

Formation mechanism and exploration potential of buried hills in the Talara Basin, Peru

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Base on the theory of structural geology, sedimentary petrology and reservoir geology, the Paleozoic metamorphic buried hill reservoir types of the Talara basin are classified into surface weathered crust reservoir and inside fracture reservoir by the use of core observation, well logging, seismic interpretation and other methods. Reservoir rocks are all kinds of quartzite, gneiss and slate and other metamorphic rocks. Reservoir space is mainly for various dissolution pores and fractures, reservoir types include three kinds, pore and fracture-pore and fracture, but the shallow-medium buried fracture-pore reservoir is the best. Palaeogeomorphology, weathering and tectonic activity are the main factors controlling the formation of buried hill reservoirs. Favorable lithology and tectonic activity effected the formation of fractures, while the weathered crust reservoir space was affected by the lithology, tectonic activity and ancient climate. The lateral faults which connected the source rocks and reservoirs are the key factor of oil and gas accumulation, the formation and influence radius of the faults controlled the vertical and horizontal distribution of the buried hill oil and gas reservoirs. The buried hill oil and gas accumulation has been proved by the discovery of several buried hill in the Talara Basin in recent years. The palaeotectonic high structures which distributed along the two main northeast - southwest direction faults are favorable exploration target area, with better reservoir conditions and exploration potential, which is a favorable direction for the secondary exploration in the old Talara Basin.