3D IN SITU STRESSES

Determination on core samples with RACOS®

Method

The removal of core from a rock mass with its unloading from the recent in situ stresses results in rock loosening. This can be largely reversed by reloading in a testing laboratory. During the reloading, the spatial load-dependent propagation characteristics of elastic waves are measured. From these measurements are derived, using RACOS®, the effective 3D in situ principal stresses and further rock loading conditions.

Requirements

Samples: Consolidated and largely homogenous drill core piece (ca. 2 dm^3), that can also be anisotropic. The core age plays no role by appropriate storage.

Data:
(a) Drill path in the analysis section (azimuth, inclination, TVD);
(b) Pore pressure in the analysis section at the time of coring;
(c) Geographical information (longitude and latitude) for magnetic reorientation;
(d) (if available) Reference lines on the core and information on the geological structure, zones of weakness, faults, stratigraphy and mean density of the overburden rock in the analysis section.

Prices *(for each analysis section)*

(1) ***Basic**:* Determination of the principal magnitudes and orientations (in relation to the core) of the recent ***3D effective in situ stresses*** ***€ 11.000,--***

(2) ***Added to (1)**:* Determination of the principal magnitudes and orientations (in relation to the core) of ***3D elastic parameters and pore pressure effectiveness*** ***€ 4.500,--***

(3) ***Added to (1 & 2)**:* Determination of the principal magnitudes and orientations of the ***3D total in situ stresses*** including overburden pressure and frac closure pressure ***€ 1.500,--***

(4) ***Additional to (1)**:* Determination of the principal magnitudes and orientations (in relation to the core) of the recent local ***3D tectonic stress state*** ***€ 1.500,--***

(5) ***Additional to (1)**:* Determination the principal 3D magnitudes and orientations (in relation to the core) of one effective ***3D palaeo stress state*** ***€ 2.000,--***

(6) ***Additional to (1 & 3)**:* Determination of the ***3D variation of the principal effective and total in situ stresses*** resulting from one pore pressure change ***€ 2.000,--***

(7) ***Additional to (1, 2, 3 & 6)**:* Determination of the elastic (dynamic) and total (static) ***3D rock deformations*** resulting from one pore pressure change ***€ 2.500,--***

(8) ***Additional**: **Geographical reorientation*** of the analyzed parameters ***€ 1.500,--***

(9) ***Additional**: **Final report*** ***€ 4.500,--***