



Minerals in Afghanistan



Nalbandon Lead- Zinc, Tulak District, Ghore Province, Afghanistan

AGS Investor Data Package No. 7

Base Metals Exploration and Development Potential

Background

Afghanistan is endowed with rich mineral wealth including lead and zinc (Fig. 1) due to its favorable geological evolution which had been driven by collisions events between the fragments of Gondwanaland drifting to the north and the Eurasian plate starting at the beginning of Mesozoic. Afghanistan is home to a wide variety of base metal deposits (Peters et al, 2007)¹, including the stratabound Nalbandon zinc-lead deposit in Ghor Province.

This deposit formed along a fault zone in a Triassic-Jurassic carbonate-silicious mudstone sequences is the best explored in the region (Figs.2-3). The mineralization zone is 3 to 9 m wide and extends to 850 m. The main ore minerals are sphalerite and galena, minor ore minerals are pyrite, chalcopyrite, and boulangerite. The content of zinc and lead are 5.77% and 0.87% respectively. According to a study by the German Geological Mission², the reserves were estimated to be 130,000 tons of zinc and 12,000 tons of lead. Many other lead-zinc occurrences of the region such as Gawnuzar-Targanaw, Sarghul and others are similar to Nalbandon and the probability of finding significant resources of lead and zinc in the region is high.

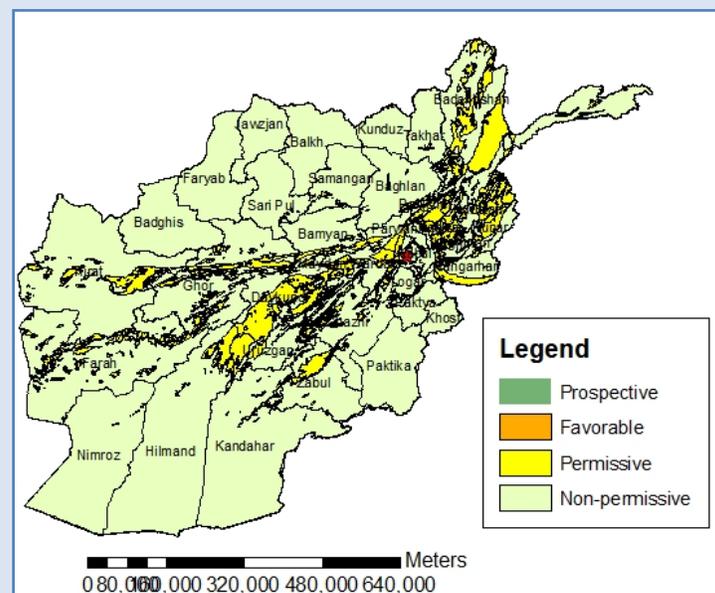


Fig. 1. Prospectivity tracts for zinc and lead in Afghanistan (after USGS, 2007)¹

In addition to Nalbandon, vein type Pb-Zn occurrences at Zawar, Minora, and Palang-Khana, have been identified within Triassic and Lower to Middle Jurassic limestones and clastic sedimentary rocks, indicating the region is very attractive for the discovery of large accumulations of lead and zinc. The vein zone are up to 1,700 m long and 7.5 m thick and typically contains galena and sphalerite within the sandstone lenses, accompanied by chalcopyrite and pyrrhotite grading 0.3 to 2.7 wt.% lead².

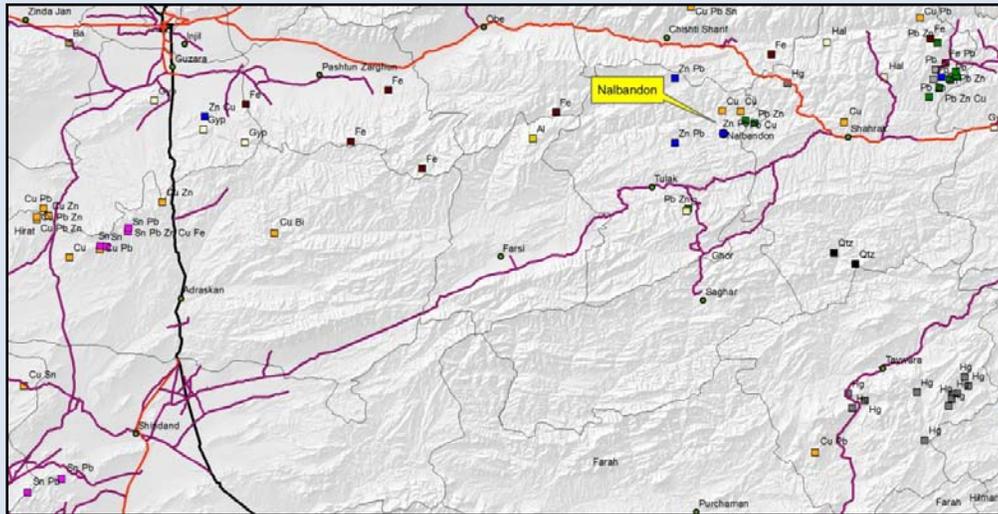


Figure 2: Location map of Nalbandon and other nearby mineral occurrences

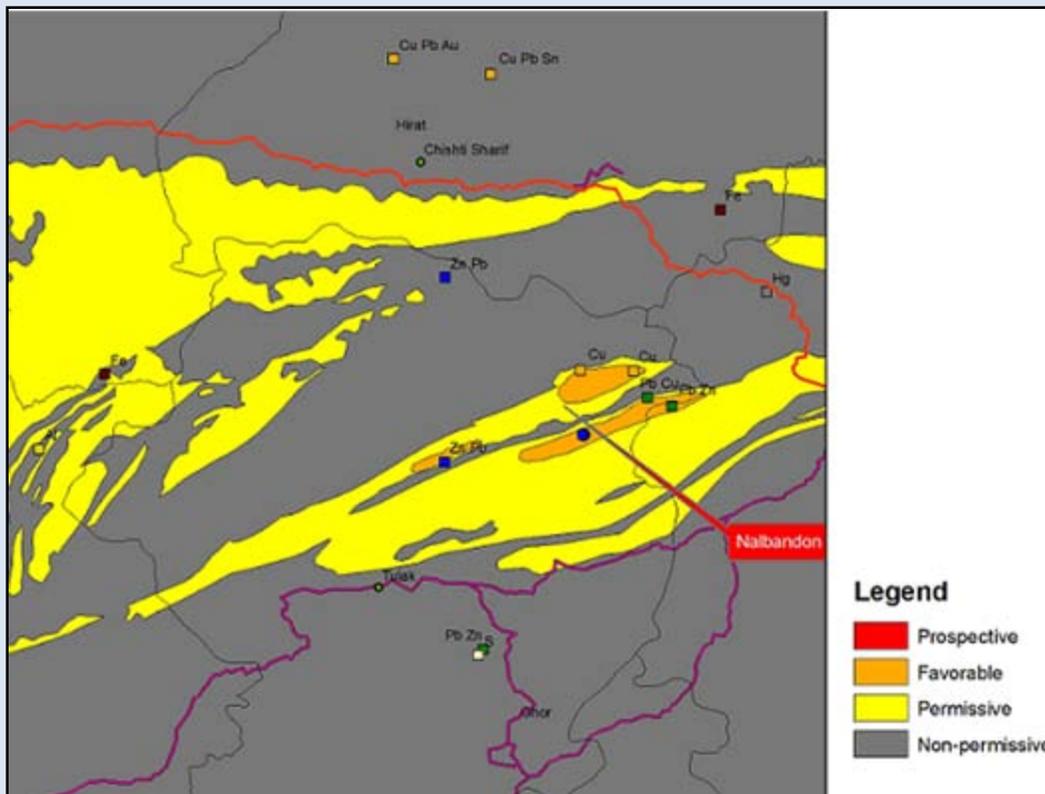


Fig. 3. Prospective, Favorable, and Permissive tracks of Zn-Pb in Tulak District

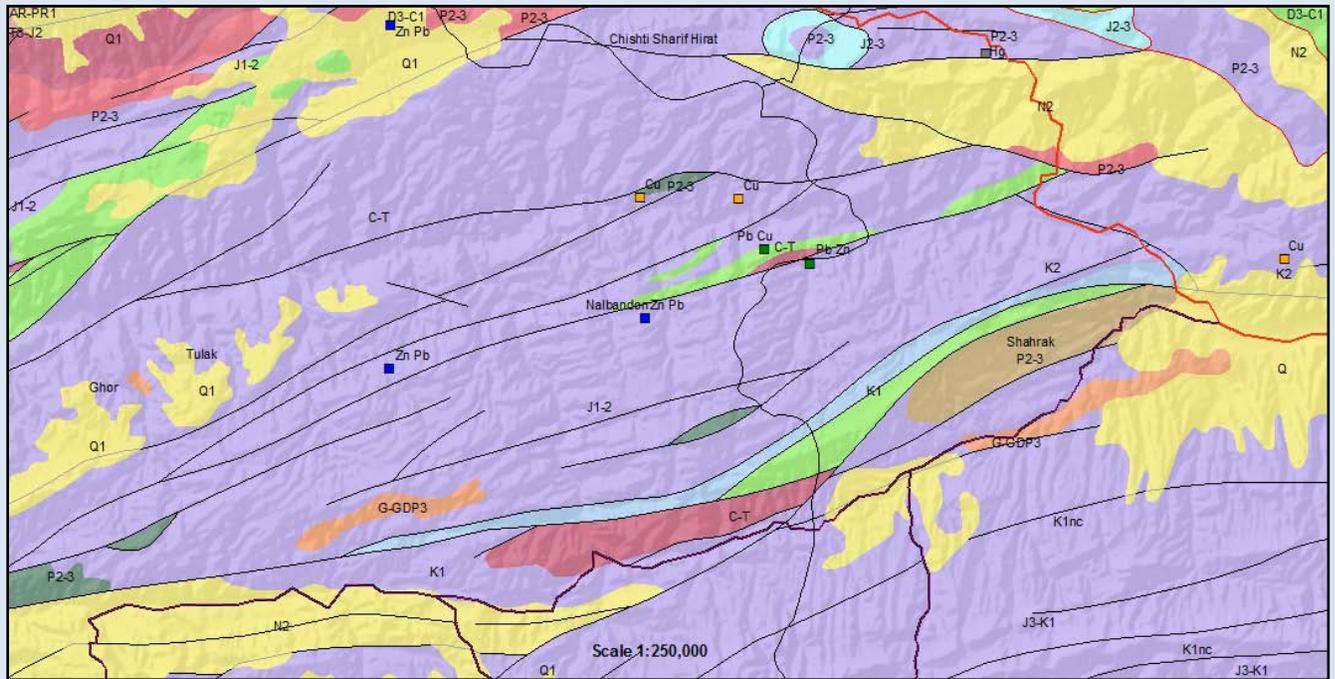


Figure 4: Geological map of Nalbandon region with other occurrences of lead and zinc

LOCATION

The area is located 24 km south of the Hari Rod River and the road leading to Herat from Chakhcharan. The area is also accessible from Shindand city to the southwest by a gravel road at a distance of 130 Km (Fig 2).

GEOLOGY

According to the 1:500,000 scale geological map of Afghanistan published by the United States Geological Survey (USGS) in 2007¹, based on the Soviet/AGS map of 1977³, the sedimentary units in the Nalbandon area consist of Late Permian-Lower Triassic limestones and dolomites, Jurassic sandstones and mudstones, Cretaceous limestones and dolomites. To the north and south of Nalbandon, the Jurassic sediments are overlain by Eocene-Oligocene rhyolites and andesites (Fig.4).

GOVERNMENT STRATEGY ON INFRASTRUCTURAL DEVELOPMENT

The GoA and donor agencies involved with the reconstruction of Afghanistan have recognized and adopted mineral resources development as a national priority goal. Under this framework, the government is seeking to align the development of infrastructures with the exploitation of major mineral resources, in order to promote and enhance the development of other natural resources within the same transportation corridor. With this objective, the GoA is in the process of continuously improving and upgrading various transportation options favorable for the development of natural resources, including minerals, construction materials and hydrocarbons.² Furthermore, the GoA has

recently endorsed and adopted major changes in mineral laws, policies, and fiscal regime to promote Afghanistan as an attractive destination of foreign exploration and development investments.

CONTACTS

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1. Peters, S.G., Ludington, S.D., Orris, G.J., Sutphin, D.M., Bliss, J.D. and Rytuba, J.J. eds. (2007). Preliminary Non-Fuel Mineral Resource Assessment of Afghanistan, USGS Open-File Report 2007-1214.
2. Scheer, K. (1969). Lead/Zinc deposit Tulak (Siah Sangand Nalbandan), BPG Bergbau-Planung GmbH, Essen, 1969.
3. Adullah S. and Chemyriov, Eds. 1977- *Geological Map of Afghanistan, Scale 1:500,000.*