Comparative Gephysical and Mining Forensic Analysis in exploration of Building Damages in Area of Mine „Lipnica"

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SUMMARY

Geophysical explorations enable determination of causes to damage or inflicted injuries, understanding of initiation mechanism of accident and proofing of hypothesis beyond reasonable doubt in court proceedings thus leading to material evidence that will either confirm or deny initial hypothesis. Mining operations in Lipnica underground mine were conducted for about 50 years and were stopped at the begging of the war in 1992. Main openings of the mine, as well as the former mining panels in roof coal seam, are located directly under the settlement Lipnica. After more than two decades of mine closure a number of court proceedings are still pending. It concerns claims for compensation of evident damages inflicted on houses. Conventional calculation methods of subsidence dynamics and time frame of consolidation process that were defined in planning of mining operations and previous forensic investigation were mainly stressing the fact that the giving time distance is to long to expect effects of mining operations. The paper gives overview of a comparative analysis of mining-geological conditions and geophysical explorations in the case of forensic investigation into damages inflicted of houses, including analysis of possibilities to apply geophysical forensics in investigation of underground mining operations impacts.
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Forensic geophysical presents one of crucial forensic disciplines in soil, rock and water explorations, thanks to non-destructive exploration methods, relatively flexible and swift measurements, available various geophysical methods and broad range of interpretation possibilities of these measurements. Geophysical explorations enable determination of causes to material damage or inflicted injuries, understanding of initiation mechanism of unwanted accident and proofing of hypothesis beyond reasonable doubt in court proceedings thus leading to material evidence that will either confirm or deny initial hypothesis.

Mining operations in Lipnica underground mine were conducted for about 50 years in past century and were stopped at the begging of the war in 1992. Vague understanding of the term -mine closure- and the fact that project of closure has never been done for this mine, resulted in divergent attitudes on how and when the subject operations were ceased. Main openings of the mine, as well as the former mining panels in roof coal seam are located directly under the settlement Lipnica itself. After more than two decades of mine closure a number of court proceedings are still pending. It concerns claims for compensation of evident damages inflicted on houses. Conventional calculation methods of subsidence dynamics and time frame of consolidation process that were defined in planning of mining operations and previous forensic investigation were mainly stressing the fact that the giving time distance is to long to expect any detriment effects of former mining operations.

The paper gives overview of a comparative analysis of mining-geological conditions and geophysical explorations in the case of forensic investigation into damages inflicted of houses in the area of Lipnica settlement, including analysis of possibilities to apply geophysical forensics in investigation of underground mining operations impacts on houses and infrastructures.