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Research Article

EVALUATION OF THE PROSPECTS OF THE DENGIZKUL UPLIFT AND ADJACENT AREAS USING PETROPHYSICAL METHODS

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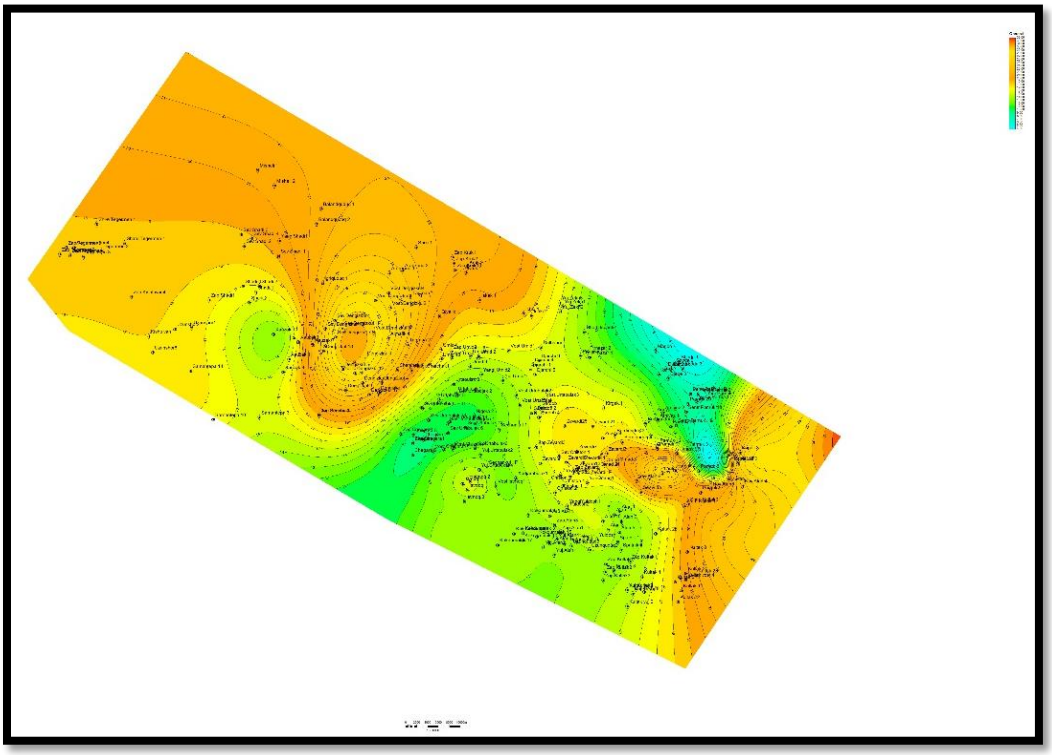
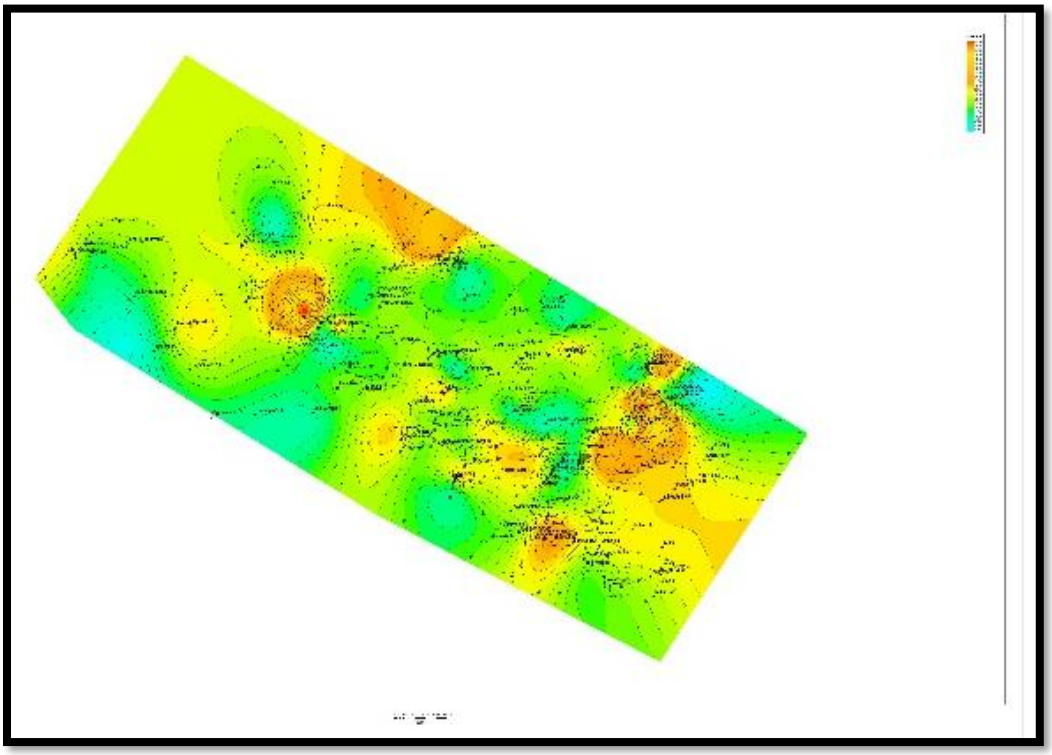
ABSTRACT
The Bukhara-Khiva oil and gas region is the main source of growth in oil and gas reserves in Western Uzbekistan. Despite the high geological and geophysical knowledge of the Bukhara-Khiva oil and gas region, the possibilities for discovering new oil and gas fields have not yet been exhausted. The goal of this article is "Forecasting the productivity of previously identified and searching for new promising objects by electrical exploration in the eastern part of the Dengizkul uplift."

Keywords: *Electroresearch Magnetotelluric Method (MTS), Geophysics, Common Depth Point (CDP), VSP-S, Chart, Anomaly*

INTRODUCTION
Until now, significant efforts have been made to search for hydrocarbon deposits in the Bukhara-Khiva oil and gas region. Many deposits have been discovered using many geophysical methods. To date, the entire area of the Bukhara-Khiva oil and gas field has been covered by a geological survey on a scale of 1:500,000, and geological surveys on a scale of 1:200,000 and 1:100,000 have been carried out in a number of prospective areas. In the territory of the Bukhara-Khiva oil and gas region, geological research for the search for hydrocarbon deposits began in 1929, and since 1936, exploratory and constructive drilling has been carried out. Researches have been conducted over the years by many famous geologists (K. A. Sotiriadi, S. I. Ilyin, O. S. Vyalov, P. I. Mikhailitsky, A. G. Babaev, etc.).
According to the constructive drilling data of 1935-1936, O. S. Vyalov conducted stratigraphic studies and identified the Chorzou tectonic plate as an independent stratigraphic unit. In order to study the research area, electroresearch magnetotelluric method (MTS), common depth point (CDP) and vertical seismic profiling (VSP) methods, as well as temperature change indicators (thermometry) were used.
According to the purpose of VSP works, seismic surveying is divided into 3 methods:
• VSP-S (standard) method;
• VSP-DGS (determining the geological section) method;
• VSP-CDP (common depth point) method;
The VSP-S (standard) method is used to determine the velocity characteristics of the rocks in the geological section of the well and stratigraphically connect the return horizons. In this case, the research work is mainly carried out by digging a borehole or dug wells in the selected area.
Figure 1. Map of the distribution of relative resistance on the XIV-horizon
The method of work is carried out by lowering the 6- or 5-component probe to the bottom of the well and raising it up every 15 m and 75 m in the VSP-S (standard) method. In this case, the distance between each receiver in the array is 15 m. 3 different velocities, i.e. layer velocities, interval velocities and average velocities, are determined according to the geological section. Indicators of temperature change with depth, velocity values of layers, and specific resistance values were studied for the entire research area.
Studies were carried out on the main return horizons XIV and XV horizons. According to the results of the study, anomalous maps were made in the XIV horizon.

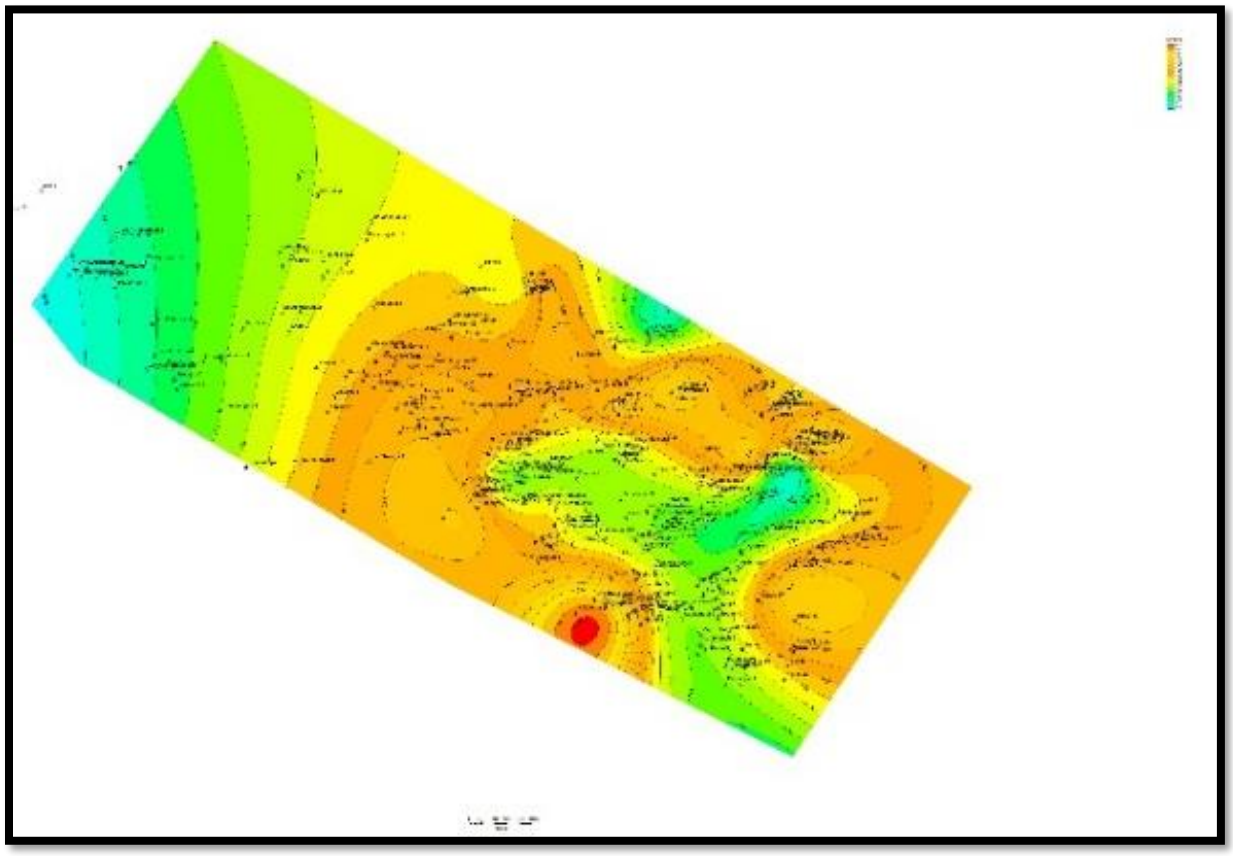




According to it, resistance values were found to be high in the XIV horizon in the Alan, New Alan, Kultak, Kapali, North Kultak fields located in the north-eastern and south-eastern parts of the Dengizkul rise and

in the Dengizkul, Charchak, Igrikuduq, Shadi, Khauzak fields in the central part of the Dengizkul rise. The lowest resistance values were observed in the XIV-horizon in the fields of Marjon and Shoda.
Figure 2. Map of temperature distribution on the XIV-horizon
It was found that the temperature values for the XIV-horizon are almost the same for the entire research area, only in the areas of New Alan, Kultak in the maximum indicators. The lowest temperature indicators were observed in Marjon, Shoda, and Jebe areas.
According to the 15th horizon, the relative resistance values showed maximum values in areas such as Pamuk, Berdikuduq, Alan, Kultak, Dengizkul, Zevardi, Istmok, Uzunshor. Temperature indicators for this horizon reached high values in areas such as Uzunshor, Istmok, Alan, Kultak, Dengizkul, Kukdumalok.

RESULTS AND DISCUSSION
According to the obtained results, it is possible to predict the presence of hydrocarbon accumulations in the fields with high resistance, where the velocity indicators and resistance values are high, and according to the characteristics of the temperature values.
Figure 3. Map of possible distribution of hydrocarbon accumulations on the XIV horizon
Areas such as Pamuk, Kokdumaloq, Dengizkul, Urtabuloq, Kultak, Shadi can be evaluated as promising oil and gas fields.
Cretaceous deposits in the Bukhara-Khiva oil and gas region have been well studied only in the area of the



Bukhara tectonic plate, where many deposits have been discovered. Chalk deposits in the southern parts of the Bukhara-Khiva oil and gas region, that is, in the area of the Chardjoy tectonic step, have not yet been explored by targeted exploration. At the same time, such a flow of hydrocarbons was considered impossible

in the Chardjoy tectonic step, because there was considered to be a barrier in the form of a thick layer of salt-anhydrite deposits between the Jurassic and Cretaceousdeposits.

CONCLUSION

In conclusion, it can be said that the Dengizkul uplift, which is located in the Jordjou tectonic step of the Bukhara-Khiva oil and gas region, has high prospects for hydrocarbon accumulations. In particular, the prospects for oil and gas in areas such as Pamuk, Kokdumaloq, Dengizkul, Urtabuloq, Kultak, and Shadi were confirmed using complex geophysical methods.

The obtained results of modeling and reinterpretation of electrical exploration data at reference objects made it possible to formulate a number of criteria regarding the identification of oil and gas promising anomalous zones in Jurassic deposits and tracing the surface of a high-resistivity reference horizon identified with Paleozoic deposits: in the area of hydrocarbon deposits on the 1D inversion section and in plan view in the depth range corresponding to the productive formation, a high-contrast anomalous zone of increased and decreased resistivity is localized; in the marginal (contact) parts of the deposit, narrow-band increases in the parameter ρmk are observed (the intensity of narrow-local maxima can be different); in the inner and outer contour parts of the deposit, narrow-band, sharply expressed minima of the parameter ρmk are observed; the upper part of the section, where there are no local heterogeneities, is characterized by the calm behavior of the ρmk isolines, eflecting the almost horizontal occurrence of the layers here. Only in the Lower Cretaceous sections is there a complication of the field, possibly associated with the migration of hydrocarbons and secondary changes in rocks under the influence of hydrocarbons.

REFERENCES

Anonymous (2000). Methodological guidelines for quantitative and economic assessment of oil, gas and condensate resources, 189.

B.B. Sidikov, N.SH. Xayitov (2012). On the problem of discovering new fields with large and medium hydrocarbon reserves in Uzbekistan. Current issues of oil and gas geology and geophysics and possible ways to solve them, 40-41 p.

Kukol Z (1987). Speed of geological processes, Mir, 246 p.

Nugmanov A.X (1981). – On the dependence of oil and gas productivity of traps on the time of their formation. *Uzbekistan Geology Journal*, 5 p.

Xamrabaev I.X., Rijkov O.A., Axmedjanov M.A., Borisov O.M., Xaimov R.N., Zuev Y.N., Shein V.S (1964). On the oil and gas potential of Paleozoic deposits of Uzbekistan and adjacent territories // geology and minerals of Uzbekistan, Tashkent, 34-47 p.