

Unveiling Nigeria Petroleum Province Deep Potentials

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The Niger Delta including the Nigeria's sector of the Gulf of Guinea is a confirmed prolific petroleum province. For over 50 years, the trend of active exploration activities witnessed an era for discoveries of giant fields in the shallow and intermediate reservoir intervals. Further indications showed that this era is gradually becoming an exploration history. Since first oil discovery in 1956, the current deepest drilled depths range from 4000m to 5000m tvd in the Land terrain and between 5000m and 6400m tvd ss in the shelf and deepwater zones in a sedimentary cover of over 40,000ft (12,192m).

The strategy was based on the "oil window" concept which led to particularly exploring the shallow and intermediate lithofacies of the Miocene to Pliocene age and indirectly shifted the focus to mainly oil exploration and limited seismic depth of investigation to these intervals while a significant Oligocene (Chattian) and Miocene deep plays in the "gas/condensate window" were largely unexplored.

Available data revealed that the next generation of giant opportunities reside in the unexplored deep reservoir intervals which may range from the specific field total drilled depth to 7000m tvd (ss) depending on the structure and stratigraphy and when aggressively pursued over 33 boe is realisable from the zone.

The purpose of this study is to review the existing data and come up with a realistic assessment of the remaining petroleum potential of the Niger Delta and Deep offshore zones using the available datasets.

There are obvious risks and challenges associated with deep exploration. The petroleum traps and entire petroleum system has not drastically changed from the known intervals and established environments. Hitherto, the quality of available old seismic vintages in the zone is a major constraint in providing accurate resource evaluation in addition to the drilling challenges in HTHP conditions. The result demonstrates a strong commitment to realising Nigeria aspirations of 20 2020 for sustainable oil production and reserves growth.