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# Volta Fan Fold Belt Hydrocarbon System, Keta Arch, Ghana

The Volta Fan Fold Belt developed during the Upper Cretaceous, along the Romanche Fault Zone in Eastern Ghana, West Africa. Potential source rocks include marine shale deposited during the Turonian and Campanian Atlantic Basin anoxic events. A rapid deepening of the Keta Basin, after the continental shelf of Brazil migrates past the area, allows deposition of a thick Cenomanian clastic wedge followed by Santonian basin floor fans. During the Maastrichtian, structural inversion from right lateral transpression along the Romanche Fault Zone formed the Volta Fan Fold Belt thrust structures. During this structural event, the Niger River may have captured the northern Volta drainage area and the Keta Basin became sediment starved. The Volta drainage system was re-established with an Eocene shelf edge delta along the Romanche Fault.

Numerous canyons were cut across the shelf during the Oligocene, 30 my unconformity. Lower Miocene turbidities fill erosional topography with shelf edge, ponded and basin floor fans. Onlapping fans are deposited around the Keta Arch during the Middle Miocene, followed by a major progradation of the Upper Miocene shelf. Hydrocarbon generation from the Upper Cretaceous source is initiated during the Miocene loading. The inversion structures control deep migration and shallow listric normal faults allow hydrocarbon leakage to the sea floor forming oil slicks and gas seeps. A radial canyon system is observed at the sea floor over the Keta Arch. These canyons are interpreted to form by headward erosion and slumping at a decollment zone between the free gas and gas hydrate zones at the sea floor.