



1 - INTRODUCTION

1.1 – OBJECTIVE

The follow present report has an objective to describe the accomplished works in offices and fields for the geologic and economic description of the area referring to the Tapajos Project of the Cone Mine Exploration. This work has a main goal elaborate an evaluation of the iron ore reserves in the area of the process, quantifying and qualifying them with accuracy.

1.2 – MINERAL LEGISLATION IN BRAZIL

The laws that conduct the mining activities in Brazil established that the subsoil belongs to the federal government. That way, activities of prospection, exploration and exploitation just are possible with the government



authorization through of its department DNPM (National Department of Mineral Production).

Each process of mineral exploration is evaluated by the DNPM based in technique criteria and the authorizations are granted in two stages: Exploration License and The Mine Work Concession. The authorization holder of DNPM has full and exclusive rights about the work execution, as well about the commercialization of the area.

1.3 - MINING IN BRAZIL

Brazil stands out worldwide as one of the main producers of the minerals goods.

The mining industry in Brazil has a highest technology level and technique, being forward of a several obtained innovations in this area in the last decades.

In all regions of the country exists an extensive web of education for the formation of professional that attempt to the mining's demand. The high workforce qualification, together to good infra-structure and low productive cost becomes the mining in Brazil object of a great interest by the part of the foreign and national investors.

Brazil is the second bigger producer of the iron ore and is the thirteenth largest producer of gold with production of approximately 54 ton in 2008.

Adding the commercialized rude ore production to the production of the sector of mineral transformation, the mining of Brazil generated in 2008 US\$ 42 billion, what represents 5.7% of the GDP. The positive scene reflects in the



investments of the sector that are foreseen in US\$ 62 billion between 2010 and 2014.



Chart 1 - Investment in Mineral Sector - Source IBRAM

1.3.1 - CURRENT SCENARIO OF GOLD IN BRAZIL

The auriferous potential in Brazil is a significant expression. The auriferous districts as defined by the occurrence of one or more deposits, and deposits and occurrences of minor relevance, are presented in several types, but, however, are concentrated in certain areas. These areas are mainly embedded in regions and on cratonic belts mobile associates, related to the Brasiliano tectonic cycle, whose most recent ages are around 450 million years.



Chart 2 - Distribution of Reserve Officer (Measured + Indicated) Gold Contained Primary Units in Brazil by the Federation - 2007 - Source DNPM

Currently, the national reserves (measured + indicated) of primary Au contained represent 98.6% of total reserves in the country legally registered, a total of 1,568 t. The chart above shows the distribution of gold reserves in the Brazilian states taking Pará main representative, with 650 t of contained gold equivalent to 41.5%, followed by Ontario with 580 tons (37.0%), Goiás (103 t, 6.5%), Bahia (99 t 6.3%), Mato Grosso (61 t 3.9%), Amapá (33 t 2.1%), Maranhão (18 t 1.2%) and others (23 t 1.5%).

In 2007, Brazilian gold production reached 47.7 tonnes registering an increase of 7.5% over the previous year. Production from mines (companies) accounted for 88.9% of national production, recording an increase of 8.1% compared to participate in the same period last year, totaling 42.4 tons Production at mines had become the order of 5.3 t in 2007, charging modest rise of 2.9% compared to the previous period. It is estimated that gold mining in 2007, had as its main gold producing states of Para 42.9%, followed by 22.7% in Mato Grosso, Amapá (12.6%), Rondônia (7.9%) and other states (13.9%).



Brazil has positioned itself in the international market as a traditional center producer and exporter of gold. In Brazil, the amount of gold exported in 2004, 2005, 2006 was 32t, 31T and 33.8 tons respectively. In 2007, exports increased by 19.3% in value (Totaling U.S. \$ 791 million FOB) and 6.5% in exports (76 tons).

In 2008 the volume exported was 37T and generated foreign reserves amounting to U.S. \$ 1 billion FOB. Those countries which have imported from Brazil were the United States (92%), United Kingdom (6%), Canada and the United Arab Emirates (2%).



Chart 3 - Exports of Gold in the Period 2004 - 2008 - Source IBRAM

From April 2002, gold prices returned to position itself above the US\$ 300/oz and has begun a new series of high, which reached a culmination with US\$ 850/oz in 2008.





Fonte: US\$/oz - LBMA London Bullion Market



The global financial crisis of 2008 did the price of gold shoot in the international market. With jumps in the price of the commodity. The troy ounce (measurement equivalent to 31 grams of gold), jumped from \$ 860 for the current U.S. \$ 1,150.00.







1.4 Tapajos Gold Province

The Tapajos Mineral Province is a major mining areas of the world, with dimensions of approximately 100,000 km². In the Tapajós Mineral Province were produced about 159 tonnes of gold during the period 1958 to 1996, with production originated predominantly the work of the miners rudimentary. In the 1980s, this region was considered a true Eldorado, attracting thousands of prospectors, adventurers from all parts of the country, moved by the dream of quick and easy fortune.

However, in early 1995 there was a decline in gold production in the Tapaiós as а result, among other factors, mainly: (I) technical and operational difficulties of extracting "lode gold" by the miners, due to the depletion of gold in alluvium-colluvium easy access by processes crude (non-mechanized), and (Ii) fall in the price of gold in the markets, internal and external It's time companies are able to combine the experience of miners to scientific reasons, research on the underground, to take the gold from where the miners could not reach.

The explanation for the vast mineral resources of the region, experts say, may be 1.9 billion years ago. Through satellite imagery, geologists from the University of São Paulo (USP), researching the anomalous concentration of gold in the Amazon, have found the existence of a volcanic crater - perhaps the oldest in the country - in the Rio Tapajos. That would explain the abundance in this area, not only gold but also other minerals like copper, which serves as a stimulus for future research.





Picture 1 - Stone-line mineralized in gold. Location: Region Gold mining in the Province of Tapajós



Picture 2 - mineralized alluvial gold deposits, the source of significant gold mining in the Tapajos - Region Garimpo



1.5 - LOCATION









Picture 2 - Location



Picture 3 - Gold mining near the project area



1.6 - THE CITY OF ITAITUBA

1.6.1 – Characterization

Area: 62.040,947 Km2

Altitude:

max:	300 m
min:	15 m
Central	point of the city: 45 m

Temperature:

year avg:	26,5 C
year max:	32,0C
year min:	22,5 C

Annual average rainfall: 2.000 mm

Major rivers:

Rio Tapajós Rio Jamanxim Rio Teles Pires Rio Cururu Rio das Tropas Rio Crepurú

Basin: BACIA AMAZÔNICA

Sources: Fundação Instituto Brasileiro de Geografia e Estatística - IBGE

1.6.2 Population

Population Estimate 2009: 127.848 Inhabitants Population density: 1,9 Inhabitants/km²

Sources: Brazilian Institute of Geography and Statistics (IBGE)

1.6.3 Transportation Road

Average distances to the main centers (km):





Belém: 1626 Manaus: 1710 Macapá: 1785 São Luis: 1790 Brasília: 2.045

Main higways in Belém:

BR-163 (Santarém-Cuiabá), BR-230 (Transamazônica), BR-316, PA-140, PA-252, PA-475, PA – 263, PA-422

Maing highways in Itaituba:

BR-163 (Santarém-Cuiabá) e BR-230 (Transamazônica)

Neighboring cities:

Aveiro Altamira Rurópolis Novo Progresso Trairão Jacareacanga

Mineral Resources

ALUMINIUM (BAUXITE) GOLD IRON ORE COPPER Source: National Department of Mineral Production - DNPM



2 - LOGISTICS AND ACCESSIBILITY

2.1 - GETTING THERE

From the city of Itaituba-PA, the BR-230 (Trans-Amazon Highway) southbound, following by 40 Km Turn right on US-163 (Santarém-Cuiabá), after about 255 km, enters right into Transgarimpeira, Process Area is located approximately 7 km.

2.2 - MAIN ACCESS ROADS

The main access routes to the area of the process are the BR-163 (Santarém-Cuiabá) and BR-230 (Trans) in addition to local roads near the processing area.

2.3 – AIRPORTS

The main airport near Area Process is Santarém Airport. This airport has an important role in strengthening the relationship with the rest of Brazil and the world due to its geographical location. Between Belem and Manaus, is an alternative for international flights. It is located 590 km Area of Procedure.





Picture 7 - Airborne view of Santarém Airport

International Airport Belém (Val de Cans) located in the state of Pará is the largest and most important airport in the Brazilian city of Belem, which still owns the airport Julio Cesar. It is the busiest in the northern region, 14 from Brazil. League Bethlehem to other cities in Brazil and the world. It lies about 1680 km from the processing area.





Picture 8 - Belém International Airport

Itaituba airport serves the city of Itaituba and region. It is the most important airport in the southwest region of Pará State, being classified as Regional Airport. It is approximately 305 km Area of Procedure.



Picture 4 – Airborne photo of Itaituba Airport Cone Mine Exploration - www.cme7.com.br Av: Luiz Paulo Franco, 345 - 1º Andar / Cep.: 30320-570 – Tel.: (31) 3282-3232 - Fax.: (31) 3286-5111 Belo Horizonte - MG - Brasil



2.5 AIR TRANSPORT

The Airborne Transportation is the only one within its characteristic, being an activity that involves quickly and easily several cities, states and countries due to the speed of the medium.

The air is a modal transport agile and recommended for high-value goods, small amounts and parcel. Thus, the preference is for this type of transportation that has increased speed and security.

In any transport operation should be taken into account the following factors: payload (quantity, weight and value), distance to be traveled and travel time. The physical units used are passenger-km and ton-kilometers. Air transport can be done by regular services, held by companies associated or not associated with the international air transport association (IATA), and charter

Within the services we have available charter companies that work with air taxi. Due to the small weight and volume of gold the choice of aircraft to the charter can be a plane (examples models baron or citation).



Picture 11 - Models of Aircraft for the Air Cargo Shipping



<u>3 - COSTS</u>

3.1 - EXPLORATION

To defining the economic possibilities of the area to explore, will be accomplished the necessary works of prospection that will consist, in the beginning of the following listed steps. However, having the currently existing data, these cannot be considered as definitive.

3.1.1 - Base-Map Elaboration

The cartographic base to the programming, register and analysis of the exploratory work will be obtained by the restitution of the air photograph, available at 1:40.000 and 1:20.000 in recent images.

The plan will have scale 1:10.000, adjusted with field topographical control and spaced level curves in 5 m

3.1.2 - Opening and Conservation of Roads

The field exploration implantation should be preceded of recovery works and improvements in the stream bed of the secondary roads that cut the area, opening of new routes, in order to facilitate the access to the distant places.



3.1.3 - Geologic Mapping 1: 10.000

It is essential the execution of the basic geological mapping, aiming to the identification and cartography of the levels potentially mineralized, as noted above. So, the whole lithological suite in the area should be identified petrographically, with delimitation as accurate as possible from the contacts of the marked units.

The accurate definition of contacts, and petrographic characterization of the emerging lithology, may eventually require the opening of the trenches, in order to expose the rocky substratum to the geologist observation.

The resulting geological map, as mentioned previously, should be presented at scale 1:10.000. To it will be integrated obtained information posteriorly, during the exploration with the execution of trenches, boring and galleries.

3.1.4 - Geophysical Prospection

Intend to accomplished a geophysical prospection in the area, conciliating two geophysical methods, as seismic and resistivity, aiming to detect possible anomalies that become into target for the investigation work in subsurface, posteriorly.



3.1.5 - Digging

It will be executed exploration's digging, aiming at to obtaining information of sub-surface and to propitiate the exposition of the mineralized bodies for the description of the points and posterior sample collection.

Opted by the execution of the trenches (or "pipe") and galleries to the characteristics' determination of the mineralized bodies, once that these ones present partially emerging and in an area of difficult access and mechanical equipment.

The trenches will be directed perpendicularly to the layers' direction. The digging will be made with manual tools, as pickaxes and shovel. To the execution of the service will be contracted the local workforce.

The works will be following by the responsable technician.

3.1.6 - Boring

From the analysis of the obtained data in the geologic mapping, will be leased some orificies of borehole, comprehended in three stages. In the end of each boring stage, an evaluation will be made, aiming to the taking a decision as for the continuity of the exploration.

It is expected, in the three stages a boring with continuous coring. The works will be contracted with specialized companies.



The description of the testimony will include the petrographic aspects, stratigraphic and structural. The intervals will have maximum length of 1,5m, eventually extended to 2,0 m in the portions confessedly sterile.

3.1.7 - Chemical Analysis

The chemical analysis will be executed in a specialized laboratory and will include the grades of Fe, FeO, Mn, SiO₂, Al₂O₃, CaO, MgO, TiO₂, S, P and others elements traces.

3.1.8 - Technological Assays

It will be sending samples of ore for the execution of the technological assays in specialized laboratory that include granulometry analyses and the following tests:

- Tumbling Iso

- Crepitation Coisrmj
- RDI Coisrmj
- Reduction JIS M 8713
- Midrex Linder Test
- Sulphur Release

These tests propitiated the verification of the material adequacy to the use in siderurgy, consisting of an evaluation for use in blast-furnace and for use in process of direct reduction.



3.1.9 - Final Report

Completed the exploration, the final report will be in charge of the petitioner's technician team, under the technician responsibility of the works' chief geologist and bunched the whole list of the executed activity, the methodology and the reached results. It should be conclusive as to the reserves existence, its dimensions and the ore characterization, and will have all the elements indispensable to the technician, business and politics decisions which will be followed.

3.1.10 - Budget

It is considered in this study the reference exchange rate as U.S. \$ 1.00 = R \$ 1.85

For the implementation of the exploration program described above, it is estimated a total cost of **US\$ 231.554,05.**



3.2 - MINING AND PROCESSING

The costs of the mining of raw ore (ROM) for the monthly production estimated at 15,000 tonnes and its respective processing are presented below:

3.2.1 - Production Data (Monthly Estimates)

					Production	
					rate	
Mines' extraction	9	h/day	30	day/month	500	t/day
Processing	9	h/day	30	day/month	3,0	Kg/day

Monthly Production of the Extracted Ore = 15.000 tons

Monthly Production of the Processed Ore = 90 kg

*P.S..: Assuming an average grade of 6.0 g / t gold.

3.2.2 Cost of Mining (Estimates Monthly)

Cut and Load ROM (R\$ 8.00 / t) = R \$ 120,000.00
Transportation ROM = R \$ 120,000.00
Drilling and Blasting = R \$ 150,000.00
Road Maintenance / Galleries = R \$ 100,000.00
Ventilation System = R \$ 100,000.00
Transport of Sterile (R\$ 4.00 / t) = R \$ 60,000.00
Cut and Sterile Charge (R\$ 4.00 / t) = R \$ 60,000.00
Overhead = R\$ 30,000.00
Unit cost = R \$ 49.34 / tonne (U.S. \$ 26.67)
MONTHLY TOTAL (USD) = U.S. \$ 400,000.00



3.2.3 Processing Costs (Estimates Monthly)

Materials / Maintenance = R \$ 50,000.00 Feeding Crusher (R\$ 70.00 / h) = R \$ 18,900.00 Crusher (R\$ 200.00 / h) = R \$ 54,000.00 Grinding (R\$ 600.00 / h) = R \$ 162,000.00 Screening (R\$ 80.00 / h) = R \$ 21,600.00 Gravimetry (R \$ 100.00 / h) = R \$ 27,000.00 Leach (R\$ 300.00 / h) = R \$ 81,000.00 Filtering (R\$ 100.00 / h) = R \$ 27,000.00 Electrolysis = R\$ 30,000.00 Electrolysis = R\$ 30,000.00 Overhead = R\$ 50,000.00 Quality Control = R \$ 15,000.00 Unit cost = R \$ 192.40 (U.S. \$ 103.98) / OZ MONTHLY TOTAL (USD) = U.S. \$ 301,000.00 3.3 AIR TRANSPORT

Air transport is considered for cargo (quantity, weight and value), distance to be traveled and travel time. The physical units used are passenger-km and tonkilometers. Considering the chartering of aircraft Citation I twice a month. Now with all values of Tax Costs and Taxes included. The monthly cost would be around:

Distance Mina-Manaus Airport: 590km Mission Estimated Time: 1:30 hr MONTHLY TOTAL (USD) = U.S. \$ 50,000.00



4 - ECONOMIC POTENTIAL OF ENTERPRISE

Should there be any positive outcome of research in accordance with the estimates made, the venture will enable the marketing of the ore FOB at a monthly cost of **US\$ 779,940,00** to 90 kg sold, equivalent to **US\$ 269.50/Oz**.

This represents a potential gross profit of **US\$ 880.50/Oz sold**, equivalent to **327%** profit on the total cost of the production chain of gold.

Considerations: Currency: U.S. \$ 1.00 = R \$ 1.85 and sales value of gold = U.S. \$ 1150.00/Oz)