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OFFICE OF INTERNATIONAL  
CORPORATE FINANCE

April 11, 2008

From: **MMX Mineração e Metálicos S.A. — Submission Pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934**

File No. 082-35042

Securities and Exchange Commission  
Division of Corporation Finance  
Office of International Corporate Finance  
100 F Street, N.E.  
Washington, D.C. 20549

**SUPL**

**PROCESSED**

**APR 23 2008**

Ladies and Gentlemen:

**THOMSON  
FINANCIAL**

In connection with the exemption from Section 12(g) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") afforded by Rule 12g3-2(b) thereunder, MMX Mineração e Metálicos S.A. (the "Company"), a corporation organized under the laws of the Federative Republic of Brazil, hereby submits the following documents:

1. *Consolidated Share Ownership Form for the month of March filed with Brazilian SEC on April 10, 2008(English version)*
2. *Public Announcement filed with Brazilian SEC on March 12, 2008 (English version)*
3. *Explanatory Notes of Certification Report – Minas- Rio Resources filed with Brazilian SEC on March 12, 2008 (English version)*
4. *2007 Earnings Releases filed with Brazilian SEC on March 13, 2008 (English version)*
5. *2008 Calendar of Corporate Events filed with Brazilian SEC on March 17, 2008 (English version)*
6. *Material Fact Notice filed with Brazilian SEC on March 31, 2008 (English version)*
7. *Public Announcement filed with Brazilian SEC on April 4, 2008 (English version)*

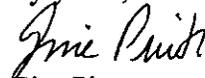
*See 4/22*

8. *Material Fact Notice filed with Brazilian SEC on April 7, 2008  
(English version)*
9. *Main Decisions of the Board of Directors' Meeting held on  
April 7, 2008 (English version)*
10. *Summary Minutes of the Extraordinary shareholders' Meeting  
held on April 7, 2008 (English version)*
11. *Material Fact Notice filed with Brazilian SEC on April 8, 2008  
(English version)*

The information contained in this letter is being furnished pursuant to Rule 12g3-2(b), with the understanding that such information and documents will not be deemed "filed" with the SEC or otherwise subject to the liabilities of Section 18 of the Exchange Act, and that neither this letter nor the furnishing of such documents and information shall constitute an admission for any purpose that the Company is subject to the registration or continuing reporting obligations of the Exchange Act.

If you have any questions or comments please contact the undersigned at 011-55-(21) 2555-5558.

Very truly yours,

  
Gina Pinto

Between March 1<sup>st</sup>, 2008 and March 31, 2008 there were no transactions with securities and derivatives, in compliance with Article 11 - CVM Instruction # 358/2002

<b>Company Name: MMX Mineração e Metálicos S.A.</b>								
<b>Company and Related Persons</b>	<b>(X) Board of Directors</b>		<b>( ) Executive Officers</b>		<b>( ) Audit Committee</b>		<b>( ) Technical and Consulting Committees</b>	
<b>Initial Balance</b>								
<b>Securities / Derivatives</b>	<b>Securities Characteristics</b>				<b>Quantity</b>	<b>% of participation</b>		
						<b>Same Class and Type</b>	<b>Total</b>	
Shares	Common				104,084	0.68%	0.68%	
Shares	Preferred				0	0.00%	0.00%	
<b>Transactions in the month</b>								
<b>Securities / Derivatives</b>	<b>Securities Characteristics</b>	<b>Brokerage House</b>	<b>Operation</b>	<b>Day</b>	<b>Quantity</b>	<b>Price</b>	<b>Volume (R\$)</b>	
<b>There were no transactions in the referred month</b>								
<b>Final Balance</b>								
<b>Securities / Derivatives</b>	<b>Securities Characteristics</b>				<b>Quantity</b>	<b>% of participation</b>		
						<b>Same Class and Type</b>	<b>Total</b>	
Shares	Common				104,084	0.68%	0.68%	
Shares	Preferred				0	0.00%	0.00%	

Note: The informed total number of shares refers to the sum of shares owned by members of the referred group plus shares owned by their related persons.

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**CONSOLIDATED FORM**

**Management and Related Person's Negotiation of Securities Issued by the Company - Article 11 - CVM  
Instruction # 358/2002**

Between March 1<sup>st</sup>, 2008 and March 31, 2008 there were no transactions with securities and derivatives, in compliance with Article 11 - CVM Instruction # 358/2002

<b>Company Name: MMX Mineração e Metálicos S.A.</b>								
<b>Company and Related Persons</b>	<input type="checkbox"/> <b>Board of Directors</b>		<input checked="" type="checkbox"/> <b>Executive Officers</b>		<input type="checkbox"/> <b>Audit Committee</b>		<input type="checkbox"/> <b>Technical and Consulting Committees</b>	
<b>Initial Balance</b>								
<b>Securities / Derivatives</b>	<b>Securities Characteristics</b>				<b>Quantity</b>	<b>% of participation</b>		
						<b>Same Class and Type</b>	<b>Total</b>	
Shares	Common				159,976	1.05%	1.05%	
Shares	Preferred				0	0.00%	0.00%	
<b>Transactions in the month</b>								
<b>Securities / Derivatives</b>	<b>Securities Characteristics</b>	<b>Brokerage House</b>	<b>Operation</b>	<b>Day</b>	<b>Quantity</b>	<b>Price</b>	<b>Volume (R\$)</b>	
<b>There were no transactions in the referred month</b>								
<b>Final Balance</b>								
<b>Securities / Derivatives</b>	<b>Securities Characteristics</b>				<b>Quantity</b>	<b>% of participation</b>		
						<b>Same Class and Type</b>	<b>Total</b>	
Shares	Common				159,976	1.05%	1.05%	
Shares	Preferred				0	0.00%	0.00%	

Note: The informed total number of shares refers to the sum of shares owned by members of the referred group plus shares owned by their related persons.

**CONSOLIDATED FORM**  
**Management and Related Person's Negotiation of Securities Issued by the Company - Article 11 - CVM**  
**Instruction # 358/2002**

Between March 1<sup>st</sup>, 2008 and March 31, 2008 the following transactions occurred with securities and derivatives, in compliance with Article 11 - CVM Instruction # 358/2002

<b>Company Name: MMX Mineração e Metálicos S.A.</b>								
<b>Company and Related Persons</b>	<b>( ) Board of Directors</b>		<b>( ) Executive Officers</b>		<b>( ) Audit Committee</b>		<b>(X) Controlling Shareholders</b>	
<b>Initial Balance</b>								
Securities / Derivatives	Securities Characteristics				Quantity	% of participation		
						Same Class and Type	Total	
Shares	Common				9.403.854	61.74%	61.74%	
Shares	Preferred				0	0.00%	0.00%	
<b>Transactions in the month</b>								
Securities / Derivatives	Securities Characteristics	Brokerage House	Operation	Day	Quantity	Price	Volume (R\$)	
Shares	Common	Itaú Corretora	Sale	29/02/2008	(300)	R\$ 912.98	R\$ 273,894.00	
Shares	Common	Itaú Corretora	Sale	03/03/2008	(200)	R\$ 905.00	R\$ 181,000.00	
Shares	Common	Itaú Corretora	Sale	31/03/2008	(410)	R\$ 945.00	R\$ 387,450.00	
Shares	Common	Itaú Corretora	Sale	31/03/2008	(1,000)	R\$ 938.99	R\$ 938,990.00	
Shares	Common	Itaú Corretora	Stock option exercise by statutory officer	07/03/2008	(1,072)	R\$ 6.97	R\$ 7471.84	
<b>Final Balance</b>								
Securities / Derivatives	Securities Characteristics				Quantity	% of participation		
						Same Class and Type	Total	
Shares	Common				9,400,872	61.72%	61.72%	
Shares	Preferred				0	0.00%	0.00%	

Note: The informed total number of shares refers to the sum of shares owned by members of the referred Controlling Shareholder, plus shares owned by their related persons.

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**MMX discloses Technical Report of MMX Minas-Rio's Mineral Resources**

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**Rio de Janeiro, March 12, 2008:** MMX Mineração e Metálicos S.A. (Bovespa: MMXM3; TSX: XMM) ("MMX") hereby informs its shareholders and investors that a new Technical Report of MMX Minas-Rio's mineral resources has been concluded.

The report contains updated and audited technical information, from geological research held until November 2007. MMX Minas-Rio will continue to carry out its drilling campaign in 2008 and 2009.

The audit of the resources was carried out according to the standards set by the Canadian Institute of Mining, Metallurgy and Petroleum (CIM Standards) and by the National Instrument 43-101 of the Canadian Securities Administrators (NI 43-101). SRK Consulting, a company specialized in geology, mining and mineral resources determination, was responsible for the audit.

MMX's mining department has prepared a document - Explanatory Notes to the Certification of Resources Report - containing the necessary information on the technical report.

The explanatory notes and the technical report are available on the Company's Investor Relations website ([www.mmx.com.br/ri](http://www.mmx.com.br/ri)).

**MMX Mineração e Metálicos S.A.**  
Luiz Rodolfo Landim Machado  
Executive President and Investor Relations Officer

MMX - Investor Relations  
Elizabeth Cruz / Gina Pinto  
Tel. 55 21 2555-5634 / 2555-5558  
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[www.mmx.com.br/ri](http://www.mmx.com.br/ri)

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**MMX**



**MMX Mineração e Metálicos S.A.**

**Explanatory Notes of  
Certification Report -  
Minas- Rio Resources**

**March/08**



## Minas – Rio Project

### **Introduction**

The aim of this report is to present a summary of the Resources Audit Report presented by SRK Consulting, carried out in accordance with the standards set by the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") and by the National Instrument 43-101 of the Canadian Securities Administrators ("NI 43-101").

These Explanatory Notes describe the various steps of the exploration program and analysis of the mineral resources of the MMX Minas-Rio mineral rights.

The Company owns the mineral resources at Minas-Rio Project Area, through the acquisition and/or staking of mineral rights, where it is currently carrying out iron ore exploration and feasibility studies.

MMX continues its exploration program, on the same mining rights disclosed in the 2007 technical report, in accordance with the approved budget plan. At Serra do Sapó, the major exploration target, the drilling performed up to date was performed in the central part of the mineralized body, representing 5 km of the total 12 km length of banded iron formation. Exploration drilling is on-going in the northern and southern parts and provide data for future resource estimation.

### **Historical Resources and Developed studies – Minas-Rio Project:**

The first public disclosure of resources was presented to investors on the occasion of the Initial Public Offering (IPO) on the Bovespa -- São Paulo Stock Exchange. The Company used a data base generated from **information and geological exploration carried out up to March 31, 2006**, and contained 407.86 million tonnes of indicated resources and 305.16 million tonnes of inferred resources. The resources were reviewed by SRK Consulting, a company specializing in geology, mining and mineral resources estimation. The standards of exploration and the estimation adopted followed the criteria and procedures adopted by Brazilian companies of the iron ore sector, who apply standards and criteria accepted by the Brazilian Mining Code, but not according to the CIM standards or NI 43-101.

After March 31, 2006, the Company initiated the process of issuing its technical disclosure in accordance with the procedures and requirements of the Canadian standards, including the standards and classification system established by CIM and NI 43-101 guidelines.

The mineral resources certified by SRK Consultant in the May 4, 2007 Technical Report were based on **information and geological exploration carried through March 31<sup>st</sup>, 2007**. The resources were classified according to



CIM Standards and NI 43-101, contained **301.3 million tonnes** of indicated resources and **223.1 million tonnes** of inferred resources. In addition, following the CIM Standards and NI 43-101, in the range of  $\pm 10\%$ , **2,127 million tonnes** may have the potential to be classified as conceptual resources (Itapanhoacanga 225 million tonnes, Serra do Sapo 1.480 million tonnes, Serro 422 million tonnes). The potential quantity and grade of such resources is conceptual in nature and there has been insufficient exploration to date to define a mineral resource and it is uncertain whether further exploration will result in the target being delineated as a mineral resource.

### Current Resource Statement – Minas Rio Project:

A new Minas Rio Technical Report, in accordance with CIM Standards and NI 43-101, and certified by SRK Consulting, dated of 12<sup>th</sup> February, 2008 and using information and geological exploration carried out up to 30<sup>th</sup> November, 2007, states **1,485 million tonnes** of indicated resources and **2,305.3 million tonnes** of inferred resources, as shown in Table 1 below. In addition, in the range of  $\pm 10\%$ , **900 million tonnes** may have the potential to be classified as conceptual resources, according to CIM Standards. The potential quantity and grade of such resources is conceptual in nature and there has been insufficient exploration to date to define a mineral resource and it is uncertain whether further exploration will result in the target being delineated as a mineral resource.

Table 1 : Statement of Resources - Minas-Rio Project

Resource	Deposit	Mt*
Indicated	Serra do Sapo	1,270.00
	Itapanhoacanga	89.00
	Serro	126.00
	Total	1,485.00
Inferred	Serra do Sapo	1,448.00
	Itapanhoacanga	412.00
	Serro	312.00
	João Monlevade	133.30
	Total	2,305.30

(\*) tonnes on a wet basis

The increase in the resources numbers reflects the additional exploration program that executed **402 drillholes**, totalizing **33,829 m** drilled in 200 x 200m grids with some targets infilled to 100 x 100m.

The MMX resources and reserves statement is in compliance with NI 43-101 and CIM guidelines. This standard was adopted by MMX for its resource and reserve statements because of its international recognition and acceptance and because MMX is listed in the Toronto Stock Exchange ("TSX"). Compliance with the recommendations and requirements of NI 43-101 provides investors with transparency in the quantity and quality of the resources and reserves disclosed, within recognized standards.



MMX is continuing with its exploration and development program with 100,000m of planned exploration and infill drilling during 2008-2009, and establishing reserves for the project through a pre-feasibility study.

A handwritten signature in black ink, appearing to read 'Maria do Carmo Schumacher'.

Geol. Maria do Carmo Schumacher MSc  
Resources and Reserves Management

March/08

**MMX announces its 2007 results**

Rio de Janeiro, March 13, 2008 – MMX Mineração e Metálicos S.A. (Bovespa: MMXM3) - (“MMX” or “Company”) announces its results for the period ending December 31, 2007.

Since the operations of its subsidiaries are still in the initial stage, the Company’s consolidated results are primarily represented by investments, costs and expenses related to projects in the process of implementation. The financial statements presented at the end of this document were prepared in accordance with the usual accounting practices adopted in Brazil, based on Brazilian Corporate Law and CVM regulations (“BR GAAP”).

**HIGHLIGHTS OF THE PERIOD**

- ✓ The MMX Corumbá System iron ore production totaled 1,504 thousand tons in 2007, with sales of 790 thousand tons, mainly for the export market.
- ✓ In MMX Metálicos Corumbá, the pig iron plant’s first blast furnace initiated operations in August 2007 and the second blast furnace in January 2008. The full production capacity should be reached in the first quarter of 2008.
- ✓ Through the subsidiary AVX, the Company concluded the acquisition of AVG Mineração, in December 2007, and of Minermidas, in March 2008, both mining companies located in the Iron Quadrangle, Minas Gerais State.
- ✓ The MMX Amapá System initiated operations in December 2007 with the first iron ore shipment headed for Gulf Industrial Investment Corporation, of Bahrain.
- ✓ LLX Logística was created in the first semester of 2007. With independent management, it is the holding company for MMX’s logistics activities. In September 2007, Ontario Teachers Pension Plan entered into an agreement to subscribe for 15% of LLX’s shares.
- ✓ In November 2007 LLX Logística entered into a financing agreement contemplating a firm commitment in the amount of US\$750 million with Bradesco, who further agreed to undertake best efforts to syndicate approximately and additional US\$1.1 billion.
- ✓ The year’s net income, of R\$765.6, was positively affected by the capital gain obtained as a result of Anglo American’s new shares subscription in the MMX Minas-Rio System, in July 2007.
- ✓ By year-end 2007 MMX’s share price reached R\$940, representing an appreciation of 309% in that year. The market capitalization was R\$14.3 billion.

**Investor Relations:**

**Rodolfo Landim**  
Executive President and IRO

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**Gina Pinto**  
IR Analyst

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## DEVELOPMENT OF MMX'S INTEGRATED SYSTEMS

### MMX Corumbá System

#### Operation and Production

The MMX Corumbá System consists of an iron ore mine and a beneficiation plant that commenced operation and production in 2005, and a pig iron plant with two blast furnaces: the first blast furnace commenced its commercial operations in August 2007 and the second blast furnace commenced operating in January 2008.

In 2007, the iron ore production reached 1,504 thousand tons, mainly of lump. Sales amounted to approximately 790 thousand tons, 99.93% to the export market.

The pig iron plant produced 60 thousand tons with 5 thousand tons of sales to the Argentinean market. The full capacity, of 400 thousand tons per year, will be reached in the first quarter of 2008.

In 2007 the Company entered into a long term agreement (2007–2012) with Siderar S.A.I.C (Argentina) and Ereğli Demir (Turkey). Furthermore, the negotiation with Lucchini (Italy) for firm iron ore supply until 2011 is at its final stage. Other negotiations for iron ore test lots supply with potential clients are being carried out.

MMX Corumbá Metálicos entered into a long term supply agreement (2007-2012) with Cargill, Incorporated, in the beginning of the year with firm take and delivery obligations for approximately 75% of the total pig iron plants production. Cargill will have exclusive rights to market MMX Metalicos's pig iron acquired production from MMX Corumbá System worldwide with the exception of South America. The company is also negotiating with Acindar (Argentina) a pig iron test lot supply in 2008.

The Corumbá Project holds short term export financing lines with Brazilian banks, which should be renewed or replaced for long term lines in 2008.

#### Forestry Program

At the end of 2007, the Forestry Program had reached 2,750 planted hectares, among acquisition of planted forest and own plantation of 1,500 hectares in that year. The Company acquired, until this date, 8,780 hectares of own forest base.

The program is focused on the development of the Company's own forest base to supply the charcoal needed to operate the pig iron operation in a sustainable and environmentally correct way. This goal will be reached in 2017 and is in line with the Conduct Commitment Term entered into with the Public Ministry of the Mato Grosso do Sul state in August 2006.

All the project parameters are aligned to the Company's environmental policy, which prioritizes the sustainability of its undertakings, reconciling economic development with the preservation of the natural habitat.

#### Logistics

The production from the MMX Corumbá Integrated System is transported on barges down the Paraguay-Paraná River way, to the ports of Rosário and San Nicolas in Argentina.



In order to guarantee the transportation of its production, the company entered into long term agreements with local barge operators which will guarantee the transportation of approximately 2.3 million tons in 2008, with increasing capacity in the following years.

MMX is examining alternatives for the transportation of its production so as to reduce the impact of the river's dry period, such as the building of inventory in the Rosário Port, in Argentina. The use of Port Brasil, to be developed by LLX, is one of the alternatives being considered for the medium to long term.

## **MMX Amapá System**

### **Operation and Production**

The MMX Amapá System consists of an iron ore mine and a beneficiation plant, the Amapá railroad and the Santana Port.

In March 2007, Centennial Assets Participações Amapá S.A. ("Centennial Assets Amapá") sold its 30% stake in the Company to Cleveland-Cliffs, Inc., the largest producer of iron ore and pellets in the USA, for US\$ 133 million.

Total investments for the Amapá System are estimated at R\$898 million, which includes the improvement in the beneficiation plant. Of this total, up to R\$580 million are object of a credit line on lending operation with BNDES as well as long term export prepayment operations with Banco ABC Brasil S.A., (US\$50 million) and Banco Itaú BBA S.A. (US\$20 million)..

Itaú BBA had also granted a short term bridge loan in the amount of R\$ 223 million in order to finance investments until the BNDES disbursement. The first disbursement from BNDES, of R\$ 250 million, occurred in December 2007.

The beneficiation plant commenced operating in December 2007, with a production of 900 tons. The production will reach its full capacity of 6.5 million tons/year in 2009.

On December 31, 2008, MMX Amapá commenced the loading of its first iron ore shipment headed for the client Gulf Industrial Investment Corporation, of Bahrain.

For MMX Metálicos Amapá Ltda. ("MMX Metálicos Amapá"), the Company is analyzing the initial project foreseen to the System, aiming at optimizing and gaining future economies of scale .

The first aspect that has been decided is the construction of a single coke oven for the pig iron plant with a capacity of 2 million tons maintained, in substitution for the ten mini-coke ovens envisaged in the initial project. The operations start-up has been postponed to mid 2010.

### **Logistics**

The System includes the Amapá Railway (EFA) for transportation of iron ore output to the Port of Santana, in the Amapá State. MMX has a 20-year concession contract, renewable for another 20 years, in operation since March 2006.

In January, 2007, MMX Amapá was granted a permit from the National Agency of Waterway Transportation (ANTAQ), authorizing the construction and operation, for an indefinite term, of a multi-purpose private port



terminal in the port area of Santana, Municipality of Santana, Amapá State. The Santana Port is already operating, with the Operating License granted in April 2007.

Iron ore exports will be carried out by barges to a floating offshore structure where it will be transhipped to the cape-size ships.

#### **Iron ore supply contract with GIIC**

In March 2007, Gulf Industrial Investment Corporation (“GIIC”) decided to increase its contracted volume of iron ore to 13 million tons/year by exercising the option to acquire an additional 6.5 million tons.

The product to be supplied will be sourced from both the MMX Amapá and the MMX Minas-Rio Integrated Systems and is supported by the supply agreement entered into in November 2006.

#### **MMX Minas-Rio System**

The MMX Minas-Rio System will reach the full iron ore production capacity of 26.5 million tons/year of pellet feed in 2011. The iron ore will be transported through a 518 km pipeline, which will connect the beneficiation plant, to be constructed near the mine, to Port Açú (Rio de Janeiro State).

MMX is working to develop the three projects that comprises the Minas-Rio System within the established timeline.

Port Açú, located at the São João da Barra Municipality, Rio de Janeiro State, will be the outlet center for the Minas-Rio System iron ore production, to be done by cape-size vessels. The construction and iron ore handling will be carried by LLX Minas-Rio Logística S.A. (“LLX Minas-Rio”), a subsidiary of LLX Logística S.A.

In June, 2007, the National Agency of Waterway Transportation – ANTAQ authorized the construction and operation, for an indefinite term, of the Port Açú multi-purpose private port terminal. The permit allows the operation of both the Company’s own as well as third-party cargo, as contemplated by the business plan of the Company’s subsidiary LLX Logística.

In July 2007, the operation for the sale of 100% of the shares owned by Centennial Assets Mining Fund LLC in the Minas-Rio System – MMX Minas-Rio and LLX Minas-Rio – to Anglo American Plc for a total economic value of US\$ 1.15 billion, was concluded. In addition, Anglo American subscribed for new shares of the Companies, increasing its ownership interest to 49%. In January 2008, Anglo and MMX’s controller, Mr. Eike Batista, entered into a period of exclusive discussions in relation to the acquisition of the remaining shares of MMX Minas-Rio and 70% of the shares in the MMX Amapá System.

In June, 2007, the Company received formal communication issued by Brazil’s National Development Bank (BNDES) Eligibility and Credit Committee recognizing that the MMX Minas-Rio System is eligible for BNDES funding. The approval by the BNDES’s board was obtained in December 2007, for the amount of R\$3.3 billion, being 50% in direct financing and 50% under a Project Finance condition.

In September 2007 LLX Minas-Rio and the ARG-CIVILPORT consortium signed a letter of Intent for the offshore construction work of Port Açú, and the construction of the facility was initiated.



The preliminary environmental permit for the construction of the slurry pipeline, was granted in August 2007 by the Federal Environmental Agency (Ibama)).

The issuance of the preliminary environmental permit represents the approval of the environmental impact study of the Pipeline by the competent Federal authority. The construction of the MMX Minas-Rio Pipeline is now conditioned upon the granting of the appropriate construction permit. The company's transparent approach, which involved presenting its projects to the community beforehand, leads MMX to reaffirm its belief in obtaining all the licenses required by law on time to meet the start-up of the Minas-Rio Integrated System as scheduled.

In September 2007 the Company hired the consortium formed by Confab Industrial S.A., Siat S.A. and Marubeni-Itochu Steel Inc., for the supply of approximately 539 km of welded steel pipes with 24 and 26-inch diameter.

Sojitz Corporation ("Sojitz"), a Japanese trading company with worldwide presence, confirmed, under long-term supply agreements with MMX Minas-Rio, that it will acquire 13.2 million tons of pellet feed (wet basis). The pellet feed will be delivered at the Port Açú at market prices. Therefore, in addition to the contract signed with GIC in 2006, MMX Minas-Rio has a total contracted volume of 21.5 million tons of pellet feed (wet basis).

The negotiations with current and potential clients for the supply of products have revealed a strong demand for pellet feed, and has led the Company's Board of Directors to postpone the start up of the pelletizing facility to 2011.

## **AVG**

In December 2007 the Company, through its subsidiary AVX, concluded the purchase of 100% of AVG's shares, for US\$ 224 million, to be paid in 5 annual installments. The purchase price may accrete by a variable portion, capped at US\$50 million, subject to the attainment of the necessary environmental permits for certain mining rights, which may increase the mining reserves base of the acquired company.

AVG is located in the Serra da Farofa area, at the Serra Azul region, at the southwest side of the Iron Quadrangle in Minas Gerais State. The production is transported through a highway until the MRS Logística railroad and, from there the export production is shipped through the Sepetiba Port, Rio de Janeiro State.

MMX has carried out technical studies which indicate that AVG's production capacity may be increased from the current 2.3 million tons to 5.8 million tons per year. The Company believes that AVG may increase its overall efficiency and productivity, due to: 1) improvement in AVG's operational process; 2) replacement of equipments near the useful life end, and; 3) implementation of maintenance procedures and routines.

To meet the expected capacity, the investment plan for AVG in 2008 and 2009 amounts to US\$ 32 million, of which US\$ 12 million for current investments and US\$ 20 million for expansion investment.

In the future, MMX plans to expand its investment in AVG to initiate a second stage in AVG's production capacity, which should exceed the planned 5.8 million tons per year, and, for this purpose, is continuing the engineering studies that will sustain the new expansion.



## **LLX Logística S.A.**

LLX Logística, constituted through a corporate restructuring approved by the Company's Board of Directors during the first semester, became the holding company for MMX's logistics activities. The company has an independent management focused in identifying new business opportunities in logistics.

Below are the key factors taken into consideration in the creation of LLX:

- ✓ Sound economic fundamentals will underpin Brazil's next high growth cycle;
- ✓ Trade will play a key role in the process, substantially increasing the demand for logistics systems;
- ✓ Brazil is underinvested in its infrastructure and provides outstanding opportunities for companies to invest in this sector;
- ✓ Isolation of logistics assets allows a better perception of its value, thus attracting a more focused analyst community and new investors.

LLX Logística, a wholly owned subsidiary of MMX, has a 70% stake in LLX Açú Operações Portuárias S.A. ("LLX Açú") and a 51% stake in LLX Minas-Rio. The remaining 49% stake in LLX Minas-Rio belongs to Anglo American Participações Ltda., as a result of the transaction between Anglo American and MMX carried out in July 2007.

In addition to the maritime infra-structure that is being constructed to handle iron ore, LLX Açú has the right to construct additional infrastructure in the area and operate logistics activities and cargo for third-parties, with the payment of a rate per ship/per ton to LLX Minas-Rio. LLX Açú will have the right to expand Port Açú as settled with LLX Minas-Rio from time to time, and will also have the right to carry on port operations in Port Açú, respecting the the iron ore priority rights.

In September, 2007, LLX Logística and Ontario Teachers' Pension Plan Board ("OTPP"), a Canadian pension fund, entered into definitive agreements providing for the subscription and purchase of 15% by OTPP of the issued and outstanding shares of LLX, in preferred shares, for a price of US\$185.0 million. This transaction implies a market value of approximately US\$ 1.23 billion for LLX Logística.

The funds raised on this transaction with OTPP will be used for the to development of non-iron ore related port activities and of an industrial complex in Port Açú's back-area. The investment will also be directed for the development of the Port Brasil , in São Paulo State, and of Port Sudeste, in Rio de Janeiro State.

In November 2007, LLX Logística entered into a financing agreement with Banco Bradesco S.A. ("Bradesco") contemplating a firm commitment in the amount of US\$750 million. The financing agreement encompasses a short term bridge loan in the amount of US\$300 million and long-term finance credit lines amounting up to US\$750 million which are expected to be originated mostly from the onlending of funds from BNDES, with an estimated term of up to 13 years. Bradesco further agreed to undertake best efforts to syndicate approximately an additional US\$1.1 billion for LLX.

All the terms and conditions related to the long-term financing will be subject to BNDES's previous analysis, and the conclusion of the transaction is subject to the detailed conditions of the Engagement Letter, and to usual market conditions for transactions of this nature.

The long-term finance credit lines are structured as project finance, with corporate guarantees limited to the pre-completion phase of the projects that are being conducted by LLX's subsidiaries. MMX will not provide guarantee for the Financing.



The Port Açú, with a back-area of 7,800 ha, will handle iron ore from the MMX Minas-Rio pipeline, as well as other products such as steel, coal, containers, granite, ethanol, oil derivatives and LNG. The Port Brasil, with a back-area of 1,950 ha, is being designed to handle iron ore, containers, fertilizers, agricultural and liquid bulk. The Port Sudeste is also strategically located and sized to house a distribution center and berth for iron ore ships.

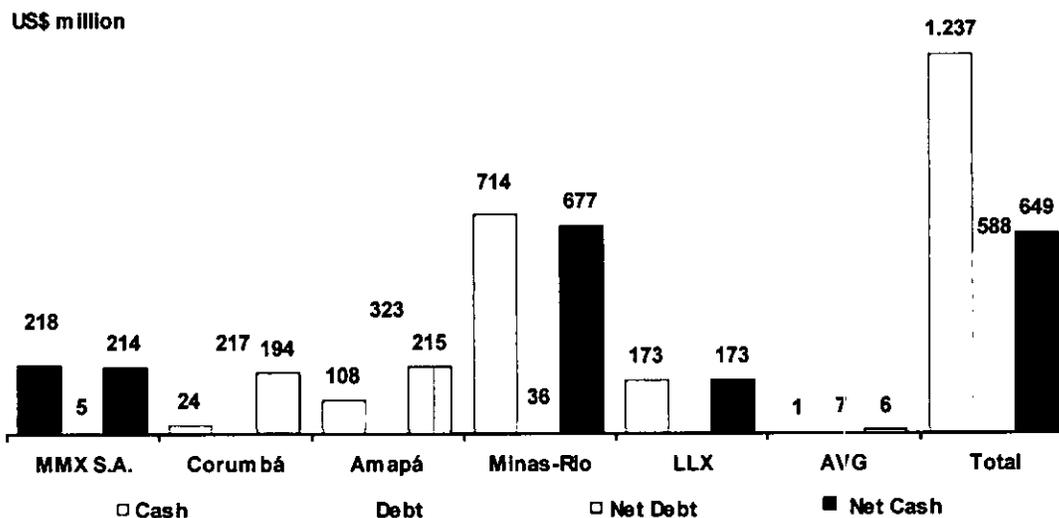
## Other Operations

The Company, through its subsidiary MMX Properties LLC (“MMX Properties”) holds a purchase option for an aircraft for which it has paid a US\$ 100 thousand down payment. The Company has also acquired, in 2007, Bay Service Serviços Portuários Ltda (“Bay Service”), a navigation service company that carry on the transshipment operation in the Amapá System.

## FINANCING AND INVESTMENTS

The sources of funding necessary to finance the investments required for the various projects was structured by MMX in conjunction with leading Brazilian banks and the BNDES.

In the chart below it is shown the Company’s strong cash position as of December 31, 2007, in US\$ million, for the MMX Systems, composed mainly of the funds obtained in the IPO (July 2006) and the contribution of strategic partners, Cleveland Cliffs and Anglo American Plc.



## GEOLOGICAL RESOURCES

On May 30 2007, we announced that the Mineral Resources and Reserves Certification Reports 43.101 for the Corumbá, Amapá and Minas-Rio Systems had been concluded by an independent consulting company. In March 2008 updates and revisions for these reports will be concluded and published, for all projects.

The Company hired SRK Consulting to develop a preliminary Technical Report 43.101 of AVG, which was concluded and disclosed on February 27, 2008.



The audit of the resources and reserves was carried out according to the standards set by the Canadian Institute of Mining, Metallurgy and Petroleum (CIM Standards) and by the National Instrument 43-101 of the Canadian Securities Administrators (NI 43-101). SRK Consulting, a company specialized in geology, mining and mineral resources determination, was responsible for the independent audit.

Compliance with the recommendations and requirements of NI 43-101, which is an internationally recognized and accepted document, guarantees the necessary transparency regarding the quantity and quality of MMX's mineral resources.

MMX prepared a document – Explanatory Notes of Certification Report – containing a summary of the first technical reports, which was made available on the Company's website.

## FINANCIAL STATEMENTS

The financial statements presented reflect the implementation phase of the Company's subsidiaries, represented by investments, costs and expenses related to the projects under development.

The year's net income was positively affected by the R\$ 830.8 million capital gain obtained through the Company's stake in the subsidiaries MMX Minas-Rio and LLX Minas-Rio, due to the subscription of the new shares by Anglo American Participações, which resulted in the reduction of MMX's stake from 70% to 51%.

Listed below are the highlights of 2007:

- ✓ Net income of R\$ 765.6 million.
- ✓ Net revenue of R\$ 204.1 million.
- ✓ Net financial revenue (including exchange rate variation) of R\$ 78.3 million.
- ✓ General and administrative expenses of R\$ 106 million.
- ✓ Cash and marketable securities of R\$ 1,424.9 million.
- ✓ Total debt of R\$ 1,110.6 million.
- ✓ Shareholders equity of R 1,813.7 million.

Most of the Company's revenues will be generated in US dollars and most of its capital expenditures (CAPEX) needs, its debt and its operating costs (OPEX) are in Reais. As a strategy to prevent and reduce the effects of foreign exchange rate fluctuations, Management adopts the policy of holding derivatives through forward currency operations, assets in Reais and liabilities in US Dollars, all registered with the CETIP (Clearing House for the Custody and Financial Settlement of Securities).

The Company presented a positive net result of R\$493 million in December 31 2007 with the forward currency operations, (R\$27 million as of December 31, 2006), booked as deferred, or as results in future periods by its subsidiaries in pre operating stage.

On December 31, 2007, the non-realized negative effects in these forward currency operations, are registered as losses and were taken to the result of the period, by the subsidiary MMX Corumbá, in the amount of R\$ 178 thousand and to the deferred by its subsidiaries in pre operating stage in the amount of R\$ 37 million. At year-end, the negative variation of the forward currency operations totaled R\$53 million.

The Company maintains open positions and has been accruing losses, although it is worth noting that this result is subject to exchange rate variations while the position are open.

## CAPITAL STOCK

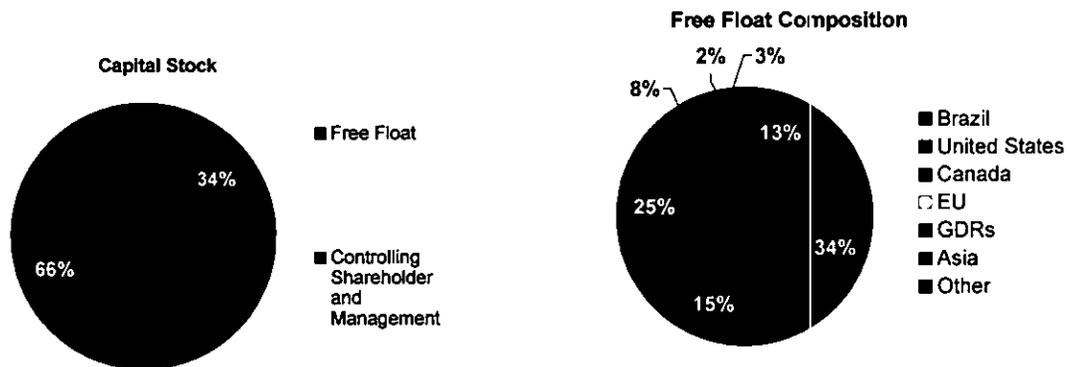
### Capital stock and 2007 performance

MMX is listed on Bovespa's Novo Mercado (MMX3M) since July 2006 and has been included in the Special Corporate Governance Stock Index (IGC). MMX is also listed at the Toronto Stock Exchange (TSX) since June 2007 with its *Global Depositary Receipts* ("GDR"), being the first Brazilian company to be listed in Canada. This initiative is aimed at broadening the Company's shareholder base by attracting additional investors with knowledge of the global mining sector.

On December 31, 2007 MMX S.A.'s capital stock is represented by 15,230 thousand shares, as a result of two share splits carried out in January and July 2007.

The capital stock is composed exclusively of common shares and minority shareholders are entitled to the same treatment given to the controlling shareholder in the eventuality of a control block trade (100% tag along rights), as stated in the Company's Bylaws.

In 2007 MMX's shares (MMXM3) ended the year with a 309% appreciation, accumulating a 361% appreciation since the IPO. The total number of trades in 2007 reached 11,315, an average of 46 trades per day. The total volume traded reached R\$ 4.3 billion, an average of R\$ 17.4 million per day.



As of December 31, the shares were priced at R\$940.00 and the Company's market cap was of R\$ 14.3 billion.

### Stock option plan

In 2006, the controlling shareholder granted the executive officers and 18 strategic managers the option to purchase MMX's shares, as part of the 5-year remuneration and incentive program, without any costs or dilution to minority shareholders. The stock option plan has individual exercise rules for each officer and manager of the Company.

In addition to this remuneration mechanism, at a Special Shareholders' Meeting held in 2006, the Company approved a stock option purchase program for MMX's shares through which the Board of Directors will grant stock options in favor of managers, officers and Company employees as long as it represents less than 1% of the outstanding shares.



## SUBSEQUENT EVENTS

### Amendments in Corporate Law no 6,404/76

Law 11,638, published in the *Official Gazette* of the Brazilian Federal Government on December 28, 2007, amends a number of provisions of Law 6,404 of 1976, which governs Brazilian public companies. These amendments became effective on January 1, 2008.

Among the principal changes introduced in the new legislation, the Company highlights the following, which Management believes could affect the form in which it presents the financial results and the criteria used to account for assets and financial position starting in the fiscal year ending December 31, 2008:

- ✓ The Statement of Origins and Applications of Funds ("DOAR," from its acronym in Portuguese) is no longer obligatory, having been replaced by the Cash Flow Statement ("DFC"). In the case of publicly traded companies, a mandatory statement of value-added ("DVA") has also been introduced. Publication of DFC and DVA are obligatory for all large corporations, regardless of their legal constitution, and are subject to independent audit.
- ✓ Intangible rights and assets have been separated from tangible assets, with fixed assets classified into investments, real property, intangible assets and deferred assets.
- ✓ The line "adjustments to asset valuations" has been added under the heading of Net Assets. Adjustments to asset valuations must be set forth when the components of increases or decreases in the valuation of assets and liabilities are not itemized in the results for the period, as required by the principles of accrual accounting, because they have been valued at market value.
- ✓ Pre-operating expenses and restructuring costs that will contribute significantly to an increase in results in more than one fiscal year and consist of more than simply a cost reduction or gain in operating efficiency will be listed under Deferred Assets.
- ✓ Tax incentives will no longer be accounted for under capital reserves, but will now form part of the results for the period. The General Shareholders' Meeting may, based on a determination by the Board, destine a portion of profits corresponding to the value of these tax incentives to the formation of a Tax Incentive Reserve, created with part of the income reserve, and may be omitted from the calculation of statutory dividend payments.
- ✓ Also amended were the criteria for valuing assets and liabilities, including the following changes:
  - Assets and liabilities deriving from long-term transactions, as well as substantial short-term transactions, will be adjusted to current value, in accordance with international accounting standards;
  - The recoverable value of goods and rights classified as real, intangible or deferred assets or liabilities must be periodically determined in order to record potential losses or register changes in the criteria for, and rates of, depreciation, amortization and exhaustion.
  - Rights classified as intangible assets must now be valued in terms of the cost incurred in acquiring them, less the current balance of the corresponding amortization schedule;
  - Financial instruments "available for sale" or "set aside for trading" will now be valued at market value; and
  - All other financial instruments must be valued at the lesser of current cost or probable realized value.
- ✓ In a restructuring, incorporation, merger, or breakup transaction between unrelated parties in which an effective transfer of control takes place, assets and liabilities must now be valued at market value.
- ✓ Debt held by employees and management, even when held in the form of financial instruments, as well debt held by employee pension or similar funds, will now have to be included in the earnings statement for the period



✓ Revaluation reserves may no longer be set aside by publicly-traded companies. The new legislation gives companies the option of maintaining the current balance in these accounts, realizing said sums under the current rules, or else rescinding these sums by the end of fiscal 2008.

The Company's Management is still evaluating the effects the abovementioned changes will have on the Company's net asset statement and statement of results for fiscal 2008, and will take into consideration the guidance and clarifications to be issued by regulators. At the moment, Management does not believe it is possible to determine the effects of these changes on its results and net assets for the fiscal year ending December 31, 2007.

#### **Acquisition of Minerminas – Mineradora Minas Gerais Ltda.**

On March 3, 2008 the Company concluded the acquisition of Minerminas – Mineradora Minas Gerais Ltda. ("Minerminas"), through its subsidiary AVX Mineração e Participações Ltda. ("AVX"). had

For the purchase of 100% of Minerminas shares, AVX will pay a total of US\$115.6 million, payable in 7 semi-annual consecutive installments. The first installment of US\$16.7 million has already been paid and the six remaining installments of equal amount will be paid in the months of July and January of each year, with the last installment due in January 2011.

Through AVX, the Company is merging the operations of AVG and Minerminas in order to obtain synergies and economies of scale. The Company estimates that the integrated operations of AVX should produce 6.1 million tons of iron ore in 2008 and 6.6 million tons of iron ore in 2009. In this regard, the Company has approved investments of nearly US\$40.1 million to improve operations over these two years.

Meanwhile, MMX plans to further increase investments for a second stage of expansion in the operating capacity of AVX and, for this purpose, is conducting engineering studies in order to reach production capacity of 10 million tons in 2010.

#### **Exclusive discussions between MMX's controlling shareholder and Anglo American**

In January 2008, Mr. Eike Batista, controlling shareholder of MMX, and a wholly-owned subsidiary of Anglo American plc entered into a period of exclusive discussions in relation to the acquisition by Anglo American (the "Acquisition Transaction") of Mr. Batista's shares in a new company to be formed ("Newco") in connection with a proposed spin-off of certain assets and liabilities of MMX to Newco and LLX Logística S.A. ("LLX") with the balance of assets and liabilities remaining in MMX (the "Reorganization Transaction"). As a result of this Reorganization Transaction, Newco will hold 51% interest in the MMX Minas-Rio System (excluding the 51% interest in LLX Minas-Rio currently held by LLX) and MMX's current 70% interest in the MMX Amapá System. A wholly owned subsidiary of Anglo American currently holds a 49% interest in the MMX Minas-Rio System and in LLX Minas-Rio.

It is proposed that the Reorganization Transaction will be a condition to the completion of the Acquisition Transaction. The terms of the Acquisition Transaction will also include the payment by Newco to MMX of an ongoing royalty, commencing in 2023 for MMX Amapá and 2025 for MMX Minas-Rio, as well as other mutual commitments of the parties.

Upon completion of the Acquisition Transaction, Anglo American will pay a price of approximately US\$361.12 per Newco share (assuming one Newco share for each current MMX share) or US\$5.5 billion for 100% of Newco's issued and outstanding shares.



After the Reorganization Transaction, MMX will continue to be Mr. Batista's exclusive vehicle for mining projects in general and LLX the vehicle for ports and logistics infrastructure projects, in each case for as long as Mr. Batista controls such entities. As part of the Reorganization Transaction, MMX would also have an option to own 50% of the first pellet plant to be built on the Port Açú.

In connection with the Reorganization Transaction, each of Newco and LLX will be listed on the Novo Mercado and shareholders of MMX will be entitled to hold shares in each of the three companies, receiving one share in the capital of Newco and LLX for every MMX share held.

Closing of each of the Reorganization Transaction and the Acquisition Transaction is subject to a number of terms and conditions, including Anglo and MMX board approval as well as regulatory approval for the definitive transaction documents. In addition, each of Newco, LLX and MMX will be required to obtain shareholder approval in an Extraordinary Meeting, according to Corporate Law no 6,404/76 and CVM regulation, for the completion of the Reorganization Transaction.

After conclusion of the Acquisition Transaction, Anglo American will launch a tag-along offer to the minority shareholders of Newco for the same price offered to Mr. Batista, all in accordance with Brazilian law and the rules of the Novo Mercado.

#### **MMX's shares at the Bovespa's odd-lot market**

On February 25th, 2008 MMX's shares commenced trading on the Bovespa's odd-lot market. The Company believes that this initiative will enable it to broaden the shareholder base and increase the liquidity of MMX's shares.

#### **MMX Corumbá receives Operating Permit for blast furnace 2 and initiates commercial operation**

In January 2008, MMX Metálicos Corumbá received the Operating Permit, authorizing MMX Corumbá to initiate the industrial operations of the second blast furnace of its Pig Iron Plant in Corumbá, Mato Grosso do Sul. The operating permit was granted by the competent State Environmental Institute of Mato Grosso do Sul. As a result, MMX Corumbá commenced the commercial operation of its second blast furnace and should reach full pig iron production capacity (400,000 tons per year in total) in the first quarter of 2008.

#### **Minas-Rio System court deposits**

The subsidiaries MMX Minas-Rio and LLX Minas-Rio are requesting the suspension of the requirement to pay income taxes and social contribution on the financial income obtained during its pre-operational phase. The Company presented a writ of mandamus on January 29, 2008 and on January 31st, 2008 the subsidiaries made court deposits of R\$ 150.2 million and R\$ 16.4 million, respectively. The Company is waiting for the first decision sentence from the Federal Justice of Rio de Janeiro.

#### **Shares subscription by Ontario Teachers' Pension Plan Board ("OTPP")**

On February 18, 2008, OTPP carried out a US\$ 185 million capital increase in LLX Logística, in accordance with the contract for the subscription of 15% of LLX Logística's shares.

#### **Share split**

The Company called a an Extraordinary Shareholders' Meeting to be held on April 07, 2008, to deliberate on the proposed split of all the shares issued by the Company, in the proportion of 20 (twenty) new shares for each existing share. Should the proposal be approved, Company Shareholders registered as of April 07,



2008 shall be entitled to receive the shares resulting from such split. All shares issued pursuant to such split shall have the exact same rights as those currently outstanding.

*This report may contain forward-looking statements about the future of the industry, as well as MMX's estimated financial and operating results and growth prospects. These are mere projections and, as such, are based solely on management's expectations regarding the future of the business. These expectations depend substantially on market conditions and the performance of the Brazilian economy, the sector and the international markets and are, therefore, subject to changes without previous notice.*



MMX Mineração e Metálicos S.A.  
(Public company)

Balance Sheet

as of December 31, 2007 and 2006

(In R\$ thousand)

Assets	Note	Parent Company		Consolidated	
		2007	2006	2007	2006
<b>Current</b>					
Cash and equivalents	5	368,931	727,843	1,424,938	779,212
Accounts receivable	6	-	-	40,510	4,640
Inventories	7	-	-	153,968	37,330
Sundry advances	8	5,715	585	41,147	14,198
Recoverable taxes	9	23,118	7,442	36,479	18,820
Restricted deposits	10	6,375	6,000	6,375	6,000
Contractual retentions	11	42,992	145,282	42,992	145,282
Prepaid expenses		58	-	1,924	-
Accounts receivable - transfer of fixed assets	15a	13,359	-	-	-
Other credits		6	421	1,368	4,780
		<u>460,554</u>	<u>887,573</u>	<u>1,749,701</u>	<u>1,010,262</u>
<b>Non Current</b>					
<b>Long Term</b>					
Sundry advances	8	-	-	41,621	-
Recoverable taxes	9	124	-	47,877	-
Prepaid expenses		203	-	257	267
Judicial deposits	12	8	-	611	687
Subsidiaries and associate companies	17	316,417	163,360	4,449	-
Loans to third parties		-	-	2,774	-
		<u>316,752</u>	<u>163,360</u>	<u>97,589</u>	<u>954</u>
<b>Permanent Assets</b>					
Investments	13	1,077,377	5,947	3,396	2,176
Intangible	14	810	-	744,746	212,835
Fixed	15	16,698	15,527	1,115,104	206,678
Deferred	16	-	-	278,953	159,575
		<u>1,094,885</u>	<u>21,474</u>	<u>2,142,199</u>	<u>581,264</u>
		<u>1,872,191</u>	<u>1,072,407</u>	<u>3,989,489</u>	<u>1,592,480</u>



MMX Mineração e Metálicos S.A.  
(Public company)

Balance Sheet

as of December 31, 2007 and 2006

(In R\$ thousand)

Liabilities	Note	Parent Company		Consolidated	
		2007	2006	2007	2006
<b>Current</b>					
Suppliers		15,351	9,813	129,116	66,495
Loans and financing	18	548	10,130	701,900	256,369
Taxes and contributions payable	19	13,594	1,999	61,420	15,571
Salaries and payroll		4,528	8	17,564	25
Provision for losses from derivatives		-	-	20,495	-
Investment acquisition liabilities	22	-	-	149,192	28,127
Fixed asset acquisition liabilities	15	-	-	12,004	-
Subsidiaries and associate companies	17	682	-	-	-
Third party payables		-	-	2,851	-
Income tax and social contribution payable	21	-	-	84,859	-
Provision for uncovered liabilities	13	12,959	2,059	-	-
Other liabilities		2,948	618	41,360	3,306
		<u>50,610</u>	<u>24,627</u>	<u>1,220,761</u>	<u>369,893</u>
<b>Non Current</b>					
<b>Long Term</b>					
Loans and financing	18	7,909	-	388,239	131,503
Taxes and contributions payable	19	-	-	972	-
Investment acquisition liabilities	22	-	-	437,038	30,182
Obligations related to withdrawal of assets and reforestation	23	-	-	12,431	-
Provision for contingencies	20	-	-	242	687
Fixed asset acquisition liabilities	15	-	-	-	10,770
Results of future years	24	-	-	68,774	-
Other liabilities		-	-	3,776	-
		<u>7,909</u>	<u>-</u>	<u>911,472</u>	<u>173,142</u>
<b>Minority Interest</b>		<u>-</u>	<u>-</u>	<u>43,584</u>	<u>1,665</u>
<b>Shareholders' Equity</b>					
Capital stock	25	1,142,804	1,142,515	1,142,804	1,142,515
Profit Reserve		670,868	-	670,868	-
Accumulated losses		-	(94,735)	-	(94,735)
		<u>1,813,672</u>	<u>1,047,780</u>	<u>1,813,672</u>	<u>1,047,780</u>
		<u>1,872,191</u>	<u>1,072,407</u>	<u>3,989,489</u>	<u>1,592,480</u>



MMX Mineração e Metálicos S.A.  
(Public company)

Income of Statement

as of December 31, 2007 and 2006

(In R\$ thousand)

	Parent Company		Consolidated	
	2007	2006	2007	2006
<b>Gross operating revenue</b>	-	-	206,781	9,392
Deductions	-	-	(2,678)	(215)
<b>Net Operating Revenue</b>	-	-	204,103	9,177
Costs of goods sold and services rendered	-	-	(182,660)	(17,852)
<b>Gross Income (Loss)</b>	-	-	21,443	(8,675)
<b>Other operating revenues (expenses)</b>				
Administrative and general	(70,032)	(54,759)	(106,029)	(60,005)
Selling	-	-	(68,897)	(342)
Financial revenues	112,205	57,816	127,112	58,842
Financial expenses	(33,611)	(79,243)	(79,777)	(81,493)
Exchange rate variation, net	(1,190)	128	31,011	1,748
Equity result	(49,988)	(13,939)	-	-
Provision for loss on realization of investments	(9,780)	-	(9,780)	-
Provision for uncovered liabilities	(10,900)	(2,059)	-	-
Provision for inventories losses	-	-	(2,573)	-
Other operating revenues (expenses)	11	-	3,757	(7,365)
<b>Operating income (loss)</b>	<u>(63,285)</u>	<u>(92,056)</u>	<u>(83,733)</u>	<u>(97,290)</u>
Non operating result	26	830,781	-	830,476
<b>Income (loss) before income tax and social contribution</b>	<u>767,496</u>	<u>(92,056)</u>	<u>746,743</u>	<u>(98,687)</u>
Income tax and social contribution	21	(1,893)	-	(3,736)
<b>Income (loss) before minority interest</b>	<u>765,603</u>	<u>(92,056)</u>	<u>743,007</u>	<u>(98,687)</u>
Minority Interest	-	-	22,596	6,631
<b>Net Income (Loss) for the period</b>	<u>765,603</u>	<u>(92,056)</u>	<u>765,603</u>	<u>(92,056)</u>
<b>Net Income (Loss) per '000 shares - R\$</b>	<u>50.27</u>	<u>(24.20)</u>		
<b>Number of shares at the end of the period (per '000 shares)</b>	<u>15,230</u>	<u>3,804</u>		



MMX Mineração e Metálicos S.A.  
(Public company)

Statement of Cash Flow

As of December 31, 2007 and 2006

(In R\$ thousand)

	Parent Company		Consolidated	
	2007	2006	2007	2006
<b>Cash flow from operating activities</b>				
Net income (loss) for the period	765,603	(92,056)	765,603	(92,056)
Items not affecting working capital:				
Depreciation and amortization	452	49	22,465	911
Equity result	49,988	13,939	-	-
Provision for uncovered liabilities	10,900	2,059	-	-
Monetary variation and interest	(22,988)	-	(55,161)	590
Minority interest	-	-	44,044	6,631
Gain from change in percentage of interest held in subsidiaries	(830,781)	-	-	-
Residual cost on disposal of fixed assets	-	-	-	1,397
Reduction in the acquisition value of investments	9,780	-	9,780	-
Changes in assets and liabilities:				
Decrease (increase) in contractual retentions	102,290	(145,282)	102,290	(145,282)
Increase in restricted deposits	(375)	(6,000)	(375)	(6,000)
Increase in inventories	-	-	(116,638)	(37,330)
Increase in trade accounts payable	-	-	(36,432)	(4,640)
Subsidiaries and associate companies	-	-	(3,389)	-
Increase in other credits	(34,143)	(8,448)	(111,634)	(38,434)
Increase in suppliers	5,538	9,813	65,434	66,025
Increase in payable income tax and social contribution	-	-	85,469	-
Increase in payable taxes and contributions	11,595	-	65,232	-
Investment acquisition liabilities	-	-	290,207	-
Increase (decrease) in other liabilities	6,848	4,586	55,142	(92,000)
Increase in investment acquisition liabilities	-	-	112,940	-
Increase in results of future years	-	-	68,774	-
Net effect of the proportional consolidation starting from July 18, 2007	-	-	(2,584)	-
<b>Net cash from operating activities</b>	<b>74,707</b>	<b>(221,340)</b>	<b>1,361,167</b>	<b>(340,188)</b>
<b>Cash flow from investing activities:</b>				
Credits from related parties:				
Acquired loans	(644,554)	(296,538)	-	-
Settled loans	514,387	133,178	-	656
Provision for losses with derivatives	-	-	20,495	-
Acquisition of permanent investments in other companies	(300,626)	(18,126)	(333,614)	-
Obligations related to withdrawal of assets	-	-	(10,101)	-
Acquisition of fixed assets	(15,273)	(15,576)	(931,139)	(200,450)
Write-off of fixed assets	13,651	-	-	-
Decrease in the amount for investment acquisition	-	-	-	50,232
Acquisition of mining rights	(600)	-	(76,623)	(39,637)
Additions to deferred assets	-	-	(205,428)	(142,375)
<b>Net cash from investing activities</b>	<b>(433,015)</b>	<b>(197,062)</b>	<b>(1,536,411)</b>	<b>(331,574)</b>
<b>Cash flow from operating activities</b>				
Capital increase, net	289	1,125,812	289	1,125,812
Loans and financing				
Acquired loans	8,849	10,130	1,190,664	376,546
Settled loans	(10,424)	-	(369,983)	(70,949)
Deposits with related parties				
Acquired loans	682	-	-	-
Settled loans	-	(357)	-	(338)
<b>Net Cash from financing activities</b>	<b>(604)</b>	<b>1,135,585</b>	<b>820,970</b>	<b>1,431,071</b>
<b>Statement of the Increase (decrease) in cash and equivalents</b>				
At the beginning of the period	727,843	10,660	779,212	19,903
At the end of the period	368,931	727,843	1,424,938	779,212
<b>Increase (decrease) in cash and equivalents</b>	<b>(358,912)</b>	<b>717,183</b>	<b>645,726</b>	<b>759,309</b>

2008 CORPORATE EVENTS CALENDAR

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<b>Company Name</b>	<b>MMX Mineração e Metálicos S.A.</b>
<b>Central Office Address</b>	<b>Praia do Flamengo, 154 – 5º. Andar, Flamengo, Rio de Janeiro, RJ</b>
<b>Website</b>	<b><u>www.mmx.com.br</u></b>
<b>Investor Relations Officer</b>	<b>Name: Luiz Rodolfo Landim Machado</b>
	<b>E-mail: <u>ri@mmx.com.br</u></b>
	<b>Telephone(s): (21) 2555-5563</b>
	<b>Fax: (21) 2555-5501</b>
<b>Responsible for Investor Relations Area</b>	<b>Name: Elizabeth Cruz</b>
	<b>E-mail: <u>ri@mmx.com.br</u></b>
	<b>Telephone(s): (21) 2555-5634</b>
	<b>Fax: (21) 2555-5501</b>
<b>Publications (and locality) in which its corporate documents are published</b>	<b>Diário Oficial do Estado do Rio de Janeiro – DORJ and Valor Econômico.</b>
<b>The Company is subject to arbitration on the Market Arbitration Chamber, as expressed in a Compulsory Clause included in its By-Laws.</b>	

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<b>Annual Financial Statement and Consolidated Financial Statement, when applicable, as of 12/31/2007</b>	
<b>EVENT</b>	<b>DATE</b>
Accessible to Stockholders	03/13/2008
Publication	03/14/2008
Submission to BOVESPA	03/13/2008

<b>Standardized Financial Statement (DFP), as of 12/31/2007</b>	
<b>EVENT</b>	<b>DATE</b>
Submission to BOVESPA	03/13/2008

<b>Annual Financial Statements or Consolidated Financial Statements, when applicable, in English or according to international standards, as of 12/31/2007</b>	
<b>EVENT</b>	<b>DATE</b>
Submission to BOVESPA	04/28/2008

<b>Annual Information – IAN, as of 12/31/2007</b>	
<b>EVENT</b>	<b>DATE</b>
Submission to BOVESPA	05/30/2008

<b>Quarterly Financial Statements – ITR</b>	
<b>EVENT</b>	<b>DATE</b>
Submission to BOVESPA	
Referring to 1Q08	05/15/2008
Referring to 2Q08	08/14/2008
Referring to 3Q08	11/14/2008

<b>Quarterly Financial Statements in English or according to international standards</b>	
<b>EVENT</b>	<b>DATE</b>
Submission to BOVESPA	
Referring to 1Q08	<b>05/30/2008</b>
Referring to 2Q08	<b>08/29/2008</b>
Referring to 3Q08	<b>11/28/2008</b>

<b>Extraordinary Shareholders' Meeting</b>	
<b>EVENT</b>	<b>DATE</b>
Publication of Call Notice	<b>March 05,06 and 07/2008</b>
Submission of Call Notice to BOVESPA accompanied by the Administrative Proposal, when available	<b>03/05/2008</b>
Realization of Extraordinary Shareholders Meeting	<b>04/07/2008</b>
Submission of main Extraordinary Shareholders' Meeting's deliberations to BOVESPA	<b>04/07/2008</b>
Submission of the Minutes of Extraordinary Shareholders' Meeting to BOVESPA	<b>04/07/2008</b>

<b>General Shareholders' Meeting</b>	
<b>EVENT</b>	<b>DATE</b>
Publication of Call Notice	<b>March 25,26 and 27/2008</b>
Submission of Call Notice to BOVESPA accompanied by the Administrative Proposal, when available	<b>03/25/2008</b>
Realization of General Shareholders Meeting	<b>04/30/2008</b>
Submission of main General Shareholders' Meeting's deliberations to BOVESPA	<b>04/30/2008</b>
Submission of the Minutes of General Shareholders Meeting to BOVESPA	<b>04/30/2008</b>

<b>Meetings with Analysts, open to the Public</b>	
<b>EVENT</b>	<b>DATE</b>
Meeting with Analysts, open to the Public • SP (APIMEC Hall, at 04:00 p.m.)	<b>08/23/2008</b>

<b>Conference Calls</b>	
<b>EVENT</b>	<b>DATE</b>
Conference Call (Comments on 1Q08 results and recent events)	<b>05/16/2008</b>
Conference Call (Comments on 3Q08 results and recent events)	<b>11/17/2008</b>



## MMX MINERAÇÃO E METÁLICOS S.A.

Publicly-Held Company

### **NOTICE TO INVESTORS**

MMX MINERAÇÃO E METÁLICOS S.A. ("MMX" or the "Company") (MMXM3: Bovespa; XMM: TSX), in accordance with article 157 of Brazilian Law No. 6.404/76 and CVM Instruction No. 358/02, both as amended, as well as complementing the information disclosed in the Public Notice to the Market published on January 17, 2008 ("First Notice to Investors"), hereby informs to the shareholders and the markets the following:

Mr. Eike Batista, controlling shareholder of MMX, certain members of the management of MMX and Anglo American Participações em Mineração Ltda. ("Anglo American Brazil"), a wholly owned subsidiary of Anglo American plc ("Anglo American"), entered into a Share Purchase and Sale Agreement ("Agreement") on this date, whereby Anglo American Brazil agreed to purchase, and Mr. Eike Batista and certain members of management of MMX agreed to sell, common shares representing approximately 63.47% of the share capital of IronX Mineração S.A. ("IronX").

IronX is a corporation currently in the process of obtaining its publicly-held company registration before the Brazilian Securities Commission (the Comissão de Valores Mobiliários or the "CVM"), and, after the conclusion of a corporate reorganization of MMX ("Reorganization"), IronX will be the owner of 51% of the share capital of MMX Minas-Rio Mineração S.A. ("MMX Minas-Rio") and 70% of MMX Amapá Mineração Ltda.. Anglo American currently owns, indirectly, 49% of MMX Minas-Rio, as well as 49% of LLX Minas-Rio Logística Comercial Exportadora S.A., and the remaining 51% of the share capital of LLX Minas-Rio Logística Comercial Exportadora S.A. will continue to be held by LLX Logística S.A. ("LLX"). The Reorganization will also involve the transfer to IronX of 100% (one hundred per cent) of the stock capital of MMX Metálicos Amapá Ltda. and Bay Service Serviços Portuários Ltda.

#### **I – Reorganization of MMX**

A Reorganization of MMX will be carried out in preparation for the acquisition of IronX ("Acquisition"). Such Reorganization will be submitted to the approval of its shareholders and duly disclosed to the market in additional detail, in accordance with CVM Instruction 319/99. If approved, the Reorganization will involve the spin-off of MMX with the transfer of portions of its assets and liabilities to IronX and LLX. IronX has already filed with the São Paulo Stock Exchange (Bolsa de Valores de São Paulo – BVSP or "Bovespa") a request for listing in the Novo Mercado segment, and LLX will also join the Novo Mercado segment in due time, as a consequence of the Reorganization.

As a result of the Reorganization, the shares of MMX in IronX and LLX will be distributed directly to the shareholders of MMX, in the same proportion of their equity interests in the share capital of MMX. Consequently, as a result of the Reorganization the shareholders of MMX will own shares in each of the three companies, receiving one new share issued by IronX and LLX for each share issued by MMX held by them.

The shareholders of MMX who disagree with the Reorganization may exercise their withdrawal rights and will be entitled to the reimbursement of the book value of the shares effectively owned until the close of trading of Bovespa on the business day immediately preceding the earlier date between (i) the date of publication of the Notice to Investors regarding the Reorganization, or (ii) the date of publication of the call notice of the general shareholders' meeting of MMX to approve the Reorganization. Shares purchased from such date onwards, will not confer withdrawal rights to their holders. The reimbursement amount will be the value of the shares of MMX, based on the shareholders' equity of MMX, as informed in its most recent financial statements, approved in the general shareholders' meeting, which corresponds to: (i) R\$119.98 per share, based on the current number of shares of MMX; or (ii) R\$5.95 per share, if the proposal to split each share of MMX into 20 shares is approved in the extraordinary general meeting of the Company to take place on April 7<sup>th</sup>, 2008.

## **II – Acquisition**

The total purchase price will be the amount in *reais* equivalent to US\$5,518,547,123.63 for all of the issued and outstanding shares of IronX, including the shares owned by Mr. Eike Batista and the shares issued pursuant to the stock option plan of MMX, as well as the shares owned by other selling shareholders in accordance with the terms of the Agreement. The purchase price above mentioned is equivalent to (i) the equivalent in *reais* to US\$361.12 per share, based on the current number of shares of MMX, after exercise of the outstanding options granted by MMX; or (ii) the equivalent in *reais* to US\$18.056 per share, if the proposal for the stock split of MMX's shares is approved in the general meeting to take place on April 7<sup>th</sup>, 2008, and further assuming a ratio of 1 IronX share for each MMX share outstanding on the date of the Reorganization, as well as the issuance of 1,027,200 new IronX common shares after the date of the Reorganization, in furtherance of management incentive options. The purchase price will be paid in *reais*, on the closing date of the Acquisition.

## **III – Mandatory Tag-Along Offer**

Considering that the Acquisition will result in the transfer of control of IronX, Anglo American Brazil or Anglo American will launch a tender offer for the common shares held by the remaining IronX shareholders, in accordance with the terms and conditions of article 254-A of Brazilian Corporate Law, CVM Instruction No. 361 and item 8.1 of the Rules of the Novo Mercado issued by Bovespa ("Tag-Along Offer"), at the same price per share paid for the controlling shares, i.e.: (i) the equivalent in *reais* to US\$ 361.12 per common share, based on the current number of shares of MMX, after exercise of the outstanding options granted by MMX; or (ii) the equivalent in *reais* to US\$18.056 per common share if the stock split proposal of MMX is approved, and further assuming a ratio of 1 IronX share for each MMX share outstanding on the date of the Reorganization, as well as the issuance of 1,027,200 new IronX common shares after the date of the Reorganization, in furtherance of management incentive options.

According to a formal communication filed by Anglo American Brazil at the headquarters of the Company today, MMX hereby informs the markets that Anglo American Brazil or Anglo American has the intention to execute, concurrently to the Tag-Along Offer, a delisting offer of IronX, as well as an offer to withdraw from Novo Mercado segment. If the valuation made according to the laws and regulations applicable to the delisting offer and the offer to withdraw

from the Novo Mercado determines an amount per share higher than the price paid to the Controlling Shareholder, Anglo American or Anglo American Brazil will decide whether to proceed with the offer to de-list and to withdraw IronX from the Novo Mercado, thus accepting to pay the higher price per share to minority shareholders, or to withdraw from such offers, keeping the tag-along offer only.

#### **IV – Continuation of the MMX and LLX businesses as publicly-held companies, listed on the Novo Mercado of Bovespa.**

In accordance with the terms of the First notice to Investors, and as long as Mr. Eike Batista remains the controlling shareholder of MMX and LLX, MMX will remain his exclusive vehicle for mining projects in general, and LLX will be the vehicle for ports and logistic infrastructure projects. As part of the Reorganization, MMX will:

(i) have the option to own a participation of 50% in the first pelletization plant, with capacity of 7.5 million tons per year, to be built in Açú Port; and

(ii) receive a payment equivalent to 2.415% of the EBITDA (excluding Selling, General and Administrative Expenses but including the Stay in Business Capital Expenditures, as defined in the respective agreement) of MMX Minas-Rio, limited to US\$50 million annually, and 3.276% of the EBITDA (duly adjusted as defined in the respective agreement) of MMX Amapá, limited to US\$14 million annually.

These payments will be due between 2025 and 2049 for MMX Minas-Rio and between 2023 and 2047 for MMX Amapá.

#### **VI – Other conditions to which the transaction is subject**

In addition to certain other conditions that are customary in transactions of this nature, in order to carry out the Reorganization, IronX, LLX and MMX must obtain the relevant approvals from their shareholders in a shareholders' meeting, called in accordance with the Law and the regulation issued by the CVM. The Acquisition is subject to registration of the Tag-Along Offer before CVM and to its completion by Anglo American Brazil.

The process will be notified to the competent antitrust bodies, while MMX, IronX and LLX will keep their shareholders and the market timely and sufficiently informed of all the steps of the transaction until conclusion.

Rio de Janeiro, March 31, 2008

**Luiz Rodolfo Landim Machado**  
Executive President and Investor Relations Officer  
MMX Mineração e Metálicos S.A.

## MMX discloses Technical Report of MMX Corumbá 's Mineral Resources and Reserves

**MMX Mineração e Metálicos S.A.** (Bovespa: MMXM3; TSX: XMM) ("MMX" or "Company") hereby informs its shareholders and investors that a new Technical Report of MMX Corumbá Mineração Ltda. ("MMX Corumbá") mineral resources and reserves has been concluded.

The report was audited by SRK Consulting, an independent company specialized in geology and mining, and was carried out in accordance with the standards set by the Canadian Institute of Mining, Metallurgy and Petroleum (CIM Standards) and by the National Instrument 43-101 of the Canadian Securities Administrators (NI 43-101).

This report presents the resources of the Urucum NE area, which reached 70 million tonnes of estimated mineral resources, in addition to the resources previously disclosed for Mine 63.

The resource estimate provided in this report was based on exploration data surveyed up to September 2007, and presents the results for the two areas - Mine 63, currently in operation, and the Urucum NE exploration target.

The resources and reserves of Mine 63 were not revaluated; they were adjusted to reflect the exclusion of the quantities mined from January to September 2007.

The current total resources and reserves of MMX Corumbá are presented on the tables below.

**MMX Corumba System Mineral Resources (\*)**

Area	Classification	Tonnage (Mt)	Fe (%)
Mine 63	Measured	5,2	60,9
	Indicated	40,4	51,9
	Stockpile	0,1	60,4
	Total Indicated	40,5	51,9
	Measured and Indicated	45,6	53,1
	Inferred	14,0	53,3
Urucum NE	Measured	3,2	55,2
	Indicated	34,0	53,0
	Measured and Indicated	37,2	53,2
	Inferred	32,8	51,0
Total	Measured	8,4	58,8
	Indicated	74,5	52,4
	Measured and Indicated	82,9	53,1
	Inferred	46,8	51,6

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(\*) Tonnes reported on a wet basis.  
 The cut-off grade for Mine 63 is 30% Fe and for Urucum NE is 20% Fe.  
 The tonnage reported for resources of Mina 63 includes reserves tonnage.

## MMX discloses Technical Report of MMX Corumbá 's Mineral Resources and Reserves

### Mine 63 Reserves (\*)

Classification	Tonnage (Mt)	Fe (%)
Proven	4,3	61,03
Probable	25,0	54,74
Stockpile	0,1	60,40
Total Probable	25,1	54,76
Total Proven and Probable	29,4	55,68

(\*) Tonnes reported on a wet basis.  
The cut-off grade for eluvium is 48.0% Fe and for colluvium is 56.1% Fe.

MMX will continue its geological survey in 2008 aimed at estimating additional resources and reserves.

SRK Consulting, a company specialized in geology, mining and mineral resources determination, was responsible for the audit. The Technical Report was endorsed by the Qualified Persons: Leah Mach CPG, MSc, Dr. Neal Rigby CEng, and S E E Johansson.

The complete Technical Report is available on the Company's Investor Relations website [www.mmx.com.br/ri](http://www.mmx.com.br/ri)

Rio de Janeiro, April 4<sup>th</sup>, 2008

### MMX Mineração e Metálicos S.A.

Luiz Rodolfo Landim Machado  
Executive President and Investor Relations Officer

**MMX – Investor Relations**  
Elizabeth Cruz / Gina Pinto  
Tel. 55 21 2555-5634 / 2555-5558  
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[www.mmx.com.br/ri](http://www.mmx.com.br/ri)



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**MMX MINERAÇÃO E METÁLICOS S.A.** OFFICE OF INTERNATIONAL CORPORATE FINANCE  
**Public Company**

**PUBLIC ANNOUNCEMENT**

MMX Mineração e Metálicos S.A. ("MMX" or the "Company") (Bovespa:MMXM3; TSX: XMM) pursuant to article 157 of Law 6,404/76 and CVM Instruction 358/02, hereby announces that, as per the minutes of the Company's Extraordinary Shareholders' Meeting held on April 7, 2008, the shareholders of the Company present at the Meeting unanimously and with no restriction, approved the split of the Company's common shares in the proportion of 20 (twenty) shares for each existing share.

The Company's shareholders registered as of April 7, 2008 shall be entitled to receive the shares resulting from such split, which shares shall be credited on April 11<sup>th</sup>, 2008.

The Company informs that, in accordance with the referred share split, it has requested the CVM (Brazilian Securities and Exchange Commission) to carry out the respective change in the proportion between its common shares and its Global Depositary Receipts ("GDRs"), in the context of its Level I GDR Program. Consequently, each of the Company's common shares, which previously corresponded to 20 (twenty) GDRs, shall correspond to 1 (one) GDR, and, therefore, there will be no issuance of new GDRs.

For additional information please contact [ri@mmx.com.br](mailto:ri@mmx.com.br).

Rio de Janeiro, April 7<sup>th</sup>, 2008

**Nelson José Guitti Guimarães**  
Chief Financial and Investor Relations Officer  
MMX Mineração e Metálicos S.A.

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## Board Meeting's Main Decisions

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The members of the Board of MMX Mineração e Metálicos S.A. ("MMX" or the "Company") (Bovespa: MMXM3; TSX: XMM), at a Meeting held today, April 7th, 2008, at 3:00 pm at the headquarters of the Company, located at Praia do Flamengo 154, 5th. Floor, Flamengo, City and State of Rio de Janeiro, has decided the following:

- (i) To ratify the signature by the Company of the "Indemnities Agreement" celebrated with LLX Logística, IronX and Anglo American on March 31<sup>st</sup>, 2008.
- (ii) To approve the Protocol and Justification of the Company's Partial Split-up, with the allocation of portions of the net worth of MMX to IronX and LLX Logística, signed on March 31st.
- (iii) To approve the Appraisal Report of the portions of MMX's net worth to be allocated to IronX and LLX Logística, prepared by KPMG Auditores Independentes.
- (iv) To authorize the Board of Officers to call the Extraordinary Shareholders' Meeting to decide upon the partial split-up of the Company (to take place in a date to be defined).
- (v) To accept the resignation of MMX's Officers Luiz Rodolfo Landim Machado and Paulo Carvalho de Gouvêa, who were then recommended to be appointed to become members of MMX's Board of Directors, whose appointment will be, of course, subject to approval by MMX's Shareholders gathered at the relevant Shareholders' Meeting.
- (vi) To elect MMX's Officer Joaquim Martino Ferreira, as the Executive President.
- (vii) To elect MMX's Chief Financial Officer Nelson José Guitti Guimarães, as Investor Relations Officer.
- (viii) To approve the reelection of the following members of the Company's Board of Officers, for a 1-year term: Eike Fuhrken Batista as CEO; Joaquim Martino Ferreira as Executive President and Mining Officer; Adriano José Negreiros Vaz Netto as Officer; Dalton Nosé as Officer; José Luiz Amarante Araújo as Commercial Officer; Nelson José Guitti Guimarães as Chief Financial and Investor Relations Officer.

The Members of the Board furthermore expressed their gratitude to the Officers that resigned for their relevant work and devotion to the Company, as well as for their enthusiasm in accomplishing the tasks entrusted to them.

The Executive President elected, Joaquim Martino, who shall accumulate the function of Mining Officer of the Company, was the Officer responsible for the mining department of MMX's three Systems - Amapá, Corumbá and Minas-Rio, with a highlight in the Amapá mining project, implemented in a record time. He has 27 years of experience in implementing and running industrial projects, including working as Superintendent for the Casa de Pedra Mine (CSN), Pelletizing and Metals Officer of Companhia Vale do Rio Doce (CVRD), Officer of Carajás Mine and of the Ponta da Madeira Port.

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## Board Meeting's Main Decisions

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The Investor Relations Officer elected, Nelson Guitti, shall accumulate as Chief Financial Officer, function that he holds since March 2007. During his career of 24 years with the Petrobras System, he was CFO of Petrobras Distribuidora S.A. and Strategy and Planning Officer of Petrobras Gás S.A. - GASPETRO. His experience in this area qualifies him to carry out the function for which he was elected with excellence.

MMX - Investor Relations  
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[www.mmx.com.br/ri](http://www.mmx.com.br/ri)

**SUMMARY MINUTES OF THE EXTRAORDINARY SHAREHOLDERS' MEETING**

**HELD ON APRIL 7 2008**

- I. **DATE, TIME AND PLACE OF THE MEETING:** At 09:00 a.m. on April 07 2008, at the Company's headquarters, located at Praia do Flamengo, n° 154, 5<sup>th</sup> floor.
- II. **QUORUM:** The members of the Company's Board of Directors, as indicated at the end of these minutes, attended the Meeting representing the necessary majority required by the applicable legislation and by the Company's bylaws.
- III. **CALL:** Call Notices published in the Official Gazette of the State of Rio de Janeiro and Valor Econômico newspaper, in their March 6, 7 and 10, and March 5, 6 and 7, 2008 editions respectively, on pages 10, 41 and 104 and B13, B8 and B5, respectively, in compliance with the provisions in article 124, section II of Law 6.404/76.
- IV. **PRESIDING BOARD:** Pursuant to Article 24 of the Company's Bylaws and also to Article 128 of Law no. 6,404/76, the attending shareholders selected by unanimous vote and without reservations, Mr. Luiz do Amaral de França Pereira to exercise the function of Chairman of the Meeting, and Mrs. Lucia Regina Guimarães Motta Zalán to exercise the function of Secretary of the Meeting.
- V. **AGENDA:** (i) To deliberate on the proposed split of all non-par book-entry common shares issued by the Company in the proportion of 20 (twenty) shares for 1 (one) existing share; and (ii) to deliberate on the consequent amendment to Article 5 of the Company's Bylaws.
- VI. **DECISIONS:** After the necessary clarifications were made, the attending shareholders decided, by unanimous vote:
- (i) To approve the split of all non-par book-entry common shares issued by the Company, in the proportion of 20 (twenty) shares for 1 (one) existing.
  - (ii) Shareholders of the Company, registered as of April 7<sup>th</sup> 2008 are eligible to receive the shares, which will be credited on April 11<sup>th</sup> 2008.
  - (iii) The shares received in view of the split approved herein will participate on equal terms in all

rights and benefits to be granted/distributed by the Company, including in the distribution of dividends and possible capital compensations to be approved by the Company.

- (iv) To amend the “caput” of Article 5 of the Company’s Bylaws, to reflect the new number of shares the Company’s capital stock is divided into, which will have the following wording:

*“Article 5. The capital stock, fully subscribed and paid-up in domestic currency and assets, is one billion, one hundred and forty two million, eight hundred and four thousand, one hundred and sixty seven and four centavos (R\$1,142,804,167.04) divided into 304,609.840 (three hundred and four million, six hundred and nine thousand, eight hundred and forty) non-par book-entry common shares”.*

- (v) The Bank of New York, the depository institution of the shares issued by the Company, in the context of its Level I *Global Depository Receipts – Level I* (“GDRs”) program, hereby records that its favorable opinion referring to the approval of the proposed stock split is in strict compliance with the proxy voting instructions received from the GDR holders of the Company.

VII. **SIGNED DOCUMENTS:** The Company’s consolidated Bylaws are filed at the Company’s headquarters and notarized by the Presiding Board, which, after being read, discussed and approved by unanimous vote of the attending shareholders, will be the Exhibit I of these present Minutes.

VIII. **CLOSURE:** At 09:45 a.m., nothing else to be discussed, the meeting was adjourned, and these present minutes were drawn up in the summary format which, after being read and found in compliance, were duly signed by the attending shareholders, who approved its publication with the omission of the signatures of the totality of the shareholders, pursuant to paragraphs 1 and 2 of article 130 of Law 6.404/76.

IX. **ATTENDING SHAREHOLDERS:** EIKE FUHRKEN BATISTA, FLAVIO GODINHO (represented by his attorney-in-fact, Joel Mendes Rennó Jr.), PEDRO ALFONSO GARCIA GUERRA (represented by his attorney-in-fact, Joel Mendes Rennó Jr.), MARCELO ADLER CHENIAUX (represented by his attorney-in-fact, Joel Mendes Rennó Jr.), THE MASTER TRUST BANK OF JAPAN, VANGUARD EMERGING MARKETS STOCK INDEX FUND, THE EMERGING MARKETS EQUITY INVESTMENTS PORT, OPPENHEIMER GOLD AND SPECIAL MINERALS FUND, COMMONWEALTH OF PENNSYLVANIA PUBLIC SCHOOL, CENTRAL STATES SOUTHEAST AND SOUTHWEST AREAS, CATHOLIC HEALTH INITIATIVES, FIDELITY FOCUS NATURAL RESOURCES FUND, THE TEXAS EDUCATION AGENCY, FIDELITY EMERGING MARKETS FUND, SSGA EMERGING

MARKETS FUND, ONTARIO TEACHERS PENSION PLAN BOARD, THE MONETARY AUTHORITY OF SINGAPORE, STATE STREET BANK AND TRUST COMPANY INVESTMENT, STATE STREET BANK AND TRUST COMPANY INVESTMENT, CAISSE DE DEPOT ET PLACEMENT DU QUEBEC, EATON VANCE STRUCTURED EMERGING MARKETS FUND, WASATCH EMERGING MARKETS SMALL CAP FUND, WILLIAM BLAIR INSTITUTIONAL INTERNATIONAL, WILLIAM BLAIR MUTUAL FUNDS INC., CAISSE DE DEPOT ET PLACEMENT DU QUEBEC, EMERGING MARKETS EQUITY MANAGERS, WILMINGTON MULTI-MANAGER INTERNATIONAL FUND, BALANTINE INTERNATIONAL EQUITY FUND SELECT, STICHTING PENSIOENFONDS METAAL EN TECHNIEK, JOHN HANCOCK TRUST INTERNATIONAL EQUITY INDEX, ISHARES MSCI BRAZIL INDEX FUND, BARCLAYS GLOBAL INVESTORS, N.A., EMERGING MARKETS SUDAN FREE EQUITY INDEX FUND, ISHARES MSCI BRIC INDEX FUND, FIDELITY FUND EMERGING MARKETS FUND, THIRD CANADIAN GENERAL INVESTMENT TRUST, WILLIAM BLAIR EMERGING MARKETS GROWTH FUND, FIRE & POLICY EMPLOYEES RETIREMENT SYSTEM, CITY OF BALTIMORE , WILLIAM BLAIR INSTITUTIONAL INTERNATIONAL GROWTH, WILLIAM BLAIR EMERGING MARKETS GROWTH FUND, WILLIAM BLAIR MUTUAL FUNDS, INC INTERNATIONAL, WELLINGTON TRUST COMPANY N.A., WELLINGTON TR CO N.A., WELLINGTON TRUST CO, N.A., WELLINGTON MGMT PRFT DUBLIN PLC, LAUDUS INTERNATIONAL MARKET MASTERS, WELLINGTON TRUST COMPANY N.A., GAVIÃO M TRADING LLC, FIDELITY INVESTMENT TRUST: FIDELITY EMERGING MARKETS FUND, FIDELITY ADVISOR SERIES VIII: FIDELITY ADVISOR EMERGING MARKETS FUND, VANGUARD INVESTMENT SERIE, PLC, FIDELITY INVESTMENT SERVICES LTD. FOR AND ON BEHALF OF FIDELITY INSTITUTIONAL EMERGING MARKET FUND, JPMORGAN EMERGING MARKETS INVESTMENT TRUST PLC, JPMORGAN LATIN AMERICA FUND, THE WELCOME TRUST LTD, GMAM INVESTMENT FUNDS TRUST, WASHINGTON STATE INVESTMENT BOARD (all represented by their attorney-in-fact, Mr. George Washington Tenório Marcelino), BRADESCO INST. IBX ATIVO FIA, BRADESCO FIA SEGURIDADE, BRADESCO FIA SUPER AÇÃO, BRADESCO FIA EQUITIES, FIF INCOME, BRAM FDO DE INVESTIMENTO EM AÇÕES, BRADESCO FIA SMALL CAP PLUS, BRADESCO FI MULTIMERCADO PREVCUMMINS, ABBPREV SOCIEDADE DE PREVIDÊNCIA PRIVADA, BASF SOCIEDADE DE PREVIDÊNCIA PRIVADA, FUNDAÇÃO FRANCISCO MARTINS BASTOS, INSTITUTO AMBEV DE PREVIDÊNCIA PRIVADA, PREVI NOVARTIS SOC. DE PREVIDÊNCIA PRIVADA, PREVI-ERICSSON SOCIEDADE DE PREV. PRIVADA, RANDONPREV – FUNDO DE PENSÃO, SPASAPREV SOCIEDADE DE PREVIDÊNCIA PRIVADA, AMEX – PREV SOC. DE PREVIDÊNCIA PRIVADA, BRAN FUNDO DE INVESTIMENTO EM AÇÕES ARUBA (all represented by their attorney-in-fact, Mrs. Ana Paula Zanetti de Barros Moreira), THE BANK OF NEW YORK (represented by its attorney-in-fact, Mr. Sandro Pereira Paulino), JOSÉ ANTONIO RIBEIRO DOS SANTOS .

This is a free English translation of Minutes of the Extraordinary Shareholders' Meeting of MMX Mineração e Metálicos S.A. held on April 7<sup>th</sup> 2008, drawn up in the Company's records.

Rio de Janeiro, April 7th 2008.

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Lucia Regina Guimarães Motta Zalán  
Secretary

Acknowledged and Accepted by Attorney:

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Joel M. Rennó Jr.  
Brazilian Bar Association/Rio de Janeiro (OAB/RJ) 132,971

BYLAWS

CHAPTER I

**Name, Headquarters, Purpose and Duration**

**Article 1** - MMX Mineração e Metálicos S.A. is a joint-stock company ruled by these present Bylaws, by Law 6,404, as of December 15, 1976 ("Law 6,404/76") and further applicable Laws and Regulations.

**Sole Paragraph** – Since the Company was accepted to join the São Paulo Stock Exchange – BOVESPA New Market, the Company, its shareholders, management and members of the Fiscal Council are subject to the provisions of the São Paulo Stock Exchange – BOVESPA New Market Listing Rules.

**Article 2** – The Company's headquarters and jurisdiction are located in the city and state of Rio de Janeiro, at Praia do Flamengo, 154, 5º andar (parte), CEP: 22210-030, and it may create and maintain branches, offices or representations, in any location of the country or abroad, by means of Board of Executive Officers' resolution, regardless of authorization of the Board of Directors or General Meeting.

**Article 3** – The Company's purpose is: (i) the industry and trade of ore in general throughout the Brazilian territory and abroad, comprising research, exploration, mining, processing, industrialization, transportation, exports and trade of mineral goods; (ii) the rendering of geological services; (iii) imports, exports, transportation and trade of mineral, chemical and industrial products; (iv) the building, manufacturing and assembly of metallic structures; (v) the manufacturing, transformation, trade, imports and exports of steel products; (vi) the installation, operation and exploration of integrated or non-integrated steelworks for the production and commercialization of iron and steel-related products and byproducts; (vii) the building, operation and exploration of owned maritime terminals or of third parties, of private, mixed or public use; (viii) the building, operation and exploration of railways and/or owned rail traffic or of third parties, as public concessionaire or not; (ix) the rendering of freight transportation integrated logistic services; (x) the generic export and import of goods, equipment and products; (xi) the generation, import, export and commercialization of electricity, the implementation of power plants, where derived from thermal, hydric, eolic or another source, the acquisition and import of fuel and the implementation of related infrastructure; (xii) the development, exploration, implementation, operation and management of hydrous resources projects, the mineral or industrial water trade, the implementation of logistics associated with the commercialization or delivery of water and the services rendering for the hydrous resources industry; (xiii) the interest in the capital of other domestic or foreign companies incorporated under any corporate form and whatever is their

corporate purpose.

**Article 4** – The Company’s duration is indeterminate.

## **CHAPTER II**

### **Capital Stock and Shares**

**Article 5** - The capital stock, fully subscribed and paid-up in domestic currency is R\$ 1,142,804,167.04 (one billion, one hundred and forty two million, eight hundred and four thousand, one hundred and sixty seven and four centavos), divided into 304,609,840 (three hundred and four million, six hundred and nine thousand, eight hundred and forty) all non-par book-entry shares.

**Paragraph 1** - Each ordinary share entitles to one vote in the general meeting’s resolutions.

**Paragraph 2** - The Company’s shares are book-entry, held in deposit accounts on behalf of their titleholders, with a financial institution authorized by the Brazilian Securities and Exchange Commission and engaged by the Company, and the selling shareholder may be required to bear the costs related to transfer services, in compliance with the maximum limits set forth by the Brazilian Securities and Exchange Commission

**Paragraph 3** – The Company is forbidden to issue preferred shares or beneficiary parties.

**Paragraph 4** – The Company may issue simple debentures or convertible into common shares, by means of Board of Directors’ resolution and if convertible into shares, within the limit of authorized capital.

**Paragraph 5** – Capital increases may be resolved, excluding the shareholders’ preemptive right to the subscription of new securities issued by the Company, in the events provided for in the Article 172 of Law 6,404/76, and such increases may occur by means of public or private subscription of shares, by means of conversion of debentures or other securities or incorporation of reserves, capitalizing funds through types authorized by law.

**Paragraph 6** – The payment of dividends and the allocation of shares derived from capital increase, when this is the case, shall occur within no later than thirty (30) days, the first payment, as from dividends are declared, the second one, as from the publication of respective minutes as provided for by law, unless if the general meeting, determines in relation to dividend, that this is paid within extended term, but during the course of fiscal year in which this is declared, and as to capital increase, decides that this is paid within lower term.

**Paragraph 7** – The shares shall participate in dividends for the year in which these are issued as follows: (i) shares subscribed until June 30 of each year shall be entitled to full dividends of said fiscal year; (ii) the shares subscribed as from July 1 of each year shall be entitled to half of

dividends allocated in said fiscal year.

**Article 6** – The Company is authorized to increase its capital, regardless of general meeting decision, until the limit of fifty billion reais (R\$ 50,000,000,000.00), by means of Board of Directors' resolution, which shall determine the number of common shares to be issued, the issuance price and subscription, payment and placement conditions.

**Article 7** – The Board of Directors may approve the issue of new shares without preemptive right to former shareholders, as set forth in the paragraph 5 of the Article 5 of these Bylaws.

### **CHAPTER III**

#### **Management**

**Article 8** – The Company's management shall be exercised by the Board of Directors and performed by the Board of Executive Officers, as provided for by laws and these Bylaws.

**Paragraph 1** – The Shareholders' General Meeting of the Company, or its Board of Directors, where this is the case, may create technical and/or advisory committees destined to advice management, deemed as necessary for the perfect operation of the Company.

**Paragraph 2** – The General Meeting shall set out the management's compensation, in accordance with the provisions in the Articles 13 and 20 of these Bylaws.

### **SECTION I**

#### **Board of Directors**

**Article 9** – The Board of Directors shall be composed of, at least, five (5) members and at most eleven (11) members, all of them shareholders and resident or not in the country, named as board members, elected by the General Meeting, with an unified one-(1) year term of office, and they may be re-elected. In addition, the General Meeting may also appoint until two (2) deputy members to the Board of Directors, who shall replace eventual absences of any Board of Directors' sitting member at the meetings regularly summoned.

**Paragraph 1** – The Board of Directors' members, after the expiration of their term of office shall remain in the exercise of their respective offices, until the election and investiture of new Board members.

**Paragraph 2** – Among the members elected for the Board of Directors, at least, 20% shall be independent members, as such defined in the São Paulo Stock Exchange – BOVESPA New Market Listing Rules, and such condition shall be indicated in the minutes of the General Meeting electing them.

**Paragraph 3** – Should occur permanent vacancy of Board of Directors' member, the Board Chairman shall call for a General Meeting to conduct the election of missing vacant positions, always observing the provisions in paragraph 2 of this Article.

**Paragraph 4** – The Board of Directors' members only shall be vested in respective offices, by means of signature of instrument of investiture drawn up in the Board of Directors' minutes book, and by means of signature of Management Instrument of Agreement provided for in the São Paulo Stock Exchange – BOVESPA New Market Listing Rules.

**Article 10** – Immediately after the investiture of its members, the Board of Directors shall elect: a) a Chairman, who shall call for and chair the meetings; and b) an Honorary Chairman, who shall replace the Chairman in his impediments and absences.

**Article 11** – The Board of Directors shall meet ordinarily, once (1) quarterly and extraordinarily, whenever necessary, by means of Chairman's call or two (2) members, exempting the call in the event all members attend the meeting.

**Paragraph 1** – The meetings shall be called by means of written notice, issued at least, five (5) days in advance, including the place, date and time of the meeting, as well as, briefly the agenda.

**Paragraph 2** – The call provided for in the previous paragraph shall be exempted whenever all Board of Directors' members attend the meeting.

**Paragraph 3** – In order to the Board of Directors' meetings may be instated and validly resolve, the attendance of the majority of its acting members shall be necessary, among them, the Board Chairman, or in the event of his impediment or temporary absence, the Honorary Chairman, being considered as attending member that one who has sent his written vote.

**Paragraph 4** – The Board of Directors shall resolve by majority vote, being incumbent upon the Board Chairman, or in the event of his impediment or temporary absence, the Honorary Chairman, the casting vote.

**Paragraph 5** – The minutes of the Board of Directors' meeting electing, withdrawing, designating or determining the executive officers' duties shall be filed at the Board of Trade of Rio de Janeiro state and published in the local press, and adopting identical procedure for acts of another nature, which shall produce effects before third parties, or when the Board of Directors deems convenient.

**Article 12** – In the event of absence or temporary impediment, the absent or impeded board member shall be automatically and temporarily replaced by one of the deputy members, who shall be elected by the Board Chairman.

**Article 13** – The compensation of Board of Directors' members shall be global and annually

defined by the General Meeting, which shall also ratify, when this is case, the amount and the percentage of interest entitled thereto in the profit, observing the limit provided for in the paragraph 1 of Article 152 of Law 6,404/76. The Board of Directors' Chairman shall distribute such compensation among his members.

**Article 14** – It is incumbent upon the Board of Directors:

- (i) to set forth the purpose, policy and general guidance for the Company's businesses;
- (ii) to call for the Annual General Meeting and when necessary the Extraordinary General Meeting;
- (iii) to appoint and remove from office the Company's executive officers, and establishing their duties, pursuant to these Bylaws;
- (iv) to previously express their opinion on the Management Report, the management accounts and financial statements for the year, among them that periodical and eventual information to be rendered as per Brazilian Securities and Exchange Commission's rules – CVM and São Paulo Stock Exchange – BOVESPA New Market Listing Rules;
- (v) to inspect the executive officers' management;
- (vi) to examine Company's acts, books, documents and agreements;
- (vii) to resolve on the issue of subscription bonus;
- (viii) to resolve on capital stock increases up to the limit provided for herein, setting out the share issue and placement conditions;
- (ix) to resolve on the issue of debentures and promissory notes for public subscription;
- (x) to resolve on the exclusion of shareholders' preemptive right to the subscription of new securities issued by the Company, in the assumptions provided for in the Article 172 of Law 6,404/76;
- (xi) to submit to the General Meeting the destination to be given to the net income for the year;
- (xii) to authorize the disposal of permanent assets, the establishment of "in rem guarantee" and tendering of guarantees to third parties' obligations;
- (xiii) to select and remove independent auditors;

(xiv) to authorize the acquisition of Company's shares to be held in treasury or their cancellation, pursuant to the law and prevailing regulatory provisions;

(xv) to define a three-name list of specialized companies to determine the Company's economic value for the purposes of public offerings provided for herein; and

(xvi) to resolve on the contingency not covered by laws in these Bylaws.

## **SECTION II**

### **Board of Executive Officers**

**Article 15** – The Board of Executive Officers is composed of, at least, two (2) executive officers and at most, eight (8) members, whether or not shareholders, all of them resident in the country, elected by the Board of Directors.

**Paragraph 1** – In compliance with these Bylaws, the duties and powers of Board of Executive Officers' members shall be defined by the Board of Directors, which shall mandatorily designate one Chief Executive Officer and one Investor Relations Officer.

**Paragraph 2** – The Board of Executive Officers' members shall be vested in their respective offices by means of signature of instrument of investiture, drawn up in the minutes book of Board of Executive Officers' meetings, as well as the Management Instrument of Agreement provided for in the São Paulo Stock Exchange – BOVESPA New Market Listing Rules.

**Paragraph 3** – The term of office of each executive officer shall be one (1) year, and re-election is allowed.

**Paragraph 4** – The executive officers after the expiration of their term of office shall remain in the exercise of their positions, until the election and investiture of new executive officers.

**Paragraph 5** – Should the executive officer's position be vacant, the Board of Directors may elect a deputy, whose term of office shall expire together with other executive officers.

**Article 16** – It is incumbent upon the board of executive officers to exercise the duties attributed thereto by these Bylaws and Board of Directors for the practice of acts, no matter how special they are, as long as in authorized rights, necessary for the regular operation of the Company.

**Article 17** – In compliance with the provisions in the Article 14 of these Bylaws, it is incumbent upon the board of executive officers:

(i) to execute works determined by the Board of Directors;

(ii) to represent the Company, as plaintiff or defendant, in or out of court;

(iii) to enter into agreements, acquire rights and assume obligations of any nature, acquire, dispose or encumber assets and real properties, contract loans and grant guarantees in the interest of the Company and its subsidiaries, open and transact bank accounts, issue and endorse checks and promissory notes; issue and endorse trade bills and bills of exchange; endorse warrants, warehouse receipts and bills of lading; hire and dismiss employees; receive and give acquittance, compromise, waive rights, forgo, sign liability commitments; practice all management acts necessary to execute the corporate purposes; express the Company's vote in general meetings of corporations in which the Company holds interest, in accordance with previous guidance of the Board of Directors; record on the accounting books all the Company's operations and transactions; insure and maintain properly insured by reputed insurance company all the Company's assets likely to be insured;

(iv) prepare annually the Management Report, the management accounts and financial statements for the year, among them that periodic and eventual information to be rendered pursuant to the São Paulo Stock Exchange – BOVESPA New Market Listing Rules, as well as to submit after the Board of Directors and Fiscal Council's opinion, in the event the latter is operating, the financial statements required by laws, as well as the proposal for the allocation of net income for the year;

(v) prepare drafts for the Company's expansion and improvement plan;

(vi) submit the Company's general budget and special budgets to the Board of Directors, including the adjustments occurring during the year and multiyears to which the board members refer; and

(vii) approve and modify organization charts and internal regulations.

**Article 18** – The Company's representation as plaintiff or defendant in acts, agreements and operations implying the Company's responsibility, is privately incumbent upon the Chief Executive Officer, acting severally, or upon two executive officers, acting jointly. The Board of Executive Officers, however, may authorize the representation is made by only one (1) executive officer, by collective designation of the body.

**Sole Paragraph** – The Company shall be represented by any executive officer, severally, without formalities provided for in this Article, in cases of receipt of summons or court notices and in the rendering of personal depositions; the Company shall be represented, in cases provided for by law, by appointed representatives, case by case, by letter.

**Article 19** – Under the limits of their duties, two (2) executive officers may retain attorneys-in-fact or proxy-holders to jointly with one executive officer or another attorney-in-fact regularly retained, as provided for by respective instruments, represent the Company in the lawful practice of acts and assumption of liabilities on the Company's behalf. The powers of attorney shall precisely and fully define the powers granted.

**Sole Paragraph** – The powers of attorney shall always be granted for a determinate duration, unless the judicial powers of attorney, which may be granted for an undetermined duration.

**Article 20** – The executive officers' compensation shall be fixed globally and annually by the General Meeting, which also shall define, when this is the case, the amount and the percentage of executive officers' interest in the Company's profit, observing the limit provided for in paragraph 1 of the Article 152 of Law 6,404/76.

**Article 21** – The Board of Executive Officers shall meet ordinarily, at least once in the quarter, and extraordinarily, whenever the Company's interests so require, and all their meetings shall be presided over by the Chief Executive Officer, or in his absence, by the executive officer, who in that occasion is selected among those attending the meeting.

**Paragraph 1** – The meetings shall always be called by any two (2) executive officers, being exempted the call in the event all its members attend the meeting. In order to the meetings may be instated and validly resolve, the attendance of the majority of executive officers shall be necessary, who in that occasion are in the exercise of their offices, or two executive officers, only if there are two acting executive officers.

**Paragraph 2** – The Board of Executive Officers' resolution shall be mentioned in minutes drawn up in the company's records and shall be taken by majority votes, also being incumbent upon the chairman of the meeting, in case of tie vote, the casting vote.

**Paragraph 3** – In the absences or temporary impediments of any executive officer, he may appoint a deputy member, and this act subject to the Board of Executive Officers' approval. The deputy member approved shall exercise all the duties, with all powers, including the voting right and duties of executive officer replaced.

**Paragraph 4** – The deputy member may be one of the other executive officers, who in this case, shall vote in the Board of Executive Officers' meetings by himself and by the executive officer he is replacing.

#### **CHAPTER IV Fiscal Council**

**Article 22** – The Company shall have a Fiscal Council composed of three (3) sitting members and equal number of deputy members, which shall operate on a non-permanent basis.

**Paragraph 1** - The Fiscal Council's members, individuals, resident in the country, legally qualified, shall be elected by General Meeting resolving on the instatement of the council, upon request of

shareholders meeting the requirements set forth in paragraph 2 of the article 161 of Law 6,404/76, with term of office until the first annual general meeting held after the election.

**Paragraph 2** - The Fiscal Council's members only shall be entitled to compensation fixed by the General Meeting, during the period in which the council is operating and in effective exercise of their duties, observing the paragraph 3 of the Article 162 of Law 6,404/76 with wording given by Law 9,457/97.

**Paragraph 3** - The Fiscal Council's members shall be vested in their respective offices by means of signature of instrument of investiture, drawn up in the minutes book of the Fiscal Council's meetings, as well as the Instrument of Agreement of Fiscal Council's members provided for in the São Paulo Stock Exchange - BOVESPA New Market Listing Rules.

**Paragraph 4** - The Fiscal Council, when instated, shall have the attributions provided for by law, and the duties of its members cannot be delegated.

## **CHAPTER V**

### **General Meetings**

**Article 23** – The Shareholders' General Meeting shall meet pursuant to law:

a) Ordinarily in the first four months, after the end of fiscal year to:

I – take the management accounts, examine, discuss and vote the financial statements;

II – elect the Board of Directors in proper periods and the Fiscal Council, when this is the case;

III – resolve on the allocation of net income for the year, if any, and the distribution of dividends, when this is the case; and

IV – set out the management's compensation.

b) Extraordinarily whenever by means of legal call the company's interests so advise or require the shareholders' manifestation.

**Article 24** – The General Meeting shall be instated and chaired by the Board of Directors' Chairman, or in his absence of impediment, instated by another board member and chaired by the chairman elected by shareholders. The secretary of the presiding board shall be freely elected by the chairman of the meeting.

**Article 25** – The call notices, published as provided for by law, shall include, besides place, date

and time of the meeting, the agenda and in case of amendment to Bylaws, the indication of this issue.

**Article 26** – The Call Notice may subject the attendance of shareholder in general meeting to the compliance with requirements provided for by law, and thus, he shall submit a document evidencing his capacity as shareholder, and deposit of such documents may be required, at least, seventy-two (72) hours in advance to the date scheduled for the performance of the meeting.

**Sole Paragraph** – In addition to the issues incumbent upon the Extraordinary Meeting provided for by laws and in these present Bylaws, it shall also approve:

I – the deregistering as publicly-held company at the Brazilian Securities and Exchange Commission - CVM;

II – the Company’s delisting from São Paulo Stock Exchange – BOVESPA New Market;

III – the selection of specialized company liable for the determination of the Company’s economic value for the purposes of public offerings provided for herein, among the companies previously appointed by the Board of Directors; and

IV – the plans for the granting of call options to the Company’s managers and employees and other companies directly or indirectly controlled thereby, excluding the shareholders’ preemptive right.

## **CHAPTER VI**

### **Fiscal Year**

**Article 27** – The fiscal year shall start on January 1 and end on December 31 and shall observe as to the financial statements, the São Paulo Stock Exchange – BOVESPA New Market Listing Rules and applicable legal provisions.

**Article 28** – The accumulated losses and income tax provision shall be deducted from the net income for the year, before any sharing.

**Article 29** – The Board of Directors shall submit to the General Meeting’s approval a proposal on the allocation of net income remaining after the following deductions or additions, made on a decreasing basis and in this order:

a) Five per cent (5%) to establish the Legal Reserve, which shall not exceed twenty per cent (20%) of the capital stock. The creation of Legal Reserve may be exempted in the year in which its balance, accrued of capital reserves amount, exceeds thirty per cent (30%) of the Capital Stock;

- b) Amount destined to the establishment of Contingencies Reserves and reversal of those created in previous years;
- c) Amount destined to the creation of Unrealized Profit Reserve;
- d) Payment of shareholders' minimum mandatory dividend.

**Paragraph 1** – The minimum mandatory dividend to be distributed by the Company shall be twenty-five per cent (25%) of the Company's adjusted net income.

**Paragraph 2** – The financial statements shall demonstrate the allocation of net income in the assumption of its approval by the Annual General Meeting, and shall be prepared with strict observance to the São Paulo Stock Exchange – BOVESPA New Market Listing Rules and other applicable legal provisions.

**Paragraph 3** – The Company, by resolution of the Board of Directors, may credit or pay to shareholders compensatory interest on own capital, thus, observing the applicable laws. The amounts paid or credited by the Company as interest on own capital may be attributed to the amount of mandatory dividends, pursuant to the applicable laws.

**Article 30** – The Company, by Board of Directors' resolution, may draw up semi-annual balance sheets and declare dividends to the income account verified in these balance sheets. The Board of Directors may declare interim dividends to the retained earnings accounts or profit reserve existing in the last annual or semi-annual balance sheet.

**Article 31** – The action pleading dividends becomes time-barred within three (3) years, which if not timely claimed, shall revert to the Company's benefit.

## **CHAPTER VII**

### **Disposal of Control**

**Article 32** – The disposal of the Company's control, both by means of a single operation, or by means of successive operations, only may be contracted under suspensive or resolutive condition that the acquirer undertakes to effect a tender offer for the acquisition of other shares of other Company's shareholders, observing conditions and terms provided for in the prevailing laws and in the New Market Listing Rules, so that to ensure them equal treatment given to the selling controlling shareholder, and observing the procedures set forth by the São Paulo Stock Exchange – BOVESPA and by the Brazilian Securities and Exchange Commission – CVM.

**Sole Paragraph** – The tender offer referred to in the "caput" of this Article shall also be required, in case of onerous assignment of share subscription rights and other titles or rights related to

securities convertible into shares, which may result in the Company's sale of control, and in case of sale of control of company holding the Company's power of control, and in this case, the selling controlling shareholder shall undertake to declare to the São Paulo Stock Exchange - BOVESPA the amount attributed to the Company in such sale and attach documentation evidencing such amount.

**Article 33** – The tender offer provided for in the Article 32 shall also be executed if the acquirer of control is already Company's shareholder, and in view of private instrument for the purchase of shares entered into with the controlling shareholder, involving any quantity of shares, acquires its share control. In this assumption, the acquirer shall indemnify those shareholders from whom he bought shares at the stock exchange within six (6) months prior to the date of sale of share control to whom he shall pay the difference between the price paid to the selling controlling shareholder and the amount paid at the stock exchange for Company's shares in this period, duly restated.

**Article 34** – The Company shall not record any transfer of shares to the acquirer of power of control or to that(those) shareholder(s) to retain the power of control, while this(these) shareholder(s) does(do) not sign the Controlling Shareholders' Statement of Agreement provided for in the São Paulo Stock Exchange – BOVESPA New Market Listing Rules.

**Sole Paragraph-** Likewise, no Shareholders' Agreement providing for the exercise of power of control may be registered at the Company's headquarters without its signatories having signed the Statement of Agreement referred to in this Article.

## **CHAPTER VIII**

### **Deregistering as Publicly-Held Company**

**Article 35** – Without prejudice to the legal and regulatory provisions, the company's deregistering as publicly-held company with the Brazilian Securities and Exchange Commission – CVM shall be preceded by a public tender offer, which shall have as price, at least, mandatorily, the Company's value and of its shares to be determined in appraisal report by specialized company, by means of utilization of share economic value as determination criterion, by means of known methodology or based on another criterion to be defined by the Brazilian Securities and Exchange Commission - CVM. The selection of specialized company shall occur as provided for by these Bylaws.

**Paragraph 1** – In compliance with other conditions of the São Paulo Stock Exchange - BOVESPA New Market Listing Rules, these Bylaws and prevailing laws, the public offering for the deregistering may also provide for the swap with securities of other publicly-held companies to be accepted by criterion of the offeree.

**Paragraph 2** – The deregistering shall be preceded by Extraordinary General Meeting specifically resolving on such deregistering.

**Art. 36** – Should the appraisal report referred to by Article 35 be not concluded until the Extraordinary General Meeting called to resolve on deregistering as publicly-held company, the controlling shareholder, the group of shareholders holding the Company's power of control or also the Company itself shall inform in such meeting the maximum amount per share or thousand shares by which the public offering shall be made.

**Paragraph 1** – The public offering shall be subject to the amount verified in the appraisal report referred to by Article 35 is not higher than the amount disclosed by the controlling shareholder, group of shareholders holding the Company's power of control or the Company's itself at the meeting referred to in the "caput" of this Article.

**Paragraph 2** – Should the value of shares determined in the appraisal report is higher than the value informed by the shareholder, group of shareholders holding the power of control or the Company's itself, the resolution referred to in the "caput" of this Article shall be automatically cancelled, and such fact shall be broadly disclosed to the market, except if the shareholder holding the power of control expressly agrees with preparing the public offering by the value verified in the appraisal report.

**Article 37** – The appraisal report referred to by Article 35 shall be prepared by specialized company, with proved experience and independence as to the power of decision of the Company, its management and/or controlling shareholder, as well as meet the requirements of paragraph 1 of the article 8 of the Brazilian Corporation Law, and include the responsibility provided for in paragraph 6 of same Article.

**Paragraph 1** – The selection of specialized company is the private incumbency of the general meeting, as from the presentation by the Board of Directors of a three-name list, and the respective resolution shall be taken, not computing the blank votes, by majority vote of shareholders representing outstanding shares present in that meeting, which if instated in first call shall rely on the attendance of shareholders, representing, at least, twenty per cent (20%) of total outstanding shares, or which if instated in a second call may rely on the attendance of any number of shareholders representing outstanding shares.

**Paragraph 2** –The costs incurred with the preparation of report shall be borne by the shareholder or group of shareholders holding the power of control or then by the Company itself, depending on the case.

## **CHAPTER IX**

### **Delisting from the New Market**

**Article 38** – Should the Company’s shareholders in Extraordinary General Meeting resolve on the Company’s delisting from the São Paulo Stock Exchange New Market – BOVESPA, the shareholder or group of shareholders holding the Company’s power of control, shall conduct a tender offer for the shares pertaining to other shareholders, at least, by the economic value of shares verified in appraisal report as provided for by Article 37, observing the legal terms, (i) whether for its shares to be recorded for trading out of New Market, (ii) or due to Company’s corporate reorganization, in which the company’s shares resulting from such reorganization are not accepted for trading in the New Market.

**Sole Paragraph** – The tender offer provided for in this article shall observe, where applicable, the provisions in the articles 35, 36 and 37 above.

## **CHAPTER X**

### **Arbitration**

**Article 39** – The Company, its shareholders, management and members of the Fiscal Council undertake by means of arbitration to resolve any and all dispute or controversy, which may arise among them, related to or derived from, especially, the application, validity, effectiveness, construal, infringement and their effects on the provisions contained in Law 6,404/76, the Company’s Bylaws, rules published by the Brazilian Monetary Council, Brazilian Central Bank and Brazilian Securities and Exchange Commission, as well as other rules applicable to the operation of capital markets in general, besides those included in the New Market Listing Rules, Market Arbitration Panel Rules and the New Market Listing Agreement.

## **CHAPTER XI**

### **Liquidation, Dissolution and Extinguishment**

**Article 40** – The Company shall be liquidated in cases provided for by law.

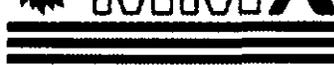
**Sole Paragraph** – The Board of Directors shall appoint the liquidator and the general meeting shall determine the mode of liquidation and shall elect the fiscal council.

**CHAPTER XII**  
**General Provisions**

**Article 41** – The Company, at any time, aiming at improving its services and adjusting to new management techniques, may adopt mechanical processes for the issue and certification of trade documents, observing established standards and systems under use and practices in effect.

**Article 42** – The profit sharing separated from the compensation may be paid to employees, after manifestation of the Annual General Meeting, pursuant to relevant laws.

**Article 43** – The provisions provided for in the sole paragraph of the Article 1, in paragraph 2 of the Article 9, in paragraph 2 of the Article 15, in paragraph 3 of the Article 22, in sole paragraph of the Article 26, in “caput” of Article 27 and, finally, Articles 32 to 39, only shall have full effectiveness, as from the date of signature of New Market Listing Agreement by the Company with the São Paulo Stock Exchange - BOVESPA.



# MMX MINERAÇÃO E METÁLICOS S.A.

Public Company

2008 APR 21 P 1:19

OFFICE OF INTERNATIONAL  
CORPORATE FINANCE

## PUBLIC ANNOUNCEMENT

MMX MINERAÇÃO E METÁLICOS S.A. ("MMX" or "Company"), in compliance with the provisions of article 157, §4º, of Brazilian Law No. 6.404/76 and with the Brazilian Securities Commission Rules ("Instruções CVM") No. 319/99 and 358/02, hereby informs that its management will submit for approval by the shareholders, in an Extraordinary Meeting, the partial Split-Up of the Company, with allocation of portions of its net worth to IronX Mineração S.A., a corporation currently in the process of obtaining its listed company registration, duly incorporated and existing in accordance with the laws of the Federative Republic of Brazil, with its headquarters in the City of Rio de Janeiro, State of Rio de Janeiro, at Praia do Flamengo, No. 154, office 501 (part), enrolled with the Brazilian Taxpayer's Registry (CNPJ/MF) under No. 09.295.979/0001-47 ("IronX"), and to LLX Logística S.A., a corporation currently in the process of obtaining its listed company registration, duly incorporated and existing in accordance with the laws of the Federative Republic of Brazil, with its headquarters in the City of Rio de Janeiro, State of Rio de Janeiro, at Praia do Flamengo, No. 154, 4th floor (part), enrolled with CNPJ/MF under No. 08.741.499/0001-08 ("LLX Logística"), according to the terms and conditions set forth below (the "Partial Split-Up").

### **1. Reasons and Advantages of the Partial Split-Up**

**1.1.** The Partial Split-Up of MMX as described in Item 3 shall consist in (a) the conveyance of a portion of MMX's shareholders' equity corresponding to the ownership interest in LLX Logística to LLX Logística itself, and as a result MMX's ownership interest in LLX Logística shall be attributed directly to the current shareholders of MMX on a pro rata basis in relation to their holdings of the shares issued by MMX, as further detailed in Item 3.1 below, and (b) the conveyance to IronX of a portion of MMX's shareholders' equity corresponding to (i) MMX's direct and indirect ownership interests, as the case may be, in MMX Minas-Rio Mineração S.A., MMX Mineração do Serro Ltda., Borbagato Agropastoril S.A., MMX Amapá Mineração Ltda., MMX Logística do Amapá Ltda., MMX Metálicos Amapá Ltda. and Bay Service Serviços Portuários Ltda. (hereinafter jointly referred to as, "IronX Subsidiaries"), and (ii) certain other assets, rights and liabilities as further detailed in Item 3.2 below; resulting in a capital increase of IronX, upon the issuance of new shares of IronX to be attributed to the current shareholders of MMX on a pro rata basis in relation to their holdings of the shares issued by MMX, on the date of approval of the Partial Split-Up.

**1.2.** MMX will continue to hold its ownership interests in MMX Corumbá Mineração Ltda., MMX Metálicos Corumbá Ltda. and in AVX Mineração Ltda. (holding company controlling the assets of AVG and Minerminas), as well as other assets that will not be transferred to LLX Logística and to IronX pursuant to the Partial Split-Up. Moreover, MMX will remain responsible for the liabilities that will not be transferred to LLX Logística and to IronX pursuant to the Partial Split-Up.

**1.3.** The Partial Split-Up is part of the acquisition transaction ("Acquisition") of the common shares representing approximately 63,47% of the corporate capital of IronX, to be held by Mr. Eike Batista and certain officers of MMX upon approval of the Partial Split-Up, by Anglo American Participações em Mineração Ltda. ("Anglo American Brasil"), a wholly-owned subsidiary of Anglo American plc ("Anglo American"). Such Acquisition was duly informed to the market in the MMX's Notices to Investors dated January 17, 2008 and March 31, 2008.

**1.4.** The Partial Split-Up will allow MMX's shareholders to become shareholders of two publicly traded corporations to be listed on the Novo Mercado segment of Bolsa de Valores de São Paulo ("BOVESPA"), in addition to MMX itself, which will remain as a publicly traded corporation listed on BOVESPA's Novo Mercado. Such segregated shareholding structure with each company separately maintaining its respective assets and liabilities shall increase their transparency and governance, and shall also facilitate receipt of strategic investments in order to allow the better development of their own projects.

**1.5.** The shares of LLX Logística and of IronX will be attributed to MMX's current shareholders on a pro rata basis in relation to their current holdings of MMX's shares, and shall all be of the same type and class, and granting to such shareholders the same rights granted by the shares of MMX currently held by such shareholders, without any change in the voting and economic privileges of such common shares.

## **2. Partial Split-Up Proposal**

**2.1** The Partial Split-Up proposal was approved by the Boards of Directors of MMX, LLX Logística and IronX ("Companies") in the meetings held on April 7, 2008, in which the management of the Companies were authorized to execute MMX's Partial Split-Up Protocol ("Protocol"). The Protocol was also executed by the executive committees of the Companies on April 7, 2008. The Partial Split-Up will be submitted to the approval of the Companies' shareholders in extraordinary meetings, which shall be called as soon as the requirements established in the rules from the Ontario Securities Commission - OSC and from the Toronto Stock Exchange (Bolsa de Valores de Toronto) (jointly, "Canadian Authorities") - jurisdictions where MMX's shares are listed - are met. Such requirements are usual to foreign private issuers and consist, basically, in the obligation to prepare proxy statements containing the detailed description of the matters to be decided in the meeting. Such proxy statements must also include conciliation of the financial statements of the Company with the Canadian generally accepted accounting principles.

## **3. Assets and Liabilities Involved**

**3.1** As a result of the Partial Split-Up, the portion of the net worth of MMX corresponding to its ownership interest in LLX Logística shall be conveyed to LLX Logística itself and, consequently, the shares of LLX Logística held by MMX shall be attributed directly by LLX Logística to the current shareholders (registered shareholders at the time when the Partial Split-Up is approved) of MMX on a pro rata basis in relation to their holdings of the shares issued by MMX, as further detailed in Item 5 below.

**3.2** Moreover, as a result of the Partial Split-Up, certain MMX's assets and liabilities described in the Protocol shall be conveyed to IronX, and the new shares of IronX to be issued as a result of the conveyance of such assets and liabilities from MMX to IronX shall be attributed to the current shareholders of MMX (registered shareholders at the time when the Partial Split-Up is approved) on a pro rata basis in relation to their holdings of the shares issued by MMX, as further detailed in Item 6 below.

#### **4. Appraisal**

**4.1** The base date of the appraisal of the portions of MMX's net worth to be split-up will be December 31, 2007. KPMG Auditores Independentes, a company headquartered at Avenida Almirante Barroso, no. 52, 4th floor, in the city of Rio de Janeiro, State of Rio de Janeiro, enrolled with the Corporate Taxpayer's Registry under number 57.755.217/0003-90, originally registered before the Regional Accounting Counsel of the State of São Paulo under number CRC-SP-14.428/O-6-f-RJ ("KPMG") has been the specialized company hired ad referendum of the shareholders' meetings to appraise the portions of MMX's net worth to be allocated to LLX Logística and IronX, respectively. The appraisal has been made at book value, based on MMX's year-end financial statements dated December 31, 2007, audited by KPMG (the "Financial Statements"). The appraisal results are mentioned below and the appraisal report (the "Appraisal Report") will be available to the shareholders in accordance with Item 10.1 below.

**4.2** The net worth variations of MMX between December 31, 2007 and the date of the Partial Split-Up shall be (i) allocated to either LLX Logística or IronX, should they refer to the portion of MMX's net worth transferred to each one of them or (ii) retained by MMX, if they relate to the assets that should remain with MMX.

**4.3** KPMG declared that it has no actual or potential conflict or pooling of interests with the controlling shareholders of the Companies, or with any of their minority shareholders, or in relation to the transaction itself.

#### **5. Allocation of Part of the Net Worth of MMX to LLX Logística.**

**5.1** The portion of MMX's net worth to be transferred to LLX Logística was appraised by KPMG at book value, pursuant to articles 183 and 184 of Law No. 6.404/76, in the amount of R\$ 165,969,700.14 (one hundred sixty-five million, nine hundred sixty-nine thousand, seven hundred reais and fourteen cents). However, since such portion is constituted by the shares of LLX Logística held by MMX, there shall be no increase in the capital of LLX Logística. Immediately prior to the Partial Split-Up, at the same shareholders' meeting of LLX in which the Partial Split-Up is to be resolved upon, the shareholders of LLX Logística will resolve upon a split of the LLX Logística's shares at the ratio of 59.4940978:1, and as a result of this share split the total number of shares of LLX Logística immediately prior to the Partial Split-Up will be 358,364,542 (three hundred fifty-eight million, three hundred sixty-four thousand five hundred forty-two) common, nominative, book-entry shares with no par value.

**5.2.** The Partial Split-Up will be implemented without the issuance of new shares by LLX Logística, and the existing shares of LLX Logística currently held by MMX, after

the share split mentioned in item 5.1 above, shall be attributed directly to MMX's current shareholders on a ratio of 1 share of LLX Logística per 1 share of MMX.

**5.3** The shares of LLX Logística to be attributed to the current shareholders of MMX shall grant the shareholders the same voting and economic privileges granted by the shares issued by MMX, with no distinction between any shareholder.

## **6. Allocation of Part of the Net Worth of MMX to Ironx.**

**6.1** The portion of MMX's net worth to be conveyed to IronX was appraised by KPMG at book value, pursuant to articles 183 and 184 of Law No. 6.404/76, in the amount of R\$ 871,903,818.66 (eight hundred seventy-one million, nine hundred and three thousand, eight hundred eighteen reais and sixty six cents). As a result, upon the approval of the Partial Split-Up, IronX's capital stock shall be increased by R\$ 871,903,818.66 (eight hundred seventy-one million, nine hundred and three thousand, eight hundred eighteen reais and sixty six cents), from R\$800.00 (eight hundred reais) to R\$ 871,904,618.66 (eight hundred seventy-one million, nine hundred and four thousand, six hundred eighteen reais and sixty six cents), upon the issuance of 1,633,543,454 (one billion, six hundred thirty-three million, five hundred forty-three thousand, four hundred fifty-four) new common, no par value, nominative shares of IronX, resulting in a total number of IronX shares of 1,633,544,254 (one billion, six hundred thirty-three million, five hundred forty-four thousand, two hundred fifty-four). Immediately following such capital increase, a reverse share split of IronX will be effected at the ratio of 5,3627402647:1. As a result of such reverse share-split and the Partial Split-Up, the capital stock of IronX shall be divided into 304,609,989 (three hundred four million, six hundred nine thousand, nine hundred eighty-nine) nominative, book-entry, no-par value shares of common stock.

**6.2.** The shares of capital stock of IronX to be issued by IronX as a consequence of the capital increase above mentioned, and after the reverse share split above mentioned, shall be attributed directly to the current shareholders of MMX pro-rata to their holdings of the shares issued by MMX, on a ratio of 1 share of IronX per 1 share of MMX. The management of MMX and IronX has considered, when defining the exchange ratio of MMX's shares by IronX's shares, the value shown in MMX's appraisal report at book value and the book value of IronX, and for this reason, the exchange ratio above stated is considered, by the management of MMX and IronX, to be absolutely equitable for their shareholders, with no privilege nor particular advantage being granted to the controlling shareholders.

**6.3** The shares of IronX to be attributed to the current shareholders of MMX shall grant the shareholders the same voting and economic privileges granted by the shares issued by MMX, with no distinction between any of the shareholders.

## **7. MMX's Capital Reduction resulting from the Partial Split-Up**

**7.1** As a result of the Partial Split-Up, MMX's capital stock will be reduced by R\$367,005,280.77 (three hundred sixty-seven million, five thousand two hundred eighty reais and seventy-seven cents), from R\$1,142,804,167.04 (one billion, one hundred forty-two million, eight hundred four thousand, one hundred sixty-seven reais and four cents) to R\$775,798,886.27 (seven hundred seventy-five million, seven

hundred ninety-eight thousand, eight hundred eighty-six reais and twenty-seven cents). MMX's capital stock decrease will not result in a change in the number of shares into which the capital stock is divided.

**7.2** The Partial Split-Up will not result in the change of the characteristics of MMX's shares or of the privileges granted by them, with no distinction between any shareholders

## **8. No joint Liability between the Companies**

**8.1** The Partial Split-Up shall be effected pursuant to the provisions of article 233, sole paragraph, of Law No. 6.404/76 and, as a result, LLX Logística and IronX shall only be liable for the obligations retained by them, with no joint liability with the other, or with MMX.

## **9. Costs of the Partial Split-Up**

**9.1** The Partial Split-Up's cost is estimated at approximately R\$ 800,000.00 (eight hundred thousand reais), broken down in fees for Brazilian, American and Canadian legal assistants, as well as in fees for accounting firms for purposes of compliance with Brazilian, American and Canadian accounting and tax rules. All costs in relation to the Partial Split-Up shall be for MMX's account.

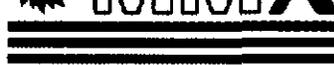
## **10. Right of Withdrawal; Reimbursement Value of the Shares**

**10.1** The dissenting shareholders of MMX may exercise their withdrawal rights. Only those shareholders of MMX who hold shares at the end of BOVESPA's trading session held on the day immediately preceding the date of publication of this notice to investors (fato relevante), which is April 7, 2008, will be entitled to withdrawal rights. Shares acquired thereafter shall not entitle their owners to withdrawal rights.

**10.2** The withdrawal rights may be exercised within the thirty (30) day period following publication of the minutes of the shareholders' meeting of MMX which approves the Partial Split-Up, by letter with notice of receipt addressed to the branches of Bank Itaú S.A. listed on the Notice to the Shareholders to be published by MMX informing as to the beginning of the period for exercise of the shareholders' withdrawal rights.

**10.3** The withdrawal value shall be the book value of MMX's shares, based on MMX's shareholders' equity recorded on the most recent financial statements approved by the shareholders in a general meeting (i.e., December 31, 2007 audited financial statements) divided by the total number of issued and outstanding shares of the capital stock of MMX (valor patrimonial), which is equal to R\$5,954083443 per share, taking into account MMX's shares' split at the ratio of twenty (20) new shares per each currently existing share, approved at the shareholders' meeting of MMX held on April 7, 2008.

**10.4** MMX shall apply for a waiver from the CVM with respect to the requirement of article 264 of Law No. 6.404/76, regarding the calculation of the exchange ratio of shares based on the net worth value of the shares of MMX, LLX Logística and IronX,



appraised under the same criteria and on the same date, at market value, due to the characteristics of the Partial Split-Up.

## **11. Analysis by Competent Authorities**

**11.1** The Acquisition to be implemented upon the consummation of the Partial Split-Up shall be submitted to (i) Brazilian antitrust authorities, i.e. the Administrative Council for Economic Defense - CADE, the Economic Law Office - SDE, and the Economic Development Office - SEAE; (ii) CVM; and (iii) BOVESPA.

**11.2** As previously stated, the shareholders meetings of the Companies shall be called as soon as all the requirements from the Canadian Authorities are fully met, also because the publication of calls for such meetings have already been authorized by the Board of Directors of the Companies.

**11.3** The shares issued by MMX are part of BOVESPA's IBRX, ITAG and IGC indexes. IronX and LLX Logística have already requested their respective listed company registrations to the CVM and the listing of their respective shares in BOVESPA's Novo Mercado segment, and are currently in the process of obtaining those registrations.

## **12. Availability of Documents**

**12.1** The Protocol, Financial Statements, Appraisal Report and the drafts of amendments to the Bylaws of MMX, LLX Logística and IronX, as well as all other documents required in compliance with the applicable law and regulations, shall be made available at MMX's headquarters as from the date of this notice, and shall be sent to CVM and to BOVESPA through IPE System.

For additional information please contact [ri@mmx.com.br](mailto:ri@mmx.com.br).

Rio de Janeiro, April 8<sup>th</sup>, 2008

**Nelson José Guitti Guimarães**  
Chief Financial and Investor Relations Officer  
MMX Mineração e Metálicos S.A.

April 11, 2008

From: **MMX Mineração e Metálicos S.A. — Submission Pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934**

**File No. 082-35042**

Securities and Exchange Commission  
Division of Corporation Finance  
Office of International Corporate Finance  
100 F Street, N.E.  
Washington, D.C. 20549

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2008 APR 21 P 1:20  
OFFICE OF INTERNATIONAL  
CORPORATE FINANCE

Ladies and Gentlemen:

In connection with the exemption from Section 12(g) of the Securities Exchange Act of 1934, as amended (the "**Exchange Act**") afforded by Rule 12g3-2(b) thereunder, MMX Mineração e Metálicos S.A. (the "**Company**"), a corporation organized under the laws of the Federative Republic of Brazil, hereby submits the following documents:

1. *Technical Report of MMX Corumbá's Mineral Resources and reserve filed with Brazilian SEC on April 4, 2008 (English version)*

The information contained in this letter is being furnished pursuant to Rule 12g3-2(b), with the understanding that such information and documents will not be deemed "filed" with the SEC or otherwise subject to the liabilities of Section 18 of the Exchange Act, and that neither this letter nor the furnishing of such documents and information shall constitute an admission for any purpose that the Company is subject to the registration or continuing reporting obligations of the Exchange Act.

If you have any questions or comments please contact the undersigned at 011-55-(21) 2555-5558.

Very truly yours,

*Gina Pinto*  
Gina Pinto

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CORPORATE FINANCE

**MMX Mineração e Metálicos S.A.**  
**NI 43-101 Technical Report**  
**Corumbá Iron Project**  
**Brazil**

**Mineração e Metálicos S.A.**  
*Praia do Flamengo 154/4°*  
*Rio de Janeiro Brasil 22210-030*

**SRK Project Number 162703**



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**Effective Date: September 30, 2007**  
**Report Date: March 10, 2008**

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**Qualified Persons**

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**Appendix A**  
Certificates of Author

## Summary (Item 3)

SRK Consulting (US), Inc., (SRK) was commissioned by MMX Mineração e Metálicos S.A. (MMX) to prepare a Canadian Securities Administrators (CSA) National Instrument 43-101 (NI 43-101) Technical Report for the Corumbá Iron Project (Corumbá Project) located in Mato Grosso do Sul State, Brazil. The subject of this report is Mine 63, an operating mine producing Lump and Sinter Feed, and an exploration property, Urucum NE. The project is owned and operated by MMX Corumbá Mineração Ltda (MMX Corumbá), a subsidiary of MMX.

### Property Description and Accessibility

The Corumbá Project is located near the city of Corumbá in the state of Mato Grosso do Sul, close to the border of Brazil and Bolivia, at coordinates 19° 11' 41"S and 57° 36' 50"W.

The Corumbá Project consists of Mine 63, an operating mine, and the Urucum NE and Rabicho exploration areas. Mine 63 is located approximately 19.5km from the city of Corumbá, the capital of Mato Grosso do Sul, Brazil; access is by paved highway BR-262 for 16km and then by unpaved roads to the property. Urucum NE is located at about 5 km eastern of Mine 63. Access is by paved highway BR-262 for 10 km from the city of Corumbá and then by unpaved road for 10 km

### Project History and Ownership

MMX Corumbá controls 20 mineral rights in the Corumbá Project area, including two mining concessions covering the mine area, 16 exploration permits, and two requests for surveys. The mining concessions and permits cover a total area of 9495.98ha. The mineral resources and ore reserves reported in this report are completely contained within the mining and exploration concessions. MMX Corumbá controls the surface rights at the mine through lease agreements with the property owners and has permission from the landowners to conduct exploration on the Urucum NE resource area.

Sociedade Brasileira de Imóveis (SBI) started mining in the area in 1958, with the extraction of colluvial iron ore, and production of pig iron at its plant near the SBI port. When the price of pig iron dropped in 1973, SBI constructed a beneficiation plant for iron and manganese ore, which operated between 1974 and 1986. Between 1986 and 2000, activity was limited to underground mining for manganese ore. After 2000, production was restricted to mining and beneficiation of iron ore. MMX Corumbá acquired the mining concessions and the beneficiation plant in 2005 and started mining and processing operations in January 2006. Exploration at Urucum NE started in 2007.

### Geology and Mineralization

The Corumbá Project lies within the Urucum iron-manganese district which is located along the Brazilian-Bolivian border and extends into the eastern areas of both Paraguay and Bolivia, and includes an area of 200km<sup>2</sup>. The Urucum deposits are associated with banded iron formations (BIF), locally known as jaspelites, that are found in the Banda Alta Formation. The regional geology consists of Proterozoic-age igneous and metamorphic rocks, granite intrusions, and acid intrusives. The rocks are in faulted and unconformable contact and are overlain by Quaternary sedimentary deposits which account for approximately 60% of the cover in the area.

The mineralization at Mine 63 is hosted in deposits of colluvium and eluvium, and the mineralization at Urucum NE is hosted by colluvium. The Eluvium is located on the flank of

Urucum Mountain and was formed by in situ silica leaching and the subsequent enrichment of iron in the jaspelite of the Banda Alta Formation. The Colluvium consists of a detrital deposit that forms an elongate fan at the base of Urucum Mountain. The iron grade in the colluvium is higher near the source rock and decreases with distance from the source.

### **Exploration**

MMX Corumbá conducted the first exploration at Mine 63 in November 2005. Although mining occurred on the property prior to the acquisition by MMX, no exploration had been done. MMX's exploration program consisted of hand digging exploration pits, referred to as shafts, channel sampling, and diamond core drilling. Assaying was initially done by Laboratório de Caracterização Tecnológica (LCT) in Sao Paulo and later by SGS Geosol Laboratorios Limitada (SGS) in Belo Horizonte. The pulps initially analyzed at LCT were subsequently sent to SGS/Geosol for check analysis. Laboratory QA/QC consisted of sending pulps to Ultra Trace Analytical Laboratories Pty Ltd (UT) in Australia for analysis. There was generally good correspondence between SGS and UT, and the SGS results were deemed acceptable for resource estimation purposes.

Exploration at Urucum NE started in 2007, with a program of shaft excavation. The samples were prepared at the Mine 63 laboratory and were analyzed at SGS in Belo Horizonte. Laboratory QA/QC consisted of inserting standards samples and duplicates into the sample stream, and a check assay program with ALS Chemex Laboratory in Australia. Analysis of the QA/QC by Agoratek International indicated that there may be a low bias in  $Al_2O_3$  and a high bias in P by SGS. The bias is being further investigated by Agoratek, and the database is considered acceptable for resource and reserve estimation.

### **Resources and Reserves**

The resources were estimated by Prominas, a geologic and engineering consulting company in Belo Horizonte, Brazil. The Mine 63 area was divided into two separate models: the Eluvium area and Colluvium area. The Eluvium area has two rock types: eluvium and a smaller component of colluvium. The Colluvium area also has two rock types: colluvium and a smaller component of cemented breccia. Three dimensional solids were constructed for the two areas based on drillhole cross-sections.

The drillhole assays were composited into 5m lengths from the top of the hole, with breaks at the lithologic contacts; intervals of 2m or less were included with the preceding composite if the lithologies were the same, resulting in a minimum length of 3m and a maximum of 7m. Shaft and channel samples with lengths greater than 6m or which were located within 10m of a drillhole were excluded from the compositing routine. Internal waste intervals which were not assayed were assigned a value of zero prior to compositing.

Variography studies were done for each rock type in the Colluvium and Eluvium areas. Separate block models were created for the Colluvium and Eluvium areas with block sizes of 50 x 50 x 5m and 25 x 25 x 5m respectively. The 3D geologic models were used to assign a rock code and percentage to the blocks. Variography studies were done for each rock type in each area. Grade was estimated with ordinary kriging. Classification into Measured, Indicated, and Inferred Resources was based on kriging variance and regression slope. The total mineral resources, including ore reserves, of Mine 63 are tabulated in Table 1.

**Table 1: Mineral Resources – Mine 63- Corumbá Project\***

Classification	Mt	Fe (%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	P (%)	Mn (%)	(%)	LOI (%)
Measured	5.2	60.92	8.27	2.62	0.08	0.03	0.14	1.75
Indicated Stockpiles	40.4	51.90	16.81	2.67	0.06	0.53	0.14	1.51
	0.1	60.40	9.28	2.53	0.08	0.05	0.14	1.69
<b>Total Indicated</b>	<b>40.5</b>	<b>51.92</b>	<b>16.79</b>	<b>2.67</b>	<b>0.06</b>	<b>0.53</b>	<b>0.14</b>	<b>1.51</b>
Measured and Indicated	45.6	53.06	15.85	2.67	0.06	0.47	0.14	1.54
Inferred	14.0	53.26	16.08	2.83	0.06	0.55	0.15	1.67

\* Tonnes are reported on a wet basis  
Fe Cut-off grade is 30%

At Urucum NE, there is a single geologic domain, the Colluvium. The deposit was modeled as a gridded seam model (GSM), where the x and y dimensions of the block are fixed and the z dimension is variable. The assays were composited into a single composite for each shaft, resulting in an average length of 4.4m, with a minimum of 2m and a maximum of 5m. The 3D geologic solid was used to assign a rock code and percentage to the blocks. Variography was conducted in all horizontal directions and no preferred orientation was found was selected as best representing the mineralization. Grade estimation was by ordinary kriging in a three-pass procedure where each succeeding pass used a longer search range. The blocks were assigned a resource classification according to the pass in which they were estimated. The resources at Urucum NE are given in Table 2.

**Table 2: Mineral Resources – Urucum NE- Corumbá Project\***

Classification	Tonnage (M t)*	Fe(%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	P(%)	Mn(%)	TiO <sub>2</sub> (%)	LOI (%)
Measured	3.17	55.23	15.2	3.09	0.056	0.12	0.18	1.72
Indicated	34.00	53.03	18.14	2.97	0.055	0.34	0.18	1.8
Measured and Indicated	37.17	53.22	17.89	2.98	0.055	0.32	0.18	1.79
Inferred	32.84	50.95	19.53	3.78	0.054	0.44	0.2	2.19

\*Tonnes are reported on a wet basis  
Fe cut-off grade (CoG) is 20%

### Ore Reserves – Mine 63

In December 2006, a Lerchs Grossman pit optimization routine was run on the Mine 63 mineral resources in December 2006 using the following parameters:

- Mass recovery: 66%;
- Average product value: US\$32/t;
- Mine cost RoM: US\$1.38/t; Mine cost waste: US\$1.00/t;
- Plant cost: US\$3.39/t product;
- Transportation cost: US\$3.12/t product;

- GandA: US\$0.68/t product;
- Density: Colluvium 3.16g/cm<sup>3</sup>; Eluvium 3.60g/cm<sup>3</sup>; and
- Pit slope: 47° Colluvium; 48° Eluvium.

The reserves reported below were depleted for mine production through September 2007. The total reserves for Mine 63 are listed in Table 2.

**Table 3: Ore Reserves - Mine 63 Corumbá Project\***

Classification	Kt	Fe (%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	P (%)	Mn (%)	TiO <sub>2</sub> (%)	LOI (%)
Proven	4.3	61.03	8.26	2.55	0.08	0.03	0.14	1.67
Probable	25.0	54.74	14.96	2.51	0.06	0.43	0.14	1.45
Stockpile	0.1	60.40	9.28	2.53	0.08	0.05	0.14	1.69
<b>Total Probable</b>	<b>25.1</b>	<b>54.76</b>	<b>14.94</b>	<b>2.51</b>	<b>0.06</b>	<b>0.43</b>	<b>0.14</b>	<b>1.45</b>
<b>Total Proven and Probabl</b>	<b>29.4</b>	<b>55.68</b>	<b>13.96</b>	<b>2.51</b>	<b>0.06</b>	<b>0.37</b>	<b>0.14</b>	<b>1.48</b>

\* Tonnes are reported on a wet basis.

Fe (CoG) for Eluvium is 48.0% and Fe (CoG) for Colluvium is 56.1%.

Average Fe price used in reserve is US\$32.02.

## Metallurgy and Process

Metallurgical testing at Mine 63 consisted of:

- A study of the correlation between run-of-mine (RoM) and Lump to establish the cut-off grade; and
- A study of the mass recovery to define the product yield of Lump and Sinter Feed.

The results of the tests indicate that at Mine 63 the average grade of the RoM must be 54.8% Fe. The mass recovery percentages for Lump and Sinter Feed are 55% and 11%, respectively.

## Environmental

The environmental program at Mine 63 includes reclamation concurrent with mining and at the end of the mine life. The reclamation plan consists of recontouring and revegetation of the tailings facility, the mine and plant areas and the waste dumps. The reclamation will be monitored following closure of the mine for a period of five years.

## Economic Analysis – Mine 63

The LoM plan and economics are based on the following:

- Reserves of 29.4Mt at an average grade of 55.7% Fe;
- A mine life of 8 years, at a designed production rate of 4,101ktpy;
- An overall average process recovery rate of 55% for Lump product and 11% for Sinter product over the LoM;
  - Mining costs per tonne of product are based on contract mining and are US\$3.46 for 2008 and US\$3.30 for the remaining LoM, and
  - Process costs per tonne of product are US\$3.79 for 2008 and US\$2.98 for the remaining LoM.

- G&A costs are as shown;
  - Sundry costs - mine planning, quality control, administration - US\$1.90/t-product for 2008 and US\$1.58/t-product for the remaining LoM,
  - Product transport – mine to port - US\$1.99/t-product for 2008 and US\$1.69/t-product for the remaining LoM,
  - Port terminal cost are included in the sales expenses, and
  - Corporate costs – miscellaneous - US\$2.22/t-product for 2008 and US\$1.78/t-product for the remaining LoM.
- A cash operating cost of US\$8.55/t-ore (US\$12.97/t-product combined);
- Total capital expenditures of US\$32.8M have been incurred in 2005, 2006, and 2007. These capital costs are amortized/depreciated in accordance with a straight-line depreciation method supplied by MMX. However, the capital costs are not included in the financial model; and
- Total sustaining capital costs of US\$26.8M LoM are included. MMX included mine closure costs in the sustaining capital. There is no allowance for salvage value.

The base case economic analysis results, shown in Table 4, indicate an after-tax net present value of US\$76M at a 10% discount rate.

**Table 4: LoM Economic Results (US\$000s)**

Description	LoM Value
<b>Ore</b>	
Ore RoM (Mt)	29.4
Grade	
Iron	55.7%
<b>Lump Ore</b>	
Process Recovery	55%
<b>Sinter Ore</b>	
Process Recovery	11%
<b>Gross Revenue</b>	
Lump Product	\$430,108
Sinter Product	\$77,272
	<b>Gross Revenue</b>
	<b>\$507,380</b>
<b>Royalty (Taxes)</b>	
Royalties	(\$22,662)
	<b>Gross Income from Mining</b>
	<b>\$484,718</b>
	<i>US\$/-ore t \$16.51</i>
	<i>US\$/t-product \$25.03</i>
<b>Gross Income from Mining</b>	
	<b>\$484,718</b>
<b>Operating Costs</b>	
Mining	(\$64,259)
Process	(\$86,798)
GandA	(100,097)
	<b>Operating Costs</b>
	<b>(\$251,154)</b>
	<i>US\$/t-ore \$8.55</i>
	<i>US\$/t-product \$12.97</i>
	<b>Operating Margin</b>
	<b>\$233,564</b>
	<i>US\$/t-ore \$7.95</i>
	<i>US\$/t-product \$12.06</i>
<b>Income Tax</b>	
Income Tax	(\$71,847)
	<b>Total Tax</b>
	<b>(\$71,847)</b>
	<i>US\$/t-ore \$2.45</i>
	<i>US\$/t-product \$3.71</i>
	<b>NIAT</b>
	<b>\$161,717</b>
	<i>US\$/t-ore \$5.51</i>
	<i>US\$/t-product \$8.35</i>
<b>Capital Costs</b>	
Sustaining	\$34,866
Equipment – sunk capital – operating mine	\$0
Mine Closure/Reclamation – incl in sustaining	\$0
	<b>Total Capital</b>
	<b>(\$34,866)</b>
	<b>Cash Flow</b>
	<b>\$126,738</b>
	<b>NPV<sub>10%</sub></b>
	<b>\$76,069</b>

## Conclusions

The Corumbá Project consists of an operating mine that has been in production since July 2006, Mine 63, and an exploration property, Urucum NE. The mineral resources and ore reserves have been estimated by Prominas under the direction of MMX. The project is well documented with original sources of drill logs, assays, and various reports, as well as an electronic database.

SRK has reviewed and validated the sample database, topography, geologic interpretation, and the resource estimation parameters. The resource block model has been verified through visual examination and by construction of swath plots through the deposit. The resource estimate follows industry standards and the resource classification is in accordance with CIM guidelines.

The metallurgical testwork has been reviewed by SRK and found to be valid.

MMX has the necessary mining and environmental permits and surface agreements to operate Mine 63 at the Corumbá Project and to conduct exploration at the resource area of Urucum NE.

The Corumbá Project team draws on its experience in the design and operation of Mine 63. The LoM is relatively short, the initial capital has been spent, and as such, the project is straightforward and does not require the extensive sensitivity analysis which is typical with long life projects. It is very likely this ore body will be extracted in the manner and time frame proposed by the operators.

The project economics indicate that:

- The Corumbá Project exhibits robust economics with a NPV<sub>10%</sub> of US\$76M; and
- SRK considers the Corumbá Project to be a relatively low-risk project given its relatively short mine life, good mining conditions, and conventional mining and processing methods.

## Recommendations

The resource database could be improved by the following procedures in future programs:

- Sample intervals should be no longer than the bench height at the mine. This procedure would eliminate the problem of sample support where intervals longer than 6m were excluded from the compositing routine; and
- Intervals of internal waste should be analyzed with the same procedures as the surrounding samples. This would eliminate the doubts about the grade and the subsequent assignment of zero grade to these intervals. MMX has instituted this practice with the 2007 exploration programs.

The resource estimate procedure at Mine 63 should be re-examined following future drilling and sampling programs to see if it could be simplified. The current estimation procedure is technically correct, but may be more complex than required for this deposit.

As mining progresses, a program of mined to model reconciliation should be instituted. This is a standard practice in mine operations and aids in evaluation and refining of the resource model.

The laboratory quality assurance/quality control (QA/QC) at Urucum NE indicates that there may be a bias in analyses of Al<sub>2</sub>O<sub>3</sub> and P by SGS. SRK recommends this bias be further investigated.

# **1 Introduction and Terms of Reference (Item 4)**

SRK Consulting (US), Inc., (SRK) was commissioned by MMX Mineração e Metálicos S.A. (MMX) to prepare a Technical Report for Mine 63 and Urucum NE of the Corumbá Iron Project (Corumbá Project) located in Mato Grosso do Sul State, Brazil to meet the requirements of Canadian National Instrument 43-101 (NI 43-101). Mine 63 is a producing iron ore mine and Urucum NE is an exploration property, both owned and operated by MMX Corumbá Mineração Ltda (MMX Corumbá) which is 70% owned by MMX and 30% by Centennium Asset Mining Fund LLC. Certain definitions used in this executive summary are defined in the body of this technical report.

This report reflects the most recent mineral resource and ore reserve estimation based on data produced through September 30, 2007.

## **1.1 Terms of Reference and Purpose of the Report**

This Technical Report is intended to be used by MMX to further the development of the Property by providing an audit of the mineral resource and ore reserve estimates, classification of resources and reserves in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) classification system, and evaluation of the project.

MMX may also use the Technical Report for any lawful purpose to which it is suited. This Technical Report has been prepared in general accordance with the guidelines provided in NI 43-101 Standards of Disclosure for Mineral Projects.

## **1.2 Sources of Information**

The underlying technical information upon which this Technical Report is based represents a compilation of work performed by MMX and several independent consulting firms. The studies and additional references for this Technical Report are listed in Section 20. SRK has reviewed the project data and incorporated the results thereof, with appropriate comments and adjustments as needed, in the preparation of the Technical Report.

## **1.3 Effective Date**

The effective date of the resources and reserves stated in this report is September 30, 2007. The report date is March 10, 2008.

## **1.4 Reliance on Other Experts (Item 5)**

SRK's opinion contained herein is based on information provided to SRK by MMX throughout the course of SRK's investigations. The sources of information include data and reports supplied by MMX and MMX Corumbá personnel as well as documents cited in Section 20.

## **1.5 Material Litigation**

SRK has been advised by MMX that there is no litigation concerning the Corumbá property.

## **1.6 Qualifications of Consultant (SRK)**

The SRK Group comprises of 750 staff, offering expertise in a wide range of resource engineering disciplines. The SRK Group's independence is ensured by the fact that it holds no equity in any project and that its ownership rests solely with its staff. This permits SRK to

provide its clients with conflict-free and objective recommendations on crucial judgment issues. SRK has a demonstrated record of accomplishment in undertaking independent assessments of mineral resources and mineral reserves, project evaluations and audits, technical reports and independent feasibility evaluations to bankable standards on behalf of exploration and mining companies and financial institutions worldwide. The SRK Group has also worked with a large number of major international mining companies and their projects, providing mining industry consultancy service inputs.

This report has been prepared based on a technical and economic review by a team of consultants sourced principally from the SRK Group's Denver US office. These consultants are specialists in the fields of geology exploration, mineral resource and mineral reserve estimation and classification, open pit mining, mineral processing and mineral economics.

Neither SRK nor any of its employees and associates employed in the preparation of this report has any beneficial interest in MMX or in the assets of MMX. SRK will be paid a fee for this work in accordance with normal professional consulting practice.

The individuals who have provided input to this technical report, who are listed below, have extensive experience in the mining industry and are members in good standing of appropriate professional institutions. The key project personnel contributing to this report are listed in Table 1.6.1.

Dr. Neal Rigby, Leah Mach, and Sten Johansson are the Qualified Persons (QP) for this report. Leah Mach visited the site between September 25 and 27, 2007. During the site visit, Ms Mach inspected the exploration shafts and drill core, laboratory, visited the processing plant, reviewed the general infrastructure of the mine, and toured the mine site. Ms Mach is responsible for the overall preparation of the report and specifically for Sections 1 through 13, 15.1 through 15.2, 16 and 18 through 22 of this Technical Report. Dr. Rigby visited the Corumbá Project property on January 6, 2006. Dr. Rigby inspected the exploration shafts, inspected the drill core, reviewed the general infrastructure of the mine, and toured the mine site. Dr. Rigby is the Qualified Person responsible for the review of the report and specifically for Sections 15.3 and 17. Sten Johansson, a qualified person for the report, also visited the site on September 25 through 27 and is responsible for Section 14. George Borinski visited the site on September 25 through 27, 2007.

Certificate of Authors are provided in Appendix A.

**Table 1.6.1: Key SRK Project Personnel**

<b>Name</b>	<b>Discipline</b>
Leah Mach	Resource Estimation, Project Manager, QP
Antonio Carlos Girodo	Resource Estimation and Reserve Conversion
Michael Elder	Mining and Infrastructure
S E E Johansson	Processing, QP
George Borinski	Environmental and Permitting
Dr. Antonio Peralta	Project Economics and Valuation
Dr. Neal Rigby	Project Review, Mining, QP

## **2 Property Description and Location (Item 6)**

### **2.1 Property Location**

The Corumbá Project is located near the city of Corumbá in the state of Mato Grosso do Sul, Brazil near the border with Bolivia, at coordinates 19° 11' 41"S and 57° 36' 50"W, shown in Figure 2-1. The project consists of several prospects and one operating mine. The operating mine, Mine 63, and the Urucum NE Project are the subjects of this Technical Report. Figure 2-2 shows the mining concessions and Figure 2-3 shows surface property ownership.

### **2.2 Mineral Titles**

#### **2.2.1 Brazilian Mining Legislation**

According to Brazil's Constitution, the survey, exploration and exploitation of mineral resources shall occur under federal authorization or concession and only Brazilian citizens or companies organized under Brazilian laws with headquarters located in the country may be entitled to practice such activities and, therefore, to obtain mining rights.

In addition, mining rights in Brazil are governed by the Mining Code and further rules enacted by Brazil's National Department of Mineral Production (DNPM), which is the governmental agency which controls mining activities throughout the country.

#### **2.2.2 Authorization for Exploration**

As stipulated in Article 14 of the Mining Code and Article 18 of the Decree, mineral exploration comprises the work necessary to measure and evaluate a resource and its technical and economic feasibility. The cited legislation also determines that the exploration may be carried out by means of on-site and laboratory studies, geological and geophysical studies, and any other type of geological exploration work.

DNPM's Local Officer grants the authorization to an interested party by means of an exploration permit, the "Alvará de Pesquisa". In order to obtain the Exploration Permit, the titleholder files an application with the DNPM. After analysis of the application, DNPM may issue an Exploration Permit valid for a period of one to three years. This period may be extended, subject to analysis of the exploration by the DNPM. The holder of the Exploration Permit (i) may assign or transfer it, provided that the assignee fulfills the legal conditions to hold the title; (ii) may, at any time, waive the Exploration Permit; (iii) shall be exclusively responsible for damages caused to third parties as a result of the performance of the exploration; and (iv) that the holder shall submit to DNPM a detailed report on the exploration activities prior to the final term of the Exploration Permit.

After DNPM reviews the detailed technical report on the exploration activities, the agency decides whether the development is technically and economically feasible. DNPM may withhold approval of the exploration process in cases where the work is insufficient or in the case of technical deficiencies in the report.

If the exploitation is considered technically and economically feasible, DNPM will approve the project. The holder of the Exploration Permit will then have one year to apply for the mining exploitation permit or negotiate the mining right with third parties. DNPM will only provide one extension to this time period. The extension must be obtained prior to the expiration of the first one-year term, and there is only one allowed extension for one additional year.

### **2.2.3 Concession for Mining Exploitation**

After DNPM's approval of the exploration report, the interested party may apply for the concession of the mining exploitation, which is granted by Brazil's Ministry of Mines and Energy by means of a specific permit titled "Concessão de Lavra". Prior to granting the Exploitation Permit, DNPM shall verify that all legal requirements are fulfilled, including the prior exploration and the approval of the technical report by DNPM.

Under the Exploitation Permit, the holder of the mining rights shall be entitled to: (i) exploit the mine until it is completely exhausted; (ii) assign or transfer the title, provided that the assignee fulfills the legal conditions to hold the title; and (iii) waive the Exploitation Permit, subject to authorization by DNPM.

The holder of the exploitation permit has the responsibility to (i) exploit the mine according to a mining plan previously approved by DNPM; (ii) not interrupt the mining operation for a period of more than six consecutive months after the beginning of the operation; (iii) extract only minerals expressly mentioned in the Exploitation Permit; (iv) respect the applicable Environmental Law; (v) pay a financial compensation for the exploitation, the Financial Compensation for the Exploitation of Mineral Resources (CFEM).

### **2.2.4 MMX's Mineral Claims in Corumbá**

MMX controls twenty mineral rights in the Corumbá Project area listed in Table 2.2.4.1 below. The total area covered by the mineral rights is 9495.98ha.

**Table 2.2.4.1: Mineral Rights – Corumbá Project, Mine 63 and Surroundings**

DNPM Process	Target	Municipality	Granting or Application Date	Former / Actual Owner	Area (ha)	Substance	Current Situation
807.200/71	Urucum NE	Ladário	26/03/1975	Luiz Arthur	995.62	Fe	Mining Request
823.955/71	Urucum NE	Ladário	26/12/1975	Mário Sérgio	370.04	Fe, Mn	Exploration Permit
868.253/05	Urucum NE	Ladário	13/09/2006	MMX Corumbá	635.24	Fe	Exploration Permit
868.045/05	Urucum NE	Ladário	08/09/2005	Eike Batista / MMX Corumbá	406.69	Fe	Exploration Permit
003.275/65	Rabicho	Ladário / Corumbá	28/02/1979	Gabrielle Haralyi	499.80	Fe	Mining Request
003.276/65	Rabicho	Corumbá	03/02/1975	Gabrielle Haralyi	500.10	Fe	Mining Request
003.277/65	Rabicho	Corumbá	29/09/1976	Gabrielle Haralyi	392.10	Fe	Mining Request
806.106/68	Rabicho	Ladário	31/08/1970	Mineração Dobrados	491.00	Fe	Mining Request
806.107/68	Rabicho	Ladário	31/08/1970	Mineração Dobrados	279.48	Fe	Mining Request
806.108/68	Rabicho	Ladário	18/11/1971	Mineração Dobrados	500.00	Fe	Mining Request
824.873/71	Rabicho	Corumbá	18/07/1973	Mineração Dobrados	999.45	Fe	Mining Request
868.252/05	Rabicho	Ladário	13/09/2006	MMX Corumbá	867.44	Fe	Exploration Permit
004.019/48	Mine 63	Corumbá/MS	6/02/84	SBI/ EBX Corumbaense <sup>(1)</sup>	349.33	Mn	Mining Permit
004.084/58	Mine 63	Corumbá/MS	21/05/81	SBI/ EBX Corumbaense	375.74	Fe	Mining Permit
868.046/05	Mine 63 Surroundings	Corumbá/MS	08/09/05	EFB / MMX <sup>(1)</sup> Corumbá	930.20	Fe	Exploration Permit
868.083/05	Mine 63 Surroundings	Corumbá/MS	23/06/05	Albertina / EBX Corumbaense	58.98	Fe	Exploration Permit
868.090/05	Mine 63 Surroundings	Corumbá/MS	08/09/05	EFB / MMX Corumbá	25.46	Fe	Exploration Permit
868.126/05	Mine 63 Surroundings	Corumbá/MS	03/11/05	EFB / MMX Corumbá	116.34	Fe	Exploration Permit
868.138/05	Mine 63 Surroundings	Corumbá/MS	30/06/05	EFB / MMX Corumbá	700.95	Fe	Survey Request
868.251/05	Mine 63 Surroundings	Ladário/MS	31/10/05	EBX Corumbaense	2.02	Fe	Survey Request

(1) CFEM – Financial Compensation for the Exploitation of Mineral Resources

### **Mine 63 and Surrounding Area**

The reserves described in this report are restricted to the area covered by mining permits 004.019/48 and 004.084/58. Mining permit 004.019/48 was originally related to manganese ore. Subsequently, this was communicated to DNPM, as the first step to the new substance amendment. The feasibility report for iron ore was provided to DNPM using appropriate reporting procedures and forms, on March 22, 2006, together with the request for amendment of the title to also include iron.

The registered owner of mining permits 004.019/48 and 004.084/58 is Sociedade Brasileira de Imoveis (SBI). MMX Corumbá is the present owner of 004.084/58 through a purchase agreement and is awaiting the change of ownership in the DNPM. MMX Corumbá controls 004.019/48 through a lease agreement with SBI.

There are an additional six exploration licenses in the Mine 63 area. The applications for permits 868.046/05, 868.090/05, 868.126/05 and 868.138/05 were originally made by Eike Batista, the principal shareholder of MMX, and the respective assignment of the right to MMX was requested from DNPM on June 23, 2006.

Permit 868.083/05 was originally owned by Albertina Maria Brazoli; the permit was purchased from Brazoli and the assignment of the right to MMX was requested from DNPM on November 22, 2006.

### **Urucum NE and Rabicho**

There are four mineral permits in the Urucum NE area including three exploration permits and one application for mining. In the Rabicho area there are eight mineral permits including one exploration permit and seven applications for mining. All these permits, except two in the Urucum NE area which are held by MMX Corumbá, are controlled by the Haralyi family as individuals or through Mineração Dobrados. The permits held by individuals of the Haralyi family are in the process of being transferred to Mineração Dobrados.

MMX Corumbá executed a contract in July 2006 with the Haralyi family in which it was agreed that MMX Corumbá would purchase all shares in Mineração Dobrados for US\$14M once all the permits were transferred to Mineração Dobrados. MMX Corumbá has paid US\$1M as a down payment and will pay the remainder immediately upon transfer of all permits to Mineração Dobrados. MMX expects that the transfer will be complete in the first half of 2008.

### **2.2.5 Maintenance of Mineral Claims**

In order to maintain the exploration permits in good standing, the holder must:

- Pay an Annual Tax per Hectare (TAH) to the DNPM until the end of exploration. The TAH is charged in the amount of (i) R\$1.55/ha during the original term of the permit and (ii) R\$2.34/ha during the extensions of the term. Note that costs per hectare are in Brazilian Reais;
- Pay expenses incurred by DNPM during inspections of the exploration area; and
- Submit an exploration work report before the expiration date of the term.

In order to maintain the exploitation permits (mining concessions) in good standing, the holder must:

- Pay the CFEM tax mentioned in Section 2.2.3 of this report;
- Pay the surface owner a compensation of 50% of the CFEM tax; and
- Present an annual report by March 15<sup>th</sup> of each year, describing all aspects of the mineral exploitation.

## **2.3 Location of Mineralization**

SRK reviewed correspondence, pertinent maps and agreements to assess the validity of land tenure and ownership of the mining rights for the properties held by MMX. Mine 63 is located within the area covered by the mining permits 004.019/48 and 004.084/58 (shown in Figure 2-2). The Urucum NE resource is contained within exploration permits 807.200/71 and 823.955/71.

## 2.4 Legal Surveys

The mineral concessions in Brazil are paper filings and do not require the actual location of monuments on the ground. The filing includes descriptions of the corners of the concessions in Geographical Coordinate System with the South American Provisional 1956 datum (DATUM SAD\_69).

The northern and eastern boundaries of the mineral concessions of Mine 63 are contiguous with Companhia Vale do Rio Doce's (Vale) boundaries and those corners are marked with concrete monuments. The monuments were established by Vale and have been confirmed by MMX.

## 2.5 Royalty Agreements and Encumbrances

There are no royalties as such on the Corumbá property. There is a tax, the Compensation for the Exploitation of Mineral Resources (CFEM), levied on the sale of raw or improved minerals. This tax is based on the type of commodity. The holder of the permit also is required to financially compensate the holder of the surface rights by an amount equal to 50% of the CFEM tax.

## 2.6 Environmental Liabilities

MMX has informed SRK that there are no known environmental liabilities in relation to the mineral rights and its previous owners.

## 2.7 Permits and Licenses

MMX Corumbá has been granted the following licenses and permits to conduct exploration and operate Mine 63:

- Permit for disturbance of vegetation, ASV 073/2005, issued on October 26, 2005 by the Brazilian Institute for the Environment (IBAMA), for the installation of the mine infrastructure and for the development of mining operations covering 19.3ha;
- Permit for disturbance of vegetation, ASV 089/2006, issued on July 11, 2006 by IBAMA, for the execution of geological surveys covering 8.11ha;
- Operating License LO 002/1991 (Amended), issued on October 26, 2005 by IBAMA, authorizing 3.3Mtpy;
- Renewal of Operating License LO 002/1991 (Amended), issued on November 01, 2007 by IBAMA, authorizing 3.3Mtpy until November 1, 2011;
- Operating License LO 387/2006, issued on September 28, 2006 by Special Environment Secretariat/Mato Grosso do Sul (SEMA/MS) for the use of groundwater in the mine operations;
- Permit for vegetal suppression ASV 194/2007, issued on November 1, 2007 by IBAMA, for the construction of tailing dam, stockpile and opening new mining areas; and
- Statement of the State Environmental Agency authorizing exploration at Urucum NE area.

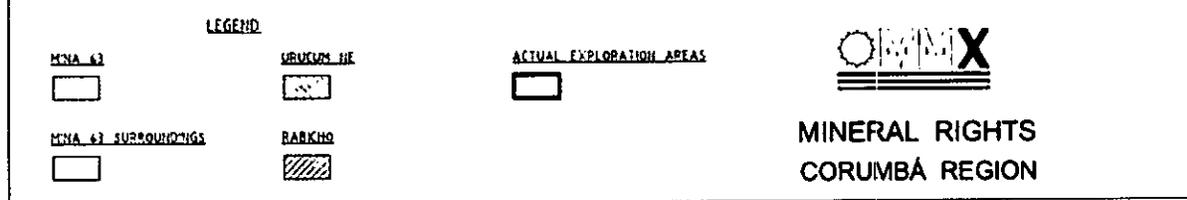
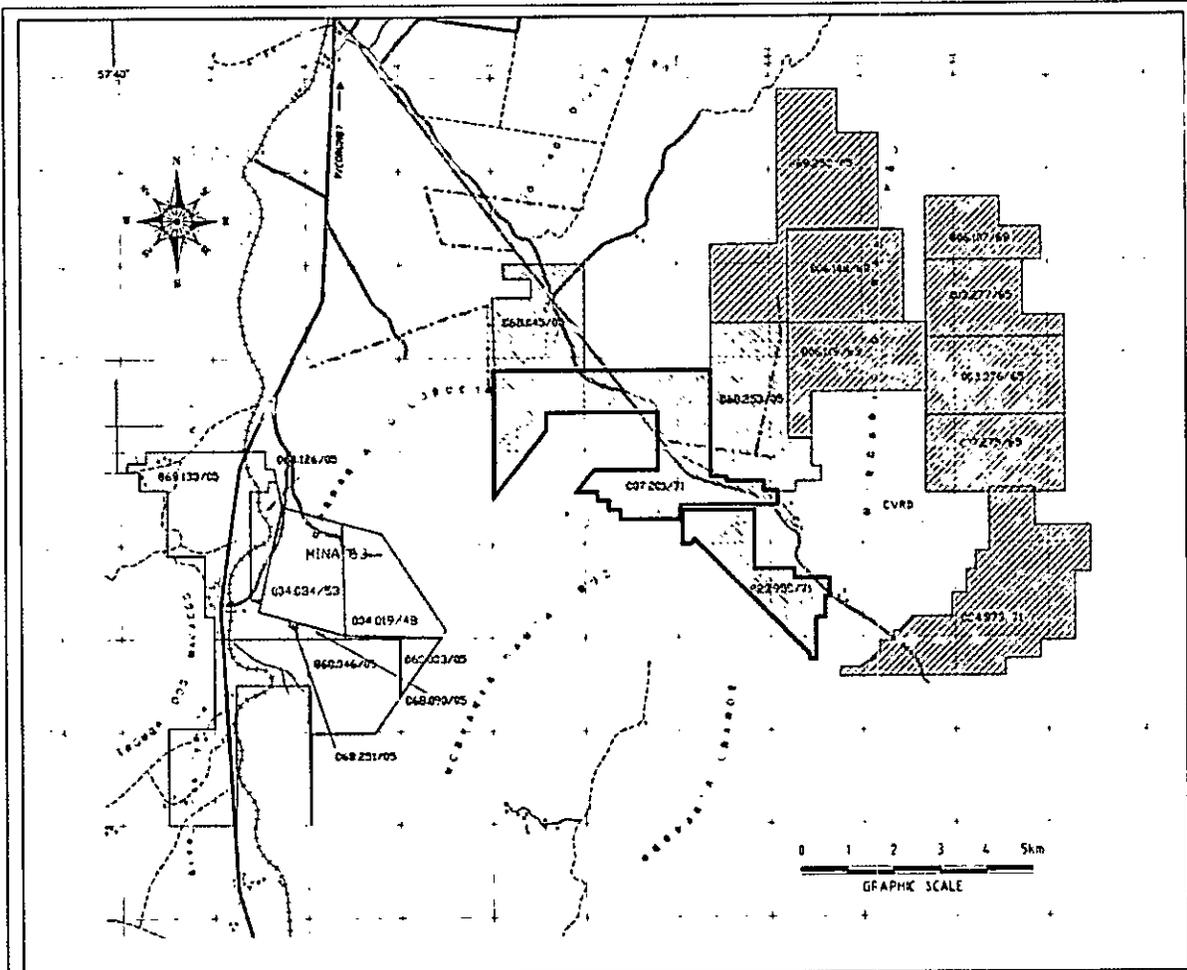
MMX has informed SRK that no other permits are required to conduct exploration or operate Mine 63 or conduct exploration at Urucum NE.

## 2.8 Surface Access

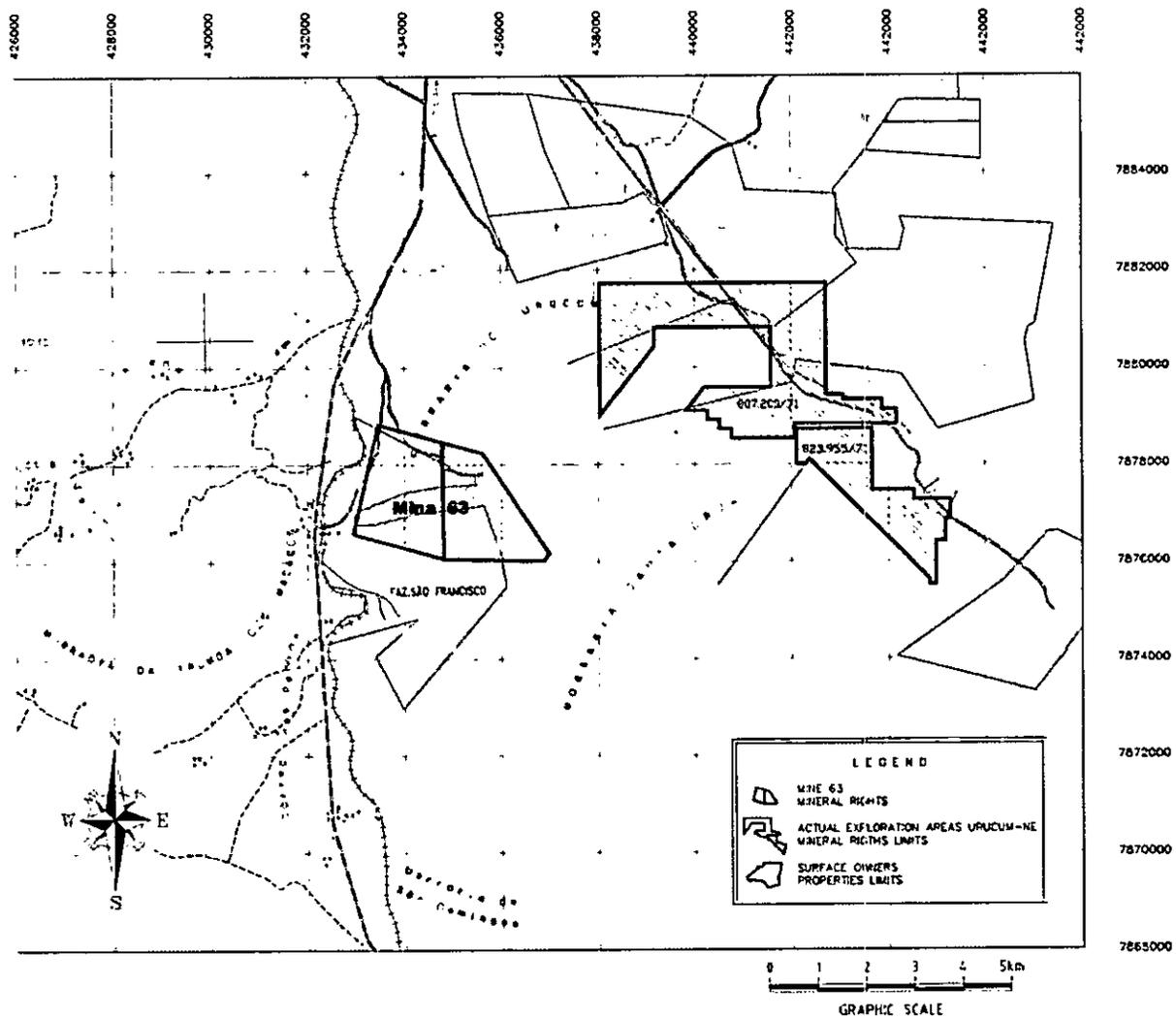
MMX Corumbá does not own the surface rights in the area of Mine 63, but has lease agreements with the owners. Part of the area is on SBI land and part is on the Fazenda São Francisco do Urucum. The lease agreement with the owner of the farm includes access to the plant area, and permission to use an area of 6ha for the tailings facility and to collect borrow material for the tailings dam from a 4ha area. MMX has exploration agreements with the surface owners at Urucum NE to open access roads, dig exploration shafts and collect samples.

The area of the mining concessions and the surface agreements are shown in Figure 2-3.





<b>SRK Consulting</b> Engineers and Scientists	<b>Corumbá Project, Brazil</b>		<b>Figure 2-2</b> <b>Mineral Rights Map - MMX</b> <b>Corumbá Project</b>	
	SRK Job No: 162708.03 File Name: Figure 2-2.doc	<b>Source: Mineração &amp; Metálicos S.A.</b>		Date: 02-27-08
			Figure: 2-2	



 <b>SRK Consulting</b> <i>Engineers and Scientists</i>	<b>Corumbá Project, Brazil</b>		<b>Figure 2-3</b> <b>Surface Owners of Urucum NE and Mine 63 Areas</b>	
	SRK Job No.: 162703.03 File Name: Figure 2-3.doc	<b>Source: Mineração &amp; Metálicos S.A.</b>		Date: 02-27-08

Figure: 2-3

## **3 Accessibility, Climate, Local Resources, Infrastructure and Physiography (Item 7)**

### **3.1 Access**

The Corumbá Project is located approximately 19.5km by road from the city of Corumbá, Mato Grosso do Sul, Brazil. Access is by paved highway BR-262 for 16km and then by unpaved roads owned by Vale (Figure 3-1). Urucum Ne is located about 5km east of Mine 63. Access is by paved highway BR-262 for 10km from the city of Corumbá and by unpaved road for an additional 10km.

### **3.2 Climate**

The climate in the project area is determined by factors related to geography and elevation, which ranges from less than 100m in the lowland depression near the city of Corumbá in Brazil and Puerto Suarez/Puerto Quijarro in Bolivia, to more than a 1,000m in the iron-rich mountains close to the Bolivian border.

The climate is tropical with marked rainy and dry seasons. The weather is controlled by the Amazon Basin to the north, the Brazilian plateau to the east, and the Andes Mountains to the west. The dry period lasts for four to five months, from approximately May to September. The rainy season occurs from December to February. Annual average rainfall is 1,500mm at the higher elevations and 1,000mm in the lowlands.

Average temperatures range from 23° to 25°C with lower temperatures in the plateaus and higher temperatures in the Mato Grosso do Sul and Bolivian lowlands. The maximum temperature can exceed 40°C in the lowlands. Rarely, minimum temperatures may reach 0°C, mainly in the Bolivian Chaco region.

### **3.3 Physiography**

Three geomorphologic units are present in the study area: the Mato Grosso Plains and Mato Grosso Lowlands, the Paraguay River Depression, and the Urucum-Amolar Residual Plateaus. The elevation above mean sea level ranges from approximately 60 to 80m in the Paraguay River Depression to over 1,000m in the Residual Plateaus, which include Morraria do Urucum and Serra do Rabicho. Elevations in the study area range from 500 to 1,000m.

### **3.4 Vegetation**

The Mato Grosso lowlands (Pantanal) are part of the upper Paraguay basin and are the largest continuous flooded plains in South America. The vegetation found in the Pantanal is a mosaic of habitats with differing flora defined by the large ecosystems of this area. The northern boundary is dominated by vegetation of the Amazon Basin, while to the east is cerrado (savannah) type vegetation related to the Central Plateau. To the south lies the southern rainforests, and to the west the lowland deciduous forests of the Chaco found in Bolivia and Paraguay.

Mine 63 and Urucum NE lie in an area originally covered by cerrado type vegetation and deciduous forests. The Brazilian cerrado biome is typically comprised of grasses, shrubs and small trees. In the upper parts of the iron-rich mountain ranges close to the city of Corumbá, the soil supporting this vegetation tends to be acidic.

The deciduous and semi-deciduous forests in the project area are restricted to the remains of gallery forests and pockets of forests found in environmental conservation areas and on the slopes of the mountain ranges. The forests have a distinct biotic characteristic, growing with a deficit of water in the dry season and an excess of water in the wet season.

### **3.5 Local Resources and Infrastructure**

The city of Corumbá has excellent transportation and infrastructure, and can be accessed by road, air or river (Figure 3-1). By road, Corumbá is accessed from the capital of the state, Campo Grande, via paved Federal Highway BR-262. The area is also accessed by the Northwest Brazil Railway (Estrada de Ferro Noroeste do Brasil), which connects Corumbá and Campo Grande to São Paulo and the Port of Santos. The Paraguay River allows transportation by barge to ports in Bolivia, Paraguay, Uruguay and Argentina, providing excellent logistic options for the shipment of goods and products. Corumbá has a population sufficient to provide the work force for the mine.

#### **3.5.1 Water Supply and Water Management**

The water for the project comes from wells inside the project area. One well has been drilled and more will be drilled if required.

The following three types of water will be used for the project:

- Untreated water – water pumped directly from the wells into the water storage tank;
- Drinking water – water from the wells that has been treated in the project treatment plant; and
- Process water – water recovered from the sedimentation ponds and pumped to the process water recovery tank.

The water from the wells will be used for the following: drinking water, service water, process make-up water, and firefighting water.

Water distribution from the water storage tank is by gravity or pumping, according to its use, in individual lines for each circuit.

After passing through the treatment plant, the treated water is stored in a nearby dedicated tank. From here, the treated water is pumped to consumption points. Treatment consists of filtration, flocculation and chlorination.

Process water is recovered from the sedimentation ponds, and used as re-pulping water in the trommels, as washing water in the screens and for the maintenance of the required levels in pump boxes. Occasionally it is used to control dust in industrial areas.

#### **3.5.2 Electrical Power Supply**

Empresa Energética do Mato Grosso do Sul SA (ENERSUL) supplies electricity to the project area by a 34.5kV transmission line. There is a 2km conventional line from the distribution point close to BR-262 to the project's sub-station. The first step-down to 13.8kV is performed at the sub-station before distribution to the load points. The main load is the processing plant sub-station where tension is further reduced to 440, 220, and 120V, to supply electricity to the electrical motors, lighting circuits, process control equipment, auxiliary equipment and other electrical devices.

Total power required is estimated 2.3MW, as negotiated with ENERSUL.

### **3.5.3 Buildings and Ancillary Facilities**

The buildings for Mine 63 include:

- Central administrative office in the city of Corumbá;
- Maintenance shop for the plant facility;
- Kitchen and dining room for 200 employees;
- Change room;
- Laboratory;
- Warehouse; and
- Small administrative office at Mine 63.

### **3.5.4 Fuel Storage Area**

Petrobrás provides a mobile fuel station at Mine 63 with a capacity of 15,000L. Petrobrás maintains the fuel station according to governmental requirements.

### **3.5.5 Sewage and Waste Disposal**

Sewage is treated through:

- Septic tank; and
- Anaerobic filter.

### **3.5.6 Laboratory**

The laboratory at Mine 63 began operations May 15, 2007. The laboratory provides sample preparation and analytical assays to support exploration and mining operations for MMX Corumbá, and quality control for the pig iron plant owned by MMX Metálicos.

The laboratory has 30 employees, 23 in sample preparation, six in the assay laboratory and one supervisor. The laboratory capacity per day is 240 sample preparations and 320 analyses. The actual production rate is about 950 samples per month with a planned increase to about 2,000 samples per month in 2008.

The laboratory procedures include:

- Sample preparation;
- Size screening;
- Iron analysis;
  - Decrepitation index, and
  - Tumble and abrasion index.
- Loss on ignition (LOI);
- X-ray fluorescence (XRF) analysis;
- Pig iron analysis;

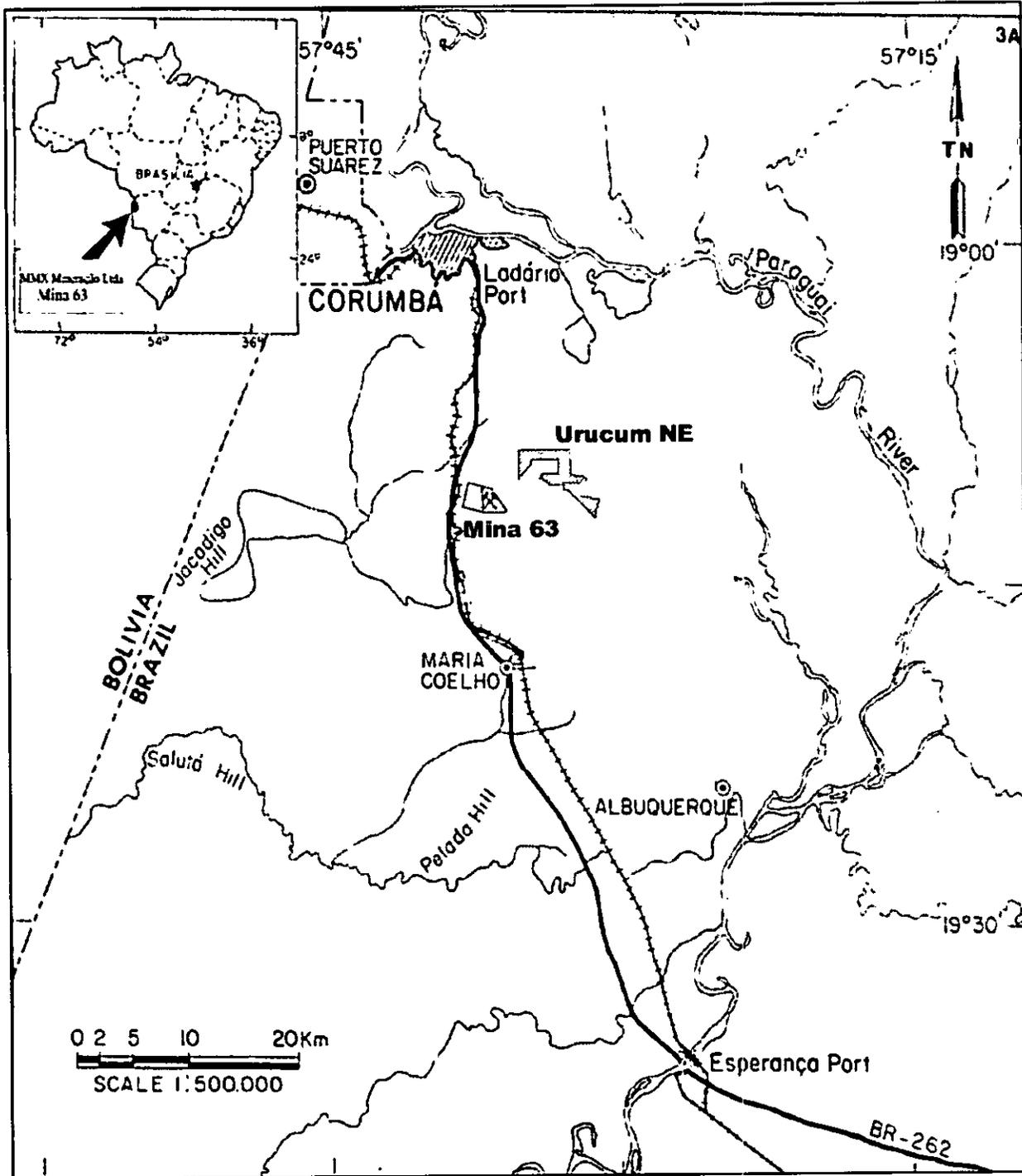
- Carbon and sulfur LECO analyses.

### **3.5.7 Communications**

The office in Corumbá has complete access to telephone and internet. The communication in the area of Mine 63 is by radio or mobile phone.

### **3.5.8 Security**

Security is provided by a contracted company, Maxima Segurança e Vigilância Patrimonial Ltda, with headquarters in Corumbá. The main access to the mine has a gate which is manned by the security company.



 <p><b>SRK Consulting</b> Engineers and Scientists</p>	<p><b>Corumbá Project, Brazil</b></p>	<p><b>Figure 3-1 Location Map of MMX Corumbá Project</b></p>	
<p>SRK Job No.: 162703.03</p>	<p><b>Source: Mineração &amp; Metálicos S.A.</b></p>	<p>Date: 02-27-08</p>	<p>Approved: LM</p>
<p>File Name: Figure 3-1.doc</p>			<p>Figure: 3-1</p>

## 4 History (Item 8)

The Corumbá Project area is located in the Corumbá municipality, Mato Grosso do Sul State, Brazil. The main economic activity of the region is mining of iron ore, manganese ore, limestone, and sand. The iron and manganese deposits have been known since the end of the nineteenth century. All manganese ore is extracted using underground mining methods while the iron ore is mined from open pits. The principal mining companies active in the region are MMX Corumbá, Mineração Urucum (Vale), Minerações Corumbaenses Reunidas (RTZ) and Fábrica de Cimento Itaú (Cement Factory -Votorantin Group).

Mining has gone on in the region for some time, but the first mining decree was issued in 1881, for the area of Morraria do Urucum (Urucum Hill Ridge). This area has a long mining history related to the Laiz and Ema Mines, which are located in the MMX mining concessions. In 1958, the mining company Sociedade Brasileira de Imóveis (SBI) started mining in the Laiz Mine area, with the extraction of colluvial iron ore. The RoM was dry beneficiated, producing 80,000t of Lump ore. The ore was transported by conventional trucks to a pig iron plant belonging to the same group, located near the SBI Port, on the road connecting Ladario to Corumbá.

In 1973, due to the low price of pig iron, work at the pig iron plant, the mine, and the ore beneficiation plant were suspended. After 1974, SBI constructed a processing plant to beneficiate the iron and manganese ore, in place of the old steel plant. This plant had the capacity to beneficiate 140,000tpy of iron ore and 30,000tpy of manganese ore. During this time, the Laiz and Ema Mines were opened. Both mines were designed to produce iron ore by open pit and manganese ore by underground methods. From 1974 to 1986, SBI produced 425,000t of Lump ore and 420,500t of manganese ore.

Between 1986 and 1993, the mining activities were restricted to underground manganese mining while the operations were leased to the Companhia Paulista de Ferro Ligas. From 1993 to 2000, SBI leased the underground manganese mine and open pit mine to Minefer LTDA.

After 2000, the mining activities were restricted to mining and beneficiation of iron ore at the Laiz Mine. SBI sold the iron ore as RoM to the Sidersul/Vetorial Group, who processed the ore using the Laiz Mine's mobile plant. In August 2005, EBX Corumbaense, presently MMX Corumbá, acquired the mineral rights for these mines, as well as the existing beneficiation plant.

After refurbishing the existing mobile crushing plant (the AZTECA plant) MMX started iron ore mining and processing operations at Mine 63 in January 2006. In July 2006, MMX started operating the main plant, and the first batch of Lump ore was shipped through Ladario Port later that month.

There has been no production at Urucum NE.

Figure 4-1 shows a schematic view of the Mine 63 project area and Urucum NE.

### 4.1 Ownership

#### Mine 63

SBI is the registered owner of mining concessions 004.019/48 and 004.084/58. MMX Corumbá is the present owner of 004.084/58 through a purchase agreement and is awaiting the change of ownership in the DNPM. MMX Corumbá controls 004.019/48 through a lease agreement with SBI.

The applications for exploration permits 868.046/05, 868.090/05, 868.126/05 and 868.138/05 were originally made by Eike Batista, the principal shareholder of MMX. The assignment of the permits to MMX was requested from DNPM on June 23, 2006.

The exploration permit 868.083/05 was purchased from Albertina Maria Brazoli, and assignment of the permit to MMX was requested from DNPM on November 22, 2006.

### **Urucum NE**

The transfer of ownership for the mining and exploration permits at Urucum NE is in progress, pending the approval of the Conselho de Defesa Nacional (National Defense Council) (CDN). The CDN is a federal bureau charged with verifying compliance with Law 6.634, which deals with the border zone and controls the procedures and requirements that are followed by businesses located in this region. Although MMX holds a previously issued permit (assentimento prévio) allowing MMX to operate in the border zone, new documents must be submitted to the CDN for each new mine acquisition. During the review process by the CDN, the mining and exploration permits in the DNPM remain in the name of former owner. Ownership will be transferred to MMX upon approval by the CDN after the completion of their review.

## **4.2 Project Expenditures**

There are no records of investments by the former owner in this area. MMX has invested about US\$28M, on mineral rights acquisition, exploration, beneficiation plant, environmental work and other studies at Mine 63. MMX has spent about US\$306,000 in exploration and \$1.0M in acquisition of mineral rights at Urucum NE. An additional \$13M must be paid once all mineral rights are transferred.

## **4.3 Historic Exploration**

The exploration methods of the previous owners of Mine 63 are unknown. However, it is the understanding of the MMX geologists that there was no exploration as such and that mining proceeded based on the surface expression of the iron-bearing rock.

Exploration activities in the Urucum NE area were initiated in the mid 1900's by Nicolas Haralyi, a mining engineer, and continued by his son Nicolau, a mining engineer and geologist. Exploration by the Haralyi's consisted of hand-excavated shafts on a 200m grid. MMX became interested in the area for the potential to produce Lump ore. In February 2007, MMX initiated an exploration campaign in this area, also digging had excavated shafts on 400m, 200m and 100m grids.

## **4.4 Historic Mineral Resource Estimates**

There were no published mineral resource or reserve statements for Mine 63 prior to MMX's involvement. MMX presented the first mineral resource estimates to the Bolsa de Valores de São Paulo (BOVESPA) in July 2006 during the Initial Public Offering of MMX common shares. The total geological resources of the Mine 63 were reported to be 65.0Mt of Measured and Indicated Resources and 23.7Mt of Inferred Resources at an average grade of 58% Fe. These resource numbers conform to the Brazilian Mining Code Definitions of Resources/Reserves Classification and are not compliant with NI 43-101 guidelines. MMX produced a NI 43-101 Technical Report on Resources and Reserves as of December 2006 in May 2007 in conjunction

with listing on the Toronto Stock Exchange (TSX). The resources and reserves listed in that report are contained in Tables 4.4.1 and 4.4.2 respectively.

**Table 4.4.1: Mineral Resources\* – Mine 63- Corumbá Project as at December 2006**

Classification	Tonnes (Mt)	Fe (%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	P (%)	Mn (%)	TiO <sub>2</sub> (%)	LOI (%)
Measured	6.5	61.1	8.08	2.59	0.08	0.04	0.14	1.70
Indicated	40.7	52.1	16.75	2.67	0.06	0.05	0.14	1.51
Measured and Indicated	47.2	53.2	15.56	2.66	0.06	0.05	0.14	1.54
Inferred	14.2	53.4	15.96	2.82	0.06	0.55	0.15	1.66

\* Tonnes are reported on a wet basis  
Fe CoG is 30%

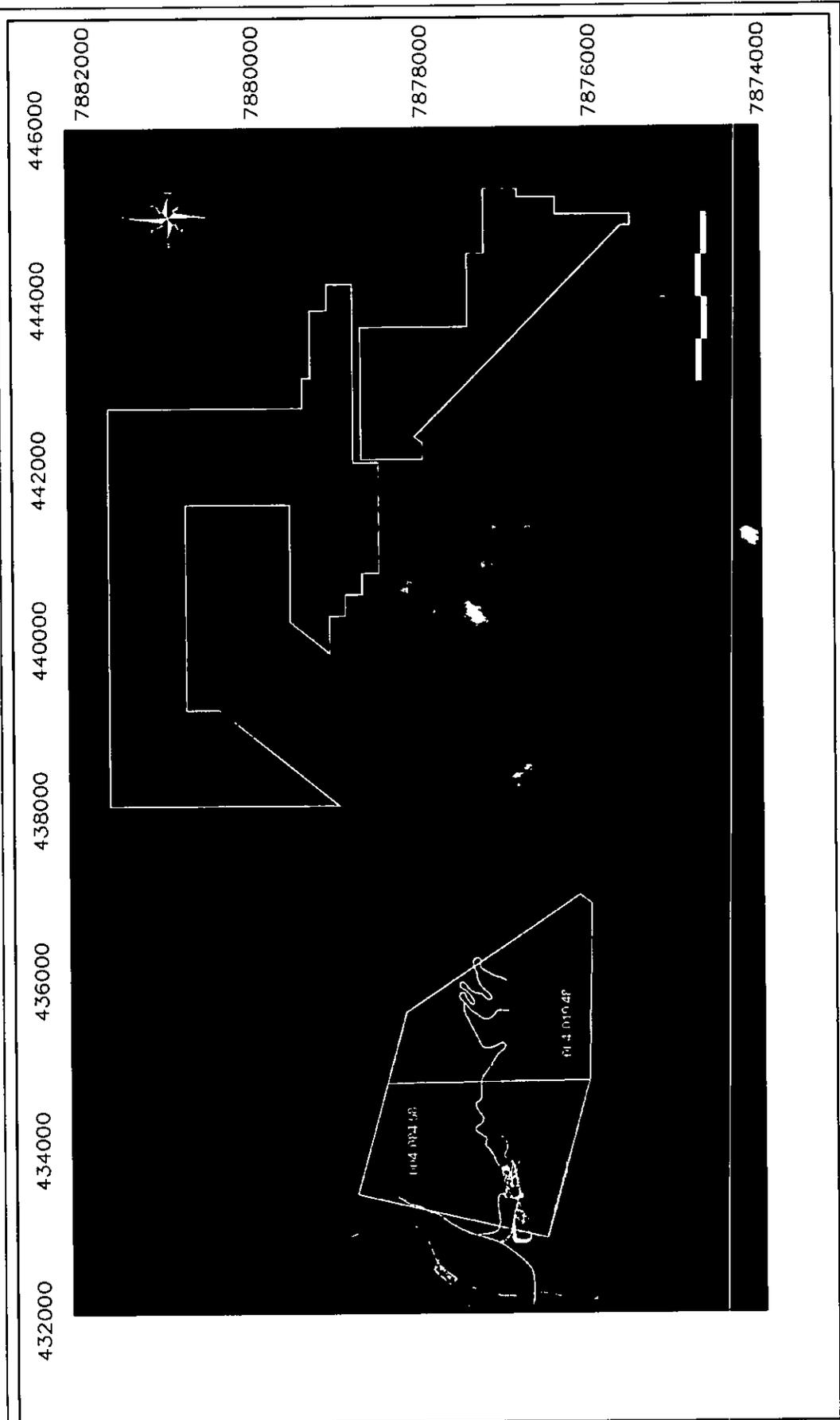
**Table 4.4.2: Ore Reserves\* – Mine 63 Corumbá Project as at December 2006**

Classification	Tonnes (Mt)	Fe (%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	P (%)	Mn (%)	LOI (%)	TiO <sub>2</sub> (%)
Proven	5.7	61.1	8.07	2.56	0.08	0.03	1.68	0.14
Probable	25.3	54.8	14.92	2.49	0.06	0.43	1.45	0.14
<b>Total</b>	<b>31.0</b>	<b>56.0</b>	<b>13.7</b>	<b>2.50</b>	<b>0.06</b>	<b>0.37</b>	<b>1.49</b>	<b>0.14</b>

\*Tonnes are reported on a wet basis  
Fe CoG Eluvium is 48.0% and in Colluvium is 56.1%  
Average Fe price used in reserve is US\$32.02

The Haralyi family estimated resources at Urucum NE at 34.4Mt at 60% Fe and submitted those numbers to the DNPM in their Exploration Final Report. The iron content was estimated through a correlation with density data. The volume of the area was based on surface mapping and the average thickness of the mineralized intervals in the exploration shafts. The Haralyi resource is not compliant with NI 43-101 guidelines and should not be relied upon.

This report presents the mineral resources and ore reserves of Mine 63 updated by depletion through September 2007 and mineral resources at Urucum NE according to CIM standards and NI 43-101 guidelines.



**Figure 4-1**

**Schematic View of Mine 63 Project  
and Urucum NE Exploration Targets**

Date: 02-27-08  
Approved: LM  
Figure: 4-1

**Corumbá Project,  
Brazil**

**Source: Mineração & Metálicos S.A.**



SRK Job No.: 162703.03

File Name: Figure 4-1.doc

## 5 Geological Setting (Item 9)

### 5.1 Regional Geology

The Corumbá Project lies within the Urucum iron-manganese district which is located along the Brazilian-Bolivian border and extends into the eastern areas of both Paraguay and Bolivia, and includes an area of 200km<sup>2</sup>. The Urucum deposits are associated with banded iron formations (BIF), locally known as jaspelites. The iron and manganese deposits are found in the plateaus which rise from the plains of the Paraguay River and near Mutum Mountain.

The iron ore deposits of Corumbá have been known since the end of the 19<sup>th</sup> century and the region has been the object of numerous publications.

The regional stratigraphy of the area is based on the 1:1,000,000 scale Geological Map of Brazil compiled in 2004 by Companhia de Pesquisa e Recursos Minerais (Brazilian Geological Survey) (CPRM). The regional geology consists of Proterozoic-age igneous and metamorphic rocks, granite intrusions, and acid intrusives. The rocks are in faulted and unconformable contact and are overlain by Quaternary sedimentary deposits which account for approximately 60% of the cover in the area. Figure 5-1 shows the stratigraphic column for the project area based on work by CPRM and the Geological Map of the Corumbá Region.

#### 5.1.1 Lithology and Stratigraphy

##### Basement Rocks

The basement rocks are a part of the southern Amazon Craton and are composed of the Lower to Middle Proterozoic Rio Apa Complex of metamorphic rocks. These rocks include gneiss, granite gneiss, biotite gneiss, granite, diorite, and schist as well as quartz diorite and quartz gabbro dikes. The rocks have a complex evolutionary history including a period of ductile deformation and simultaneous recrystallization during the Transamazonian thermo-tectonic event. Toward the end of this period, the rocks underwent potassic alteration. The complex has been dated at 1.7Ga.

The regional stratigraphic sequence also includes the following, which are not observed in the Corumbá Project area:

- Pontes e Lacerda Group – metavolcanic sediments of Middle Proterozoic age;
- Santa Helena Intrusive Rocks – syenogranites and monzogranites with late aplite and pegmatite phases;
- Aguapei Group – metasedimentary rocks; and
- Cuiabá Group – metasedimentary rocks.

In the Corumbá Project area, the Rio Apa Complex is overlain by the following rock groups.

##### Jacadigo Group

The rocks of the Jacadigo Group of Upper Proterozoic age, host the iron and manganese deposits. These rocks form plateaus rising up to 950m over the Pantanal plains, distributed in an area of 500km<sup>2</sup>. On the Brazil-Bolivia border, the Mountains of Santa Cruz, São Domingos, Grande, Rabichão, Urucum, Tromba dos Macacos and Jacadigo/Mutum are composed of the Jacadigo Group. In the Yacuses area, in Bolivia, about 50km west of Mutum, small hills are

found, which are also composed of magnetic non-leached jaspelites. The presence of jaspelites in this area of Bolivia indicates that the deposition basin of the iron sequence was large and not restricted to the Corumbá region.

Dorr (1945) divided this group into three formations, from base to top: Urucum, Córrego das Pedras and Banda Alta. This division is used by the other mining companies in the area and at Mine 63 with some adaptations as described in Section 5.3 on Local Geology.

The Urucum Formation, at the base of the Group, is composed of arkose and conglomerate with limy cement and has a maximum thickness of 400m. Toward the top, the cement is predominantly iron-manganese, characterizing the transition to a more ferruginous depositional environment. The overlying Córrego das Pedras Formation is a package of ferruginous clastic rocks with iron-manganese cement, about 100m thick, composed of ferruginous arkose, quartz sandstone, and some intercalations of jaspelite. Near the top, the ferruginous arkose grades to sandstone and to ferruginous jaspelite with intercalations of manganese (criptomelane). The Banda Alta Formation is a package of ferruginous sediments with manganese intercalations at the. Locally, there are layers of jasper, some centimeters thick with irregular shapes due to fragmentation and deformation with subordinate dropstones of granite.

The Banda Alta Formation has a maximum thickness of 320m and is characterized by the alternating layers of jaspelites and clastic ferruginous sediments. The jaspelite has an average Fe content of 55% in the area of Mineração Corumbaense Reunida S/A - MCR, and is considered to be one of the highest primary contents among the deposits in the world. In the Mutum area the average content found in the jaspelites is in the order of 46% Fe.

Almeida in 1945 (cited by Del'Arco et al., 1982) proposed the division of the Jacadigo Series into two groups: the lower, Urucum, composed of arkose, conglomerate, and limy and pyritiferous siltstones; and the upper, Santa Cruz, composed of jaspelite, arkose sandstone, with manganese oxide lenses, layers of jasper and a package of alternating jasper and hematite laminae, constituting a banded iron ore formation.

The two above mentioned studies, performed by Dorr II (1945) and Almeida in 1945 (cited by Del'Arco et al., 1982), form the basis of subsequent studies. In recent studies, the Jacadigo Group has been subdivided into the Urucum Formation and Santa Cruz Formation. This nomenclature is used in more recent work, including the geological map of Brasil - CPRM (2004), which is the base for the regional geological map of the Corumbá region presented herein.

### **Puga Formation**

The Puga Formation, which is not found in the Corumbá Project area, contains paraconglomerates and diamictites with boulders of granite, quartzite, schist, limestone and quartz with silty or sandy cement. To some authors, this formation is at the base of the Corumbá Group.

### **Corumbá Group**

The stratigraphic relation between the Jacadigo Group and the Corumbá Group has been the subject of interest of various authors, but as of yet there is no consensus. Almeida in 1945 and in 1965 (cited by Del'Arco et al., 1982), suggested an interdigitation between the Jacadigo Group and the Corumbá Group. Other authors suggested joining the two groups into a single unit. The Corumbá Group, of Upper Proterozoic age, contains three formations: Cerradinho, Bocaina and

Tamengo Formations. The Cerradinho Formation, which does not outcrop in the Corumbá Project area., is composed of sandstones, siltstones, shales, marls, limestones, dolomites and thin chert beds, with arkose and conglomerate at the base. The Bocaina Formation contains dolomite, dolomitic limestones with oolites and stromatolitic structures, and marls. This package of carbonate rocks is up to 300m in thickness. The Tamengo Formation is characterized by dark grey limestone alternating with red and grey shales and siltstone and thin layers of micaceous and limy sandstone and oolites. This package, about 120m thick, presents parallel and cross stratification, ripple marks and intraformational breccia. Sedimentary deposits of the Quaternary cover Tamengo Formation.

The following units are part of the regional stratigraphy, but are not present in the Corumbá Project area:

- The Upper Proterozoic Alto Paraguai Group - contains marls, limestone, dolomite sandstone, shale and conglomerate;
- São Vicente Intrusive Rocks – granitic rocks that intrude the metasediments of the Cuiabá Group and are related to Vulcanicas Mimoso, a group of volcanic rocks. The rocks have been dated at 506Ma;
- Coimbra Formation – Silurian age sandstone and conglomerate with silty-ferruginous cement;
- Paleozoic sedimentary rocks related to the Paraná sedimentary basin;
- Ponta do Morro Intrusives – granite and riebeckite dated at 84Ma; and
- Tertiary sediments – lateritic deposits, with local ferruginous concretions.

#### **Quaternary Sediments**

These sediments cover most of the lowlands and plains related to the lowlands of the Paraguay River. They include the Pantanal Formation, of Pleistocene age, and the Pantanal deposits, the Xaraiés Formation and the Alluvial Deposits of Holocene age.

#### **Pantanal Formation**

The Pantanal Formation consists of colluvium, eluvium and alluvium found in the lowlands and plains. Three facies can be distinguished: the Colluvial Deposits, the Alluvial Terraces and the Alluvial Deposits.

The Colluvial Deposits consist of detrital sediments, partially laterized, of conglomerate, sand, silt and clay. The distribution of the deposits is irregular. They occur at the northwestern edge of the Paraná Basin and at the foot of the slopes of the Urucum, Santa Cruz, Grande and Rabichão Mountains.

The colluvial deposits at the foot of the slopes of the Urucum Mountains contain detrital sediments, and boulders of jasperite and banded hematite, which originated mainly from the Santa Cruz Formation. These rudaceous fragments, together with a ferruginous cement in the clay-sandy matrix, constitute a limonitic hardpan. The silica in the fragments has been leached thereby increasing the Fe grade. These deposits host the highest-grade material in the Corumbá Project area.

The alluvium terraces are formed by semi-consolidated clay-sandy sediments, partially laterized, and with an irregular distribution around the mountains.

The alluvium deposits are formed by clay, silt and sand sediments with a continuous distribution in the flood plain areas that are a part of the hydrographic basin of the Paraguay River.

#### Lowland Deposits

The lowland deposits are related to the areas of seasonal floods and contain sand and clay sediments, rich in organic material.

#### Xaraiés Formation

The Xaraiés Formation is characterized by limestone tuff with fossil plants, travertine with gastropods, and conglomerates with limy cement. This formation occurs in the regions located between the Jacadigo Mountains and Morrinhos Stream, to the west of Lagoa Negra and to the south of Zanetti Mountains, overlaying rocks of the Corumbá and Jacadigo Group.

#### Alluvial Deposits

The Alluvial Deposits are formed by unconsolidated material, such as sand, gravel, silt and clay related to the deposits of the flooded plain areas belonging to the hydrographic basin of the Paraguay River.

## **5.2 Structural Geology**

The Proterozoic units exhibit folds and faults related to the compressive and extensional events in the area. There is a direct correlation between the structures and the lithology. The rocks of the Rio Apa Complex are sheared and show cataclastic features related to different tectonic phases. Almeida in 1965, 1966 and 1967 (cited in Marini et al., 1984) and Almeida in 1968 suggested that the sediments of the Cuiabá, Jacadigo, Corumbá and Alto Paraguai Groups are related to the Paraguay-Araguaia Geosyncline and each one of these groups present distinct structural behavior. The Cuiabá Group located in the inner portion of the geosyncline, represents the earliest sedimentation and is highly folded and metamorphized to greenschist facies. The other groups are younger than the Cuiabá Group and are located in the outer portion of the orogenic arch, near the Amazon craton. The Jacadigo and Corumbá Groups contain folds with axes striking NNW-SSE and normal faults.

The dominant regional structures are northeast-trending faults between the Mountains of Mutum and Jacadigo, Urucum and Tromba dos Macacos, and Urucum and Santa Cruz. One of the most important structures is the Urucum Fault System, a set of northeast striking normal faults. Figure 5-2, taken from the geological map of the RADAM Project (1982), illustrates the structural trends.

Locally, the Urucum Mountains are cut by a set of normal faults that strike northeast. The fault separating the Urucum and Santa Cruz Mountains trends N50°E with a maximum offset of 300m, with the Urucum block down-dropped relative to the Santa Cruz block. Almeida in 1945 (cited in Del'Arco et al., 1982), considered that the Urucum Fault System underwent reactivation through time with the last movement in the Tertiary period during the Andean Orogenesis.

The rocks of the Jacadigo Group form a regional anticlinal structural cut by northeast-striking faults, sub-parallel to the anticlinal axis resulting in horst and graben structures. The faults and

associated fractures in the jaspelite bodies provided the ground preparation that favored the enrichment of the iron ore in the region.

In the Corumbá region the limestones of the Corumbá Group also exhibit faults parallel to the Urucum Fault System. The Lajinha synclinal structure located northeastern of the Urucum Mountain is triangular in shape with the axis striking N55°E. This fold is bound by faults to the northeast and south. The southern limb is in fault contact with the gneiss-granites of the Rio Apa Complex.

### 5.3 Local Geology

Mine 63 and Urucum NE are located on the western and eastern flanks, respectively, of Urucum Mountain which is composed of rocks of the Jacadigo Group overlying the basement granite and gneisses. MMX Corumbá uses Almeida's (1945, cited by Del'Arco et al., 1982) description of the Jacadigo Group in which it is composed of the Urucum and Santa Cruz Formations with the latter consisting of two members, the Córrego das Pedras and the Banda Alta. Table 5.3.1 summarizes the local stratigraphy in the immediate area of Mine 63 and Figures 5-3 and 5-4 show the geology in the immediate vicinity of Mine 63 and Urucum NE, respectively.

**Table 5.3.1: Local Stratigraphy – Mine 63 Area**

Group	Formation	Member	Facies	Heading	Deposit Type	Lithology Description
	Pantanal				Colluvium	Partially laterized conglomerates and sediments
Jacadigo	Santa Cruz	Banda Alta	Murucu	Morro Grande		Banded Chert
				Água Verde	Eluvium	Jaspelite/Eluvium
						Banded Mn/Nodular Mn and
		Córrego das Pedras	Urucum	Rabicho		Arkose/Conglomerate with hematitic cement.

#### 5.3.1 Santa Cruz Formation - Córrego das Pedras Member

The Córrego das Pedras Member of the Santa Cruz Formation outcrops near Highway BR-292 and underlies the colluvium deposits that surround the nearby Urucum Mountain. These rocks consist of ferruginous arkose, arkosic sandstone and conglomerate. The arkose is generally massive, dark gray, fine- to coarse-grained and has a quartz-feldspar composition. Cross and parallel stratifications are commonly exhibited. The sandstones are predominantly gray, with some red units, fine-grained to conglomeratic and occur as intercalated beds with the arkose. Some intercalations of siltstones are also found in the sequence.

The colluvium deposits rest unconformably on the sandstones, arkoses and conglomeratic sandstones. Where exposed to surface weathering, this unit develops a yellowish clay-sandy soil.

#### 5.3.2 Santa Cruz Formation - Banda Alta Member

The Banda Alta Member of the Santa Cruz Formation is characterized by jaspelites with millimeter scale bandings and subordinate layers of quartz-feldspar sediments. The basal portion of the sequence contains clastic and ferruginous sediments, with up to four manganese layers varying from 0.5m to 4m thick.

### **5.3.3 Mine 63 Geology**

#### **Colluvial Domain**

The Colluvial Domain is characterized by the detrital deposits around Urucum Mountain, with fan or elongate shapes distributed on the flanks of the Mountain and the plains area. They comprise packages of sediments, with thickness varying from 0.5 to 32m, with an average of 13m. These deposits are composed of ferruginous sediments from the Banda Alta Formation that were deposited on the Córrego das Pedras Formation.

The angular fragments vary from pebble to boulder size and are constituted mainly of banded hematite, ferruginous jaspelite and by rare ferruginous arkose. The fragments are randomly distributed, although the size tends to decrease in proportion to the distance from the base of the Mountain.

A sedimentary breccia occurs in the central west portion of Mine 63 area. It is contemporary to the colluvial deposits and it consists of fine to medium sized clasts of hematite jaspelite, partially to totally leached, and by coarse clasts of ferruginous sandstone and of hematite jaspelite partially leached with limonitic cement. The breccia trends east-west and is about 2,500m long, 50 to 200m wide, and averages about 10m thick, with a maximum thickness of 16m.

The colluvial deposits are classified as proximal, medial or distal deposits according to their distance from the source area. The higher Fe contents are related to the deposits near the source area while the laterite deposits are far from the source area.

#### **Eluvial Domain**

The Eluvial Domain was generated by in situ weathering action through total and/or partial hydrolyzation, in a process of silica leaching and subsequent enrichment of iron in the hematite jaspelites of the Banda Alta Formation.

In the area of Mine 63, the eluvium is located on the top and upper slope of the Urucum Mountain, and has an average thickness of 15m. The effects of leaching decrease from the top toward the base of the sequence, followed by an increase in the SiO<sub>2</sub> concentration and a decrease of Fe. In general, the silica leaching increases with the increased frequency of the fractures.

### **5.3.4 Urucum NE Geology**

#### **Colluvial Domain**

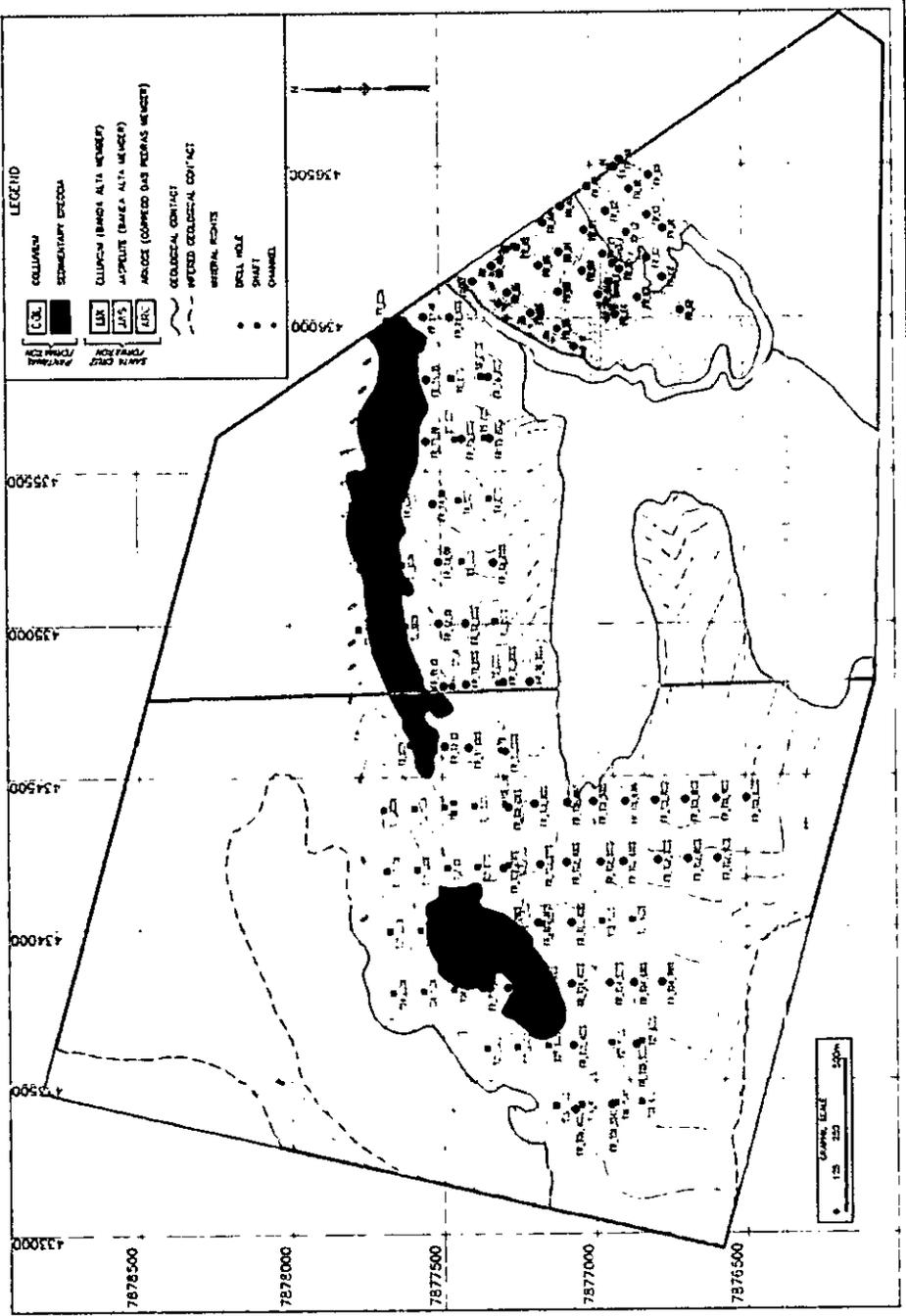
The geology of the Urucum Project area is related to the colluvial deposits of the northeast region of the Santa Cruz Mountain. These colluvial deposits are composed of clastic hematite-jaspelite, arkoses, ferriferous sandstone, as well as erratic milky quartz and granitoid fragments. The bedrock consists of a saprolitic sequence formed from the arkose and, in some cases, the granitoid basement.

In the southern portion of the deposit, a morphologic depression is observed at the top of the colluvial deposit. A colluvial channel was detected through a geophysical survey which may be related to fault zones that increase the erosive processes on the hillside.





# Geological Map - Mine 63 - Corumba Project

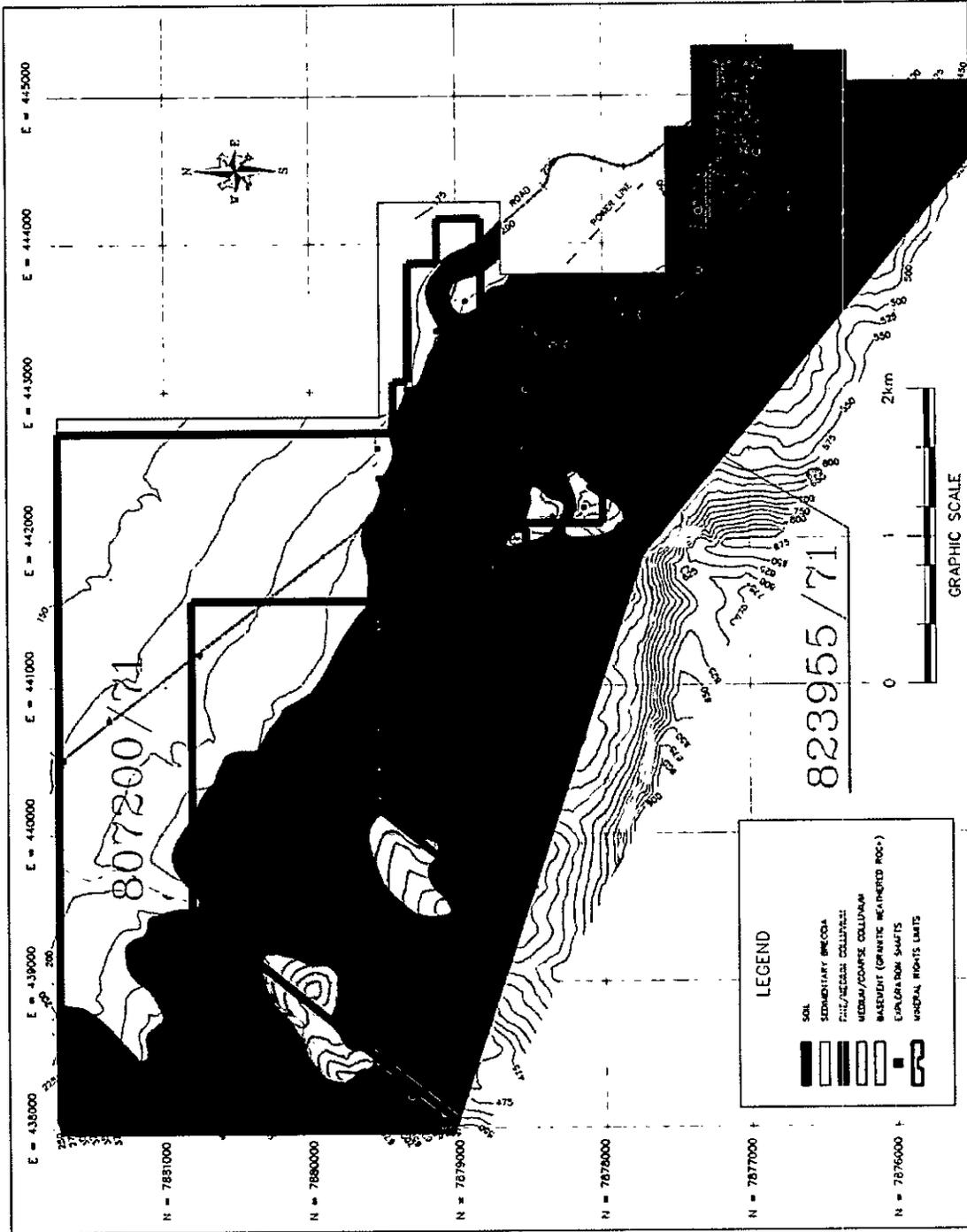


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 File Name: Figure 5-3.doc

**Corumbá Project,  
 Brazil**  
**Source: Mineração & Metálicos S.A.**

**Figure 5-3  
 Geologic Map of the Mine 63  
 Area**

Date: 02-27-08  
 Approved: LM  
 Figure: 5-3



SRK Job No.: 162703.03  
 File Name: Figure 5-4.doc

Corumbá Project,  
 Brazil

Source: Mineração & Metálicos S.A.

**Figure 5-4**  
**Geologic Map of Urucum NE**

Date: 02-27-08  
 Approved: LM  
 Figure: 5-4

## 6 Deposit Types (Item 10)

According to Haralyi and Walde (1986), the iron ore of the Jacadigo Group is described as jaspelite, banded hematite or Banded Iron Formation (BIF). In the central part of the basin, there is an interlayering of hematite laminae and ferruginous jasper. At the margin of the basin, there is no banded character, passing to a chemical sedimentation with major clastic contribution. There is a polymictic conglomerate with ferruginous cement in the marginal parts of the basin and on top of the iron sequence.

Haralyi and Barbour (1974), studying the Banda Alta Member at the Urucum Mountain, noted a progressive increase of the average grade of silica in the depositional sequence corresponding to a diminishing of the relative thickness of hematite compared to jaspelite. The variation in layers is related to a gradual diminishment of the Fe<sup>++</sup> element in the water of the basin, culminating with the deposition of only silica extracts. Laterally, the diminishing of the average thickness of laminae of hematite and in the increase of jasper laminae can also be noted.

In the area of the Urucum Mountain, the central part of the basin, the average Fe content in the banded hematite ranges from 55% to 60.5%. At the margins of the basin, the Fe contents range from 35% to 50%.

The origin of the iron in this thick jaspelite sequence with high primary Fe content is quite controversial. The jaspelite package in the project area and surrounding areas is characterized by alternating layers of extremely fine hematite and jasper, without magnetite. Some jaspelites exhibit small lenses of jasper eyes. No carbonates are observed, although some textures resemble carbonate substitution by silica. There are two explanations for the absence of carbonate in the jaspelites: a) the carbonate was replaced by silica in the diagenetic process; b) the carbonate was totally destroyed by the climatic conditions, caused by the intense percolation of the meteoric waters, facilitated by the high degree of fracturing of the jaspelite package. The presence of carbonates in the Mutum area is outstanding, in the form of siderite, calcite and dolomite, in percentages varying from 10 to 15%. The presence of magnetite in the jaspelites of Mutum and north of Rabicho is probably an indication of deeper more reducing waters, or could also be a result of the slightly higher metamorphic degree in Mutum area.

The resource and reserves at Mine 63 and Urucum NE are contained within elluvial and colluvial deposits related to the weathering of the jaspelites and BIF.

## **7 Mineralization (Item 11)**

### **7.1 Eluvial Deposits**

The eluvium originates in the primary jaspelite which has been fractured and undergone weathering and leaching of silica. The Fe content of the eluvium is directly related to the content of the original primary rock. At the marginal parts of the basin, there is lateral variation and even a banding in the Fe contents of the eluvial ore, indicating primary variations in the content of the iron.

The iron enrichment in the eluvium resulted from in situ silica leaching of the primary jaspelite and therefore forms a nearly continuous zone over the bedrock of the jaspelite. At Mine 63, it is located on the top and slopes of Urucum Mountain and has a thickness that varies from less than 1m to over 30m, with an average of about 15m. There is no eluvium at the Urucum NE deposit.

The enrichment factor of the eluvial material, in relation to the primary rock, depends on the grain size and the dimension of the fragments. At the marginal parts of the basin, where sedimentation was mainly clastic, the enrichment of the eluvial material is directly proportional to the iron content in the jaspelite from which it originated. The same is not true in the central part of the basin, where sedimentation is mainly chemical.

### **7.2 Colluvial Deposits**

The colluvium is the material deposited at the base of Urucum Mountain where the Banda Alta member outcrops. The main source rock is the jaspelite, with a secondary contribution from the arkose of the Urucum Formation. The colluvium is formed by recent clastic deposition composed mainly of angular fragments of leached hematite jaspelites and arkose. The colluvial deposits which are richer in hematite fragments and jaspelite, leached or not, concentrate near the rock source, that is, near the mountain. The total iron content is directly proportional to the distance from the source and has been enriched by the leaching of silica. The breccia area has undergone cementation and has a more consolidated nature than the colluvium.

The colluvium, including the breccia, at Mine 63 has an elongate shape, about 3km long and 1.25km wide, and varies from less than 1m to over 30m in thickness, with the thickest sections closest to the source rock and average thickness of 22m. The colluvium at Urucum NE is more than 6km in length and 2km in width.

## **8 Exploration (Item 12)**

### **8.1 Exploration of Mine 63**

The exploration methods of the previous owners of the Corumbá Project are unknown. However, it is the understanding of the MMX geologists that there was no exploration as such and that mining proceeded based on the surface expression of the iron-bearing rock.

The first exploration work by MMX in the region of Mine 63 was the excavation of a series of hand dug exploration pits. The pits, excavated with pick and shovel, are 1.5m<sup>2</sup> in plan view and have vertical walls which are 6m deep in the colluvium and 10m deep in the eluvium. Because of the shape of the pits, they are referred to as shafts. The shafts were excavated on a grid of 100m x 100m in the eluvium area and on a grid of 200m x 100m in the colluvium, and were excavated through the mineralized zone and into the bedrock.

Following this first stage of exploration, a core drilling program was implemented using a Brazilian contractor, Geosol – Geologia e Sondagens Ltda (Geosol). The drilling extended the grid in the colluvium to the north and also twinned some of the exploration shafts.

Additional exploration consisted of channel samples collected during the pre-stripping phase of the mine, where vertical samples were taken in the face of the mountain and surface mapping at a scale of 1:5000.

The drilling and sampling procedures used by MMX are further described in the following sections.

The exploration identified a large area of mineralization associated with the colluvium and eluvium. SRK considers the methods used by MMX to be appropriate for this type of deposit.

### **8.2 Exploration of Urucum NE**

The exploration method employed by the former owners of Urucum NE consisted of the excavation of more than one hundred exploration shafts on a 200m x 200m grid. The exploration methods were not rigorous and the shaft grades and size fractions were inferred using a correlation formula between density and iron grade.

In February 2007, MMX Corumbá started an exploration campaign in which shafts were manually excavated to bedrock or to a maximum depth of 5.0m. The shafts were centered on 100m, 200m and 400m grids).

Exploration lines with spacing at 400m, 200m and 100m, were surveyed by BXF Topographia Ltda (BXF), a topographic survey company with headquarters in Ladário, MS, with supervision by the MMX exploration staff. The surveying was done with a total station Topcon, model GPT3000LW and a total station Pentax, model PCS1S. The methodology was by open polygonal, linked to the mark 1,065 IBGE (Brazilian Official Mark on Santa Cruz Hill) with the UTM coordinates N-7,876,829.21 and E-437,739.16, elevation of 1,065.44 m, DATUM SAD 69. The topographic surface was generated using points on the exploration lines, and a laser survey (ALTM - Airborne Laser Terrain Mapper) performed by GEOID Company, between the lines. The surface was generated using Autodesk software AutoCAD 2006.

The locations of the shafts were surveyed by BXF with supervision of MMX team, using a total station Topcon. The exploration campaign was completed with 159 shafts.

### 8.2.1 Geophysics

Geophysical surveys in the Urucum NE project were conducted by HGeo – Tecnologia e Informação em Geociência Ltda (HGeo), a contracted company. They used IP method (Induced Polarization), an electrical geophysical method, in lines L27 (2,020m), L28 (2,480m), L29 (2,480m) and L34 (1,400m). The main goal was to determine the contact between the colluvial cover and the arkose basement and, in some cases, the contact with granitic-gneissic basement.

The results were presented in electroresistivity sections, where the scale of colors varies from red (more resistive) to blue (more conductive). The colluvial cover is more resistive than the basement. The transition between the conductive and resistive regions of the sections can be interpreted as the contact between two units.

The preliminary results show an error of about 10% in the maximum depth in the more level areas and about 15% in the regions with irregular relief. This means the interpreted contact in the resistivity sections in the exploration area could show an error up to 6m, depending on the relief.

MMX will continue with this type of geophysical survey, developing more tests on the areas with drilling information at Mine 63, to better calibrate the basal contact delineation. MMX hopes to use this methodology to complement drilling information and support inferred resources estimation.

## 9 Drilling (Item 13)

### 9.1 Mine 63

The first drilling at Mine 63 was initiated in November 2005 by MMX. All drilling was conducted by Geosol, a Brazilian company with experience in iron ore drilling. The holes were drilled to an average depth of 16m, with a maximum depth of 40m, with core size of 6.4cm (HQ). All drillholes were vertical and no downhole surveys were taken because of the short length of the holes. The mineralization forms a shallow zone, from less than 1m to about 40m over the bedrock, and is best drilled with vertical holes; the lack of downhole surveys is not a concern in these short holes.

Drilling in the colluvium area is on a north-south grid with sections 200m apart and the holes spaced at 100m on section. The drillholes in the eluvium area are on a 100m x 100m grid oriented N50°E. The holes in both areas were drilled into the bedrock before being halted, and thus penetrate the entire mineralized length.

The drill core was placed in wooden boxes approximately 1m long with 3 sections to contain the core. The drill intervals were marked with wooden plates and the recovery was measured by the drill contractor with supervision by MMX personnel. The core was photographed, logged, split, and sampled by MMX personnel in a core facility at Mine 63.

The drillhole collars are marked with a small concrete slab with the hole number inscribed on an aluminum tag. The drill hole collars were surveyed by BXF.

The shafts were excavated by pick and shovel to a maximum depth of 16m and were 1.5m x 1.5m in plan view. The shafts were sampled in vertical channels by MMX personnel. Channel samples were taken during the pre-stripping phase of mining.

The resource database consists of drillholes, channel samples, and shafts and will be referred to as drilling in this report. A summary of the drilling is given in Table 9.1.1 and the locations are shown in Figure 9-1.

**Table 9.1.1: Drilling in Mine 63, Corumbá Project**

Sample Type	Number	Total (m)	Average Depth (m)	Minimum Depth (m)	Maximum Depth (m)
Channel Samples	18	210.2	11.7	4.4	20.6
Shafts	102	640.3	6.3	0.1	13.6
Drill Holes	81	1312.0	16.2	4.1	41.0
<b>Total</b>	<b>201</b>	<b>2,162.5</b>			

### 9.2 Urucum NE

The excavation of exploration shafts in the Urucum NE area began in February 2007. The exploration shafts were excavated manually with pickaxes and shovels to a maximum depth of 5m and with plan dimensions of 1.5m x 1.5m. Material from the shafts was placed in separate piles for each 1m of depth; this material was used for metallurgical tests. Geological samples were collected in vertical channel samples located in the center of one wall of the shaft. The channel was 0.2m wide and 0.3m deep, and the length of the sample was determined by lithology. Shafts where the colluvium was less than 1.5m were not sampled.

The shafts were located on three different grids: 400m x 400m, 200m x 200m and 100 x 100m. The 400 x 400 m spacing is the initial exploration grid. MMX later infilled the grid spacing to 200 x 200m and 100 x 100m. A summary of the exploration shafts is given in Table 9.2.1 and the locations are shown in Figure 9-2.

**Table 9.2.1: Shafts at Urucum NE, Corumbá Project**

Sample Type	Number	Total (m)	Average Depth (m)	Minimum Depth (m)	Maximum Depth (m)
Shaft	159	703.42	4.4	0.09	5.0

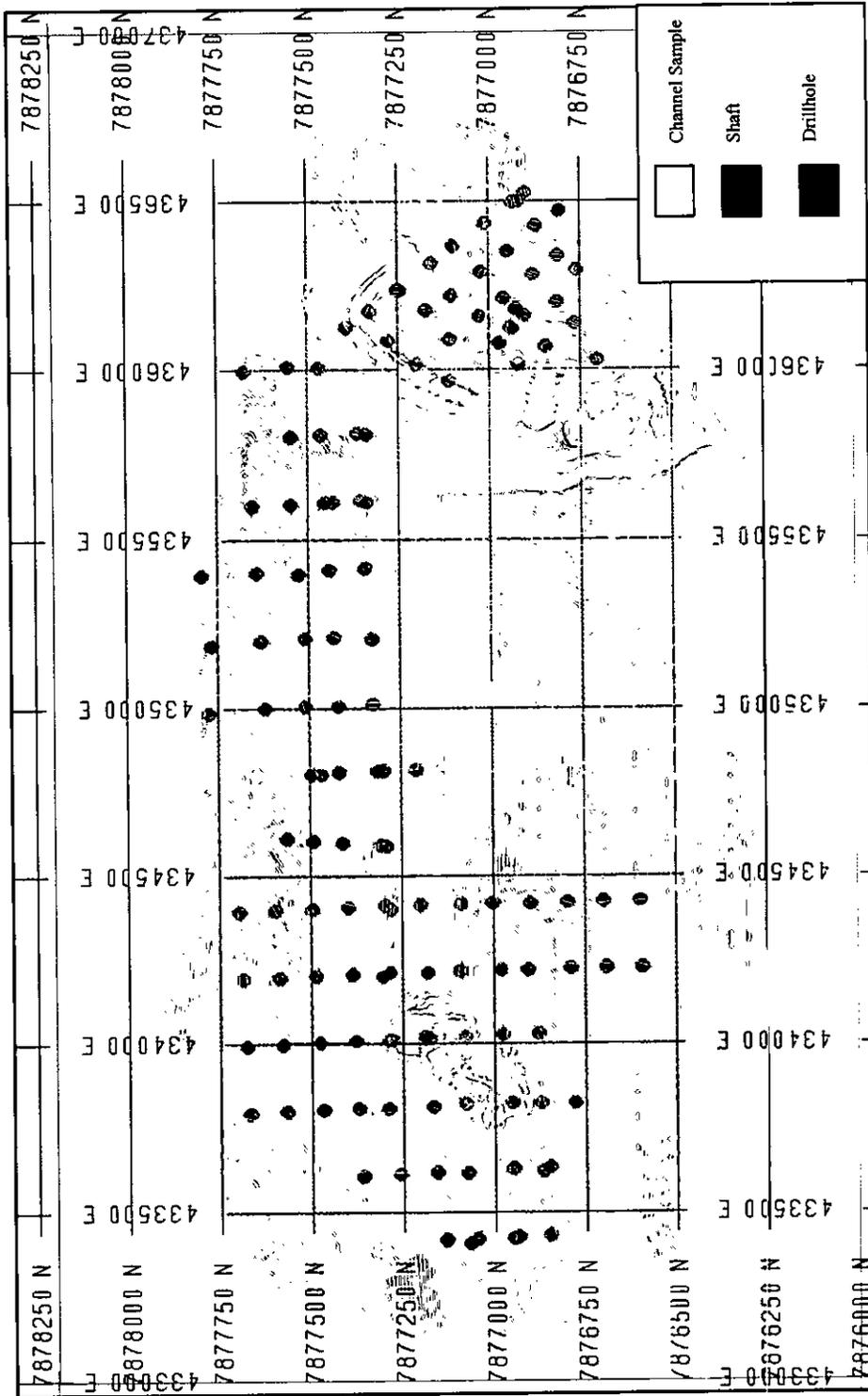


Figure 9-1

Drillhole and Sample Locations,  
Mine 63 Corumbá Project

Date: 02-27-08 Approved: LM Figure: 9-1

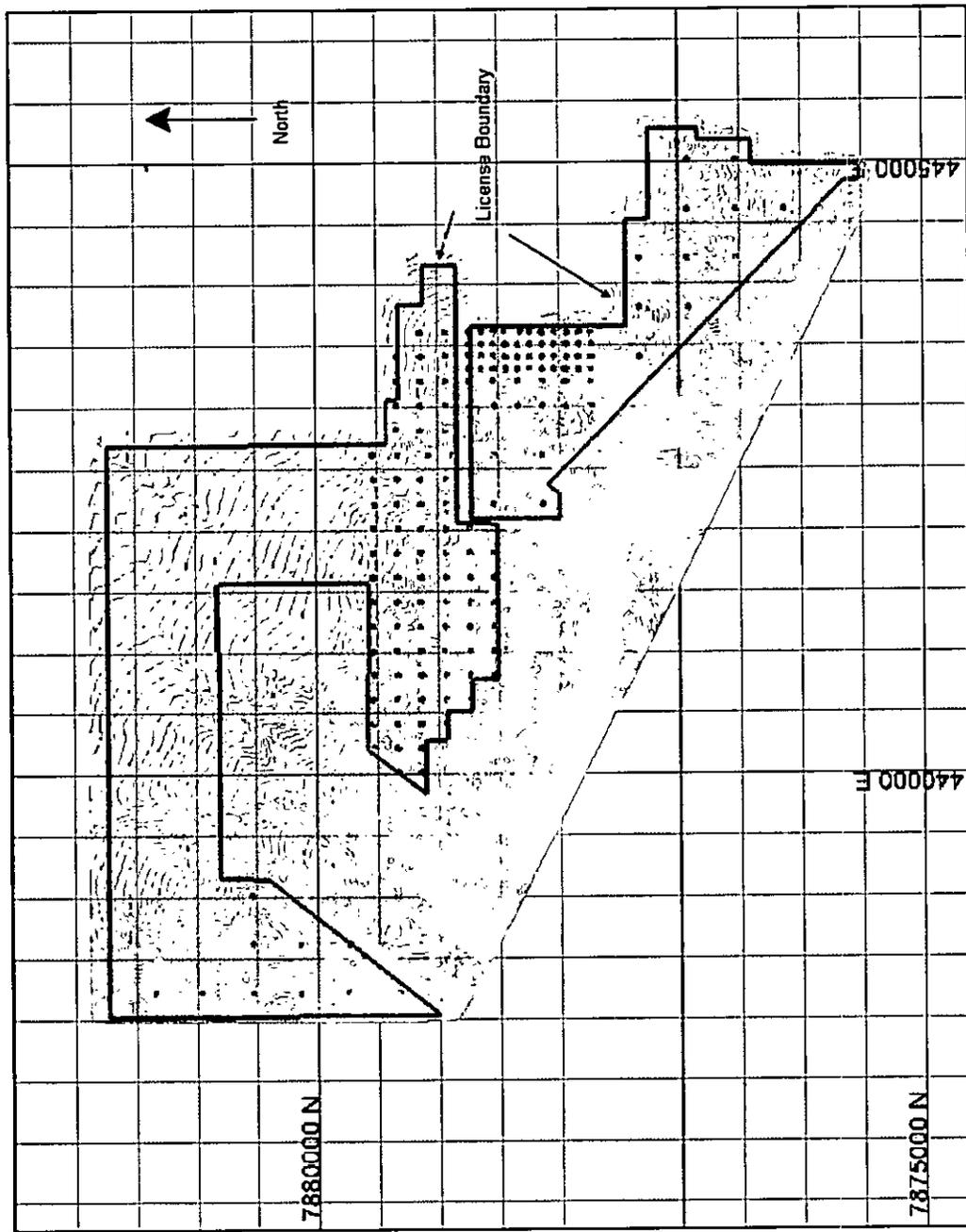
Corumbá Project,  
Brazil

Source: Mineração & Metálicos S.A.



SRK Job No.: 162703.03

File Name: Figure 9-1.doc



SRK Job No.: 162703.03

File Name: Figure 9-2.doc

Corumbá Project,  
Brazil

Source: Mineração & Metálicos S.A.

Figure 9-2

Shaft Locations Urucum NE

Date: 02-27-08

Approved: LM

Figure: 9-2

## 10 Sampling Method and Approach (Item 14)

The sampling of the core followed the customary procedures for iron ore in Brazil. The core was split lengthwise with breaks at lithologic contacts, and one-half of the core was bagged and the remainder was stored in wooden boxes. Intervals that were considered to be internal waste were not sampled and intervals within the bedrock were not sampled. The samples were numbered consecutively using a blind numbering sequence. Sample tags were placed in the sample bag and the bag was marked with the sample number as well.

Samples from the shafts were collected from vertical channels in one wall of the shaft. The channel was 10cm wide and 15cm deep and was sampled over the entire length of the mineralized zone in the shaft. The channel was made using a hammer and chisel and the sample was collected in a wooden box. The sample was then transferred to plastic bags. The samples were also numbered consecutively with blind numbers as with the drill samples. The four walls of the shafts are photographed meter by meter. The samples from Urucum NE were sent directly to SGS in Belo Horizonte for preparation and analysis.

The channel samples are vertical and were collected from outcrops and benches, using the same methodology as in the shaft samples.

At Urucum NE, a sample of 200kg is collected to provide enough material for a global sample, size fraction samples and for an archive with enough weight for duplicate tests if necessary. The colluvium with total thickness less than 2.0m was not sampled as 2m is considered to be a minimum mining thickness and because their metallogenic potential is considered lower. The sedimentary breccia domain is not considered as resources in this estimation, because it is very hard and massive making manual excavation difficult.

The samples are identified by shaft number and depth and sent to the MMX preparation laboratory. The pulps are bagged and are transported by a dispatching company to the SGS Lab in Belo Horizonte, Minas Gerais State for analysis.

Table 10.1 lists the statistics for the number and type of samples at Mine 63 and Urucum NE

**Table 10.1: Sample Interval Statistics for Mine 63 and Urucum NE**

Sample Type	Intervals			
	Number	Average (m)	Minimum (m)	Maximum (m)
<b>Mine 63</b>				
Channel Sample	27	6.70	3.0	15.4
Shaft	122	5.16	0.5	10.0
Drill Hole	452	2.36	0.5	5.9
<b>Total Mine 63</b>	<b>595</b>			
<b>Urucum NE</b>				
Shaft	150	4.04	1.5	5.0

The unsampled intervals are considered waste and assigned a value of zero for the compositing routine. The channel samples and shaft samples tend to be long intervals over the entire mineralized section of the unit. The drillhole samples are nominal 2m intervals with breaks at changes in lithology. The resulting database contains samples with highly variable sample

intervals, many of which are longer than the compositing length. SRK recommends the sample length be uniform at 5m (with breaks for lithology) and that the internal waste intervals also be assayed to eliminate ambiguity in the assignment of a value to that material.

All the drillholes, shafts, and channels shown in Figures 9-1 and 9-2 were sampled. The area sampled is more than 3km in length east-west and about 1.25km north-south at Mine 63 and about 7km in length and 1.5km in width at Urucum NE.

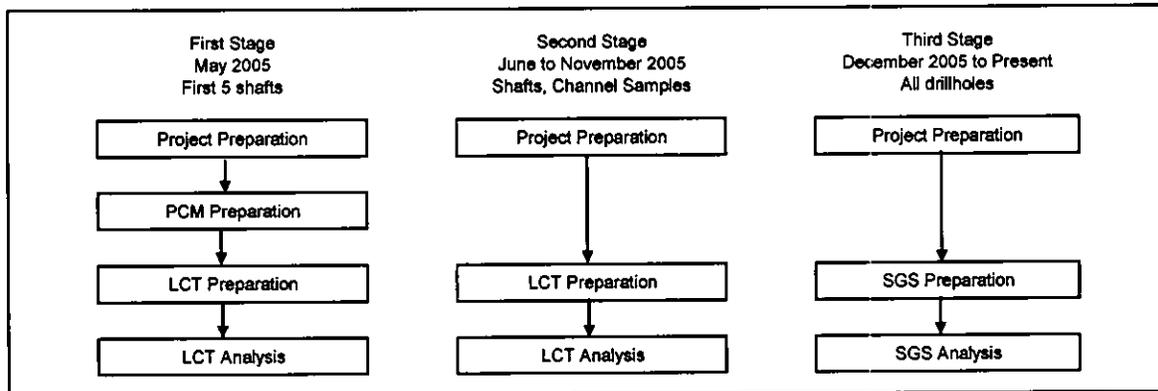
SRK considers the samples to be representative of the mineralized zones and sections. The colluvial and eluvial material was sampled over the entire length of the mineralization, with the exception of the internal waste zones as mentioned above. The core recovery and the size of the shaft and channel samples are sufficient to provide a reliable database for resource estimation.

# 11 Sample Preparation, Analyses and Security

(Item 15)

## 11.1 Sample Preparation, Analysis and Security for Mine 63

The sample preparation and analysis procedures have evolved during the project history as shown below:



MMX originally used the Technological Characterization Laboratory (LCT) of the Polytechnic School at the University of São Paulo for analysis of the shaft and channel samples; the lab is not internationally certified. The drill samples were analyzed at SGS Geosol Laboratorios Limitada (SGS); SGS has ISO 9001(2000) and ISO 14001(2001) certification. At the suggestion of MMX's Quality Control/Quality Assurance (QA/QC) consultant, 5% of the total samples were sent to the Ultra Trace Analytical Laboratories Pty Ltd (UT) in western Australia for check assays. UT has ISO 17025 and National Association of Testing Authorities, Australia Certifications. At the suggestion of SRK, MMX decided to reassay all available pulps which were initially analyzed by LCT at SGS and to use that laboratory for future work. Only 14 samples remain in the database with only the LCT analysis. Current laboratory QA/QC consists of using SGS internal controls, the use of a standard reference sample, and check assays of 5% of the samples at UT. The following sections describe the sample preparation and analysis procedures used for Corumbá samples. The final section reviews the QA/QC program.

### 11.1.1 Sample Preparation

The initial sample preparation is done by MMX at the Mine 63 facility. The reduced sample is then shipped to the commercial laboratory for further preparation and analysis.

#### MMX

The current sample preparation consists of:

- Drying the sample in the sun for 4 to 12 hours;
- Jaw crushing to 2.5cm; and
- Homogenization and splitting with a Jones splitter to a 2kg sample.

Initially a 10kg sample was sent to the laboratory Processamento e Caracterização Mineral Ltda (PCM) and later a 2kg sample was sent to LCT Laboratory. PCM does not have international certification.

### PCM

PCM Laboratory was used for sample preparation for the first five shafts to dry, crush and reduce the sample to 2kg before sending to LCT for analysis.

### LCT

The sample preparation at LCT consisted of:

- Drying in an oven at a temperature between 80 and 100°C;
- Jaw crushing;
- Disc or roller mill;
- Samples greater than 35g were split to 30g with a Jones splitter;
- Drying in oven for two hours; and
- Pulverization with Herzog mill to grain size less than 0.05mm.

### SGS

The sample preparation at SGS consist of:

- Drying in oven at 100±10°C;
- Crush to 90% less than 2mm;
- Homogenization and splitting with Jones splitter to 250 to 300g;
- Pulverization to 95% less than 150 mesh; and
- Splitting to 125g.

#### **11.1.2 Sample Analysis**

### LCT

Between 7 to 10g of sample is combined with Hoescht resin (10% of the sample weight) and the resulting mixture is then weighed. The sample and resin are homogenized and then pressed in a Herzog press to form a disk.

The samples are analyzed with an X-ray Fluorescence Spectroscopy (XRF) spectrometer. LOI is analyzed by placing 1.000g ± 0.0001g of sample in a porcelain crucible, heating in a furnace for one hour at 1050°C and cooling with a dryer. The sample is reweighed and the LOI calculated.

### SGS

The sample is dried at 100±10°C and then a 0.50g sample is combined with a lithium tetraborate solvent which is fused and poured into a mold to form a disk. The samples are analyzed by XRF, LOI is analyzed by heating the sample at 110°C for one hour, placing 1.5 to 2g of the sample in a crucible, heating at 1000±50°C for one hour, cooling, and weighing the sample and crucible again. The LOI is calculated with a detection limit of 0.01%.

The data are transferred directly from the equipment and stored in the Laboratory Management and Information System (LIMS).

## UT

The sample is fused in a Bradway electric rocking furnace and cast into 40mm diameter beads using 12.22 flux containing 5% sodium nitrate. The beads are analyzed with XRF. LOI is analyzed by heating a pre-dried portion of the sample in an electric furnace set to the client's requested temperature.

### **11.1.3 Laboratory Quality Control and Quality Assurance**

#### **Internal SGS QA/QC**

SGS internal QA/QC procedures consist of:

- LIMS software is used during the acquisition of data in the laboratory to eliminate errors in the manual entry of data. The software is also used in statistical treatment of the Quality controls;
- Calibration of all critical equipment every six months;
- Daily verification of scales and spectrometers;
- 5% of the samples are weighed after each step of sample preparation, with 3% as an acceptable loss in sample weight;
- 5% of the samples are measured for sample size during preparation with 95% passing the mesh size being the acceptable value;
- The batch size is 40 samples. Duplicate samples are prepared for each 20 samples; standard reference samples are inserted in the sample stream at a rate of 1 in 20 samples and one blank sample is inserted in each batch; and
- Samples with anomalous results are repeated. If the repeat does not duplicate the original, then a new sample is prepared from the reject.

#### **MMX QA/QC**

Analytical Solutions Ltd reviewed the QA/QC data and this section is taken from her report. As mentioned in the introduction to this section, LCT analyzed the shaft and channel samples and SGS analyzed the drillhole samples. Five percent of the samples were sent to the UT Laboratory in Australia for check analysis, including 17 pulps originally analyzed by LCT. In general, there was poor correspondence between the UT and LCT data (Figure 11-1). As suggested by other MMX consultants, the LCT data was not considered reliable for resource estimation and MMX decided to have all the pulps reanalyzed by SGS for use in the resource estimation.

For check analysis purposes, a total of 82 pulps analyzed by SGS in 2006 were reanalyzed by UT. Both SGS and UT used fused disk (glass bead) XRF for determination of the major oxides. In general, there is good agreement between the two sets of data. Figure 11-1 summarizes the percentage difference between SGS and UT assays relative to the SGS determination (with no implication that SGS or UT provided the preferred data). One sample is excluded for LOI where values of 0.01 and 0.59% were reported which results in a large percentage difference and may be due to data handling issues. Table 11.1.3.1 documents the percent difference between SGS and UT samples.

Table 11.1.3.1 documents the percentage of samples within  $\pm 5\%$ ,  $10\%$ ,  $20\%$ , etc.

**Table 11.1.3.1: Summary of Percent Difference Between SGS and UT Samples**

Element	N	5%	10%	20%	25%	50%	> +50%
Fe	82	82 100%					
MnO	82	59 72%	61 74%	70 85%	74 90%	81 99%	1 1%
SiO <sub>2</sub>	82	76 93%	80 98%	82 100%			
Al <sub>2</sub> O <sub>3</sub>	82	49 60%	72 88%	78 95%	80 98%	82 100%	
P	82	59 72%	77 94%	82 100%			
TiO <sub>2</sub>	82	41 50%	65 79%	77 94%	78 95%	82 100%	
LOI	82	38 46%	57 70%	71 87%	75 91%	79 96%	3 4%

The key observations are:

- Eleven Fe values agree within 5%;
- 93% of SiO<sub>2</sub> values agree within 5%;
- Al<sub>2</sub>O<sub>3</sub> values show good correspondence above 1% and 88% of all the samples agree within  $\pm 10\%$ ;
- The majority of P values are less than 0.1% and close to detection limits for the XRF method; there is a bias equal to approximately 3% of the P concentration with higher values reported by SGS than UT (similar to the observation for Minas-Rio);
- The majority of values of TiO<sub>2</sub> are less than 0.2%. TiO<sub>2</sub> show good correspondence and 79% of the agree within  $\pm 10\%$ . The majority of results which do not agree within  $\pm 10\%$  are almost within 10 times detection limit and precision is expected to be in the order of  $\pm 100\%$ ;
- 74% of the Mn values agree within  $\pm 10\%$ ; values less than 0.1% do not agree within  $\pm 10\%$  but are within ten times detection limits and precision is expected to be poor; and
- 65% of the LOI values reported by SGS are higher than those reported by UT. UT refers to the analyses as done by a robotic Thermogravimetric Analyser (TGA) with the furnaces set 100° and 1000°C. The temperature used for LOI at SGS should be determined and the two analytical methods compared. The majority of the LOI values are less than 2% and the variance between the laboratories is in the order of 5% of the reported values.

In general, there is good correspondence between SGS and UT major oxide determinations. Some elements (MnO, P and TiO<sub>2</sub>) are found in concentrations within ten times the detection limit of the XRF method. If these determinations are required more accurately, it is

recommended that a lithium metaborate fusion – ICP method, with detection limits in the range of 1 to 10ppm, be used.

SRK considers the sample preparation, analysis and security to follow industry standards and that the assays are reliable for resource estimation.

## **11.2 Sample, Preparation and Analysis for Urucum NE**

### **11.2.1 Sample Preparation Procedures**

Sample preparation takes place at the MMX Corumbá Laboratory. SGS Laboratory, in Belo Horizonte, did all the chemical analysis and ALS Chemex Laboratory, in Australia, was used for check assaying as the second lab.

The 200kg-sample is crushed in a closed circuit with a 38mm screen until all material is less than 38mm. The crushed material is then fed into a rotary splitter. Half the sample is filed as an archive and the other half is fed into rotary splitting again. The second splitting generates two portions, one is used for the global analysis and the other for the size fraction test. The sample is screened at 25mm, 19mm, 12mm, 6.35mm and 4mm. A small portion is taken from the 25mm to 19mm fraction for a crepitation test. The remainder of that fraction is mixed with the 19mm to 12mm fraction. The <4mm fraction is wet screened to generate three more fractions: 4mm to 1mm, 1mm to 0.15mm and <0.15 mm. The resulting size fractions are:

- 25mm to 12mm;
- 12mm to 6.35mm;
- 6.35mm to 4mm;
- 4mm to 1mm;
- 1mm to 0.15mm, and
- <0.15mm.

All six size fractions and the global samples are sent to chemical analysis preparation. This process consists of successive crushing and splitting until the last stage when a pulp is taken for chemical analysis. The first stage is crushing to 8mm. All crushed material is fed into rotary splitting until one 3kg portion is obtained. This portion is crushed again to 2mm and dried at 105°C. Then the dried sample is fed into the rotary splitter until a 200g portion is obtained. This portion is pulverized and split again. One-half is sent for chemical analysis and the other half is stored as an archive.

The global sample and the fractions 25mm to 19mm, 19mm to 12mm and 12mm to 6.35mm pass through the chemical analysis preparation process from the beginning starting with the 8mm-crushing. The fraction 6.35mm to 4mm starts the process in the next stage, where the 3kg portion is obtained. The fractions 4mm to 1mm and 1mm to 0.15mm are sent directly to the drying stage and the fraction <0.15mm is filtered before also being sent to the drying stage.

All chemical analyses are done by XRF for the elements Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, P, MnO, CaO, MgO, K<sub>2</sub>O, Na<sub>2</sub>O, TiO<sub>2</sub> and gravimetric analysis for LOI (Loss on Ignition).

## 11.2.2 Chemical Analysis Procedures

### SGS Procedures

SGS receives the pulverized samples and dries them at a temperature of  $100 \pm 10^{\circ}\text{C}$ . A portion of 0.50g is taken from the dried samples and a solvent with a lithium tetraborate base is added in a quantity sufficient for the total fusion of the sample. The mixture of the sample and solvent is then homogenized and fused in a platinum crucible, using an automatic fusion machine for between 15 and 20 minutes. The fused material is poured into a platinum mold, forming a disk with a flat surface.

The SGS internal laboratory QA/QC procedures consist of inserting a duplicate sample or a replicate sample, alternately, for each ten samples in a batch. At least one reference sample is inserted into each batch. The samples are stored individually in plastic bags and maintained in a dryer until the spectrometer reading. The samples are analyzed by XRF.

The data are transferred directly from the equipment and stored in the LIMS.

**Table 11.2.2.1: Limits Detection of SGS Iron Ore Analysis**

Element	Detection Limit (%)	Upper Limit (%)
Al <sub>2</sub> O <sub>3</sub>	0.10	90
Fe <sub>2</sub> O <sub>3</sub>	0.01	100
K <sub>2</sub> O	0.01	15
MgO	0.10	45
MnO	0.01	70
Na <sub>2</sub> O	0.10	15
P <sub>2</sub> O <sub>5</sub>	0.01	45
SiO <sub>2</sub>	0.10	100
TiO <sub>2</sub>	0.01	100

Loss on Ignition is performed by a gravimetric method. The sample is heated to approximately  $110^{\circ}\text{C}$  for a minimum of one hour. A clean, dry crucible is weighed and the weight is recorded (CV). 1.5 to 2g of the heated sample is added to the crucible, which is then weighed again (C+A). The crucible with the sample is placed in an oven which is heated to a temperature of  $1000 \pm 50^{\circ}\text{C}$ . The sample is left to cremate for a period of more than one hour. The crucible is removed from the furnace and placed on a refractory plate until it loses its incandescence. It is then placed in a dryer until the crucible and sample are cooled and then it is weighed again (final weight).

The calculation of results is:

$$\% \text{ F.W.} = \frac{(C + A) - (\text{Final Weight})}{(C + A) - (\text{CV})} \times 100$$

The detection limit is 0.01% and the data are recorded in the LIMS.

### ALS Chemex Procedures

ALS Chemex uses the lithium metaborate fusion method and XRF for its analysis of iron ore samples. A prepared sample (0.5g) is fused with a lithium metaborate flux at about  $1000^{\circ}\text{C}$  which is then analyzed by RXR spectrometry.

The samples were analyzed with ALS Chemex 19 element package. The elements determined by XRF are listed below in Table 11.2.2.2.

The analysis includes a LOI determination at 1000°C, undertaken with a TGA. This allows for an addition of the oxides, generated at the ignition temperature and the LOI, to arrive at a total (oxides plus LOI). The LOI is due to the loss of water from hydrated minerals (goethite, gibbsite and kaolinite), decomposition of carbonates (calcite, siderite and dolomite) and the volatilization of organic compounds.

**Table 11.2.2.2: Detection Limits in ALS Chemex Iron Ore Analysis**

Element	Symbol	Units	Lower Limit	Upper Limit
Aluminum	Al <sub>2</sub> O <sub>3</sub>	%	0.01	30
Arsenic	As	%	0.001	0.6
Barium	Ba	%	0.005	0.3
Calcium	CaO	%	0.01	10
Cobalt	Co	%	0.005	2
Chromium	Cr	%	0.005	5
Copper	Cu	%	0.005	3
Iron	Fe	%	0.01	75
Potassium	K <sub>2</sub> O	%	0.001	5
Magnesium	MgO	%	0.01	10
Manganese	MnO	%	0.001	75
Sodium	Na <sub>2</sub> O	%	0.01	5
Nickel	Ni	%	0.005	3
Phosphorus	P	%	0.001	5
Sulphur	S	%	0.001	5
Silicon	SiO <sub>2</sub>	%	0.01	70
Vanadium	V	%	0.005	1
Zinc	Zn	%	0.005	5

### 11.2.3 Quality Control Procedures (QA/QC)

#### SGS Quality Control

- SGS uses software developed by LIMS used by geochemical laboratories in various countries (such as Brazil, Chile, Canada and Germany) for on-line acquisition of data, eliminating errors in the manual entry of information. Information relative to quality control (blanks, duplicates and standards) is also retrieved with this software;
- Calibration of all critical equipment related to the process every six months;
- Daily verification of scales and spectrometers through standard weights or control samples;
- Control of mass in 5% of samples prepared in the steps of crushing and pulverization, through weighing samples before and after each step, a maximum loss of 3% of material being acceptable for each step;
- Control of screening in 5% of samples prepared in the steps of crushing and pulverization through the screening analysis of samples after each step, a minimum percentage of 95% below the mesh reference being acceptable;

- With each 20 samples prepared, a sample is divided into two parts after the process of crushing and the final preparation is made of each of these parts (preparation of duplicates);
- The analyses are done in batches of up to 40 samples;
- Samples of internal reference and certified material are inserted in each 20 samples;
- Inclusion of blanks of reagents in each batch analyzed; and
- Anomalous results are repeated and when the result obtained does not confirm the first assay, the analysis of a new sample is prepared using the waste of the material received.

### **ALS Chemex Quality Control**

ALS Chemex uses a web-based LIMS control system which is used by geochemical laboratories in various countries with on-line acquisition of data from equipment used in the laboratory, eliminating errors in the manual entry of information. The system provides additional assurance of the quality of data by providing on-line access to complete audit trails and important QC data and control charts.

Standard specifications for sample preparation are clearly defined and monitored. ALS Chemex standard operating procedures require that at least one sample per day be taken from each sample preparation station.

The ALS Chemex LIMS inserts quality control samples (reference materials, blanks and duplicates) in each analytical run, based on the rack sizes associated with the method. The rack size is the number of samples, including QC samples, included in a batch. The blank is inserted at the beginning, standards are inserted at random intervals, and duplicates are analyzed at the end of the batch. Quality control samples are inserted based on rack sizes specific to the method. XRF methods use two standards, one duplicate and one blank, with rack size of 39 samples.

Quality Control Limits for reference materials and duplicate analyses are established according to the precision and accuracy requirements of the particular method.

### **MMX Quality Control**

MMX initialized a QA/QC program at the beginning of the Urucum NE exploration. The program consists of introducing one iron ore standard, OREAS40, one blank, and one pulp duplicate per batch. Additionally 117 samples were sent to ALS Chemex in Australia for check assaying.

Agoratek International (Agoratek) reviewed the following laboratory QA/QC data for MMX:

- SGS internal QA/QC data;
- SGS vs ALS Chemex pairs of check assays;
- SGS assays of MMX standard OREAS40; and
- A few assays of OREAS40 and APHP standards at ALS Chemex.

Agoratek made the following observations:

- Standard IPT123, the SGS internal commercial standard, is ill-certified and can be used only as a measure of accuracy and cannot be used to assess SGS's general performance;
- Standard OREAS40 has good certification and has been validated by Agoratek in the past. SGS performs well on this standard for Fe and SiO<sub>2</sub>, but may show bias with Al<sub>2</sub>O<sub>3</sub> and P;
- A comparison of the SGS and ALS Chemex check assays indicates that there may be a high bias on P by SGS and a low bias on Al<sub>2</sub>O<sub>3</sub>; and
- The samples submitted as blanks actually were not blank and therefore the results are not usable.

#### **11.2.4 Sample Security**

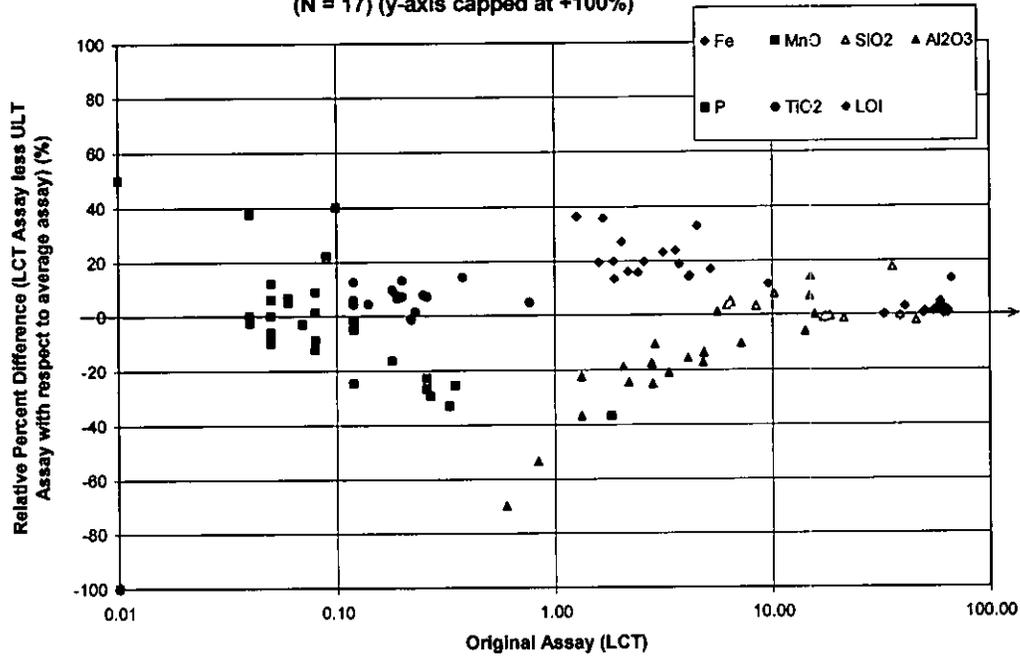
MMX has maintained control of samples from collection to the production of individual samples in sealed shipping packets at the MMX project site. These packets are delivered from the Mine site to the SGS Lab in Belo Horizonte by a transport company.

MMX retains the pulps and coarse rejects from their samples at their secure office at Mine 63.

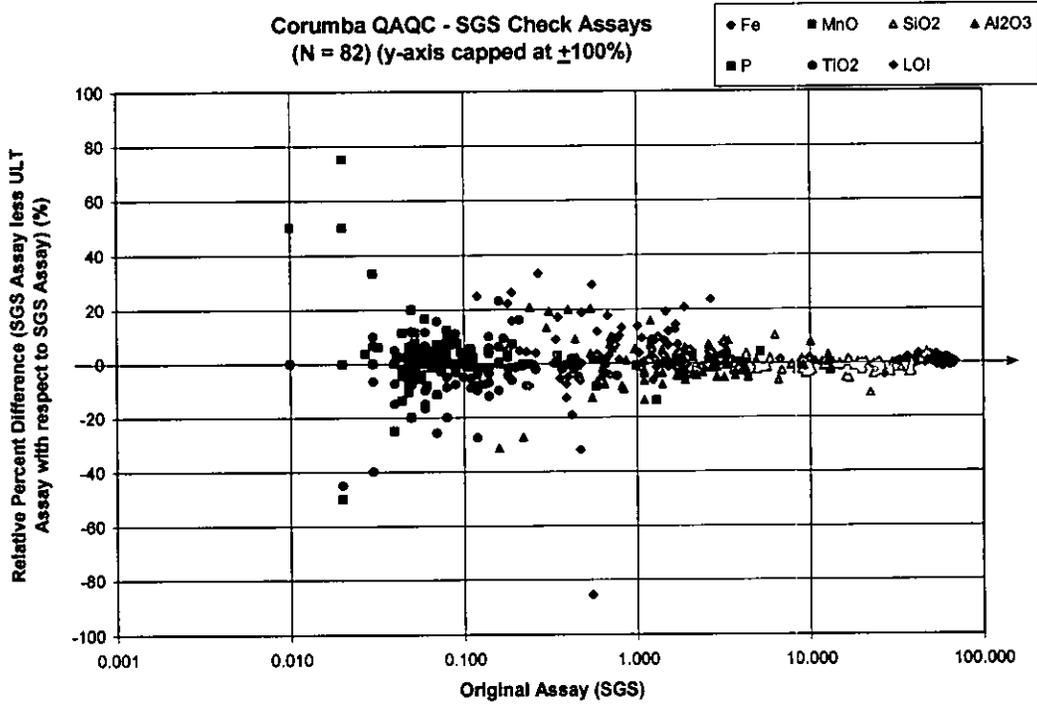
#### **11.2.5 ISO 9000 Certification**

SGS has ISO 9001(2000) and ISO 14001(2001) Certification.

Corumba QAQC - LCT Check Assays  
(N = 17) (y-axis capped at +100%)



Corumba QAQC - SGS Check Assays  
(N = 82) (y-axis capped at  $\pm 100\%$ )



SRK Job No.: 162703.03

File Name: Figure 11-1.doc

Corumbá Project,  
Brazil

Source: Mineração & Metálicos S.A.

Figure 11-1

LCT and SGS vs. UT Analyses for  
Corumbá Samples

Date: 02-27-08

Approved: LM

Figure: 11-1

## 12 Data Verification (Item 16)

The data is received from the laboratory as electronic files and as hard copies of the assay certificates. The data is entered into Excel spreadsheets with four sheets for collar coordinates, assays, downhole surveys, and lithologic information. The laboratory certificates are received as hard copies.

During SRK's verification process for Mine 63 data in the previous Technical Report, some problems were noticed with the values of the MnO variable where in some cases the values appeared to be for Mn and in others the values were for MnO. SRK rebuilt the entire database using the original spreadsheets from SGS. After the database was rebuilt, SRK performed checks on 10% of the data against the assay certificates. SRK also checked the drillhole collars against the database and also reviewed selected lithologic intervals against the core photos and drill logs.

SRK has verified 10% of the Urucum NE database against assay certificates and found no significant errors.

SRK did not independently collect samples for assay because the rock shows obvious mineralization and the database samples have undergone extensive assaying and check assaying.

## 13 Adjacent Properties (Item 17)

Vale operates the Urucum Mine immediately northeast of Mine 63 and RTZ operates the Corumbaense Reunidas Mine in the nearby Santa Cruz Mountains. MMX did not utilize any information from these mines in the preparation of this report.

## 14 Mineral Processing and Metallurgical Testing (Item 18)

### 14.1 Mineral Processing and Metallurgical Testing for Mine 63

#### 14.1.1 Technological Parameters of the Process

This section describes the procedures and results of metallurgical tests to define the parameters used in the development of the process flowsheet and product recoveries and includes:

- Description and location of samples used in bench tests;
- Description of bench tests;
- Study of the correlation between RoM and Lump for the Eluvium and Colluvium ore types, with a view to obtaining the relation of enrichment and establish cut-offs; and
- Study of mass recovery, with the definition of factors of product yield of Lump and Sinter Feed.

#### Bench Tests and Chemical Analyses

The bench test samples were composed of coarse rejects from 35 shaft samples. Figure 14-1 shows the location of the samples for the bench tests and the pit outline. The eluvial area is well represented by the bench test samples. The samples in the colluvial area were taken in areas close to the source material and also at points at some distance from the source. The overall representativeness of the samples appears to be good. The procedures followed the standard NBR ISO 3082, which deals with the principles of iron ore sampling and preparation of samples.

The samples were prepared by PCM Laboratory with the following procedure:

- An initial sample was taken from the coarse reject for the RoM sample;
- Homogenization of the remainder of each sample;
- The sample was dried and weighed to verify the initial volume of the sample;
- The sample was crushed to less than 25.4mm;
- The sample was combined with an alkaline dispersant, sodium silicate (ph~10), to about 50% solids;
- Scrubbing was conducted in a mixer with visual control of desegregation;
- Wet screening was accomplished with a Manupen type screen into the following sample bands 25.4 – 19.6 – 12.5 – 9.6 – 6.35 – 4.0 – 2.0 – 1.0 – 0.5 – 0.25 and 0.15mm; and
- The range for Lump was considered to be 25.4 to 6.35mm and Sinter Feed was 6.35 to 1.00mm.

Samples of RoM and Lump were sent to the Technological Characterization Laboratory – (LCT) of the Polytechnic School at the University of São Paulo for chemical analysis. The results are shown in Tables 14.1.1.1 and 14.1.1.2.

Table 14.1.1.1: Colluvial Ore - Chemical Analysis: RoM and Lump

Coordinates										RoM										Lump													
X	Y	Z	Hole Id	Laboratory Name	From	To	Fe	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	F	MnO	CaO	MgO	THO <sub>2</sub>	LOI	N'LCT	Hole Id	Fe	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	P	Mn	TiO <sub>2</sub>	LOI	N'LCT	Hole Id	Fe	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	P	Mn	TiO <sub>2</sub>	LOI
435800.8	7877646	618.03	Can T6	EBX075	0.00	7.70	65.230	4.19	1.89	0.05	<0.10	na	na	na	0.16	2.51	7084005	67.498	2.12	1.01	0.054	<0.10	0.13	1.1	7084005	67.498	2.12	1.01	0.054	<0.10	0.13	1.1	
434600.1	7877503	403.06	TO 00	EBX118	0.00	10.00	58.309	13.36	1.87	0.05	<0.10	na	na	na	0.15	1.42	7552005	65.135	5.8	0.61	0.053	<0.10	<0.10	1.2	7552005	65.135	5.8	0.61	0.053	<0.10	<0.10	1.2	
434400.5	7877393	378.22	TO1 100S	EBX069	0.00	6.00	56.005	12.80	2.00	0.06	2.01	na	na	na	0.17	2.48	7066005	64.8	6.10	0.79	0.06	0.64	<0.10	1.20	7066005	64.8	6.10	0.79	0.06	0.64	<0.10	1.20	
434199.6	7877484	344.96	TO2 00	EBX149	0.00	5.60	56.991	15.76	1.33	0.05	0.35	na	na	na	0.12	1.60	7066005	62.578	9.030	0.62	0.054	0.115	<0.10	1.70	7066005	62.578	9.030	0.62	0.054	0.115	<0.10	1.70	
434204.3	7877384	357.41	TO2 100S	EBX090	0.00	6.00	54.001	15.03	3.31	0.07	0.70	na	na	na	0.20	3.11	7129005	63.062	8.28	0.48	0.056	0.342	<0.10	1.7	7129005	63.062	8.28	0.48	0.056	0.342	<0.10	1.7	
434209	7877284	352.99	TO2 200S	EBX079	0.00	6.00	53.563	16.83	1.59	0.07	2.14	na	na	na	0.14	2.78	7096005	62.954	7.8	0.46	0.051	0.831	<0.10	1.82	7096005	62.954	7.8	0.46	0.051	0.831	<0.10	1.82	
434000.5	7877375	330.5	TO3 100S	EBX089	0.00	5.05	61.320	7.90	2.46	0.08	0.42	na	na	na	0.18	2.42	7126005	65.442	3.49	1.32	0.062	<0.10	1.74	7126005	65.442	3.49	1.32	0.062	<0.10	1.74			
434982.3	7877772	458.93	T2 250N	EBX086	0.00	2.47	63.803	4.90	2.49	0.08	<0.10	na	na	na	0.16	2.68	T2/250N	65.111	3.13	2.22	0.065	<0.10	0.12	2.37	T2/250N	65.111	3.13	2.22	0.065	<0.10	0.12	2.37	
435194.6	7877629	493.82	T3 100N	EBX066	0.00	5.00	60.954	8.21	2.11	0.06	0.20	na	na	na	0.18	2.59	T3/100N	67.413	2.83	0.7	0.063	<0.10	<0.10	1.28	T3/100N	67.413	2.83	0.7	0.063	<0.10	<0.10	1.28	
435181.8	7877765	491.54	T3 250N	EBX057	0.00	2.90	65.523	3.66	1.10	0.06	0.15	na	na	na	0.12	1.91	T3/250N	67.9	2.16	1.19	0.06	<0.10	<0.10	0.99	T3/250N	67.9	2.16	1.19	0.06	<0.10	<0.10	0.99	
435400.5	7877541	557.73	T4 00	EBX058	0.00	8.15	61.193	7.42	2.64	0.05	<0.10	na	na	na	0.21	2.68	T4/00	68.7	2.33	0.72	0.06	<0.10	0.09	0.84	T4/00	68.7	2.33	0.72	0.06	<0.10	0.09	0.84	
435595.4	7877640	531.56	T4 100N	EBX073	0.00	5.40	61.662	7.94	2.24	0.06	0.10	na	na	na	0.18	2.11	T4/100S	68.154	3.01	0.53	0.05	<0.10	<0.10	0.8	T4/100S	68.154	3.01	0.53	0.05	<0.10	<0.10	0.8	
435410.7	7877341	596.65	T4 200S	EBX059	0.00	6.00	59.334	8.48	4.12	0.06	<0.10	na	na	na	0.25	3.75	T4/200S	68.8	1.82	0.37	0.06	<0.10	<0.10	0.63	T4/200S	68.8	1.82	0.37	0.06	<0.10	<0.10	0.63	
435387.6	7877791	527.78	T4 250N	EBX061	0.00	2.60	59.009	7.98	2.96	0.09	0.51	na	na	na	0.19	3.49	T4/250N	65.2	4.97	1.05	0.08	<0.10	<0.10	1.39	T4/250N	65.2	4.97	1.05	0.08	<0.10	<0.10	1.39	
435600.1	7877551	595.54	T5 00	EBX078	0.00	8.70	59.430	9.15	3.82	0.08	<0.10	na	na	na	0.20	2.93	T5/00	67.155	3.16	0.82	0.056	<0.10	<0.10	0.86	T5/00	67.155	3.16	0.82	0.056	<0.10	<0.10	0.86	
435605.3	7877451	619.66	T5 100S	EBX062	0.00	6.00	60.292	7.17	3.50	0.05	<0.10	na	na	na	0.26	3.18	T5/100S	68.5	1.71	0.75	0.05	<0.10	<0.10	0.85	T5/100S	68.5	1.71	0.75	0.05	<0.10	<0.10	0.85	
435610.4	7877351	635.34	T5 200S	EBX065	0.00	6.00	62.793	6.87	1.70	0.05	<0.10	na	na	na	0.16	2.28	T5/200S	67.697	3.14	0.3	0.052	<0.10	<0.10	0.73	T5/200S	67.697	3.14	0.3	0.052	<0.10	<0.10	0.73	
435799.9	7877561	641.54	T 00	EBX083	0.00	9.80	63.685	7.60	0.89	0.06	<0.10	na	na	na	0.10	2.11	T/00	67.865	1.8	0.34	0.055	<0.10	<0.10	1.43	T/00	67.865	1.8	0.34	0.055	<0.10	<0.10	1.43	
435805	7877461	672.88	T6 100S	EBX068	0.00	6.00	63.109	5.17	2.61	0.05	<0.10	na	na	na	0.21	2.59	T6/100S	66.738	2.03	0.82	0.065	1.102	<0.10	1.41	T6/100S	66.738	2.03	0.82	0.065	1.102	<0.10	1.41	
435810.1	7877361	704.98	T6 200S	EBX072	0.00	6.00	64.767	4.21	1.81	0.05	0.25	na	na	na	0.16	2.14	T6/200S	66.471	2.15	1.06	0.053	0.771	<0.10	2.45	T6/200S	66.471	2.15	1.06	0.053	0.771	<0.10	2.45	
435999.6	7877571	689.83	T7 00	EBX080	0.00	8.00	63.697	5.72	1.90	0.07	<0.10	na	na	na	0.16	2.39	T7/00	68.4	2.65	0.66	0.07	<0.10	<0.10	0.87	T7/00	68.4	2.65	0.66	0.07	<0.10	<0.10	0.87	
435994.4	7877671	672.51	T7 100N	EBX088	0.00	6.00	64.355	4.62	2.03	0.06	<0.10	na	na	na	0.17	2.14	T7/100N	68.55	1.61	0.4	0.052	<0.10	<0.10	1.39	T7/100N	68.55	1.61	0.4	0.052	<0.10	<0.10	1.39	
436004.7	7877471	736.43	T7 100S	EBX074	0.00	6.00	62.158	6.42	2.83	0.05	0.31	na	na	na	0.25	3.02	T7/100S	63.284	7.15	0.75	0.069	1.154	<0.10	1.15	T7/100S	63.284	7.15	0.75	0.069	1.154	<0.10	1.15	

Table 14.1.1.2: Eluvial Ore - Chemical Analysis: RoM and Lump

Coordinates										RoM										Lump													
X	Y	Z	Hole Id	Laboratory Name	From	To	Fe	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	P	MnO	CaO	MgO	THO <sub>2</sub>	LOI	N'LCT	Hole Id	Fe	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	P	Mn	TiO <sub>2</sub>	LOI	N'LCT	Hole Id	Fe	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	P	Mn	TiO <sub>2</sub>	LOI
436368.1	7877088.2	890.33	A3	EBX3	0.00	10.00	59.900	6.12	4.22	0.09	0.04	na	na	na	0.22	5.39	A3	65.1	3.39	2.48	0.08	<0.10	<0.10	1.07	A3	65.1	3.39	2.48	0.08	<0.10	<0.10	1.07	
436306.0	7877164.5	863.04	A4	EBX4	0.00	10.00	64.200	6.20	1.33	0.07	0.04	na	na	na	0.12	1.87	A4	67.32	3.42	0.35	0.06	<0.10	<0.10	1.2	A4	67.32	3.42	0.35	0.06	<0.10	<0.10	1.2	
436122.0	7877980.2	827.00	A7 CAN4A	EBX 107	0.00	4.20	64.587	4.390	2.320	0.040	<0.10	na	na	na	0.190	2.020	7177005	68.9	1.48	0.18	0.05	<0.10	<0.10	1.07	7177005	68.9	1.48	0.18	0.05	<0.10	<0.10	1.07	
436149.1	7877555.7	849.51	CAN 3A (0-4m)	EBX104	0.00	6.00	66.370	4.96	0.97	0.04	<0.10	na	na	na	0.11	1.08	7168005	63.6	2.68	0.32	0.04	<0.10	<0.10	1.70	7168005	63.6	2.68	0.32	0.04	<0.10	<0.10	1.70	
436149.1	7877555.7	849.51	CAN 3A (6-10.20m)	EBX105	0.00	10.20	61.098	12.3	0.40	0.05	<0.10	na	na	na	<0.10	0.97	7171005	63.6	7.61	0.10	0.04	0.14	<0.10	1.99	7171005	63.6	7.61	0.10	0.04	0.14	<0.10	1.99	
436075.8	7877285.9	857.79	CAN 3B	EBX84	0.00	15.40	62.217	7.12	2.68	0.09	<0.10	na	na	na	0.19	2.67	7111005	65.0	6.72	0.18	0.04	<0.10	<0.10	1.37	7111005	65.0	6.72	0.18	0.04	<0.10	<0.10	1.37	
436015.4	7877208.4	861.71	CAN 3C	EBX87	0.00	11.30	64.072	6.78	0.95	0.05	<0.10	na	na	na	0.11	2.00	7120005	65.7	4.55	0.58	0.04	<0.10	<0.10	1.62	7120005	65.7	4.55	0.58	0.04	<0.10	<0.10	1.62	
435949.3	7877141.8	846.56	CAN 3D (0.0 a 5.0m)	EBX97	0.00	5.00	62.079	9.85	0.58	0.05	<0.10	na	na	na	<0.10	1.79	7147005	64.7	6.99	0.22	0.04	<0.10	<0.10	1.09	7147005	64.7	6.99	0.22	0.04	<0.10	<0.10	1.09	
435949.3	7877141.8	846.56	CAN 3D (5-11.65m)	EBX98	5.00	11.65	66.536	3.25	1.06	0.05	<0.10	na	na	na	0.10	1.63	7150005	67.5	2.16	0.67	0.05	<0.10	<0.10	1.70	7150005	67.5	2.16	0.67	0.05	<0.10	<0.10	1.70	
436049.8	7877306.6	833.66	CAN 4B (0-6.90m)	EBX101	0.00	6.90	64.756	4.16	1.92	0.05	<0.10	na	na	na	0.16	2.39	7159005	65.6	1.41	1.25	0.12	<0.10	<0.10	1.34	7159005	65.6	1.41	1.25	0.12	<0.10	<0.10	1.34	
436049.8	7877306.6	833.66	CAN 4B (6.90-11.80m)	EBX102	6.90	11.90	64.375	5.63	0.84	0.05	<0.10	na	na	na	0.12	1.68	7162005	66.7	3.81	0.47	0.05	<0.10	<0.10	1.13	7162005	66.7	3.81	0.47	0.05	<0.10	<0.10	1.13	
435945.2	7877145.8	844.36	CAN 4D (0.0 a 7.20m)	EBX95	0.00	7.20	64.517	4.04	2.34	0.04	<0.10	na	na	na	0.16	2.50	7141005	67.4	1.27	1.12	0.04	<0.10	<0.10	2.14	7141005	67.4	1.27	1.12	0.04	<0.10	<0.10	2.14	
435905.8	7877058.9	841.53	CAN 4E (0 a 6.20m)	EBX125	0.00	6.20	60.571	9.31																									

### **Correlation RoM x Lump**

The iron grade of RoM and Lump for each sample was plotted on separate graphs for colluvium and eluvium. The equations that relate the grade of Fe in RoM with the grade of Fe in the Lump was obtained by linear regression. The results for the two kinds of ore present in the area, eluvial and colluvial are discussed below.

The first graph presented in Figure 14-2, shows the correlation curve for the grade of Fe of the eluvial type ore. A good correlation is shown between the tests. For the eluvial graph for Fe, the following linear equation is observed:  $Lump = 0.85 \times RoM + 12.454$ . Therefore, substituting the iron grade in RoM, the value of the iron grade in Lump is obtained. Considering that the grade of iron expected in the product at Mine 63 is 64.2%, the average grade of feed for RoM shall be 60.9% Fe.

The second graph presented in Figure 14-2 shows the correlation curve for the grade of colluvial type ore. In this case, the low correlation between the grades can be noted. This result can be explained by the characteristics of this type of ore that presents high variability in the distribution of iron grades because of the clastic nature of the material.

For the graph of Fe in Colluvium, the following linear equation is observed:  $Lump = 0.3657 \times RoM + 44.144$ . Therefore, substituting the x for the grade of Fe in RoM, the value will be obtained of Fe in Lump. Considering that the grade of iron expected in the product of Mine 63 is 64.2%, the average grade of feed for RoM should be 54.8% Fe. Because of the high variability obtained in the colluvium samples, additional tests are planned, using a larger number of samples. In addition, the particle size will be considered as well as the global chemistry.

#### **14.1.2 Mineralogical Analysis**

The mineralogical contents for seven samples with three product sizes each are presented in Table 14.1.2.1. The major contents of the samples are iron oxides and hydroxides in aggregate or in mixed particles. The principal mineral is hematite. Goethite/limonite is very porous and is found free or interspersed among other iron oxide crystals and may show coliform texture, bordering hematite aggregates. Martitic hematite is extremely rare and occurs as very porous crystals, with shapes varying from anhedral to subhedral and grain sizes ranging from cryptocrystalline to very fine. Specular hematite is also rare, and occurs as elongate, oriented crystals, which are rarely acicular. Quartz is anhedral and free of inclusions. Occasionally, quartz occurs within aggregates and shows a reddish coloration due to a fine goethite/limonite cover. Kaolinite occurs freely, associated with goethite/limonite and sometimes overlain by it. Cryptocrystalline and lamellar manganese oxides occur freely associated to goethite/limonite and, rarely containing inclusions of hematite and quartz. Free leucosene, probably a product of an alteration process of rutile, is present with goethite/limonite aggregates. Phosphorous is present in the samples as apatite, which occurs in anhedral and subhedral crystals included in hematite or as an aggregate of cryptocrystalline crystals included or associated with goethite/limonite.

Yellow and red or brown agglomerates formed by an association of goethite/limonite, argillaceous minerals, hematite, quartz and manganese oxides are present in almost all the fines samples, except AM 0053 and AM 058.

Table 14.1.2.1: Mineralogical Analyses of Samples from Mine 63

Sample	Hematite		Goethite		Goethite/Aggregate		Free Quartz		Quartz/Aggregate		Manganese		Kaolin		Gibbsite	
	VOL (%)	Weight (%)	VOL (%)	Weight (%)	VOL (%)	Weight (%)	VOL (%)	Weight (%)	VOL (%)	Weight (%)	VOL (%)	Weight (%)	VOL (%)	Weight (%)	VOL (%)	Weight (%)
AM - 11	Lump	96.80	97.70	0.00	0.00	3.10	2.20	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00
	Sinter Feed	76.20	81.30	7.90	7.00	13.30	10.00	11.30	0.60	0.00	0.00	0.00	1.70	0.90	0.20	0.20
	Pellet Feed	46.10	57.10	1.30	1.30	33.80	30.10	0.00	7.00	0.00	0.00	0.00	7.50	4.50	0.00	0.00
AM - 13	Lump	58.10	66.00	14.80	13.00	23.00	18.70	0.80	0.00	0.00	0.00	0.00	4.10	2.30	0.00	0.00
	Sinter Feed	45.60	55.80	4.80	4.80	38.20	33.30	3.60	0.50	0.00	0.00	0.00	10.60	6.30	0.00	0.00
	Pellet Feed	3.50	5.50	5.10	6.80	42.30	48.60	0.40	2.90	0.00	0.00	0.60	44.10	34.70	0.80	0.80
AM - 20	Lump	90.50	93.10	0.30	0.30	8.00	6.00	10.30	0.20	0.30	0.10	0.20	0.30	0.10	0.00	0.00
	Sinter Feed	56.00	65.90	0.00	0.00	31.30	26.60	19.30	6.10	1.30	0.80	0.00	1.10	0.60	0.00	0.00
	Pellet Feed	24.40	35.10	0.00	0.00	32.90	34.20	25.10	14.00	0.00	0.00	0.20	23.20	16.50	0.00	0.00
AM - 47	Lump	36.70	47.50	16.00	17.30	15.60	14.60	21.40	16.40	1.50	1.00	0.00	5.10	3.30	0.00	0.00
	Sinter Feed	37.50	49.80	7.30	8.10	18.60	17.80	29.50	14.30	3.30	2.20	0.00	11.90	7.80	0.00	0.00
	Pellet Feed	35.60	47.90	6.80	7.60	17.90	17.40	32.70	20.00	0.00	0.00	1.10	9.10	6.00	0.00	0.00
AM - 48	Lump	59.40	74.00	0.00	0.00	1.70	1.60	19.20	20.50	2.60	1.60	0.00	3.60	2.20	0.00	0.00
	Sinter Feed	62.00	73.90	0.00	0.00	12.50	10.80	33.70	11.50	2.60	1.60	0.50	3.10	1.80	0.00	0.00
	Pellet Feed	32.50	44.40	6.40	7.20	21.30	21.00	5.10	23.20	0.00	0.00	0.10	6.00	4.10	0.00	0.00
AM - 53	Lump	39.90	45.90	47.20	45.10	5.80	4.80	15.60	2.90	1.00	0.60	0.40	0.70	0.40	0.00	0.00
	Sinter Feed	22.70	30.60	38.10	42.70	0.00	0.00	0.00	10.60	14.90	10.10	0.70	8.10	5.40	0.00	0.00
	Pellet Feed	19.10	28.90	14.70	18.50	6.60	7.20	51.50	39.20	0.70	0.60	0.30	7.10	5.30	0.00	0.00
AM - 58	Lump	98.30	98.90	0.40	0.30	0.40	0.40	0.50	0.20	0.20	0.10	0.00	0.10	0.10	0.00	0.00
	Sinter Feed	67.50	77.30	0.00	0.00	15.50	12.80	16.60	9.60	0.00	0.00	0.10	0.20	0.10	0.00	0.00
	Pellet Feed	18.10	28.40	3.40	4.50	15.50	17.60	53.40	42.20	1.70	1.40	0.00	7.80	6.00	0.00	0.00

### 14.1.3 Calculation of Mass Balance

The mass balance is used to quantitatively establish the efficiency, yield and the dimensioning of the process plant.

For this study several size fractions characteristic of Lump and Sinter Feed were considered, in order to determine the mass recovery (product yield) of these materials. A total of 110 samples were analyzed; the results are summarized in Table 14.1.3.1 below and the sample locations are shown in Figure 14-3. The samples used in the mass balance calculation cover the entire mine area and are therefore quite representative of the material to feed the beneficiation plant.

**Table 14.1.3.1: Average Results of Mass Recovery – Lump and Sinter Feed**

	Lump Fractions				Lump	Sinter Feed Fractions					Sinter Feed
	<25.40m m >19.00m m Weight%	<19.00mm >12.50mm Weight%	<12.50mm >9.50mm Weight%	<9.50mm >6.35mm Weight%	<25.40mm >6.35mm Weight%	<6.35mm >4.75mm Weight%	<4.75mm >3.35mm Weight%	<3.35mm >2.00mm Weight%	<2.00mm >1.00mm Weight%	<6.35mm >1mm Weight%	
MEAN	12.63	30.41	15.46	10.23	68.73	5.48	5.62	4.01	2.17	17.27	
STD.DEV.	6.15	4.27	2.85	2.05	5.68	1.51	1.41	1.08	0.69	3.93	
MIN	1.80	20.89	9.51	6.77	55.45	2.48	3.45	1.90	0.91	9.57	
MAX	27.95	42.29	22.60	16.23	83.57	10.01	10.92	7.46	4.28	31.83	

The size fractions for Lump are between 25.4 and 6.35mm and for Sinter Feed between 6.35 and 1.00mm. In Lump, the average weight percent is 68.7%, with minimum and maximum values of 55.5% and 83.6% respectively. The decision was to adopt 55%, the lowest value, as the project premise. The average weight percent in Sinter Feed is 17.3% with a minimum of 9.6% and maximum of 31.8%. A mass recovery of 11% of Sinter Feed was adopted as the premise for the project.

## 14.2 Mineral Processing and Metallurgical Testing - Urucum NE

MMX Corumbá performed bench scale tests of partition and gravimetric concentration in order to evaluate the potential of the resources in Urucum NE area for the production of Lump and Sinter Feed.

These tests were designed to evaluate the concentration properties of the resource considering mass and metallurgical recovery. The optimal methods obtained for concentration of the ore were based on gravity concentration processes.

### 14.2.1 Location and Preparation of Metallurgical Samples

Twenty-five samples were collected in the Urucum NE area from the same exploration shafts used in the geologic model. The sample locations are shown in Figure 14-4 and the principal chemical characteristics of these samples are presented in Table 14.2.1.1.

**Table 14.2.1.1: Characteristics of Samples Analyzed in Heavy Medium Concentration**

Sample ID	Fe	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	P	Mn	TiO <sub>2</sub>	LOI	K <sub>2</sub> O
L14 2400S	46.00	5.50	24.70	0.054	0.66	0.26	3.30	0.34
L14 2600S	57.20	2.30	13.50	0.053	0.09	0.16	1.53	0.11
L15 2400S A	59.60	2.30	10.10	0.055	0.15	0.15	1.28	0.11
L15 2600S	60.20	2.30	8.50	0.055	0.37	0.16	1.55	0.13
L15 2800S A	52.50	3.50	17.30	0.049	0.42	0.16	1.95	0.19
L15 2800S B	60.10	2.80	7.60	0.051	0.37	0.16	1.65	0.13
L16 2400S	49.60	2.70	21.30	0.055	1.50	0.18	1.74	0.28
L16 2600S	53.70	2.50	15.60	0.055	1.10	0.17	1.55	0.23
L17 2200S	52.50	2.70	17.00	0.053	1.01	0.18	1.68	0.26
L17 2400S	59.90	2.10	8.40	0.059	0.85	0.17	1.41	0.16
L17 3000S A	59.60	3.00	7.00	0.066	0.02	0.18	1.92	0.11
L17 3000S B	60.00	3.00	9.50	0.059	0.02	0.20	1.60	0.15
L17 3200S A	60.30	2.80	6.90	0.059	0.05	0.18	1.70	0.10
L17 3200S B	59.30	2.40	8.40	0.059	0.02	0.16	1.46	0.14
L18 2200S	52.20	2.30	17.40	0.054	1.32	0.16	1.47	0.25
L18 2400S	53.80	2.10	16.50	0.055	0.46	0.15	1.96	0.22
L18 3000S	62.40	2.10	7.50	0.053	0.02	0.14	1.11	0.08
L18 3200S	58.30	1.90	13.40	0.056	0.02	0.13	1.33	0.08
L19 2200S	55.00	4.70	13.40	0.066	0.27	0.24	2.49	0.14
L19 2400S	60.30	2.70	8.70	0.052	0.12	0.15	1.45	0.06
L19 2800S	55.20	2.00	15.80	0.051	0.08	0.13	1.52	0.11
L19 3000S A	62.70	2.40	7.90	0.059	0.05	0.18	1.57	0.13
L19 3200S	59.00	1.80	11.90	0.054	0.02	0.12	1.12	0.11
L20 2600S	59.30	2.70	11.00	0.052	0.07	0.16	1.50	0.08
L20 3000S	54.20	2.60	16.90	0.067	0.36	0.14	1.76	0.16
<b>Average</b>	<b>56.92</b>	<b>2.69</b>	<b>12.65</b>	<b>0.056</b>	<b>0.38</b>	<b>0.17</b>	<b>1.66</b>	<b>0.15</b>

### 14.2.2 Methodology

All samples were prepared according to flowchart in Figure 14-5 before the gravimetric concentration tests were carried out.

The sample preparation resulted in three size fractions to be used in the gravimetric tests and one sample considered waste, as described below:

- Fraction <38 mm > 6.35 mm –concentration test - Lump 1;
- Fraction <25 mm >9.52mm –concentration test - Lump 3;
- Fraction < 6.35mm > 1.00mm –concentration test - Sinter Feed; and
- Fraction < 1.00 mm – considered tailings.

The heavy medium used in the assays was a suspension of atomized Ferrosilicon with a density of approximately 7.00g/cm<sup>3</sup>. A suspension with 83.3% solids was prepared to obtain a stable pulp with a density of 3.50g/cm<sup>3</sup>.

### 14.2.3 Results

The samples, after preparation, presented size fraction mass yield and chemical analysis described in Tables 14.2.3.1 and 14.2.3.2.

**Table 14.2.3.1: Mass Yield of Different Products After Processing**

Shaft ID	< 38.0 mm >6.3 mm (%)	< 6.35 mm >1.00 mm (%)	<1.00 mm (%)
L14 2400S	53.92	21.18	24.90
L14 2600S	76.15	16.99	6.86
L15 2400S A	75.18	15.95	8.87
L15 2600S	72.01	19.40	8.59
L15 2800S A	70.23	20.39	9.38
L15 2800S B	65.39	17.77	16.84
L16 2400S	70.44	18.41	11.15
L16 2600S	70.26	20.11	9.63
L17 2200S	70.24	18.53	11.23
L17 2400S	72.77	19.25	7.98
L17 3000S A	70.06	21.14	8.80
L17 3000S B	69.45	20.20	10.35
L17 3200S A	68.33	23.66	8.01
L17 3200S B	68.22	22.82	8.96
L18 2200S	71.28	18.89	9.83
L18 2400S	68.31	19.77	11.92
L18 3000S	67.69	18.81	13.50
L18 3200S	76.97	16.39	6.64
L19 2200S	72.54	19.11	8.35
L19 2400S	75.23	18.78	5.99
L19 2800S	71.97	21.33	6.70
L19 3000S A	69.15	25.27	5.58
L19 3200S	74.03	18.12	7.85
L20 2600S	73.47	19.99	6.54
L20 3000S	73.86	16.24	9.90
<b>Average</b>	<b>70.69</b>	<b>19.54</b>	<b>9.77</b>

**Table 14.2.3.2: Average Chemical Analysis Before Gravimetric Concentration**

Fraction	Fe	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	P	P.F.	K <sub>2</sub> O	MnO	TiO <sub>2</sub>
Lump1	62.88	1.08	7.85	0.060	0.76	0.11	0.47	0.09
Lump3	62.44	0.87	9.19	0.060	0.70	0.11	0.55	0.10
Sinter Feed	55.38	2.23	15.12	0.070	1.80	0.18	0.67	0.18

The results of the gravity concentration tests in Sinter Feed, Lump 1 and Lump 3 are presented in Tables 14.2.3.3, 14.2.3.4 and 14.2.3.5, respectively. The average grades obtained in the tests with Lump 1 were 65.02% Fe and 4.86% SiO<sub>2</sub> and with Lump 3, 64.76% Fe and 5.76% SiO<sub>2</sub>. When the results of the concentration of the two types of products (Lump 1 and Lump 3) are compared, it is noted that there is not a significant difference in grade, indicating that the reduction of top size of the Lump to 25mm does not bring a gain in its quality. The mass and metallurgical recoveries of the concentration tests were on average of 83% and 86% for LUMP 1 and of 88% and 91% for LUMP 3.

**Table 14.2.3.3: Average Chemical Quality of Sinter Feed**

	Fe	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	P	P.F.	K <sub>2</sub> O	MnO	TiO <sub>2</sub>
Sinter feed concentrate	64.30	1.64	4.78	0.05	1.05	0.06	0.15	0.11

**Table 14.2.3.4: Results of Heavy Medium Tests for the Fraction <38.00> - LUMP1**

SAMPLE	FLOW	Fe	Al2O3	SiO2	P	MnO	Mass Recovery	Mat Recovery
I-14-2400S-1.1	FEED	56.70	1.40	14.70	0.050	1.10		
	CONCENTRATE	63.41	1.03	6.39	0.054	0.63	57%	64%
	TAILING	47.71	2.76	24.20	0.060	2.28		
I-14-2600S-1.1	FEED	62.50	0.90	9.50	0.070	0.06		
	CONCENTRATE	63.62	1.08	6.54	0.053	0.11	89%	90%
	TAILING	53.65	1.73	19.63	0.070	0.43		
I-15-2400SA-1.1	FEED	64.40	0.98	6.10	0.060	0.07		
	CONCENTRATE	65.06	1.04	4.92	0.049	0.07	91%	92%
	TAILING	57.62	2.07	12.51	0.060	0.61		
I-15-2600S-1.1	FEED	65.30	0.98	4.50	0.070	0.53		
	CONCENTRATE	65.97	0.85	3.52	0.047	0.11	85%	86%
	TAILING	61.43	1.83	6.58	0.060	1.65		
I-15-2800SA-1.1	FEED	65.20	1.20	2.90	0.070	0.32		
	CONCENTRATE	66.78	1.16	2.02	0.052	0.14	86%	88%
	TAILING	55.48	2.33	9.15	0.060	4.81		
I-15-2800SB-1.1	FEED	63.60	0.84	7.20	0.070	0.42		
	CONCENTRATE	65.92	0.70	3.99	0.046	0.03	82%	85%
	TAILING	53.26	2.27	13.46	0.080	1.91		
I-16-2400S-1.1	FEED	54.90	1.40	16.20	0.060	1.70		
	CONCENTRATE	64.06	0.81	6.25	0.049	0.86	52%	61%
	TAILING	45.00	2.37	27.87	0.060	4.03		
I-16-2600S-1.1	FEED	60.30	1.10	11.30	0.050	1.30		
	CONCENTRATE	63.87	0.93	5.97	0.051	0.50	77%	82%
	TAILING	48.30	2.34	24.34	0.060	3.42		
I-17-2200S-1.1	FEED	59.70	1.10	12.30	0.050	1.00		
	CONCENTRATE	64.38	0.89	5.91	0.048	0.13	61%	66%
	TAILING	52.38	2.14	17.31	0.060	4.04		
I-17-2400S-1.1	FEED	64.70	1.20	3.70	0.080	1.10		
	CONCENTRATE	66.26	0.98	2.54	0.050	0.34	83%	85%
	TAILING	57.25	2.37	8.53	0.070	3.04		
I-17-3000SA-1.1	FEED	66.00	1.40	2.70	0.070	0.04		
	CONCENTRATE	66.78	1.19	2.08	0.051	0.02	82%	83%
	TAILING	62.50	3.03	4.42	0.070	0.06		
I-17-3000SB-1.1	FEED	64.80	1.20	4.20	0.070	0.04		
	CONCENTRATE	65.95	1.10	2.96	0.052	0.02	68%	70%
	TAILING	62.32	2.13	5.73	0.070	0.04		
I-18-2200S-1.1	FEED	58.10	1.10	13.70	0.050	1.60		
	CONCENTRATE	64.16	1.07	5.48	0.053	0.23	68%	75%
	TAILING	45.06	2.35	28.30	0.060	6.20		
I-18-2400S-1.1	FEED	61.60	1.00	11.20	0.050	0.29		
	CONCENTRATE	64.14	0.83	6.17	0.049	0.22	82%	86%
	TAILING	49.68	1.90	24.35	0.050	1.35		
I-18-3200S-1.1	FEED	62.00	0.80	9.10	0.060	0.05		
	CONCENTRATE	63.79	0.72	7.18	0.046	0.01	77%	79%
	TAILING	55.93	1.52	17.77	0.060	0.06		
I-19-2200S-1.1	FEED	63.10	1.20	7.30	0.070	0.45		
	CONCENTRATE	65.55	1.01	4.08	0.050	0.06	89%	93%
	TAILING	43.00	4.49	21.70	0.090	3.19		
I-19-2400S-1.1	FEED	64.90	1.20	5.00	0.070	0.41		
	CONCENTRATE	65.48	1.08	4.19	0.049	0.03	89%	90%
	TAILING	60.25	2.32	8.18	0.070	0.27		
I-19-2800S-1.1	FEED	60.60	0.90	13.20	0.050	0.04		
	CONCENTRATE	63.38	0.81	8.10	0.047	0.03	78%	81%
	TAILING	50.93	1.87	25.94	0.070	0.81		
I-19-3000S-1.1	FEED	66.10	1.10	3.90	0.050	0.06		
	CONCENTRATE	66.58	0.96	3.01	0.048	0.02	82%	83%
	TAILING	63.84	1.71	4.84	0.060	0.14		
I-19-3200S-1.1	FEED	64.10	0.73	7.50	0.040	0.04		
	CONCENTRATE	64.29	0.74	6.86	0.048	0.02	95%	96%
	TAILING	60.31	1.38	11.22	0.060	0.05		
I-20-2600S-1.1	FEED	63.70	1.10	8.10	0.060	0.06		
	CONCENTRATE	65.42	0.92	4.98	0.048	0.03	67%	68%
	TAILING	60.27	1.61	10.54	0.060	0.42		
I-20-3000S-1.1	FEED	60.20	0.83	11.20	0.060	0.87		
	CONCENTRATE	62.39	0.85	8.79	0.056	0.58	89%	93%
	TAILING	42.00	1.64	32.23	0.070	4.61		

**Table 14.2.3.5: Results of Heavy Medium Tests for the Fraction < 25.00 > 9.52 – LUMP3**

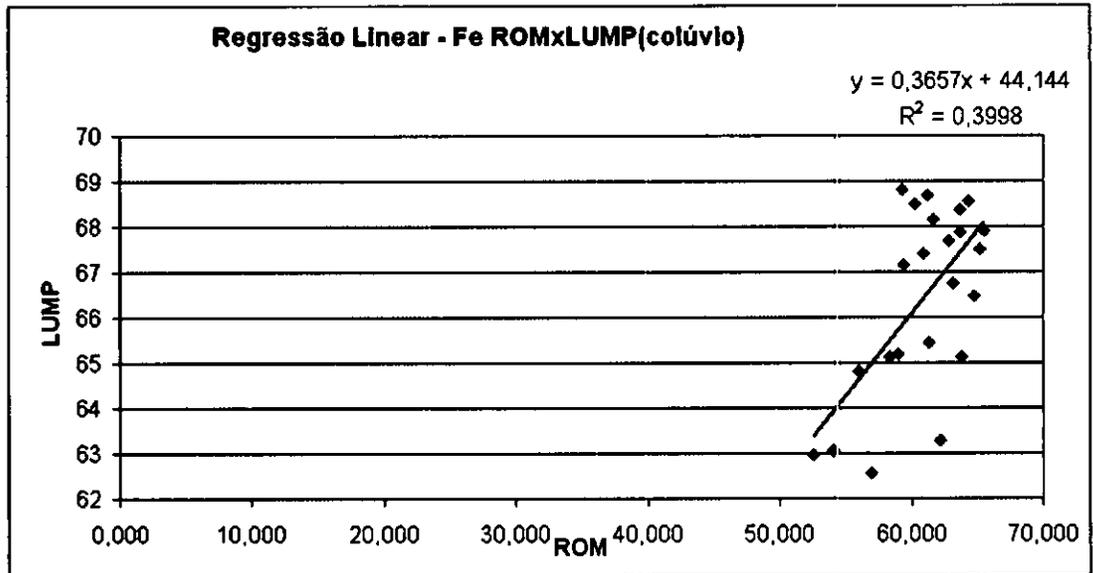
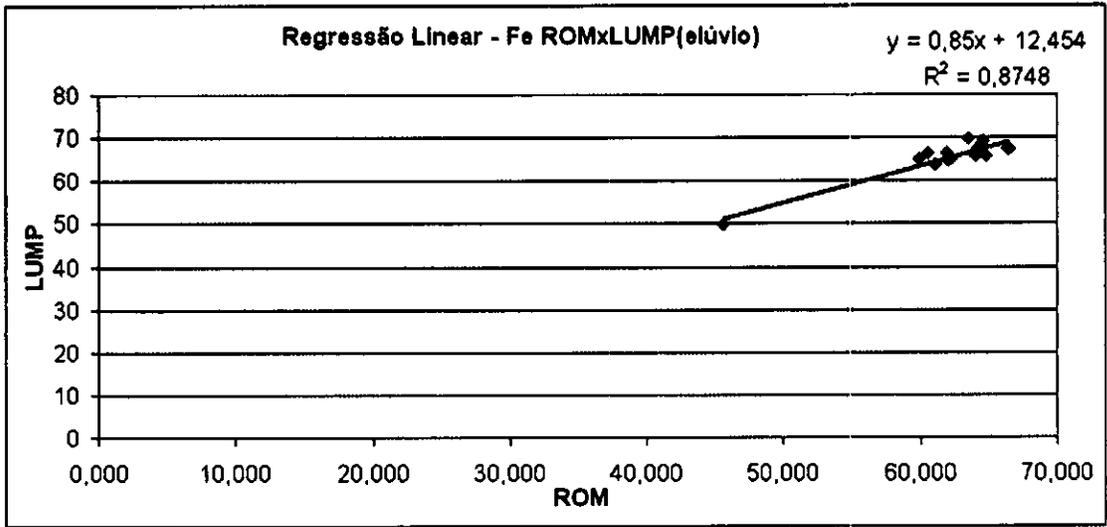
SAMPLE	FLOW	Fe	Al2O3	SiO2	P	MnO	Mass Recovery	Met. Recovery
I.14-2400S-1.1	FEED	58.20	1.20	14.40	0.050	0.80		
	CONCENTRATE	63.43	0.92	6.53	0.049	0.37	71%	78%
	TAILING	45.12	2.55	30.26	0.050	1.86		
I.14-2600S-1.1	FEED	62.20	0.76	10.90	0.070	0.12		
	CONCENTRATE	63.77	0.96	6.62	0.050	0.02	86%	89%
	TAILING	52.22	1.88	21.81	0.080	0.87		
I.15-2400SA-1.1	FEED	54.60	0.64	22.00	0.050	0.09		
	CONCENTRATE	60.49	0.77	12.13	0.047	0.03	64%	71%
	TAILING	44.01	1.70	41.93	0.050	0.32		
I.15-2600S-1.1	FEED	65.80	0.83	4.20	0.060	0.41		
	CONCENTRATE	66.00	0.95	3.42	0.050	0.57	97%	98%
	TAILING	58.16	1.97	7.83	0.070	3.98		
I.15-2800SA-1.1	FEED	67.20	0.93	2.60	0.060	0.58		
	CONCENTRATE	66.96	1.15	2.13	0.053	0.09	102%	102%
	TAILING	56.27	2.19	8.38	0.080	5.17		
I.15-2800SB-1.1	FEED	62.50	0.87	8.90	0.060	0.48		
	CONCENTRATE	65.97	0.71	4.44	0.048	0.03	78%	82%
	TAILING	50.42	2.53	16.41	0.080	2.10		
I-16 2400S-1.1	FEED	54.70	1.20	18.00	0.060	1.90		
	CONCENTRATE	63.43	0.84	7.59	0.048	0.23	68%	79%
	TAILING	38.00	2.57	40.05	0.060	5.04		
I-16 2600S-1.1	FEED	59.30	0.99	12.10	0.060	1.40		
	CONCENTRATE	63.09	0.90	7.66	0.052	0.42	76%	81%
	TAILING	47.38	2.50	24.55	0.070	4.23		
I-17 2200S-1.1	FEED	60.20	0.98	11.50	0.050	1.20		
	CONCENTRATE	64.51	0.84	5.91	0.047	0.28	82%	88%
	TAILING	41.00	2.15	32.11	0.050	3.76		
I-17 2400S-1.1	FEED	65.30	0.94	4.00	0.070	1.00		
	CONCENTRATE	66.60	0.94	2.50	0.051	0.29	88%	90%
	TAILING	55.83	2.61	9.30	0.070	4.36		
I-17 3000SA-1.1	FEED	58.10	0.99	13.10	0.050	1.80		
	CONCENTRATE	66.18	0.89	4.96	0.050	0.35	73%	82%
	TAILING	39.00	2.47	34.09	0.050	5.45		
I-17 3000SB-1.1	FEED	60.50	0.88	11.70	0.040	0.35		
	CONCENTRATE	64.34	0.78	6.31	0.049	0.14	77%	82%
	TAILING	47.59	2.01	28.79	0.060	0.91		
I-18 2200S-1.1	FEED	56.50	0.79	18.20	0.050	0.34		
	CONCENTRATE	60.39	0.81	12.23	0.049	0.06	81%	86%
	TAILING	40.00	1.51	42.85	0.050	0.82		
I-18 2400S-1.1	FEED	63.00	0.59	10.30	0.070	0.03		
	CONCENTRATE	64.22	0.82	6.79	0.051	0.02	87%	88%
	TAILING	55.17	1.73	18.50	0.070	0.07		
I-18 3200S-1.1	FEED	63.10	1.20	7.30	0.070	0.45		
	CONCENTRATE	63.39	0.78	8.02	0.049	0.21	98%	99%
	TAILING	48.35	2.30	28.92	0.050	0.37		
I-19 2200S-1.1	FEED	60.00	0.62	13.70	0.060	0.07		
	CONCENTRATE	63.94	0.69	7.84	0.048	0.03	61%	65%
	TAILING	53.82	1.34	23.25	0.060	0.10		
I-19 2400S-1.1	FEED	64.20	0.68	7.70	0.060	0.10		
	CONCENTRATE	64.72	0.84	5.93	0.049	0.13	92%	93%
	TAILING	58.21	1.49	14.98	0.060	0.33		
I-19 2800S-1.1	FEED	60.80	0.70	12.40	0.060	0.68		
	CONCENTRATE	63.25	0.78	8.13	0.055	0.56	88%	91%
	TAILING	43.00	1.38	33.13	0.070	2.22		
I-19 3000S-1.1	FEED	66.10	1.10	3.90	0.050	0.06		
	CONCENTRATE	66.58	0.96	3.01	0.048	0.02	82%	83%
	TAILING	63.84	1.71	4.84	0.060	0.14		
I-19 3200S-1.1	FEED	64.10	0.73	7.50	0.040	0.04		
	CONCENTRATE	64.29	0.74	6.86	0.048	0.02	95%	96%
	TAILING	60.31	1.38	11.22	0.060	0.05		
I-20 2600S-1.1	FEED	63.70	1.10	8.10	0.060	0.06		
	CONCENTRATE	65.42	0.92	4.98	0.048	0.03	67%	68%
	TAILING	60.27	1.61	10.54	0.060	0.42		
I-20 3000S-1.1	FEED	60.20	0.83	11.20	0.060	0.87		
	CONCENTRATE	62.39	0.85	8.79	0.056	0.58	89%	93%
	TAILING	42.00	1.64	32.23	0.070	4.61		

#### **14.2.4 Conclusion**

The first indicative tests with samples from Urucum NE showed good results for the production of iron ore products adequate for the current market. According to the technological characterization of the samples, approximately 57% of the mass of RoM can be transformed into Lump with average grades of 65% Fe and 5% SiO<sub>2</sub> using dense media concentration (DMS). As with the Lump, the Sinter Feed also presented good indicative results.

Partition and concentration tests are in progress with other samples from Urucum NE to increase the representativity both in the number of samples and in spatial and quality distribution.





**Corumbá Project,  
Brazil**

**Figure 14-2**

**Iron Percentage RoM vs. Lump,  
Mine 63**

SRK Job No.: 162703.03

File Name: Figure 14-2.doc

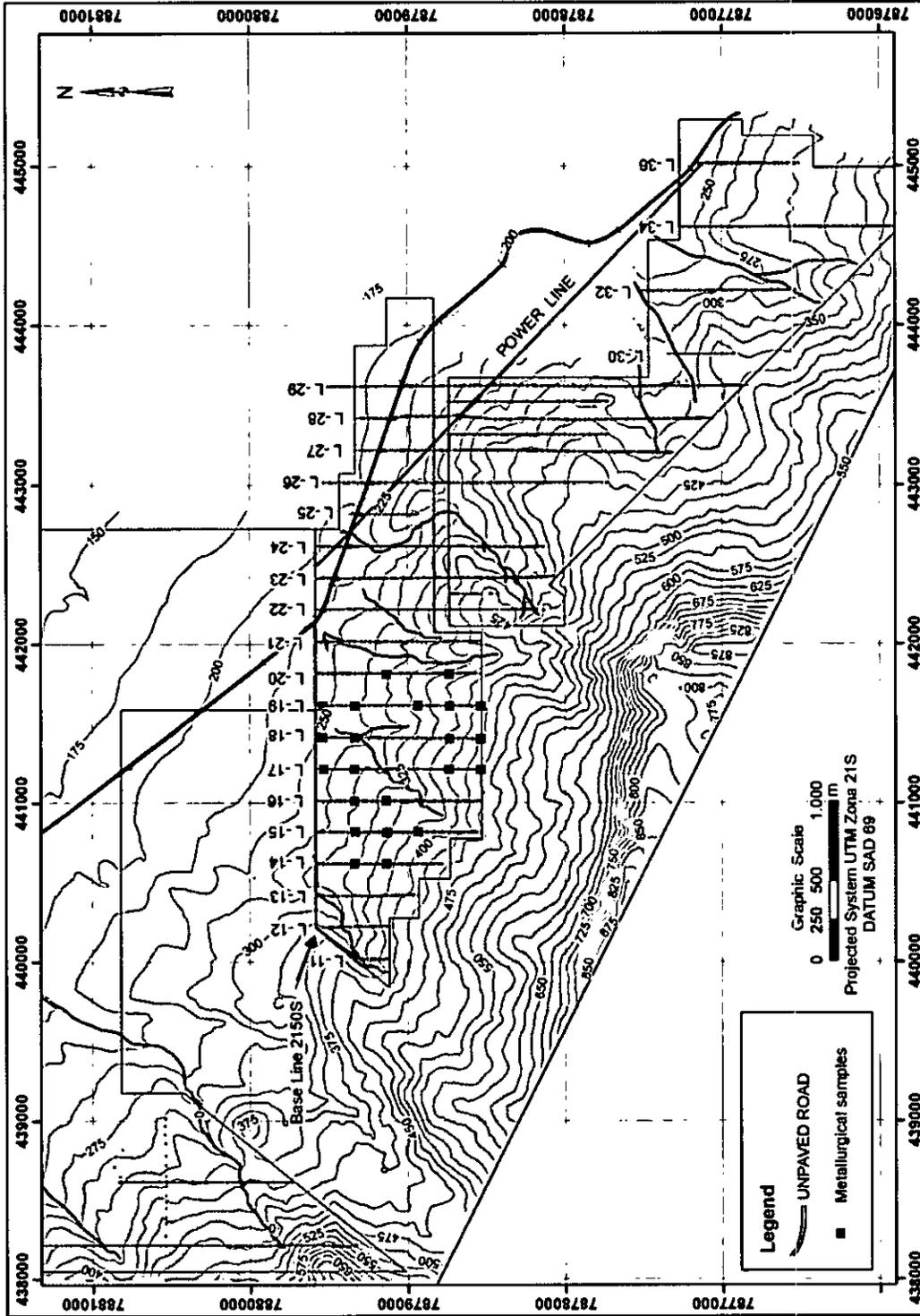
**Source: Mineração & Metálicos S.A.**

Date: 02-27-08

Approved: LM

Figure: 14-2





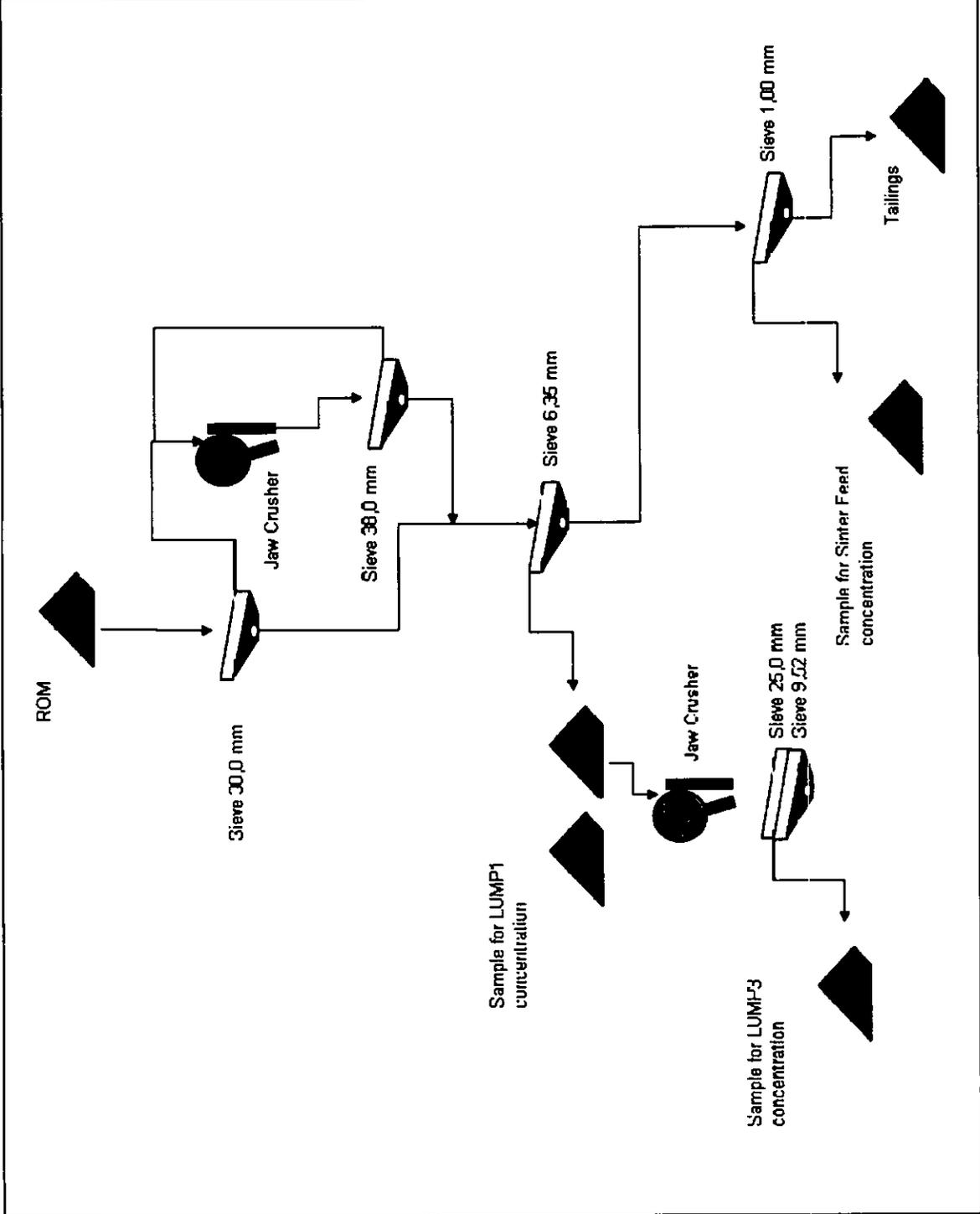
**Figure 14-4**  
**Location Map of Metallurgical Samples, Urucum NE**

**Corumbá Project, Brazil**  
**Source: Mineração & Metálicos S.A.**

**SRK Consulting**  
 Engineers and Scientists

SRK Job No.: 162703.03  
 File Name: Figure 14-4.doc

Date: 02-27-08  
 Approved: LM  
 Figure: 14-4



**Figure 14-5**  
**Flowchart of Preparation of Samples for Dense Medium Tests, Urucum NE**

**Corumbá Project, Brazil**  
**Source: Mineração & Metálicos S.A.**

**SRK Consulting**  
 Engineers and Scientists

SRK Job No.: 162703.03  
 File Name: Figure 14-5.doc

## 15 Mineral Resource and Reserve Estimates (Item 19)

The resource was estimated by Prominas, an independent geologic and engineering consultant company based in Belo Horizonte, under the supervision of MMX personnel. SRK reviewed the resource estimation procedures and results and performed separate validation procedures. MineSight software was used by Prominas and Vulcan software by SRK. SRK received the database as a Microsoft Excel file with four sheets containing the collar coordinates, downhole surveys, assays, and lithologic information. The MineSight surfaces and 3D solids were exported as Vulcan surfaces and solids by Prominas and given to SRK.

### 15.1 Mineral Resource and Reserve Estimation for Mine 63

The resource estimate uses all data through December 2006 and is depleted for production through September 2007. The resource estimation procedure was first described in a NI43-101 Technical Report by SRK in May 2007.

#### 15.1.1 Database

The assays are received from the laboratory as electronic files and as hard copies of the assay certificates. The assays are entered into an Acquire database where it is checked for errors in duplication of fields, sample intervals, and total depth. Channel samples, shafts, and drillholes are all used in the resource database. Figure 15-1 is location map of all channel samples, shafts, and drillholes in the database.

#### 15.1.2 Geological Model

For the purposes of the resource and reserve evaluation, the area of Mine 63 was divided into two separate models: Eluvium Model and the Colluvium Model. Two types of material were modeled in the Colluvium area, colluvium (COL) and breccia (BRE); and two types were modeled in the Eluvial area, COL and Eluvium (LIX).

Two sets of vertical cross sections were generated and interpreted for each model. In the eluvium area, sections are oriented NE-SW and NW-SE and in the colluvium area, the sections are N-S and E-W. The geological contacts were justified between the two sets of sections for each area, and digitized. 3D solids were created for the COL, BRE, and LIX. Figure 15-2, 15-3 and 15-4 illustrate the 3D solids of Mine 63.

#### 15.1.3 Resource Database

Fifty-four shaft and channel samples were excluded from the database for the resource estimation procedure. Two different criteria were used to exclude samples: samples with length of more than 6m or less than 1m and samples within 10.0m of drillholes. SRK has reviewed the excluded samples and notes that the average grade is 57.9% Fe which is somewhat higher than the average grade of the samples which were retained. The revised database with 142 drillholes was obtained after the application of the criteria cited above. The sample locations in the resource database are shown in Figure 15-5 and are summarized in Table 15.1.3.1.

**Table 15.1.3.1: Resource Database, Mine 63**

Types of Drilling	# Drilling	# Samples	Sampled Meters	% Meters
Channel	7	15	83	7%
Drill Hole	81	384	919	74%
Shaft	54	65	237	19%
<b>Total</b>	<b>142</b>	<b>464</b>	<b>1,239</b>	<b>100%</b>

A statistical analysis was performed on the samples in each area, Colluvium and Eluvium, type of material (LIX, COL and BRE) and type of drilling (channel, drill hole and shaft). After the statistical analysis it was decided to use all types of samples in the resource estimate because the statistics showed no bias and the method used for the channel samples and shaft samples are similar to the sampling support of the drill holes.

**Unassayed Intervals**

Some intervals contained within the COL, BRE, or LIX 3D solids had not undergone laboratory analysis. In the original geologic description, some of these intervals that are internal to the mineralized area were described as arkose and are considered internal waste material. Other intervals were not analyzed because there was no core recovery. It was decided to assign a value of zero to all elements in the intervals considered to be internal waste and to assign a value of -1 to those intervals where core was not recovered. In the compositing procedure, the internal waste would be calculated with a value of zero, and the non-recovered intervals would not be used.

Tables 15.1.3.2 and 15.1.3.3 present summaries of the descriptive statistics for the original samples including the internal waste material.

**Table 15.1.3.2: Basic Statistics – Original Assays– Colluvium Area**

		Fe (%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	P (%)	Mn (%)	TiO <sub>2</sub> (%)	LOI (%)
COL	Sample	241	241	241	241	241	241	241
	Minimum	-	-	-	-	-	-	-
	Maximum	66.3	51.1	11.2	0.2	4.49	0.46	5.83
	Mean	51.39	17.04	2.85	0.054	0.6	0.15	1.55
	Std. Devn.	13.11	10.59	2.05	0.018	0.9	0.09	1.07
	Variance	171.74	112.19	4.22	0	0.81	0.01	1.15
	Co. of Variation	0.26	0.62	0.72	0.34	1.49	0.57	0.69
BRE	Sample	48	48	48	48	48	48	48
	Minimum	-	-	-	-	-	-	-
	Maximum	64.2	47.8	6	0.3	2.71	0.28	4.66
	Mean	49.92	20.96	2.27	0.1	0.46	0.12	1.66
	Std. Devn.	10.55	10.08	1.22	0.067	0.5	0.05	1.17
	Variance	111.39	101.56	1.48	0.004	0.25	0	1.37
All	Sample	289	289	289	289	289	289	289
	Minimum	-	-	-	-	-	-	-
	Maximum	66.3	51.1	11.2	0.3	4.49	0.46	5.83
	Mean	51.13	17.74	2.74	0.062	0.58	0.15	1.57
	Std. Devn.	12.7	10.61	1.95	0.037	0.84	0.08	1.09
	Variance	161.4	112.55	3.78	0.001	0.71	0.01	1.19
	Co. of Variation	0.25	0.6	0.71	0.59	1.46	0.56	0.69

**Table 15.1.3.3: Statistics – Original Assays – Eluvium Area**

		Fe (%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	P (%)	Mn (%)	TiO <sub>2</sub> (%)	LOI (%)
LIX	Sample	164	164	164	164	164	164	164
	Minimum	-	-	-	-	-	-	-
	Maximum	68.6	33.9	14.6	0.284	0.29	0.62	9.95
	Mean	60.39	8.67	2.51	0.072	0.04	0.14	1.65
	Std. Devn.	6.15	5.78	2.44	0.04	0.04	0.11	1.72
	Variance	37.76	33.43	5.96	0.002	0	0.01	2.97
	Co. of Variation	0.1	0.67	0.97	0.55	1.04	0.78	1.04
COL	Sample	41	41	41	41	41	41	41
	Minimum	37.4	1.3	0.22	0.036	0.01	0.02	0.25
	Maximum	66.7	41.3	8.6	0.44	2.25	0.4	5.77
	Mean	57.84	12.77	2.43	0.078	0.14	0.15	1.71
	Std. Devn.	6.7	9.44	1.92	0.039	0.39	0.09	1.32
	Variance	44.86	89.08	3.67	0.002	0.15	0.01	1.75
	Co. of Variation	0.12	0.74	0.79	0.5	2.84	0.61	0.77
All	Sample	205	205	205	205	205	205	205
	Minimum	-	-	-	-	-	-	-
	Maximum	68.6	41.3	14.6	0.44	2.25	0.62	9.95
	Mean	59.94	9.41	2.49	0.073	0.06	0.14	1.66
	Std. Devn.	6.32	6.77	2.36	0.04	0.17	0.11	1.66
	Variance	39.99	45.88	5.55	0.002	0.03	0.01	2.75
	Co. of Variation	0.11	0.72	0.94	0.54	3.08	0.75	1

#### 15.1.4 Compositing

The original samples were composited into 5m lengths with breaks at the geologic contacts. Intervals less than 2.0m were included in the previous interval if both intervals were inside the same lithologic domain. The compositing procedure resulted in 282 composite samples. For grade estimation, only composites with lengths between 3 and 7m were used. Tables 15.1.4.1 and 15.1.4.2 present summary statistics for composites used in resource estimation. The composites excluded from resource estimation because they had lengths outside the accepted range include:

- Colluvium area: 21 composites in the colluvium with a mean grade of 44.8% Fe and seven composites in the breccia with a mean grade of 57.6% Fe; and
- Eluvium area: nine samples in the LIX with a mean grade of 61.1% Fe and five in the colluvium with a mean grade of 59.2% Fe.

SRK notes that the more customary method of limiting the influence of composites with lengths less than the nominal compositing length is to use length weighting in the estimation procedure. However, the validation of the block grade models indicates that this procedure of excluding composites has not created a grade bias in the estimation.

**Table 15.1.4.1: Basic Statistics Composite Data Set – Colluvium Area**

		Fe (%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	P (%)	Mn (%)	TiO <sub>2</sub> (%)	LOI (%)
All	Sample	148	148	148	148	148	148	148
	Minimum	12.66	3.5	0.15	0.013	0.01	0.01	0.04
	Maximum	66.11	39.45	11.2	0.3	4.03	0.45	4.92
	Mean	50.93	17.88	2.64	0.062	0.59	0.14	1.48
	Std. Devn.	9.98	9.03	1.74	0.033	0.78	0.07	0.96
	Variance	99.6	81.62	3.02	0.001	0.6	0.01	0.92
	Co. of Variation	0.2	0.51	0.66	0.53	1.32	0.51	0.65

**Table 15.1.4.2: Basic Statistics Length Composite Data Set – Eluvium Area**

		Fe (%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	P (%)	Mn (%)	TiO <sub>2</sub> (%)	LOI (%)
All	Sample	94	94	94	94	94	94	94
	Minimum	38.95	2.1	0.3	0.035	-	0.01	-
	Maximum	68.3	38.2	9.09	0.242	1.36	0.47	7.14
	Mean	59.78	9.6	2.52	0.074	0.06	0.14	1.71
	Std. Devn.	5.1	6.5	2.12	0.037	0.14	0.1	1.5
	Variance	26.03	42.25	4.47	0.001	0.02	0.01	2.26
	Co. of Variation	0.09	0.68	0.84	0.5	2.52	0.67	0.88

Histograms of the iron in the colluvium and eluvium areas show different distributions. The eluvial ore presents a smaller variation of iron content with a minimum iron grade of 45.28%. The variation of the iron content in the colluvial ore is larger, with iron grades between 12 and 66%. The difference is explained by the genesis of each type of mineralization. The eluvial ore deposit is an “in situ” enrichment from the jaspelite. The colluvial ore deposit represents a depositional process. This type of iron ore contains clasts of eluvial ore as well as fragments of jaspelite and arkose within a clay matrix.

### 15.1.5 Density

Bulk density measurements were made on samples collected from the shafts in the colluvium and eluvium areas of Mine 63. The sampling and analysis were done by Prominas, a Brazilian company with experience in the procedures. The specific gravity (SG) measurements were done on a wet basis.

#### Methodology

The tests to determine density were carried out in accordance with the established Brazilian Association of Technical Standards (ABNT), listed below:

- NBR 7.185/1986 – Determination of Apparent Specific Mass, in situ, with use of sand flask; and
- NBR 10.838/1988 – Determination of Apparent Specific Mass of undeformed samples, with the use of a hydrostatic scale – displacement of volume in dense medium.

For the eluvium, the test was displacement of volume in dense medium which is the methodology used for compact or hard samples. For colluvium material, the sand flask method was used because this type of material consist of unconsolidated rock.

### **Eluvium**

Sixty-four samples of eluvium material were collected in the walls of exploration shafts, using small pieces of compact material. The data are presented in Table 15.1.4.2. The average density for the eluvium was 3.603g/cm<sup>3</sup>, standard deviation 0.4397g/cm<sup>3</sup> and variance 2.07g/cm<sup>3</sup>, with maximum and minimum values of 4.67 and 2.60g/cm<sup>3</sup> respectively.

### **Colluvium**

The method used for lab tests on colluvium material was the sand flask. Twenty-five samples of Colluvium Ore Type were collected beside or inside the exploration shafts.

The average density was 3.158g/cm<sup>3</sup>, the standard deviation was 0.3598g/cm<sup>3</sup>, the variance was 1.52g/cm<sup>3</sup> with maximum and minimum values of 3.9 and 2.38g/cm<sup>3</sup> respectively.

#### **15.1.6 Topography**

The preliminary survey of Mine 63 was carried out by BXF, which used a Topcon DT 209 electronic theodolite, optical plummet with angular accuracy of 20" (twenty seconds) and distances measured by tape; after setting a baseline, a Pentax PCS1S Total Station was used, with angular accuracy of 10" (ten seconds), optical plummet, 5" (five seconds) reading, 800m range with 1 circular prism and 1,100m range, with three prisms, HP 48GX calculator-type external data collector, Pawertopolite system. The calculations and drawings were made with use of topoGRAPH 98 and AutoCAD 2004 software.

The tie-in point (PA) had landmark M\_24 on top of the Urucum Hill (observation deck) as a station, and its UTM coordinates (Universal Transverse Mercator System) are N 7877220.20 E 436598.27 Z 935.93.

The topography used in the original resource estimation was current as of December 2006. The topography used in this report is current as of September 2007.

BXF also surveyed the location of the drillhole collars, shafts, and channel samples

#### **15.1.7 Variography**

Variographic analysis and modeling were made for both Colluvium and Eluvium areas. The variables studied were Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, P, MnO, TiO<sub>2</sub> and LOI in each of the areas and by individual material types.

After analysis of the directional variograms and taking into account the small number of available samples, it was decided to develop omnidirectional horizontal semi-variograms. Semi-variograms in the vertical direction were made to assess the continuity in the vertical direction and the nugget value.

The spherical model using up to two nested structures. The parameters are:

- C0 = nugget effect;
- C1 = sill 1st structure;
- C2 = sill 2nd Structure;
- A1 = range 1st structure; and
- A2 = range 2nd structure.

Figures 15-6 and 15-7 present the variograms developed for Fe in the Colluvium and Eluvium areas and tables 15.1.7.1 and 15.1.7.2 summarize all variographic models adjusted for the regional variables modeled in Colluvium and Eluvium areas.

**Table 15.1.7.1: Variography – Colluvium Area**

VR	COD	C0	Horizontal Sill			Vertical Sill			Horizontal Range		Vertical Range	
			C1	C2	Total	C1	C2	Total	A1	A2	A1	A2
COL		24.26	33.09	15.22	72.57	10.54	37.78	72.57	138.6	500	6.78	14.93
ALL		34.25	23.34	9.99	67.58	33.33	-	67.58	173.28	499.2	19.27	-
COL		35.57	44.38	19.84	99.79	68.76	-	104.33	116.24	467.53	17.11	-
ALL		39	49.72	9.37	98.09	62.03	-	101.03	151.7	532.87	20.31	-
COL		1.28	1.353	1.356	3.989	2.336	-	3.616	169.08	500	11.15	-
ALL		1.6	1.022	0.897	3.52	1.758	-	3.358	129.42	499.18	11	-
COL		0.2993	0.5803	0.2164	1.096	0.0795	-	0.3788	101.15	367.38	3.77	-
ALL		0.18	0.6981	0.1925	1.0706	0.2934	-	0.4734	78.46	344.75	10	-
COL		0.55	0.276	0.154	0.981	0.502	-	1.052	152.95	325	15.47	-
ALL		0.458	0.394	0.041	0.893	0.482	-	0.94	135.2	318	10.82	-
COL		0.004	0.0005	0.0029	0.0074	0.0027	-	0.0067	208.3	420.38	11.48	-
ALL		0.004	0.0012	0.0011	0.0063	0.0025	-	0.0065	249.87	454.53	12.83	-
COL		0.403	0.549	0.24	1.191	0.791	-	1.194	56.2	347.55	10.17	-
ALL		0.199	0.901	0.091	1.191	0.991	-	1.19	64.6	306.21	9.9	-

**Table 15.1.7.2: Variography – Eluvium Area**

VR	COD	C0	Horizontal Sill			Vertical Sill			Horizontal Range		Vertical Range	
			C1	C2	Total	C1	C2	Total	A1	A2	A1	A2
LIX		0.43	0.31	0.29	1.03	1.07	-	1.5	26.32	398.56	12.1	-
ALL		13.3	1.89	7.4	22.59	8.65	-	21.95	118.11	381.5	16.94	-
LIX		17.8	6.08	4.03	27.9	5.61	-	23.41	84.71	338.82	9.26	-
ALL		25.5	4.6	7.83	37.93	3.28	-	28.78	88.08	393.08	10.03	-
LIX		0.31	1.785	3.77	5.865	4.387	-	4.697	81.16	521.83	12.63	-
ALL		0.25	1.729	3.316	5.295	3.001	-	3.251	75.87	490.26	11.7	-
LIX		0.0001	0.0004	0.0007	0.0012	0.0008	-	0.0009	76.38	353.47	24.51	-
ALL		0.0001	0.0005	0.0006	0.0012	0.0008	-	0.0009	108.56	435.83	17.05	-
LIX		0.011	0.002	0.001	0.014	0.002	0.001	0.013	81.69	241.92	4.44	14.04
ALL		0.01	0.002	0.0013	0.013	0.037	-	0.047	74.37	210.83	14.68	-
LIX		0.002	0.0031	0.0079	0.013	0.008	-	0.01	32.68	495	12.88	-
ALL		0.0018	0.0028	0.0066	0.0112	0.0048	-	0.0066	64.57	441.79	10.78	-
LIX		0.013	0.001	-	0.014	1.905	-	1.918	184.82	-	6.38	-
ALL		0.042	0.003	0.004	0.049	1.129	0.799	1.97	83.95	259.1	4.68	10.16

The adjusted models presented geometric anisotropy related to the range in the horizontal plane. In some cases, the models also presented zonal anisotropy. The vertical variograms do not show good structure, because of the small thickness of the layers and the consequent few sample numbers.

To solve the problem of anisotropy, the technique of telescoping was employed. This technique was described by Campos (1989) and developed in the algorithm of decomposition of variograms that deals with complex situations such as nested structures with geometric and zonal anisotropies. This method was adopted by Girodo and colleagues (personal communication, 2007) in the evaluation of iron ore mines in the Iron Ore Quadrangle of Minas Gerais.

The results of the telescoping study are shown in Table 15.1.7.3 and Table 15.1.7.4. The range in the z direction was set to an artificially high number so that the kriging weight would not be limited in the vertical direction.

Table 15.1.7.3: Telescoped Variograms – Colluvium Area

VR/Type	Code	Nugget	Structures			Ranges Structure 1			Ranges Structure 2			Ranges Structure 3		
			Sill 1	Sill 2	Sill 3	X	Y	Z	X	Y	Z	X	Y	Z
Fe	COL	24.26	10.54	22.56	15.22	139	139	7	139	139	15	500	500	15
	ALL	34.25	23.34	9.99	-	173	173	19	499	499	19	-	-	-
SiO <sub>2</sub>	COL	35.57	44.38	19.84	4.54	116	116	17	468	468	17	99999	99999	17
	ALL	39.00	49.72	9.37	2.94	152	152	20	533	533	20	99999	99999	20
Al <sub>2</sub> O <sub>3</sub>	COL	1.28	1.35	0.98	0.37	169	169	11	500	500	11	500	500	99999
	ALL	1.60	1.02	0.74	0.16	129	129	11	499	499	11	499	499	99999
P	COL	0.30	0.08	0.50	0.22	101	101	8	101	101	99999	367	367	99999
	ALL	0.18	0.29	0.40	0.19	78	78	10	78	78	99999	345	345	99999
Mn	COL	0.55	0.28	0.15	0.07	153	153	15	325	325	15	99999	99999	15
	ALL	0.46	0.39	0.04	0.05	135	135	20	318	318	20	99999	99999	20
TiO <sub>2</sub>	COL	0.00	0.00	0.00	0.00	208	208	11	420	420	11	420	420	99999
	ALL	0.00	0.00	0.00	0.00	250	250	13	455	455	13	99999	99999	13
LOI	COL	0.40	0.55	0.24	0.00	56	56	10	348	348	10	99999	99999	10
	ALL	0.20	0.90	0.09	0.00	65	65	10	306	306	10	306	306	99999

Table 15.1.7.4: Telescoped Variograms – Eluvium Area

VR/Type	Code	Nugget	Structures			Ranges Structure 1			Ranges Structure 2			Ranges Structure 3		
			Sill 1	Sill 2	Sill 3	X	Y	Z	X	Y	Z	X	Y	Z
Fe	LIX	8.20	5.91	5.54	8.92	26	26	12	399	399	12	99999	99999	12
	ALL	13.30	1.89	6.77	0.64	118	118	17	382	382	17	382	382	99999
SiO <sub>2</sub>	LIX	17.80	5.61	0.47	4.03	85	85	9	85	85	99999	339	339	99999
	ALL	25.50	3.28	1.32	7.83	88	88	10	88	88	99999	393	393	99999
Al <sub>2</sub> O <sub>3</sub>	LIX	0.31	1.79	2.60	1.17	81	81	13	522	522	13	522	522	99999
	ALL	0.25	1.73	1.27	2.04	76	76	12	490	490	12	490	490	99999
P	LIX	0.00	0.00	0.00	0.00	76	76	25	353	353	25	353	353	99999
	ALL	0.00	0.00	0.00	0.00	109	109	17	436	436	17	436	436	99999
Mn	LIX	0.01	0.00	0.00	0.00	82	82	4	82	82	14	242	242	99999
	ALL	0.01	0.00	0.00	0.03	74	74	10	211	211	10	99999	99999	10
TiO <sub>2</sub>	LIX	0.00	0.00	0.00	0.00	33	33	13	495	495	13	495	495	99999
	ALL	0.00	0.00	0.00	0.00	65	65	11	442	442	11	442	442	99999
LOI	LIX	0.01	0.00	1.90	-	185	185	6	99999	99999	6	-	-	-
	ALL	0.04	0.00	0.00	1.12	84	84	5	259	259	5	99999	99999	5

### 15.1.8 Resource Estimation

#### Block Model

Following the same strategy applied to the geologic model, the area was divided into two separate block models. The Colluvium block model is oriented north-south and the Eluvium block model is rotated with an azimuth of 312°, from the reference point X = 436,150 (East UTM Location) and Y = 7,875,700 (North UTM Location).

The two block models were constructed with different cell sizes related to the sample grid spacing of each domain. The parameters of the two models are described in the Table 15.1.8.1. The Eluvium block model coordinates are local, the origin of the block model is the reference point cited above.

**Table 15.1.8.1: Parameters of Block Model**

Model	Direction	Minimum	Maximum	Block Sizes (m)	No. of Blocks
Colluvium	X	433 000	436 250	50	65
	Y	7 875 500	7 878 500	50	60
	Z	200	1 200	5	200
Eluvium	X	0	2 000	25	80
	Y	0	2 000	25	80
	Z	500	1 200	5	140

The blocks were assigned a rock code from the 3D solids using MineSight software; the percentage of the block within the solid was also assigned to the block. Blocks that intersected more than one solid were assigned the majority rock code.

Figure 15-8 illustrates the Mine 63 Block Models.

#### Estimation

The variables Fe, SiO<sub>2</sub>, P, Al<sub>2</sub>O<sub>3</sub>, Mn and TiO<sub>2</sub> were estimated by ordinary kriging, using the following parameters:

- Composite samples with length between 3.0 and 7.0m;
- The minimum number of samples was two and the maximum number of samples was 27;
- A maximum of three composites per hole were used in the estimation of each block;
- Selection of composite samples by quadrants, with a maximum of seven composites per quadrant;
- The search distance in the horizontal direction was defined by the maximum range of the variogram with no restriction in the vertical search, which is limited by the geologic solid;
- Discretization of the blocks equal to 5m x 5m x 2m in X, Y and Z; and
- Only composite samples of the same geological domain were used in each estimation.

In addition to Fe, SiO<sub>2</sub>, P, Al<sub>2</sub>O<sub>3</sub>, Mn and TiO<sub>2</sub>, the following variables were included in the estimation:

- VK – Kriging Variance;
- RS – Regression Slope;
- DISTC = distance from the center of the block to the nearest composite sample used in the block estimation;
- DISTM = average distance from the center of the block to the samples used in the block estimation;
- NA = number of samples used in the block estimation; and
- NF = number of holes used in the estimation.

For the COL (Colluvium area) and LIX (Eluvium area) geologic domains the respective variographic models were used. For the BRE geologic domain in the Colluvium area, the variographic model ALL was used but only samples of the BRE domain were used. For the COL geologic domain in the Eluvium area, the variographic model ALL was used but only samples of the COL domain was used. Tables 15.1.8.2 and 15.1.8.3 present the statistics of the estimated blocks for the Colluvium and Eluvium areas and Figures 15-9 and 15-10 present a plan view and cross-sections of the block model.

**Table 15.1.8.2: Statistics of the Colluvium Block Model**

	Fe (%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	P (%)	Mn (%)	TiO <sub>2</sub> (%)	LOI (%)
# Block	4 281	4 283	4 281	4 243	4 227	4 271	4 241
Minimum	31.9	4.84	1.02	0.038	0.03	0.07	0.75
Maximum	62.6	32.18	7.42	0.23	2.52	0.28	4.14
All Mean	51.43	17.53	2.83	0.06	0.62	0.15	1.59
Std. Devn.	5.39	5.07	0.85	0.022	0.47	0.03	0.48
Variance	29.08	25.73	0.72	0.001	0.22	0	0.23
Co. of Variation	0.1	0.29	0.3	0.37	0.76	0.22	0.3

**Table 15.1.8.3: Statistics of the Eluvium Block Model**

	Fe (%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	P (%)	Mn (%)	TiO <sub>2</sub> (%)	LOI (%)
# Block	2 913	2 913	2 913	2 913	2 911	2 913	2 913
Minimum	49.67	5.48	0.47	0.039	0.01	0.05	0.09
Maximum	65.89	21.9	7.31	0.209	1.03	0.32	6.21
All Mean	60.24	9.66	2.42	0.077	0.05	0.14	1.66
Std. Devn.	2.58	2.94	1.19	0.024	0.08	0.05	1.12
Variance	6.65	8.62	1.41	0.001	0.01	0	1.24
Co. of Variation	0.04	0.3	0.49	0.32	1.69	0.35	0.67

### **Model Validation**

SRK validated the block model by constructing swath plots comparing iron grades of composites and block model grades in the east-west and north-south directions as shown in Figure 15-11. The plots include data from both block models and all composites, regardless of sample length. The plots show good agreement between the composite and block grades. SRK also visually compared the block model to composites by cross-section and by bench.

### 15.1.9 Resource Classification

The Mineral Resources are classified under the categories of Measured, Indicated and Inferred Mineral resources according to CIM guidelines. Tonnes are reported on a wet basis. The resource classification of the Colluvium and Eluvium areas was based on the kriging variance and/or the regression slope between the kriged-estimated value and the real value.

The mineral resources of the Colluvium area were classified based on the following criterion:

For the COL geologic domain:

- Indicated: Kriging Variance < 43; and
- Inferred: Kriging Variance >= 43.

For the BRE domain:

- Indicated: Kriging Variance < 40; and
- Inferred: Kriging Variance >= 40.

The mineral resources of the Eluvium area were classified based on the following criterion:

For the LIX geologic domain:

- Measured: Kriging Variance < 13 and Regression Slope > 0.9;
- Indicated: Kriging Variance < 13 and Regression Slope <= 0.9; and
- Inferred: Kriging Variance >= 13.

For the COL geologic domain:

- Indicated: Kriging Variance < 9.5; and
- Inferred: Kriging Variance >= 9.5.

### Resource Statements

The resources for the Corumbá iron deposit are declared at a 30% Fe cut-off. The resources were depleted for mine production through September 2007. Table 15.1.8.4 lists the total resources, including ore reserves, for Mine 63 of the Corumbá Project as at September 30, 2007.

**Table 15.1.8.4: Mineral Resources – Mine 63 Corumbá Project\***

Classification	Tonnage (M t)*	Fe(%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	P(%)	Mn(%)	TiO <sub>2</sub> (%)	LOI (%)
Measured	3.17	55.23	15.2	3.09	0.056	0.12	0.18	1.72
Indicated	34.00	53.03	18.14	2.97	0.055	0.34	0.18	1.8
Measured and Indicated	37.17	53.22	17.89	2.98	0.055	0.32	0.18	1.79
Inferred	32.84	50.95	19.53	3.78	0.054	0.44	0.2	2.19

\* Tonnes are reported on a wet basis  
Fe Cut-off grade is 30%

## 15.2 Mineral Resource Estimation – Urucum NE

### 15.2.1 Database

The database of the Urucum NE Project consists of 162 exploration shafts and represents the available data through September 2007. Three of these shafts were removed from the resource database because they are less than 1m in depth. An additional 22 shafts were not sampled because they did not encounter favorable lithologies. These 22 shafts were used in the database that defined the geologic model, but are outside the model and therefore not used in the resource estimation. The resource database therefore contains 137 shafts that were used for statistical analysis and grade estimation. Table 15.2.1.1 presents the summary of the Urucum NE shafts.

**Table 15.2.1.1: Summary of Exploration Shafts, Urucum NE**

	Number	Meters	% Meters
Shafts	159	703.42	100
Sampled	137	605.42	86

The database consists of four Microsoft Excel spreadsheets:

- Header: collar co-ordinates of the shafts with 159 records;
- Survey: shaft surveys with 159 records; all shafts are vertical;
- Geology: final geological description with 421 records; and
- Assay: eight assays tables were generated with the global analysis (GL) and seven analyses corresponding to the granulometric intervals (F1 to F7). Samples with values below the detection limit received a value of half of the detection limit. Unsampled intervals were designated as -1.

These files were imported to the MineSight© software and during the import routines no errors were found in relation to duplicated fields or different length between the tables.

The basic statistics for the global analyses by rock type are shown in Table 15.2.1.2.

**Table 15.2.1.2: Basic Statistics – Global Assay Urucum NE Area**

		Fe (%)	Al <sub>2</sub> O <sub>3</sub> (%)	SiO <sub>2</sub> (%)	P(%)	Mn(%)	TiO <sub>2</sub> (%)	LOI(%)
Entire Samples COFM	Valid	52	52	52	52	52	52	52
	Minimum	19.4	0.8	8.2	0.025	0.02	0.06	0.9
	Maximum	62.4	12.5	52.9	0.18	1.4	0.57	5.92
	Mean	50.085	4.049	20.407	0.0559	0.321	0.219	2.272
	1st Quartile	45.598	2.596	13.607	0.0451	0.03	0.17	1.542
	3rd Quartile	56.305	5.1	25.111	0.062	0.601	0.25	2.601
	Std. Devn.	8.614	2.294	9.422	0.0212	0.4	0.09	1.093
	Variance	74.196	5.263	88.769	0.0004	0.16	0.008	1.194
	Co. of Variation	0.172	0.567	0.462	0.3793	1.244	0.412	0.481
Entire samples COMG	Valid	17	17	17	17	17	17	17
	Minimum	45.5	1.3	8.4	0.038	0.02	0.1	0.82
	Maximum	60	4.5	29.3	0.081	1.6	0.29	2.49
	Mean	51.9	2.491	20.776	0.0574	0.284	0.166	1.469
	1st Quartile	47.521	1.8	19.382	0.052	0.049	0.14	1.07
	3rd Quartile	53.508	3.099	25.203	0.06	0.37	0.17	1.729
	Std. Devn.	4.761	0.893	6.72	0.011	0.411	0.044	0.527
	Variance	22.666	0.798	45.153	0.0001	0.169	0.002	0.278
	Co. of Variation	0.092	0.358	0.323	0.1918	1.447	0.264	0.359
Mixed samples COFM	Valid	50	50	50	50	50	50	50
	Minimum	40.7	1.4	6.7	0.036	0.02	0.12	1.04
	Maximum	63.1	6.13	35	0.077	1.5	0.28	4.27
	Mean	54.79	2.796	15.938	0.0574	0.3	0.174	1.759
	1st Quartile	51.716	1.999	9.819	0.053	0.04	0.15	1.371
	3rd Quartile	59.582	3.005	20.814	0.064	0.391	0.19	1.921
	Std. Devn.	5.273	1.176	6.587	0.009	0.384	0.035	0.663
	Variance	27.809	1.383	43.391	0.0001	0.148	0.001	0.439
	Co. of Variation	0.096	0.421	0.413	0.1567	1.28	0.202	0.377
Mixed samples COMG	Valid	31	31	31	31	31	31	31
	Minimum	28.6	1.5	7.5	0.03	0.02	0.12	0.73
	Maximum	62.7	6.4	48.9	0.073	1.32	0.35	2.93
	Mean	54.519	2.789	16.597	0.0542	0.245	0.171	1.613
	1st Quartile	52.197	2.198	11.02	0.051	0.03	0.15	1.329
	3rd Quartile	59.101	2.9	19.521	0.059	0.36	0.19	1.812
	Std. Devn.	6.471	0.942	7.985	0.0079	0.363	0.042	0.399
	Variance	41.88	0.887	63.754	0.0001	0.132	0.002	0.159
	Co. of Variation	0.119	0.338	0.481	0.1464	1.485	0.245	0.247
All samples	Valid	150	150	150	150	150	150	150
	Minimum	19.4	0.8	6.7	0.025	0.02	0.06	0.73
	Maximum	63.1	12.5	52.9	0.18	1.6	0.57	5.92
	Mean	52.775	3.194	18.172	0.0562	0.294	0.188	1.874
	1st Quartile	49.706	2.186	11.99	0.05	0.03	0.15	1.34
	3rd Quartile	58.184	3.684	23.217	0.062	0.391	0.2	2.17
	Std. Devn.	7.072	1.709	8.188	0.0144	0.386	0.065	0.841
	Variance	50.017	2.919	67.047	0.0002	0.149	0.004	0.708
	Co. of Variation	0.134	0.535	0.451	0.2563	1.311	0.348	0.449

### 15.2.2 Geologic Model

The geologic model of the Urucum NE area was created in MineSight© software using a Gridded Seam Model (GSM).

Originally, the colluvium of the Urucum NE area was classified by grain size, mineralogy and matrix characteristics, as fine to medium colluvium (COFM) and medium to coarse colluvium (COMG). The geologic model was simplified by combining the two groups into a single colluvium layer, COL, because the density and chemical qualities were not significantly different. In Urucum NE area, the lithologic layers are well defined as soil (SOL), colluvium (COL), breccia (BRE) and basement saprolite (SAP). The colluvium is sub-horizontal following the topographic surface. This allows modeling the geology as a sub-horizontal GSM, with a cell size of 15m x 15m in plan. Data points were created in the database to allow smoother transitions to areas where the saprolite is near to the surface and the colluvium is thin or non-existent. The generation of top and bottom surfaces of the colluvium layer (COL) was made through the an inverse distance (IDW) methodology, interpolating the thickness of this layer with the length of the composite intervals. A 3D solid of the colluvium was created covering the entire map area (Figure 15-12), using the contact surfaces.

To validate the solid model, two sets of vertical cross sections, NS and EW, were created with spacing based on the grid of the shafts and the solid was visually compared to the shafts.

The geologic colluvium solid was modified to obtain the final solid used in resource estimation as follows:

- The geologic solid was cut to a maximum thickness of 5m;
- Isopach curves were created and the solid was cut by the 2m isopach curves as it is considered that 2m is the minimum mining thickness;
- The solid was cut by the limits of the exploration licenses; and
- The solid was cut by the original topography surface.

Figure 15-13 illustrates the final solid.

### 15.2.3 Gridded Seam Block Model

The block model was generated in the MineSight© GSM module. This results in blocks with set x and y dimensions and variable z dimensions, dependent on the thickness of the layer. The block model limits are described in table 15.2.3.1.

**Table 15.2.3.1: Parameters of Block Model**

Direction	Minimum	Maximum	Block Sizes (m)	N° of Blocks
X	437,600	445,600	50	160
Y	7,875,000	7,882,200	50	144
Z	100	950	variable	1

The colluvium solid was used to code the lithology variable and the percentage of the block within the solid.

### 15.2.4 Density

Density measurements were performed by MMX personnel, who had been trained by a Prominas technician. The methodology followed the procedures described in Section 15.1.5.

The 132 samples of colluvium were collected at the collar, middle and bottom of the exploration shafts. In order to check any variability, samples were taken in the two types of colluvium ore:

98 samples in the fine to medium colluvium and 34 samples in the medium to coarse colluvium. Table 15.2.4.1 presents the statistics of the data obtained from the tests.

The fine to medium colluvium has an average density of 2.87g/cm<sup>3</sup> and the medium to coarse colluvium has an average density of 2.84g/cm<sup>3</sup>. The colluvium as assigned a density of 2.86 based on the density tests.

**Table 15.2.4.1: Statistics of Density Tests – Colluvium Ore Type**

Parameters	Wet Density (g/cm <sup>3</sup> )		
	All	Fine to medium	Medium to coarse
Number	132	98	34
Minimum	2.01	2.14	2.01
Maximum	4.05	3.92	4.05
Mean	2.86	2.87	2.84
Median	2.85	2.87	2.79
Standard deviation	0.37	0.35	0.44
Variance	0.14	0.12	0.19
Kurtosis	1.03	0.93	1.12

### 15.2.5 Topography

Exploration lines with spacing at 400m, 200m and 100m, were surveyed by BXF Topographia Ltda (BXF), a topographic survey company with headquarters in Ladário, MS, with supervision by the MMX exploration staff. The surveying was done with a total station Topcon, model GPT3000LW and a total station Pentax, model PCS1S. The methodology was by open polygonal, linked to the mark 1,065 IBGE (Brazilian Official Mark on Santa Cruz Hill) with the UTM coordinates N-7,876,829.21 and E-437,739.16, elevation of 1,065.44 m, DATUM SAD 69. The topographic surface was generated using points on the exploration lines, and a laser survey (ALTM - Airborne Laser Terrain Mapper) performed by GEOID Company, between the lines. The surface was generated using Autodesk software AutoCAD 2006. BXF also surveyed the location of the exploration shafts.

### 15.2.6 Compositing

The original assay data was composited using the MineSight seam composite procedure whereby a single composite was calculated for the colluvium layer. The minimum length of the composite is 2m, the maximum is 5m, and the average is 4.4m.

The database consists of analyses of seven different elements (Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, P, Mn, TiO<sub>2</sub> and LOI) for each of the eight size fractions shown in Table 15.2.6.1, and the mass recovery for each size fraction. The principal estimation was done using grades for the global fraction. The grades of the individual size fractions and their respective mass recoveries were also estimated for use in future reserve estimates.

**Table 15.2.6.1: Size Fractions of Sample Analyses**

Variable name	Size Fraction
F1	>3/4in
F2	>1/2" <3/4 in
F3	>1/4" < 1/2 in
F4	>4mm < 1/4 in
F5	>1mm <4mm
F6	>0.15mm < 1mm
F7	<0.15mm
Global	Size undifferentiated

### 15.2.7 Variography

Variography analysis was conducted with only the global Fe variable in the colluvium. Variograms in different directions were inspected to define the best structure indicative of the spatial continuity, but it was determined that the an omnidirectional horizontal variogram was the best option. The global Fe semivariogram is presented in Figure 15-14.

### 15.2.8 Resource Estimation

The geology of Urucum NE Area consists of a single layer of colluvium and it was modeled as a single mineralized unit.

The blocks grades were estimated with the Inverse Distance Squared (ID2) algorithm in a 3-pass procedure as presented in Table 15.2.8.1. After the estimation had been concluded, it was observed that some blocks had not been adequately classified and that there were instances of isolated measured or indicated blocks within indicated or inferred areas. These blocks were adjusted manually. The total number of modified blocks was 87. Of these, 22 were reclassified from indicated to inferred resource, 14 from measured to indicated resource and one block from inferred to indicated resource. The distribution of blocks by classification is shown in Figure 15-15.

**Table 15.2.8.1: Resources Classification Criteria**

Resource Classification	Search Ellipsoid		Min./Max. No. of Samples
	Variographic Parameter	Search Ratio -- Horizontal Plane	
Measured	¼ Range	118 m	4/6
Indicated	½ Range	235 m	2/16
Inferred	1 Range	470 m	1/16

Comparison of the basic statistics for the assays, composites, and block model are given in Table 15.2.8.2

**Table 15.2.8.2: Basic Statistics for Block Model, Composites and Original Assays**

		#	Min.	Max.	Mean	1 <sup>st</sup> Quartile	Median	3 <sup>rd</sup> Quartile	Std.Devn.	Variance
Fe(%)	Block Model	2,782	20.05	62.93	52.25	48.78	52.03	55.09	4.66	21.75
	Composite	137	19.40	63.10	53.06	49.72	53.53	57.22	6.50	42.26
	Assay	150	19.40	63.10	53.06	49.72	53.53	58.22	6.66	44.33
Al <sub>2</sub> O <sub>3</sub> (%)	Block Model	2,782	1.17	11.67	3.31	2.44	2.89	4.01	1.29	1.67
	Composite	137	1.13	11.90	3.06	2.21	2.71	3.71	1.38	1.90
	Assay	150	0.80	12.50	3.06	2.19	2.71	3.69	1.47	2.17
SiO <sub>2</sub> (%)	Block Model	2,782	7.08	52.13	18.59	15.14	18.93	23.11	5.56	30.93
	Composite	137	6.70	52.90	17.96	12.94	17.34	22.88	7.64	58.40
	Assay	150	6.70	52.90	17.96	12.03	17.26	23.18	7.80	60.78
P(%)	Block Model	2,782	0.026	0.180	0.055	0.049	0.054	0.059	0.009	0.000
	Composite	137	0.025	0.180	0.056	0.050	0.054	0.062	0.012	0.000
	Assay	150	0.025	0.180	0.056	0.050	0.055	0.062	0.012	0.000
Mn(%)	Block Model	2,782	0.02	1.60	0.37	0.07	0.26	0.61	0.37	0.13
	Composite	137	0.02	1.60	0.30	0.03	0.09	0.41	0.39	0.15
	Assay	150	0.02	1.60	0.30	0.03	0.09	0.39	0.40	0.16
TiO <sub>2</sub> (%)	Block Model	2,782	0.10	0.45	0.19	0.16	0.18	0.21	0.05	0.00
	Composite	137	0.10	0.46	0.18	0.15	0.17	0.20	0.05	0.00
	Assay	150	0.06	0.57	0.18	0.15	0.17	0.20	0.06	0.00
LOI(%)	Block Model	2,782	0.86	5.46	1.95	1.50	1.74	2.31	0.69	0.48
	Composite	137	0.73	5.46	1.81	1.40	1.70	2.19	0.69	0.48
	Assay	150	0.73	5.92	1.81	1.34	1.66	2.17	0.74	0.55

SRK validated the resource by creating a conventional 3D block model, compositing the database, and estimating grades with the same search distances and parameters as MMX. The block tonnage and grade were within 5% of MMX's resource, which is a good validation.

### 15.2.9 Resource Statement

Table 15.2.9.1 below lists the resources of Urucum NE Area.

**Table 15.2.9.1: Summary of Resources Urucum NE**

Classification	Tonnage (M t)*	Fe(%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	P(%)	Mn(%)	TiO <sub>2</sub> (%)	LOI (%)
Measured	3.17	55.23	15.2	3.09	0.056	0.12	0.18	1.72
Indicated	34.00	53.03	18.14	2.97	0.055	0.34	0.18	1.8
Measured and Indicated	37.17	53.22	17.89	2.98	0.055	0.32	0.18	1.79
Inferred	32.84	50.95	19.53	3.78	0.054	0.44	0.2	2.19

(\* ) Tonnes reported in wet basis. Density = 2.86 g/cm<sup>3</sup>. Cut off = 20% Fe.

### 15.3 Reserve Estimation Mine 63

The reserve estimation used measured and indicated resources to define the pit limits through a Lerchs-Grossman pit optimization program. Prominas was responsible for the reserve estimation under the supervision of MMX. The pit optimization was conducted at the end of 2007 as reported in the May 2007 NI 43-101 Technical Report.

Based on correlation studies between RoM ore and product specifications, the average grades required for the mined ore were established. Table 15.3.1 summarizes the correlation of RoM and Lump as detailed in Section 14.

**Table 15.3.1: Correlations RoM x Lump**

	<b>Colluvium</b>	<b>Eluvium</b>
Fe	$Y = 0.3657 x + 44.144$	$Y = 0.85 x + 12.454$
SiO <sub>2</sub>	$Y = 0.4999 x - 0.321$	$Y = 0.954 x + 2.5395$
Al <sub>2</sub> O <sub>3</sub>	$Y = 0.294 x + 0.7128$	$Y = 0.3831 x + 0.0224$
P	$Y = 0.2208 x + 0.0447$	$Y = 0.4477 x + 0.0262$

The results were 54.4% Fe for the colluvial ore and 60.8% Fe for the eluvial ore. These grades result in an average grade of product equal to 64.03% Fe and 64.13% Fe, respectively.

Figure 15-16 presents the parameterization of measured and indicated resources for the two areas. Based on the curves for the resources, cut-off grades were established at 51.7% Fe for the Colluvium area and 59.0% Fe for the Eluvium area. Based on these result, different cuts were simulated near to the cutoff values to maximize the mineable reserves, maintaining the required average grade for the RoM ore.

The Colluvium and Eluvium block models were optimized separately, using the parameters listed below:

- RM (mass recovery)= 66% (55% Lump and 11% Sinter-feed);
- Average Product Value = US\$32.02/t (Lump US\$35.50/t and Sinter-Feed US\$15.00/t; prices as of December 2006);
- Mine Cost RoM = US\$1.38/t;
- Mine Cost Waste = US\$1.00/t;
- Plant Cost = US\$3.39/t product;
- Sundry Costs (Sundry costs include: planning and quality control, administration and others)= US\$0.68/t product;
- Transportation Cost = US\$3.12/t product (from Mine 63 to the Ladário Port);
- Colluvium Block Model;
  - Density – 3.16 Colluvium and Breccia; 1.72 Waste,
  - Volume - 12,500m<sup>3</sup>, and
  - Pit Slope – 47°.
- Eluvium Block Model;

- Density – 3.60 Colluvium and Breccia; 3.87 Waste,
- Volume - 3,125m<sup>3</sup>, and
- Pit Slope - 48°.

Table 15.3.2 contains ore and waste in the optimized pit which was used as the base for a designed pit and subsequent mine planning. The average product value of US\$32.02 is higher than the projected future prices used in the cash flow. As a check on the sensitivity of the pit optimization to the product price, two additional optimizations were run on the Colluvium area only, using US\$30.00 and US\$20.00. The results, given in Table 15.3.3, indicate that the pit is very robust in regard to product price and that the use of a higher iron price has no effect on the pit optimization results.

**Table 15.3.2: Optimized Pit for Mine 63, Corumbá Project End of December 2006**

Class	Colluvium		Eluvium		Total	
	Mt	Fe%	Mt	Fe%	Mt	Fe%
Proven and Probable	22.69	54.41	7.85	60.81	30.53	56.05
Waste					19.12	
Total Pit					49.65	
Strip Ratio					0.63	

**Table 15.3.3: Sensitivity of the Optimized Pit to Product Price in Colluvium Area Only**

Average Product Price	Mt	Fe%
\$32	22.687	54.41
\$30	22.669	54.41
\$20	22.463	54.41

After the pit was designed with the inclusion of ramps, the average grade of the Colluvium area was slightly above the grade required for the product specifications. The CoG within the designed pit was then lowered from 48.85% to 48.00%, increasing the Mineable Reserve by 1.09Mt. In the Eluvium area, the CoG was adjusted to 56.1% from 55.85% in order to achieve the specified product grade, resulting in a loss of 0.09Mt. The Measured Resources at or above the CoG within the designed pit were converted to Proven Reserves and the Indicated Resources at the CoG were converted to Probable Reserves. Table 15.3.4 presents the Ore Reserves for Mine 63 as of December 2006.

**Table 15.3.4: Total Reserves as at December 2006 - Mine 63 Corumbá Project\***

Classification	Tonnes (Mt)	Fe (%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	P (%)	Mn (%)	LOI (%)	TiO <sub>2</sub> (%)
Proven	5.7	61.1	8.07	2.56	0.08	0.03	1.68	0.14
Probable	25.3	54.8	14.92	2.49	0.06	0.43	1.45	0.14
Total	31.0	56.0	13.66	2.51	0.06	0.35	1.49	0.14
Waste	15.3							
SR	0.49							

\* Tonnes are reported on a wet basis. Fe cut-off grade for Eluvium is 48.0% and for Colluvium is 56.1%. Average Fe price used is US\$ 32.02.

Mine production from January to September 2007 is shown in Table 15.3.5.

**Table 15.3.5: Mine 63 Production, January to September 2007**

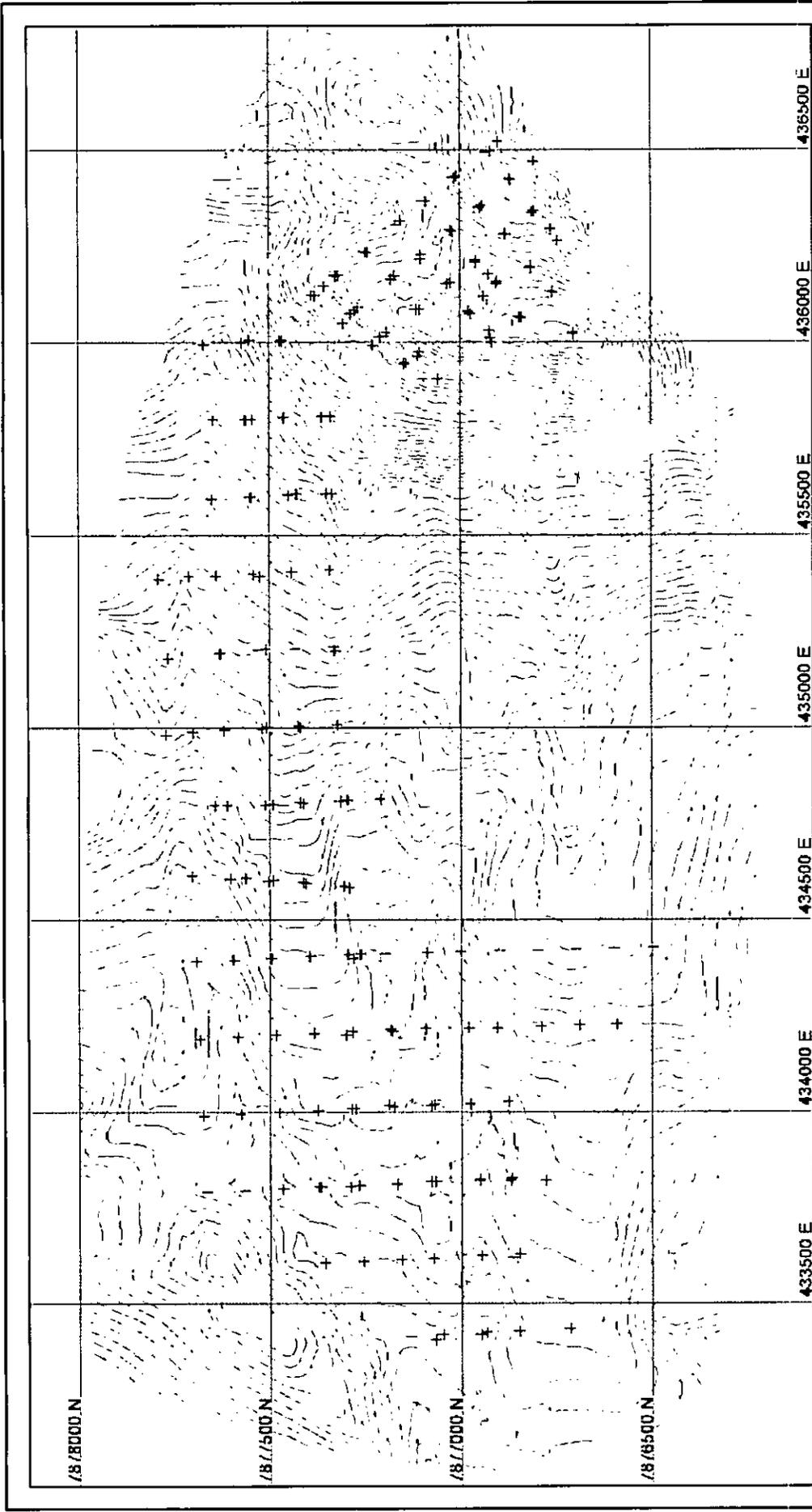
			Product			Mass Recovery		
RoM (t)	Stockpile (t)	Processed (t)	Lump (t)	Sinter (t)	Total	Lump	Sinter	Total
1,746,334	79,600	1,666,734	844,684	225,897	1,070,581	50.68	13.55	64.23

Production from January to September 2007 was subtracted from the 2006 year-end reserves to arrive at the reserves as of September 30, 2007. The total reserves, including stockpiles, are listed in Table 15.3.6. Figure 15-17 illustrates the final pit layout of the Mine 63 project.

**Table 15.3.6: Total Proven and Probable Reserves at Mine 63 Corumbá Project\*, September 30, 2007**

Classification	Mt	Fe (%)	SiO2 (%)	Al2O3 (%)	P (%)	Mn (%)	TiO2 (%)	LOI (%)
Proven	4.3	61.03	8.26	2.55	0.08	0.03	0.14	1.67
Probable	25.0	54.74	14.96	2.51	0.06	0.43	0.14	1.45
Stockpile	0.1	60.40	9.28	2.53	0.08	0.05	0.14	1.69
Total Probable	25.1	54.76	14.94	2.51	0.06	0.43	0.14	1.45
<b>Total</b>	<b>29.4</b>	<b>55.68</b>	<b>13.96</b>	<b>2.51</b>	<b>0.06</b>	<b>0.37</b>	<b>0.14</b>	<b>1.48</b>

\* Tonnes are reported on a wet basis  
Fe CoG for Eluvium is 48.0% and Fe CoG for Colluvium is 56.1%  
Average Fe price is US\$32.02



**Figure 15-1**  
**All Drillholes, Channel Samples, and Shafts - Mine 63**

**Corumbá Project,  
 Brazil**  
 Source: **Mineração & Metálicos S.A.**

**SRK Consulting**  
 Engineers and Scientists

SRK Job No.: 162703.03  
 File Name: Figure 15-1.doc

Date: 02-27-08  
 Approved: LM  
 Figure: 15-1



**SRK Consulting**  
 Engineers and Scientists

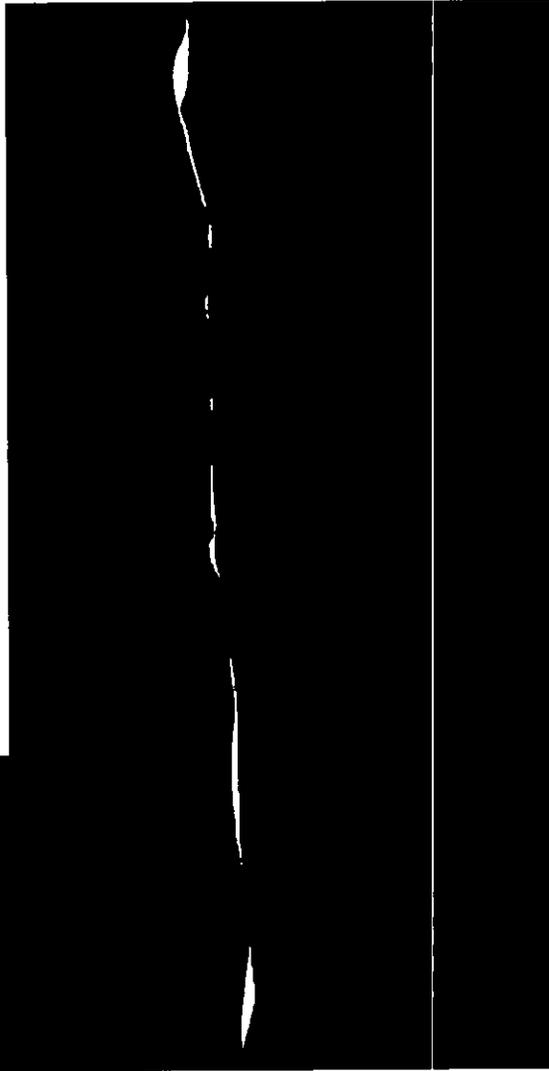
SRK Job No.: 162703.03  
 File Name: Figure 15-2.doc

**Corumbá Project,  
 Brazil**

**Source: Mineração & Metálicos S.A.**

**Figure 15-2  
 Colluvium and Eluvium Areas of  
 Mine 63**

Date: 02-27-08      Approved: LM      Figure: 15-2



SRK Job No.: 162703.03

File Name: Figure 15-3.doc

**Corumbá Project,  
Brazil**

**Source: Mineração & Metálicos S.A.**

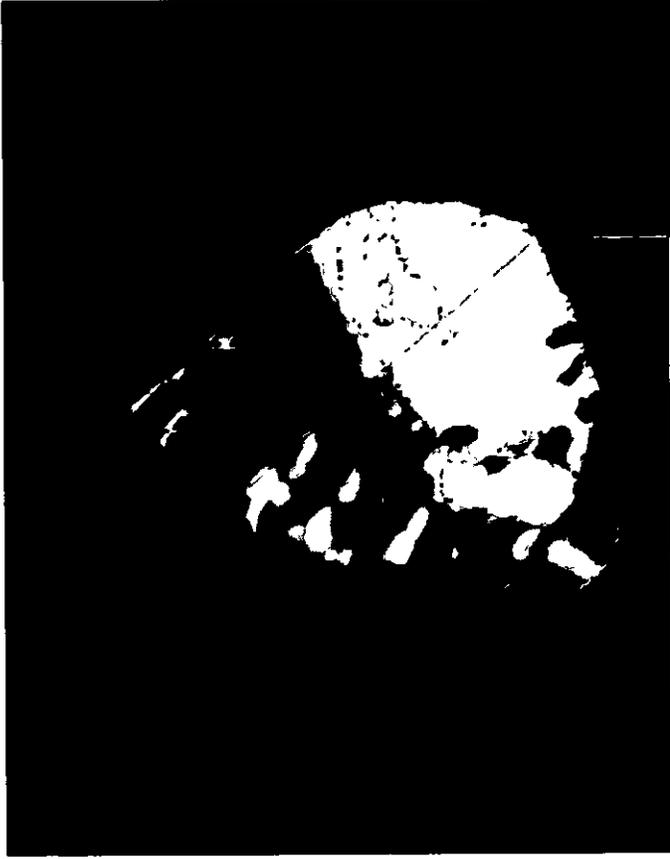
**Figure 15-3**

**Colluvium 3D Solids in Plan and  
Cross-Section**

Date: 02-27-08

Approved: LM

Figure: 15-3



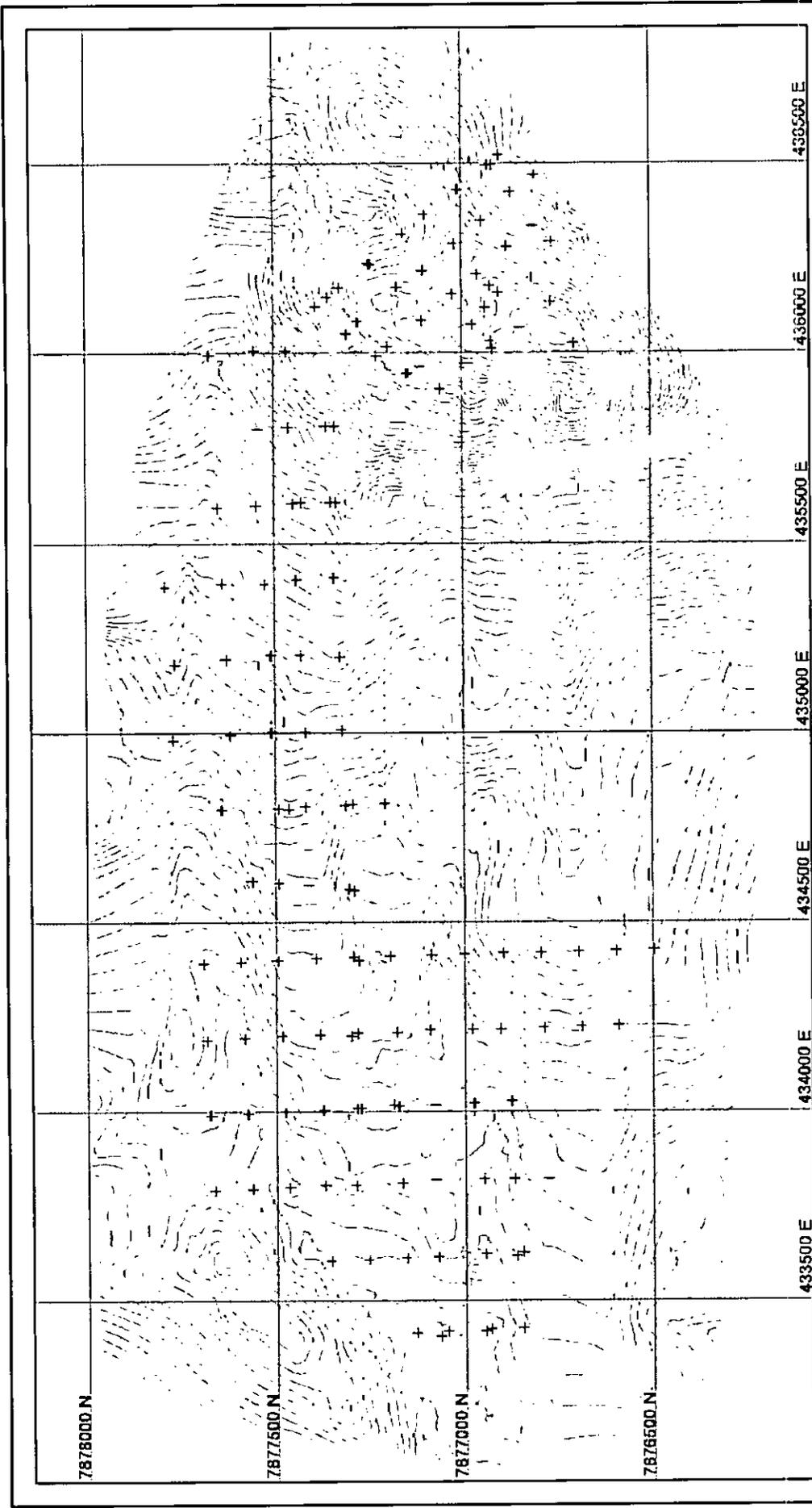
SRK Job No.: 162703.03

File Name: Figure 15-4.doc

**Figure 15-4**  
**Eluvium 3D Solids in Plan and Cross-Section**

Date: 02-27-08  
Approved: LM  
Figure: 15-4

**Corumbá Project,  
Brazil**  
**Source: Mineração & Metálicos S.A.**



**Figure 15-5**  
**Location of Samples in Resource Database - Mine 63**

**Corumbá Project,  
 Brazil**  
 Source: **Mineração & Metálicos S.A.**

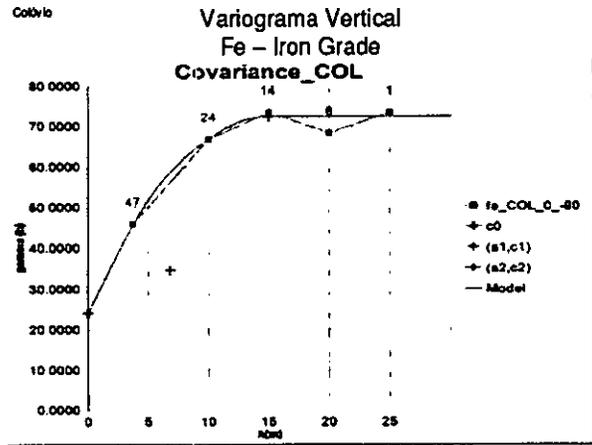
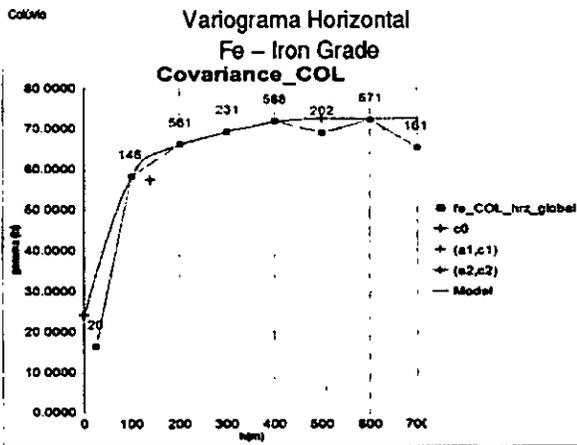
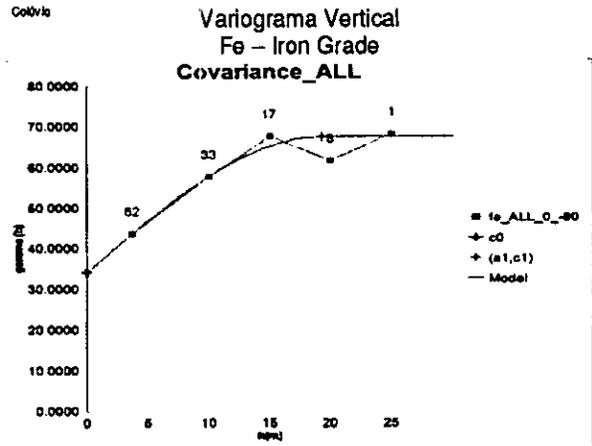
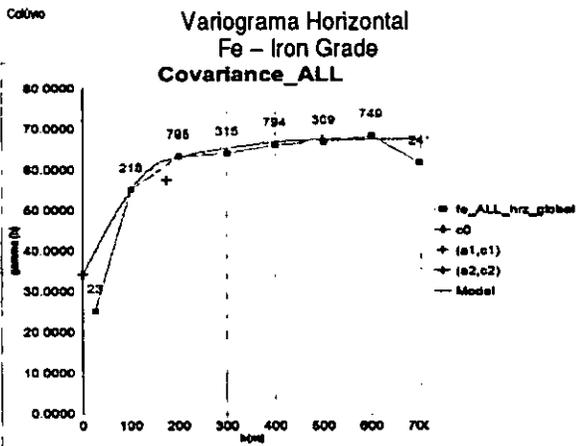
**SRK Consulting**  
*Engineers and Scientists*

SRK Job No.: 162703.03

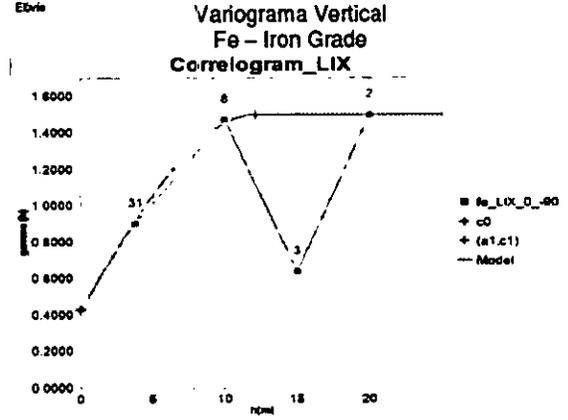
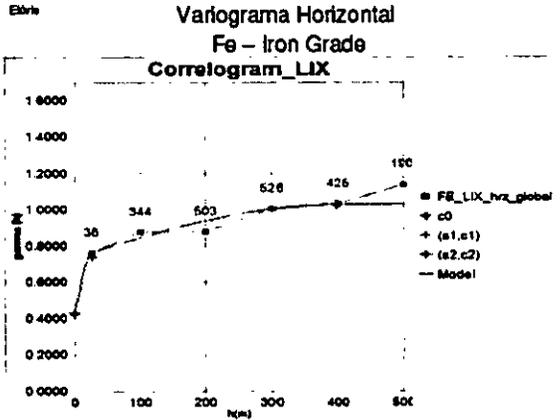
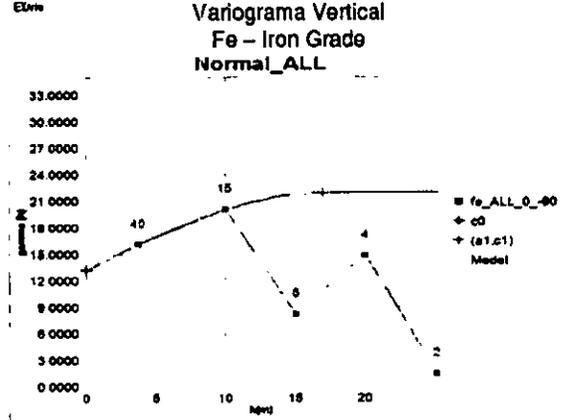
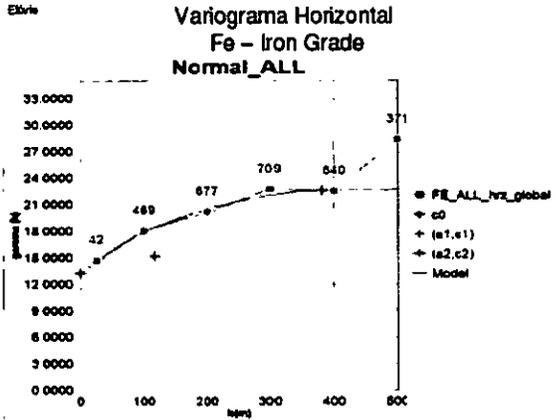
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Date: 02-27-08    Approved: LM

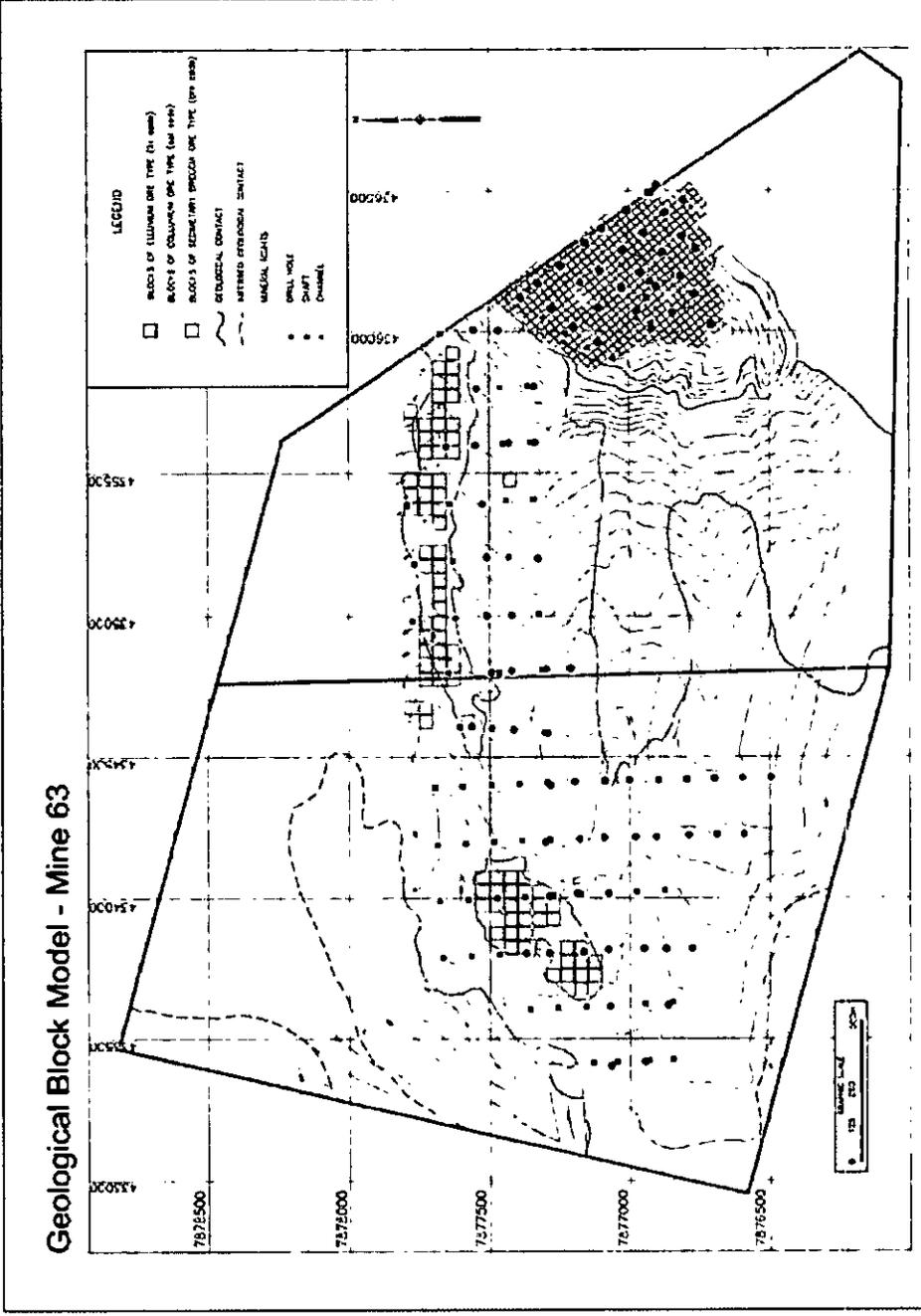
Figure: 15-5



 <b>SRK Consulting</b> <i>Engineers and Scientists</i>	<b>Corumbá Project, Brazil</b>		<b>Figure 15-6</b>	
	<b>Source: Mineração &amp; Metálicos S.A.</b>		<b>Iron Variograms—Colluvium</b>	
SRK Job No.: 162703.03  File Name: Figure 15-6.doc		Date: 02-27-08	Approved: LM	Figure: 15-6



 <b>SRK Consulting</b> <i>Engineers and Scientists</i>	<b>Corumbá Project, Brazil</b>		<b>Figure 15-7</b>	
	<b>Source: Mineração &amp; Metálicos S.A.</b>		<b>Iron Variograms—Eluvium Area</b>	
SRK Job No.: 182703.03  File Name: Figure 15-7.doc		Date: 02-27-08	Approved: LM	Figure: 15-7



SRK Job No.: 162703.03

File Name: Figure 15-8.doc

Corumbá Project,  
Brazil

Source: Mineração & Metálicos S.A.

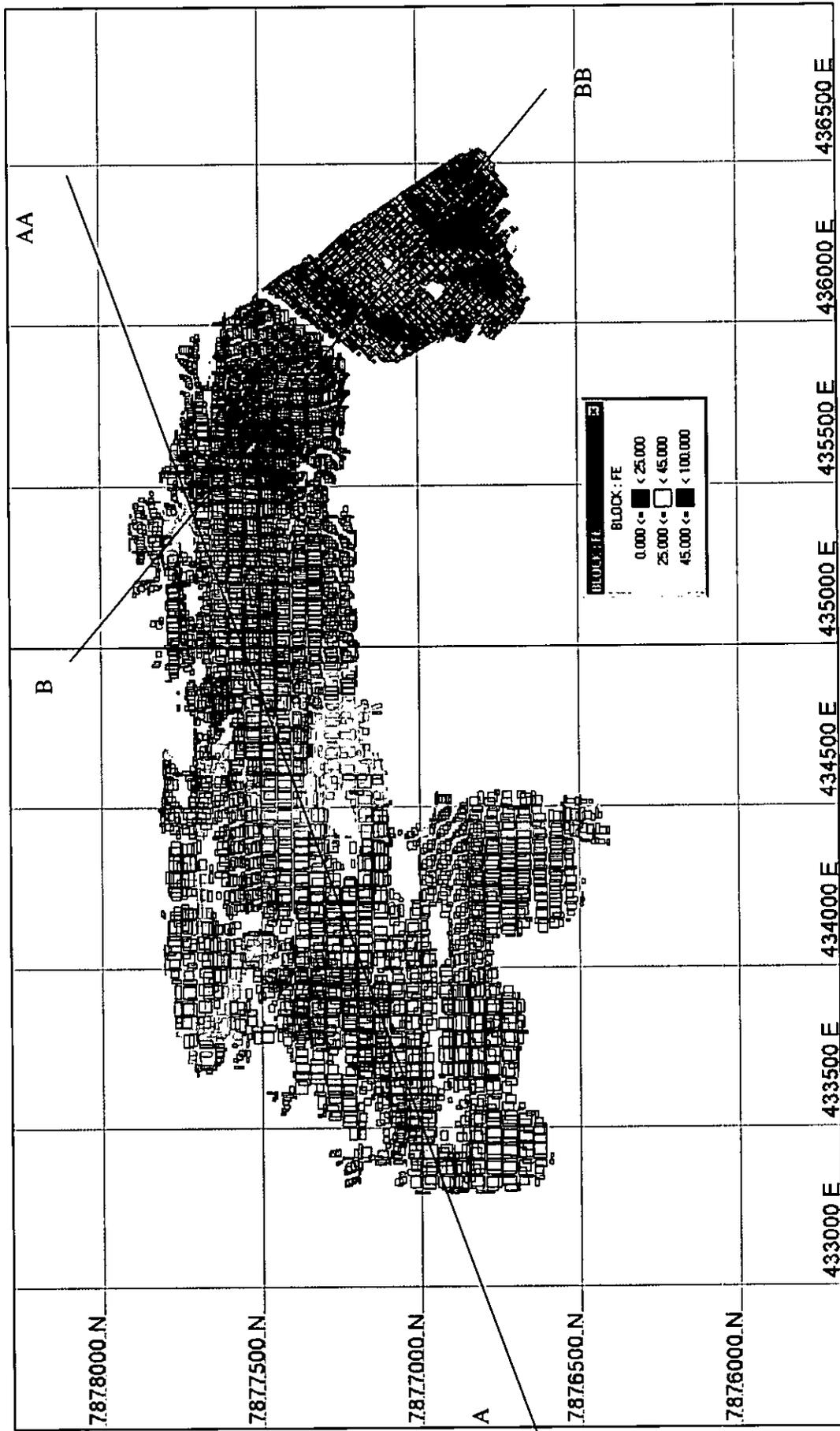
Figure 15-8

Colluvium and Eluvium Block  
Models Mine 63

Date: 02-27-08

Approved: LM

Figure: 15-8



SRK Job No.: 162703.03

File Name: Figure 15-9.doc

Corumbá Project,  
Brazil

Source: Mineração & Metálicos S.A.

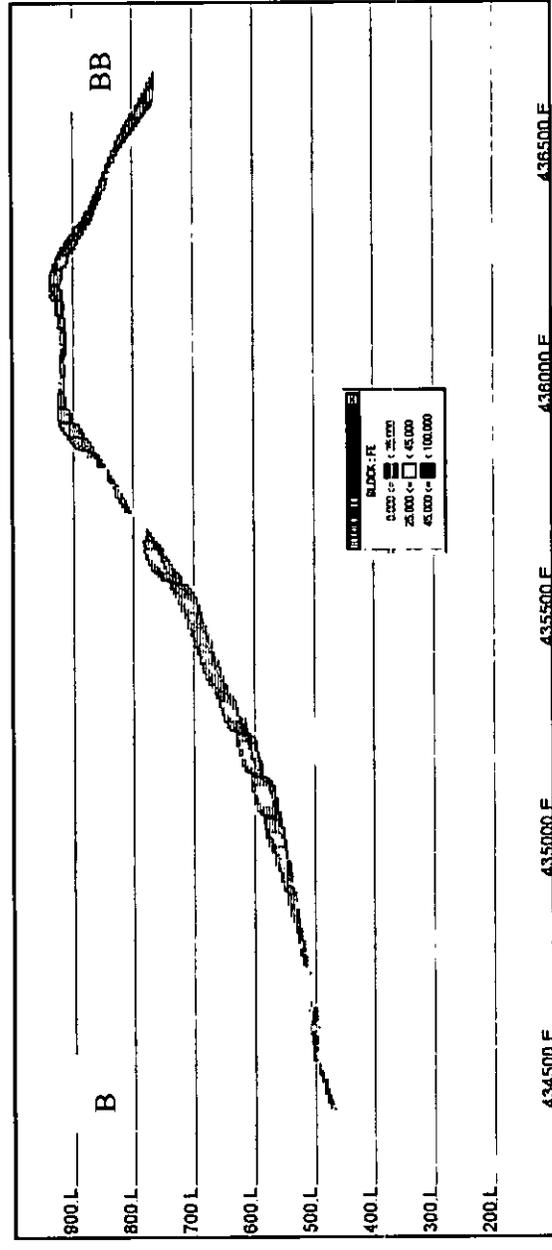
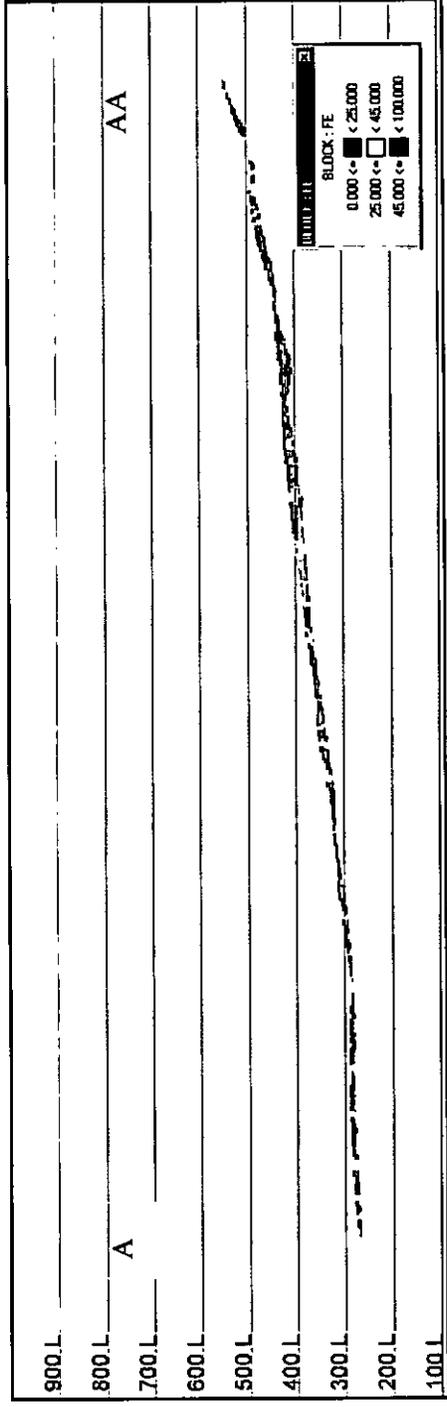
Figure 15-9

Colluvium and Eluvium Block  
Grades Plan View

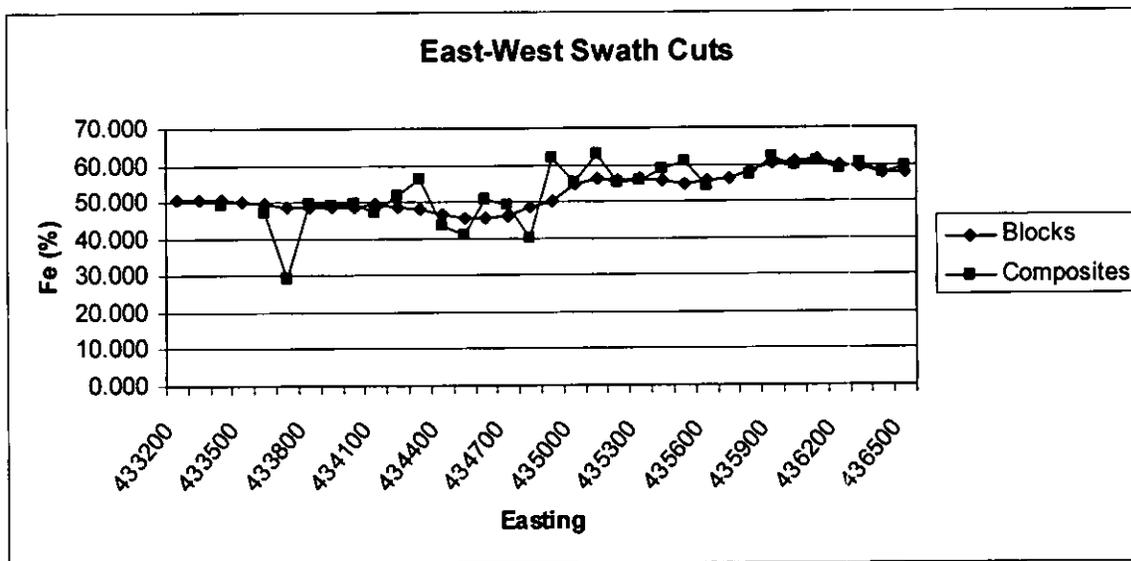
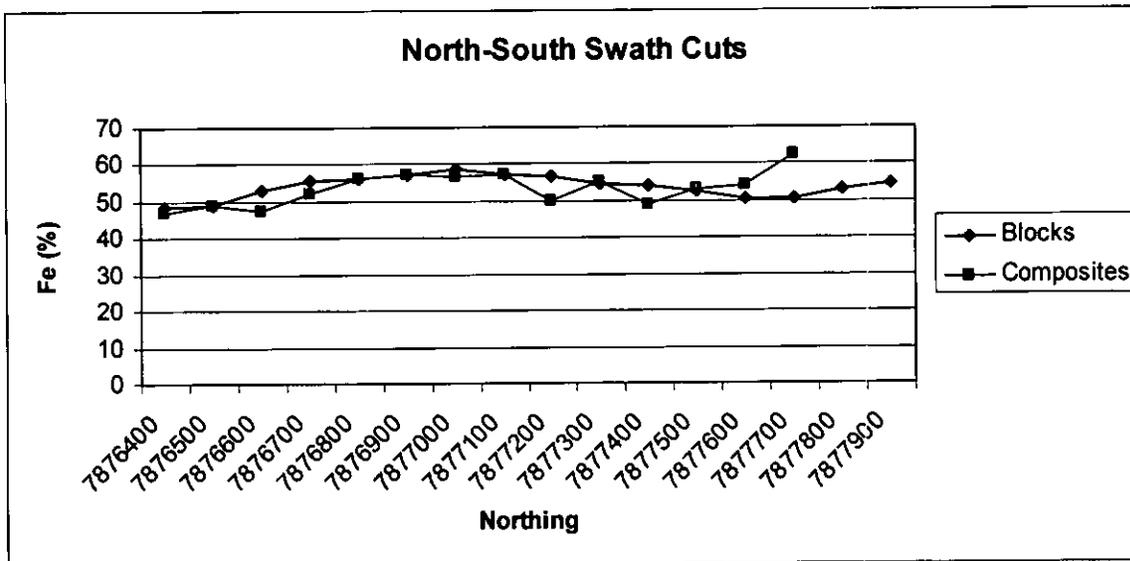
Date: 02-27-08

Approved: LM

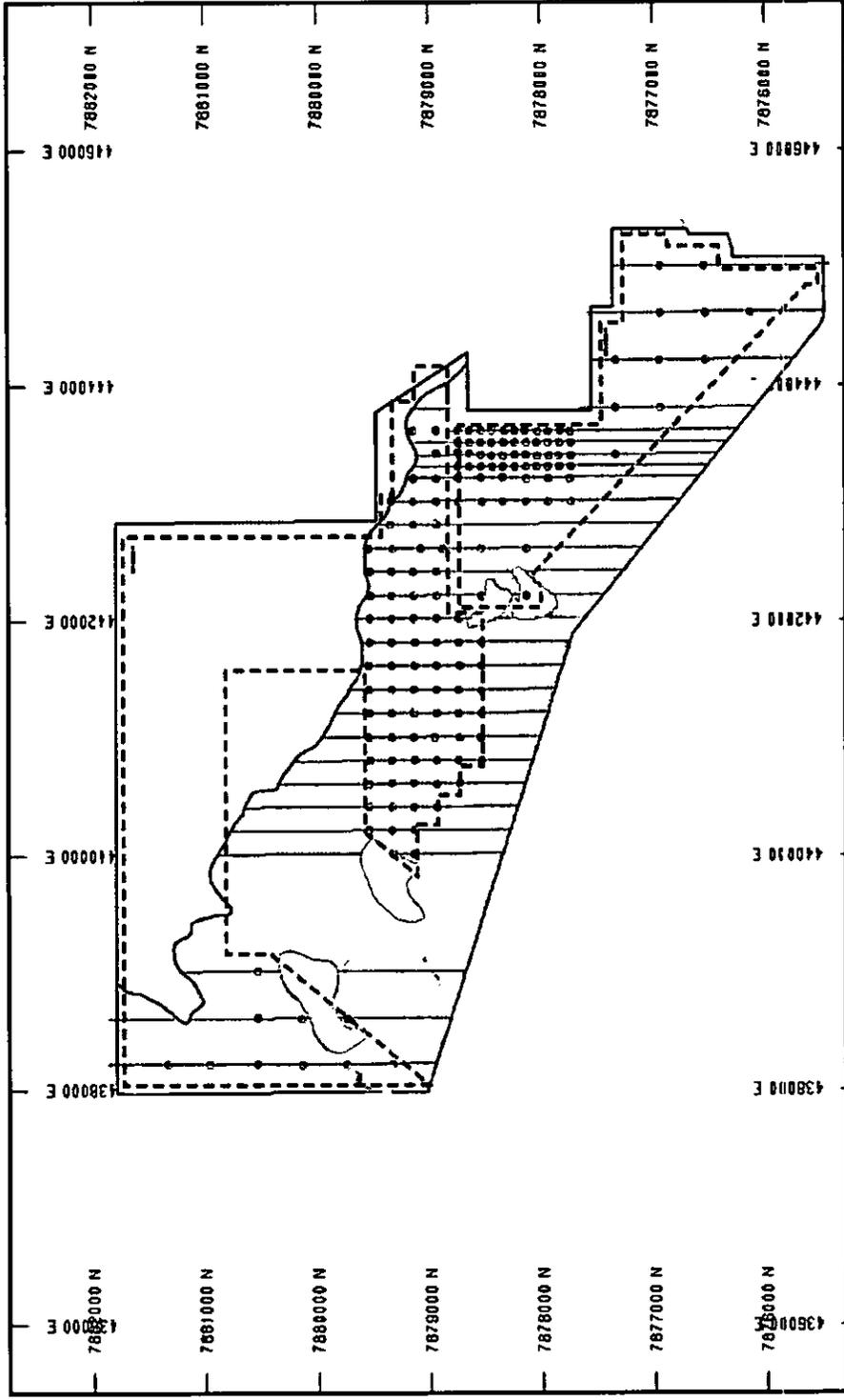
Figure: 15-9



 <b>SRK Consulting</b> <i>Engineers and Scientists</i>	<b>Corumbá Project,          Brazil</b>		<b>Figure 15-10</b> <b>Colluvium and Eluvium Block          Model Cross-Section</b>
	SRK Job No.: 162702.03 File Name: Figure 15-10.doc	Source: <b>Mineração &amp; Metálicos S.A.</b>	
		Date: 2-27-07 Approved: LM	Figure: 15-10



<b>SRK Consulting</b> <small>Engineers and Scientists</small>	<b>Corumbá Project, Brazil</b>	<b>Figure 15-11</b> <b>Swath Plots Mine 63</b>	
		SRK Job No.: 162703.03	Date: 02-27-08
File Name: Figure 15-11.doc			



**Figure 15-12**  
**Colluvium Solid Urucum NE**

**Corumbá Project,**  
**Brazil**  
**Source: Mineração & Metálicos S.A.**

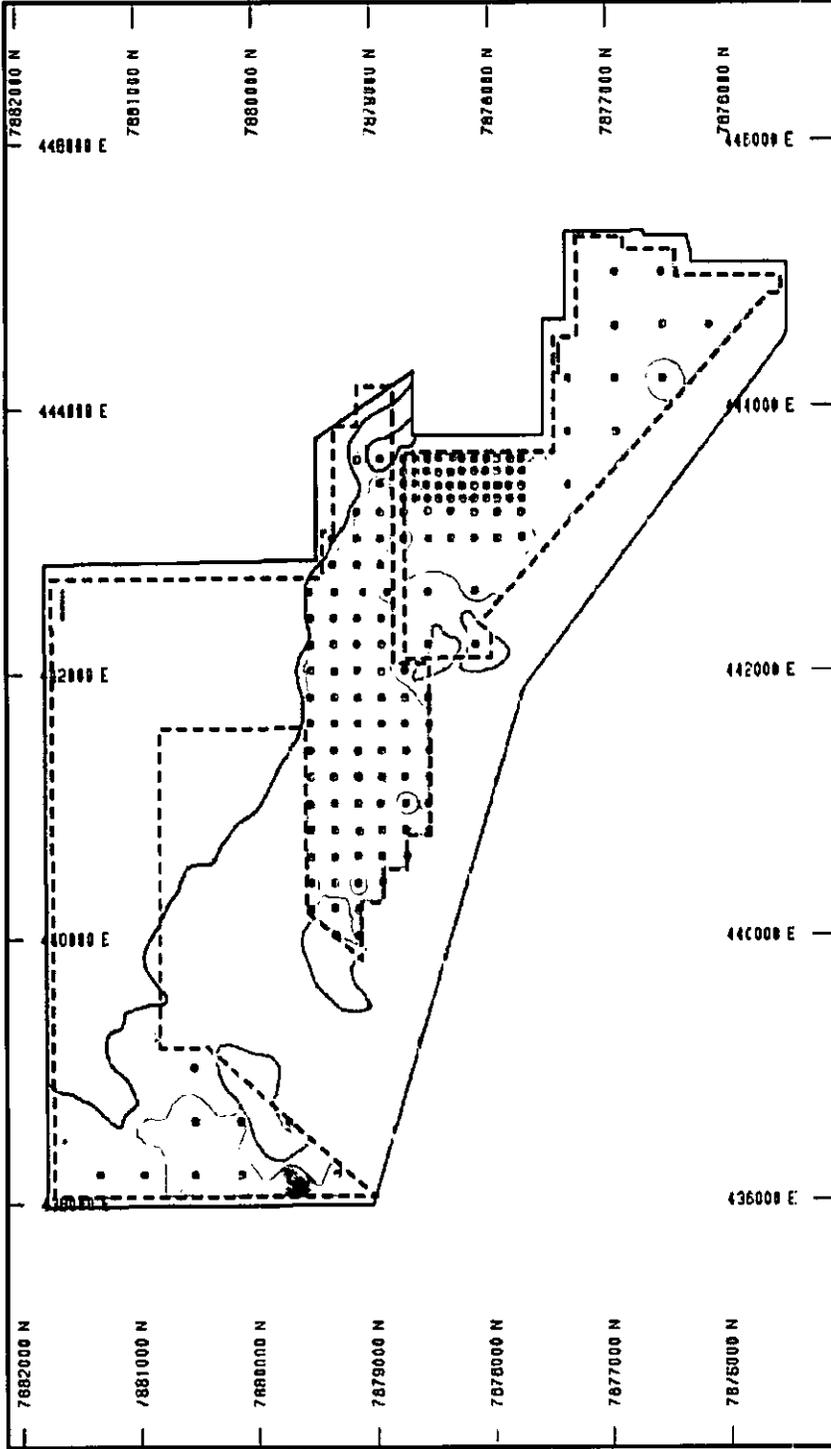


SRK Job No.: 162702.03

File Name: Figure 15-12.doc

Date: 2-27-07  
 Approved: LM

Figure: 15-12



SRK Job No.: 162702.03

File Name: Figure 15-13.doc

Corumbá Project,  
Brazil

Source: Mineração & Metálicos S.A.

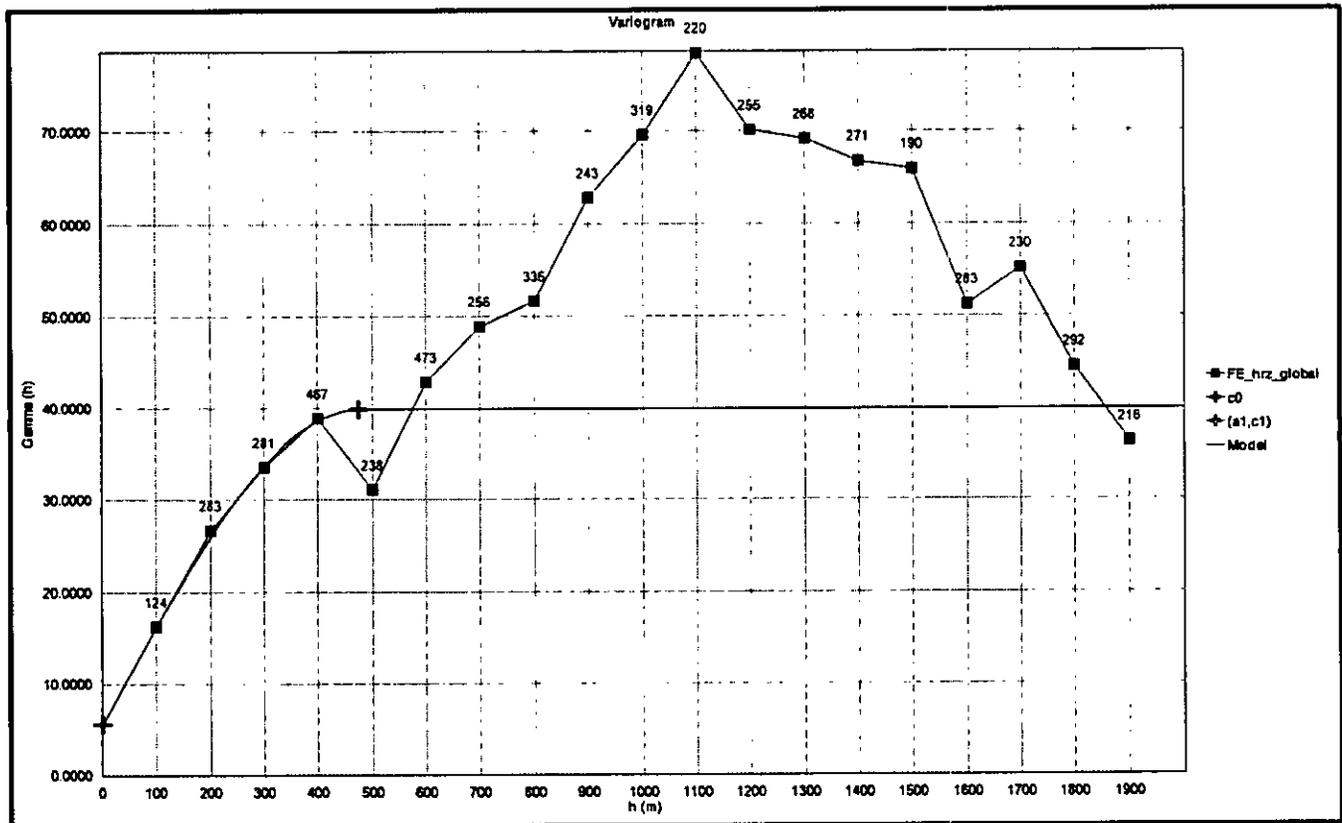
Figure 15-13

Final Colluvium Solid for  
Resource Estimation Urucum NE

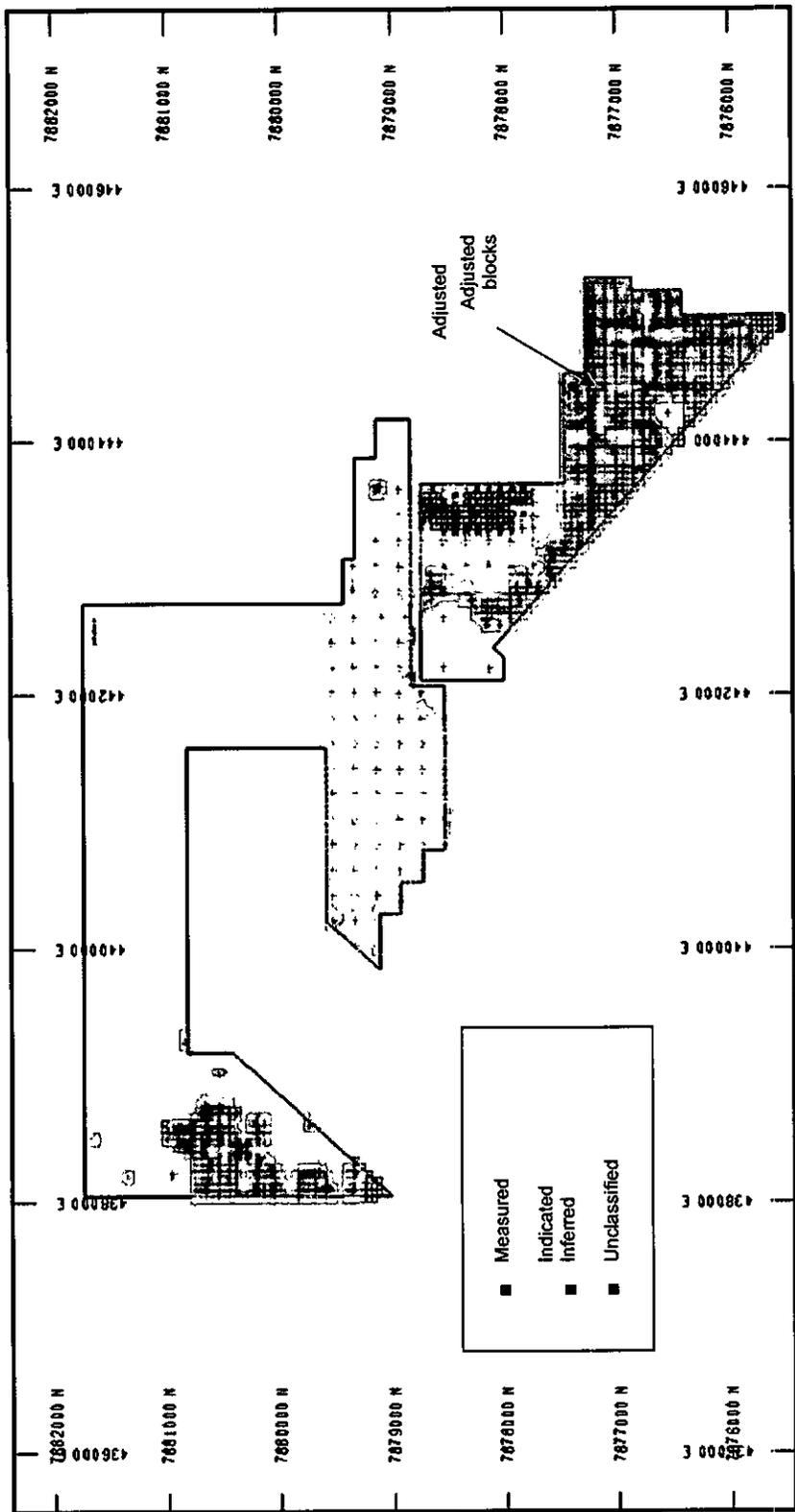
Date: 2-27-07

Approved: JM

Figure: 15-13



 <b>SRK Consulting</b> <i>Engineers and Scientists</i>	<b>Corumbá Project, Brazil</b>		<b>Figure 15-14</b>		
	<b>Source: Mineração &amp; Metálicos S.A.</b>		<b>Iron Variogram Urucum NE</b>		
SRK Job No.: 162703.03  File Name: Figure 15-14.doc			Date: 02-27-08	Approved: LM	Figure: 15-14



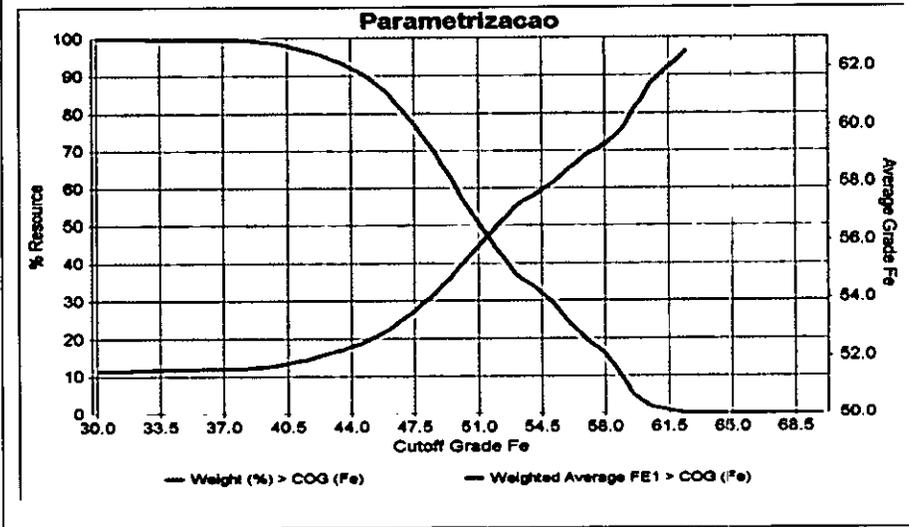
SRK Job No.: 162702.03  
 File Name: Figure 15-15.doc

Corumbá Project,  
 Brazil  
 Source: Mineração & Metálicos S.A.

Figure 15-15  
 Blocks by Classification Urucum  
 NE

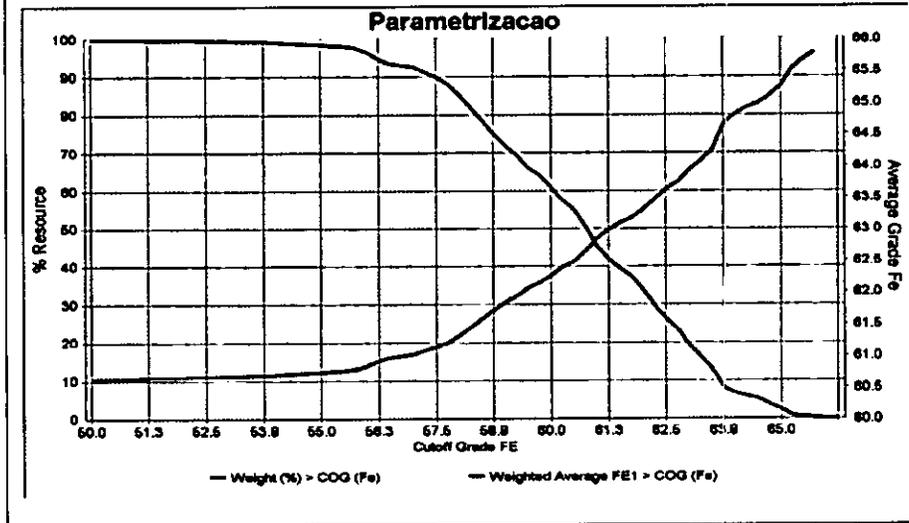
Date: 2-27-07  
 Approved: LM  
 Figure: 15-15

$$\text{Fe COG} \geq 48.85 \Leftrightarrow \text{Fe}_{\text{avg}} = 54.4$$



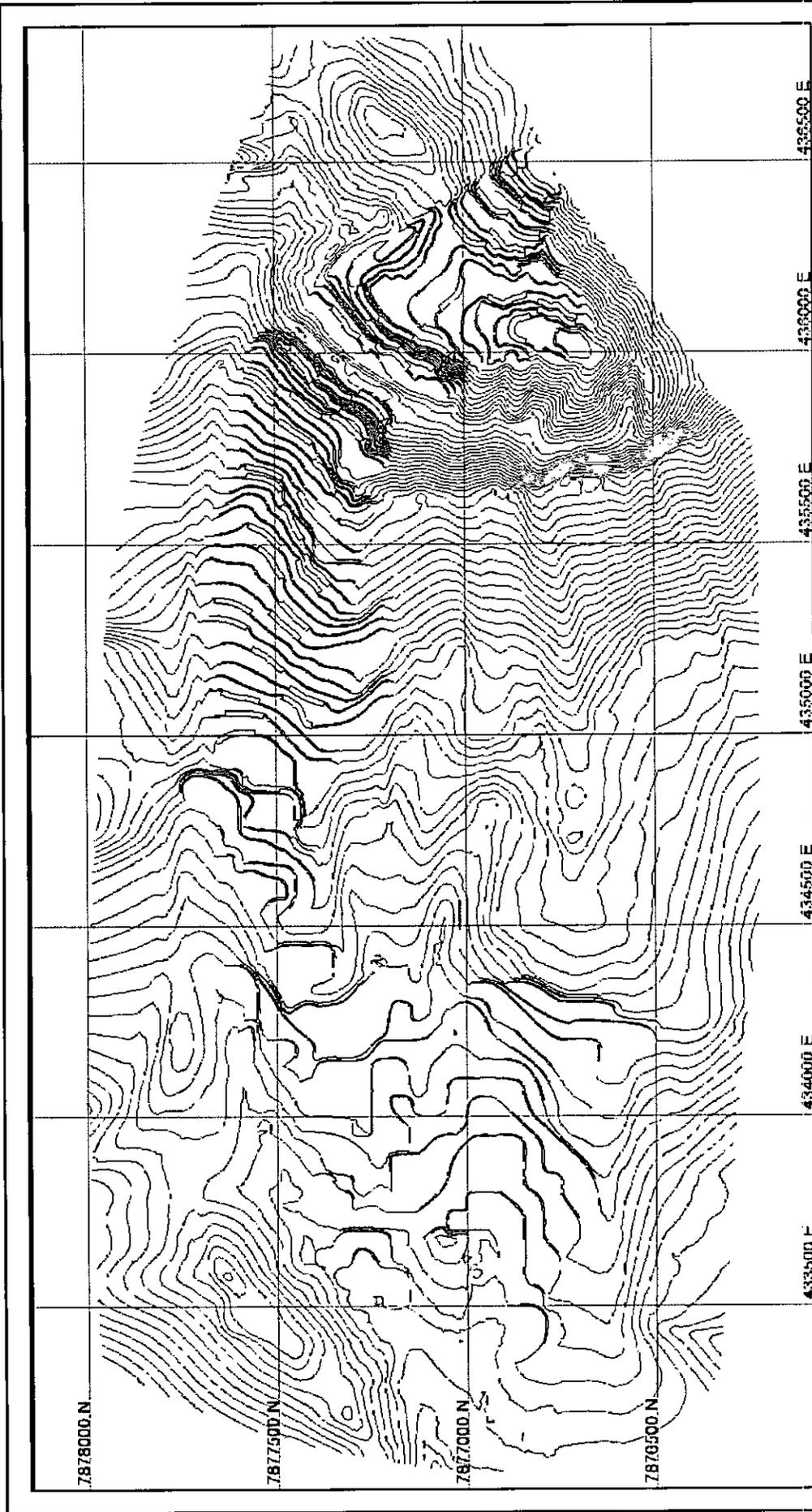
### Colluvium Area

$$\text{Fe COG} \geq 55.85 \Leftrightarrow \text{Fe}_{\text{avg}} = 60.8\%$$



### Eluvium Area

 <p><b>SRK Consulting</b> Engineers and Scientists</p>	<p>Corumbá Project, Brazil</p>	<p>Figure 15-16</p>		
		<p>CoG Curve Colluvium and Eluvium</p>		
<p>SRK Job No.: 162703.03</p>	<p>Source: Mineração &amp; Metálicos S.A.</p>	Date 02-27-08	Approved: LM	Figure: 15-16
<p>File Name: Figure 15-16.doc</p>				



SRK Job No.: 162703.03

File Name: Figure 15-17.doc

**Corumbá Project,  
Brazil**

**Source: Mineração & Metálicos S.A.**

**Figure 15-17**

**Mine 63 Pit Colluvium and  
Eluvium Areas**

Date: 02-27-08  
Approved: LM

Figure: 15-17

## **16 Other Relevant Data and Information (Item 20)**

### **16.1 Potential Resources**

#### **16.1.1 Mine 63**

MMX Corumbá plans to upgrade a portion of the inferred material to indicated and a portion of the indicated material to measured and to increase the total amount of resources through an exploration program that includes 1,500m of shafts, geochemical analysis by size fraction, complete implementation of a QA/QC program and maintenance of the data in Acquire database software.

#### **16.1.2 Additional Targets**

MMX Corumbá holds additional exploration permits in the Corumbá Region, located in the Rabicho Mountains. The initial exploration work in these new targets suggests a potential for new geologic resources in both colluvium and eluvium iron ore types. Development of these potential resources is part of MMX's long-term strategy for the region

### **16.2 Process Improvements**

A processing route using heavy liquid separation is being studied for the concentration of coarse material at Corumbá, with a view to increasing the iron grade in the Lump product and thus increasing the realized price. The process of separation in a heavy liquid involves removal of contaminants through gravity separation and the subsequent enrichment of the Lump ore. In the colluvium material, the arkose particles may be removed with this process, which will help to lower the cut-off grade and accordingly increase the reserve tonnage.

Tests have been conducted at the EMITANG installations (Empresa de Mineração Tanguá Ltda.) in Tanguá – Rio de Janeiro. Bulk samples of Lump from four different locations were collected at Mine 63, comprising 1,100t of material. The test was divided into four different categories, according to the chemical quality of the samples to be tested. These samples were submitted to the Heavy Medium Drum equipment for size separation. After the conclusion of the tests, the four different samples were submitted to "reprocessing" with the intention of evaluating the influence of the resident time in separation.

The results indicate the applicability of the process of heavy liquid separation as an alternative for the enrichment of Lump at Corumbá. However, the plant used as pilot in this third phase of development has been modified from its original characteristics. Additional tests will be run which will also test the separation with greater densities.

MMX is in the process of dimensioning the industrial plant with heavy medium drums. The commercial proposal, together with a description of the project, is in progress by the Dorr-Oliver EIMCO.

## 17 Additional Requirements for Operating Properties and Production Properties (Item 25)

Mine 63 is an operating property. Current mine operations produce iron ore by surface methods. Previous mining operations produced both iron ore and manganese ore by surface and underground methods.

### 17.1 Geotechnical Studies

In the area of Mine 63, the hillsides are steep and sustained by the competence of primary hematite jaspelite which is the protolith of the eluvial ore. The thickness of the eluvium is between 15 and 20m. The material still presents a certain rocky continuity that confers competence, although inferior to the competence of the unleached jaspelite.

The colluvium forms on the hillside below the almost vertical wall of Urucum Mountain. It is composed of reddish clayey soil, with gravel, blocks and small pebbles of jaspelite with dimensions of centimeters to tens of centimeters. The thickness of the colluvium is variable from a few meters at elevations between 550 and 600m, to a maximum of 25 to 30m locally. The average thickness is about 12m and the proportion of blocks of larger dimensions decreases from the base of the cliff toward the toe of the colluvial fan.

There are two water levels: the first at the level of silica leaching of the jaspelite in the higher elevations and the second in the colluvium. The water level varies according to the season and the lines of concentration of the subterranean flow, probably predominating at the base of this formation.

Various simulations have been conducted to achieve the optimal pit angles with the following results:

- For the final slope in colluvium: a bench face angle of 55° and a berm width of 4.7m, results in an average slope angle of 47°; and
- For slopes in eluvium with ultimate heights of 100m, a bench face angle of 75° and a berm width of 6m results in an average slope angle of 48°.

### 17.2 Mining Operations

MMX started iron ore mining and processing operations at Mine 63 in January 2006. Current mine operations produce iron ore by surface methods. Initial production was processed through the refurbished mobile crushing plant (AZTECA plant) which is no longer in use. In July 2006, MMX started operating the main crushing and washing plant and the first batch of Lump ore was shipped through Ladario Port later that month.

This Technical Report is based on annual ore production of 4.1Mtpy from Mine 63, producing 2.7Mt of Lump and Sinter Feed. To meet the processing rate, the average mining rate for total material movement (ore and waste) varies from 14,000tpd to 17,550tpd. Processing operations are scheduled 24 hours/day, and the mine production is scheduled to directly feed the processing operations.

The mine layout is shown in Figure 17-1.

## 17.3 Mining Method

MMX uses contract mining at Mine 63. A contract with Julio Simões Transportes e Serviços Ltda was signed on June 1, 2007 and is valid for 36 months from that date. The mine operates 348 days per year, three shifts per day.

The surface operations include:

- Topsoil removal;
- Ripping, drilling and blasting;
- Loading and haulage; and
- General maintenance and services.

### Topsoil Removal

Topsoil operations consists of removing the cover in order to expose the ore and waste material. The topsoil is stockpiled for future reclamation activities or direct placed during reclamation activities. Mine 63 operations utilize CAT D6 and D8, or similar type of dozer equipment.

### Ripping, Drilling and Blasting

Mine 63 scarifies or rips waste and ore material with D8 dozer class equipment. Drilling and blasting, as required, is conducted by drilling and blasting contractors. A hydraulic breaker adapted to a 25t digging machine reduces the size of any remaining large blocks.

Grade control samples are obtained from percussive drilling and channel samples are collected and analyzed.

### Loading and Haulage

Ore and waste are separately loaded into haulage trucks. A CAT330 class backhoe with 2.4m<sup>3</sup> capacity is the primary loader. Alternatively, a CAT 980 class front-end loader with a 5m<sup>3</sup> bucket is used as a backup loader.

Ore is transported to the primary crusher pad and waste is transported to the waste dumps with 25-30t rear dump haul trucks. Haul roads are 10m wide, with a maximum 12% grade and 1% drainage cross-slope.

### General Maintenance and Services

Ore is hauled continuously to the primary crusher. As required, RoM material will feed the primary crusher. A CAT 980 type class loads the material from the RoM piles.

Haul road construction and maintenance, waste dump operations, sedimentation pond operations and other general maintenance activities utilize the reclamation dozer, Cat 140H class grader, water truck, various maintenance equipment and pickups.

## 17.4 Mine Planning

The mine is laid out with ten sectors in the Colluvial area and five sectors in the Eluvial area. The Colluvium reserves have an average grade of 54.4% Fe and the Eluvium reserves have an average grade of 60.81% resulting in an average mine reserve grade of 55.96% Fe. Grades in the individual sectors vary from 49.66 to 62.30% Fe. The average RoM ore grade is estimated at 55.7% for the LoM.

Table 17.4.1 below presents the planned RoM, waste and total material mined in the LoM Plan.

**Table 17.4.1: Mine Production Schedule – Mine 63**

<b>Year</b>	<b>RoM Mtpy</b>	<b>Waste Mtpy</b>	<b>Total Movement Mtpy</b>
2007	0.675	0.283	0.958
2008	3.723	1.604	4.877
2009	4.101	2.009	6.110
2010	4.101	2.009	6.110
2011	4.101	2.009	6.110
2012	4.101	2.009	6.110
2013	4.101	2.009	6.110
2014	4.101	2.009	6.110
2015	0.812	0.398	1.210
<b>Total</b>	<b>29.366</b>	<b>14.333</b>	<b>43.705</b>

The mine production schedule in Table 17.4.1 includes all Proven and Probable Reserves as of September 30, 2007. The quantities are based on cutoff grades of 48.85% for Colluvium and 55.85% for Eluvium. There is no dilution added to the reserves and there are no mining losses deducted from the reserves. MMX considers that internal dilution is adequately represented in the resource estimation and they intend to recover all economic material in the LoM Plan.

**Table 17.4.2: Mine Personnel Requirements**

<b>Position</b>	<b>Each</b>	<b>Schedule Days/shifts/hrs</b>
<b>Supervisory/Technical Personnel</b>		
Mining General Mgr	1	250,1,8
Maintenance Mgr	1	250,1,8
Operations Mgr	1	250,1,8
Planning, Mine and QC Mgr	1	250,1,8
Supply Coordinator (Sr Eng)	1	250,1,8
Safety Engineer (Sr Eng)	1	250,1,8
Environmental Eng (Jr Eng)	1	250,1,8
Junior Geologist	1	250,1,8
Supervisors	8	348,3,8
Administrative 1	1	250,1,8
Administrative 2	2	250,1,8
Administrative 3	2	250,1,8
Physics/Chem Lab (Jr Tech)	4	348,3,8
Mine Planning (Eng)	1	250,1,8
Jr Admin Adviser (Jr Eng)	1	250,1,8
Physics/Chem Lab (Tech)	1	250,1,8
Surveyor (Sr Tech)	1	250,1,8
Grade Control (Sr Tech)	1	250,1,8
Acctg (Eng)	1	250,1,8
Security/Medic	1	250,1,8
<i>Sub-total Supervisory/Technical Staff</i>	<i>32</i>	
<b>Process Operations/Maintenance</b>		
Mechanics	21	348,3,8
Operators	32	348,3,8
Quality Control	4	348,3,8
Sr Operators/Mechanics	14	348,3,8
Operators/Mechanics	15	348,3,8
Jr Operators/Mechanics	9	348,3,8
Sp Tech Operators/Mechanics	1	250,1,8
Laborers	3	250,1,8
<i>Sub-total Operations/Maintenance Staff</i>	<i>99</i>	
<b>Total Mine Workforce</b>	<b>131</b>	

## 17.5 Processing

The process plant for Mine 63 ore is a simple crushing and washing plant for the production of Lump and Sinter Feed. The plant has a capacity of 4.1Mtpy. The plant has been designed to perform the following operations as shown in Figure 17-2 and the simplified flowsheet in Figure 17-3:

- Primary crushing with a conventional jaw crusher;
- Secondary and tertiary crushing with cone crushers and classification screens;
- Washing and dewatering of Lump product with trommel and screens;
- Classification and dewatering of Sinter Feed with spiral classifier with double helix and dewatering screens;
- Deposition of slurry with tailings in sedimentation ponds;

- Storage of dry tailings for possible future use, for construction of dams and for reclamation of disturbed areas; and
- Transport and storage of products.

## 17.6 Infrastructure

The operational infrastructure consists primarily of:

- Power transmission line 2km long and 34.5kV; connected to the main line which supplies the “Vale das Mineradoras” from Corumbá;
- Five sub-stations with a principal step-down sub-station of 1,100kVA (34.5kV/440V) and four of variable potency;
- Roads and access;
- Products stockpile areas before shipping, placed near Highway BR-262, with 80,000t capacity;
- Water well system, water treatment system, reservoirs for recovered water, and storage tanks;
- Industrial and administrative facilities (workshops, stockroom, offices and others.); and
- Two tailings facilities for rejects with storage capacity of 12Mt of solids, the first dam being constructed for the first phase and the second dam constructed after 4 to 5 years of operation.

### 17.6.1 Tailings

The main plant will produce approximately 300,000t of slurry tailings/yr, with fine particles <0.15mm and a solids content of 6%. According to the environmental permit construction of the tailings site will begin in the last half of 2008. The tailings facility was designed by Dam Projetos de Engenharia Ltda based in Belo Horizonte, Minas Gerais. The total capacity is 1Mm<sup>3</sup> 118,000m<sup>3</sup> of water and 882,000m<sup>3</sup> of tailings. The maximum height of the dam is 23m; overflow water will be returned to the beneficiation plant. The facility will also store rainwater which will be collected from the mine site.

For the first years of operation, a series of four sedimentation ponds will be used to decant water from the tailings. The ponds are successively allowed to dry and the dry tailings are removed and trucked to a dry tailings pile. Three ponds are currently in use and a fourth will be constructed in March 2008.

## 17.7 Contracts

MMX has negotiated a contract with Julio Simões Transportes e Serviços Ltda, signed June 1, 2007 and valid for 36 months from that date for mining ore and waste at Mine 63. MMX also has other small contracts for providing food and cleaning services.

## 17.8 Markets

The iron ore products from Corumbá are transported either to the pig iron plant operated by MMX Metálicos near Corumbá or to the Ladário Port on the Paraguay River from where they

can be transported to domestic markets or to the San Nicholas port in Argentina. The export destinations are Argentina, Europe, and China.

Mine 63 is also very close to a rising pig iron market in the region of Corumbá/Campo Grande.

Currently all sales from Corumbá are negotiated at spot price due to the elevated price of iron ore product. MMX will consider negotiations for long-term contracts as part of its long-term strategy. MMX will also investigate the possibility of strategic partners for the project.

### **17.8.1 Shipment Logistics**

Lump ore is trucked directly to the pig iron plant operated by MMX Metálicos near Corumbá. Products to be sold to domestic or international markets are transported by truck to the port terminal of Granel Química on the Paraguay River in Ladario, a distance of 28km from Mine 63, and 45km from the areas of Urucum NE and Rabicho Sul

For the cash flow analysis, which considers FOB prices at the port terminal, the costs of port terminal movements are included. The port terminal belongs to the Norwegian company Odfjell, is fully authorized for exports and is capable of moving products by the waterway from either road or rail access. The products can be stored in a 15,000m<sup>2</sup> stockyard and then loaded onto the ships.

## **17.9 Environmental Management**

### **17.9.1 During the Operational Life of the Mine**

The plan for rehabilitation of areas impacted by mining includes the following activities during mine operations:

- After the authorization to proceed with the vegetation removal in the mining areas is given, the topsoil is removed and stockpiled during the mining period;
- Training program for the orientation of professionals on operational planning and best practices for environmental administration of mining projects;
- As soon as the mine slopes and areas reach the final geometry, in any point of the mine life, those surfaces receive stabilization treatment, in a way to provide efficient drainage; and
- Once the re-contouring is done, a topsoil layer is applied and it will be revegetated with native seeds.

### **17.9.2 Mine Closure**

The following areas will be recontoured and revegetated after the mine operations are completed:

- Tailings dam;
- Mining areas; and
- Plant and waste dumps.

Every area cited above will be subjected to the following reclamation program:

- Topographic reconstruction;
- Vegetation species selection; and

- Conditioning of berms and pit walls.

After the implementation of the reclamation plan, a monitoring program will be instituted for flora, fauna and human activity.

## 17.10 Economic Analysis

SRK has reviewed the internal LoM technical and financial model prepared by MMX for Corumbá Mine 63. The Mine has been operating since mid-2006 and the financial projections indicates a positive cash flow throughout the remaining life of the Mine. The economic analysis is presented on a post-tax basis and assumes 100% equity to provide a clear picture of the technical merits of the project.

The LoM plan, technical and economic projections in the LoM model include forward looking statements that are not historical facts and are required in accordance with the reporting requirements. These forward-looking statements are estimates and involve risks and uncertainties that could cause actual results to differ materially.

## 17.11 Taxes and Royalties

Taxes are included on Gross Revenues as well as the 34% Income Tax on Net Income Before Tax (NIBT). There are four royalties identified by MMX as indicated in Table 17.11.1. The 34% Income Tax/Social Security Tax is calculated on the NIBT.

**Table 17.11.1: MMX Royalties**

Royalty	Percentage	Comments
PIS	1.65%	Applied to Internal Production Only
COFINS	7.60%	Applied to Internal Production Only
CFEM	2.00%	Applied to Total Production
Land Owner Rights	1.00%	Applied to Total Production

## 17.12 LoM Plan Economics

The SRK LoM plan and economics are based on the following:

- Reserves of 29.4Mt at an average grade of 55.7% Fe;
- A mine life of eight years, at a designed rate of 4,101ktpy;
- An overall average process recovery rate of 55% for Lump product and 11% for Sinter product over the LoM;
- Operating Costs are shown in Table 17.12.1;
- G&A costs:
  - Sundry costs – include mine planning, quality control, administration - US\$1.90/t-product for 2008 and US\$1.58/t product for the remaining LoM,
  - Product transport – mine to port - US\$1.99/t-product for 2008 and US\$1.69/t-product for the remaining LoM,
  - Port terminal cost is included in sales expenses, and

- Corporate costs – miscellaneous - US\$2.22/t-product for 2008 and US\$1.78/t-product for the remaining LoM.
- A cash operating cost of US\$8.55/t-ore or US\$12.97/t of total product;
- Total capital costs of US\$35.8M have been spent in 2005, 2006, and 2007. The capital costs are amortized/depreciated in accordance with MMX supplied straight-line depreciation methods. However, the capital costs are not included in the financial model; and
- Total sustaining capital costs of US\$26.8M LoM are included for years 2008-2015. MMX included mine closure costs in the sustaining capital. There is no provision for salvage value.

The base case economic analysis results, shown in Table 17.12.2, indicate an after-tax net present value of US\$76M at a 10% discount rate.

**Table 17.12.1: Operating Costs (US\$/t of product)**

<b>Description</b>	<b>2008</b>	<b>LoM</b>
Mining	3.46	3.30
Process	3.79	2.98
Ore handling	1.74	1.37
Sundry cost	1.90	1.58
Transport cost to port	1.99	1.69
Port terminal cost	0.00	0.00
Corporate cost	2.22	1.78
<b>Total</b>	<b>15.10</b>	<b>12.70</b>

**Table 17.12.2: LoM Economic Results (US\$000s)**

<b>Description</b>	<b>LoM Value</b>
<b>Ore</b>	
Ore RoM (Mt)	29.4
Grade	
Iron	55.7%
<b>Lump Ore</b>	
Process Recovery	55%
<b>Sinter Ore</b>	
Process Recovery	11%
<b>Gross Revenue</b>	
Lump Product	\$430,108
Sinter Product	\$77,272
<b>Gross Revenue</b>	<b>\$507,380</b>
<b>Royalty (Taxes)</b>	
Royalties	(\$22,662)
<b>Gross Income from Mining</b>	<b>\$484,718</b>
<i>US\$/-ore t</i>	<i>\$16.51</i>
<i>US\$/t-product</i>	<i>\$25.03</i>
<b>Gross Income from Mining</b>	<b>\$484,718</b>
<b>Operating Costs</b>	
Mining	(\$64,259)
Process	(\$86,798)
G & A	(100,097)
<b>Operating Costs</b>	<b>(\$251,154)</b>
<i>US\$/t-ore</i>	<i>\$8.55</i>
<i>US\$/t-product</i>	<i>\$12.97</i>
<b>Operating Margin</b>	<b>\$233,564</b>
<i>US\$/t-ore</i>	<i>\$7.95</i>
<i>US\$/t-product</i>	<i>\$1206</i>
<b>Income Tax</b>	
Income Tax	(\$71,847)
<b>Total Tax</b>	<b>(\$71,847)</b>
<i>US\$/t-ore</i>	<i>\$2.45</i>
<i>US\$/t-product</i>	<i>\$3.71</i>
<b>NIAT</b>	<b>\$161,717</b>
<i>US\$/t-ore</i>	<i>\$5.51</i>
<i>US\$/t-product</i>	<i>\$8.35</i>
<b>Capital Costs</b>	
Sustaining	\$34,866
Equipment – sunk capital – operating mine	\$0
Mine Closure/Reclamation – incl in sustaining	\$0
<b>Total Capital</b>	<b>(\$34,866)</b>
<b>Cash Flow</b>	<b>\$126,738</b>
<b>NPV<sub>10%</sub></b>	<b>\$76,069</b>

### 17.13 Sensitivities

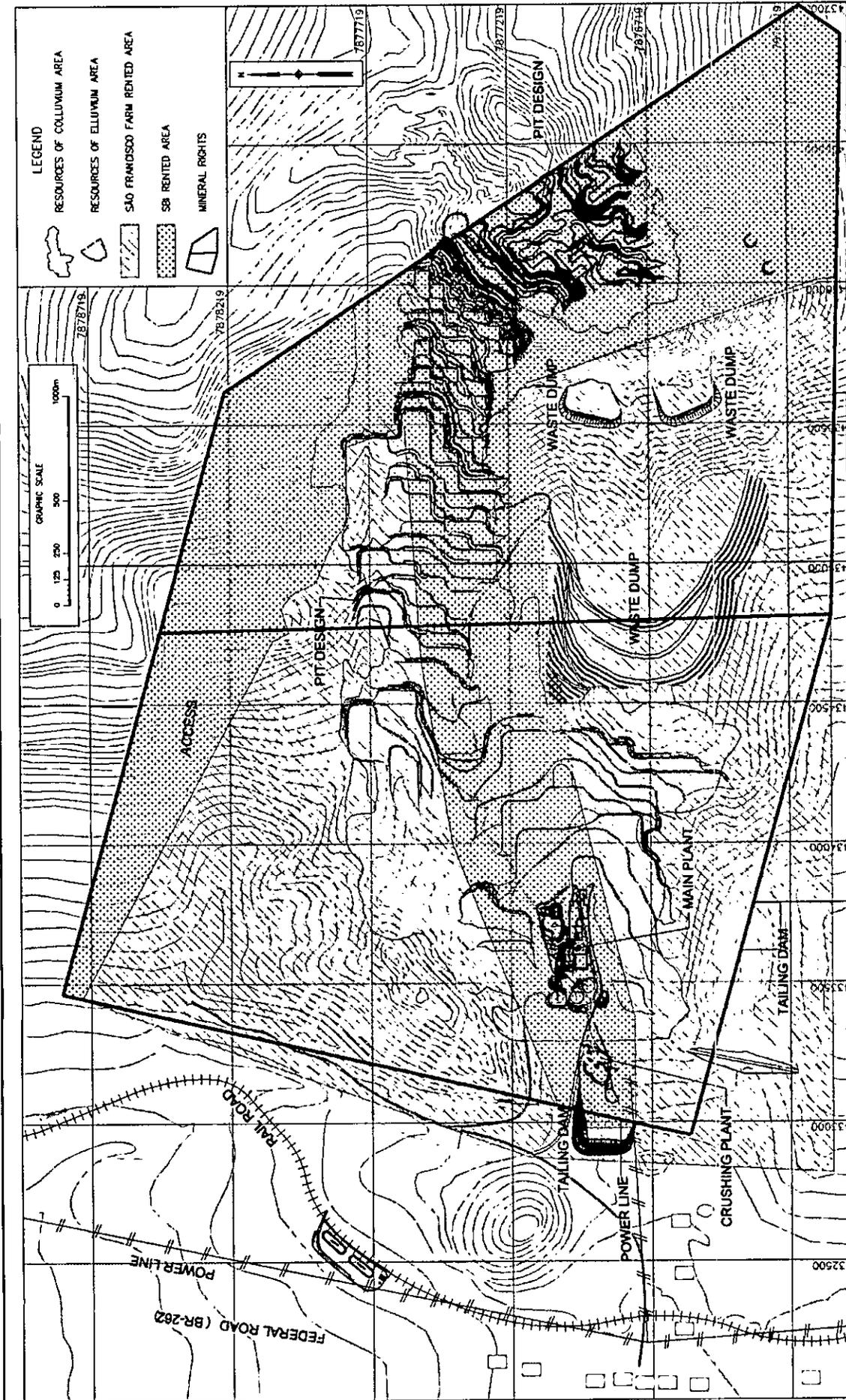
Sensitivity analysis for the key economic parameters are shown in Table 17.13.1. The analysis was carried out varying the base case values by +10%. The analysis suggests that the project is most sensitive to market price. Being a short life operating mine with initial capital already expensed, the project is least sensitive to ongoing capital costs.

**Table 17.13.1: Project Sensitivity (NPV<sub>10%</sub> US\$000's)**

Factor %	Discount Rate		Opex		Market Prices		Lump Recovery		Capex	
	NPV	Variation %	NPV	Variation %	NPV	Variation %	NPV	Variation %	NPV	Variation %
-10	79,812	4.92	86,412	13.60	55,590	-26.92	68,470	-9.99	78,157	2.7
0	76,069	0.00	76,069	0.00	76,069	0.00	76,069	0.00	76,069	0.0
10	72,546	-4.63	65,639	-13.71	96,407	26.74	83,656	9.97	73,945	-2.8

### 17.14 Mine Life

Mine 63 has a projected life of approximately 8 years. The mine will operate from the last quarter of 2007 through 71 days into 2015.



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File Name: Figure 17-1.doc

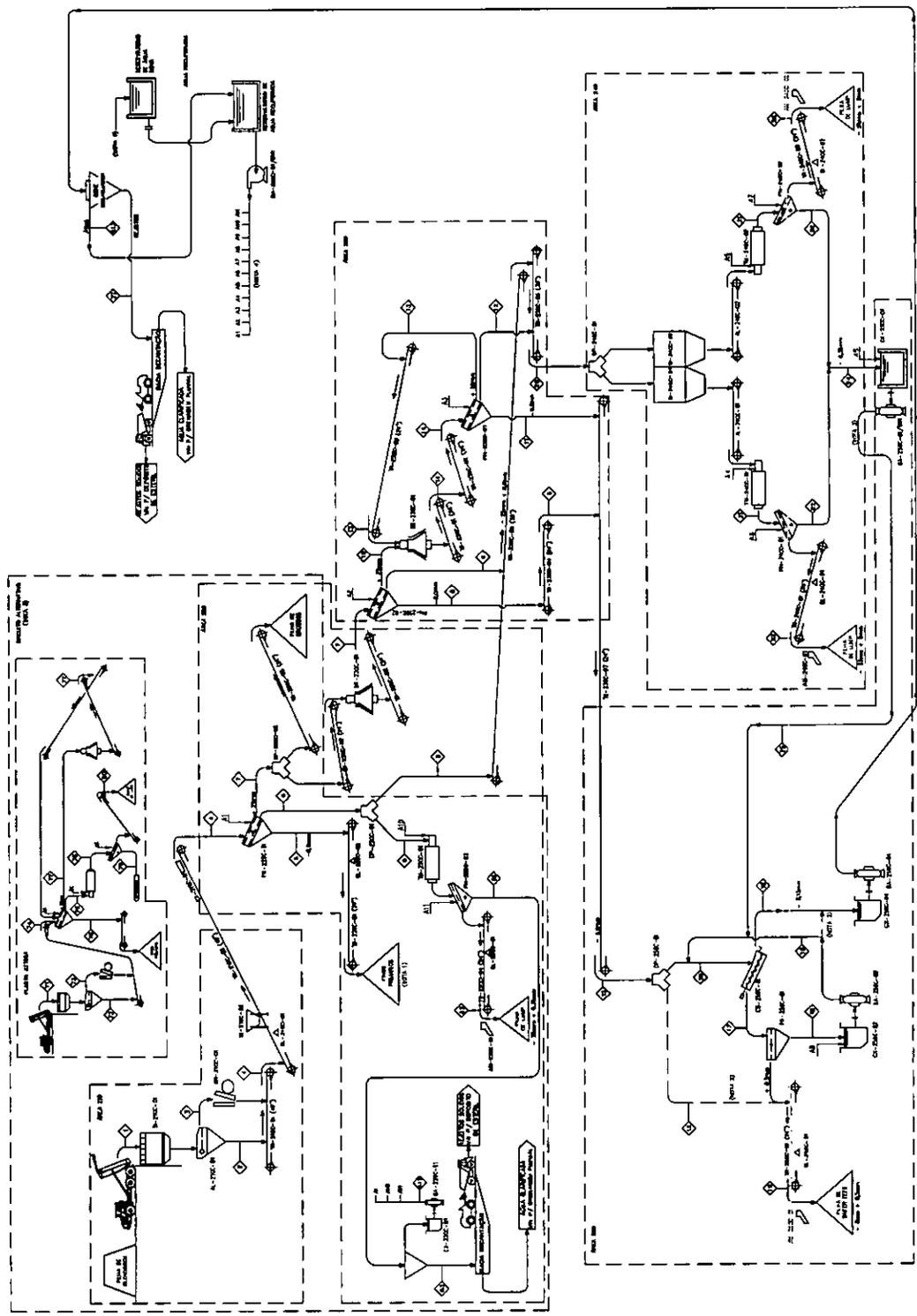
Corumbá Project,  
Brazil

Source: Mineração & Metais S.A

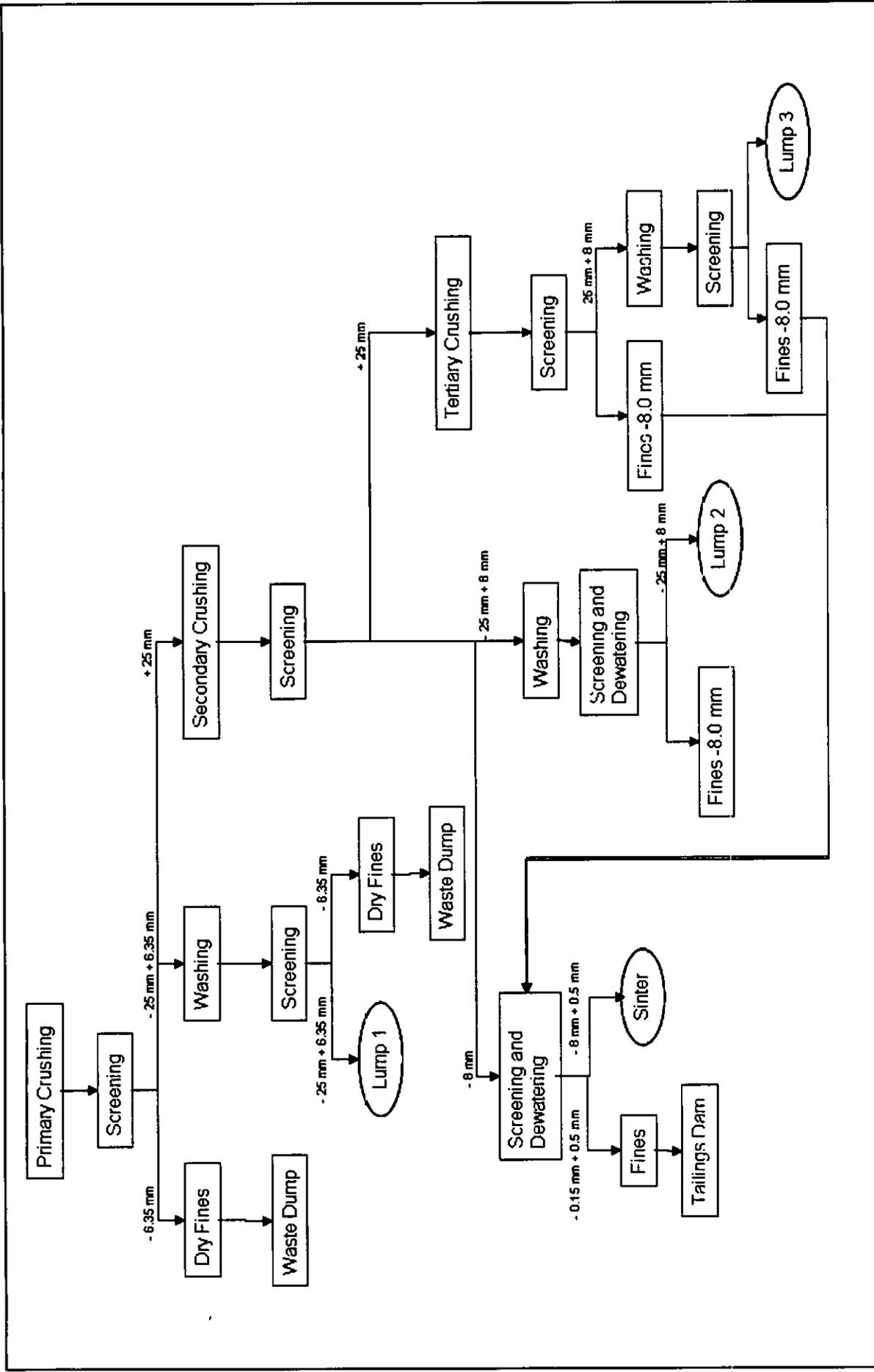
Figure 17-1  
Layout of Mine 63 Coru  
Project

Date: 02.27.06  
Approved: LM

Page



 <b>SRK Consulting</b> Engineers and Scientists	<b>Corumbá Project, Brazil</b>		<b>Figure 17-2</b>
	Source: Mineração & Metais S.A.		<b>Plant Design</b>
SRK Job No.: 162703.03 File Name: Figure 17-2.doc	Date: 02.27.08	Approved: LX	Figure 17-2



 <b>SRK Consulting</b> <small>Engineers and Scientists</small>	<b>Corumbá Project, Brazil</b>		<b>Figure 17-3 Simplified Process Flowsheet</b>	
	<b>Source: Mineração &amp; Metálicos S.A</b>		Date: 02-27-08	Approved: LM
SRK Job No.: 162703.03		Figure: 17-3		
File Name: Figure 17-3.doc				

## 18 Interpretation and Conclusions (Item 21)

The Corumbá Project is an operating mine that has been in production since July 2006. The Resource and Reserve have been estimated by Prominas under the direction of MMX. The Project is well documented with original sources of drill logs, assays, and various reports, as well as an electronic database.

SRK has reviewed and validated the sample database, topography, geologic interpretation, and the resource estimation parameters. The resource block model has been verified through visual examination and by construction of swath plots through the deposit. The resource database and the resource estimate follow industry standards and resource classification is in accordance with CIM guidelines.

The metallurgical testwork has been reviewed by SRK and found to be adequate for the project.

MMX has the necessary mining and environmental permits and surface agreements to operate Mine 63 at the Corumbá Project.

The LoM is relatively short and as such, the project is straightforward with the initial capital expended and does not require complex sensitivity analysis typical with long life projects.

The project economics indicate that:

- The Corumbá Project exhibits robust economics with a NPV<sub>10%</sub> of US\$76M; and
- SRK considers the Corumbá Project to be a relatively low-risk project given its relatively short mine life, good mining conditions, conventional processing methods, sunk capital, and contracts for sales of its iron products.

## 19 Recommendations (Item 22)

The resource database could be improved by the following procedures in future programs:

- Sample intervals should be no longer than the bench height of the mine. This procedure would eliminate the problem of sample support where intervals longer than 6m were excluded from the compositing routine; and
- Intervals of internal waste should be analyzed with the same procedures as the surrounding samples. This would eliminate the doubts about the grade and the subsequent assignment of zero to those intervals. MMX has instituted this practice in 2007 at Urucum NE.

The resource estimate procedure should be re-examined following future drilling and sampling programs to see if it could be simplified. The current procedure is technically correct, but may be more complex than required for this deposit.

As mining progresses, a program of mined to model reconciliation should be instituted. This is a standard practice in mine operations and aids in evaluation of the resource model.

The laboratory QA/QC at Urucum NE indicates that there may be a bias in SGS analysis of  $Al_2O_3$  and P. SRK recommends that MMX continue its investigation into the issue.

## 20 References (Item 23)

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# 21 Glossary

## 21.1 Mineral Resources and Reserves

### Mineral Resources

The mineral resources and mineral reserves have been classified according to the “CIM Standards on Mineral Resources and Reserves: Definitions and Guidelines” (August 2000). Accordingly, the Resources have been classified as Measured, Indicated or Inferred, the Reserves have been classified as Proven, and Probable based on the Measured and Indicated Resources as defined below.

A Mineral Resource is a concentration or occurrence of natural, solid, inorganic or fossilized organic material in or on the Earth’s crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge.

An ‘Inferred Mineral Resource’ is that part of a Mineral Resource for which quantity and grade or quality can be estimated on the basis of geological evidence and limited sampling and reasonably assumed, but not verified, geological and grade continuity. The estimate is based on limited information and sampling gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drillholes.

An ‘Indicated Mineral Resource’ is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drillholes that are spaced closely enough for geological and grade continuity to be reasonably assumed.

A ‘Measured Mineral Resource’ is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drillholes that are spaced closely enough to confirm both geological and grade continuity.

### Mineral Reserves

A Mineral Reserve is the economically mineable part of a Measured or Indicated Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified. A Mineral Reserve includes diluting materials and allowances for losses that may occur when the material is mined.

A 'Probable Mineral Reserve' is the economically mineable part of an Indicated, and in some circumstances a Measured Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified.

A 'Proven Mineral Reserve' is the economically mineable part of a Measured Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction is justified.

## 21.2 Glossary

<b>Assay:</b>	The chemical analysis of mineral samples to determine the metal content.
<b>Capital Expenditure:</b>	All other expenditures not classified as operating costs.
<b>Composite:</b>	Combining more than one sample result to give an average result over a larger distance.
<b>Concentrate:</b>	A metal-rich product resulting from a mineral enrichment process such as gravity concentration or flotation, in which most of the desired mineral has been separated from the waste material in the ore.
<b>Crushing:</b>	Initial process of reducing ore particle size to render it more amenable for further processing.
<b>Cutoff Grade (CoG):</b>	The grade of mineralized rock, which determines as to whether or not it is economic to recover its gold content by further concentration.
<b>Dilution:</b>	Waste, which is unavoidably mined with ore.
<b>Dip:</b>	Angle of inclination of a geological feature/rock from the horizontal.
<b>Fault:</b>	The surface of a fracture along which movement has occurred.
<b>Grade:</b>	The measure of concentration of gold within mineralized rock.
<b>Haulage:</b>	A horizontal underground excavation which is used to transport mined ore.
<b>Hydrocyclone:</b>	A process whereby material is graded according to size by exploiting centrifugal forces of particulate materials.
<b>Igneous:</b>	Primary crystalline rock formed by the solidification of magma.
<b>Kriging:</b>	An interpolation method of assigning values from samples to blocks that minimizes the estimation error.
<b>Level:</b>	Horizontal tunnel the primary purpose is the transportation of personnel and materials.
<b>Lithological:</b>	Geological description pertaining to different rock types.
<b>LoM Plans:</b>	Life-of-Mine plans.
<b>Material Properties:</b>	Mine properties.

<b>Milling:</b>	A general term used to describe the process in which the ore is crushed and ground and subjected to physical or chemical treatment to extract the valuable metals to a concentrate or finished product.
<b>Mineral/Mining Lease:</b>	A lease area for which mineral rights are held.
<b>Mining Assets:</b>	The Material Properties and Significant Exploration Properties.
<b>Ongoing Capital:</b>	Capital estimates of a routine nature, which is necessary for sustaining operations.
<b>Ore Reserve:</b>	See Mineral Reserve.
<b>RoM:</b>	Run-of-Mine.
<b>Sedimentary:</b>	Pertaining to rocks formed by the accumulation of sediments, formed by the erosion of other rocks.
<b>Shaft:</b>	An opening cut downwards from the surface for transporting personnel, equipment, supplies, ore and waste. In the case of this report the shafts were used for sampling the colluvial and eluvial deposits.
<b>Stratigraphy:</b>	The study of stratified rocks in terms of time and space.
<b>Strike:</b>	Direction of line formed by the intersection of strata surfaces with the horizontal plane, always perpendicular to the dip direction.
<b>Tailings:</b>	Finely ground waste rock from which valuable minerals or metals have been extracted.
<b>Thickening:</b>	The process of concentrating solid particles in suspension.
<b>Total Expenditure:</b>	All expenditures including those of an operating and capital nature.
<b>Variogram:</b>	A statistical representation of physical characteristics (usually grade).

### **Abbreviations**

The metric system has been used throughout this report unless otherwise stated. All currency is in U.S. dollars. Market prices are reported in US\$25.75/t fob and US\$15.75/t fob of iron ore. Tonnes are metric of 1,000kg, or 2,204.6lbs. The following abbreviations are used in this report.

<b><u>Abbreviation</u></b>	<b><u>Unit or Term</u></b>
A	ampere
AA	atomic absorption
A/m <sup>2</sup>	amperes per square meter
Al <sub>2</sub> O <sub>3</sub>	Aluminum Oxide
°C	degrees Centigrade
CoG	Cut-off-Grade
cm	centimeter

cm <sup>2</sup>	square centimeter
cm <sup>3</sup>	cubic centimeter
cfm	cubic feet per minute
°	degree (degrees)
dia.	Diameter
Fe	Iron
Fe <sup>++</sup>	Ferrous iron
g	gram
Ga	billion years before present
gpt	grams per tonne
ha	hectares
ID <sup>2</sup>	inverse-distance squared
ID <sup>3</sup>	inverse-distance cubed
kA	kiloamperes
kg	kilograms
km	kilometer
km <sup>2</sup>	square kilometer
kt	thousand tonnes
ktpd	thousand tonnes per day
ktpy	thousand tonnes per year
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
kWh/t	kilowatt-hour per metric tonne
l	liter
lps	liters per second
LOI	Loss On Ignition
LoM	Life-of-Mine
lps	liters per second
m	meter
m <sup>2</sup>	square meter
m <sup>3</sup>	cubic meter
mg/l	milligrams/liter

mm	millimeter
mm <sup>2</sup>	square millimeter
mm <sup>3</sup>	cubic millimeter
Mn	Manganese
MnO	Manganese oxide
Mt	million tonnes
Mtpy	million tonnes per year
MW	million watts
NI 43-101	Canadian National Instrument 43-101
OSC	Ontario Securities Commission
%	percent
P	Phosphorous
ppb	parts per billion
ppm	parts per million
QA/QC	Quality Assurance/Quality Control
RoM	Run-of-Mine
s	second
SiO <sub>2</sub>	Silica
SG	specific gravity
t	tonne (metric ton) (2,204.6 pounds)
TiO <sub>2</sub>	Titanium Oxide
tph	tonnes per hour
tpd	tonnes per day
tpy	tonnes per year
μ	micron or microns
V	volts
W	watt
XRD	x-ray diffraction
yr	year



**Appendix A**  
**Certificates of Authors**

**CERTIFICATE of AUTHOR**

I, Neal Rigby, CEng do hereby certify that:

1. I am a Principal of:

SRK Consulting (US), Inc.  
7175 W. Jefferson Ave, Suite 3000  
Lakewood, CO, USA, 80235

2. I graduated with a BSc degree in Mineral Exploitation with first class honors in 1974 and a PhD in Mining Engineering in 1977 both from the University of Wales, UK.
3. I am a member of the Institute of Materials, Mining and Metallurgy.
4. I have worked as a mining engineer for a total of 33 years since my graduation from university.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for Section 15.3 and 17, as well as, the content, compilation, and editing of all sections of the technical report, titled, MMX Mineração e Metálicos S.A. NI 43-101 Technical Report, Corumbá Iron Project, and dated March 10, 2008 (the "Technical Report") relating to the Corumbá Iron Project. I personally visited the Corumbá Iron Project on January 6, 2006.
7. I have had prior involvement with the property that is the subject of the Technical Report. The nature of my prior involvement with the property was as the qualified person for the preparation of Sections 14, 15.9 and 17 and the overall preparation of the Technical Report titled NI 43-101 Technical Report, Mineração & Metálicos S.A. Corumbá Project, Brazil, and dated May 04, 2007.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of the issuer applying all of the tests in Section 1.4 of National Instrument 43-101.

Group Offices in:	North American Offices:
Australia	Denver 303.985.1333
North America	Elko 775.753.4151
Southern Africa	Reno 775.828.6800
South America	Tucson 520-544-3688
United Kingdom	Toronto 416.601.1445
	Vancouver 604.681.4196
	Yellowknife 867-699-2430

10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical has been prepared in compliance with that instrument and form.

Dated March 10, 2008.

A handwritten signature in black ink, appearing to read "N. Rigby". The signature is written in a cursive style with a horizontal line at the end.

Neal Rigby, CEng., MIMMM, PhD (signed)

**CERTIFICATE of AUTHOR**

I, Leah Mach, CPG do hereby certify that:

1. I am a Principal Resource Geologist of:

SRK Consulting (US), Inc.  
7175 W. Jefferson Ave, Suite 3000  
Lakewood, CO, USA, 80235

2. I graduated with a Master of Science degree in Geology from the University of Idaho in 1986.
3. I am a member of the American Institute of Professional Geologists.
4. I have worked as a Geologist for a total of 22 years since my graduation in minerals exploration, mine geology, project development and resource estimation.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for the responsible for the overall preparation of the report and specifically for Sections 1 through 13, 15.1 through 15.2, 16 and 18 through 22 of the technical report, titled, MMX Mineração e Metálicos S.A. NI 43-101 Technical Report, Corumbá Iron Project, and dated March 10, 2008 (the "Technical Report") relating to the Corumbá Iron Project. I personally visited the Corumbá Iron Project on September 25 through 27, 2007.
7. I have had prior involvement with the property that is the subject of the Technical Report. The nature of my prior involvement with the property was as the qualified person for the preparation of Sections 2 through 13, and 15.1 through 15.8 of the Technical Report titled NI 43-101 Technical Report, Mineração & Metálicos S.A., Minas-Rio Project, Brazil, and dated May 4, 2007.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose with makes the Technical Report misleading.
9. I am independent of the issuer applying all of the tests in Section 1.4 of National Instrument 43-101.

Group Offices in:	North American Offices:
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Southern Africa	Reno 775.828.6800
South America	Tucson 520-544-3688
United Kingdom	Toronto 416.601.1445
	Vancouver 604.681.4196
	Yellowknife 867-699-2430

10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Dated March 10, 2008.

*Leah Mach*

\_\_\_\_\_  
Leah Mach, CPG, MSc (signed)

**CPG 10940 (sealed)**

**CERTIFICATE of AUTHOR**

I, *Sten Erik Einar Johansson*, MSAIMM do hereby certify that:

1. I am a Principal Metallurgist of:

Turgis Consulting (Pty) Ltd  
299 Pendoring Road  
2195 Blackheath  
South Africa

Consulting to:

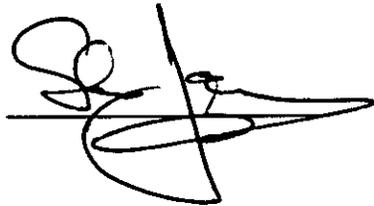
SRK Consulting (US), Inc.  
7175 W. Jefferson Ave, Suite 3000  
Denver, CO, USA, 80235

2. I graduated with a diploma in Mining and Metallurgy from the Technical High School (University equivalent) of Skellefteå, Sweden in 1964.
3. I am a member of the South African Institute of Mining and Metallurgy.
4. I have worked as a metallurgist for a total of 40 years since my graduation from university.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for the preparation of section on mineral processing and metallurgical testing of the technical report titled MMX Mineração e Metálicos S.A. NI 43-101 Technical Report, Corumba Project and dated March 10, 2008 (the "Technical Report") relating to Mine 63 which is owned and operated by MMX Corumba. I visited the Metallurgical Office in Belo Horizonte and the Pilot Plant in Ouro Preto on September 24, September 29 and October, 2007 for 3 days. A visit to the Corumba mine and the plant took place on October 3 and 4.
7. I have not had prior involvement with the properties that are the subject of the Technical Report.

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Australia	Denver 303.985.1333
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Southern Africa	Reno 775.828.6800
South America	Tucson 520-544-3688
United Kingdom	Toronto 416.601.1445
	Vancouver 604.681.4196
	Yellowknife 867-699-2430

8. I am independent of the issuer applying all of the tests in section 1.4 of National Instrument 43-101.
9. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
10. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.
11. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

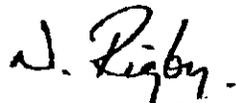
Dated this 10th Day of March, 2008.

A handwritten signature in black ink, appearing to read 'Sten Erik Einar Johansson', written over a horizontal line.

Sten Erik Einar Johansson

MMX Mineração e Metálicos S.A. NI 43-101 Technical Report, Corumbá Project, Brazil, September 30, 2008.

Dated March 10, 2008

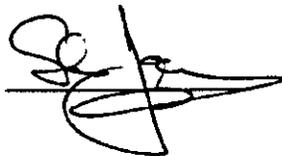


Dr. Neal Rigby CEng, MIMMM, PhD (signed)



Leah Mach MS Geology, CPG (signed)

CPG 10940 (sealed)



S E E Johansson, MAXIM (signed)

**END**