Precious Metal and Porphyry Mineralization of the Baimka Trend, the Chukchi Peninsula, Russia

YU.N. SIDORINA, G.T. DZHEDZHEYA, I.A. KALKO AND YU.N. NIKOLAEV

Faculty of Geology, Moscow State University, Leninskie Gory 1, Moscow, 119991, Russia (bobbin@yandex.ru)

The Baimka Cu trend, 250 km SW of Bilibino was formed in island arc and includes clusters of porphyry Cu deposits and prospects with total resources >20 Mt Cu. The region comprises J_3 tuffaceous-terrigeneous sequence intruded by bodies of J_3 gabbro, J_3-K_1 diorite porphyry, and K_1 monzodiorite, syenite and quartz monzonite porphyry associated with ore zones.

At the Peschanka deposit among bornite-chalcopyrite-molybdenite porphyry mineralization (0.6% Cu) only sporadic subepithermal sphalerite, Se-bearing galena, tennantite-tetrahedrite, altaite, hessite, and native gold were determined.

IS epithermal Au-Ag-Pb-Zn mineralization of the Nakhodka ore field (10 km S of Peschanka) occurs in phyllic rocks as quartz-carbonate stockwork cutting at the depth of 150 m porphyry Cu-Mo ore body. The average grades are: 2.9 g/t Au, 56 g/t Ag, 0.9% Pb+Zn, 0.15% Cu. The major epithermal ore minerals are As-bearing pyrite, chalcopyrite, galena, sphalerite, and Zn-rich tennantite-tetrahedrite; electrum, native gold, hessite, and altaite are minor; petzite, pearceite, stützite, and acanthite are rare. Among gangue minerals rhodochrosite and Mn-rich dolomite are typical.

Recently by X-ray fluorescence prospecting several Cu anomalies have been discovered at the Omchak prospect (8 km SE of Nakhodka). They correspond to the jointing zones hosting porphyry Cu and epithermal Au mineralization similar in composition to that of Nakhodka. Porphyry Cu zones (0.37-1% Cu) are framed by argillic alteration with quartz-carbonate veinlets bearing subepithermal Zn-Pb±Ag (0.11% Zn, 0.27% Pb, 38 g/t Ag) and epithermal Zn-Pb±Ag±Au±As (0.05-0.8% Zn, 0.003-0.35% Pb, 3.7-6.4 g/t Ag, 1.7-1.9 g/t Au, 153-1000 g/t As) mineralization. One of the discovered Cu stockworks has high Au (0.7 g/t) and Ag (4.7 g/t) grades which is the effect of the superimposed LS epithermal mineralization — Se-pearceite and naumannite have been identified here.

Occurrence of epithermal Au-Ag mineralization indicate moderate erosion level of the southern porphyry-epithermal systems, therefore main volume of porphyry Cu may be localized at depth.