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Environment effects and Composition and properties of natural hydrocarbons

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Abstract— *The objective of the paper is to figure out What are Composition and properties of natural hydrocarbons And Environment effects. By using descriptive method for primary model, synthesis methods and process analysis and analysis of difficulties and discussion, We have already noted that The solubility of oils depends not only on their properties and composition, but also on the properties solvent and its temperature. The lighter the oil, the higher the temperature and the lower the salinity of the water, especially when hydrocarbonate-sodium composition, the higher the solubility of oil in water. We emphasize that in the field of environmental impacts on the environment with processes simulating fractional distillation of oil, one has to deal not only with refineries or when utilizing heavy fractions - fuel oil, tar, etc., but also when extracting heavy high-viscosity oil by reservoir combustion.*
Keywords— ***problems, environment, properties, natural hydrocarbons, composition***

I. INTRODUCTION

In the European part of Russia, the residual fund of oil resources is dominated by oil with increased and high density, enriched with potentially toxic elements (PTE). The study and accounting of the levels of natural and technological enrichment of oil and gas feedstock PTE is able to prevent or reduce the negative impact on the natural environment. Availability of information on the composition and content of impurities biotoxicants in oil and gas raw materials - a necessary and sufficient condition for the development and application of protective measures at the stage of selecting technologies for extraction, processing and disposal oil and gas.

The paper presents related studies and analysis with Composition and properties of natural hydrocarbons And Environment effects.

Research questions:

Question 1: What are related researches and What are Composition and properties of natural hydrocarbons And Environment effects?

II. 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.

III. MAIN FINDINGS

Composition and properties of natural hydrocarbons

Oil and condensates physical properties. Oil is a viscous liquid that varies in color from light amber to even milky to deep black. The heavier the oil, the darker the color. Condensates practically colorless.

Heavy oil occupies a special place among the oil, differing both in properties and in composition. Heavy oil is dominated by tar-asphaltene compounds with heavy molecular weight, consisting of complex polycyclic molecular systems, often enriched with PTE. By the early 1990s, proven reserves of heavy oil and natural bitumen in the world exceeded the reserves of conventional oil by 1.6-1.8 times. heavy oil resources concentrated in Venezuela, Canada, Russia and the USA, table 1, figure 1.

Table 1 - Recoverable resources of heavy oil, billion tons

Region, country	**Accumulated**	**Known**	**Undiscovered**	**Final**
	booty	**resources**	**resources**	**resources**
North America, incl. USA	1.7	3.5	3.2	8.4
	1.6	2.8	0.4	4.8
South America, incl.	0.6	44.0	3.5	48.1
Venezuela (K ret = 0.15)	0.5	43.8	3.4	47.7
Zap. Europe	0.06	1.2	0.03	1.3
Middle and Middle	1.8	5.3	4.0	11.1
East, incl. Iraq	1.6	3.5	3.0	8.1
Africa	0.05	0.7	0.2	0.95
The rest of Asia,	0.2	1.5	0.4	2.1
Australia and Oceania				

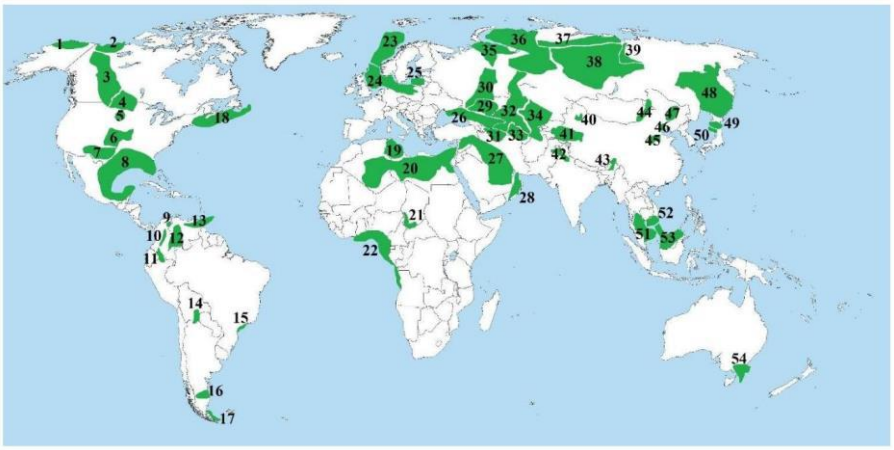

Fig.1. The main oil and gas bearing basins of the world with reserves (resources) of heavy,

high viscosity oil:

1. Arctic slope of Alaska; 2. Beaufort; 3. Western Canadian; 4. Williston; 5. Hannah Laramie; 6. West Inner; 7. Perm; 8. Gulf of Mexico; 9. Maracaib; ten. Upper and Middle Magdalena; 11. Upper Amazonian; 12. Barinas Apure; 13. Orinoksky; fourteen. Central Pre-Andean; 15. Santos; 16. San Jorge; 17. Magellanic; 18. Novoshotladsky; 19. Tunisian-Sicilian; 20. Sahara-Libyan; 21. Shari; 22. Gulf of Guinea; 23. Norwegian Sea; 24. Central European; 25. Baltic; 26. North Caucasian; 27. the Persian Gulf; 28. Omano-Makransky; 29. Caspian; 30. Volga-Ural; 31. South Caspian; 32. Turan; 33. Amudaryinsky; 34. Afghan-Tajik; 35. Timano Pechorsky; 36. West Siberian; 37. Yenisei-Anabar; 38. Leno-Tunguska; 39. Leno Vilyuisky; 40. Dzungarian; 41. Tarim; 42. Punjabi; 43. Assamese; 44. Tamtsaksko Hailar; 45. Bohai; 46. Liaohe; 47. Songliao; 48. Okhotsk; 49. Ishikari; 50. Akita; 51. Siamese; 52. Vung Tau; 53. Sarawak; 54. Gipsland.

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World geological reserves of heavy hydrocarbons of all categories are estimated at 641 billion tons (4.7 trillion barrels) of oil equivalent. By 2019 proven reserves of heavy oil and natural bitumen in the world have grown. Only in the Orinoco Basin in Central America geological resources of heavy oil, bitumen and oil in oil sands are not predicted less than 600 billion tons, and in terms of reserves 177.9 billion tons. For comparison, high-viscosity oil reserves in the Russian Federation amount to 6.236 billion tons. These figures indicate the forthcoming volumes of development heavy oil.

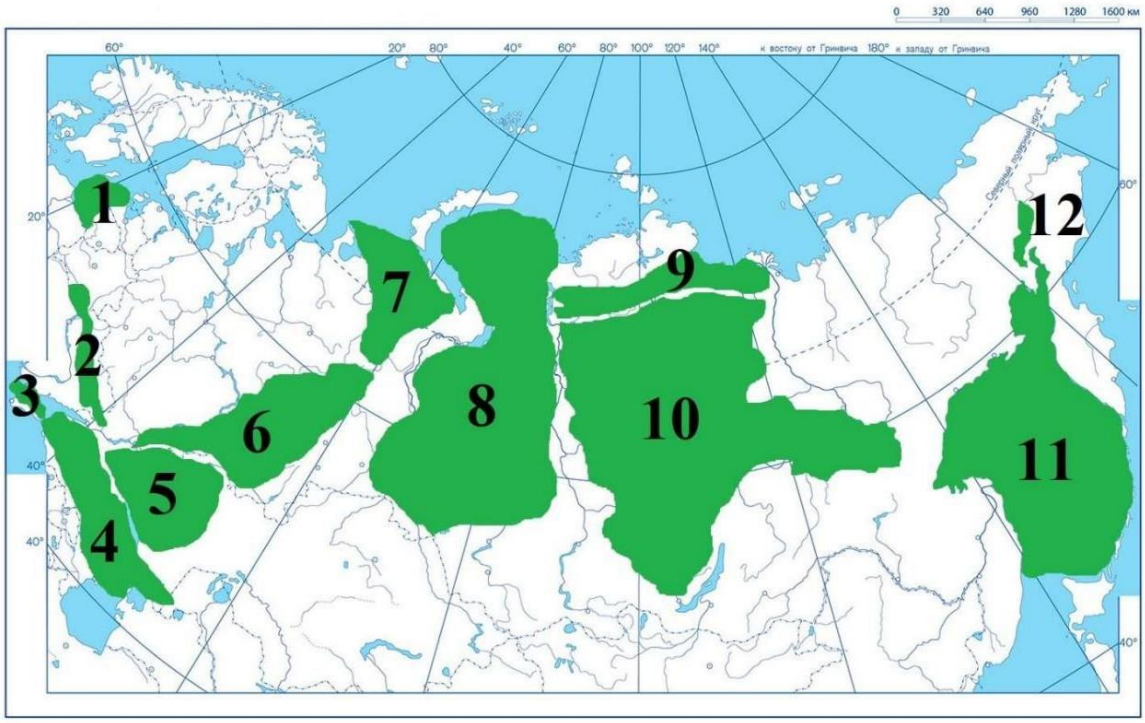

Fig.2 - Scheme of location in the Russian Federation of the main deposits of heavy oil and bitumen accumulation zones:

1. Baltic; 2. Dnieper-Pripyat; 3. North Crimean; 4. North Caucasian; 5. Caspian; 6. Volga-Ural; 7. Timan-Pechora; 8. West Siberian; 9. Yenisei-Anabar; 10. Leno-Tunguska; 11. Okhotsk; 12. Penzhinsky.

Explored reserves of heavy oil in Russia, with a density of more than 0.904 g/cm^3 amounted to beginning of 2004 13.8% of their total value. They are concentrated in three main provinces, figure 17:

ÿ Timan-Pechora - 18.2%.

In 2003, 4.6% of the total oil production in Russia was produced, but almost the entire volume of their production is 90% - falls on the European, the most populated part of Russia. to be expected and further increase in heavy oil production in the European part of Russia, as reserves discoveries of high-quality oil reserves here are no longer large, and the existing infrastructure and growing volumes of consumption need to maintain production.

In the same wide range as the density, the viscosity of oil also changes - the most important indicator of their extraction efficiency (MPa s under standard conditions):

ÿ with low viscosity - less than 5;

ÿ low viscosity - 5-10;

Since viscosity depends on many parameters, primarily on the composition of the oil and temperature, the degree of their gas saturation, etc., then in reservoir conditions the viscosity is significantly lower and approaches in terms of characteristics, averaging 2.5 MPa s, usually not exceeding 30 MPa s. - Ashalchinskoye and Yaregskoye field of extra-viscous oil - more than 30 MPa s.

The latter is due to the fact that an increase in temperature from standard 20 ° C to, for example, 50 ° C in reservoir conditions reduces the viscosity of heavy oil by 4-5 times, while light oil is only 1.5 times.

Basically, the high viscosity of oil is determined by the high content of resin in them-asphaltene fractions, but sometimes also paraffins. According to the content of paraffins, three oil groups (%):

ÿ low paraffin - less than 1.5;

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ÿ paraffinic - 1.5 - 6.0;

ÿ highly paraffinic - more than 6.0.

According to the content of resin-asphalten fractions (%):

ÿ ordinary oil - 10-20;

ÿ heavy oil - 21-35;

ÿ malts - 35-60;

ÿ natural bitumen - 60-98.

The solubility of oils depends not only on their properties and composition, but also on the properties solvent and its temperature. Oil is highly soluble in hydrocarbons and, especially, carbon dioxide, so the latter are often considered as a carrier medium for oil when they migration, especially in high-temperature conditions of deep subsurface. They are slightly soluble in water - up to 130-160 cm3 / m3 .

The lighter the oil, the higher the temperature and the lower the salinity of the water, especially when hydrocarbonate-sodium composition, the higher the solubility of oil in water. Smolo asphaltene fractions of oil are slightly soluble not only in water, but also in gases. Hence there are more low migration ability, further aggravated by the large size of their molecules.

IV. DISCUSSION AND CONCLUSION

In the course of atmospheric precipitation, the air environment is purified and metals biotoxicants settle, are deposited by soils, surface and ground waters, accumulated by local biota. Zones of entry of such biotoxicants into the environment located directly near fuel and energy facilities processing and consuming hydrocarbons raw materials, mainly fuel oils enriched with metals

We emphasize that in the field of environmental impacts on the environment with processes simulating fractional distillation of oil, one has to deal not only with refineries or when utilizing heavy fractions - fuel oil, tar, etc., but also when extracting heavy high-viscosity oil by reservoir combustion. In this situation, the temperatures developed in layer, in some places exceed 500ºÿ. The fluid system in the reservoir becomes aggressive steam-gas-hydrocarbon substance with pronounced solvent properties and a large pressure. Its retention within the reservoir being developed is difficult, light fractions easily spread through other formations with favorable reservoir properties, sometimes breaking out to the surface or into near-surface horizons through old wells, of which there are many in such areas. It is the most environmentally hazardous a production method based on in-situ fractional distillation of oil.

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