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Cretaceous-Cenozoic tectonic stress fields in the vicinity of diffuse plate boundary between North American and Eurasian plates in the Laptev Sea region (Bel'kov Island, Russian Arctic)

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The purpose of the study is to present the reconstructions of the Cretaceous-Cenozoic tectonic stress fields for the Laptev Sea Region. The study is based on the mesostructural investigations, carried out mainly in the Middle-Upper Paleozoic sedimentary rocks along the Western coast of Bel'kov Island in 2002. Bel'kov Island is located in the North-Eastern Laptev Sea region, close to the diffuse plate boundary between Eurasian and North American plates [e.g. Gordon, 1998; Avetisov, 1999] and is the nearest one to southern termination of Gakkel ultraslow spreading ridge. The Island belongs to extended Bel'kov horst of the Late Cretaceous (?) - Cenozoic Laptev Sea rift system [e.g. Drachev et al, 1998]. It is commonly believed, that general NW-SE trending compressional structural pattern of Bel'kov and adjacent (to the East) Kotel'nyi Island was formed in Early Cretaceous (Neocomian) as a result of Eurasia - Chukchi-New Siberian block collision along South Anyui-Lyakhov suture zone. It was determined, that NW-SE striking and steeply deeping to SW reverse faults (corresponding to the general structural pattern) are complicated by small, but wide-spread left-lateral constituent. According to plate tectonic reconstructions [Gaina et al. 2002] the Laptev Sea segment of North American and Eurasian plate boundary was developed in the Late Cretaceous in compressional setting (79-69 Ma), followed by extension and transtension during latest Late Cretaceous - Middle Miocene (69-11 Ma). Mesostructural data confirm the presence of postcollisional stage of ~ E-W compression and subsequent extensional/ sinistral transtensional setting. The analysis of distribution of poles to normal faults without significant strike-slip component revealed the presence of two main populations, corresponding to the NE-SW and ENE-WSW

general extension directions (roughly orthogonal to the Laptev Sea rift system and Gakkel spreading ridge) during rift stage. It is interesting to note, that ~ N-S compressional (most likely immediately after ~ E-W compression) stage is also recognized. The work was supported by INTAS grant 01-0762 (NEMLOR), N.Sh.-1980.2003.5 and RSSF grants.