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Late Cenozoic faulting pattern and stress fields of the Barguzin rift (Baikal region)

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Late Cenozoic faulting pattern and stress fields in the Barguzin rift (Baikal rift zone) are characterized on the basis of field structural and geological data with the use of gravimetry, geoelectric and seismology materials published. It is shown that the NE-SW trending faults are dominant. A large lineament trending nearly N-S for several hundreds km which is located between 110˚ and 110˚30′ of the east longitude has made a profound impact on the rift structure. The lineament is pronounced both in crystalline basement and in sediments of the Barguzin basin as a system of separated fault segments. Geometry and kinematics of many faults are established. The NE-SW trending fractures are normal faults; that is in agreement with the previous data on kinematics of these structures. In places, on fault terminations as a rule, there is an insignificant right-lateral component of displacement. The nearly E-W trending fractures are left-lateral strike-slip faults, sometimes with normal fault component. The kinematics of NW-SE trending fractures is often ambiguous. The right-lateral normal-strike-slip and strike-slip-normal fault displacements occurred along the nearly N-S trending faults. The Late Cenozoic faulting pattern is regular as a whole and predetermined by previous tectonic structures.

It is confirmed that tension is the prevailing type of the state of stresses in the Barguzin rift. At the same time, the strike-slip stress fields that may have originated from regional tension and realized by displacements along the faults transversal to normal faults or in combination with them occur widely. The tensional stress vectors are relatively stable and predominantly oriented to NW-SE almost orthogonally to the rift axis. The obvious variations of the state of stresses took place in the large fault system trending nearly N-S through the central part of the Barguzin rift. It is shown that the occurrence of local stress fields that differ in types in the study area reflects a mosaic structure of regional stress field which is due to its continuous "reorganization"

during reactivation faulting pattern. The obtained results are important for developing the strategy of seismic hazard assessment connected with reactivation of faults and tectonic blocks in the continuously acting and varying stress field.

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