

## **LITHOLOGIC AND FACIAL CHARACTERISTICS OF THE MEDIUM AND OIL AND GAS POTENTIAL OF PRODUCTIVE SUITE AT SANGACHAL-DENIZ - DUVANNY-DENIZ - KHARA-ZIRYA – BULLA-DENIZ AREA**

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The study of the lithologic & facies features of the medium of V, VII and VIII horizons of the Productive Suite (PS) based on integrated seismic data and well log analysis enabled to highlight some aspects of sedimentation, and also to identify some oil and gas potential area that has great practical importance in the further field development. As is known, logging measurements provide information about vertical changing of the geological section in the well, i.e. we have a definite information about the vertical change at one particular point. Seismic data, in turn, make it possible to judge the geological structure of the area in lateral direction. Another source of information are core data and grain sizing (granulometric) of the rocks, which are characterized separate intervals of the well section. The grain size distribution of the rocks usually increases upwards along the section and from the sea to the coastline direction. On the specified part of the sea level fluctuation cycle can form three types of layers: progradation or regressive (formed when the sea recedes), retrogradation or transgresses (formed when the sea sets in) and aggradation with a relatively stable sea level position. Logging data analysis of the existing wells in the area of study and drawing up the correlation scheme give us an opportunity to get a foretaste of lithologic replacement of the medium and give an idea of separate layers and formation thickness variance at near borehole environment and interwell space. Rocks structure changes are associated with periodic sea level variation as well as with the rivers activity that take place in the area of study. Besides, a number of seismic attributes (for example, Sweetness, RMS, etc.) were calculated and analyzed to define the relationship between the amplitude (which is the maximum variation of the seismic signal) and the geological features of the production intervals. Amplitude analysis are one of the methods for predicting lithological replacement of the producing zone according to the seismic data. The main parameter for calculating seismic attributes is the window range characterizing reflection from the target horizon. Amplitudes were calculated in a wide range (window range from 80 to 100 milliseconds), which characterizes the production intervals a potential reservoir. Amplitude seismic data analysis provides certain opportunities for the study of challenging objects that are not evident at usual interpretation process. The segment of seismic section, characterized by a bright amplitude spot, in most cases coincides with the distribution of sand bodies observing at the logging data, and in some cases the

observed amplitude anomaly indicates the presence of a gas-bearing zone confirmed by production wells.

Consequently, the amplitude map variation through the AOI describing the maximum values of the upper part of productive zone are represented by yellow and orange colors and specified in this case the distribution of sand bodies.

As a result, oil and gas presence prediction was done based on results of integrated seismic & well logging data. Based on the sharp changes of PS deposits through the area and across the section, separate facies, each of which is characteristic of a local part, were isolated. Identifying the sediments types, the supply source and the paleoriver activities, that delivered sedimentary material, were taken into consideration. According to the obtained results, each lithological facies type has its corresponding distribution area. In the AOI of the Caspian Sea basin, besides great paleoriver activities such as paleo-Volga and paleo-Kura, small rivers activities (for example, Paleo-Jerankechmez), which played a significant role in the distribution of the sedimentary material and the distribution of hydrocarbon accumulation, were also highlighted. Oil and gas saturation at this area are mainly associated with a mixed type of sediments (absheron-kura type). V, VII and VIII horizons and also QA of the PS are oil & gas-saturated.