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1 THE PROJECT

The Golden Tocantins Project focuses the exploration of world class gold deposits hosted in Archean greenstone-belts located in the southeast of Tocantins State.

The Project claims block covers part of the 30 km wide and 130 km long, northeast striking Conceição-Almas greenstone-belt. It is geologically inserted in the Tocantins Geologic Province – TGP, which is located at the western boundary of the São Fransisco craton. Two other Archean greenstone-belts occur in the TGP, named Barro Alto and Crixás-Hidrolina, and they have respectively produced the Serrinha and the Crixás gold mines.

These Archean greenstone-belts, the most conspicuous geologic feature in the southeast of Tocantins State, are surrounded by a granite-gneiss complex of same age. They are affected by Paleoproterozoic mafic to ultramafic and granitic to granodioritic intrusives, partially covered by Mesoproterozoic and Neoproterozoic metasediments, Phanerozoic undeformed sediments and recent detritic-lateritic cover.

The Conceição-Natividade-Almas-Dianópolis region has produced gold since the 18th Century, when the Portuguese gold explorers, known as *Bandeirantes* used the strength of slaves for mining. They were, in fact, those who built these cities, among others.

The deposit typology and geologic environment of the Glden Tocantins Project area could be correlated to similar Archean greenstone-belt gold deposits in Australia (Kalgoorlie > 50 Mi oz Au), USA (Homestake > 40 Mi oz Au), as well as in Brazil (Morro Velho > 15 Mi oz Au, Crixás > 3 Mi oz Au, Serrinha > 120 K oz Au and Paiol > 150 K oz Au).





In the township of Conceição systematic exploration for gold and base metals started some 35 years ago, conducted by several companies – Vale, Anglo Gold, TVX, Paranapanema, Inco, Metago and IamGold – seeking primary sources for the abundant alluvial and hard rock gold production in that region. Significant artisanal operations undertaken by garimpeiros also occurred during the decades of the 70's and 80's, but State environmental policy turned impossible garimpo in the region, ever since.

Primary and secondary gold mineralizations are found in the Golden Tocantins Project area. The secondary ones correspond to recent sedimentary deposits, such as eluvial and alluvial placers and laterite caps. There are several rivers, creeks and plateaux where one can see large amounts of dumped material or pits and trenches worked out by bandeirantes and garimpeiros.

Field observations and artisan mining shows indicate the occurrence of at least three types of gold mineralization: sulfide strata bound deposits associated to banded iron formation intercalated with basic metavolcanic sequences; disseminated sulfides in hydrothermally altered rocks with abundant stock-work quartz vein; sub-vertical rods subordinated to shear zones.

The Companhia Vale do Rio Doce – CVRD (just Vale, today) operated an open-pit gold mine during the 90's, the Paiol mine, located 50 km north of the Project area, which mineralized zone is spatially and genetically related to the Almas greenstone-belt.

An old underground mine is located within the boundaries of the Conceição do Norte town. It was never properly worked, but it has a 150 m ramp and galleries used to mine a high grade (> 15 g/t) sulphide ore associated to banded iron formation. CVRD drilled about a dozen drill holes there in the late 80's, but results are not available.



Greenstone Belt Au Mines

Kalgoorlie big pit, in Tocantins Satellite photo showing open pit mine and processing plant

Greenstone Belt Au Mines

Paiol Gold Mines, in Tocantins Air photo showing open pit mine and processing plant





2 LOCATION AND ACCESS

The Golden Tocantins Project area is located in southeastern Tocantins State, 5 km north of the historic gold mining town of Conceição do Norte.

Road access from Brasília to Conceição do Norte town is through 550 km of paved roads, starting on federal road BR-020 northeastwards, then to the north, along GO-118 and after through the TO-050, respectively Goiás State and Tocantins State roads. From Palmas, the Tocantins State Capital, road access is through 350 km paved roads, starting on TO-070, after TO-050 and then BR-010, always to the south.



Project Location and Access

- Paved road access
- 600km from Brasilia and 350km from Palmas
- 100km from Arraiais 45,000 inhabitants

Project Location and Access

Way to the Project area from Brasília.





3 GENERAL FACTS

The main regional geomorphological feature in which the Golden Tocantins Project area is inserted in is the Brazilian Central Plateau, a tabular surface distributed along a vast dissected low plain. The relief is characterized by an eroded Gondwana paleo-surface, with elevations fewer than 50 m high, and covered by Latosoil and Concretionary Soil. The average altitude is about 400 m high.

The regional hydrographic pattern is rectangular, controlled by geologic faults and by the local fracture system, assuming locally a dendritic pattern, when the rocky substratum is of massive structure, typical of granite-gneissic rocks.

The climate is tropical humid, alternating a dry season, from May to September, with a rainy season, from October to April. The average annual precipitation is 1,600 mm and the average annual temperature is 25°C, with maximal of 38°C, in September and October, and minimal of 23°C, in June and July.

The regional vegetation is dominated by Savanna. A deciduous forest develops on the basic rock terrain, and a dense forest, with trees up to 15 m high occur along the river valleys.

The Conceição do Norte County has a surface measuring 2.501 km² and a population estimated in 5,000 people. The main economic activity is cattle growing, counting about 30,000 cow heads. After comes artisanal gold mining. Local labor is dressed upon these working areas.

The town has 1st and 2nd degree public schools (high-school), a police station, a health station, a post-office and a small local commerce. There is no bank. The city of Arraias, 100 km south, counting a population of about 45,000 people is the regional capital, where there is a Banco do Brasil agency and a Bradesco agency and a reasonable commerce.

The company maintains an office-residence and core layout facility in the Conceição do Norte town.



Conceição do Norte Office-Residence Core layout facility



4 REGIONAL GEOLOGY

The regional geology of the Golden Tocantins Project area is poorly exposed and masked by a widespread detritic-lateritic overburden. In general, outcrops of granitic and gneissic rocks are better preserved from weathering than the volcano-sedimentary rocks that compose the so called Conceição do Norte greenstone-belt.

The greenstone-belt stratigraphy is characterized by a basal metavolcanic unit and an upper metasedimentary unit (Riachão do Ouro Group). The metavolcanic unit is dominantly composed by Fe rich tholeitic flows, locally exhibiting deformed pillowed structures, and subordinated Mg rich komatiitic basalts. The upper metasedimentary unit is dominated by a monotonous sequence of sericitic phyllites with carbonaceous rich horizons and intercalations of banded iron formation, magnetite-hematite quartzite, tourmaline quartzite, metaconglomerate and metachert. This upper unit also includes intermediate to felsic metatuff.

A series of intrusive plutonic granitoid rocks of tonalitic, trondhjemitic and granodioritic compositions are included in the granite-gneiss complex that envelops the narrow striped greenstonebelts, characterizing it as a TTG-like terrain. The intrusive character of these plutons is attested by the



presence of incorporated xenoliths of metabasalts, apophyses that cut the greenstone rocks and the ellipsoidal shape exhibited by some of them. Based on petrographic studies and whole-rock chemistry, these granitoid bodies are grouped in two suites: i) an amphibole bearing suite characterized by low Al, low La/Yb and Sr/Y ratios and high Ni, Cr and Mg content; ii) a biotite bearing suite characterized by high Al, high La/Yb and Sr/Y ratios and Yb and Y depletion. The origin of each of these suites is related to an ultramafic mantle source and partial melting of metabasalts, respectively.

The synthesized geologic map shown below illustrates the regional geology in which the Golden Tocantins Project is inserted in.

Conceição do Norte Conceição/Almas Greenstone-Belt



The regional structures that affected the granite-greenstone terrain are grouped in an early Dn event, and a later Dn+1 event, related to the development of strike-slip shear zones. The Dn event is characterized, in the greenstone rocks, by a flat schistosity (Sn) with local shearing features, upright vertical folds and a mineral lineation (Ln). Sn strikes N-S with sub-vertical dip. Lnis nearly horizontal with a north or south plunge. Folds are tight isoclinal with vertical axis.

The plutons of Suites 1 and 2 have the same structural pattern. Towards the greenstone contacts the foliation tends to intensify, but some granitoid bodies are also foliated, even far away from those contacts. The granitoid intrusives are related to the D n event and some related apophyses are intruded along Sn.

The Dn+1 shear zones are nearly parallel to the greenstone-belt contacts, and they show a dextral movement, striking N20-30E, with steep dips to east and west. Some other dextral shear zones have a N0-10E or N10-20W orientation and they are interpreted as subsidiary directions to the Dn+1 related ones. These shear zones bend from one direction to another. In the granite-gneiss domain, the Dn+1 related deformation is restricted to the proximity of shear zones, and the granitoid bodies are not deformed away from them. In the greenstone domain a penetrative Sn+1 mylonitic foliation is developed, and partially overprints early structures. The overlying Natividade Group and Bambui Group are mainly affected by the NE-SW striking Brasiliano Lineaments, and locally by reactivated Dn+1shear zones.

Two metamorphic events are recognized. The first (M1) event is related to D n foliation and it is mainly observed in the greenstone rocks, while the second (M2) event is related to Dn+1 shear zones and affects the whole granitoid-greenstone terrain. The M1 event produced the assemblage amphibole + plagioclase + chlorite + epidote in metabasalts (temperatures of 576 +- 46° C and 632 +- 60° C and pressures of 3.9 +- 2 and 4.4 +- 2 kbars). The M2 thermodynamic conditions were calculated for two granitoid plutons and for hornblende gabbro samples and they showed a range of 485 +- 18° C to 539 +- 65° C and 4.0 +- 0.2 to 4.4 +- 0.5 kbars. The minimum Rb-Sr age determined for a tonalite pluton that outcrops close to Almas is between 2,050 M.A. and 2,217 +- 85 M.A.



5 STREAM SEDIMENT REGIONAL GEOCHEMISTRY

The Conceição do Norte Project area used to belong to CVRD in the past, but because of carelessness with their mining rights, they lost the property to Mineração Rio Tocantins. During the period that CVRD held the property, a detailed stream sediment sampling program was carried out over much of the Conceição-Almas greenstone-belt. Large volume (10 liter) samples were collected and panned. Gold spec counts in pan concentrate resulted in gold values (g/m³), and then plotted in 1:50,000 topographic and geological maps.

A clearly defined anomalous trend extends between the towns of Conceição and Almas, respectively 5 km to the south and 50 km to the north of the Golden Tocantins Project area. Within this trend, two strong centers are evident, similar in area, continuity and contrast.

The other strong center is a 20 km long area that extends between the town of Conceição and the 12° latitude parallel. The Golden Tocantins Project claim block covers a major portion of this anomalous ground. A pan-concentrate and a stream sediment geochemical sampling campaign were also conducted by Minera Teck in 1977 in the Conceição do Norte greenstone-belt area, confirming that gold anomaly worked-out by CVRD in the late 80's.

The following figure illustrates the relation between the geochemical stream sediment Au anomalous trend and the strips of Archean greenstone sequences shown in the regional geological map of the previous figure.





6 GOLDEN TOCANTINS – STREAM SEDIMENTARY GEOCHEMISTRY

There are two elongated zones of stream sediment anomalies showing gold values more than 20 times background within the Golden Tocantins claim block. Both trends are parallel to the greenstonebelt and to structures which control gold mineralization elsewhere in the district. The principal one, striking NE, in the southwest side of the property, is 1 to 3 km wide, and extends for 15 km. The other, about 3 km to the east is 2 to 5 km wide, and extends for 10 km, striking N-NW. There are other local areas measuring from 3 km to 4 km wide within each contour line > 100 specs, as shown on the following figure.

The most striking set of values > 100 specs is distributed across the southern border of the claim block. All these high anomalous samples come from the Riachão Creek sub-basin streams. This set of high values could be divided in two sub-sets: i) one of them is located outside the OBML claim block and it shows values of 120, 129, 137 and 157 specs – this anomaly corresponds to the 25 m x 25 m spaced and 1.2 km long by 100 m wide reserve estimation drilling grid set up by Mundo Minerals inside an Anglo-Gold property; ii) the other one shows values of 144, 154, 258, 360, 400 and 600 specs and it is completely inserted inside OBML claim block – this corresponds to one of the targets (Córrego Fundo target) selected for a detailed follow-up exploration program.

There are other minor anomalies too. All of them correspond to old Bandeirantes open-pit and underground workings and they have been selected for follow-up exploration, as well.

The following map illustrates the distribution of the stream sediment Au anomalies:





7 GOLDEN TOCANTINS – AIRBORNE GEOPHYSICS

In mid 1998 Scintrex was engaged to fly the area. A detailed airborne survey (magnetometry and gamma spectrometry) over the property revealed a definite N-NW trend with various dipoles that coincide with the previously detected stream sediment anomaly.

The survey flight altitude was 80 m and the path pattern spaced at 200 m intervals. A total of 2,500 km were flown, including areas to the south pertaining to CVRD and Anglo-American (today held by lamGold, AngloGold, Mundo Minerals and Amazon Mining).

It turned evident that both geochemical and geophysical anomaly trends are perfectly aligned and coincident, as well as to the greenstone-belt outcrop area. All the areas showing high incidence of old mining works (garimpos) are also aligned to these structures.

The first figure on the next page shows the colored Total Magnetic Field map superposed by the Vertical Gradient black and white contour line map. It reveals two elongated high trends striking N-NW and two other striking NE, like two superposed "Y" shaped structures. These highly magnetic rocks correspond to Banded Iron Formation lenses spread throughout the metavolcanic greenstone host rock.

The radiometric survey has also contributed for mapping the different geological units. The Gamma Radiometric map for Potash (K), shown in the second figure of the next page reveals the contact of the greenstone rocks with granite-gneiss at the east portion of the Golden Tocantins claim block, as well as the gabbroic intrusive body near the southwestern corner of the block. The granite and granodioritic intrusives at the central portion of the claim block could be easily recognized too.







8 LOCAL GEOLOGY

Remnants of the Conceição do Norte greenstone-belt outcrop in an area of about 1,600 km2as a "Y" shaped body formed by narrow stripes of volcano-sedimentary rocks striking N-S to N35E, surrounded by granite-gneiss. This direction is coincident with regional shear zones and granite orientation. A summary of the recognized units within this area is presented below:

- Basal Complex: it corresponds to the basement and it is represented by muscovite and/or biotite gneiss, displaying concordant regional foliation with the infolded greenstone rocks; it is also characterized by a white sandy soil with spaced savanna type vegetation.
- Riachão do Ouro Group (the Conceição greenstone-belt): it consists of a lower mafic unit, represented by amphibolites (quartz, tremolite-actinolite, plagioclase), and an upper metasedimentary unit, interlayered with felsic volcanic rocks, comprising sericitequartz schist, sericite schist, carbonaceous sericite schist, chlorite-sericite-quartz schist, magnetic banded iron formation (BIF) and metachert. The BIF horizons have better continuity than other greenstone lithologies, in terms of outcrops, and they are used as regional stratigraphic markers. Most of the gold garimpos are spatially related to this metasedimentary and felsic metavolcanic package, and more specifically to the BIF horizons, which correspond to a quiescence period during the greenstone evolution. The mafic package develops a dark brown to dark reddish clay soil and they develop dense vegetation, the trees reaching up to 10 m or even 15 meters high. The quartzsericite schist display a light brown-yellow clay soil, often associated with a detritic cover, while the BIF horizons show dark red clay and magnetic soil, and develop dense vegetation.

Boqueirão Intrusive Suite: it is represented by four main ellipsoidal shaped coarse to fine grain granite bodies and medium to fine grain granodiorite intrusive plutons, named Poções, Taipas, Cajuzeiro and Japonês; they also contain xenoliths of metavolcanic rocks, attesting their intrusive character; these felsic intrusive rocks a light brown sandy-clayey soil, upon which a mixed dense and spaced vegetation is developed; lateritization is quiet frequent on these rocks, and the soil color becomes dark brown, especially when they are cut by shear zones;

Mafic-Ultramafic Intrusives: they are represented by the Vila Nova gabbroic pluton, located 5 km north of Conceição; this rock is actually an amphibolite (hornblende + plagioclase) emplaced in the central portion of the main greenstone belt.

Recent cover: they correspond to alluvium deposits distributed along the drainage system and to the detritic and lateritic overburden, often found where the topography is flat.

The Conceição do Norte greenstone-belt can be structurally interpreted as a N35E striking anticline, with a SW plunge and an overturned SE limb. This structure is fairly well traced following the distribution of the BIF lenses that outcrop along the SE limb (São Felipe, Daniel and Fleury garimpos), then turn to SE near the Conceição town and disappear below the detritic-lateritic cover. A continuation of it may correspond to the BIF at the Dirceu garimpo (N40-60W) that progress to NW, just aside Conceição town, and turns back again to NE and outcrops continuously in the Córrego Fundo garimpo area (N15-20E strike, 50-80NWdip).

The core of the anticline is occupied by the Poções granodiorite, in the north, and by the Cajuzeiro granite and the Vila Nova gabbro, in the center. The axial zone, corresponding to the neighborhood of the



Conceição town, is strongly deformed, probably due to the interference of a NW-SE fault that induced an "L" shaped conformation to this zone, where the lower segment strikes S40E. At Dirceu garimpo gold mineralized boudins plunge to SW. This area also shows significant stream sediment and pan concentrate gold anomalies and anomalous arsenic values (up to 800 ppm in rock and 120 ppm in stream sediments).

Primary gold mineralization is associated to quartz veins and boudins developed during regional shearing processes, related to the Dn+1tectonic event, and hosted by a variety of rock types (metavolcanics, metasediments, granitoids, etc.).

Granitoid bodies host predominantly the gold bearing quartz vein type mineralization, while the supracrustal suites show mineralized penetrative fabric, as cleavage and microfolds. The strong tectonic control played a major role in distributing and trapping gold. Structurally controlled gold mineralization is controlled by the following orientations: (Riedel's model): N0-10E (dextral transcurrent – C); N10-20W (extension – R); N20-30E (extension – P); and N50-70E (extension – R').

The sheared greenstone rocks show the following hydrothermal alterations related to gold mineralizing processes: silicification, sericitization, chloritization, carbonatization and sulfidation (pyrite, chalcopyrite, arsenopyrite and traces of galena and sphalerite). Locally, tourmalinization and albitization are also observed. Granitoids show basically sericitization, silicification and sulfidation (pyrite, chalcopyrite, galena and arsenopyrite). The intensity of alteration is stronger in the supracrustals rather than in the granitoids.

Greenstone rocks host most of primary gold occurrences, followed by granitoids. The BIF horizons are spatially close to gold occurrences.

The map below represents the geology of the Golden Tocantins Project area and the following one the selected targets in relation to the claims.





9 PRIOR EXPLORATION WORK

Verena - Minera Teck JV

- Geological mapping: Lithology, mapping of structural features and "garimpo" inventory.
- Targets defined to date: Japonês, Santo Amaro, São Felipe, Vila Nova and Córrego Fundo.

Targets followed-up by Minera Teck

- Japonês: Ground geophysics (magnetometry), soil geochemistry and ore bulk sampling from a "garimpo" shaft.
- Santo Amaro: Ground geophysics (magnetometry) and soil geochemistry.
- Córrego Fundo: Ground geophysics (magnetometry) and soil geochemistry.

Targets followed-up by Verena

- Japonês: Ground geophysics (max-min, magnetometry) and 4 diamond drill-holes (average depth of 150 m).
- Santo Amaro: Ground geophysics (magnetometry) commenced and 1 diamond drill-hole (150 m deep).





10 TARGET FOLLOW-UP

A preliminary follow-up program was undertaken by the company Minera Teck in 1999. Exploration work comprised geologic mapping, soil geochemistry and ground geophysics (magnetometry) on three main targets, named Japonês, Santo Amaro and Córrego Fundo.

The soil geochemistry program consisted of three grids (200 m x 25 m) totaling 106 km of line cutting, and 2,935 soil samples collected. The 0.5 kg samples were collected in the "B" soil horizon (0.2 m to 0.4 m deep) and analyzed for Au, Cu, Pb, Zn and Ni by Bondar Clegg and Nomos laboratories. Larger soil samples (10 liters of <3 mm sieved material) were also collected, totaling 1,141 samples, all submitted to panning, the remaining heavy concentrate examined by hand lens and gold specs were counted on dish.

The ground magnetic survey was also carried out over the three grids using two total field G-856 Geometrics magnetometers. The lines were surveyed according to the same grid used for the soil geochemistry program.

Verena Minerals started an exploration diamond drilling program to test targets in 2008, when it was forced to interrupt the program due to fund shortfall after the international financial crisis, although preliminary results were good. It was a total of 700 m divided in five drill-holes, four of them in the Japonês target and one in the Santo Amaro target.

The following map illustrates the location of the three selected targets where some follow up exploration work was developed:





11 JAPONÊS TARGET

The Japonês target is located in the northeastern quadrant of the property. It is a well known abandoned occurrence in the region, where gold was produced by garimpeiros in the recent past, mostly during the decade of 1980's.

The area is mostly covered by a lateritic crust. Outcrops are basically found only in the garimpeiro pits and shallow shafts (10 to 20 m deep), which are aligned at least 1,200 m along the N-S direction. In the southern portion of the target there are volcano-sedimentary sequence outcrops, including a magnetic Banded Iron Formation.

The predominant rock type at the Japonês target consists of a coarse grained granodiorite that is altered to sericite-quartz schist when sheared. This granitoid body is affected by a N-S striking sub vertical shear structure.

Gold mineralization is a sulfide rich (pyrite, chalcopyrite and chalcocite) seriticized and carbonated quartz vein. Chlorite is also locally the main alteration product along the shear zone. A petrographic essay revealed free gold and chalcopyrite included in quartz and pyrite.





This occurrence was well detected by the pan concentrate stream sediment carried out by CVRD in the 1980's, which produced stream sediment anomalous samples showing 160, 53, 72 and 25 gold colors.

The mineralized zone was also detected by the preliminary Teck work. Some pan concentrate anomalies, including a 91 and a 78 gold colors in soils samples were considered important, together with the following grab samples:

	Au (ppm)	Cu (ppm)	Ag (ppm)	
PRSr - 133	0,89	490	1,8	Sericite-quartz schist with Pyrite
PRSr - 134	110,15	109.000	109	Massive sulphide quartz vein

Grab samples from the pits collected by Verena in the late 2007's confirmed the high grade ore, returning impressive results including: 45.92 g/t, 113.59 g/t, and 23.39 g/t Au.

The highest soil values detected out of a total of 723 samples were the following:

Au (ppb)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ni (ppm)
502	107	50	77	232
334	67	43	58	31

About the ground magnetometric survey: i) the main magnetic trend is oriented N-S and N40E; ii) magnetic bodies occur in the eastern and western portions of the grid, as well as in its northwestern and northeastern corners.

Exploration diamond drilling started in 2008 when Verena Minerals drilled four holes, all positive – 3 along strike 100 m apart and one perpendicular to strike – in the Japonês target. The map below shows the geology of the area and the location of the drill-holes. The next figure shows a cross-section and the analysis results for Au every meter along the hole.





Japonês Target

Table below.

Japonês Target

- **3 positive holes along** • strike (DCJ-01, DCJ-02 and **DCJ-04)**
- 1 positive hole perpendicular to strike (DCJ-03)





Туре	Sample ID	Au (ppb)
	32	530
SMP (Duplicate)	32	545
SMP	33	123
SMP	34	<mark>15151</mark>
SMP	35	< 5
SMP	36	10
SMP	37	< 5
SMP	38	<mark>41032</mark>
SMP	39	<mark>3253</mark>
SMP	40	<mark>864</mark>
SMP	41	26
SMP	42	9
SMP	43	< 5
SMP	44	<mark>1547</mark>
SMP	45	<mark>921</mark>
SMP	46	45
SMP	47	< 5
SMP	48	12
SMP	49	635
SMP	50	7
SMP	51	195
SMP	52	569
SMP	53	316
SMP	54	10
SMP	55	62
SMP	56	574



12 SANTO AMARO TARGET

The Santo Amaro target is located near the north central border of the property. It is defined by a narrow elongated ridge of metasedimentary rocks measuring 500 m x 30 m, where artisanal miners exploited a 2 to 2.5 m wide gold bearing quartz vein hosted in a sericite schist unit at the contact of a Banded Iron Formation horizon. Grab samples from this target returned 24.79 g/t Au in the BIF, 5.64 g/t Au and 2.20 g/t Au in the quartz vein.

The main feature of the Santo Amaro target is the presence of a narrow and elongated – at least 1,600 m x 100 m big, open to N-NE – metasedimentary pack composed of chemical and pelitic rocks striking N15E to N20E with dip of 55° to 60° NW. It is constituted of magnetic Banded Iron Formation, sericite schist, chlorite-sericite schist and magnetite-carbonate-sericite schist. A Latosoil and a lateritic crust cover most of the area. Fragments of BIF are also found elsewhere, suggesting multiple horizons, or they would be the result of hydrothermal alteration.

Garimpeiros used to produce gold on a ferruginous and carbonated zone, about 2.5 m thick. The ore is dark color schist showing multiple sulphide rich parallel and concordant tiny quartz veins at the contact of a sericite schist (hanging wall) and a BIF horizon (foot wall).

A series of excavations (trenches, shafts and galleries) distributed along the crest of a local hill showing BIF outcrops could be followed for at least 800 m.

The ground magnetometric survey showed lineaments oriented predominantly along N15E, which is the direction of the magnetic BIF lenses, but also a N75W lineament.



Santo Amaro Garimpo

- Bellow, Au rich quartz vein
- Left, aligned trenches cut by garimpeiros along a sheared structure in BIF lenses





13 SÃO FELIPE TARGET

The São Filipe target consist of a large zone (200 m x 1,800 m) along which a profusion of quartz vein stock work hosted in felsic volcanic rocks outcrop close to a short elongated hill formed of Banded Iron Formation.

This huge garimpo extends along the NE direction, parallel to the sheared contact of the metavolcano-sedimentary sequence pack with basement granite-gneiss.

The photo below illustrate the São Filipe abandoned garimpo.



Santo Felipe Garimpo Au rich stock work quartz veining



14 CÓRREGO FUNDO TARGET

The Córrego Fundo target presented the most significant pan concentrate anomaly undertaken by CVRD in the Conceição do Norte greenstone belt area. Values recorded are 144, 154, 258, 360, 400 and 600 specs, for a background of 5 specs, all samples collected in the tributaries of the Riachão creek. The pan concentrate stream sediment geochemistry program made by Teck confirmed the anomaly.

Soil geochemistry done by Teck (1,790 soil samples in a 200 m x 25 m grid) returned the maximum value of 2,638 ppb Au, 230 ppm Cu, 770 ppm Pb, 940 ppm Zn and 720 ppm Ni. The geochemical anomaly appears spatially associated with a north-northeast trend magnetic Banded Iron Formation and it is neighbor to the Mundo Minerals 1 km long 25 m x 25 m drilling grid.

Scattered outcrops of muscovite gneiss denounced by light brown to white sandy soil dominate the target terrain. A few outcrops of amphibole schist, chlorite schist and amphibolite, interpreted as metamorphosed mafic volcanic flows occur to the west. There is a pack of pelitic and chemical metasedimentary rocks in the eastern portion of the target, represented by magnetic Banded Iron Formation, chlorite-sericite schist and sericite schist. There are at least three BIF horizons 5 to 15 m thick. The ground magnetometric survey reflected these units.

The central portion of the target area is characterized by a displacement to northwest of the metavolcano-sedimentary sequence. This structural corridor is controlled by two N35W semi-parallel faults that caused an apparent reject of nearly 1,000 m. The ground magnetometric and soil geochemical anomalies displacement reflect this NW structural corridor.



Córrego Fundo Target

- 1. Highest stream sediment Au values
- 2. Magnetometric high striking
- Parallel structure to Mundo Minerals drilling grid – 1km long – 25m X 25m grid cell; company reported ore reserves in August 2010



Three garimpos are found in the target area:

• Dois Irmãos – 250 m x 150 m x 5 m gold mineralization associated to a series of vertical dip quartz veins hosted by chlorite-sericite schist showing some carbonatization; the metasedimentary pack includes at least 3 BIF horizons;

• Chapadinha – gold associated to a vertical dip quartz vein hosted by muscovite gneiss; mineralization develops discontinuously along 200 m;

• Cangalha Velha – 50 m x 10 m x 7 m gold mineralization associated to at least 6 vertical dip quartz veins striking N35E hosted by gneiss with chert levels.



15 OTHER TARGETS

- Santo Amaro
 - i. Sericite-chlorite-carbonate-sulfide alteration halos
 - ii. Banded Iron Formation BIF
 - iii. NE shear structure
- Córrego Fundo
 - i. Located inside the NW shear structure corridor
 - ii. Highest stream sediment anomalous sample
 - iii. Neighbor to Mundo Minerals 1 km long drilling grid
- São Felipe
 - i. Huge stock work quartz vein garimpo
 - ii. Contact felsic volcanics and BIF with granite
 - iii. NE shear structure



16 FINAL CONSIDERATIONS

- Gold deposit potential
 - i. Japonês: < 0.25 Moz, high-grade ore open pit
 - ii. Córrego Fundo: > 2-3 Moz, high-grade ore open pit and underground mining
- Recommended follow-up
 - i. Detailed geological mapping, trenching, MMI geochemistry and exploration drilling on Córrego Fundo
 - ii. Detailed geological mapping, trenching and MMI geochemistry on Santo Amaro and São Felipe targets
- And keep investigating for new targets, especially below the lateritic cover auger drilling & MMI geochemistry