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ASSESSMENT REPORT

describing

AIRBORNE GEOPHYSICS

at the

ODIE PROPERTY

Odie 1-1470	YC50878-YC52347
1471-1560	YC54782-YC54871

Latitude 65°25'N; Longitude 134°54'W
NTS 106E/06, 07, 10, 11

in the

Mayo Mining District
Yukon Territory

prepared by

Archer, Cathro & Associates (1981) Limited

for

CASH MINERALS LTD.
and

TWENTY-SEVEN CAPITAL CORP.

by

Matthew R. Dumala, B.A.Sc., EIT
January 2007

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INTRODUCTION

Twenty-Seven Capital Corp. staked the Odie property in August 2006 to cover a large area of high magnetic susceptibility outlined by government airborne surveys. Additional claims were staked in late October. Odie and 18 other properties in the Wernecke Mountains owned by Twenty-Seven are under option to Cash Minerals Ltd. as part of the Yukon Uranium Project.

Exploration work on the Odie property consisted of airborne magnetic and gravity surveys that were conducted by Bell Geospace Inc. in September 2006. The author supervised the work and his Statement of Qualifications appears in Appendix I.

PROPERTY LOCATION, CLAIM DATA AND ACCESS

The property is located in east-central Yukon Territory at latitude 65°25'N and longitude 134°54'W on NTS map sheets 106E/06, 07, 10 and 11 (Figure 1). It comprises a total of 1560 mineral claims covering approximately 31,200 hectares. The claims were staked under the Yukon Quartz Mining Act and are registered with the Mayo Mining Recorder in the name of Archer, Cathro & Associates (1981) Limited which holds them in trust for Twenty-Seven. Claim registration data are summarized below while the locations of individual claims are shown on Figure 2.

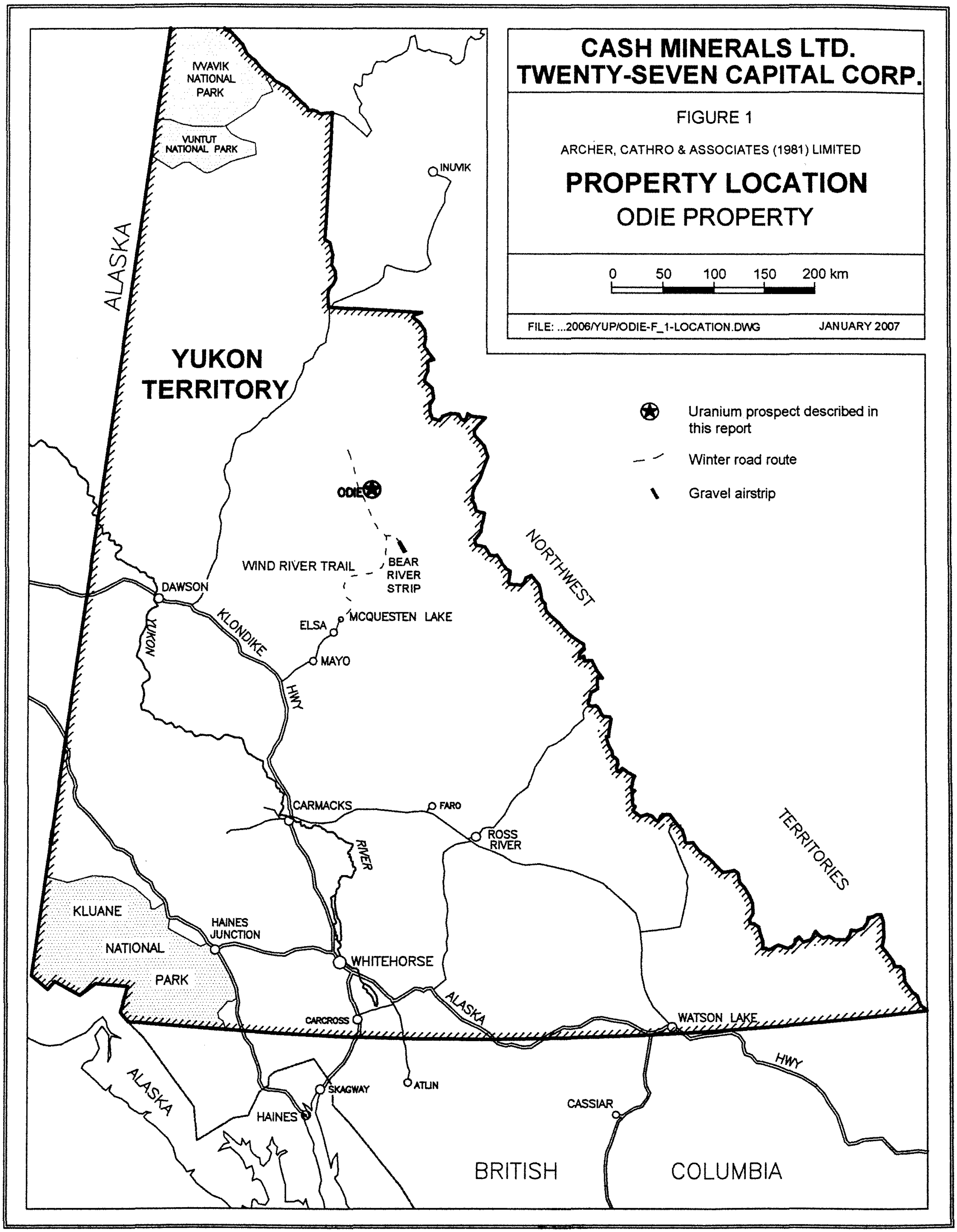
Claim Name	Grant Number	Expiry Date*
Odie 1-1470	YC50878-YC52347	August 31, 2007
1471-1560	YC54782-YC54871	November 24, 2007

*expiry dates do not include 2006 work which has not yet been filed for assessment credit.

The Odie property is located 195 km northeast of the village of Mayo which is accessible via the Yukon highway system using the Klondike Highway and Silver Trail. Mayo is situated 407 km by road north of Whitehorse. The closest road access to the property is at McQuesten Lake which lies 87 km by road northeast of Mayo and 135 km south of Odie. From McQuesten Lake the Wind River Trail, an abandoned winter road, extends northward to the Peel Basin passing within 10 km of the property. There are numerous lakes suitable for float equipped aircraft on the property.

HISTORY

The first report of mineralization in the Wernecke Mountains was the discovery of hematite rich float in river gravels by prospectors enroute to the Klondike Goldfields in 1898. A few copper and gold prospects were identified and staked prior to the 1960s, but no serious exploration was undertaken. Following discovery of the Crest Iron Deposit by California Standard Company Ltd. in 1961, several hematite bodies were staked and briefly explored. This wave of exploration coupled with improved access spurred by construction of the Wind River Trail led to new copper discoveries in the mid 1960s, some of which were drilled or bulldozer trenched (Deklerk and Traynor, 2004).


CASH MINERALS LTD.
TWENTY-SEVEN CAPITAL CORP.
FIGURE 1
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED
PROPERTY LOCATION
ODIE PROPERTY
0 50 100 150 200 km
FILE: ...2006/YUP/ODIE-F_1-LOCATION.DWG
JANUARY 2007
Uranium prospect described in this report
Winter road route
Gravel airstrip
IVVAVIK NATIONAL PARK
VUNTUT NATIONAL PARK
INUVIK
ALASKA
YUKON TERRITORY
ODIE
WIND RIVER TRAIL
BEAR RIVER STRIP
NORTHWEST
TERRITORIES
DAWSON
KLONDIKE
HWY
YUKON
ELSA
MCQUESTEN LAKE
MAYO
CARMACKS
FARO
ROSS RIVER
RIVER
KLUANE NATIONAL PARK
HAINES JUNCTION
WHITEHORSE
ALASKA
CARCROSS
WATSON LAKE
HWY
ALASKA
SKAGWAY
ATLIN
HAINES
CASSIAR
BRITISH COLUMBIA

Uranium was first discovered in the Wernecke Mountains in 1974 at the Igor property by Ogilvie Joint Venture (Chevron Canada Ltd., Marietta Resources International Ltd. and Aquitaine Company of Canada Ltd.). The following summer Wernecke Joint Venture (Chevron and Aquitaine) conducted helicopter borne radiometric reconnaissance throughout the district and staked a number of other properties based on ground radiometric follow up. Most of these occurrences are associated with large iron oxide rich breccia bodies that are informally known as the Wernecke Breccias. Eldorado Nuclear optioned Wernecke Joint Venture's properties and regional exploration rights in 1976. It conducted property and regional exploration in 1976 and 1977 along with a number of other companies, notably Noranda Minerals Ltd. and Pan Ocean Oil Ltd. Wernecke Joint Venture resumed exploration in 1978 after Eldorado Nuclear began to drop its optioned properties. Systematic uranium exploration by various parties continued in the Wernecke Mountains until 1982, when uranium prices fell (Eaton and Wober, 2005).

Another wave of regional and property exploration occurred in the mid 1990s when Westmin Resources Ltd. and Newmont Mining Corp. explored some of the Wernecke Breccias for copper and gold using the IOCG model.

Coal was discovered in the Bonnet Plume Basin in 1977 by Pan Ocean Oil Ltd. Twenty seven diamond drill holes totalling 4877 m tested the coal measures south of the Odie property between 1978 and 1979. Measured, indicated and inferred in-situ reserves are reported to be in excess of 380 million tonnes of high volatile "C" bituminous coal, while potential coal reserves throughout the Bonnet Plume Basin are believed to be approximately 1.5 billion tonnes (Cullingham, 1980).

PHYSIOGRAPHY AND GEOMORPHOLOGY

The Odie property is located on the Bonnet Plume Plateau and is drained by the Bonnet Plume River and tributaries of the Wind River. Both flow into the Peel River and ultimately the Arctic Ocean via the Mackenzie River.

The property is located on a broad plain. Much of the area is low lying and marshy. Vegetation includes mosses, grasses, buckbrush and stunted black spruce. Elevations range from about 390 m in the north to 790 m atop small hills in the south. There is no commercial timber on the property.

The climate in the Wernecke Mountains is typical of northern continental regions with long, cold winters, truncated fall and spring seasons and short, cool summers. Average temperatures in January are about –25°C and in July about 10°C. Total annual precipitation is approximately 30 cm, mostly occurring as rain during the summer months. Maximum snow pack averages about 40 cm. Although summers are relatively mild, arctic cold fronts occasionally cover the area and snowfall can happen in any month. Sunlight ranges from 22 hours per day in late June to approximately six hours per day in late December. The property is relatively snow-free from late May until late October.

REGIONAL GEOLOGY

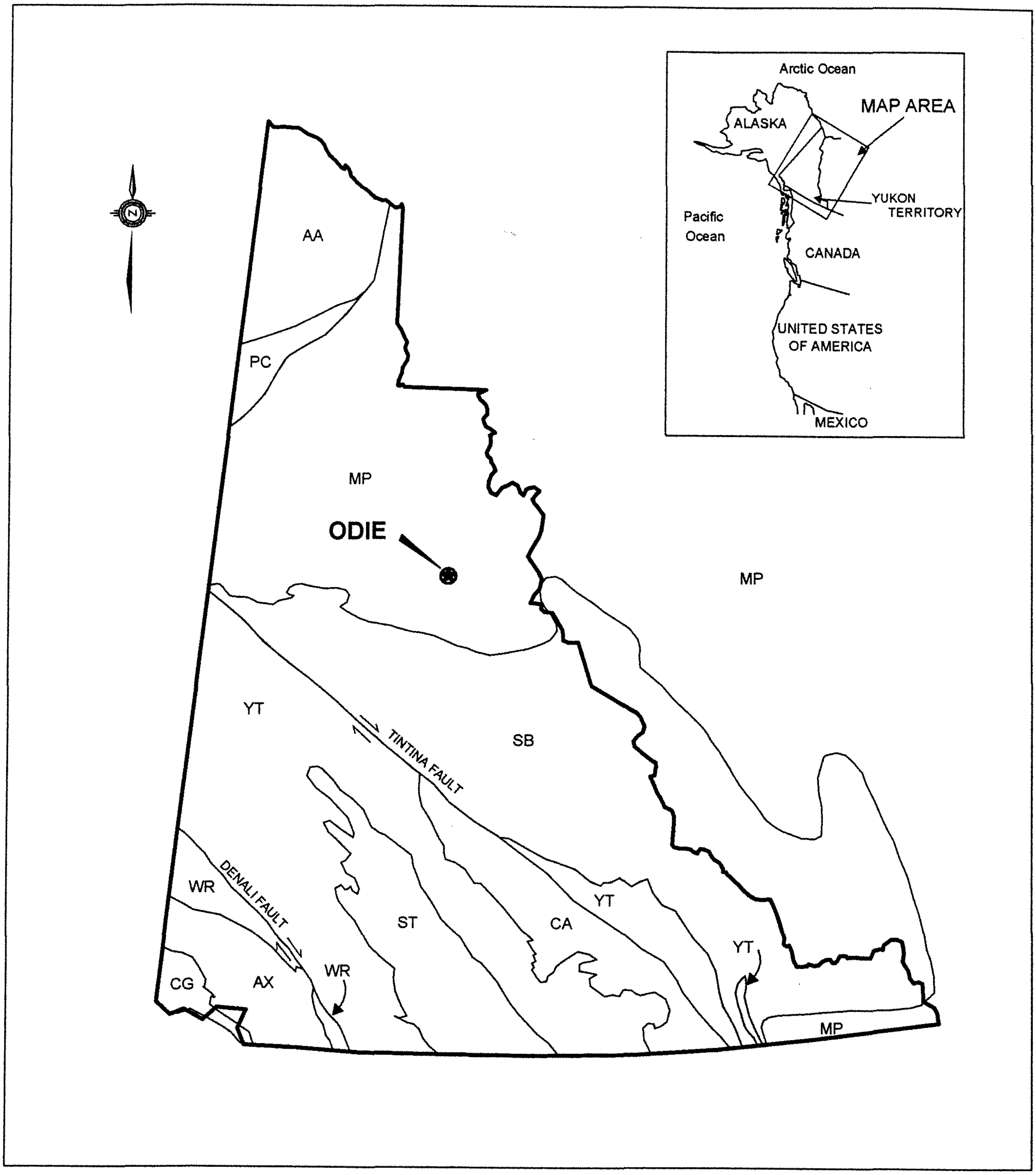
The Odie property lies within the Mackenzie Platform tectonic element (Figure 3) and is underlain by a sequence of Proterozoic, Paleozoic and Cretaceous rocks. The Proterozoic rocks are predominantly fine grained clastic sedimentary rocks with lesser carbonate rich units, rare volcanic flows, scattered intrusive dykes of varying ages and widespread, discordant breccia bodies (Wernecke Breccias). The stratified rocks belong to the Wernecke Supergroup which is subdivided into the basal Fairchild Lake Group, the overlying Quartet Group and the uppermost Gillespie Lake Group. Recent mapping and age determinations suggest that the Wernecke Supergroup strata are about 1850 to 1750 million years old and that the Wernecke Breccias were formed about 1600 Ma (Thorkelson, et al., 2001a). These ages closely resemble those of similar units in Australia, which has led to speculation that Laurentia (proto North America) and Australia were once joined and that the breccia bodies were formed during initial rifting (Bell and Jefferson, 1987 and Thorkelson, et al., 2001a). This rifting is marked by the Richardson Fault Array. This cluster of north trending curvilinear near vertical faults has reactivated at various times and is thought to have played an important role in formation of the Wernecke Breccias.

Episodic reactivation of the Richardson Fault Array in Early and Middle Paleozoic formed a north to northwest trending intracratonic depression known as the Richardson Trough. To the east, the Richardson Trough is bounded by the Trevor Fault and to the west by the Deception Fault. It coincides with the Richardson Anticlinorium, a broad north plunging anticlinal structure. Deep water shales and argillaceous limestone of the Middle Devonian Road River Group were deposited along the margins of the anticlinorium. Towards the core, Middle Cambrian Slats Creek sandstones and conglomerates and Lower Cambrian limestones and dolostones of the Illtyd Formation unconformably overlie Proterozoic Wernecke Supergroup.

Renewed activation of the Richardson Fault Array in Late Cretaceous formed the Bonnet Plume Basin (Figure 4). The Bonnet Plume Basin lies asymmetrically on the west flank of the Richardson Anticlinorium and is bounded to the east by the Knorr Fault and to the west by the Deslauriers Fault. Between 900 and 1500 m of non-marine sediments, known as the Bonnet Plume Formation, were deposited within the basin. This formation is divided into two members. The lower member, of Early Cretaceous age, is predominantly chert-pebble conglomerate with minor sandstone, shale and coal seams. This is unconformably overlain by the Late Cretaceous to Eocene finer grained upper member consisting of interbedded conglomerate, sandstone, shale and coal seams. In the area of the Odie property (Figure 5), local uplifting resulted in the deposition of the Bonnet Plume Formation directly onto Proterozoic rocks (Norris and Hopkins, 1977).

REGIONAL MINERALIZATION

The Wernecke Breccias are notably enriched in iron, copper, uranium, gold, cobalt, barium and molybdenum and slightly enriched in rare earth elements. Iron oxide mineralization is ubiquitous in the Wernecke Breccias. Magnetite is most abundant in prograding alteration sequences. It normally occurs as disseminated euhedral grains but locally forms semi massive



ANCESTRAL NORTH AMERICA

MP	Mackenzie Platform
SB	Selwyn Basin

TERRANES
Displaced Continental Margin

AA	Arctic Alaska
CA	Cassiar
PC	Porcupine

Pericratonic Terranes

YT	Yukon-Tanana / Slide Mountain

ACCRETED TERRANES

ST	Stikinia / Cache Creek
AX	Alexander
WR	Wrangellia
CG	Chugach

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FIGURE 3

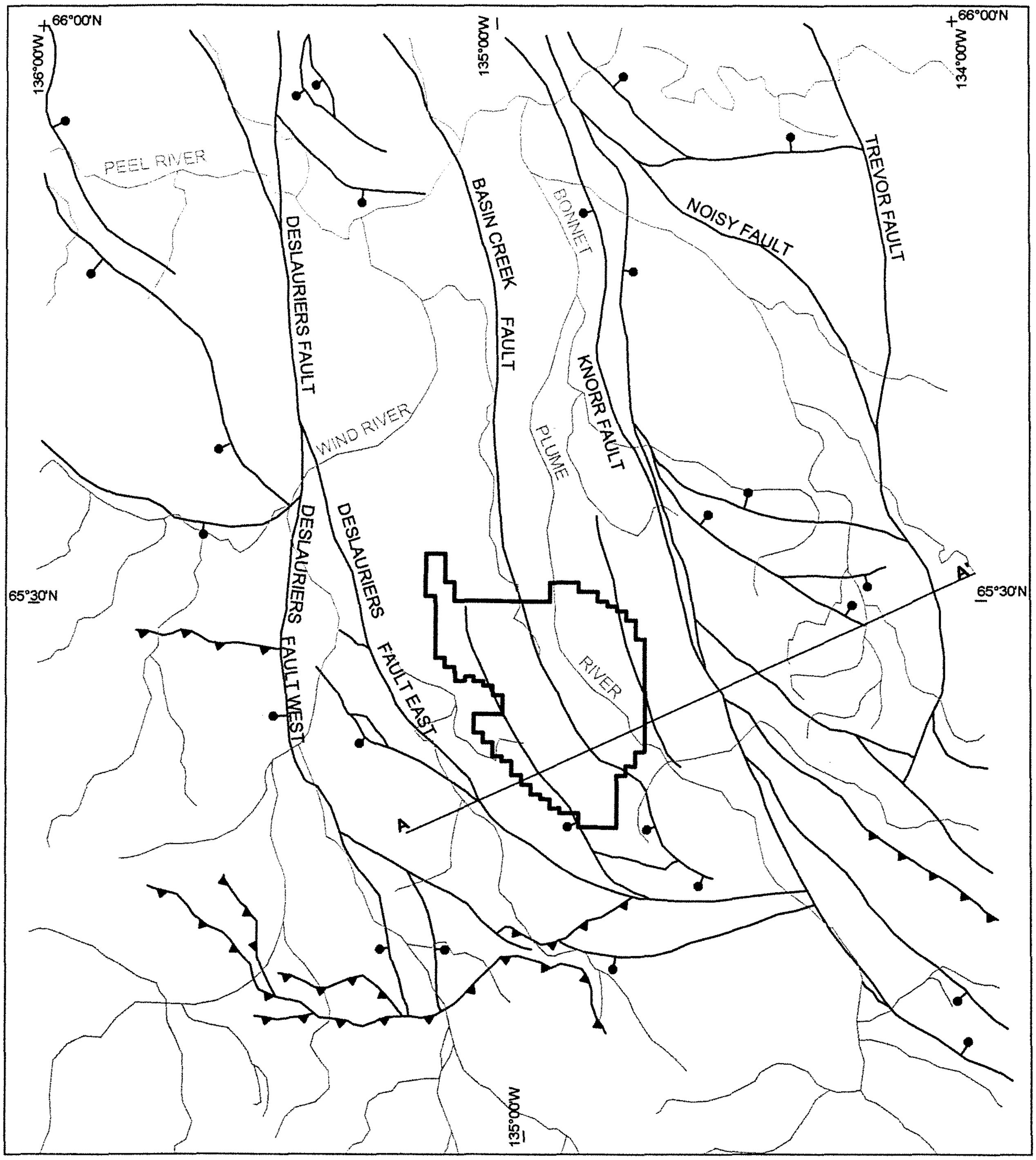
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

TECTONIC SETTING

ODIE PROPERTY

0 100 200 km

FILE: ...2006/YUP/ODIE/F_3-TECTONIC.DWG | DATE: JANUARY 2007



Fault

Property boundary

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FIGURE 4

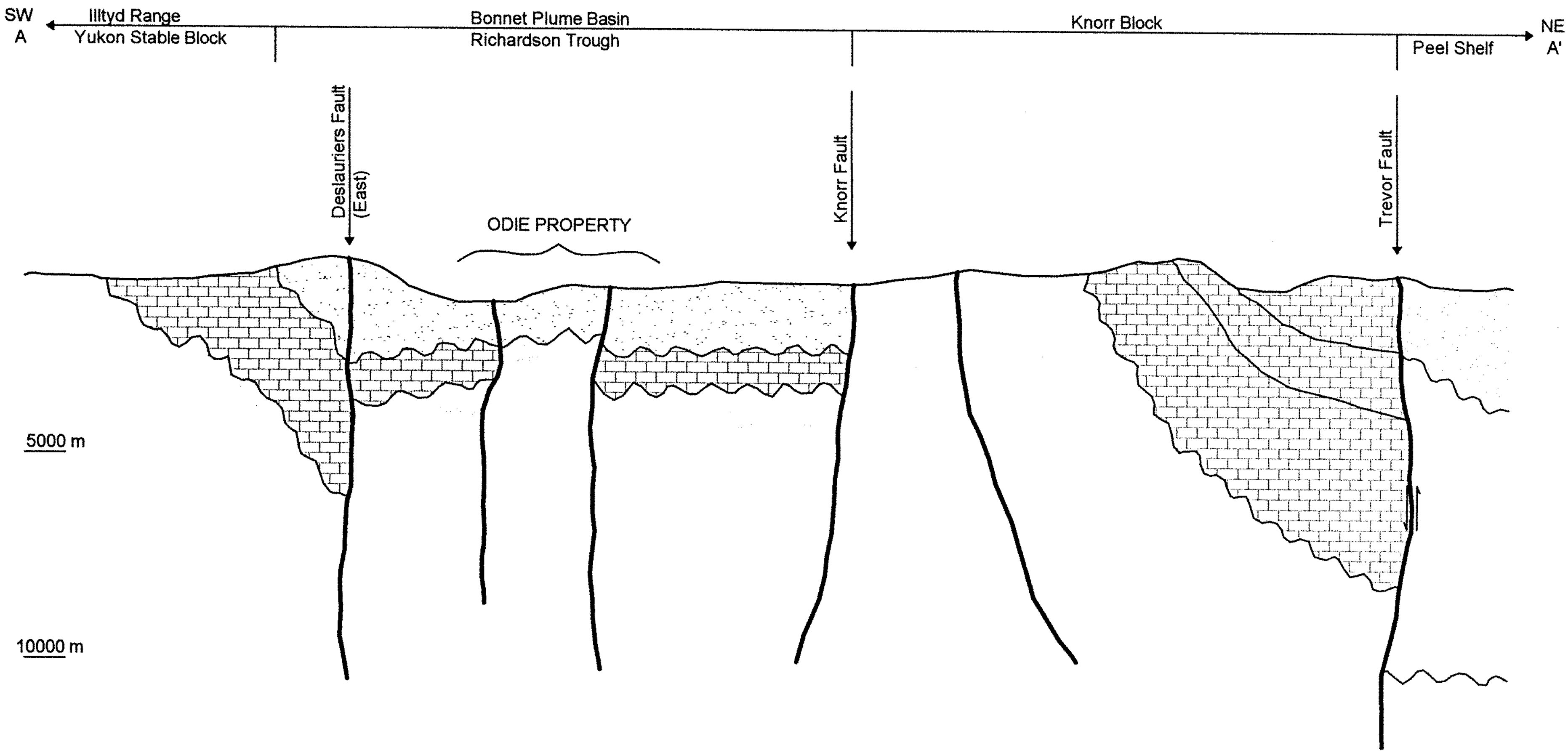
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

REGIONAL GEOLOGY
ODIE PROPERTY

0 10 20 30 km

FILE: ...2006/YUP/ODIE/F_4-REG.DWG

DATE: JANUARY 2007



Cretaceous

Paleozoic

Proterozoic

After Hannigan, 2000

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FIGURE 5

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

SCHEMATIC SECTION

ODIE PROPERTY

FILE: ...2006/YUP/ODIE/F_5-SECTION.DWG	DATE: JANUARY 2007

bands up to 5 m thick. Hematite is found in all breccia phases but is best developed in retrograde alteration assemblages where it appears as specular hematite and as martite replacing magnetite.

Pyrite can occur with the iron oxide minerals but becomes more abundant deeper in the system, particularly within breccia bodies cutting Fairchild Lake Group strata. Iron bearing carbonate minerals such as ferroan dolomite and siderite are also common.

Copper is present in most Wernecke Breccias. Disseminated chalcopyrite is found in breccias cutting Fairchild Lake Group rocks, where it is associated with intense albite alteration, and in those cutting Quartet Group rocks, where it is found in strongly carbonate altered zones. Semi massive chalcopyrite occurs with breccia matrix minerals in late stage channelways within some breccia bodies. Quartz-carbonate veins are reported within the Fairchild Lake Group, Quartet Group and Gillespie Lake Group. These veins often contain chalcopyrite and pyrite. Other copper minerals (chalcocite, bornite and copper carbonate minerals) have been reported in weathered rocks but no significant supergene enrichment has been identified.

Uranium occurs in three main forms in the Wernecke Mountains. Brannerite appears as scattered blebs within most Wernecke Breccias and in quartz veins and fractures peripheral to them. Although pockets of coarse crystals up to 40 cm across have been discovered, no economically significant brannerite occurrence has been identified. Pitchblende is the main uranium mineral in the other two types of showings: (1) uraniferous carbonate-chalcopyrite-barite-magnetite assemblages within late stage channelways in Wernecke Breccias (Hitzman, 1990 and Eaton and Archer, 1982) and (2) much younger structurally controlled uraniferous veins immediately below major unconformities (Eaton and Archer, 1982).

AIRBORNE GEOPHYSICS

Airborne gravity and magnetic surveys were carried out over the Odie property in September 2006 by Bell Geospace, Inc. of Houston, Texas. The survey was completed using a Cessna Caravan based at Eagle Plains Lodge. A line spacing of 400 m and a flight altitude of 140 m was used for the survey. Gravity measurements were taken using the Air-FTG® system developed by Lockheed Martin. Excerpts from the final report outlining the methods used in the survey can be found in Appendix II. Figure 6 shows the total magnetic field reduced to poles, while Figure 7 shows the first vertical derivative. Terrain corrected gravity results are shown on Figure 8.

Airborne magnetics outlined a large high centred on the Odie property. Numerous smaller anomalies radiate from this main anomaly. The largest of these anomalies is a horseshoe shaped high located along the western edge of the property.

Airborne gravity outlined a 4 to 8 km wide, northwest trending corridor with an above average gravity signature. Many pronounced gravity highs were identified within this corridor, including a curved 9 by 1.5 km anomaly. The strongest part of this anomaly is located at the apex of the curve in the vicinity of the magnetic anomaly described above.

DISCUSSION AND CONCLUSIONS

Airborne geophysical surveys outlined a northwest trending corridor cutting across the Odie property. This corridor likely represents an uplifted, fault bound block where the denser Proterozoic rocks are closer to surface. Within this corridor there are a number of much stronger gravity anomalies, many coincident with strong magnetic anomalies. These anomalies are interpreted to represent much denser buried targets such as Wernecke Breccias. Future work should be comprised of an extensive diamond drill program in conjunction with ground geophysics to test the airborne anomalies.

Respectfully submitted,

Archer, Cathro & Associates (1981) Limited

Matthew R. Dumala, B.A.Sc., EIT

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APPENDIX I

STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

I, Matthew R. Dumala, geological engineer, with business address in Vancouver, British Columbia and Whitehorse, Yukon Territory and residential address in Vancouver, British Columbia, do hereby certify that:

1. I graduated from the University of British Columbia in 2002 with a B.A.Sc in Geological Engineering, Option l, mineral and fuel exploration.

2. I am registered as an Engineer in Training in the Province of British Columbia.

3. From 2003 to present, I have been actively engaged in mineral exploration in the Yukon Territory.

4. I have personally supervised the fieldwork reported herein.

Matthew R. Dumala, B.A.Sc., EIT

APPENDIX II

BELL GEOSPACE, INC. GEOPHYSICAL REPORT

ARCHER, CATHRO & ASSOCIATES [1985] LIMITED

Final Report
Acquisition & Processing

Air-FTG® Survey

Wernecke Mountains Project
Yukon Territory, Canada

September 2006

By

BELL GEOSPACE

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INTRODUCTION

For the past six years Bell Geospace has been acquiring airborne full tensor gravity gradiometry (Air-FTG®) data in Africa, New Zealand, Australia, North America, South America, and Europe. This report summarizes the results of Air-FTG® data acquired over prospects belonging to Archer Cathro & Associates [1985] Limited, in the Wernecke Mountains area of Yukon Territory, Canada. A total of six prospects namely, Odie, Wernecke (Boris), LWR, Bond-Vic-Erb, Steel off and an extension of the Odie prospect were initially planned for Air-FTG® survey. To date one prospect (Odie) has been completed and the survey is still in progress for the remaining prospects. However, there have been some delays due to increasingly bad weather conditions in the region.

The main body of this report provides general information on Air-FTG® and the ongoing surveys that are being conducted by Bell Geospace, Inc, for Archer, Cathro & Associates [1985] Limited. Appendices 1, 2, 3, and 4 give a general overview of the processing procedures and products for Air-FTG® data. Thereafter, the report contains addendums with details information for the individual surveys.

THE SURVEY AREA

The insert in figure1 show the general location of the survey areas. The survey area comprises of six prospects shown in figure 1. The survey area lies between latitudes 64° 33′ N and 65° 30′ N and longitudes -136° 00′ W and -134° 00′ W.

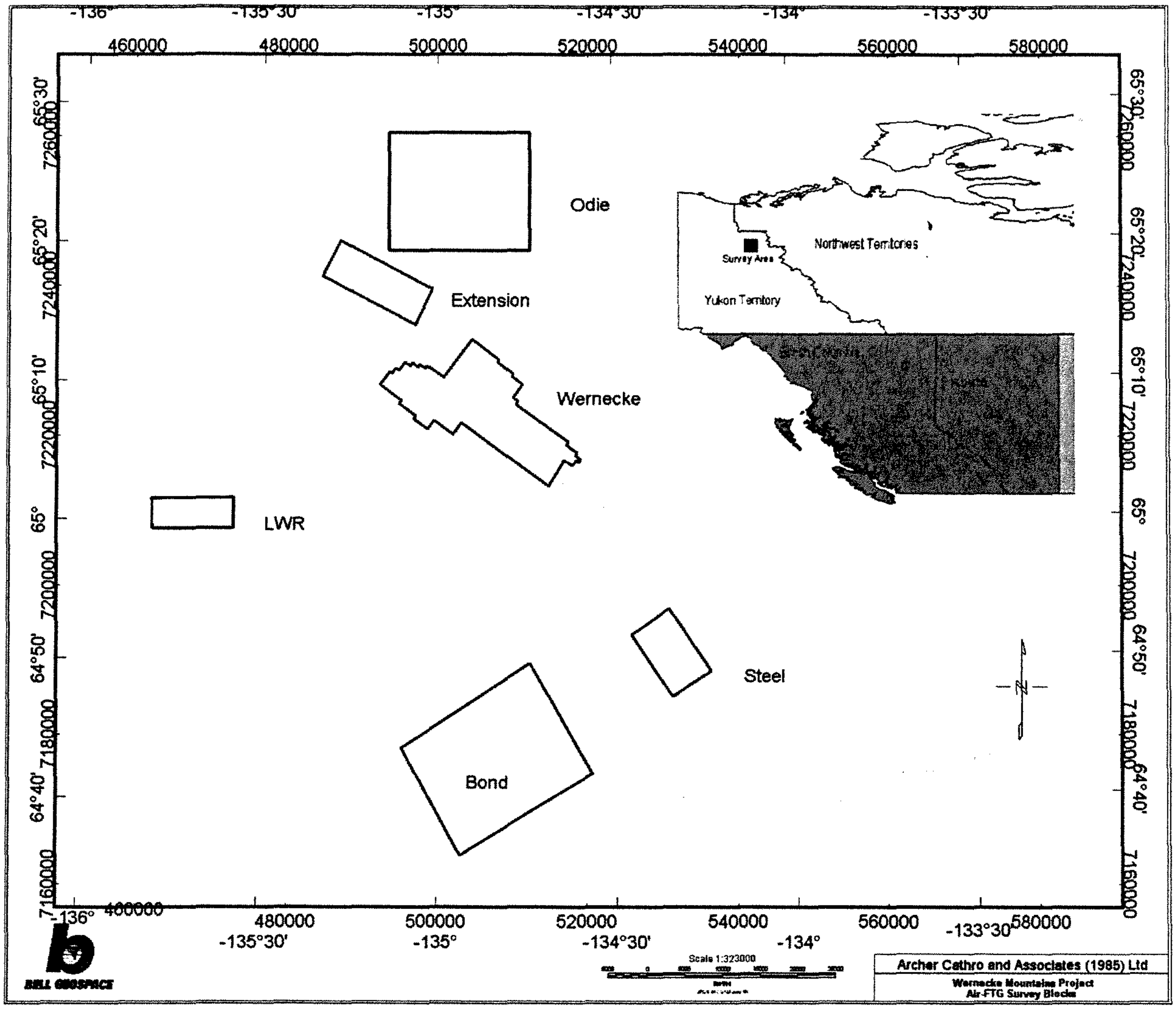

Figure 1. The location map of the survey blocks with the insert showing the map of Yukon Territory with approximate position of the survey area.

EQUIPMENT DESCRIPTIONS

THE FULL TENSOR GRADIOMETER (FTG)

The Full Tensor Gradiometry (FTG) system is a high precision, high-resolution, multiple accelerometer, rotating platform that measures the gradient of the gravity field. The FTG system contains three Gravity Gradient Instruments (GGIs) each consisting of two opposing pairs of accelerometers arranged on a disc.

The FTG system used by Bell Geospace (see Figure 2) is one of the few operational FTGs available for a moving vehicle. The gradiometer is installed in the aircraft along with all the required support equipment including the control electronics, computers, monitors, printers, air conditioning and other peripheral devices needed to support FTG data acquisition. The FTG is contained in an airtight case while in operation. The case is approximately 1 cubic meter and weighs 227 kg with the GGIs installed. The electronics cabinet is approximately the same size and weighs 160 kg. The case provides a temperature, pressure, and humidity controlled environment for the FTG during data acquisition.

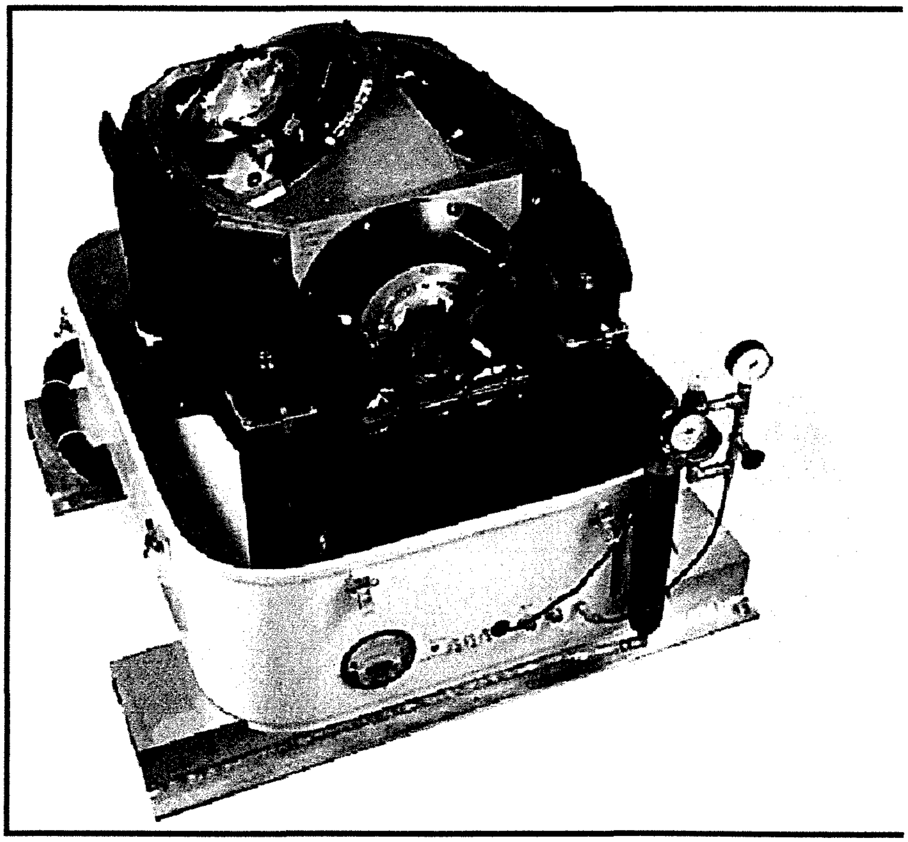

Figure 2. Bell Geospace's FTG-01 marine instrument prior to airborne conversion; support equipment not shown.

MAGNETOMETER

One Geometrics cesium vapour high sensitivity magnetometer was used. The magnetometer was mounted within the "tail stinger". The following table describes the technical characteristics of the airborne magnetometers:

Manufacturer	Geometrics
Type and Model	Cesium vapour G-822A
Ambiant Range (nT)	20 000 - 100 000
Sensitivity (nT)	± 0.0005
Absolute Accuracy	< 3 nT
Noise Enveloppe (nT)	0.01
Sampling Rate (Hz)	0.1
Sampling Interval	9 m at typical survey speed
Heading Error	± 0.15nT

An RMS AARC500 Adaptive Aeromagnetic Real-Time Compensator was used to correct the magnetic response from the aircraft for changes in flight attitude (i.e. Pitch, Roll and Yaw). The system includes Tri-Axial fluxgate magnetometer installed in the stinger to monitor the aircraft's orientation within the earth's magnetic field and the compensator digitally corrects the input magnetic signal from the airborne magnetometer. The technical specifications of the compensator are given in the following table:

Manufacturer	RMS
Resolution	0.032 pT
Absolute Accuracy	± 10 nT
Noise Level	0.1 pT
Range	20,000 – 100,000 nT
Sampling	160Hz
Standard F.O.M.	<1.5 nT

Base station magnetometers

The base station magnetometer was not installed for entire survey. Being a small survey with short lines, any diurnal variation is essentially linear and can be removed in statistical levelling. Therefore for such a small survey the absence of a base station magnetometer has little or no effect on the final magnetic data.

The synchronisation with the GPS time was made possible by the base station's capability to automatically record GPS time. The following table presents the technical specifications of the commonly used base station magnetometer:

Manufacturer	Geometrics
Type	Proton precession
Model	G-856AX
Dynamic Range (nT)	20 000 – 90 000
Accuracy (nT)	± 0.5
Precision (nT)	0.1
Resolution (nT)	0.1
Sampling Rate per second	1.5

GRADIENT DATA ACQUISTION

Gradiometry data is initially acquired in an internal coordinate system that is referenced to the axes of the three GGIs that are the primary measurement components of the FTG. This data is later transformed into a left handed coordinate system with x and y in the plane of the earth's surface and z perpendicular to that plane but pointed down into the earth.

Prior to acquisition, a self-calibration procedure is performed with the aircraft on the ground. This creates a table of calibration factors that will be used during data processing to remove the gradient effects of the variations in pitch, roll, and yaw experienced by the aircraft in flight. Data is acquired continuously throughout the flight, usually at ground speeds of around 215 km/h. The system generates approximately 400 megabytes of data per hour including the navigation data and data on the plane's accelerations. The data is stored on a computer hard drive and backed up to AIT tape cartridges. Two sets of backup tapes are made which are sent to Bell Geospace's processing office in separate shipments. One set is used for final processing and engineering analysis while the other is stored offsite as backup.

OPERATIONS

The gradiometry data is collected with Bell Geospace's FTG installed on a Cessna Grand Caravan C-GSKT (Figure 3). The FTG is installed in the main cabin as near as possible to the center of pitch, roll and yaw of the plane. Both GPS and DGPS systems are used for positioning with latitude and longitude coordinates acquired on the WGS-84 ellipsoid. During processing the data is locally projected in x and y in the appropriate Universal Transverse Mercator (UTM) zone.

A radar altimeter system is deployed to measure the distance between the airplane and the ground. Along with the plane's altitude acquired via GPS, radar altimetry data can be used to produce a digital elevation model (DEM) which may be useful in terrain correction applications.

Figure 3. Cessna Grand Caravan C-GSKT.

GLOBAL POSITIONING SYSTEM (GPS) AND ONBOARD NAVIGATION SYSTEM

The Global Positioning System consists of a constellation of 24 active satellites orbiting the earth. Each satellite has a period of approximately 12 hours and an altitude of approximately 20,000 km. Each satellite contains a very accurate cesium clock that is synchronized to a common clock by the ground control stations operated by the U.S. Air Force.

Each satellite transmits individually coded radio signals that are received by the user's GPS receiver. Along with timing information, each satellite transmits ephemeredes (astronomical almanac or table) information that enables the receiver to compute the satellite's precise spatial position. The receiver decodes the timing signals from the satellites in view (4 satellites or more for a 3-dimensional fix) and, knowing their respective locations from the ephemeredes information, the GPS system computes a latitude, longitude, and altitude for the user.

A Novatel Propak OEM4 airborne differential GPS Systems (dual-frequency) was used on the aircraft. It provides an accuracy of ±5 meters and positions were real-time differentially corrected with the Omni-Star system. The GPS systems were used in conjunction with a PNAV-2001 Navigation System. The main features of this system are:

- Real-time graphical and numerical display of flight path with survey-area and grid-line overlay
- Distance-from-line and distance-to-go indicators
- Operation in survey-grid or waypoint navigation mode
- Recording of raw range-data for all satellites from both the aircraft-borne and base-station GPS receivers, for post-flight refinement of GPS position

FTG ONBOARD QUALITY CONTROL

Accelerations measured by the instrument during data acquisition are closely monitored along with many other indicators of instrument performance. On the main FTG screen, the operators visually inspect the inline sums and cross gradients, position and temperature of the gyros, GGI case and block temperatures and the north, east, and vertical accelerations. Any variances beyond the norm are closely watched and if an error is detected the acquisition is interrupted and appropriate action is taken. Duplicate sets of spares are available in case of suspected hardware failure. Many other factors are also monitored that will help alert the operator to any unusual performance of the FTG. These include strip charts, coefficient tables and onsite offline analysis of the data. In addition to the onboard QC checks, final survey data is sent to a Bell Geospace processing office electronically for preliminary processing. Any substandard data will be identified by cross tie analysis and other methods. As soon as the source of the data degradation is identified and corrected, the suspect line(s) are re-acquired and again transmitted into the office for approval before the aircraft leaves the survey area.

FTG DATA PROCESSING

The acquired FTG survey undergoes a series of processing steps to obtain the final measured gravity gradient data used for interpretation. Specific processing methods may vary slightly depending upon survey layout, weather conditions, and other factors affecting the data. A generalized FTG data processing schematic is provided in Appendix 1.

HIGH RATE POST MISSION COMPENSATION

Raw data recorded by the instrument consists of two signals from each of three **G**ravity **G**radient **I**nstruments (GGI), these being referred to as the Cross and Inline signals. The three sets of signal data are run through proprietary software referred to as **H**igh-**R**ate **P**ost **M**ission **C**ompensation (HRPMC). This step operates on the most highly sampled data, using the gyro outputs at 1024 hertz and GGI outputs at 128 hertz. HRPMC compensates the data for most of the physical conditions during signal acquisition. This includes corrections for the gradients of the aircraft and the gradients of the instrument itself. Files monitoring GGI platform status are logged in real time and used to create tables of coefficients that are used later to help correct the data. A series of complex algorithms within the program use these files to generate coefficients for each 2 hour segment of acquisition. These coefficients are then used to calculate corrections for aircraft motion and position relative to the instrument during the entire survey. Another set of corrections is made to remove gradients due to the centripetal accelerations that result from the rotation of each of the three GGIs.

Upon completion of HRPMC, the data are subject to another step referred to as SAR, which strips out the necessary elements, averages the values and reformats it into a 24-column binary file. The averaging process in SAR allows the processor to choose the data sample rate for all subsequent processing and final data. The final sample rate is currently limited to 1 second or greater. The SAR files are comprised of daily blocks of data and are combined to create one file containing all the data for the entire survey. Since FTG data is recorded continuously, this file also contains data recorded during traverses, turns, and on lines that were later re-acquired for various reasons. The data recorded in these instances are removed from the data file before final processing.

It is during the SAR procedure that navigation and aircraft attitude data are merged with the gradient data. Gravity is also merged in at this point if applicable.

TERRAIN CORRECTION METHOD

The terrain corrections are computed with a 3-D prism based modelling package. The program uses grids and prisms to compute the gravity effect of each defined layer. The computation assumes a density of 1.0 gm/cc and calculates the gravity response of a model that represents the mass of the Earth between the terrain surface and the ellipsoid. The result of the computation is a terrain correction for each tensor component that can be subtracted from the measured data. This produces a set of tensor components that contain primarily the gravitational effects of the sub-surface geology only. This correction can be easily scaled to any density desired and applied using the following channels and formula:

Tzz_TC_267 = Tzz_FA – 2.67*TC_Tzz_100

where

Tzz_TC_267	is the terrain corrected Tzz component at a density of 2.67 gm/cc
Tzz_FA	is the Free Air Tzz component
TC_Tzz_100	is the terrain correction factor for Tzz at a density of 1.00 gm/cc

Similar equations hold for the other components.

FTG-SPECIFIC LINE CORRECTIONS

The next process is another proprietary method referred to as FTG-Specific Line Correction. This step calculates the tensor components from the measured inline and cross data sets and removes bulk low frequency errors through time based line levelling and correlated GGI output. This process assumes that there is no correlation between the error we want to remove and the signal that we want to keep.

The DGPS provides highly accurate aircraft position, heading, and speed measurements. The exact position of each GGI relative to the umbrella frame is provided from the servomotors that induce the rotations, and from the gyros on the stabilized platform. From this information the measured accelerations in the inline and cross signals from each GGI can be converted to directional gradients and provides the tensor elements Txx, Txy, Txz, Tyy, Tyz and Tzz. In this survey the carousel was not rotating so only the rotation of the GGI's must be compensated for. The carousel rotation rate is normally 360 degrees per hour, so due to the short lines in this survey a complete rotation would not occur while online and would not assist in noise compensation. Feed back from the gyros and GPS data allows the servomotors to keep each GGI in the same horizontal and vertical orientation relative to the ground throughout the survey.

The FTG data record is synchronized and time stamped with the GMT time at one second intervals. The differentially corrected GPS data is also GMT time stamped. Based on a match in GMT time, the umbrella frame coordinates in the FTG data are replaced with real world coordinates in the WGS-84 ellipsoid. Coordinates in other ellipsoids, datum's and various projection methods can be produced later in the processing as requested by the client.

The GGI drift poses a special problem because it is not linear, so traditional line levelling techniques are inadequate to correct for this error, and, since GGI drift is time dependent, levelling must occur in the time domain. Because of the nature of gradient data and the Laplace equation ($Txx + Tyy + Tzz = 0$), complicated levelling procedures must be used to keep all components levelled both to themselves and to each of the other components so that this relationship is honored during correction. This process is generally executed as follows:

First, the data on the turns and traverses outside the survey area are deleted. Secondly, time-varying heading and roll corrections are applied. Using the position and attitude of the aircraft relative to the carousel, line groups with the same heading and carousel angle are used to compute corrections that are linear over small sections of lines.

After this procedure, the data is free of DC shift and most of the low frequency error and can be mapped with a very little line error.

FINAL LINE LEVELLING

After the data is FTG levelled and bulk corrected, some small misties at intersections still remain due to random noise content and non-specific linear errors. At this point a more traditional approach to line levelling can be taken to produce final data suitable for mapping. To best evaluate the remaining misties and noise, a Butterworth filter usually between 0.5 and 1 kilometer in length is applied and misties are calculated at every intersection. The misties in the filtered data are analyzed on a line-by-line basis. Each component is shown in profile form with intersection mistie information from crossing lines displayed as well. In most cases the largest misties are due to a noise spike on a line near an intersection or from remnant effects from turning on to or off of a line. Usually spikes occur over very few data points but still may affect the filtered trace enough to introduce a mistie. The erroneous unfiltered data is either interpolated across or manually edited for a better fit with the intersecting lines. After each component has been edited by this method on every line, the filter is reapplied and misties are calculated and analyzed again. This procedure is repeated until all detrimental errors are removed. After a thorough edit, the data can be levelled by the application of low order polynomials or a tensioned spline.

The adjustments calculated from the filtered trace are also applied to the unfiltered data. This process is completed in several passes, each time re-calculating misties, and applying a successively higher order fit to the data until the misties are very near zero, and well within the noise envelope.

After each polynomial adjustment, the data is gridded and mapped as an additional quality control to aid in mistie evaluation. Intersections that cannot be tied with the polynomial fit are re-examined in profile and map form to determine which line best fits the shape of the surrounding data and is then manually adjusted as necessary. This procedure finally produces mistie adjusted, unfiltered data. The unfiltered data can then be mapped without any apparent line oriented error. The Tzz is recalculated from the levelled Txx and Tyy to preserve the Laplace relationship.

Although this dataset produces quite reasonable maps, additional improvements can sometimes be achieved through Micro-levelling. This is a process in which tie lines are excluded, and only the correlation between parallel lines is analysed. The user can specify various filter lengths, tolerances, and other parameters to fine-tune the process to better address the characteristics of the non-correlateable frequencies. This process attempts to remove or reduce various frequencies in each line that are not present in neighbouring lines. This includes high frequency noise and lower frequency errors between intersections that cannot be removed in the tie line based adjustments. All filtering, levelling and mapping is done in Geosoft's Oasis Montaj data analysis package.

FULL TENSOR DATA ENHANCEMENT – Multi-Channel Processing

The nature of the Full Tensor Gradiometer allows for some distinct advantages in noise reduction. The FTG records five independent measurements of the geology from different perspectives. These measurements are related by the fact that they are recording data from the same source. If a signal in one tensor is not supported in the other tensors, that signal is removed from the data. This process produces a greatly improved dataset with a much better signal to noise ratio. The final tensor products contain very little erroneous noise and allows for high confidence in the mapped anomalies throughout the frequency range.

MAGNETIC DATA PROCESSING

The Magnetic data acquired onboard the aircraft must undergo several corrections particular to Airborne Magnetic surveys.

Heading Correction

Heading corrections are computed prior to the survey to allow for the removal of the magnetic field generated by the aircraft. This is done by flying lines in cardinal directions (North-South-East-West) over a common point. The averaged value at that point is the true magnetic reading, and the differences between the average value and the value recorded on each cardinal line is used to determine the heading correction. The tables generated from this exercise are used to remove the aircraft's effect during the survey.

Lag Correction

A correction is necessary to account for the distance from the GPS receiver to the magnetic sensor in the tail stinger. This is called the Lag correction. The magnetometer sensor was 39 feet behind the GPS receiver. The exact amount of lag will vary with aircraft speed, but in this case a 4 fiducial lag was applied and seemed to produce the best fit.

Earth's Field Removal

To better isolate local anomalies, the earth's Magnetic Field is removed from the survey data. In this area the Earth's Field is generally a slope of about 80 nT, dipping generally Northward. The Earth's Field was computed using Geosoft's Oasis Montage. The IGRF Tables from year 2000 were extrapolated to the time and date of the survey.

Reduction to the Magnetic Pole

The corrected, levelled data is finally reduced to the magnetic pole. This process approximates the magnetic anomaly as it would occur directly over the causative body. This is useful for interpretation because it aligns the magnetic response with the vertical gravity gradient response (Tzz). The procedure was also performed within Geosoft's Oasis Montage using a Declination of -11.3 Degrees and an Inclination of -38.8 Degrees. These are the mean values for the entire survey area.

COMMENTS

Bell Geospace continuously fine-tunes the acquisition and processing parameters for Air-FTG® data. The process described here produces valuable and dependable data that is suitable for its intended purposes. As we progress it is important to note that many procedures described herein continue to improve as we continue to learn more about the performance of the instrument in dynamic airborne environments. Air-FTG® data can consistently detect shallow bodies spanning 300 meters or less, with amplitudes repeatedly and accurately measured less than 10 Eötvös. Third party analyses have recently put resolution at 4.7 to 7 Eötvös. As we further refine processing and acquisition methods, even higher resolution will be achieved

FINAL MAPS AND DIGITAL DATA

The final step in the data processing is the application of gridding and contouring to the flight line data. Typically a minimum curvature grid with an increment on the order of 1/3 to 1/2 the closest line spacing is used, or a spacing that reflects the along line sampling rate. Air-FTG® gradient component maps are contoured at an appropriate interval and displayed using a colour filled shaded relief grid. Measured free air and terrain corrected maps for each of the six-tensor components are provided. Measured component Tzz is best compared to ground gravity if available i.e., a computed 1st vertical derivative upward continued (to flying height) Tzz as derived from ground gravity. Computed gravity, the result of vertical integration of the measured free air Tzz component, can be produced and made available for comparison and reference purposes. Page sized free air maps (jpeg format) of the final data are provided separately on a CD-ROM.

The final digital flight line data are provided on CD-ROM in a Geosoft Oasis database and also in Geosoft grid format. Measured Free air and terrain corrected tensors components are included along with the terrain correction at 1.00 gm/cc to facilitate re-computation at various densities.

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ITAR Export Restrictions

This data is covered by the United States Munitions list (USML) 22.CFR121.1 and the export of the data must be licensed by the office of Defense Trade Controls (ODTC) U.S. Department of State, prior to export from the United States or to a foreign person within the United States. It is the responsibility of the exporter to assure that the export is properly licensed and documented.

Appendix 1: Background Information on Tensors

Gradiometer data differs in many aspects from conventional high-resolution gravity data. One important difference is in bandwidth which is 500m or less for gradient data versus 3,000m for conventional gravity. The greatly increased bandwidth allows the retention of the short wavelength signal generated by shallow to intermediate geologic features which are not retained in gravity data. The increased sensitivity allows for much greater resolution and is the reason gradiometer data can be successfully incorporated into the subsequent interpretation at a prospect level.

Just as the gradient of a scalar field such as gravitational potential, is a 3 x 1 matrix of numbers commonly called a vector, the gradient of a vector field is a 3 x 3 matrix of numbers commonly called a tensor. Each element of the tensor is the rate of change of one of the components of the vector in one of the coordinate directions. Thus, when T is a scalar field,

grad T = $[\partial T/\partial x \ \ \partial T/\partial y \ \ \partial T/\partial z]$ or [Tx Ty Tz]

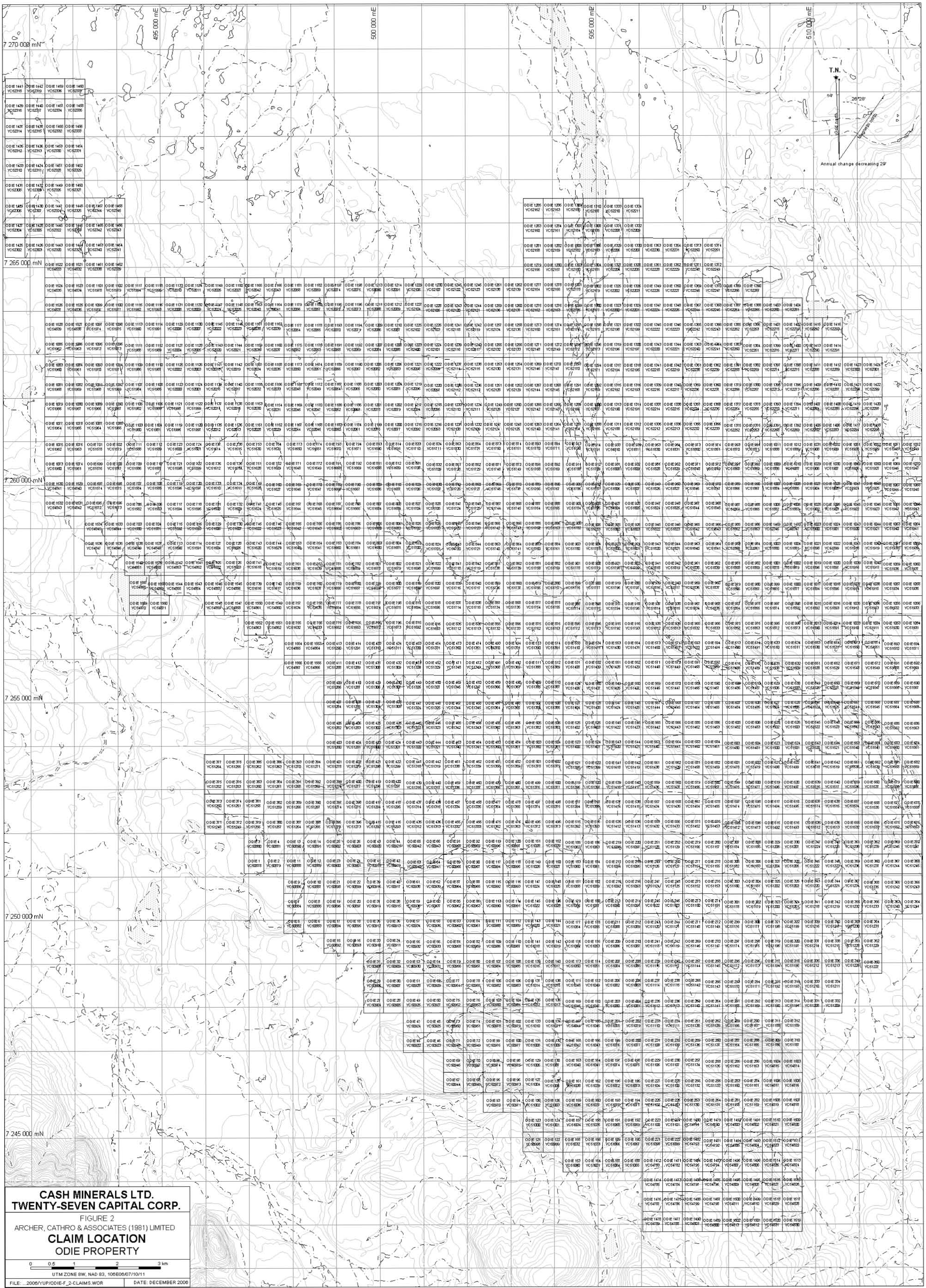
Then, grad(grad T) = [Txx Tyx Tzx
Txy Tyy Tzy
Txz Tyz Tzz]

In the expressions above, Tx, Ty, and Tz represent the familiar acceleration of gravity in the three coordinate directions. Txx, Tyx, ... represent the rate of change of each component of gravity as one's position changes in the three coordinate directions.

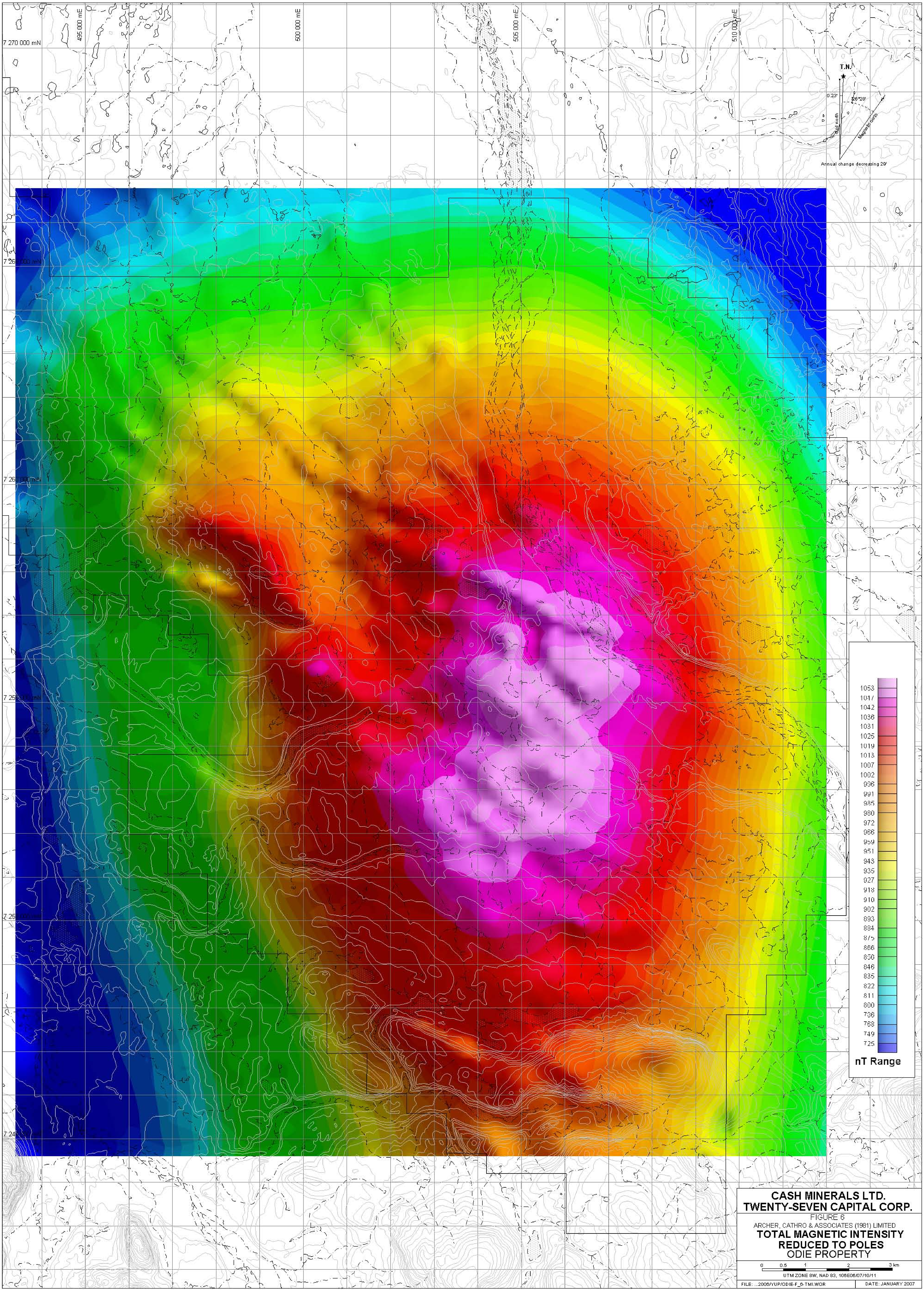
For a potential field, the sum of the diagonal components is zero, i.e., Txx+Tyy+Tzz = 0. This is the definition of a potential field and is the famous Laplace's Equation. Perhaps as importantly, one can show that the matrix is symmetry about this diagonal, so Tyx = Txy, Tyz = Tzy, and Txz = Tzx. As a consequence, of these two facts, only five components of the gradient tensor are independent. For example, if one knows Txx, Tyy, Txz, Txz, and Tyz, the remaining four components are uniquely determined by the relationships give above.

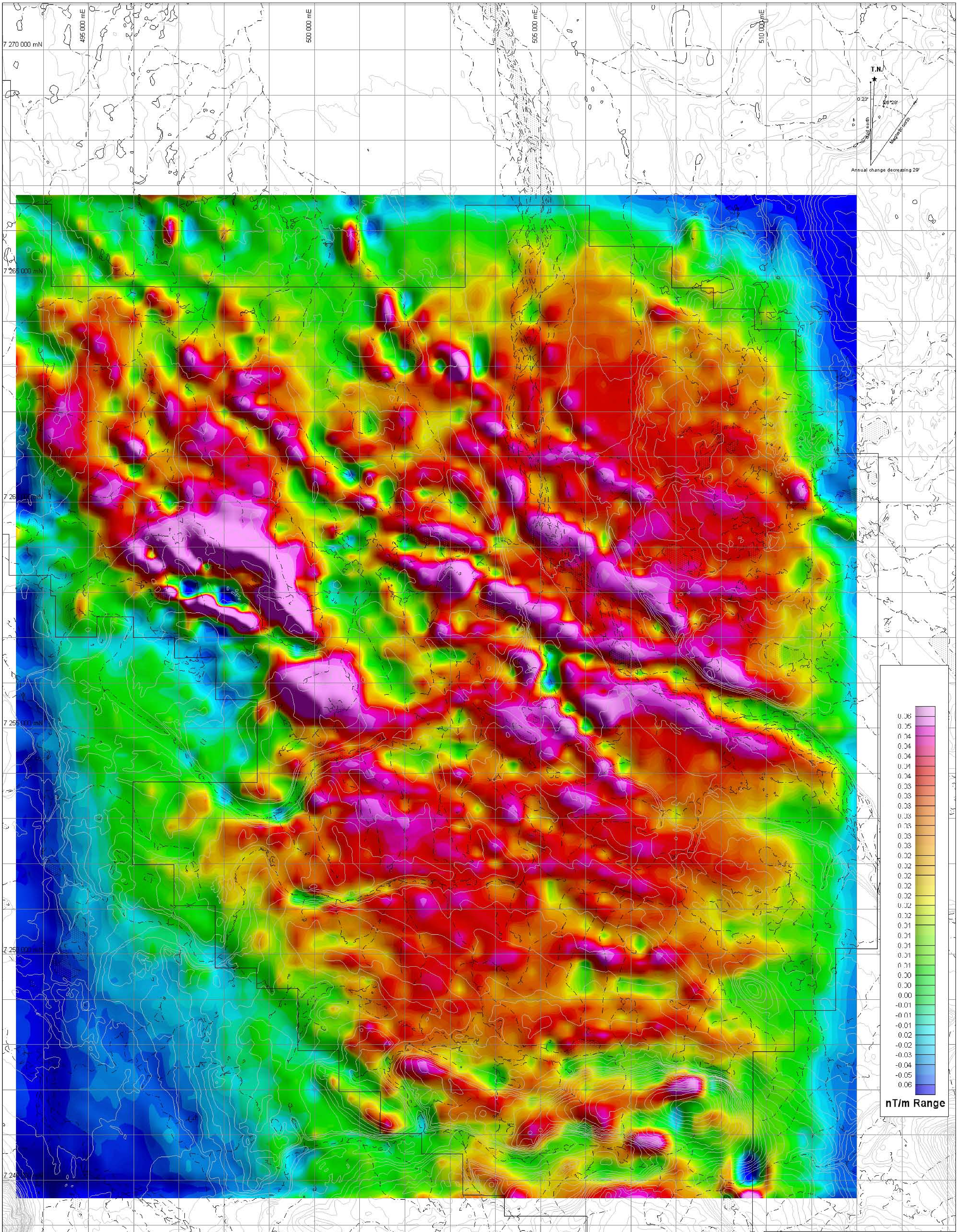
Each of the gravity gradient tensor components responds uniquely to the size, shape and thickness of density anomalies, providing extensive constraint during the interpretation process. All 5 independent tensors are used in the interpretation process to determine the center of mass (Txz and Tyz), edges (Tyy and Txx) and corners (Txy) of the anomaly. The expression of Tzz (the vertical component) more closely resembles the conventional gravity in that the anomaly is shown in the correct position spatially and is thus more easily related to sub-surface geology.

For more information, please see Potential Theory in Gravity & Magnetic Applications by Richard J. Blakely (Cambridge University Press, 1996).



495 000 mE
500 000 mE
505 000 mE
510 000 mE
7 270 000 mN
7 265 000 mN
7 260 000 mN
7 255 000 mN
7 250 000 mN
7 245 000 mN
T.N.
Annual change decreasing 29'
CASH MINERALS LTD.
TWENTY-SEVEN CAPITAL CORP.
FIGURE 2
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED
CLAIM LOCATION
ODIE PROPERTY
0 0.5 1 2 3 km
UTM ZONE 8W, NAD 83, 106E06/07/10/11
FILE: ...2006/YUP/ODIE-F_2-CLAIMS.WOR
DATE: DECEMBER 2006


495 000 mE
500 000 mE
505 000 mE
510 000 mE
7 270 000 mN
7 260 000 mN
T.N.
0.23'
26°28'
Grid north
Magnetic north
Annual change decreasing 29'
1053
1017
1042
1036
1031
1025
1019
1013
1007
1002
996
991
985
980
972
966
959
951
943
935
927
918
910
902
893
884
875
866
856
846
835
822
811
800
786
768
749
725
nT Range
CASH MINERALS LTD.
TWENTY-SEVEN CAPITAL CORP.
FIGURE 6
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED
TOTAL MAGNETIC INTENSITY
REDUCED TO POLES
ODIE PROPERTY
0 0.5 1 2 3 km
UTM ZONE 8W, NAD 83, 106E06/07/10/11
FILE: ...2006/YUP/ODIE-F_6-TMI.WOR
DATE: JANUARY 2007



CASH MINERALS LTD.
TWENTY-SEVEN CAPITAL CORP.

FIGURE 7

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

MAGNETIC FIRST VERTICAL DERIVATIVE

ODIE PROPERTY

0 0.5 1 2 3 km

UTM ZONE 8W, NAD 83, 106E06/07/10/11

FILE: ...2006/YUP/ODIE-F_7-FVD.WOR | DATE: JANUARY 2007

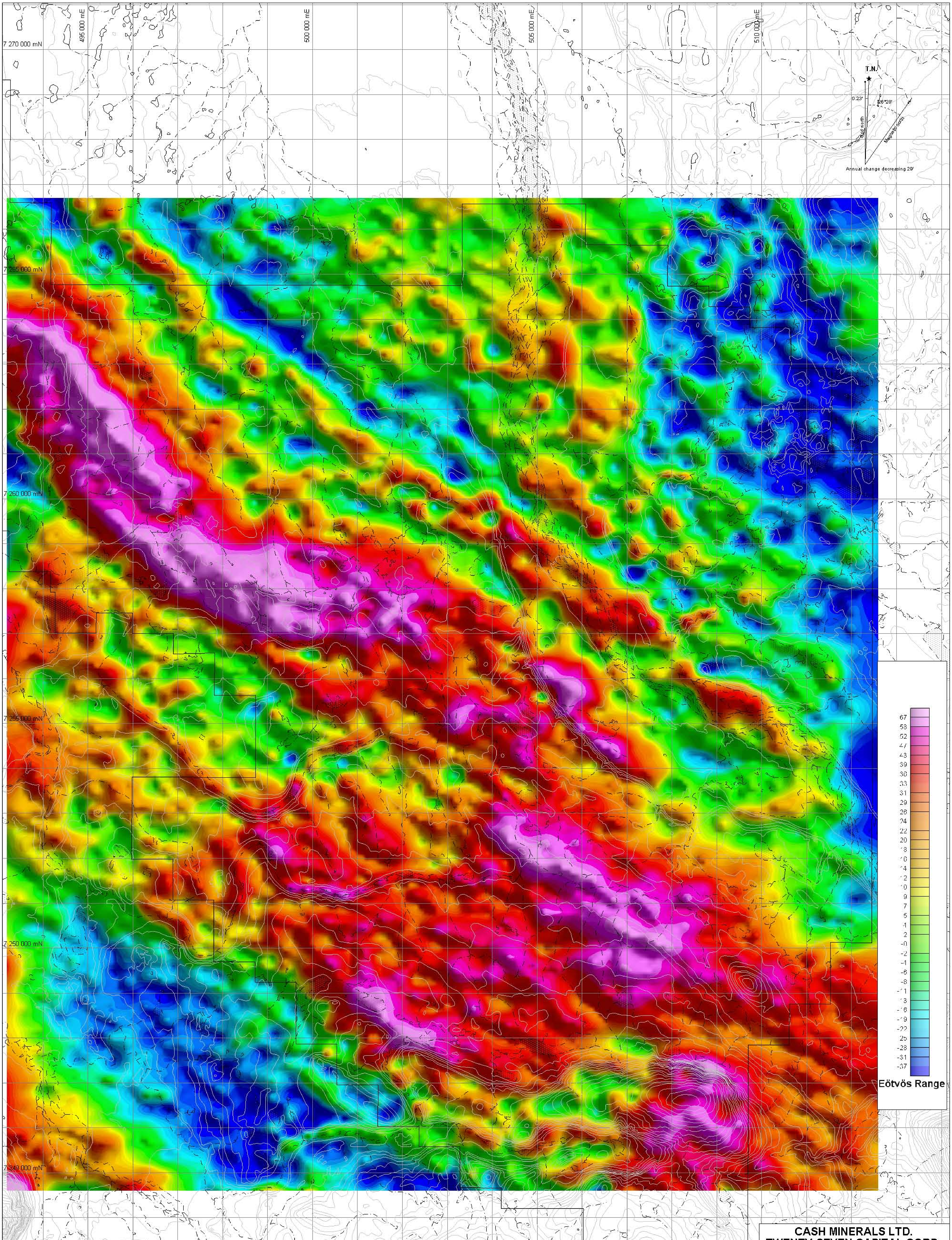


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FIGURE 8

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

TZZ TERRAIN CORRECTED GRAVITY

ODIE PROPERTY

0 0.5 1 2 3 km

UTM ZONE 8W, NAD 83, 106E06/07/10/11

FILE: ...2006/YUP/ODIE-F_8-TZZ.WOR | DATE: JANUARY 2007