

Abstract

Lukavice village is located in Eastern Bohemia and it is known for its historical pyrite mining. The first mention of mining comes from the beginning of 17th century. The mines were abandoned in 1892 due to a significant depletion of the upper parts of the deposit and also because of the competition of cheaper pyrite from abroad. Old mine workings were often backfilled incompletely and their exact location is unknown. The occurrence of empty mine workings under the roads in the village centre could cause a collapse of the ground under the weight of heavy trucks which carry through Lukavice village aggregate from the nearby quarry.

The aim of geophysics was to determine the thickness of dump material (seismics), subsidence monitoring in the village centre (repeated levelling) and the principal aim was to locate old mine galleries and shafts (gravity survey).

Gravity measurements did not prove the presence of empty mine workings under the main road at the village centre. Most pronounced negative Bouguer anomaly, which occurs in the vicinity of Bartolomějská jáma shaft, may be caused by higher degree of alteration of underlying porphyroids.

According to historical maps and photos we determined approximate location of the former water pit Vilemina. For the determination of the exact position of the pit we used gravity survey in the detailed grid of profiles. The results of measurements show that gravity survey was successful and precise position of water pit Vilemína was located in the southern part of study area. According to the shape and size of the anomaly we conclude that besides the water pit was also detected a hole for a water wheel that powered pumps drawing water from the mines.