Value Creation of Integrated 3-D data and 2-D OBN Data Processing Towards Solving Imaging Challenges in Large Gas Cloud Environment : Case Study Offshore Malaysia

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ABSTRACT

Here we showcase the results of the integrated reprocessing of 3-D marine streamer data and 2-D acquired Ocean Bottom Node (OBN) data. Both datasets were acquired offshore Malaysia with a very complex geological setting containing thickening and thinning layers of carbonates, very large extended gas clouds of upto 25 km width, highly faulted zones and shallow thin gas layers. Our objectives were to improve the seismic imaging of deeper pre-carbonate section affected by gas clouds and to enhance the faults delineations and definitions in the area. Because of the above described very complex geological setting, we observed many distorted signals in the gathers and this created many wipe out zones in the vintage data that was processed originally. We implemented a very detailed, sequential and systematic workflow addressing the various complex geophysical imaging challenges to further improve the zones affected by all geological complexities. Diving wave tomography and Q tomography technologies were the main drivers to improve the stratigraphic structures and were utilized to optimally recover some of the signals affected by the thin shallow gas layers and huge gas cloud bodies.