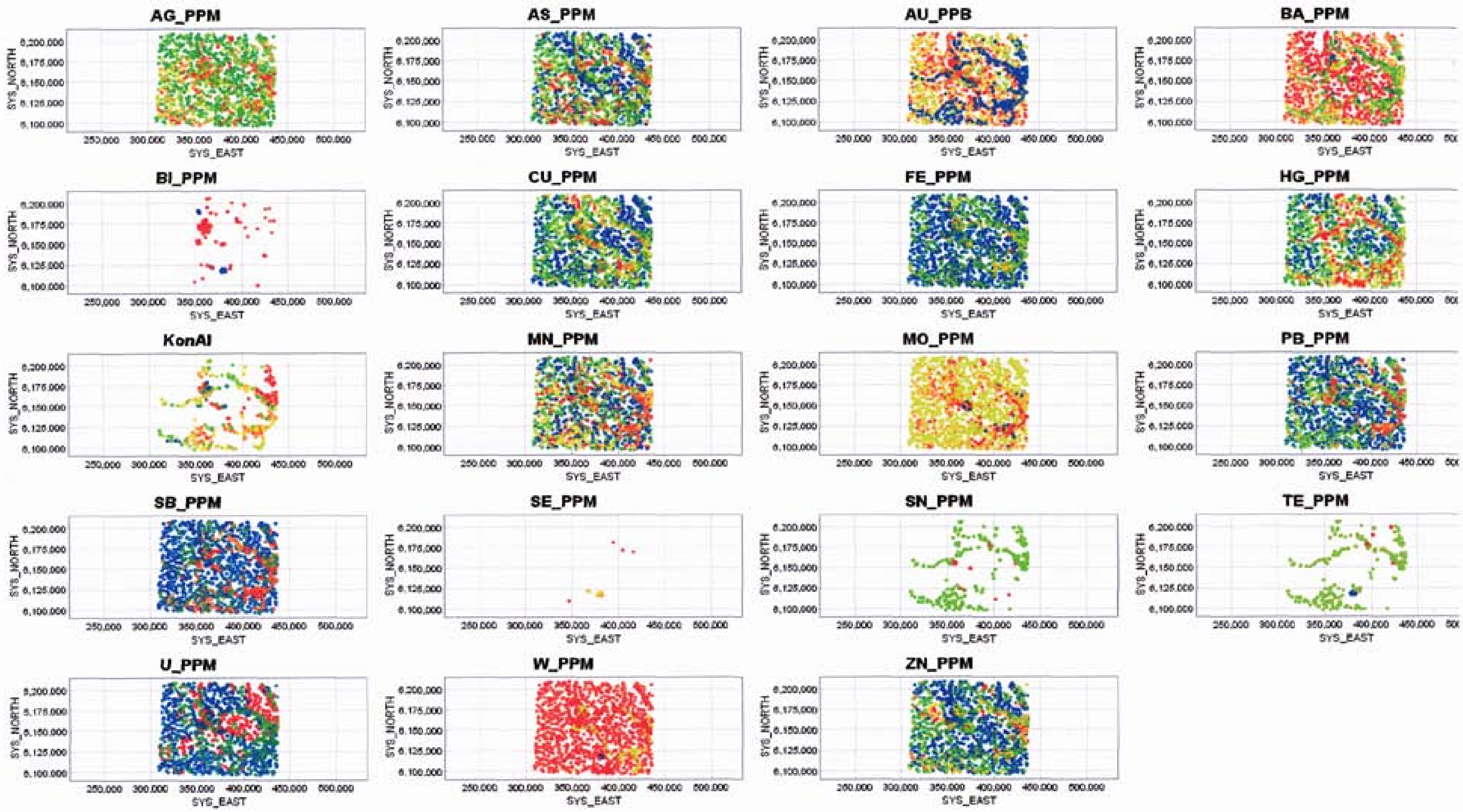
Shapes
- Default Shape

Colours
- Contour Soils
- NGR_GEC04
- SOIL MISC
- SSED MOSS
- Streamsed
- Till

Sizes
- Default Size

Regional Data – Updated Till

Till definitely looking different to other data in some elements (flick between this and the next slide to get a feel of the control) – levelling required if the data is to be looked at in one group



Shapes

- Default Shape

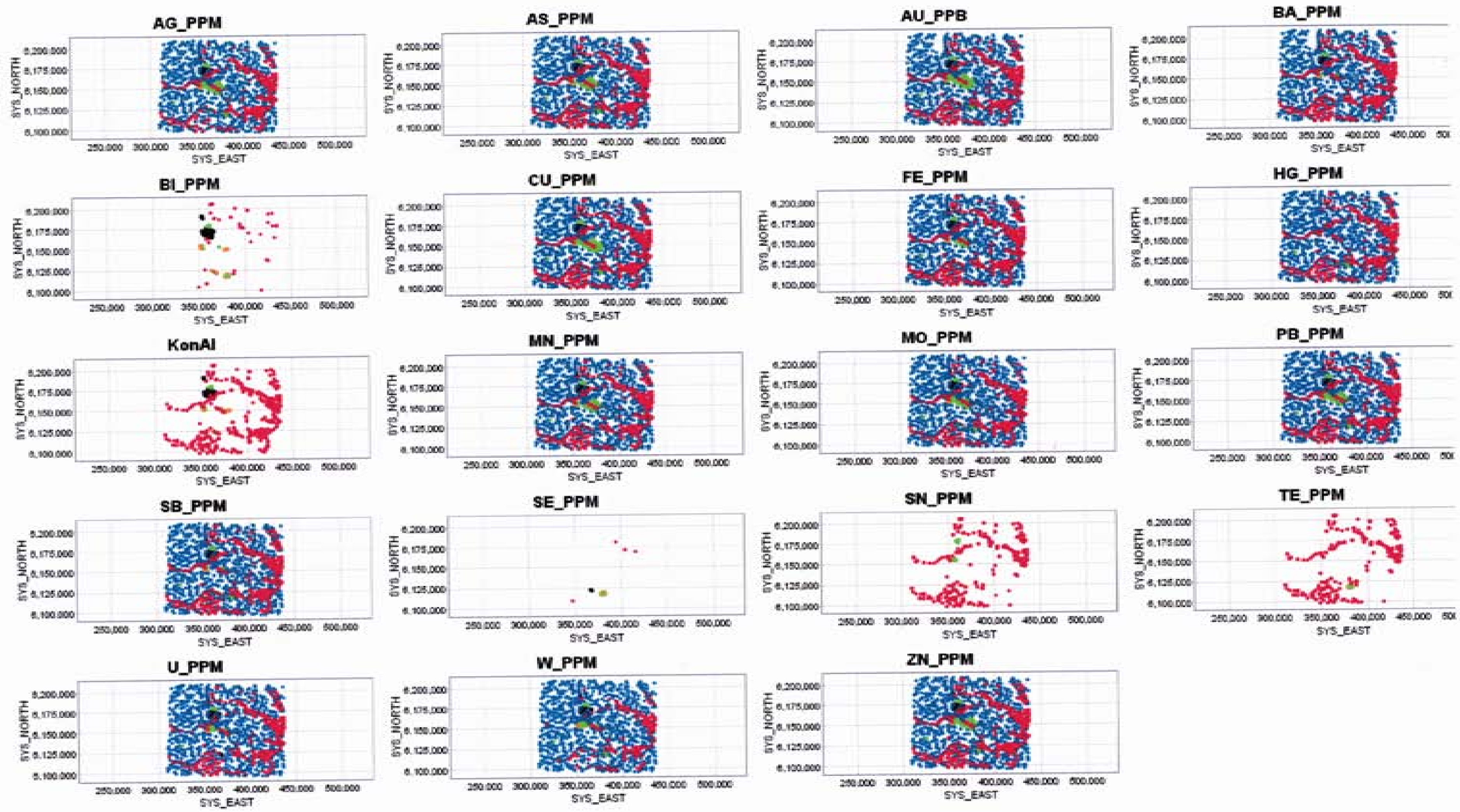
Colours

- Contour Soils
- NGR_GEC04
- SOIL MISC
- SSED MOSS
- Streamsed
- Till

Sizes

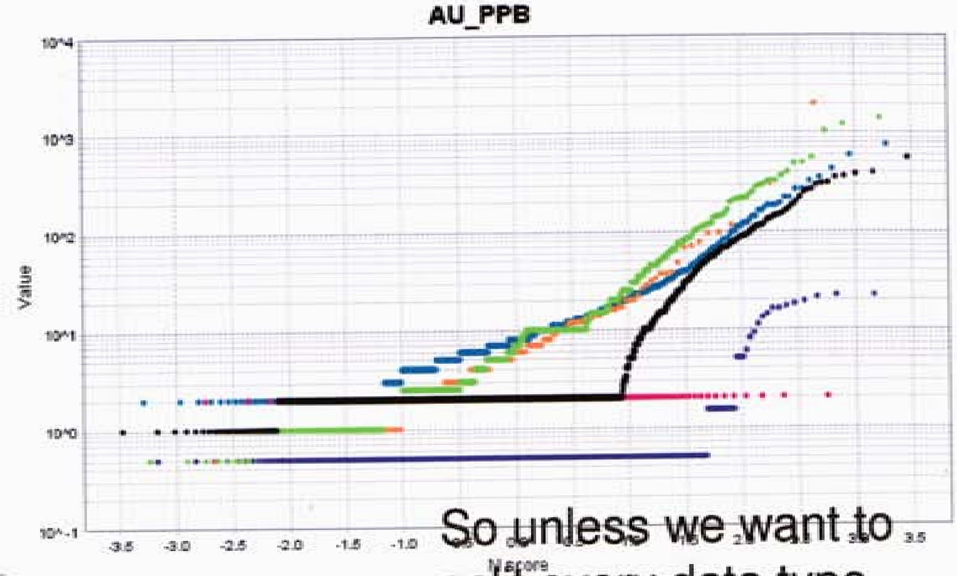
Default Size

Regional Data – Updated Till

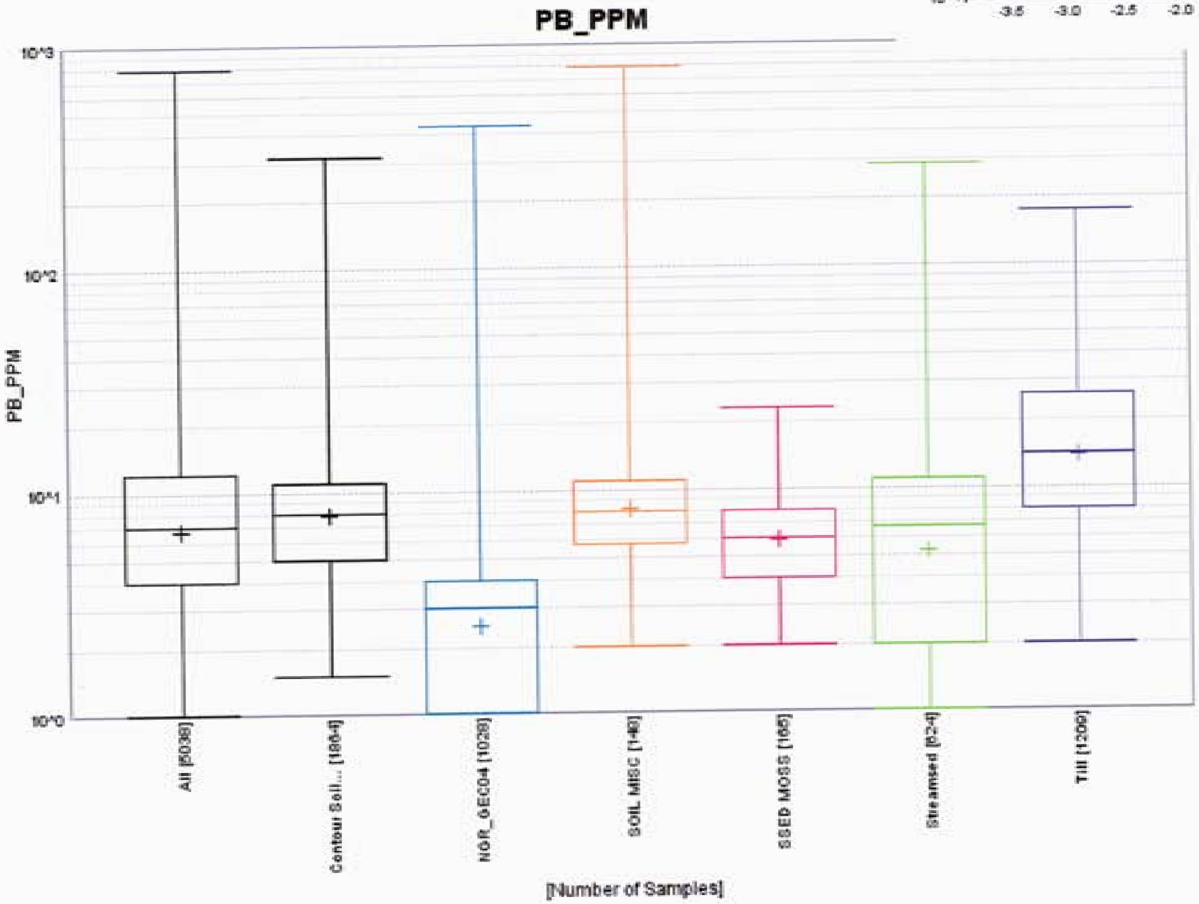


Regional Data

- In fact, some of the subgroups are very different anyway..



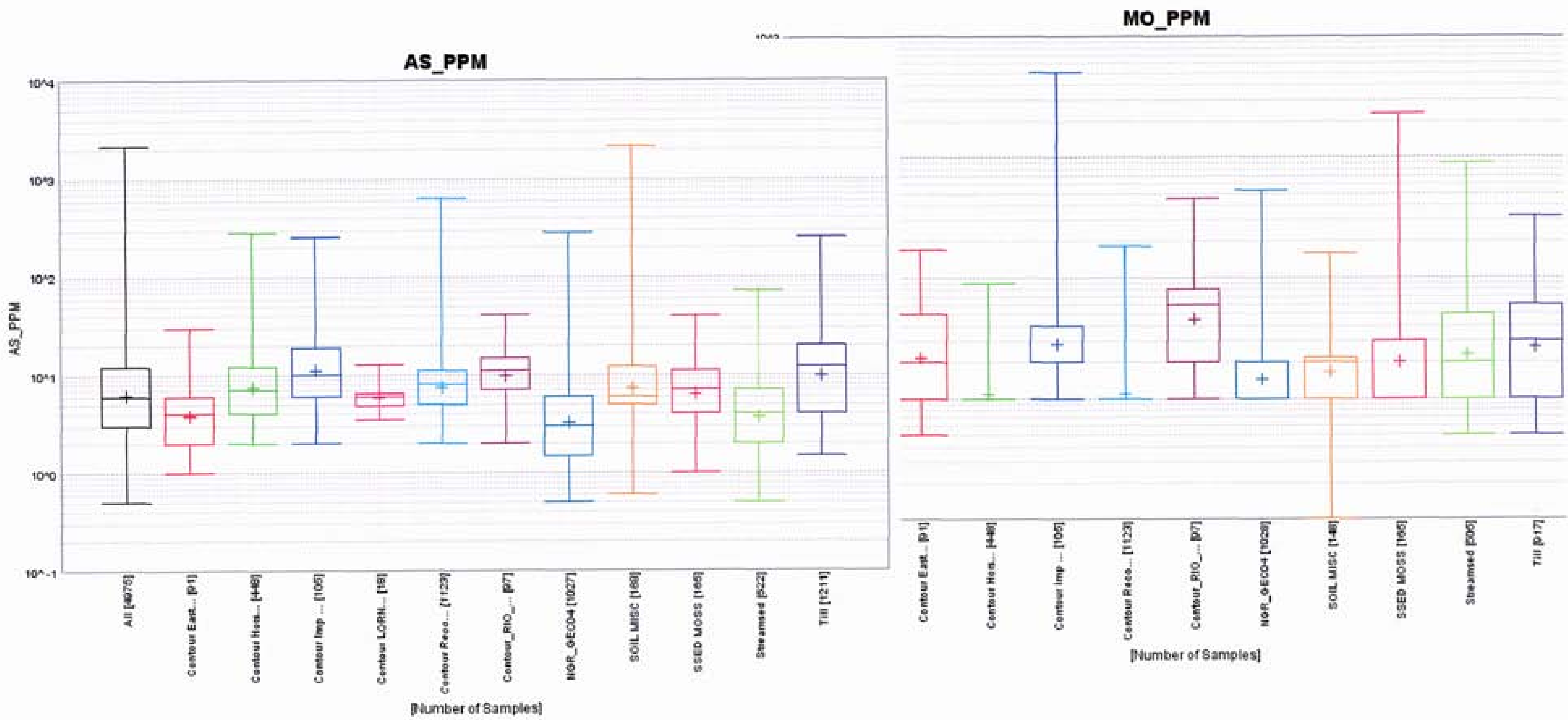
So unless we want to split every data type in the 'regional' data and look at it separately…



Perhaps it is better to do a Log Z-score level of each source (including the various Contour sources) and then plot the levelled data

Regional Samples

- The distributions below show why the contour sample sources, need to be considered when levelling, as they have different data distributions… however these variations could be due to spatial differences and therefore may contain the information we are looking for!
- Possible problems with Z-Score levelling using the contour subgroups are downplay of large anomalies and enhancements of variation in some data sets which probably don't contain 'true' anomalism
- If nervous, use hard cutoffs for each sample type and look at those samples (might do that for Au, As, Cu, Mo, Zn)



Regional Samples - Levelling

- BUT, the sample type column can be used to level the data too, with less chance of local effects being exacerbated e.g. contour soils belonging to different areas will all be in the one code
- So it is similar to the regional subset codes e.g. splitting regional BC data from stream sediment collected by a different source
- Therefore, will level to sample type using <u>Log Z-score, and Percentile</u>

- 'Hard' cut-offs are still recommended to compare to the levelled data, to ensure no real anomalies have been removed.. However time constraints make this impossible. Thus percentile levels are available, for each group to ensure that top ranked samples from each group show up.

- 20 LZS (Log Z-score) levelled variables have had percentile thematics produced
- Only a small selection of the PL (percentile levelled) variables have been themed into Mapinfo from gas
- Be wary of the Sb data for Tills!! Looks a bit high…

Regional Sample RGBs – Carried out on Log Z-score Levelled (to Sample Type: LZSL-ST) Variables

- RGBs created for CuMoAs, CuMoAu, AsMoAu at the 95^{th} Percentile
- Mo is the limiting element in most cases
- Legends accompany each table (useful for interpreting RGB symbols)

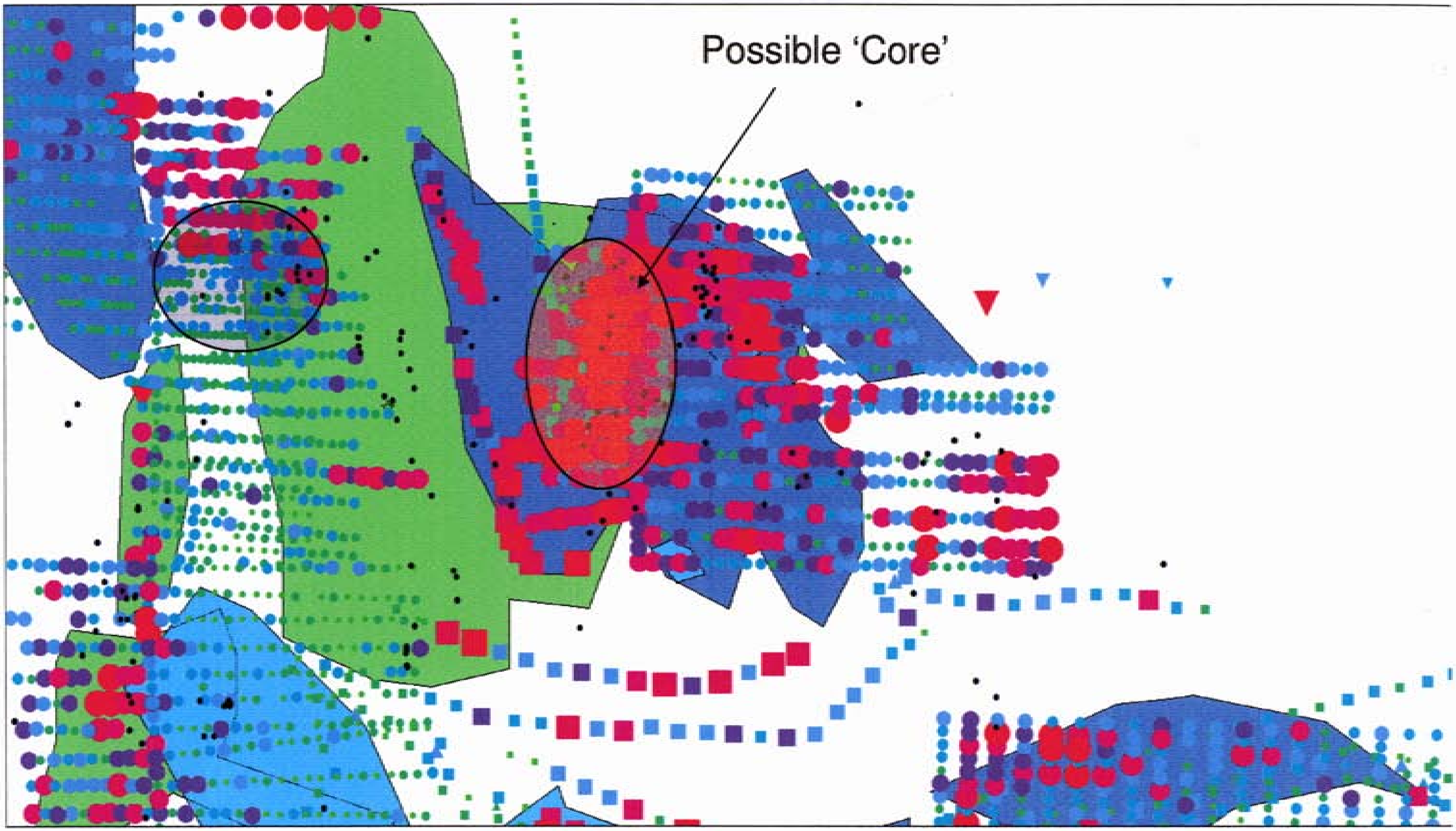
Interpretation Suggestions

- Use individual elements first, and highlight local 'coherent' anomalies. I use 'local' because the strength of the anomalism within the bulk data may not be in the highest percentiles
- The regional subset seems quite effective at showing consistent coherent anomalies, probably because much of it is stream sediments – giving nice dispersion trains down drainage (no attempt has been made here to indicate follow-up directions etc etc).
- With any luck, grid-soil, regional and rock samples will consistently indicate spatially coherent univariate anomalies
- Create polygons for these coherent univariate anomalies e.g. Cu, Mo, As in the example (this takes forever! But you must be rigorous). Record notes on element anomaly strength, size, rank etc.
- It helps to look at non-nugget elements for this, and overlay nuggety elements later
- The grid images are useful for delineating polygons where coverage exists, otherwise use the combination of data sources e.g. have 3 percentile layer thematics open
- Superimpose 'core' indicators such as percentiles of K/Al, Ag/Au, Au on top of these and look for central areas of porphyry systems
- Also use RGB coverage (where it is available) to confirm coincident anomalism.. Unfortunately, it's coverage is quite restrictive in most of the subsets

- NOTE: the example interpretative layers supplied for Cu, Mo, As were produced in a couple of hours… not very rigorous, more to give an indication of how anomalies can be generated and the various layers of information incorporated

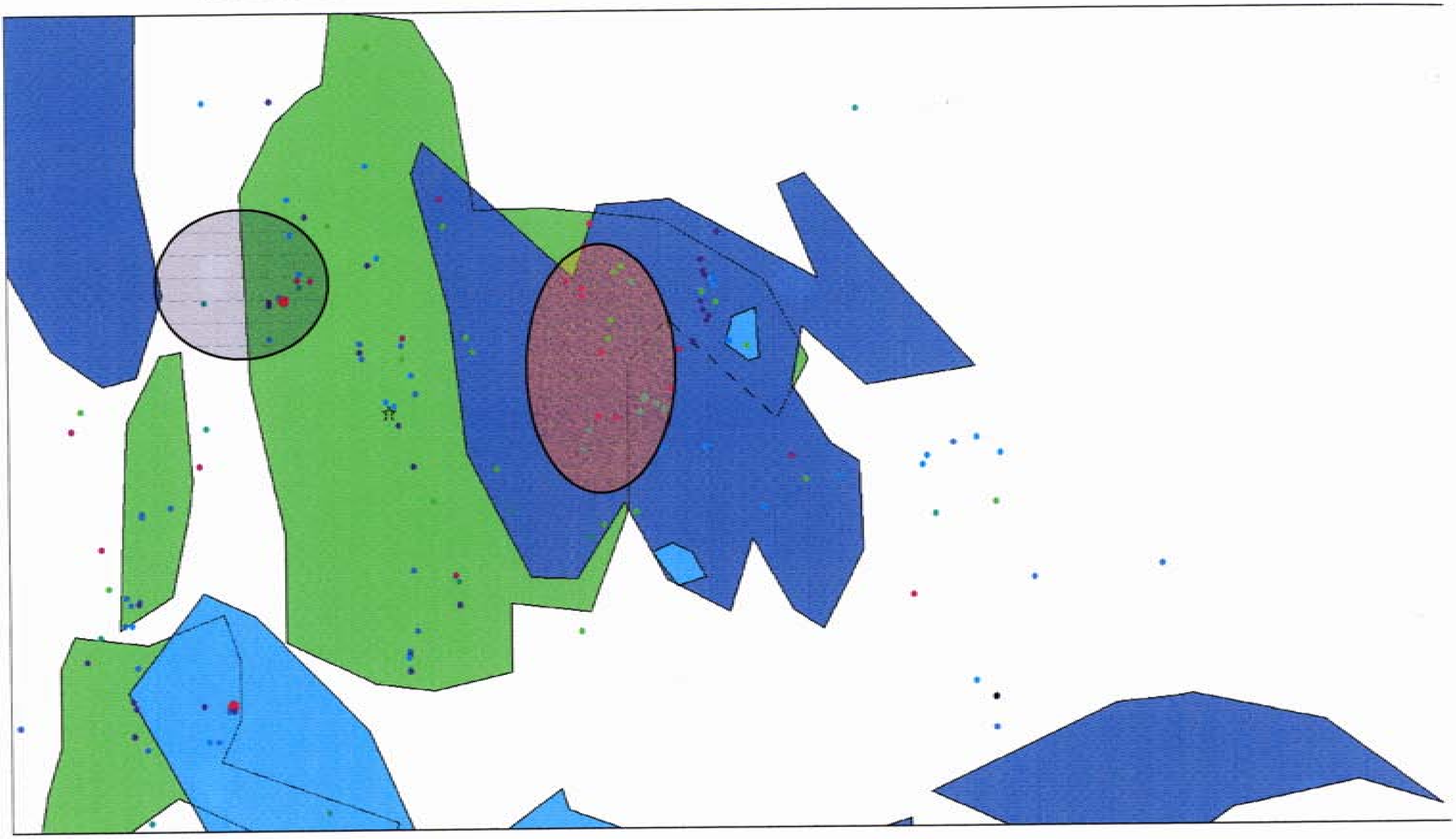
Example interp layering

Green = Cu, Blue = Mo, Teal = As, theme is K/Al for rock, grid and regional subsets



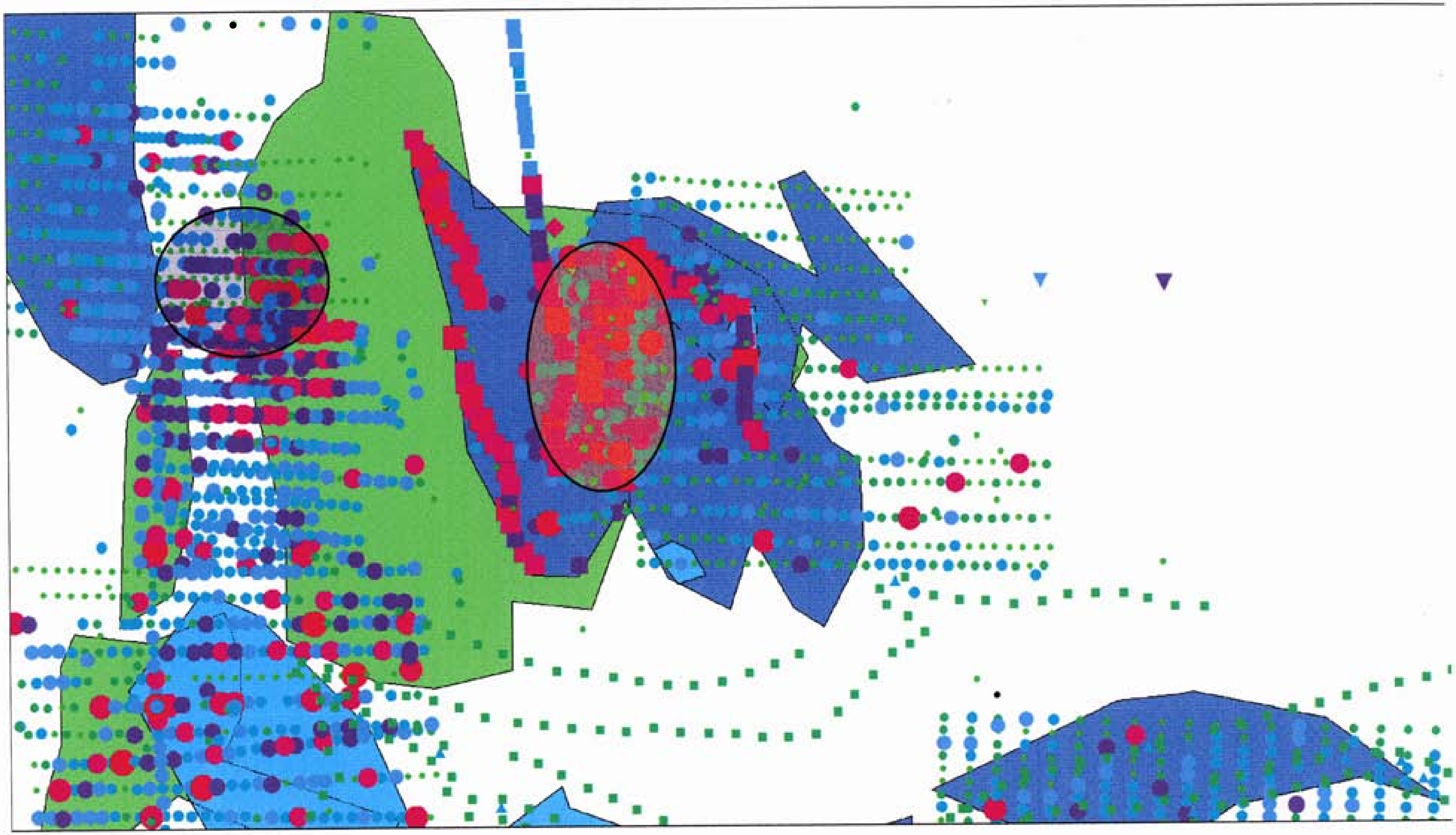
Example interp layering

Green = Cu, Blue = Mo, Teal = As, theme is Ag/Au (inverted colours) for rocks



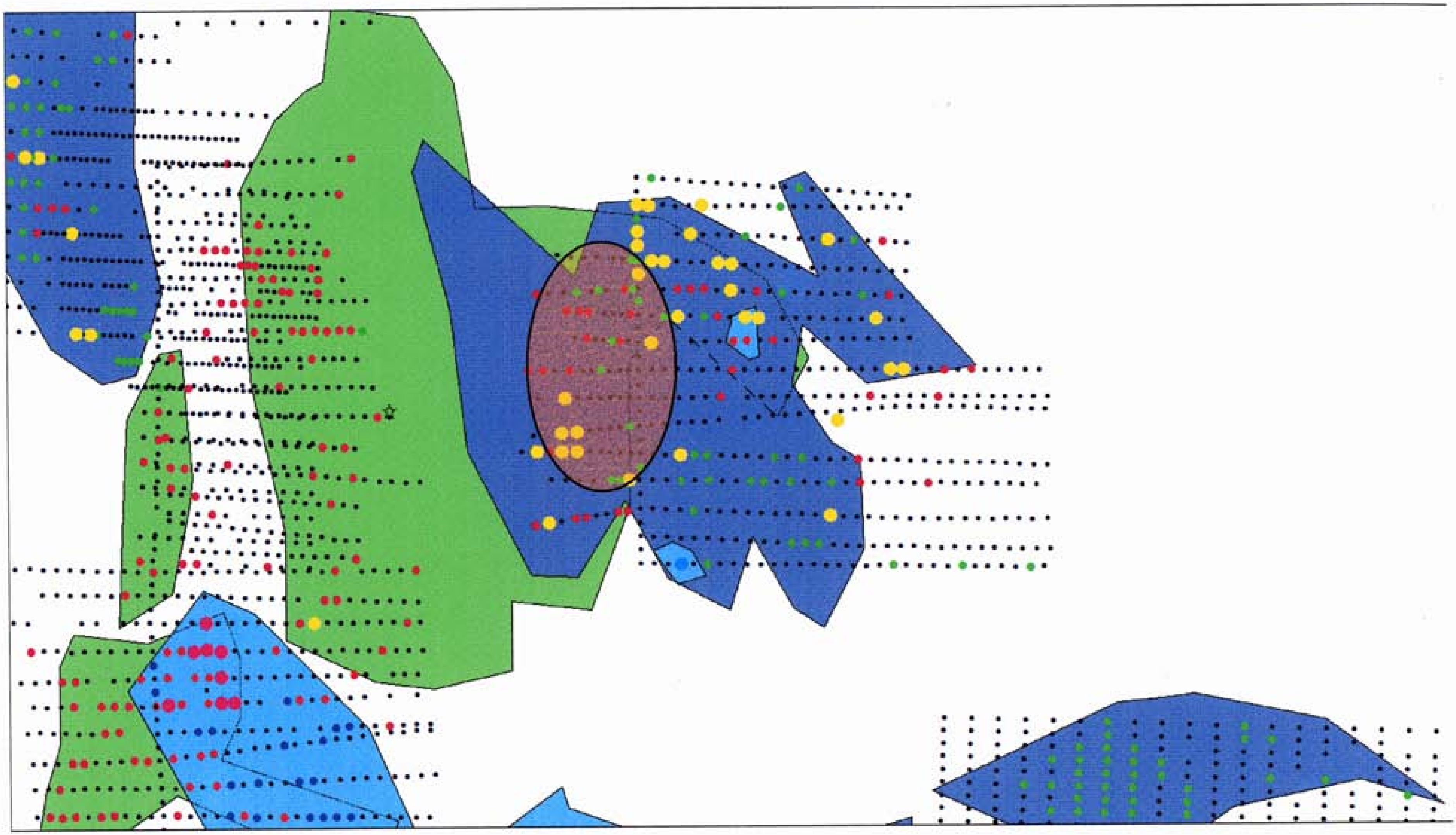
Example interp layering

Green = Cu, Blue = Mo, Teal = As, theme is Au for rocks, grid-soils and regional subsets



Example interp layering

Green = Cu, Blue = Mo, Teal = As, theme GRID CuMoAs RGB

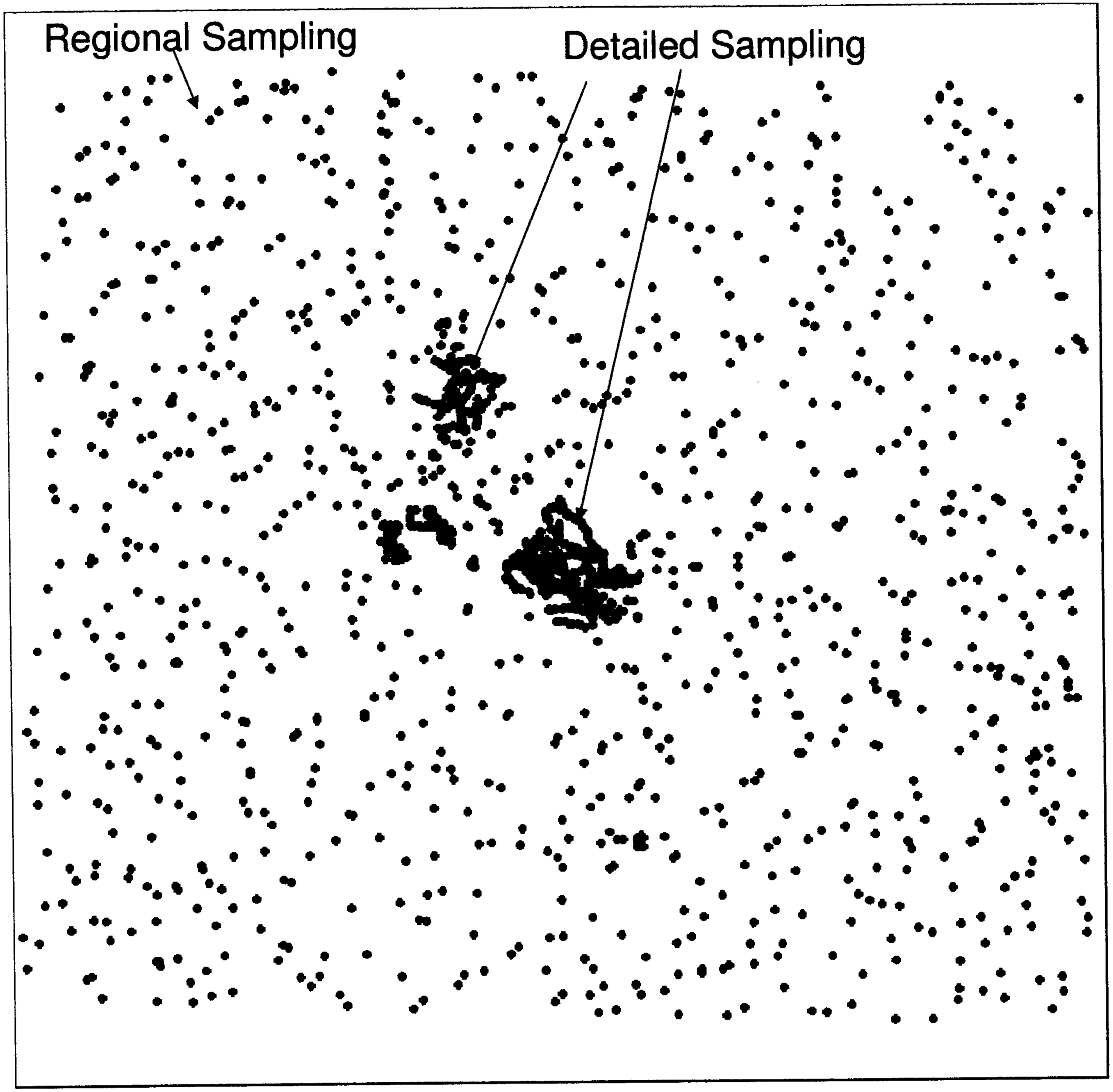


Catchment Generation/Analysis

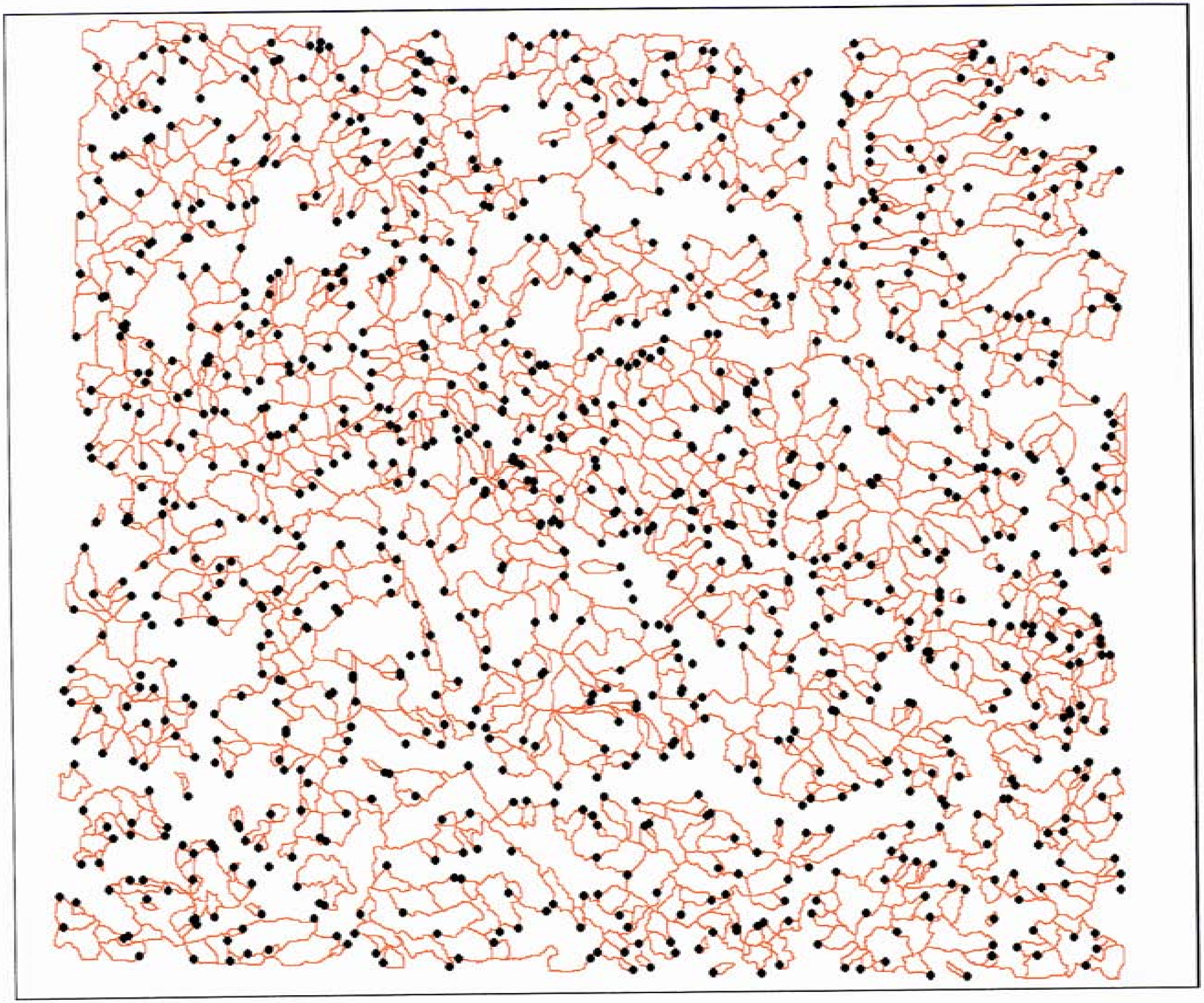
- Drainage Lines generated using topo grid supplied by GEX
- SSEDs separated from the regional subset
- Of these, many are detailed SSED sampled at close spacing in distinct areas of the area – looking at follow up or definitely chasing a local source
- So the 'detailed' SSED samples have been split from the regional SSEDs, only the regional SSEDs are considered in this part of the project (this could be done using a code in one of the metadata columns, so regional samples in areas with detailed coverage can still be extracted)
- Moss samples have been excluded

Catchment Generation/Analysis

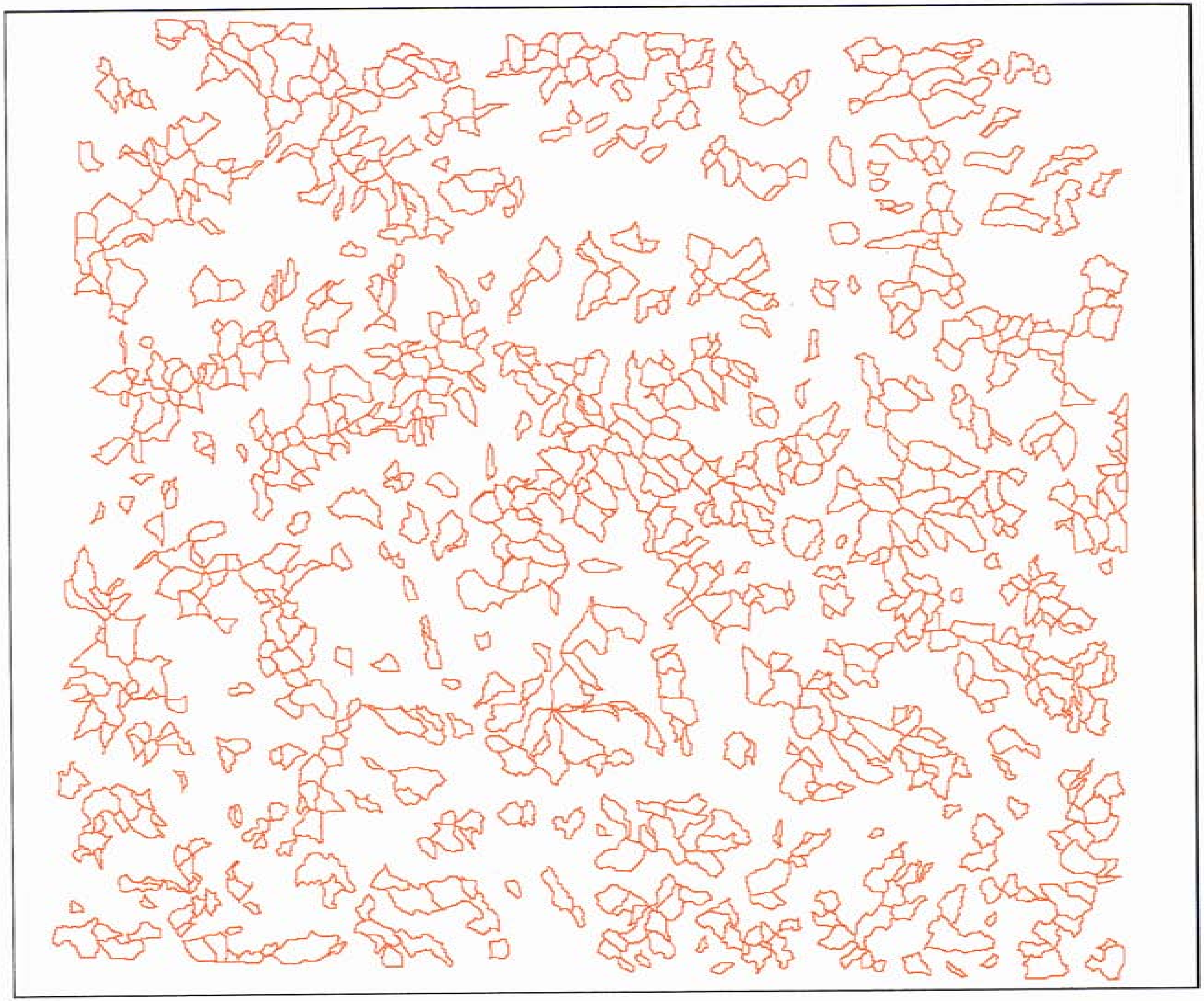
- The regional stream sediment (SSED) subset has been removed from the rest of the regional dataset and used to generate catchments for each sample
- Note, that samples which did not lie on a recognisable drainage line were ignored (there were about 30 or so of these, out of ~1000 samples)
- Due to time constraints, a full catchment analysis, including calculation of abundances taking into account catchment size and anomaly stregth, was not carried out
- Instead, only samples with catchment areas of 20 square km have been selected and then a thematic applied **(815 samples out of 993)**
- Note that anomalies in catchments which are much larger are probably sourcing something local, and should definitely be followed up…
- The 20sqkm thematic subset is meant to provide a rapid assessment of element abundances in those samples which should source similar area sizes
- It can also demonstrate whether any areas have not been sampled with a low enough order sample
- Some samples that were excluded sample half of the map area!


Regional Sampling
Detailed Sampling

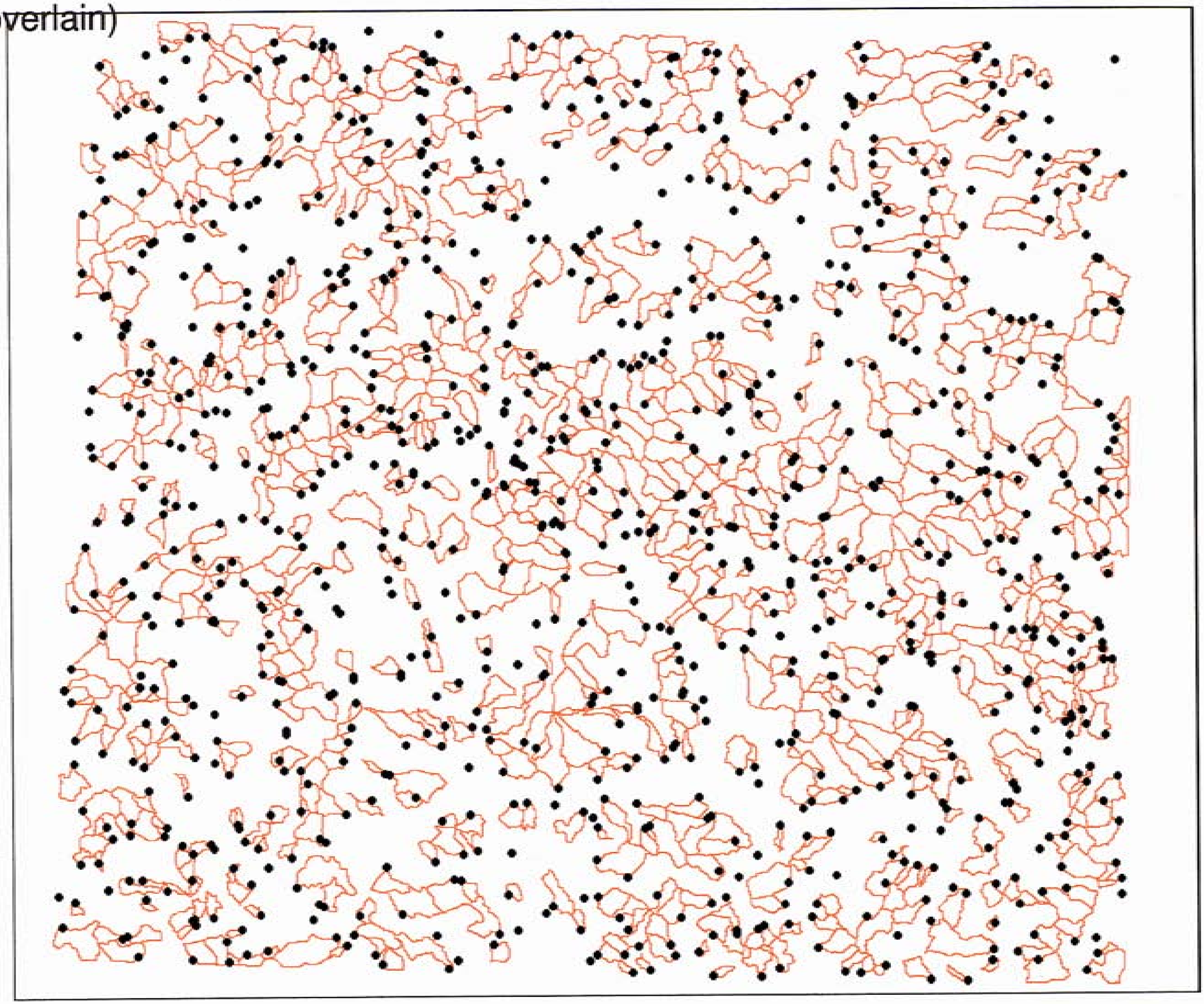
Catchments generated for regional SSED samples



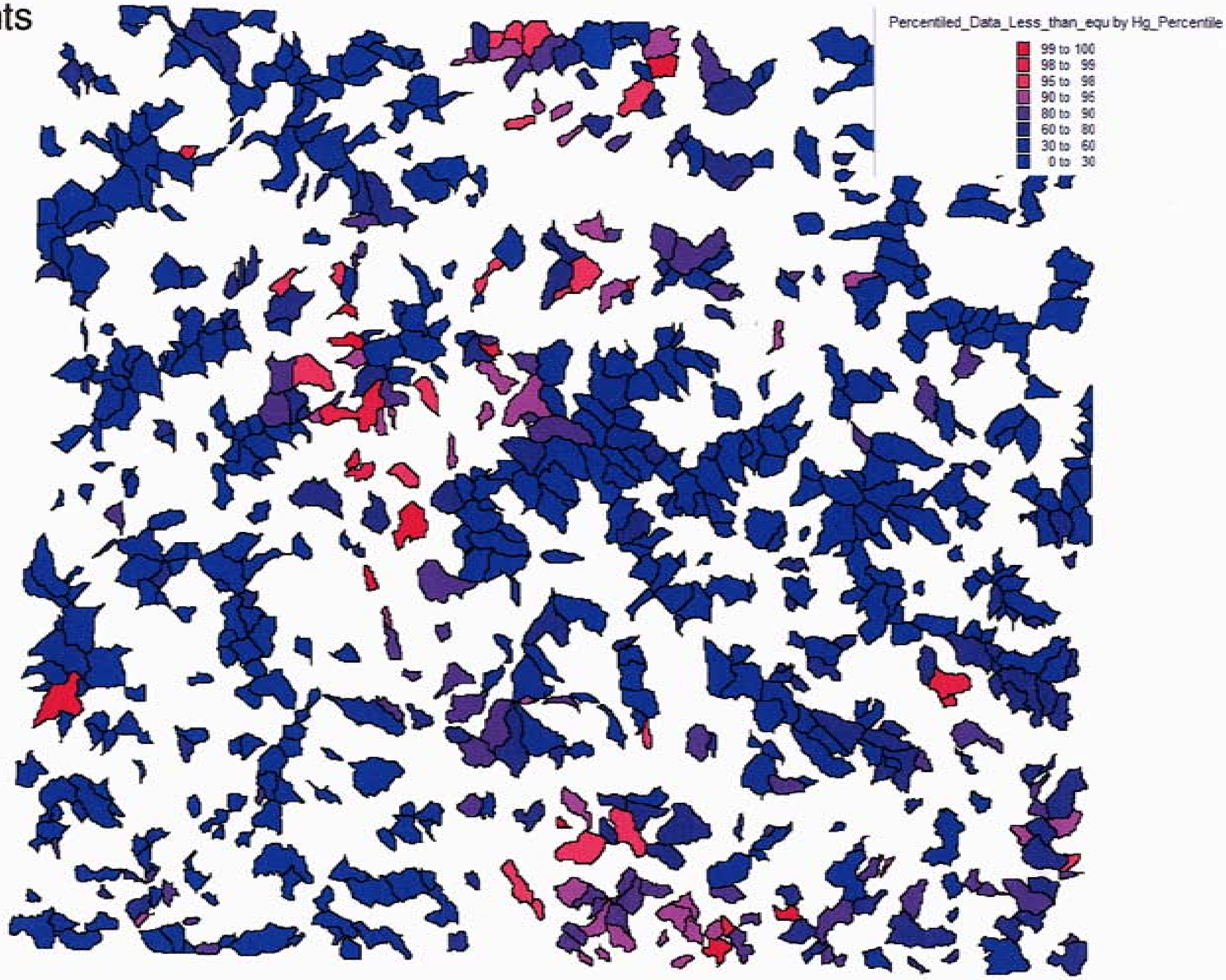
20sqkm subset of regional SSED data



20sqkm subset of regional SSED data (shown as polygon catchments – with initial data overlain)



Example of Themed Percentile Abundance for Hg – coloured into the catchment it represents



Catchment Analysis

- Remember that the catchments can overlap
- It is possible to select those polygons with percentiles above a certain level if you wish to focus on paticular values
- Some published equations exist that allow modified abundances to be calculated based on catchment area and anticipated anomaly source size and values
- Delivered as a workspace with thematics, and as individual layers hard coloured

TAKLA - REDTON PROJECT

2005 ASSESSMENT REPORT

Appendix 8

Redton Project Drill Hole Database

Collar File Extract

GEOINFOBANK_REDTON_DHCOLLAR

PROJ_CODE	DATASET	HOLE_ID	HOLE_TYPE	HOLE_SIZE	LIBRARY_NO	SOURCE_DOC_NO	ORIG_GRID_ID	ORIG_EAST	ORIG_NORTH	ORIG_GRID_UNIT	ORIG_RL	ORIG_GRID_ID2	ORIG_EAST2	ORIG_NORTH2	ORIG_GRID_UNIT2	CAPTURE_METHOD	CAPTURED_BY	CAPTURE_ACC	SYS_GRID_ID	SYS_EAST	SYS_NORTH	SYS_RL	ORIG_DEPTH	ORIG_DEPTH_UNIT	ORIG_DEPTH_M	MAX_DEPTH_M	DATE_COMMENCED	DATE_COMPLETED	PROPERTY_NAME	PROPERTY_OWNER	PROPERTY_OPERATOR	GEOLOGIST	COLLAR_AZIMUTH	COLLAR_DIP	NOTES
GEC010	BIRCH_MOUNTAIN_1996	EA_96_01	DD	NQ-2	L3916	ARIS_24871	NAD83_UTM_10	379773.64	6118858.61	m	970.43					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	379773.64	6118858.61	970.43	294.97	m	294.97	294.97	18/09/1996	22/09/1996	Eagle	Birch Mountain Resources	Birch Mountain Resources	Simon X. Fan	42	-46	
GEC010	BIRCH_MOUNTAIN_1996	EA_96_02	DD	NQ-2	L3916	ARIS_24871	NAD83_UTM_10	379773.64	6118858.61	m	970.43					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	379773.64	6118858.61	970.43	398.37	m	398.37	398.37	23/09/1996	27/09/1996	Eagle	Birch Mountain Resources	Birch Mountain Resources	Simon X. Fan	42	-63	
GEC010	BIRCH_MOUNTAIN_1996	EA_96_03	DD	NQ-2	L3916	ARIS_24871	NAD83_UTM_10	381211.2	6116892.17	m	1362.85					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	381211.2	6116892.17	1362.85	300.84	m	300.84	300.84	23/09/1996	27/09/1996	Eagle	Birch Mountain Resources	Birch Mountain Resources	Simon X. Fan	42	-45	
GEC010	BIRCH_MOUNTAIN_1996	EA_96_04	DD	NQ-2	L3916	ARIS_24871	NAD83_UTM_10	381211.2	6116892.17	m	1362.85					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	381211.2	6116892.17	1362.85	349.61	m	349.61	349.61	1/10/1996	3/10/1996	Eagle	Birch Mountain Resources	Birch Mountain Resources	Daniel A. Beauchamp	42	-65	
GEC010	BIRCH_MOUNTAIN_1996	EA_96_05	DD	NQ-2	L3916	ARIS_24871	NAD83_UTM_10	381297.82	6116833.45	m	1385.05					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	381297.82	6116833.45	1385.05	197.21	m	197.21	197.21	3/10/1996	6/10/1996	Eagle	Birch Mountain Resources	Birch Mountain Resources	Daniel A. Beauchamp	42	-45	
GEC010	BIRCH_MOUNTAIN_1996	EA_96_06	DD	NQ-2	L3916	ARIS_24871	NAD83_UTM_10	381297.82	6116833.45	m	1385.05					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	381297.82	6116833.45	1385.05	279.79	m	279.79	279.79		8/10/1996	Eagle	Birch Mountain Resources	Birch Mountain Resources	Daniel A. Beauchamp	42	-65	
GEC010	IMPERIAL_METALS_1987	TRS87_1	DD	BQ	L3916	ARIS_16759	NAD27_UTM_10	356066.91	6168118.43	m	1788.98					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355962.6473	6168316.807	1788.98	144.78	m	144.78	144.78	13/07/1987	17/07/1987	Takla-Rainbow	Cathedral Gold	Imperial Metals	R. Pesalj	55	-55	
GEC010	IMPERIAL_METALS_1987	TRS87_2	DD	BQ	L3916	ARIS_16759	NAD27_UTM_10	356196.44	6168193.41	m	1714.55					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	356099.1573	6168395.201	1714.55	174.65	m	174.65	174.65	18/07/1987	21/07/1987	Takla-Rainbow	Cathedral Gold	Imperial Metals	R. Pesalj	55	-45	
GEC010	IMPERIAL_METALS_1987	TRS87_3	DD	BQ	L3916	ARIS_16759	NAD27_UTM_10	356192.67	6168191.15	m	1719.09					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	356088.4129	6168389.532	1719.09	192.63	m	192.63	192.63	21/07/1987	26/07/1987	Takla-Rainbow	Cathedral Gold	Imperial Metals	R. Pesalj	235	-45	
GEC010	IMPERIAL_METALS_1987	TRS87_4	DD	BQ	L3916	ARIS_16759	NAD27_UTM_10	356348.01	6168220.56	m	1662.64					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	356252.3486	6168424.225	1662.64	122.53	m	122.53	122.53	27/07/1987	2/08/1987	Takla-Rainbow	Cathedral Gold	Imperial Metals	R. Pesalj	55	-45	
GEC010	CATHEDRAL_GOLD_85	DDH001	DD	BQ	L3916	ARIS_14103	TRW	300	1250	m	1606.98	NAD27_UTM_10	354987.84	6170780.53	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354894.5796	6171001.421	1606.98	76.81	m	76.81	76.81	16/09/1985	17/09/1985	Takla-Rainbow	Cathedral Gold	Imperial Metals	R. Pesalj	360	-45	
GEC010	CATHEDRAL_GOLD_85	DDH002	DD	BQ	L3916	ARIS_14103	TRW	300	1200	m	1617.21	NAD27_UTM_10	354986.91	6170730.91	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354894.7527	6170946.612	1617.21	78.33	m	78.33	78.33	18/09/1985	19/09/1985	Takla-Rainbow	Cathedral Gold	Imperial Metals	R. Pesalj	360	-45	
GEC010	CATHEDRAL_GOLD_85	DDH003	DD	BQ	L3916	ARIS_14103	TRW	500	1000	m	1596.29	NAD27_UTM_10	355382.88	6170387.4	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355289.6627	6170590.284	1596.29	79.86	m	79.86	79.86	19/09/1985	20/09/1985	Takla-Rainbow	Cathedral Gold	Imperial Metals	R. Pesalj	360	-45	
GEC010	CATHEDRAL_GOLD_85	DDH004	DD	BQ	L3916	ARIS_14103	TRW	700	850	m	1651.05	NAD27_UTM_10	355184.44	6170535	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355091.2182	6170737.894	1651.05	76.81	m	76.81	76.81	20/09/1985	21/09/1985	Takla-Rainbow	Cathedral Gold	Imperial Metals	R. Pesalj	360	-45	
GEC010	CATHEDRAL_GOLD_86	DDH005	DD	BQ	L3916	ARIS_15487	TRW	291	923	m	1620.91	NAD27_UTM_10	355018.71	6170701.18	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354925.4933	6170904.06	1620.91	118.26	m	118.26	118.26	30/07/1986	2/08/1986	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_86	DDH006	DD	BQ	L3916	ARIS_15487	TRW	387	912	m	1639.9	NAD27_UTM_10	355076	6170622.59	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354982.7689	6170825.466	1639.9	96.93	m	96.93	96.93	2/08/1986	4/08/1986	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_86	DDH007	DD	BQ	L3916	ARIS_15487	TRW	576	924	m	1648.75	NAD27_UTM_10	355221.48	6170494.29	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355128.2586	6170697.182	1648.75	81.69	m	81.69	81.69	5/08/1986	7/08/1986	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_86	DDH008	DD	BQ	L3916	ARIS_15487	TRW	669	938	m	1628.85	NAD27_UTM_10	355296.3	6170437.74	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355203.0814	6170640.634	1628.85	117.35	m	117.35	117.35	8/08/1986	10/08/1986	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_86	DDH009	DD	BQ	L3916	ARIS_15487	TRW	737	941	m	1608.85	NAD27_UTM_10	355345.21	6170393	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355251.9792	6170595.893	1608.85	115.21	m	115.21	115.21	10/08/1986	13/08/1986	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_86	DDH010	DD	BQ	L3916	ARIS_15487	TRW	816	955	m	1575.51	NAD27_UTM_10	355411.59	6170346.22	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355318.3748	6170549.113	1575.51	99.91	m	99.91	99.91	10/08/1986	17/08/1986	Takla-Rainbow	Imperial Metals	Imperial Metals	D. Gorc	45	-55	
GEC010	CATHEDRAL_GOLD_86	DDH011	DD	BQ	L3916	ARIS_15487	TRW	147	924	m	1617.43	NAD27_UTM_10	354919.81	6170802.36	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354826.5926	6171005.24	1617.43	117.65	m	117.65	117.65	17/08/1986	20/08/1986	Takla-Rainbow	Imperial Metals	Imperial Metals	D. Gorc	45	-55	
GEC010	CATHEDRAL_GOLD_86	DDH012	DD	BQ	L3916	ARIS_15487	TRW	196	902	m	1618.68	NAD27_UTM_10	354936.45	6170753.61	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354843.2327	6170956.49	1618.68	191.41	m	191.41	191.41	21/08/1986	25/08/1986	Takla-Rainbow	Imperial Metals	Imperial Metals	D. Gorc	45	-55	
GEC010	CATHEDRAL_GOLD_86	DDH013	DD	BQ	L3916	ARIS_15487	TRW	292	973	m	1608.74	NAD27_UTM_10	355056.36	6170734.95	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354963.1438	6170937.833	1608.74	121.31	m	121.31	121.31	26/08/1986	29/08/1986	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_86	DDH014	DD	BQ	L3916	ARIS_15487	TRW	725	15	m	1603.69	NAD27_UTM_10	355393.2	6170451.97	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355299.9783	6170654.861	1603.69	167.03	m	167.03	167.03	29/08/1986	3/09/1986	Takla-Rainbow	Imperial Metals	Imperial Metals	D. Gorc	225	-55	
GEC010	CATHEDRAL_GOLD_86	DDH015	DD	BQ	L3916	ARIS_15487	TRW	386	-38	m	1619.33	NAD27_UTM_10	355113.75	6170659.27	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355020.5184	6170862.149	1619.33	124.97	m	124.97	124.97	19/09/1986	20/09/1986	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_86	DDH016	DD	BQ	L3916	ARIS_15487	TRW	484	40	m	1608.83	NAD27_UTM_10	355242.5	6170643.23	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355149.2772	6170846.112	1608.83	154.84	m	154.84	154.84	20/09/1986	23/09/1986	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	225	-48	
GEC010	CATHEDRAL_GOLD_86	DDH017	DD	BQ	L3916	ARIS_15487	TRW	574	51	m	1606.35	NAD27_UTM_10	355312.85	6170583.92	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355219.6308	6170786.794	1606.35	133.81	m	133.81	133.81	25/09/1986	27/09/1986	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	225	-55	
GEC010	CATHEDRAL_GOLD_86	DDH018	DD	BQ	L3916	ARIS_15487	TRW	675	79	m	1593.88	NAD27_UTM_10	355403.92	6170532.65	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355310.6979	6170735.535	1593.88	107.89	m	107.89	107.89	27/09/1986	29/09/1986	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	225	-50	
GEC010	CATHEDRAL_GOLD_87	DDH019	DD	BQ	L3916	ARIS_16759	TRW	920	910	m	1536.08	NAD27_UTM_10	355455.59	6170239.18	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355362.3746	6170442.064	1536.08	262.13	m	262.13	262.13	17/08/1987	20/08/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_87	DDH020	DD	BQ	L3916	ARIS_16759	TRW	246	942	m	1613.98	NAD27_UTM_10	354991.59	6170742.25	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354898.3727	6170945.132	1613.98	181.97	m	181.97	181.97	20/08/1987	22/08/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_87	DDH021	DD	BQ	L3916	ARIS_16759	TRW	246	892	m	1621.78	NAD27_UTM_10	354965.18	6170716.87	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354871.9612	6170919.747	1621.78	224.64	m	224.64	224.64	22/08/1987	24/08/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_87	DDH022	DD	BQ	L3916	ARIS_16759	TRW	291	873	m	1635.53	NAD27_UTM_10	354986.9	6170667.22	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354893.6808	6170870.097	1635.53	252.07	m	252.07	252.07	22/08/1987	26/08/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_87	DDH023	DD	BQ	L3916	ARIS_16759	TRW	920	909	m	1536.08	NAD27_UTM_10	355455.59	6170239.18	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355362.3746	6170442.064	1536.08	242.62	m	242.62	242.62	29/08/1987	31/08/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	225	-50	
GEC010	CATHEDRAL_GOLD_87	DDH024	DD	BQ	L3916	ARIS_16759	TRW	340	932	m	1624.76	NAD27_UTM_10	355054.9	6170669.3	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354961.6843	6170872.177	1624.76	181.97	m	181.97	181.97	31/08/1987	2/09/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_87	DDH025	DD	BQ	L3916	ARIS_16759	TRW	340	882	m	1636.1	NAD27_UTM_10	355022.44	6170637.54	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354929.2204	6170840.423	1636.1	254.81	m	254.81	254.81	2/09/1987	5/09/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_87	DDH026	DD	BQ	L3916	ARIS_16759	TRW	387	865	m	1658.91	NAD27_UTM_10	355041.26	6170588.72	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354948.0374	6170791.603	1658.91	50.9	m	50.9	50.9	5/09/1987	7/09/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_87	DDH026A	DD	BQ	L3916	ARIS_16759	TRW	387	865	m	1658.91	NAD27_UTM_10	355041.26	6170588.72	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354948.0374	6170791.603	1658.91	331.01	m	331.01	331.01	14/09/1987	18/09/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_87	DDH027	DD	BQ	L3916	ARIS_16759	TRW	440	895	m	1656.06	NAD27_UTM_10	355105.06	6170574.16	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355011.8355	6170777.046	1656.06	258.17	m	258.17	258.17	7/09/1987	10/09/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_87	DDH028	DD	BQ	L3916	ARIS_16759	TRW	737	880	m	1605.73	NAD27_UTM_10	355302.97	6170352.17	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355209.7522	6170555.061	1605.73	221.59	m	221.59	221.59	10/09/1987	12/09/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	225	-50	
GEC010	CATHEDRAL_GOLD_87	DDH029	DD	BQ	L3916	ARIS_16759	TRW	440	945	m	1639.58	NAD27_UTM_10	355141.25	6170607.97	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355048.0347	6170810.849	1639.58	154.53	m	154.53	154.53	12/09/1987	14/09/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_87	DDH030	DD	BQ	L3916	ARIS_16759	TRW	535	890	m	1660.75	NAD27_UTM_10	355161.37	6170510.19	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355068.1546	6170713.079	1660.75	269.14	m	269.14	269.14	18/09/1987	21/09/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	D. Gorc	45	-55	
GEC010	CATHEDRAL_GOLD_87	DDH031	DD	BQ	L3916	ARIS_16759	TRW	816	855	m	1572.73	NAD27_UTM_10	355339.16	6170277.14	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355245.935	6170480.027	1572.73	268.83	m	268.83	268.83	21/09/1987	24/09/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	D. Gorc	45	-55	
GEC010	CATHEDRAL_GOLD_87	DDH032	DD	BQ	L3916	ARIS_16759	TRW	816	854	m	1569.74	NAD27_UTM_10	355334.55	6170269.6	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355241.3256	6170472.488	1569.74	228.6	m	228.6	228.6	26/09/1987	28/09/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	D. Gorc	225	-50	
GEC010	CATHEDRAL_GOLD_87	DDH033	DD	BQ	L3916	ARIS_16759	TRW	920	1000	m	1544.84	NAD27_UTM_10	355519	6170303.17	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355425.7769	6170506.061	1544.84	462.99	m	462.99	462.99	29/09/1987	3/10/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	D. Gorc	45	-55	
GEC010	CATHEDRAL_GOLD_87	DDH034	DD	BQ	L3916	ARIS_16759	TRW	340	882	m	1636.1	NAD27_UTM_10	355022.44	6170637.54	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354929.2204	6170840.423	1636.1	456.29	m	456.29	456.29	4/10/1987	11/10/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	D. Gorc/R. Pesalj	45	-70	
GEC010	CATHEDRAL_GOLD_87	DDH035	DD	BQ	L3916	ARIS_16759	TRW	1120	1005	m	1476.4	NAD27_UTM_10	355661.02	6170160.81	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355567.8033	6170363.7	1476.4	455.98	m	455.98	455.98	13/10/1987	19/10/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-55	
GEC010	CATHEDRAL_GOLD_87	DDH036	DD	BQ	L3916	ARIS_16759	TRW	1120	1005	m	1475.41	NAD27_UTM_10	355656.34	6170157.88	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355563.1197	6170360.771	1475.41	480.67	m	480.67	480.67	19/10/1987	25/10/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	225	-50	
GEC010	CATHEDRAL_GOLD_87	DDH037	DD	BQ	L3916	ARIS_16759	TRW	342	941	m	1624.07	NAD27_UTM_10	355059.53	6170676.44	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354966.3019	6170879.315	1624.07	168.25	m	168.25	168.25	26/10/1987	28/10/1987	Takla-Rainbow	Imperial Metals	Imperial Metals	R. Pesalj	45	-45	
GEC010	CATHEDRAL_GOLD_88	DDH038	DD		L4101		TRW	292	898	m	1631.85	NAD27_UTM_10	355001	6170677	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354907.7812	6170879.875	1631.85	227.08	m	227.08	227.08			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH039	DD		L4101		TRW	291	948	m	1614.4	NAD27_UTM_10	355040	6170714	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354946.784	6170916.878	1614.4	135.64	m	135.64	135.64			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH040	DD		L4101		TRW	316	927	m	1626.64	NAD27_UTM_10	355040	6170681	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354946.784	6170883.874	1626.64	205.74	m	205.74	205.74			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH041	DD		L4101		TRW	315	966	m	1615.45	NAD27_UTM_10	355071	6170710	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354977.7719	6170912.879	1615.45	89.92	m	89.92	89.92			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH042	DD		L4101		TRW	267	926	m	1620.06	NAD27_UTM_10	355005	6170715	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354911.7804	6170917.878	1620.06	153.92	m	153.92	153.92			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH043	DD		L4101		TRW	265	970	m	1607.49	NAD27_UTM_10	355039	6170748	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354945.778	6170950.881	1607.49	92.96	m	92.96	92.96			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH044	DD		L4101		TRW	344	903	m	1632.49	NAD27_UTM_10	355041	6170644	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354947.7818	6170846.882	1632.49	39.62	m	39.62	39.62			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH045	DD		L4101		TRW	367	924	m	1630.48	NAD27_UTM_10	355073	6170642	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354979.7756	6170844.882	1630.48	190.5	m	190.5	190.5			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH046	DD		L4101		TRW	365	962	m	1616.63	NAD27_UTM_10	355102	6170671	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355008.7763	6170873.876	1616.63	141.73	m	141.73	141.73			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH047	DD		L4101		TRW	388	935	m	1631.8	NAD27_UTM_10	355097	6170635	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355003.7711	6170837.884	1631.8	140.21	m	140.21	140.21			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH048	DD		L4101		TRW	342	934	m	1623.59	NAD27_UTM_10	355064	6170667	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354970.7712	6170869.877	1623.59	140.21	m	140.21	140.21			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-71	
GEC010	CATHEDRAL_GOLD_88	DDH049	DD		L4101		TRW	388	889	m	1651	NAD27_UTM_10	355060	6170602	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354966.772	6170804.881	1651	170.69	m	170.69	170.69			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH050	DD		L4101		TRW	412	941	m	1637.1	NAD27_UTM_10	355118	6170622	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355024.7815	6170824.876	1637.1	148.13	m	148.13	148.13			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH051	DD		L4101		TRW	466	944	m	1645.62	NAD27_UTM_10	355158	6170586	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355064.7821	6170788.884	1645.62	168.55	m	168.55	168.55			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH052	DD		L4101		TRW	438	925	m	1646.66	NAD27_UTM_10	355121	6170595	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355027.783	6170797.882	1646.66	198.12	m	198.12	198.12			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH053	DD		L4101		TRW	515	949	m	1644.8	NAD27_UTM_10	355196	6170554	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355102.7789	6170756.89	1644.8	182.88	m	182.88	182.88			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH054	DD		L4101		TRW	538	941	m	1643.8	NAD27_UTM_10	355206	6170532	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355112.7811	6170734.885	1643.8	182.88	m	182.88	182.88			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH055	DD		L4101		TRW	918	853	m	1527.6	NAD27_UTM_10	355400	6170196	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355306.7811	6170398.893	1527.6	213.36	m	213.36	213.36			Takla-Rainbow	Cathedral Gold	Cathedral Gold		225	-55	
GEC010	CATHEDRAL_GOLD_88	DDH056	DD		L4101		TRW	960	865	m	1515.24	NAD27_UTM_10	355439	6170175	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355345.7839	6170377.887	1515.24	213.35	m	213.35	213.35			Takla-Rainbow	Cathedral Gold	Cathedral Gold		225	-55	
GEC010	CATHEDRAL_GOLD_88	DDH057	DD		L4101		TRW	876	865	m	1547	NAD27_UTM_10	355380	6170235	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355286.7767	6170437.885	1547	213.36	m	213.36	213.36			Takla-Rainbow	Cathedral Gold	Cathedral Gold		225	-55	
GEC010	CATHEDRAL_GOLD_88	DDH058	DD		L4101		TRW	876	868	m	1547.07	NAD27_UTM_10	355383	6170237	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355289.7782	6170439.885	1547.07	198.12	m	198.12	198.12			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH059	DD		L4101		TRW	917	943	m	1542.64	NAD27_UTM_10	355471	6170261	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355377.7778	6170463.89	1542.64	182.88	m	182.88	182.88			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH060	DD		L4101		TRW	866	955	m	1558.77	NAD27_UTM_10	355445	6170306	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355351.7787	6170508.891	1558.77	182.88	m	182.88	182.88			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH061	DD		L4101		TRW	918	977	m	1544.39	NAD27_UTM_10	355499	6170285	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355405.7807	6170487.885	1544.39	137.16	m	137.16	137.16			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH062	DD		L4101		TRW	824	883	m	1569.5	NAD27_UTM_10	355358	6170285	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355264.7685	6170487.885	1569.5	198.11	m	198.11	198.11			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH063	DD		L4101		TRW	965	918	m	1515.23	NAD27_UTM_10	355484	6170209	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355390.7815	6170411.891	1515.23	274.32	m	274.32	274.32			Takla-Rainbow	Cathedral Gold	Cathedral Gold		225	-55	
GEC010	CATHEDRAL_GOLD_88	DDH064	DD		L4101		TRW	1006	871	m	1499.32	NAD27_UTM_10	355475	6170146	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355381.777	6170348.893	1499.32	213.36	m	213.36	213.36			Takla-Rainbow	Cathedral Gold	Cathedral Gold		225	-55	
GEC010	CATHEDRAL_GOLD_88	DDH065	DD		L4101		TRW	873	912	m	1554.8	NAD27_UTM_10	355416	6170271	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355322.778	6170473.888	1554.8	304.8	m	304.8	304.8			Takla-Rainbow	Cathedral Gold	Cathedral Gold		225	-55	
GEC010	CATHEDRAL_GOLD_88	DDH066	DD		L4101		TRW	776	961	m	1592.56	NAD27_UTM_10	355387	6170375	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355293.7774	6170577.887	1592.56	121.92	m	121.92	121.92			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH067	DD		L4101		TRW	701	941	m	1621.74	NAD27_UTM_10	355319	6170415	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355225.7739	6170617.889	1621.74	121.93	m	121.93	121.93			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH068	DD		L4101		TRW	534	891	m	1662.75	NAD27_UTM_10	355163	6170499	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355069.779	6170701.891	1662.75	228.59	m	228.59	228.59			Takla-Rainbow	Cathedral Gold	Cathedral Gold		225	-55	
GEC010	CATHEDRAL_GOLD_88	DDH069	DD		L4101		TRW	370	875	m	1651.7	NAD27_UTM_10	355036	6170605	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354942.7848	6170807.88	1651.7	139.3	m	139.3	139.3			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-65	
GEC010	CATHEDRAL_GOLD_88	DDH069A	DD		L4101		TRW	368	894	m	1643	NAD27_UTM_10	355050	6170620	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354956.778	6170822.877	1643	231.04	m	231.04	231.04			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-69	
GEC010	CATHEDRAL_GOLD_88	DDH070	DD		L4101		TRW	318	879	m	1636.68	NAD27_UTM_10	355003	6170645	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354909.7767	6170847.882	1636.68	363.61	m	363.61	363.61			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-65	
GEC010	CATHEDRAL_GOLD_88	DDH071	DD		L4101		TRW	248	953	m	1610.23	NAD27_UTM_10	355014	6170748	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354920.7766	6170950.881	1610.23	98.75	m	98.75	98.75			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH072	DD		L4101		TRW	197	1000	m	1601.4	NAD27_UTM_10	355016	6170819	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	354922.7804	6171021.876	1601.4	138.69	m	138.69	138.69			Takla-Rainbow	Cathedral Gold	Cathedral Gold		45	-55	
GEC010	CATHEDRAL_GOLD_88	DDH073	DD		L4101		TRW	366	1089	m	1588.95	NAD27_UTM_10	355204	6170761	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355110.7774	6170963.878	1588.95	325.22	m	325.22	325.22			Takla-Rainbow	Cathedral Gold	Cathedral Gold		225	-67	
GEC010	CATHEDRAL_GOLD_88	DDH074	DD		L4101		TRW	918	977	m	1544.39	NAD27_UTM_10	355499	6170285	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355405.7807	6170487.885	1544.39	396.22	m	396.22	396.22			Takla-Rainbow	Cathedral Gold	Cathedral Gold		225	-55	
GEC010	CATHEDRAL_GOLD_88	DDH075	DD		L4101		TRW	965	970	m	1525.98	NAD27_UTM_10	355526	6170246	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	355432.7776	6170448.893	1525.98	365.76	m	365.76	365.76			Takla-Rainbow	Cathedral Gold	Cathedral Gold		225	-55	
GEC010	EASTFIELD_RESOURCES	MAC2000_1	DD	BQ TW	L3916	ARIS_26508					1054.17	NAD27_UTM_10	354056.4	6189262.2	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	353961.77	6189465.17	1054.17	90.22	m	90.22	90.22	30/10/2000	31/10/2000	Lorraine-JaJay Creek	Lysander Minerals	Eastfield Resources	Jay Page	168	-45	
GEC010	EASTFIELD_RESOURCES	MAC2000_2	DD	BQ TW	L3916	ARIS_26508					1054.17	NAD27_UTM_10	354056.4	6189262.2	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	353961.77	6189465.17	1054.17	91.44	m	91.44	91.44	31/10/2000	1/11/2000	Lorraine-JaJay Creek	Lysander Minerals	Eastfield Resources	Jay Page	193	-60	
GEC010	EASTFIELD_RESOURCES	MAC2000_3	DD	BQ TW	L3916	ARIS_26508					1032.33	NAD27_UTM_10	354024.3	6189518.61	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	353929.68	6189721.58	1032.33	42.06	m	42.06	42.06	1/11/2000	1/11/2000	Lorraine-JaJay Creek	Lysander Minerals	Eastfield Resources	Jay Page	231	-45	
GEC010	EASTFIELD_RESOURCES	MAC2000_4	DD	BQ TW	L3916	ARIS_26508					1021.18	NAD27_UTM_10	353951.83	6189817.66	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	353857.2	6190020.64	1021.18	60.96	m	60.96	60.96	1/11/2000	2/11/2000	Lorraine-JaJay Creek	Lysander Minerals	Eastfield Resources	Jay Page	30	-45	
GEC010	EASTFIELD_RESOURCES	MAC2000_5	DD	BQ TW	L3916	ARIS_26508					1054.17	NAD27_UTM_10	354056.4	6189262.2	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	353961.77	6189465.17	1054.17	67.06	m	67.06	67.06	2/11/2000	2/11/2000	Lorraine-JaJay Creek	Lysander Minerals	Eastfield Resources	Jay Page	64	-44	
GEC010	BP_CANADA_DRILL_1990	AH90_1	DD	BQ	L4041	ARIS_20943	NAD83_UTM_10	381170.61	6132216.15	m	1164.81					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	381170.61	6132216.15	1164.81	198.1	m	198.1	198.1	15/09/1990	19/09/1990	Lorraine-JaJay Creek	Lysander Minerals	Eastfield Resources	WP	269	-45	
GEC010	BP_CANADA_DRILL_1990	AH90_2	DD	BQ	L4041	ARIS_20943	NAD83_UTM_10	381172.91	6132213.88	m	1165.49					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	381172.91	6132213.88	1165.49	164	m	164	164	13/09/1990	19/09/1990	Lorraine-JaJay Creek	Lysander Minerals	Eastfield Resources	WP	150	-46	
GEC010	BP_CANADA_DRILL_1990	AH90_3	DD	BQ	L4041	ARIS_20943	NAD83_UTM_10	381000.53	6132546.11	m	1217.82					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	381000.53	6132546.11	1217.82	202.7	m	202.7	202.7	19/09/1990	21/09/1990	Lorraine-JaJay Creek	Lysander Minerals	Eastfield Resources	WP	256	-45	
GEC010	BP_CANADA_DRILL_1990	AH90_4	DD	BQ	L4041	ARIS_20943	NAD83_UTM_10	381004.58	6132546.06	m	1217.15					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	381004.58	6132546.06	1217.15	168.9	m	168.9	168.9	21/09/1990	22/09/1990	Lorraine-JaJay Creek	Lysander Minerals	Eastfield Resources	CTB	91	-59	
GEC010	BP_CANADA_DRILL_1990	AH90_5	DD	BQ	L4041	ARIS_20943	NAD83_UTM_10	381584.88	6132545.24	m	1150.84					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	381584.88	6132545.24	1150.84	170	m	170	170	23/09/1990	24/09/1990	Lorraine-JaJay Creek	Lysander Minerals	Eastfield Resources	CTB	150	-45	
GEC010	BP_CANADA_DRILL_1990	AH90_6	DD	BQ	L4041	ARIS_20943	NAD83_UTM_10	381395.88	6132376.06	m	1162.04					DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	381395.88	6132376.06	1162.04	164.1	m	164.1	164.1	24/09/1990	25/09/1990	Lorraine-JaJay Creek	Lysander Minerals	Eastfield Resources		160	-45	
GEC010	PLACER_DEVELOP_79	DDH_72_8	DD		L4041	ARIS_7432					1487.24	NAD27_UTM_10	359179.28	6153020.8	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	359084.45	6153223.99	1487.24			10	10			Burn Claims	LUC syndicate	Placer Development		0	-90	Max Depth unknown - used an assumed minimum, dip assumed to be vertical
GEC010	PLACER_DEVELOP_79	DDH_72_1	DD		L4041	ARIS_7432					1441.45	NAD27_UTM_10	359180.27	6153320.18	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	359085.44	6153523.37	1441.45			10	10			Burn Claims	LUC syndicate	Placer Development		0	-90	Max Depth unknown - used an assumed minimum, dip assumed to be vertical
GEC010	PLACER_DEVELOP_79	DDH_72_10	DD		L4041	ARIS_7432					1460.75	NAD27_UTM_10	359425.19	6153019.17	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	359330.36	6153222.36	1460.75			10	10			Burn Claims	LUC syndicate	Placer Development		180	-45	Max Depth unknown - used an assumed minimum, azimuth taken from map, dip guessed
GEC010	PLACER_DEVELOP_79	DDH_72_11	DD		L4041	ARIS_7432					1492.7	NAD27_UTM_10	359317.74	6152900.16	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	359222.9	6153103.35	1492.7			10	10			Burn Claims	LUC syndicate	Placer Development		0	-90	Max Depth unknown - used an assumed minimum, dip assumed to be vertical
GEC010	PLACER_DEVELOP_79	DDH_72_12	DD		L4041	ARIS_7432					1408	NAD27_UTM_10	359546	6153326.21	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	359451.16	6153529.41	1408			10	10			Burn Claims	LUC syndicate	Placer Development		180	-45	Max Depth unknown - used an assumed minimum, azimuth taken from map, dip guessed
GEC010	PLACER_DEVELOP_79	DDH_72_2	DD		L4041	ARIS_7432					1411.39	NAD27_UTM_10	359180.17	6153562.1	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	359085.33	6153765.3	1411.39			10	10			Burn Claims	LUC syndicate	Placer Development		0	-90	Max Depth unknown - used an assumed minimum, dip assumed to be vertical
GEC010	PLACER_DEVELOP_79	DDH_72_3	DD		L4041	ARIS_7432					1390.06	NAD27_UTM_10	359422.11	6153560.62	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	359327.27	6153763.82	1390.06			10	10			Burn Claims	LUC syndicate	Placer Development		0	-90	Max Depth unknown - used an assumed minimum, dip assumed to be vertical
GEC010	PLACER_DEVELOP_79	DDH_72_4	DD		L4041	ARIS_7432					1390.06	NAD27_UTM_10	359422.11	6153560.62	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	359327.27	6153763.82	1390.06			10	10			Burn Claims	LUC syndicate	Placer Development		0	-90	Max Depth unknown - used an assumed minimum, dip assumed to be vertical
GEC010	PLACER_DEVELOP_79	DDH_72_5	DD		L4041	ARIS_7432					1342.03	NAD27_UTM_10	359419.7	6153918.54	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	359324.87	6154121.73	1342.03			10	10			Burn Claims	LUC syndicate	Placer Development		180	-45	Max Depth unknown - used an assumed minimum, azimuth taken from map, dip guessed
GEC010	PLACER_DEVELOP_79	DDH_72_6	DD		L4041	ARIS_7432					1461.46	NAD27_UTM_10	359176.95	6153200.87	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	359082.12	6153404.06	1461.46			10	10			Burn Claims	LUC syndicate	Placer Development		0	-90	Max Depth unknown - used an assumed minimum, dip assumed to be vertical
GEC010	PLACER_DEVELOP_79	DDH_72_7	DD		L4041	ARIS_7432					1470.38	NAD27_UTM_10	359301.91	6153081.37	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	359207.07	6153284.56	1470.38			10	10			Burn Claims	LUC syndicate	Placer Development		0	-90	Max Depth unknown - used an assumed minimum, dip assumed to be vertical
GEC010	PLACER_DEVELOP_79	DDH_72_9	DD		L4041	ARIS_7432					1529.24	NAD27_UTM_10	359591.73	6152379.38	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	359496.89	6152582.57	1529.24			10	10			Burn Claims	LUC syndicate	Placer Development		215	-45	Max Depth unknown - used an assumed minimum, azimuth taken from map, dip guessed
GEC010	PLACER_DEVELOP_79	PDH_79_1	PERC		L4041	ARIS_7898					1389.96	NAD27_UTM_10	360420.58	6151931.76	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	360325.75	6152134.95	1389.96	300	ft	91.44	91.44			Burn Claims	LUC syndicate	Placer Development		0	-90	Hole assumed to be vertical
GEC010	PLACER_DEVELOP_79	PDH_79_10	PERC		L4041	ARIS_7926					1285.02	NAD83_UTM_10	357896.64	6155938.75	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	357896.64	6155938.75	1285.02	300	ft	91.44	91.44			Burn Claims	LUC syndicate	Placer Development		0	-90	Hole assumed to be vertical
GEC010	PLACER_DEVELOP_79	PDH_79_2	PERC		L4041	ARIS_7898					1383.4	NAD27_UTM_10	360419.72	6152184.83	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	360324.89	6152388.02	1383.4	300	ft	91.44	91.44			Burn Claims	LUC syndicate	Placer Development		0	-90	Hole assumed to be vertical
GEC010	PLACER_DEVELOP_79	PDH_79_3	PERC		L4041	ARIS_7898					1365.18	NAD27_UTM_10	360389.72	6152438.3	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	360294.88	6152641.49	1365.18	300	ft	91.44	91.44			Burn Claims	LUC syndicate	Placer Development		0	-90	Hole assumed to be vertical
GEC010	PLACER_DEVELOP_79	PDH_79_4	PERC		L4041	ARIS_7898					1353.68	NAD27_UTM_10	360323.64	6152684.75	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	360228.8	6152887.94	1353.68	300	ft	91.44	91.44			Burn Claims	LUC syndicate	Placer Development		0	-90	Hole assumed to be vertical
GEC010	PLACER_DEVELOP_79	PDH_79_5	PERC		L4041	ARIS_7898					1355.4	NAD27_UTM_10	360190.16	6152952.52	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	360095.32	6153155.71	1355.4	300	ft	91.44	91.44			Burn Claims	LUC syndicate	Placer Development		0	-90	Hole assumed to be vertical
GEC010	PLACER_DEVELOP_79	PDH_79_6	PERC		L4041	ARIS_7898					1364.29	NAD27_UTM_10	359962.04	6153204.29	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	359867.2	6153407.48	1364.29	300	ft	91.44	91.44			Burn Claims	LUC syndicate	Placer Development		0	-90	Hole assumed to be vertical
GEC010	PLACER_DEVELOP_79	PDH_79_7	PERC		L4041	ARIS_7898					1368.72	NAD27_UTM_10	359759.6	6153455.75	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	359664.77	6153658.94	1368.72	300	ft	91.44	91.44			Burn Claims	LUC syndicate	Placer Development		0	-90	Hole assumed to be vertical
GEC010	PLACER_DEVELOP_79	PDH_79_8	PERC		L4041	ARIS_7898					1380.02	NAD27_UTM_10	358270.74	6154581.15	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	358175.9	6154784.34	1380.02	300	ft	91.44	91.44			Burn Claims	LUC syndicate	Placer Development		0	-90	Hole assumed to be vertical
GEC010	PLACER_DEVELOP_79	PDH_79_9	PERC		L4041	ARIS_7926					1341.18	NAD83_UTM_10	357988.82	6155328.57	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	357988.82	6155328.57	1341.18	300	ft	91.44	91.44			Burn Claims	LUC syndicate	Placer Development		0	-90	Hole assumed to be vertical
GEC010	PLACER_DOME_91	DH91_1	DD		L3916	ARIS_22145					1545.2	NAD27_UTM_10	360180.95	6175973.99	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	360086.34	6176176.94	1545.2	149.35	m	149.35	149.35			Tak Claims	Rio Algom	Placer Dome		0	-90	Dip and azimuth from log header
GEC010	PLACER_DOME_91	DH91_2	DD		L3916	ARIS_22145					1535.33	NAD27_UTM_10	360120.71	6176081.86	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	360026.09	6176284.81	1535.33	152.1	m	152.1	152.1			Tak Claims	Rio Algom	Placer Dome		0	-90	Dip and azimuth from log header
GEC010	PLACER_DOME_91	DH91_3	DD		L3916	ARIS_22145					1520.75	NAD27_UTM_10	360501.75	6176076.38	m	DIGITISED	NEVILLE_PANIZZA	3	NAD83_UTM_10	360407.13	6176279.33	1520.75	151.18	m	151.18	151.18			Tak Claims	Rio Algom	Placer Dome		90	-45	Dip and azimuth from log header, Acid surveys at 73m (-42) and 151m (-35)

TAKLA - REDTON PROJECT

2005 ASSESSMENT REPORT

Appendix 9

Redton Project Remote Sensing Report

By AGARSS

ASTER Alteration Mineral Mapping

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ASTER Alteration Mineral Mapping;
Redton District, British Colombia, Canada.

Geoinformatics Exploration Australia P/L

Bob Agar

1. Introduction

Five ASTER image granules were acquired from 3 separate data capture dates to cover the area defined by Geoinformatics Exploration Australia P/L as their Redton project.

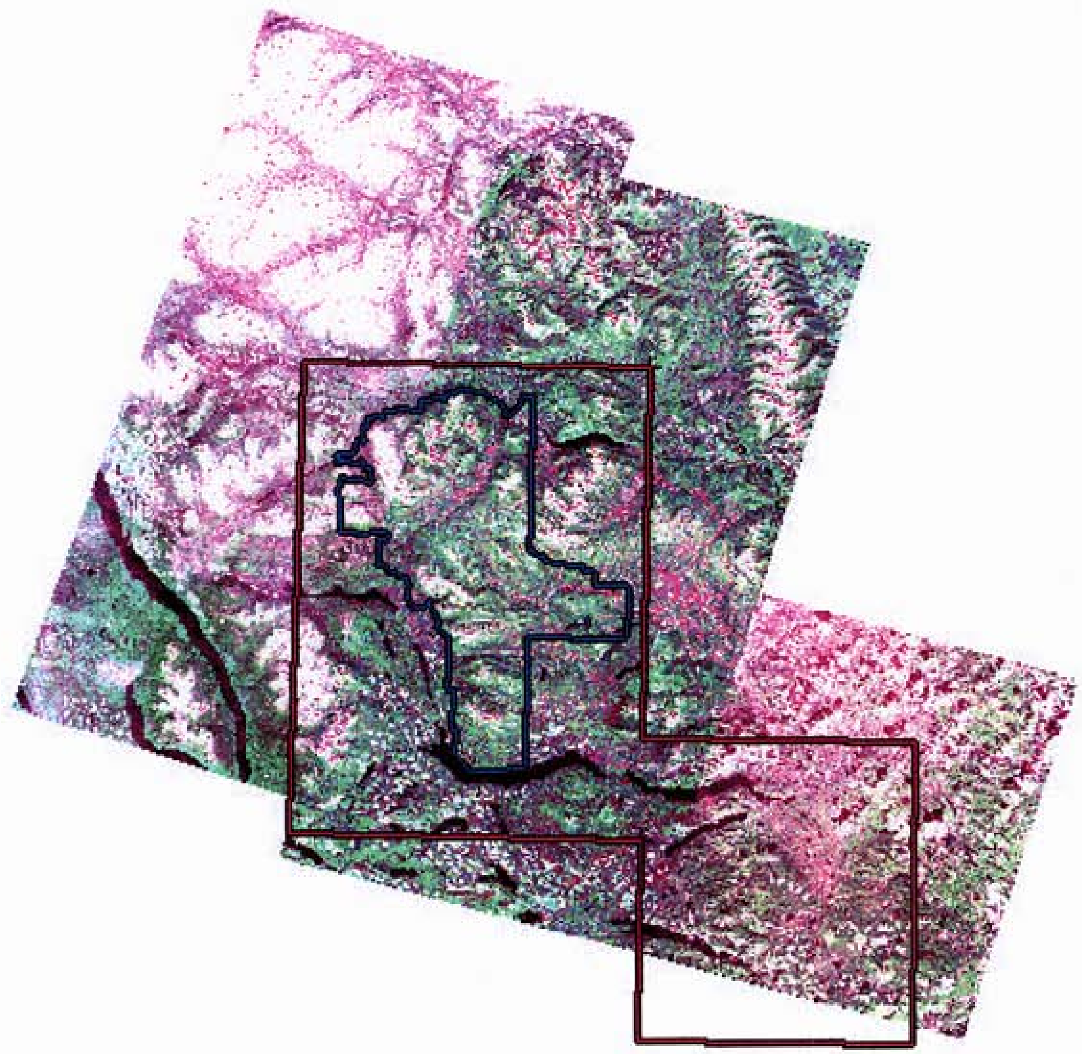

Figure 1; ASTER coverage acquired over the Redton Project Area (blue) and Regional Area of Interest (Red).

The ASTER granules acquired where as follows:-
Path 50, rows 63 and 64, view 3; captured 28th July 2003 comprising granules:-
AST_L1A_00307282003193433_08132003151935
AST_L1A_00307282003193442_08132003151954
Path 50, row 64, view 5; captured 21st September 2000 comprising granule:-
AST_L1B_003_09212000195016_09232003085855

Path 52, rows 62 and 63, view 7; captured 28th May 2005 comprising granules:-
AST_L1B_00305282005194702_06012005131718
AST_L1B_00305282005194710_06012005131440

Although data captured in late summer was considered optimum from the point of view of snow and ice cover and the wetness of the ground, it was not possible to obtain data with less than 20% cloud over the entire area and one of the image strips was from early in the summer and hence not ideal. Although Level 1B (radiance at sensor) data are preferred, Level 1A scenes were acquired here where no Level 1B coverage existed.

2. Processing and Interpreting ASTER data.

2.1 Introduction to ASTER Data

The Advanced Spacebome Thermal Emission and Reflection Radiometer (ASTER) acquires multi-spectral image data for 15 channels across the visible, near, short wave and thermal infrared wavelengths (table 1).

Subsystem	Band No.	Spectral Range	Spatial Resolution
VNIR	1	0.52-0.60	15m
	2	0.63-0.69	
	3N	0.78-0.86	
	3B	0.78-0.86	
SWIR	4	1.600-1.700	30m
	5	2.145-2.185	
	6	2.185-2.225	
	7	2.235-2.285	
	8	2.295-2.365	
	9	2.360-2.430	
TIR	10	8.125-8.475	90m
	11	8.475-8.825	
	12	8.925-9.275	
	13	10.25-10.95	
	14	10.95-11.65	

Table 1; Band specifications of the ASTER sensor system.

Compared to Landsat Thematic Mapper (TM), the ASTER visible and near infrared (VNIR) data have a finer resolution (15 metres), the short wave infrared (SWIR) data have are the same 30m resolution as Landsat TM bands 5 and 7 but with 6 contiguous channels over the same wavelength range offer far greater spectral resolution, and the thermal infrared (TIR) data with 5 channels and a 90m spatial resolution offer greater spectral and spatial resolution than the single Landsat TM TIR band 6 (120m) (Table 1).

Although a considerable improvement on Landsat TM data, ASTER remains a relatively coarse resolution sensor. It must be remembered that pixels of ASTER dimensions will almost invariably be mixed in terms of their mineralogy and so pure mineral spectra are unlikely. Nevertheless, the spectra for some pixels will be dominated by a single mineral and should show some close resemblance to the spectrum for that particular mineral. However, minerals that occur together produce mixed spectra that can appear very much like another mineral. For example, alunite and kaolinite commonly occur together and their mixed spectra as convolved to ASTER band positions may look like dickite (figure 3). Thus like Landsat TM, ASTER also has the capacity to create significant false mineral zones and care is still required in interpretation of the minerals mapped.

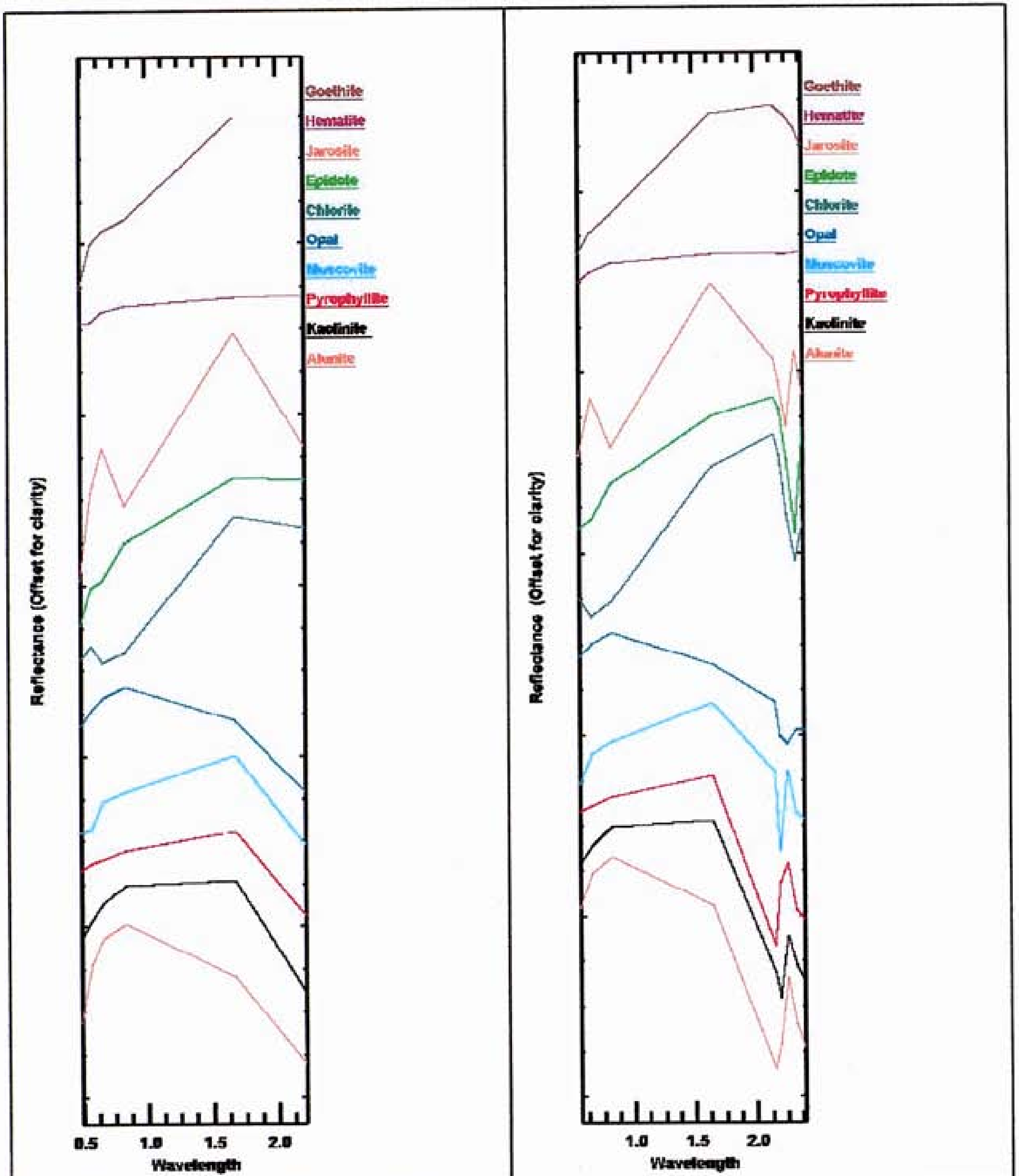

Figure 2; Comparison of Landsat and ASTER spectra of some common alteration minerals.

Fourteen of ASTER's fifteen bands are collected with the sensor looking vertically downward (nadir) but the data also contain an additional VNIR band that is acquired from a rear-looking telescope (Band 3B is Backward-looking, Band 3N is Nadir-looking, table 1). The two band 3s are useful in providing a perspective view that enables the data to be viewed as a stereo pair. The data also contain internal ground control points calculated from the satellite ephemeris that are used to georeference the data and which, in conjunction with the stereo visualisation and parallax effect, enable the creation of digital terrain models (DTMs) and ortho-rectification of the spectral image bands which can be of critical importance in rugged terrain.

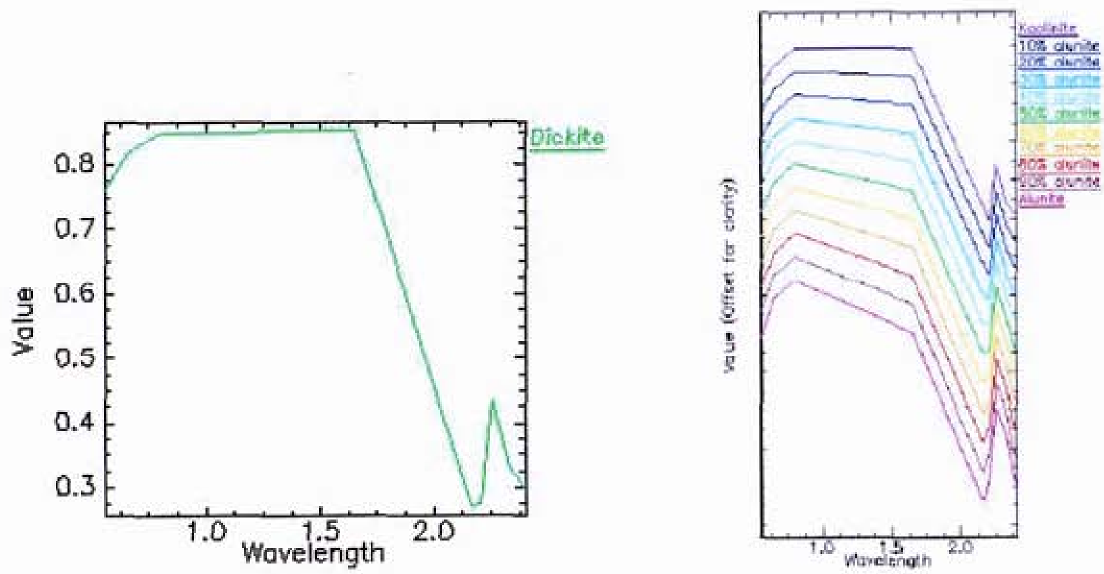

Figure 3; Comparison of dickite spectrum convolved to ASTER band specifications (left) with modelled spectra for various mixtures of kaolinite and alunite. Note the similarity between the dickite and the 50% kaolinite/alunite mixture (green on right).

ASTER data are provided as either Level 1A (raw) or Level 1B (radiance at the sensor) data. The former need to be first converted to radiance at the sensor before any standard processing of the data can commence and this conversion involves the adjustment of the raw digital values recorded for each band according to variable instrumental parameters written into the data package.

Radiance at the sensor data comprises the reflectance from the ground plus artefacts such as energy that is backscattered by particles such as dust or water vapour in the atmosphere and electronic noise. Thus, in order to convert the data to reflectance so that they can be compared and used to map materials based upon the similarity of their reflectance spectra, these artefacts need to be removed.

In ASTER data, the digital number recorded at the sensor is also affected by an energy "overspill" or "crosstalk" problem between detectors. Energy from ASTER band 4 "leaks" and affects the digital number being recorded in other bands, most notably bands 5 and

9 (figure 4). Both the "crosstalk" and atmospheric effects need to be corrected for before converting the data to reflectance.

A further problem has been identified within many ASTER scenes that is manifested by a band of intermittent bright pixels in processed data such as band ratios and mineral indices but which is not visible in the raw bands (figure 5; Coulter, 2002).

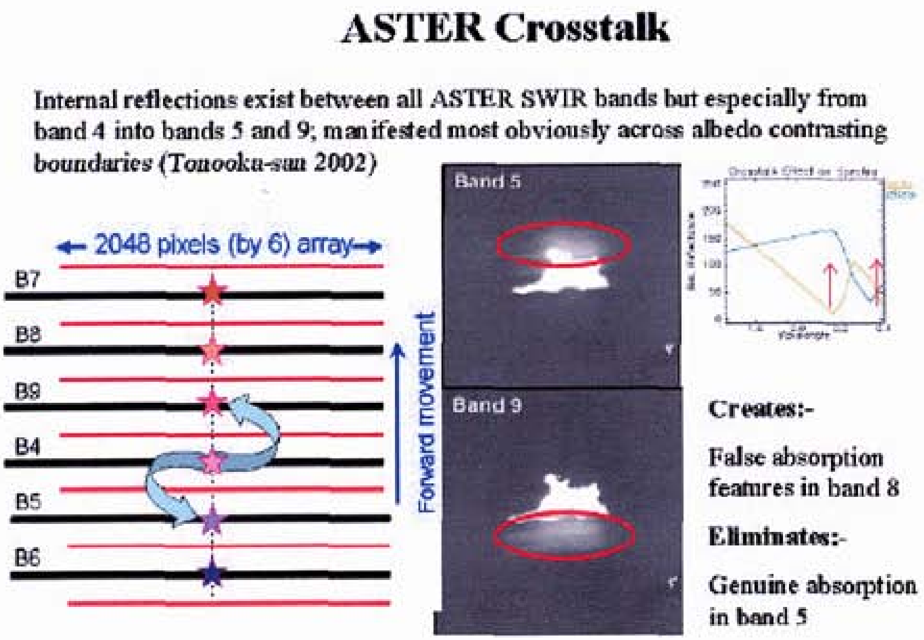

Figure 4; Schematic representation of the "crosstalk" problem in the ASTER SWIR module

The problem has been ascribed to a permanent scratch in the instrument's diffraction grating for the SWIR module causing a distinct change in the signal:noise characteristics across a certain band of pixels (Watanabe, 2002). There is no correction for this problem. Furthermore, when mosaicking scenes, spurious pixel values can be generated along scene boundaries and produce false anomalies or mineral zones. Thus care should be taken when interpreting alteration that maps in any orbit-parallel array whether within or marginal to an image strip.

As with all remote sensing work, the efficacy of any data depends to a large extent on the nature of the terrain being imaged and the signal:noise characteristics of the data. As a general rule, hyper-arid terrains such as the Atacama Desert of Northern Chile afford the best climate and geologic exposure for mineral exploration applications. These data have very high signal:noise characteristics due to the clean dry atmospheric conditions combined with high soil and rock exposure. Elsewhere, other desert terrains are also ideal for remote sensing purposes but as one moves into semi-arid and progressively more humid climes, the amount of vegetation in the region and the atmospheric humidity both increase.

Furthermore, away from the tropics towards higher latitudes, the sun elevation at the time of acquisition is lower and hence signal strength also falls. The sun elevation and atmospheric humidity issues combine to reduce the data quality and the presence of vegetation, including lichen and mosses, acts to modify mineral spectra to the extent that the spectra of normally distinct minerals are sufficiently obscured or modified as to be lost within the general noise and vegetation spectra.

Another factor affecting all spectral data is the presence of water which absorbs so much of the incoming infrared radiation as to significantly suppress the amount of reflected energy available to the detector, reducing the amplitude of spectral features and rendering many normally distinct minerals indistinguishable.

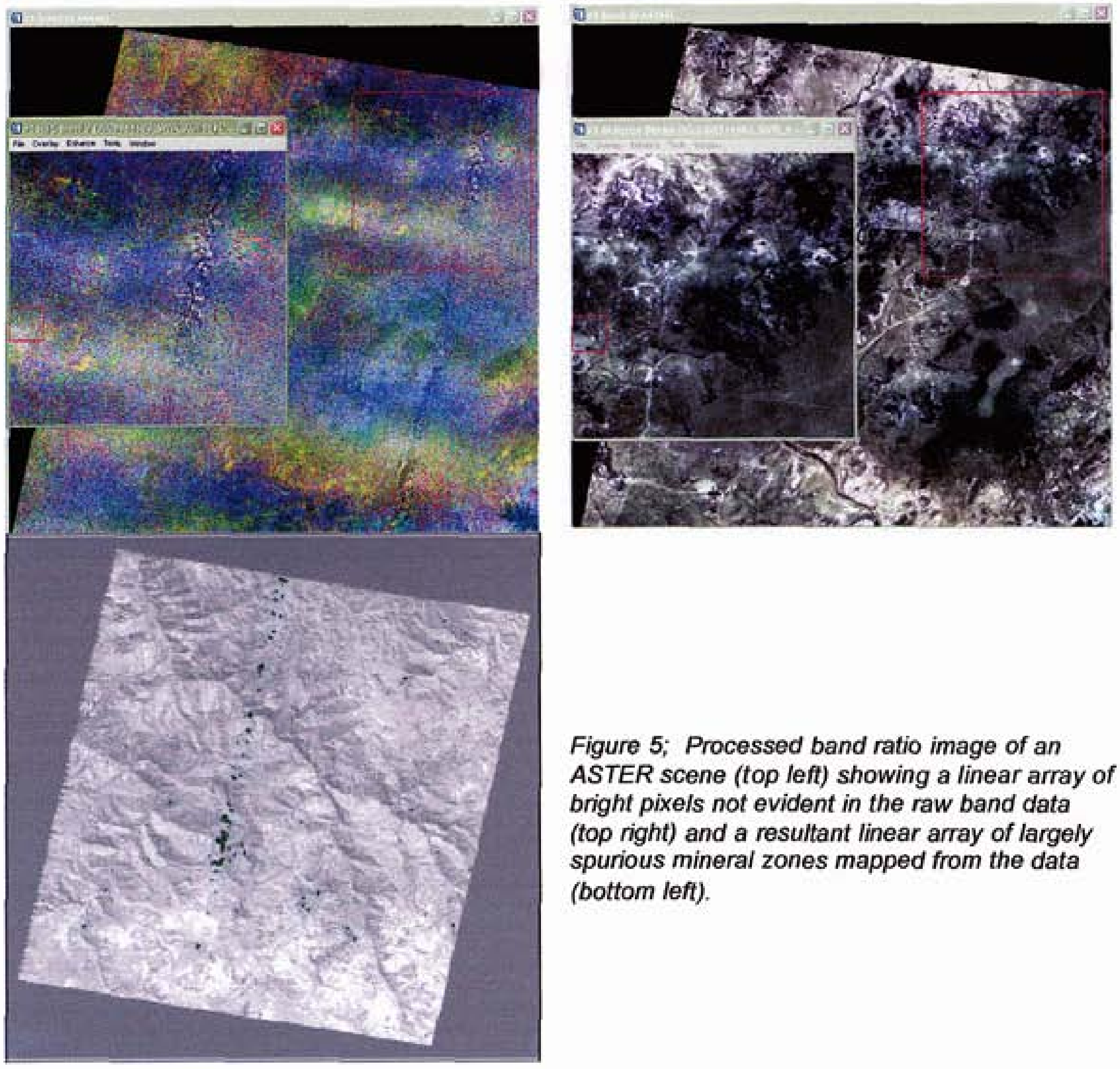

Figure 5; Processed band ratio image of an ASTER scene (top left) showing a linear array of bright pixels not evident in the raw band data (top right) and a resultant linear array of largely spurious mineral zones mapped from the data (bottom left).

Although data may be correctly processed and converted to reflectance, the above factors and seasonal changes to vegetation conditions can combine to affect the extent to which minerals can be mapped in different but overlapping images and it is not always possible to level the mapping of minerals across scene boundaries. Where one scene has a lower signal, it may bring the threshold values for certain mineral indices into the levels of noise or, where a mineral spectrum has strong similarities to vegetation, such as goethite which looks very similar to dry vegetation, there can be quite strong contrasts to mapped mineral distributions across scene boundaries.

2.2 Processing ASTER Data

The Level 1A scenes were converted to Level 1B before all were used to create a Digital Elevation Model (DEM) using the AsterDTM ENVI add on software of Sulsoft (Brazil) and this same DEM was in turn used to ortho-correct each of the image bands. Scenes that were acquired on the same day as part of a single data capture were then mosaicked together and treated as a single image strip for subsequent processing.

The atmospheric backscatter component is greatest at shorter wavelengths and most pronounced for ASTER data in band 1, diminishing exponentially to be insignificant in the SWIR bands. The effect is very significant however in the VNIR bands where the spectra for the iron oxide minerals are separated from vegetation and each other by the relationship between bands 1, 2 and 3 where, for the iron minerals, band 1 is consistently low relative to bands 2 and 3 and a critical slope change occurs at band 2 which signifies vegetation. If the backscatter is not corrected, band 1 will be artificially high and result in fewer iron minerals being mapped.

Bodies of water typically have a very flat spectrum in the VNIR and the response over known water bodies was used here to generate a spectrum representing the atmospheric backscatter that was subsequently removed from every pixel. As a check, pixels over obvious vegetation were checked in the corrected data to confirm that their spectra were showing band 1 (natural green) higher than band 2 (natural red).

Similarly, the "cross-talk" problem in the SWIR bands was removed using a spectral unmixing technique in RASTUS software to identify the "cross-talk" spectrum and remove it from each pixel in turn. Unless removed, "cross-talk" will record artificially high values in bands 5 and 9, diminishing apparent absorption in band 5 thereby reducing the potential for mapping alunite and pyrophyllite; increase the apparent absorption in band 6 thereby increasing the amount of kaolinite, and white micas (e.g. sericite, illite, phengite) mapped and increase the apparent absorption in band 8 thereby mapping chlorite, epidote and calcite more widely than it should (figure 2).

Once these corrections to the radiance data had been carried out, the data were then converted to reflectance using the "log residual" normalisation technique (Green & Craig, 1985) in RASTUS software. From these reflectance data, mineral indices were prepared and analysed separately for each constituent scene or data capture series. Indices were prepared for the suite of minerals using the methodology as listed in table 2.

The minerals selected are typical of those found in a variety of mineralised hydrothermal and metasomatic (skarn-type) systems and the reference spectra are taken from the USGS spectral library available in ENVI software and convolved to the ASTER band positions. The suffix number of each reference spectrum is that from the USGS reference library.

Mineral or Style	Index processing routine
FeOx	Mask of ratios 2/1, 3/2, and 3/1 within known ranges for goethite, hematite and jarosite applied to PC3 of PC123
Goethite	Mask of ratios 2/1, 3/2, within known ranges for goethite; applied to VNIR MF result for goethite 1.
Jarosite vnir	Mask of ratios 2/1, 3/2, within known ranges for jarosite; applied to VNIR MF result for jarosite 6.
Haematite	Mask of the FeOx index with jarosite and goethite pixels removed.
Advanced Argillic	Mask of ratios 4/5>1; 5/6<1; 7/6>1; 7/5>1; 7/8>1; 9/8<1, 5/8<1, 5/9<1 applied to ratio 7/5.
Argillic	Mask of ratios 4/5>1; 5/6>1; 7/6>1; 7/5>1; 7/8>1; 9/8<1, applied to ratio 7/6
Phyllic	Mask of ratios 4/5>1; 5/6>1; 7/6>1; 7/8>1; 9/8<1, 6/8<1, 6/9<1 applied to ratio 7/6 for intensity and ratio 7/5 for AlOH composition
AlOH	Mask of ratios 4/5>1; 7/6>1, 7/8>1; applied to ratio 7/6
Propylitic	Mask of ratios 4/5<1, 5/6>1, 7/6<1, 7/5<1,7/8>1,9/8>1, 5/8>1, 6/9<1 applied to ratio 5/8.
Carbonate	Mask of ratios 4/5>1, 5/6>1, 7/6<1, 7/5<1, 9/8>1, 6/9<1 applied to ratio 5/8.
SiO2	Mask of band ratios 12/13<1; 12/11<1; 13/11>1; 11/10>1 applied to TIR MF result for silica
Alunite	Mask of ratios 4/5>1; 5/6<1; 7/6>1; 7/5>1; 7/8>1; 9/8<1, 5/8<1, 5/9<1 applied to SFF result for Alunite 1
Pyrophyllite	Mask of ratios 4/5>1; 5/6<1; 7/6>1; 7/5>1; 7/8>1; 9/8<1, 5/8<1, 5/9<1 applied to SFF result for Pyrophyllite 3
Dickite	Mask of ratios 4/5>1; 5/6>0.99<1.01; 7/6>1; 7/5>1; 7/8>1; 9/8<1, 5/8<1, 5/9<1 applied to SFF result for Dickite 1
Kaolinite	Mask of ratios 4/5>1; 5/6>1; 7/6>1; 7/5>1; 7/8>1; 9/8<1, 6/8<1, 6/9<1 applied to SFF result for Kaolinite 7
Sericite (High-AlOH phyllic)	Mask of ratios 4/5>1; 5/6>1; 7/6>1; 7/5>1; 7/8>1; 9/8>1, 6/8<1, 6/9<1 applied to SFF result for Muscovite 4
Phengite (Low-AlOH phyllic)	Mask of ratios 4/5>1; 5/6>1; 7/6>1; 7/5<1; 7/8>1; 9/8>1, 6/8<1, 6/9<1 applied to SFF result for Muscovite 3
Jarosite swir	Mask of ratios 4/5>1; 5/6>1; 7/6<1; 7/5<1; 7/8<1; 9/8<1, 6/9>1 applied to SFF result for Jarosite 2
Opal	Mask of ratios 4/5>1; 5/6>1; 7/6<1; 7/5<1; 7/8<1; 9/8<1, 6/9<1 applied to SFF result for Opal 2
Dolomite	Mask of ratios 4/5>1; 5/6>1; 7/6<1; 7/5<1; 7/8<1; 9/8>1, 6/9>1 applied to SFF result for Dolomite 1
Calcite	Mask of ratios 4/5>1, 5/6>1, 7/6<1, 7/5<1,7/8>1,9/8>1, 5/8>1, 6/9<1 applied to SFF result for SFF result for Calcite 3
Chlorite	Mask of ratios 4/5<1, 5/6>1, 7/6<1, 7/5<1,7/8>1,9/8>1, 5/8>1, 6/9<1 applied to SFF result for SFF result for Chlorite 3
Epidote	Mask of ratios 4/5<1, 5/6>1, 7/6<1, 7/5<1,7/8>1,9/8>1, 5/8>1, 6/9<1 applied to SFF result for SFF result for Epidote 3
Garnet	Mask of ratios 12/13>1; 14/13>1; 12/14>1; 12/11>1; 13/11<1, 14/11<1; 14/10<1 applied to TIR MF result for garnet
CO3	Mask of ratios 14/13<1; 12/13<1, 12/11>1, 13/11>1, 11/10>1, 12/14>1, 14/11<1, 14/10<1 applied to MF result for TIR CO3.

Table 2; Alteration minerals mapped and their respective processing routines and algorithms.

Two muscovite or phyllic alteration mineral indices were created in an attempt to map any variability in muscovite mineralogy from high AlOH variants (referred hereinafter as sericite) to low-AlOH (more MgOH, FeOH bearing and referred to hereinafter as phengite). The wavelength position of the maximum absorption in muscovite minerals is known to be controlled by the mineral chemistry and to range from 2194nm for high AlOH up to 2219nm for the low AlOH (figure 7a). Although the ASTER data cannot map such a wavelength shift in the absorption band, the ASTER spectra do show a variation in the shape of the absorption band at 2209nm (Figure 7b) proportional to the value of the band ratio 7/5 which can therefore be used to map this sericite – phengite continuum.

A phyllic index was created using simple band ratios to select only pixels that had a phyllic absorption feature at band 6 and the ratio 7/5 was used to provide a proxy numerical index of the wavelength position, higher values to the high- AlOH/low wavelength end of the continuum such that high-AlOH minerals would have values >1 and low AlOH <1 in this index (figure 7 and table 2).

The spectral feature fit (SFF) routine in ENVI software uses a least-squares fit approach to measure the closeness of fit between an image or pixel spectrum with a reference spectrum (Clark et al., 1990) and is directly proportional to the depth of the spectral feature and mineral abundance. This method was used to create indices for alteration minerals with spectral features in the SWIR because the method is direct although it is reputedly more sensitive to illumination, albedo and aspect effects than other methods.

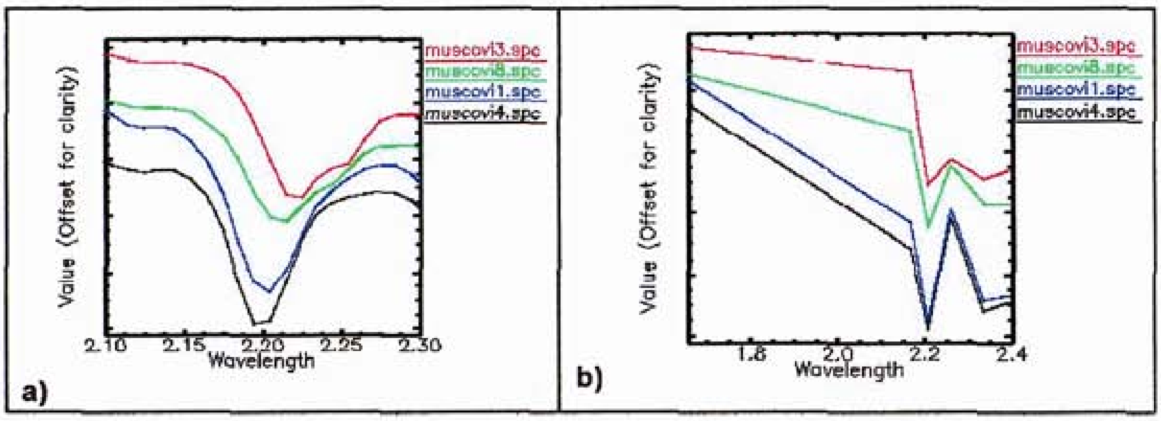

Figure 7; a) Standard USGS reference spectra for high AlOH (muscovi4), moderately high AlOH (muscovi1), relatively low AlOH (muscovi8) and low AlOH (moscovi3) showing the progressive shift of the absorption band position to longer wavelengths and b) the same spectra convolved to the ASTER band configuration showing the variation in the shape of the 2209nm absorption band for the same minerals.

The SFF routine is used in conjunction with masks generated using arguments based upon band ratio properties to define only those pixels with spectra approximating the reference to reduce noise and false positives (table 2).

A matched filter (MF) routine also in ENVI is a rapid partial unmixing process that focuses on and maximises values where there is a match and suppresses the response for the composite unknown background. It works well and is used for the VNIR, where the spectra are simple (3 bands), and in the TIR but gives inconsistent results and is thus not used for the SWIR minerals. However, in both the VNIR and the TIR, the MF routine is again used in close conjunction with band ratios to eliminate possible false positives. The band ratio masking algorithms for the VNIR and SWIR are derived from USGS reference mineral spectra and those in the TIR derived from mineral emission spectra taken from the John Hopkins Spectral Library in ENVI.

An alternative approach, the Spectral Angle Mapper (SAM) method developed in ENVI software from the work of Kruse and others (1993), measures the angular difference between the image spectrum and the reference spectrum but produces an inverted image in which the lowest values represent the closest match. In this author's experience, the method has given inconsistent results for many minerals and is used only in instances where the albedo and aspect effects preclude use of SFF.

With the exception of the FeOx, goethite, jarosite-vnir, haematite, AlOH, advanced argillic, argillic, phyllic, propylitic, carbonate, SiO2, garnet and CO3 indices, which were generated using band ratio values as constraints (table 2), thresholds were determined for each mineral index by first filtering pixels according to the band ratio constraints listed in table 2 before visually comparing the remaining pixel spectra against a reference spectrum using a simple density slice routine to highlight the different index levels. Where the top pixel values for the index of any mineral did not exhibit characteristic or diagnostic spectral features of that mineral, the mineral was omitted from the final output.

Where a threshold could be determined, only those pixels with index values greater than the threshold were preserved and ultimately used to create the full regional mosaic index. This image was saved as the final index for that mineral and a region of interest created from the index marking those pixels assigned to that mineral in a specific colour. The index was then filtered using a combination of closing and median filters to consolidate clustered pixels into zones and eliminate outliers or noise. These pixels were also defined as a colour coded smoothed region of interest and saved together for final output visualisation. The filtered index image was finally exported as both a vector file delineating the smoothed occurrence boundaries for each mineral and as a pseudo-colour raster image draped over albedo to show variation in intensity for each mineral.

The regions of interest, both individual pixel and filtered, were individually displayed on a greyscale albedo background so as to provide an overview of the distribution of the various alteration minerals. Unfortunately, in ENVI software, later created regions of interest overprint the earlier ones where they overlap. This is not an issue for the alteration minerals in the SWIR because the way in which the regions are generated means they would not overlap or only minimally overlap. However, the iron oxide and silica regions, being created in the VNIR and TIR data respectively can and do overlap the other minerals. Thus care should be taken in interpreting the region of interest output image.

Alteration style indices produced for FeOx (ferruginisation) SiO2 (silicification), advanced argillic, argillic, phyllic, propylitic and carbonate were also saved as both pixel regions of interest mapping all possible pixels with appropriate characteristics and as filtered regions of interest. The output for all alteration style indices were smoothed and filtered as for the individual mineral indices and both region of interest images, intensity images and vector outputs prepared.

Some indices map very extensively. Garnet for example maps more widely than would be anticipated due to its spectral similarity to mafic rocks. For this reason, the garnet index is further thresholded at the 97% probability level so as to map only the top 3% of the possible pixels. Haematite also maps very widely because it lies spectrally between goethite and jarosite end members. For this reason, the Matched Filter index for haematite is unreliable and the FeOx index is used instead. Haematite is therefore more of an indication of iron enrichment that cannot be attributed to either goethite or jarosite. Because it also maps extensively, it is also thresholded at the 97% probability level.

The outline boundary vectors for each mineral and alteration style were imported into MapInfo and can be visualised either individually or collectively. The advantage here is that where overlaps occur, the ornament allows that overlap to be noted and some idea of the total mineral assemblage can be generated. These vector files can be attributed in such a way as to permit interactive interrogation of the ASTER output data with other data sets in a GIS.

Other output includes standard ER Mapper files for 2-3-1 (rgb); 6-3-1 (rgb); 5-6-8 (rgb), albedo, a RGB combination of FeOx, AlOH, and SiO2 indices (FAS), as well as pseudo-colour images showing the variation in intensity for each mineral identified. The 2-3-1 (rgb) image is a simulated true colour image whereas the 6-3-1 RGB image is an ASTER equivalent of the standard Landsat 7-4-1 (rgb) image product and can be interpreted similarly. The 5-6-8 (rgb) image however shows alteration styles of advanced argillic in blue tones, argillic and phyllic in pink-red tones and propylitic in yellow-green tones. The FAS (FeOx-AlOH-SiO2) (rgb) image shows iron rich areas in red, hydrothermally altered areas in green and silicified zones in blue. Combined iron-clay anomalism is yellow in colour, iron-silica magenta, clay-silica cyan, and all three combined is white. Furthermore, a Digital Elevation Model (DEM) was produced for the granule and from this both greyscale and pseudocolour shaded relief images created and exported into MapInfo. All output images have been compressed using the ER Mapper ECW compression and subsequently imported into MapInfo for display with the vector files as a single MapInfo workspace.

In addition to a regional mosaic compiled from the results for all image strips, workspaces and output for each if the individual strips were also compiled.

2.3 Interpreting ASTER Data

The quality and reliability of the resultant mineral distribution maps can only be judged against accurate field observations and mapping. However, some observations with regard to the output products are relevant.

As noted above, pixels of these dimensions will almost invariably be mixed in terms of their contents and so pure mineral spectra are unlikely. Where a mineral has been mapped, the mineral mapping in this study assumes that the pixel spectrum represents a single mineral. However, minerals occurring together produce mixed spectra that can appear very much like another mineral. For example, an equal mix of kaolinite and alunite appears spectrally like dickite in the ASTER band configuration (figure 3).

The nature in which certain alteration minerals occur should always be taken into consideration. For example, in hydrothermal settings, pyrophyllite and dickite typically occur in narrow veins and are unlikely to spectrally dominate a wide zone of 30m ASTER pixels. Thus, indications of their presence might represent a mixture of other more common minerals.

Additionally, although the reference spectra used for the mineral mapping are those of hydrothermal alteration minerals, some are very similar to a host of other minerals that may also be present. For example, the phyllic minerals mapped as sericite or high-AlOH phyllic and those mapped as phengite or low-AlOH phyllic are in a spectral continuum that includes muscovites, illites, and montmorillonites, all of which are practically indistinguishable at this spectral resolution (figure 5).

Similarly, although chlorite and epidote are used for the propylitic minerals, it is important to remember that the propylitic mineral spectra will also likely capture occurrences of high-MgOH clays derived from mafic rocks. Thus, the minerals mapped should be viewed in their broadest context and not as absolute or perfect examples of those minerals.

Thus, care must always be taken when interpreting the mineral map and the indicated presence of a particular mineral should be viewed in the context of its spatial coherence, the minerals mapped in close association with it as well as its 3-dimensional distribution. When identifying and characterising alteration zones and systems, associations of the more common alteration minerals are more likely to be indicative of the alteration facies and zones of the rarer minerals viewed more positively if they are indeed narrow and in keeping with their known mode of occurrence. Alteration minerals that map in coherent zones that are 3-dimensionally consistent with known or conceptual alteration systems will usually be more significant than those which occur either in isolation or in rare or obscure associations.

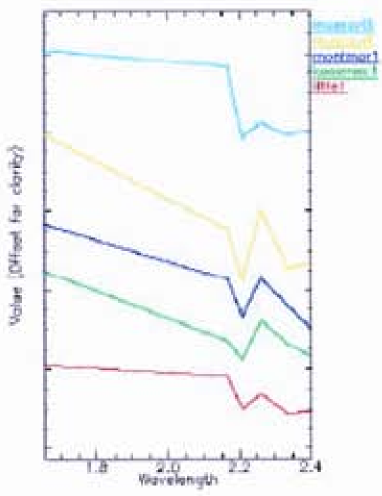

Figure 5; Comparitive plots of ASTER spectra for a range of phyllic minerals showing their overall similarity and hence likelihood for being mapped together

The iron oxide minerals mapped specifically are goethite, haematite and jarosite. The spectral variability of hematite falls within the range of both goethite and jarosite and as such is difficult to map as a specific index. By creating a total FeOx index as applied here, haematite falls within the area not covered by either goethite or jarosite. However, it must be noted also that mixtures of both goethite and jarosite can produce the same spectral shape as haematite and so the mapped distribution of haematite outside the goethite and jarosite end-members should be treated as mixed iron oxides and/or haematite. Goethite and jarosite usually map more discretely and are more likely to be representative of ferruginisation associated with mineralisation. However, the more intense zones of the haematite_97 index might also represent ferruginisation.

The jarosite index generated using the SWIR does not always match that of jarosite using the VNIR bands. This is not unusual in so much as the spectral absorption feature for jarosite in the SWIR is often subdued in the presence of other alteration minerals such as alunite and sericite that have much stronger absorption features and a higher overall brightness. Furthermore, the jarosite typically occurs on fracture surfaces and is not exposed to the sensor across the full area of the pixel.

A combination of opaline silica and jarosite is quite common in reality and also frequently indicated within ASTER imagery. This may be a real association but care must be exercised in interpreting such associations because the spectral absorption features for both minerals are at the same wavelength and each mineral would score highly in the index for the other, thus, the association may be artificial. Furthermore, where jarosite and/or opaline silica are present with other minerals such as alunite or any of the phyllic minerals, their reflectance and overall strength of spectral features are such that the diagnostic jarosite and opal features are likely to be lost or at best subdued.

Problems with the ASTER data themselves can impact on the way minerals map. The advanced argillic minerals such as alunite and pyrophyllite can be lost due to the energy over-spill or "crosstalk" problem within ASTER band 4 while chlorite, epidote and calcite can map more widely (see above).

Another problem identified in ASTER data concerns instability in the detector for band 4 which can give wide fluctuations in the values for that wavelength, impacting upon the slope between bands 4 and 5 in the spectrum so that absorption is consistently mapped at band 5. Thus, where both pyrophyllite and alunite map more widely than might normally be expected it could be due to this instability problem. Bands 8 and 9 also frequently appear to have anomalously high values and may need to be adjusted by applying a gain factor. When left unadjusted, the abnormally high values in either of these bands can impact greatly on how all minerals map.

Additionally, many minerals share an absorption band with certain vegetation species and care should be taken when interpreting mapped mineral zones that have a greenish colour in the 6-3-1 (rgb) and 2-3-1 (rgb) reference images. Where this problem is widespread, it may be necessary to remove the vegetation by masking or attempting to unmix the vegetation and mineral spectra using any of a number of unmixing algorithms. However, the successful unmixing of vegetation spectra depends upon accurate and usually multiple vegetation species and spectra being identified within the data and, although this routine may work with hyperspectral data is less likely to work with data of ASTER's spectral resolution.

All mineral indices, but especially those of the phyllic minerals, can have conflicts with areas of water, cloud, snow and ice but these can easily be recognised when interpreting the data by checking the output against the 63-1 (rgb) and 2-3-1 (rgb) reference images. Both very commonly map to areas of deep shadow in scenes with high albedo contrast due to the "crosstalk" effect and care should be exercised in interpreting such zones.

The advanced argillic, argillic and phyllic minerals commonly map extensively along the northern shores of water bodies. The cause of this phenomenon is not clear but may be a similar effect to the harmonic "crosstalk" effects noted above or may be due to other factors such as an increase in humidity local to large water bodies. In any event, the phenomenon should be noted and caution taken in drawing any significance from such mapped mineral zones.

The propylitic and calc-silicate minerals are typically dark and relatively low in overall reflectance by comparison with other minerals being mapped. Frequently they map to areas of shadow and caution should be exercised in interpreting any areas identified as being of these minerals that are in significant shadow. They are also often in conflict with vegetation and once again care should be exercised in interpreting areas indicated as being propylitic or calc-silicate minerals that are also green in the 6-3-1 (rgb) or 2-3-1 (rgb) reference images.

Garnet is mapped using the TIR bands and usually maps much more widely than would be expected, probably due to the presence of mafic within the area covered by the scene. Mafic and carbonate rocks have a similar thermal emission spectrum and hence skarn alteration should be interpreted only where garnet is indicated in conjunction with carbonate and calc-silicate minerals.

3. Alteration in the Redton District.

The alteration zones as mapped by the ASTER image data are heavily influenced by vegetation. Frequently, alteration mapped appears coherent and to have some geologic or structural control but is nevertheless coincident with lush vegetation and absent from areas of outcrop within the same area. Caution is therefore urged in the interpretation of these alteration zones and if used in exploration targeting they should be viewed together with geological and structural parameters very much in mind.

The contrast in the amounts of alteration being mapped across scene boundaries testifies to the seasonal impact of vegetation. Lichen and mosses, that cover outcrop and, having absorption features at similar wavelengths to advanced argillic, propylitic and carbonate minerals, give conflicting signals leading to the generation of false mineral zones which are discontinuous across scene boundaries.

Addressing the vegetation problem by elimination of those pixels identified in the VNIR as being dominated by vegetation would clear away many of the false mineral zones. Thus, a second suite of mineral zones were created from the original indices after applying a mask created from the "Normalised Difference Vegetation Index (NDVI) in which any pixel with a positive sign (i.e. containing significant vegetation) was masked. The residual mineral alteration zones were then imported into MapInfo and analysed and those indications of alteration with a coherent geologic shape and association with other alteration minerals and styles were mapped as targets and ranked according to their association of alteration minerals, styles and structural features.

Targets were ranked according to their indicated alteration mineralogy with a score of 0.5 allocated for the presence of an alteration style such as argillic plus 0.5 for the indication of a specific mineral of that style such as kaolinite up to a maximum of 6. Carbonate and propylitic styles are often seen peripheral to other zones and can represent either an alteration halo or the background lithology. Also, they are spectrally very similar and so are treated as one unless the alteration style indicated suggests it may be calc-silicate/skarn type mineralisation when they would be considered and scored separately. Added to the basic score assigned for the alteration styles and minerals indicated would be a value of 1 for a clear zonation from high-temperature to low temperature alteration facies or a spatial relationship with an intrusive. The presence of clear, strong, linear structural elements in association with the alteration are scored at 0.5 for each but with a bonus 0.5 where three occur and intersect, making a maximum ranking value of 10.

It should be noted that the review of the data found that many of the potential targets so identified were still seen to be associated with vegetated areas or fringing ice, both of which are known to often give rise to spurious anomalies. Furthermore, with no knowledge of the style and scale of alteration associated with known mineralisation in the district, the exercise in defining targets can only be considered as rudimentarily indicative and all targets and other mapped associations that were not targeted should be reconsidered and re-evaluated in the light of such knowledge.

The indications of alteration selected and ranked are listed in table 3.

Table 3; Indications of hydrothermal alteration and exploration targets.

ID	Easting	Northing	Area	Description	Rank
1	349853	6231812	158.48	Large area fringing ice; SiO2; phyllic (sericite); with argillic (kaolinite); adv. argillic (alunite) centres; FeOx; propylitic (chlorite)/carbonate halo; some suggestions of NE & ENE structural trends in SiO2 & FAS images	6.5
2	385887	6213914	33.83	SiO2 with phyllic (sericite); argillic (kaolinite); adv. argillic; FeOx (hematite, jarosite); propylitic (chlorite); carbonate (dolomite); N & SE linears	6.5
3	372659	6218147	52.04	SiO2; Phyllic (sericite, phengite); argillic (kaolinite); adv. argillic (pyrophyllite); FeOx (hematite); propylitic (chlorite)/carbonate (calcite); strong NE orientations in FeOx, SiO2, phyllic; Lush vegetation	6.5

Table 3 Continued; Indications of hydrothermal alteration and exploration targets.

ID	Easting	Northing	Area	Description	Rank
4	372752	6202829	224.59	Linked fault zone; N & SE linears plus several NE fractures; SiO2; Phyllic (sericite, phengite) in linkage zone, centres of argillic (kaolinite, dickite); adv. argillic (alunite, pyrophyllite); FeOx (hematite); propylitic (chlorite)/carbonate (calcite)	8
5	351494	6203305	92.36	Scattered zones of SiO2, phyllic (sericite); argillic (kaolinite): adv. argillic (alunite, pyrophyllite) within ice; semblance of altitude zonation, adv. argillic high, phyllic low - telescoped system? Some SE linear control?	4.5
6	318872	6208530	8.54	SiO2; phyllic (sericite, phengite); argillic; propylitic/carbonate (calcite); aligned along SE linear	4
7	313502	6188503	66.18	SiO2; phyllic (sericite); argillic (kaolinite); adv. argillic (alunite); FeOx (hematite, jarosite); propylitic (chlorite); SE and NE linears; edge of ice	7
8	322206	6196916	38.39	SiO2; adv. argillic (alunite); argillic (kaolinite); phyllic (sericite); FeOx (jarosite); propylitic (chlorite)/carbonate (calcite); NE linear	6.5
9	359437	6187012	105.15	Zones of SiO2; Adv. argillic (alunite, pyrophyllite); argillic (kaolinite); phyllic (sericite, phengite); propylitic (chlorite); carbonate (calcite); FeOx (hematite, jarosite); in valley with lush vegetation	6
10	327803	6174243	137.41	SiO2; Adv. argillic (alunite, pyrophyllite); argillic (kaolinite); phyllic (sericite); FeOx (hematite); propylitic (chlorite); fringing ice; N, NE and SE linears.	8
11	355016	6223213	88.01	SiO2; Adv. argillioc (alunite); argillic (kaolinite); phyllic (sericite); FeOx; propylitic (chlorite); carbonate; fringing ice;	5.5
12	337769	6194288	6.02	SiO2; adv. argillic (alunite); argillic (kaolinite); phyllic (sericite); propylitic (chlorite)/carbonate (calcite); NE, SE linears	6
13	346553	6197489	19.54	SiO2; adv. argillic (alunite); argillic (kaolinite); phyllic (sericite); propylitic (chlorite); N linear	5.5
14	384094	6188282	77.94	Zones of SiO2; Adv. argillic (alunite, pyrophyllite); argillic (kaolinite, dickite); phyllic (sericite, phengite); propylitic (chlorite); carbonate (calcite); FeOx (hematite); SE linear; in valley with lush vegetation	6.5
15	393897	6200081	90.88	SiO2; Adv. argillic (alunite, pyrophyllite); argillic (kaolinite, dickite); phyllic (sericite, phengite); FeOx (haematite); propylitic (chlorite); carbonate (dolomite); SE linear	6.5
16	404335	6196893	71.54	SiO2; Adv. argillic (alunite, pyrophyllite); argillic (kaolinite); phyllic (sericite, phengite); carbonate (dolomite); N, NE, SE linears;	6.5
17	405736	6186483	51.41	SiO2; adv. argillic (alunite, pyrophyllite); argillic (kaolinite); phyllic (sericite); carbonate (dolomite); N, NE linears	5.5

Table 3 Continued; Indications of hydrothermal alteration and exploration targets.

ID	Easting	Northing	Area	Description	Rank
18	414549	6173788	99.12	SiO2; adv. argillic (alunite); argillic (kaolinite, dickite); phyllic (sericite, phengite); FeOx (haematite); carbonate (dolomite); propylitic; NE, SE linears.	7
19	359913	6168863	180.69	SiO2; adv. argillic (alunite); argillic (kaolinite); phyllic (sericite, phengite); FeOx (haematite, jarosite); carbonate (dolomite, calcite); propylitic (chlorite, epidote); N, NE, SE linears	8
20	318191	6152804	64.44	Adv. argillic (alunite); argillic (kaolinite); phyllic (sericite); propylitic (chlorite)/carbonate; NE linear - haze effect	4.5
21	332292	6150105	57.84	SiO2; adv. argillic; argillic (kaolinite); phyllic (sericite); FeOx (haematite, jarosite); propylitic (chlorite)/carbonate (calcite); NE linears	6
22	379279	6154497	42.65	SiO2, phyllic (sericite); argillic (kaolinite); adv. argillic (alunite); propylitic (chlorite)/carbonate	5
23	362745	6156375	63.19	SiO2; adv. argillic (pyrophyllite, alunite); argillic (kaolinite); phyllic (sericite, phengite); FeOx (haematite); carbonate (dolomite)/propylitic; N, SE linears	7
24	407191	6162354	36.13	Adv. argillic (alunite, pyrophyllite); SiO2; argillic (kaolinite, dickite); phyllic (sericite); FeOx (haematite); carbonate (dolomite)/propylitic (chlorite); N, NE, SE linears.	8
25	399254	6118436	65.21	Phyllic (sericite); SiO2; FeOx (haematite); argillic (kaolinite); adv. argillic (alunite, pyrophyllite); propyliyic (chlorite)/carbonate (dolomite): NE linear.	6.5
26	405154	6128728	38.61	Adv. argillic (alunite, pyrophyllite); argillic (kaolinite); phyllic (sericite); SiO2; carbonate (dolomite)/propylitic; NE, SE linears.	6

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TAKLA - REDTON PROJECT

2005 ASSESSMENT REPORT

Appendix 10

Probabilistic Targeting Using MOCA

Probabilistic Targeting Using MOCA (Monte Carlo) Targeting Software

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Geoinformatics Exploration Inc
October 2005

Introduction

GXL proprietary MOCA Targeting Software is a model-driven method of targeting for mineral deposits using Monte Carlo probabilistic algorithms. Model-driven methods are in contrast to trained methods (e.g. Weights of Evidence) where deposits are compared to many datasets to determine which areas look statistically the most like areas with deposits. In addition to being model-driven, MOCA also employs a multiplicative probabilistic scoring method in contrast to additive methods used by most other targeting methods. The major advantages of probabilistic scoring are that a wide range of scores are generated for a small number of input layers making only a few key layers necessary and it decreases the number of false positives by eliminating areas that lack any of the key features.

MOCA uses Monte Carlo algorithms in order to incorporate uncertainty and risk into the targeting procedure. Monte Carlo algorithms are iterative methods of estimating calculations that are difficult to make directly. The final output of the MOCA program is an estimate of the probability of success everywhere in the project area. This provides an effective means of ranking targets against each other and, if employed consistently, should allow for comparison of targets across projects. Oil companies have employed this strategy for over twenty years and have experienced increased success as a result.

Defining Variables and Creating Layers

In order to use MOCA it is necessary to generate a soft model for the deposit type of interest and then determine the key input layers necessary for targeting the model. Development of models for MOCA is based largely on the petroleum systems model which uses source, maturation, pathway, trap and reservoir as the major input variables. This exact system could work for some basinal ore deposits such as Mississippi Valley type deposits but will likely require modification for all other deposit types.

Once the key features for a deposit type are decided it is necessary to make layers that are representative of those features. For example, the set of key features for porphyry copper gold environments could be a fertile source region, melting of the source region to generate hydrous magmas, migration pathways for the magma, and a trap to stop the magma's ascent at the appropriate depth. The layer used as input to MOCA for the migration pathways would most likely be a major structure interpretation with deep structures defined by datasets such as gravity worms and seismic data. The input layer for the trap could be an intrusion interpretation since the intrusions represent magma getting trapped in the crust.

Assigning Probabilities and Uncertainties

Every feature that is input into the MOCA program must be assigned a set of attributes that describe that likelihood that a feature has been identified properly, and if that feature acts as one of the components of the model. The probability that a feature has been identified properly is known as the probability of existence (P_{ex}) and the uncertainty of this value is the uncertainty of existence (U_{ex}). If developing an intrusive layer, the P_{ex} and U_{ex} could be assigned in the following manner:

Feature	Source	Pex	Uex
Intrusion 1	High quality mapping; characteristic magnetic signature	1	0
Intrusion 2	Poor quality mapping; characteristic magnetic signature	0.85	0.15
Intrusion 3	High quality mapping	0.95	0.05
Intrusion 4	Characteristic magnetic signature	0.7	0.2
Intrusion 5	Poor quality mapping	0.5	0.3
Intrusion 6	Ambiguous magnetic signature	0.3	0.2

The P_{ex} is based on how confident the identification of an intrusion is. Intrusion 1 is present in two high quality data sets so it is almost certainly there while intrusion 5 occurs in one poor quality dataset so it is impossible to be certain of it existence. It is also possible for an intrusion interpreted using high quality data to get a low score if the data are ambiguous as is the case for intrusion 6. The uncertainty is an estimate of the error on the estimate of P_{ex}. This error is based almost entirely on the quality of the data. In this case intrusions from poor quality mapping have U_{ex} of 0.3, those from the magnetic survey have U_{ex} of 0.2 and those from high quality mapping have U_{ex} of 0.1.

The probability that the feature has the desired effect and acts as one of the features of the model is called the probability of effect (P_{eff}) and the uncertainty on this value is the uncertainty of effect (U_{eff}). These values may be assigned for the intrusion described above as follows:

Feature	Peff	Ueff	Pchem	Uchem	Mchem
Intrusion 1	0.2	0.1	1	0	2
Intrusion 2	0.2	0.1	0.7	0.12	2
Intrusion 3	0.2	0.1	0.8	0.06	0.33
Intrusion 4	0.2	0.1	1	0	1
Intrusion 5	0.2	0.1	1	0	1
Intrusion 6	0.2	0.1	1	0	1

The P_{eff} is initially the same for all intrusions because the quality of the datasets used to map an intrusion has no bearing on the likelihood that it has an effect. However, MOCA has the flexibility to allow modifiers for probability to make use of datasets that provide more information about the feature. In the example above, the chemistry of the intrusions is being used to raise or lower the P_{eff}. The P_{chem} is the likelihood that we know the chemistry, U_{chem} is the uncertainty on P_{chem} and M_{chem} is a factor that is applied to P_{eff} if we know the chemistry. Intrusion 1 is known to have favorable chemistry since the P_{chem} is 1 and the U_{chem} is 0 so its P_{eff} will be doubled on each iteration. Intrusion 2 will be treated as favorable in approximately 70% of the iterations. Intrusion 3 has chemistry that is not favorable and will therefore have its P_{eff} multiplied by 0.33 on 80% of the iterations. Nothing is known about the chemistry of intrusions 4, 5 and 6 so the P_{eff} is left unchanged.

MOCA Algorithm

After assigning probability and uncertainty values, the variables are input into the MOCA program. MOCA then runs a certain number of iterations (in most cases 1000) using the probability distributions for P_{ex}, P_{eff} and any modifiers to assign values for each iteration. Features are first checked to see if they exist. This is done by comparing the value for P_{ex} generated for each iteration against a random number between 0 and 1. If the feature exists a similar check is made to determine if it has the desired effect incorporating any modifiers. Examples of this are shown for intrusions 1 and 2 in Tables 1 and 2 at the end of this report.

On each iteration all the features that exist and have the desired effect are placed on a grid and those grids are stored to disk. After all the iterations have been completed MOCA reads through all the stored grids and determines the average probability of success for each of the input layers and then calculates the overall probability of success.

Probability of Success

The calculations described above generate a series of ones and zeros where ones represent a success on a given iteration and zeros represent a failure. A series of ones and zeros generates a binomial statistical distribution which has a mean number of successes (μ) and a variance on the number of successes (σ^2) for N iterations defined by:

$$\mu = Np \qquad (1)$$

$$\sigma^2 = Np(p-1) \qquad (2)$$

where p is the overall probability of success on any given iteration. The variable p is the value we are interested in so we count the number of successes (μ) and divide by the number of iterations (N) giving an overall probability of success. This is done for all layers to generate a probability layer for each input variable. The overall probability of success is determined in two ways. The decision tree probability is calculated by counting the number of iterations where all variables overlapped and then dividing by the number of iterations. This is another binomial distribution as described above. The multiplied probability is determined by multiplying the probability of success (p) for each of the input layers.

Uncertainty

Because the Monte Carlo algorithm used here generates a binomial distribution, the variance is directly related to the probability calculated as described above. For p values of 0 and 1, $\sigma^2 = 0$ and σ^2 has a maximum value where $p = 0.5$. Therefore, reporting a standard deviation for the final probabilities is meaningless because it is related to the probability by a simple equation. The uncertainty can be used to determine if enough iterations were used to obtain a statistically significant result. This is done using the standard error which is an estimate of how well you can estimate the p value for a given number of iterations and is defined by:

$$s.e. = \frac{p(p-1)}{\sqrt{N}} \qquad (3)$$

The worst estimate of *s.e.* is where $p = 0.5$. The table below shows how the *s.e.* changes at $p = 0.5$ with different numbers of iterations.

Iterations	s.e.
1	0.25000
2	0.17678
5	0.11180
10	0.07906
100	0.02500
1000	0.00791
10000	0.00250
100000	0.00079

Note that use of equation 3 above requires p is not equal to 0 or 1.

Table 1. MOCA demonstration for intrusion 1

Pex	1		Peff	0.2		Pchem		1		
Uex	0		Ueff	0.1		Uchem		0		
Dex	Normal		Deff	Normal		Dchem		Normal		
						Mchem		2		
Iterations	1	2	3	4	5	6	7	8	9	10
Does the intrusion exist?										
Pex(i)	1	1	1	1	1	1	1	1	1	1
Comparison data	0.09	0.60	0.04	0.84	0.08	0.71	0.05	0.44	0.04	0.33
Exists	1	1	1	1	1	1	1	1	1	1
Does it have the desired effect? This is the same for all intrusions but can be modified for age or chemistry.										
Peff(i)	0.20	0.27	0.08	0.21	0.27	0.30	0.20	0.22	0.38	0.15
Does the intrusion have the right chemsitry? If yes, double the probability of the intrusion have the desired effect. If not, don't change the probability.										
Pchem(i)	1	1	1	1	1	1	1	1	1	1
Comparison data	0.33	0.48	0.95	0.27	0.24	0.28	0.63	0.56	0.37	0.05
Right chem	1	1	1	1	1	1	1	1	1	1
Multiplier	2	2	2	2	2	2	2	2	2	2
Multiply Peff(i) by Multiplier to generate Peff_mod(i) and determine if the intrusion had the desired effect.										
Peff_mod(i)	0.41	0.55	0.15	0.41	0.53	0.61	0.40	0.44	0.77	0.30
Comparison data	0.33	0.12	0.80	0.75	0.42	0.90	0.17	0.06	0.93	0.52
Effect	1	1	0	0	1	0	1	1	0	0
Does the intrusion get included in the final grid? This is a 1 if the intrusion both exists and has the desired effect. It is 0 otherwise.										
Final grid	1	1	0	0	1	0	1	1	0	0

Note that probabilities > 1 and < 0 can be generated for the Pex, Peff and Pchem depending on the distribution.
All probabilities > 1 are treated as 1 and all probabilities < 0 are treated as 0.

Table 2. MOCA demonstration for intrusion 2

Pex	0.85		Peff	0.2		Pchem		0.7		
Uex	0.15		Ueff	0.1		Uchem		0.12		
Dex	Normal		Deff	Normal		Dchem		Normal		
						Mchem		2		
Iterations	1	2	3	4	5	6	7	8	9	10
Does the intrusion exist?										
Pex(i)	0.82743	1.04054	0.88027	0.75072	0.87205	0.76179	0.98313	0.64635	0.94257	0.83247
Comparison data	0.57	0.50	0.98	0.63	0.88	0.34	0.33	0.48	0.52	0.46
Exists	1	1	0	1	0	1	1	1	1	1
Does it have the desired effect? This is the same for all intrusions but can be modified for age or chemistry.										
Peff(i)	0.29	0.30		0.31		-0.01	0.21	0.12	0.26	0.08
Does the intrusion have the right chemsitry? If yes, double the probability of the intrusion have the desired effect. If not, do not change the probability.										
Pchem(i)	0.7183	0.77802		0.60226		0.60561	0.86797	0.9413	0.76799	0.84114
Comparison data	0.11	0.58		0.57		0.19	0.79	0.36	0.74	0.19
Right chem	1	1		1		1	1	1	1	1
Multiplier	2	2		2		2	2	2	2	2
Multiply Peff(i) by Multiplier to generate Peff_mod(i) and determine if the intrusion had the desired effect.										
Peff_mod(i)	0.58	0.60		0.63		-0.02	0.41	0.24	0.52	0.16
Comparison data	0.12	0.20		0.64		0.57	0.89	0.29	0.27	0.83
Effect	1	1		0		0	0	0	1	0
Does the intrusion get included in the final grid? This is a 1 if the intrusion both exists and has the desired effect. It is 0 otherwise.										
Final grid	1	1	0	0	0	0	0	0	1	0

Note that probabilities > 1 and < 0 can be generated for the Pex, Peff and Pchem depending on the distribution.
All probabilities > 1 are treated as 1 and all probabilities < 0 are treated as 0.

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Appendix 11

Redton Project Target List

TARGET_NAME	EAST NAD83	NORTH NAD83	TENURE OWNERSHIP	TARGET DIMENSIONS	SOURCE: LITH CODE	SOURCE: HOST_LITHOLOGY	SOURCE: INTRUSIVE_CENTRES	SOURCE: MOCA_S SCORE	PATHWAY: BATHOLITH MARGIN	PATHWAY: DEEP MAG STRUCTURE	PATHWAY: GRAVITY STRUCTURES	PATHWAY: SURFACE STRUCTURES	PATHWAY: MOCA_P SCORE	MOCA_SP SCORE	MOCA_SP RANKING
Tak / Crescent Ridge	359347.75	6175431.08	Redton JV	1600x1100m	JI_IIM	Edge of Monzonite batholith with half target undiff volcanics	completely within GXL interp deep pluton. no auto detection intrusive	0.854564	inside buffer	NNW deep structure	no. outside buffer	intersected by N-S fault	0.853787	1.000000	1
Tak south	357865.54	6173827.90	Redton JV	1200x900m	JI_IIM	Edge of Monzonite batholith	completely within GXL interp deep pluton. no auto detection intrusive	0.946207	inside buffer	distal - 2km from NNW deep structure	no. outside buffer	between 2 N-S faults	0.669022	1.000000	1
Nell (North Skarn)	357865.75	6177070.13	Redton JV	1800x900m	JI_IIM	Edge of Monzonite batholith	between 2 GXL interp deep plutons. not near auto detection intrusive	0.963632	outside buffer	within 1km of N-S to NNW deep structures	within 1km of gravity high margin	trends along NNE fault	0.891971	1.000000	1
Rainbow (Takla North East)	355136.19	6171411.57	Redton JV	1000x600m	JI_IIM	Edge of Monzonite batholith. also diorite	outside edge of GXL interp deep pluton and auto detection intrusive	0.819850	inside buffer	distal - 2km from NNW deep structure	no. outside buffer	intersection of Takla fault and NNE fault	0.776813	0.970000	7
Tak North	359681.99	6178235.46	Redton JV	1600x1300m	JI_IIM	Edge of Monzonite batholith	between 2 GXL interp deep plutons. outside edge of auto detection intrusive	0.854534	inside buffer	N trending deep mag worm structure	no. outside buffer	close to intersection of NW and NE faults	0.798804	0.983004	6
Nell South	357120.39	6174592.49	Redton JV	1800x900m	JI_IIM	Edge of Monzonite batholith with some granodiorite	outside edge of GXL interp deep pluton. no auto detection intrusive	0.960784	mostly outside buffer	within 1km of NNW deep structure	within 1.5km of gravity high margin	intersected by NNE fault	0.882654	1.000000	1
Bor	367996.18	6122160.33	west half Redton JV, east half excluded	1500mx1500m	JI_IIM	Monzonite batholith	inside edge of GXL interp deep pluton. outside edge of auto detection intrusive	0.625368	mostly outside buffer	within 1km of NE deep structure. 1.5km of NW deep structure	within 1km of gravity high margin	none mapped	0.849747	0.738752	15
Bor North	369305.22	6123929.40	Redton JV	1000x2000m	JI_IIM	Monzonite batholith	inside edge of GXL interp deep pluton. outside edge of auto detection intrusive	0.625345	outside buffer	within 1km of NE deep structure	straddles gravity high margin	intersected by NW fault	0.807060	0.738747	16
Rainbow East	357624.32	6170193.69	Redton JV	1300x700m	Ru_VOO	Undifferentiated Volcanic-volcaniclastic-sedimentary rocks. Some rhyolite porphyry rocks	outside edge of GXL interp deep pluton. no auto detection intrusive	0.938942	inside buffer	within 1km of NW deep structure	no. outside buffer	intersection of Takla fault and NNE fault	0.820731	1.000000	1
Duckling	359062.58	6180240.68	Redton JV	1000x600m	JI_IIM	edge of monzonite batholith	outside edge of GXL interp deep pluton. not near auto detection intrusive	0.686013	inside buffer	N trending deep mag worm structure	no. outside buffer	close to intersection of NW and NE faults	0.998681	0.802012	14
Duckling West	357865.75	6179558.34	Redton JV	800x600m	JI_IIM	Monzonite batholith	completely within GXL interp deep pluton. not near auto detection intrusive	0.685260	outside buffer	within 1km of N-S deep structures	within 1km of gravity high margin	close to NE fault	0.796475	0.803093	13
KW	361220.96	6147120.75	Redton JV	2400x1600m	JI_IIM	Monzonite batholith - edge of cretaceous granite	inside edge of GXL interp deep pluton and auto detection intrusive	0.539800	inside buffer	within 1.5km of intersection of NW and WNW deep structure	within 1km of gravity high margin	intersected by E-W fault	1.000000	0.584261	23
KW West	358532.09	6146607.81	Redton JV	1600x1000m	JI_IIM	Monzonite batholith	outside edge of GXL interp deep pluton and auto detection intrusive	0.544463	inside buffer	within 1.5km of NW deep structure	no. outside buffer	intersected by E-W fault	0.767166	0.607091	21
East Swan	354304.22	6154568.25	Redton JV	2700x1200m	JI_IIM	Monzonite batholith	inside edge of GXL interp deep pluton and auto detection intrusive	0.694449	outside buffer	within 1km of NW deep structure	within 1km of gravity high margin	none mapped	0.542178	0.883902	8
CS25	353869.74	6173697.07	Redton JV	900x500m	JI_IIM	Monzonite batholith	inside edge of GXL interp deep pluton and auto detection intrusive	0.739111	outside buffer	no. ~2.5km from any deep structures	within 1km of gravity high margin	intersected by N-NNE fault	0.446967	0.838036	11
CS24	354989.23	6174687.07	Redton JV	900x600m	JI_IIM	Monzonite batholith. also some granodiorite dykes	inside edge of GXL interp deep pluton and auto detection intrusive	0.740237	outside buffer	within 1.5km of NNW deep structure	within 500m of gravity high margin	none mapped	0.550831	0.850000	10
Nation	368456.11	6133163.42	Redton JV	2300x1200m	JI_IIM	Monzonite batholith	inside edge of GXL interp deep pluton and auto detection intrusive	0.595182	outside buffer	within 1.5km of NW deep structure	straddles gravity high margin	aligned with NW fault immediately to the north	0.744430	0.725560	17
Burn	357506.07	6149526.62	Redton JV	1700x1200m	JI_IIM	Monzonite batholith	inside edge of GXL interp deep pluton and auto detection intrusive	0.606783	outside buffer	within 1.5km of NW deep structure	no. outside buffer	none mapped	0.392799	0.566825	25
Cirque	355586.89	6167380.14	Redton JV	1800x1600m	K_IKGF	Cretaceous Age - alkali feldspar granite / syenogranite	outside edge of GXL interp deep pluton and auto detection intrusive	0.714926	inside buffer	no. ~2km from NNW deep structure	straddles gravity high margin	none mapped. possible NNW-NW mag lineaments	0.725724	0.880000	9
CS32	351752.06	6177748.54	Redton JV	2100x1700m	JI_IIM	Monzonite batholith	outside edge of GXL interp deep pluton and auto detection intrusive	0.631929	outside buffer	no. ~4km from nearest deep structure	no. outside buffer	intersected by NE fault	0.195881	0.313248	29
Eagle Nest Roof	362778.30	6180046.23	Redton JV	2000x1300m	Ru_VOO	undifferentiated volcanics-volcaniclastics-sediments	completely within GXL interp deep pluton and partly within auto detection intrusive	0.295217	outside buffer	intersection of N-S and NW deep structures	no. outside buffer	none mapped	0.711314	0.307204	30
Kwanika Creek	359563.34	6161686.21	Redton JV	1400x1000m	JI_IIM	Edge of Monzonite batholith	no GXL interp deep pluton. outside edge of auto detection intrusive	0.515052	inside buffer	intersecting NW and ENE deep structures	no. outside buffer	intersected by NNW fault and possible NE fault	0.806539	0.619767	20
Dog	372917.05	6169312.85	Redton JV	3300x1900	Ru_VOO	undifferentiated volcanics-volcaniclastics-sediments	outside edge of GXL interp deep pluton and auto detection intrusive	0.259421	outside buffer	within 1km of NW deep structure	no. outside buffer	N-S fault immediately East	0.535779	0.219942	32
Twin Creek	361336.29	6169015.44	Redton JV	2500x1100m	Ru_VOO	Undifferentiated Volcanic-volcaniclastic-sedimentary rocks	inside edge of GXL interp deep pluton and auto detection intrusive	0.278403	outside buffer	within 1km of NNW deep structure	straddles gravity high margin	intersection of Takla fault - NE fault and NW fault	0.888444	0.315476	28
KC East	366782.55	6154718.23	Redton JV	1700x1200m	JI_IIM	monzonite	completely within GXL interp deep pluton and auto detection intrusive	0.634740	inside buffer	no.~2km from NW deep structure	no. outside buffer	none mapped. possible NW mag linear (wrapping around target)	0.213906	0.242955	31
Lys	377725.62	6143529.77	Redton JV	1300x1200m	K_IKGF	alkali feldspar granite / syenogranite surrounded by gabbro	inside edge of GXL interp deep pluton and auto detection intrusive	0.522568	inside buffer	within 1.5km of NE deep structure	within 1.5km of gravity low margin	none mapped	0.711323	0.598640	22
Serengeti	369368.64	6150514.09	Serengeti	1000x800m	JI_IIM	Monzonite surrounded by gabbro	inside edge of GXL interp deep pluton and auto detection intrusive	0.660704	inside buffer	within 1.5km of NW deep structure	no. outside buffer	none mapped. possible NW mag linear	0.477933	0.678917	19
Hal East	364847.40	6140947.03	Redton JV	1300x900m	JI_IIM	Monzonite batholith	inside edge of GXL interp deep pluton and auto detection intrusive	0.519859	inside buffer	within 1.5km of NW deep structure	straddles gravity high margin	none mapped	0.721687	0.568415	24
Heath South	364352.07	6125061.45	Redton JV	700x1800m	JI_IIM	Monzonite batholith	none identified	0.554598	inside buffer	within 1.5km of NW deep structure	no. outside buffer	intersected by NNE fault	0.690569	0.724853	18
Heath	362382.27	6131835.00	Redton JV	2000x1700m	JI_IIM	Monzonite batholith - edge of Triassic diorite	outside edge of GXL interp deep pluton and auto detection intrusive	0.673964	inside buffer	within 1.5km of NW deep structure	within 1km of gravity high margin	none mapped. possible NW continuation of NW fault to the south	0.746022	0.837972	12
Valleau	373503.88	6151081.13	Redton JV	1300x700m	RJ_IMG	Triassic - Jurassic Age - Gabbro	outside edge of GXL interp deep pluton and auto detection intrusive	0.357494	outside buffer	within 1km of NW deep structure	within 1km of gravity low margin	NW fault immediately East	0.705729	0.390000	26
Tsay	384471.51	6145569.56	Redton JV	1400x800	Ru_VOO	undifferentiated volcanics-volcaniclastics-sediments	outside edge of GXL interp deep pluton and auto detection intrusive	0.276859	outside buffer	within 1km of NE deep structure	within 1km of gravity low margin	NNW fault	0.745599	0.327668	27

TARGET_NAME	FOCUS: SHALLOW_INTRUSIVES	FOCUS: ALT_ASTER	FOCUS: ALT RADIOMETRICS	FOCUS: MOCA_F SCORE	MOCA SCORE: MOCA_SPF SCORE	MOCA SCORE: MOCA_SPF RANKING
Tak / Crescent Ridge	covers GXL interp intrusive and auto detection intrusive. intrusive and volcanic outcrop	none	moderately anomalous	0.449219	0.184763	7
Tak south	covers GXL interp intrusive and auto detection intrusive. intrusive and volcanic outcrop	Advanced Argillic	minor weak anomalism	0.422218	0.184965	6
Nell (North Skarn)	encloses a GXL interp intrusive. no auto detection intrusive. granodiorite dyke outcrop	none	transected by linear K anomaly	0.478934	0.276541	3
Rainbow (Takla North East)	outside edge of GXL interp intrusive and auto detection intrusive. diorite and granite porphyry outcrop	edge of Advanced Argillic	minor weak anomalism / background levels	0.337631	0.195069	5
Tak North	encloses a GXL interp intrusive. no auto detection intrusive	none	distinct K peak in centre of target	0.422678	0.257817	4
Nell South	edge of 2 GXL interp intrusives and 1 auto detection intrusive. granodiorite dyke outcrop	Advanced Argillic	moderately anomalous	0.444312	0.312211	1
Bor	edge of 2 GXL interpreted / auto detection intrusives	Kaolinitic	background levels - no anomalism	0.392729	0.170752	10
Bor North	edge of GXL interpreted / auto detection intrusive	Sericitisation	some minor K anomalism	0.299377	0.124114	18
Rainbow East	outside edge of GXL interp intrusive and auto detection intrusive. Rhyolite porphyry outcrop	edge of Advanced Argillic	weak-moderate anomalism	0.545724	0.288290	2
Duckling	outside edge of GXL interp intrusive and auto detection intrusive	none	anomalous - edge of K high	0.275160	0.183057	9
Duckling West	between 2 GXL interp intrusives and auto detection intrusives	none	anomalous - edge of K high	0.349935	0.183233	8
KW	covers small GXL / auto detection intrusive and edge of GXL / auto detection intrusive	Sericitisation. Iron oxides to the east	moderate-strong K anomaly peak	0.330103	0.141642	13
KW West	edge of GXL / auto detection intrusive	Sericitisation. Iron oxides immediately west	relative low	0.352265	0.145089	11
East Swan	edge of 2 small GXL interpreted / auto detection intrusives.	Iron oxides	no anomalism	0.332821	0.124242	17
CS25	outside edge of GXL interp intrusive and small auto detection intrusive.	some Advanced Argillic	edge of distinct k high	0.442945	0.139435	14
CS24	edge of GXL interp intrusive. No auto detection intrusive. granodiorite dyke outcrop	none	weak anomalism plus K low	0.381318	0.144213	12
Nation	includes 2 GXL / auto detection intrusives	some Advanced Argillic	no anomalism - relative low no anomalism	0.328446	0.134288	15
Burn	covers GXL / auto detection intrusive	none	slightly lower area within moderate-strong K anomaly	0.290024	0.066152	27
Cirque	includes 1 small GXL interpreted intrusive. no auto detection intrusives. Granite and porphyritic andesite outcrop	some Advanced Argillic	no anomalism	0.312214	0.109992	20
CS32	outside edge of 2 GXL interp intrusives and auto detection intrusives.	edge of Advanced Argillic	anomalous - edge of K high	0.451179	0.049749	30
Eagle Nest Roof	edge of GXL interp intrusive and auto detection high frequency intrusive. 1 outcrop point - porphyritic mafic intrusive	Advanced Argillic	very weak - possible background noise	0.319357	0.056422	29
Kwanika Creek	no interpreted intrusives	edge of Advanced Argillic / Sericitisation/Fe-Ox	no anomalism	0.309724	0.125663	16
Dog	includes small GXL interpreted and auto detected intrusives. edge of 3rd GXL / auto detection intrusives	none	distinct anomaly	0.332905	0.035082	32
Twin Creek	includes 3 small GXL interpreted intrusives. no auto detection intrusives	Advanced Argillic	no anomalism	0.473614	0.110305	19
KC East	covers GXL / auto detection intrusive	Advanced Argillic	north end of moderate linear K anomaly	0.286135	0.037526	31
Lys	covers GXL / auto detection intrusive. outcropping cretaceous granite	Kaolinitic / Sericitic	no anomalism	0.223942	0.078305	26
Serengeti	edge of GXL / auto detection intrusive	edge of Sericitisation zone	no anomalism	0.283922	0.065054	28
Hal East	edge of small GXL / auto detection intrusive	edge of Advanced Argillic	moderate K - background for area	0.260034	0.095007	23
Heath South	edge of GXL interpreted intrusive. no auto detection intrusive	edge of Sericitisation	edge of moderate k anomaly	0.362270	0.105964	21
Heath	edge of GXL / auto detection intrusive	Iron Oxide	weak-moderate k anomaly	0.231425	0.096608	22
Valleau	outside edge of GXL / auto detection intrusive. some basalt outcrop	Sericitisation / Kaolinite	no anomalism - relative low	0.353479	0.082897	24
Tsay	includes small GXL interpreted intrusive. No auto detection intrusive. minor sandstone outcrop	Advanced Argillic	no anomalism	0.401655	0.078510	25

TARGET_NAME	TRAP (Not scored using MOCA): RELATION TO KNOWN MINERALISATION	TRAP: REGIONAL STREAM GEOCHEMISTRY	TRAP: PROSPECT_GEOCHEMISTRY	OUTCROP_COVER	TARGET_TYPE	TARGET_CLASS	CURRENT EXPL. STATUS	PROSPECTIVITY CLASS	PROSPECTIVITY RANKING	FIELDWORK PRIORITY	ACCESS_TESTABILITY	FUTURE_WORK	COMMENTS
Tak / Crescent Ridge	Tak prospect	high Cu-Au-Mo-Pb-Zn anomalism	well covered by soils/rocks. very strong Au-Cu-Mo zone with supporting Bi, Pb, Zn, Ag anomalism	mostly felsic-int volcanics with some syenite mapped	Porphyry Cu-Au	Intrusion_outcropping	near drill ready	A	A1	1	good - high ridge	field evaluate to determine orientation of drilling - drill test	main geochem anomaly.
Tak south	none	moderate Cu-Au anomalism	N half covered by soil grid. Strong Cu-Au anomaly. Strong As-Ag, mod Zn-Pb zoning	extensive outcrop - felsic volcanics, undiff intrusives, diorite	Porphyry Cu-Au	Intrusion_outcropping	near drill ready	A	A2	2	good - high ridge with extensive outcrop	extend soil grid south? drill test?	
Nell (North Skarn)	none	high Cu-Au anomalism	southern part covered by soil grid (mostly in valley) - high Mo, some high Cu, low Au, As	Granodiorite mapped along ridge top. Should be signif outcrop	Porphyry Cu-Au	Intrusion_outcropping	near drill ready	A	A3	3	good access. probably extensive outcrop	extend geochem coverage north - drill test?	
Rainbow (Takla North East)	immediately north of Takla-Rainbow prospect	mod-strong Cu-Au-Mo	southern tip covered by soil grid - anomalous Cu-Mo on ends of soil lines. Weak-mod Cu-Au anomalism in rock chips	mostly ridge with some diorite mapped. Probably extensive outcrop	Porphyry Cu-Au	Intrusion_outcropping	near drill ready	A	A4	4	good - high ridge with probably extensive outcrop	review IP, extend geochem coverage, drill test?	
Tak North	none	strongly anomalous sample in valley to east but could be from ridge to east	moderate Cu-Au anomalism in a few stream samples. Not well tested. Signif Cu in rockchip to SE	1 narrow ridge - Monzonite outcrop mapped. significant cover in valley	Porphyry Cu-Au	Intrusion_outcropping	Prospect	A	A5	5	Good on ridge. Poor in Valley	increase geochem coverage, drill test?	
Nell South	none	moderate Cu-Au anomalism	NE corner tested by soil grid, rest poorly tested. Au-Cu anomalism in soils	significant granodiorite outcrop	Porphyry Cu-Au	Intrusion_outcropping	Prospect	A	A6	6	good - high ridge with extensive outcrop	extend geochem coverage	
Bor	none	moderate Cu-Mo-Au-As anomaly	partly tested by soil sampling - week Cu, no Au	not mapped - extensive cover likely	Porphyry Cu-Au	Intrusion_poor_outcrop?	Prospect	B	B01	7	moderate. lower slope/valley bottom - below tree line		
Bor North	none	moderate Cu-Mo-Au-As anomaly	untested	not mapped. some outcrop likely	Porphyry Cu-Au	Intrusion_poor_outcrop?	grass roots	B	B02	8	moderate. lower slope, possibly below tree line		
Rainbow East	immediately south of Loop Cu showing	Strong Au-Pb-Zn-Ag, mod Cu	untested	porphyritic rhyolite mapped on ridge top. possible cover on slopes	Porphyry Cu-Au	Intrusion_outcropping	Prospect	B	B03	9	South facing slope. Likely significant cover on lower slopes. Ridge top good	field evaluate target and area to north	Geochem indicates centre to north
Duckling	none	untested	untested	edge of low hill - probably poor outcrop / signif cover	Porphyry Cu-Au	Intrusion_poor_outcrop?	grass roots	B	B04	22	possibly difficult - below tree line?		
Duckling West	none	untested	untested	lower slopes with incised valleys probably poor outcrop / signif cover	Porphyry Cu-Au	Intrusion_poor_outcrop?	grass roots	B	B05	23	possibly difficult - below tree line?		
KW	immediately east of KW Cu-Mo showing	partly tested. Anomalous Cu-Mo	untested	not mapped. high round hill - likely extensive outcrop	Porphyry Cu-Au	Intrusion_outcropping	grass roots	B	B06	10	Good - mostly high hills		
KW West	~1.5 km West of KW Cu-Mo showing	untested	untested	not mapped. upper slope of ridge - likely extensive outcrop	Porphyry Cu-Au	Intrusion_outcropping	grass roots	B	B07	11	OK		
East Swan	none	partly tested - mod Pb-As-Hg anomalism	2 local streams draining target sampled. Minor Au anomalism in 1	monzonite mapped to West of target	Porphyry Cu-Au	Intrusion_poor_outcrop?	grass roots	B	B08	24	prob difficult - lower slopes below tree line		
CS25	none	moderate Cu-Mo-Au-Ag anomalism	untested	granodiorite mapped along ridge to south	Porphyry Cu-Au	Intrusion_outcropping	Prospect	B	B09	12	good. moderately high ridge presumably with outcrop		
CS24	none	moderate Cu-Mo-Au-Ag anomalism	untested	some granodiorite mapped	Porphyry Cu-Au	Intrusion_outcropping	Prospect	B	B10	13	good. moderately high ridge with mapped outcrop		
Nation	none	20% tested - no anomalism. high Au, mod Cu drainages to east	untested	not mapped. some outcrop likely	Porphyry Cu-Au	Intrusion_outcropping	grass roots	B	B11	25	difficult. mid slope - steep, partly below tree line?		
Burn	~1km west of North Kwanika Cu showing	possibly partly tested by large catchment - strong Au anomaly	untested	not mapped. High ridge, likely extensive outcrop	Porphyry Cu-Au	Intrusion_outcropping	grass roots	B	B12	14	OK - high ridge, possibly steep terrain		
Cirque	~1km north of Hooey Cu showing	Mod-strong Au-Mo-Ag	NE tip covered by soil grid - strong Au, mod Cu-Pb-Ag NE of target. most of target area untested	minor andesite and granite outcrop in NE corner	Porphyry Cu-Au	Intrusion_outcropping	Prospect	B	B13	15	broad, fairly high valley - possibly some outcrop but also likely significant cover	Review geochem anomaly at TRS grid to north. extend soil grid?	Cu-Au anomaly to north (TRS Grid) - drilled
CS32	none	untested	untested	no outcrop mapped. lower slopes	Porphyry Cu-Au	Intrusion_poor_outcrop?	grass roots	B	B14	16	OK Possibly partly below tree line		
Eagle Nest Roof	none	untested	2 stream samples high on 1 of 2 ridges. no significant anomalism	mostly high ridges - no outcrop mapped but likely good outcrop of young volcanic cover	Porphyry Cu-Au	concealed intrusion? Volcanics_outcropping	grass roots	C	C01	17	good access but volcanic cover	fracture map - signs of buried intrusive	If field review is positive other targets may exist to the south and SW
Kwanika Creek	none	untested	Soil grid ~1km N - anomalous Au-Cu on 500m spaced grid	valley floor - probably mostly cover	Epithermal Au	Intrusion_poor_outcrop?	grass roots	C	C02	31	difficult -valley floor / below tree line	extend and infill soil grid to north	epithermal target?
Dog	none	partly tested - no anomalism	untested	not mapped. mostly lower slopes - possible cover. Outcrop on ridges to west likely	Porphyry Cu-Au	concealed intrusion? Voclanics_poor_outcrop	grass roots	C	C03	18	ridges ok to west. most of target below tree line	evaluate nearest outcrop to SW	
Twin Creek	none	untested (large catchment)	mostly covered by soil grid, stream seds, ridge samples. Only scattered weak Au-Cu anomalism	minor fault breccia, basalt outcrop. mid-lower slopes - likely some cover	Porphyry Cu-Au	concealed intrusion? Volcanics_outcropping	Prospect	C	C04	19	upper half good access. lower half probably below tree line	assess effectiveness of soils	
KC East	2km east of Kwanika Cu showing	anomalous Cu-Au ,moderate Mo-Ag	untested. detailed soil grid West of target (other side of valley) has strong Cu anomaly (Serengeti claim)	not mapped. probably some outcrop on hills	Porphyry Cu-Au	Intrusion_poor_outcrop?	grass roots	C	C05	20	OK - low-mod hills. prob partly below tree line		
Lys	none	untested	covered by soil grid and local stream seds - Au anomaly in streams but soils not anomalous	1 small granite outcrop. valley bottom - extensive cover likely	Porphyry Cu-Au	Intrusion_poor_outcrop?	Prospect	C	C06	28	difficult - valley bottom below tree line		
Serengeti	none	untested	mostly covered by soil grid, local stream seds. No significant anomalism in soils. patchy Cu-Au in streams	edge of low valley - extensive cover likely	Porphyry Cu-Au	Intrusion_poor_outcrop?	Prospect	C	C07	32	edge of low valley - probably below tree line	**no work - outside GXL claims**	
Hal East	~3km east on same ridge as Hal4 Cu-Ag showing	untested	untested	not mapped. likely extensive outcrop	Porphyry Cu-Au	Intrusion_outcropping	grass roots	C	C08	21	good. slightly down slope from high ridge		
Heath South	~1.5km SE of Heath3 Cu-Ag-Au showing	untested. high Cu, mod Au-As-Mo-Pb immediately east	untested	granodiorite mapped up slope. extensive cover likely	Porphyry Cu-Au	Intrusion_poor_outcrop?	grass roots	C	C09	30	moderate. lower slope, probably below tree line		
Heath	~2.5km NW of Tyger Cu showing	untested	untested	not mapped - some outcrop likely	Porphyry Cu-Au	Intrusion_poor_outcrop?	grass roots	C	C10	29	moderate. lower slopes, possibly below tree line		
Valleau	none	high Au, mod Cu anomaly	1 line of local stream seds - no anomalism. strong Mo-Zn soil anomaly 1km to north	not mapped. some outcrop likely	Porphyry Cu-Au	concealed intrusion? Volcanics_outcropping	Prospect	C	C11	26	Good. mid slope of high ridge		
Tsay	~2km SE of Tsay Cu showing	High Au, mod Cu-As anomaly	untested	not mapped. some outcrop likely	Porphyry Cu-Au	concealed intrusion? Volcanics_poor_outcrop	grass roots	C	C12	27	OK. low hills / high valley		

A = prospective intrusive rocks mapped/interpreted, high MOCA score, supporting geochemistry
B = within interpreted intrusive batholith, moderate MOCA score, +/- limited geochem coverage
C = generally outside interpreted intrusive batholith, low-moderate MOCA score, generally poor geochem coverage - regional streams only

28,264

TAKLA - REDTON PROJECT

2005 ASSESSMENT REPORT

Appendix 12

Claim Listing

TAKLA REDTON Project Claim Listing

Claim Name	Owner	Issue Date	Tenure No.	Area (hectares)	Work Applied	Fees Paid	Expiry	Yearly Assessment Requirements			
								06	07	09	10
HS001	Redton Resources Inc.	12-Jan-05	501112	456.824	1,827.30	182.73	January 12, 2007	X	1,827.30		
cs001	Redton Resources Inc.	12-Jan-05	501115	456.826	1,827.30	182.73	January 12, 2007	X	1,827.30		
HS002	Redton Resources Inc.	12-Jan-05	501139	456.82	1,827.28	182.73	January 12, 2007	X	1,827.28		
HS003	Redton Resources Inc.	12-Jan-05	501164	456.816	1,827.26	182.73	January 12, 2007	X	1,827.26		
cs001	Redton Resources Inc.	12-Jan-05	501177	456.826	1,827.30	182.73	January 12, 2007	X	1,827.30		
HS004	Redton Resources Inc.	12-Jan-05	501178	456.813	1,827.25	182.73	January 12, 2007	X	1,827.25		
HS005	Redton Resources Inc.	12-Jan-05	501206	456.806	1,827.22	182.72	January 12, 2007	X	1,827.22		
cs003	Redton Resources Inc.	12-Jan-05	501211	456.823	1,827.29	182.73	January 12, 2007	X	1,827.29		
HS006	Redton Resources Inc.	12-Jan-05	501230	456.803	1,827.21	182.72	January 12, 2007	X	1,827.21		
cs004	Redton Resources Inc.	12-Jan-05	501239	456.821	1,827.28	182.73	January 12, 2007	X	1,827.28		
cs005	Redton Resources Inc.	12-Jan-05	501270	456.821	1,827.28	182.73	January 12, 2007	X	1,827.28		
HS007	Redton Resources Inc.	12-Jan-05	501320	456.585	1,826.34	182.63	January 12, 2007	X	1,826.34		
cs006	Redton Resources Inc.	12-Jan-05	501324	456.587	1,826.35	182.64	January 12, 2007	X	1,826.35		
HS008	Redton Resources Inc.	12-Jan-05	501353	456.579	1,826.32	182.63	January 12, 2007	X	1,826.32		
cs007	Redton Resources Inc.	12-Jan-05	501354	456.586	1,826.34	182.63	January 12, 2007	X	1,826.34		
cs008	Redton Resources Inc.	12-Jan-05	501374	456.582	1,826.33	182.63	January 12, 2007	X	1,826.33		
HS009	Redton Resources Inc.	12-Jan-05	501378	456.576	1,826.30	182.63	January 12, 2007	X	1,826.30		
cs009	Redton Resources Inc.	12-Jan-05	501406	456.58	1,826.32	182.63	January 12, 2007	X	1,826.32		
HS010	Redton Resources Inc.	12-Jan-05	501409	456.572	1,826.29	182.63	January 12, 2007	X	1,826.29		
cs010	Redton Resources Inc.	12-Jan-05	501421	456.577	1,826.31	182.63	January 12, 2007	X	1,826.31		
HS011	Redton Resources Inc.	12-Jan-05	501439	456.564	1,826.26	182.63	January 12, 2007	X	1,826.26		
cs011	Redton Resources Inc.	12-Jan-05	501447	456.573	1,826.29	182.63	January 12, 2007	X	1,826.29		
HS012	Redton Resources Inc.	12-Jan-05	501470	456.561	1,826.24	182.62	January 12, 2007	X	1,826.24		
cs012	Redton Resources Inc.	12-Jan-05	501491	420.038	1,680.15	168.02	January 12, 2007	X	1,680.15		
HS013	Redton Resources Inc.	12-Jan-05	501498	456.346	1,825.38	182.54	January 12, 2007	X	1,825.38		
cs013	Redton Resources Inc.	12-Jan-05	501512	456.348	3,650.78	365.08	January 12, 2008	X	X		
HS014	Redton Resources Inc.	12-Jan-05	501529	456.339	1,825.36	182.54	January 12, 2007	X	1,825.36		
cs014	Redton Resources Inc.	12-Jan-05	501547	419.887	3,359.10	335.91	January 12, 2008	X	X		
HS015	Redton Resources Inc.	12-Jan-05	501571	456.336	1,825.34	182.53	January 12, 2007	X	1,825.34		
cs015	Redton Resources Inc.	12-Jan-05	501582	456.314	3,650.52	365.05	January 12, 2008	X	X		
cs016	Redton Resources Inc.	12-Jan-05	501606	438.052	1,752.21	175.22	January 12, 2007	X	1,752.21		
HS016	Redton Resources Inc.	12-Jan-05	501609	456.331	1,825.32	182.53	January 12, 2007	X	1,825.32		
HS017	Redton Resources Inc.	12-Jan-05	501638	456.323	1,825.29	182.53	January 12, 2007	X	1,825.29		
cs017	Redton Resources Inc.	12-Jan-05	501641	438.048	1,752.19	175.22	January 12, 2007	X	1,752.19		
HS018	Redton Resources Inc.	12-Jan-05	501672	456.32	1,825.28	182.53	January 12, 2007	X	1,825.28		
cs018	Redton Resources Inc.	12-Jan-05	501675	437.824	3,502.60	350.26	January 12, 2008	X	X		
HS019	Redton Resources Inc.	12-Jan-05	501690	456.101	1,824.40	182.44	January 12, 2007	X	1,824.40		
cs019	Redton Resources Inc.	12-Jan-05	501691	437.818	1,751.27	175.13	January 12, 2007	X	1,751.27		
HS020	Redton Resources Inc.	12-Jan-05	501705	456.092	1,824.37	182.44	January 12, 2007	X	1,824.37		
cs020	Redton Resources Inc.	12-Jan-05	501715	456.105	3,648.84	364.88	January 12, 2008	X	X		
HS021	Redton Resources Inc.	12-Jan-05	501717	456.09	1,824.36	182.44	January 12, 2007	X	1,824.36		
cs021	Redton Resources Inc.	12-Jan-05	501735	455.861	3,646.88	364.69	January 12, 2008	X	X		
HS022	Redton Resources Inc.	12-Jan-05	501736	456.085	1,824.34	182.43	January 12, 2007	X	1,824.34		
HS023	Redton Resources Inc.	12-Jan-05	501747	456.075	1,824.30	182.43	January 12, 2007	X	1,824.30		
cs022	Redton Resources Inc.	12-Jan-05	501748	455.962	3,647.70	364.77	January 12, 2008	X	X		
cs023	Redton Resources Inc.	12-Jan-05	501759	455.86	3,646.88	364.69	January 12, 2008	X	X		
HS024	Redton Resources Inc.	12-Jan-05	501760	456.07	1,824.28	182.43	January 12, 2007	X	1,824.28		
cs024	Redton Resources Inc.	12-Jan-05	501777	455.859	3,646.88	364.69	January 12, 2008	X	X		
HS025	Redton Resources Inc.	12-Jan-05	501788	455.857	1,823.43	182.34	January 12, 2007	X	1,823.43		
cs025	Redton Resources Inc.	12-Jan-05	501790	455.857	3,646.86	364.69	January 12, 2008	X	X		
cs026	Redton Resources Inc.	12-Jan-05	501804	455.852	3,646.82	364.68	January 12, 2008	X	X		
HS026	Redton Resources Inc.	12-Jan-05	501808	455.851	1,823.40	182.34	January 12, 2007	X	1,823.40		
cs027	Redton Resources Inc.	12-Jan-05	501814	455.846	1,823.38	182.34	January 12, 2007	X	1,823.38		
HS027	Redton Resources Inc.	12-Jan-05	501825	455.848	1,823.39	182.34	January 12, 2007	X	1,823.39		
028	Redton Resources Inc.	12-Jan-05	501833	455.619	3,644.96	364.50	January 12, 2008	X	X		
HS028	Redton Resources Inc.	12-Jan-05	501838	455.843	1,823.37	182.34	January 12, 2007	X	1,823.37		
cs029	Redton Resources Inc.	12-Jan-05	501851	455.62	3,644.96	364.50	January 12, 2008	X	X		
HS029	Redton Resources Inc.	12-Jan-05	501859	455.83	1,823.32	182.33	January 12, 2007	X	1,823.32		
cs030	Redton Resources Inc.	12-Jan-05	501867	455.618	3,644.94	364.49	January 12, 2008	X	X		
HS030	Redton Resources Inc.	12-Jan-05	501869	455.617	1,823.30	182.33	January 12, 2007	X	1,823.30		
cs031	Redton Resources Inc.	12-Jan-05	501883	455.617	3,644.94	364.49	January 12, 2008	X	X		
HS031	Redton Resources Inc.	12-Jan-05	501890	455.614	1,822.46	182.25	January 12, 2007	X	1,822.46		
cs032	Redton Resources Inc.	12-Jan-05	501896	455.616	3,644.92	364.49	January 12, 2008	X	X		
HS032	Redton Resources Inc.	12-Jan-05	501902	455.378	1,822.44	182.24	January 12, 2007	X	1,822.44		
HS033	Redton Resources Inc.	12-Jan-05	501912	455.608	1,822.43	182.24	January 12, 2007	X	1,822.43		
CS033	Redton Resources Inc.	12-Jan-05	501919	455.375	3,643.00	364.30	January 12, 2008	X	X		
HS034	Redton Resources Inc.	12-Jan-05	501933	455.603	1,822.41	182.24	January 12, 2007	X	1,822.41		
CS034	Redton Resources Inc.	12-Jan-05	501935	455.378	3,643.02	364.30	January 12, 2008	X	X		
HS035	Redton Resources Inc.	12-Jan-05	501946	455.587	1,822.35	182.24	January 12, 2007	X	1,822.35		
	Redton Resources Inc.	12-Jan-05	501957	455.377	3,643.02	364.30	January 12, 2008	X	X		
HS036	Redton Resources Inc.	12-Jan-05	501960	455.582	1,822.33	182.23	January 12, 2007	X	1,822.33		
HS037	Redton Resources Inc.	12-Jan-05	501982	455.371	1,821.48	182.15	January 12, 2007	X	1,821.48		
HS038	Redton Resources Inc.	12-Jan-05	501991	455.369	1,821.48	182.15	January 12, 2007	X	1,821.48		
HS039	Redton Resources Inc.	12-Jan-05	502001	455.368	1,821.47	182.15	January 12, 2007	X	1,821.47		
CS036	Redton Resources Inc.	12-Jan-05	502011	455.483	3,643.86	364.39	January 12, 2008	X	X		

TAKLA REDTON Project Claim Listing

Claim Name	Owner	Issue Date	Tenure No.	Area (hectares)	Work Applied	Fees Paid	Expiry	Yearly Assessment Requirements			
								06	07	09	10
CS037	Redton Resources Inc.	12-Jan-05	502040	455.196	3,641.56	364.16	January 12, 2008	X	X		
HS040	Redton Resources Inc.	12-Jan-05	502041	437.151	1,748.60	174.86	January 12, 2007	X	1,748.60		
HS041	Redton Resources Inc.	12-Jan-05	502055	455.389	1,821.56	182.16	January 12, 2007	X	1,821.56		
CS038	Redton Resources Inc.	12-Jan-05	502057	455.601	1,822.40	182.24	January 12, 2007	X	1,822.40		
HS042	Redton Resources Inc.	12-Jan-05	502064	455.241	1,820.96	182.10	January 12, 2007	X	1,820.96		
HS043	Redton Resources Inc.	12-Jan-05	502078	436.953	1,747.81	174.78	January 12, 2007	X	1,747.81		
CS039	Redton Resources Inc.	12-Jan-05	502080	455.639	1,822.56	182.26	January 12, 2007	X	1,822.56		
HS044	Redton Resources Inc.	12-Jan-05	502093	455.17	1,820.68	182.07	January 12, 2007	X	1,820.68		
CS040	Redton Resources Inc.	12-Jan-05	502094	437.589	1,750.36	175.04	January 12, 2007	X	1,750.36		
CS041	Redton Resources Inc.	12-Jan-05	502107	456.056	1,824.22	182.42	January 12, 2007	X	1,824.22		
HS045	Redton Resources Inc.	12-Jan-05	502109	455.762	1,823.05	182.31	January 12, 2007	X	1,823.05		
HS046	Redton Resources Inc.	12-Jan-05	502121	456.376	1,825.50	182.55	January 12, 2007	X	1,825.50		
CS042	Redton Resources Inc.	12-Jan-05	502124	456.317	1,825.27	182.53	January 12, 2007	X	1,825.27		
HS047	Redton Resources Inc.	12-Jan-05	502140	456.982	1,827.93	182.79	January 12, 2007	X	1,827.93		
CS043	Redton Resources Inc.	12-Jan-05	502142	456.763	1,827.05	182.71	January 12, 2007	X	1,827.05		
HS048	Redton Resources Inc.	12-Jan-05	502151	457.585	1,830.34	183.03	January 12, 2007	X	1,830.34		
HS049	Redton Resources Inc.	12-Jan-05	502158	457.069	1,828.28	182.83	January 12, 2007	X	1,828.28		
CS044	Redton Resources Inc.	12-Jan-05	502159	456.972	1,827.89	182.79	January 12, 2007	X	1,827.89		
HS050	Redton Resources Inc.	12-Jan-05	502172	457.066	1,828.26	182.83	January 12, 2007	X	1,828.26		
CS045	Redton Resources Inc.	12-Jan-05	502179	457.474	1,829.90	182.99	January 12, 2007	X	1,829.90		
HS051	Redton Resources Inc.	12-Jan-05	502184	457.062	1,828.25	182.83	January 12, 2007	X	1,828.25		
HS052	Redton Resources Inc.	12-Jan-05	502202	457.057	1,828.23	182.82	January 12, 2007	X	1,828.23		
CS046	Redton Resources Inc.	12-Jan-05	502205	439.299	1,757.20	175.72	January 12, 2007	X	1,757.20		
HS053	Redton Resources Inc.	12-Jan-05	502213	457.05	1,828.20	182.82	January 12, 2007	X	1,828.20		
HS054	Redton Resources Inc.	12-Jan-05	502222	457.045	1,828.18	182.82	January 12, 2007	X	1,828.18		
HS055	Redton Resources Inc.	12-Jan-05	502236	457.334	1,829.34	182.93	January 12, 2007	X	1,829.34		
HS056	Redton Resources Inc.	12-Jan-05	502246	457.331	1,829.32	182.93	January 12, 2007	X	1,829.32		
HS057	Redton Resources Inc.	12-Jan-05	502252	457.323	1,829.29	182.93	January 12, 2007	X	1,829.29		
CS047	Redton Resources Inc.	12-Jan-05	502260	457.865	1,831.46	183.15	January 12, 2007	X	1,831.46		
HS058	Redton Resources Inc.	12-Jan-05	502265	457.314	1,829.26	182.93	January 12, 2007	X	1,829.26		
HS059	Redton Resources Inc.	12-Jan-05	502271	457.302	1,829.21	182.92	January 12, 2007	X	1,829.21		
HS060	Redton Resources Inc.	12-Jan-05	502277	457.291	1,829.16	182.92	January 12, 2007	X	1,829.16		
cs048	Redton Resources Inc.	12-Jan-05	502281	457.07	1,828.28	182.83	January 12, 2007	X	1,828.28		
HS061	Redton Resources Inc.	12-Jan-05	502284	457.573	1,830.29	183.03	January 12, 2007	X	1,830.29		
HS067	Redton Resources Inc.	12-Jan-05	502299	439.587	1,758.35	175.84	January 12, 2007	X	1,758.35		
cs049	Redton Resources Inc.	12-Jan-05	502300	457.07	1,828.28	182.83	January 12, 2007	X	1,828.28		
HS068	Redton Resources Inc.	12-Jan-05	502303	457.8	1,831.20	183.12	January 12, 2007	X	1,831.20		
cs050	Redton Resources Inc.	12-Jan-05	502308	457.572	1,830.29	183.03	January 12, 2007	X	1,830.29		
HS066	Redton Resources Inc.	12-Jan-05	502309	457.533	1,830.13	183.01	January 12, 2007	X	1,830.13		
cs051	Redton Resources Inc.	12-Jan-05	502315	457.589	1,830.36	183.04	January 12, 2007	X	1,830.36		
HS065	Redton Resources Inc.	12-Jan-05	502316	457.544	1,830.18	183.02	January 12, 2007	X	1,830.18		
cs052	Redton Resources Inc.	12-Jan-05	502322	457.925	1,831.70	183.17	January 12, 2007	X	1,831.70		
HS064	Redton Resources Inc.	12-Jan-05	502329	439.231	1,756.92	175.69	January 12, 2007	X	1,756.92		
cs053	Redton Resources Inc.	12-Jan-05	502331	457.813	1,831.25	183.13	January 12, 2007	X	1,831.25		
cs054	Redton Resources Inc.	12-Jan-05	502339	403.071	1,612.28	161.23	January 12, 2007	X	1,612.28		
HS063	Redton Resources Inc.	12-Jan-05	502342	219.711	878.84	87.88	January 12, 2007	X	878.84		
HS069	Redton Resources Inc.	12-Jan-05	502346	366.209	1,464.84	146.48	January 12, 2007	X	1,464.84		
cs055	Redton Resources Inc.	12-Jan-05	502347	458.166	1,832.66	183.27	January 12, 2007	X	1,832.66		
HS070	Redton Resources Inc.	12-Jan-05	502354	366.2	1,464.80	146.48	January 12, 2007	X	1,464.80		
cs056	Redton Resources Inc.	12-Jan-05	502356	458.173	1,832.69	183.27	January 12, 2007	X	1,832.69		
cs57	Redton Resources Inc.	12-Jan-05	502359	458.181	1,832.72	183.27	January 12, 2007	X	1,832.72		
HS062	Redton Resources Inc.	12-Jan-05	502364	457.875	1,831.50	183.15	January 12, 2007	X	1,831.50		
cs058	Redton Resources Inc.	12-Jan-05	502368	421.409	1,685.64	168.56	January 12, 2007	X	1,685.64		
cs059	Redton Resources Inc.	12-Jan-05	502373	458.287	1,833.15	183.32	January 12, 2007	X	1,833.15		
HS071	Redton Resources Inc.	12-Jan-05	502375	439.708	1,758.83	175.88	January 12, 2007	X	1,758.83		
cs060	Redton Resources Inc.	12-Jan-05	502379	457.069	1,828.28	182.83	January 12, 2007	X	1,828.28		
cs061	Redton Resources Inc.	12-Jan-05	502384	457.066	1,828.26	182.83	January 12, 2007	X	1,828.26		
cs062	Redton Resources Inc.	12-Jan-05	502389	457.068	1,828.27	182.83	January 12, 2007	X	1,828.27		
cs063	Redton Resources Inc.	12-Jan-05	502390	457.331	1,829.32	182.93	January 12, 2007	X	1,829.32		
cs064	Redton Resources Inc.	12-Jan-05	502393	457.329	1,829.32	182.93	January 12, 2007	X	1,829.32		
HS072	Redton Resources Inc.	12-Jan-05	502394	439.867	1,759.47	175.95	January 12, 2007	X	1,759.47		
cs065	Redton Resources Inc.	12-Jan-05	502397	457.327	1,829.31	182.93	January 12, 2007	X	1,829.31		
HS073	Redton Resources Inc.	12-Jan-05	502401	439.776	1,759.10	175.91	January 12, 2007	X	1,759.10		
cs066	Redton Resources Inc.	12-Jan-05	502402	457.323	1,829.29	182.93	January 12, 2007	X	1,829.29		
cs067	Redton Resources Inc.	12-Jan-05	502404	457.325	1,829.30	182.93	January 12, 2007	X	1,829.30		
HS074	Redton Resources Inc.	12-Jan-05	502410	439.789	1,759.16	175.92	January 12, 2007	X	1,759.16		
cs068	Redton Resources Inc.	12-Jan-05	502412	457.571	1,830.28	183.03	January 12, 2007	X	1,830.28		
cs069	Redton Resources Inc.	12-Jan-05	502416	457.569	1,830.28	183.03	January 12, 2007	X	1,830.28		
HS075	Redton Resources Inc.	12-Jan-05	502418	439.785	1,759.14	175.91	January 12, 2007	X	1,759.14		
cs070	Redton Resources Inc.	12-Jan-05	502419	457.567	1,830.27	183.03	January 12, 2007	X	1,830.27		
cs071	Redton Resources Inc.	12-Jan-05	502423	457.811	1,831.24	183.12	January 12, 2007	X	1,831.24		
HS076	Redton Resources Inc.	12-Jan-05	502424	439.738	1,758.95	175.90	January 12, 2007	X	1,758.95		
cs072	Redton Resources Inc.	12-Jan-05	502426	457.809	1,831.24	183.12	January 12, 2007	X	1,831.24		
cs073	Redton Resources Inc.	12-Jan-05	502431	457.807	1,831.23	183.12	January 12, 2007	X	1,831.23		
HS077	Redton Resources Inc.	12-Jan-05	502432	458.245	1,832.98	183.30	January 12, 2007	X	1,832.98		

TAKLA REDTON Project Claim Listing

Claim Name	Owner	Issue Date	Tenure No.	Area (hectares)	Work Applied	Fees Paid	Expiry	Yearly Assessment Requirements			
								06	07	09	10
cs074	Redton Resources Inc.	12-Jan-05	502434	458.034	1,832.14	183.21	January 12, 2007	X	1,832.14		
HS078	Redton Resources Inc.	12-Jan-05	502437	440.138	1,760.55	176.06	January 12, 2007	X	1,760.55		
cs075	Redton Resources Inc.	12-Jan-05	502439	458.033	1,832.13	183.21	January 12, 2007	X	1,832.13		
cs076	Redton Resources Inc.	12-Jan-05	502440	458.032	1,832.13	183.21	January 12, 2007	X	1,832.13		
HS079	Redton Resources Inc.	12-Jan-05	502443	440.247	1,760.99	176.10	January 12, 2007	X	1,760.99		
cs077	Redton Resources Inc.	12-Jan-05	502445	458.21	1,832.84	183.28	January 12, 2007	X	1,832.84		
HS080	Redton Resources Inc.	12-Jan-05	502446	421.793	1,687.17	168.72	January 12, 2007	X	1,687.17		
cs078	Redton Resources Inc.	12-Jan-05	502448	458.209	1,832.84	183.28	January 12, 2007	X	1,832.84		
HS081	Redton Resources Inc.	12-Jan-05	502450	458.413	1,833.65	183.37	January 12, 2007	X	1,833.65		
cs079	Redton Resources Inc.	12-Jan-05	502451	458.211	1,832.84	183.28	January 12, 2007	X	1,832.84		
HS082	Redton Resources Inc.	12-Jan-05	502453	458.412	1,833.65	183.37	January 12, 2007	X	1,833.65		
cs080	Redton Resources Inc.	12-Jan-05	502455	458.45	1,833.80	183.38	January 12, 2007	X	1,833.80		
HS083	Redton Resources Inc.	12-Jan-05	502459	440.101	1,760.40	176.04	January 12, 2007	X	1,760.40		
cs081	Redton Resources Inc.	12-Jan-05	502460	458.45	1,833.80	183.38	January 12, 2007	X	1,833.80		
cs082	Redton Resources Inc.	12-Jan-05	502463	458.69	1,834.76	183.48	January 12, 2007	X	1,834.76		
HS084	Redton Resources Inc.	12-Jan-05	502464	440.242	1,760.97	176.10	January 12, 2007	X	1,760.97		
cs083	Redton Resources Inc.	12-Jan-05	502469	458.928	1,835.71	183.57	January 12, 2007	X	1,835.71		
HS085	Redton Resources Inc.	12-Jan-05	502480	440.391	1,761.56	176.16	January 12, 2007	X	1,761.56		
CS084	Redton Resources Inc.	12-Jan-05	502481	458.405	1,833.62	183.36	January 12, 2007	X	1,833.62		
HS086	Redton Resources Inc.	12-Jan-05	502484	440.383	1,761.53	176.15	January 12, 2007	X	1,761.53		
HS087	Redton Resources Inc.	12-Jan-05	502487	440.379	1,761.52	176.15	January 12, 2007	X	1,761.52		
HS088	Redton Resources Inc.	12-Jan-05	502489	440.376	1,761.50	176.15	January 12, 2007	X	1,761.50		
CS085	Redton Resources Inc.	12-Jan-05	502492	458.645	1,834.58	183.46	January 12, 2007	X	1,834.58		
HS089	Redton Resources Inc.	12-Jan-05	502496	440.376	1,761.50	176.15	January 12, 2007	X	1,761.50		
CS086	Redton Resources Inc.	12-Jan-05	502497	458.885	1,835.54	183.55	January 12, 2007	X	1,835.54		
HS090	Redton Resources Inc.	12-Jan-05	502501	458.751	1,835.00	183.50	January 12, 2007	X	1,835.00		
CS087	Redton Resources Inc.	12-Jan-05	502504	440.143	1,760.57	176.06	January 12, 2007	X	1,760.57		
HS091	Redton Resources Inc.	12-Jan-05	502505	458.948	1,835.79	183.58	January 12, 2007	X	1,835.79		
CS088	Redton Resources Inc.	12-Jan-05	502507	440.148	1,760.59	176.06	January 12, 2007	X	1,760.59		
HS092	Redton Resources Inc.	12-Jan-05	502508	458.947	1,835.79	183.58	January 12, 2007	X	1,835.79		
CS089	Redton Resources Inc.	12-Jan-05	502510	440.107	1,760.43	176.04	January 12, 2007	X	1,760.43		
HS093	Redton Resources Inc.	12-Jan-05	502513	458.969	1,835.88	183.59	January 12, 2007	X	1,835.88		
CS090	Redton Resources Inc.	12-Jan-05	502515	458.524	1,834.10	183.41	January 12, 2007	X	1,834.10		
HS094	Redton Resources Inc.	12-Jan-05	502523	440.537	1,762.15	176.22	January 12, 2007	X	1,762.15		
CS091	Redton Resources Inc.	12-Jan-05	502524	458.762	1,835.05	183.51	January 12, 2007	X	1,835.05		
HS095	Redton Resources Inc.	12-Jan-05	502528	440.576	1,762.30	176.23	January 12, 2007	X	1,762.30		
CS092	Redton Resources Inc.	12-Jan-05	502532	348.631	1,394.52	139.45	January 12, 2007	X	1,394.52		
HS096	Redton Resources Inc.	12-Jan-05	502533	440.568	1,762.27	176.23	January 12, 2007	X	1,762.27		
HS097	Redton Resources Inc.	12-Jan-05	502536	459.112	1,836.45	183.65	January 12, 2007	X	1,836.45		
CS093	Redton Resources Inc.	12-Jan-05	502538	458.983	1,835.93	183.59	January 12, 2007	X	1,835.93		
HS098	Redton Resources Inc.	12-Jan-05	502539	459.136	1,836.54	183.65	January 12, 2007	X	1,836.54		
HS099	Redton Resources Inc.	12-Jan-05	502543	459.141	1,836.56	183.66	January 12, 2007	X	1,836.56		
CS094	Redton Resources Inc.	12-Jan-05	502544	458.989	1,835.96	183.60	January 12, 2007	X	1,835.96		
HS100	Redton Resources Inc.	12-Jan-05	502546	440.8	1,763.20	176.32	January 12, 2007	X	1,763.20		
CS095	Redton Resources Inc.	12-Jan-05	502549	459.119	1,836.48	183.65	January 12, 2007	X	1,836.48		
HS101	Redton Resources Inc.	12-Jan-05	502550	440.798	1,763.19	176.32	January 12, 2007	X	1,763.19		
HS102	Redton Resources Inc.	12-Jan-05	502553	440.798	1,763.19	176.32	January 12, 2007	X	1,763.19		
CS096	Redton Resources Inc.	12-Jan-05	502558	459.218	1,836.87	183.69	January 12, 2007	X	1,836.87		
HS103	Redton Resources Inc.	12-Jan-05	502559	440.298	1,761.19	176.12	January 12, 2007	X	1,761.19		
CS097	Redton Resources Inc.	12-Jan-05	502562	459.222	1,836.89	183.69	January 12, 2007	X	1,836.89		
HS104	Redton Resources Inc.	12-Jan-05	502569	440.488	1,761.95	176.20	January 12, 2007	X	1,761.95		
CS098	Redton Resources Inc.	12-Jan-05	502571	274.867	1,099.47	109.95	January 12, 2007	X	1,099.47		
HS105	Redton Resources Inc.	12-Jan-05	502574	458.884	1,835.54	183.55	January 12, 2007	X	1,835.54		
CS099	Redton Resources Inc.	12-Jan-05	502576	256.718	1,026.87	102.69	January 12, 2007	X	1,026.87		
HS106	Redton Resources Inc.	12-Jan-05	502578	440.709	1,762.84	176.28	January 12, 2007	X	1,762.84		
HS107	Redton Resources Inc.	12-Jan-05	502581	459.072	1,836.29	183.63	January 12, 2007	X	1,836.29		
CS100	Redton Resources Inc.	12-Jan-05	502582	458.725	1,834.90	183.49	January 12, 2007	X	1,834.90		
HS108	Redton Resources Inc.	12-Jan-05	502585	459.104	1,836.42	183.64	January 12, 2007	X	1,836.42		
HS109	Redton Resources Inc.	12-Jan-05	502593	440.658	1,762.63	176.26	January 12, 2007	X	1,762.63		
CS101	Redton Resources Inc.	12-Jan-05	502605	459.194	1,836.78	183.68	January 12, 2007	X	1,836.78		
HS110	Redton Resources Inc.	12-Jan-05	502607	459.649	1,838.60	183.86	January 12, 2007	X	1,838.60		
CS102	Redton Resources Inc.	12-Jan-05	502610	459.43	1,837.72	183.77	January 12, 2007	X	1,837.72		
HS111	Redton Resources Inc.	12-Jan-05	502612	459.652	1,838.61	183.86	January 12, 2007	X	1,838.61		
CS103	Redton Resources Inc.	12-Jan-05	502613	441.06	1,764.24	176.42	January 12, 2007	X	1,764.24		
HS112	Redton Resources Inc.	12-Jan-05	502614	459.656	1,838.62	183.86	January 12, 2007	X	1,838.62		
HS113	Redton Resources Inc.	12-Jan-05	502615	459.664	1,838.66	183.87	January 12, 2007	X	1,838.66		
CS104	Redton Resources Inc.	12-Jan-05	502617	441.066	1,764.26	176.43	January 12, 2007	X	1,764.26		
HS114	Redton Resources Inc.	12-Jan-05	502618	459.672	1,838.69	183.87	January 12, 2007	X	1,838.69		
HS115	Redton Resources Inc.	12-Jan-05	502619	459.68	1,838.72	183.87	January 12, 2007	X	1,838.72		
CS105	Redton Resources Inc.	12-Jan-05	502620	441.076	1,764.30	176.43	January 12, 2007	X	1,764.30		
HS116	Redton Resources Inc.	12-Jan-05	502622	459.895	1,839.58	183.96	January 12, 2007	X	1,839.58		
HS117	Redton Resources Inc.	12-Jan-05	502625	459.897	1,839.59	183.96	January 12, 2007	X	1,839.59		
CS106	Redton Resources Inc.	12-Jan-05	502626	293.921	1,175.68	117.57	January 12, 2007	X	1,175.68		
HS118	Redton Resources Inc.	12-Jan-05	502628	459.901	1,839.60	183.96	January 12, 2007	X	1,839.60		
HS119	Redton Resources Inc.	12-Jan-05	502629	459.908	1,839.63	183.96	January 12, 2007	X	1,839.63		

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Claim Name	Owner	Issue Date	Tenure No.	Area (hectares)	Work Applied	Fees Paid	Expiry	Yearly Assessment Requirements 06	07	09	10
CS107	Redton Resources Inc.	12-Jan-05	502630	441.084	1,764.34	176.43	January 12, 2007	X	1,764.34		
HS120	Redton Resources Inc.	12-Jan-05	502633	459.915	1,839.66	183.97	January 12, 2007	X	1,839.66		
HS121	Redton Resources Inc.	12-Jan-05	502634	459.921	1,839.68	183.97	January 12, 2007	X	1,839.68		
CS108	Redton Resources Inc.	12-Jan-05	502636	440.914	1,763.66	176.37	January 12, 2007	X	1,763.66		
HS122	Redton Resources Inc.	12-Jan-05	502637	460.158	1,840.63	184.06	January 12, 2007	X	1,840.63		
HS123	Redton Resources Inc.	12-Jan-05	502639	460.157	1,840.63	184.06	January 12, 2007	X	1,840.63		
CS109	Redton Resources Inc.	12-Jan-05	502640	275.577	1,102.31	110.23	January 12, 2007	X	1,102.31		
HS124	Redton Resources Inc.	12-Jan-05	502641	460.157	1,840.63	184.06	January 12, 2007	X	1,840.63		
HS125	Redton Resources Inc.	12-Jan-05	502644	460.161	1,840.64	184.06	January 12, 2007	X	1,840.64		
CS110	Redton Resources Inc.	12-Jan-05	502652	460.644	1,842.58	184.26	January 12, 2007	X	1,842.58		
CS111	Redton Resources Inc.	12-Jan-05	502653	460.642	1,842.57	184.26	January 12, 2007	X	1,842.57		
HS126	Redton Resources Inc.	12-Jan-05	502654	460.164	1,840.66	184.07	January 12, 2007	X	1,840.66		
CS112	Redton Resources Inc.	13-Jan-05	502655	460.639	1,842.56	184.26	January 13, 2007	X	1,842.56		
HS127	Redton Resources Inc.	13-Jan-05	502656	460.166	1,840.66	184.07	January 13, 2007	X	1,840.66		
CS113	Redton Resources Inc.	13-Jan-05	502657	460.637	1,842.55	184.26	January 13, 2007	X	1,842.55		
HS128	Redton Resources Inc.	13-Jan-05	502658	405.139	1,620.56	162.06	January 13, 2007	X	1,620.56		
CS114	Redton Resources Inc.	13-Jan-05	502659	460.883	1,843.53	184.35	January 13, 2007	X	1,843.53		
HS129	Redton Resources Inc.	13-Jan-05	502661	460.396	1,841.58	184.16	January 13, 2007	X	1,841.58		
CS115	Redton Resources Inc.	13-Jan-05	502662	460.881	1,843.52	184.35	January 13, 2007	X	1,843.52		
HS130	Redton Resources Inc.	13-Jan-05	502663	460.397	1,841.59	184.16	January 13, 2007	X	1,841.59		
CS116	Redton Resources Inc.	13-Jan-05	502665	460.879	1,843.52	184.35	January 13, 2007	X	1,843.52		
HS131	Redton Resources Inc.	13-Jan-05	502666	460.4	1,841.60	184.16	January 13, 2007	X	1,841.60		
CS117	Redton Resources Inc.	13-Jan-05	502668	460.876	1,843.50	184.35	January 13, 2007	X	1,843.50		
HS132	Redton Resources Inc.	13-Jan-05	502669	460.403	1,841.61	184.16	January 13, 2007	X	1,841.61		
CS118	Redton Resources Inc.	13-Jan-05	502670	461.121	1,844.48	184.45	January 13, 2007	X	1,844.48		
HS133	Redton Resources Inc.	13-Jan-05	502671	460.405	1,841.62	184.16	January 13, 2007	X	1,841.62		
CS119	Redton Resources Inc.	13-Jan-05	502675	461.108	1,844.43	184.44	January 13, 2007	X	1,844.43		
CS120	Redton Resources Inc.	13-Jan-05	502677	442.668	1,770.67	177.07	January 13, 2007	X	1,770.67		
CS121	Redton Resources Inc.	13-Jan-05	502679	461.36	1,845.44	184.54	January 13, 2007	X	1,845.44		
HS134	Redton Resources Inc.	13-Jan-05	502680	442.343	1,769.37	176.94	January 13, 2007	X	1,769.37		
CS122	Redton Resources Inc.	13-Jan-05	502682	461.369	1,845.48	184.55	January 13, 2007	X	1,845.48		
HS135	Redton Resources Inc.	13-Jan-05	502684	460.966	1,843.86	184.39	January 13, 2007	X	1,843.86		
CS123	Redton Resources Inc.	13-Jan-05	502686	461.379	1,845.52	184.55	January 13, 2007	X	1,845.52		
CS124	Redton Resources Inc.	13-Jan-05	502688	461.117	1,844.47	184.45	January 13, 2007	X	1,844.47		
CS125	Redton Resources Inc.	13-Jan-05	502690	461.121	1,844.48	184.45	January 13, 2007	X	1,844.48		
CS126	Redton Resources Inc.	13-Jan-05	502691	461.278	1,845.11	184.51	January 13, 2007	X	1,845.11		
CS127	Redton Resources Inc.	13-Jan-05	502695	424.435	1,697.74	169.77	January 13, 2007	X	1,697.74		
CS128	Redton Resources Inc.	13-Jan-05	502696	461.449	1,845.80	184.58	January 13, 2007	X	1,845.80		
Twin 05	LORNE BRIAN WARREN	12-Jan-05	504257	456.317	3,648.64	364.86	January 19, 2008	X	X		
Twin 0502	LORNE BRIAN WARREN	19-Jan-05	504261	346.815	2,774.52	277.45	January 19, 2008	X	X		
King	Redton Resources Inc.	1-Feb-05	505407	18.341	660.27	44.04	February 1, 2012	X	X	X	X
	LORNE BRIAN WARREN	10-Feb-05	506567	802.893	3,218.42	321.84	May 1, 2008	X	X		
	LORNE BRIAN WARREN	10-Feb-05	506568	766.411	3,072.18	307.22	May 1, 2008	X	X		
Ext01	Redton Resources Inc.	20-Jan-05	504417	459.534	1,838.14	183.81	January 20, 2007	X	1,838.14		
Ext02	Redton Resources Inc.	21-Jan-05	504420	459.95	1,839.80	183.98	January 21, 2007	X	1,839.80		
Ext03	Redton Resources Inc.	21-Jan-05	504423	55.38	221.52	22.15	January 21, 2007	X	221.52		
HAL 1	Geoinformatics Exploration Canada	13-Jan-06	525350	440.421			January 13, 2007	X	1,761.68		
TOTAL	272 claims			121,846	527,500.10	52,728.02			439,754.71	0.00	0.00

2007 Assessment Requirements ($4.00/hectare)

2007 Assessment Fees ($0.40/hectare)

TAKLA - REDTON PROJECT

2005 ASSESSMENT REPORT

Appendix 13

Statement of Costs

Expenditures & Assessment Data

Takla - Redton Project 2005 Statement of Cost

Date	Item	Cost	Usable for Assessment
Alborne Geophysics			
	Zang Geophysical (labour)	1,700.00	1,700.00
	Zang Geophysical (expenses)	634.10	634.10
	Fugro survey	89,251.27	89,251.27
	Aeroquest survey	56,000.00	56,000.00
	G. Bidwell (labour)	1,937.93	1,937.93
	J. McLachlan (expenses)	892.87	892.87
	Zang Geophysical	8,769.64	8,769.64
	Webb's Hunting lodge(accomodation)	560.00	560.00
	G. Bidwell (expenses)	825.78	825.78
	Nugget Expediting (truck rental)	2,385.23	2,385.23
	Aeroquest survey	212,356.00	212,356.00
	Total	**375,312.82**	**375,312.82**
Prospecting			
Jun 13-17	G. Bidwell (labour)	6,270.00	6,270.00
Jun13-17	Georeference Online (labour)	4,400.00	4,400.00
Jun13-17	Steve Cook (geochemist) (labour)	3,250.00	3,250.00
Jun13-17	Cook expenses	908.94	908.94
Jun13-17	Geoference Online	623.71	623.71
Jun13-17	equipment rental	321.00	321.00
Jun13-17	Georeference Online (travel expenses)	1,073.51	1,073.51
Jun13-17	CJL Enterprises	7,104.37	7,104.37
Jun13-17	CJL Enterprises (freight)	46.69	46.69
Jun13-17	Interior Helicopters - charter helicopter	9,014.93	9,014.93
Jun13-17	G. Bidwell (expenses)	24.56	24.56
Jun13-17	G. Bidwell (expenses)	136.06	136.06
Jun13-17	Acme Labs (assays)	222.60	222.60
	Total	**33,396.37**	**33,396.37**
Data Capture (Perth)			
	scanned data (ARIS reports)	1,239.86	1,239.86
	Geoinformatics labour (Sep/05)	41,160.00	41,160.00
	Geoinformatics labour (Oct/05)	38,301.25	38,301.25
	Geoinformatics labour (Nov/05)	40,389.90	40,389.90
	Scanning (Sep/05)	103.00	103.00
	Magnasoft (digitizing)(Sep/05)	3,280.00	3,280.00
	T. Worth (travel costs)	4,002.73	4,002.73
	Maxwell Data	617.50	617.50
	Magnasoft (digitizing)(Oct/05)	5,327.00	5,327.00
	Neville Panizza (travel)	1,255.72	1,255.72
	Neville Panizza (travel expenses)	253.00	253.00
	couriers	2.67	2.67
	Infrotrieve	95.00	95.00
	publications	80.53	80.53
	Magnasoft (digitizing)(Nov/05)	1,166.10	1,166.10
	N. Archibald travel expenses	162.28	162.28
	Total	**137,436.54**	**137,436.54**
Assessment fees		**50,000.00**	
	TOTAL	**596,145.73**	**546,145.73**

Takla Redton Project - 2005 Labour (hours)

Person	Affiliation	Jun	Sep	Oct	Nov	Total
Gerry Bidwell	Geoinformatics (Vancouver)	40	0	40	16	**96**
Clinton Smyth	Georeference Online (Vancouver)	40				**40**
Steve Cook	geochemist (Victoria)	40				**40**
Lorne Warren	property owner (Smithers)	40				**40**
Dan Garner	assistant (Smithers)	40				**40**
Cory Degrassi	assistant (Smithers)	40				**40**
Amanda Buckingham	Geoinformatics (Perth)		24	0	0	**24**
David Byrne	Geoinformatics (Perth)		95.55	1	0	**96.55**
Helen Ly	Geoinformatics (Perth)		79.2	126.2	95.4	**300.8**
Jennifer McLachlan	Geoinformatics (Vancouver)		32.25	13.9	32	**78.15**
Lisa Kirby	Geoinformatics (Perth)		5	18.55	2.7	**26.25**
Neville Panizza	Geoinformatics (Perth)		118	78.4	120.2	**316.6**
Peter Wilson	Geoinformatics (Perth)		22	27	31	**80**
Rob Stuart	Geoinformatics (Perth)		24	16	13.4	**53.4**
Robin Wilson	Geoinformatics (Perth)		24.3	58.8	40.95	**124.05**
Steve Garwin	Geoinformatics (Perth)		0	52.85	8	**60.85**
Tony Worth	Geoinformatics (Perth)		0	1	109.6	**110.6**
	Total	**240**	**424.3**	**433.7**	**469.25**	**1327.25**