American Journal of Applied Science and Technology

VOLUME Vol.06 Issue 01 2026
PAGE NO. 58-60
DOI 10.37547/ajast/Volume06Issue01-13

Stratigraphy Of The High Juran Carbonate Formation With Oil And Gas In The Bukhara-Khiva Region

Rabbimov Jakhongir Shodmonkulovich
Acting Associate Professor of Karshi State Technical University, Doctor of Philosophy in Technical Sciences, Uzbekistan

Temirov Toxir Turgun ugli
A third-year student of the Department of "Geology and Mining Engineering" at Karshi State Technical University, Uzbekistan

Received: 22 November 2025; **Accepted:** 14 December 2025; **Published:** 19 January 2026

Abstract: Paleontological and stratigraphic studies play an important role in increasing the efficiency of oil and gas exploration. While these studies help determine the boundaries of the exploration area, they also ensure the determination of the location of trap areas and sections belonging to the non-anticlinal group and the identification of reefs in the bodies of fossil carbonate strata.

Keywords: Carbonate, formation, stratigraphy, reef, horizon, terrigenous, interpretation, carbonate, formation.

INTRODUCTION:

Studies carried out in the Bukhara–Khiva oil and gas region have shown that corals played a significant role in the formation of Upper Jurassic carbonate formations. Among the organic remains found in the carbonate formation deposits of the Bukhara–Khiva oil and gas basin, large volumes of limestone containing corals have proven to be extremely productive.

The boundary between the Jurassic and Cretaceous periods is drawn across the deposits of the Karabil Formation of Tithonian age, similar to those observed at the foothills of the Southwestern Gissar Mountains.

Clarifications were made regarding the stratigraphy and age boundaries of the Upper Jurassic carbonate formation. As a result, it was paleontologically substantiated that the Kimmeridgian deposits should also be included within the volume of the carbonate formation.

Coral assemblages were identified in the carbonate formation layers of the O'rtabuloq oil field located on the Dengizko'l uplift, and their stratigraphic significance was determined.

Based on coral studies, new data were obtained, which significantly contributed to determining the age of reef complexes within the carbonate formation of the Bukhara–Khiva region. While these reefs were previously considered to be of Middle–Upper Callovian–Oxfordian age, they are now more accurately dated as Middle–Upper Oxfordian–Kimmeridgian.

In summary, the study of corals from the Upper Jurassic carbonate reef formation has demonstrated their great stratigraphic importance and confirmed that they can be effectively used for determining and correlating the ages of deposits.

A monographic description of seven coral species belonging to four genera is presented (Tables I–IV). As a result of coral investigations, the age of reef complexes located on the Dengizko'l uplift was determined to be Middle–Upper Oxfordian and Kimmeridgian.

It should be noted that, in general, production specialists and field geologists widely apply schemes

for subdividing carbonate formation deposits into productive horizons. In particular, the study of productive carbonate formations distributed in the Bukhara–Khiva oil and gas basin and the determination of their stratigraphic position in sections were based on formation (layer)-based schemes (Mirkomolov et al., 1979). Unfortunately, these formations were not implemented in practical geological work. Therefore, subsequently developed formation-based schemes have not yet found widespread practical application.

In general, the Middle–Upper Callovian and Lower Oxfordian deposits (XVI and XV sub-reef horizons) form the lower complex of the carbonate formation and can be considered to have been formed under conditions of stable tectonic development of the basin. This is evidenced by the relatively constant thickness of these deposits, except in certain areas.

The Middle–Upper Oxfordian (XV – reef horizon) and Kimmeridgian (XVI – supra-reef horizon) deposits are distinguished in geological sections by the wide distribution and excellent development of various organisms. In particular, skeletal remains of coral polyps constitute a significant portion of the sedimentary mass and, at the final stage, formed solid organic buildups such as biogerms and reefs.

In addition, terrigenous Jurassic deposits in the study area remain poorly investigated due to the limited number of deep exploratory wells. In several individual wells on the Dengizko‘l uplift, gas inflows were obtained from terrigenous Jurassic deposits.

During 2007–2010, M.E. Rakhmatov conducted 2D seismic exploration (OGT-2D) in the Dengizko‘l and Ispanli–Chandir uplifts of the Chardjou step. These detailed seismic surveys were carried out in the Igritepa, Nazarxon, Navbahor, Sarak, Northern Zekri, and Sariqum areas to identify oil and gas prospective targets in terrigenous Jurassic deposits and, where possible, in the Lower Jurassic complex.

Similar detailed surveys were conducted in the Eastern Chegara and Markovski–Sardoba areas to study the new Southern O‘rtabuloq prospect.

At the Dengizko‘l field, terrigenous Jurassic deposits were penetrated by 15 wells, while in the Shodi–Khauzak area these deposits were penetrated by eight wells. The penetrated thickness of these deposits ranges from 45 m (Dengizko‘l-12) to 236 m (Khauzak-1), but generally does not exceed 100 m.

It should be emphasized that the main productive horizon (XVIII) of the terrigenous Jurassic deposits at the Dengizko‘l field is located in the middle part of the geological section. The high productivity of the terrigenous formation has been proven at the Uzunchak field, which is located in the central part of the Dengizko‘l uplift.

The Uzunchak structure was identified in 2004 as a result of reinterpretation of UCHN-2D seismic survey data. It was prepared for deep exploratory drilling in 2009 following additional detailed UCHN-2D surveys.

Geological and geophysical data obtained from the No. 1 exploratory well in the Uzunchak area provided a positive assessment of the oil and gas potential of both Jurassic carbonate and terrigenous Jurassic deposits.

Terrigenous Jurassic deposits have been penetrated by individual wells in many areas of the Dengizko‘l uplift; however, testing results mainly yielded gas inflows from the Jurassic carbonate complex. In some wells, only the upper part of the terrigenous Jurassic deposits was penetrated.

According to well-logging data and core analysis results, terrigenous Jurassic reservoir rocks consist of sandstones and siltstones in the form of layers and interbeds, combining horizons XVII and XVIII. The reservoir properties of these horizons are relatively low.

Porous–cavernous reservoirs within Jurassic natural traps are considered to be fluid-saturated and are predominantly widespread in the upper part of the carbonate formation.

REFERENCES

1. Абдуллаев Г. Стратиграфия и двустворчатые моллюски верхнеюрских карбонатных формаций Западного и Южного Узбекистана. Автор дисс. сахар - геол. - мин. наук. Душанбе, 1987, 19 с.
2. Абедов Э. М. Верхнеюрская карбонатная формация юго-западных рукавов Гисарскии. Версия. Наука, Ташкент, 1965, 138 с.
3. Акрамходжаев А. М., Эгамбердиев М. Э.идр. Литология, стратиграфия и нефть и газ Юга и

Запада Узбекистана. Ташкент, 1971, 200 с.

4. Акрамходжаев А.М., Миркамалов Х.Х., Хусанов С.Т. и др. Биостратиграфическое обоснование корреляции многофазных волокон юрских терригенных и карбонатных формаций западного Узбекистана как основа целевого освоения месторождений нефти и газа. Тезисы IV лекций. Межведомственная стратиграфическая конференция. Ашхабад, 1983 год. С.I4-I6.
5. Turdiyev, Sh., Komilov, B., Rabbimov, J., & Bo'riyev, S. (2022). Murodtepa maydonida izlov-qidiruv ishlarini baholash tamoyillari va iqtisodiy samaradorlik ko'rsatkichlari. Eurasian Journal of Academic Research, 2(11), 246-250.
6. Turdiyev, Sh., Komilov, B., Rabbimov, J., Bo'riyev, S., & Azimov, A. (2022). QIZOTA (YOSHLIK II) MAYDONINING GIDROGEOLOGIK TUZILISHI. Eurasian Journal of Academic Research, 2(11), 242-245.
7. Турдиев, Ш. Ш. У., Комилов, Б. А. У., & Раббимов, Ж. Ш. (2022). АНАЛИЗ ТЕКУЩЕГО СОСТОЯНИЯ И ПРОБЛЕМЫ РАЗРАБОТКИ ПОДГАЗОВЫХ НЕФТЯНЫХ ЗАЛЕЖЕЙ. Universum: технические науки, (11-3 (104)), 58-62.
8. Turdiyev, Sh., Komilov, B., Rabbimov, J., & Azimov, A. (2022). QIZOTA (YOSHLIK II) MAYDONINING STRATIGRAFIYASI. Eurasian Journal of Academic Research, 2(11), 502-504.
9. Rabbimov, J. S. (2022). QATLAMDAN KELAYOTGAN OQIMNI JADALLASHTIRISH MAQSADIDA QATLAMGA KISLOTALI ERITMA BILAN ISHLOV BERISH (MURODTEPA MAYDONI MISOLIDA). Eurasian Journal of Academic Research, 2(3), 373-378.