

THE GEOPHYSICAL AND NEOTECTONIC APPLICATION TO GROUNDWATER RESEARCH IN THE SOUTH ARABIAN PLATE

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The analysis of geophysical and neotectonic materials is the important component of hydrogeological researches. It is especially important in the regions with active present tectonics and volcanism. Within the territory of the Taiz area (Republic of Yemen) next structural-lithological complexes there are: Lower and Upper Precambrian, Mesozoic and Cenozoic. The present structure was caused by spreading of Red Sea and Aden rifts, and is characterized by the block faulting, wide development of grabens and shifts. By search of groundwater deposits in a Cretaceous sandstone of Tawilah group and in a Tertiary volcanic complex the remote sensing and field neotectonic methods were applied. The purpose was a choice of sites where the depth of water-bearing horizons is minimal. On these sites the original complex of geophysical methods was carried out: Method of Nuclear Magnetic Resonance and Transient Electromagnetic Method. With the help of these methods the structure of geological-geophysical sections up to depths 800m have been investigated, Cretaceous sandstone of a thickness 250m under Eocene basalts was mapped, the most water-bearing parts of the section were determined and the salinity of groundwater roughly was estimated. The substantiation for statement of groundwater test boring wells was prepared.