Sharpening Brunei's Subsurface: Refining Current Structural-Stratigraphic Concepts With New Seismic Data

(Original short abstract)

Authors: Arthur Kellermann Slotemaker, Keith Campbell, Anton Koopman, Benedikt Lehner & Matt Mueller

Abstract

To serve the goal of ongoing rejuvenation of BSP's (Brunei Shell Petroleum's) heartland and aiming for a more robust exploration portfolio, a next phase of refining the tectono-stratigraphic architecture was initiated. To improve understanding of the large-scale basin evolution based on a multitude of currently available exploration play evaluations, a set of upgraded regional horizons were produced, based on new BroadSeis seismic data, blanketing Brunei's entire offshore territory wall-to-wall. These horizons were used as constraints in creating a full 3D interpretation model applying Shell proprietary Stratascan workflow on a merged seismic data set of up to 10+ Gb (decimated) covering an area of 10.000+ km2. Together with a 'second to none' well database this re-interpretation effort has resulted in exiting new tectono-stratigraphic insights, and recognition of additional prospectivity. Subsequent application of existing & new Shell proprietary scanning techniques will allow full probing of the merged seismic cube. Furthermore, sharpened imaging from the new seismic provides opportunities to refine our model of deep-seated structural elements (e.g. the allochthonous front, basement trends), the interplay between thin- and thick-skinned tectonics, and where to put the main tectono-stratigraphic boundaries associated with the oldest Miocene NW-directed deltaic system and even older accretionary & rift units. Based on this deeper imaging some new structural-stratigraphic concepts are proposed for both the western and eastern offshore sector, which will potentially result in yet more exploration prospectivity rejuvenating one of Shell's oldest heartlands for oil and gas.