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# ASSESSMENT REPORT

describing

# HELICOPTER-BORNE MAGNETIC AND RADIOMETRIC SURVEYS

at the

# LANCE PROPERTY

| | |
|---|---|
| Lance 1-108 | YD109791-YD109898 |
| 109-332 | YE66799-YE67022 |

NTS 105N/06 & NTS 105N/07
Latitude 63°27´N; Longitude 132°55´W

located in the

Mayo Mining District
Yukon Territory

prepared by

Archer, Cathro & Associates (1981) Limited

for

**STRATEGIC METALS LTD.**

by

A. Mitchell, B.Sc. Geology, GIT

October 2015

# CONTENTS

## APPENDICES

## TABLES

# FIGURES

## INTRODUCTION

The Lance property lies within the Tombstone Gold Belt in east-central Yukon (Figure 1). It covers strong gold-in-soil anomalies and several auriferous quartz veins. The property is wholly owned by Strategic Metals Ltd.

This report describes property wide helicopter-borne magnetic and radiometric surveys conducted between July 6 and 9, 2015 by Precision Geosurveys Inc. The surveys were supervised by Archer, Cathro and Associates (1981) Limited on behalf of Strategic Metals Ltd. The author interpreted the results of the surveys, and his Statement of Qualifications is in Appendix I. A Statement of Expenditures is in Appendix II.

## PROPERTY LOCATION, CLAIM DATA AND ACCESS

The Lance property is located in central Yukon at latitude 63°27′ north and longitude 132°55′ west on NTS map sheet 105N/07 (Figure 1). It comprises 332 contiguous mineral claims that cover an area of about 6700 hectares (67 $km^2$). All of the claims are registered with the Mayo Mining Recorder in the name of Archer Cathro, which holds them in trust for Strategic Metals. Specifics concerning claim registration are tabulated below, while the locations of individual claims are shown on Figure 2.

| Claim Name | Grant Number | Expiry Date* |
|---|---|---|
| Lance 1-108 | YD109791-YD109898 | March 31, 2021 |
| Lance 109-332 | YE66799-YD67022 | March 31, 2021 |

* Expiry dates include 2015 work that has been filed for assessment credit, but has not yet been accepted.

The Lance property is located 12 km southwest of Swan Lake and 30 km northwest of Fairweather Lake, both of which can accommodate float planes. The property lies 145 km east-southeast of Mayo, the nearest supply centre. Mayo can be reached in all seasons by two wheel drive vehicles using the Yukon highway system.

## HISTORY AND PREVIOUS WORK

In 1990, the Geological Survey of Canada (GSC) completed a reconnaissance-scale stream sediment and water sampling survey on NTS map sheet 105N (Day *et. al.*, 2009). Samples collected from creeks draining the Lance property returned 80th to greater than 99th percentile arsenic (29 to 480 ppm), background to 90th percentile gold (0 to 12 ppb), and 80th to greater than 98th percentile bismuth (0.3 to 1.2 ppm) and antimony (1.6 and 6.0 ppm) values for that map sheet.

In 2010, Strategic Metals staked 108 claims to cover the anomalous drainages.

In spring 2011, the property was optioned to New Dimension, and later that summer soil sampling outlined a broad arsenic anomaly that encompasses five more localized gold targets (A

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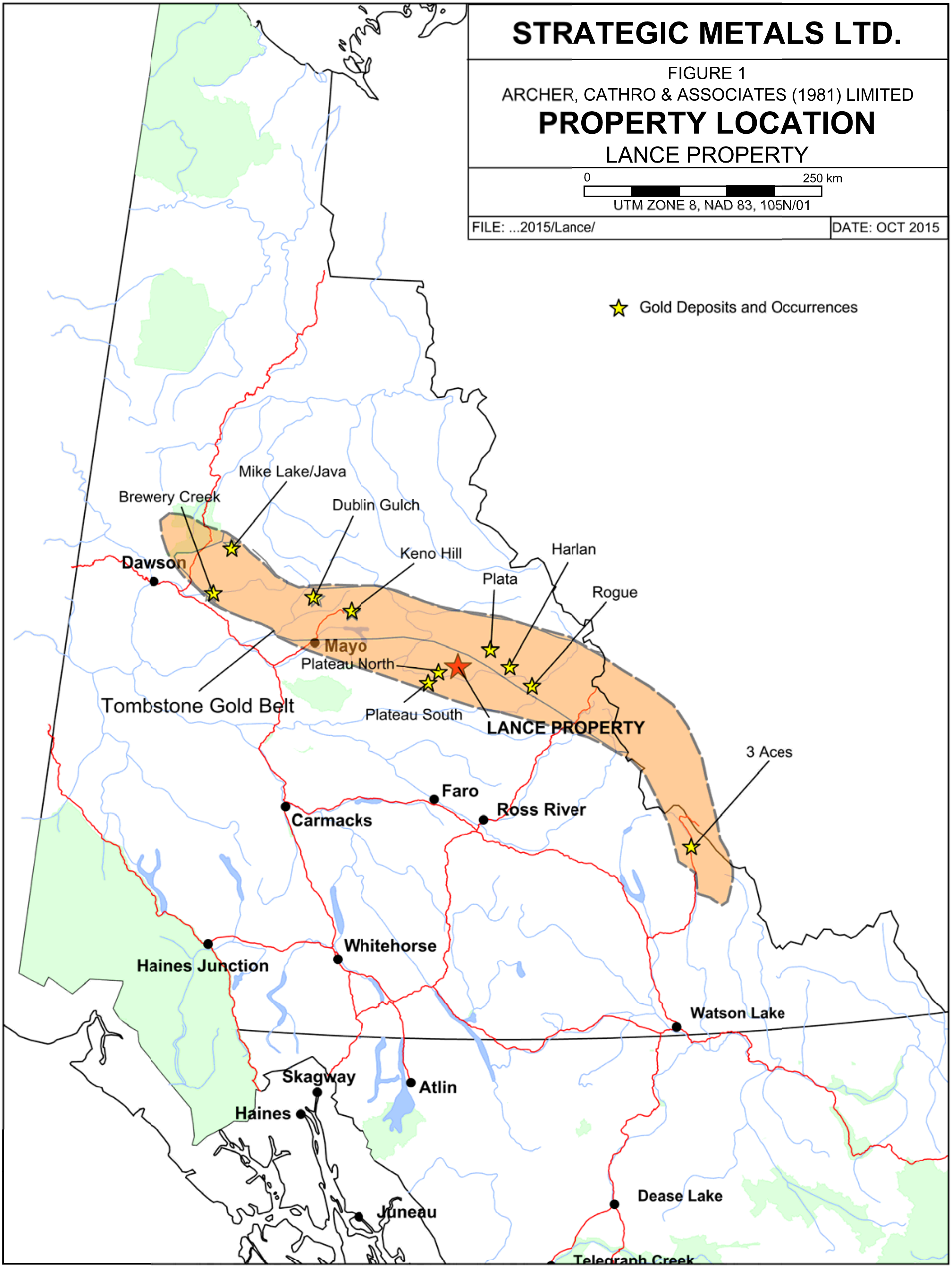
FIGURE 1
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

## PROPERTY LOCATION

LANCE PROPERTY

0
250 km
UTM ZONE 8, NAD 83, 105N/01

FILE: ...2015/Lance/
DATE: OCT 2015



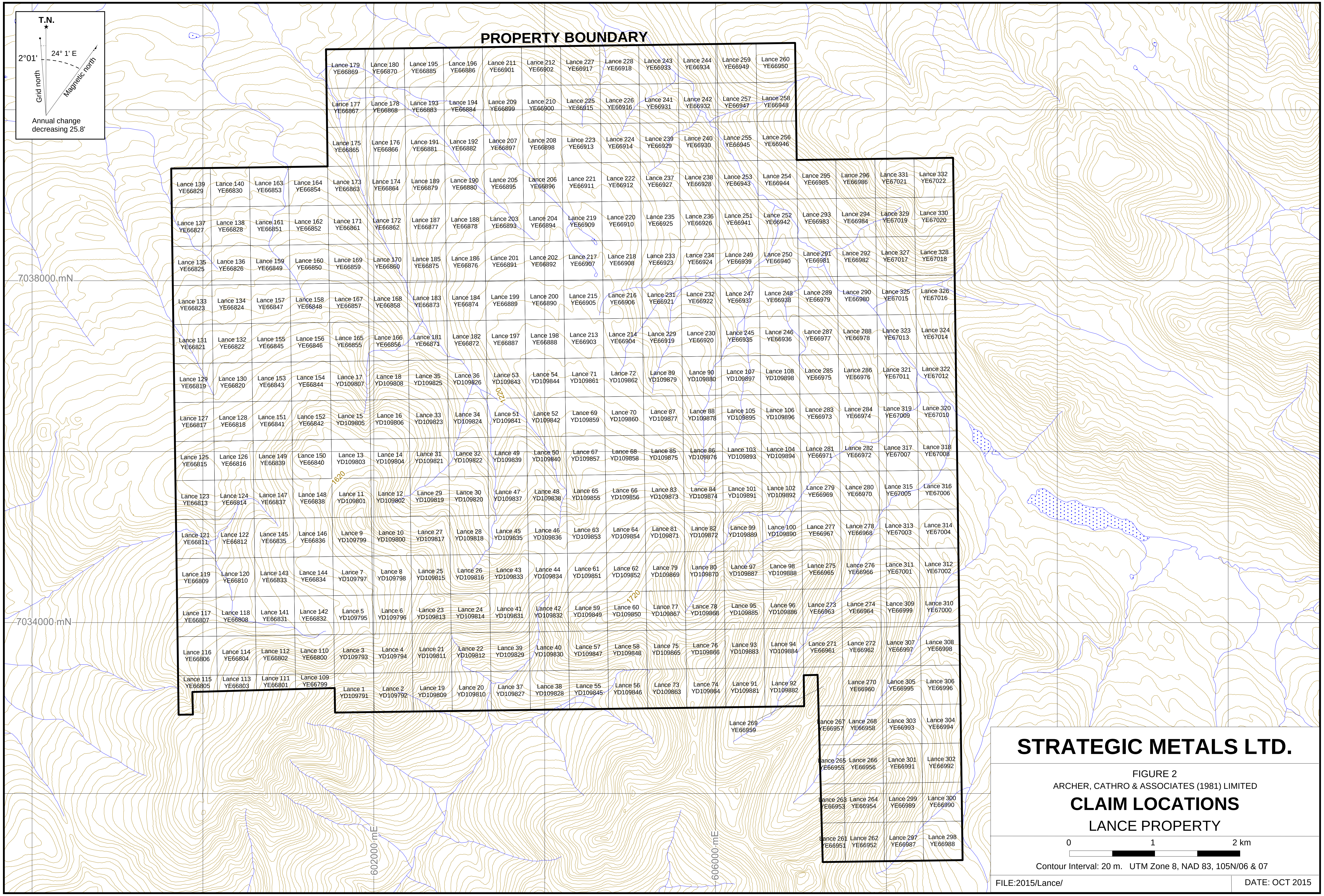


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FIGURE 2

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

## CLAIM LOCATIONS

### LANCE PROPERTY

Contour Interval: 20 m. UTM Zone 8, NAD 83, 105N/06 & 07

FILE:2015/Lance/

DATE: OCT 2015

to E). These targets are defined by gold-in-soil values up to 8.32 g/t with strong arsenic (up to 5,990 ppm), antimony (up to 523 ppm), bismuth (up to 39.5 ppm) and/or tungsten (up to 60.5 ppm) support (Eaton, 2011). Targets A to C host auriferous quartz veins (Zones A to C), which returned up to: 0.970 g/t gold with 9970 ppm arsenic; 1.46 g/t gold with 25.2% arsenic; and 1.61 g/t gold with 3.41% arsenic, respectively. In August 2011, the property was expanded from 108 to 332 claims because of the encouraging geochemical results.

In 2012, New Dimension conducted a program that included additional soil geochemical sampling, hand trenching, prospecting and geological mapping (Mitchell, 2013). Details of this work are discussed in the appropriate sections below.

In spring 2014, New Dimension terminated its option on the property.

## GEOMORPHOLOGY AND CLIMATE

The Lance property is situated in the Hess Mountains, a subset of the Selwyn Mountains. It is drained by streams that flow into Pleasant Creek and Hess River, which both ultimately discharge into the Pacific Ocean via the Stewart and Yukon rivers.

Most of the property covers a northwest-trending arcuate ridge and several northeast-trending spurs. The northeastern corner of the property is cut by a wide creek valley. Local elevations range from about 800 to 1880 m above sea level (asl). Outcrop is generally restricted to ridge tops, creek cuts and steep slopes. Approximately one-third of the property lies above treeline, which is at about 1500 m asl. Slopes above that elevation are characterized by talus, outcrop and alpine vegetation that primarily consist of low grass and staghorn moss. The density and size of vegetation gradually increases on lower slopes, and valley floors are treed by mature spruce forests with an understory consisting of low shrubs and moss.

The top of the main ridge is a broad, grassy plateau with moderately abundant outcrop along its southeastern crest and sparse outcrop on the plateau itself. The principal areas of interest identified to date on the property are situated on two of the northeast-trending spurs and within the intervening valley.

Much of the overburden in the region is associated with the most recent Cordilleran ice sheet, the McConnell glaciation, which is believed to have covered south and central Yukon between 26,500 and 10,000 years ago (Yukon Geological Survey, 2011). In this area, the ice sheet generally moved in a northwesterly direction.

The climate in the Lance property area is typical of northern continental regions with long, cold winters, truncated fall and spring seasons and short, mild summers. The property is mostly snow free from late May to late September.

## REGIONAL GEOLOGY

In 1995 and 2003, the GSC and Yukon Geological Survey (YGS) published geological maps of the Lansing Range map sheet (NTS 105N) at 1:125,000 and 1:250,000 scales, respectively (Roots *et.al.*, 1995 and Roots, 2003). In 2003, Gordey and Makepeace incorporated this data as part of a Yukon-wide geological compilation. The following geological descriptions are based on the published data.

The Lance property is located within Selwyn Basin (Figure 3), a predominantly off-shelf metasedimentary and metavolcanic sequence that formed on the western margin of the North American craton from Upper Proterozoic to Lower Paleozoic times.

The geology of the Lansing Range map sheet includes eight sedimentary units and one intrusive unit (Figure 4). The basal sequence of Hyland Group, Gull Lake Formation and Road River Group represents clastic fill and deep water chemical precipitate of Upper Proterozoic and Lower Paleozoic age. In the southwest part of the map sheet, thin horizons of Cambrian Marmot Formation mafic volcanics lie within the Hyland and Road River groups. The Mid-Paleozoic Earn Group conformably and locally unconformably overlies the sedimentary basal sequence and dominantly consists of black shale and marine conglomerate (Roots, 2003). Fine grained clastic and carbonate rocks of Mississippian Tay Formation and Keno Hill Quartzite, Carboniferous to Permian Mount Christie Formation and Triassic Jones Lake Formation conformably overlie Earn Group or are juxtaposed against the older units along faults. These younger strata are limited in extent relative to the older units. Numerous Mid-Cretaceous Selwyn Suite igneous bodies cut the sedimentary package throughout the region. A large area at the centre of the map sheet is covered by Quaternary unconsolidated glacial, glaciofluvial and glaciolacustrine deposits. The units are described in Table I.

**Table I – Lithological Units (*after Gordey and Makepeace, 2003*)**

| Unit Name | Map Name | Age | Description |
|---|---|---|---|
| Q | Quaternary | Quaternary | Unconsolidated glacial, glaciofluvial and glaciolacustrine deposits; fluviatile silt, sand, and gravel, and local volcanic ash, in part with cover of soil and organic deposits. |
| mKgS | Selwyn Suite | Mid-Cretaceous | Mainly hornblende and hornblende/biotite syenite, commonly porphyritic (potassium feldspar phenocrysts), uneven textured, mostly medium grained, locally fine or coarse grained; minor diorite; hornblende syenite. |
| TrJ | Jones Lake Formation | Triassic | Brown to buff weathering, calcareous fine grained sandstone, argillite and shale; extensive ripple cross-lamination and bioturbation; massive, light grey weathering, fine crystalline, dark grey limestone; minor orange weathering platy |

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FIGURE 3

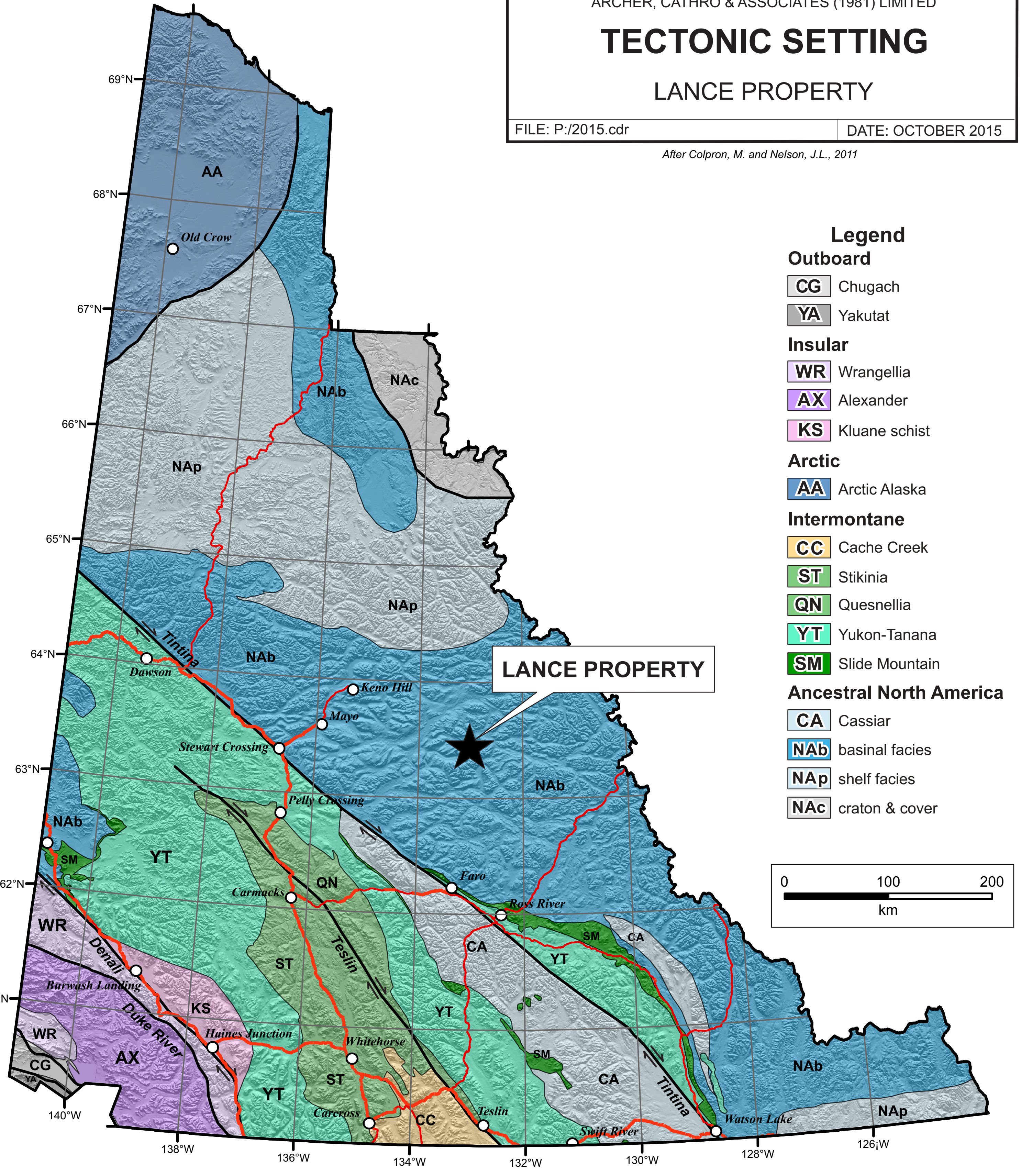
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

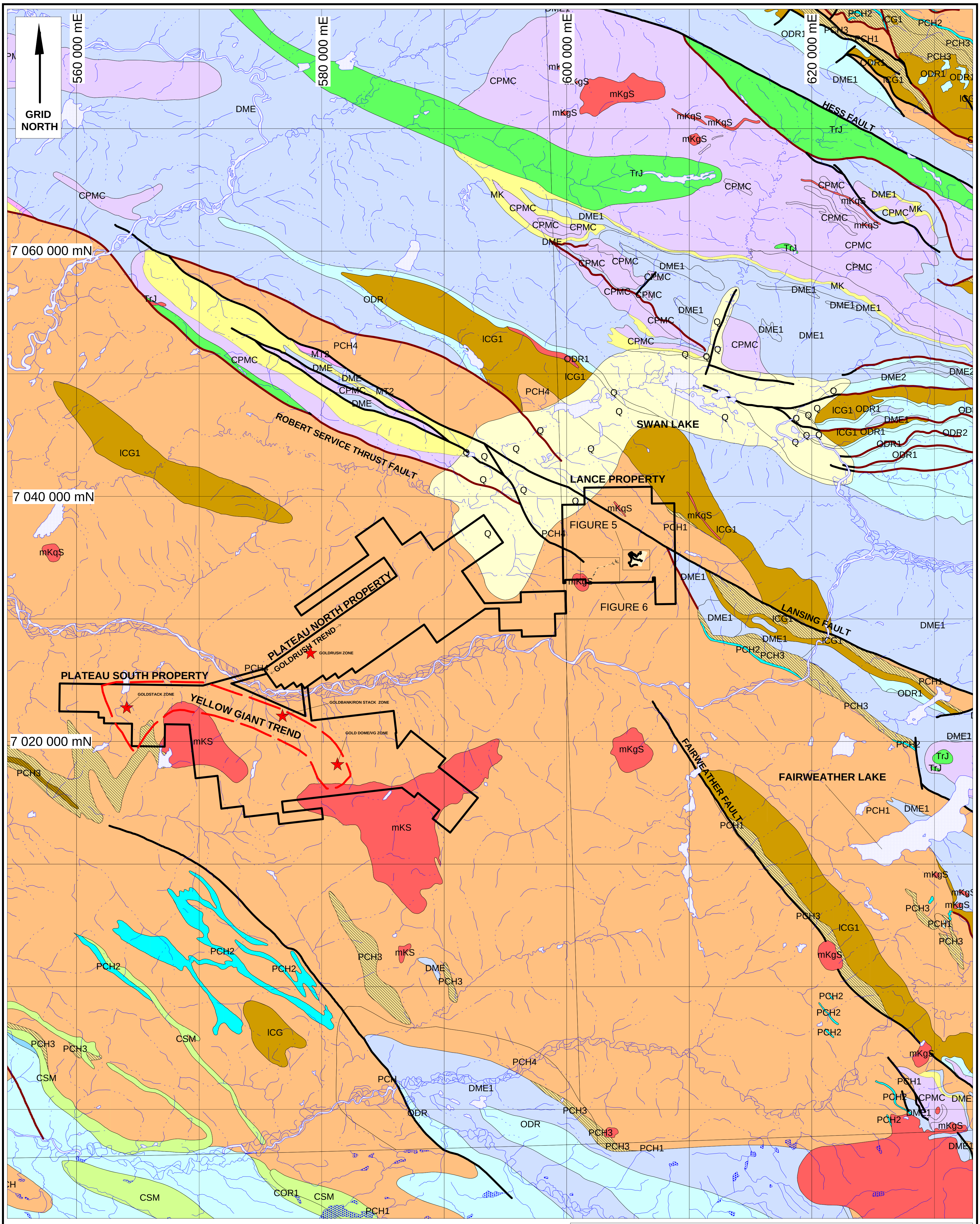
# TECTONIC SETTING

## LANCE PROPERTY

| FILE: P:/2015.cdr | DATE: OCTOBER 2015 |
|---|---|

*After Colpron, M. and Nelson, J.L., 2011*





After Gordey and Makepeace, 2003 and Bremner, 2012

★ Goldstrike Resources Mineralized Zones Referred to in Text

— Fault (movement unknown)

— Thrust fault (dip unknown)

See accompanying lithological legend

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FIGURE 4
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

## REGIONAL GEOLOGY

LANCE PROPERTY

0 5 10 km

UTM ZONE 8, NAD 83, NTS 105N

FILE: ...2015/Lance/

DATE: OCT 2015

| | | | |
|---|---|---|---|
| | | | limestone. |
| CPMC | Mount Christie Formation | Carboniferous to Permian | Burrowed, interbedded greenish grey cherty shale and green shale; thin to medium bedded, light grey-green to black chert; black siliceous slate and siltstone; minor quartzite, limestone and dolostone; locally abundant, large grey barite nodules. |
| MK | Keno Hill Quartzite | Mississippian | Massive to thick bedded quartzarenite; thin to medium bedded quartzarenite interstratified with black shale or carbonaceous phyllite; local scour surfaces and shale intraclasts; locally foliated and lineated. |
| MT2 | Tay Formation | Mississippian | Grey and buff weathering, generally thick bedded to massive, dark grey to black fetid limestone; fine crystalline to cryptocrystalline; commonly bioclastic. |
| DME | Earn Group | Devonian and Mississippian | Thin bedded, laminated slate with thin to thickly interbedded fine to medium grained chert-arenite and wacke; thick members of chert pebble conglomerate; black siliceous siltstone; nodular and bedded barite; rare limestone. |
| ODR1 | Road River Group | Ordovician to Lower Devonian | Black, gun-blue, or silvery white weathering black graptolitic shale and black chert; resistant grey weathering, thin to medium bedded, light grey to black, greenish grey or turquoise chert; minor argillaceous limestone. |
| CSM (undivided) | Marmot Formation | Cambrian to Silurian | Mostly mafic volcanics, in locally thick accumulations (1) - (6) but also of common occurrence as undifferentiated thin scattered members within other units. |
| lCG1 | Gull Lake Formation | Lower Cambrian | Shale, siltstone and mudstone, locally bioturbated, with minor quartz sandstone; rare green-grey chert; local basal limestone and limestone conglomerate; phyllite to quartz-muscovite-biotite schist (+/-garnet +/-sillimanite +/-staurolite +/-andalusite). |
| PCH (undivided) | Hyland Group | Upper Proterozoic to Lower Cambrian | Consists upwards of coarse turbiditic clastics (1), limestone (2) and fine clastics typified by maroon and green shale (3). |
| PCH1 | | | Thin to thick bedded, brown to pale green shale, fine to coarse grained quartz-rich sandstone, grit, and quartz-pebble |

| | | | |
|---|---|---|---|
| | | | conglomerate; minor argillaceous limestone; phyllite, quartzofeldspathic and micaceous psammite, gritty psammite and minor marble. |
| PCH2 | | | Grey weathering, dark grey to grey white, thin to thick bedded, very fine crystalline limestone, locally sandy; calc-silicate and marble. |
| PCH3 | | | Distinctive, recessive, maroon weathering, interbedded maroon and apple-green slate; "Oldhamia" trace fossils; rare grey chert; locally basal member and interbeds of quartz siltstone, sandstone and quartz-pebble conglomerate. |
| PCH4 | | | Quartzose clastic rocks as described in (1); mostly(?) equivalent to (1) but may include younger units |

Structure on the Lansing Range map sheet dominantly follows a northwesterly trend. Significant thrust, strike-slip and extensional faults are present throughout the map sheet. The most important thrust faults are the Dawson Thrust to the northeast and the Roberts Service Thrust to the west-northwest. The Lance property overlies part of the Lansing Fault (informally named for the purposes of this report), which is a large steeply-dipping fault that offsets the Robert Service Thrust. The main portion of the Robert Service Thrust lies 4 km west of the Lance property; however, a relatively short, offset segment of this fault crosses the eastern part of the property. Another high angle fault is mapped in the southwest corner of the property, which may connect to the Fairweather Fault (also informally named for this report) 10 km to the southeast. All of the major faults pre-date Mid-Cretaceous plutonism, as evidenced by cross-cutting relationships and several plugs that are emplaced along, but not offset by the Fairweather Fault. Bedding is variable throughout the map sheet, but generally trends northwesterly and dips moderately to the southwest.

## PROPERTY GEOLOGY

In 2012, New Dimension conducted detailed geological mapping in the vicinity of gold-in-soil anomalies that were identified in 2011 within the southern part of the Lance property. The following geological descriptions are based on regional government data (Yukon Geological Survey, 2012) and New Dimension's mapping.

Government mapping in the area indicates that the Lance property is dominantly underlain by undifferentiated Hyland Group clastic and carbonate rocks (Figure 4). Hyland Group is overlain by Gull Lake Formation and unconsolidated Quaternary glacial, glaciofluvial and glaciolacustrine deposits in the northeast and northwest corners of the property, respectively. Along the eastern property boundary, the Lansing Fault and Robert Service Thrust Fault juxtapose Hyland Group against a sliver of Earn Group. Hyland Group is cut by two small Selwyn Suite intrusive bodies in the northern and southwestern parts of the property. Selwyn

Suite intrusive bodies in this area have little or no aeromagnetic expression due to their reduced nature (Roots, 2003 and Lefebure and Hart, 2005). A regional aeromagnetic map compiled by the YGS shows little magnetic contrast on the Lance property (Yukon Geological Survey, 2011).

Detailed mapping in the southern part of the property identified three primary Hyland Group sub-units – siliceous grit, phyllite and limestone (Figure 5). The siliceous grit is the most abundant and widespread of the three sub-units. It is grey to tan weathering and fine to coarse grained with sand and pebble sized clasts. The grit layers are commonly interbedded with grey to buff weathering, light to medium grey-green phyllite. Phyllite beds are typically less than two metres thick. An approximately 50 m thick limestone horizon with quartz clasts up to 5 mm in diameter outcrops in the southwest part of the main detail map area. The quartz clasts comprise about 10% of the horizon. Three, grey to buff to tan weathering, fine grained, medium to dark grey, locally well-bedded limestone horizons were outlined in the centre of the main detail map area. These horizons vary from 5 to 40 m thick. A limey turbidite horizon was noted along the top of one of these limestone horizons.

In the northwest part of the main detail map area, several fine grained, white, sucrosic, locally pyritiferous aplite dykes cut the sedimentary package. These dykes vary from 1 to 15 m thick, but could not be traced along strike due to vegetation cover.

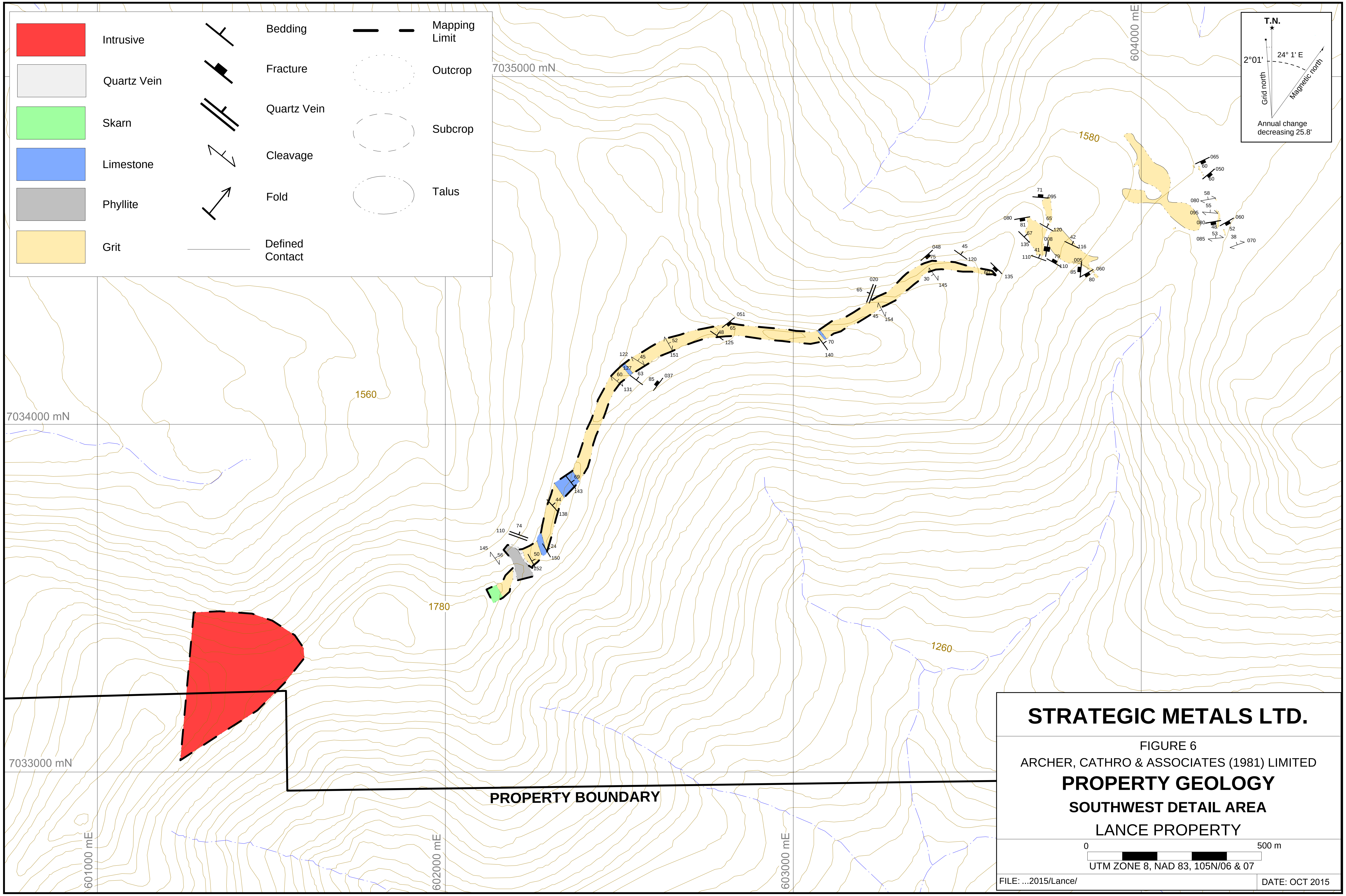
The eastern edge of the more southerly of the two intrusive plugs shown on government's regional map was located and its position confirmed (Figures 4 and 6). Outcrop exposures on the ridge extending northeasterly from that plug dominantly comprise grit with minor interbeds of phyllite, while limestone, marble and skarn horizons up to 55 m wide were also identified. All units within approximately one kilometre of the intrusion are weakly to strongly hornfelsed and are rusty weathering.

Bedding in the southern part of the property generally strikes southeasterly and dips moderately to the northeast. Erratically oriented tight folds were locally observed within phyllite and thinly bedded limestone. The grit is weakly schistose in close proximity to folded, finer grained rocks. All rocks within the map area are moderately fractured. These fractures dominantly strike northeasterly and dip variably to the northwest and southeast. Quartz veins occur in clusters, locally as stockworks or sheeted sets, and mainly strike east to southeasterly with moderate dips to the northeast.

## MINERALIZATION

In 2012, New Dimension conducted detailed prospecting in conjunction with soil sampling, hand trenching and geological mapping in the vicinity of the five local gold targets (A to E) outlined in 2011 (Figures 7 to 14). This follow up work confirmed gold+arsenic±antimony±bismuth mineralization at Zones A to C, discovered similar mineralization at a new zone (Zone H) and identified tungsten mineralization within Target D (Zone D).

**Zone A** hosts vein material with altered phyllite and grit wallrocks, which occurs within three linear gullies that cut perpendicular across a flat-topped, alpine ridge. An approximately 25 by 10 m rusty kill zone is developed in the vicinity of these gullies, and it contains about 5% percent



# STRATEGIC METALS LTD.

FIGURE 6

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

## PROPERTY GEOLOGY

### SOUTHWEST DETAIL AREA

LANCE PROPERTY

UTM ZONE 8, NAD 83, 105N/06 & 07

FILE: ...2015/Lance/

DATE: OCT 2015

quartz vein fragments in weakly pyritiferous, fine to coarse grained siliceous talus (Hyland Group). Quartz vein fragments are found within the gullies and on the low ridges between them. The quartz is variably rusty weathering and often contains weakly disseminated pyrite and limonite. No quartz veins have been seen in outcrops that occur along the edges of the gullies. An aplite sill was observed in the area.

In 2012, three hand trenches totalling 71 m were completed by New Dimension at Zone A. The best assays came from TR-12-01, where two adjacent chip samples averaged 0.795 g/t gold and 6640 ppm arsenic over a combined length of 3.1 m. These samples mostly comprised strongly altered grit with millimetre sized quartz clasts in a rusty matrix of fine grained sand.

Prospecting and hand trenching at Zone A have been unable to explain the very high (8.32 and 2.5 g/t) gold-in-soil results obtained in the area.

**Zone B** comprises an arsenopyrite-rich quartz vein that occurs on a steep southeast-facing slope (~ 45 to 50 degrees), 300 m southeast of Zone A. The vein cuts coarse grained grit and is up to 10 cm thick. It is only exposed over a two metre strike length, trending into heavily vegetated terrain to the southeast and beneath talus cover to the northwest. This vein exposure returned 1.46 g/t gold, 35 g/t silver and 25.2% arsenic. A two cm thick, scordite-stained quartz vein fragment, which was discovered in talus about 75 m north of the showing, yielded 0.669 g/t gold, 9.51% arsenic, 75.9 ppm antimony and 130.5 ppm bismuth.

**Zone C** consists of a 20 cm wide strongly scordite-stained quartz vein hosting moderate, fine grained arsenopyrite. The adjacent country rock comprises fine to medium grained grit, which is locally and weakly scordite stained. The quartz vein strikes 126 degrees, dips steeply to the northeast and appears to pinch and swell along strike. A continuous chip sample across the main vein yielded 1.04 g/t gold, 2.81% arsenic and 20.9 ppm antimony. Adjoining chip samples of country rock taken 1.7 m into the footwall and 0.7 m into the hanging wall returned 0.044 g/t gold with 563 ppm arsenic, and 0.076 g/t gold with 1655 ppm arsenic, respectively.

At **Zone D**, a 50 cm deep soil pit was dug beneath the site of a strongly anomalous gold-in-soil result. A specimen of highly calcareous skarn with green bands hosting coarse to fine grained magnetite crystals and chlorite stringers was collected from the pit. A sample from that specimen returned a significantly elevated tungsten (410 ppm) value but only background results for gold, arsenic, antimony and bismuth. The specimen is angular to sub-angular and appears to be transported over a relatively short distance. Limonitic soil and rock fragments were also observed within this pit and a soil sample of that material returned high values for gold and pathfinder elements, except tungsten. This sample is further discussed in the Soil Geochemistry section.

**Zone H** comprises highly altered quartz vein with moderate scordite-staining. A sample consisting of 13 vein chips was collected from an approximately 30 by 30 m area on a talus slope composed of phyllite, grit and quartz vein. The source of the vein float appears to be located above a rusty spur leaching green soil. The composite sample of quartz vein float yielded 0.594 g/t gold, 13.8% arsenic, 102.5 ppm antimony and 95.3 ppm bismuth.

## SOIL GEOCHEMISTRY

In 2011, New Dimension collected 15 stream sediment and 218 soil samples from the southern part of the Lance property. In 2012, a total of 826 soil samples were taken from two soil grids covering Targets A to E, and contour sample lines located south of those targets. Results for gold, arsenic, antimony, bismuth, tungsten, silver, lead and zinc are plotted on Figures 7 to 14, respectively.

Soil sampling identified a large, relatively intense arsenic anomaly that covers much of the southern part of the property. The arsenic anomaly is locally supported by elevated gold, antimony, bismuth, tungsten, silver, lead and zinc values. Anomalous thresholds and peak values for soil samples are listed in Table II.

**Table II – Near Surface Geochemical Data for Soil Geochemical Targets**

| Element | Anomalous Thresholds | | | | |
|---|---|---|---|---|---|
| | Weak | Moderate | Strong | Very Strong | Peak |
| Gold (ppb) | ≥ 10 < 20 | ≥ 20 < 50 | ≥ 50 < 100 | ≥ 100 | 8,320 |
| Arsenic (ppm) | ≥ 100 < 200 | ≥ 200 < 500 | ≥ 500 < 1,000 | ≥ 1,000 | 10,001 |
| Antimony (ppm) | ≥ 5 < 10 | ≥ 10 < 20 | ≥ 20 < 50 | ≥ 50 | 273 |
| Bismuth (ppm) | ≥ 5 < 10 | ≥ 10 < 20 | ≥ 20 <50 | ≥ 50 | 20.0 |
| Tungsten (ppm) | ≥ 5 < 10 | ≥ 10 < 20 | ≥ 20 <50 | ≥ 50 | 21.7 |
| Silver (ppm) | ≥ 1 < 2 | ≥ 2 < 5 | ≥ 5 < 10 | ≥ 10 | 3.57 |
| Lead (ppm) | ≥ 50 < 100 | ≥ 100 < 200 | ≥ 200 < 500 | ≥ 500 | 899 |
| Zinc (ppm) | ≥ 100 < 200 | ≥ 200 < 500 | ≥ 500 < 1,000 | ≥ 1,000 | 668 |

Within the broad soil anomaly, seven specific targets (A to H) were defined by elevated gold± arsenic±antimony±bismuth±tungsten±silver±lead±zinc. Relative strength and peak values for soil geochemical targets are listed in Table III.

**Table III – Relative Strength and Peak Values for Near Surface Soil Geochemical Targets**

| | **Target A** | |
|---|---|---|
| **Element** | **Relative Strength** | **Peak Value** |
| Gold (ppb) | Very Strong | 8,320 |
| Arsenic (ppm) | Very Strong | 10,001 |
| Antimony (ppm) | Strong | 33.6 |
| Bismuth (ppm) | Moderate | 15.4 |
| Tungsten (ppm) | Background | 0.46 |
| Silver (ppm) | Background | 0.86 |
| Lead (ppm) | Background | 28.7 |
| Zinc (ppm) | Background | 98 |
| | **Target B** | |
| **Element** | **Relative Strength** | **Peak Value** |
| Gold (ppb) | Very Strong | 261 |
| Arsenic (ppm) | Very Strong | 10,001 |
| Antimony (ppm) | Strong | 30.7 |
| Bismuth (ppm) | Moderate | 16.85 |
| Tungsten (ppm) | Background | 0.27 |
| Silver (ppm) | Weak | 1.82 |
| Lead (ppm) | Strong | 361 |
| Zinc (ppm) | Weak | 164 |
| | **Target C** | |
| **Element** | **Relative Strength** | **Peak Value** |
| Gold (ppb) | Very Strong | 337 |
| Arsenic (ppm) | Very Strong | 3,390 |
| Antimony (ppm) | Weak | 9.21 |
| Bismuth (ppm) | Background | 1.1 |
| Tungsten (ppm) | Background | 0.09 |
| Silver (ppm) | Weak | 1.25 |
| Lead (ppm) | Weak | 81.7 |
| Zinc (ppm) | Weak | 151 |

| | Target D | |
|---|---|---|
| Element | Relative Strength | Peak Value |
| Gold (ppb) | Very Strong | 1,400 |
| Arsenic (ppm) | Very Strong | 10,001 |
| Antimony (ppm) | Very Strong | 273 |
| Bismuth (ppm) | Moderate | 20.0 |
| Tungsten (ppm) | Strong | 21.7 |
| Silver (ppm) | Moderate | 3.33 |
| Lead (ppm) | Strong | 281 |
| Zinc (ppm) | Strong | 668 |
| | **Target E** | |
| **Element** | **Relative Strength** | **Peak Value** |
| Gold (ppb) | Very Strong | 865 |
| Arsenic (ppm) | Background | 49.5 |
| Antimony (ppm) | Background | 2.06 |
| Bismuth (ppm) | Background | 0.41 |
| Tungsten (ppm) | Background | 0.28 |
| Silver (ppm) | Background | 0.12 |
| Lead (ppm) | Background | 26.1 |
| Zinc (ppm) | Background | 81 |
| | **Target F** | |
| **Element** | **Relative Strength** | **Peak Value** |
| Gold (ppb) | Very Strong | 115 |
| Arsenic (ppm) | Very Strong | 2,570 |
| Antimony (ppm) | Very Strong | 138 |
| Bismuth (ppm) | Weak | 9.42 |
| Tungsten (ppm) | Background | 0.41 |
| Silver (ppm) | Moderate | 3.57 |
| Lead (ppm) | Strong | 899 |
| Zinc (ppm) | Moderate | 436 |
| | **Target G** | |
| **Element** | **Relative Strength** | **Peak Value** |
| Gold (ppb) | Very Strong | 300 |
| Arsenic (ppm) | Very Strong | 6,120 |
| Antimony (ppm) | Weak | 9.69 |
| Bismuth (ppm) | Background | 1.35 |
| Tungsten (ppm) | Background | 0.08 |
| Silver (ppm) | Background | 0.77 |
| Lead (ppm) | Moderate | 186.5 |
| Zinc (ppm) | Weak | 154 |

| | Target H | |
|---|---|---|
| Element | Relative Strength | Peak Value |
| Gold (ppb) | Weak | 11 |
| Arsenic (ppm) | Strong | 631 |
| Antimony (ppm) | Moderate | 10.7 |
| Bismuth (ppm) | Background | 3.44 |
| Tungsten (ppm) | Background | 0.12 |
| Silver (ppm) | Background | 0.22 |
| Lead (ppm) | Weak | 65.4 |
| Zinc (ppm) | Weak | 118 |

Target A encompasses Zone A and includes a cluster of three very strong gold results in the north part of the target and a highly elevated gold point anomaly to the south. All of the high gold values are directly supported by arsenic, but only the northern cluster shows elevated antimony and bismuth response. The two highest gold-in-soil values on the property are from samples taken within this target, near the gullies at Zone A.

Target B is located 300 m southwest of Target A and consists of two samples that yielded very high gold results with direct arsenic, antimony, bismuth and lead support. It lies immediately downhill of the auriferous arsenopyrite-rich quartz vein at Zone B. Two samples taken from the northern part of the target also returned strongly elevated values for gold with coincidently high arsenic, antimony and lead response.

Target C is situated 500 m south of Target A on a steep southeast facing slope. It is defined by two strong gold values with elevated arsenic results. The anomalous soil samples were collected immediately downhill from the auriferous quartz vein at Zone C. The target is locally underlain by stockwork-veined grit.

Target D lies 700 m northwest of Target A, on a small knob that is separated from the main north-facing hillside by a southwest trending gully. A soil sample collected from the bottom of a one metre deep hand pit dug at an anomalous near surface soil sample (see Table III for results) returned 1190 ppb gold, 10,001 ppm arsenic, 578 ppm antimony, 80.8 ppm bismuth, 59.9 ppm tungsten, 14.95 ppm silver, 1200 ppm lead and 2570 ppm zinc. The elevated tungsten response distinguishes Target D from the other targets. The high tungsten-in-soil value may be explained by the skarn specimen taken from the soil pit (described in the Mineralization Section); however, the known skarn does not appear to be the source for gold or other elements of interest.

Target E is located 2000 m west-southwest of Target A and is defined by a very high gold point anomaly from 2011. Unlike Targets A to D, the gold value at Target E is not supported by any of the other elements of interest. Soil samples taken from this area in 2012 were unable to reproduce the 2011 anomalous gold result. This area is heavily vegetated and contains very limited outcrop.

Target F sits 800 m northwest of Target A, on a moderate northeast facing slope. This target comprises a northeast trending line of four samples, which returned strongly elevated gold values with coincident, moderate to strong arsenic and antimony response. The highest gold value lies in the southwestern-most part of the target, and is from a sample that also produced a silver, lead and zinc point anomaly. The highest gold value is underlain by limestone that is cut by aplite dykes/sills.

Target G lies 600 m south of Target A and is defined by a highly elevated gold and arsenic point anomaly with moderate lead support. Target G overlies variably coarse grained grit with lesser phyllite interbeds.

Target H is situated 800 m southwest of Target A on a moderately steep southeast facing slope. This target features a weakly anomalous gold value with elevated arsenic and antimony results, which were obtained from a sample taken 25 m uphill from the composite sample of auriferous quartz vein that defines Zone H.

## GEOPHYSICAL SURVEYS

In July 2015, helicopter-borne magnetic and radiometric surveys were completed across the entire property by Precision Geosurveys Inc. of Vancouver, British Columbia using a Eurocopter AS350 helicopter (registration C-GOHK). A total of 819 line kilometres were flown with survey lines oriented at 000° and spaced 100 m apart and tie lines oriented at 090° and spaced 1000 m apart. The helicopter maintained an average height of approximately 35 m. The helicopter was equipped with a magnetometer stinger and internal spectrometer crystals, for magnetic and radiometric data acquisition, respectively.

Figure 15 illustrates residual magnetic intensity overlain by gold geochemistry. The survey revealed three distinct domains (D1, D2, and D3) separated by two regional-scale faults in the southwest corner and northeast part of the property – projected continuations of the Fairweather and Lansing faults, respectively.

Domain 1 features a prominent magnetic low response; an amoeboid shaped magnetic low that corresponds to a mapped Selwyn Suite intrusion.

Domain 2, contains all of the known geochemical anomalies and mineralized zones. It contains a magnetic low, which may represent a buried pluton, and a bordering magnetic high to the northwest, northeast and southeast. Within this pattern there are subtle, northwesterly- and northeasterly-trending magnetic lows near Targets A, F and G. These secondary magnetic lows may represent demagnetized alteration zones hosting gold-enriched vein mineralization. Localized areas with the highest magnetic response could mark skarn zones.

Domain 3 in the northeastern corner of the property shows alternating bands of high and low magnetic response. Large, linear magnetic lows correspond with suspected faults, while a small but intense circular low is attributed to a mapped Selwyn Suite plug or dyke.

Total count – radiometrics and gold geochemistry are illustrated on Figure 16. High radioactivity in D1 corresponds to the Selwyn Suite pluton mapped in the area. North, northeast and east of this plug within D2 there is an extensive radiometric high, which likely represents an alteration envelope above the buried intrusion that is inferred from magnetic data. All of the geochemical anomalies and mineralized zones lie within this suspected alteration halo. A broad northwesterly-trending radiometric low, mostly confined to D3, follows a valley and is likely the expression of thick overburden cover and vegetation.

Appendix III contains a digital copy of Precision Geosurvey's report.

## EXPLORATION MODEL

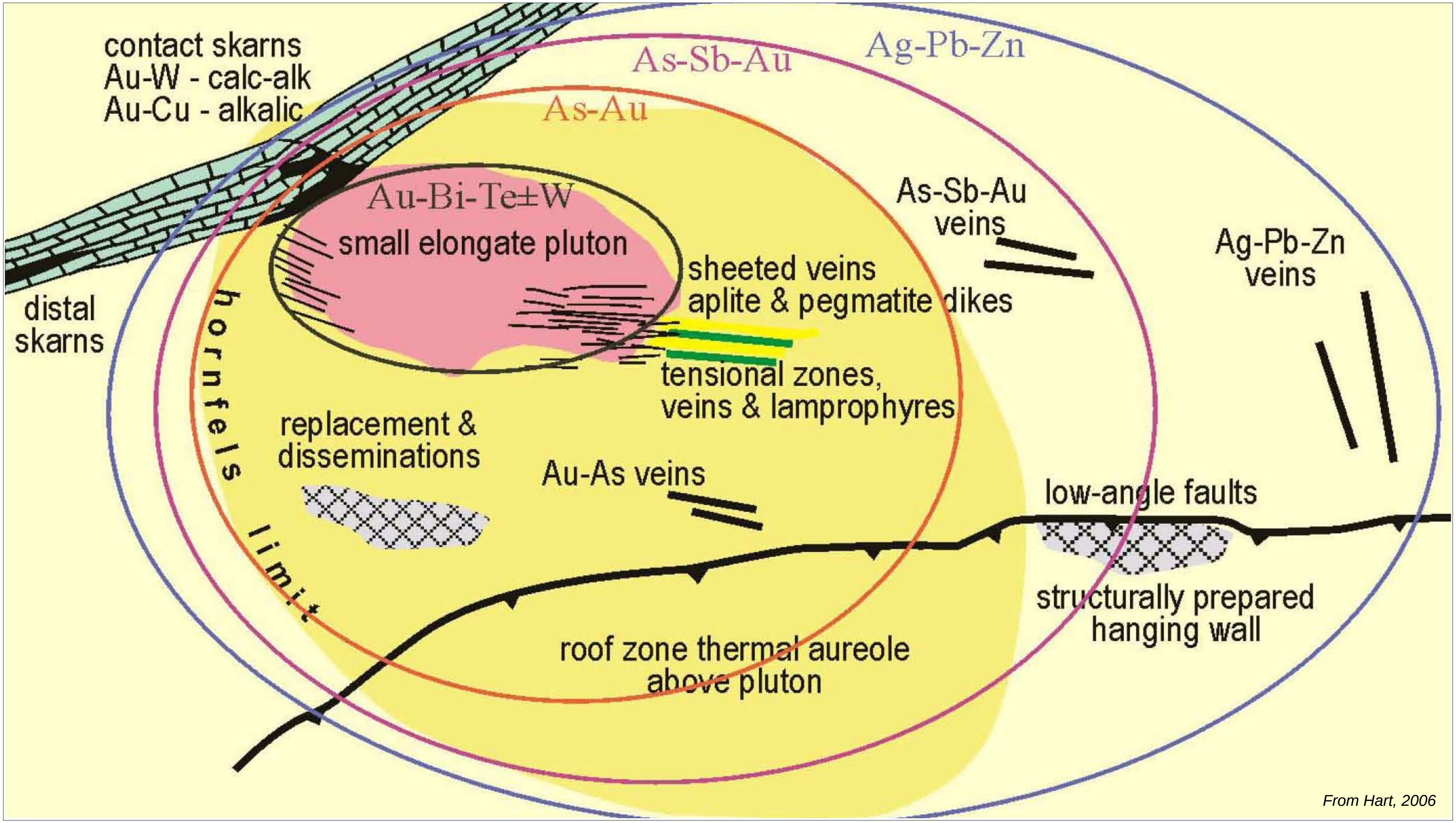
The Lance property is located within the Tombstone Gold Belt (TGB), a 600 km long belt of gold occurrences that extend across central Yukon and Alaska and which is associated with reduced, low magnetic signature plutons (Hart and Lewis, 2006 and Hart, 2006).

Since the discovery of the intrusion-related Fort Knox gold deposit in Alaska in the early 1990s, gold exploration in Yukon (particularly within the TGB) has increasingly focussed on plutons of Mid-Cretaceous age (Hart and Lewis, 2006). The strong association between gold mineralization and Mid-Cretaceous intrusions within the TGB provided the foundation for a reduced intrusion-related gold systems (RIRGS) model that has gained widespread use and acceptance (Hart and Lewis, 2006).

A nearby example of RIRGS gold mineralization have recently been discovered at Goldstrike Resources Limited's Plateau North and South properties, located 10 and 25 km southwest of the Lance property, respectively (Figure 4). The Yellow Giant Trend on Plateau South property hosts high grade gold mineralization. It lies within and on the margins of two Selwyn Suite plugs. Multiple rock samples from each of the VG/Gold Dome, Goldbank/Ron Stack, and Goldstack zones reportedly contain visible gold and return promising assays, including 529.86, 637.95 and 49.21 g/t gold, respectively. The best drill intercepts were 7.6 g/t gold over 9.03 m and 13.25 g/t gold over 17.5 m, including 35.28 g/t gold over 5.7 m at the VG/Gold Dome and Goldstack zones, respectively. The Goldrush Trend, located on Plateau North property, has produced strongly elevated gold-in-soil (up to 26.82 g/t) and gold-in-rock (up to 8.99 g/t) results The gold is structurally controlled and occurs in a variety of settings: silica flooded rhyolite crystal tuff (VG Zone); weathered gritty sandstone hosting disseminated arsenopyrite (VG Zone); arsenopyrite-rich veins and stockworks in silicified, albitized tuff (Goldbank Zone); and volcanic breccias associated with extensive quartz veining (Ron Stack Zone) – (Bremner, 2015).

RIRGS gold deposits are the product of local-scale fluids derived from cooling of a proximal granitoid intrusion. Figure 17 illustrates several of the geochemical, lithological, structural and mineralogical features of RIRGS gold deposits. These deposits share several characteristics with orogenic deposits, which are considered to result from crustal-scale fluids derived through metamorphic dehydration (Hart, 2005). Features that are common to both deposit types include:

1) metaluminous, subalkalic intrusions or intermediate to felsic compositions that lie near the boundary between ilmenite and magnetite series;
2) carbonic hydrothermal fluids;



*From Hart, 2006*

**STRATEGIC METALS LTD.**

FIGURE 17

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

## REDUCED INTRUSION-RELATED GOLD SYSTEMS MODEL

LANCE PROPERTY

FILE:2015/Lance/ DATE: OCT 2015

3) a metal assemblage that variably combines gold with elevated bismuth, tungsten, arsenic, molybdenum, tellurium and/or antimony and low concentrations of base metals; and
4) a low sulphide mineral content, with a reduced ore mineral assemblage typically comprising arsenopyrite, pyrrhotite and pyrite and lacking magnetite and hematite (Hart, 2005).

Other features exist that exclusively differentiate RIRGS deposits (Hart, 2005), including:

1) ideal tectonic setting is ancient continental margin behind accretionary or collisional orogens and subduction-related magmatic arcs;
2) typically formed late in orogeny;
3) preferred host strata include basinal miogeoclinal sedimentary or metasedimentary rocks;
4) concentric zoning due to steep thermal gradients surrounding cooling plutons – zones can develop outward from pluton margin for up to a few kilometres and gold mineralization is associated with pluton-proximal mineralization (bismuth, tellurium and tungsten), aureole-hosted mineralization (arsenic or antimony) and distal mineralization (silver, lead and zinc);
5) several different styles of mineralization due to rapid cooling of mineralizing fluids – styles include variably intrusion and country-rock hosted skarns, replacements, disseminations, stockworks and veins;
6) sheeted arrays of parallel, low-sulphide, single-stage quartz veins found over tens to hundreds or metres and preferentially located in the pluton’s cupola are the most distinctive style of gold mineralization;
7) plutons should exhibit physical evidence and geochemical support for high volatile contents, fluid exsolution, rapid fractionation, zonation, porphyry textures, presence of aplite and pegmatite dykes, quartz and tourmaline veins, greisen alteration, mariolitic cavities and/or unidirectional-solidification textures;
8) felsic, ilmenite-series plutons that lack magnetite, have low magnetic susceptibilities and aeromagnetic response, and have low ferric:ferrous ratios; and
9) coeval (± 2 million years) with their associated, causative pluton.

The abundance of RIRGS deposits correlates inversely with the surface exposure of the related intrusion because stocks and batholiths with considerable erosion are generally less prospective (Lefebure and Hart, 2005).

## DISCUSSION AND CONCLUSIONS

The Lance property is favourably situated in the Tombstone Gold Belt, about 25 km northeast of Goldstrike Resources flagship Plateau South project. The property covers four zones of auriferous quartz veins and a tungsten skarn showing. Thus far, eight strong gold-in-soil anomalies have been identified, but only a small portion of the property has been sampled. The most encouraging soil values have yet to be explained.

Several geochemical and geological features on the Lance property are characteristic of the RIRGS deposit model. These features include: a continental margin setting that underwent orogeny; proximity to small granitoid intrusions that feature low magnetic susceptibilities and aeromagnetic responses; aplite dykes; and evidence of a large hydrothermal system that is marked by auriferous veins and skarns. This model applies to a number of mines and advanced prospects in the Tombstone Gold Belt of Yukon and Alaska.

The geochemical signature of the rock samples taken from Zone A, combined with the presence of aplite dykes/sills in the area, suggests close proximity to a pluton (within the As-Au aureole, as illustrated on Figure 17). Geochemical signatures of gold bearing quartz veins collected from Zones B, C and H place these showings within the As-Sb-Au aureole of the RIRGS model. Elevated gold-in-soil values at Targets D and F appear to be sourcing from limestone horizons that could host skarn or replacement style mineralization.

Geophysical surveys completed in 2015 delineated the Fairweather and Lansing fault traces and identified a large magnetic low that likely represents a buried intrusive body. These magnetic low and fringing magnetic highs show elevated radiometric responses, which is attributed to an alteration halo developed above the buried pluton. All of the known mineralized zones and soil geochemical targets lie immediately southeast of the magnetic low within country rocks.

Additional exploration is needed on the Lance property to constrain the extent, nature and controls of the mineralization. Airphoto interpretation should be completed prior to the field season and any linear features should be plotted on geochemical maps. Field work should include: 1) expansion of soil geochemical grids to cover more of the area around the inferred intrusive plug and its alteration zone; 2) closely-spaced contour soil sampling across the remainder of the property, especially near the mapped intrusions in the southwestern and northeastern parts of the property; 3) systematic prospecting and hand trenching of known geochemically anomalous areas; and 4) where mineralization is discovered, detailed mapping and hand trenching to identify its bedrock source and evaluate its size and grade potential.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

A. Mitchell

A. Mitchell, B.Sc. Geology, GIT

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# APPENDIX I

# STATEMENT OF QUALIFICATIONS

# STATEMENT OF QUALIFICATIONS

I, Andrew Mitchell, geologist, with business addresses in Whitehorse, Yukon Territory and Vancouver, British Columbia and residential address in Vancouver, British Columbia, hereby certify that:

1. I graduated from the University of British Columbia in 2010 with a B.Sc. in Earth and Environmental Sciences.
2. From 2010 to present, I have been actively engaged in mineral exploration in Yukon Territory.
3. I am a Geoscientist in Training (GIT) with the Association of Professional Engineers and Geoscientists of British Columbia (Member Number 169067)
4. I have interpreted all data resulting from this work.

A. Mitchell

A. Mitchell, B.Sc. Geology, GIT

# APPENDIX II

# STATEMENT OF EXPENDITURES

## Statement of Expenditures
Lance 1-332 Mineral Claims
November 12, 2015

### Labour

| | |
|---|---|
| D. Eaton (geologist) 15 hours April to October at $120/hr | $ 1,890.00 |
| H. Burrell (geologist) 6 hours April to October at $106/hr | 667.80 |
| A. Mitchell (geologist) 27 hours April to October at $82/hr | 2,324.70 |
| L. Smith (office) 5 hours April to October at $69/hr | 362.25 |
| S. Newman (office) 8 hours April to October at $64/hr | 537.60 |
| | 5,782.35 |

### Expenses (including management)

| | |
|---|---|
| Precision GeoSurveys Inc. | 74,887.12 |
| | $80,669.47 |

332 claims at $80,669.47 = $242.98/claim

# APPENDIX III

# GEOPHYSICAL SURVEY REPORT

# AIRBORNE GEOPHYSICAL SURVEY REPORT

## Lance Survey Block
### Prepared for Strategic Metals Ltd.

Jenny Poon, B.Sc., P.Geo.
Precision GeoSurveys Inc.
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Canada V6C 2G8
604-484-9402

August 2015

# Table of Contents

## List of Figures

## List of Tables

# 1.0 Introduction

This report outlines the geophysical survey operations and data processing procedures taken during the high resolution airborne magnetic and radiometric survey flown at the Lance survey block for Strategic Metals Ltd. The Lance survey block area is centered 148.4 km east of Mayo, Yukon and covers a total of 73.6 km$^2$, including a 100 m buffer zone around the perimeter of the claim block (Figure 1). The geophysical survey was started on July 6, 2015 and completed on July 9, 2015.

Figure 1: Lance survey block location map.

## 1.1 Survey Area

The Lance survey block is approximately 148 km east of the Mayo Airport and 44 km northeast of the Russell Creek airstrip (Figure 2). The block covers an irregular area of 9.3 km by 9.7 km and its survey plan includes 95 survey lines and 10 tie lines.

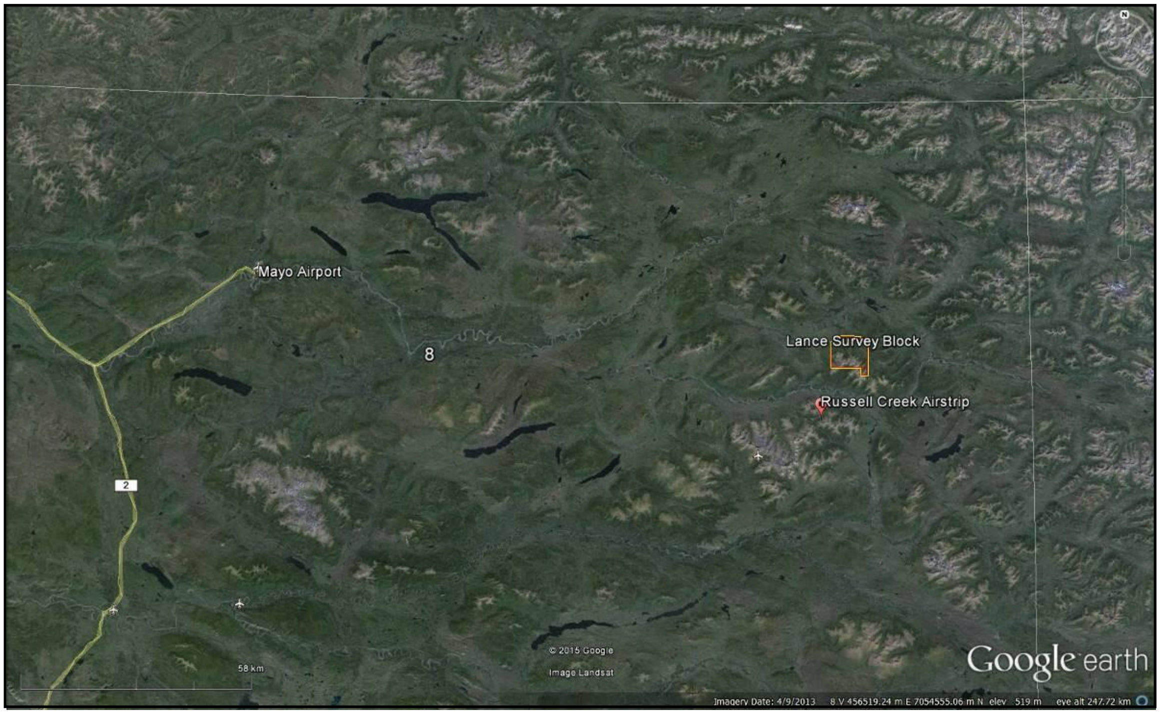


Figure 2: Lance survey block; boundary outline of the 100 m buffer zone in yellow and the survey block boundary in red; east of Mayo Airport, Yukon.

The Lance survey block was flown at 100 meter spacing at a 000°/180° heading; the tie lines were flown at 1000 meter spacing at a heading of 090°/270° (Figures 3 and 4). An extra 4 line km of data were collected on several survey and tie lines extending outside the survey block. As a result, the total line km flown for the entire survey block was 819 km.

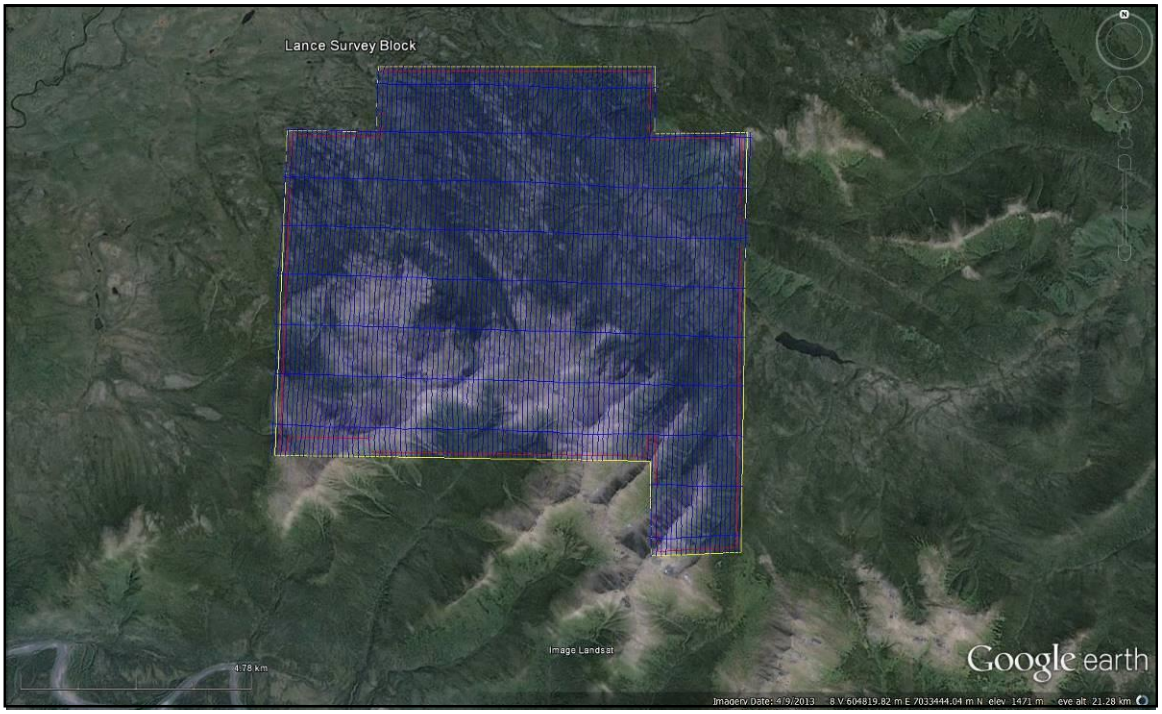


Figure 3: Plan View –Lance survey block with actual flight lines displayed in blue, the 100 m buffer zone outlined in yellow, and the block boundary in red.

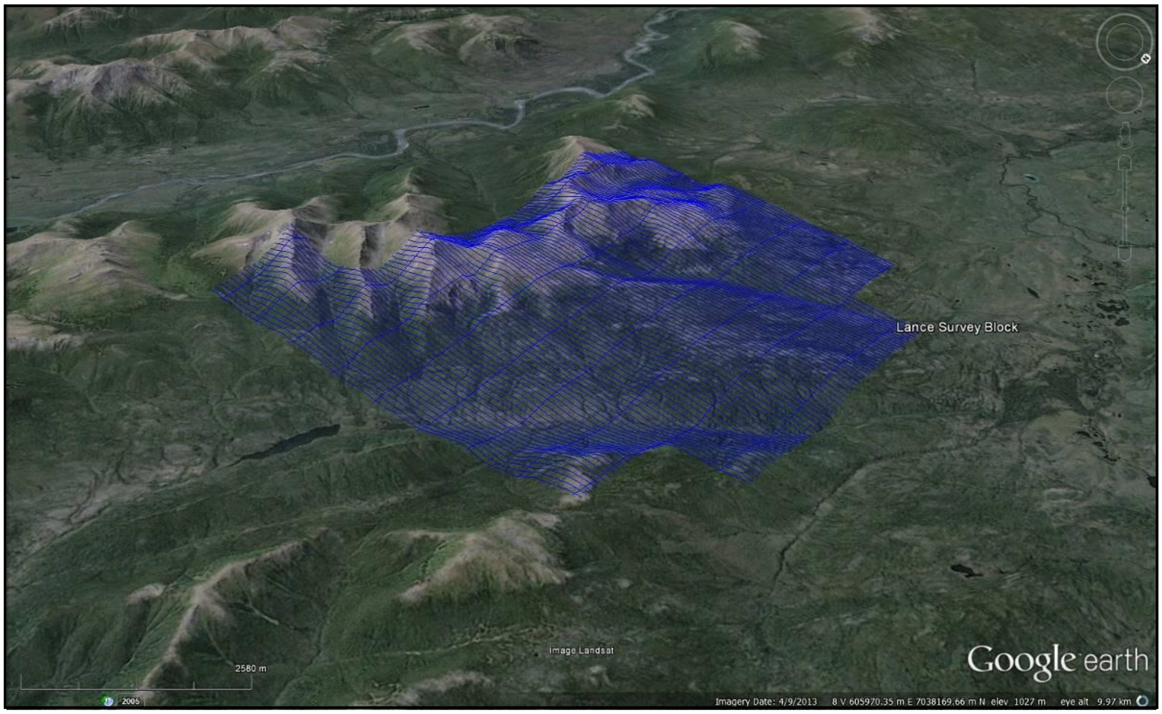


Figure 4: Terrain View – Lance survey block with actual flight lines displayed in blue.

## 1.2 Survey Specifications

The geodetic system used for this survey is WGS 84 and the area is contained in zone 8N. A total of 819 line km was flown (Figure 5). The survey data acquisition specifications and coordinates for the survey are specified as follows (Tables 1 and 2).

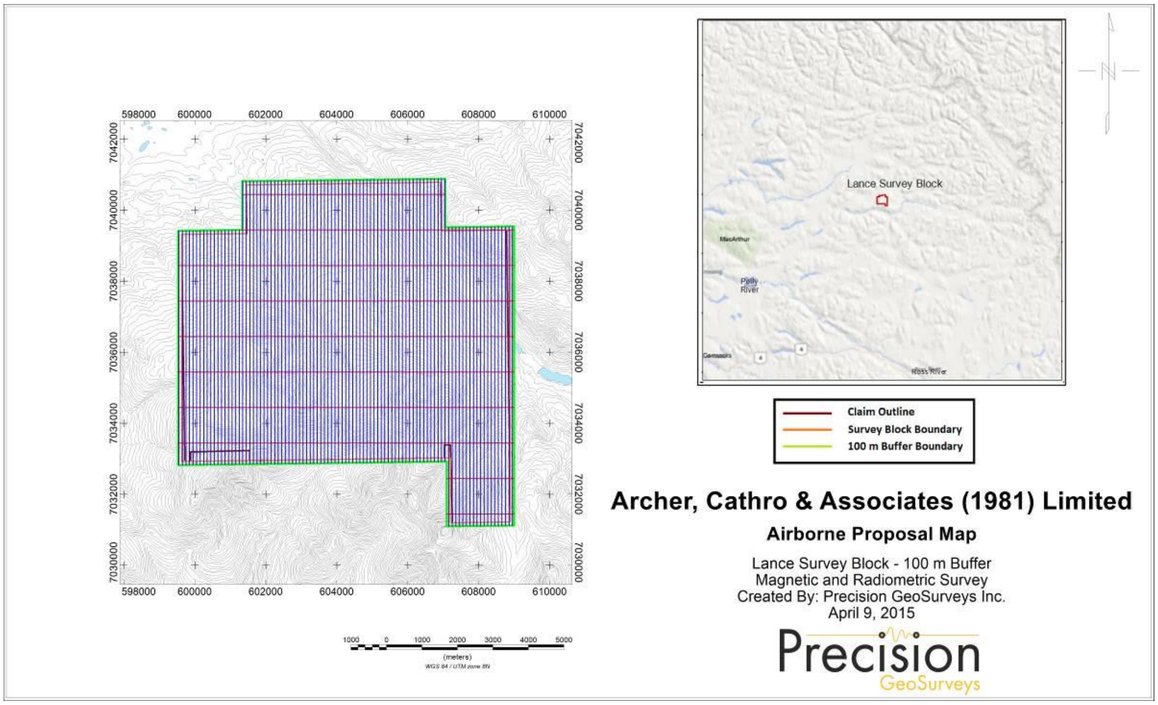


Figure 5: Survey map of Lance survey block area showing proposed survey and tie lines. Survey block boundary in brown, 100 m buffer outline in green, survey lines in blue, and tie lines in red.

| Block Name | Area (km$^2$) | Line Type | Planned No. of Lines | Planned Line Spacing (m) | Line Orientation | Nominal Survey Height (m) | Actual Survey Height (m) | Total Planned Line km | Total Actual km Flown |
|---|---|---|---|---|---|---|---|---|---|
| Lance | 73.6 | Survey | 95 | 100 | 000°/180° | 35 | 36.5 | 741 | 743 |
| | | Tie | 10 | 1000 | 090°/270° | 35 | 34.9 | 74 | 76 |
| | | **Total:** | **105** | | | | | **815** | **819** |

Table 1: Lance survey area flight line specifications.

| Longitude | Latitude | Easting | Northing | N/S | E/W |
|---|---|---|---|---|---|
| 132.96548287 | 63.48112700 | 601340.29 | 7040806.97 | N | W |
| 132.85091226 | 63.48013523 | 607049.80 | 7040882.15 | N | W |
| 132.85183455 | 63.46784856 | 607049.80 | 7039512.66 | N | W |
| 132.81288120 | 63.46748298 | 608991.65 | 7039537.68 | N | W |
| 132.81863029 | 63.39199751 | 608991.65 | 7031120.51 | N | W |
| 132.85657949 | 63.39237456 | 607094.73 | 7031098.14 | N | W |
| 132.85535878 | 63.40872412 | 607094.73 | 7032921.55 | N | W |
| 133.00682055 | 63.41001934 | 599528.64 | 7032821.45 | N | W |
| 133.00270631 | 63.46913588 | 599528.64 | 7039412.41 | N | W |
| 132.96635540 | 63.46884841 | 601340.29 | 7039437.48 | N | W |

Table 2: Lance survey block with 100 buffer zone polygon coordinates using WGS 84 in zone 8N.

## 2.0 Geophysical Data

Geophysical data are collected in a variety of ways and are used to aid in determination of geology, mineral deposits, oil and gas deposits, geotechnical investigations, contaminated land sites and UXO detection.

For the purposes of this survey, airborne magnetic and radiometric data were collected to serve in the exploration for gold-copper deposits.

## 2.1 Magnetic Data

Magnetic surveying is probably the most common airborne survey type to be conducted for both mineral and hydrocarbon exploration. Aeromagnetic surveys measure and record the total intensity of the magnetic field at the magnetometer sensor, which is a combination of the desired magnetic field generated in the Earth as well as tiny variations due to the temporal effects of the constantly varying solar wind and the magnetic field of the survey aircraft. By subtracting the solar, regional, and aircraft effects, the resulting aeromagnetic map shows the spatial distribution and relative abundance of magnetic minerals (most commonly the iron oxide mineral magnetite) in the upper levels of the Earth's crust. The type of survey specifications, instrumentation, and interpretation procedures depend on the objectives of the survey. Typically magnetic surveys are performed for:

1. Geological Mapping - to aid in mapping lithology, structure and alteration.
2. Depth to Basement Mapping - for exploration in sedimentary basins or mineralization associated with the basement surface.

## 2.2 Radiometric Data

Radiometric surveys detect and map natural radioactive emanations, called gamma rays, from rocks and soils. All detectable gamma radiation from earth materials come from the natural decay products of three primary radioelements: uranium (U), thorium (Th), and potassium (K). The purpose of radiometric surveys is to determine either the absolute or relative amounts of U, Th, and K in surface rocks and soils which are then useful in mapping lithology, alteration, and structure.

## 3.0 Survey Operations

Precision GeoSurveys flew the survey out of the Mayo Airport, Yukon. The experience of the pilot helped to ensure that the data quality objectives were met and that the safety of the flight crew was never compromised given the potential risks involved in airborne geophysical surveying. Field processing and quality control checks were done daily.

## 3.1 Operations Base and Crew

The base of operation for this survey was located at the Russell Creek airstrip, 44 km southwest of the Lance survey block (Figure 6).

Figure 6: Map showing base of operation at Russell Creek airstrip southwest of the Lance survey block.

The Precision geophysical crew consisted of four members:

Harmen Keyser – Helicopter Pilot
Erik Keyser – Geophysical technician
Brenton Keyser – Fixed wing pilot; air and ground support
Jenny Poon (off-site) – Geophysicist and data processor

The survey was started on July 6, 2015 and completed on July 9, 2015. The survey encountered minor delays due to equipment malfunction.

## 3.2 Base Station Specifications

Base station magnetometers were set up before the survey to record diurnal magnetic variations during the survey flights. In this case, two GEM GSM 19T base stations were located at the west end of the Russell Creek airstrip (Table 3; Figures 7 and 8).

| **Station name** | **Easting/ Northing** | **Longitude/ Latitude** | **Datum/ Projection** |
|---|---|---|---|
| GEM 2 (Serial # 2105650 ) | 0580263E, 6998750N | 133° 24' 33.70" W<br>63° 06' 33.12" N | WGS 84, Zone 8N |
| GEM 3 (Serial # 5081669) | 0580261E, 6998755N | 133° 24' 33.80" W<br>63° 06' 33.30" N | WGS 84, Zone 8N |

Table 3: Base station specifications.

Base station readings were reviewed at regular intervals to ensure that no data were collected during periods of high diurnal magnetic activity (greater than 5 nT per minute). The magnetic base stations were installed at a magnetically noise-free area, away from metallic items such as ferromagnetic objects, vehicles, or power lines that could affect the base station or survey data.

Figure 7: GEM 3 (right) magnetic base station at Russell Creek airstrip.

Figure 8: GEM 2 and GEM 3 magnetic base stations located at the Russell Creek airstrip east of Mayo, Yukon on Google Earth.

The diurnal magnetic variations recorded by the stationary base stations were removed from the magnetic data recorded in flight to ensure that the anomalies seen were real and not due to solar activity. On this survey, the magnetic data recorded by GEM 3 were used for diurnal corrections and GEM 2 was used as a backup.

## 3.3 Field Processing and Quality Control

On a flight-by-flight basis, the survey data were transferred from the helicopter's data acquisition system onto a USB flash drive and copied onto a field data processing laptop. The raw data files were in PEI binary data format and were converted into Geosoft GDB database format. Using Geosoft Oasis Montaj 8.3.3, the quality of the data was inspected to see if it met the contract specifications (Table 4). Navigational accuracy (left/right or up/down) for all survey and tie lines were within contract specifications (Figure 9), and no re-flights were required due to navigational error. All suspect anomalies, especially those found on a single flight line, were re-flown for confirmation. Re-flight lines were a minimum of 2000 m long, so that survey line re-flights crossed at least two tie lines, and tie line re-flights crossed at least 10 survey lines.

| Specification | Parameter | Details |
|---|---|---|
| Line Spacing | Position | Flight line deviation from flight path by more than 10 m left/ right for 1 km or more. |
| Height | | Nominal flight height of 35 m above ground. Flight height deviation by more than 10 m up/down for 1 km or more, provided line deviation from height is not due to tall trees, topography, cultural features, mitigation of livestock harassment, or other obstacles beyond the pilot's control. |
| GPS | | Any flight lines where 3 or less GPS satellites received for distances of greater than 1 km, provided signal loss is not due to topography. |
| Diurnal Variations | Magnetics | Non-linear magnetic diurnal variations exceed 10nT from a linear chord of length one (1) minute. |
| Normalized 4th Difference | | Magnetic data exceeding 0.30 nT peak to peak for distances greater than 1 km or more (provided noise is not due to geological or cultural features). |

Table 4: Contract re-flight specifications.

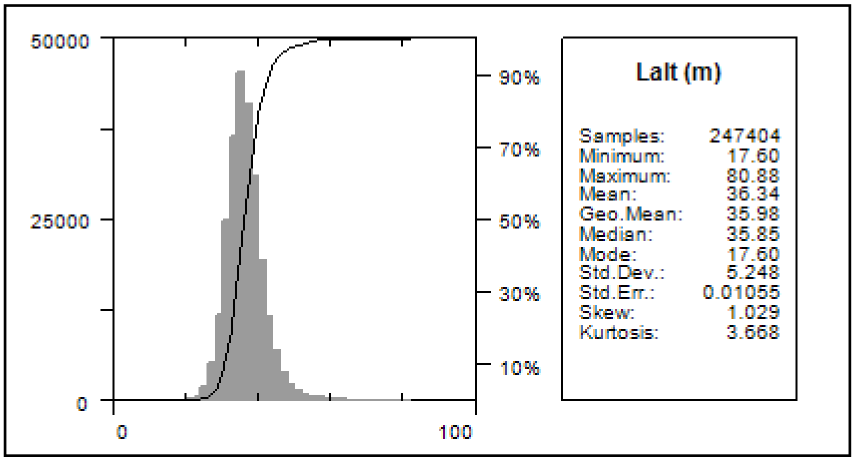


Figure 9: Histogram showing survey elevation vertically above ground.

## 4.0 Aircraft and Equipment

All geophysical and subsidiary equipment are carefully installed on Precision GeoSurveys aircraft. For this survey, a magnetometer, a spectrometer, a data acquisition system, laser altimeter, magnetic compensation system, a pilot guidance unit (PGU), a GPS navigation system, and magnetic base stations were required to carry out the survey and collect quality, high resolution data. The survey magnetometer was carried in an approved “stinger” configuration to enhance flight safety and improve data quality.

## 4.1 Aircraft

Precision GeoSurveys flew the Lance survey block using a Eurocopter AS350 helicopter (Figure 10), registration C-GOHK. The survey lines were flown at a nominal line spacing of one hundred (100) meters spacing and the tie lines were flown at one thousand (1000) meters spacing for both the magnetometer and spectrometer.

Figure 10: Eurocopter AS350 helicopter equipped with mag stinger for magnetic data acquisition, and internal spectrometer crystals for radiometric data acquisition.

## 4.2 Equipment

### 4.2.1 AGIS

The Airborne Geophysical Information System, AGIS, (Figure 11), is the main computer used in data recording, data synchronizing, displaying real-time quality control data for the geophysical operator, and the generation of navigation information for the pilot and operator display system. Information such as magnetic field, total gamma count, counts of various radioelements (K, U, Th, etc.), temperature, cosmic radiation, barometric pressure, atmospheric humidity and survey altitude can all be monitored on the AGIS on-board display for immediate quality control.

Figure 11: AGIS operator display installed in the Eurocopter AS350, with screen displaying real time flight line recording and navigation parameters. Additional windows display real time geophysical data to operator

The AGIS was manufactured by Pico Envirotec and uses standardized Pico software. External sensors are connected to the system via RS-232 serial communication cables. The AGIS data format is converted into Geosoft or ASCII file formats by a conversion program called PEIView. Additional Pico software allows for post or real time magnetic compensation and survey quality control procedures.

### 4.2.2 Magnetometer

The airborne magnetic sensor used by Precision GeoSurveys is a Scintrex cesium vapor CS-3 magnetometer. The system was housed in a front mounted "stinger" (Figure 12). The CS-3 is a high sensitivity/low noise magnetometer with automatic hemisphere switching and a wide voltage range, the static noise rating for the unit is +/- 0.01 nT. On the AGIS monitor the operator can view the raw magnetic response, the magnetic fourth difference, compensated and uncompensated data, aircraft position, and the survey altitude for immediate QC (quality control) of the magnetic data. The magnetic data are recorded at 10 Hz. A fluxgate magnetometer is also used to determine helicopter pitches, rolls and yaws within the Earth's geomagnetic field which are then used to remove magnetic noise created by the movement of the helicopter within the Earth's geomagnetic field through a compensation process.

Figure 12: View of the mag stinger.

### 4.2.3 Spectrometer

The IRIS, or Integrated Radiometric Information System, is a fully integrated, gamma radiation detection system containing 16.8 litres of NaI (T1) synthetic downward looking crystals and 4.2 litres of NaI (T1) synthetic upward looking crystals (Figure 13) with 256 channel output at 1 Hz sampling rate. The downward-looking crystals are designed to measure gamma rays from below the aircraft and are equipped with upward-shielding high density RayShield® gamma-attenuating blankets to minimize cosmic and solar gamma noise. The upward looking crystal measures solar gamma radiation from above the survey helicopter and a 6 mm thick lead plate is used for downward-shielding. Real time data acquisition, navigation and communication tasks are integrated into a single unit that is installed in the rear cabin of the aircraft.

Figure 13: GRS-10 Thallium-activated Sodium Iodide spectrometer crystal pack. The open unit on the right shows two individual 4.2 liter detectors.

### 4.2.4 Base Stations

For monitoring and recording of the Earth's diurnal magnetic field variation, Precision GeoSurveys operates two GEM GSM-19T magnetometer base stations continuously throughout the airborne data acquisition operation. The base stations were positioned on the west end of the Russell Creek airstrip, in a region with low magnetic gradient, to give accurate magnetic field readings. The base stations were located in an area away from electric transmission power lines and moving ferrous objects, such as motor vehicles that could affect the survey data integrity.

The GEM GSM-19T magnetometer with integrated GPS (Figure 14) time synchronization uses proton precession technology with a 0.5 Hz sampling rate. The GSM-19T has an accuracy of +/- 0.2 nT at 1 Hz. Base station data are recorded on the internal solid-state memory, and downloaded onto a field laptop computer using a serial cable and GEMLink 5.0 software. Profile plots of the base station readings are generated and updated at the end of each survey day.

Figure 14: GEM GSM-19T proton precession magnetometer.

### 4.2.5 Laser Altimeter

The pilot is provided with terrain guidance and clearance information from an Opti-Logic RS800 laser altimeter (Figure 15). This is attached at the aft end of the magnetometer boom. The RS800 sensor is a time-of-flight sensor that measures distance by a rapidly-modulated and collimated laser beam that creates a dot on the target surface. The maximum range of the laser altimeter is 700 m off of natural surfaces with an accuracy of +/- 1 meter on 1 x 1 $m^2$ diffuse target with 50% (+/- 20%) reflectivity. Within the sensor unit, reflected signal light is collected by the lens and focused onto a photodiode. Through serial communications and digital outputs, the ground clearance data are transmitted to an RS-232 compatible port and recorded and displayed by the AGIS and PGU at 10 Hz in meters.

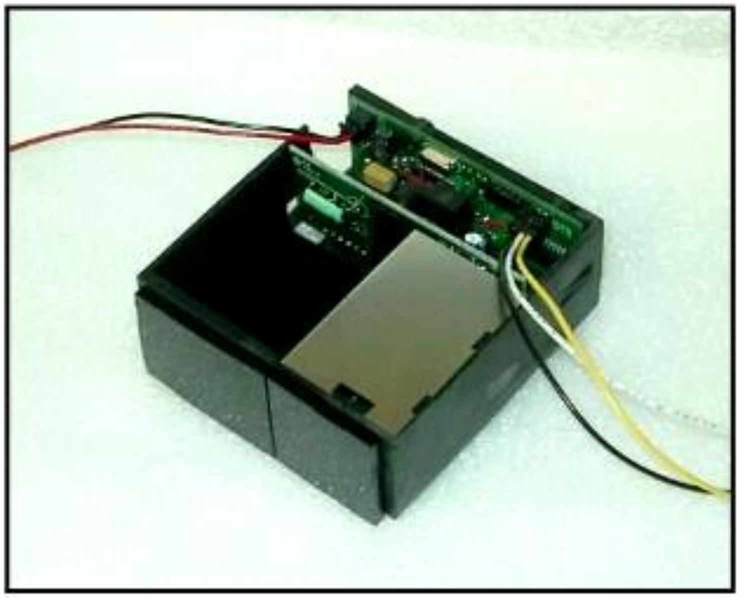


Figure 15: Opti-Logic RS800 laser altimeter.

## 4.2.6 Pilot Guidance Unit

The PGU (Pilot Guidance Unit) is a graphical display type unit that provides continuous steering and elevation information to the pilot (Figure 16). It is mounted remotely from the data system on top of the helicopter's instrument panel. The PGU assists the pilot in keeping the helicopter on the flight path and at the desired ground clearance.

Figure 16: Pilot Guidance Unit.

The LCD monitor measures 7 inches, with a full VGA 800 x 600 pixel display. The CPU for the PGU is housed in the PC-104 console and uses Windows XP Embedded operating system control, with input from the GPS antenna, laser altimeter, and AGIS.

## 4.2.7 GPS Navigation System

A Hemisphere R220 GPS receiver (Figure 17) navigation system integrated with the pilot display (PGU) and AGIS provided navigational information and control. The R220 GPS receiver features RTK (Real Time Kinematic) for fast, reliable, and long range centimeter level performance. It employs COAST technology that allows continuous operation for at least 40 minutes during temporary differential signal outages.

Figure 17: Hemisphere R220 GPS Receiver.

It can track GPS, SBAS (Satellite-Based Augmentation System), and L-Band (OmniSTAR HP and XP) differential corrections to provide high precision positioning.

## 5.0 Data Acquisition Equipment Checks and Calibration

Airborne equipment tests were conducted at the start of the survey. There are three tests conducted for the airborne magnetometer: compensation flight, lag test, and heading error test. Gamma ray spectrometer checks and calibrations are also conducted prior to the start of the survey. The three spectrometer tests were the calibration pad test, cosmic flight test, and the Breckenridge test range.

## 5.1 Magnetometer Checks

### 5.1.1 Compensation Flight Test

During aeromagnetic surveying a small but significant amount of noise is introduced to the magnetic data by the aircraft itself, as the magnetometer is within the helicopter's magnetic field. Movement of the aircraft (roll, pitch and yaw) and the permanent magnetization of certain aircraft parts (engine and other ferrous magnetic objects) contribute to this noise. To remove noise generated by the aircraft a process called magnetic compensation is implemented. The magnetic compensation process starts with a test flight at the beginning of the survey where the aircraft flies in the four orthogonal headings required for the survey (000°/180° and 090°/270° in the case of this survey) at a sufficient altitude (typically > 1,500 m AGL) where the Earth's magnetic field becomes nearly uniform at the scale of the compensation flight (Table 5). In each heading direction, three specified roll, pitch, and yaw maneuvers are performed by the pilot at constant elevation so that any magnetic variation recorded by the airborne magnetometer can be attributed to the aircraft movement. The variations recorded by these maneuvers provide the data that are required to calculate the necessary parameters for compensating the magnetic data and removing the aircraft noise.

| **Pre-Compensation** | | | | | **Post-Compensation** | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Heading** | **Roll** | **Pitch** | **Yaw** | **Total** | **Heading** | **Roll** | **Pitch** | **Yaw** | **Total** |
| 002° | 6.3288 | 2.7336 | 2.3691 | 11.4315 | 002° | 0.1348 | 0.2014 | 0.1500 | 0.4862 |
| 092° | 8.7724 | 3.4844 | 2.2246 | 14.4814 | 092° | 0.1598 | 0.1328 | 0.1701 | 0.4627 |
| 179° | 8.0140 | 6.3537 | 1.7995 | 16.1672 | 179° | 0.3737 | 0.3121 | 0.1505 | 0.8363 |
| 273° | 5.0688 | 2.3674 | 1.4757 | 8.9119 | 273° | 0.1919 | 0.1646 | 0.1763 | 0.5328 |
| **Total** | 28.1840 | 14.9391 | 7.8689 | | **Total** | 0.8602 | 0.8109 | 0.6469 | |
| **FOM =50.992nT** | | | | | **FOM =2.318 nT** | | | | |

Table 5: Figure of Merit maneuver test results for compensation flight flown on July 5, 2015 at an area 5 km south of Mayo, Yukon.

### 5.1.2 Lag Test

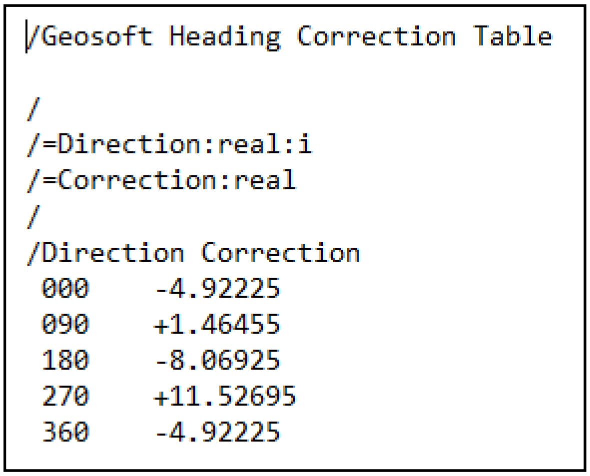
A lag test was performed to determine the relationship between the time the digital reading was recorded by the instrument magnetic sensor and the time for the position fix that the fiducial of the reading was obtained by the GPS system. The test was flown in the four orthogonal headings over an identifiable magnetic anomaly (ie. Truck, Trailer, etc.) at survey speed and height. A lag of 7 fiducials (0.7 seconds) was determined from the lag test.

### 5.1.3 Heading Error Test

To determine the magnetic heading effect a cloverleaf pattern flight test was conducted. The cloverleaf test was flown in the same orthogonal headings as the survey and tie lines (000°/180° and 090°/270° at >1000 m AGL in an area with low magnetic gradient. For all four directions the survey helicopter must pass over the same mid-point all four times at the same elevation (Table 6 and Figure 18).

| **Line Number** | **Fiducials** | **Heading** | **Mag (nT)** | **Average (nT)** |
|---|---|---|---|---|
| L000 | 910.4 | N – 000° | 57061.2570 | |
| L090 | 528.6 | E – 090° | 57054.8702 | |
| L180 | 778.9 | S - 180° | 57064.4040 | |
| L270 | 690.7 | W - 270° | 57044.8078 | |
| | | | | 57056.33475 |

Table 6: Heading error test data format flown on July 5, 2015 5 km south of Mayo, Yukon.



```
/Geosoft Heading Correction Table

/
/=Direction:real:i
/=Correction:real
/
/Direction Correction
 000    -4.92225
 090    +1.46455
 180    -8.06925
 270    +11.52695
 360    -4.92225
```

Figure 18: Heading data results in .tbl format in Geosoft table.

## 5.2 Gamma-ray Spectrometer Checks and Calibrations

Pre-survey calibrations and testing of the GRS-10 airborne gamma-ray spectrometry system were carried out prior to the start of the survey. The calibration of the spectrometer system involved three tests which enabled the conversion of airborne data to ground concentration of natural radioactive elements. These tests were the calibration pad test, cosmic flight test, and the Breckenridge test range. The measurements were made in accordance with IAEA technical report series No. 323, “Airborne Gamma Ray Spectrometer Surveying”, and AGSO Record 1995/60, “A Guide to the Technical Specification for Airborne Gamma-Ray Surveys”.

### 5.2.1 Calibration Pad Test

The calibration pad test was conducted by Pico Envirotec at the GSC (Geological Survey of Canada) testing facility in Ottawa, Ontario over the approved GSC calibration pad. It is a slab of concrete containing known concentrations of the radioelements (K, Th, and U) and is ideally used to simulate a geological source of radiation. The measurements collected from the calibration pad test are used to determine the Compton scattering and Grasty Backscatter (spectral overlap between element windows) coefficients.

### 5.2.2 Cosmic Flight Test

While the background source of gamma radiation from the aircraft itself is essentially constant, the amount of signal detected from ground sources varies with ground clearance. As the height of the aircraft increases, the distance between the ground and the spectrometer crystals increase, and the proportion of cosmic radiation in each spectral window increases exponentially due to radiation of cosmic origin. The cosmic flight test is conducted to determine the aircraft’s background attenuation coefficients for the detector crystal packs and the cosmic coefficients. The pilot is required to fly over the same location repeatedly in opposite directions starting from 1,500 m to 3,000 m at 500 m intervals for approximately 2 minutes each to collect gamma data used to determine the amount of non-terrestrial gamma signal.

### 5.2.3 Breckenridge Test Range

The Breckenridge test range is very similar to the cosmic flight test but is conducted at lower elevations (from ground level). The pilot is required to fly over the same location at the following elevations in meters above ground; 30, 50, 100, 150, 200, 250, and 300. As the distance of the aircraft increases away from the radioactive ground source, the source signature exponentially degrades. As a result, this test is used to determine the altitude attenuation coefficients and the radio-element sensitivity of the airborne spectrometer system.

## 6.0 Data Processing

After all the data were collected from a survey flight several procedures were undertaken to ensure that the data met a high standard of quality. All data were processed using Pico Envirotec software and Geosoft Oasis Montaj 8.3.3 geophysical processing software along with proprietary processing algorithms.

### 6.1 Magnetic Processing

The data obtained from the compensation flight test were applied to the raw magnetic data before any further processing and editing. A computer program called PEIComp was used to create a model from the compensation flight test for each survey to remove the noise induced by aircraft movement; this model was applied to each survey flight so the data could be further processed.

Over glassy water or fog, the laser altimeter is unable to record a valid reading and a zero is recorded; therefore all data points recorded at zero were replaced with a nominal height of 35 m. Filtering was then applied to the laser altimeter data to remove vegetation clutter and to show the actual ground clearance. To remove vegetation clutter a Rolling Statistic filter was applied to the laser altimeter data and a low pass filter was used to smooth out the laser altimeter profile to eliminate isolated noise. As a result, filtering the data will yield a more uniform surface in close conformance with the actual terrain. A digital terrain model channel was calculated by subtracting the filtered laser altimeter data from the filtered GPS altimeter data defined by the WGS 84 ellipsoidal height.

The processing of the magnetic data first involved the correction for diurnal variations. The base station data that were used for the correction came from GEM 3. The diurnal data were edited, plotted and merged into a Geosoft (.gdb) database on a daily basis. The airborne magnetic data were corrected for diurnal variations by subtracting the observed magnetic base station deviations. Following the diurnal correction, a lag correction was applied. A lag correction of 0.7 seconds was applied to the total magnetic field data to compensate for the combination of lag in the recording system and the magnetometer sensor flying 15.2 m ahead of the GPS antenna. Lastly, a heading correction was applied to the data.

Some filtering of the magnetic data was also required. A Non Linear filter was used for spike removal. The 1D Non-Linear Filter is ideal for removing very short wavelength, but high amplitude features from data. It is often thought of as a noise spike-rejection filter, but it can also be effective for removing short wavelength geological features, such as signals from surficial features. The 1D Non-Linear Filter is used to locate and remove data that are recognized as noise. The algorithm is ‘non- linear’ because it looks at each data point and decides if that a datum is noise or a valid signal. If the point is noise, it is simply removed and replaced by an estimate based on surrounding data points. Parts of the data that are not considered noise are not modified. The low pass filters was also applied to simply smooth out the magnetic profile to remove isolated noise.

The initial Total Magnetic Intensity (TMI) data from the survey and tie lines were used to level the entire survey dataset. Two forms of leveling were applied to the corrected data: conventional leveling and micro-leveling. There were two components to conventional leveling; the first involved statistical leveling of magnetic data to correct miss ties (intersection errors) followed by specific patterns or trends. For the second component, tie lines were brought to a common regional base value using the mean value of the cross-level error. To obtain the best possible leveled data, individual corrections were edited at selected intersections. Lastly, micro-leveling was applied to the corrected conventional leveled data. This will remove any residual noise related to flight line direction, and any low amplitude component of flight line noise, that still remained in the data after tie line leveling.

### 6.1.1 IGRF Removal and Calculation of the First Vertical Derivative

The International Geomagnetic Reference Field (IGRF) model is the empirical representation of the Earth’s magnetic field (main core field without external sources) collected and disseminated from satellites and from observatories around the world. The IGRF is generally revised and updated every five years by a group of modelers associated with the International Association of Geomagnetism and Aeronomy (IAGA). In this case, the IGRF values were calculated from the recently updated model (IGRF – 12) year 2015 and the actual survey dates were obtained from the “Date” channel.

With the removal of the IGRF from the observed Total Magnetic Intensity (TMI) a Residual Magnetic Intensity (RMI) was generated. This created a more valid model of individual near surface anomalies and the data will not be referenced to a time which can be easily incorporated into databases of magnetic data acquired in the past or in the future.

The first vertical derivative was computed from the Total Magnetic Intensity (TMI) data. Long wavelengths and vertical rate of change were suppressed in the magnetic field. Therefore, the edges of magnetic anomalies were highlighted and spatial resolution was increased.

## 6.2 Radiometric Processing

Radiometric surveys map the concentration of radioelements at or near the earth's surface; typically up to 1.5 meters below surface. Thus, the first step which is vital before processing of the airborne radiometric data was to calibrate the spectrometer system. Once calibration of the system was complete, the radiometric data were processed by windowing the full spectrum to create channels for U, K, Th and total count. A 5-point Hanning filter was applied to the Cosmic window before going any further with processing the radiometric data.

Aircraft background and cosmic stripping corrections were applied to all three elements, and total count using the following formula:

$$C_{ac} = C_{lt} - (a_c + b_c * \mathrm{Cos}_f)$$

where: $C_{ac}$ is the background and cosmic corrected channel
$C_{lt}$ is the live time corrected channel
$a_c$ is the aircraft background for this channel
$b_c$ is the cosmic stripping coefficient for this channel
$\mathrm{Cos}_f$ is the filtered cosmic channel

The radon backgrounds were first removed and followed by Compton stripping. Spectral overlap corrections were applied on to potassium, uranium, and thorium as part of the Compton stripping process. This was done by using the stripping ratios that have been calculated for the spectrometer by prior calibration; this breaks the corrected elemental values down into the apparent radioelement concentrations. Lastly, attenuation corrections were applied to the data which involves nominal survey altitude corrections, in this case 36.3 metres is applied to total count, potassium, uranium, and thorium data.

With all corrections applied to the radiometric data, the final step was to convert the corrected potassium, uranium, and thorium to apparent radioelement concentrations using the following formula:

$$eE = C_{cor}/s$$

where: $eE$ is the element concentration K(%) and equivalent element concentration of U(ppm) & Th(ppm)
$s$ is the experimentally determined sensitivity
$C_{cor}$ is the fully corrected channel

Finally, the natural air exposure rate was determined by using the following formula:

$$E = [(13.08 * K + 5.43 * eU + 2.69 * eTh) / 8.69]$$

where: $E$ is the absorption dose rate in µR/h
$K$ is the concentration of potassium (%)
$eU$ is the equivalent concentration of uranium (ppm)
$eTh$ is the equivalent concentration of thorium (ppm)

To calculate for radiometric ratios the guidelines of the IAEA were followed. Due to statistical uncertainties in the individual radioelement measurements, some care was taken in the calculation of the ratio in order to obtain statistically significant values. Following IAEA guidelines, the method of determining ratios of the eU/eTh, eU/K and eTh/K was as follows:

1. Any data points where the potassium concentration was less than 0.25% were neglected.
2. The element with the lowest corrected count rate was determined.
3. The element concentrations of adjacent points on either side of each data point were summed until they exceeded a pre-determined threshold value. This threshold was set to be equivalent to 100 counts of the element with the lowest count rate. Additional minimum thresholds of 1.6% for potassium, 20 ppm for thorium, and 30 ppm for uranium were set up to ensure meaningful ratios.
4. The ratios were calculated using the accumulated sums.

With this method, the errors associated with the calculated ratios were minimized and comparable for all data points.

## 7.0 Deliverables

All digital data are presented on a compact disc (CD) and USB memory stick with the logistic report. The survey data are presented as digital databases, maps, and a report.

## 7.1 Digital Data

The file format will be provided in two (2) formats, the first will be a .GDB file for use in Geosoft Oasis Montaj, the second format will be a .XYZ file, this is text file. A complete file provided in each format will contain magnetic and radiometric data separately. Full description of the digital data and contents are included in the report (Appendix B).

The digital data are represented into grids. The following grids are prepared for the Lance survey block listed below:

- Digital terrain model (DTM)

- Total magnetic intensity (TMI)
- Residual magnetic intensity (RMI) – removal of IGRF from TMI
- Calculated vertical gradient (CVG) - first vertical derivative of TMI
- Potassium – Equivalent Concentration (%K)
- Thorium – Equivalent Concentration (eTh)
- Uranium – Equivalent Concentration (eU)
- Total Count – Equivalent Dose Rate (TCcor)
- Total Count – Exposure Rate (TCexp)
- Potassium over Thorium Ratio (%K/eTh)
- Potassium over Uranium Ratio (%K/eU)
- Uranium over Thorium Ratio (eU/eTh)
- Thorium over Potassium Ratio (eTh/%K)
- Uranium over Potassium Ratio (eU/%K)
- Ternary Map (TM)

## 7.2 KMZ Grids

The digital data represented into grids were exported into kmz files which can be displayed using Google Earth. The grids can be draped onto topography and rendered to give a 3D view.

## 7.3 Maps

Digital maps were created for the Lance survey block. The following map products were prepared:

Survey Overview Maps (colour images with elevation contour lines):

- Actual flight lines
- Digital terrain model

Magnetic Maps (colour images with elevation contour lines):

- Total magnetic intensity
- Total magnetic intensity with plotted flight lines
- Residual magnetic intensity
- Calculated vertical gradient of the total magnetic intensity

Radiometric Maps (colour images with elevation contour lines):

- Potassium – Equivalent Concentration in Percentage
- Thorium – Equivalent Concentration

- Uranium – Equivalent Concentration
- Total Count – Equivalent Dose Rate
- Total Count – Exposure Rate
- Potassium over Thorium Ratio
- Potassium over Uranium Ratio
- Uranium over Thorium Ratio
- Thorium over Potassium Ratio
- Uranium over Potassium Ratio
- Ternary Map

All maps were prepared in WGS 84 and UTM zone 8N.

## 7.4 Report

The logistics report provides information on the acquisition procedures, magnetic and radiometric processing, and presentation of the Lance survey block data. A pdf copy of the report is included along with the digital data and maps that are provided on the CD and USB stick.

# Appendix A

## Equipment Specifications

- GEM GSM-19T Proton Precession Magnetometer (Base Station)
- Hemisphere R220 GPS Receiver
- Opti-Logic RS800 Laser Altimeter
- HC-S3 Temperature and Relative Humidity Probe
- Barometric Pressure Setra Model 276
- Scintrex CS-3 Survey Magnetometer
- Bartington Mag-03 three-axis fluxgate magnetic field sensor
- Pico Envirotec GRS-10 Gamma Spectrometer
- Pico Envirotec AGIS data recorder system (for Navigation, Gamma spectrometer, VLF-EM and Magnetometer Data Acquisition)

## GEM GSM-19T Proton Precession Magnetometer (Base Station) Specifications

| | |
|---|---|
| **Configuration Options** | 15 |
| **Cycle Time** | 999 sec to 0.5 sec |
| **Environmental** | -40°C to +60°C |
| **Gradient Tolerance** | 7,000 nT/m |
| **Magnetic Readings** | 299,593 |
| **Operating Range** | 10, 000 to 120,000 nT |
| **Power** | 12 V @ 0.62 A |
| **Sensitivity** | 0.1 nT @ 1 sec |
| **Weight (Console/ Sensor)** | 3.2 Kg |
| **Integrated GPS** | Yes |

## Hemisphere R220 GPS Receiver Specifications

| | | | |
|---|---|---|---|
| **GPS Sensor** | Receiver Type | L1 and L2 RTK with carrier phase | |
| | Channels | 12 L1CA GPS<br>12 L1P GPS<br>12 L2P GPS<br>3 SBAS or 3 additional L1CA GPS | |
| | Update Rate | 10 Hz standard, 20 Hz available | |
| | Cold Start Time | <60 s | |
| | Warm Start Time 1 | 30 s (valid ephemeris) | |
| | Warm Start Time 2 | 30 s ( almanac and RTC) | |
| | Hot Start Time | 10 s typical (valid ephemeris and RTC) | |
| | Reacquisition | <1 s | |
| | Differential Options | SBAS, Autonomous, External RTCM, RTK, OmniSTAR (HP/XP) | |
| **Horizontal Accuracy** | | RMS (67%) | 2DRMS (95%) |
| | RTK [1, 2] | 10 mm + 1 ppm | 20 mm+2 ppm |
| | OmniSTAR HP [1, 3] | 0.1 m | 0.2 m |
| | SBAS (WAAS) [1] | 0.3 m | 0.6 m |
| | Autonomous, no SA [1] | 1.2 m | 2.5 m |
| **L-Band Sensor** | Channel | Single channel | |
| | Frequency Range | 1530 MHz to 1560 MHz | |
| | Satellite Selection | Manual or Automatic (based on location) | |
| | Startup and Satellite Reacquisition Time | 15 seconds typical | |
| **Communications** | Serial Ports | 2 full duplex RS232 | |
| | Baud Rates | 4800 – 115200 | |
| | USB Ports | 1 Communications, 1 Flash Drive data storage | |
| | Correction I/O Protocol | Hemisphere GPS proprietary, RTCM v2.3 (DGPS), RTCM v3 (RTK), CMR, CMR+NMEA 0183, Hemisphere GPS binary | |
| | Timing Output | 1 PPS (HCMOS, active high, rising edge sync, 10kΩ, 10pF load) | |
| | Event Marker Input | HCMOS, active low, falling edge sync, 10kΩ | |
| **Environmental** | Operating Temperature | -30°C to +65°C | |
| | Storage Temperature | -40°C to +85°C | |
| | Humidity | 95% non-condensing | |
| **Power GPS Sensor** | Input Voltage Range | 8 to 36 VDC | |
| | Consumption, RTK | <4.9W (0.40A @ 12 VDC typical) | |
| | Consumption, OmniSTAR | <5.5W (0.46A @ 12 VDC typical) | |

[1] Depends on multipath environment, number of satellites in view, satellite geometry and ionospheric activity.
[2] Depends also on baseline length.
[3] Requires a subscription from OmniSTAR.

## Opti-Logic RS800 Laser Altimeter Specifications

| | |
|---|---|
| **Accuracy** | +/- 1m on 1x1 $m^2$ diffuse target with 50% reflectivity |
| **Resolution** | 0.2 m |
| **Communication Protocol** | RS232-8,N,1 |
| **Baud Rate** | 19200 |
| **Data Raw Counts** | ~200 Hz |
| **Data Calibrated Range** | ~10 Hz |
| **Calibrated Range Units** | Feet, Meters, Yards |
| **Laser** | Class I (eye-safe) 905nm +/- 10nm |
| **Power** | 7-9VDC conditioned required, current draw at full power (~ 1.8W) |
| **Laser Wavelength** | RS100 905 nm +/- 10 nm |
| **Laser Divergence** | Vertical axis – 3.5 mrad half- angle divergence;<br>Horizontal axis – 1 mrad half- angle divergence;<br>(Approximate beam footprint at 100 m is 35 cm x 5 cm) |
| **Data Rate** | ~200 Hz raw counts for un-calibrated operation;<br>~10 Hz for calibrated operation (averaging algorithm seeks 8 good readings) |
| **Dimensions** | 32 x 78 x 84 mm (lens face cross section is 32 x 78 mm) |
| **Weight** | < 227 g (8oz) |
| **Casing** | RS100/RS400/RS800 units are supplied as OEM modules consisting of an open chassis containing optics and circuit boards. Custom housings can be designed and built on request. |

## HC-S3 Temperature and Relative Humidity Probe Specifications

| | |
|---|---|
| **Operating Temperature** | -40°C to +60°C |
| **Temperature Output Signal Range** | 0 to 1.0 VDC |
| **Temperature Resolution** | 0.1°C or better |
| **Relative Humidity(RH) Measurement Range** | 0 to 100 % non-condensing |
| **RH Output Signal Range** | 0 to 1.0 VDC |
| **RH Accuracy At 23°C** | ± 1.5 % RH |
| **RH Response Time** | 12 to 15 secs |
| **RH Typical Long Term Stability** | Better than 1% RH per year |
| **Probe Length** | 168 mm (6.6 in.) |
| **Probe Body Diameter** | 15.25 mm (0.6 in.) |
| **Housing Material** | Polycarbonate |
| **Power Consumption** | < 4 mA |
| **Supply Voltage** | 3.5 to 50 VDC (typically 5 VDC) |
| **Settling Time after power is switched on** | 3 secs |

## Barometric Pressure Setra Model 276 Specifications

| | |
|---|---|
| **Pressure Ranges** | 600 to 1100 hPa/mb<br>800 to 1100 hPa/mb<br>0 to 20 psia |
| **Accuracy** | ±0.25% FS |
| **Output** | 0.1 to 5.1 VDC<br>0.5 to 4.5 VDC |
| **Excitation** | 12 VDC (9.0 to 14.5)<br>24 VDC (21.6 to 26.0)<br>5 VDC (4.9 to 7.1) |
| **Size** | 2” dia. x 1” (5 cm x 2.5 cm) |

## Scintrex CS-3 Magnetometer Specifications

| | |
|---|---|
| **Operating Principal** | Self-oscillation split-beam Cesium Vapor (non-radioactive Cs-133) |
| **Operating Range** | 15,000 to 105,000 nT |
| **Gradient Tolerance** | 40,000 nT/metre |
| **Operating Zones** | 10° to 85° and 95° to 170° |
| **Hemisphere Switching** | a) Automatic<br>b) Electronic control actuated by the control voltage levels (TTL/CMOS)<br>c) Manual |
| **Sensitivity** | 0.0006 nT √Hz rms |
| **Noise Envelope** | Typically 0.002 nT P-P, 0.1 to 1 Hz bandwidth |
| **Heading Error** | +/- 0.25 nT (inside the optical axis to the field direction angle range 15° to 75° and 105° to 165°) |
| **Absolute Accuracy** | <2.5 nT throughout range |
| **Output** | a) Continuous signal at the Larmor frequency which is proportional to the magnetic field ( proportionality constant 3.49857 Hz/nT) sine wave signal amplitude modulated on the power supply voltage<br>b) Square wave signal at the I/O connector, TTL/CMOS compatible |
| **Information Bandwidth** | Only limited by the magnetometer processor used |
| **Sensor Head** | Diameter: 63 mm (2.5”)<br>Length: 160 mm (6.3”)<br>Weight: 1.15 kg (2.6 lb) |
| **Sensor Electronics** | Diameter: 63 mm (2.5”)<br>Length: 350 mm (13.8”)<br>Weight: 1.5 kg (3.3 lb) |
| **Cable, Sensor to Sensor Electronics** | 3m (9’ 8”), lengths up to 5m (16’ 4”) available |
| **Operating Temperature** | -40°C to +50°C |
| **Humidity** | Up to 100%, splash proof |
| **Supply Power** | 24 to 35 Volts DC |
| **Supply Current** | Approx. 1.5A at start up, decreasing to 0.5A at 20°C |
| **Power Up Time** | Less than 15 minutes at -30°C |

## Bartington Mag-03 three-axis fluxgate magnetic field sensor Specifications

| | |
|---|---|
| **Number of Axes** | 3 |
| **Bandwidth** | 0 to 3kHz at 50µT peak |
| **Internal Noise** | Basic version: >10 to 20pTrms/√Hz at 1Hz<br>Standard version: 6 to ≤10pTrms/√Hz at 1Hz<br>Low Noise version: <6pTrms/√Hz at 1Hz |
| **Scaling error (DC)** | <±0.5% |
| **Orthogonality error** | <0.1° |
| **Alignment error (Z axis to reference face)** | <0.1° |
| **Linearity error** | <0.0015% |
| **Frequency response** | 0 to 1kHz maximally flat, ±5% maximum at 1kHz |
| **Input voltage** | ±12V to ±17V |
| **Supply current** | +30mA, -10mA (+1.4mA per 100µT for each axis) |
| **Power supply rejection ratio** | 5µV/V (-106dB) |
| **Analog output** | ±10V (±12V supply) swings to within 0.5V of supply voltage |
| **Output impedance** | 10 Ω |
| **Operating temperature range** | -40°C to +70°C |
| **Environmental protection** | IP51 |
| **Dimensions (W x H x L)** | 32 x 32 x 152mm |
| **Weight** | 160g |
| **Enclosure material** | Reinforced epoxy |
| **Connector** | ITT Cannon DEM-9P-NMB |
| **Mating connector** | ITT Cannon DEM-9S-NMB |
| **Mounting** | 2 x M5 fixing holes |

## Pico Envirotec GRS-10 Gamma Spectrometer Specifications

| | |
|---|---|
| **Crystal volume** | 16.8 litres of NaI (T1) synthetic downward looking crystals and 4.2 litres of NaI (T1) synthetic upward looking crystals |
| **Resolution** | 256/512 channels |
| **Tuning** | Automatic using peak determination algorithm |
| **Detector** | Digital Peak |
| **Calibration** | Fully automated detector |
| **Real Time** | Linearization and gain stabilization |
| **Communication** | RS232 |
| **Detectors** | Expandable to 10 detectors and digital peak |
| **Count Rate** | Up to 60,000 cps per detector |
| **Count Capacity per channel** | 65545 |
| **Energy detection range:** | 36 KeV to 3 MeV |
| **Cosmic channel** | Above 3 MeV |
| **Upward Shielding** | RayShield® non-radioactive shielding on downward looking crystals |
| **Downward Shielding** | 6 mm thick lead plate is used for downward-shielding |
| **Spectra** | Collected spectra of 256/512 channels, internal spectrum resolution 1024 |
| **Software** | Calibration: High voltage adjustment,<br>linearity correction coefficients calculation, and communication test support<br>Real Time Data Collection: Automatic Gain real time control on natural isotopes, and PC based test and calibration software suite |
| **Sensor** | Each box containing two (2) gamma detection NaI(Tl) crystals – each 4.2 liters. (256 cu in.) (approx. 100 x 100 x 650 mm) Total volume of approx 8.4 litres or 512 cu in with detector electronics |
| **Spectra Stabilization** | Real time automatic corrections on radio nuclei: Th, Ur, K.<br>No implanted sources |

## Pico Envirotec AGIS data recorder system Specifications

(for Navigation, Gamma spectrometer, VLF-EM and Magnetometer Data Acquisition)

| | |
|---|---|
| **Functions** | Airborne Geophysical Information System (AGIS) with integrated Global Positioning System Receiver (GPS) and all necessary navigation guidance software. Inputs for geophysical sensors - portable gamma ray spectrometer GRS-10, MMS4 Magnetometer, Totem 2A EM, A/D converter, temperature probe, humidity probe, barometric pressure probe, and laser altimeter. Output for the multi-parameter PGU (Pilot Guidance Unit) |
| **Display** | Touch screen with display of 800 x 600 pixels; customized keypad and operator keyboard. Multi-screen options for real-time viewing of all data inputs, fiducial points, flight line tracking, and GPS channels by operator. |
| **GPS Navigation** | Garmin 12-channel, WAAS-enabled |
| **Data Sampling** | Sensor dependent |
| **Data Synchronization** | Synchronized to GPS position |
| **Data File** | PEI Binary data format |
| **Storage** | 80 GB |
| **Supplied Software** | PEIView: Allows fast data Quality Control (QC)<br>Data Format: Geosoft GBN and ASCII output<br>PEIConv: For survey preparation and survey plot after data acquisition |
| **Software** | Calibration: High voltage adjustment, linearity correction coefficients calculation, and communication test support<br>Real Time Data Collection: Automatic Gain real time control on natural isotopes and PC based test and calibration software suite |
| **Power Requirements** | 24 to 32 VDC |
| **Temperature** | Operating: -10°C to +55°C; storage: -20°C to +70°C |

# Appendix B

## Digital File Descriptions

- Magnetic database description
- Radiometric database description
- Grids
- Maps

## Magnetic Database:

Abbreviations used in the GDB files listed below:

| Channel | Units | Description |
|---|---|---|
| **X_WGS84** | m | UTM Easting – WGS 84 Zone 8 North |
| **Y_WGS84** | m | UTM Northing – WGS 84 Zone 8 North |
| **Lon_deg** | degree | Longitude |
| **Lat_deg** | degree | Latitude |
| **Date** | yyyy/mm/dd | Dates of the survey flight(s) |
| **FLT** | | Flight Line numbers |
| **LineNo** | | Line numbers |
| **STL** | | Number of satellite(s) |
| **GPSfix** | | GPS fix |
| **GPStime** | Hours:min:secs | GPS time (UTC) |
| **Geos_m** | m | Geoidal separation |
| **GHead_deg** | degree | Heading of the helicopter |
| **XTE_m** | m | Flight line cross distance |
| **Galt** | m | GPS height – WGS 84 Zone 8 North |
| **Lalt** | m | Laser Altimeter readings |
| **DTM** | m | Digital Terrain Model |
| **basemag** | nT | Base station diurnal data |
| **IGRF** | | International Geomagnetic Reference Field 2015 |
| **Declin** | Decimal degree | Calculated declination of magnetic field |
| **Inclin** | Decimal degree | Calculated inclination of magnetic field |
| **TMI** | nT | Total Magnetic Intensity |
| **RMI** | nT | Residual Magnetic Intensity |

## Radiometric Database:

Abbreviations used in the GDB files listed below:

| Channel | Units | Description |
|---|---|---|
| **X_WGS84** | m | UTM Easting – WGS 84 Zone 8 North |
| **Y_WGS84** | m | UTM Northing – WGS 84 Zone 8 North |
| **Lon_deg** | degree | Longitude |
| **Lat_deg** | degree | Latitude |
| **Date** | yyyy/mm/dd | Dates of the survey flight(s) |
| **FLT** | | Flight numbers |
| **LineNo** | | Line numbers |
| **STL** | | Number of satellite(s) |
| **GPStime** | Hours:min:secs | GPS time (UTC) |
| **Geos_m** | m | Geoidal separation |
| **GPSFix** | | GPS fix |
| **GHead_deg** | degree | Heading of the helicopter |
| **XTE_m** | m | Flight line cross distance |
| **Galt** | m | GPS height – WGS 84 Zone 8 North |
| **Lalt** | m | Laser Altimeter readings |
| **DTM** | m | Digital Terrain Model |
| **BaroSTP_kP** | KiloPascal | Barometric Altitude (Press and Temp Corrected) |
| **Temp_degC** | Degrees C | Air Temperature |
| **Press_kP** | KiloPascal | Atmospheric Pressure |
| **COSFILT** | counts/sec | Spectrometer - Filtered Cosmic |
| **URUFILT** | counts /sec | Spectrometer - Filtered Upward Uranium |
| **Kcor** | % | Equivalent Concentration - Potassium |
| **THcor** | ppm | Equivalent Concentration - Thorium |
| **Ucor** | ppm | Equivalent Concentration - Uranium |
| **TCcor** | µR | Equivalent Dose Rate |
| **TCexp** | µR/hour | Exposure Rate - SUM(%k, eU, eTh) * determined factors |
| **THKratio** | | Spectrometer – eTh/%K ratio |
| **UKratio** | | Spectrometer – eU/%K ratio |
| **UTHratio** | | Spectrometer – eU/eTh ratio |

## Grids: Lance Survey Block, WGS 84 Datum, Zone 8N

| FILE NAME | DESCRIPTION |
|---|---|
| Lance_DTM_25m.grd | Lance survey block digital terrain model gridded at 25 m cell size |
| Lance_TMI_25m.grd | Lance survey block total magnetic intensity gridded at 25 m cell size |
| Lance_RMI_25m.grd | Lance survey block residual magnetic intensity gridded at 25 m cell size |
| Lance_CVG_25m.grd | Lance survey block calculated vertical gradient of TMI gridded at 25 m cell size |
| Lance_Kcor_25m.grd | Lance survey block potassium (%K) - equivalent concentration in percentage gridded at 25 m cell size |
| Lance_Thcor_25m.grd | Lance survey block Thorium (eTh) – equivalent concentration gridded at 25 m cell size |
| Lance_Ucor_25m.grd | Lance survey block Uranium (eU) – equivalent concentration gridded at 25 m cell size |
| Lance_TCcor_25m.grd | Lance survey block Total Count (TCcor) – equivalent dose rate gridded at 25 m cell size |
| Lance_TCexp_25m.grd | Lance survey block Total Count (TCexp) – exposure rate gridded at 25 m cell size |
| Lance_KThratio_25m.grd | Lance survey block potassium over thorium ratio (%K/eTh) gridded at 25 m cell size |
| Lance_KUratio_25m.grd | Lance survey block potassium over uranium ratio (%K/eU) gridded at 25 m cell size |
| Lance_UThratio_25m.grd | Lance survey block uranium over thorium ratio (eU/eTh) gridded at 25 m cell size |
| Lance_ThKratio_25m.grd | Lance survey block thorium over potassium ratio (eTh/%K) gridded at 25 m cell size |
| Lance_UKratio_25m.grd | Lance survey block uranium over potassium ratio (eU/%K) gridded at 25 m cell size |

Maps: Lance survey block, WGS 84 Datum, Zone 8N (jpegs and pdfs)

| FILE NAME | DESCRIPTION |
|---|---|
| Lance_ActualFlightLines | Lance survey block survey block plotted actual flown flight lines |
| Lance_DTM_25m | Lance survey block digital terrain model gridded at 25 m cell size |
| Lance_TMI_25m | Lance survey block total magnetic intensity gridded at 25 m cell size |
| Lance_TMI_with_FlightLines_25m | Lance survey block total magnetic intensity with plotted actual flight lines gridded at 25 m cell size |
| Lance_RMI_25m | Lance survey block residual magnetic intensity gridded at 25 m cell size |
| Lance_CVG_25m | Lance survey block calculated vertical gradient of TMI gridded at 25 m cell size |
| Lance_Kcor_25m | Lance survey block potassium (%K) - equivalent concentration in percentage gridded at 25 m cell size |
| Lance_Thcor_25m | Lance survey block Thorium (eTh) – equivalent concentration gridded at 25 m cell size |
| Lance_Ucor_25m | Lance survey block Uranium (eU) – equivalent concentration gridded at 25 m cell size |
| Lance_TCcor_25m | Lance survey block Total Count (TCcor) – equivalent dose rate gridded at 25 m cell size |
| Lance_TCexp_25m | Lance survey block Total Count (TCexp) – exposure rate gridded at 25 m cell size |
| Lance_KThratio_25m | Lance survey block potassium over thorium ratio (%K/eTh) gridded at 25 m cell size |
| Lance_KUratio_25m | Lance survey block potassium over uranium ratio (%K/eU) gridded at 25 m cell size |
| Lance_UThratio_25m | Lance survey block uranium over thorium ratio (eU/eTh) gridded at 25 m cell size |
| Lance_ThKratio_25m | Lance survey block thorium over potassium ratio (eTh/%K) gridded at 25 m cell size |
| Lance_TernaryMap_25m | Lance survey block displaying ratios of all three elements (%K, eTh, eU) |

# Appendix C

## Lance Survey Block Maps

Survey Overview Maps (colour image with elevation contour lines):

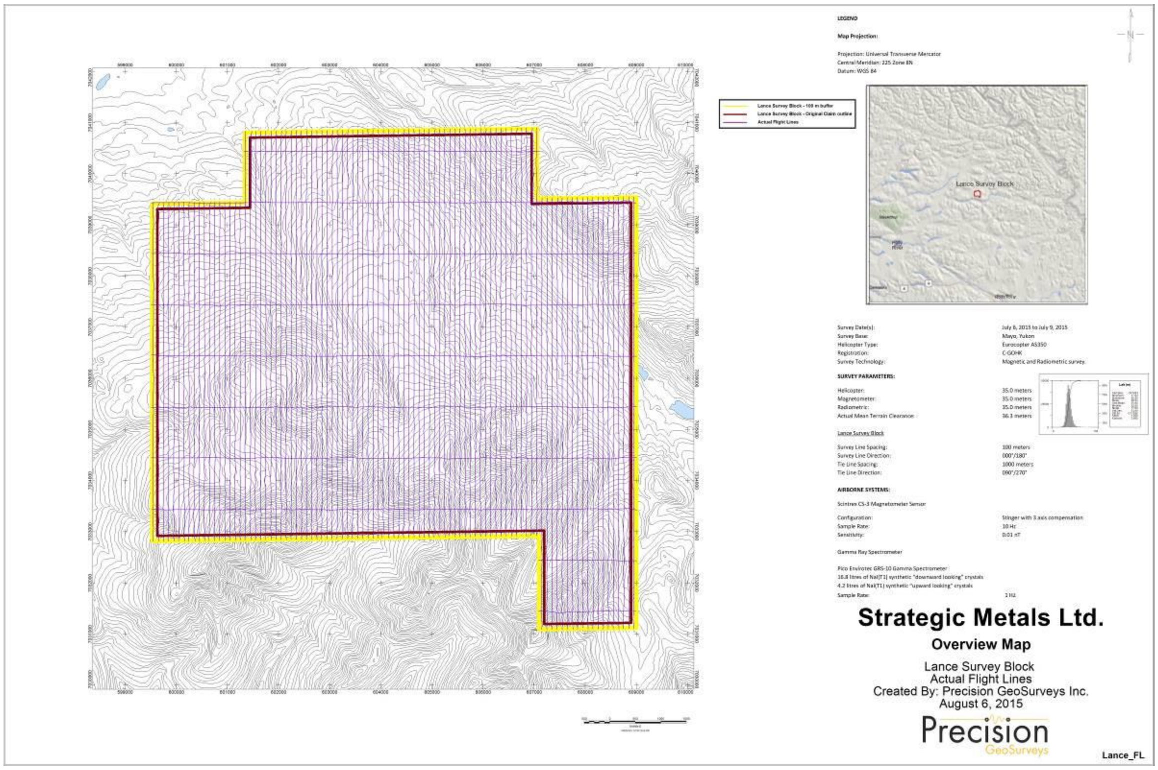
- Flight Lines (FL)
- Digital Terrain Model (DTM)

Magnetic Maps (colour image with elevation contour lines):

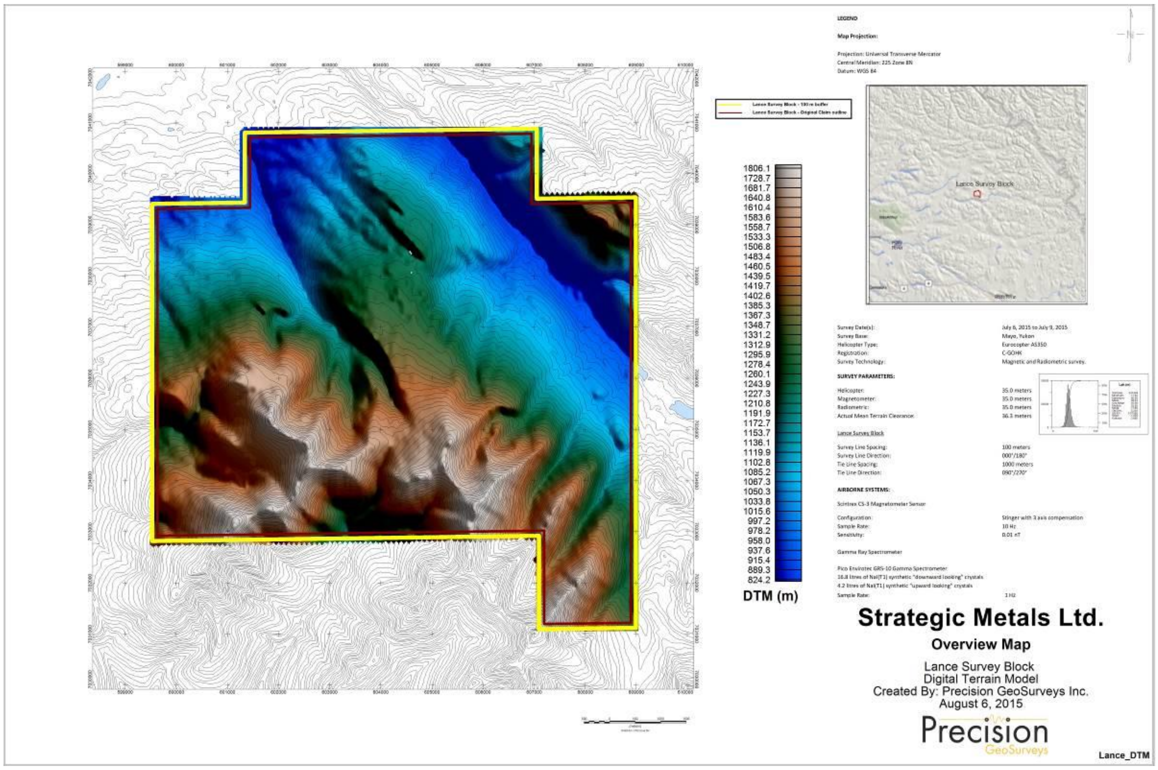
- Total Magnetic Intensity (TMI)
- Total Magnetic Intensity with flight lines (TMI_wFL)
- Residual Magnetic Intensity (RMI)
- Calculated Vertical Gradient (CVG) of TMI

Radiometric Maps (colour image with elevation contour lines):

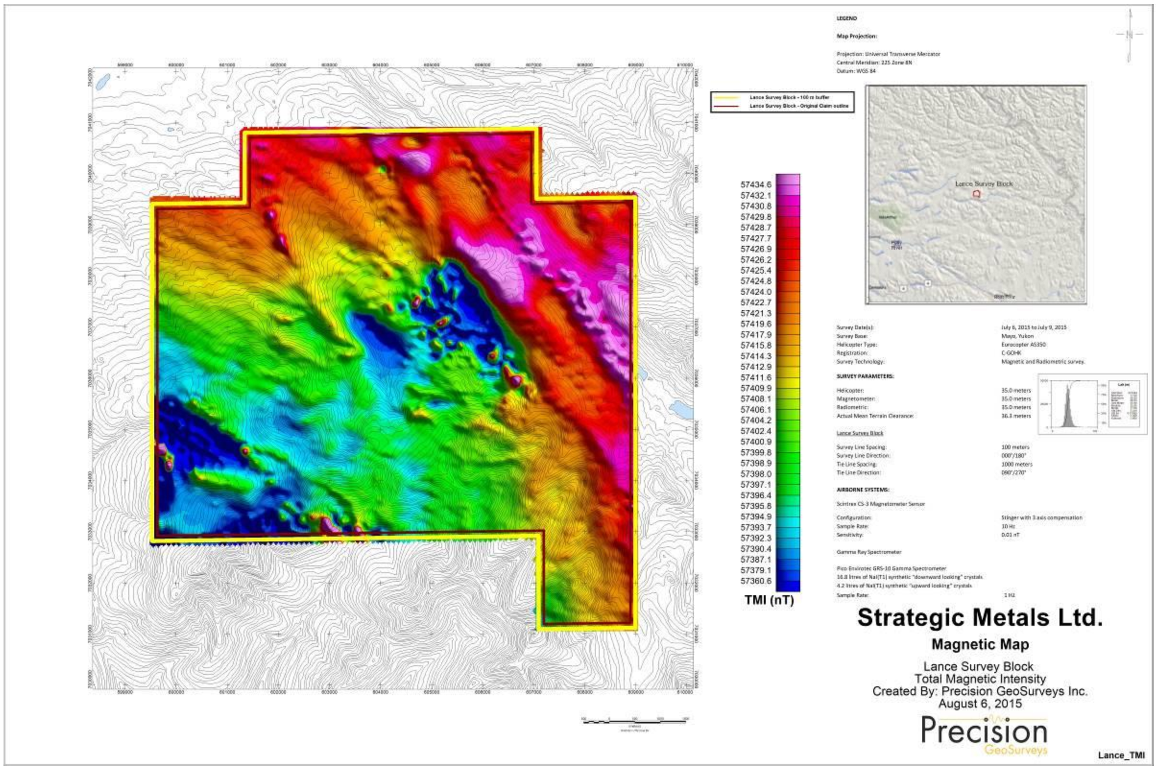
- Potassium – Equivalent Concentration (%K)
- Thorium – Equivalent Concentration (eTh)
- Uranium – Equivalent Concentration (eU)
- Total Count – Equivalent Dose Rate (TCcor)
- Total Count – Exposure Rate (TCexp)
- Potassium over Thorium Ratio (%K/eTh)
- Potassium over Uranium Ratio (%K/eU)
- Uranium over Thorium Ratio (eU/eTh)
- Thorium over Potassium Ratio (eTh/%K)
- Uranium over Potassium Ratio (eU/%K)
- Ternary Map (TM)



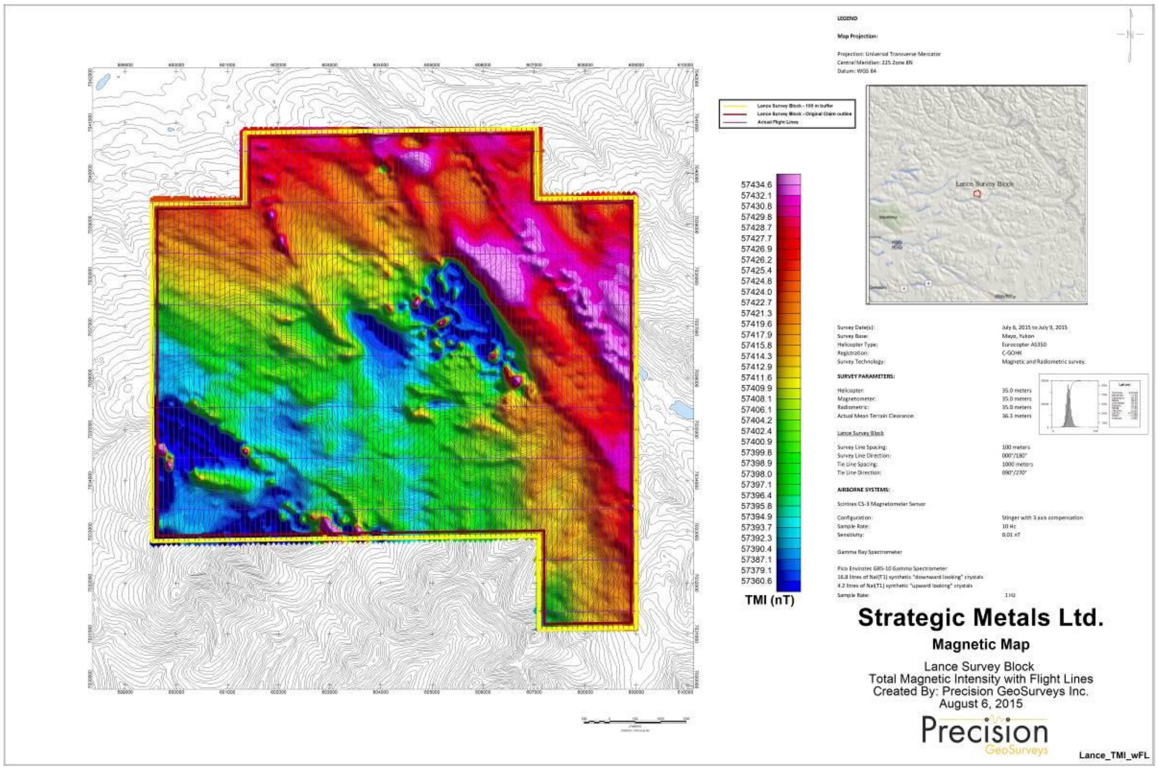
Map 1: Lance survey block actual flight lines.



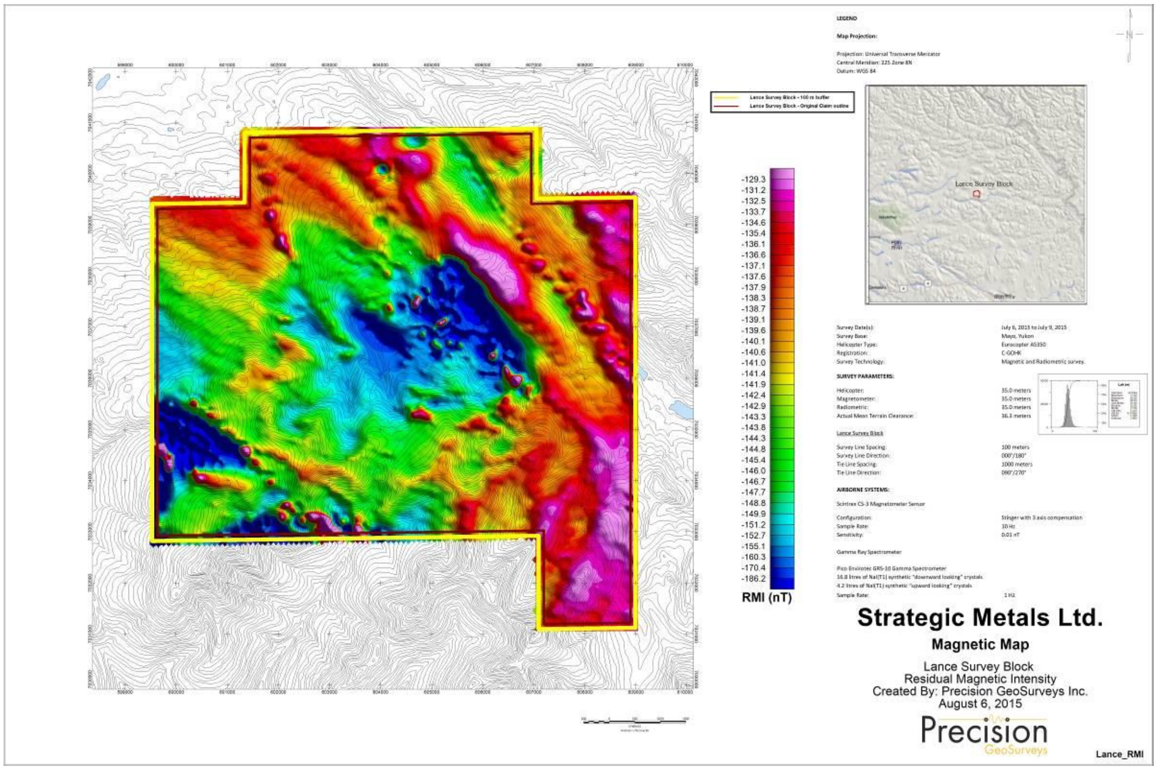
Map 2: Lance survey block digital terrain model.



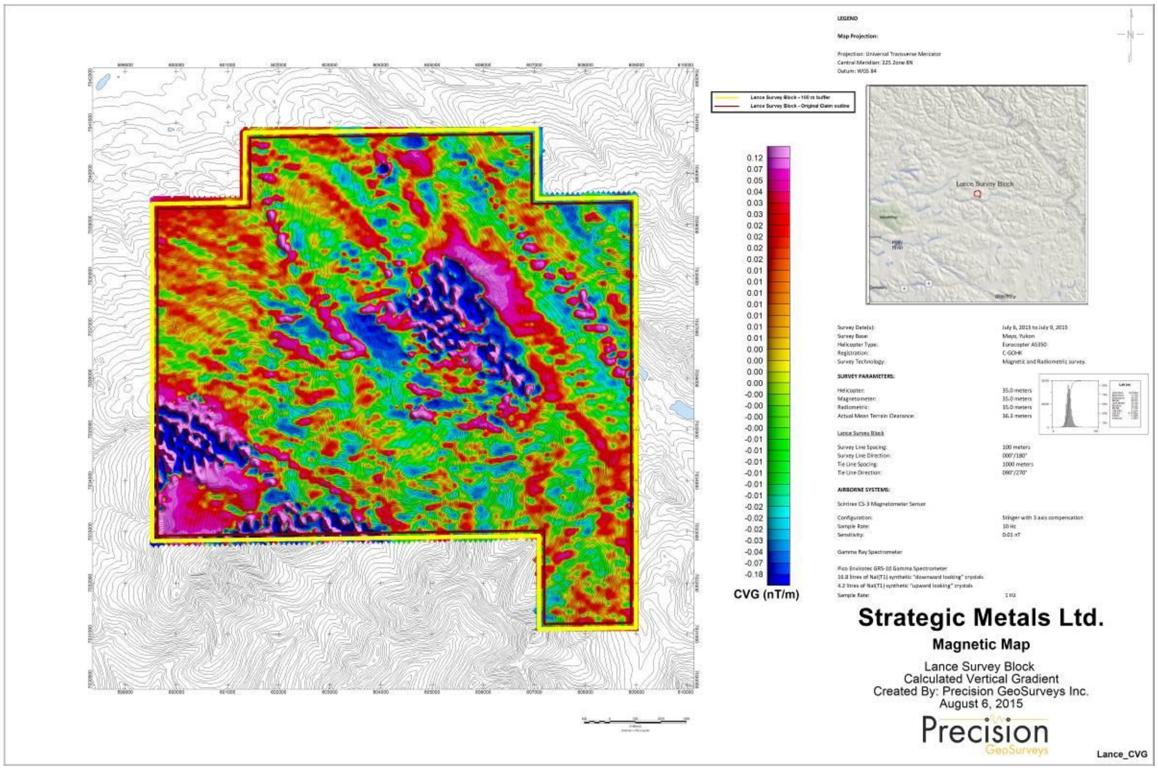
Map 3: Lance survey block total magnetic intensity.



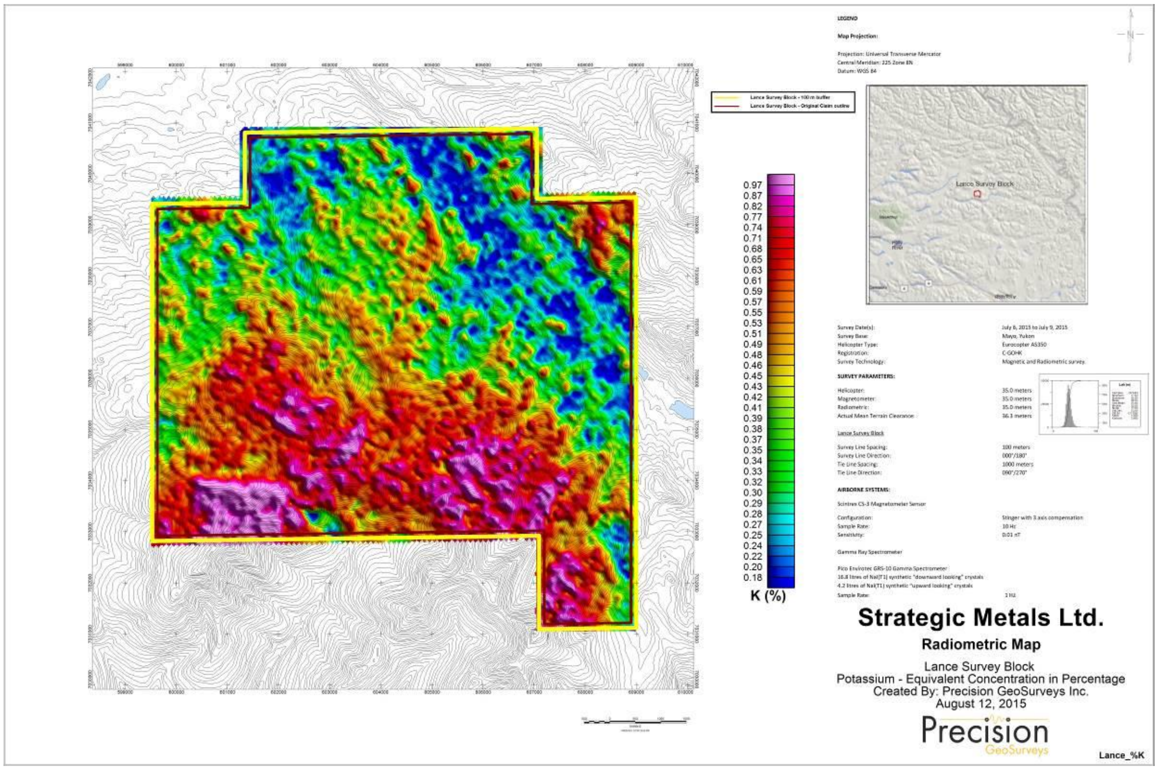
Map 4: Lance survey block total magnetic intensity with actual flight lines.



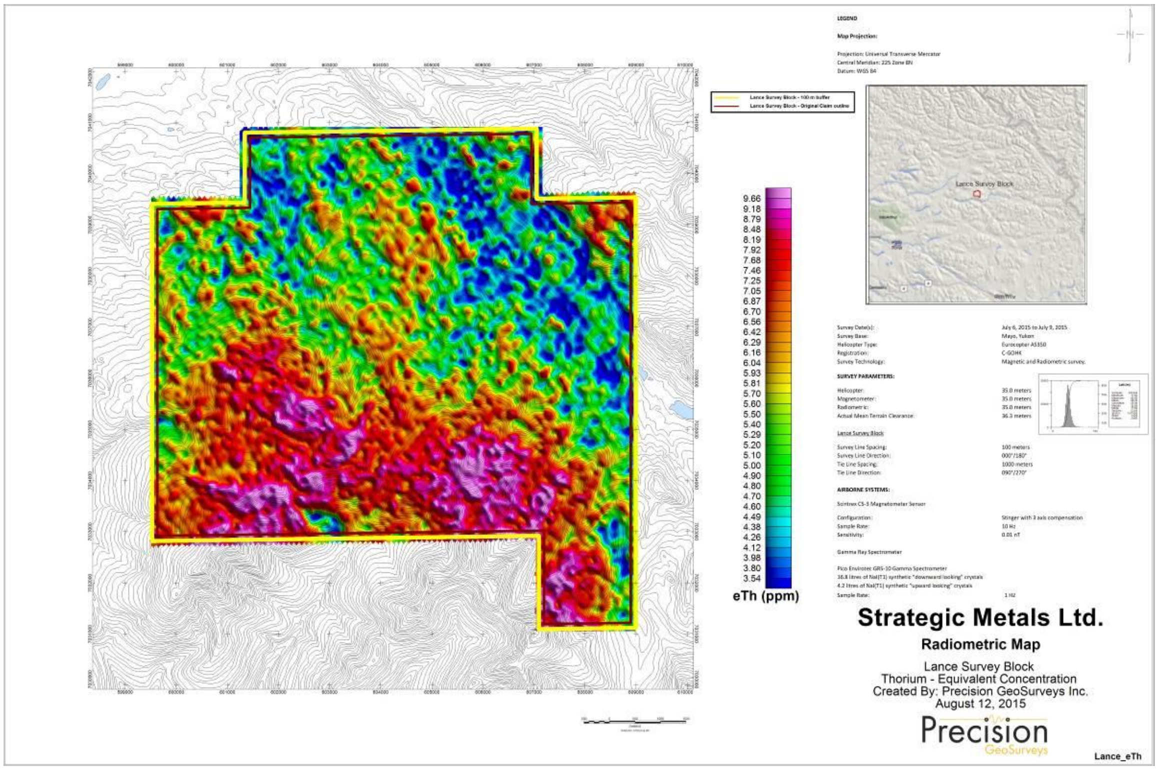
Map 5: Lance survey block residual magnetic intensity.



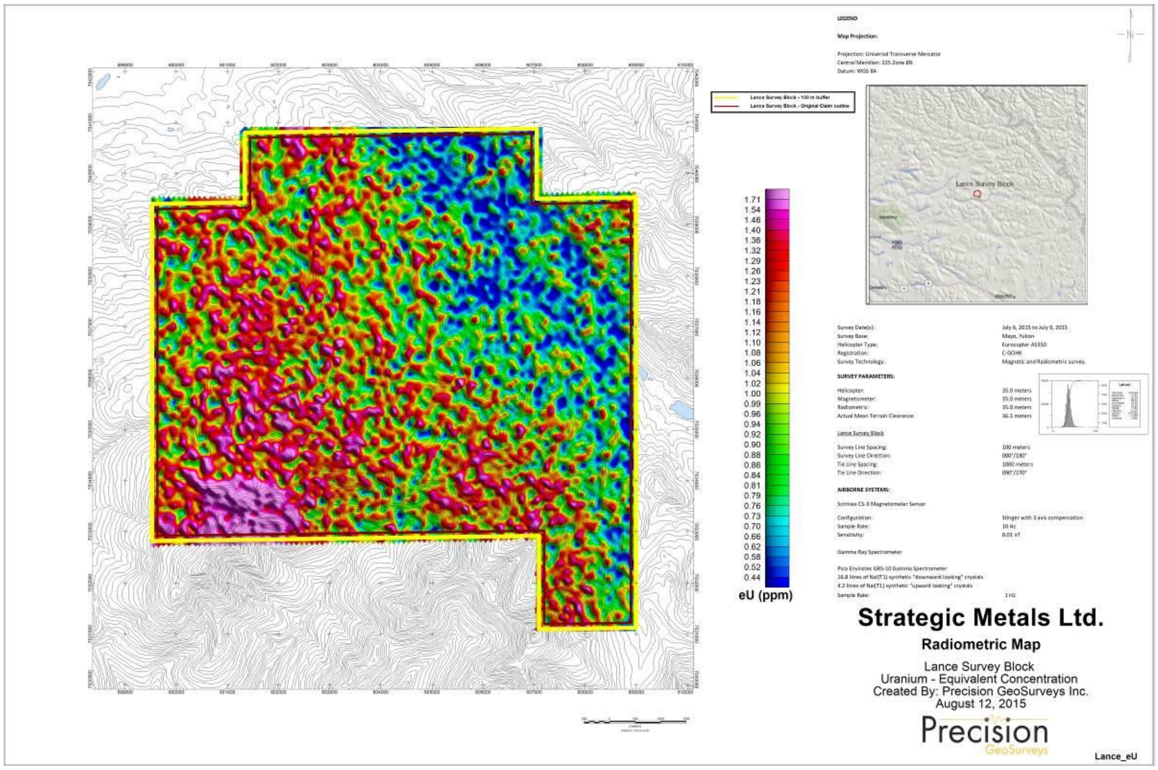
Map 6: Lance survey block calculated vertical gradient of the total magnetic intensity.



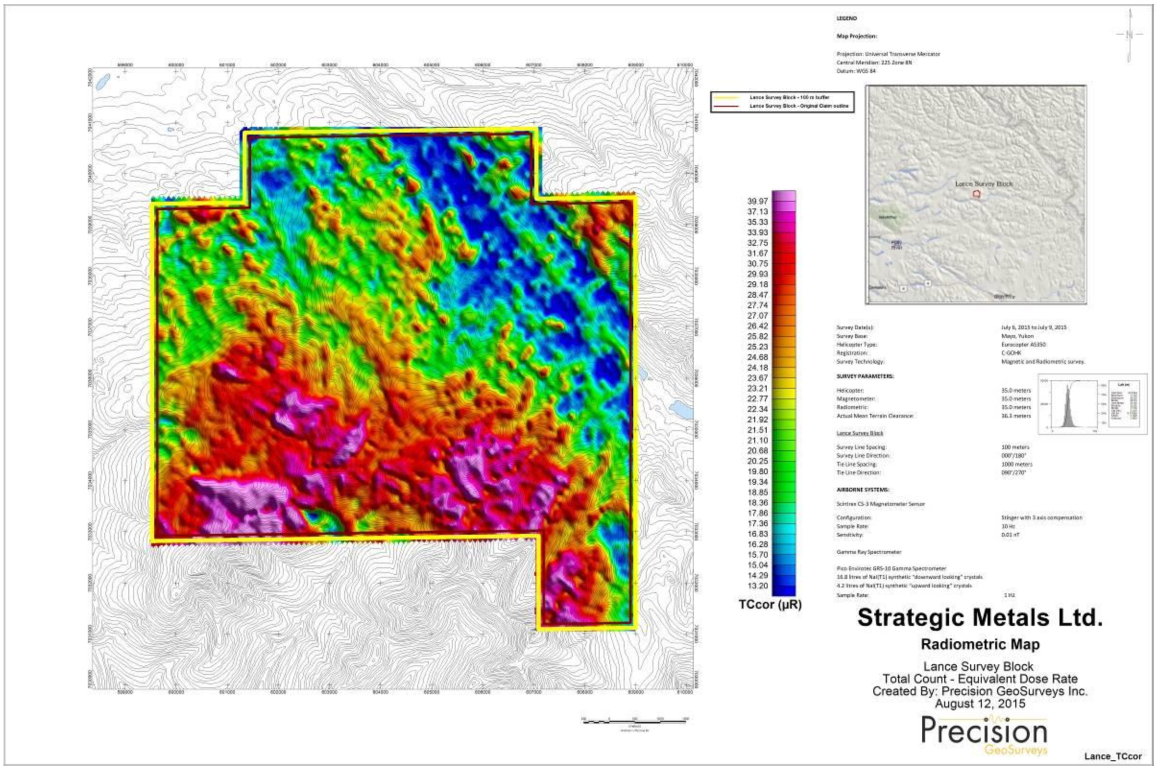
Map 7: Lance survey block potassium – equivalent concentration in percentage.



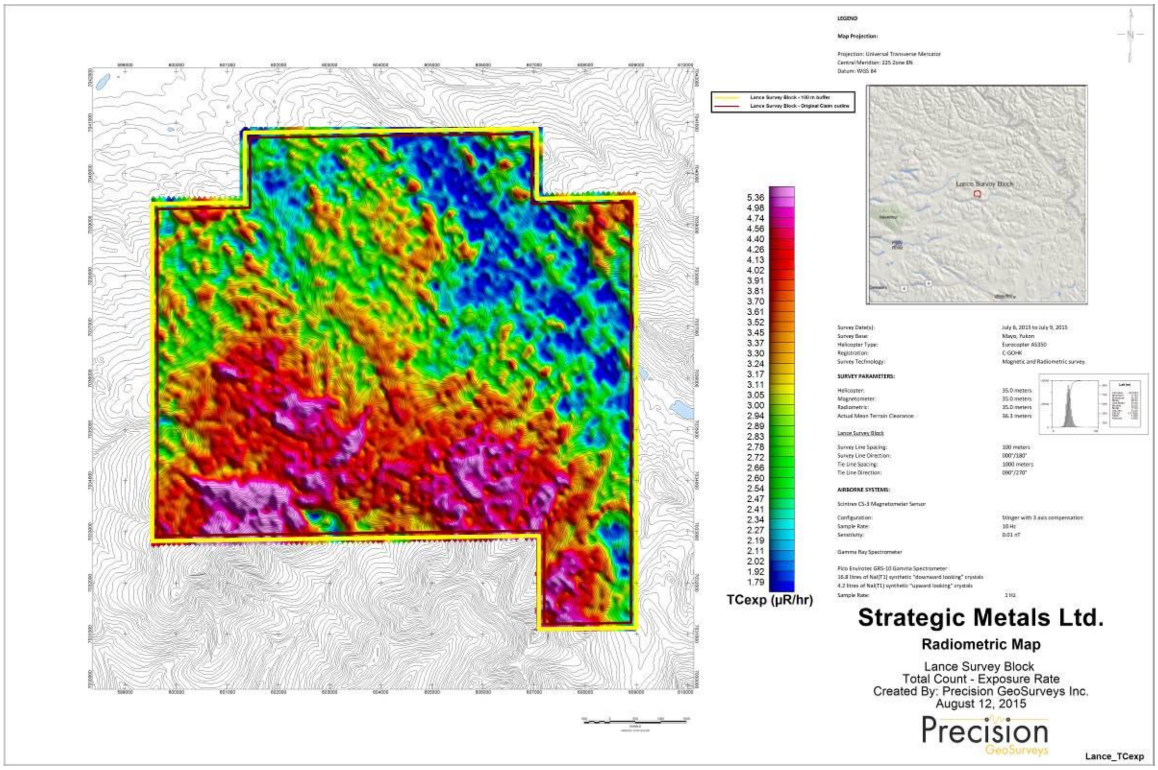
Map 8: Lance survey block thorium – equivalent concentration



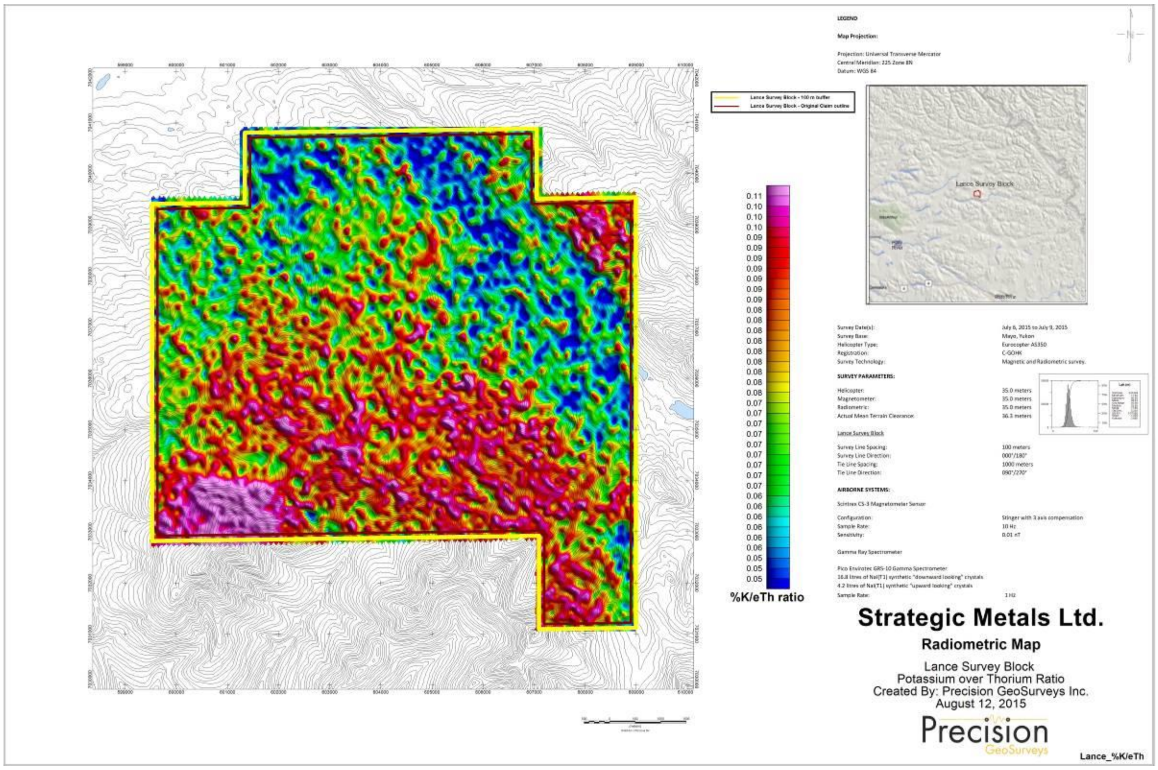
Map 9: Lance survey block uranium – equivalent concentration.



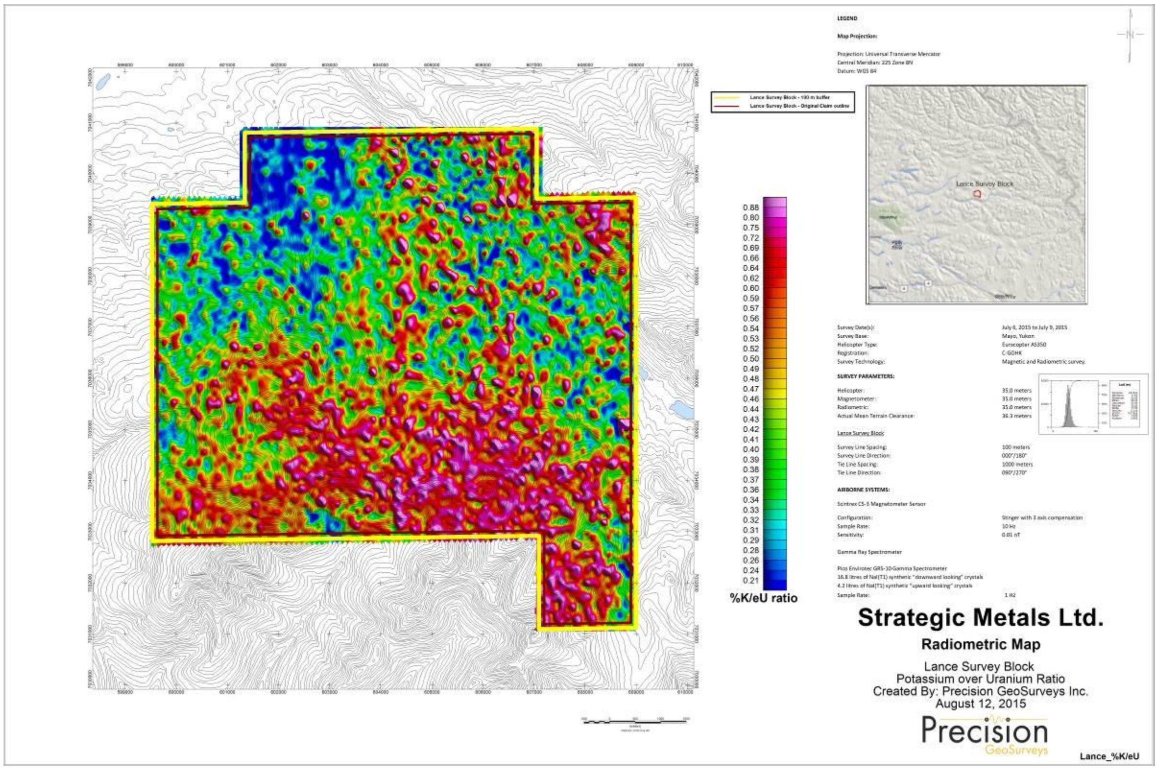
Map 10: Lance survey block total count – equivalent dose rate.



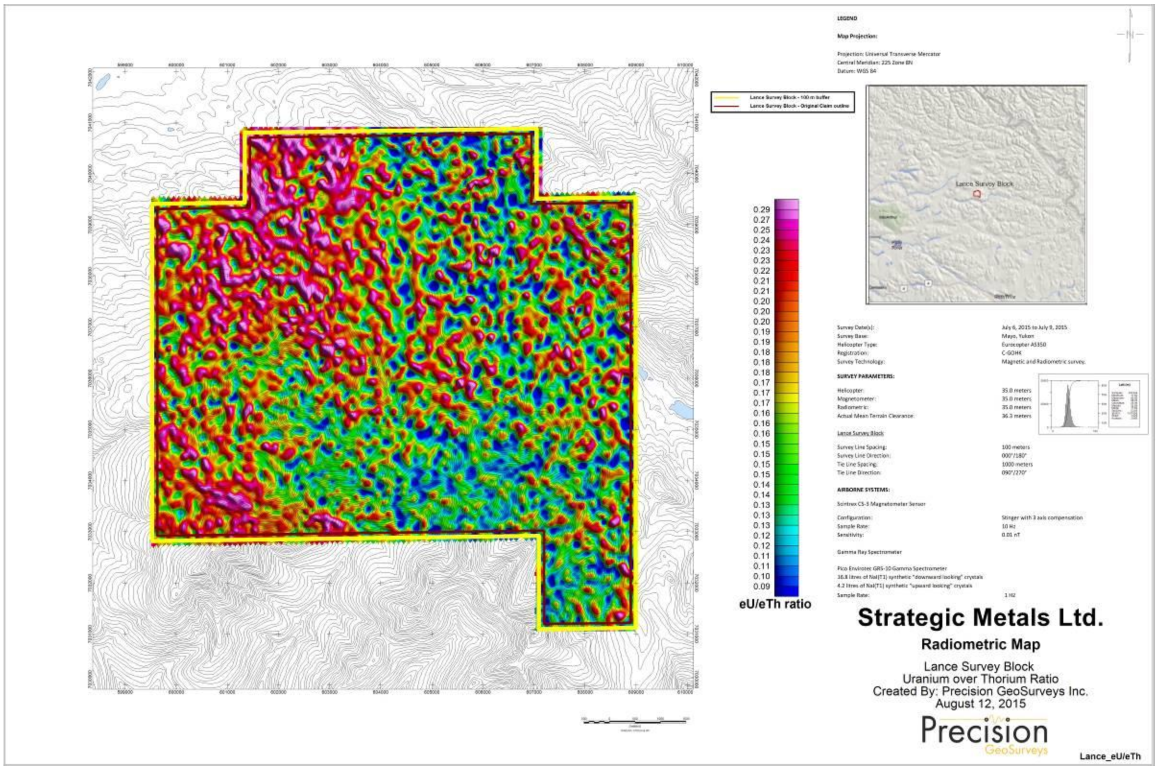
Map 11: Lance survey block total count – exposure rate.



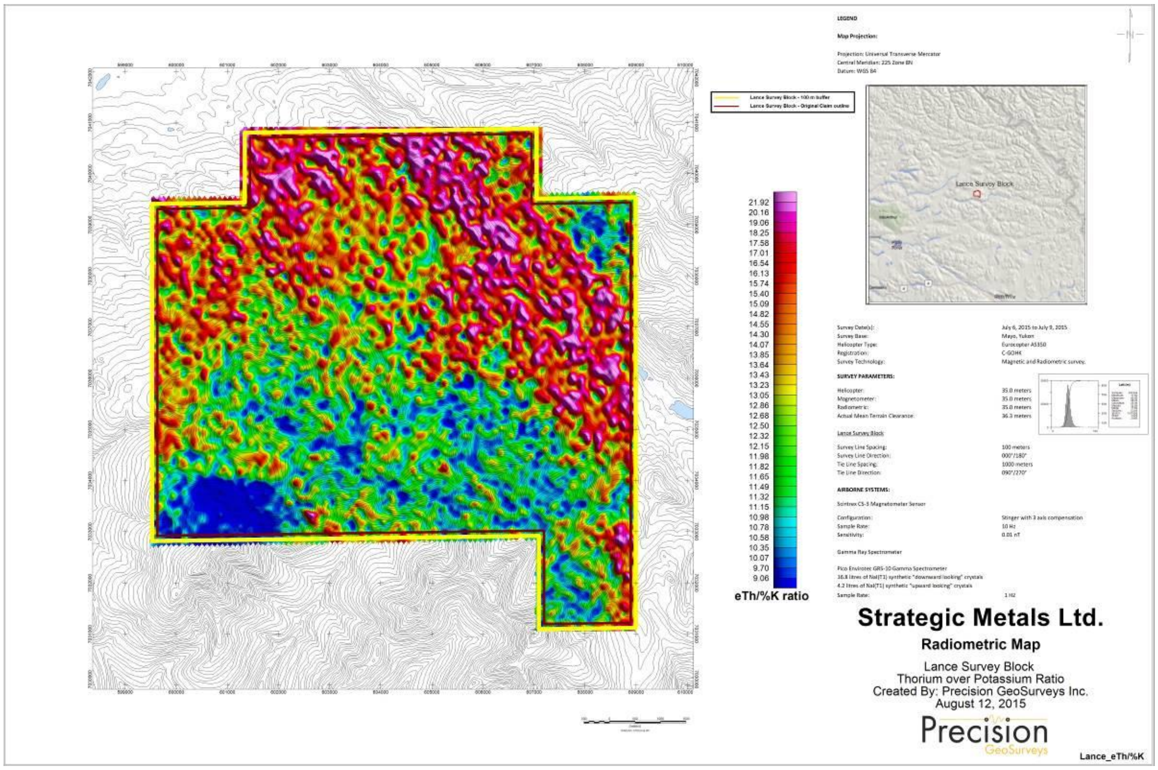
Map 12: Lance survey block potassium over thorium ratio.



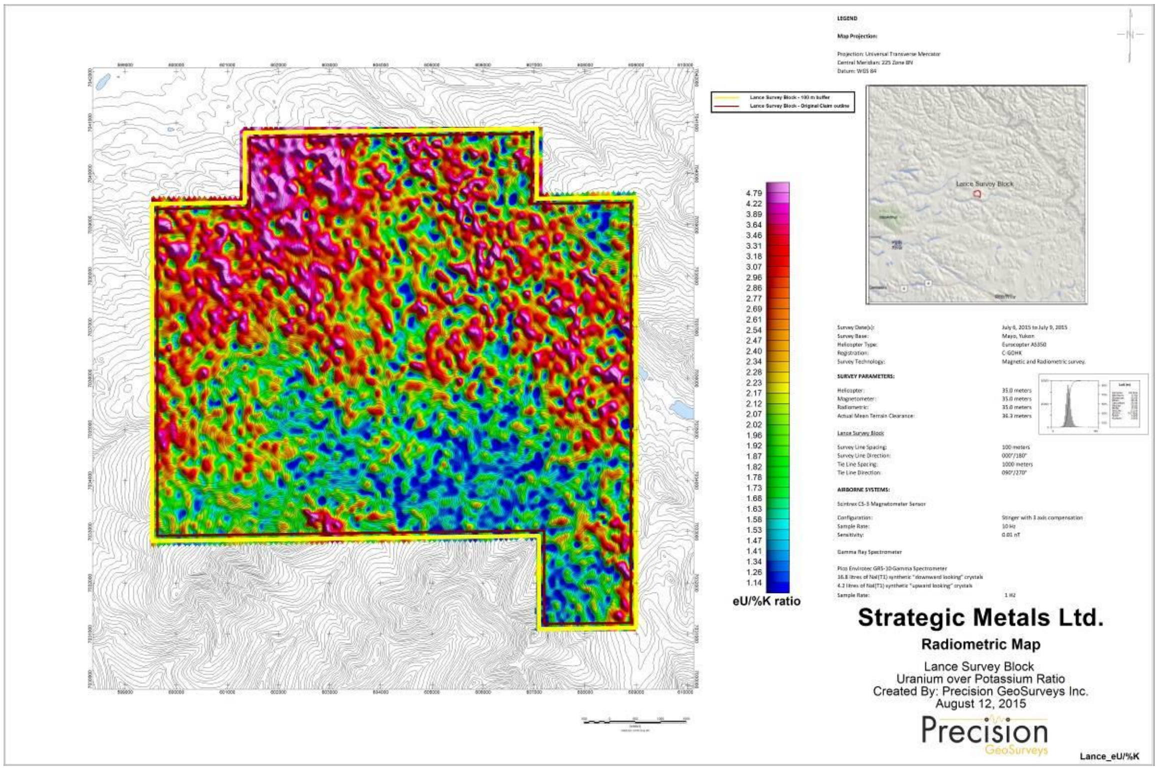
Map 13: Lance survey block potassium over uranium ratio.



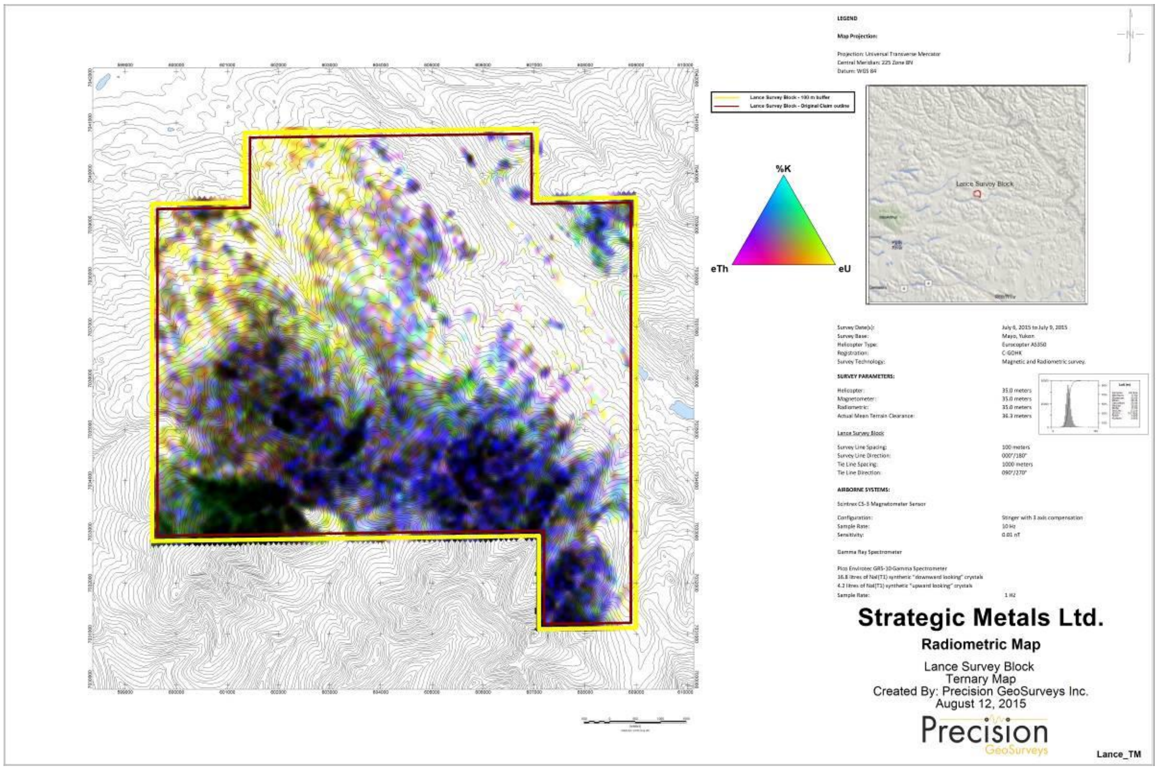
Map 14: Lance survey block uranium over thorium ratio.



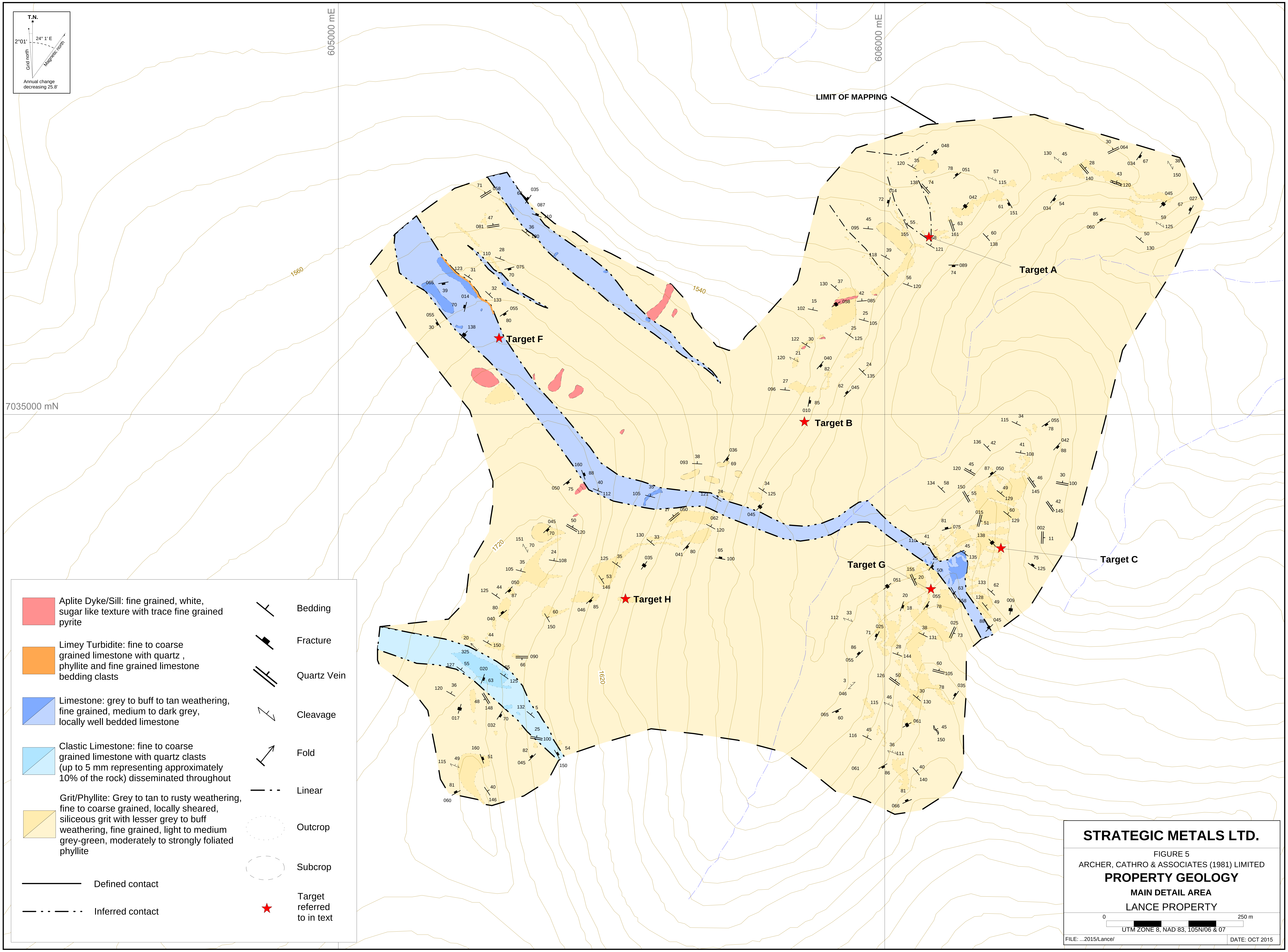
Map 15: Lance survey block thorium over potassium ratio.

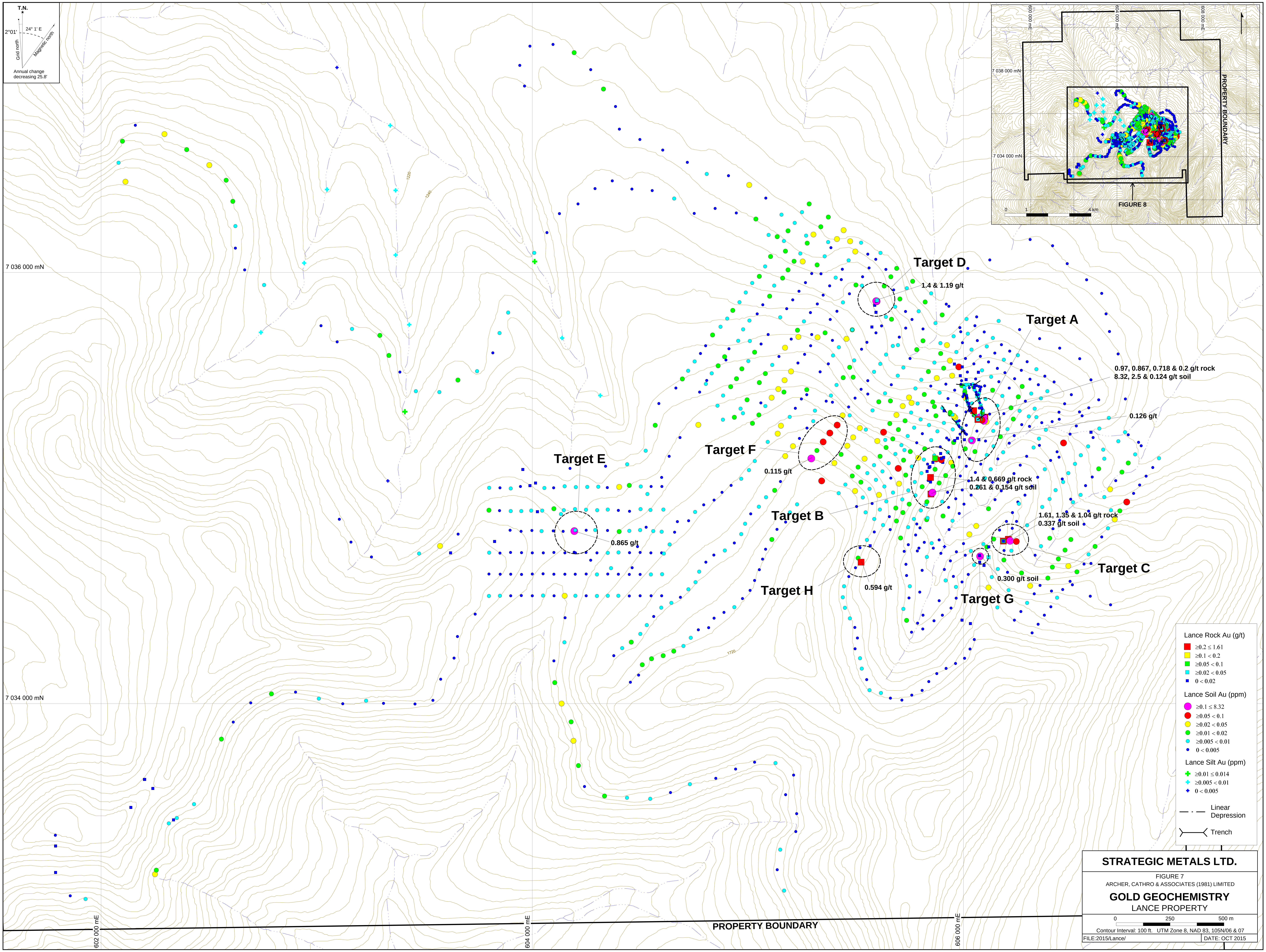


Map 16: Lance survey block uranium over potassium ratio.



Map 17: Lance survey block ternary map; ratio of K, Th, and U.


T.N.
2°01'
24° 1' E
Grid north
Magnetic north
Annual change decreasing 25.8'
605000 mE
606000 mE
7035000 mN
LIMIT OF MAPPING
1560
1540
1720
1620
Target A
Target B
Target C
Target F
Target G
Target H
Aplite Dyke/Sill: fine grained, white, sugar like texture with trace fine grained pyrite
Limey Turbidite: fine to coarse grained limestone with quartz , phyllite and fine grained limestone bedding clasts
Limestone: grey to buff to tan weathering, fine grained, medium to dark grey, locally well bedded limestone
Clastic Limestone: fine to coarse grained limestone with quartz clasts (up to 5 mm representing approximately 10% of the rock) disseminated throughout
Grit/Phyllite: Grey to tan to rusty weathering, fine to coarse grained, locally sheared, siliceous grit with lesser grey to buff weathering, fine grained, light to medium grey-green, moderately to strongly foliated phyllite
Defined contact
Inferred contact
Bedding
Fracture
Quartz Vein
Cleavage
Fold
Linear
Outcrop
Subcrop
Target referred to in text
STRATEGIC METALS LTD.
FIGURE 5
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED
PROPERTY GEOLOGY
MAIN DETAIL AREA
LANCE PROPERTY
0
250 m
UTM ZONE 8, NAD 83, 105N/06 & 07
FILE: ...2015/Lance/
DATE: OCT 2015



**STRATEGIC METALS LTD.**

FIGURE 7

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

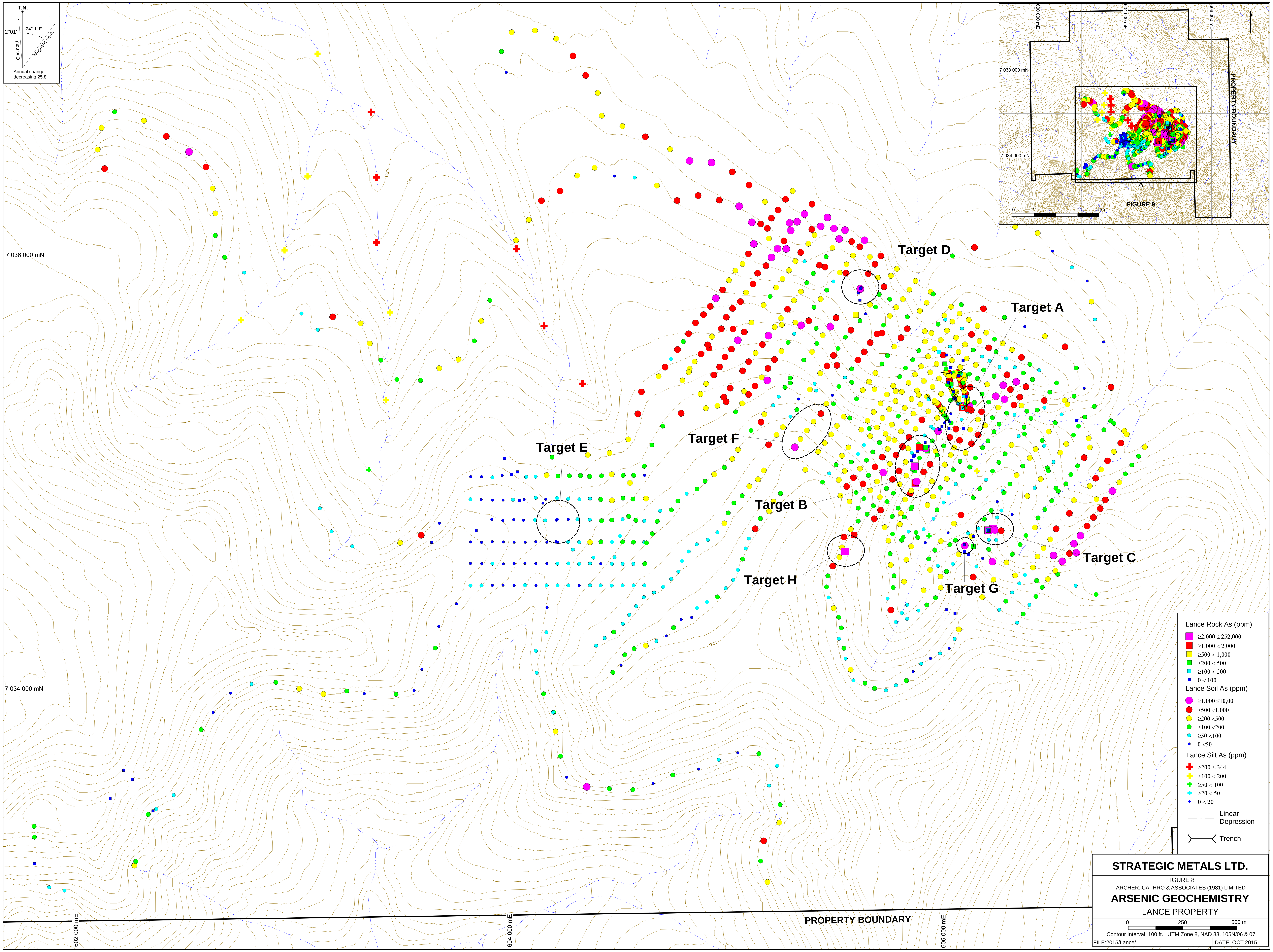
**GOLD GEOCHEMISTRY**

LANCE PROPERTY

Contour Interval: 100 ft. UTM Zone 8, NAD 83, 105N/06 & 07

FILE:2015/Lance/

DATE: OCT 2015



Lance Rock As (ppm)

- 🟪 ≥2,000 ≤ 252,000
- 🟥 ≥1,000 < 2,000
- 🟨 ≥500 < 1,000
- 🟩 ≥200 < 500
- ■ ≥100 < 200
- ■ 0 < 100

Lance Soil As (ppm)

- ● ≥1,000 ≤10,001
- ● ≥500 <1,000
- ● ≥200 <500
- ● ≥100 <200
- ● ≥50 <100
- ● 0 <50

Lance Silt As (ppm)

- ✚ ≥200 ≤ 344
- ✚ ≥100 < 200
- ✚ ≥50 < 100
- ✚ ≥20 < 50
- ✚ 0 < 20

— · — Linear Depression

≻—≺ Trench

**STRATEGIC METALS LTD.**

FIGURE 8

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

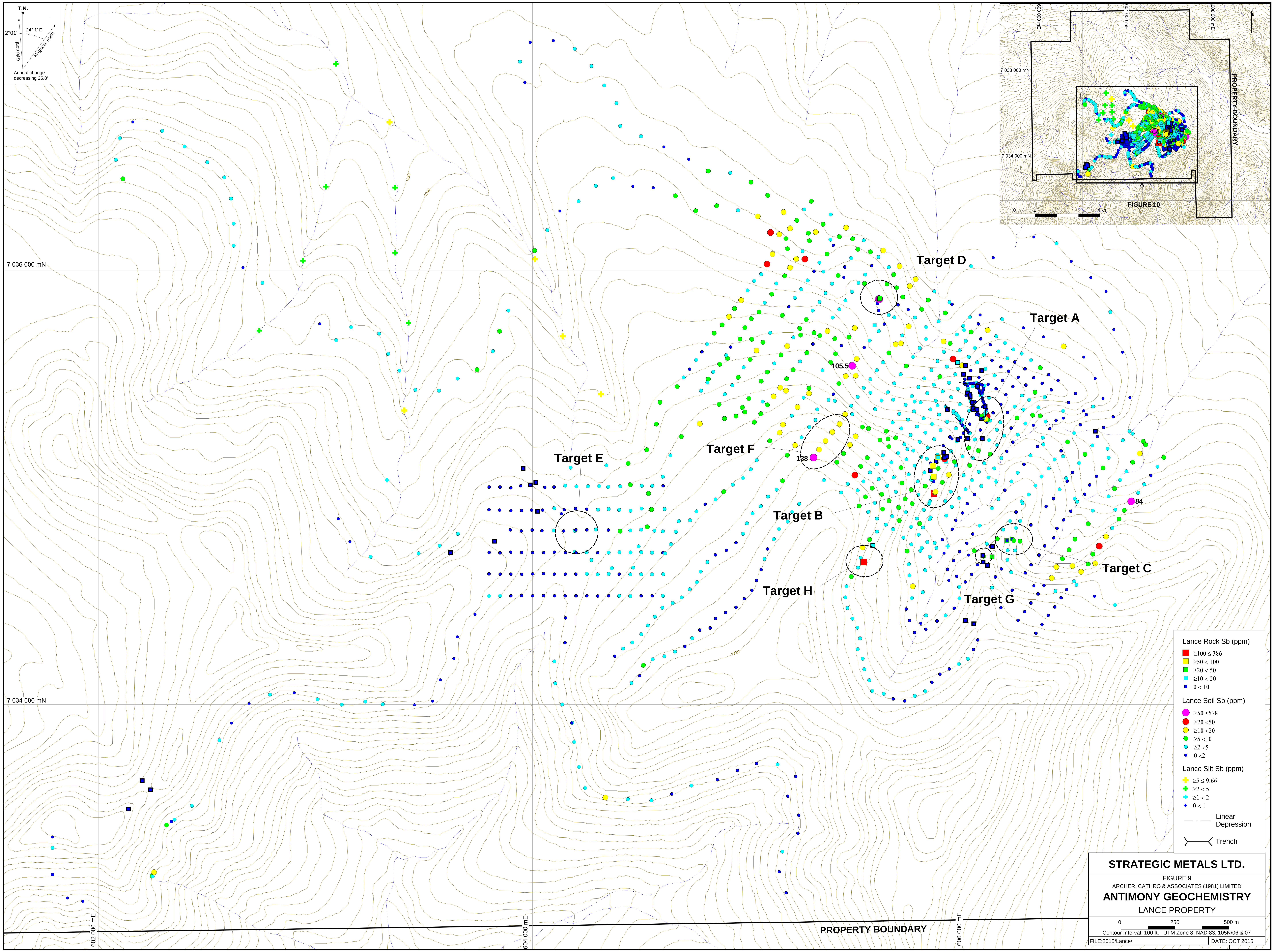
**ARSENIC GEOCHEMISTRY**

LANCE PROPERTY

0 250 500 m

Contour Interval: 100 ft. UTM Zone 8, NAD 83, 105N/06 & 07

FILE:2015/Lance/ DATE: OCT 2015



**STRATEGIC METALS LTD.**

FIGURE 9

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

**ANTIMONY GEOCHEMISTRY**

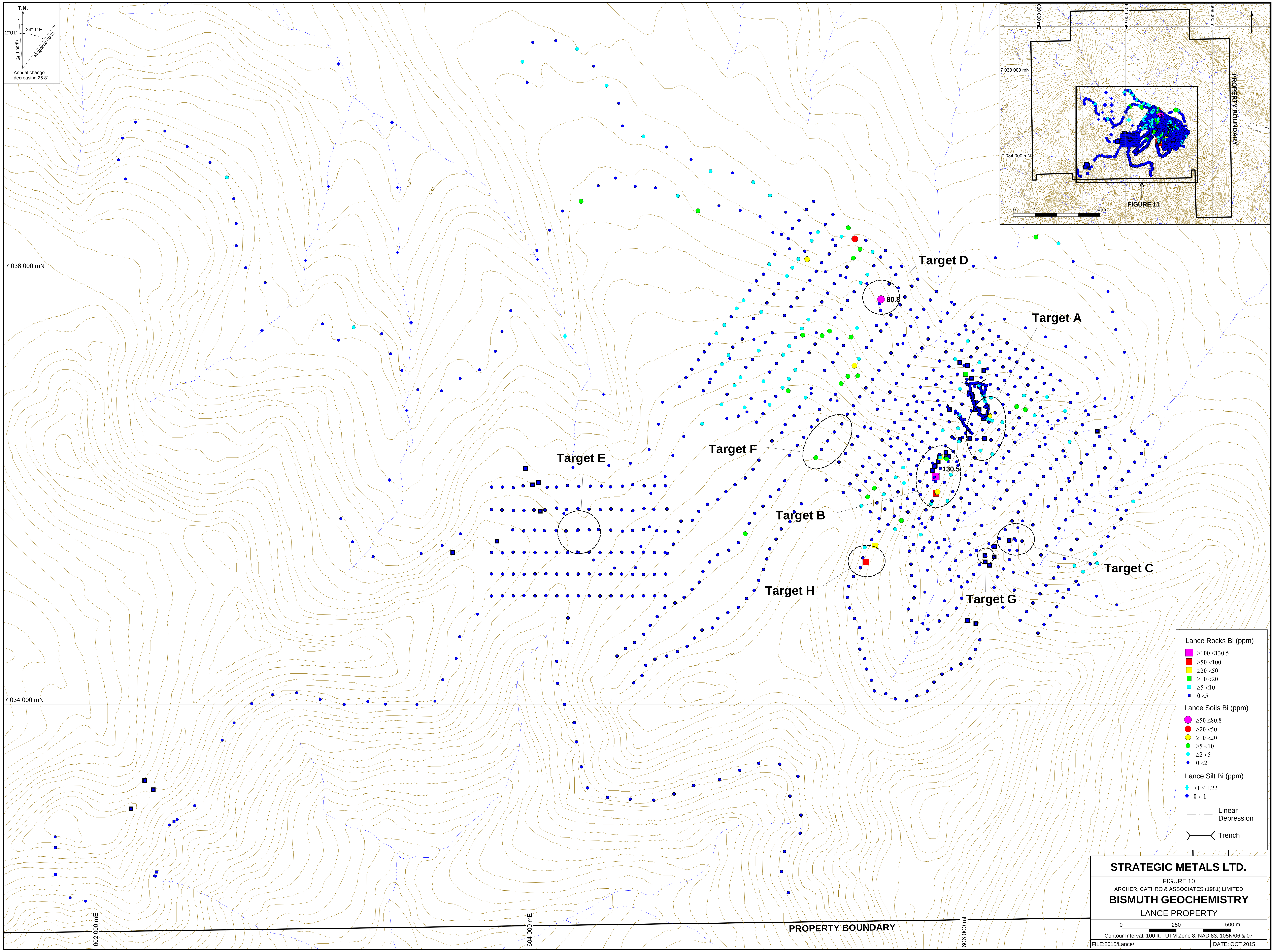
LANCE PROPERTY

0 250 500 m

Contour Interval: 100 ft. UTM Zone 8, NAD 83, 105N/06 & 07

FILE:2015/Lance/

DATE: OCT 2015



**STRATEGIC METALS LTD.**

FIGURE 10

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

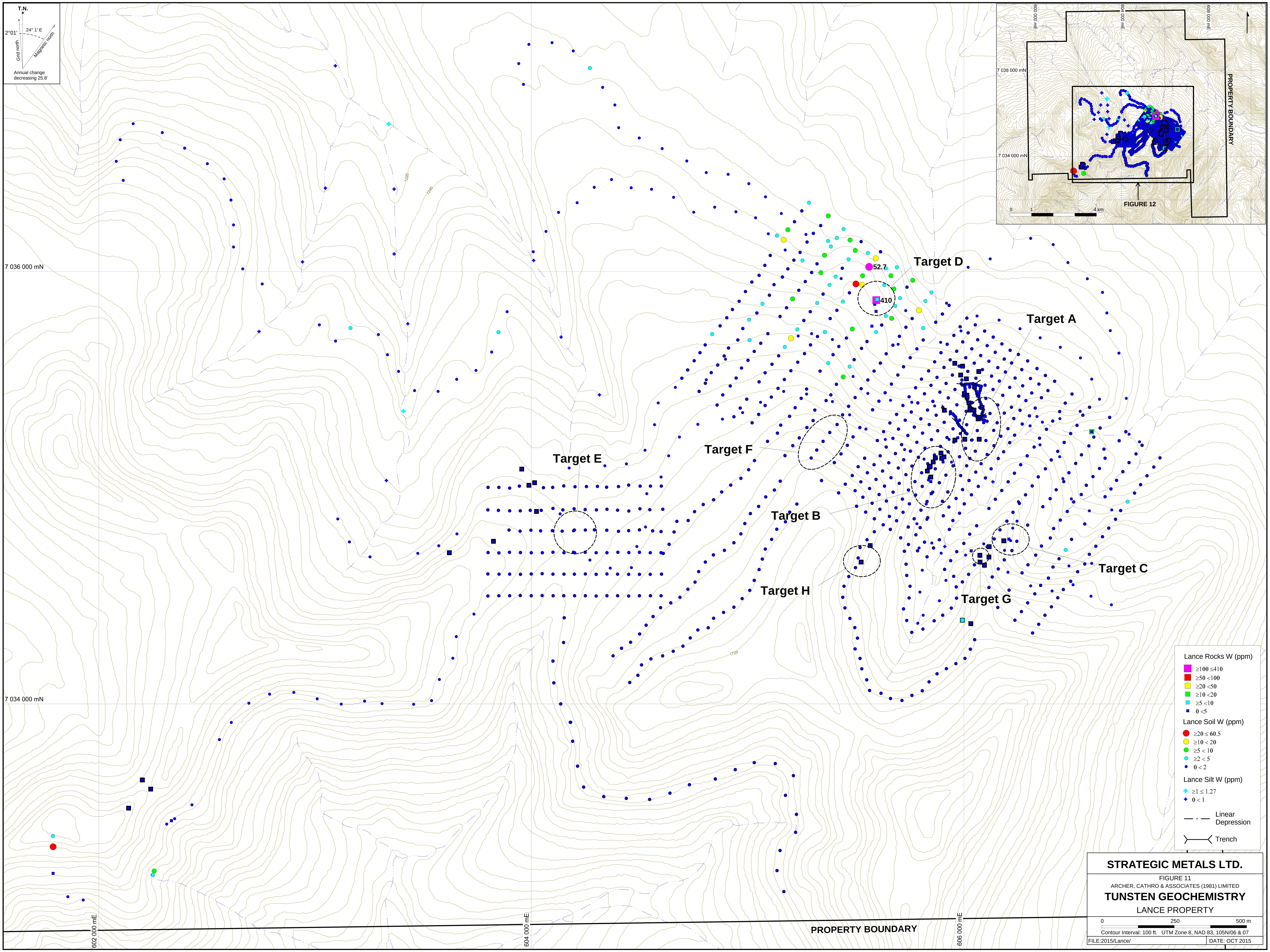
**BISMUTH GEOCHEMISTRY**

LANCE PROPERTY

Contour Interval: 100 ft. UTM Zone 8, NAD 83, 105N/06 & 07

FILE:2015/Lance/

DATE: OCT 2015



**STRATEGIC METALS LTD.**

FIGURE 11

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

# TUNSTEN GEOCHEMISTRY

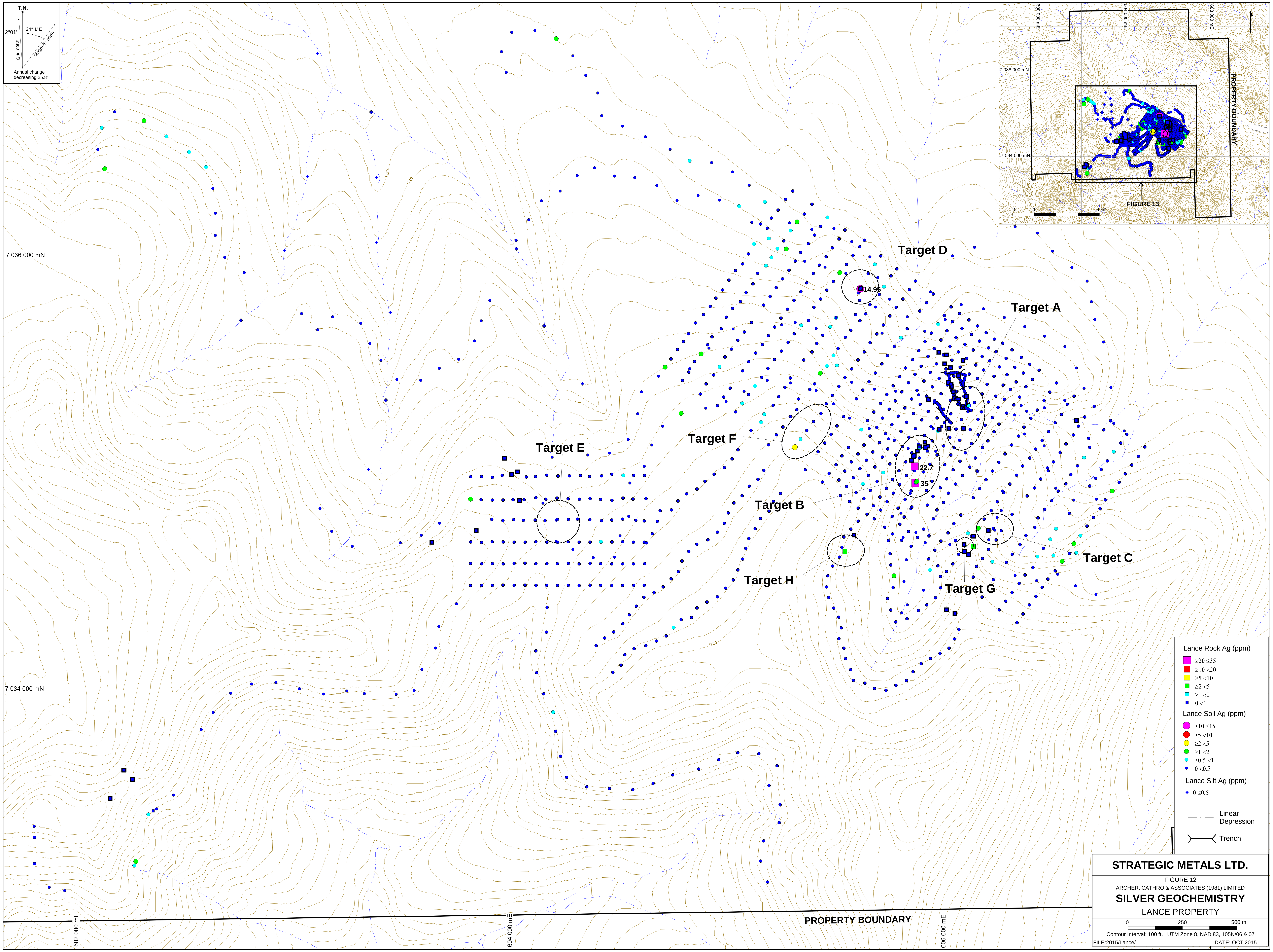
LANCE PROPERTY

0 250 500 m

Contour Interval: 100 ft. UTM Zone 8, NAD 83, 105N/06 & 07

FILE:2015/Lance/

DATE: OCT 2015



**STRATEGIC METALS LTD.**

FIGURE 12

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

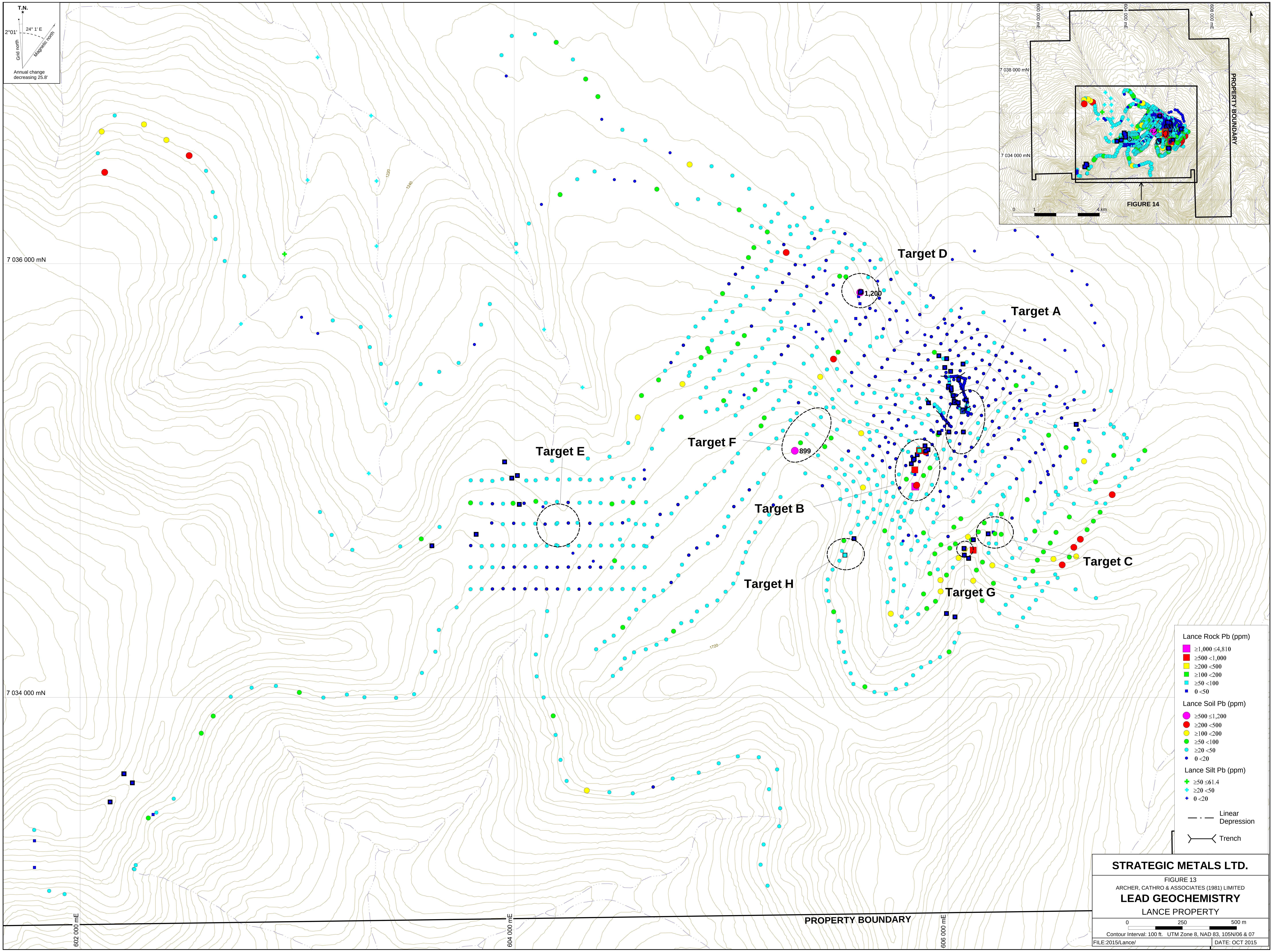
**SILVER GEOCHEMISTRY**

LANCE PROPERTY

Contour Interval: 100 ft. UTM Zone 8, NAD 83, 105N/06 & 07

FILE:2015/Lance/

DATE: OCT 2015



**STRATEGIC METALS LTD.**

FIGURE 13

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

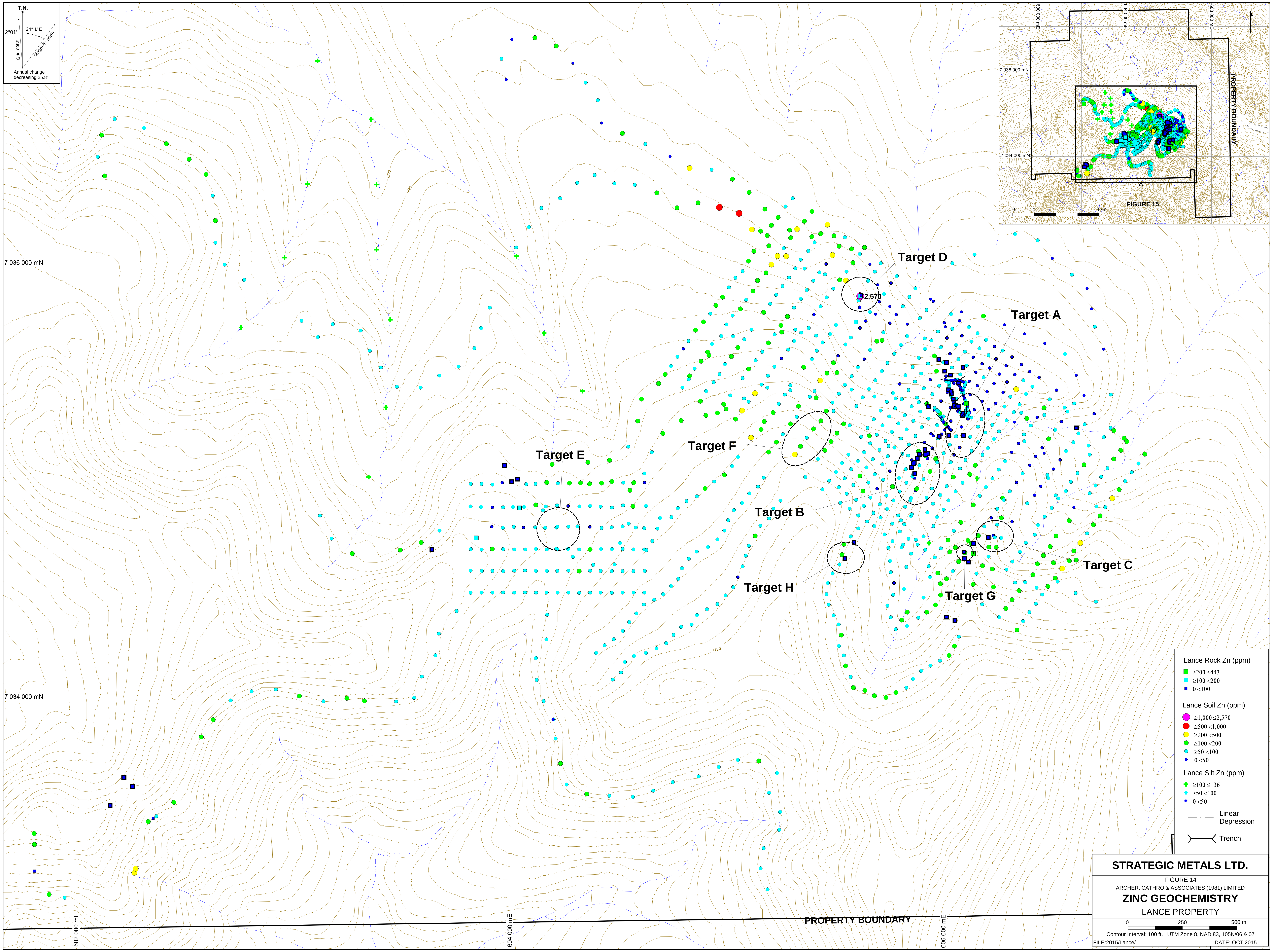
**LEAD GEOCHEMISTRY**

LANCE PROPERTY

Contour Interval: 100 ft. UTM Zone 8, NAD 83, 105N/06 & 07

FILE:2015/Lance/

DATE: OCT 2015



**STRATEGIC METALS LTD.**

FIGURE 14

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

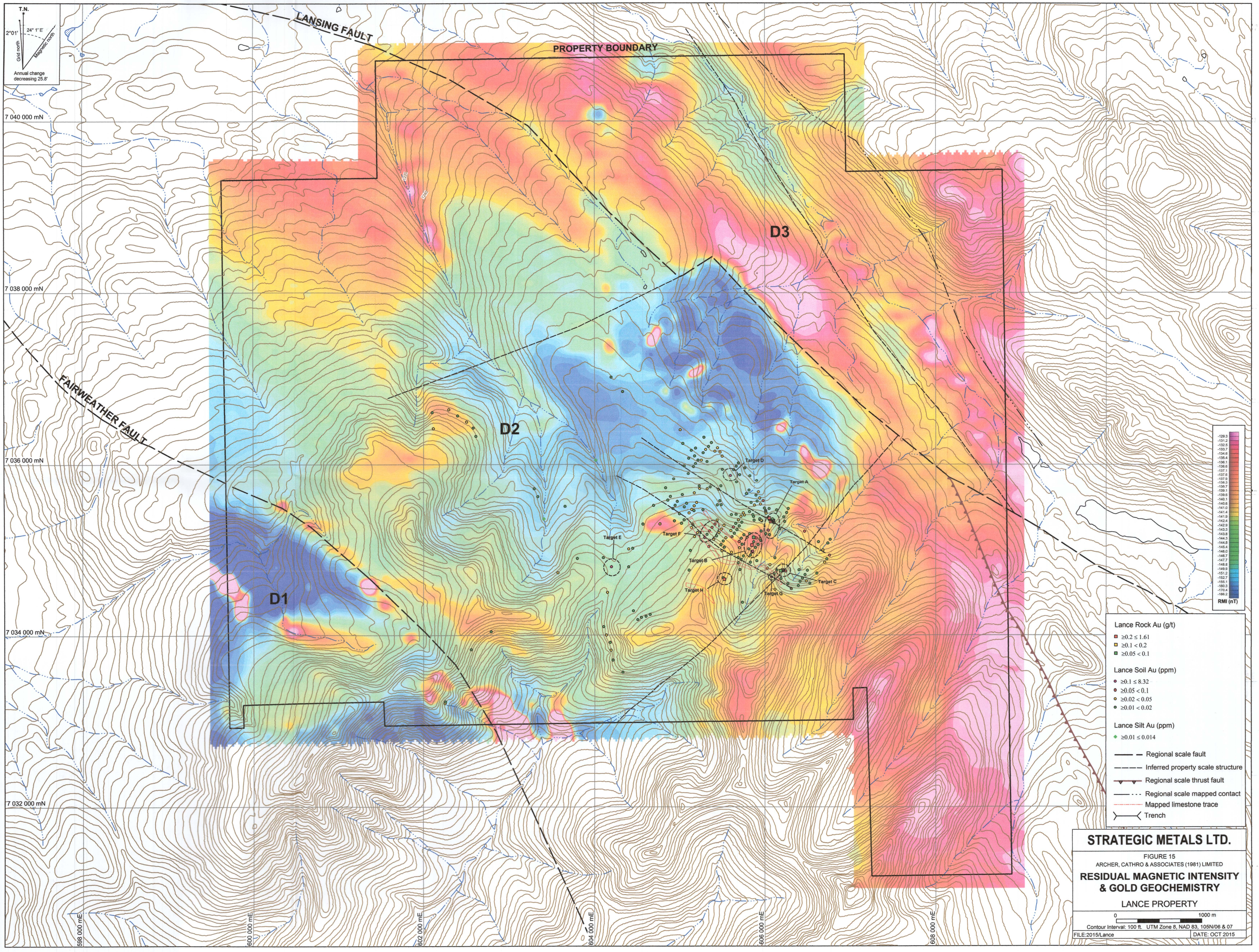
## ZINC GEOCHEMISTRY

LANCE PROPERTY

0 250 500 m

Contour Interval: 100 ft. UTM Zone 8, NAD 83, 105N/06 & 07

FILE:2015/Lance/ DATE: OCT 2015



**STRATEGIC METALS LTD.**

FIGURE 15

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

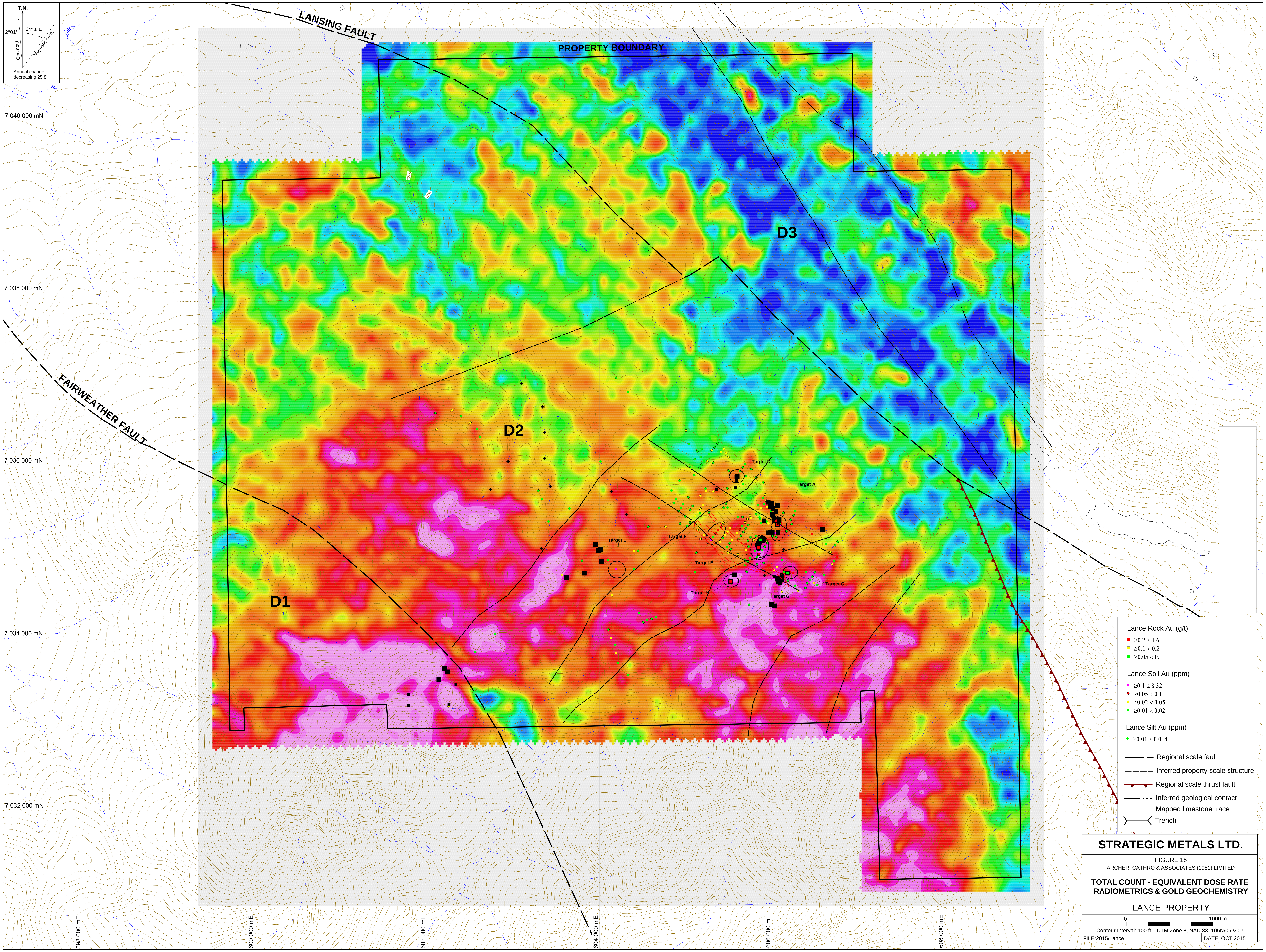
**RESIDUAL MAGNETIC INTENSITY & GOLD GEOCHEMISTRY**

LANCE PROPERTY

Contour Interval: 100 ft. UTM Zone 8, NAD 83, 105N/06 & 07

FILE:2015/Lance

DATE: OCT 2015



# STRATEGIC METALS LTD.

FIGURE 16
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

## TOTAL COUNT - EQUIVALENT DOSE RATE RADIOMETRICS & GOLD GEOCHEMISTRY

LANCE PROPERTY

0 1000 m

Contour Interval: 100 ft. UTM Zone 8, NAD 83, 105N/06 & 07

FILE:2015/Lance
DATE: OCT 2015