

## **METHOD FOR DETERMINATION OF VARIABLE GAS SATURATION IN WATER-FILLED ROCKS**

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Variable gas saturation occurs in water-filled rocks under both natural and human-disturbed conditions. It can be of sufficient interest since it is a sort of indicator of the pressure-and-temperature changes in the depths.

The method for the in-situ determination of the volume gas saturation (below VGS) in water-filled rocks was developed. The method started from the idea, that the wetting zone (which it always exists above the water table) could be considered a model for a geological formation where gassing occurred.

This method integrates two elements— (1) acoustic investigations of the wetting zone, and (2) the cross-borehole acoustic sensing data. The element (1) involves the in situ investigations plus lab simulation of wetting zone, and plotting the VGS dependence of augments of the sound absorption. The element (2) is the application of the dependence (1) to the data resulting from the cross-borehole acoustic sensing carried out in a frequent mode.

This method when being used for the monitoring the in-situ leaching of an uranium deposit gave results coincident with the directly determined VGS values.

The method for the in-situ determination of the VGS in water-filled rocks may be used for monitoring both water-filled formations and alternating underground water level - in the areas of karst propagation, in the seismo dangerous areas, underground disposals of wastes, etc.