

The Barro Alto Bauxite Mine: A New and Wholly-Exploitable Deposit in Goiás State, Central Brazil

Tadeu Veiga¹, Gustavo A. Guerra², Luiz Antonio Vessani³ and Reinaldo Noronha⁴

1. Technical Director

GEOS Tadeu Veiga, Brasília, Brazil.

2. Geology Manager

Terra Goyana Mineradora Ltda., Goiânia, Brazil

3. Technical Director

Mineradora Santo Expedito Ltda. and Terra Goyana Mineradora Ltda., Goiânia, Brazil

4. Chemical Engineer

Mineradora Santo Expedito Ltda., Goiânia, Brazil

Corresponding author: tadeu@geos.com.br

Abstract

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The Barro Alto bauxite mine is situated in Central Brazil, about 200 km Northwest of Brasília, in a region served by good infrastructure (paved roads, rail, energy, human resources, etc.). Exploration and research works were developed from 2004 to 2012 and revealed a large and peculiar outcropping deposit, composed of high-grade bauxite, low-grade bauxite and associated kaolinite. It was formed by alteration of anorthosites, included in a large Proterozoic mafic-ultramafic complex. The total resources reached 300 million tons of ore, without barren cover. Mining activities started in 2013, with good results. The excellent quality of the bauxites and clays permits the entire exploitation of the resources and allows several industrial uses for the ores, apart from the classic metallurgical application.

Keywords: bauxite, new mine, Central Brazil, anorthosites.

1. Introduction

The Barro Alto bauxite mine is situated in Central Brazil, about 200 km Northwest of Brasília and 200 km North of Goiânia (Figure 1). The lands belong to two municipalities in the State of Goiás: Barro Alto and Santa Rita do Novo Destino.

The region is served by good infrastructure and has a favorable geo-economic environment. Paved highways, electric power, human resources, etc. are available. The mine is close to an important future railway junction between North-South railway FE-151 (under construction 40 km away of Santa Rita) and the East-West railway FE-354 (planned).

2. Geo-environmental Context

The bauxite deposit occurs within the Neoproterozoic Brasília Fold Belt and is located in the Northern part of the great Mafic-Ultramafic Barro Alto Massif, more specifically in the Upper Series, which consists of anorthosites, gabbros and pyroxenites [1], [2]. It is located nearby an important nickel laterite deposit mined by Anglo American (Figure 2).

The region is located within the Tocantins Basin. The landscape is dominated by a high ridge with levels exceeding 1 200 m. These elevated terrains have no significant economic use, the soil is poor with thin vegetation. On the other hand, the lowlands have fertile soils derived from mafic rocks that is utilized for industrial agriculture (sugar cane, rubber plantations, tomatoes, fenced-in cattle).

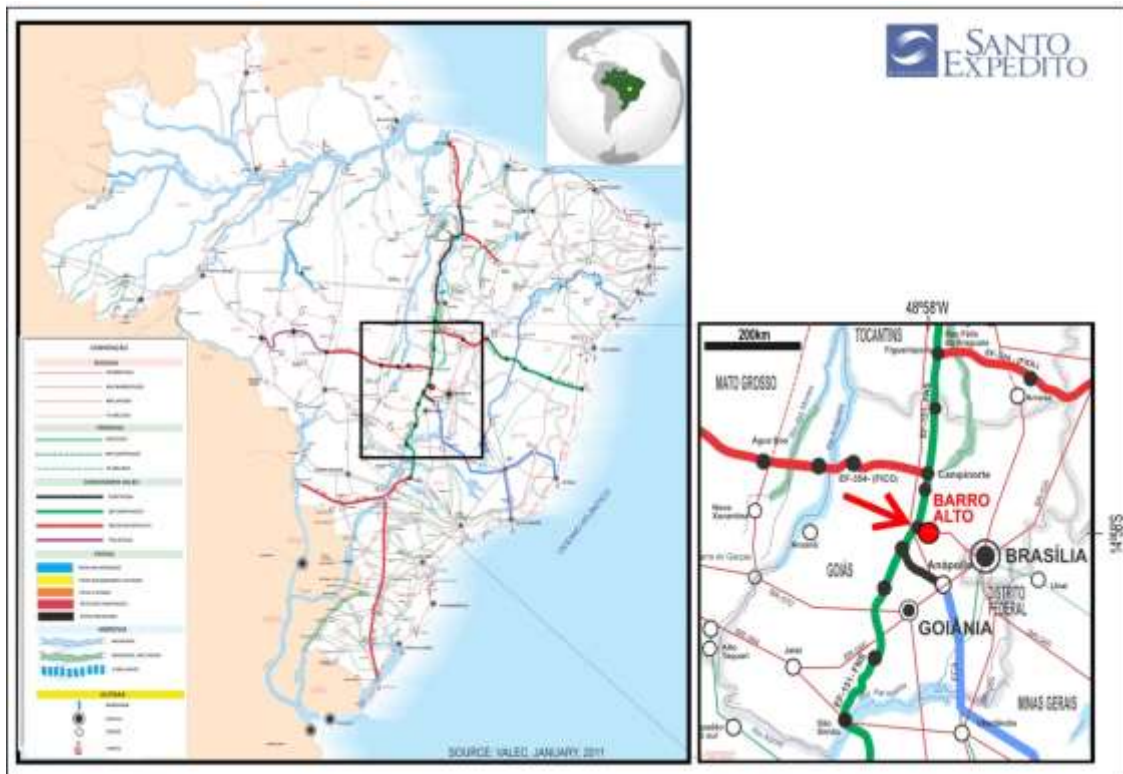


Figure 1. Location and infrastructure.

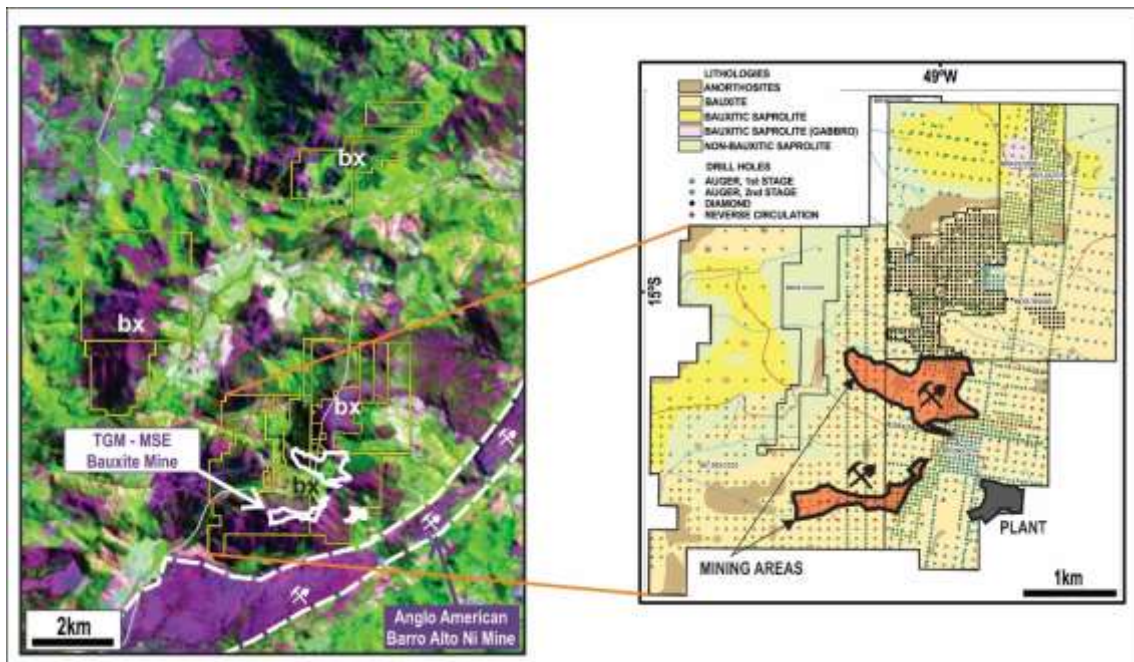


Figure 2. Environmental context and mine geology.

3. Project History and Mineral Rights

The Barro Alto bauxite deposit is the first to be discovered in Central Brazil. The history of the Project may be summarized as follows [1], [3], [4]:

The high quality of the ores allows simple circuits of treatment and permits the attendance of diversified and growing demands, largely distributed in Brazil and neighbor countries. As seen, the ore processing does not need water or generate tailings.

Everything has the potential to be economically useful in this peculiar ore deposit. Many of its geological features are suggestive of hydrothermal origin, presently under scientific investigation at University of Pará.

Mining operations started in November of 2013 and already occupies a remarkable place within the Brazilian mineral industry. This resource contributes to numerous industries, thus contributing decisively to the development of the region in a sustainable fashion.

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