

EXPERIMENTAL STUDYING OF STRUCTURAL DISCONTINUITIES FORMATION IN OCEANIC RIFT ZONES

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Physical modeling of structural discontinuities formation of oceanic lithosphere rift zones has been carried out. The experiments were based in view of criteria similarity (Shemenda, 1983). They have been performed on model materials composed of solid and fluid hydrocarbons. The materials are destroyed by a quasi-brittle mechanism under certain values of temperature and strain rate. The experimental device consists of a textolite bath with a heating elements. There is a frame with a piston in the bath driven by the electric motor. The drive unit allows to conduct deformations of a model plate with variable velocities and direction of an extension and its different values of thickness. The modeling results have shown, that under extension of a brittle layer of lithosphere the generated rift fissures form bending of an axis, nontransform offsets, small and large overlapping spreading centers etc. Their formation and evolution depend on the thickness of lithosphere in spreading axis, width of a zone of its warming up, direction and velocity of an extension. Orthogonal tension leads to the origin of different range cracks perpendicular to the spreading direction. In the case of oblique spreading it is possible various location of cracks both under some angle and normal to the direction of an extension. It depends on a declination of a rift zone concerning a direction of an extension. The experiments also have shown that in any type of a spreading the crack origination is preceded by formation of linear microcrack zones breaking only upper more fragile layers of lithosphere.