International Journal of Engineering & Technology, 7 (4.36) (2018) 1002-1005

International Journal of Engineering & Technology

Website: www.sciencepubco.com/index.php/IJET

Research paper

Oil Well Fordacos – Nigeria

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Abstract

In this article we will touch upon one of the most important oil region in Africa, the Niger Delta, it is located in southern Nigeria, with an area of about 292,407.m2 Niger Delta knows how geological feature, offer huge reserves of hydrocarbons. The stratigraphic sequence of the Niger Delta consists of three broad lithostratigraphically. Units and its geochemical analyses of rocks have shown that clays from the lower coastal plain, marine Delta sediments (prodelta) and completely marine areas can be enriched with both terrestrial plant material and non-structural organic matter. That is an indicator of wealth.
Forcados (forcados) in the Niger Delta province and follow plays a crucial role in the Nigerian economy and the world oil exchange. Forkados field, its physical and geographical location, Characteristics, molar and mass content of oil composition

Keywords: *Forcados, Delta Niger, Nigeria, Output, petroleum refining, offshore, Royal Dutch Shell economics.*

1. Introduction

The field represents set of the deposits of oil and gas dated for uniform tectonic structure and located within one area. Fields can be monodeposit and multideposit. In size of recoverable oil reserves and balance reserves of gas of the field are subdivided on unique, large, average and small. [5, p 9].
The key parameters characterizing oil fields: a geological structure of the area of the field, an arrangement of local structure concerning structures of higher order, existence of various structural plans, the characteristic of the productive horizons and fluid seal, types and quantity of traps and deposits, a phase condition of hydrocarbons in deposits, deposits, their density on the area, etc. The oil field can unite several structural floors that very much complicate its investigation and development, and demands studying of ratios in respect of contours of deposits among themselves and with contours of structures [5].
Depending on forms of stay, communication with the minerals, main for this field, and taking into account requirements imposed by the industry to development, passing minerals and components are subdivided into groups.
The passing minerals forming independent layers of a deposit or ore bodies in the breeds containing the main mineral belong **to the first group [5]**. In relation to oil and gas fields it is possible to carry the underground waters of productive layers or the water-bearing horizons containing the increased concentration of iodine, bromine, a pine forest, compounds of magnesium, potassium, lithium, rubidium, strontium and other components and also the underground waters suitable for balneological, heat power and other purposes to such passing minerals.
The components concluded in mineral allocated at its production (separation) in independent products belong **to the second group [5]**. B oil pools is the dissolved (passing) gas, and in gas-condensate - condensate. In Classification of deposits and resources of 1983 they are considered as the main minerals.
The passing useful components which are present at composition of the main mineral and allocated only at its processing belong **to the third group [5]**. On many oil fields and bitumens such components vanadium, titanium, nickel, etc. can be gray (in the form of hydrogen sulfide and other sulphurous connections). The free and dissolved gases contain ethane, propane, butane and also may contain hydrogen sulfide, helium, argon, carbon dioxide, sometimes mercury. Can be present at underground waters of oil and gas fields as it was noted above, iodine and bromine and also the compounds of various metals referred to useful components III of group. When determining deposits of fields reserves of oil, gas, condensate and the components which are contained in them (ethane, propane, buds, sulfur, helium, metals) which expediency of extraction is proved by technological and technical and economic calculations are subject to obligatory calculation and account. Calculation and accounting of reserves of these minerals and components having industrial value are made on each deposit separately and to the field in general on existence them in a subsoil without losses when developing fields. Expected resources are estimated separately on oil, gas and condensate and also on the components which are contained in them. Calculation, account and assessment of deposits and perspective resources and assessment of expected resources are made under the conditions given to standard (0,1 MPas at 20 °C).

2. Geographical Arrangement of Nigeria and Geological Characteristics of the Niger Delta

Nigeria is located in the Western Africa on the coast of the Gulf of Guinea and occupies the space of 923 768 km ². Being the 32nd country in the world and the 14th in Africa across the territory with the population in 167 million people, Nigeria is the largest producer of oil in Africa - about 2,5 million barrels a day. The Forcados field (forkados) in the province the Delta of Niger is located in the south of Nigeria. The delta of Niger it is presented in the drawing-1 [8].

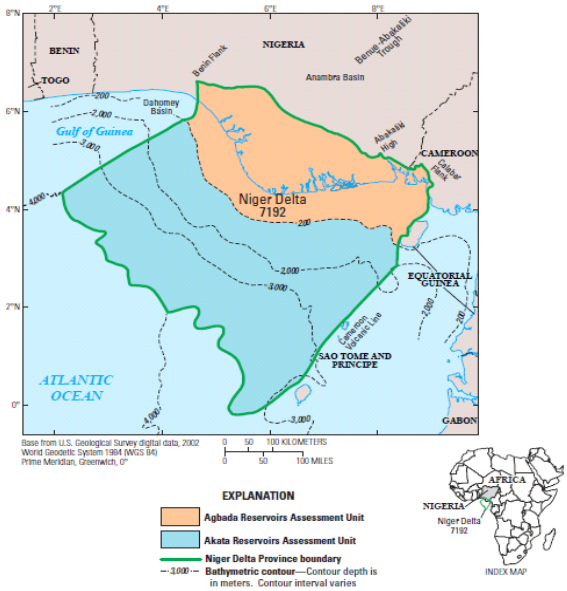
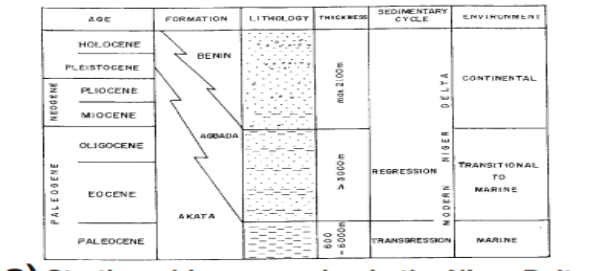
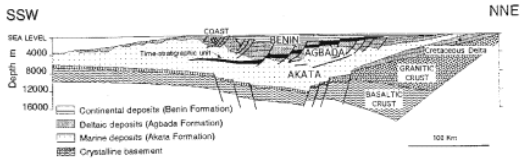


Figure 1: Delta of Niger

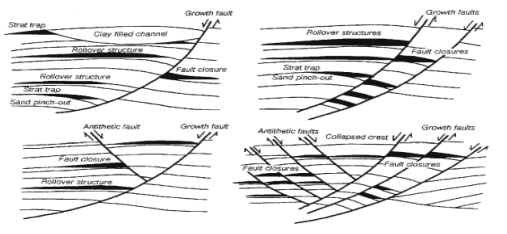
The Stratigraphic sequence of the Delta of Niger consists of three wide lithostratigraphic units: the continental shallow massive sandy sequence - the Beninese formation; the coastal sea sequence of the alternating sands and slates - Agbada formation and basal division of sea slates - Akata formations. Akata consists of clays and soapstones with small layers of sand. Almost all industrial congestions of oil and gas meet in deltoid Agbada sandstones. Congestions of hydrocarbons are generally connected with structures of breaks of growth in which traps arise in the closed zones or against one or several breaks, especially in their overgrown party. To a stratigraphy of structural elements and ways of bedding of hydrocarbons in the Delta of Niger it is presented in the figure 2[1].



a) Stratigraphic succession in the Niger Delta



b) Stratigraphic succession, subsidence and progradational cycle model of the Niger Delta



c) Hydrocarbons are generally trapped in rollover anticlinesand growth fault closuresi n the Niger Delt

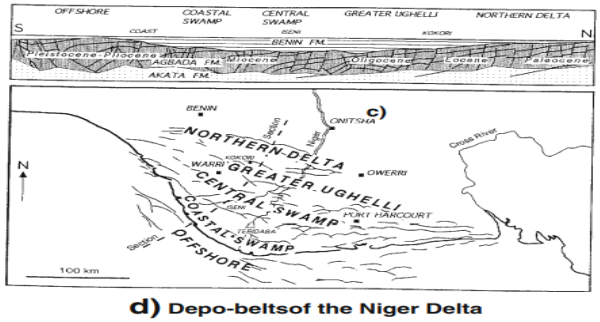


Figure 2: Stratigraphy of structural elements and ways of bedding of hydrocarbons in the Delta of Niger

Geochemical analyses of the Delta of Niger on oil, as a rule, indicate that the main source of hydrocarbons is plant material of the earth and unstructured organic substance. Analyses of rocks showed that clays from the lower coastal plain, sea deltoid deposits (prodelta) and completely sea areas can be enriched with both land plant material, and unstructured organic substance. Lower coastal flat deposits, such as marsh clays and coals, seldom remain on the place in large volumes in the Delta of Niger. These deposits are usually processed and repeatedly besieged in the form of sea deltoid clays and full sea clays [1].

Gas chromatogram of oil and associated gases show variable compositions of oil which indicate differences in the environment of sedimentation of related initial breeds. Changes in ratios prishtan / phitan are connected with change of the environment of initial rocks from sour swamps with insignificant bacterial processing to more water, less acidic environments where bacteria process seaweed and plant material to unstructured organic substance. Content of wax and a point of hardening - biodegraded on API> 25. Average and heavy oil, as a rule, break up on API <25 [1]. Hydrocarbonic deposits of the region are presented in the figure 3.

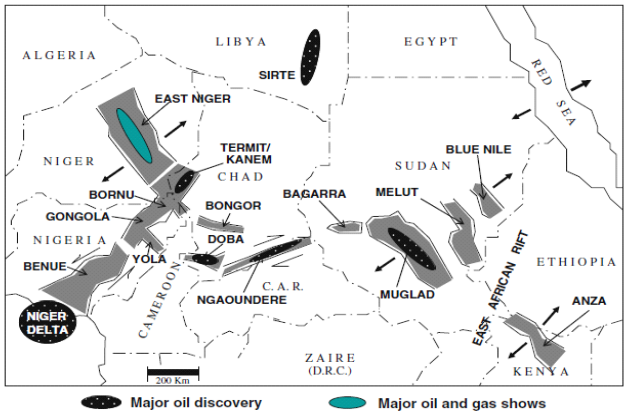


Fig 3: Hydrocarbonic deposits of the region

In the drawing the regional tectonic map of West and Central African rift basins showing Muglade's interrelation, Doby and East Niger to Benue through the pool of Gongola is submitted. Destinations of regional areas of the scissors (marked by a half arrow) and promotions of the main zones (noted by a full arrow) are also shown. (It is adapted from schull, 1988),

3. Assessment of unsolved reserves of oil and gas in the province the niger delta

Unsolved reserves of oil and gas in the province the Delta of Niger are estimated as average volumes of the unsolved, technically taken traditional reserves of oil and gas for Agbada assessment block - collectors at provinces the Delta of Niger (Table 1) [8] at the level of 1,616 million barrels of oil, 9,454 billion cubic feet of

gas and 494 million barrels of liquid natural gas. The settlement average size of the largest oil field, as expected, will be found at the level of 274 million barrels of oil, and the settlement average size of the expected size of the gas field will be 981 billion cubic feet of gas. Calculated values of volumes for Akata tanks can be estimated at the level (Table 1) of 13,918 million barrels of oil, 48,767 billion cubic feet of gas, and 5,832 million barrels of liquefied natural gas with estimated average sizes of the largest oil and gas fields of 4,119 million barrels of oil and 13,355 billion cubic feet of gas, respectively. For such assessment, the minimum size of unopened fields on 1 million barrels of an oil equivalent for assessment of Agbada tanks was used and the minimum size of unopened fields of 5 million barrels of an oil equivalent - for assessment of Akata Otsenka tanks of unsolved reserves of oil and gas in the province the Delta of Niger is presented to us in the table 1[8].

Table 1: Assessment of unsolved reserves of oil and gas in the province the Delta Niger.

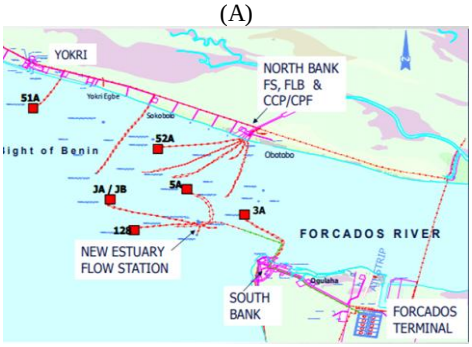
Province, Total Petroleum Systems (TPS) and Assessment Units (AU)	Field type	Largest expected mean field size	Total undiscovered resources											
			Oil (MMBO)				Gas (BCFG)				NGL (MMBNGL)			
			F95	F50	F5	Mean	F95	F50	F5	Mean	F95	F50	F5	Mean
Niger Delta Province—Tertiary Niger Delta TPS														
Agbada Reservoirs AU	Oil	274	526	1,437	3,326	1,616	1,904	5,387	13,011	6,139	65	245	904	339
	Gas	981					751	2,742	7,817	3,315	30	120	397	155
Akata Reservoirs AU	Oil	4,119	4,321	12,271	29,129	13,918	5,432	16,270	45,864	19,779	143	433	1,253	535
	Gas	13,355					5,862	21,723	78,443	28,988	1,030	3,886	14,491	5,297
Total Conventional Resources			4,847	13,708	154,081	15,534	8,949	46,122	145,135	58,221	1,268	4,684	17,045	6,326

NGL (MMBNGL): Gas Condensate
OIL (MMBO): Oil
Gas (BCFG): Gas

4. Field of forkados

The Fordakos field it is located in the province the Delta Niger. It is located on the shelf and is one of the fields, largest in the country, capable to produce 400 000 barrels a day. The Forkados field and the Trans-Forkados Pipeline transport more than 60% of crude oil production in structure of Shell Petroleum Development that is presented in the drawing-4. [6, p 4]. and [7, p 7].

(A)



(C)

Figure 4: Forkados Field.

6. The characteristic of oil (fordakos) to oil refinery

Approximate extent of preparation of Forkados oil from Nigeria is presented to SIR the table 2 [2].

Table 2: Approximate extent of preparation of oil (forkados from Nigeria) in SIR

Components	Methods	Units of measure	Results
Density at 15 ^{0}C,	NF EN 12185	Kg/m^3	865,5
Content of water	NF EN 9029	% v/v	0,050
ACIDITY	ASTM D 664	mg KOH/g	0,39
Content of sulphur	NF EN 8754	% m/m	0,16
Density, API	ASTM D 1298	-	32,0
Hardening temperature	NF EN ISO 3016	°C	-30

Royal Dutch Shell - the Netherlands-British oil and Gas Company, the fourth in size of assets production company in the world, according to rating, Forbes Global 2000 and first in the rating of Fortune Global 500 in revenue size. Royal Dutch Shell is management company of the field Fordakos in Nigeria. According to Nigerian national oil corporation (NNPC) only on the Forkados field from about 300 000 to 330 000 barrels a day are extracted [3].

It is claimed that the largest oil company in Europe finished force major speeding up of crude Forcados oil. The measure which allows the companies to pass contractual obligations was entered on February 21 last year. Deliveries this month will average about 250 000 barrels a day. Nigeria increases the number of barrels in the market while other members of OPEC try to remove them to support the prices [10].

7. Summary

Nigeria - the West African giant gaining 70% of the income from oil production - left the place as the leading producer of oil to Angola. But Nigeria just restored the positions of the largest producer of oil in Africa, having reached peak in 1,68 million barrels of oil production a day in October [10].

Let's remind that till June, 2016 Nigeria lost the first place of the exporter of black gold on the continent in favor of the Angola competitors. According to data of OPEC, Nigeria produces 1,5 million barrels a day (against 1,78 million for Angola) that made decrease by 21,5% in comparison with January, 2016 [11].

9. Conclusion

Forkados plays an important role in Nigerian and world oil economy as in view of various available information it is known that Forkados makes 20 percent of export of oil of Nigeria. But very many problems are connected with production, transportation and oil refining. One of examples which show this fact is that in Nigeria, the first country in Africa on oil production, and the eleventh in the world, the shortage of gasoline are a part of everyday life of her citizens. Corruption which is very widespread aggravates a situation in the country. Consistently bad distribution of riches often leads to defeat of oil installations or even strikes of the population in such provinces as the Delta of Niger.

Acknowledgements

Work is performed according to the program of competitive growth of the Government of the Russian Federation of Kazan Federal University
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