International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM 2017 vol.17 N11, pages 11-18

Accessory mineralization of dolomite reservoirs as the factor of fluids variability composition

Eskin A., Korolev E., Bakhtin A., Kolchugin A., Barieva E.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© SGEM2017. All Rights Reserved. Oil-saturated Visean dolomite reservoirs were studied from the Tatarstan Republic, east of Russian platform. The main methods of study were X-ray and SEM analysis. Dolomite forms interstratified dense and porous layers with thickness of 0.5-4.0 m in oil-saturated parts of reservoirs. The dolomites are characterized by rhombic form of crystals. Many of them have crystal growth zones as alternate micro-layers with different iron content. In the pore space of dense dolomites find some iron accessory minerals such as siderite and pyrite. There are accessory crystals of quartz and aggregates of microcline in cavernous of porosity dolomites. Based on the heterogeneous composition of dolomites and their accessory minerals associations were modeled stages and hydrochemical parameters variation of fluids before oil charge.

http://dx.doi.org/10.5593/sgem2017/11/S01.002

Keywords

Accessory minerals, Dolomites, Microcline, Pyrite, Quartz, Siderite

References

[1] Bagrintseva K.I., Carbonate rocks are collectors of oil and gas, Moscow, Nedra, Russia, 1977, 231 p.

[2] Bogush I.A., Framboidal pyrite of cementation subzone Kizil-Dere deposit, Doklady AN USSR, Russia, 1977, vol. 236/issue 2, pp 435-437.

[3] Zapivalov N.P., Nanoeffects of the formation of secondary highly productive reservoirs in carbonate rocks, Georesources, Russia, 2010, vol. 34/issue 2, pp 2-5.

[4] Korolev E.A., Morozov V.P., Eskin A.A., Kolchugin A.N., Diagenetic dolomite reservoirs in carboniferous rocks of Melekess depression and South-Tatar arch, Neftyanoe Khozyaystvo - Oil Industry, Russia, 2016, vol. 11, pp 40-42

[5] Lukin A.E., Biogenic-carbonate constructions on the protrusions of decomposed crystalline rocks - a promising type of combined oil and gas traps, Neftegazovaya Geologiya - Theory and practice, Russia, 2007, vol. 2, pp 1-21.

[6] Pankina R.G., Maksimov S.P., Shpilman I.A., Shutov G.Ya., On the genesis of hydrogen sulphide of the Orenburg gas condensate deposit, Geology of oil and gas, Russia, 1971, vol. 1, pp 11-19.

[7] Rozanova E.P., Galushko A.C., Ivanova A.E., Distribution of sulfate-reducing bacteria which use lactate and fatty acids in anaerobic ecotopes of flooded oil reservoirs, Microbiology, Russia, 1991, vol. 60/issue 2, pp 360-366.

[8] Trofimuk A.A., Molchanov V.P., Paraev V.V., Model of formation of oil and gas bearing carbonates (on the example of Kuyumbo-Yurubcheno-Taiga supergiant), Doklady Academy of Sciences of the USSR, Russia, 1999, vol. 364/issue 3, pp 366-368.

[9] Khisamov R.S., Gubaidullin A.A., Bazarevskaya V.G., Yudintsev E.A., Geology of complexed carbonate reservoirs of the Devonian and the Carboniferous, Kazan, Publishing house FEN, Russia, 2010, 283p.

[10] Lighthelm D.J., De Boer R.B., Brint J.F., Schulte W.M., Reservoir souring: an analytical model for H2S generation and transportation in an oil reservoir owing to bacterial activity, in proceedings offshore Europe, Proceedings of the SPE Offshore Europe Conference, United Kingdom, 1991, pp 369–378.