

عنوان مقاله:

Determination of unstable tectonic zones in C–North deposit, Sangan, NE Iran using GPR method: importance of structural geology

محل انتشار:

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خلاصه مقاله:

Ground Penetrating Radar (GPR) is an effective and practical geophysical imaging tool, with a wide set of applications in geological mapping of subsurface information. This research study aims at determination of the geophysical parameter differences in the subsurface geological structures and construction of a 3D fracture model. GPR and resistivity methods were applied to detect the unstable tectonic zones in the C-North deposit. Structural geology investigations were, first, surveyed to detect the faults and fractures in the study area. Based on the structural features, the survey was conducted over an area of 1 km² with a total of 30 profiles and low-resistivity zones in the C-North deposit which is a great help in reducing their impacts in slope stability studies. GPR sections were, then, obtained from low and high frequency antennas (10 and 50 MHz) to detect fractures and water content zones. The obtained data results demonstrated that the major structural trends in the study area were W–E, NE–SW, and NW–SE while fault zones that can create pathways for groundwater inflow into the deposit in the future. Information obtained from geological and GPR studies were also integrated with drill hole data. The geological information from structures are in good agreement with the actual geological situation. Method and results of this study could be useful in solving problems related to subsurface structures in mining engineering.

کلمات کلیدی:

Geological structures, Ground Penetrating Radar (GPR), Resistivity, C–North deposit, Sangan

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