



Research of geodynamic processes on natural model of block medium

F. N. Yudakhin (1), N. K. Kapustian (3), G. N. Antonovskaya (2), E. V. Shakhova (2)

(1) Archangelsk Scientific Centre of Ural Branch, Russian Academy of Sciences, Archangelsk, Russia (asc@sanet.ru/Phone +8182-21-57-65), (2) Institute of Ecological Problems in the North, Ural Branch, Russian Academy of Sciences, Archangelsk, Russia (felix@dvina.ru/Phone:+8182-61-91-36), (3) Institute of Physics of the Earth, Russian Academy of Sciences, Moscow, Russia (n_kapustian@mtu-net.ru/Phone: +495-252-07-26)

On the past General Assembly EGU (Vienna, Austria, 2005) we submitted the report about the nanoseismic technology making possible to record the earthquakes with $M = -4$; - 5.

At that moment we had an opportunity to carry out a natural experiment.

As natural object has been investigated the sea dam connecting islands of B. Solovetsky and B. Muksalma in the White Sea. This construction has been finished in the middle of XIX century. The dam represents really a Cyclopean construction from large (1 m and more) boulders connected by sandy- clay filler. The length of the dam is about 1 km, height - 6-7 m, it is about 2 m under the water. Thus the dam can serve as natural model of the strongly fractured block geological medium. The basic influence on short time intervals (at some hours) at a calm is action of sea flow, the estimation gives change of lateral stress on a dam in 0,1 bar. It is important, that the area of a dam is practically uninhabited, i.e. technogenic component both in influence, and in a seismic signal is absent. Three-componental seismometric observations were conducted in the central part of the dam with the help of digital baro-seismic station and seismometers SM-3.

At processing was analyzed the form of microseism records, power spectra and functions of coherence in pairs for all interval of supervision for all components were counted. The analysis of coherence function allows to reveal the events latent by a microseism background that demands using of technology of allocation the weak events,

submitted by us in 2005 in the General Assembly EGU.

From results of works on natural model which properties correspond natural block medium, follows, that dot thin-route seismometric supervisions with use of endogenous radiation analysis allow to reveal the geodynamic processes caused by weak changes of stress fields. The given experiment can be considered as original calibration of estimation method of condition and properties of the block medium, suitable for search of faults and monitoring of their activity.