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GEOSTRUCTURAL CHARACTERISTICS IN CASPIAN OIL AND GAS FIELDS

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ABSTRACT

The paper aims to describe Geostructural characteristics in Caspian oil and gas fields. By using descriptive method for primary model, synthesis methods and process analysis and analysis of difficulties and discussion, The study of this problem point that, It is important to emphasize that the shallow depth of deposits and even the high density of oil in Caspian oil and gas fields are not decisive for the accumulation of vanadium in them. His low everywhere, most often less than 20 g/t, in single deposits of the South Emba a little more 100 g/t, and only at the Buzachinskiy dome the content of vanadium in heavy oil is consistently high -up to 200-300 g/t. Change in the content of vanadium pentoxide depending on the density of oil in different geostructural zones of the Caspian Sea and Mangyshlak is shown in study. Caspian OGP: This vast oil and gas region is interesting in that a number of large, sharply different in geostructural characteristics blocks of productive strata, with different conditions of oil and gas content and, accordingly, unequal composition and quality oil.

Key words: Toxic elements, composition, oil and gas fields

Introduction

As part of the systematic study of the metal content of oil, which we started in 1987, province, it turned out that many newly discovered deposits or their deposits were not explored for metal content. Therefore, on a single methodological basis, tests were carried out many, specially new deposits, that turned out to be available for these purposes, and subsequently, analytical studies were carried out, mainly in VNIGRI. Their purpose, in those years, there was an assessment of the industrial significance of petroleum V and Ni as raw materials for metallurgy.

In total, the metal content of oil was determined for 37 fields, including 50 deposits provinces. This amounted to, respectively, 42.5% and 25.8% of the deposits explored in the CCI and deposits by 1988. The most promising ones were selected for further detailed exploration of the province's deposits. They turned out to be 42 deposits at 23 fields. All they are associated with heavy oils with a high content of sulfur, tars and asphaltenes.

Research questions:

Question 1: What are related researches and Geostructural characteristics in Caspian oil and gas fields?

1. Methodology

Authors have used qualitative and analytical methods, descriptive method

for primary model, synthesis and discussion methods in this paper.

We also used historical materialism method.

2. Main findings

Analysis of problem :

The Volga-Urals oil and gas field is one of the regions of the world with a high content of metals in oil, including potentially toxic ones. Assessing the overall microcomponent composition oil and bitumen of the Volga-Ural oil and gas field, I have to note their unfavorable environmental appearance due to high contents of V - 50-260 g/t and Ni - 15-80 g/t, especially in the northern and the central regions of the province, where their main resources are concentrated.

Study shows the calculations of the approximate volumes of vanadium extracted from the bowels along with oil. At the same time, only the largest of the developed fields were taken into account and, to a lesser extent, medium ones with the studied content of V.

It should be noted that, in the calculations, slightly underestimated contents of V in oil were taken, focusing on the fact that in the initial periods of production, lighter oils were extracted, with lower metal content predominantly heavier and more vanadium-bearing oils. Apparently in 2005-2010 the weighted average content of vanadium in the

produced oil of the Ural-Volga region will be 60-70 g/t.

The total volume of already mined and, of course, dispersed in the environment V only developed deposits of the Ural-Volga region amounted to 221.5 thousand tons.

We do not have enough nickel contents for similar calculations, but the estimate of its volumes can be performed using the value of the ratio V/Ni, which for oil from the Volga region is most often 3:1.

In this case, about 73.7 thousand tons of nickel were also extracted from the bowels. It must be emphasized that the actual amount of V and Ni significantly exceeds the estimated, since in table 52 the total volumes of cumulative oil production are taken into account, mainly for large deposits of the Ural-Volga region. 2.4 billion tons of oil remained unaccounted for in the calculations, mined by 2000, and with it vanadium and nickel.

Even if we conditionally assume that the content of vanadium for them is equal to the same 55 g/t, which will be rather an understatement than an overstatement, relative to the fact, then we must add to the above figures for about 132 thousand tons of vanadium and 44 thousand tons

of nickel. A significant part of these volumes V and Ni was dispersed in the environment and concentrated in soils and groundwater, near the sites of oil refining and the sale of fuel oil. Nearly all of them are focused on lands of the Central European part of the Russian Federation, i.e. most densely populated regions and only partially, were exported.

Therefore, when it comes to the unfavorable environmental situation in these areas, then a significant contribution to its formation belongs to the extracted and utilized oil with PTE.

Caspian OGP

This vast oil and gas region is interesting in that a number of large, sharply different in geostructural characteristics blocks of productive strata, with different conditions of oil and gas content and, accordingly, unequal composition and quality oil, figure shown.

The main interest for the research topic, according to the degree of difference in geochemical characteristics, represent the oils of the interfluvium of the Volga and the Urals, the South Embensky region and Mangyshlak, studied by the author during two field seasons in 1986-1988

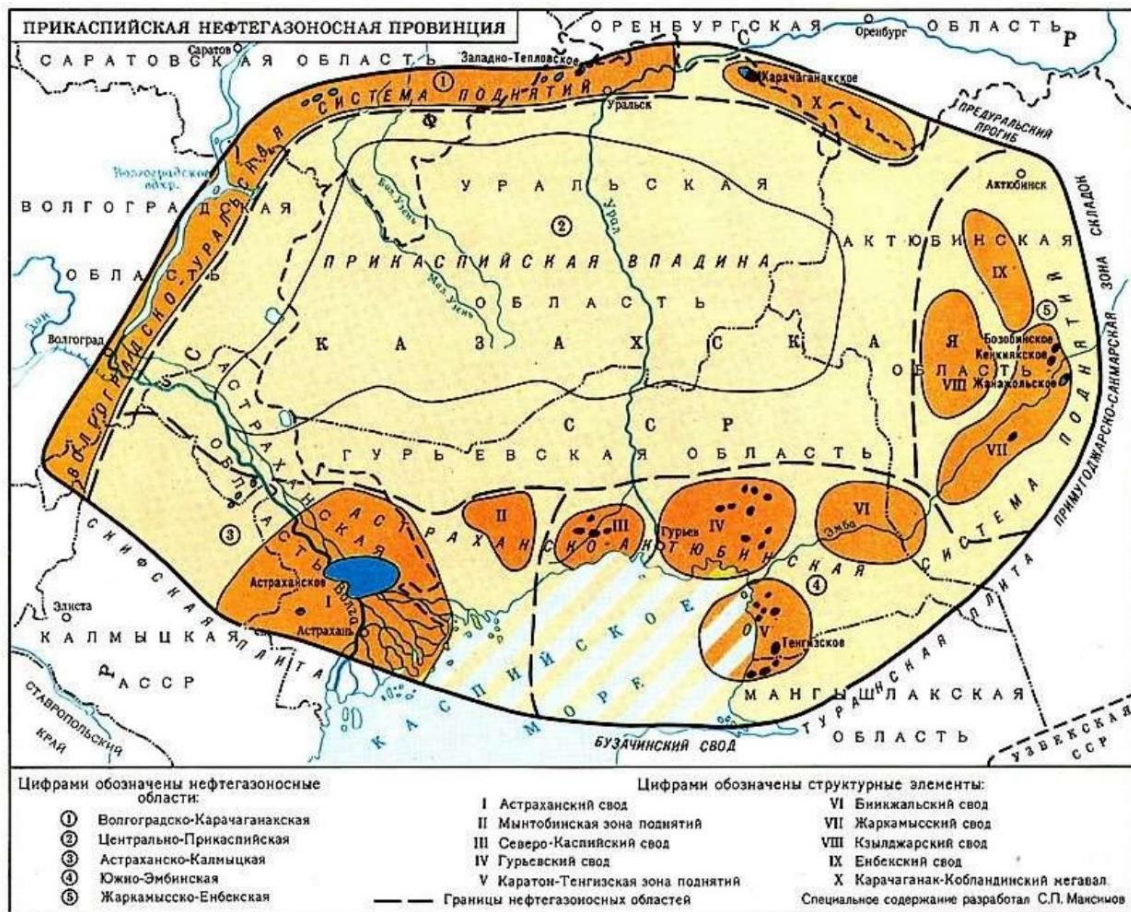


Figure 1 - Caspian OGP

Cretaceous deposits at shallow depths are productive in the interfluvial. Oils are different density, light to heavy, low sulfur, less than 0.5% sulfur, all with negligible the content of V - 1-10 g/t and Ni - 0.7-8 g/t. Characterization, including vanadium concentrations by a number of Caspian deposits are presented.

In the South Embensky region, the main oil reserves were found in pre-salt deposits

Carboniferous - Karachaganak, Tengiz, Kenkiyak, etc. These are light oils. Samples taken and analyzed by us at these deposits showed low V content - 0.8-15 g/t and Ni - 0.5-16 g/t. Here, in the post-salt Mesozoic, oil density slightly increases, and the content of vanadium in them, up to 120 g/t, but mostly 10-30 g/t.



Figure 2 - Field camp. Ridge Karatau. Peninsula Mangyshlak (Sergey Yakutseny ©).

In the southeast of the Caspian Sea, in the Mangyshlak folded NGO, Mesozoic oil in deposit Zhetybay, Uzen, etc. again predominantly light and medium in density, in they have a lot of paraffin, but low V content - up to 2.9 g / t, which is confirmed, incl. and our field and analytical work. Oils of Jurassic deposits in the arch are sharply different from them. Buzachi Peninsula, north of the folded Mangyshlak Karazhanbas, Kalamkas and other large oil deposits were discovered here at shallow depths - 0.25-0.85 km. All oils are here heavy with a high content of V, up to 300 g/t and Ni- up to 164 g/t.

It is important to emphasize that the shallow depth of deposits and even the high density of oil in Caspian oil and gas fields are not decisive for the accumulation of vanadium in them. His low everywhere, most often less than 20 g/t, in single deposits of the South Emba a little more 100 g/t, and only at the Buzachinskiy dome the content of vanadium in heavy oil is consistently high -up to 200-300 g/t. Change in the content of vanadium pentoxide depending on the density of oil in different geostructural zones of the Caspian Sea and Mangyshlak is shown in Figure below.

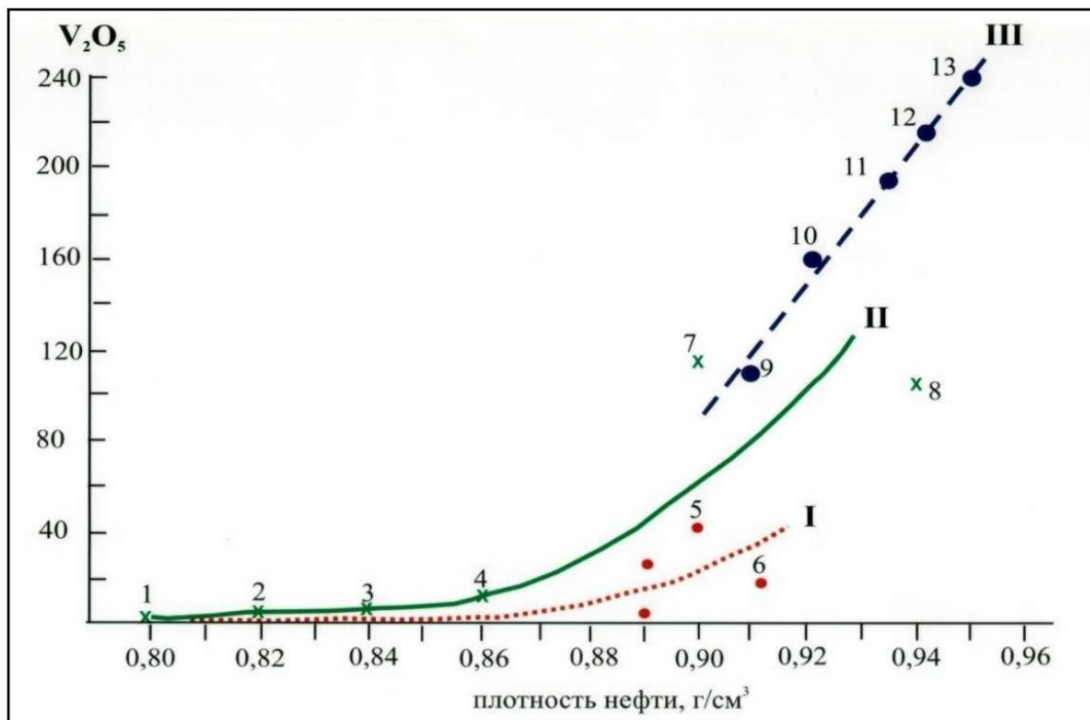


Figure 2- Change in the content of vanadium pentoxide depending on the density oil in various geostructural zones of the Caspian Sea and Mangyshlak

I - Interfluvium of the Volga and the Urals; II - South Emba; III - Buzachinsky vault. Place of Birth (depth, km; S -%): 1 - Tengiz (4.5; 0.7), 2 - Kenkiyak (3.96; 0.39), 3 - Zapadno-Teplovskoye (2.98; 1.30), 4 - Prorva (2.2; 0.78), 5 - Ridge (0.34; 0.57), 6 - Reed (0.4; 0.57), 7 - Plain (3.24; 1.00), 8 - Kara-Arna (1.04; 2.86), 9 - Kalamkas (0.4; 1.82), 10 - Kalamkas (0.45; 1.78), 11 - Sev. Buzachi (0.37; 2.51), 12 - Karazhanbas (0.42; 2.30). 13 - Karazhanbas (0.25; 2.44)

3. Discussion and conclusion

Insufficient amount of analytical data and their too wide territorial scatter do not allow us to discuss patterns of changes in their distribution. But

noteworthy are the elevated contents of As and Hg recorded in the ashes.

In general, assessing the possibility of toxicological impact on the environment of oil Caspian region and the sale of products of their processing, it should be noted a relatively low PTE enrichment for subsalt productive deposits and high for oil

Therefore, when it comes to the unfavorable environmental situation in these areas, then a significant contribution to its formation belongs to the extracted and utilized oil with PTE.

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Conflicts of interest

There is no conflict of interest

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