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Genesis and formation oil and gas fields (Azerbaijan)

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Abstract

The large amount of material of HC isotope composition of over 330 samples allow to restore the history of oil and gas deposits formation within the South-Caspian Depression.

Maps of isotope composition changes according to area extent, as well as graphs of HC distribution depending upon stratigraphic age, including rocks, graphs of isotope composition change on sampling depth were compiled for HC study and oil-gas deposits formation. Comparison of mud volcanoes gases, oil and gas fields, gas-hydrates and bottom sediments were conducted. Gases genesis according to M. Shoelle and A. James methodic were studied. Model of area paleoconstruction was studied.

Two stages of formation were distinguished as a result of gases study of various forms of their manifestation (gases of mud volcanoes, oil and gas fields, gas hydrate, bottom sediments) as well as isotope gases composition distribution in area of extent including stratigraphic age of deposits, depth of sampling and application of M. Shoelle and A. James. There were determined basic ways of HC migration as well as estimated oil-gas content prospective.

The first stage has begun in the underlying PS deposits and continued up to PS deposits. At this stage one various kind of tectonic fluctuations can observed.

The second stage of HC formation has started from PS and characterised with a change of geodynamic conditions in region. Avalanche sedimentation, predominance of descending movements over ascending ones promoted the accumulation of thick sediments in PS age. As a result of sediments accumulation and tectonic processes (down warping) in the deep-seated basin led to the complication of thermobaric conditions in the sedimentary series.

The studied chemical and HC gases isotope composition showed that basic source of oil and gas formation is located in the deep areas of central and near-flank parts of depression. HC migration has mainly occurred upward. Study of HC migration trend in time and area as well as areas of generation etc. allows to reveal some structures where there is evidence of HC accumulation with large and gigantic reserves.