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Siliceous metasomatism in gold deposits of western Uzbekistan

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The importance of metasomatic changes are valuable at investigation of deposits, as they are accepted as search indication. Western Uzbekistan contains a huge number of gold deposits, including giants like Muruntau, Zarmitan, where main part of wallrocks became metasomatites. The article gives information about the results of analyzing the results of metasomatites in gold deposits of western Uzbekistan. In particular manifestation installed siliceous metasomatism, which resulted in carbonate rocks are converted into quartzite and jasperoids, slates and sandstones in the hornstones. Consider the features of siliceous metasomatism on individual deposits of western Uzbekistan. By analyzing the results of chemical and atomic absorption (on Au and Ag) analyzes of weakly and strongly altered rocks, can be said that, contain of gold increases related to rise of the amount of silica in certain type of rocks, simultaneously. But, some exceptions also defined, which can be explained that higher gold grades are associated with intensely silicified and ferruginous rocks formed by the process of metasomatism. Elevated values of silica in the rocks accompanied by elevated values of ferric can be recommended as an indicator of the search of gold mineralization.

A reservoir scale case study: Facies geometries, cyclicity, and depositional environments of the heterogeneous oolitic Miocene sequence, Wadi al-Qattarah formation, Cyrenaica platform, northeast Libya

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Five detailed field sections of 31 m maximum thickness, along 3.5 km distance were measured in the Middle to Late Miocene carbonate succession of Wadi al-Qattarah Formation. Five distinctive sedimentary facies associations were distinguished in the oolitic Miocene shallowing upward sequence. The facies associations are: 1) transgressive phase facies association, 2) Tidal shoal sand bar facies associations, 3) tidal shoal channels facies associations, 4) tidal spillover lobe sand-belt facies associations and 5) interchannel 'bay' pond facies association. Moreover, interchannel flats or levees are regarded as subfacies and incorporated in tidal channels facies associations and interchannel pond filling facies associations. The W-E stratigraphic cross section highlighted geometries and vertical heterogeneity of these facies. The transgressive phase facies associations form a fining upward cycle that is made up of skeletal conglomeratic-lime, limesand fragments of coralline red algae, gastropods, echinoids and other shell fragments. It is graded, laminated and well bedded. This unit rests unconformably above the older Eocene rocks. The tidal sand bar facies associations form a coarsening upward cycle of non-skeletal and skeletal limesand. It comprises ooids, composite ooids, pellets, fragmented coralline red algae, and gastropods. It is laminated, well bedded, and cross bedded with imbrications structures at the base. Tidal shoal channels facies associations form a fining upward cycle of skeletal and non-skeletal conglomeratic-lime, limesand, and pure limemud, and oncolitic-ooids. Gastropods, benthic forams and shell fragments are common in this unit. It is graded, laminated, cross laminate, well bedded, and burrowed at the top. Tidal spillover lobe sand-belt facies associations form a uniform cycle of oolitic grainstone. It has a few echinoids shell fragments. The unit is graded, laminated, cross laminated, well bedded, and cross bedded with lens shape channels that show soft sediment deformation and sharp basal surfaces. This sand waves and sand bars unit is characterized by a composite set of large planar and trough crosses bedding overlain by a small scale planar and trough cross bedding and then capped by wave-formed ripples. Interchannel 'bay' pond facies associations form a coarsening upward cycle of skeletal and non-skeletal limesand includes ooids and pellets. This unit contains bivalves, gastropods, and benthic forams. It is graded, laminated, cross laminated, and well bedded. The heterogeneous oolitic Miocene shallowing upward sequence was deposited in a tidal environment as indicated by its facies associations and the herring-bone cross bedding. This outcrop case study covered a limited portion of the oolitic Miocene sequence that extends for more than 150 km along a dip profile and its excellent 3-D exposure makes it an analogue for ooid grainstone carbonate reservoirs in the subsurface within the Mediterranean region and globally.

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