ЦИК core research centre

V.I.SHPILMAN RESEARCH AND ANALYTICAL CENTRE FOR THE RATIONAL USE OF THE SUBSOIL

Cross-sectional studies of core

Photography lighted by natural daylight and ultraviolet light

Detailed photography lighted by natural daylight and ultraviolet light of the whole core, sawn core and photography of samples using CDP-265 equipped with the camera of high resolution Canon EOS 5Dsr and EF 24-70 mm f/2.8 lens

Photo of samples lighted by natural daylight and ultraviolet light

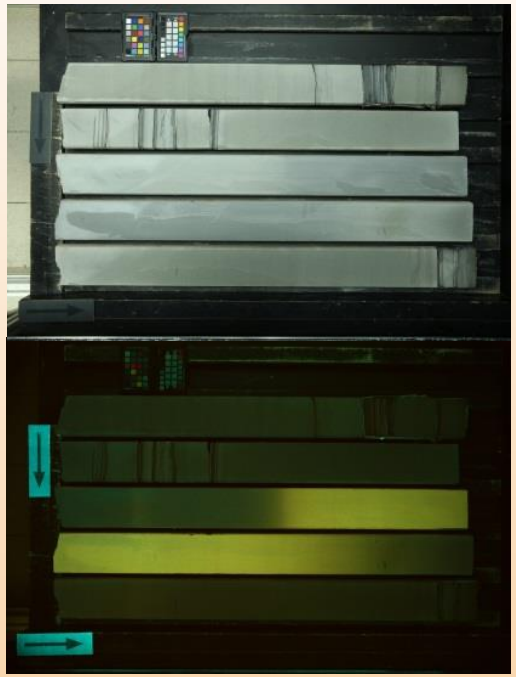


Photo of whole core lighted by natural daylight and ultraviolet light

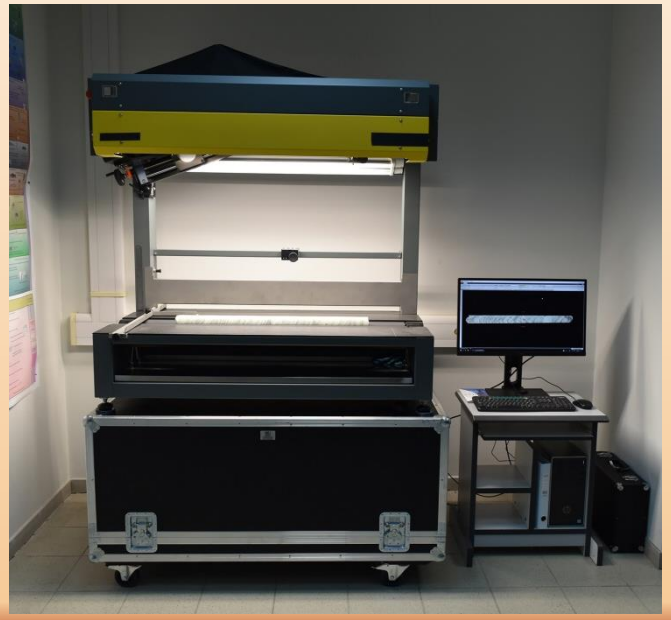
3D photo of sidewall surface of drill core, 1 meter

Sidewall surface of unrolled drill core, 1 meter long

Sidewall surface of unrolled core samples

DMT CoreScan®3 analyzer

DMT CoreScan®3 analyzer carries out scanning of the optical image of sidewall rounded surface of core with a diameter of 25 to 150 mm (diameter of the sawn core up to 250 mm) and up to 1 meter long. The core rotates around the longitudinal axis and is scanned by digital linear camera. The analyzer provides the full image of the unrolled core in 360° mode.

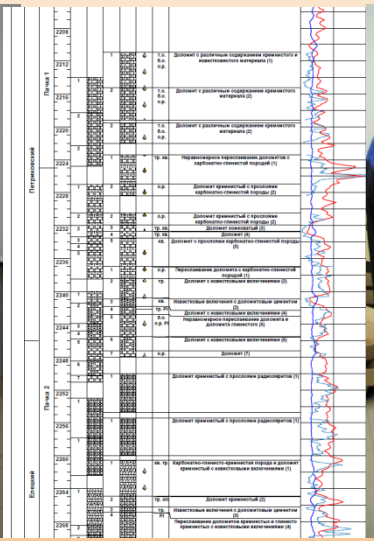


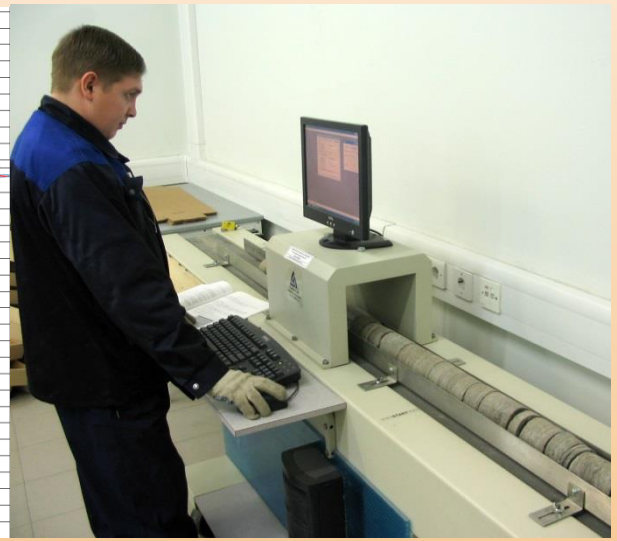
Spectral gamma – ray logging

Cross-sectional equipment SPGL - 330I, national product, is intended for measurement of natural spectral gamma radioactivity of core in terms of API and μR/hour, mass content of the gamma emitting daughter radionuclides as uranium, thorium and potassium series and identification of core density depending on depth of formation.

Measurements are made on cross-sectional equipment SGL-300 (CoreLab Instr.) intended for simultaneous record of the general level of natural radioactivity of rocks and mass content of U-238, Th-232 and K-40 in the material. The general level of radioactivity registers in terms of API.

The structure of files corresponds to the LAS standard that allows using them easily in any interpretative systems, these data can be also used both for the lithological layering and for clay analysis, organic content, porosity and permeability properties, etc.





Tomographic analysis of whole core

RXCT Multi-sensor X-ray Core Tomograph (Geotek Limited, Great Britain)

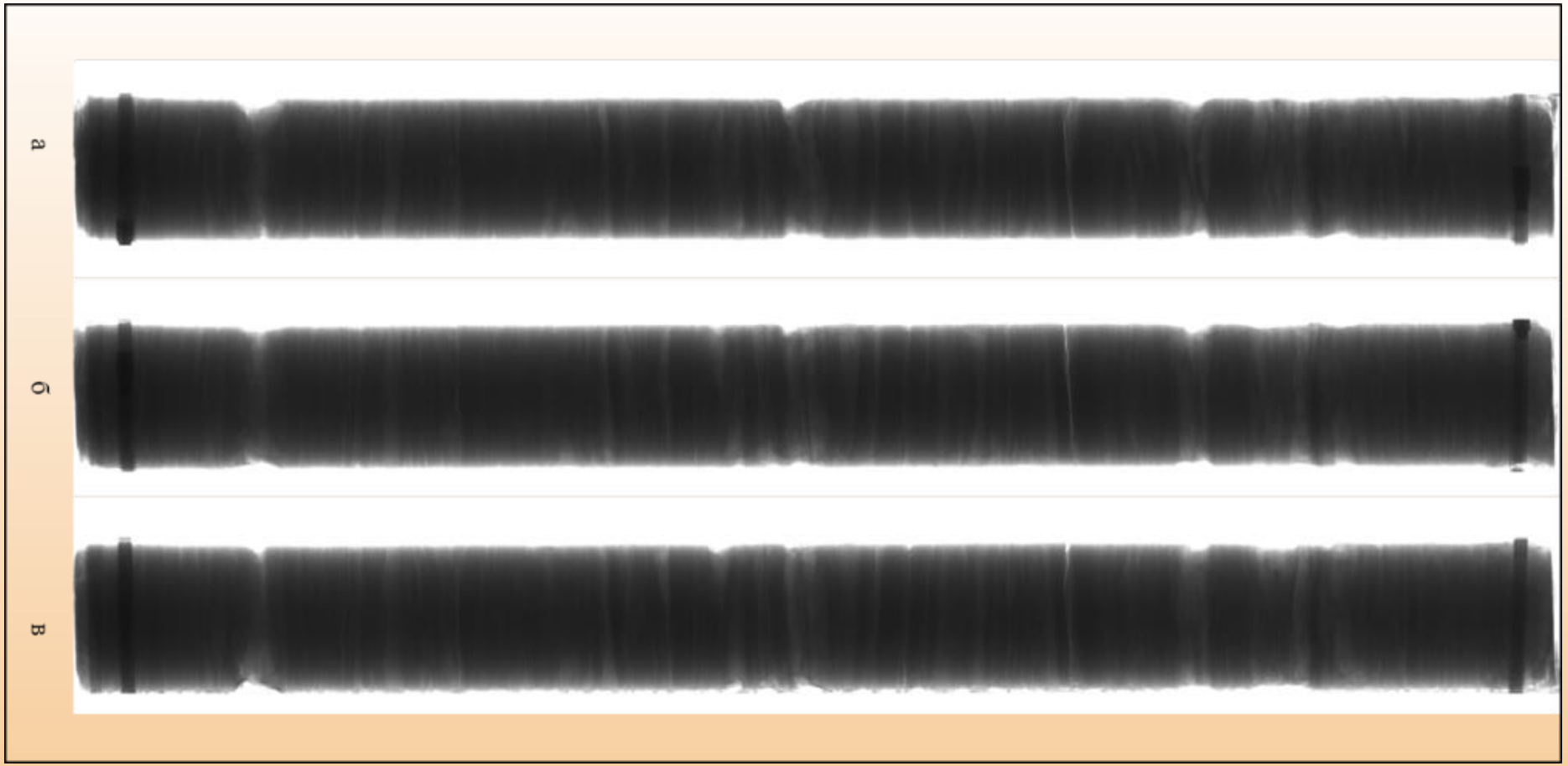
The rotating “source-detector” system

Function:

Evaluation of isolated core state, which arrived on study

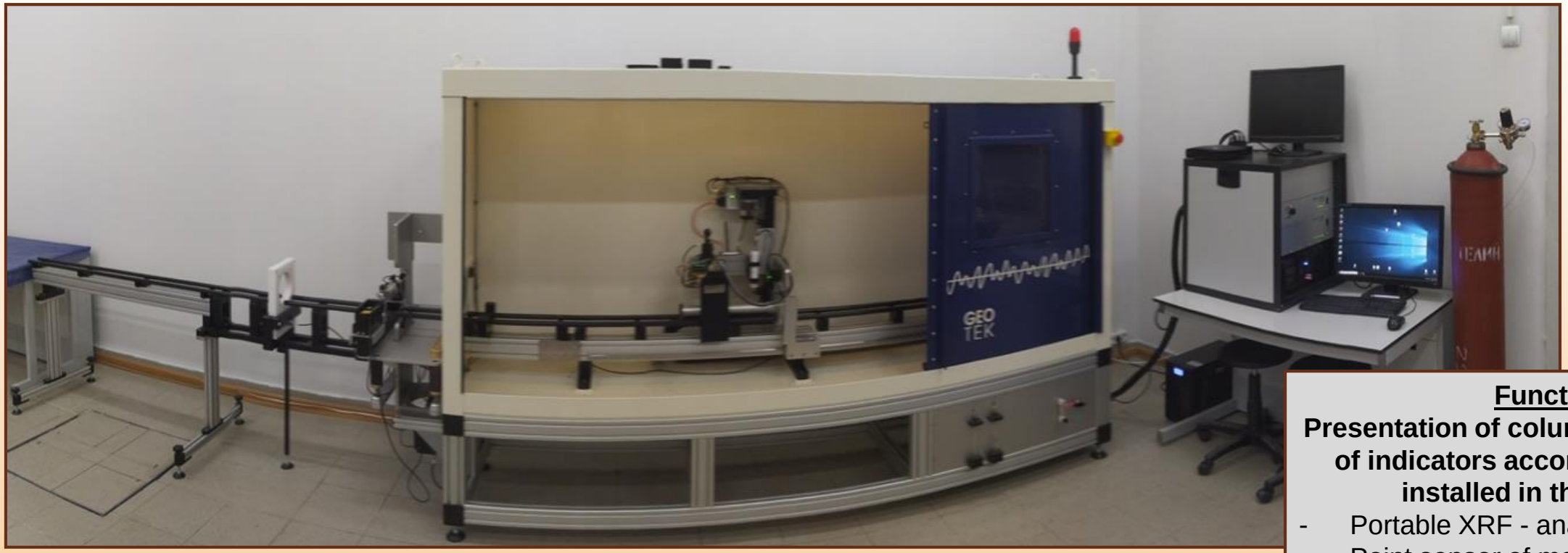
- radiography (2D) mode allows receiving core images in the three projections of 0°, 45°, 90°
- (3D) CT mode allows producing the detailed reconstructed images in the two projections and a set of axial slices

Tomographic analysis of whole core



Lightened core image produced in the radiography mode in the three projections of 0 °(a), 45° (b), 90° (c)

Study of whole core using the multi-sensor scanner



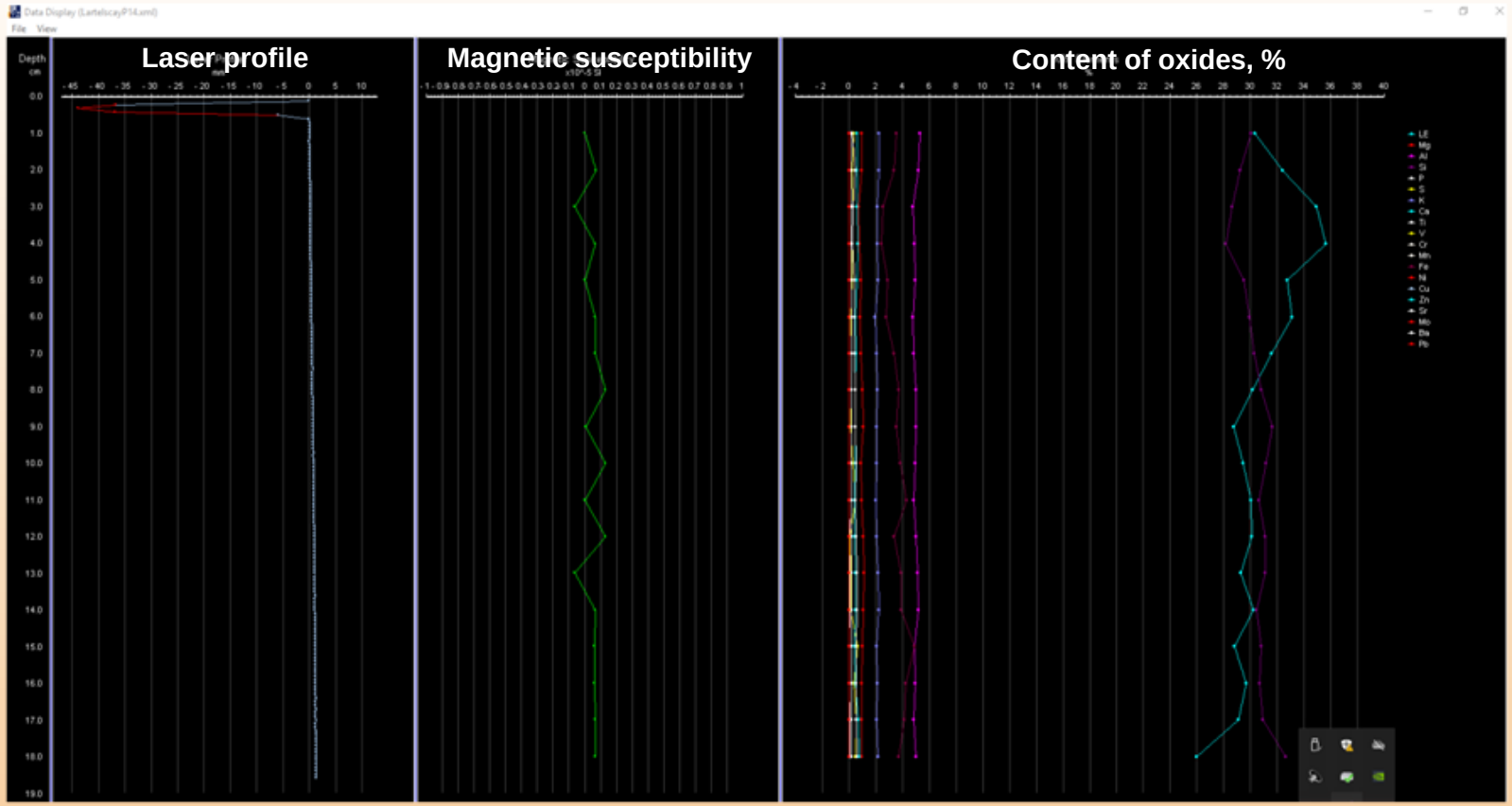
MSCL – SXZ Multi-sensor Core Scanner (Geotek Limited, Great Britain)

Function:

Presentation of columns of distribution of indicators according to sensors installed in the scanner:

- Portable XRF - analyzer
- Point sensor of magnetic susceptibility
- Loop sensor of magnetic susceptibility
- Reciprocating sensor of P-wave velocity

Study of whole core using the multi-sensor scanner



Example of core laser profile results, magnetic susceptibility and mass content of oxides of chemical elements

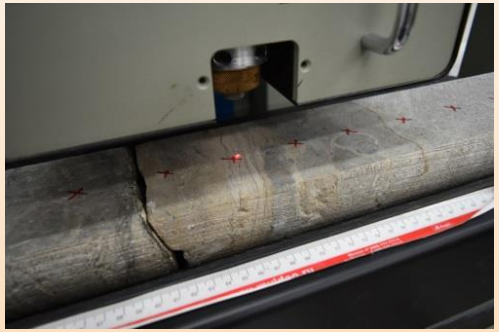
Determination of elemental composition using the portable analyzer

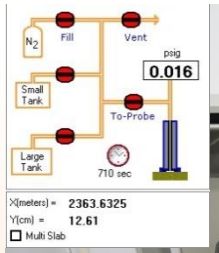
NITON XL3t 950 GOLDD Portable X-ray Fluorescent Spectrometer (Thermo Fisher Scientific, Switzerland)

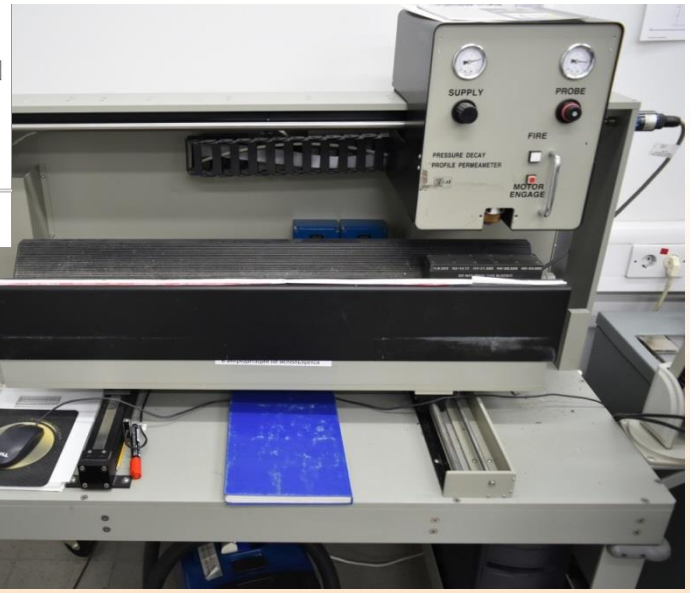
Function:
Express determination of elemental composition (from Mg to U) of core samples (whole core, grinded samples, splinters)

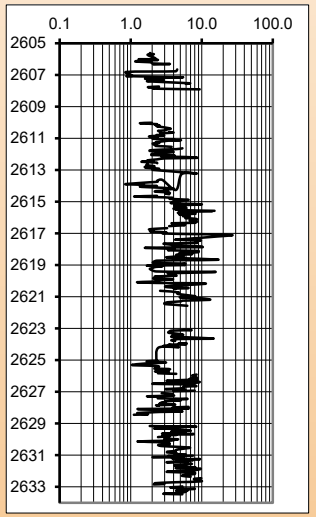
Identification of permeability profile using PDPK-400 system

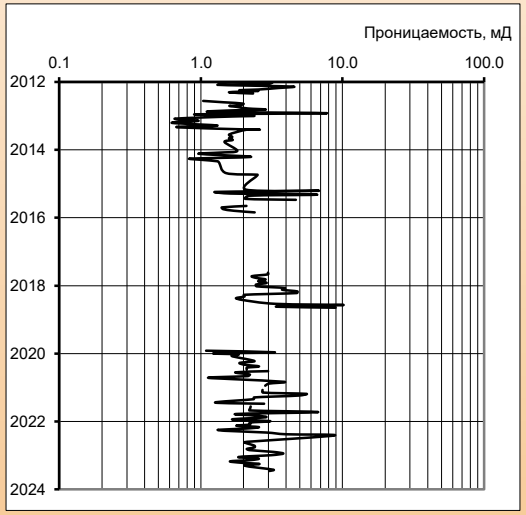
The system is intended for operational calculation of gas permeability (providing a permeability profile) on a flat surface of the core sawn along an axis and preliminary determination of barriers of the rock collector as traditional collectors of oil and gas











Core and log matching (core – geophysical well logging)