OIL AND GAS PROSPECTS OF TECTONIC CRASHING ZONES OF THE KURA INTERMOUNTAIN DEPRESSION

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Abstract

The article considers lithofacies and structural-tectonic conditions of oil and gas formation in the Kura depression. In addition, the formation of oil and gas accumulation zones in the crushing nodes in the Mesozoic deposits was determined and the role of faults in their formation was studied, tectonic crushing zones were found using seismically active zones in these deposits, the issues of prospects analysis were studied and the issues of prospecting and exploration were considered.

Taking into consideration that the tectonic crushing zones are formed in Mesozoic deposits composed mainly of competence rocks, it can be predicted that oil and gas fields in these zones are associated mainly with Mesozoic age rocks. In the Middle Kura depression, the surface of the Mesozoic deposits lies at a depth of up to 4-5 km, therefore it is considered favorable for exploration. Due to this, the oil and gas prospects of the tectonic crushing zones was studied in the Mesozoic deposits as a prospecting object of the Middle Kura depression.

Keywords: Middle Kura, tectonic crushing zone, sedimentary layer, Mesozoic, fault, Cretaceous deposits.

I. Introduction

The Kura intermountain depression is a part of the South-Caspian mega-depression located in the central segment of the Alpine-Himalayan mountain fold belt [1].

The main structural elements of the modern Kura depression began to form in the Early Jurassic period. Mesozoic sediment complexes were formed in sedimentary and volcanic formations with a large thickness (16-18 km and more) due to intensive and continuous subsidence of the Gabirri-Ajinohur, Yevlakh-Aghjabedi, and Lower Kura depressions starting from the Jurassic period [2].

The oldest rock complexes of the Kura depression uncovered by wells are Middle Jurassic (Aalenian, Bayosian and Batian) and were studied in the rock samples taken from the Saatli Superdeep Borehole (SB-1). According to those data, these old rocks are represented by andesite, basalt formations. Upper Jurassic sediments were uncovered by wells dug in Saatli, Jarli and Sor-sor areas [3]. Lower Cretaceous sediments were uncovered by wells dug in Saatli, Jarli and Sor-sor areas. The Lower Cretaceous is represented by carbonate-lithofacies in the Saatli area [4]. Cenomanian-Turonian stage (K_2s-t) tuffaceous series was uncovered by wells dug in Khatinli, Girag Kasamanli, Mammadtapa, Tarsdallar areas.

Upper Cretaceous formations are composed of extrusives and andesite lava-based basalts in the elevated parts of the Muradkhanli area. The carbonate formation of the Cenonian stage (K_2sn) belonging to the sediments of the Coniacian-Maastrichtian substage is uncovered by wells dug in Khatinli, Girag Kasamanli, Sajdag, Mammadtapa areas. Based on the microfauna characteristics of the Cenonian stage sediments uncovered in the Khatinli area (structural exploration wells 29, 32), it was possible to carve up the Campanian and Maastrichtian stages. The Campanian stage sediments are lithologically represented by calcareous marls and limestone series. The sediments of the Maastrichtian stage consist of greenish-gray sandy clays, sometimes marls layered with gray clayey marl interlayers. Carbonate sediments of the Upper Cretaceous are exposed in the north-west limb of the Muradkhanli uplift.

According to the comprehensive analysis of well and seismic exploration data, the maximum thickness of the carbonate layer reaches 1400 m in the central part of the Yevlakh-Aghjabedi depression [3] and the thickness decreases in the slope parts, however, sandy-clay rocks are found in the section.

Along the north-east slope of the Ajinohur depression, the Cretaceous sediments are represented by a continuous section from the Aptian to the Danish stage up to 1.8-2 km thick. In the Aptian-Albian interval, the section is divided into 20-25 sandstone horizons up to 6 m thick. Along the Cretaceous section the Cenamon stage characterized by higher reservoir properties, which includes sandstones and carbonate rocks from 100 to 180 m thick.

Oil and gas reservoirs in the Upper Cretaceous are mainly carbonate, porous- leaky-cracked volcanic and grained rocks. However, receiving a high amount of water flow (from 120-190 to 8-10 thousand t/day), in some cases, even oil and gas flow from wells dug in Jarlı, Sor-Sor, Garajali, Sovetlar and other areas show that the carbonate sediments of the Upper Cretaceous are characterized by high capacity and filtration properties [5].

Thus, as noted the lithofacies of the Mesozoic rock complexes are mainly brittle carbonate rocks, therefore, there is a high probability of formation of crashing zones at the intersections of faults of different scales.

Paleocene sediments were uncovered in Khatinli (wells 29 and 32), Girag Kasamanli (well 46), Mammadtapa (well 1) and Tarsdalar (well 9) in the Kura-Gabirri interfluve area [6].

The lower part of the Paleocene (the Danish stage) consists clayey hard limestones layered by the interlayers of marl of 47 m thick in the Khatinli area, but it consists of 27 m thick limestones along the section of the Girag Kasamanli area.

The Eocene sediments are widely developed in the Kura and Gabirri interfluve zone and uncovered by numerous deep prospecting wells.

These sediments were uncovered in all the wells dug along the Kura and Gabirri interfluve areas (Jahandar, Damirtapa-Udabno, Mammadtapa, Sajdag, Gurzundag, etc.), and are characterized by tough calcareous clays with clayey, fine-grained sandstone, siltstone, marl, and limestone interlayers.

In the Kura and Gabirri interfluve region, industrially important oil flow was obtained from Middle Eocene sediments of the wells dug in the Tarsdallar area (wells 1, 4, 8, 9).

The thickness of Maykop series sediments (P_3+N_1^1) increases from south to north to 0-2500 m in the Kura and Gabirri interfluve area. Lithologically, these sediments mainly consist of sandstone and clay formations with marl interlayeres.

Middle Miocene (N_1^2) sediments are limited in the Kura-Gabirri interfluve area. Lithologically consists of dense clays with marl interlayers and marl dolomites.

The Upper Miocene (N_1^3) mainly consists of gray, grayish-brown clay layers alternating with dense, cracked thin marl layers.

The Upper Pliocene (N_2^2) sediments lie on the basal conglomerates formed by weathering products of the Miocene and Paleogene sediments. The Aghjagil stage consists mainly of clays, however, the middle substage consists of clays with sand and thick limestone interbeds [7].

Clayey sediments of Upper Cretaceous, Eocene, and Maykop within the Kura depression can act as a screen for the formation of oil and gas accumulations on the hydrocarbon migration way.

As is known, oil and gas deposits in the Earth's crust are usually grouped in oil-gas accumulation zones consisting of different types of traps.

In addition to structural, lithological and stratigraphic factors, tectonic crushing zones also play a special role in the formation of several types of oil and gas accumulation zones [8, 9].

Based on geological-geophysical and space data, according to the schematic-structural map depicting the consolidated foundation and fault tectonics of the South Caspian megadepression (Fig. 1), the main feature of the structure of the Mesozoic rock complex within Kura depression is that it is divided into tectonic blocks of different sizes, complicated by longitudinal and transverse faults of different directions. The blocks descended gradually from the slopes of the depression towards the center along the regional faults with a vertical amplitude of 500-1000 m relative to each other (Fig. 2). Taking this into consideration, it should be noted that due to the relatively complex geological structure and high consolidation of the Mesozoic rock complex, there is a high probability intensive crushing of rock at the intersections of faults. The composition of tectonic blocks, along with the intersection of disjunctives oriented in different directions along the Kura depression, contributes to the formation of the crushing zone of rocks at the intersection nodes [10].

Therefore, it can be noted that the Kura depression has favorable structural-tectonic conditions in terms of the formation of industrially important oil and gas accumulations in various types of natural traps and tectonic crushing zones.

The Mesozoic rock complexes are promising for oil and gas due to the presence of significant fractured, tuffogenic-sedimentary and volcanogenic-sedimentary rocks with good reservoir properties along the section of Upper Cretaceous of the Kura depression, the presence of sufficient of a large number of Cenozoic impermeable layers that can serve as a caprock, favorable structures that can serve as traps for hydrocarbon accumulation, and the presence of tectonic crushing zones such as unconventional traps, as well as the discovery of oil fields in a number of areas such as Muradkhanli, Zardab, Sovetlar [11].

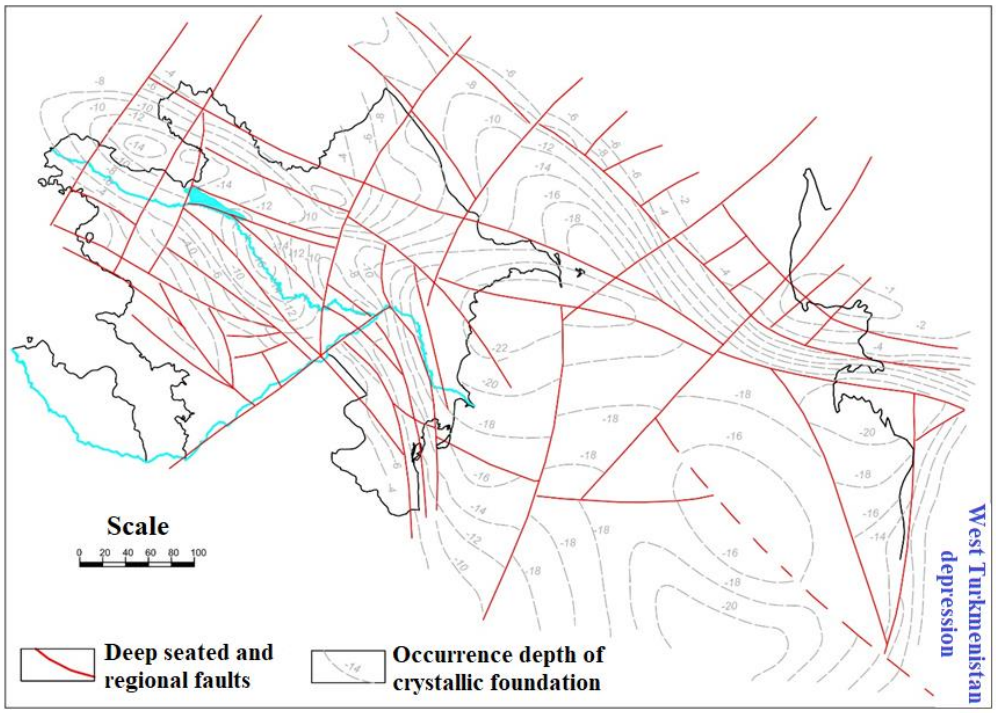

Fig. 1: *South Caspian megadepression. Schematic structural map according to the surface of the consolidated foundation and fault tectonics (according to F.M. Bagirzade, K.M. Karimov, etc.)*

Based on the conducted analysis, it can be concluded that in addition to structural type traps in the studied oil and gas regions in the Middle Kura depression, developed tectonic crushing zones and nodes in the Mesozoic rock complex are also unconventional traps with fairly high oil and gas prospects.

It should be noted that when a network of relatively dense and intersecting faults complicates the competent rocks in any area, since they are brittle, not only the faults but also the network of cracks accompanying them will develop. This leads to the formation of relatively large, so, regional-scale crushing and cracking zones around of those faults.

As is known, in many cases, folds and faults regulate the location of oil and gas deposits in the Earth's crust. Relatively, from the point of view of the presence of large oil and gas deposits, the intersection nodes of the faults of the studied foundation are more interesting. In this regard, intersection nodes of faults and tectonic faults create large-scale structures that may be associated with significant hydrocarbon accumulations [12].

II. Discussion and conclusions

Conducted studies show that tectonic crushing zones are widespread within Middle Kur depression. They are arising of great interest as an object for the search of oil and gas deposits (Fig. 3).

Based on the available data of the fault tectonics of the Kura intermountain depression [13] about 11 intersection nodes were determined accompanied by rock crushing at the intersection of disjunctives with different ages, scales and arrangements (Fig. 3).

The Dahna-Akharbakhar crushing zone is located in the northwest of the Goychay-Garamaryam zone, in the southeast of the Mahmudlu-Khaldan zone and in the central part of the Dahna-Ivanovka zone and was formed by 7 faults. Longitudinal faults are represented by overthrusts and reverse faults, however, transverse faults are represented by deep seated and ring-like faults. In this node, a tectonic cover with an amplitude of 1000 m has developed due to intensive crushing of rocks [14].

The presence of limestones with highly fractured sandstone layers for the accumulation of industrially important hydrocarbon deposits in the Upper Jurassic section suggests that the Dahna-Ivanovka zone is promising.

Parametric wells drilled in the Mahmudlu-Khaldan zone of the Ajinohur oil and gas bearing region uncovered Upper Cretaceous sediments at a depth of 6500 m [15]. There is an experimental interest that the parametric and exploratory wells drilling in the Goychay-Garamaryam zones, will uncover the Upper Jurassic sediments at a depth of 6.5-7 km. The prospects in the Goychay-Garamaryam zone are mainly related to dense fractured and crushed carbonate rocks, as well as reef structures. In addition, the development of regional and local faults creates favorable conditions for the formation of intensive cracking in competent carbonate rocks. All this phenomenon arouse interest for prospecting of industrially important oil and gas deposits along the Upper Jurassic and Cretaceous sediments.

The Agsu crushing zone is covered of the south-east edge of the Dahna-Ivanovka and Goychay-Garamaryam zones, the eastern part of the Kurdamir-Saatli zone, and the north-west of Navai, Central Gobustan and Padar-Salyan zones. It was formed by 6 faults, including the Western Caspian deep seated fault. However, tectonic covers are developed in the Upper Cretaceous volcanogenic-sedimentary rocks section covered by Paleogene and Miocene sediments within this node [7].

According to the Upper Jurassic sediments the Goychay-Garamaryam and Dahna-Ivanovka zones are can be evaluated prospective in Agsu node. In addition, parametric wells at a depth of 6.5-7 km can uncover highly fractured carbonate reservoirs.

Based on the data of the Lower Cretaceous sediments of the Kurdamir-Saatli zone [3] the geological-geochemical conditions can be considered favorable for the formation of hydrocarbons

in the above-mentioned node. The development of a network of regional and local faults in this node has led to the improvement of the capacity of carbonate rocks for accumulation of hydrocarbons in the crushed Upper Jurassic and Cretaceous rocks. In the northern part of the Salyan-Padar zone, which belongs to the Agsu node, along the regional faults, the rocks are eroded, so there are favorable conditions for the accumulation of oil and gas.

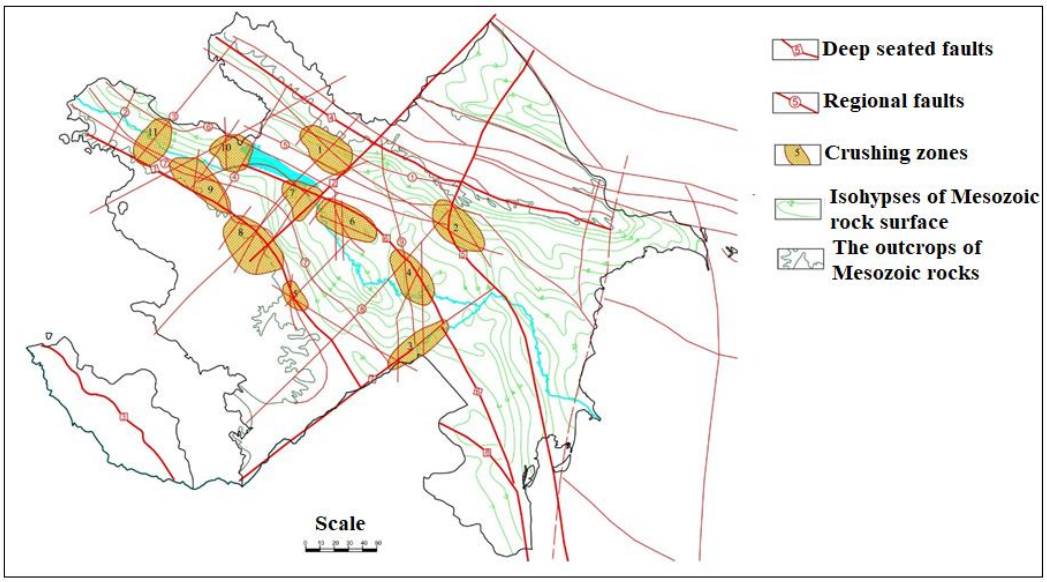

Fig. 2: *Map of tectonic crushing zones of Kura depression based on the data R.M. Hajiyev, K.M. Karimov and others.*

Compiled by: Ass. Prof. N.R. Narimanov; G.J. Nasibova, E.A. Ismayilzadeh

Legend: Crushing zones. Nodes: 1- Dahna Akharbakhar, 2- Agsu, 3- Garadonlu, 4-Muradkhanli, 5-Agdam, 6- Bozdag, 7- Barda, 8- Tartar, 9- Shamkir, 10- Tarsdallar, 11- Agstafa; Deep seated faults: 1- Lesser Fore-Caucasus, 2- Arpachay-Samur, 3- Nakhchivan, 4- Kvareli-Gabala-Goradil, 5- West Caspian, 6-Mingachevir-Lankaran, 7- Ashagi Araz, 8- Fore-Talysh; Regional faults: 1- North Kakhetia-North Ajinohur, 2-Gazakh-Signakhi, 3- Tovuz-Lagodekhi, 4- Ganja-Alazan, 5- Udabno-Goychay, 6- Udabno-Eriklar, 7- Tovuz-Lagodekhi, 8- Azerbaijan Flexure, 9- Imishli-Oguz.

The Garadonlu crushing zone was formed by 5 faults, including the Araz, Lesser Caucasus deep seated faults. This node covers the part of the meridional graben that coincides with the Talysh-Vandam gravity maximum on the plan [2].

To contain rare sandstone limestones with increased crucks for the accumulation of industrially important hydrocarbon accumulations along the main part of the cross-section of the Jurassic sediments are expected within Garadonlu node. The south-east part of the Garkhunlu-Garadonlu zone is considered promising. Assumed that the Upper Jurassic sediments can be uncovered at a depth of 6.5-7 km. Based on the Lower Cretaceous sediments, the southeast part of the Garkhunlu-Garadonlu zone, where large oil and gas accumulations are likely to be formed in carbonate, rifogenic and terrigenous formations, is considered promising. Like the upper Jurassic sediments in the Eirija-Shiringum zone, the occurrence depth of the Lower Cretaceous sediments more than 7 km. Therefore, they are not considered promising for the drilling of prospecting wells [4].

Exploration well 2 with a project depth of 5000 m has been placed in the south-east part of the Duzdag-Sovetlar zone, at the Agtel outcrop. After passing the depth of 3855 m (along Paleogene sediments), it was abandoned due to technical reasons.

Further geophysical studies showed that the well location was not chosen correctly. However, 2 parametric wells with a project depth of 5000 m were drilled in the Eyrija-Shiringum area, within the limits of the Garadonlu node. The first well at a depth of 4807 m (in Eocene

sediments) was abandoned due to technical reasons. The second well uncovered the Upper Cretaceous sediments of fractured limestones, which show the crushing of these rocks in the limits of Garadonlu node at the depth interval of 4390-5000 m [7]. This node is characterized by a favorable structure for the formation of oil-gas accumulations in the traps associated with crushing nodes, formed due to the intersection of regional deep seated and local faults.

However, the Upper Cretaceous sediments lie at a depth of 6.0-7.5 km in the south-east part of the Garkhunlu-Garadonlu zone. In the west part of the node, within Lesser Caucasus and Duzdag-Sovetlar zone, the occurrence depth of the Upper Cretaceous sediments is up to 5000 m, which is considered possible for drilling [3].

The Muradkhanli crushing zone covers the central part of the Garkhunlu-Garadonlu zone and the western part of the Agdash-Mil zone. This node is formed by 4 faults, including the Gutgashin-Imishli deep seated fault passing through the Muradkhanli field. This fault was involved in the formation of good reservoirs along the effusive rocks of Upper Cretaceous. After uncovering of the oil field in the Muradkhanli effusive formations, along with carbonate rocks, volcanogenic rocks were also characterized as a prospecting object in the central part of the Kura depression. The discovery of an oil field in the effusive rocks of the Garkhunlu-Garadonlu zone (Muradkhanli field), as well as the similarity of the normal sections belonging to the individual structures of the zone, became a good guiding factor for conducting prospecting and exploration works for the purpose of searching for oil in the Mesozoic sediments of this zone and other crushing zones. The oil in the Zardab field was obtained from formations lying under marls of the Upper Eocene. Later, industrially important flows were obtained in the contact zone of carbonate and effusive rocks of the Upper and Lower Cretaceous (well 4,7,9).

Carbonate sediments were uncovered in the Maastrichtian-Santonian stages of the Upper Cretaceous complex around Agdash-Mil zone within the limits of the Muradkhanli node, under the Eocene sediments [3]. Below the section is continue by alternation of limestones with marls, argillites and tuffaceous sandstones.

The development of a fault network in the Mil area led to the formation of cracking and crushing zones in carbonate and effusive rocks. A part of these zones can be considered promising for oil and gas in Upper Cretaceous sediments. In order to carry out prospecting-exploration work in this node, it is necessary to clarify the structural-tectonic conditions in the intersection zones of the faults and their preparation for drilling.

The Barda crushing zone covers the north part of the Yevlakh-Lanbaran zone, the Eyrija-Shiringum and Garkhunlu-Garadonlu zones [3]. At this node, in the Upper Jurassic sediments, the Garkhunlu-Garadonlu zone, which is expected to contain sparse sandstone limestones with increased cracking for the formation of industrially important hydrocarbon accumulations in the main part of the section, can be considered promising.

Since the occurrence depth of the Lower Cretaceous sediments more than 7 km in the Eyrija-Shiringum zone, they are not considered promising for the drilling of prospecting wells.

In the Garkhunlu-Garadonlu zone formed by eight faults, the Upper Cretaceous sediments are represented by cracked and crushed effusives, carbonates and terrigenous-tufogenic rocks, which are favorable for the formation of oil and gas accumulations. According to the Upper Cretaceous sediments within this node, the north part of the Garkhunlu-Garadonlu zone is considered as an object for exploration, which is favorable for the formation of oil and gas reserves in traps due to the tectonic crushing of rocks.

The Bozdag crushing zone occupies parts of the Duzdag-Sovetlar, Yevlakh-Lanbaran and Garkhunlu-Garadonlu zones [3]. The node has formed by 8 faults elongated different directions, which improve the reservoir properties of the rocks due to cracking and crushing. The Garkhunlu-Garadonlu zone, which is considered a continuation of the Barda crushing node, can be considered as a promising within of Bozdag node, due to the presence of fractured limestones that consists the main part of the section of Upper Jurassic sediments. Nodes also have favorable conditions for industrially important oil and gas formation. The occurrence depth of Upper

Jurassic sediments in other parts of the node up to 7-8 km, which is technically difficult for modern drilling.

The Lower Cretaceous sediments are considered favorable for the formation of oil and gas deposits due to their geological and geochemical conditions in the major part of the Kura depression. Taking this into consideration, we can predict the existence of significant oil and gas accumulations in the Lower Cretaceous intensively crushed and fractured carbonates, rifogenic and terrigenous formations, in the north part of the Garkhunlu-Garadonlu zone, within the Bozdag crushing node.

According to the Upper Cretaceous sediments, the Duzdag-Sovetlar zone is proposed as an object for the search of oil and gas deposits.

The Aghdam node is the smallest among the crushing zones and occupies a part of the Lesser Fore-Caucasus zone [10]. The node was formed due to 4 faults, including the Lesser Fore-Caucasus deep seated fault.

The prospects of the Upper Jurassic sediments within the Aghdam node is associated with the crushing zone developing along the Lesser Fore-Caucasus deep seated fault. In this zone, development of highly fractured carbonate reservoirs are expected, which is suitable for oil and gas accumulation.

According to the Upper Cretaceous sediments, the Aghdam crushing node is not promising for oil and gas accumulation, due to the lack of a reliable caprocks.

The Tartar crushing zone runs parallel to the Lesser Caucasus trough and occupies a part of it. From the east, it covers the Lesser Fore-Caucasus and a part of the Duzdag-Sovietlar zones [10].

Along the Lesser Fore-Caucasus fault, the Earth's crust movement occurred from time to time and was very active throughout the Mesozoic period. The node was formed by 10 faults, including the Lesser Fore-Caucasus deep seated fault, an arc fault and a regional transverse fault that runs through the entire territory of Azerbaijan. This fault and other faults intersecting with it have formed intensive crushing zones that create favorable conditions for the formation of oil and gas accumulations in this node. The prospect of the Upper Jurassic sediments is associated with the Lesser Fore-Caucasus zone, which is expected to contain carbonate reservoirs, mostly intensively fractured, that serve to accumulate oil and gas.

Prospecting wells were drilled in the Tartar zone and two of the 4 drilled wells (153,152) uncovered the Upper Cretaceous carbonate layer with a thickness of 700 m. However, the Upper Cretaceous sediments were not productive.

The Shamkir crushing node is located in the north-west of the Tartar crushing node. It occupies the Lesser Fore-Caucasus meganticlinorium trough and a part of the Garayaz-Khuluf zone [3].

The node was formed by 11 different alignment faults, including the Alazan-Eyrichay, the Lesser Fore-Caucasus deep seated fault, and the Shamkhor-Aliabad regional fault.

Unlike the previously mentioned nodes, the Shamkir crushing node differs in that it is more strongly complicated by faults. Intensively crushing and fracturing of the Mesozoic rocks are expected.

Late Jurassic-Early Cretaceous granitoid intrusions have developed in the north-east border of the Lesser Fore-Caucasus trough. In the western part of the node, due to the development of intrusive formations, there is not probability of the presence of industrially important hydrocarbon accumulations. According to faults and geological-geophysical data, in the east, towards the Kura River, there is a high probability of formation of hydrocarbon accumulations in the structures complicated by the Shamkir-Aliabad fault, which is located within the depression. As noted by A. Shikhalibeyli and others, this is confirmed by the entire chaotically located overthrust and revers fault network. The Upper Cretaceous sediments with complex tectonic structure, which make up the surface of the Mesozoic rocks, has been strong crushed in the boundaries of this node, mainly in the intersection zone of the faults. As noted by K. Karimov, this factor does not allow establishing the exact lithofacies regularity in the area, but due to the Upper

Cretaceous sediments in the boundaries of node, its east and north-east parts can be considered promising.

Tarsdallar crushing zone was formed by 4 meridional and Cis-Caucasus faults. The node covers the south-east part of the Garayaz-Khuluflu zone and the south part of the Molladag-Tarsdallar zone. The Molladag-Tarsdallar zone is considered promising due to intense folding by faults and the presence of the Upper Jurassic sediments along the cross section of the central part of node. However, Upper Jurassic sediments can be uncovered at a depth of 6.5-7 km [16].

In the Lower Cretaceous sediments, there were favorable conditions for the formation of oil and gas accumulations due to the cracking of rocks of various origins, which are non-anticlinal traps. As a result, the presence of significant oil and gas accumulations in fractured carbonate, rifogenic and terrigenous formations in the Molladag- Tarsdallar zone can be predicted.

In the south-west part of the node, within of the Garayaz-Khuluflu zone, the prospects of the Lower Cretaceous sediments are negatively evaluated. The reason for this is that, as in the Upper Jurassic, these sediments do not participate in the section or are represented in an insignificant thickness for the formation of oil and gas deposits.

According to the Upper Cretaceous sediments, the Molladag-Tarsdallar zone is considered as promising object for the search of oil and gas deposits.

In September 1983, in the Tarsdallar area of the Kura-Gabirri interfluve region, a large fountain oil flow was obtained from cracked marls of the Middle Eocene with a production of 300 t/g [16]. The reservoir properties of rocks are expressed by the faults with small-amplitude and fissures in the middle limb of the flexural trough. Taking into account the complexity of the geological structure of this node, it is possible to increase the reservoir properties of the carbonate and volcanic rocks of the Cretaceous. This allows considering the Cretaceous sediments as a promising object for the search of hydrocarbons.

The Agstafa crushing zone is formed by 7 disjunctives in different directions, including the Gazakh-Tsitelchkaroy and Lesser Fore-Caucasus faults, as well as submeridional and general Caucasian regional faults [3].

The node covers the north-east part of the Lesser Caucasus trough, the central part of the Garayaz-Khuluflu and the Molladag-Tarsdallar zones.

The occurrence depths of Mesozoic sediments is shallow within Garayaz-Khuluflu zone, in the boundaries of the node (Tovuz-Gazakh, Girakh-Kasamanli and Khatun). Only the upper part of the Upper Cretaceous was studied in the area by wells, where its section represented with carbonate and under lying volcanic-sedimentary rocks.

The upper Cretaceous sediments, which are involved in the structure of the Gazakh depression, descend in the northeast direction and penetrate under the Cenozoic sediments in the Kura-Gabirri interfluve region. Fore-mountain zone towards the center of the depression, the volcanogenic-sedimentary facies is continuously replaced by sedimentary formations.

The north-east part of the node located in the Kura-Gabirri interfluve region is considered more promising. There is a possibility of Cretaceous high cracked reservoirs. In order to avoid drilling excess wells, first of all, it is advisable to carry out complex geological-geophysical searches to determine the condition of the Cretaceous structural floor and its oil-gas content.

However, the prospective oil and gas bearing crushing nodes zone were analyzed in the Mesozoic sediments within Kura intermountain depression. As a result, 4 highly promising- Dahna-Akharbakhar, Muradkhanli, Tartar and Tarsdallar; 5 promising- Agsu, Barda, Bozdag, Shamkir, Agstafa; 2 less promising- Garadonlu and Aghdam crushing nodes are determined (Tab. 1).

III. Conclusıon and suggestıons

1. Based on the lithofacies and structural analysis, the emergence of tectonic crushing zones in the Mesozoic rock complexes, which are subjected to intense brittle deformation and are

complicated by disjunctives of various scales and a dense network of cracks, and the latter play the role of a favorable trap in the formation of oil and gas accumulations.

2. Determined that oil and gas deposits of Muradkhanli, Zardab, Sovetlar, Tarsdallar areas are associeted with crushing zones, it was found that faults are of great importance in the formation of deposits in the Mesozoic sediments named zones in the Kura depression.

3. Highly promising- Dahna-Akharbakhar, Muradkhanli, Tartar and Tarsdallar, promising- Agsu, Barda, Bozdag, Shamkir, Agstafa, and less promising- Garadonlu and Aghdam crushing nodes has been determined. This nodes are favorable for oil and gas accumulation in the Middle Kura depression.

Table 1: *Characteristics of crushing zones*

№	Nodes	Lithological characteristics	Type and age of caprocks		Dislocation level	Disjunctive	Oil and gas formation complexes and its age		Oil and gas manifestations	Promising	Knowledge	Research
1	Dahna-Akharbakhar	massive limestone	clay	₽	7	5	carbonate	J_3K	-	highly promising	Well	I order
2	Muradkhanli	effuzive carbonate	clay	N_2-N_1	4	7	effuzive	K_2N_2	-			
3	Tarsdallar	carbonate volcanogenic	clay	₽-N_1	4	3	carbonate	K_2P_2	-			
4	Tartar	carbonate	clay	₽	10	5	carbonate	J_3	-			
5	Agsu	volcanogenic - sedimentary, carbonate	clay	₽-N_1	6	3	carbonate	J_3K	oil-gas	promising	Sufficiently	II order
6	Barda	massive limestone, effuziv	clay	₽	8	7	effuzive carbonate	K_2	-			
7	Bozdag	massive limestone	clay	₽	8	3	terrigenous - carbonate,	J_3k	-			
8	Shamkir	carbonate	clay	₽	11	-	rifogenic	J_3k	-			
9	Agstafa	carbonate, volcanogenic -sedimentary	clay	₽	7	4	carbonate	K	-			
10	Garadonlu	massive limestone with sandstone interbed	clay	₽	5	2	carbonate, rifogenic	J_3k	-	Less promising	Weak	III order
11	Aghdam	volcanogenic	clay	₽-N_1	4	-	-	-	-			

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