

Carbonate Sequence Stratigraphy of Central Luconia Build-Ups – New Thinking Needed

Coca, Spencer, Sarawak Shell Berhad, Miri, Malaysia

Core and well log data from 28 Miocene carbonate fields were analysed in a sequence stratigraphic context. Paired with interpretation of regional seismic lines a new sequence stratigraphic scheme for the carbonate section of the Central Luconia province was developed. Analysis of data showed good agreement between the stratigraphic record and published global sea level curves, clearly indicating that eustasy was the main controlling mechanism in carbonate platform development. However, localised tectonics played a role at times and was responsible for considerable facies variations. The sequence stratigraphic scheme is supported by chronostratigraphic data (Sr-isotopes) and was used to aid reservoir correlations at a regional level.

Extensive periods of subaerial exposure marked by intense karstification are part of the carbonate record. Based on the new interpretation, the vast majority of Central Luconia build-ups were terminated at three different third-order sequence boundaries during periods of sea level lowstand, being thereafter progressively drowned by advancing pro-deltaic clastics. This is in contradiction to the current understanding, whereby the demise of build-ups was as a result of rapid transgression and terminal back-stepping.