1 Regional Geological Background

Garze-Litang Fault Zone, in Western Sichuan Province, was situated tectonically in boundary area between the giant SongPan-Garze Orogenic belt and Yidun Island Arc. Garze - Litang fault belt is a multiperiodic activity fault zone, its evolution are complex. At Late Permian to early Triassic performed as an oceanic rift. At Late Triassic oceanic crust subduction to west, produce high pressure metamorphic belt, formed trench arc basin system in the west. At the end of the late Triassic arc - continental collision, intracontinental fold belt and remelting granite are development in yanshan period. At Tertiary, fault basin and nappe tectonic belt are developed.Mainly performed as thrust, translation shear zone at this day and age, there are still some fracture seismic activity.

The zone is exposed by the ultrabasic rock, layered gabbro, diabase walls, basalt, siliceous rocks and deep water turbidite of ophiolitic melange, and late Triassic volcanic sedimentary rock, the representative of the west island arc environment and the late Triassic flysch sedimentary, which the representative of the eastern passive continental margin the environment (Xikang group), along the fault zone, shows different sizes of tectonite sheet and clamp block mixed, has the characteristics of stratified disorder as a whole.

2 Geological Characteristics and Metallogenic Geological Condition of the Typical Ore Deposit in Garze - Litang Gold Metallogenic Belt

2.1 The geological characteristics of the typical ore deposit

Gala gold deposit is mainly controlled by the ductile shear zone within the fault zone, Gold mineralization mainly occurs at mylonite which in the ductile shear zone. Ore-bearing rocks are mainly mylonite and mylonitization of rocks. Gold mineralization is related with carbonatization, silicide, chromium hydromica, sericitization and pyritization, arsenopyrite and stibnite alteration. Metallogenic material mainly comes from surrounding rock and deep crust, it is a brittle - ductile shear zone altered rock - sulfide type gold deposit.

Ajialongwa gold deposit is found in Litang ophiolitic melange, and it is controlled by the north east to secondary fracture of the Yahuo - ZhuoXi fracture. Mineral source mainly comes from volcanic-sedimentary construction in chasmic trough, the ore medium migration(solution) is in under the action of tectonic movement, regional metamorphism and magmatic activity, through leaching to extract ore-forming elements in rocks. Silicification, chloritization and sulfide materialized (pyrite and arsenopyrite) constitute the strong alteration belt. Brittle coarse clastic rock and volcanic clastic rocks (sedimentary volcanic rock) tectonite of fractures are the main ore rock. it is the hypabyssal and medium to low temperature liquid type gold deposit.

Xionglongxi gold deposit ore body was in nearly north-south trending thrust fault zone of the upper plate, the secondary fracture. The ore bodies spatial distribution are controlled by nearly north-south trending tectonic fracture zone, broken bandwidth dozens to hundreds of meters. Regional deep fracture are ore guide structure, side secondary fracture are ore structure, metallogenic period of tectonic movement, magmatic activity, the migration of the underground hot water solution and the dissolution and migration of gold is essential to the geological conditions of the ore deposit formation. The genesis of ore deposit types should belong to the underground (halogen) water
leached formation of the micro disseminated type gold deposit.

2.2 The main ore-controlling factors of gold deposits

From the geological characteristics of typical gold metallogenic in Garze - Litang metallogenic belt and the analysis of characteristics of wall rock alteration, the main ore-controlling factors of gold deposits as follows:

Structural factor: gold deposits are all in the secondary fault zone or fractured zone, fracture of tensile or compressive shear, which is an important ore place and migration channels.

Magmatic rocks factor: there a large number of intermediate-basic rock distribut in Ajialongwa gold field, part of the intermediate-basic rock and ore body boundary are gradual transition, the ore have strong pyritization, poison mineralization can become the high grade ore, it means the rock mass is ore rock in itself.

Stratigraphic and lithologic factor: Ajialongwa, Xionglongxi and Gala gold deposit all have a part of the ore body are produced in the sedimentary strata, and the sedimentary strata in metallogenic belt (especially the basal old strata) has a high background value of gold, and it is the original source, meanwhile, the sedimentary rocks have good permeability and appropriate ore space.

3 Conclusion

Garze - Litang fault belt (at least in the north), since the Cenozoic Himalayan tectonic regime there has been a marked shift, is the highly favorable places of activation, migration and enrichment of gold elements in crust and mantle. With the metallogenic conditions of forming gold mine enrichment region, thus, further understanding the law of the Cenozoic Himalayan tectonic movement and spatial distribution characteristics have great significance to the area of prospecting.

Acknowledgements

I would like to extend my sincere gratitude to my classmate, Mr. Li Jiangyong, he provided me mostly materials for this paper. Special thanks should go to my friends who have put considerable time and effort into their comments on the draft. Last my thanks would go to my beloved family for their loving considerations and great confidence in me all through these years.

References


