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Post-collisional granitoids and mid-Cretaceous (117-106 Ma) extension in tectonic evolution of Chukotka Mesozoids, Northeast Russia

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Tectonic evolution of arctic margins of Chukotka Mesozoids in Mesozoic time is tightly related to formation of Amerasia basin. The Alazei-Oloy fold belt (AOFB), South-Anyui Suture Zone (SAZ) and Anuyi-Chukotka fold belt (ACFB)(Chukotka Mesozoids) are the main tectonic elements of Chukotka. They formed as a result of collision between active margin of the North-Asian (Siberian) continent and the Chukotka-Arctic Alaska microcontinent (CAAM). Deformation on the Siberian continent was localized in the AOFB, and deformation of the passive margin of the CAAM, in the ACFB. The latter is composed of Pz-Mz sedimentary deposits. Collisional stage was followed by extension in the K₁ap-al resulted in formation of metamorphic core complexes and overlapping orogenic basins [1, 2].

Post-collisional granitoids and dikes of basic, medium and felsic composition cut deformational structures of collisional stage – thrusts, folds with development of a south- and north-dipping axial plane cleavage/foliation. The age of granitoids falls in 117-105 Ma (U-Pb SIMS, zircon) [3-6]. Their intrusion is related to extension associated with strike-slips on the late stage of collision [7]. The orientation of regional extension was E-W to ENE-WSW based on the consistent N-S to NNW-SSE orientation of over 800 mapped dikes and quartz veins [5]. The same orientation of extension is proposed in Luchitskaya et al. [6] on the base of shape and spatial distribution of Velitkenay and Moltykan post-collisional plutons. By now, there were no geochronological data on the age of dikes.

During 2014 field works in Pevek city region of ACFB some post-collisional plutons (Peekineysky and Shelagsky) and dikes were sampled for U-Pb SIMS dating. Peekineysky pluton in the western part of the region intrudes terrigenous J₃–K₁ rocks. Zircon age of granodiorites is 111.5±1.0 Ma; of syenites is 109.7±0.6 Ma. Shelagsky pluton in the most northwestern part of the region intrudes T₃k terrigenous rocks. Zircon age of granodiorites is 107.1±1.2 Ma. The U-Pb zircon ages of Pevek region dikes fall in 114-106 Ma time interval. Dikes have N-S to NNW-SSE orientation. Two dikes contain single zircon crystals of 260, 302, 342, 555, 742, 1290, 1825, >2100 Ma.

Conclusions. Post-collisional granitoid magmatism and dikes intrusion in mid-Cretaceous time (117-105 Ma) herald the change in tectonic regime from collision to extension in tectonic evolution of Chukotka Mesozoids. These events could be related to the continued opening of Amerasian Basin and formation of Makarov, Podvodnikov basins in Arctic. On the continent there is simultaneous formation of Anakhurgen, Nutesyn and Kameshkov basins. This fact is also confirmed by timing of extension tectonic

events and spreading in Canadian basin Grantz et al. [8] and collisional events, deformations and reconstruction of structural and sedimentary plans in SAZ.

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