SPG Mineração S. A.

Tartarugal Grande Iron Ore Project

THE PROJECT

LOGISTICS

CURRENT STATUS

Introduction

SPG Mineração S. A. is a holding company of Mineral Rights in Amapa State, northern of Brazil. His main area of activity is a development of new business related to the exploitation of deposits of iron ore.

Founded in 2006 by three partners / shareholders, SPG Mineração S. A. has been preparing since them, the consolidation of the Greenfield Project, Tartarugal Grande Iron Ore, located in Tartarugalzinho County, Amapa State.

Currently the structure of SPG Mineração S.A is made up of 88% of own Shares and 12% of company shares Acquired by a Russian company, SEVERSTAL in 2011.

This document is a brief presentation of all aspects related to the, quality of the Ore, Tenements, Logistics, Geophysical and Drilling Studies already performed.

Amapa State

Northern Brazilian state with population of 890.000 people.

The state's GDP is dominated by services (69%), followed by agriculture and forestry (19%) and industrial production (12%).

Mining products (Iron Ore, Gold, Tantalum and Manganese) account for more than 90% of the state's exports, followed by wood (5%) and agriculture products (1-2%).

The state has a high quality highway between SPG Minera'c~ao Areas and Santana Port, with extremely low load rate, the capital Macapa has an international airport.

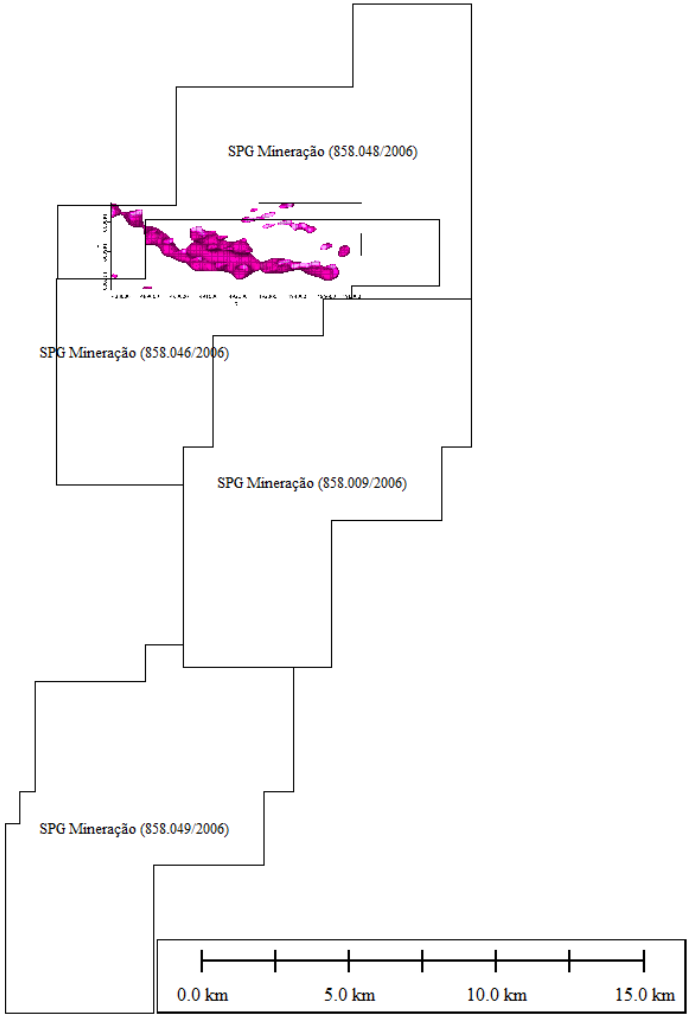
The Port of Santana has the capacity to dock and simulately load two 50,000-ton handymax ships.

The state has c. 237 Mwatt /h. power generation supply and c. 200 Mwatt/h. power generation demand. Currently 4 new dams are built with total generation capacity of 1.000 Mwatt/h. The Brazilian government wants the Amapa state to become a net exporter of electricity.

Brazil Map and Amapá State in red.

Tenements

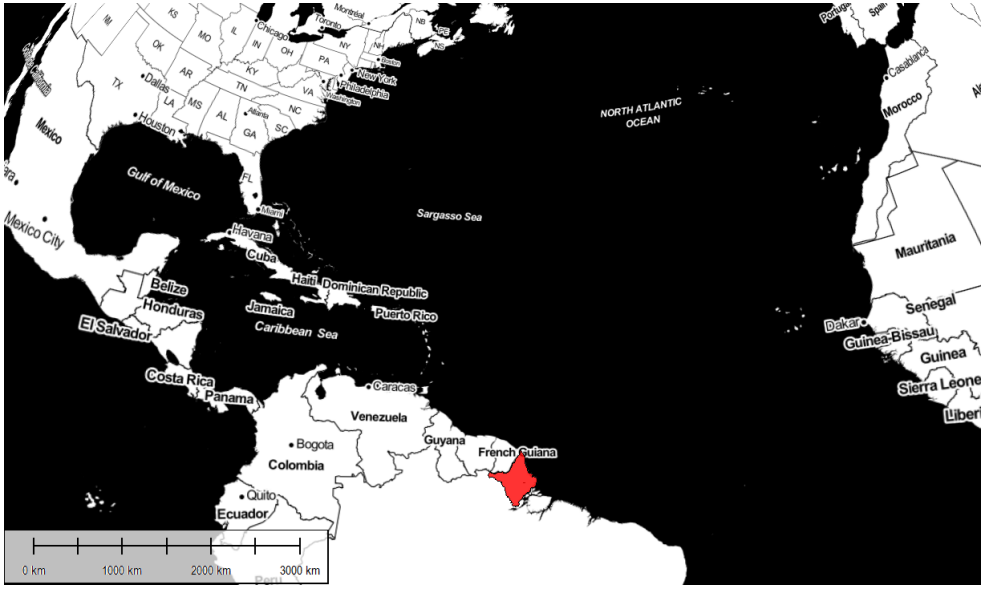
858.009/2006 - 8593.75 Hectars
858.046/2006 - 6453.32 Hectars
858.048/2006 - 6839.93 Hectars
858.049/2006 - 8250.10 Hectars



SPG Mineração S. A. and their respectives ANM processes.

Cost Position

The State of Amapa is in a very favorable region in relation to maritime logistics. The navigation distance to the Panama canal is 2,200 nautical miles, a good point for Asian, European and countries of North America.



Amapa State painted in RED Color.

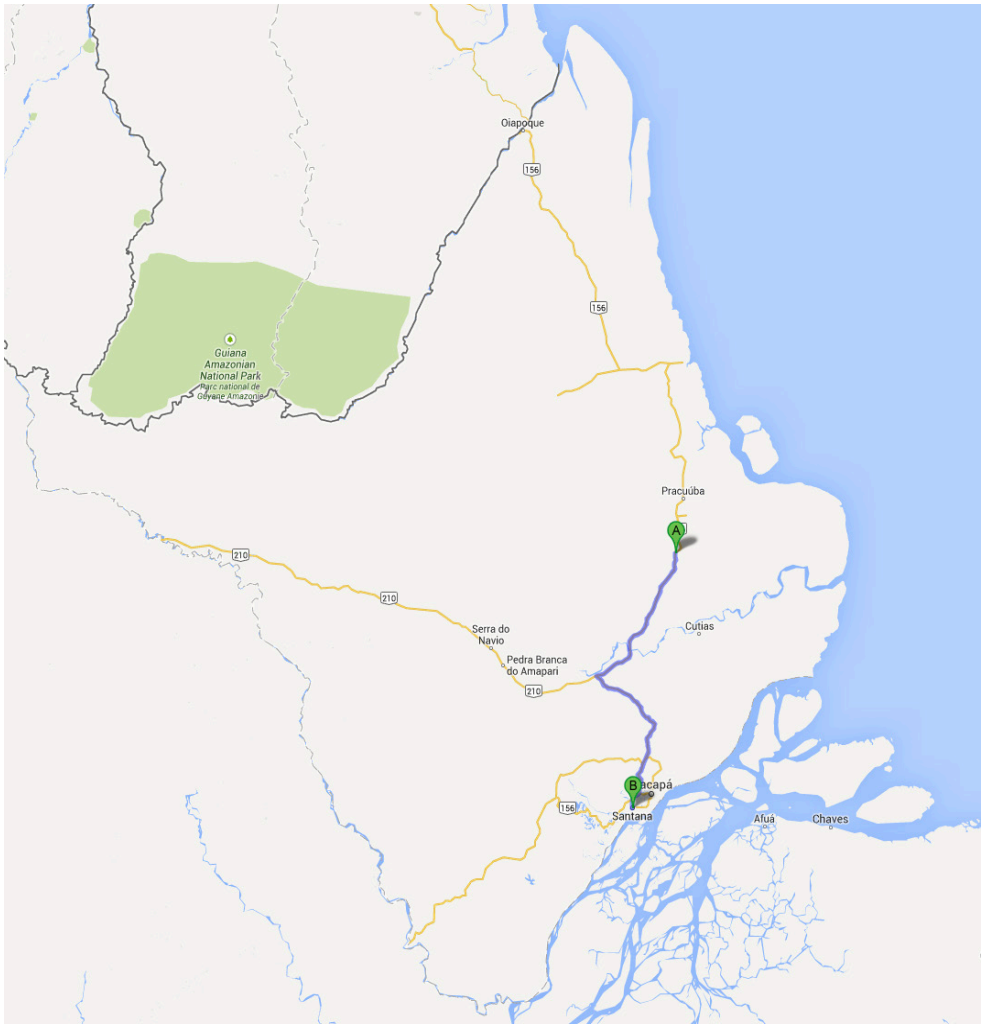
Actual Scenery

Currently the logistics can be made through trucks from the areas of SPG Mineração S. A. to the Port of Santana.

This path can be done by trucks with a capacity of 50 tons.

The distance between areas of SPG Mineração S. A. to the Port of Santana is approximately 216 Kilometers (134 Miles).

This highway has a low rate of traffic and a high quality asphalt with no incidence of tolls.



BR-156 From SPG Minerção S. A. site (A) to Santana Port (B).

BR-156 Road, near the acces to SPG Mineração S. A.

Santana Port

As it is located on the Equator line, maritime logistics costs are reduced from 30% to 40% from the Port of Santana, which is close to Macapá and also due to its strategic geographical location.

Currently the port of santana can operate with the simulatane boarding of up to two handymax ships, which are loaded in approximately 4 days. There is a good idle range that can be filled with approximately 8 more ships per month, which would be 350,000 to 400,000 ton/month.

Handymax Vessel Loading Iron Ore @ Number 2 Deck.

Geophysics

The geophysic map presented on this page was generated from a preliminary study of aerial geophysical interpretation, produced by RECONSULT Geofísica in 2011 and supervised by technical staff of SPG Mineração S. A.

In 2021, Allan Pedrosa Vieira Nascimento, CEO of SPG, performed a high quality Geophysical Modelling using the Oasis Montaj software from Geosoft and MEV Tools to improve the resolution of Voxels. With the new products generated, it was possible to determine new targets with precision and interesting places to measure inferred and indicated resources and also to point out favorable locations for the beginning of experimental mines with high content of magnetite and hematite, often classified as Direct Ship Ore.

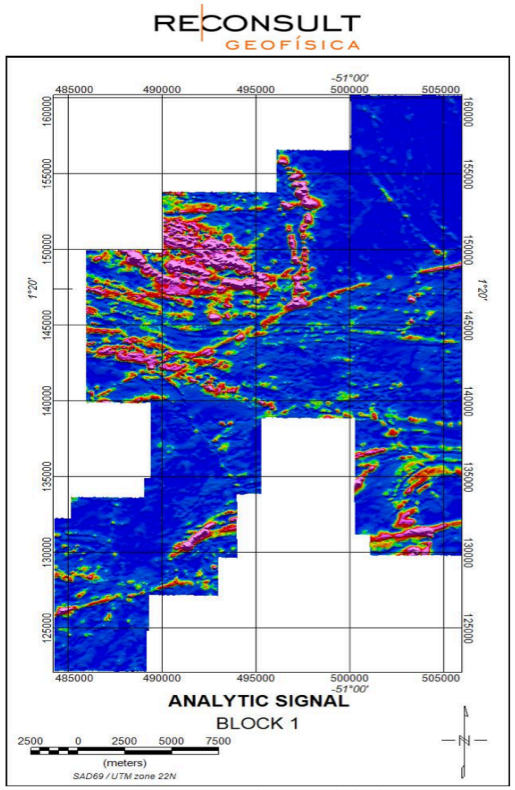
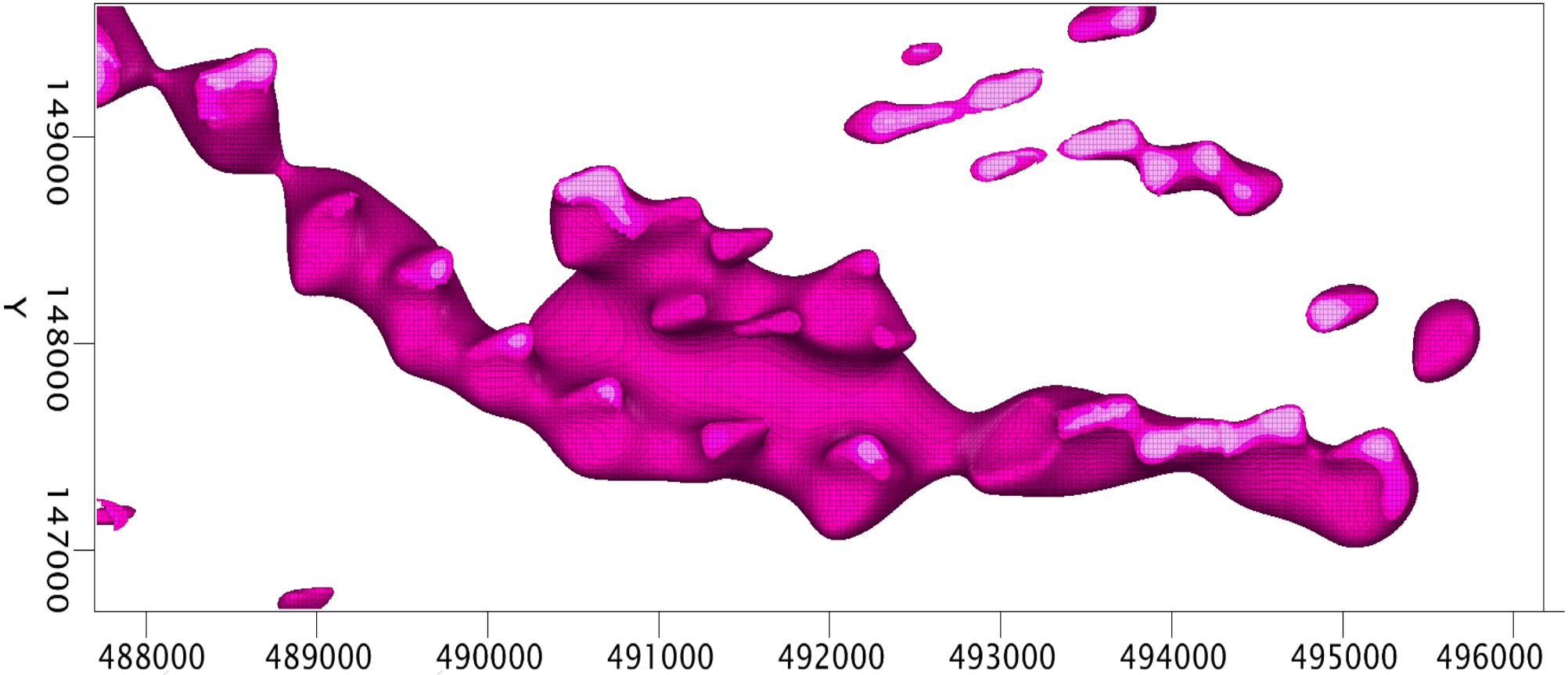


Figure 7: Magnetic Analytic Signal Block 1 Map.

What is Analytic Signal? AS is a transformation developed by Nabighian (1972, 1984). MacLeod et al (1993) showed that this operation is particularly important in low magnetic latitude regions, producing maximum over magnetic contacts regardless the direction of magnetization.

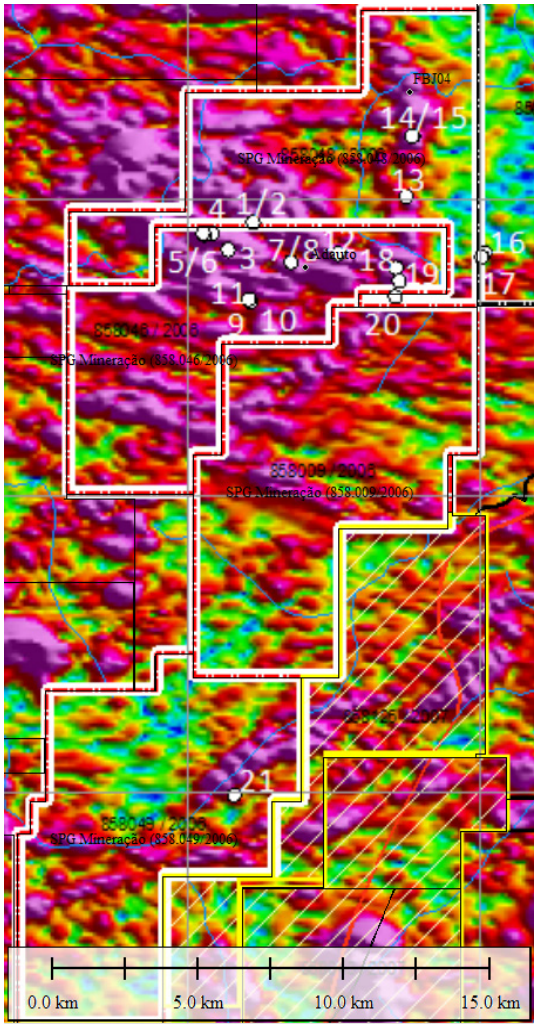
Magnetic Analytic Signal of Main Anomaly.



The lighter magenta areas correspond to places where the ore is outcropping.

Trenches

Based on the geophysical interpretations and outcrops, approximately 100 trenches were opened, some of them are represented below with their respective chemical analyses.



Bed Rocks located inside the trenches.

SPG Mineração S. A.

Tartarugal Grande Iron Ore Project

1) SPG 01 Trench - UTM: 492245E / 149195N

Place called Morro do Raimundinho, with dense and high forest, and relatively low relief, with an E-W crest, 400 m long and 200 to 250 m wide.

Sample collected from the highly lateritized bed rock, still with banding preserved between magnetite and quartz, E-W direction, sub-horizontalized, moderate magnetism.

Trench with an average depth of 2.50 m, with colluvial mass up to 0.50 m, followed by lateritized and pisolitic fragments, sometimes strongly magnetized, between 0.50 m and 2.0 m and, at the bottom, decomposed rock to the trench floor.

2) SPG 02 Trench - UTM: 492245E / 149195N

Colluvium from the aforementioned trench, brown to red, composed of 50 to 60% clay matrix, and 40 to 50% lateritized fragments of varying sizes, strongly magnetic and manganese pisolites

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG01	57.97	11.58	2.44	0.052	0.027	0.32	0.005	0.0050	3.08
SPG02	46.78	17.91	9.10	0.086	0.023	0.69	0.021	0.0150	7.08

3) SPG 03 Trench - UTM: 491390E / 148261N

Place called Morro da Bruna, with dense and high forest, high relief, with crests oriented according to Az 250°, therefore with the same orientation as the previous point. The chip sample was collected from the various rolled blocks found at the site, along the crest of the hill. This elongation of the sites (Raimundinho and Bruna) extends for more than 6 km in the direction of az 250°, to the banks of the Tartarugal Grande River.

The collected blocks are friable to soft rock banded between quartz and magnetite, with medium to strong magnetism intensity, classified in the field as Itabirite (BIF).

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG03	41.06	39.62	0.86	0.024	0.005	0.09	0.010	0.0030	0.89

4) SPG 04 Trench - UTM: 490849E / 148817N

Place called “Morro do Açúcar” that is part of the same alignment as Morro da Bruna, with high relief, red soil typical of land with iron formations.

Sample collected in an open trench with a backhoe with a depth of 2.5m; the trench profile presents: from 0.00 to 0.35 cm, soil with boulders and angular fragments of friable to soft Itabirito; from 0.35 m to 2.50 m Itabirite friable to mild very silicified, with foliation Az 90 and dip 60 S. It has strong magnetism.

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI	fecham
SPG04	44.05	35.45	0.78	0.054	0.010	0.12	0.010	0.0020	0.91	100.378

5) SPG 05 trench - UTM: 490571E / 148765N

Location with higher relief, wavy, with “V” drainage, high vegetation, with dense forest. It is an outcrop of bland to compact Itabirite (ITBB/ ITBC) strongly magnetic, banding formed by quartz and magnetite/ hematite, with attitude Az 110/60 SW.

It is presenting an elongation that coincides with the other places previously visited and sampled.

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG05	42.79	38.07	0.58	0.029	0.009	0.07	0.009	0.0020	0.57

6) SPG 06 Trench - UTM: 490537E / 148826N

Fred's named place. This is another bland to compact Itabirite outcrop, with the same characteristics as the previous sample (SPG 05)

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG06	40.87	40.69	0.50	0.026	0.007	0.08	0.007	0.0000	0.62

7) SPG 07 Trench - UTM:493538E / 147844N

Place called Adauto which is aligned with the previous place called Fred, with an extension of more or less 3.0 km, high altitude; compact itabirite rock sample was collected, with lateritized edges, very dense and strongly magnetic.

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG07	65.61	1.08	0.64	0.241	0.076	0.06	0.001	0.0020	4.33

8) SPG 08 Trench - UTM:493539E / 147844N

At the site of the previous sample, a trench was dug with a backhoe, where a sample of the more friable itabirite bed rock was collected, where the banding between magnetite/hematite(?) and saccharoidal quartz is very well preserved.

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG08	51.81	22.33	1.22	0.034	0.007	0.09	0.007	0.0020	1.69

9) SPG 09 Trench - UTM: 492161E / 146502N

Place called Galeno, where a 20 m long trench was opened with a backhoe exposing a colluvium very rich in strongly magnetic lateritized rock fragments. It was not possible to sample the walls of the trench for safety reasons (the trench depth is 4.0 m). The sample was collected on the sides of the trench, at the disposal site, at several points. Sample composed only of colluvium fragments exposed in the excavation of the trench.

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG09	62.89	3.72	2.97	0.057	0.001	0.48	0.001	0.0050	3.05

10) SPG 10 Trench - UTM:492102E / 146596N

This sample is the matrix of the colluvium of the previous trench, red to yellow in color and with lateritized rock fragments and magnetite (?) magnetic pisolites.

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG10	49.47	10.74	10.54	0.124	0.007	0.74	0.001	0.0190	7.94

11) Trench SPG 11– UTM: 492102E / 146596N

Sample composed of only strongly magnetic and very dense lateritized fragments collected on the sides of the excavation of the aforementioned trench, whose sample content was 65.08% Fe.

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI	fecham
SPG11	65.08	2.00	3.18	0.045	0.009	0.15	0.010	0.0090	1.86	100.370

12) SPG 12 Trench - UTM: 495154E / 148132N

Place called Regis where a trench was opened and inside it, in the iron ore strip, a well with a square section of 1.0 x 1.0 m and 0.8 m deep was opened. Sample of friable, strongly magnetic, dense itabirite and banding between quartz and preserved magnetite / hematite, NS direction, sub-horizontalized.

Beside this trench, a diamond hole with diameter NQ, and depth of 17.0 m was drilled, which was paralyzed by mechanical problems of the probe, belonging to the SPG.

Along 800 m in the NS direction, there are open trenches in the E-W direction that were not sampled.

It is a “magnettite” with no preserved structure, originating from hydrothermal alteration in adjacent granite (?). Very magnetic and not very dense rock. The sample collected in the well has a relatively low iron content (39.30%) and high silica content (40.99%), in contrast to the other samples collected in the region.

Contact between two geological structures

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI	fecham
SPG12	39.30	40.99	1.38	0.024	0.032	0.26	0.008	0.0040	-0.05	98.869

13) SPG 13 Trench - UTM: 497481E / 150064N

Place called Piauí; outcrop located in a cut on the side of the access road to the SPG camp, with attitudes: N30E, 40SE; friable itabirite, strongly magnetic and with little expression in the outcrop.

A small trench was sampled by the SPG which, according to verbal information, presented a content in the range of 43% of iron.

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG13	40.07	37.09	3.34	0.037	0.008	0.26	0.012	0.0320	2.64

14) SPG 14 Trench - UTM: 497711E / 152114N

Location called Morro do Carlos, where a sample of soft itabirite outcrop, NS direction, with preserved banding between quartz and magnetite/hematite, with strong magnetism and low dip angle, was collected.

It is a place of dense and high forest and undulating relief with “V” drainage.

According to information from the SPG, this outcrop has an extension of about 3.0 km in the NS direction, reaching the Tartarugal Grande River. Six trenches spaced 500 m apart were opened, but they were not sampled on this visit. Only one of them was sampled, which is sample SPG 15, next.

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG14	48.91	26.51	1.42	0.064	0.012	0.21	0.016	0.0130	2.60

15) SPG 15 Trench - UTM: 497688E / 152091N

Sample composed of fragments of decomposed rock, banding poorly preserved, strongly magnetic collected next to the trench which is part of six other trenches opened every 500 m, mentioned above.

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG15	42.02	37.97	1.14	0.012	0.012	0.09	0.012	0.0030	0.69

16) SPG 16 Trench - UTM: 500170E / 148170N

Cerrado region that covers a very large flattened region, in which most of the SPG areas are located.

This sample was collected in an open trench along a horizontal outcrop, with Az direction 100° slope of 20° NE. It is a narrow band with a large extension of coarse rock, oriented, friable, ferruginous, with little magnetism and banding preserved between quartz and magnetite/hematite (?). This rock can be classified as a friable ferruginous quartzite.

The trench has an average depth of 2.0 m, whose profile presents from the top to 1.0 m a stony soil, weakly magnetic and with a lot of sand; and from 1.0 m down, the ferruginous quartzite.

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG16	45.09	31.03	1.17	0.123	0.001	0.05	0.009	0.0020	4.49

17) SPG 17 Trench - UTM: 500066E / 148033N

Sample collected in the same band of ferruginous quartzite described in the previous sample.

In this sample, the magnetism is more intense, the rock is less dense, with more quartz, but with a coarse banding between quartz/magnetite.

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG17	40.51	39.70	0.71	0.017	0.001	0.06	0.010	0.0010	0.81

18) SPG 18 Trench - UTM: 497147E / 147653N

19) SPG 19 Trench - UTM: 497237E / 147215N

20) SPG 20 Trench - UTM: 497100E / 146684N

Samples 18, 19 and 20 were collected in places called Nemias I, II and IV; it is a mountainous region where it presents a strip of foliated rock with a general direction NS and an outcrop thickness varying from a few to tens of meters. This rock is very dense and strongly magnetic with poorly preserved quartz/magnetite/hematite banding.

The alignment of this location is the same as in the SPG 12 sample.

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG18	36.92	38.52	4.63	0.018	0.001	0.75	0.021	0.0040	3.60

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG19	36.89	43.92	1.69	0.028	0.014	0.09	0.012	0.0050	1.65

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG20	41.53	38.22	1.37	0.026	0.005	0.09	0.008	0.0050	1.24

21) SPG 21 Trench - UTM: 491603E / 129870N

Place called Morro do Jiripoca, which is on the border between the dense forest and the savannah; it is a strip with an elongated extension in the NE direction of approximately 6 km.

At the sampled site there is an outcrop of finely banded rock between quartz and magnetite, strongly magnetic, with a lot of crystallized magnetite.

Nº Am.	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI
SPG21	45.60	29.68	2.83	0.020	0.031	0.21	0.014	0.0040	1.03

SPG Mineração S. A.

Tartarugal Grande Iron Ore Project

N Am.	X	Y	%Fe	SiO2	Al2O3	P	Mn	TiO2	CaO	K2O	LOI	fecham
SPG01	492245	149195	57,97	11,58	2,44	0,05	0,027	0,32	0,005	0,0050	3,08	100,452
SPG02	492245	149195	46,78	17,91	9,10	0,08	0,023	0,69	0,021	0,0150	7,08	101,926
SPG03	491390	148261	41,06	39,62	0,86	0,02	0,005	0,09	0,010	0,0030	0,89	100,241
SPG04	490849	148817	44,05	35,45	0,78	0,05	0,010	0,12	0,010	0,0020	0,91	100,378
SPG05	490571	148765	42,79	38,07	0,58	0,02	0,009	0,07	0,009	0,0020	0,57	100,555
SPG06	490537	148826	40,87	40,69	0,50	0,02	0,007	0,08	0,007	0,0000	0,62	100,406
SPG07	493538	147844	65,61	1,08	0,64	0,24	0,076	0,06	0,001	0,0020	4,33	100,560
SPG08	493539	147844	51,81	22,33	1,22	0,03	0,007	0,09	0,007	0,0020	1,69	99,494
SPG09	492161	146502	62,89	3,72	2,97	0,05	0,001	0,48	0,001	0,0050	3,05	100,260
SPG10	492102	146596	49,47	10,74	10,54	0,12	0,007	0,74	0,001	0,0190	7,94	101
SPG11	492102	146596	65,08	2,00	3,18	0,04	0,009	0,15	0,010	0,0090	1,86	100,370
SPG12	495154	148132	39,30	40,99	1,38	0,02	0,032	0,26	0,008	0,0040	-0,05	98,869
SPG13	497481	150064	40,07	37,09	3,34	0,03	0,008	0,26	0,012	0,0320	2,64	100,748
SPG14	497711	152114	48,91	26,51	1,42	0,06	0,012	0,21	0,016	0,0130	2,60	100,856
SPG15	497688	152091	42,02	37,97	1,14	0,01	0,012	0,09	0,012	0,0030	0,69	100,030
SPG16	500170	148170	45,09	31,03	1,17	0,12	0,001	0,05	0,009	0,0020	4,49	101,511
SPG17	500066	148033	40,51	39,70	0,71	0,01	0,001	0,06	0,010	0,0010	0,81	99,250
SPG18	497147	147653	36,92	38,52	4,63	0,01	0,001	0,75	0,021	0,0040	3,60	100,345
SPG19	497237	147215	36,89	43,92	1,69	0,02	0,014	0,09	0,012	0,0050	1,65	100,183
SPG20	497100	146684	41,53	38,22	1,37	0,02	0,005	0,09	0,008	0,0050	1,24	100,365
SPG21	491603	129870	45,60	29,68	2,83	0,02	0,031	0,21	0,014	0,0040	1,03	99,051

SPG Mineração S. A.

Tartarugal Grande Iron Ore Project

Sample	Date	FE %	DNPM Process	Latitude	Longitude
UCRE	27/5/2006	42,68	858.009/06	N1 18 91.7	W51 00 60.7
UCRE	27/5/2006	53,46	858.009/06	N1 18 91.7	W51 00 60.7
UCRE	27/5/2006	43,84	858.009/06	N1 18 91.7	W51 00 60.7
FBJ02	28/7/2007	59,24	858.048/06	N1 23 13.6	W51 01 27.8
FBJ03	28/7/2007	39,56	858.048/06	N1 23 26.6	W51 01 18.4
FBJ04	28/7/2007	59,27	858.048/06	N1 23 23.5	W51 01 17.5
FBJ09	28/7/2007	65,67	858.048/06	N1 22 44.4	W51 01 15.7
FBJ011	28/7/2007	48,92	858.048/06	N1 22 34.9	W51 01 15.9
FBJ014	28/7/2007	53,06	858.048/06	N1 21 23.9	W51 01 21.9
SAMPLE 01	28/7/2007	42,68	858.009/06	N1 14 38.4	W51 03 45.4
SAMPLE 02	28/7/2007	53,46	858.009/06	N1 14 38.4	W51 03 45.5
SAMPLE 03	28/7/2007	43,84	858.009/06	N1 14 38.6	W51 03 45.4
SPG-061A	20/10/2007	46,42	858.049/06	N1 08 56.0	W51 05 10.2
CAMILO	21/12/2007	58	858.048/06	N1 22 48.5	W51 00 43.2
FBJ 01	21/12/2007	22,8	858.048/06	N1 23 23.4	W51 01 26.9
FBJ 09	21/12/2007	58,1	858.048/06	N1 22 44.4	W51 01 15.7
FBJ 05	21/12/2007	58,3	858.048/06	N1 23 16.3	W51 01 17.0
FBJ 010	21/12/2007	53,4	858.048/06	N1 22 38.0	W51 01 16.1
Adauto	21/12/2007	56,8	858.046/06	N1 20 10.3	W51 03 13.4
Adervandro linha 2	21/12/2007	56,7	858.046/06	N1 21 05.2	W51 01 28.9
606	21/12/2007	57	858.009/06	N1 04 24,8	W51 03 53,6
Serra Pelada	21/12/2007	55,2	858.009/06	N1 14 38.4	W51 03 45.4
SPG-BJ-FOS 01	29/5/2008	33,6	858.048/06	N1 22 07.8	W51 00 46.8
SPG-FERRO 01	29/5/2008	44,7	858.048/06	N1 22 48.5	W51 00 43.2
FEJIRI 2	4/6/2008	39,06	858.049/06	N1 10 27.7	W51 05 01.4
FEJIRI 3	4/6/2008	38,95	858.049/06	N1 10 29.3	W51 05 05.6
JIRIPOCA 4	4/6/2008	44,53	858.049/06	N1 10 36.4	W51 05 14.0
KMLA - 01 049 06	4/6/2008	61,99	858.049/06	N1 08 23.9	W51 06 36.2
KMLA - 02 049 06	4/6/2008	47,91	858.049/06	N1 08 23.9	W51 06 36.2

Drilling Job

The works were made by drilling company BOART LONGYEAR, totaling 24 holes around the areas 858.009/2006, 858.046/2006, 858.048/2006 858.049/2006. The 24 holes has on average 118 meters each, totaling 2851.28 meters linear samples.

Such exploratory holes serve to delimit the geological contacts between the Mineralized zone with high iron content identified in geophysical studies in contact with other Substances.

In addition, the 24 holes are the basis for proving the existence of high grade ore in the aforementioned exploration permits, thus showing consistency to support the approval of the final investigation report, which had been approved.

SPG Mineração S. A.

Tartarugal Grande Iron Ore Project

Resources

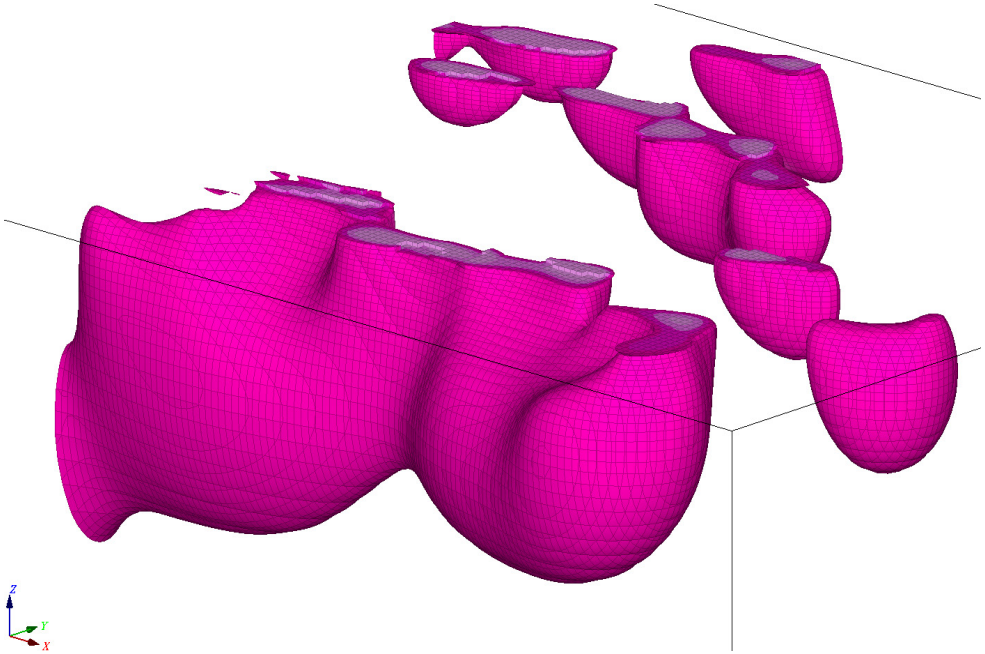
The deposit contains both hematite and magnetite ores with the latter being located very close to the surface and may be sold as direct shipping ore.

Resource base is estimated at 0.5-1.5 bn tonnes. (ROM)

Magnetite grade accounts for ~40% Fe, while hematite grade is estimated at much higher level of 60-65% Fe.

In case hematite part of the deposit contains enough reserves the project may be started with mining high-grade low-cost hematite first and turning to magnetite afterward.

Mathematically, it is impossible to determine the volume of this mineralized body with only 24 drilling holes, due to the amplitude of the distance between the exploratory holes. In order to have an exact calculation of measured reserves, it is necessary to create a grid of drilling holes on the 6-kilometer anomaly, with reasonable intervals between the holes, in order to prove the depth of the previously indicated outcrops.



SPG Mineração S. A. main cell Voxel.

Allan Pedrosa Vieira Nascimento
Ver. 4.0
Released September 2022
allanpvnascimento@gmail.com / allan@spgmineracao.com.br
+55 15 99860 2020

SPG Mineração S. A.

Tartarugal Grande Iron Ore Project