SUMMARY REPORT

Hydrothermal Manganese Mineralization

Rondonia / Mato Grosso

Brazil

Prepared For

Maxtech Ventures Corp.

Location: Centred about Latitude 11^0 22' 0" South, Longitude 60^0 00' 0" West

Coverage: Border Regions of Eastern Rondonia - Western Mato Grosso, Brazil

February 12, 2017

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Terms – Definitions

R$	Brazil currency "Real or Reais"
BMC	Brazil Manganese Corporation, a subsidiary of Meridian Mining S.E. Meridian has taken over mining activities in Rondonia. BMC has become the exploration arm and began exploration for tin South East of Porto Velho, RO. This new arrangement has become official in early 2017.
CONFEA	Conselho Federal de Engenharia, Arquitetura e Agronomia, Brazil's federally legislated governing body for Engineers (including Geologists), Architects and Agronomists. CREA is the state based arm of CONFEA
CREA-MT	Conselho Regional de Engenharia, Arquitetura e Agronomia do Mato Grosso
Davos	Davos Comercial e Exploração Mineral Ltda
DNPM	Brazilian Department of Mineral Production
Espigao	Espigao d'Oeste, city and service centre in Rondonia
Garimpeiro	Prospector, artisan miner
Guia	Small mining license – Allows an initial 6,000 tonnes of material to be removed for testing purposes.
Juina	Juina is a city and service centre in Mato Grosso
Lavra	Mining License or Concession
Meridian	Meridian Mining SE, Cancana and Ferro Metals merged in early 2017 to form Meridian, the parent of BMC
Partial Report	A progress report submitted to DNPM after 3 years of research. It may request additional time to continue exploration or it may state that not enough was found to continue.
Process	Claim
Process Data	https://sistemas.dnpm.gov.br/SCM/Extra/site/admin/dadosProcesso.aspx
TAH	Taxa Anual por Hectare, Anual fee per hectare

Summary

This report has been prepared as an overview of the emerging high quality, hydrothermal manganese mineralized camp located in the western Brazilian States of Rondonia and Mato Grosso. The known mineralization strikes easterly for at least 250 km from Eastern Rondonia across the state borders into Mato Grosso. Mineralization consists primarily of hydrothermal manganese in the form of pyrolusite (MnO2). It occurs as surficial, eroded clasts and cobbles of material with assays reported to greater than 54% Mn and less weathered, primary veins of similar material. Veins have been shown to extend from surface to below 80 metres and still be open below that depth.

The author has worked in the region since 2006, initially conducting exploration and bulk sampling of diamond bearing kimberlites. From 2008 he has reviewed, mapped and developed numerous (~100) manganese showings, several of which were or currently are in production. The abundance of similar showings located along a 250 kilometre trend indicates further opportunities exist for new discoveries.

Property Description and Ownership

Currently, two operators hold the majority of properties. Brazilian Manganese Corporation (BMC) operates exploration and mining projects in the Espigao d'Oeste region of Rondonia while Davos Comercial e Exploração Mineral Ltda (Davos) has exploration projects in the Juina region of Mato Grosso. The indigenous occupied land known as the Roosevelt Reservation straddles the common border between the States and separates the two exploration centres.

Geology and Mineralization

Eastern Rondônia / Western Mato Grosso is underlain by a sequence of metamorphosed and younger granitoid intrusives of Proterozoic age. The younger Proterozoic, granitoid plutons are in some parts cut by high-level, late-stage hydrothermal veins rich in pyrolusite. These veins are structurally controlled in a predominant ENE direction with steep dips. The better individual veins observed can be up to 2 m wide within a structural zone up to 3 – 5 m wide.

Subsequent erosion of the hydrothermal veins, without much transport, results in a proximal/in-situ deposit of angular manganese bearing sand, cobbles, and boulders.

Mineral Resource Estimate

Inferred resource estimates have been previously quoted for the manganese colluvium, however these historical resource estimations do not meet current requirements for reporting. There are no Mineral Resources presented in this report.

Mining Methods

Mining currently occurs in Rondonia but not in Mato Grosso. Only the near surface cobble material is extracted. Exploration and development of the in-situ vein material is on going. Operations similar to sand and gravel separation plants are used to clean and sort the weathered clast material into various size fractions. These fractions are sold FOB Espigao to Brazilian fertilizer producers who make liquid fertilizers for the soy, garlic and sugar cane industries. Lessor amounts are sold to the steel manufactures.

Project Infrastructure

Existing projects are located near service-centre towns with populations in the 30,000 inhabitant range. Labourers, skilled staff and abundant services are available for project execution.

Environmental Studies and Permitting

Both guias and lavras have been issued for various localities where material has been extracted for research purposes and profit. The federal department of mines, DNPM, encourages and supports ongoing exploration and mining activities. The local populations also support these programs. The author has not encountered opposition to these opportunities by local citizens.

Conclusions and Recommendations

The State of Mato Grosso is equally appealing as Rondonia for manganese exploration. It has had much less concerted effort in exploration or development for manganese than Rondonia.

Similar geology, tectonic history and presence of manganese showings identical to those in Rondonia make this area ideal for additional discoveries of high-grade manganese deposits.

The focus in the Juina area has been placer and primary diamond deposits, a similar situation to the Espigao region in Rondonia about *ten years ago* or 2006. With this in mind, prospective land along major structural trends should be easier to acquire. Recent claim maps (Feb, 2017) show large areas of prospective ground are open for staking to the north east of Juina.

Mato Grosso is one of the major soy bean producing areas and thus a major user of manganese based fertilizers. Proximity to the end users in this application should be mutually beneficial to both a manganese producer and end users.

Minor regional exploration has been performed to date. Local, specific exploration has included pitting, trenching, shallow core drilling and ground magnetometer geophysics. BMC has flown airborne surveys over portions of their lands in Rondonia. New targets have been identified by the airborne surveys. Further airborne studies in conjunction with prospecting, systematic soil sampling, ground geophysical surveys such as IP/Resistivity and regional ground magnetics would be appropriate for this type of mineralization. Airborne geophysical surveys would be an asset to help identify prospective structures within the project areas.

Introduction and Terms of Reference

Located within the Brazilian States of Rondonia and Mato Grosso, Proterozoic aged granitic plutons structurally host several high-grade manganese occurrences. Mineralization occurs in two forms. The primary hosts for the mineralization are hydrothermal veins located within shear zones. The secondary mineralization, formed by erosion of the veins, occurs as close packed, rounded to angular clasts of Pyrolusite / Manganite within a saprolitic soil. These clast rich horizons are spatially associated with and generally overlay the primary mineralization. The clasts range in size from sand particles to boulders greater than 1m on a side. This form is currently in production by Brazil Manganese Corporation (BMC), in the Brazilian State of Rondonia.

Davos Comercial e Exploração Mineral Ltda (Davos) has approximately 57,000 hectares contained within 3 projects in the Juina area of Mato Grosso. Several showings of either primary

or secondary mineralization, or a combination of both have been identified within the projects. A small test mining operation, conducted on one project extracted and sold clasts to buyers.
Exploration for manganese has been performed in the Espigao d'Oeste region of Rondonia for approximately ten years while similar efforts around Juina have occurred for the last five or so years. I have been involved with exploring for, documenting, and overseeing evaluation of similar prospects to the west in Rondonia since 2008.

Terms of Reference

The author was engaged by Maxtech Ventures Corp. to review the manganese occurrences located within this emerging metallogenic province.

Location

The known mineralization strikes easterly for at least 250 km from Eastern Rondonia across the state borders into Mato Grosso. Currently, two operators hold the majority of properties. Brazilian Manganese Corporation (BMC) operates exploration and mining projects in the Espigao d'Oeste region of Rondonia while Davos Comercial e Exploração Mineral Ltda (Davos) has exploration projects in the Juina region of Mato Grosso. The indigenous occupied land known as the Roosevelt Reservation straddles the common border between the States and separates the two exploration centres. Exploration on the reservation is not allowed by Brazilian federal law. The author has not been on the reservation but has been told by local residents that the manganese occurrences do exist and continue across the reservation. This would be expected, as the showings and mineralization found on either side of the indigenous land are similar in many ways. The appearance, style, geological setting and geochemistry are interchangeable.

Summary of Brazil Mining Laws

Brazil's mining regulations are established within Brazil's Federal Constitution. A summary of these regulations follows:

- Mining legislation is enacted at the Federal level.
- Minerals are the property of the Federal Government

- Exploration can be carried out by Brazilian individuals or legal entities federally incorporated in Brazil
- Exploration and mining are considered activities of national interest
- Landowners, local, state and federal governments are entitled to a royalty
- Mining is subject to additional environmental, forestry, land use licensing and reclamation activities
- Processes (claims) are granted for a three year period with an extension of up to three additional years upon approval by the DNPM
- Annual taxes of R$3 per hectare are payable for each process
- Exploration activities required to locate and define a deposit and determination of the economic feasibility can be carried out during the life of the Process
- During the life of the process a small mining license (GUIA) may be granted for extraction of up to 6,000 tonnes of manganese cobbles. The proceeds of the sale of this material are intended to help fund additional exploration.
- Additional licenses are required to obtain a GUIA.

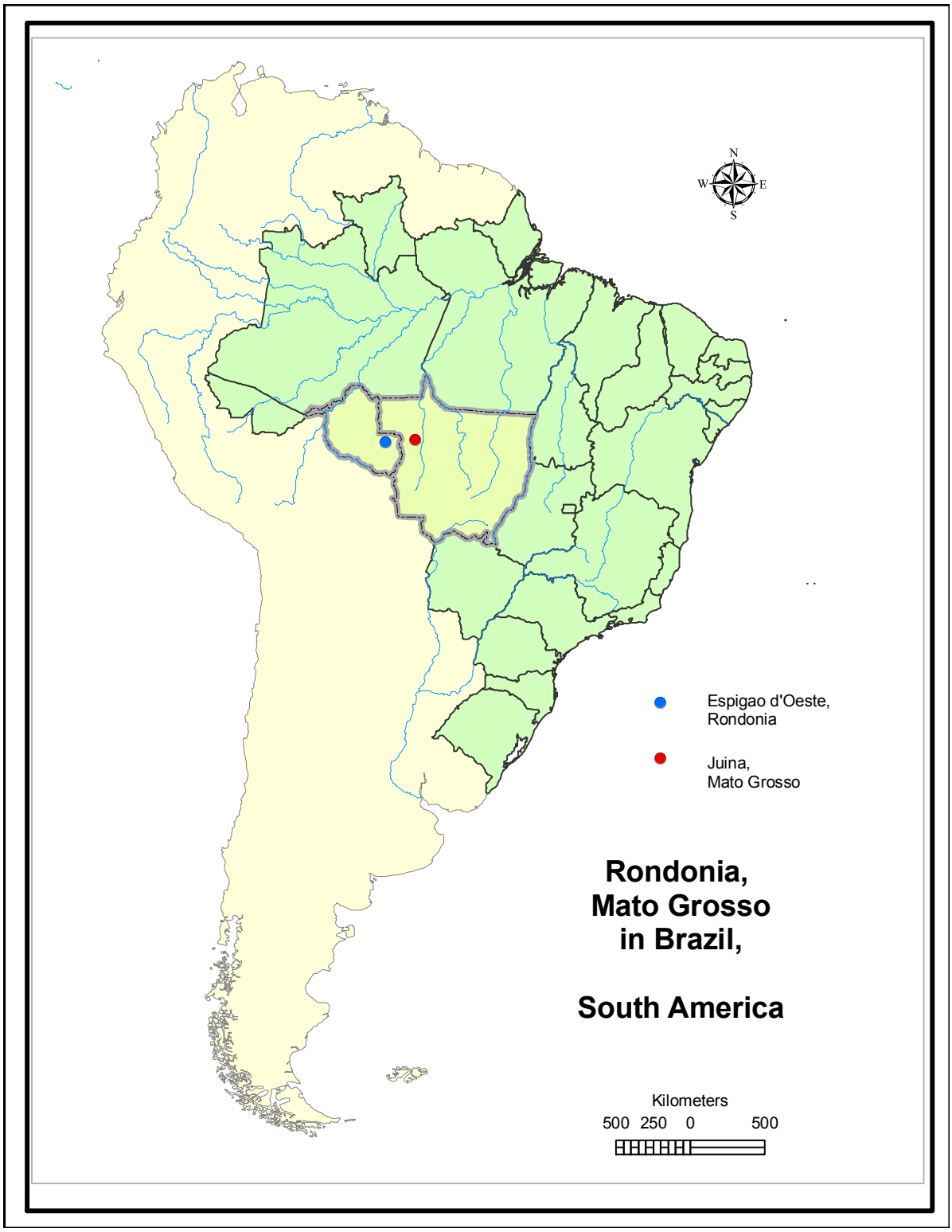

Figure 1: Location Map

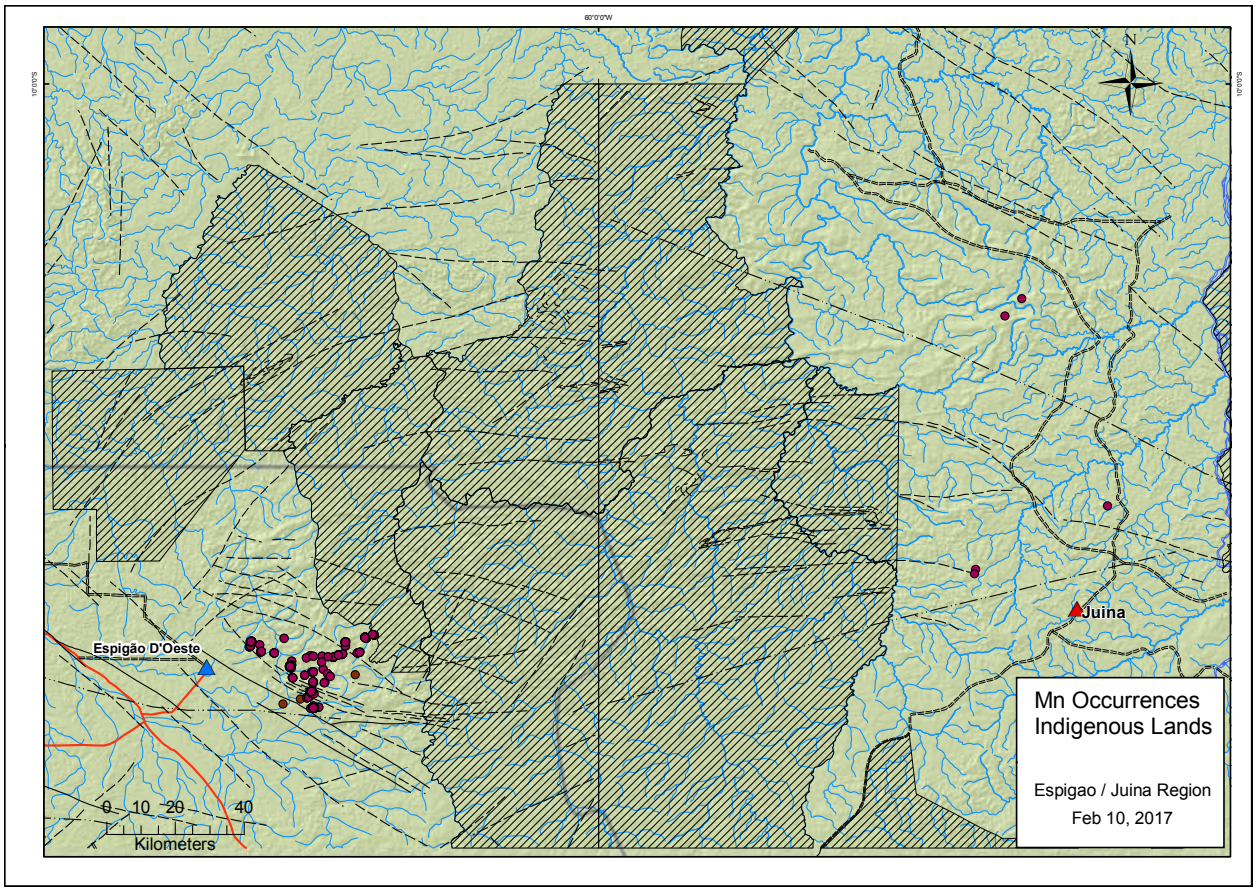

Figure 2: Location of Manganese Occurrences with Indigenous Lands

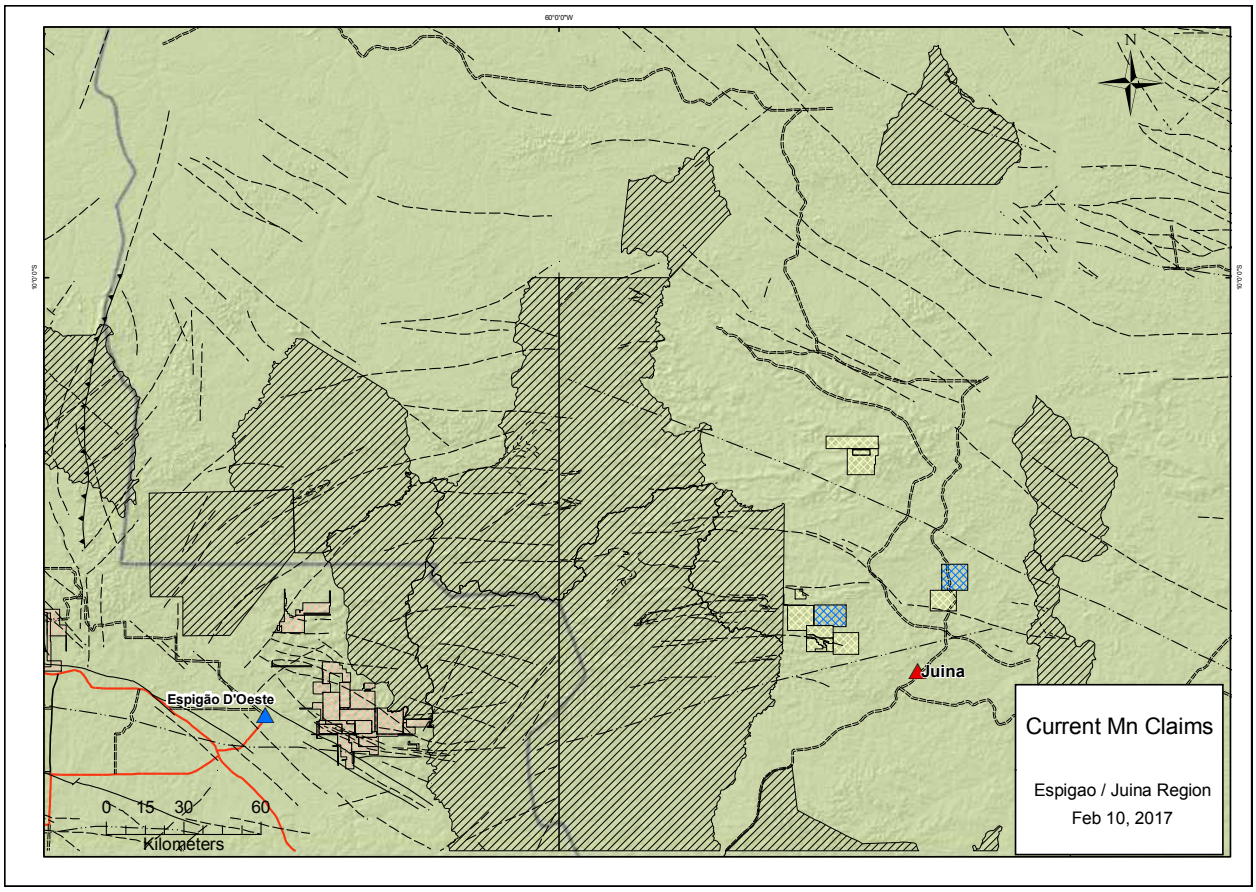

Figure 3: Claim Locations

Accessibility, Climate, Local Resources, Infrastructure and Physiography

Access

The region is located in the Brazilian states of Mato Grosso and Rondonia, which lays within the Amazon River drainage basin. Cuiaba is the capital city of the State of Mato Grosso, in northwestern Brazil. Juina, a town of 40,000 people located 800 km by road to the north of Cuiaba, is accessible by a good-quality paved highway from Cuiaba. Espigao d'Oeste is located in Eastern Rondonia, 800 kilometres from Porto Velho, the State Capital. Both Porto Velho's

and Cuiaba's international airports are serviced by regularly scheduled jet air flights. There are scheduled flights into Juina by turbo-prop aircraft from Cuiaba.

The Properties are accessible by relatively well-maintained municipal dirt roads. These are accessible year round, however during heavy rains there are short periods where access is restricted to 4 x 4 vehicles. The government has promoted farm development activity in the region. This has resulted in the development of a network of farm roads of variable quality that provide extensive access to the property for exploration activity.

Climate

The climate of the region is equatorial and is generally hot and humid with little diurnal temperature variation and a very high annual rainfall. There are two seasons, namely: a dry season during April to October and a wet season lasting from November until March. In the dry season temperatures can often reach highs of 32˚ to 42˚ Celsius. During the wet season, rain falls almost every day, often as thunderstorms. The annual precipitation of the area is between 1,900mm and 2,500 mm while the average humidity is between 80% and 85%.

Local and Regional Resources

Agricultural colonization of Mato Grosso and Rondônia has proceeded at a very high pace over the past 25 years, following the construction of the all-weather BR-364 highway linking the states of Mato Grosso, Rondônia and Acre with the rest of Brazil. This highway has provided a valuable alternative corridor for the export of forestry and agricultural products and minerals to European and North American markets. The Madeira River at Porto Velho is navigable by large freight barges (> 200 tonne capacity). Shipments out are trans-shipped to ocean-going vessels in Manaus. This is analogous to the situation in the Great Lakes-St. Lawrence seaway system.

Cuiaba, the state capital of Mato Grosso lies in the south of the State, at the exact centre of South America. It is at an elevation of 165m and hosts a large agricultural service industry. Mato Grosso is an important cattle and agro business locale. With the advent of highways and the growth of agribusiness, Cuiaba has grown from a city of 50,000 to over half a million persons. It serves as an important commercial, transportation, and communications centre. Cuiaba lies on the Interoceanic Highway, which connects to the Pacific Ocean and federal highway BR-364 that

connects to the Atlantic Ocean. The city is also linked by highway with the city of São Paulo to the southeast, in São Paulo State.

Within the areas of interest of Mato Grosso there is one significant settlement, namely: Juina.

Juina is a small city, with a population of some 40,000 people, located at Lat.11˚25'25" S and Long. 58˚45'17" W. It lies at an altitude of 330 m above sea level. It is an administrative and service centre located at the north end of a major agricultural region. The town has numerous schools, hospitals and excellent industrial service facilities. Diamond mining is an industry in the area. Juina is the home of Si Mineradora S/A, a producer of rough diamonds in Brazil. The DNPM summary for 2005 – 2009 says Si Mineradora S/A produced 80,100 carats of rough diamonds, the most of any producer in Brazil. Long-distance, air conditioned bus service connects Juina with Cuiaba. The local airport has turbo-prop service to Cuiaba, and offers connecting flights to all major Brazilian cities. Juina is an excellent source of skilled and unskilled labour.

Porto Velho, the state capital of Rondonia lies in the northwest corner of the State along the south bank of the Madeira River, a tributary of the Amazon, at an elevation of about 300 feet (100 metres). It was installed as the municipal seat in 1915. As the head of navigation on the Madeira, Porto Velho serves as an important commercial, transportation, and communications centre. The city was the northern terminus of the now-defunct Madeira-Mamoré Railway, which was built to circumvent rapids between Porto Velho and Guajará-Mirim and to carry rubber from Mato Grosso state and northeastern Bolivia, the borders of which lie 100 miles (160 km) southwest. Tin ore, lumber and medicinal plants and oils are exported from Porto Velho. Porto Velho lies on the principal highway between Manaus to the northeast and Rio Branco to the west, in Amazonas and Acre States, respectively. The city is also linked by highway with the city of São Paulo to the southeast, in São Paulo State. Porto Velho is a major administrative and service centre with well-developed infrastructures, facilities and services. Currently the population is estimated at 320,000 inhabitants.

The area of interest within Rondonia hosts two significant settlements, namely: Cacoal and Espigão d'Oeste.

Cacoal is a small city, with a population of some 80,000 people, located at Lat.11˚26'19" S and Long 61˚26'50" W. It lies at an altitude of 200 m above sea level. It was initially established as an outpost, to guard the regional telegraph line connecting Porto Velho to Cuiabá, capital of Mato Grosso. Today it is the administrative and service centre of a major agricultural community. The town has numerous colleges, schools, hospitals and excellent industrial service facilities. A long-distance, air conditioned bus service connects Cacoal with Porto Velho. The local airport has recently been renovated with an expanded runway system, promising international flight connections in the near future. Cacoal is an excellent source of skilled and unskilled labour.

Espigão d'Oeste located at Lat 11˚34'60" S and Long 60˚58'60" W at an altitude of 282 metres, is a smaller agricultural community. It lies some 20 kilometers north of Highway BR-364, serviced by a paved highway BR-387. Despite its small population, (approximately 30,000 inhabitants) the town has excellent industrial service facilities and is a source of reliable local labour skilled in prospecting and artisanal mining of surficial deposits.

Infrastructure

Many of the farms in the district are supplied with electrical power from the national grid. During the past 20 years, the government has engaged in a major development program to establish water, road, power and telecommunications services to the region in order to support migration away from Brazil's major cities and to increase agricultural activities in this region. The deforestation of the region is now a concern and the government is restricting forestry and artisanal mining to protect the dwindling tracts of primary jungle. There is an established network of interconnected farm access roads giving good access to most areas.

The landline system of telephony is now augmented by extensive coverage by cell telephone networks. Coverage for voice and data (3G -GPS-GPRS) on roaming Canadian cell phones is also extensive.

Physiography

Northern Mato Grosso's physiography is similar to that of Eastern Rondônia. There is a complex mosaic of peneplain surfaces interspersed with hills of Precambrian Brazilian Shield granitoids, gneisses and schists. Davos' properties lie within the Precambrian Shield granitoid sector. In this area most of the land is cleared and farmed and only small tracts of jungle remain.

Much of the region is characterized by rolling hills with elevations of around 400 m. Relief is controlled by the underlying bedrock geology. Sharp scarps and extensive flat plains predominate over many of the Proterozoic basement lithologies.

The drainage pattern of the region is primarily northwards into the Juruena River basin, which becomes the Tapajos River that flows into the Amazon River.

Bedrock exposure in the southern and central sectors of Davos' clams is generally poor and is limited to rounded granitic outcrops on steep hillsides and to the graded roadbeds of the unpaved rural highways and farm tracks where the sand and dirt has been washed away exposing bedrock. Tropical weathering (saprolitization and lateritization) is highly variable and is generally developed to a depth of 3 to 8 m, but it has been seen to a depth of 20m in drill core. Due to the original Amazonian jungle cover and the gentle relief, one may not observe the broad dispersion of near-surface materials that might be seen at similar latitudes in Africa.

Characteristic vegetation types are also associated with different bedrock lithologies. Primary jungle and new growth vegetation (when not cleared) overlay the more rugged Precambrian basement rocks.

Land use is primarily agricultural; cattle grazing and subsistence farming. Teak plantations as well as bananas, oranges, tangerines, mangos, pineapples, melons and cashew fruit are grown for local consumption. Old growth Amazon rain forest remains on hilltops and steep valley walls.

History

Exploration for manganese in the Espigao region has been performed since 2008 by Rio Madeira and by Eletroligas Ltda since 2010. Prior to them exploration throughout this part of Rondonia has been dominated by the search for diamonds. In Rondônia artisanal miners (garimpeiros) have worked alluvial diamond deposits on the Pimenta Bueno and Comemoracão Rivers and their

tributaries since the 1930s. Before the forestry and agricultural development in this region access to the area of Rio Madeira's claims was extremely difficult. This limited mining activities to small-scale garimpeiro operations. Reported alluvial production has totaled only 260,000 carats (DNPM website); such declared production figures are notoriously unreliable and often far less than actual amounts.

During 2008, Rio Madeira was granted a Lavra for production of manganese and have produced product continuously since. Eletroligas has produced manganese for its own internal use since 2010. Only recently has there been any international interest in the manganese fields.

Exploration for manganese in the Juina region has been ongoing since 2008 by Davos Comercial e Exploração Mineral Ltda. Prior to them and concurrently, exploration throughout this part of Mato Grosso has been dominated by the search for diamonds. During the 1970s and 1980s, 5-6 million cts per year were taken from the Juina placer diamond fields. Both De Beers and Rio Tinto, actively explored the Juina District for kimberlite. Their respective efforts led to the discovery of 26 kimberlite bodies. These turned out to be sub-economic eventually causing both companies to leave the area. During 2006-2007 Diagem Inc. discovered a group of diamondiferous kimberlitic pipes (Pandrea-1 to -7) within the Chapadão Plateau, at the head of a drainage system, which has produced most of the alluvial diamonds mined in the Juina area. The diamond grade of these kimberlites ranges from 0.8 to 2.8 ct/m3.

These kimberlites have been dated at 93 Ma, roughly contemporaneous with the opening of the Southern Atlantic. (Felix V. Kaminsky et al). Sl Mineradora Ltda has been Brazil's largest miner of diamonds producing over 80,000 ct between 2005 and 2009. (USGS Minerals Yearbook 2009)

In Rondônia to the West, artisanal miners (garimpeiros) have worked alluvial diamond deposits on the Pimenta Bueno and Comemoracão Rivers and their tributaries since the 1930s. This limited mining activities to small-scale garimpeiro operations. Reported alluvial production has totaled only 260,000 carats (DNPM website); such declared production figures are notoriously unreliable and often far less than actual amounts.

During 2014, Davos was granted a Guia on process 866676/2011 for test production of manganese and produced approximately 2,000 tonnes of product.

Since 2014, Brazil Manganese Corporation (BMC), a company with financial roots in Australia, has applied comprehensive exploration on the Rondonia portion. Mato Grosso has yet to see extensive, in depth exploration and remains a target for motivated companies.

Geological Setting and Mineralization

Regional Geology

Both Rondonia and Mato Grosso share a common geology and tectonic history, for the area of interest. The description of the regional and local geology equally applies to both areas. The South American platform of Brazil is underlain by an assemblage of two cratons, the Amazon craton and the São Francisco craton. The area of interest is located on the Amazon craton (Figure 4) within basement rocks of Proterozoic age (1.8 to 1.2 Ga). The tropically weathered host rocks are referred to as the Serra de Providência Intrusive Suite. This suite includes Amphibole-Biotite Monzogranites, Syeno-Granites and high-level porphyries.

Two large continental scale lineaments are defined by airborne magnetics. The northwest-southeast trending lineament is referred to as the 125°AZ. Throughout this region, kimberlite and alkaline intrusions appear controlled by this major structural discontinuity.

An assemblage of north-northwest/south-southeast steep dipping gneisses and amphibolitic rocks of Precambrian age form the basement. A Supercrustal assemblage of acid sub-volcanic and hyperbyssal rocks (1.6 billion years), granitic rocks (1.2 to 1.4 billion years) and mafic intrusions usually sub-parallel the graben borders. These intrusions correspond to the last major tectonic event, the Rondoniense at 1.2 to 1.3 billion years.

There are a number of release structures roughly perpendicular to the major regional 125º structural trend. These may be related to the break-up of Gondwanaland or the last structural event in the area.

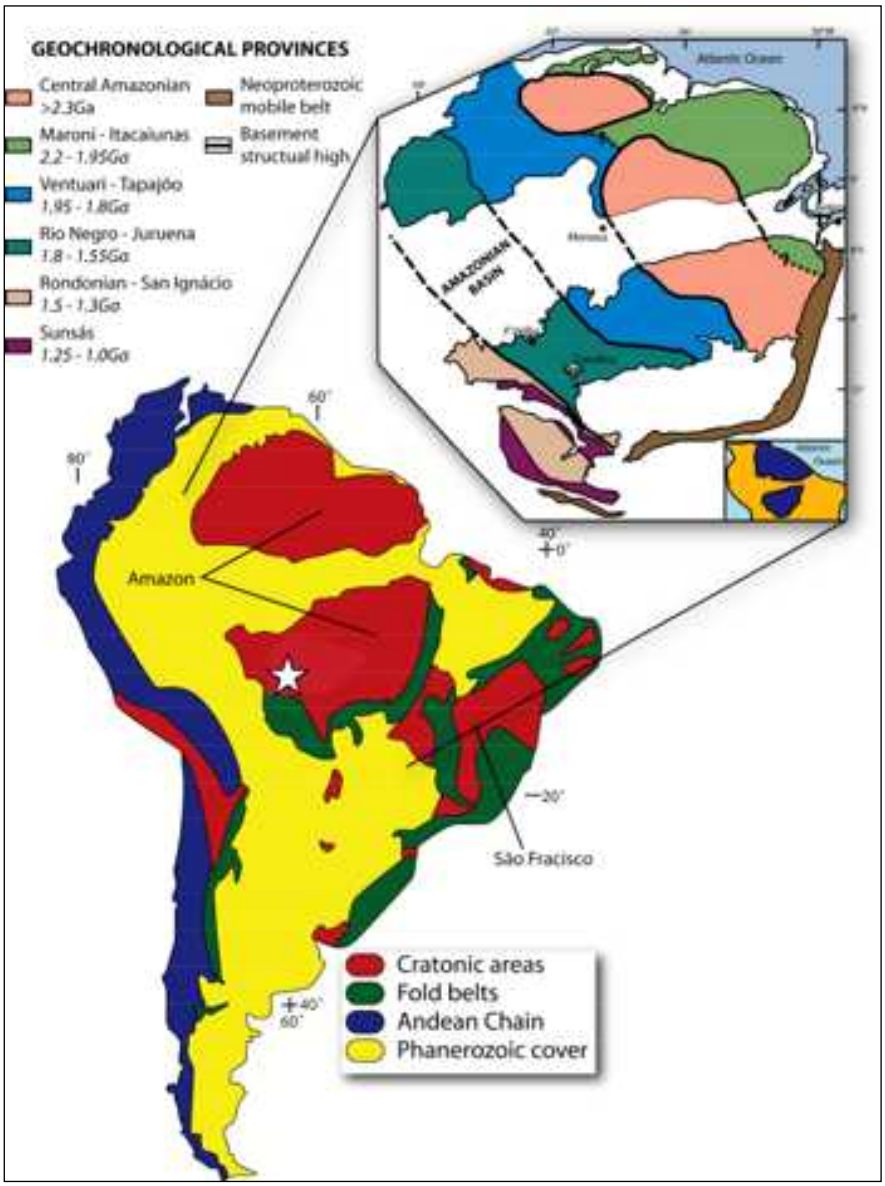

Figure 4: Geology S.A. (after Hunt et al, 2008)

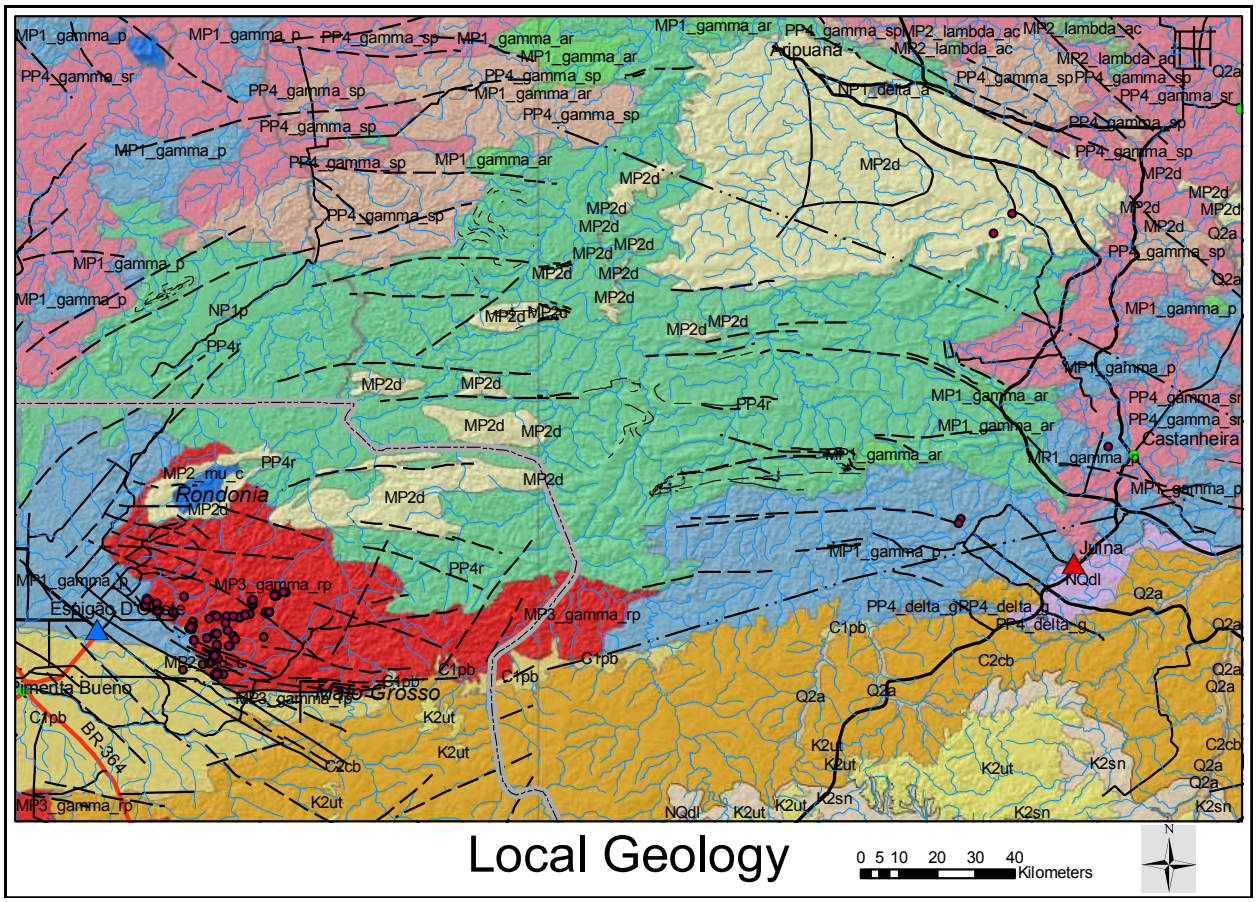

Figure 5: Local Geology

MAP CODE	LITHOLOGY	AGE_MAX	ERA_MAXIMA	PERIOD_MAX
Q2a	Sand, Gravel	0.875	Cenozoic	Quaternary
NQdl	Ferruginous laterites	23.5	Cenozoic	Quaternary
K2ut	Fine Sandstone	96	Mesozoic	Cretaceous
K2sn	Conglomerates, fine arenites	96	Mesozoic	Cretaceous
C2cb	Arkose, Quartzo-Arenite, Argilite, Conglomerate, Shale	320	Paleozoic	Carboniferous
C1pb	Sandstone, Conglomerate, Shale, Siltstone	355	Paleozoic	Carboniferous
NP1p	Sandstone, Sandstone Arkosic, clast supported conglomerate	1000	Neoproterozoic	Toniano
MP3_gamma_rp	Aplite, monzogranite, pegmatite, quartz-monzonite, quartz-syenite, syenogranite	1005	Mesoproterozoic	Esteniano
MP2d	Arkosic-Arenite, Quartz-Arenite, mudstone, clast supported conglomerate, siltstone	1383	Mesoproterozoic	Ectasiano
MP2_lambda	Quartz syenite, syenite	1400	Mesoproterozoic	Ectasiano
MP1_gamma_p	Charnockite, Gabbro, mangerites, monzogranites, syenogranites	1547	Mesoproterozoic	Calimiano
MP1_gamma_ar	syenogranites	1548	Mesoproterozoic	Calimiano
PP4r	Dacite, rhyolite, pyroclastic breccias, ignimbrite, lithic sandstone, Chert, B.I.F., Metapelities, metachert	1762	Paleoproterozoic	Estateriano
PP4_gamma_sr	Metagranodiorite, Metamonzogranite, Metassienogranite	1770	Paleoproterozoic	Estateriano
PP4_gamma_sp	Metamonzogranite, Metasyenogranite, biotite monzogranite	1784	Paleoproterozoic	Estateriano

Table 1: Local Geology Legend

Local Geology

The stratigraphic section exposed in and around this region includes:

i) Quaternary aged alluvial deposits of unconsolidated sand and gravels,

ii) Neogene aged continental, alluvial ferruginous conglomerates and gravel, poorly consolidated.

iii) Cretaceous aged, continental desert and fluvial fine grained sandstones and conglomerates.

iv) Carboniferous aged Fazenda da Casa Branca and Pimenta Bueno formations, lacustrine deposits of arkoses, quartz arenites, mudstones, conglomerates.

v) Neoproterozoic Palmeiral Formation consisting of arkoses arenites and conglomerates.

vi) Mesoproterozoic aged Rio Pardo intrusive suite of aplites, monzogranites, pegmatites, and quartz syenites.

vii) Mesoproterozoic aged Daranelos Formation of mixed sandstones and conglomerates.

viii) Mesoproterozoic aged Alcalinas Canama intrusion of syenites.

ix) Mesoproterozoic Serra da Providencia Intrusive Suite: granitoids with a characteristic rapakivi texture.

x) Mesoproterozoic aged Aripuana Granite, a syeno-granite.

xi) Paleoproterozoic Roosevelt Volcanic Suite: flows and pyroclasitcs of predominately acid composition.

xii) Paleoproterozoic aged Sao Romao Intrusive suite consisting of inequigranular metamonzogranites.

xiii) Paleoproterozoic Paleoproterozoic aged Sao Pedro Intrusive suite of megaporphoritic monzogranites.

Mineralization

Manganese cobbles have been extracted in both areas. BMC has done minor test extraction of hydrothermal vein material on the western end of the trend, in Rondonia. Exploration and prospecting to date have shown the Mato Grosso properties to contain cobble fields and hydrothermal vein systems similar to the style of mineralization found in Eastern Rondonia, 250 kms to the west.

Deposit Types

General Characteristics of Mn Mineralization.

Eastern Rondônia / Western Mato Grosso is underlain by a sequence of metamorphosed and younger granitoid intrusives of Proterozoic age. The younger Proterozoic, granitoid plutons are in some parts cut by high-level, late-stage hydrothermal veins rich in pyrolusite. These veins are structurally controlled in a predominant ENE direction with steep dips. The better individual veins observed can be up to 2 m wide within a structural zone up to 3 – 5 m wide.

Subsequent erosion of the hydrothermal veins, without much transport, results in a proximal/in-situ deposit of angular manganese bearing sand, cobbles, and boulders.

"World-wide, most manganese is mined from stratiform horizons in sedimentary basins. Major production centers have included South Africa, Brazil, and Australia. These deposits typically have low grades in the range of 30% to 40% Mn. The manganese oxide hosts silica and iron inclusions, and generally these ores have elevated levels of phosphorous. Sedimentary deposits can have oxide and carbonate components. In some settings, the manganese carbonate weathers to from supergene caps, which can be high grade but have a limited depth extent (Figure 6).

In Mato Grosso and neighbouring Rondonia there is another style of deposit: structurally controlled hydrothermal manganese mineralization. The best documented example of such a deposit is the Woodie Woodie Project in the Pilbara region in Western Australia (Jones, 2011; Jones et al, 2013). In that district, multiple manganese orebodies were emplaced in a network of extensional structures (normal and transform faults), associated with development on an adjacent basin. The dominant manganese minerals there are pyrolusite, cryptomelane and braunite, with

minor quartz and barite gangue minerals. Broader haloes of hematite-goethite alteration are present in places. The manganese oxide locally overprints and replaces quartz in pre-existing structures. The deepest known mineralization at Woodie Woodie is 210m below surface and open at depth. The manganese minerals were deposited as hydrothermal oxide phases, without manganese carbonates or manganese sulfides. The Woodie Woodie ores have low phosphorous contents (<0.1 P2O5), and manganese:iron ratios are high (~13). Lower grade breccia style mineralization is separated from gangue phases by dense-liquid separation. (SRK Consulting (U.S), Inc.)

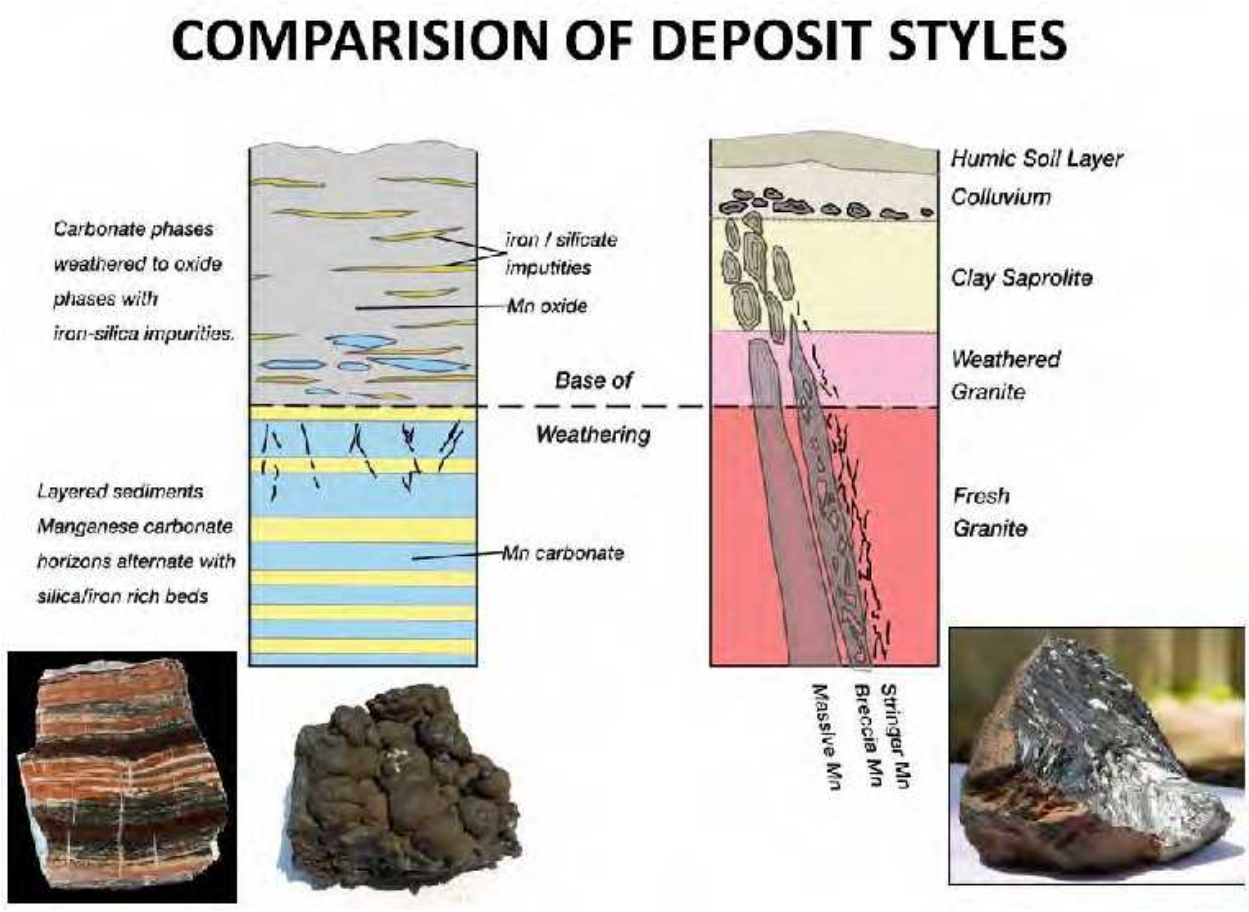

Figure 6 Schematic Comparison of Hydrothermal Vein Mineralization (SRK Consulting (US), Inc.)

Manganese Clast Style

Priliminary exploration has identified cobbles as the most widespread type of mineralization in the region. The cobbles occur as clean, high-grade clasts or cobbles of Pyrolusite or other forms of manganese minerals. The clasts occur as a surface layer of material ranging in size from sand to angular blocks greater than a half metre on a side. The clasts are loose to close packed and range from a thin veneer to thicknesses up to 1.5 metres in depth. Red, saprolitic soil acts as the matrix material. Heterolithic clasts of granitic composition are common within the soil profile as well. Clasts of quartz vein material, some containing manganese veinlets, have been observed associated with these showings. From work done in Rondonia, these clast beds overlay the hydrothermal vein structures.

Photo 1 Serra Morena Project: Clasts in roadbed

Vein Style

Hydro thermal sourced veins of manganese material are generally observed as resistant ridges and knobs. Local float indicates the presence of well developed, crystaline structures within massive pyrolusite and breccia with clasts of quartz in a manganese mineral matrix. Generally the vein structures are not well exposed but local work by prospectors can reveal greater detail in cross section.

Photo 2: Ridge formed by resistant Vein structure

Photo 3 Stringer material showing acicular, radiating habit of pyrolusite.

Photo 4 Breccia clast

Photo 5 Vein material showing crystalized nature of mineralization

Photo 6 Manganese clasts on surface

Photo 7 Colluvium clasts

Photo 8 Vein material in cross section

.

Other Relevant Data and Information

Exploration for and development / mining of diamonds has been another notable activity in both states. Production from Juina area has been historically significant from both placer and primary, in-situ deposits. Numerous kimberlites have been identified. In the Espigao region production has been from placer operations but bulk sampling of kimberlites has shown the potential for primary deposits as well.

Interpretation and Conclusions

The manganese mineralization observed in the Juina area is the same as that found in the Espigao area of Rondonia. Brazil Manganese Corporation (BMC) has consolidated properties in that region and is currently producing manganese for the fertilizer industry. Typically the grade they produce hovers around 50% Mn . They operate year round from two plants that currently take feed from the secondary or colluvium horizons. Extensive exploration is on going with the aim to produce 50,000 tonnes per annum. They are exploring for both hydrothermal vein style deposits and the colluvium rich, clast deposits. No mineral resource estimates have been published as yet.
In the Juina area, Davos has the identical geological setting and style of mineralization as that in Eastern Rondonia. The manganese camp is essentially one continuous structurally controlled region that has not been explored in the central area. There are indigenous lands that separate the Eastern (Juina, MT) area and the western (Espigao d'Oeste, RO) area. Exploration is not permitted on indigenous lands so no work has been done to fill in this central region of the camp.
All three projects that Davos has have extensive manganese showings, both the near surface, colluvial clast bearing and the potentially larger, structurally controlled, hydrothermal vein systems.

Recommendations

The State of Mato Grosso has had less concerted effort in exploration or development for manganese than Rondonia. The focus in the Juina area has been placer and primary diamond

deposits, a similar situation to the Espigao region in Rondonia about ten years ago or 2006. With this in mind, prospective land along major structural trends should be easier to acquire.

Mato Grosso is one of the major soy bean producing areas and thus a major user of manganese based fertilizers. Proximity to the end users in this application should be mutually beneficial to both manganese producers and end users.

Minor regional exploration has been performed to date. Local, specific exploration has included pitting, trenching, shallow core drilling and ground magnetometer geophysics. Companies need to initiate regional exploration programs aimed at identifying manganese occurrences with follow up leading to resource and reserve calculations. Prospecting, systematic soil sampling, ground geophysical surveys such as IP/Resistivity and regional ground magnetics would be appropriate for this area and type of mineralization. Airborne geophysical surveys would be an asset to help identify prospective structures within the project areas.

Two styles of mineralization are present and each requires different techniques to explore and expand each resource.

A number of colluvium showings have been identified and work performed to test the character and size of these showings. In order to develop resource numbers close control is needed on the dimensions and grade.

This can be accomplished by using a mobile, auger drill augmented by a backhoe for trenching to increase the information needed development of these resource figures. A program consisting of auger drill holes, drilled on a 25m by 25m square grid would give a starting place for these calculations. Trenching would be used to calculate volumes and contained mineralization. This is a rare situation where assays don't determine cutoff but volumes do. Volumes are immediately known and the program does not hinge on return times from a lab. Visual identification of clasts is enough to determine extensions or terminations of each colluvium zone. Of course, check samples will be taken at regular intervals and sent for analysis. We know the range to expect from our previous work. With experience, we will be able to lay out optimal programs for further resource calculations in other areas. Accessibility is good because of the extensive forest clearing done in the past for development of the cattle industry.

For pure grass roots exploration and for areas with extensive forest cover, prospecting and simple soil surveys using soil augers and kraft soil bags would be quick, inexpensive and have the least surface disturbance of any exploration method. A respected lab in Belo Horizonte would analyze the soil samples collected. A suite of elements would be analyzed, searching for multi element occurrences within the area. Lines and sample sites would be controlled through hand held GPS. Results could be plotted and maps prepared showing the results in a very short turn-around time.

The foci of these regional programs would be structures identified through airborne lineaments, airborne geophysics, mapping and follow-up of known mineralized structures.

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Statement of Qualifications

I, *Michael John Harper*, do hereby certify that:

I am a graduate of: Carleton University, Ottawa, Ontario. (B.Sc in Geology, 1978).
I am registered as a Professional Geologist (P.Geol) with the Association of Professional Engineers and Geoscientists of Alberta (Member#: M96223) and as a Professional Geologist (P.Geo) with the Association of Professional Geologists of Ontario. (Member#: 2133)
I have been employed as a mineral exploration geologist for various Canadian Companies since 1977. My wide ranging responsibilities have included managing delineation drill programs, both surface and underground, managing comprehensive exploration programs involving mapping, sampling, drilling, geophysical surveys, logistics, budget preparation, final reporting both in-house and for appropriate authority bodies.
I have worked extensively in most regions of Canada and with international experience in U.S.A., Brazil and Tanzania. For the past decade, the majority of my field time has been spent in Brazil exploring, developing, and managing manganese exploration programs with the focus of developing these targets into mining operations. The BMC operations in Rondonia are a direct result of my team's efforts brought to fruition.
I have been employed by or provided consultancy services to companies engaged in exploration and evaluation for diamonds, precious metals, base metals and uranium.

Dated this 12th day of February, 2017

Signed John Harper

John Harper B.Sc., P. Geol