

Evolution From Shelf to Deep Water Exploration in the Niger Delta, Nigeria

By

*Elwood Hardman, Exploration Consultant, Evergreen, Colorado
(Formerly President, TGS International Co.)*

Exploration of deep water Niger Delta has evolved due to major advances in exploration and drilling technology including availability of new data, changes in the investment environment and the relative political stability of host governments. With new technology available, industry was ready for deep water exploration throughout the world. It is significant that major improvements in licensing terms were made coincident with the developing technologies. In the Gulf of Mexico, Area Wide Leasing was offered beginning in the mid eighties. By the late eighties several west African countries and particularly Nigeria offered large deep water blocks with lowered royalties and guaranteed profit levels under modified production sharing contract arrangements.

These improved terms and new technologies changed the exploration philosophy throughout the industry. Seismic contractors changed their mode of non-exclusive operations. Major oil companies sold company seismic vessels to concentrate their budgets on land acquisition, exploration and drilling. Application of new technologies on a regional basis was left to contractors with non-exclusive studies followed by proprietary studies and 3-D seismic at the prospect stage after lease blocks were acquired by participating oil companies.

By extending the knowledge base from the onshore and shelf areas of the Niger Delta with the application of modern concepts of biostratigraphy, sequence stratigraphic and structural interpretation, coupled with velocity studies and further complemented by potential field surveys, the risk of exploration in deep water has been significantly reduced. Early drilling results have proved major reserves.