



DETERMINING THE STRUCTURE OF A LARGE TILTED BLOCK BETWEEN TWO MAJOR BOUNDARY FAULTS IN A CONTINENTAL RIFT (CENTRAL LAKE BAIKAL): A REFLECTION SEISMIC STUDY

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Between the major boundary faults of the central part of Lake Baikal (ie. the Ol'khon fault and the Primorsky fault), a structurally complex tilted area exists that is strongly influenced by the interaction between these two faults. This area, that is about 30 kilometer wide and a 100 kilometers long, consists of three main parts: Pri-Ol'khon, Ol'khon-island and the submerged Maloe More depression. It is believed that the area formed by the gradual propagation of the Primorsky fault in a southeast direction towards the Ol'khon fault.

During the summer of 2001 a large amount of high resolution reflection seismic profiles were shot in Maloe More (>600 km), that could be used to get a better insight in the structural development of the area, and in the geometry of its different sub-blocks and basins. In a first stage we have investigated the morphology of the basement underneath the sedimentary cover, and we determined which structures were fault related and which not. Age constraints on the subsequent evolution came from the correlation of the sedimentary units in Maloe More with deposits on Ol'khon-island, and with data from the long BDP-cores in a nearby area (Academician Ridge).

The depth of the basement gradually increases from the southwest towards the northeast, and its morphology is characterised by several ridge structures and faults that strike at high-angle to the main faults. Several of these ridges border basins that con-

tain relatively old sediments (Miocene age; Unit A) later overlain by younger units. Therefore the main basement structures of the Maloe More area should be older than the general believed age for the southward propagation of the Primorsky fault (1 Ma according to earlier models). Moreover the occurrence of relatively thick deposits of unit A in the southwestern extremity of Maloe More and in Ol'khon-gate contradicts the idea that these parts of the area are the youngest, being submerged only recently. Instead, older (isolated) sedimentary traps and lacustrine environments must have existed in this area. Faulting in the younger sediments however shows that the present-day activity of the major boundary faults, still has a pronounced effect on the local structure between them. Some of the formed basins are still determined by displacements on the older structures.

For this study we have tried to determine the evolution of the Maloe More area, based on its interpreted structure and the relation with overlying sedimentary deposits, and we have tried to link our observations with existing models for the development of the Primorsky and Ol'khon faults.