JOINT ANNUAL REPORT

EL-25399 COMPASS CREEK
&
EL-25436 MAVIS PROJECT

Period: 28/02/2011 to 27/02/2012

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Summary

Hapsburg Exploration Pty Ltd was granted EL-25399 in April 2007 for a period of six years. The tenement, known as Compass Creek, consists of 16 sub-blocks and is about 53.4 km$^2$ in area. In 2010 the name of the tenement holder was officially transferred to IsMins Pty Ltd (IsMins). The tenement is located about 130 km south-east of Darwin, 55 km NNW of Pine Creek and about 15 km east of Ban Ban Springs.

In January 2010, IsMins signed an “option to purchase agreement” with Spundaily Pty Ltd concerning an adjoining tenement known as EL-25436 (Mavis Project). This tenement consists of two sub-blocks that are located on the south boundary of EL-25399, just south of the old Mavis tin mine. Spundaily was originally granted EL-25436 (Mavis Project) in February 2007 for a period of five years. Application for renewal was lodged in January 2012 with the NT Department of Resources. The two sub-blocks total about 6.4 km$^2$ and bring the combined project area to about 60 km$^2$. This report is a joint annual report for both tenements, and will be referred to as the Compass Creek project.

The Compass Creek project is within the old “Mt. Wells Policy Reserve” which existed from 1964 to June 1988. This Policy Reserve restricted exploration in the area to small scale prospecting only. Hence no significant work was done by major exploration companies during this period.

Most early exploration around Compass Creek was focussed on trying to find gold and/or tin deposits. The closest significant mines are the Mount Wells tin mine, located about 8 km south-east, and the Woolwonga and Yam Creek Group of gold mines located about 7 km west and 10 km south-west of Compass Creek respectively.

Geology & Gold Mineralisation

The Compass Creek tenement is located near the centre of the Pine Creek Orogen (PCO). The PCO is a major sedimentary basin up to 14 km thick, and covers a present area of about 66,000 km$^2$ in the north central part of the Northern Territory. The PCO consists of Early Proterozoic (2470 – 1870 Ma) fluvial to marine sediments deposited in a spreading/rift basin unconformably resting on an Archean basement of granite-gneiss domes. The PCO is made up of an alternating sequence of psammitic and pelitic sediments with minor carbonate and volcanic rocks. Mafic sills (Zamu Dolerite) of a continental thoelitic suite of rocks were intruded prior to the Lower Proterozoic orogeny.

The PCO was subject to deformation and metamorphism between 1870 and 1780 Ma. During this period the tensional regime that had opened the sedimentary basin, change to compression in an east-west direction (F-1). This caused the sediments in the centre of the basin to become tightly to isoclinally folded, and developed a strong axial plane cleavage. The units in the centre of the PCO (geosyncline) were subject to regional lower greenschist facies metamorphism. The mafic sills of the Zamu Dolerite were altered to amphibolites.

The central part of the PCO is cut by a major fault/shear zone that occurred just prior and possibly during the major granitic intrusive event. This is known as the Pine Creek Shear Zone (PCSZ) and extends through the centre of the Pine Creek Orogen, from Katherine in the SSE, to near Darwin in the NNW; a distance of over 200 kilometres. The width of the PCSZ is at least 10 km and possibly wider in places.
The Lower Proterozoic sequence of the PCO was intruded by a series of granitoids between 1840 and 1780 Ma. These intrusions are related to a major orogeny between 1870 to 1780 Ma. In the central part of the PCO a granitic intrusive event (Cullen Batholith) occurred between 1830 – 1800 Ma, near the end of the deformation events. The Cullen Batholith intrusives are widespread and created broad aureoles of metamorphism and metasomatism.

In 1870 coarse alluvial gold was found at Yam Creek (12 km SSW from Compass Creek) while crews were digging holes for the overland telegraph line. This started a major gold rush in the central PCO, and by the turn of the century all of the major gold mines had been found. By 1915 gold mining had virtually ceased, and it wasn’t until the modern gold exploration in the early 1980’s that led to the resumption of gold mining in 1986. This modern exploration and mining targeted the 250 known gold mines and prospects, with only minor effort spent on “grass-roots” exploration. With the possible exception of the Glencoe and Goodall mines and the Mount Porter deposit, it would appear no new discoveries have been made during the modern era.

Total gold production from the PCO to the end of 1998 (NT DME production records), was about 115.5 tonnes (3.71 mill oz). It is likely that this number vastly underestimates the amount of gold won from alluvial and shallow surface mines, due to the fact that goldfield records were not kept until 10 or 20 years after the goldfields were discovered. Current resource estimates indicate over 5.0 million ounces remain in 15 to 20 mines throughout the central Pine Creek district, with the majority occurring in 5 or 6 mines.

The gold mineralisation within the PCO is preferentially developed within strata of the South Alligator Group (especially above the Middle Koolpin Formation) and lower parts of the Finniss River Group (ie, lower parts of the Burrell Creek Formation), and is largely located within the metamorphic aureole of the granitic intrusives of the Cullen Batholith (generally within 5 km of the intrusive).

It is apparent that the gold mineralisation in the PCO is spatially and temporally related to the granitic intrusives of the Cullen Batholith, and that the formation of gold deposits is controlled by structures (fluid pathways & pressure release), decrease in temperature away from the intrusive (500 – 1000m above the carapace) and possible chemical interaction with favourable host rocks (enhancing precipitation). Fluid inclusion and stable isotope studies (Bajwah, 1994) of various gold, base metal and tin deposits in the Central PCO show a significant overlap of isotope values and formation temperatures. Therefore it was concluded that most mineralisation originated from the granitic magmas and that the various types of mineralisation can be found together. However, it is reasonable to assume that significant tin mineralisation is more likely to occur closer to the intrusives in higher temperature regimes such as greisen zones.

**Compass Creek Geology**

The Compass Creek tenement covers the contact between the Prices Springs Granite (I-type) to the south-west and the South Alligator Group and the Finniss River Group of sediments to the north and north-east. Almost all the contact aureole in the sediments is covered by the tenement. In the southern half of the tenement, the combination of higher topography due to resistant sediments, and a weak aeromagnetic response over the same area, is thought to be related to shallow underlying Prices Springs Granite. The higher terrane is likely due to harder rock created by metasomatism, while the weak magnetic response is typical of all the Cullen granites. The presence of strong hydrothermal alteration and a breccia pipe at Kamas...
Cauldron and breccia vein at Jason’s Peak are also indicative of an intrusive at a relatively shallow depth.

**Previous exploration in the Compass Creek area**

Between 1988 and 1995 several companies conducted limited stream sediment and rock chip sampling, geologic mapping and Landsat structural interpretation. This limited surface exploration did show widespread anomalous rock chip samples for Sn-As-Pb-Ag and weak values of Cu, Au & Nb. However, no trenching or drilling of any kind has been documented in the Compass Creek area.

Exploration by Hapsburg and IsMins since 2007 has included extensive research of historic exploration, examination of satellite imagery and airborne magnetic surveys, and research on controls of gold mineralisation in the Pine Creek Goldfield. In addition two mapping and sampling programs have been conducted. In November 2008, Fugro Airborne Surveys (FAS) completed an airborne electro-magnetic survey (AEM) over EL-25399. The geophysical interpretation of this data concluded there were two significant AEM anomalies that occur on the deeper depth slices of the AEM data (deepest being 150 to 200m). The most prominent AEM response was over the Mavis mine, where it appears to be about 1400m long and 500m wide, and is attributed to two NNW trending lineaments (fault/veins) probably made up of a high sulphide content (graphite could be present but is thought to be unlikely). In addition, a prominent airborne magnetic anomaly was recognised to the SW of the Mavis Mine, in EL-25436.

**2010 Exploration Program**

Exploration during the 2010 field season consisted of a detailed ground magnetic survey over the airborne magnetic anomaly in EL-25436 and the location of the airborne EM anomaly over the Mavis mine. This was followed by detailed mapping over the magnetic anomaly and the area of the airborne EM anomaly. Extensive rock chip sampling accompanied stream and soil sampling over the same area. The 2010 exploration program confirmed four target areas worthy of follow-up in 2011: the magnetic/alteration anomaly in EL-25436, the Mavis area, and the two breccia pipes of Jason’s Peak and Kamas Cauldron.

**2011 Exploration Program**

Exploration during the 2011 field season consisted of a reconnaissance IP/Resistivity survey and extensive mapping & rock chip sampling.

The IP/Resistivity program consisted of 8 lines totalling 16.5 km. Five lines were located over the southern Magnetic Anomaly and Mavis Mine area with line spacing of 500 m. Three lines were located over the Jason’s Peak – Kamas Cauldron area with 350 m line spacing. All 8 IP lines show significant chargeability anomalies. Some of these were expected as they reflect known surface mineralisation; while several locations were a surprise as there was no known sulphide mineralisation on surface (i.e. blind anomalies).

Reconnaissance mapping and rock chip sampling was conducted in the mountainous terrane around the Mavis Mine area, and between the old Hewson Mine and the Jason’s Peak and Kamas Cauldron prospects. Also mapping and sampling was done in the southern part of the Magnetic Anomaly. A total of 51 rock chip samples were collected from mineralised material. Assay results show highly anomalous values for lead, arsenic, bismuth and
antimony, with moderately anomalous copper and tin; along with weak to moderately anomalous silver and gold.

Three exploration target areas have been defined. These are: the Magnetic Anomaly, the Mavis Area, and the newly define target known as the Mountain Area. The new Mountain Area encompasses the breccia pipes of Kamas Cauldron and Jason’s Peak, and the old Hewson tin mine.

The discovery of the Mountain Area was a major revelation this field season (2011). Here broad zones of alteration with many small quartz-gossan-breccia veins were found to occur over a large area (1x3 km). The assay results from rock samples in the Mountain Area returned highly anomalous arsenic and lead, along with moderately anomalous bismuth, antimony, tin, gold, silver and copper.

All three areas have geophysical anomalies that indicate the presence of significant sulphide mineralisation at depth. All three areas have large zones of hydrothermal alteration with related quartz-sulphide vein mineralisation. All three areas show pathfinder geochemistry that is consistent with known gold deposits in the Pine Creek Goldfield. All three areas are in structurally favourable settings such as the core of a plunging anticline and major NNW trending faults. And all appear to be underlain by granite at shallow depth.

Therefore it is clear that all three areas are justifiable exploration targets for gold, tin and base-metals. Hence it is proposed to arrange a drilling program during 2012.
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Introduction

Hapsburg Exploration Pty Ltd was granted EL-25399 in April 2007 for a period of six years. The tenement, known as Compass Creek, consists of 16 sub-blocks and is about 53.4 km² in area. In 2010 the name of the tenement holder was officially transferred to IsMins Pty Ltd (IsMins). The tenement is located about 130 km south-east of Darwin, 55 km NNW of Pine Creek and about 15 km east of Ban Ban Springs. There are no current mineral claims or mining leases within the EL, and the EL is covered by the McKinlay River (5271) 1:100,000 sheet and the Ban Ban (14/3-111) 1:50,000 sheet.

In January 2010, IsMins signed an “option to purchase agreement” with Spundaily Pty Ltd concerning an adjoining tenement known as EL-25436 (Mavis Project). This tenement consists of two sub-blocks that are located on the south boundary of EL-25399, just south of the old Mavis tin mine. Spundaily was originally granted EL-25436 (Mavis Project) in February 2007 for a period of five years. Application for renewal was lodged in January 2012 with the NT Department of Resources. The two sub-blocks total about 6.4 km² and bring the combined project area to about 60 km². This report is a joint annual report for both tenements, and will be referred to as the Compass Creek project.

The Compass Creek project is within the old “Mt. Wells Policy Reserve” which existed from 1964 to June 1988. This Policy Reserve restricted exploration in the area to small scale prospecting only. Hence no significant work was done by major exploration companies during this period. Minor surface stream and rock chip sampling for gold was conducted by several companies between 1988 and 1995, while no work was reported between 1995 and 2007 when Hapsburg acquired the tenement. No ground geophysical surveys or drilling have been reported (or are known) within the tenement area.

Most early exploration around Compass Creek was focussed on trying to find gold and/or tin deposits. The closest significant mines are the Mount Wells tin mine, located about 8 km south-east, and the Woolwonga and Yam Creek Group of gold mines located about 7 km west and 10 km south-west of Compass Creek respectively.

This report provides a review of the known geology and the prospectivity of the Compass Creek project. The report also presents the results of recent work done by IsMins during this reporting year.

Tenement Description

EL-25399 is in Block Identification Map: SD-52
Block  Sub-Blocks
1220  N, O, P, S, T, U, X, Y, Z (9)
1221  L, Q, V (3)
1292  C, D, E (3)
1293  A (1)  Total for EL-25399 = 16 sub-blocks

EL-25436 is in Block Identification Map: SD-52
Block  Sub-Blocks
1292  K (1)
1293  F (1)  Total for EL-25436 = 2 sub-blocks
General Geology

Early Proterozoic Sedimentary Basin

The Compass Creek tenement is located near the centre of the Pine Creek Orogen (PCO) (Fig 2). The PCO is a major sedimentary basin up to 14 km thick, and covers a present area of about 66,000 km$^2$ in the north central part of the Northern Territory. The PCO consists of Early Proterozoic (2470 – 1870 Ma) fluvial to marine sediments deposited in a spreadingrift basin unconformably resting on an Archean basement of granite-gneiss domes. The PCO is made up of an alternating sequence of psammitic and pelitic sediments with minor carbonate and volcanic rocks. Mafic sills (Zamu Dolerite) of a continental thoelitic suite of rocks were intruded prior to the Lower Proterozoic orogeny.

Stratigraphy

The oldest formation outcropping in the centre of the PCO is the Masson Formation which is exposed in the core of the Mount Masson Anticline and consists of carbonaceous and dolomitic pelites (Fig 3). The Masson Formation is overlain (disconformably?) by the three units of the Mount Partridge Group. The lower unit of the Mount Partridge Group is the Mundogie Sandstone which consists of a sequence of coarse grained psammites (sandstone/quartzite) with minor interbedded pelites (siltstones). These units were deposited in a high energy environment, and probably represent a period of uplift and rapid erosion. These quartzites and siltstones outcrop as steep strike ridges. The Mundogie Sandstone is conformably overlain by two units of the Wildman Siltstone; a lower hematitic, dominantly pelitic unit, and an upper sequence of interbedded pelites and quartzose sandstone.

The Mount Partridge Group is unconformably overlain by iron-rich sediments, carbonates and tuffs of the South Alligator Group (Figs 4 & 4a). The oldest formation in the South Alligator Group is the Koolpin Formation which consists of pyritic, carbonaceous shale, ferruginous sandstone and chert, plus minor carbonate and iron formations which were deposited in a shallow marine environment. The Koolpin Formation is unconformably overlain by the Gerowie Tuff which consists of black cherty tuff and grey siliceous pelites. This tuff was the product of felsic volcanism dated at 1880Ma (Stuart-Smith et al 1986). The Gerowie Tuff is overlain by, and grades into, the Mount Bonnie Formation, which is a transitional unit between the predominantly volcanic units of the Gerowie Tuff and the greywacke units of the overlying Burrell Creek Formation. The base of the Mount Bonnie Formation is marked by a one metre thick greywacke unit, and the top is defined by the last one metre thick tuffaceous unit.

The Burrell Creek Formation is part of the Finnis River Group and is the youngest Lower Proterozoic stratigraphic unit in the centre of the PCO. The lithologies present include hematitic siltstone, shale and greywacke. The greywacke content increases towards the east. The Burrell Creek Formation represents a change in conditions to deeper water flysch style sedimentation. The shales and slates of this unit outcrop as low hills in the McKinlay and Margaret River catchments. This represents the last episode of Early Proterozoic deposition in the PCO.

Lower Proterozoic Orogeny

The PCO was subject to deformation and metamorphism between 1870 and 1780 Ma. During this period the tensional regime that had opened the sedimentary basin, change to compression in an east-west direction (F-1). This caused the sediments in the centre of the basin to become tightly to isoclinally folded, and developed a strong axial plane cleavage.
The units in the centre of the PCO (geosyncline) were subject to regional lower greenschist facies metamorphism. The mafic sills of the Zamu Dolerite were altered to amphibolites.

Between 1870 and 1780 Ma five phases of deformation are recorded as 1) north trending monoclinal warping, 2) thrusting and recumbent folding, 3) north to northwest trending non-cylindrical, closed to tight folds, 4) open small amplitude regional folding related to granitic intrusions, and 5) kinks and drag folds related to movement on major faults. The major deformation events created a regional greenschist metamorphic facies and produced a regional north-west trending structural fabric.

The central part of the PCO is cut by a major fault/shear zone that occurred just prior and possibly during the major granitic intrusive event (see below). This is known as the Pine Creek Shear Zone (PCSZ) and extends through the centre of the Pine Creek Orogen, from Katherine in the SSE, to near Darwin in the NNW; a distance of over 200 kilometres. The width of the PCSZ is at least 10 km and possibly wider in places. However sub-parallel (related) shear zones may confuse the actual width and location of the PCSZ.

**Lower Proterozoic Granitic Intrusions**

The Lower Proterozoic sequence of the PCO was intruded by a series of granitoids between 1840 and 1780 Ma. These intrusions are related to a major orogeny between 1870 to 1780 Ma (see above). In the central part of the PCO a granitic intrusive event (Cullen Batholith) occurred between 1830 – 1800 Ma, near the end of the deformation events. Older granitic intrusives (1870-1840 Ma) occur near the eastern and western boundaries of the PCO, and are not related to the Cullen Batholith (not discussed here).

The main intrusive granitoids in the centre of the PCO are the Margaret, Burnside, Shoobridge, Fenton, Prices Springs and McKinlay intrusions which are all part of the Cullen Batholith. The Cullen Batholith consists of at least fifteen separate intrusions with seven additional satellite plutons. The granitoid types range from granite, through granodiorite to monzodiorite (Bajwah, 1994). In the centre of the PCO the plutons range in composition from granite to quartz syenite (Stuart-Smith & Needham 1984).

The Cullen Batholith intrusives are widespread and created broad aureoles of metamorphism and metasomatism from 500 m to 10 km from the contact. It is likely that the broader aureoles indicate that the granites extends at shallow depth beneath these aureoles. Albite-epidote hornfels is present in all contact aureoles, commonly with a narrow inner zone of hornblende hornfels. Locally the metamorphic aureoles developed andalusite crystals in pelitic units and amphiboles in the mafic sills of the Zamu Dolerite (Page et al. 1980).

The intrusive units of the Cullen Batholith are predominantly I type granites and are suggested to have magnetite as a common accessory. However, the airborne magnetic survey over the central PCO, show the granitic bodies to have a distinctly low magnetic response. This feature can be used to indicate the areas with granite at shallow depth below the metasediments.
Gold Mineralisation in the Pine Creek Orogen (PCO)

Gold was first discovered in the PCO in 1865 at the Finniss River; however this was not economic. In 1870 coarse alluvial gold was found at Yam Creek (12 km SSW from Compass Creek) while crews were digging holes for the overland telegraph line. This started a major gold rush in the central PCO, and by the turn of the century all of the major gold mines had been found. By 1915 gold mining had virtually ceased, and it wasn’t until the modern gold exploration in the early 1980’s that led to the resumption of gold mining in 1986. This modern exploration and mining targeted the old known gold mines, and it would appear that only minor effort was spent on “grass-roots” exploration. With the possible exception of the Glencoe and Goodall mines, it would appear no new discoveries have been made during the modern era.

Over 250 gold occurrences are known in the PCO, and most of these are in the Central Region (Figs 4). A few gold occurrences occur in the Litchfield Province and Rum Jungle Region, while the South Alligator River Valley contains some uranium-gold and gold-platinum deposits and the East Alligator River Region contains a few uranium-gold deposits.

Total gold production from the PCO to the end of 1998 (NT DME production records), was about 115.5 tonnes (3.71 mill oz). It is likely that this number vastly underestimates the amount of gold won from alluvial and shallow surface mines, due to the fact that goldfield records were not kept until 10 or 20 years after the goldfields were discovered. Also, many miners (especially Chinese) were probably reluctant to reveal the true amount of gold won.

The gold mineralisation within the PCO is preferentially developed within strata of the South Alligator Group (especially above the Middle Koolpin Formation) and lower parts of the Finniss River Group (in the lower parts of the Burrell Creek Formation), and is largely located within the metamorphic aureole of the granitic intrusives of the Cullen Batholith (generally within 5 km of the intrusive).

It is apparent that the gold mineralisation in the PCO is spatially and temporally related to the granitic intrusives of the Cullen Batholith (Figs 4 & 5), and that the formation of gold deposits is controlled by structures (fluid pathways & pressure release), decrease in temperature away from the intrusive (500 – 1000m above the carapace) and possible chemical interaction with favourable host rocks (enhancing precipitation). Fluid inclusion and stable isotope studies (Bajwah, 1994) of various gold, base metal and tin deposits in the Central PCO show a significant overlap of isotope values and formation temperatures. Therefore it was concluded that most mineralisation originated from the granitic magmas and that the various types of mineralisation can be found together. However, it is reasonable to assume that significant tin mineralisation is more likely to occur closer to the intrusives in higher temperature regimes such as greisen zones.
Exploration Potential of the Compass Creek Area
The Compass Creek tenement straddles the contact between the Prices Springs Granite (I-type) to the south-west and the South Alligator Group and the Finniss River Group of sediments to the north and north-east. Almost all the contact aureole in the sediments is covered by ELs 25399 & 25436. In the southern half of the tenement, the combination of higher topography due to resistant sediments and a weak aeromagnetic response over the same area is thought to be related to shallow underlying Prices Springs Granite (Fig 7). The higher terrane is likely due to harder rock created by metasomatism, while the weak magnetic response is typical of all the Cullen granites. The presence of strong hydrothermal alteration and a breccia pipe at Kamas Cauldron and multiple breccia veins at Jason’s Peak are also indicative of an intrusive at relatively shallow depth. Given that the Compass Creek Project is located within the Pine Creek Shear Zone (PCSZ) and that there are many mines and prospects (Au, Sn & basemetal) from 8 to 50 km south-southeast of Compass Creek in the PCSZ, it is reasonable to assume that similar deposits may be found at Compass Creek.

Exploration on ELs 25399 & 25436 during 2010
Exploration during the 2010 field season consisted of a detailed ground magnetic survey over the airborne magnetic anomaly in EL-25436 and the location of the airborne EM anomaly over the Mavis mine. This was followed by detailed mapping over the magnetic anomaly and the area of the airborne EM anomaly. Extensive rock chip sampling accompanied stream and soil sampling over the same area. The 2010 exploration program confirmed four target areas worthy of follow-up in 2011.

1) The strong Magnetic Anomaly in EL-25436 is located 1500m SSW of the old Mavis mine. The magnetic high coincides with a large area of phyllic alteration containing quartz veining and sulphide mineralisation extending up to 1500m long and 500m to 150m wide. Rock chip analyses show moderately anomalous copper, lead and arsenic in many of the samples. The source of the magnetic anomaly is unexplained at the surface. The alteration and magnetic anomalies are centred on a large north to NNE plunging anticline with the axial plane extending through the Mavis mine. The axial core of this anticline is strongly hornfelsed over a width of about 100m, and extends about 400m from the granite contact. The hornfels body is centred on the magnetic anomaly.

2) The Mavis target area includes the old tin (-gold) mine and the immediate area to south where anomalous gold mineralisation has been found in soils and rock chip samples. This area coincides with a significant N-S trending airborne electromagnetic (AEM) anomaly which occurs at depth (150-200m), and is unexplained at the surface.

3) The Jason’s Peak breccia anomaly consists of a hill of semi-hornfelsed porphyroblastic sediments and several narrow breccia pipes and breccia faults from 0.5 to 6m wide and with both vertical and shallow dips. These breccia bodies occur within an area of about 75 x 30 metres, and rock chip samples returned highly anomalous Pb, As, Sn, Bi, Sb & Ag, with weakly anomalous Au.

4) The Kamas Cauldron breccia anomaly consists of an 80m diameter breccia pipe containing rock samples with high Pb, As & Sn and moderately anomalous Bi, Sb, & Ag. The breccia pipe is surrounded by spotted (porphyroblastic) semi-hornfelsed sediments, thus indicating an intrusive is within close proximity (at depth).
**Exploration on ELs 25399 & 25436 during 2011**

Exploration during the 2011 field season consisted of a reconnaissance IP/Resistivity survey and extensive mapping & rock chip sampling (see Appendices 1 to 7).

The IP/Resistivity program consisted of 8 lines totalling 16.5 km. Of these, five lines were located over the southern Magnetic Anomaly and the Mavis Mine area with lines spaced 500m apart. Three lines were located over the Jason’s Peak – Kamas Cauldron area with 350m line spacing. All 8 IP lines show significant chargeability anomalies. Some of these were expected as they reflect known surface mineralisation; while several locations were a surprise as there was no known sulphide mineralisation on surface (i.e. blind anomalies).

The IP/Resistivity survey was conducted by Fender Geophysics Pty Ltd (Contact: Andrew Sloot, Suite 203, 283 Alfred St, North Sydney, NSW). Fender Geophysics provided a three man crew and all geophysical equipment; and the program was conducted between August 28\(^{th}\) and September 16\(^{th}\) 2011.

Reconnaissance mapping and rock chip sampling was conducted in the mountainous terrane around the Mavis Mine area, and between the old Hewson Mine and the Jason’s Peak and Kamas Cauldron prospects. Also mapping and sampling was done in the southern part of the Magnetic Anomaly. A total of 51 rock chip samples were collected from mineralised material. Assay results show highly anomalous values for lead, arsenic, bismuth and antimony, with moderately anomalous copper and tin; along with weak to moderately anomalous silver and gold.

Three exploration target areas have been defined. These are: the Magnetic Anomaly, the Mavis Area, and the newly define target known as the Mountain Area. The new Mountain Area encompasses the breccia pipes of Kamas Cauldron and Jason’s Peak, and the old Hewson tin mine.

The discovery of the Mountain Area was a major revelation this field season (2011). Here broad zones of alteration with many small quartz-gossan-breccia veins were found to occur over a large area (1x3 km). The assay results from rock samples in the Mountain Area returned highly anomalous arsenic and lead, along with moderately anomalous bismuth, antimony, tin, gold, silver and copper.

All three areas have geophysical anomalies that indicate the presence of significant sulphide mineralisation at depth. All three areas have large zones of hydrothermal alteration with related quartz-sulphide vein mineralisation. All three areas show pathfinder geochemistry that is consistent with known gold deposits in the Pine Creek Goldfield. All three areas are in structurally favourable settings such as the core of a plunging anticline and major NNW trending faults. And all appear to be underlain by granite at relatively shallow depth.

The reader is directed to the following appendices that provide commentary and analysis on results of the geophysical and rock sampling programs (including the results from previous years).

Appendix 1, Interim Review of 2011 Exploration at Compass Creek.
Appendix 2, Compass Creek IP Modelling: Executive Summary (Montana GIS).

Annual Report for EL-25399 & EL-25436 for years ending Feb & April 2012
REFERENCES

Ahmad, M., Wygralak, A.S. & Ferenzi, P.A. Gold Deposits of the Northern Territory Northern Territory Geological Survey (Rpt 11), 1999

Ahmad, M. & Lally, J.M. Pine Creek Orogen: Field Excursion Guide. Chief Government Geologist Conference, NTGS Record 2003-003

Bajwah, Z. U. A Contribution of Geology, Petrology and Geochemistry To the Cullen Batholith and related Hydrothermal Activity Responsible for Mineralisation, Pine Creek Geosyncline, Northern Territory. Northern Territory Geological Survey (Rpt 8), 1994

Geoscience Australia (ex BMR) 1:100,000 Geology Map Series – McKinlay River Sheet


McGregor-Dawson, Jim Annual Report for EL-25399 (Compass Creek, NT) for the period 12 April 2008 – 11 April 2009 Hapsburg Exploration P/L, unpublished report (May 2009)

McGregor-Dawson, Jim Annual Report for EL-25399 (Compass Creek, NT) for the period 10 April 2009 – 9 April 2010 Hapsburg Exploration P/L, unpublished report (April 2010)

McGregor-Dawson, Jim Joint Annual Report for EL-25399 (Compass Creek) and EL-25436 (Mavis Project) for the period 28 February 2010 to 27 February 2011. Ismins Pty Ltd, unpublished report (March 2011)