Geophysical Research Abstracts,
Vol. 10, EGU2008-A-02155, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-02155
EGU General Assembly 2008

Experimental research on thermal properties of rock formations.

A. Lipaev , S. Lipaev

Almetyevsk State Oil Institute, Tatarstan, Russia (alm6811@rambler.ru / Fax: +8553231586)

The most important thermal properties of rocks are heat capacities, thermal conductivities and thermal diffusivities . Data of measured thermal properties from rocks are used for assessment and evaluation of the heat flow from subsurface environments , which in its turn brings us to study of abyssal features of both separate flows and the Earth crust as a whole.

Research in thermal properties of rocks is used for solving a number of other important problems including determination of natural thermal fields , research , exploration , development and exploitation of fossil fuels fields.

Many scientists were engaged in creating methods for determining thermal properties and investigation into of rock formations , but still the study of the effect of high pressure and temperature on thermal conductivity is insufficient.

The authors offer a methodology and an experimental unit for determination and measurement of thermal properties of sample rocks at pressure up to 150MPa and temperature up to 150 degrees C. Measurement errors are no more than 3-4 %.

The method is based on the laws of regular thermal regime of the third kind in the system of contacting bodies : a sample under investigation and two references.

The unit consists of two functional sections : technological and measuring . The technological section is designed to stimulate thermobaric conditions exposing rock samples to occurrence conditions. The following devices are used in measuring section : signal generator , power supply , amplifier , voltmeter , ammeter , recorder.

The unit described has been used for study of the Urals rock samples : limestones , serpentines , dunites , basalts , under conditions simulating their subsurface environments. On the basis of the authentic and plausible dataset evaluation of the thermal flow density in super deep well CG-4 , the Urals (Vekhnaya Tura), was made .