GEOTHERMIC FIELDS OF FAULTS

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A fault is understood as a linear geological body formed by means of a series of formations alongside of corresponding disjunctions. Due to the disjunctions a fault is a relatively transparent zone, which is confirmed by anomal helium flows. In terms of heat and mass transfer a fault is satisfactoruly modelled by a vertically placed seam system. That is why one intuitively expects that heat flows over faults should increase. However a minute geothermic survey showed that this is at least not a general phenomenon. Measuring heat flows in specially bored wells showed that a geothermic field along a fault has a "mosaic" structure reflecting the interchanging zones of high and low heat flow values. The results on hydrodynamic instability make it possible to attribite this fact to a convective selforganization in a condensed transparent medium. From the initial set of equations (the laws of mass energy and impulse conservation in a porous medium and the equation of liquid state) we get after a series of customary simplifications (Bussinesk's approximation, the incomoressibility of a liquid etc) the following equation for the temperature disturbance- $-\nabla^4 \theta = Ra^*/H^2 \cdot \nabla^2_{xy} \theta$ (1) where Ra^* is the Rayleigh number. There is such a critical Rayleigh number that if $Ra^* < Ra_c$ the equation (1) has only a trivial solution. In case Ra^* is greater than the critical number there develops a cinvection giving rise to a heat field of variable structure. For any fault $Ra_c = 40\,S^4$ with S depending greatly on the relationship of the "depth" H and the "width" L. In the depth there are formed S convection cells with the period along the axis X equal to $2H/(S^2 - H/L)^{1/2}$ giving rise to a mosaic heat fields on the surface. To site an example, we shall aduce the results of the investigation of the geothermic fault of field in the area of the southen slope of the Karpinsky Swell and in Vitash fault on Daghestan. Heat flows were measured in drillholes 50-100 m deep. A geothermic field is a regular alteration of zones with shaply high and low heat flow values. Similar structure can be also found in other faults.