

# Hydrocarbon Potential of the Republic of Guinea Bissau; Volume I - Biostratigraphic Well Correlation

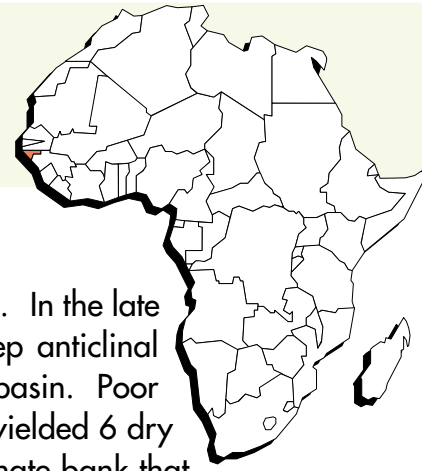
## The Casamance/Guinea Bissau Salt Basin: Examination and Correlation of Key Offshore and Nearshore Wells with DSDP Corehole 367



Offshore West Africa is fast becoming one of the most prolific plays in the world. Much of the attention is focused on the central Africa countries of Nigeria, Angola and the like. Overlooked, but similar in geologic history is the northwest margin of Africa, notably Senegal, The Gambia and Guinea Bissau. First Exchange Corporation is excited to announce the latest in a series of studies commissioned to examine the unevaluated potential of the northwest margin. The Biostratigraphic Well Correlation of the Offshore Republic of Guinea Bissau is an extension of work previously conducted for offshore Senegal. The principal investigators are Dr. Ray Bate and Dr. Nick Cameron of Lacustine Associates, along with noted geochemist Dr. Andy Carr. Two Biostratigraphic Profiles comprised of 10 wells, eight of which are positioned in the salt basin. Previous studies in this series have documented the presence of mature, oil prone, Albian source rocks off Senegal and The Gambia. Untested, deep-water fan reservoirs were identified in proximity to these source rocks. This study continues to trace the presence of mature, oil prone, Albian, Cenomanian and Turonian source rocks off the coast of The Republic of Guinea Bissau. The reservoirs on the shelf are generally of excellent quality. The main targets are shallow marine Albian and Maastrichtian sands derived from a large onshore delta system. Detailed biostratigraphic and lithologic summaries have been generated for each well, to better understand depositional environments and reservoir quality. Geologic models based on the above criteria were constructed to better predict reservoir quality trends.

### REGIONAL GEOLOGY

The Republic of Guinea Bissau is located on the north Atlantic margin of West Africa, immediately south of Senegal. Mesozoic rifting, responsible for the opening of the north Atlantic, left a series of grabens, half-grabens and horst blocks along the coastal areas. Jurassic salt was deposited in the grabens and half-grabens. At the cessation of rifting, the margin became passive and thick sequences of Cretaceous marine and deltaic sediments were deposited above the salt, loading it and initiating diapiric movement. Several transgressive/regressive episodes during the Cretaceous and Tertiary have resulted in a complex depositional history. Diapiric salt affords both a structuring and a migration mechanism. Most of the 10 offshore wells targeted salt related traps.



## EXPLORATION HISTORY

There have been 3 periods of exploratory drilling in the waters off Guinea Bissau. In the late 1960's, Esso (now Exxon) drilled 6 wells. The PGO wells targeted either deep anticlinal structures in the northern portion of the basin, or salt related traps in the central basin. Poor reservoir quality in the north and poor seismic imaging in the central salt basin yielded 6 dry holes. In 1984 Elf drilled the GBO-1 well to test the Barremian - Albian carbonate bank that underlies the Cretaceous shelf. The target limestone reservoir lacked any primary porosity. Good oil shows were encountered in the overlying Turonian-Cenomanian shales. The last drilling campaign was conducted by Pecten (Shell) in 1989-1990. Three wells, SHO, DRO and BAO were drilled. Poor reservoir quality and poor seismic imaging resulted in 3 dry holes.

These 10 wells targeted 3 play types; 1) deep anticlinal structures, 2) carbonate bank, and 3) diapiric salt traps. Two common causes of failure were noted, highly variable reservoir quality across the basin and poor seismic imaging. The issue of seismic imaging was addressed by a separate initiative (Guinea Bissau Reprocessing Project conducted by Veritas and FEC). This study addresses the first issue, a better understanding of both source rock and reservoir rock quality and distribution.

## STUDY CONTENT

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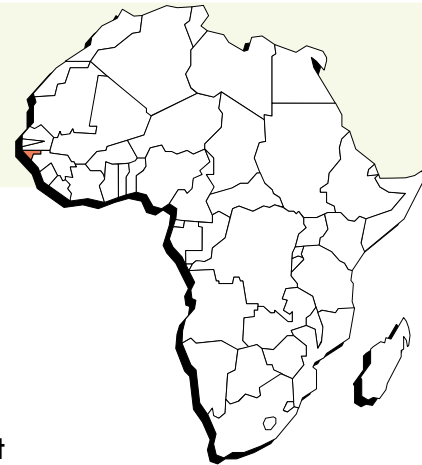
## DELIVERABLES

Two Source and reservoir distribution profiles

Well Summary Displays

Source & Reservoir Compilation Maps

Geologic Models



## PROFILES

Profile A	Well Name	TD (Section)	Age at TD
	DSDP 367	5,901 m, (1,153m)	Oceanic Crust
	CM-10	3,755 m	Aptian
	CO-1	2,003 m	Silurian
Profile B			
	CM-10	3,755 m	Aptian
	PGO-1	2,482 m	Senonian
	DRO-1	2,201 m	Campanian
	SHO-1	3,320 m	Aptian
	PGO-3	3,881 m	Aptian
	BAO-1	3,003 m	Aptian
	PGO-4	3,272 m	Aptian
	PGO-5	1,995 m	Salt

## PRICING

Pricing for this report is \$15,000, plus reproduction and delivery charges.

Special pricing available if this report is licensed in conjunction with the follow up study, Petroleum Systems of the Offshore Area, Republic of Guinea Bissau. Reference is made to our similar product for Offshore Senegal, An Assessment of the Hydrocarbon Potential of the Senegal Basin, as an example of what this Guinea Bissau Biostratigraphic Study involves.

Study Manager in Houston is John Dombrowski. Information regarding this Study or any of our additional NW Africa Studies may be obtained from the contacts below.