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Late Mesozoic-Early Paleogene strike-slip tectonics of the Kular-Nera slate belt (northeast Russia)

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The Kular-Nera slate belt is located in the central part of the Verkhoyansk-Kolyma folded region. It is chiefly made of Upper Permian, Triassic and Lower Jurassic terrigenous rocks. Extensive rupture dislocations separate the belt from adjacent tectonic structures. In the northeast, it is separated by the Charky-Indigirka and Chai-Yureya faults from the In'yali-Debin synclinorium and in the southwest by the Adycha-Taryn fault from the structures of the passive margin of the North Asian craton. The structural plan of the Kular-Nera slate belt is defined by linear folds and faults of northwestern and more rarely latitudinal strike which formed during several deformation stages. We studied multistage deformation structures of the Kular-Nera slate belt which are related to Late Jurassic-Neocomian accretionary-collisional and Late Cretaceous-Early Paleocene post-accretionary events in the Verkhoyansk-Kolyma folded region. Up-to-date structural-kinematic methods were used in studying major and minor planar and linear deformation elements. As a result, key structural elements of variable age were distinguished, chronology of deformation events and mineralization was reconstructed, and their relation to geodynamic events in northeast Asia was established. The first Late Jurassic deformation event D1 is characterized by the development of tight to isoclinal F1 folds of northwest strike and ramps. Major fold structures, extensive thrusts, granitoids, dikes and orogenic gold mineralization were formed in the reverse-fault tectonic stress field during the second deformation stage D2. Both D1 and D2 structures originated under conditions of frontal accretionary-collisional events with NE-SW orientation of compression axis. Subsequent deformation is mainly represented by strike slips. They began to form during the second accretionary-collisional stage (Aptian age of the Lower Cretaceous) and continued to develop at the post-accretionary stage in connection with extensional processes occurring in the rear part of the Late Cretaceous Okhotsk-Chukotka volcanoplutonic belt. Coaxial left-lateral D3-4 motions along NW-trending faults occurred under conditions of prevailing WE compression. They led to the formation of submeridional and northeast-striking F3-4 folds with steep hinges, reactivation of early structures, among them ore-controlling ones, and formation of subvolcanic granite-porphyry dikes, pull-apart basins and Au-Sb mineralization. The last deformation event D5 is represented by dextral strike slips with a normal fault component which caused repeated folding of rocks, reactivation of early ore-controlling structures as well as development of latitudinal folds and axial surface cleavage. It is supposed that Maastrichtian-Early Eocene deformation of strike-slip nature is related to oblique subduction of the plates of the paleo-Pacific ocean beneath the eastern margin of North Asia (Parfenov, 2001) and/or development of a transform margin in northeast Asia (Khanchuk and Ivanov, 1999). Thus, as exemplified by the Kular-Nera slate belt, a regular replacement of the Late Jurassic-Neocomian frontal accetionary-collisional tectonic setting by the Aptian-Early Eocene mainly strike-slip setting is established for the Verkhoyansk-Kolyma folded region.