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Climate Stratigraphy In Subsurface Correlation: An Application In Resak Field, Malay Basin, Malaysia.

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Abstract

This paper presents an entirely new stratigraphic interpretation based on climate stratigraphic approach using spectral (frequency) analysis of facies-sensitive wireline-logs. Climate stratigraphy is a newly emerging stratigraphy concept that is defined as a stratigraphic succession of climatic changes through geologic time. The study was conducted on major Miocene clastic reservoirs (Groups H, I and J) of the Resak Field, Malay Basin, Malaysia. From climate stratigraphic analysis, at the semi-regional scale, a new marker for Group H was identified. High-resolution correlation up to 6th order was carried out that further refined the existing stratigraphic framework of the Resak Field. Integrating data such as seismic, sequence stratigraphy, cores and biostratigraphy have proven its importance in guiding and constraining the climate stratigraphic analysis and interpretation of wireline log. Although the new climate stratigraphic scheme in this study is provisional and applies to the study wells only, but the application of the climate stratigraphy in this study has been considered successful and can be adopted.

Introduction

This study evaluates the applicability of climate stratigraphy as an alternative high-resolution correlation technique for the Miocene clastic reservoirs of Resak Field, Malay Basin. Climate stratigraphy is a newly emerging concept which uses cyclicity of climatic changes. The key questions to be addressed include “Can climate signals derived from facies sensitive wireline logs be used to establish a near-synchronous high-resolution stratigraphic framework and correlation in the Miocene clastics reservoirs in the Resak Field?” Specifically, the study was focused on an entirely new methodology for the stratigraphic interpretation based on climate stratigraphic concept by using spectral (frequency) analysis of facies-sensitive