

Why is There Oil in Southern Senegal and Gas in the North?

Occasional short releases by First Exchange Corporation on the MSGBC Basin #2
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In 2013 the giant SNE oil discovery was made in Southern Senegal by Cairn. Two years later Kosmos discovered gas in the Greater Tortue region some 275 kilometers to the north in a giant scale trap that straddled the Mauritanian border. The geology of each of these oil and gas areas are similar, yet the hydrocarbon charge is quite different.

First Exchange Corporation (FEC) has an explanation for this difference that is detailed in their recent MSGBC Petroleum Systems Study. In summary the explanation relates to the volume and nature of the sediment supply to the Senegal offshore during the mid-Cretaceous. Northern Senegal was the exit point during that time of the dominant arm of the now extinct Casamance Delta (Figure 1) and, as a result, the northern region now hosts a far thicker section than is present to the south.

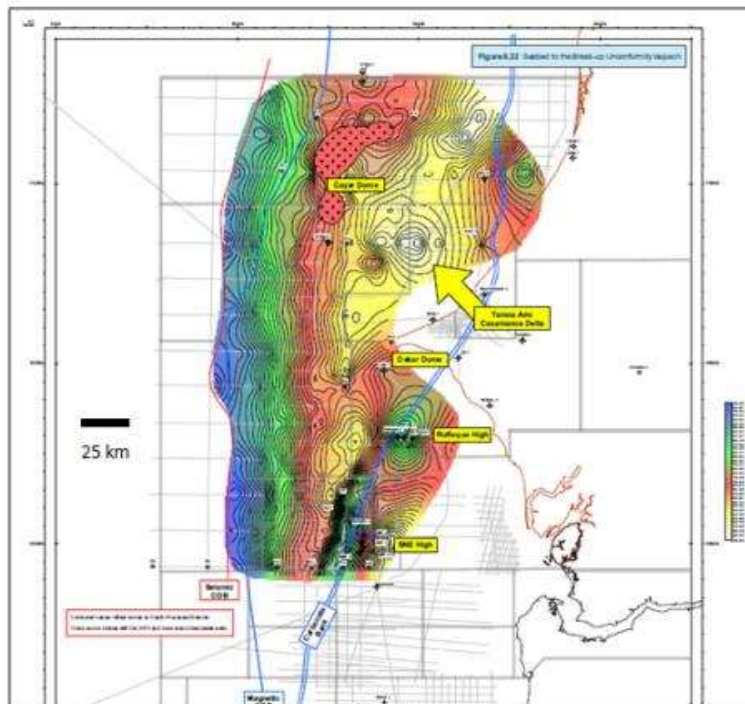


Figure 1. Seabed to Break up unconformity thicknesses in Northern Senegal.

Strike orientated seismic (Figure 2) reveals higher levels of maturity exist in the north due to a combination of deeper burial depths of the source section and higher heat flows related to subsequent Cenozoic magmatism. The outcome is a greater volume of gas generation in the north compared to the south.

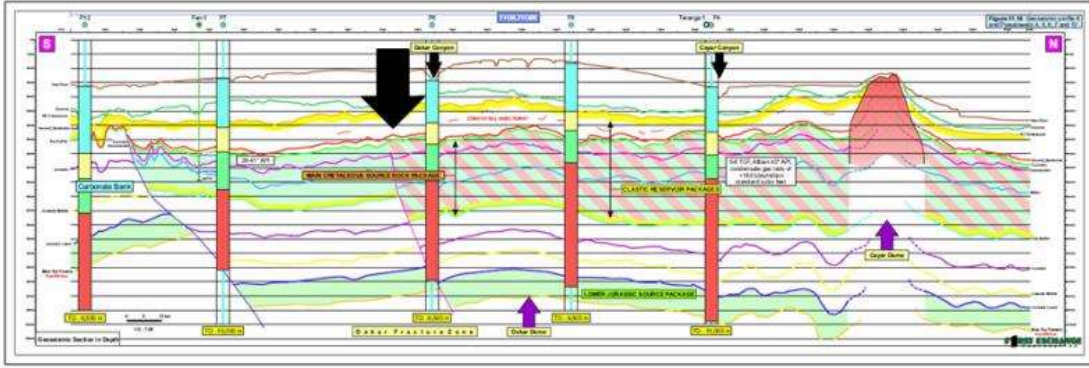


Figure 2. FEC north-south strike geoseismic profile. The Dakar Fracture Zone defines this change in environments and is located by the black arrow on the profile.

A third factor contributing to the volume of gas in the north is the nature of the kerogens within the source section. Within the Tamna Arm, Type III and IV kerogens supplied by the Casamance Delta dilute the otherwise prevalent presence in the MSGBC Basin during the Aptian to Turonian of upwelling related, Type II kerogens (Figure 3).

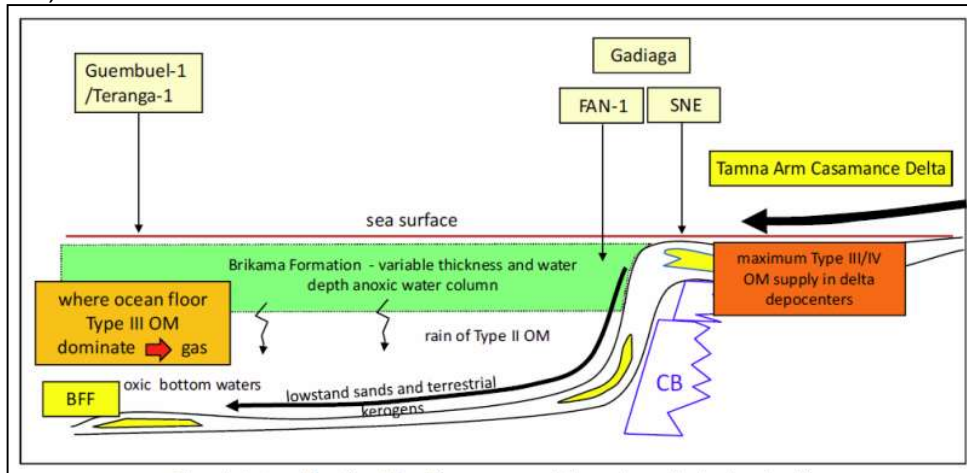


Figure 3. Kerogen controls during the mid-Cretaceous in Senegal.

More details on the Cretaceous source rocks and the associated exploration opportunities may be readily obtained from First Exchange Corporation’s completed research whose contact details are provided below.



+1 (713) 278-2745
7880 San Felipe St., Suite 105
Houston, TX 77063 USA

dhearn@fec.bz
www.first-exchange.com

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