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(54) Title: METHOD OF DETERMINING IN-SITU STRESSES IN AN EARTH FORMATION

(57) Abstract

A method is provided of determining an in-situ stress of an earth formation (3) subjected to first, second and a third in-situ stresses, wherein a borehole (1) has been drilled into the formation, the borehole containing a borehole fluid (7) inducing a selected pressure to the borehole wall so that in a region of the formation the first in-situ stress is replaced by another stress depending on said selected pressure induced to the borehole wall. The method comprises the steps of: selecting a sample (16) which has been removed from said region, the sample having first (18), second (20) and third (22) reference directions which coincide with the respective directions of the first, second and third in-situ stresses prior to removal of the sample from the formation; and conducting a plurality of tests on the sample whereby in each test the sample is subjected to selected stresses in the reference directions so as to determine a damage envelope of the sample and to determine from the damage envelope at least one of the second and third in-situ stresses, wherein the magnitude of the selected stress in the first reference direction is substantially equal to the magnitude of said another stress.

