

IRP02

## Stratigraphic Analysis of the Cretaceous Petroleum System, Sulaimani Area, Kurdistan, Iraq

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### SUMMARY

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The Cretaceous sequence of northeast Iraq form an important petroleum system in housing potential source rocks such as the Balambo, Sarmord and partly Shiranish Formations. It also includes an important reservoir rocks accompanied by good secondary porosity such as the Qamchuqa and Kometan Formations. This study examined three surface localities at Pira Migroon anticline, northeast of Sulaimani city, and three subsurface wells of neighboring oil fields: Miran East (ME-1), Bazian (Ba-1), and Chemchamal (Ch-2) from Sulaimani area of Kurdistan region of northeastern Iraq. The study applies stratigraphic analysis, microfacies investigations, and lithostratigraphic correlation in an attempt to characterize these units at this area, and to give an insight regarding their stratigraphic architecture's impact on the development of the important Cretaceous petroleum system of the area.

## **Introduction**

The Cretaceous sequence of northeast Iraq form an important petroleum system in housing potential source rocks such as the Balambo, Sarmord and partly Shiranish Formations. It also includes an important reservoir rocks accompanied by good secondary porosity such as the Qamchuqa and Kometan Formations.

## **Method and/or Theory**

This study examined three surface localities at Pira Migroon anticline, northeast of Sulaimani city, and three subsurface wells of neighboring oil fields: Miran East (ME-1), Bazian (Ba-1), and Chemchamal (Ch-2) from Sulaimani area of Kurdistan region of northeastern Iraq. The study applies stratigraphic analysis, microfacies investigations, and lithostratigraphic correlation in an attempt to characterize these units at this area, and to give an insight regarding their stratigraphic architecture's impact on the development of the important Cretaceous petroleum system of the area.

## **Conclusions**

Microfacies analyses show the occurrences of deep to shallow marine facies. It ranges between basinal foraminiferal - Oligostiginal grainstone to wackestone (Balambo, Sarmord, Kometan, Shiranish, and parts of the Tanjero Formation) to bioclastic - foraminiferal packstone to wackestone of the Qamchuqa Formation. The Dolostone part of Qamchuqa Formation is characterized by medium to coarse crystalline planar-e to planar-s dolomite mosaic with common intercrystalline, vuggy, and fractured porosities.

The Late Cretaceous units of the Kometan, Shiranish, and Tanjero Formations in both outcrop and subsurface wells, show close stratigraphic similarities throughout the study area, and as compared to the surroundings. It makes a considerable reservoirs especially when it shows intensive fracturing. The Early Cretaceous units of the Balambo, Sarmord, and Qamchuqa Formations, however, show lateral and vertical stratigraphic variations in lithology and thicknesses and potentiality in both northward and westward directions. The basic difference is the change of the deep marine Oligostiginal marly limestone of the Balambo Formation (potential source rock) into the dolomitized platform carbonates of the Qamchuqa Formation (Significant reservoir rock at northern Iraqi oil fields) in both directions. This lateral changes passes through a transitional zone of inter-fingering relation, which extends for up to 15 Km in width. This zone plays an important role in developing the Cretaceous petroleum system of the area by forming the passage for the generated oil from source into the adjacent Qamchuqa reservoir.

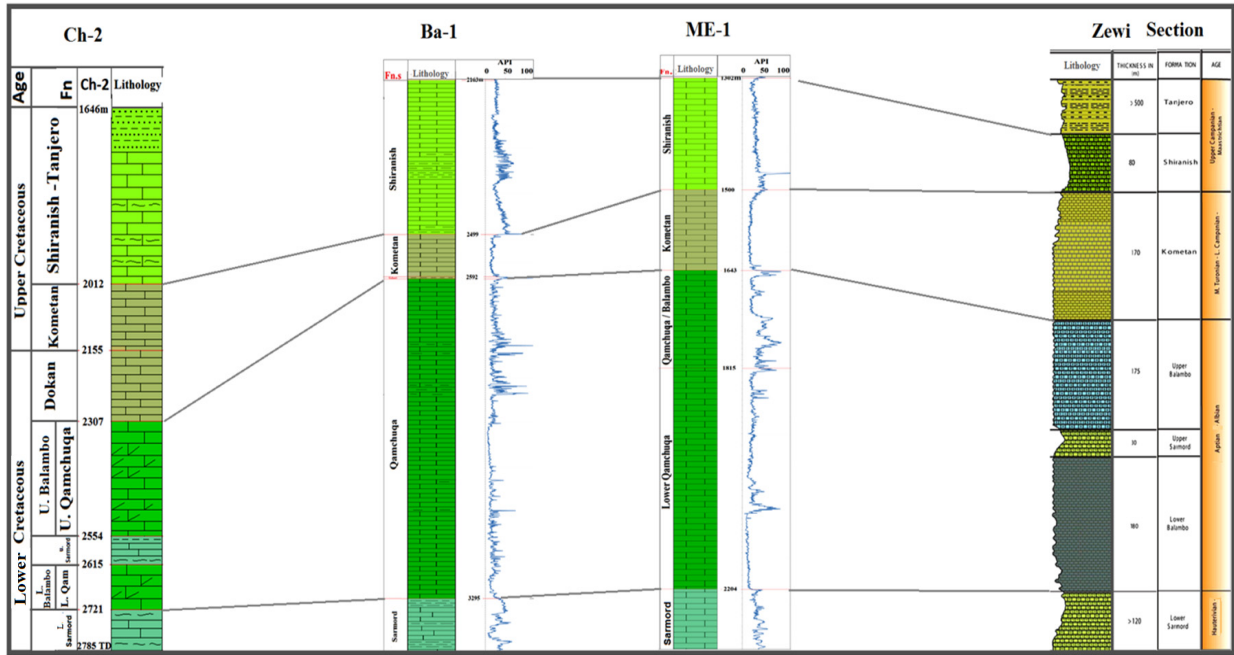


Figure 1 Stratigraphic correlation of surface and subsurface sections of the study area.