YIN Guanghou and YIN Jing, 2014. The Superimposed Mineralization Andexploration of Integrated Technology of Yangla Copper Deposit, Northwestern Yunnan. *Acta Geologica Sinica* (English Edition), 88(supp. 2): 637-638.

The Superimposed Mineralization Andexploration of Integrated Technology of Yangla Copper Deposit, Northwestern Yunnan

YIN Guanghou and YIN Jing

Dept of Yunnan Geological Survey bureau, 87 Dongfeng Road, Kunming 650051，Yunnan China

1 Introduction

Yangla ore district is located at the southern section of Jinshajiang Metallogenic Belt in southwest China. Many aspects of mineral deposits, such as genetic types of ore deposits, have gained good results, however, little of research bearing on exploration of the deposit involved. In this paper, on the basis of "A Study on the Superimposition Metallogenesis and Resource Utilization of Yangla Cu Multimetallic Deposit Aggregation Area (No. 201411107-06)", a techniques model of mineral deposits prospecting has been suggested by proceeding from achievements of regional geological setting of mining area and it's evolution, controlling factors of metallogenic , as well as genetic types of ore deposits etc.

2 Regional Geological Setting and Tectonic Evolution

Yangla Cu deposit is in the middle section of Jinshajiang tectonic conjunction zone, the north section of Weixi-Luchun Late Palaeozoic-Early Mesozoic volcanic arc of E margin of Lanping Land-Mass(Zhu Jun et al., 2009), and the N plunging end of Jiaren granodiorite body in the connection part of ocean inner arc(Wang LiQuan et al., 1999). There are the outcropped spilite-keratophyre-flyschoid formation composed of intermediate-basic volcanic rocks, volcanic debris rock, carbonate rock and muddy-sandy rock. The contact metasomatic alteration is developed near the contact of the ore-bearing Devonian strata(D) with the intermediate-acid intrusive body: hornfels, skarn and Cu, Pb, Zn multimetallic metallogenesis with different intensity. The tectonics is controlled by the development and evolution of Jinshajiang back-arc ocean basin, the form, development and evolution of Jinshajiang multiple island arc-basin system experienced roughly: ①fault basin stage(D) →②ocean basin formation stage(C_1-P_1^1)→③ocean crust underthrust subduction stage(P_1^2-P_2)→④arc-land collision stage(T_1-T_2)→⑤superimposition rift stage(T_3^1) →⑥foreland basin stage(T_3^2-K)→⑦inland collecting orogeny stage(E-Q) 7 evolution stages(He LongQing et al., 1998), forming the fold-fault structure composed of a series of nearly SN linear fold and same direction fault in this area, which controls the distribution of sedimentary formation, magmatism and the related mineral resources, whereas the secondary same direction fault and the derived "λ"-form fault are the ore control structure.The magmatic rocks of emplacement upwards along the structure zone are complete from ultrabasic to intermediate-acid. Variscan intermediate-basic volcanic rocks belong to the island arc tholelite(Li DingMou et al., 2002), Indosinian-Yanshanian diorite, granite have the evolution trend from intermediate to acid, controlled by the regional fault zone and form Jiaren Granite Zone(Liu ZengQian et al., 1993).

3 Deposit Feature and Metallogenesis Control

The ore deposit is composed of Linong and Lunong et al 7 ore blocks, total 39 ore bodies large or small. Besides Cu, there are the useful associated component Au, Ag, Sn, W, Pb, etc..There are 3 occurrence types of ore body: ①stratiform, stratoid ore body in stratiform skarn, metamorphic clastic rock along the outer contact, bedding occurrence; ②ring, arcual vein occurrence along inner contact, boundary of 2 different rock facies or around rock body; ③vein ore body in NE fault, fissure zone.

The ore body of Linong ore block is in the W marginal part of Linong composite rock body, Linong Formation (D_{2+3}l) and Jiangbian Formation(D_1j), composed of close stratiform, large vein ore body group, ore bodies 15 as a whole, long 170 m～1980m, thickness 1 m～35m, Cu grade 0.30～11.90%. The genesis and occurrence of ore

* Corresponding author. E-mail: 1134138092@qq.com

body in the orefield are doubtless related close with the magmatism, tectonics, sedimentation, the genesis of Cu deposit is controlled evidently by the tectonic environment and different evolution stage, and the different magmatic assemblage and metallogenesis type are formed because of the different tectonic environment. Devonian-Late Permian ocean basin stage, sea bottom effusive-hydrothermal sedimentary Cu deposit formed in the primitive fault depression-ocean basin island arc-slope facies tectonics-volcanism environment; in Late Indosinian-Early YanshanianW-wards underthrust subduction-collision orogeny stage, the intermediate-acid rock and the related porphyry and skarn Cu deposit area formed; in Late Yanshanian-Himalayan collision orogeny close, epizonal, super-epizonal magmatic intrusion stage, the porphyry multimetallic metallogenesis, hydrothermal-filling vein metallogenesis and superimposition are formed.

4 The Exploration of Integrated Technology

Yangla Cu deposit is controlled by multiple geological factors, and has the long experience of tectonic evolution, which is the final appearance of comprehensive metallogenesis. According to the multicomponent data information metallogenetic indices of geological, geophysical, geochemical, remote sensing, etc, Cu deposit feature and the prospecting-exploration experience, we put forward the Determine ore body Type Either “Bedding” or “around Rock Body” Metallogenesis Model, and “Rock Body + Horizon(Rock Characters)+Contact+Magnetic +Multiple Electric Methods” Integrated Technology.

5 Conclusion

Yangla ore deposit is a multi-periodic, multistage, multi-genesis composite deposit, which is a state key project；There are 3 occurrence types of ore body；The Most Effective Prospecting-Exploration Technologic Composite:“metallogenesis system + gravimetry + magnetic + multiple electrical method”.

References

He LongQing. Tectonic Setting and evolutionary pattern of the Jinshajiang orogenic belt[J]. Geoscience, 1998,12(2):185-191 (in Chinese with English abstract).

Liu ZengQian, Li X Z, Ye Q T, Luo J N and Sen G F. Division of tectono-magmatic zones and the distribution of deposits in the Sanjiang area. 1993,Beijing: Geological Publishing House, (in Chinese).

Li DingMou, Wang L Q, Xu T R, Diao Z Z, Chen K X, Lu Y F, Wei J Q and Zhou Z X. Mineralization and exploration of the copper and gold deposits along the Jinshajiang structural zone, southwestern China[M]. Beijing: Geological Publishing House. 2002,104-144 (in Chinese with English abstract).

Wang LiQuan,Pan G T,Li D M,Xu Q A and Lin S L .The Spatio-temporal Framework and Geological Evolution of the Jinshajiang Arc-Basin Systems. Acta Geologica Sinica ,1999，73：206～218(in Chinese).

Zhu Jun，Zeng P S，Zeng LZ and Yin J. Stratigraphic Subdivision of the Yanla Copper Ore Districtu,Northwestern Yunna[J]. Acta Geologica Sinica ,2009,83（10）：1415～1420(in Chinese).