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Research Article

STRATIGRAPHY OF THE KYZYLKUM PALEOGENIC SEDIMENTS

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ABSTRACT

This research paper is the result of a study of the subdivisionof Paleogene sediments by foraminifera, bivalves and nannoplankton of the Central Kyzylkums.

The relevance of these works is explained by the fact that the Paleogene sediments due to poverty of their faunal remains did not have sufficient paleontological substantiation.

The need for stratigraphic subdivisionof the Paleogene sediments of the Central Kyzylkums is dictated by the fact that the current state of validity of their subdivisionand correlation does not provide the necessary accuracy with the International Stratigraphic Scale.

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KEYWORDS

Suite, nannoplankton, foraminifera, oyster, Kyzyltakyr, Karashor, Yilanly, Kurtysh, the Central Kyzylkums.

INTRODUCTION

The Paleogene sedimentary basin of Uzbekistan had a different specificity in its different parts, which left its mark on the character of sediments, their thickness, petrographic-mineralogical composition, and organic life.

The eastern part of the territory, adjacent to the hilly land area, occupied a hypsometrically higher part in comparison with the western one. The sedimentation basin of this area was shallow for most of the Paleogene period, with frequent changes in salinity upward or downward, with enhanced hydrodynamics, predominance of sulfate or terrigenous sedimentation in certain periods of time, with its own specific organic world.

Some of these reasons explain the presence of an oppressed funa, the so-called "Kaplanbek complex" or massive, sharply sculptured oysters. Agglutinated forms predominate among foraminifera. A stratigraphically important nannoplankton group in the sections of eastern Uzbekistan is rare and fragmentary. Vyalova's scheme of Paleogene stratigraphy was used to subdivide the Paleogene sections in the east of Uzbekistan.

In the west of Uzbekistan, the border of which runs approximately along the zone of a deep transverse fault, identified by D.P. Rezvy and O.M. Borisov (1962), in the Paleogene there was a normally marine basin with stable sedimentation, with planktonic foraminifera, with more representative nannofossil forms. These groups of organic remains are reference, with clearly distinguished zonal complexes that allow reliable correlation with the sections of the Caucasus, Crimea, and the Mediterranean. On the other hand, the faunal zones identified in the west can be traced to the area where the indicated forms were found. They are effective for the purposes of stratigraphy to the peripheral parts of the sedimentary basin, which served as the basis for using the scheme of the Paleogene stratigraphy of Turkmenistan for the dissection of the studied Paleogene sections of the western regions of Uzbekistan.

The Paleogene sediments in the area under consideration are subdivided into the Paleocene section with lower and upper subsections, the Eocene - with the lower, middle and upper subsections, and into the Oligocene section.

Within the Central Kyzyl Kum, Paleogene sediments are widely developed and are confined mainly to the foothills of the Kuldzhuktau, Auminzatau, Tamdytau, Bukantau, where they come to the surface. In the Minbulakskaya, Karakatinskaya and Agitma basins, the Neogene was penetrated by wells under the cover of younger formations. The Paleogene section here is composed of shallow-water coastal-marine sediments, characterized by the consistency of the lithological composition throughout the entire area. Deposits of the Lower and Upper Paleocene, Lower, Middle and Upper Eocene have been identified based on the complexes of organic remains.

Stratigraphic subdivision of Paleogene sediments

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Paleocene

Lower Paleocene.

Danish and montian tiers

In the Kyzyl Kum Deposits of the Lower Paleocene (Montsky Stage) are established in the northwest. They are composed of calcareous sandy with inclusions of phosphorite gravel, up to 2 m thick. They contain interlayers of shells with Venericarditaexgr.dupontilossm, TurritellamariaeBr. etCorn., characterizing the Monttian.

In the Karakatinskaya and Agitma depressions, a member of up to 25 m thick sugary, dense, fine-grained gypsum and anhydrite is attributed to the Lower Paleocene, which turn into calcareous sandstones and limestones to the south. This member contains mollusks characteristic of the Monttian: Lucinamontensis Cossm., L. (Catilucina) duponti Cossm., Corbula (Cuneocorbula) angulata Lam. 'rritellamonsensis Br. etCorn, etc.

The Akdkar horizon is distinguished as beds with Corbis montensis Astrea montensis, Corbula davidsoni, and Lucina montensis; it is characteristic of the eastern regions of Uzbekistan and corresponds in age to the Mont stage of the Lower Paleocene.

Upper Paleocene

Thanet tier

In the Kyzyl Kum, the deposits of the Upper Paleocene are developed in the Karakta, Agitma depressions, Kuldzhuktau. They are represented by the Kyzyltakir horizon. It consists of alternating limestones, dolomites, sandy limestones (25-30 m), the thickness of which in another part increases to 50 m. In the Dzhusama depression in Beltau, Aristantau, Kuldzhuktau, Bukhara deposits are represented by a thin (2-7 m) member of calcareous sandstones, sands, oysters with a phosphorite horizon at the base, in which a foam-like complex of mollusks and brachiopods Nummites of the Late Paleocene, from foraminulimifera - solit de la Harpe, I deserti de la Harpe, N. fraasi de la Harpe. In the eastern part of the Karatash depression - Sangruntau, these deposits are overlain by carbonate-free clays, siltstones with a bed of combustible shales (up to 1.5 m), 10-15 m thick, in which benthic foraminifera are widely developed, including those with characteristic zonal species.

In Karaktau (Kyzyl Kum), red clays, siltstones with sandstone interlayers 19 m thick, containing no organic remains, are conventionally assigned to the Upper Paleocene.

Eocene

Lower Eocene

Ypresian tier

In Kyzyl Kum, the Lower Eocene deposits consist of two members, the first is represented by greenish-gray clays, siltstones, sandstones and marls up to 20 m thick.In the area of the Tamdytau mountains, the capacity decreases to 8-12 m. lying with erosion on more ancient sediments up to the Paleozoic. At the base, in gravels and small-pebble conglomerates, phosphorite pebbles and fragments of fish bones are found. A foraminiferal assemblage characteristic of the Lower Eocene, including the form of the Globorotalia subbotinae Zone, was found in carbonate clays and marls. The upper member is represented by light brown phosphorite-bearing marls with interlayers of marls and clays, where the complex of the NP13 Zone: Pontosphaera pectinata Bram was found. et Sull., Discoaster kupperi Strad., Imperasterus curus Martini.,

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et al. Thickness from 25 m to 45 m. In Tamdytau, central parts of Bukantau, the indicated thickness does not change. At the base of the member, thin gravelstones and small-pebble conglomerates appear, overlying with erosion on more ancient sediments.

In the Agitma and Karakatinskaya depressions, in the eastern part of the Kyzyl Kum, the thickness of the member increases; it contains a large number of foraminiferal shells, including Globorotalia aragonensis. The upper, more clayey part contains the forms of the Middle Eocene foraminiferal complex.

Middle Eocene

Lutetian and Barton tiers

In the Kyzyl Kum, the Middle Eocene consists of a member of marls up to 16 m thick with foraminifera of the Acarinina bulbrooki zone and nannofossal zone NP14 and a clay stratum up to 70-80 m thick, which is characterized by a decrease in carbonate content from the bottom upward along the section, with thin (up to 1 m) interlayers of opoki , a massive accumulation of radiolarian shells. The number of radiolarians increases from bottom to top. Foraminifers are mainly benthic.

In the Central Kyzylkum sections, the Acarinina-rotundimarginata zone was encountered; it corresponds to the Ilyalinsky horizon of the Ustyurt and South Aral Sea region. The age is confirmed by the presence of NP14 nannoplankton: Coccolithus eopelagicus Bram. et Ried., Neococcoluthus dubius Deflan., Discoaste relegans Bram. et Sull. Cyclo-: colithus Formosa Kamptner. and etc.

The Kurtysh horizon up to 50 m thick consists of sandstones, siltstones, clays, in which there is a wide development of agglutinating foraminifera and radiolarians. The presence of the characteristic species Globigerina turkmenica in the foraminiferal complex in the Central Kyzyl Kum mountains allows us to compare them with the Kurtysh (Duma) horizon of the western regions. In addition, the discovery of the NP 16 Zone complex Coccolithus eopelagicus Bram. et Sull., Neococcolithus dubius Deflandre., Discoaster elegans Bram. et Sull., Cyclococcolithus formosa Kamptner. and others in the Ayakkuduk region confirms this definition of age.

Upper Eocene

Priabonian stage

In Kyzyl Kum, the Akhchakai and most of the Daudan horizon are attributed to the Upper Eocene. In the western regions of Kyzylkum, the section is represented by calcareous clays and sandstones, limestones, shells with molluscs, typical of the Rishtan horizon of Fergana. Thickness is up to 70 m in depressions and 10-12 m in areas of uplifts. The rocks are eroded onto the Middle Eocene sediments. In the rest of the territory, erosion is not observed, but the enrichment of the lower part with sandy-silty sediments is noted. Foraminifera are represented by benthic and planktonic complexes. They also contain characteristic species of the Upper Eocene, in connection with which a reliable comparison with the western sections is difficult.

In the central part of the Kyzylkum desert, in Tamdytau, a member of dark green carbonate-free clays is assigned to this age interval. Its base is silty clays. They contain mollusks characteristic of the corresponding horizons of Fergana: a from the characteristic foraminifera Bolivina antegressa from the Upper Eocene of the Bukhara-Karshi region, South Aral Sea region. The preserved thickness of the sections varies from a few meters to 150 m in the eastern part of the Kyzylkum desert. Above, red-

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colored rocks of the Sarbatyr Formation occur with erosion.

Oligocene

Lower Oligocene

Rüpel tier

In Kyzylkum, the Lower Karabatr horizon belongs to the Lower Oligocene, represented by red, purple, gray, carbonate, sandy clays and silts 10-15 m thick. Deposits with erosion lie on different horizons of the Upper Eocene. The nasal horizon is represented by small rounded pebbles, clay pellets and sand nests. Foraminifera are rare and are represented by benthos. However, mollusk kernels and imprints are abundant, the most characteristic of which is Nucula comta Goldf.

Upper Oligocene

Hatta tier

In the Kyzylkum Desert, the Upper Oligocene is composed of rocks of the Upper Sarabagyr Subformation. They are represented at the bottom of the section by red clays and siltstones with interlayers of yellow sandstones. The thickness is up to 25 m. A member of loose sandstones, siltstones and shell sandstones with a complex of mollusks and foraminifera characteristic of the Upper Oligocene lies on them with erosion. These deposits are overlain by pink-red siltstones of the Agitma Formation, already belonging to the Neogene.

It should be noted that there is no consensus on the age of the Verkhnesarbatyr subformation, and the Nizhebarbatyr subformation. Some researchers date the age of the Lower Sarbatyr Subformation as the Late Oligocene. Most researchers attribute the lower part of the Upper Sarabatyr Subformation to the Upper Oligocene, and the upper part is considered the Lower Miocene.

Thus, from the presented data on the Paleogene stratigraphy of the studied regions of Uzbekistan, we can conclude the following. On the scheme of dissection of the Paleogene of Uzbekistan, we have identified subdivisions of the General Stratigraphic Scale (departments, subdivisions, stages), regional subdivisions (horizons) and nannoplankton zones.

In the Kyzylkum Paleogene sections, horizons of the West Turkmen scale were traced and nannoplankton zones were identified for the first time, complexes of nannoplankton zones made it possible to change the position of the boundary between sediments attributed to the Lower and Middle Eocene, and to draw it in the upper part of the Karashor horizon. Previously, it was carried out along the base of the Karashor horizon. The boundary between the deposits attributed to the Middle and Upper Eocene was drawn by us along the top of the Kurtysh horizon, which previously corresponded to the base of the Kurtysh horizon.

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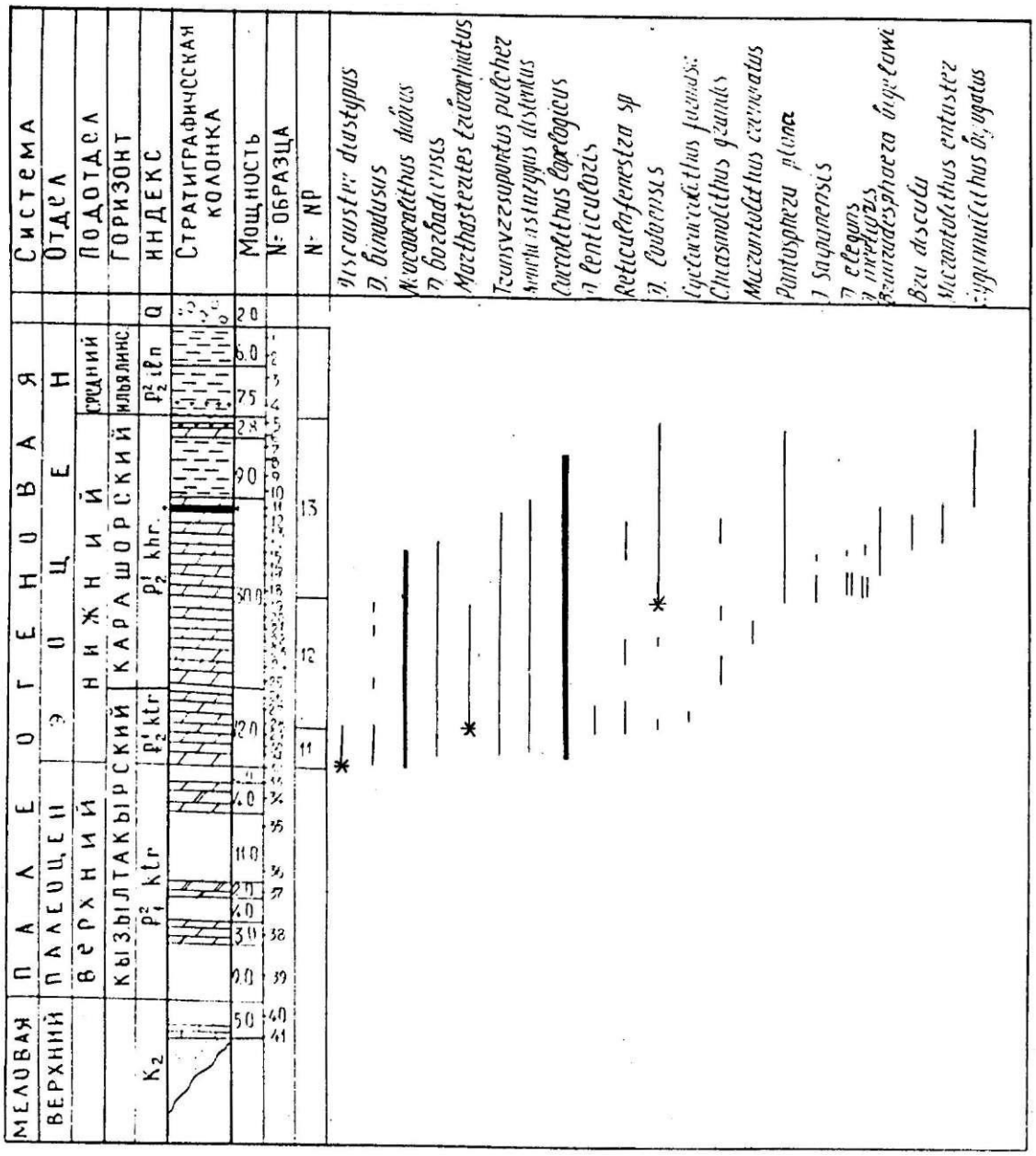
STRATIGRAPHIC DISTRIBUTION OF NANNOPDUNKTON Kyzylkum SKV .1654
M-b 1: 500 Compiled by A.R. Kushakov



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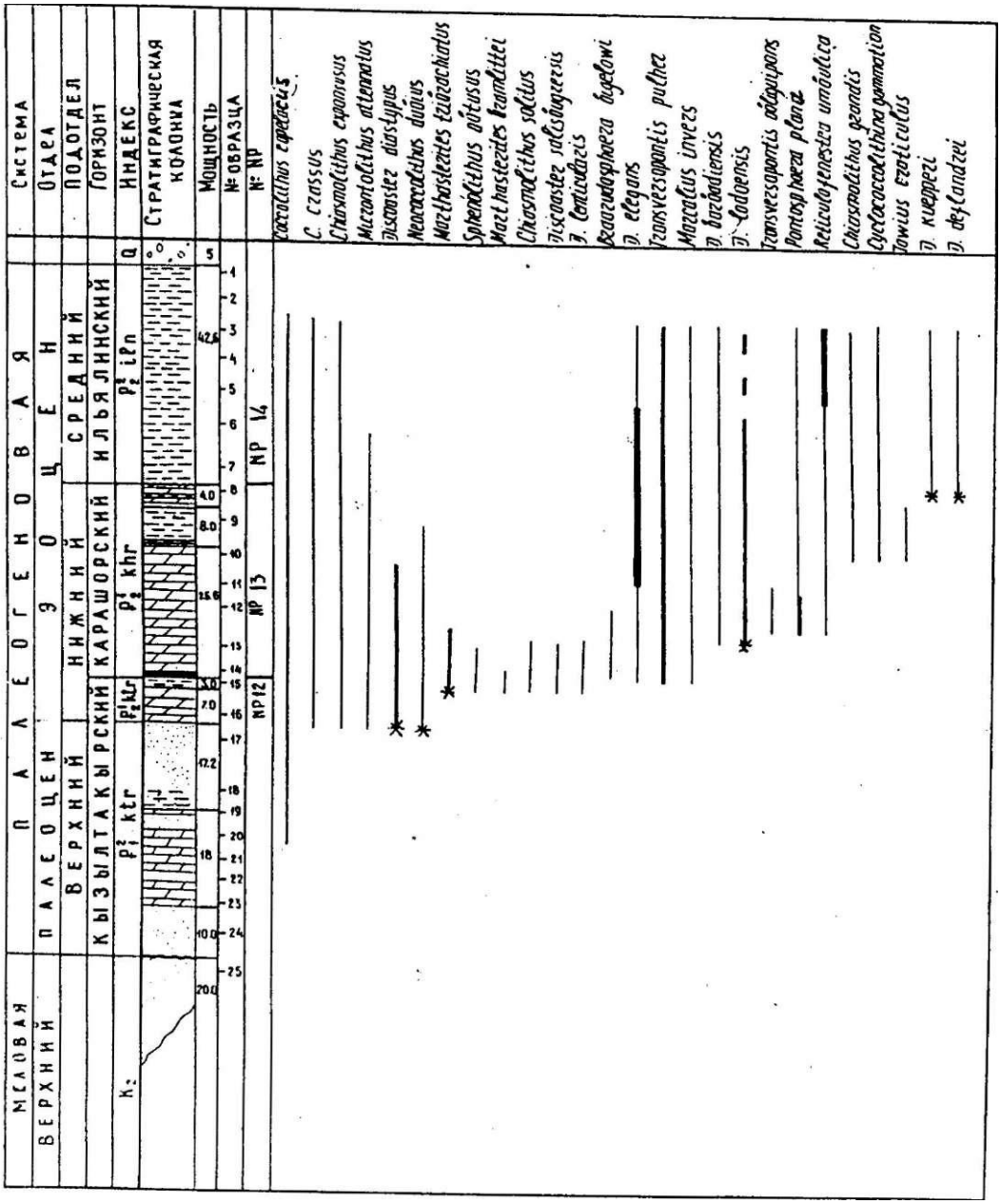
STRATIGRAPHIC DISTRIBUTION OF NANNOPLANKTON IN THE KYZILKUM SECTIONS OF THE 1700 SKV

M-b 1: 500

Compiled by A.R. Kushakov



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