

ZHANG Deyan, XIANG Fang, CHEN Kang, LIU Yao and HAN Xuyuan, 2014. Analysis of the Geological Condition of Molybdenum Mineralization, Dongwuqi, Inner Mongolia. *Acta Geologica Sinica* (English Edition), 88(supp. 2): 1319-1320.

Geological Condition of Molybdenum Mineralization, Dongwuqi, Inner Mongolia

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1 Geological Setting and Metallogenic Regularity

Dongwuzhumuqinqi (Dongwuqi for short) of Inner Mongolia is located in the suture line of Sino-Korean plate and Siberian plate (that is Hegenshan deep-seated fault). The tectonic location belongs to southern margin of the Siberian ancient plate and Caledonian-early Variscan geosynclinal fold belt (Huang et al., 2001). The study area is upon the Chagan Aobao-Zhalantun Paleozoic accretive continental margin (I_1^{3-4}), which belongs to the Dongwuqi-Zhalantun passive continental margin of volcanic-type (I_1^3) within the southeastern margin of Siberian plate (I) (Shao, 2001). The stratum rarely exposed, the tectonic activity is strong, the magmatic rock exists widely, the magmatic activity is obviously controlled by the structure, the intrusive rocks mainly belong to Yanshanian, and polymetallic ore deposits (points) distribute extensively. The magmatic rock distributes widely in the region, in which mostly is fault in structural development and form. The exposed strata include Paleozoic Erathem, Mesozoic Erathem and Cenozoic Erathem. The developed intrusive rock of which mainly are acidic rocks, can be divided into Carboniferous, Late Triassic and Late Jurassic.

Regional structure is given priority to with fault, fold is complementary; and the main direction of the fault is northern-east, then northern-west. And the large-scale of the fault is mostly covered by the loose sediment of the Quaternary System, hence it is manifested with a gully in the direction of north-east and north-west. The developed volcanic structure has seven craters along the Gulapusaiban Aobao-Ximuchang, performing as a string

of beads in east-west direction, which indicated that there exists buried fault beneath it in the same direction. The folds mainly exist in Paleozoic Erathem, forming a series of anticlines and synclines.

The study area is located in the Chaobuleng-Pear Mountain where boasts polymetallic mineralization, such as iron and zinc, as the polymetallic periphery of Chaobuleng, including iron lead-zinc. The workspace area is Variscan tectonomagmatic belt which developed from the base of the Caledonian arc zone, and then came into the western Pacific active continental margin tectonic development stage from the Mesozoic, and developed volcanic plutonic rock of the Mesozoic. According to Inner Mongolia's 1:1,000,000 aeromagnetic data, the workspace featured in the calm the negative magnetic anomaly, the positive magnetic anomaly in work area and south area may be presumed as the response of Mesozoic concealed rock. Overall characteristics according to Inner Mongolia 1:10 00000 gravity data, of the workspace is a negative anomaly area where is the transition zone of gravity anomaly in north-east and the field value reduced gradually from south to north. Local high and low gravity in-band is oval in axial and mostly from the east to the north. The relatively low anomaly is mainly caused by the Ordovician, Silurian system, and the base of Devonian system.

With regard to the area, the Neoproterozoic and Paleozoic carbonate rocks, calcareous siltstone are the iron ore rocks with plentiful polymetallic deposit and the magmatic rocks associated with mineralization are: Baigang granite, granite and biotite granite in Variscan; biotite granite in Yanshanian. These acidic magmas related to mineralization is characterized by rich alkali and the known ore deposit types are contact metasomatic type and hydrothermal type, given priority to contact

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metasomatic type. there are iron molybdenum deposit of the variscan (the Pear mountain), iron ore deposit (Ta'erqi, Zhongdao mountain), iron polymetallic deposit in Yanshan period (Chaobuleng, Chaganaobao, Eighty kilometers, Suhu river), copper zinc ore deposit (Balin), Jilinbao silver deposits in hydrothermal type in promising prospecting area. Thus, all of these constitute a iron polymetallic metallogenic belt, regarding variscan and the yanshan period contact metasomatic type as its principle. There are bogle skarn type copper, plumbum and zinc mines in the north-east, SuJINbudun hydrothermal type copper base deposit in south-west, Ann son ulla skarn iron ore in north west.

The standard of the previous geological explorations level is low for the study area is located in the border of China and Mongolia. But the area should be a favorable area for looking for contact metasomatic type of iron polymetallic deposit from the analysis of geological tectonic evolution history. At the same time, the Mesozoic volcanic activity is frequent and there are many volcanic institutions and acidic hypabyssal intrusive stock in late Jurassic in this area, in which is also a favorable area for looking for the volcanic type ore deposits which is closely related to volcanic rocks, and porphyry deposits which is closely associated with hypabyssal intrusive rocks.

2 Conclusion and Suggestions

Through this geological prospecting, analyzing from the history of the evolution of the geological structure, the area is a favorable area to look for contact metasomatic iron polymetallic deposits. There are frequent volcanic activity of the Mesozoic, and exist many volcanic edifice and acidic intrusive rocks of the Late Jurassic, and favorable areas to look for porphyry deposits which are

closely associated with volcanic rocks and hypabyssal intrusive rocks of Late Jurassic. Through an integrated approach for prospecting work in this area, we found that many chemical explorations are abnormal, including AP22, 23, 25. And after the investigation and verification, we found that a large area of mineralization was altered, mineralization and alteration was strong according to bedrock spectroscopy, many samples, such as Mo, Ag, Pb, has reached industrial grade according to the picking block analysis. All in all, there is a profound exploration prospects to look for mine, but the extent of the work is not deep, and we need to further strengthen the targeted geological prospecting work.

Key words: Molybdenum mine, gravity anomaly, metallogenic regularity, aeromagnetic survey, metallogenic conditions

Acknowledgements

This paper is financially supported by the National Natural Science Foundation of China (Grant No. 41072083). Thanks are given to Prof. Xiang Fang for thoughtful discussions.

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