ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TITLE OF REPORT: Airborne Geophysical Survey (Magnetic and Radiometric) at the Tak-Rodeo Property

TOTAL COST:

AUTHOR(S): Brock Bolin

SIGNATURE(S): 

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):
STATEMENT OF WORK EVENT NUMBER(S)/DATE(S): 5105527 / Oct 26-2011

YEAR OF WORK: 2011
PROPERTY NAME: Tak-Rodeo
CLAIM NAME(S) (on which work was done):
363008, 512481, 539437, 553666, 555109, 571247, 572217, 573954, 575540, 575541, 575542, 587244, 587246, 587248, 587250, 587254, 587255, 587257, 842480

COMMODITIES SOUGHT: Gold/Copper

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN:

MINING DIVISION: Cariboo
NTS / BCGS: 093A Quesnel Lake /
LATITUDE: 52° 10' 35.3" N
LONGITUDE: -121° 08' 17.2" W (at centre of work)
UTM Zone: 10 EASTING: 627303 E NORTING: 5782300 N

OWNER(S): Newmont Canada Corporation

MAILING ADDRESS:
6363 South Fiddler's Green Circle
Greenwood Village, CO 80111 USA

OPERATOR(S) [who paid for the work]: Newmont Canada Corporation

MAILING ADDRESS:
6363 South Fiddler's Green Circle
Greenwood Village, CO 80111 USA

REPORT KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude. Do not use abbreviations or codes)
geophysics, Quesnel, airborne, magnetics, radiometrics, Cariboo

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:
01836, 25733, 26211, 27384, 27940, 28730, 29763, 31230
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Technical Assessment Report

Covering

2011 Airborne Geophysical Surveying (Magnetics and Radiometrics) on the Tak-Rodeo Property

Cariboo Mining Division
British Columbia, Canada

NTS Map Sheet 093A - Quesnel Lake
Latitude (center) 52° 10’ 35” North
Longitude (center) 121°08’ 17” West

By

Newmont Canada Corporation
6363 S. Fiddler’s Green Circle
Greenwood Village, Colorado USA 80111

Report by
Brock Bolin, M.Sc. Geophysics
January 23, 2012
EXECUTIVE SUMMARY

The Tak-Rodeo property is an alkalic porphyry copper-gold project located in the Quesnel Trough geologic province of central British Columbia, Canada. The property covers about 17,552 ha in 21 contiguous mineral tenures and is located about 75 km east of Williams Lake and 25 km southeast of Horsefly. Operating mines in the region include Mount Polley, Gibraltar, and Highland Valley, all of which are porphyry deposits that produce Cu, Au, and/or Mo from open pits. Other significant deposits in the Williams Lake region include Prosperity, a large undeveloped Cu-Au-Mo porphyry, Blackwater-Davidson, an epithermal Au-Ag system, and Woodjam, a series of Cu-Au+/−Mo porphyry deposits located 20 km west of the Tak-Rodeo property.

The Tak-Rodeo project has been operated by Newmont Canada Corporation beginning in late 2010. Newmont Canada Corporation is the record owner of all of the claims.

The scope of this report relates to the acquisition and processing of geophysical data from a helicopter magnetics and radiometrics survey flown from May 2nd to May 8th, 2011. Newmont acquired these data using an in-house geophysical acquisition system that utilizes commercial sensors. The survey covered approximately 230 km². A total of 2,451 line-km of data including tie lines were acquired, along survey lines oriented east-west and spaced 100 meters apart. Nominal terrain clearance of the magnetometer was 50 meters. Prism Helicopters based out of Pitt Meadows, B.C. provided a Hughes MD-500D aircraft, a qualified long line vertical reference pilot, and a full-time trained mechanic.

The objective of the survey was to have a detailed airborne geophysical dataset to aid geological mapping, structural interpretation, and mineral target identification. This report summarizes the safety, logistical, technical specifications, data collection, and data processing aspects of the airborne survey.
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1.0 Introduction

1.1 Project Description

Tak-Rodeo is an early-stage gold and copper exploration project owned and operated by Newmont Canada Corporation. Despite 40 years of sporadic exploration, the sparse outcrop, dense forest cover, and glacial overburden has thus far limited the success of traditional surface prospecting. Modern exploration techniques employing high resolution airborne geophysics, coupled with an increased understanding of the geologic setting and nearby deposit characteristics provide the basis for identifying untested targets at the property.

1.2 Location and Access

The Tak-Rodeo property is located in central British Columbia, approximately 75 km east of Williams Lake and 65 km east of 150 Mile House, both of which lie along Highway 97. From 150 Mile House, the main access to the property is 65 km east via the well-maintained Moffat Lakes Road (2300 Road) to its junction with the 8100 Road network. Figure 1 shows the geographic location of the property and the claims which comprise the Tak-Rodeo Property. Coordinates used in this report use the North American Datum 1983, UTM zone 10 North.

Figure 1. Tak-Rodeo Project location map.
1.3 Tenure

Record title to the Tak-Rodeo property mineral tenures are owned and operated by Newmont. The property contains approximately 17,552 ha in 21 tenures. Table 1 details the claim status and Appendix 1 shows the claim block at a scale of 1:50,000.

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Table 1. List of Claims for the Tak-Rodeo Property, British Columbia

1.4 Survey Objective

The objective of the survey is to have a detailed airborne geophysical dataset to aid geological mapping, structural interpretation, and mineral target identification over an area with sparse geologic outcrop and exposure. This report is a summary of the airborne operation to cover the safety, logistical, technical specifications, data collection, and data processing aspects of the survey.
2.0 Exploration History

The Tak-Rodeo property has seen only modest past exploration despite its location within the volcanic sequence of the Quesnel Trough in part because much of the property is low-lying and bedrock exposure is poor. Nearly all of the historic work on the property has been conducted on two prospects, Rodeo and Luky Jack, located in the northeast part of the Tak-Rodeo property. Published exploration completed to date is summarized as follows:

In 1969, Royal Canadian Ventures, Ltd. acquired the Mag claims (northeast part of Tak-Rodeo) to investigate a regional magnetic low coincident with the Mag Lake basin (Vollo, 1969). VLF-EM and ground magnetometer surveys were conducted over the claims for a total of 24 line km (15 mi.) using a line spacing of 122 m (400 ft). The surveys confirmed the magnetic low and fringing weak conductors which were interpreted to represent either a distinct late phase of intrusion within the Takomkane batholith or alteration. No follow-up was documented despite a recommendation for geologic reconnaissance to validate the anomalies.

In 1980 through 1981, Cominco Ltd. conducted exploration over its Tisdall Lake property (TL claims), which overlap and extend north of the present Rodeo claims. The property formed part of the Molybdenum JV with Bethlehem Copper. Cominco’s work included outcrop mapping, surface sampling, and an IP survey (Rebic, 1981; Jackisch, 1981). 271 soil samples, 17 stream sediment samples, 9 heavy mineral concentrates, and 16 rock chip samples were collected and analyzed principally for Cu, Mo, W, and Zn. B-horizon soils were collected every 100 m along 400-m spaced, N-S lines. The grid was later tightened to 200-m spaced lines in the area of anomalous base metal geochemistry. Copper in soils ranged from 9 ppm to 810 ppm, with an irregular zone approximately 600 m by 200 m containing greater than 200 ppm. High zinc in soils occurred broadly in a till-covered region NNW of the copper zone.

Mapping by Cominco showed that much of the eastern area of the property was underlain by Triassic Nicola Volcanics, which were intruded by a fine- to medium-grained quartz-bearing monzonite to syenodiorite intrusion to the south, the contact of which runs approximately E-W (Rebic, 1981). In addition, the poorly exposed western half of the property, which is topographically lower than the eastern half, is underlain by Eocene volcaniclastic sedimentary rocks of the Kamloops Group and Miocene Chilcotin basalt.

In 1981, Cominco conducted an IP survey over the 200-m spaced soil grid (Jackisch, 1981). A total of 18.8 line-km were surveyed, of which 14.3 km utilized 100-m spaced dipoles, with the remaining 4.5 line-km using 50-m spaced dipoles. The survey delineated a significant IP chargeability anomaly on the order of 10 ms to >60 ms covering an area of roughly 1,000 m (NE-SW) by 600 m (NW-SE) in the north-central part of the TL grid, which lies mostly north of the Tak-Rodeo property. There is no documented record of drilling during this period, although Wahl (1998; Assessment #25,773) indicates that two holes were completed but results are unavailable.

In 1998, the Rodeo/Luky Jack property was staked and explored by Herb Wahl and Jack Brown John following discovery of copper mineralization in a newly-opened borrow pit. Wahl and Brown John operated the property continuously until it was leased to Newmont Canada Corporation in 2010. Initial exploration by Wahl and Brown John in 1998 consisted of several short trenches and prospect pits in the borrow pit area, known as the Copper Pit prospect. Also explored was an area of anomalous zinc-in-soils located 1.3 km to the north called Luky Jack, which was previously identified by Cominco in 1980. Subsequent work on the property by Wahl/Brown John included more trenching and sampling, prospecting, an enzyme leach survey in 1999 over the zinc-in-soils anomaly, and the drilling of three shallow angled core holes for 391 m in 2001, one of which was drilled at Copper Pit and two at Luky Jack. More trenching and
A reconnaissance traverse of Happy Creek Minerals’ Moffat Lake property was made in 2010 (MacDonald, 2010). The property comprises a single claim that is located in the southwest corner of the Mag Lake basin and 500 m south of Royal Canadian Ventures’ VLF-magnetics survey of 1969. The claim is underlain by mostly fresh, weakly-foliated granodiorite and quartz monzonite. Weak propylitic alteration and silicification was noted along a few narrow fractures, and 9 traverse soil and rock chip samples contained no anomalous results. In 2011, Newmont acquired the Moffat Lake property through an earn-in agreement with Happy Creek Minerals and has included it in its Tak-Rodeo property.

3.0 Geologic Setting

3.1 Regional Overview

The Tak-Rodeo project lies within the Quesnel Trough, a distinct geologic terrane associated with numerous copper-gold porphyry deposits that runs the length of British Columbia along a north-northwesterly trend. Evidence strongly suggests that the western part of the Quesnel Trough represents a Triassic to early Jurassic island arc terrane that was accreted to North America in the Jurassic. Productive latest Triassic to earliest Jurassic porphyries (i.e., syn-arc, pre-accretionary) are thought to represent the intrusive equivalents to widespread intermediate to mafic volcanic rocks of broadly alkaline character that comprise the trough, and in most cases, intrusions have an intimate relationship to their enclosing pyroxene-phyric volcanic rocks (Bailey, 1990). The porphyry deposits range from alkalic Cu-Au types associated with syenite, monzonite, and monzodiorite through calc-alkaline Cu-Au-Mo and Cu-Mo types associated with quartz monzonite and quartz diorite intrusions. Significant deposits within the trough include from north to south: Red Chris, Kemess, Kwanika, Mount Milligan, Mount Polley, Woodjam, Afton-Ajax, Highland Valley, and Copper Mountain.

In the Cariboo region, the Quesnel Trough is subdivided into an eastern flysch basin and a western andesite domain (Logan et al., 2010). The eastern flysch, comprised largely of Middle and Upper Triassic argillite, phyllite, and graywacke, is associated with metamorphic quartz-hosted lode gold deposits (e.g., Barkerville) as well as larger sediment-hosted, metamorphic vein gold deposits such as Spanish Mountain and Frasergold, which are characterized as bulk-tonnage deposits due to the sheeted character of quartz veins within them. Significant placer gold for which the Cariboo is widely known is likely sourced from these types of deposits. In contrast, rocks of the western domain are dominated by intermediate and mafic volcanics and by their coeval intrusive equivalents. Volcanic rocks include laharc breccias, tuffs, and flows and are widely propyliticallly altered (Figure 2).

The Quesnel Trough is bounded on the east by crystalline basement rocks of the North American craton and by Proterozoic and Paleozoic strata derived from this basement. On the west, the trough is bounded by exotic, highly deformed marine strata of the Cache Creek terrane, which are overlain by younger late Mesozoic and Tertiary volcanic and volcaniclastic rocks and intruded by intermediate to silicic intrusions of similar age.

Evolved plutons of dominantly granodiorite and quartz monzonite composition and early Jurassic age intrude alkalic rocks of the Quesnel Trough. These plutons are regarded as late- and post-accretionary, an
example of which is the early Jurassic Takomkane batholith that borders the southern and eastern part of the Tak-Rodeo property. Recent discoveries at the nearby Woodjam property suggest that smaller, syn-batholith intrusions, particularly on the edges of the Takomkane batholith, may also be productive for porphyry Cu-Au-Mo mineralization. This is consistent with the large Highland Valley porphyry Cu-Mo deposit to the south near Kamloops, which formed at the top of the early Jurassic Guichon Creek batholith.

3.2 Economic Assessment

The Cariboo region is considered prospective for a variety of precious and base metal deposits. Epithermal Au-Ag deposits (e.g., Blackwater-Davidson, Newton, Capoose) occur in Cretaceous volcanic rocks to the west of the Quesnel Trough, and although not presently mined, some like Blackwater are being considered for development. Sediment-hosted, metamorphic vein gold deposits hosted in Quesnel sedimentary rocks, are also considered potentially viable, with development at Spanish Mountain ongoing. More significant in terms of past and current production, however, are the porphyry deposits of the region, including Mount Polley, Gibraltar, and Highland Valley, which together produce a large percentage of British Columbia’s copper, gold, and molybdenum. Highland Valley is the largest copper mine in Canada, producing between 90,000 t and 135,000 t Cu per year.

3.3 Tak-Rodeo Geology and Mineralization

3.3.1 Property Geology

Bedrock exposure at Tak-Rodeo is scarce, as much of the property lies in a topographic low and subdued region that is covered in large part by Pleistocene glacial till and outwash (Figure 3). The northeast part of the property within the Rodeo claims portion, contains several prominent bedrock-cored hills that rise as much as 800 m above the surrounding intermontane plain and which have appreciably better exposure. Here, the oldest rocks exposed on the Tak-Rodeo property are pyroxene-phyric andesitic and basaltic rocks of the Nicola Group, part of the Quesnel magmatic arc of late Triassic age. The rocks consist predominantly of volcanic flows, debris-flow breccias, tuffs, and lesser volcaniclastic sedimentary rocks. Nicola volcanics are intruded by fine- to medium-grained, monzonite to quartz diorite intrusions, which contain an abundance of euhedral plagioclase along with hornblende, biotite and K-feldspar +/- quartz. Broadly, these intrusions are considered to be intrusive equivalents to Nicola volcanic rocks. The Nicola volcanic rocks are regionally altered to a propylitic assemblage containing varying amounts of chlorite, albite, carbonate, and pyrite. Late Nicola-type intrusions are fresh to variably altered, with secondary biotite and magnetite +/- chalcopyrite in several zones within the Rodeo claims portion of the property. Similarly, Nicola volcanics are recrystallized to hornfels adjacent to intrusions and also exhibit signs of potassic alteration in the form of quartz-magnetite-biotite veins and wall rock replacement.

Exposed in the south and east portions of the property are coarse-grained granodiorite and quartz monzonite of the Takomkane batholith of earliest Jurassic age. Takomkane rocks are conspicuously quartz-rich and porphyritic, with typically large K-feldspar phenocrysts in striking contrast to the finer-grained and quartz-poor Nicola-type intrusions. Based on regional mapping and geochronology, plutons comprising the Takomkane batholith are younger than and intrude Nicola volcanics, although these relations have not been confirmed at Tak-Rodeo.
Figure 3. Tak-Rodeo Property Geology Map

Geology of the Murphy Lake Area - OF-2009

Newmont Canada Corporation
Property Geology, Tak-Rodeo Property, British Columbia
Unconformably overlying Mesozoic rocks of Nicola and Takomkane age are Eocene volcaniclastic sandstones and tuffaceous sedimentary rocks, part of the regionally extensive Kamloops Group. Aphyric to quartz-phyric rhyolite dikes, often flow-banded and generally fresh, also are considered Eocene in age, but their relation to the volcanic rocks is uncertain. The rhyolite dikes cut both Nicola and Takomkane rocks. Unconformably overlying all other bedrock in the region are mafic flows and flow breccias of the late Miocene Chilcotin flood basalts.

3.3.2 Structural Setting

The regional structural grain at Tak-Rodeo is northwest, which is consistent with that developed throughout the Quesnel Trough. Presumed but generally poorly understood arc-parallel, northwest-striking thrust and anastomosing strike-slip faults probably localized eruptive centers and plutons within the Quesnel terrane. Generally broad east-northeast-striking, “cross-arc” structural zones are also thought by some to be important for localizing productive porphyry mineralization, suggesting that they originated in the Triassic. Owing to poor bedrock exposure as well as post-mineral cover, detailed magnetic surveys over the region have been particularly useful in delineating much of the underlying structural framework as rocks in the region exhibit a high degree of magnetic contrast.

3.3.3 Alteration and Mineralization

The Tak-Rodeo property has been sporadically explored since the 1960s principally for porphyry Cu-Au-Mo. Porphyry mineralization at nearby Mount Polley mine and at the Woodjam project is associated with small, high-level stocks of monzonite through syenite as well as quartz-saturated quartz monzonite and diorite. Available age and geologic information indicate that the productive intrusions are in part coeval with the Nicola volcanics which they intrude, as well as younger, having formed at the same time as the nearby Takomkane batholith. Intrusions that are older and cogenetic with the Nicola volcanics tend toward more alkalic compositions and are associated with Cu-Au mineralization, whereas the younger, more evolved intrusions tend toward Cu-Au-Mo and Cu-Mo styles. It is worth noting that the more alkalic porphyry Cu-Au deposits have chalcopyrite and locally, bornite in veins generally lacking quartz whereas well-developed quartz stockworks accompany Cu-Au-Mo and Cu-Mo types.

At the Copper Pit and Luky Jack prospects, exposed Nicola-type intrusions are locally altered to a potassic assemblage containing secondary biotite after hornblende, magnetite, hematite, tourmaline, epidote, pyrite, chalcopyrite, and sparse quartz. The patchy alteration is generally expressed by a “reddening” of the rock due to the introduction of hematite inclusions in plagioclase as well as mantling of plagioclase by K-feldspar. Very thin, intergranular, anastomosing veinlets containing biotite, magnetite, and locally chalcopyrite invade the host intrusions and where abundant create breccias that range from crackle breccia through matrix-supported, hydrothermal breccia. Tourmaline and epidote along with lesser quartz and chalcopyrite accompany the veinlets. A similar style of alteration affects volcanic rocks proximal to potassically-altered intrusions. Miarolitic cavities are locally common (e.g., Copper Pit) in potassically-altered intrusions. Miaroles are localized along veinlet corridors, and contain open-space quartz, epidote, magnetite, biotite, chalcopyrite, and pyrite. Locally, quartz-sericite-pyrite-tourmaline alteration occurs in both intrusive and volcanic rocks, in part as an overprint on earlier potassic alteration. Such phyllic alteration occurs at Luky Jack prospect.
at the contact between a Nicola intrusion and volcanics and is associated with elevated base metals, particularly zinc.

4.0 2011 Airborne Geophysics Program

4.1 Production Summary

From May 2nd to May 8th, 2011, Newmont personnel installed all necessary equipment into the aircraft (see section 4.3 for details) and acquired 2,451 line-km of concurrent magnetic and radiometric data in 33.6 hours of helicopter time. Survey lines were flown in the east-west orientation at 100 meter line spacing as shown in Appendix 2. With the magnetometer in the towed bird configuration on a 30 meter long-line, the nominal sensor terrain clearance derived from GPS measurements averaged 50 meters. Approximately 230 square kilometers were surveyed in this configuration. Table 2 provides the survey vertices in NAD83 UTM Zone 10 North projection/datum.

<table>
<thead>
<tr>
<th>Vertex</th>
<th>Easting</th>
<th>Northing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>638508</td>
<td>5775954</td>
</tr>
<tr>
<td>2</td>
<td>632370</td>
<td>5775954</td>
</tr>
<tr>
<td>3</td>
<td>616997</td>
<td>5778388</td>
</tr>
<tr>
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<td>616997</td>
<td>5787516</td>
</tr>
<tr>
<td>5</td>
<td>638508</td>
<td>5787516</td>
</tr>
</tbody>
</table>

Table 2. Airborne geophysical survey vertices.

4.2 Logistics

The airborne geophysical survey was operated by Newmont staff geophysicists using Newmont-owned geophysical equipment. Newmont personnel organized transport of the geophysical equipment to Canada with the assistance of Newmont’s broker based in Edmonton, Alberta. Coast Mountain Geological based in Vancouver, B.C. provided orientation to the survey staging area, logistical guidance, and assistance with community relations. Prism Helicopters was contracted to provide helicopter support, as well as all logistics related to fuel supply and all other aviation considerations.

A bed and breakfast hotel located in Horsefly, B.C. was identified as a staging area with suitable space and capacity to handle a helicopter landing zone. Petro Canada delivered the required fuel in 200 liter drums by truck to the site in Horsefly, and installed a containment berm with spill kit and fire extinguisher. All drums and associated fueling equipment were retrieved at the completion of the survey by Petro Canada.

Prism mobilized the helicopter and mechanic to Horsefly from their Pitt Meadows base on May 2, at which time the installation of the geophysical hardware commenced. For the period of May 3-8, daily sorties were staged from the hotel in Horsefly. Of the 6 days of production surveying, only one day was adversely affected by low clouds and rain although one cycle was still possible despite the weather. Otherwise, the flying was quite agreeable considering the early spring schedule. On May 8, Prism demobilized to Pitt Meadows, and Newmont personnel organized return shipping of equipment and returned to Denver.
Total cost of the airborne survey was $83,264.26. Expenditures are summarized in the “Statement of Expenditures” section found later in this report.

4.3 Aircraft and Equipment

4.3.1 Aircraft and Aviation Safety

An exhaustive aviation safety audit was completed before the commencement of surveying. Whipple Aviation, Inc., conducted a detailed operational evaluation of Prism Helicopters, including maintenance procedure and facility, safety policies and standards, training schedule, survey pilot qualification, and general aircraft airworthiness. The Hughes MD-500D helicopter (Figure 4) and the nominated pilot, Jeremy Zall, were found to be well qualified to perform the specific flying style required of this particular helicopter geophysical survey given the terrain, temperature, and elevation. Jeremy Zall is also the Operations Manager for the Pitt Meadows facility.

Prism personnel were present during geophysical equipment installation in the aircraft to ensure compliance with Transport Canada regulations. As such, no aircraft modifications were required as the particular Hughes utilized was already appropriately outfitted with long range fuel tank, communications, side baskets, long line equipment, and left-hand drive pilot control. The aircraft is equipped with ground to air communications (radio, satellite, cellular), as well as real time aircraft tracking using a commercial aviation AFF system.

Both Newmont and Prism worked in full cooperation to maintain the staging area with vital environmental and safety considerations in place, including emergency response plan, spill mitigation, and community awareness.

4.3.2 Acquisition and Navigation Systems

The Newmont Rapid Mapping System is a general purpose airborne navigation and data acquisition system that can be coupled with various sensors such as magnetometers, radiometric spectrometers, or electromagnetic receivers. The primary components of the system include the following:

- Navigation and Acquisition computer
- Operator’s display screen for system setup
- Pilot’s touch screen display
- Radar altimeter
- GPS antenna
- Cabling
Figure 4. Hughes MD-500D owned and operated by Prism Helicopters of the type used in the survey (photo courtesy of Prism Helicopters, Inc.).

The navigation computer is built around a Pentium CPU and its associated peripherals (e.g. power supply, hard drive, etc.). A GPS receiver is mounted in this computer to supply the positions used for navigation.

The operator panel is used to control the data stream and to monitor the sensor outputs as data is acquired. This display is based around a sunlight-readable LCD with a touch screen overlay for operator inputs. The pilot’s display is used to show the aircraft’s height and horizontal position relative to the projected flight lines so the pilot can navigate the aircraft along the selected flight path. The pilot’s display is normally mounted directly in front of the pilot in a location that does not interfere with the pilot’s vision of the instrument panel, aircraft controls, or the terrain outside.

The radar altimeter consists of an antenna and the associated processing electronics housed in an aluminum box. The radar altimeter is mounted beneath the aircraft in a location where the RF power radiated from the antenna is not obstructed by the aircraft parts. The GPS antenna used by Newmont is a small aero-antenna specially designed for aircraft installations. It is mounted on the aircraft in a location where its view of the GPS satellites is not seriously obstructed during flight.

All of these system components are interconnected and controlled by the navigation and acquisition central computer. In a typical installation, the cables from the components on the outside of the aircraft are secured and run through a window into the aircraft cabin. Power for the system (about 5 A at 28 V) is supplied by the aircraft’s auxiliary electrical port.
4.3.3 Magnetometers

The towed-bird magnetometer sensor used in the survey is a cesium vapor model G-822A designed and manufactured by Geometrics of San Jose, California, USA. The bird housing and associated electronics, including GPS positioning equipment, are designed and built by Newmont Mining Corporation Geophysical Operations group. The magnetometer bird is attached by a custom long-line at a distance of 30 meters below the helicopter’s belly hook. Appendix 3 presents the detailed manufacturer’s specifications of the sensor.

Two Geometrics G-856 base magnetometers were placed in a magnetically quiet area near the base of operations. Appendix 4 presents the detailed specifications of these magnetometers from the manufacturer’s website.

4.3.4 Gamma Ray Spectrometer

The gamma ray spectrometer used in the survey is a Radiation Solutions, Inc. model RSX-5. Two crystal packs were utilized, with one instrument mounted in the baskets on either side of the MD-500D helicopter (Figure 5). Appendix 5 details the specifications of the spectrometers.
4.3.5 Personnel

The following Newmont personnel were involved in the project:
  Project Manager: Brock Bolin
  Field operator and data processing: David Wynn

The following Prism Helicopters personnel were involved in the project:
  Survey Pilot: Jeremy Zall
  Mechanic: Matthew Richardson

4.4 Processing Specifications

4.4.1 Magnetics

Magnetics data were collected at 30 Hz. Data were downloaded after each flight cycle and a spike removal filter was applied based on the 4th difference of the total field data. Diurnal corrections were made every night using the base station data. An IGRF correction was applied to the data at the end of the survey. Tie-line leveling was not necessary as there were no significant drape variations across the survey due to the flying skills of the Prism pilot. A decorrugation filter was applied to the final gridded data.

4.4.2 Radiometrics

Raw radiometric data were windowed in the three common element channels of potassium, thorium, and uranium, as well as total counts. Four additional standard corrections were then applied to the windowed data as detailed below.

1. Aircraft and Cosmic
2. Radon removal
3. Stripping and Height
4. Conversion to concentration

A high altitude radiometric calibration flight was performed. Five altitudes were flown for 15 minutes each, at every 305 meters beginning at 1,220 meters AGL. The collected data were used to determine both aircraft background and cosmic constants. The average windowed counts for each of the four flight altitudes (the lowest altitude was not used) were plotted against the average cosmic counts. The resulting slope and intercept of the best fit line gave the correction constants. The remaining constants were obtained from the manufacturer and/or from tests over calibration pads. A complete list of constants is provided in Appendix 6.

Tie-line leveling was applied to the corrected radiometric data to correct for radon contamination that was observed on one flight cycle, and micro-leveling was applied to the tie-leveled data to produce final grids.
5.0 Results

5.1 Magnetic Results
The magnetic survey successfully delineated discrete circular magnetic anomalies interpreted to be individual intrusive phases of a larger magmatic complex. Magnetic lineaments oriented NNW throughout the eastern half of the project provide a structural framework for the intrusive rock emplacement and may offer some context for mineralization. The data are of high quality and resolution and provide the basis for further interpretation based on 3D modeling, vertical derivative filters, and gradient products to help maximize the value from the survey. Figure 6 shows the processed Total Magnetic Intensity image for the extents of the coverage. A 1:50,000 scale Total Magnetic Intensity map is also appended as Appendix 7.

![Figure 6. Tak-Rodeo Project total magnetic intensity and contiguous claim block boundary.](image)

5.2 Radiometric Results
The flexible configuration of the geophysical hardware allows for simple acquisition of multiple dataset types, including radiometrics. Therefore, the decision was made to collect radiometrics as it does not affect the cost or contaminate the magnetic data in any way. While there was little expectation that the radiometrics datasets would be coherent due to the amount of glacial till cover and forestation, in fact there are several discrete anomalies throughout the survey area. Beyond these obvious follow-up targets, the radiometric data are not as useful as the magnetic data. Figure 7 shows the potassium band. Radiometric
maps for Total Counts, Potassium, Thorium and Uranium are attached at 1:50,000 scale in Appendices 8 to 11.

![Figure 7. Tak-Rodeo project – Potassium.](image)

### 6.0 Conclusions

The airborne geophysical survey over the Rodeo Project in the Cariboo mining division of eastern British Columbia was completed safely and efficiently by Newmont Canada Corporation. All local and provincial regulations relating to low-level vertical reference aviation were followed, as well as environmental stewardship at the staging area. Data acquisition and processing conformed to standard industry practice, as well as internal Newmont criteria. The airborne geophysical operation adhered to internal Newmont Standard Operating Procedure and aviation safety protocol.

The resulting magnetic data clearly show regional and local structural information, as well as discrete magnetic anomalies interpreted to be distinct intrusive bodies. The magnetic map will be used as an exploration guide for district interpretation, follow-up mapping, geochemical sampling, and ground geophysical surveys as part of general drill targeting exercises.

The resulting radiometric data are not as useful in general, due to pervasive glacial and forest cover. However, in isolated instances there seem to be coherent anomalies yet to be explained by field visits.

The geophysical datasets acquired at the property provide a structural and igneous framework for future exploration in the district, and should provide a regional understanding of geology in an area...
with sparse rock exposures. In particular, the magnetic data show structural intersections that may indicate preferential magmatic pathways for porphyry style mineralization.

7.0 References


Schiarizza, P. et al; Geology of the Murphy Lake Area, NTS 93A/03, British Columbia Geological Survey Open File 2009-03, 1:50,000 scale.


8.0 Statement of Expenditures

Total expenditures for the Tak-Rodeo airborne geophysical survey were $83,264.26. These costs are outlined in the Schedule of Costs in Table 3.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>Unit</th>
<th>Cost per unit</th>
<th>Total ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personnel</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brock Bolin (labor)</td>
<td>80</td>
<td>Hrs</td>
<td>105.956</td>
<td>8,476.44</td>
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<tr>
<td>Dave Wynn (labor)</td>
<td>99</td>
<td>Hrs</td>
<td>80.728</td>
<td>7,992.07</td>
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<tr>
<td>Subtotal Personnel</td>
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<td></td>
<td></td>
<td>16,468.51</td>
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<tr>
<td><strong>Airborne Survey Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Brock Bolin travel expenses</td>
<td></td>
<td></td>
<td></td>
<td>5,154.48</td>
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<tr>
<td>Dave Wynn travel expense</td>
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<td></td>
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<td>2,789.64</td>
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<td>Room and Board</td>
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<td></td>
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<td>3,549.28</td>
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<tr>
<td>Equipment (Newmont Owned)</td>
<td>2541</td>
<td>Line km</td>
<td>3.335</td>
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<td>Helicopter</td>
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<td>Hrs.</td>
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<td>36,691.20</td>
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<tr>
<td>Helicopter fuel</td>
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<td>Litres</td>
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<td>Subtotal on Expenses</td>
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<tr>
<td>Report and Processing Costs (Brock)</td>
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<td>Hrs</td>
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<td>4,238.22</td>
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<tr>
<td><strong>Overall Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td>83,264.26</td>
</tr>
</tbody>
</table>

Table 3. Schedule of Costs for Tak-Rodeo Airborne Geophysical Survey.
9.0 Statement of Qualifications

I, Brock J. Bolin, MSc. Geophysics, of 6363 South Fiddlers Green Circle, Greenwood Village, CO, 80111 USA do hereby certify the following:

I am a senior managing geophysicist with Newmont Mining Corporation of Greenwood Village in actively employed as Manager of Geophysical Operations – Americas Region for the company.

I have been practicing my profession continuously in both industry and academia since graduation in 1994. I have worked as a mineral exploration geophysicist on projects throughout the USA, Canada, Mexico, Bolivia, Peru, Chile, Argentina, Suriname, and Hispaniola.

I have worked continuously as a geophysicist for the following companies: CH2M Hill Hanford (1993-1994), Gradient Geophysics, Inc (1994-2003), and Newmont Mining Corporation (2003 – present).

I am a graduate of the University of Montana, with a Bachelor of Arts in Geology in 1994. I am a graduate of Montana Tech with a Master of Science in Geophysical Engineering in 2003.

I am a professional geophysicist in good standing with the Society of Exploration Geophysicists and the Australian Society of Exploration Geophysicists.

Respectfully submitted,

[Signature]

Brock J. Bolin
Newmont Mining Corporation
Manager of Geophysics – Americas Region

Dated 17/1/2012 Denver, Colorado
Appendix 1.

Tenure Map
Appendix 2.

Flight Line Location Map
Appendix 3.

Towed Bird Magnetometer Specifications
# MODEL G-822A CESIUM MAGNETOMETER SENSOR SPECIFICATIONS

## Operating Principle:
Self-oscillating split-beam Cesium Vapor (non-radioactive)

## Operating Range:
20,000 to 100,000 nT

## Operating Zones:
The earth’s field vector should be at an angle greater than 6° from the sensor’s equator and greater than 6° away from the sensor's long axis. Automatic hemisphere switching.

## Sensitivity:
<0.0005 nT/Hz rms. Typically 0.003 nT P-P at a 0.1 second sample rate using 822A Supercounter, 0.02nT P-P for CM-221

## Heading Error:
±0.15 nT (over entire 360° polar and equatorial spin)

## Absolute Accuracy:
<3 nT throughout range

## Output:
Cycle of Larmor frequency = 3.498572 Hz/nT, 2V P-P coupled through the sensor power input

## Mechanical:

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<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor</td>
<td>2.375” (60.32 mm) dia., 5.75” (146 mm) long, 12 oz (339 g) - any orientation in 7” dia. stinger</td>
</tr>
<tr>
<td>Sensor Electronics</td>
<td>2.5” (63.5 mm) dia., 11” (279.4 mm) long, 22 oz (623 g)</td>
</tr>
<tr>
<td>Cables:</td>
<td>Sensor to electronics: Standard 162 in. (13 ft 6 inch or4.1 m). Other lengths available from 2.4ft (0.75m) at 40 inch (1m) increments with connector on electronics end. Note: Cable lengths are approximate due to cable dielectric variations</td>
</tr>
<tr>
<td>Sensor Electronics to Counter: Standard 10m, up to 165 ft (50 m) (Coax with signal superimposed on power, requires decoupler board or box.)</td>
<td></td>
</tr>
</tbody>
</table>

## Operating Temperature:
-30°F to +122°F (-35°C to +50°C)

## Storage Temperature:
-48°F to +158°F (-45°C to +70°C)

## Altitude:
Up to 30,000 ft (9,000 m)

## Weatherproof:
O-Ring sealed for operation in rain or 100% humidity

## Power:
24 to 32 VDC, 1 amp at turn-on and 0.5 amp thereafter

## Accessories:

| Standard         | Power/Larmor coaxial cable (electronics to counter), standard length 10m, maximum 50m, spare O rings, operation manual and carrying/storage case |
| Optional:        | Signal/Power Decoupler, board or multi-channel box: Separates the Larmor signal from the power (28 V) to enable connection to RMS Instruments’ AADClII Automatic Aeromagnetic Compensator or Customer supplied counter |
| Internal Decoupler: | P/N 27504 - up to two sensor installation |
| External Decoupler: | P/N 27560 - three and four sensor installation |
| Internal CM-221 Counter | See G-823 A Data Sheet |
| Stinger, Wingtip, Bird | Contact Factory for complete system integration information |
| Base Station Accessories | Non-magnetic Tripod, clamps cables |

**SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE**

GEOMETRICS, INC. 2190 Fortune Drive, San Jose, California 95131  [www.geometrics.com](http://www.geometrics.com)
408-954-0522 ● Fax 408-954-0902 ● Email: sales@geometrics.com

GEOMETRICS Europe 20 Eden Way, Pages Industrial Park, Leighton Buzzard, LU7 4TZ ● 44-1525-383438 ● Fax 44-1525-328200 ● eml: chris@georentals.co.uk

GEOMETRICS China Laurel Technologies - Beijing Office, Suite 1807-1810, Kun Tai International Mansion, #12B Chaowai St., Beijing, China 100020 ● Tel 86-10-5879-0099 ● Fax (010) 5879-0989 ● eml: laurel@lauretech.com.cn
Appendix 4.

Base Magnetometer Specifications
Portable Proton Magnetometer
Model G-856AX

• 0.1 nT resolution and sensitivity
  Designed for ease of use by non-
  skilled personnel
• Digital memory - 12,500 readings
• Manual data recall, or down load
  to a PC
• Versatile, total field, gradiometer
  or base station use
• Rugged weatherproof
  construction.

The G-856 provides a reliable, low cost
solution for a variety of magnetic search and
mapping applications. Single key stroke
operation means the G-856AX can be operated
by non-technical field personnel or used in
teaching environments. The G-856AX uses the
established proton precession method,
allowing accurate measurements to be made
with virtually no dependence upon variables
such as sensor orientation, temperature, or
location. The

unit provides a repeatable absolute total field
magnetic reading, traceable to the National
Bureau of Standards, unlike other magnetic
field measurement processes which measure
only a single component of the field.

Applications:
The G-865AX is ideal for mapping
geological structures, for mineral
exploration, magnetic search for industrial,
environmental or archaeological targets. The
optional gradiometer attachment gives greater
resolution and noise immunity for conducting
searches in industrial or high cultural noise
environments. Simple operation, large digital
data storage capability, and the inclusion of
MagMap2000 data transfer and editing
software provides a system well suited for both
teaching and survey applications.

The automated cycling option with long
sensor cable and external power connection
allows use of the G-856AX as a Basestation
unit for the measurement of diurnal changes
in the earth’s magnetic field. Diurnal
correction data is then downloaded by
MagMap2000 and can be applied to other
856, 858 or 822/823 Airborne data.
Superior Data Editing Software. MagMap2000 allows rapid download of the data from the G-856AX to a PC. Data can be diurnally corrected, profile lines and positions displayed and edited, noisy readings filtered and QC plots of profiles, 2D contour and 3D surface plots made. Data can be exported to Surfer, Geosoft or MagPick (free from Geometrics) for more sophisticated final maps and analysis. The software requires Windows 98, NT or XP operating system.

Specifications:
- **Resolution:** 0.1 nT
- **Accuracy:** 0.5 nT
- **Clock:** Julian date, accuracy 5 sec per month.
- **Tuning:** Auto or manual, range 20,000 to 90,000 nT
- **Gradient Tolerance:** 1000 nT/meter
- **Cycle time:** 3 sec to 999 sec standard, can be manually selected as fast as 1.5 sec cycle time.
- **Read:** Manual, or auto cycle for base station use.
- **Memory:** 5700 field or 12500 base station readings
- **Display:** Six digit display of field/time, three digit auxiliary display of line number, day
- **Digital Output:** RS-232, 9600 baud.
- **Input:** Will accept external cycle command.
- **Physical:** Console: 7 x 10.5 x 3.5 inches, (18 x 27 x 9 cm) 6 lbs (2.7 kg) Sensor: 3.5 x 5 inches (9 x 13 cm) 4 lbs (1.8 kg)
- **Environmental:** Meets specifications within 0° to 40°C (32° to 105°F) Will operate satisfactorily from -20° to 50°C (-4° to 122°F)
- **Power:** 9 each 1.5 “D” Cells or Gel Cell

Standard Accessories:
- Sensor, Staff, Chest Harness, Two sets of batteries, RS-232 cable, Operations manual, Applications manual, MagMap96 software

Options:

For More information contact:

Geometrics, Inc.
2190 Fortune Drive
San Jose, CA 95131
Tel:408-954-0522
Fax:408-954-0902
sales@mail.geometrics.com

A thoroughly well proven design (over 2,600 units sold), excellent performance and the lowest price professional system are key features of the G-856AX. Combined with the ease of use, user friendly download/editing software, and readily available commercial contouring programs, the G-856AX represents a complete magnetic surveying package generating high quality data for budget conscious users.
Appendix 5.

Gama Ray Spectrometer Specifications
### Technical specifications

#### RSX-4 (16L)

<table>
<thead>
<tr>
<th>Spectrometer</th>
<th>Outputs</th>
<th>Detectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channels</td>
<td>1024</td>
<td>4 x 4L NaI(Tl)</td>
</tr>
<tr>
<td>Differential nonlinearity</td>
<td>&lt;0.2% over top 99.5%</td>
<td></td>
</tr>
<tr>
<td>Integral nonlinearity</td>
<td>&lt;0.01% over top 99.5%</td>
<td></td>
</tr>
<tr>
<td>Zero dead time(1)</td>
<td></td>
<td>4 x 4L NaI(Tl)</td>
</tr>
<tr>
<td>Baseline restoration</td>
<td>Digital (IPBR) (2)</td>
<td>9-40 VDC, 50 W</td>
</tr>
<tr>
<td></td>
<td>Digital (AOPS)²</td>
<td>9-40 VDC, 55 W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulse shaping</td>
<td>Digital (AOPS)²</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pile-up rejection</td>
<td>Digital (&lt;40nS)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pile-up contamination</td>
<td>&lt;1% @ 250kcps</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample rate</td>
<td>0.1-10 sec⁻¹</td>
<td></td>
</tr>
<tr>
<td>Timing</td>
<td>Internal/External</td>
<td></td>
</tr>
<tr>
<td>Gain stabilization</td>
<td>Automatic multi-peak</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ethernet</td>
<td></td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td>USB-232 19200-115200 bit/s</td>
<td></td>
</tr>
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<td></td>
<td>USB memory stick</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Environmental</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Temp.</td>
<td></td>
<td>-30°C to +45°C</td>
</tr>
</tbody>
</table>

#### RSX-5 (16L with 4L up detectors)

| Inputs                  |                          |                   |
| Detection configuration |                          |                   |
| Operational parameters  |                          |                   |
| Trigger signal          |                          |                   |
| Calibration data        |                          |                   |

#### Notes

1. The RS-500 has no dead time in a traditional sense. A live time clock will be adjusted for loss of system measured pile-up rejections to give an apparent dead time to ensure the absolute count rate is correct.

2. IPBR - Individual Pulse Baseline Restoration. The baseline is established for each individual pulse for maximum pulse height accuracy.

3. AOPS - Automatic Optimized Pulse Shaping. Pulses are continuously analyzed and the signal pulse shaping adjusted for optimum performance.

4. Stated energy resolution is for new systems. refurbished system performance depends on quality of Xts supplied.

5. The dimension includes removable mounting rails.

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Radiation Solutions Inc. is a Canadian company specializing in nuclear instrumentation for the detection, measurement and analysis of low level ionizing radiation from both naturally occurring or man made sources.

RSI’s focus is the design and manufacture of airborne and mobile systems using advanced DSP (Digital Signal Processing) technology. This technology provides a level of quality previously only attainable in laboratory equipment.

RSI’s philosophy is to work as closely as possible with customers in all aspects of the product life cycle including; product requirement, application, training, support and product improvement. It is this philosophy that will enable RSI to supply industry leading software techniques and hardware components that not only meet, but exceed the customer’s requirements.
Appendix 6.

Radiometric Constants
Appendix 6. Radiometric Constants

**Aircraft Background (Alpha)**

<table>
<thead>
<tr>
<th>Component</th>
<th>Count</th>
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</thead>
<tbody>
<tr>
<td>Total Count</td>
<td>11.69</td>
</tr>
<tr>
<td>Potassium</td>
<td>10.49</td>
</tr>
<tr>
<td>Uranium</td>
<td>2.52</td>
</tr>
<tr>
<td>Thorium</td>
<td>4.17</td>
</tr>
<tr>
<td>Up Uranium</td>
<td>0.05</td>
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</tbody>
</table>

**Cosmic Correction (Beta)**

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<th>Component</th>
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<tbody>
<tr>
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<tr>
<td>Potassium</td>
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</tr>
<tr>
<td>Uranium</td>
<td>0.059</td>
</tr>
<tr>
<td>Thorium</td>
<td>0.071</td>
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<tr>
<td>Up Uranium</td>
<td>0.015</td>
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</table>

**Height Attenuation Constants**

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<tr>
<th>Component</th>
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</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Potassium</td>
<td>-0.0082</td>
</tr>
<tr>
<td>Uranium</td>
<td>-0.0084</td>
</tr>
<tr>
<td>Thorium</td>
<td>-0.0066</td>
</tr>
</tbody>
</table>

**Stripping Constants**

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha</td>
<td>0.273</td>
</tr>
<tr>
<td>Beta</td>
<td>0.396</td>
</tr>
<tr>
<td>Gamma</td>
<td>0.765</td>
</tr>
<tr>
<td>a</td>
<td>0.046</td>
</tr>
<tr>
<td>b</td>
<td>0.001</td>
</tr>
<tr>
<td>c</td>
<td>0.001</td>
</tr>
</tbody>
</table>

**Concentration Constants**

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Potassium</td>
<td>68.4 cps/%k</td>
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<tr>
<td>Uranium</td>
<td>6.62 cps/ppm</td>
</tr>
<tr>
<td>Thorium</td>
<td>4.56 cps/ppm</td>
</tr>
</tbody>
</table>

**Stripping Height Constants**

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha</td>
<td>0.000454</td>
</tr>
<tr>
<td>Beta</td>
<td>0.000600</td>
</tr>
<tr>
<td>Gamma</td>
<td>0.000640</td>
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</tbody>
</table>
Appendix 7.

Magnetic Data

Total Magnetic Intensity Map
Appendix 8.

Radiometric Data

Total Counts Map
Appendix 9.

Radiometric Data

Potassium Map
Appendix 10.

Radiometric Data

Thorium Map
Appendix 11.

Radiometric Data

Uranium Map