Mediterranean Journal of Basic and Applied Sciences (MJBAS)
Volume 6, Issue 4, Pages 01-06, October-December 2022

Composition and Characteristics in Hydrocarbons, Oil and Gas Fields

Trinh Quoc Vinh[1], Dinh Tran Ngoc Huy, MBA[2] & Sergey Yakutseny[3]

[1]Gubkin Russian State University of Oil and Gas, Moscow, Russia, Email: vinhtq95@gmail.com [2]Banking University HCMC Ho Chi Minh city Vietnam – International University of Japan, Japan, Email: dtnhuy2010@gmail.com [3]Gubkin Russian State University of Oil and Gas, Moscow, Russia, Email: spyakutseni@yandex.ru

DOI: https://doi.org/10.46382/MJBAS.2022.6401

Article Received: 03 August 2022 *Article Accepted: 11 October 2022* *Article Published: 13 November 2022*

ABSTRACT

The paper aims to describe Composition and characteristics in hydrocarbons, 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 No less active influence on the properties and composition of oil, including their metallogeny, was also exerted by inversion processes. They manifested themselves especially brightly in the Varandey-Adzva zone.

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.

Keywords: *Hydrocarbons, Composition, Oil and gas fields.*

1. 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: Composition and characteristics in hydrocarbons, oil and gas fields?

2. 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.

3. MAIN FINDINGS

Analysis of problem

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, especially 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.

The main areas of metal-bearing oil and bitumen in the province are:

Varandey-Adzvinskaya structural zone, south of the Kolvinsky megaswell, south of Shapkinsko Yuryakhinskaya zone and Khoreiverskaya depression, Velyu-Tebuksky oil and gas region, Michayu-Pashninsky oil and gas region and the north of the Ukhta-Izhemsky swell.

The highest concentrations of metals are found, as a rule, in oil deposits. The upper part of the section - up to 1.5, less often 2.5 km, regardless of stratigraphic age enclosing deposits. Information on the content of metals in individual deposits of oil and bitumen Chambers of Commerce and Industry are shown.

The performed analysis showed that, as in many other regions of the world, where heavy oils, two main types of environments for finding the most metal oil.

The first is associated with hypergenesis zones, moderately mineralized waters in the zones increased infiltration and in conditions of shallow depths, mainly up to 1.5 km. Second - with migrating deep formation waters spreading through zones tectonic dislocations from great depths. These waters are mainly hydrocarbonate sodium type, enriched with microcomponents. Oils associated with the first type of water, confined to the upper part of the section. Among them is a heavy metal-containing Permian-Carboniferous oil deposit of the Usinskoye field at a depth of 1260 m, as well as Permian, medium-density oil - 0.887 g/cm^3 of the Lemyuskoye field - 650 m, etc.

Oils associated with the second type, are distributed at great depths, up to 3.5 km, for example, the zone Srednemakarikhinsky deposit. Deposits of metal-bearing oil are often confined to regional and local faults, zones of decompression, contributing to migration of metal-bearing fluids or oil deposits. In particular, the formation of permo carbon deposits at the Usinskoye field, many researchers associate with migration oil from the Devonian by dislocation zones. Sources of metals in oil can be both sedimentary cover rocks and crystalline basement. But there may also be hydrothermal metallic fluids. The most active for the transport of metals are medium and low-mineralized waters of bicarbonate-sodium composition.

The mineragenic situation within the CCI is the same as in the Volga-Ural oil and gas field and others regions is determined by the foundation, its framing along the boundaries of the NGB and subsequent hydrothermal and volcanic processes, more actively manifested in the TPP than in Ural-Volga region. For the Chamber of Commerce, the frame is the ancient Timan and the rejuvenated Urals with Pai-Khoi. Both regions with active ore occurrences, including those with industrial significance. The most active deep removal of metals into the

sedimentary cover occurred in epochs tectonic movements. For rift zones, the TPP is mainly Late Devonian. Forces the main composition break through D1 + 2.

Paikhoi fold-thrust zone with Precambrian basement began to form still in the Permian, together with the Uralides, and continued until the Cretaceous.

Many thrusts were overturned to the west, creating a complex system of disturbances in the cover. Their the intensity decreases only towards the Korotaikhinskaya depression. Sharp deployment sediments activated hydrothermal processes, and also disrupted the mode of existence HC, their ontogeny, changed the metallogenic appearance of the cover and, in general, destroyed formed accumulations of hydrocarbons, as evidenced by multiple high-metal bitumen occurrences in the north-east of the province.

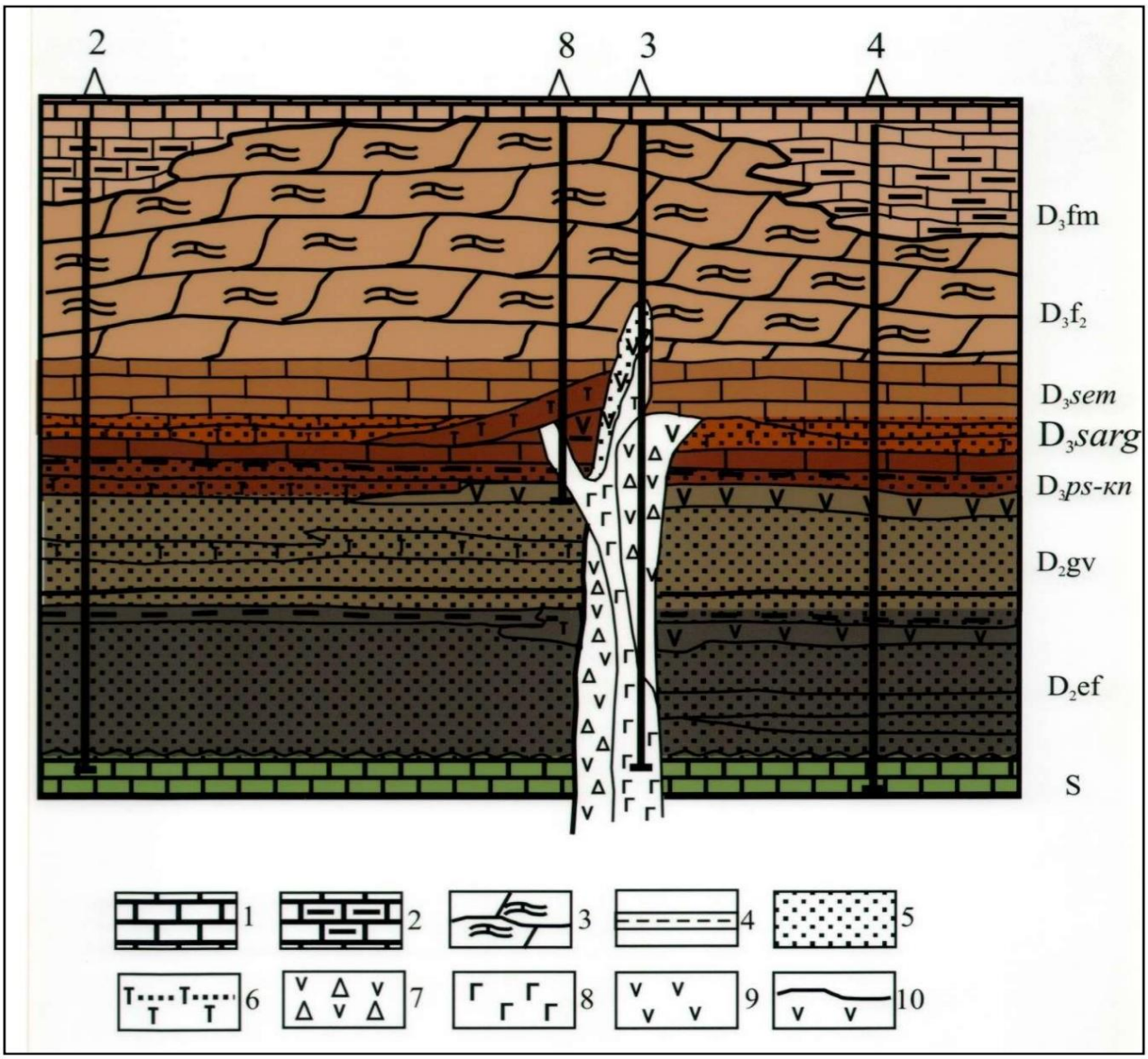

Figure 1. Scheme of the structure of the Isakovskaya volcanic structure (L.T.Belyakova, T.I.Kushnareva 1986)

1 - limestone, dolomite; 2 - clayey limestones; 3 - reef limestones and dolomites; 4 - clay; 5 - sandstones; 6 - tuffites, tuffs; 7 - lava breccias; 8-extrusive dolerites; 9-granophires; 10 - strength of dolerites.

Mediterranean Journal of Basic and Applied Sciences (MJBAS)
Volume 6, Issue 4, Pages 01-06, October-December 2022

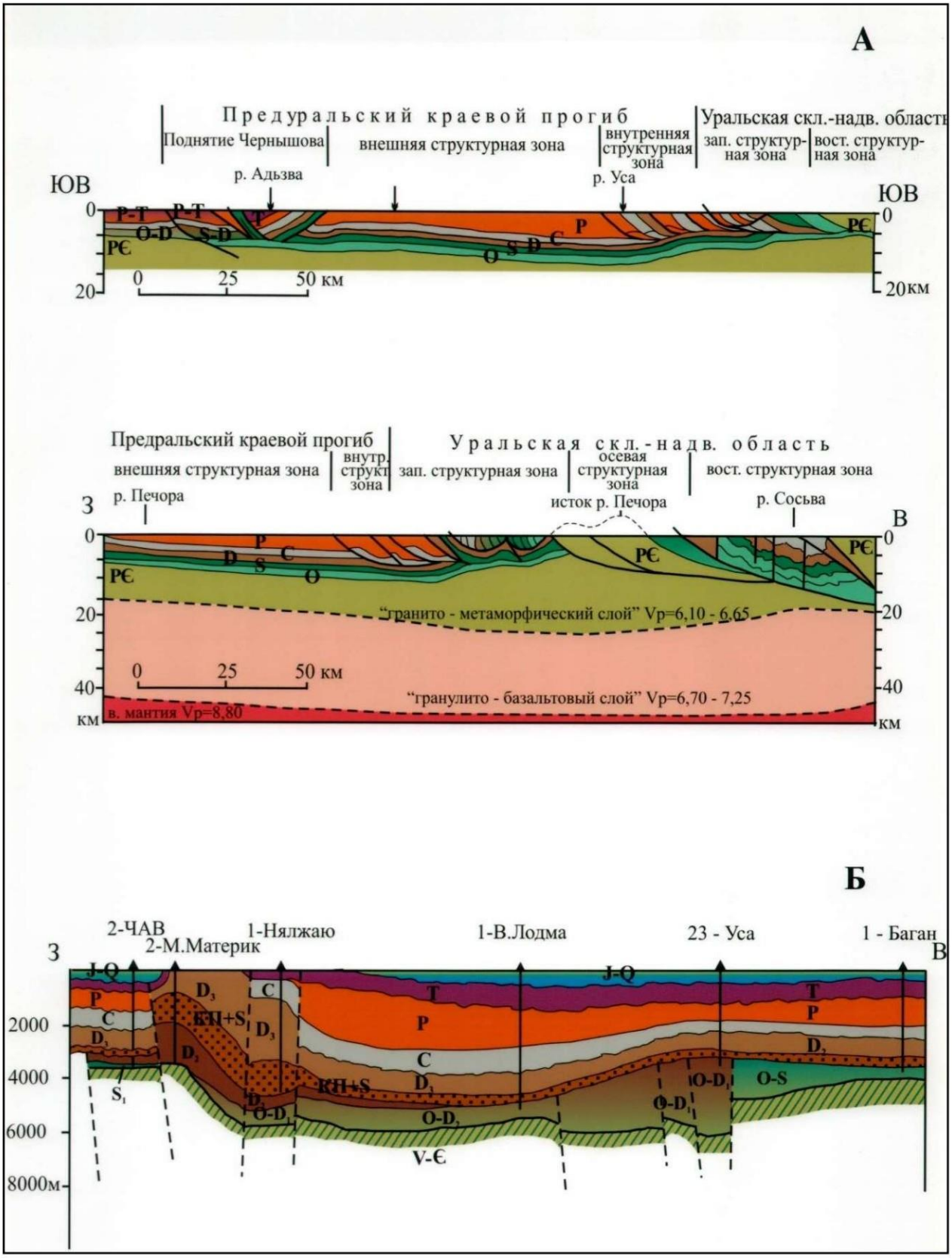

Figure 2. Consolidated geological sections:

A - Northern Urals and Cis-Urals; B - north of the Pechoro-Kolvinsky aulacogen

(N.N. Timonina, V.V. Yudin, 1994)

4. DISCUSSION AND CONCLUSION

No less active influence on the properties and composition of oil, including their metallogeny, was also exerted by inversion processes. They manifested themselves especially brightly in the Varandey-Adzva zone.

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.

Declarations

Source of Funding

This research did not receive any grant from funding agencies in the public, commercial, or not-for-profit sectors.

Competing Interests Statement

The authors declare no competing financial, professional, or personal interests.

Consent for publication

The authors declare that they consented to the publication of this research work.

Availability of data and material

The authors are willing to share the data and material according to relevant needs.

References

Abbas Abdollahi, Balachandran Vadivel, Dinh Tran Ngoc Huy, Maria Jade Catalan Opulencia, Pham Van Tuan, Abbas Abd Ali Abbood, Zarina Nasirova, Supat Chupradit, Kelly A Allen, Olga Beloglazov I et al. (2020). The Concept of Digital Twins for Tech Operator Training Simulator Design for Mining and Processing Industry, Eurasian Mining, 3. DOI:10.17580/em.2020.02.12.

Boschert, S., Rosen, R. (2016). Digital Twin-The Simulation Aspect. In Mechatronic Futures; Hehenberger, P., Bradley, D., Eds.; Springer: Berlin/Heidelberg, Germany, pp. 59–74.

Haag, S.; Anderl, R. (2018). Digital twin-Proof of concept. Manuf. Lett., 15, 64–66.

Defelipe & Alcalde. (2022). Towards a digital twin of the earth system: geo-soft-core, a geoscientific software & code repository, Frontiers in Earth Science 10:828005. DOI: 10.3389/Feart.2022.828005.

Do Thu Huong, Dinh Tran Ngoc Huy, Nguyen Thi Hang ,Pham Thi Huyen Trang, Duong Thi Ngu. (2021). Discussion on Case Teaching Method in a Risk Management Case Study with Econometric Model at Vietnam Listed Banks – Issues of Economic Education for Students, Review of Int. Geographical Education, 11(5).

Dmitrieva & Romasheva. (2020). Sustainable Development of Oil and Gas Potential of the Arctic and its Shelf Zone: The Role of Innovations, J. Mar. Sci. Eng. 2020, 8, 1003; DOI: 10.3390/jmse8121003.

Official website of the Ministry of Energy of the Russian Federation. Oil production raw materials. In the link: URL https://minenergo.gov.ru/node/1209.

G. K. Bikmukhametova, A. I. Abdullin, E. A. Emelyanycheva, R. I. Sibgatullina, L. I. Mullakhmetova, A. M. Mustafina, (2016). Natural bitumens. Prospects for use. Herald technological university, V.19, No. 18, S.31–36.

Hodgkinson, J.H, & Elmouttie, M. (2020). Cousins, Siblings and twins: a review of the geological model's place in the digital mine, Resources 2020, 9(3), 24. https://doi.org/10.3390/Resources9030024.

I Patra, DTN Huy, F Alsaikhan, MJC Opulencia, P Van Tuan (2022). Toxic effects on enzymatic activity, gene expression and histopathological biomarkers in organisms exposed to microplastics and nanoplastics: a review, Environmental Sciences Europe 34(1), 1–17.

Ivanov V.V. (1994). Ecological geochemistry of elements. Reference book in 6 volumes, 1994, M. "Nedra".

Kalidindi S.R et al. (2022). Digital Twins for Materials, Front. Mater., 2022, Sec. Computational Materials Science. https://doi.org/10.3389/fmats.2022.818535.

Lari, K.S et al. (2022). Towards a digital twin for characterising natural source zone depletion: A feasibility study based on the Bemidji site, Water research, 208. https://doi.org/10.1016/j.watres.2021.117853.

Litvinenko, V.S. (2020). Digital Economy as a Factor in the Technological Development of the Mineral Sector, Natural Resources Research volume 29, 1521–1541.

Mei, H., Haider, M., Joseph, R., Migot, A., and Giurgiutiu, V. (2019). Recent Advances in Piezoelectric Wafer Active Sensors for Structural Health Monitoring Applications. Sensors 19 (2), 383. DOI: 10.3390/s19020383.

Modern problems of studying and preserving the biosphere, vol. II, Living systems under external impact. / Ed. Krasnogorskoy N.V. - St. Petersburg, Gidrometeoizdat, 1992.

Pronin A.P., Golevoy R.V. (2009). Gas respiration of the Earth and its global ecological consequences. Chistaya Voda: problems and solutions, Publisher: JSC "Institute Microeconomics (Moscow), No. 1, 2009, pp. 37–40.

Tynkkynen (2019). The climate is changing Russia: from a hydrocarbon to an ecological culture, Social and Political Science 2019. DOI: https://doi.org/10.4337/9781788978606.00012.

Z Wang, M Akhavan, MNI Kashkouli, MJC Opulencia, DTN Huy. (2022). Sustainable wastewater management from shale oil production wells: emerging opportunities and barriers, Applied Water Science 12 (7), pp. 1–6.

Cite this article

Trinh, Q.V., DTN Huy & Sergey, Y. Composition and Characteristics in Hydrocarbons, Oil and Gas Fields. Mediterranean Journal of Basic and Applied Sciences 6(4), 01–06 (2022).