



CRM of Ukraine Database Supplements

Mineral target:	Polokhivske deposit
Commodity:	Lithium

Version: 17 April 2024

Project	101075609 — GSEU — HORIZON-CL5-2021-D3-02
Supplement Data	
Supplement number:	MO.400032
Dissemination level:	Public
Supplement type:	Description
Work package:	WP2: Critical Raw Materials, the International Centre of Excellence and United Nations Framework Classification (CRM-ICE-UNFC)
Lead WP/ Supplement beneficiary:	[EGS]

Supplement status	
Endorsed (WP leader):	Guillaume Bertrand, BRGM
Supervised	Boris Malyuk, BRGM/GIU
Approved (Metadata Coordinator):	Oleksiy Likhosherstov, GIU
Author(s):	Affiliation:
Nataliya Kovalenko	GIU
Stella Shekhunova	IGS
Vitaliy Sukach	IGMOF
Maria Kurylo	UAG

Location. The deposit is located in the Novoukrainskiy district of the Kirovograd region, 12.5 km to the northeast of the operating Smolinskiy mine of the Eastern GZK, 15 km west of the outskirts of the Mali Skroni village. The Smolinskiy mine is connected by a railway branch to the Kapustino station, has an electric substation, residential and social facilities that can be used in the development of the Polokhivske deposit. The region is characterized by a developed network of roads and railways. The paved road connects the nearest villages with the district center, the town of Mala Vyska, and runs 2.5 km south of the deposit.

Research: The Polokhivske deposit was discovered in 1990 by Expedition No. 47 of the State Geological Enterprise "Kirovgeologiya" during geological and forecasting work on uranium in the Yaroshevsko-Ulyanivska site. In 1989-1993, prospecting and evaluation works were carried out at the deposit. In 2011, a preliminary geological and economic assessment of reserves of petalite lithium ores was carried out, and in 2016, a repeated geological and economic assessment was carried out. In 2017-2018, a detailed geological and economic assessment of lithium ore reserves of deposits No. 1,2,3 was performed. Estimated reserves up to a depth of 500 m (horizon minus 350 m) for four variants of lithium oxide content cutoff (0.3; 0.5; 0.7; 1.0%). Reserves and resources of petalite lithium ores were approved by the decision of the DKZ of Ukraine (protocol No. 4479-DSK dated 21.08.2018) under categories C1 (UNFC code 111), C2 (UNFC code 122) and promising resources of category P1 (UNFC code 333).

Geological characteristics. The deposit was discovered within the boundaries of the Polokhivskiy granite massif, composed of aplite-pegmatoid, pegmatoid and medium-grained biotite granites. Rare metal pegmatites with poor tantalum and niobium mineralization are also known within the area. The Polokhivskiy massif is elongated in the north-western direction on 1,600 m. Its thickness in the central part reaches 400m. Pegmatoid and biotite granites occupy only 5-10% of the volume of the massif, the rest are aplite-pegmatoid granites and metasomatites. Ores are localized in leucocratic sodium-lithium aplite-pegmatoid granites. The deposit belongs to the hydrothermal-metasomatic type of mineralization, localized in the zones of volumetric cataclasis. Rocks of the crystalline basement are covered by brittle rocks - weathered crust, sands, clays, and loams. The total thickness of loose formations is from 42 to 128 m, on average 80 m.

Lithium pegmatites occur in the form of very thick steeply dipping bodies with a dip to the southwest at an angle of 60°. The hosts are metamorphic rocks represented by plagiogneisses (mainly cordierite-biotite, garnet-biotite, garnet-diopside-biotite), which are complexly dislocated and injected granitoids of the Kirovograd-Zhytomyr Complex. The ore bodies lie in the central part of the granite massifs and consist of three ore zones. About 2/3 of the deposit's resources are concentrated within the ore zone I, 17% - in the zone II, 8% - in the zone III. The mining technical conditions are favorable for the development of the deposit by a system of underground cut-and-fill chambers and shafts. The main lithium-bearing mineral in the deposit is petalite, with limited distribution of spodumene.

There are 3 aquifers in the deposit area. The estimated water inflow into the mine workings system, provided the deposit is developed to depth, 450 m, will be 2,870 m³/day.

The deposit belongs to the group of deposits of a very complex geological structure (group 3) in accordance with the Classification of Mineral Reserves and Resources of the State Mineral Resources Fund.

Information about mineral resources and reserves is confidential.