Overview Research Achievement of China First Uranium Scientific Deep Drilling

WANG Jian, NIE Jiangtao, GUO Jian, HUANG Zhizhang and LI Xiuzhen

1 Beijing Research Institute of Uranium Geology, Beijing, 100029, China
2 CNNC Key Laboratory of Uranium Resources Exploration Evaluation Technology, Beijing 100029, China

1 Overview of Xiangshan Previous Research

Xiangshan large Uranium Ore-field is in the southwest of Ganhang tectonic - volcanic rock belt (Fig. 1), 24 large, medium or small uranium deposits having been already demonstrated. It’s the biggest volcanic rock type uranium orefield and important uranium production base in China. The characteristics of the ore field is big reserves and enrich grade, but most of demonstrated deposits controlling depth less than 500 meters, according to construction deeper drilling hole in these years, mineralization apothem is already more than 900 meters in the deep of Xiangshan uranium ore field, as well as good polymetallic mineralization been discovered below 1000 metres. The history of Xiangshan Uranium Ore-field also is the history of deepening uranium geological theory and enriching ore-prospecting experience, so it has important Reality basis and theoretical basis to construction China First Uranium Scientific deep Drilling in Xiangshan uranium ore field.

2 Location Selection of Xiangshan Scientific Drilling Hole

The characteristic of stratum, structural, mineralize alteration, volcanic formation, magmatic body and vein in study area have been ascertain by apply field geologic investigation, geophysical and geochemistry survey in Xiangshan uranium orefield. Generalized the feature of the main faults. Finish two telluric electromagnetic sounding (MT) lateral sections and seven AMT section which cross the volcanic basin in different direction, by these data we drawing relevant profiles. Carry out the comprehensive research to Zoujiashan, Heyuanbei and Gangshangying proposed areas from aspect of the structure, subvolcanic rock, surfical hydrothermal alteration, litho geochemistry comparison, the latest stratigraphic ore-controlling model. Established stratum model and give the feasibility reports to every proposed area, finally pick up Zoujiashan proposed area as drilling site, Heyuanbei proposed area as alternate site (Fig. 2).

* Corresponding author. E-mail: wjcnnc@126.com

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3 Overview Research Result of Scientific Drilling

Because of hard work by charged unit and construction organization, The China First Uranium Scientific Deep Drilling win the multi-first place in geological exploring industry. The project finished in May 3, 2013, final depth is 2818.88 meters all drilling project took 287 days. Through the deep drill construction, found four uranium mineralizations in the upper, a number of lead, zinc and gold mineralization in the middle, and the domestic deepest copper mineralization in the lower. The associated useful elements are Ag, Co, Cd, Ga and In, the ore minerals are dominated by sulfide. The major metallic minerals are sphalerite, chalcopyrite, pyrrhotite, pyrite, galena, arsenopyrite, siderite (Fig. 3), the subordinate metallic minerals are ilmenite, scheelite, argentite, cassiterite, collusite, boulangerite, chalcocite, domeykite, rutile, etc. There are strong sericitization on the both sides of ore bearing veins, metallic mineral mainly originate in these quartz and carbonate veins or exist in the altered minerals like quartz, chlorite and carbonate in the form of disseminated structure or lumpy structure. The mineral assemblage, ore fabric and alteration feature show the major characteristic of mineralization is low-to-moderate temperature, local belong to the high temperature, divide the Xiangshan deep polymetallic mineralization into two important stages, ①Single sulfide phase, mainly formation of sphalerite, deduced the age of this metallogenic phase between 100 Ma and 135 Ma years old; ②Chalcopyrite mineralization phase, mainly formation of abundant chalcopyrite, deduced the metallogenic age tend to be about 100 Ma.

4 Discussion

The north-east Suichuan fault is the very important structure in the Xiangshan basin, on the regional geological background, a series of important ore fields and ore deposits distribution along the Suichuan fault, south-east wall priority produce uranium resources, north-west wall priority produce noble metal and multi-metal. By comprehensive research, Xiangshan deep polymetallic mineralization is the part of China eastern polymetallic centralized area, which formed in the Mesozoic tectonic magmatic activity, it’s have a superiority metallogenic prospect, further research is needed.

References

