MAR 20160015: CROWSNEST NORTH

A report on Gold, Lead, Silver and Zinc exploration on the Crowsnest North property near Pincher Creek.

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A report for Assessment in reference to Metallic and Industrial Minerals Permit 9304091032
Crowsnest North Project
Part B

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2016 Assessment Report for Industrial and Metallic Industrial Permit 9304091032

Crowsnest North Project

TABLE OF CONTENTS

A report for Assessment in reference to Metallic and Industrial Minerals Permit 9304091032
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Project Summary

This report details an exploration work program carried out on Metallic and Industrial Minerals Permit 9304091032.

Prospecting was carried out by the author or by others under his direction on a area of the permit that is to the north of a talus slope in Metallic and Industrial Minerals Permit 9304091032 at approximately 49 48' 10.87" N and 114 33' 30.63" W. The cliff and talus slope forms the most striking feature on what is a significant rise in topography created by outcropping rocks of the Crowsnest Volcanics. The slope represents a large exposure of the volcanics in the outcrop offering representative materials of several of the Crowsnest Volcanic sequences. The sharp cliff face bounds the permit area along the southerly end with the permit extending to the north to incorporate the highlands that the cliff cuts. This topographic feature ranges from approximately 1560m above sea level to 1950m and from examination of the cliff and around the edges of the upland as bound by the North Racehorse Creek and the South Racehorse Creek is made up almost entirely of rocks of the Crowsnest Volcanics. Prospecting was carried out over several site visits in the summer fall of 2015 and spring and summer of 2016 to expand on the exploration carried out over the 2013/14 exploration period. Work this period focused on north and north west portion of the permit area in an effort to locate metallic mineral indicators and to, hopefully, determine a source or sources for galena found in the previous exploration effort.

The main purpose of the work carried out on site was to relocate a metallic mineral deposit located in the mid 1960's by Mike Czech, a prospector from the area. Mike had shown roughly where he had located a silvery white/grey metallic mineral in test pits dug along a slope located in the permit area. He indicated a general location on a topographic map and had confirmed the rough location from the Forestry Trunk Road by pointing to it and linking it to several local features.

In 1994 he showed samples of the mineral to the author and his partner and said he thought they might be platinum but from what examination that could be done at the time the sample more closely resembled a massive rich galena type ore. Three pieces, the largest approximately 1 cm by 1.5 cm by 0.3 cm thick, the smallest 0.5 cm by 0.2 by 0.2 thick and one slightly larger than that smallest piece. The surface was still rough and they were obviously heavy for their size. They had been recovered in a panned sample from a test pit dig in the hillside. Efforts to secure a sample to test were unsuccessful as Mike wanted to send them for analysis himself. As far as is known the samples were never tested and their whereabouts is unknown after his death.

No in situ metallic mineral occurrences were found in this exploration period within the new area of exploration to the north and north west side of the upland defined along its south boundary by a talus slope located at approximately 49 48' 10.87" N and 114 33' 30.63" W. Several samples were taken from the areas where indications of galena were discovered in a previous program and those confirmed galena was reporting to samples from the previous area of exploration. The survey did not locate any galena indicators in the exploration area though several pieces of volcanic rock with quartz infilling were found in float as samplers were screened. Since there appears to be a link between the quartz infilling of the volcanics and the galena discovered to date, the location of the quartz rich samples helps to define an area of interest which appears to be the eastern half of the permit area. Exploration will be moved to the eastern end as defined by the junction of the North and South Racehorse Creeks and if access permits up onto the higher parts of the upland.

Further work has been recommended and is ongoing in concert with continuing evaluation and exploration of the deposit for decorative rock use.

Introduction

Further to earlier studies submitted for assessment on this same permit in 2006 and 2010 to assess the potential for Crowsnest Volcanic rock to be used for decorative crushed rock and for decorative rock slabs there is ongoing study of the potential for mineral deposits in the area.

The primary reason for the investigation that is the subject of this report was to follow-up on data from studies in the late 1980's and early 1990's that indicated sulphide linked gold values in the Crowsnest Volcanics. The discovery of that sulphide link lead to a major mineral staking rush throughout the Crowsnest Pass, south to the US border and north to past the Old Man River. The studies at that time identified the link but considered it uneconomic. The potential for small localized bonanza type deposits was proposed at that time and there has been some anecdotal evidence as well as exploration results in the region that offer some support to the idea. The silver deposits found to the south along the Alberta/ B.C. border were well known and prospectors in the Crowsnest were certainly aware of them. According to Mike Czech a well known local prospector, and other prospectors from the area, samples of the ore to the south were in their collections and they always kept an eye out for anything that looked like it. Mike and several prospecting acquaintances said that they had found evidence of similar deposits to the north of Hwy 3 up into the area north of Crowsnest Mountain. Many of them, including Mike, were fixated on the search for gold spurred by stories of the Lost Lemon Mine and they were not as excited about the "low value" lead/silver potential. Like all good prospectors though, they kept their eyes open for anything anomalous that might help them in their search and Mike mentioned several of his personal leads that he had not yet had a chance to follow up on. Prospecting notes taken from discussions with Mr. Czech in the late 1980's and early 1990's indicated that there is a potential for sulphide and metallic minerals like galena in the area. Mike told of a small bonanza deposit of silver rich galena found at the foot an outcrop just to the west of the town site of Coalman. Discovered during road construction a worker found silver rich galena in broken rock taken from the base of the slope. He broke off chunks and gathered all he could find which, was enough to fill a 5 gallon metal pail. He filled the container and did not realize the weight of the material and tore the handle off the pail attempting to lift it. It was never followed up on because that entire area was blasted out and re-contoured to put the highway through and no other potential ore came to light or at least was noted. Samples from the material that had been gathered circulated among a small group of local prospectors for years but the main sample was moved and then lost some years later. Mike said he had seen a large piece of the sample tossed in an empty lot in the old section of Coalman but had not bothered to collect it. Interestingly the story ties in with an even earlier story from that same area and may very well be part of the same deposit or share the same depositional characteristic. According to Mike a local resident wanted to dig a well to take advantage of a seep or spring at the very base of the outcrop where it met the flat area that extended out towards the river. As he dug down he hit a small, very rich, metallic mineral occurrence. Like the discovery during road construction this occurrence was small and restricted in extent; the entire deposit being represented by only a few fist sized chunks and small bits of broken rock. As Mike described it, the person digging the well hit this right where the wet loose material was against the hard rock underneath. Of the pieces he had a chance to examine it was very rich greyish metallic and extremely soft. It showed dents in it where a pick had hit it and was as soft as "lead sheet like used for roofing". A knife would cut pieces off "like cutting hard cheese". The only other interesting feature was that it looked like this metal had "grown around the rock and not really in the rock" that it was obviously a natural occurrence was clear but the minerals had formed like "a pool of metal around the rocks that were there". There was so little of it that other than being a curiosity nobody got excited about a "tiny lead deposit" but Mike retained a piece of it. It was not until years later that Mike had samples looked at and was told that the silver content was very high being over 100 ounces to the ton. A geologist friend who saw the samples proposed that Mike had a piece of rich ore from a secondary silver deposit and wanted to know where it had been found. Once again road construction along that outcrop and surrounding area had covered the location and without any other clear evidence of mineral potential it faded into another curiosity in Mike's collection.

The focus of this report is the continued prospecting to follow up on one of Mike's prospecting leads that was in this permit area.

This program was carried out over 2015 and 2016.

Expenditures for Assessment

EXPENDITURE STATEMENT
BY ACTIVITY

AMOUNT SPENT

1. Prospecting	$28248.50
2. Geological mapping & petrography	$0
3. Geophysical Surveys	
a. Airborne	$0
b. Ground	$0
4. Geochemical Surveys	$0
5. Trenching and Stripping	$0
6. Drilling	$0
7. Assaying & whole rock analysis	$0
SUBTOTAL	**$28248.50**
9. Administration (10% of subtotal)	$2824.00

TOTAL **$31072.50**

SIGNATURE

DATE

Location and Access

The site is located in the south west part of Alberta 20 km north of Highway 3

The program was carried out to the north and north west of a talus slope made up of various types of volcanic rock at approximately 49 48' 10.87" N and 114 33' 30.63" W and along the edges of the upland where Mike Czech said he found the metallic minerals. A larger map is attached to this document giving greater detail on the location.

The Forestry Trunk road goes north from Hwy 3 to a pipeline that comes through the Racehorse Pass. A road branches east from where the pipeline intersects the Trunk Road and follows the South Racehorse Creek and can be used to access the base of the talus slope referred to above. Access to the study area was by a trail system that extends from the Forestry Trunk Road from previous work by logging companies that intersects the main road with mostly foot access to the more rugged and overgrown areas. The location is shown in the Google Earth image below and can be referenced in the attached map as well. While some trails are obviously well travelled during the year by both snowmobiles and quads or larger four wheel drive vehicles, in order to do our work we were forced to carry out much of the effort on foot. This is rough and treacherous work. Much of it is in and around historic logging areas that present some real challenges. Rough terrain, hidden holes covered with logging debris and the general difficulty of moving through, at times, dense regrowth added to the challenge. Climbs were not uncommon that had to deal with a 100 metre change in elevation in 500 metres distance and when coupled with the thinner air, rough and broken rocky conditions and logging debris the conditions were punishing on everyone involved. If there was any amount of rain the going was almost impossible. In some cases it would take several days to complete one line.

Base camp for the work was near where North Racehorse Creek crosses the Forestry Trunk Road and quads were used from there to gain access to the project area. The quads were used to get as close as possible to the planned work for the day and to help move samples and while invaluable were mostly restricted to the lower ends of the survey lines with the rest of the work done on foot. As we had seen in previous work it was not always possible to return to camp safely before night fall and several overnight stays on the mountain had to be done. Though prepared with equipment for shelter, fire and food the going was so rough that we were running a stripped down pack load with just the bare essentials. This coupled with forest fire concerns meant cold food or self heated MREs and no more warmth in a tarp shelter than a candle lantern. Overnights were cold and damp with minimal rest and we were on the move as soon as it was light enough to see and move safely. As can be seen from the aerial photographs used for mapping the program the lines for the survey were essentially along more open areas and the heavily forested sections were avoided. This is due in part to the fact that the more treacherous and steep areas remain forested after logging has been in the area and movement through those areas is very difficult. It should be noted that the term "more open" is relative and the aerial imagry used for this mapping is dated such that many of the areas shown as open in the imagry have had some measure of forest regrowth, making movement a challenge even in the more open and less steep areas.

Google Earth view of prospecting area – it is located along the base of the talus slope immediately to the east of the main road and north of the pipeline road, on top of the plateau north of the talus slope and across to the north side of the plateau bordered along the north by North Racehorse Creek and the south by South Racehorse Creek

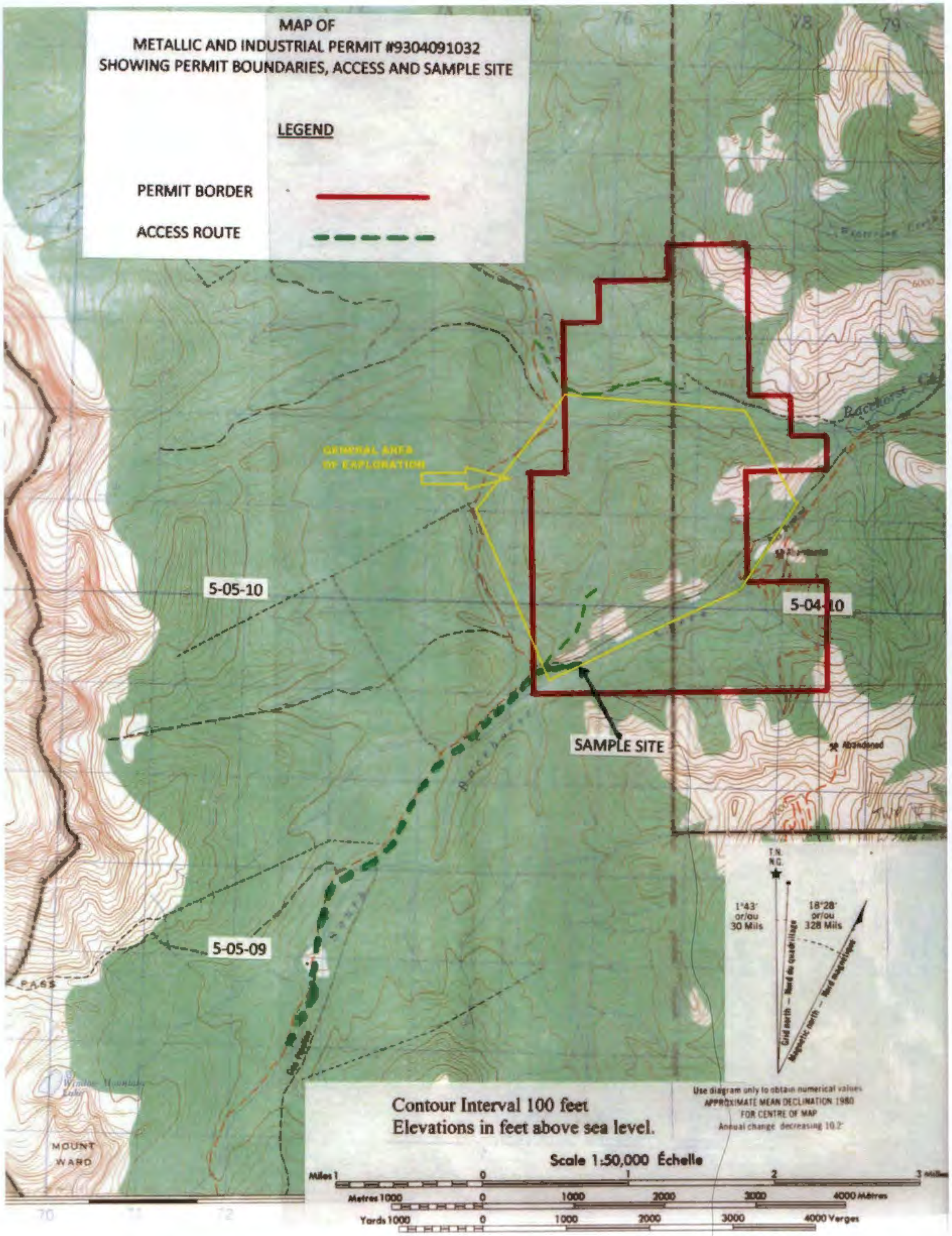
Permit Land Description

MINERAL AGREEMENT DETAIL REPORT

Agreement Number: 093 9304091032 **Agreement Area:** 1136.0000

LAND / ZONE DESCRIPTION

5-04-010: 07L9-L10,SE,SW,NW;18L9-L10,L15,SW,NW;19SW,NW
5-05-010: 12;13L11,L14,SE,SW,NE;24L3,L6,L9-L10,SE


MAP OF
METALLIC AND INDUSTRIAL PERMIT #9304091032
SHOWING PERMIT BOUNDARIES, ACCESS AND SAMPLE SITE
LEGEND
PERMIT BORDER
ACCESS ROUTE
GENERAL AREA OF EXPLORATION
5-05-10
5-04-10
SAMPLE SITE
5-05-09
Contour Interval 100 feet
Elevations in feet above sea level.
Scale 1:50,000 Échelle
Use diagram only to obtain numerical values
APPROXIMATE MEAN DECLINATION 1980
FOR CENTRE OF MAP
Annual change decreasing 10.2'
1°43' or/ou 30 Mils
18°28' or/ou 328 Mils
Miles
Metres
Yards
4000 Mètres
4000 Verges

Geology

The rocks in this study are from a volcanic unit defined by Robin Adair in his 1989 Master's thesis for the University of Alberta as the "Upper Member".
Adair describes that rock unit as "a thick sequence of massive pyroclastic breccias and minor agglomerates." The upper member is a prominent ridge former in the area and can be tracked for many kilometres in a north south trend from north of the study area to south of Hwy 3.
Two broad classifications can be used visually to categorize the volcanic units. One group is from a green coloured layer of volcanic rock and another from a pinkish coloured layer. Within those two very broad categories is a range of colours often zones or layered. The two broad categories was chosen because its easy to see from a distance when prospecting the difference between the darker units and the lighter/pinker units.
The green dark rock unit corresponds with Adair's definition of the "Upper Member" while the pink light coloured rock has characteristics similar to units he ascribes to the "Lower Member".
For the purposes of this study no further attempts were made to refine the categorization as examination in the field was meant to only roughly identify the local geology to confirm that we were working in the volcanics.

Prospecting Method

Following up on the successful use of the Goldspear as a reconnaissance tool in the 2013/14 exploration seasons the Goldpsear was utilized in this program as well. As a prospecting tool the Goldspear has proven of significant benefit, allowing fairly large areas to be examined, at least at a preliminary level, with minimal expense or technical challenges.
The following information was provided in the 2014 Assessment Report for the same permit but for the sake of those examining this report without benefit of the earlier information the following should serve as an explanation of the Goldspear and how it is used.

The Goldspear is a contact probe instrument that can be used to detect minerals in metallic form. It is pushed into the soil and as the detection head passes a piece of metallic mineral in its native metal form i.e. gold, silver, lead , copper the operator receives both an audio and visual signal. Minerals in native metallic form as small as 200 Tyler Mesh, approx 74 microns, can be detected dependably. In good conditions detection can extend to even smaller with the manufacturer claiming a small as 300 mesh. The only interfering potential can be caused by un-oxidized man made metals but generally that is easily determined in the field. One advantage that the Goldspear has for searching for mineralized halos is that it can give a secondary signal to tell the operator that it has encountered oxides and sometimes sulphides of metallic minerals (depending on conductivity of that particular mineral grain) by both an audio and visual signal. Please see the next section for a more detailed overview of the instrument. The Goldspear enjoyed a period of popular use worldwide but many operators misunderstood its purpose and proper operation. The original design went through several iterations and the manufacturer stopped production after several years with the intention of incorporating the input from experienced successful users with enhanced electronics to deliver a superior design. That new design has not yet been released though the manufacturer continues to develop it. For those prospectors lucky enough to own one and know how it should be used the Goldspear has excellent potential for use in loaming techniques for detecting metallic mineral deposits. Enhanced oxide minerals of metallic minerals will also give a signal though it is sometimes difficult to determine how the signal translates to the mineral in ground. An operator getting a strong oxide metallic mineral signal (a crackling sound as the oxide

minerals are detected) is best served by taking samples of sediments that show higher signal density and doing a closer examination.
Prospecting in the area was carried out in lines with the probe being pushed into loose surface materials to the point where strong down pressure would not move it further. In the soils in that area the average probe depth was around 10 cm.
The nature of the detection system does not lend itself to fixed station sample points, especially in an area like this where larger rock is found and the terrain is quite rugged. Rather, the best method is to choose a survey line or a path of travel that can be mapped and then walk that line taking probe measurements frequently along the path of travel. It should be noted that the stations as mapped may be some distance apart and the actual number of tests or probe events can be hundreds between each station. In areas where some signals appear anomalous the operator might take numerous probes in the immediate area to determine if they are in a halo of mineralized material or if it was simply a single anomalous detection. Any signal locations that the operator considers interesting are flagged, GPS located and a soil sample gathered. If there is an area of anomalous readings an operator can map that as such and can either try at that time to follow the indicated path (usually up-hill or up drainage) towards a source or continue on to finish the planned survey route and then move to a parallel path up-hill or up drainage and probe along that path in an attempt to intersect the mineralization train. In very rough country it may not be possible to follow the mineralization from first detection towards source directly and the operator will have to move up-hill or up drainage where they can safely follow a path that should cross the mineral train if it is above them. If no signal is found then the working assumption is that the mineral source is between the two survey lines. This is only a working assumption as quite a few factors can complicate the evidence. Nevertheless, it provides mappable data that can be used to help tighten the search and some qualitative data that can also be used to determine the nature of the mineralization. The idea in most prospecting of this type is to get a reconnaissance evaluation in relatively short order that gives an idea on anomalous zones or areas with the potential for discovery and tracking of a metallic mineral trail back to source. The technique has been used successfully for as long as organized mineral prospecting has existed with refinements made as technology and geological understanding have progressed. In more recent times the technique has been used successfully in the gold fields of Australia where it is called loaming and in many other areas of the world. Diamond exploration using indicator minerals derived from soils and sediments has been a field proven technique and is an adaption on the loaming techniques. Traditional loaming relies on taking soil samples and panning each one down looking for metallic minerals to track back to source. The Goldspear eliminates the need for panning every sample site and allows an operator to concentrate on samples most likely to yield results.

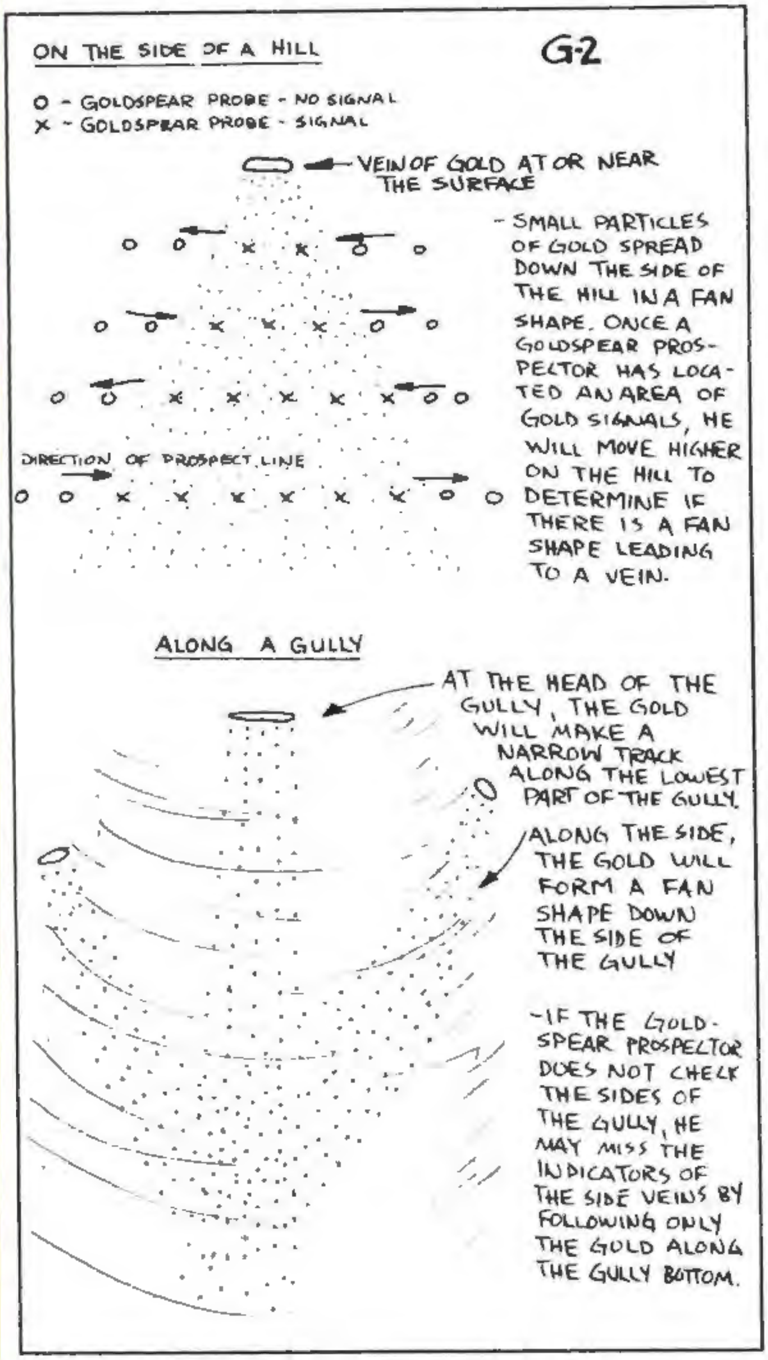
An Overview Of The Goldspear With Excerpts From "The Modern Goldseekers Manual"

The Goldspear is an electronic detector for very fine particles of metal. In the case of prospecting this would be minerals in metallic form with gold, silver, copper, lead etc being represented in nature in their metallic form. The particles can be very small but must be loose in the soil so that a probe can come in contact with and scrub by to measure the conductivity of the particle. Essentially the instrument is a specially designed ohm meter with a finely laminated probe head that has non conductive layers sandwiched between contacts in a multi layered and multiple contacts pointed head. The head is made of hardened steel that is very abrasion resistant.
As the probe is shoved down through the soil a metallic particle comes in contact and scrubs up and across the contact layers. As that particle bridges the gap across a non conductive layer an internal microprocessor compares the conductivity of the particle with a set parameter and if it is conductive enough to match a good conductive metal a positive signal is made. This same system is configured so

that marginally conductive materials like iron oxide minerals and some sulphides will give a different signal thereby informing the operator of the potential for heavy mineral concentrations.

The following are excerpts from The Modern Goldseekers Manual – a book written by this author and in continuous publication through 7 editions since 1988

> "You have probably seen ads or reports in magazines on the Goldspear. It looks like a combination ray gun and fish spear. It is, to put it simply, a gold detector.
> Metal detectors have been used for some time in the search for precious metals. They work well on large concentrations (veins or nuggets) of gold, silver, platinum, etc. No metal detector made can find flour gold. When looking for such deposits, the operator has to look for black sand concentrations that will, hopefully, carry find gold as well. Metal detectors find metal. Sophisticated ones can even rule out some "junk" metals, so you're not digging bottlecaps as a full-time occupation. However, even the most discriminating detector can only tell you that it's found a non-junk metal, not what that non-junk metal is."
>
> " The Goldspear tells you that a valuable metal is present and can, as a bonus, tell you that black sand is present. This instrument detects gold, platinum, and mercury on the valuable metal readout and can detect particles of those metals as small as 300 mesh. That is 90,000 particles in 1 square inch, folks! Tiny stuff no matter how you look at it. On a separate readout, the Goldspear tells you when you have found black sand.
> The Goldspear gives the operator both a visual and an audio signal. Pretty exciting! But, as with any specialized piece of equipment, the very design that lets it perform miracles also creates limitations.
> Unlike a metal detector, which transmits and receives signals, the Goldspear transmits nothing. The spear section is pushed into the ground and when the probe head hits or rubs by a particle of gold and/or black sand a signal is heard and seen. The Goldspear is more a measuring device than a transmitting device. As particles pass along the probe head, their electrical fingerprints are taken, compared with acceptable limits, and accepted or rejected."
>
> "It took Lars Guldstrom 15 years to design a machine to do it. Microchip technology is the key, but the machine must be used properly and with an understanding of its limitations.
> For the Goldspear to take a fingerprint, the probe head must touch the gold, platinum, mercury, or black sand while the probe head is moving, so that the mineral rubs along its surface.
> As you can see, those are some of the limitations. You can't wave the spear over bedrock like a magic wand, and find veins of gold. You must be able to push the probe into the ground being tested. Heavily impacted gravel will limit your probe depth to one or two inches, unless you can loosen it up. In areas with boulders or large stones you will, undoubtedly, run into one that you can't get through or around.
>
> "Push the spear slowly and steadily into the test material. An audio signal comes through when you contact valuable metal, but it has a slight lag time. If you ran the spear too quickly, you might pass the gold by the time you hear the signal. This would gum up your depth calculations. There is a visual signal (blinking lights), but the audio signal is used more often.
> The signal for gold, platinum, and mercury is a high-pitched warble. Black sand makes a crackling noise. Some people say the valuable metal signal sounds like something from a video arcade. When you hear it you won't mistake it.



A Goldspear can't tell you how big a piece of gold is."

"It is possible to receive only a few signals per square foot in an area and find coarse gold there with your pan, and then get a bunch of signals in another area and find that it's a concentration of ultra-fine gold. You have to determine what size gold you have found by panning. Once you have established the size the gold runs, you can begin tracking it down.

And tracking is a good word for it. You track down paystreaks by taking frequent probes and marking hot spots. The paystreak will be the line that connects the hot spots.
There are some people who object to the sensitivity of the Goldspear. They say that 300 mesh is too fine. It may seem so to those who find a lot of 300 mesh gold in an area they're testing. Getting a signal nearly every time you push the probe into the ground is frustrating, but using a pan to check out hot spots helps. The spear's sensitivity may be frustrating to some, but it's an advantage to those searching for pockets or veins of gold or platinum.
The ads say the Goldspear is for prospecting placer material, but if you limit yourself that way, you'll miss out on a side of prospecting where this instrument may prove invaluable - loaming. Loaming was used "way back when" to find and track veins and pockets of gold. Through erosion fine particles of gold where broke off and carried downhill. The early prospectors working the hillsides found gold in the upper layers of dirt or loam - thus the name "loaming". These old- timers had pretty limited resources. They had to either carry their samples down to the water or carry the water up to where they were working. When gold was found in a sample, the prospector would take samples higher and higher up the hill until he found the source. More often than not he didn't find anything, despite hundreds of samples and hours, even days of panning.
The Goldspear would have turned that back-breaking labor into the equivalent of a Sunday stroll. Walking along hillsides pushing his spear into the loose loam until he heard a signal, the prospector could then have headed uphill until the signals increased in number per area and pan-tested only productive loam.
Small particles fan out over a wider and wider area, the further downhill they travel from their source. They form a fan-like pattern, with the thin end at the source and the wide end downhill. When you get a signal with the spear, probe back and forth across the hill at that elevation. You should find the edges of the fan. Move uphill a little way and probe across the hill at that elevation. The edges of the fan should pull in and the numbers of particles should increase. This way you pan only productive samples for testing. Think of all the places that could be prospected this way that the old-timers missed."

"As for reliability, you couldn't ask for better from such a sensitive instrument. The controls are simple. One dial controls the on/off and the discriminate level. Another dial controls black sand sensitivity. You don't need to reset or retune the instrument. Just set it and forget it. The trick is not learning how to use it, it's learning where to use it."

"My probe has been pushed into everything from sand and gravel to "big rock" gravel. It's been bashed against big rocks and against bedrock underlying gravel, yet it has no signs of scratching or blunting. The shaft is tough and shows only polishing marks along its length. You could probably bend the shaft if you used it like a pry bar, but normal use hardly shows. The steel is extremely tough and can stand up to all kinds of abuse.
The control box, sealed against moisture, can handle splashing and probably even a dunking. The spear is waterproof right up to the control box connection."

"There are three discrimination levels. The instructions are vague as to the actual use of the higher discriminate levels. They are supposed to cut out false signals, but I found low discrimination fine for everything I did. Purer or larger gold didn't seem to make a difference. Sometimes you may get a signal that won't quit. It sounds like you have found gold, but when you move the probe the signal just keeps warbling. A quick wipe of the probe head with a rag usually cures it. A small piece of gold or mercury could have stuck to the probe. If the signal

persists, dry the probe head off and flip the control knob to test. This neutralizes the signal and away you go.
If the signal is a continuous high-pitched beep without the warble, the battery is low. The Goldspear uses one nine-volt battery, which should last about 50 hours.
The black sand detection is calibrated for a wide range of heavier specific gravity minerals including magnetite, pyrite, galena, etc. Just as you can spot hot spots for gold, you can spot black sand hot spots and track black sand stringers.
Because you can track both gold and black sand, you won't find yourself digging through rich black sand for no gold, which sometimes happens with a metal detector. Of course, you might be in an area that has heavies other than what you are prospecting for, if they're mixed in with the black sand. Columbite, tantalite, and cassiterite come to mind, as do gemstones.
The limitations of a Goldspear, ie: difficulty in probing hard packed material, extreme sensitivity, contact detection, etc., make some individuals dwell on the things a Goldspear can't do. They use these as reasons why you shouldn't get one. You have to accept the fact that you are dealing with a specialized instrument. A Magnetometer has a lot of limitations too, but it has led to fortunes for those prospectors smart enough to use it properly. Here are a few of the applications that I have experimented with:

1. Location of gold-bearing bench material that was covered with three feet of barren sandy loam. It was evident that several prospectors had begun test pits, but quit. (There was no indication of pay until you hit gold-bearing gravel.) The loam was filled with tree roots that made digging tough. The spear had no problems getting through the stuff, and by measuring how deep I had to push the spear in before I got a gold signal, I knew how deep to dig.
2 Tracking gold and black sand stringers across gravel bars.
3. Checking placer indications in flood gravel layers on bedrock.
3 Prospecting for hardrock gold by loaming.
5. Testing dry ancient river gravel that had been exposed by a road cut.
6. Testing old tailings piles. Rumor had it that these concentrates had been cyanided. I now know differently. Further testing may indicate that it is economically feasible to rework those tailings.
7. Tracking down gold-bearing portions of material sent through a screening plant The plant produced washed screened gravel and the fine sand tailings carried substantial amounts of fine gold. These tailings had been left in large piles, and in the years since the plant closed, the piles had been eroded almost flat. Only certain parts of the gravel deposit had been gold-bearing, so only certain tailings piles had gold in them.

Without the Goldspear it would have been pretty tough to track down the gold-bearing sections of what had become a mish-mash of sand piles. With the Goldspear it was easy to walk along and track down the gold-bearing sand and to define its depth."

"These are only a few of the applications that the Goldspear has been used for. I'm sure that many more uses will be found by people willing to accept the limitations and work with them."

Sample Preparation and Processing Method

Since the expected minimum size of the metallic particle detected is in the plus 200 mesh range the sample can be concentrated by panning and examined in the field. Soil samples should be in the 2 to 3 litre size of minus 1 cm material dry screened from the sample site. In most areas tested that would equate to over 5 litres of raw bank run material. In this program access to water was difficult in some areas so dry screening to a maximum 3 litre sample size and examination of the oversize on the screen was the norm. When possible water was used to wet down picks off the oversize screen to help with examination. The material passing the screen was brought out for further processing. This gives a good chance that any flakes of metallic mineral that could be causing a native metal signal will be captured and it gives a large enough sample so that the volume of metallic oxide minerals and general heavy mineral concentrate volume can be determined. Quick field tests can help qualify a sample. Material retained on the screen is examined and anything anomalous noted, the panned sample of fixed volume will begin to give the operator an idea of the background heavy minerals volume and a quick check with a magnet can be used to determine what the rough percentage of the concentrate is magnetic. All samples taken whether an oxide/sulphide mineral anomaly or metallic mineral hit should be checked for obvious metallic minerals A judgement call can be made to preserve the sample for more careful examination or notes taken about it. In the case of a metallic mineral hit the sample should be preserved even if no metallic minerals are seen on first examination in the field. In the case of an anomalous oxide signal the sample can be noted and a judgement call can be made by the operator.

Samples retained in the field for further examination should be dried and screened then fractions examined under a USB microscope with images of interesting minerals saved directly to computer files for further work. In this program other than the quartz infilled volcanic rock samples noted in the screened oversize no anomalous minerals were found in the samples.

During the dry screening process and as the team moves along the path of travel the potential for anomalous float materials is always there. In this program, as with the previous exploration program, several samples of rock were recovered that showed quartz infilling. After seeing what the material looks like from previous sampling operators were able to spot it in the oversize. The samples that were recovered were examined with hand lens on a fresh face in the field and noted in the report. So far they have not been prepared for microscopic examination but are slated to be examined in more detail over the winter.

Image of total exploration area covered with the 2013/14 exploration season survey stations and tests pit shown in red and green and the 2015/16 exploration seasons illustrated in blue and magenta.

Overview of 2015 survey with stations in blue and sample sites in magenta. The red markers are from the 2013/14 survey to show how the two programs overlap.

Line A from 2015 with survey stations in blue and sample sites in magenta

Lines B, C, D, E of the 2015 season with stations in blue and sample sites in magenta. Red markers are from the 2013/14 season

Lines A through D of the 2016 program with survey stations in blue and sample sites in magenta with markers designated using the number 16 in the description code. The A line from the 2015 program is in the north of the picture and is illustrated using the number 15 in the description code.

Discussion

The area of exploration was suggested in interviews with a local prospector who worked in the general vicinity over decades. Mike Czech had a large number of potential prospects developed over many years and advancing age was making it obvious that he would never be able to follow-up on many of them. The author and his partners were lucky enough to have been friends with Mike and he was always forthright and candid about his opinions on the exploration potential of the area. Over the years the information that Mike shared was evaluated and found to be dependable if somewhat vague due to years passing and the weight of data preserved largely in memory for so many prospects. Nevertheless, the leads that Mike passed on for our area of interest were found to be accurate as to details of topography and general location and even though no deposit was found during this program sufficient information was gathered to indicate that the area does have the potential to host the type of mineralization that Mike had found and that there are hints at a local anomaly with quartz infilling the local country rock. The program has identified obvious target areas for continuing work. The 2013/14 seasons provided evidence of galena in the area and this program , though unsuccessful in locating any new galena, has closed in and delineated the area of interest for further work.

The 2016 season was cut short as the program had to be suspended as partners dealt with their business interests that were in jeopardy due to the Fort McMurray Fire. The fire caused a delay in getting out in the field and the season was cut short by both wet weather and the need to get back to Fort McMurray to re-establish the business interests there. The planned follow up effort to do further examination of the area where quartz infilled volcanic rock had been found to the 2013/14 seasons was not carried out because of the shut down but that is slated for the next exploration period.

Of the samples taken most were based on what the operator of the Goldspear determined to be higher concentrations of signals and for the entirety of the program those signals were of the low conductive oxide type. The average sample over a wide area shows essentially the breakdown minerals from the volcanics including heavy mineral black sand with most being magnetic or the black melanite garnet found throughout the volcanic country rock.

Two samples on the same line (4-S1 and 4-S2) gave oxide mineral signals indicating relatively high concentration but on panning were not above average for the area. This area will be sampled again to see if something not obvious contributed to the signal. Higher iron content garnet for instance might be conductive enough but bench testing did not find anything particularly anomalous with the recovered garnet.

Conclusions

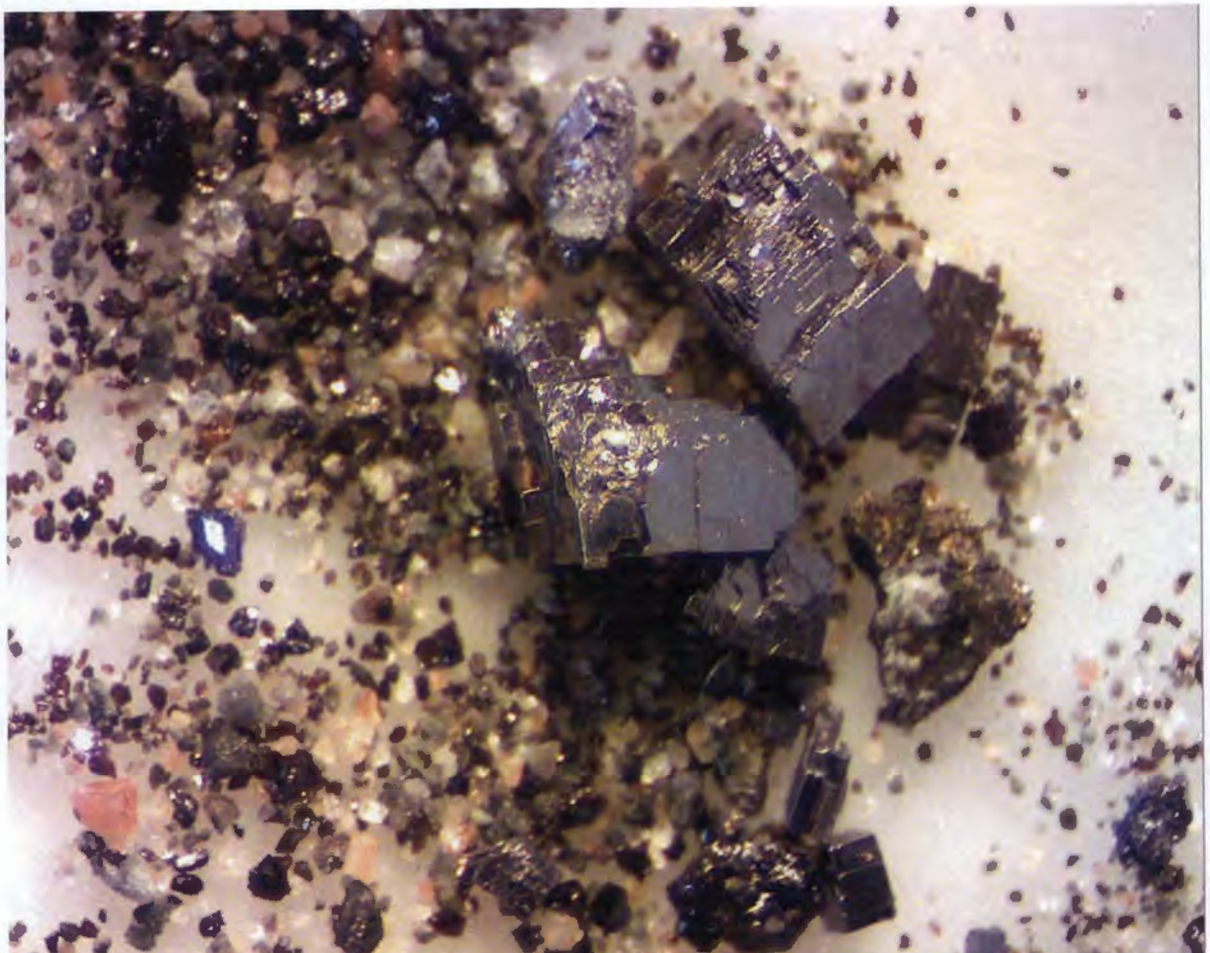
The intent of this program was to carry out an area examination in the vicinity of a suspected mineral location. The use of a specialized detection system allowed a broad area to be examined for obvious metallic minerals as native metals occurrences that shed metallic mineral grains of 74 microns and larger. The detection system has merit though no metallic minerals as metals were detected in this survey.

Prospecting continues to find anomalous quartz rich country rock. The country rock being volcanic in origin this type of quartz mineralization appears to have come in as an infilling sequence and offers an interesting hint at potential mineral deposit formation linked with the quartz infiltration into the volcanic country rock.

Quartz rich volcanic rocks were recovered during field sample preparation in the oversize screened fraction in the 2013/14 programs and was found as float in the dry screen oversize in this program so follow up work will need to be done to try to track a source of origin. The first samples were anomalous visually and therefore set aside in the field but it was not until further work on sawed samples with microscope support that the true nature of the samples was determined. Follow-up field work in the discovery location will be part of a future exploration phase. As it is, the quartz infill float has been found in the eastern portion of the permit. It is still early to conclude that the quartz inflll is restricted to that portion but it is beginning to indicate that enhanced attention on the eastern half of the permit area is warranted. If a solid connection can be found between locations in the eastern half then we can work from them to the west again to determine the western limits.

It should also be noted that samples from the D15 Line and E15 Line gave oversize with quartz infilling. The two lines are not sharing drainage or erosion paths and are likely not sharing a source unless it is from the ridge dividing the two lines which may represent a common source shedding to either side and work will need to be done to determine that. At the moment we have too few samples to determine a definite source sequence in the volcanics and it appears that the mineralization is not restricted to a single sequence but is infilling through the formation as a whole. As more samples come to light a time frame based on what is known about the Crowsnest volcanics might help determine the depositional environment and help refine the search.

As described in earlier assessment reports work in the late 1980's in the Crowsnest Volcanics indicated that there was a link between sulphides and gold. There may also be a link between sulphides in quartz and gold as well as other metallic minerals as sulphides including the suspected galena found during the previous program. We will be using data from this program to help target specific areas for future exploration.



Photograph of Suspected Galena From Sample Site 12-S2 taken in the 2013/14 prospecting season at 15x magnification

An example of the infilling Quartz in Volcanic Rock Sample Site 16-S1 from the 2013/14 exploration season

Recommendations

The two significant results from the survey should be followed up as soon as weather permits. The suspected galena grains roughly match with the historic exploration story from Mike Czech and now that the nature of the signal has been evaluated the area should be tested using the Goldspear on a tighter grid with the intent of tracking back to source.
The quartz in volcanics samples offer some potential for an expanded depositional model in the area and work on the recovered field samples will continue in an effort to gain as much knowledge about the nature of the deposit and where it might be in relation to where the float samples were found.

LIST OF SURVEY LINE STATIONS AND SAMPLE SITES

STATION ID	LATITUDE	LONGITUDE	COMMENTS
A15-1	49°49'19.13"N	114°34'15.12"W	
A15-2	49°49'18.90"N	114°34'15.49"W	
A15-3	49°49'18.69"N	114°34'13.85"W	
A15-4	49°49'18.12"N	114°34'12.72"W	
A15-5	49°49'17.68"N	114°34'11.76"W	
A15-6	49°49'17.44"N	114°34'11.14"W	
A15-7	49°49'17.21"N	114°34'10.71"W	
A15-8	49°49'17.77"N	114°34'10.17"W	
A15-9	49°49'17.57"N	114°34'9.66"W	
A15-10	49°49'17.70"N	114°34'8.99"W	
A15-11	49°49'18.09"N	114°34'8.59"W	
A15-12	49°49'17.80"N	114°34'8.38"W	
A15-13	49°49'17.59"N	114°34'8.40"W	
A15-14	49°49'17.77"N	114°34'8.02"W	
A15-15	49°49'17.60"N	114°34'7.20"W	
A15-16	49°49'17.41"N	114°34'6.44"W	
A15-17	49°49'17.79"N	114°34'5.29"W	
A15-18	49°49'17.80"N	114°34'4.63"W	
A15-19	49°49'18.08"N	114°34'4.28"W	
A15-20	49°49'18.24"N	114°34'3.87"W	
A15-21	49°49'18.70"N	114°34'3.59"W	
A 15- 22	49°49'18.76"N	114°34'2.79"W	
A15-23	49°49'19.54"N	114°34'1.92"W	
A15-24	49°49'19.88"N	114°34'1.07"W	
A15-25	49°49'19.58"N	114°34'0.53"W	
B15-1	49°49'31.88"N	114°33'48.95"W	
B15-2	49°49'31.14"N	114°33'49.40"W	
B15-3	49°49'30.23"N	114°33'51.66"W	
B15-4	49°49'29.58"N	114°33'53.11"W	
B15-5	49°49'28.74"N	114°33'53.75"W	
B15-6	49°49'28.19"N	114°33'54.21"W	
B15-7	49°49'27.73"N	114°33'54.66"W	
B15-8	49°49'27.60"N	114°33'52.32"W	

B15-9	49°49'27.67"N	114°33'50.83"W	
B15-10	49°49'28.91"N	114°33'49.71"W	
B15-11	49°49'29.90"N	114°33'48.62"W	
B15-12	49°49'30.99"N	114°33'47.03"W	
B15-13	49°49'31.41"N	114°33'45.45"W	
B15-14	49°49'30.51"N	114°33'42.22"W	
B15-15	49°49'31.24"N	114°33'41.23"W	
B15-16	49°49'32.18"N	114°33'40.33"W	
B15-17	49°49'32.82"N	114°33'38.47"W	
B15-18	49°49'33.34"N	114°33'40.39"W	
B15-19	49°49'33.86"N	114°33'39.86"W	
B15-20	49°49'34.02"N	114°33'38.30"W	
C15-1	49°49'32.27"N	114°33'37.57"W	
C15-2	49°49'31.71"N	114°33'37.99"W	
C15-3	49°49'31.38"N	114°33'38.70"W	
C15-4	49°49'31.18"N	114°33'39.22"W	
C15-5	49°49'30.52"N	114°33'39.19"W	
C15-6	49°49'30.05"N	114°33'38.73"W	
C15-7	49°49'30.50"N	114°33'36.78"W	
C15-8	49°49'31.27"N	114°33'36.20"W	
C15-9	49°49'31.83"N	114°33'35.52"W	
C15-10	49°49'31.29"N	114°33'34.34"W	
C15-11	49°49'30.94"N	114°33'33.89"W	
C15-12	49°49'30.64"N	114°33'33.78"W	
C15-13	49°49'29.31"N	114°33'33.52"W	
C15-14	49°49'28.35"N	114°33'33.53"W	
C15-15	49°49'27.64"N	114°33'33.43"W	
C15-16	49°49'27.22"N	114°33'34.83"W	
C15-17	49°49'26.60"N	114°33'34.70"W	
C15-18	49°49'26.40"N	114°33'36.22"W	
C15-19	49°49'25.82"N	114°33'35.89"W	
C15-20	49°49'24.88"N	114°33'35.28"W	
D15-1	49°49'34.08"N	114°33'5.18"W	
D15-2	49°49'33.21"N	114°33'7.43"W	
D15-3	49°49'32.64"N	114°33'8.04"W	
D15-4	49°49'32.03"N	114°33'10.01"W	
D15-5	49°49'31.39"N	114°33'8.39"W	
D15-6	49°49'31.38"N	114°33'6.79"W	Location approx – bad GPS
D15-7	49°49'31.68"N	114°33'5.89"W	
D15-8	49°49'32.68"N	114°33'5.38"W	
D15.9	49°49'33.56"N	114°33'4.89"W	
D15-10	49°49'34.25"N	114°33'3.52"W	

D15-11	49°49'33.42"N	114°33'3.01"W	
D15-12	49°49'33.17"N	114°33'2.34"W	
D15-13	49°49'32.65"N	114°33'2.39"W	
015-14	49°49'32.12"N	114°33'2.50"W	
D15-15	49°49'31.45"N	114°33'2.88"W	
D15-16	49°49'30.54"N	114°33'4.07"W	
D15-17	49°49'30.41"N	114°33'5.06"W	
D15-18	49°49'29.49"N	114°33'3.85"W	
D15-19	49°49'30.39"N	114°33'2.25"W	
D15-20	49°49'30.87"N	114°33'1.00"W	
D15-21	49°49'31.85"N	114°33'0.46"W	
D15-22	49°49'31.36"N	114°32'59.88"W	
D15-23	49°49'30.90"N	114°32'59.37"W	
D15 24	49°49'30.49"N	114°32'59.64"W	
D15-25	49°49'30.03"N	114°32'59.75"W	
D15-26	49°49'29.53"N	114°33'0.36"W	
D15-27	49°49'29.24"N	114°33'0.73"W	
D15-28	49°49'28.64"N	114°33'1.87"W	
D15-29	49°49'28.02"N	114°33'1.79"W	
D15-30	49°49'27.56"N	114°33'1.72"W	
D15-31	49°49'27.51"N	114°33'0.75"W	
D15-32	49°49'27.87"N	114°32'59.69"W	
D15-33	49°49'28.67"N	114°32'59.13"W	
D15-34	49°49'29.09"N	114°32'58.37"W	
D15-35	49°49'29.72"N	114°32'57.87"W	
E15-1	49°49'29.21"N	114°33'18.41"W	
E15-2	49°49'28.11"N	114°33'18.57"W	
E15-3	49°49'27.70"N	114°33'19.56"W	
E15-4	49°49'27.72"N	114°33'20.52"W	
E15-5	49°49'27.27"N	114°33'21.03"W	
E15-6	49°49'26.83"N	114°33'21.32"W	
E15-7	49°49'26.44"N	114°33'22.07"W	
E15-8	49°49'25.81"N	114°33'22.84"W	
E15-9	49°49'25.43"N	114°33'23.37"W	
E15-10	49°49'24.63"N	114°33'23.68"W	
E15-11	49°49'24.14"N	114°33'23.62"W	
E15-12	49°49'23.42"N	114°33'23.30"W	
E15-13	49°49'22.93"N	114°33'23.69"W	
E15-14	49°49'22.57"N	114°33'23.88"W	
E15-15	49°49'22.40"N	114°33'24.80"W	
E15-16	49°49'21.94"N	114°33'25.64"W	
E15-17	49°49'21.39"N	114°33'25.80"W	
E15-18	49°49'20.91"N	114°33'25.57"W	

E15-19	49°49'20.09"N	114°33'25.48"W	
E15-20	49°49'19.80"N	114°33'23.34"W	
E15-21	49°49'20.60"N	114°33'21.62"W	
E15-22	49°49'21.44"N	114°33'21.51"W	
E15-23	49°49'22.30"N	114°33'21.79"W	
E15-24	49°49'22.92"N	114°33'20.82"W	
E15-25	49°49'23.83"N	49°49'23.83"N	
E15-26	49°49'24.48"N	114°33'18.40"W	
E15-27	49°49'25.17"N	114°33'17.87"W	
E15-28	49°49'25.95"N	114°33'17.53"W	
E15-29	49°49'26.67"N	114°33'15.57"W	
E15-30	49°49'25.84"N	114°33'13.28"W	
E15-31	49°49'25.97"N	114°33'11.27"W	
E15-32	49°49'25.27"N	114°33'11.90"W	
E15-33	49°49'24.11"N	114°33'13.86"W	
E15-34	49°49'23.48"N	114°33'14.42"W	
E15-35	49°49'22.96"N	114°33'15.29"W	
E15-36	49°49'22.31"N	114°33'16.00"W	
E15-37	49°49'21.52"N	114°33'16.77"W	
E15-38	49°49'20.55"N	114°33'18.39"W	
A16-1	49°49'16.03"N	114°34'20.39"W	
A16-2	49°49'15.50"N	114°34'20.63"W	
A16-3	49°49'14.94"N	114°34'20.76"W	
A16-4	49°49'14.54"N	114°34'21.16"W	
A16-5	49°49'14.30"N	114°34'20.84"W	
A16-6	49°49'14.00"N	114°34'21.24"W	
A16-7	49°49'13.50"N	114°34'21.63"W	
A16-8	49°49'13.24"N	114°34'21.83"W	
A16-9	49°49'12.92"N	114°34'21.95"W	
A16-10	49°49'12.64"N	114°34'21.74"W	
A16-11	49°49'12.55"N	114°34'21.34"W	
A16-12	49°49'12.51"N	114°34'20.93"W	
A16-13	49°49'12.58"N	114°34'20.46"W	
A16-14	49°49'12.68"N	114°34'20.15"W	
A16-15	49°49'12.91"N	114°34'20.02"W	
A16-16	49°49'12.68"N	114°34'19.71"W	
A16-17	49°49'12.25"N	114°34'21.69"W	
A16-18	49°49'12.00"N	114°34'21.53"W	
A16-19	49°49'11.75"N	114°34'21.57"W	
A16-20	49°49'11.45"N	114°34'21.80"W	
A16-21	49°49'11.15"N	114°34'21.76"W	

A16-22	49°49'10.88"N	114°34'21.94"W	
A16-23	49°49'10.77"N	114°34'22.21"W	
A16-24	49°49'10.51"N	114°34'22.34"W	
A16-25	49°49'10.31"N	114°34'22.37"W	
A16-26	49°49'10.04"N	114°34'22.41"W	
A16-27	49°49'9.98"N	114°34'22.87"W	
A16-28	49°49'9.73"N	114°34'22.95"W	
A16-29	49°49'9.50"N	114°34'23.03"W	
A16-30	49°49'9.12"N	114°34'23.45"W	
A16-31	49°49'8.99"N	114°34'23.73"W	
A16-32	49°49'8.65"N	114°34'23.90"W	
A16-33	49°49'8.43"N	114°34'24.15"W	
A16- 34	49°49'7.99"N	114°34'24.61"W	
A16-35	49°49'7.67"N	114°34'24.38"W	
A16-36	49°49'7.37"N	114°34'24.11"W	
A16-37	49°49'7.22"N	114°34'23.83"W	
A16-38	49°49'7.44"N	114°34'23.49"W	
A16-39	49°49'7.47"N	114°34'22.95"W	
A16-40	49°49'7.42"N	114°34'24.71"W	
A16-41	49°49'7.12"N	114°34'25.14"W	
A16-42	49°49'6.85"N	114°34'25.40"W	
A16-43	49°49'6.59"N	114°34'25.92"W	
A16-44	49°49'6.14"N	114°34'26.67"W	
A16-45	49°49'5.45"N	114°34'27.48"W	
A16-46	49°49'4.90"N	114°34'26.05"W	
A16-47	49°49'5.21"N	114°34'25.40"W	
A16-48	49°49'5.54"N	114°34'24.85"W	
A16-49	49°49'6.35"N	114°34'24.01"W	
B16-1	49°49'16.70"N	114°34'19.00"W	
B16-2	49°49'16.26"N	114°34'19.11"W	
B16-3	49°49'15.86"N	114°34'18.99"W	
B16-4	49°49'14.82"N	114°34'19.16"W	
B16-5	49°49'14.22"N	114°34'19.02"W	
B16-6	49°49'13.85"N	114°34'19.02"W	
B16-7	49°49'13.75"N	114°34'19.37"W	
B16-8	49°49'13.49"N	114°34'18.85"W	
B16-9	49°49'13.24"N	114°34'18.46"W	
B16-10	49°49'12.85"N	114°34'18.10"W	
B16-11	49°49'12.29"N	114°34'17.91"W	
B16-12	49°49'11.87"N	114°34'17.80"W	
B16-13	49°49'11.48"N	114°34'17.60"W	
B16-14	49°49'10.96"N	114°34'17.32"W	
B16-15	49°49'10.61"N	114°34'16.74"W	

B16-16	49°49'9.89"N	114°34'16.67"W	
B16-17	49°49'9.27"N	114°34'16.79"W	
B16-18	49°49'8.37"N	114°34'16.58"W	
B16-19	49°49'8.38"N	114°34'15.13"W	
B16-20	49°49'7.68"N	114°34'15.14"W	
B16-21	49°49'7.25"N	114°34'15.26"W	
B16-22	49°49'6.66"N	114°34'15.35"W	
B16-23	49°49'6.35"N	114°34'16.03"W	
B16-24	49°49'6.39"N	114°34'16.75"W	
B16-25	49°49'6.25"N	114°34'17.17"W	
B16-26	49°49'6.93"N	114°34'18.62"W	
B16-27	49°49'6.97"N	114°34'20.78"W	
B16-28	49°49'6.70"N	114°34'21.18"W	
B16-29	49°49'6.49"N	114°34'21.61"W	
B16-30	49°49'6.13"N	114°34'22.01"W	
C16-1	49°49'11.11"N	114°34'14.05"W	
C16-2	49°49'10.43"N	114°34'14.09"W	
C16-3	49°49'9.81"N	114°34'13.96"W	
C16-4	49°49'9.43"N	114°34'13.77"W	
C16-5	49°49'9.03"N	114°34'13.45"W	
C16-6	49°49'8.46"N	114°34'13.25"W	
C16-7	49°49'8.09"N	114°34'13.39"W	
C16-8	49°49'8.05"N	114°34'14.12"W	
C16-9	49°49'7.65"N	114°34'14.02"W	
C16-10	49°49'7.35"N	114°34'14.01"W	
C16-11	49°49'7.01"N	114°34'13.81"W	
C16-12	49°49'6.48"N	114°34'13.99"W	
C16-13	49°49'6.03"N	114°34'13.69"W	
C16-14	49°49'5.93"N	114°34'14.16"W	
C16-15	49°49'5.30"N	114°34'14.45"W	
C16-16	49°49'4.94"N	114°34'14.48"W	
C16-17	49°49'4.59"N	114°34'14.59"W	
C16-18	49°49'4.17"N	114°34'14.47"W	
C16-19	49°49'3.69"N	114°34'14.79"W	
C16-20	49°49'3.43"N	114°34'15.25"W	
D16-1	49°49'5.01"N	114°34'11.62"W	
D16-2	49°49'4.46"N	114°34'11.06"W	
D16-3	49°49'3.72"N	114°34'10.47"W	
D16-4	49°49'2.99"N	114°34'9.75"W	
D16-5	49°49'2.34"N	114°34'9.08"W	
D16-6	49°49'1.32"N	114°34'8.42"W	
D16-7	49°49'0.65"N	114°34'8.70"W	
D16-8	49°49'2.79"N	114°34'7.35"W	

D16-9	49°49'4.67"N	114°34'7.96"W	
D16-10	49°49'5.91"N	114°34'7.65"W	
D16-11	49°49'6.62"N	114°34'7.89"W	
D16-12	49°49'7.39"N	114°34'8.37"W	
D16-13	49°49'8.17"N	114°34'8.23"W	
D16-14	49°49'8.93"N	114°34'8.48"W	
D16-15	49°49'9.35"N	114°34'8.59"W	
D16-16	49°49'10.44"N	114°34'9.31"W	
D16-17	49°49'11.07"N	114°34'9.41"W	
D16-18	49°49'11.77"N	114°34'9.72"W	
D16-19	49°49'12.57"N	114°34'9.75"W	
		SAMPLES	
A15-S1	49°49'17.58"N	114°34'7.06"W	Bl Snd – melanite and magnetics
A15-S2	49°49'18.65"N	114°34'3.43"W	Bl Snd – mostly melanite
A15-S3	49°49'18.71"N	114°34'3.05"W	Bl Snd – some increase in volume but same basic black sand mix
B15-S1	49°49'31.34"N	114°33'45.13"W	Bl Snd – magnetic and melanite garnet
B15-S2	49°49'32.74"N	114°33'38.33"W	Bl Snd – as above
B15-S3	49°49'33.86"N	114°33'39.70"W	Bl Snd – as above
B15-S4	49°49'30.55"N	114°33'42.09"W	Bl Snd – magnetite high – should compare to titaniferous magnetite from Burmis deposit to the east especially the hydrothermal overprint of titanium seen at Burmis
C15-S1	49°49'30.93"N	114°33'36.65"W	Bl Snd – very low
C15-S2	49°49'30.09"N	114°33'33.65"W	Bl Snd – as above
C15-S3	49°49'25.44"N	114°33'35.61"W	Bl Snd – as above
C15-S4	49°49'20.97"N	114°33'35.79"W	Bl Snd – as above – low count for volume compared to other areas
C15-S5	49°49'19.12"N	114°33'32.92"W	Bl Snd - Low

D15-S1	49°49'29.53"N	114°33'3.72"W	Bl Snd - Low
D15-S2	49°49'29.85"N	114°33'3.21"W	Bl Snd – Quartz infill in oversize piece 5x3x3cm
D15-S3	49°49'30.45"N	114°33'2.17"W	Bl Snd -average
D15-S4	49°49'29.29"N	114°32'58.27"W	Bl Snd – Quartz infill -2 pieces oversize 2x4x2cm and 2x2x3cm
E15-S1	49°49'27.72"N	114°33'19.84"W	Bl Snd – some larger melanite
E15-S2	49°49'23.19"N	114°33'20.59"W	Bl Snd - average
E15-S3	49°49'25.75"N	114°33'17.65"W	Bl Snd – Quartz infill - 1 piece 3x3x4cm
A16-S1	49°49'13.76"N	114°34'21.45"W	Bl Snd – Average for area
A16-S2	49°49'12.60"N	114°34'21.60"W	Bl Snd – as above
A16-S3	49°49'12.57"N	114°34'20.68"W	Bl Snd – as above
A16-S4	49°49'12.80"N	114°34'19.86"W	Bl Snd – as above
A16-S5	49°49'11.57"N	114°34'21.69"W	Bl Snd – as above
A16-S6	49°49'9.25"N	114°34'23.34"W	Bl Snd - as above
A16-S7	49°49'6.69"N	114°34'25.75"W	Bl Snd – as above
B16-S1	49°49'8.61"N	114°34'16.60"W	Bl Snd – some small but well shaped melanite garnet
B16-S2	49°49'6.79"N	114°34'18.04"W	Bl Snd – average
C16-S1	49°49'11.03"N	114°34'14.06"W	Bl Snd – average
C16-S2	49°49'7.74"N	114°34'14.06"W	Bl Snd - not as good a sample as higher than usual surface organics
C16-S3	49°49'7.30"N	114°34'13.98"W	Bl Snd – average for area
C16-S4	49°49'5.03"N	114°34'14.47"W	Bl Snd – a couple of pices of loose feldspar that had broken cleanly from matrix – interesting to see
C16-S5	49°49'3.47"N	114°34'15.25"W	Bl Snd - average for area
D16-S1	49°49'3.34"N	114°34'9.92"W	Bl Snd – average for area
D16-S2	49°49'1.75"N	114°34'8.37"W	Bl Snd – average for area
D16-S3	49°49'2.38"N	114°34'7.84"W	Bl Snd – some larger magnetic at least compared to average in area
D16-S4	49°49'2.54"N	114°34'7.63"W	Bl Snd – as earlier sample should check for titanium as it looks a lot like the magnetite at Burmis
D16-S5	49°49'2.96"N	114°34'7.56"W	Bl Snd – for some reason

			the melanite looks more broken – like shards of garnet – examine again
D16-S6	49°49'10.07"N	114°34'8.65"W	Bl Snd – average for area
D16-S7	49°49'10.23"N	114°34'8.85"W	Bl Snd – average for area

** Please note that there is a sample mapped that has no code assigned to it. That sample would have been A15-S4 but the sample was not completed except for the dry screen which showed no result. The finer fraction was misplaced in processing.

Statement of Qualifications

I, Tom Bryant, am the author of this report and either carried out the work detailed herein or caused that work to be done.
I am a mineral exploration and development professional with over 35 years of experience as prospector, project operator, public and private exploration company upper management and consultant to industry.

[redacted]

[redacted] Tom Bryant

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