

Offshore Peru, Trujillo Basin, Block Z-46: 2-D PSTM Seismic Processing Reveals Deep Basins, Deformed by Different Episodes of Normal and Trans-tensional Faulting, and Thick Eocene/ Oligocene Stratigraphically complex Submarine Fans Linked to Evidence of Hydrocarbons/DHIs
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Update from the offshore Peru Trujillo Basin: reprocessing (2009) of 5600 line km of 1993/1996 vintage 2D seismic , using advanced prestack Radon noise removal and Kirchoff curved ray PSTM migration shows Lower Cretaceous to Early Tertiary (Eocene, Oligocene and Lower Miocene) deep basins in stunning detail, not previously interpretable using the original data. Block Z-46 has only a few wells, drilled before 1999, in approx 300 meters of water, executed previous to current operator SK Energy, one with oil shows in the Eocene/ Oligocene. New seismic reprocessing shows that 3 older wells in the south part of the block were drilled on “bald” uplifted Paleozoic basement horsts, one with oil shows, out of the fairway of extensive Eocene and Oligocene submarine fans likely present downdip in fault-bounded closures, and in stratigraphic pinchouts. There is evidence of DHIs near the seafloor and in seismic chimneys suggesting hydrocarbon charge after trap and seals were in place.

3D visualization of the 2D data reveals the probable entrance point of early Tertiary deposition in the south part of Block 46 occurred through erosion of a zone of weakness in the adjoining Salavarry basin near the coastline of Peru. The 2D also shows that the Block Z-46 has a late overprint of regional plate tectonic Tertiary-age wrench faults that deform normal faulting of the Paleozoic/ Mesozoic horsts and grabens. The presentation is illustrated with numerous 2D seismic examples showing un-tested Tertiary trap concepts; shingled, stacked submarine fans, well log AVO properties, and suggests that local faulting is complex enough to require more seismic shooting to resolve mapping geometries.