NIGERIA, MEETING THE CHALLENGE OF CRUDE OIL AND GAS PRODUCTION

BY

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<td><strong>STATE:</strong></td>
<td>AKWA IBOM</td>
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<td><strong>REGION:</strong></td>
<td>NIGER DELTA</td>
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<td><strong>COUNTRY:</strong></td>
<td>NIGERIA</td>
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<td><strong>JOB:</strong></td>
<td>EXXONMOBIL NIGERIA</td>
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MAP OF THE FEDERAL REPUBLIC OF NIGERIA
INFORMATION ON NIGERIA

- OFFICIAL NAME: Federal Republic of Nigeria
- PRESIDENT: Alhaji Umaru Musa Yar’ Adua of the PDP

PEOPLE
- POPULATION: 140 Million (July 2006 census estimate)
- POPULATION GROWTH: 3% (July 2006 census estimate)
- MAIN RELIGIONS: Christianity, Islamic and indigenous beliefs
- MAJOR ETHNIC GROUPS: Hausa, Yoruba, and Igbo and others minority tribes
- OFFICIAL LANGUAGE: English
GOVERNMENT AND POLITICS IN NIGERIA

- **Administrative Division:** 36 states and a Federal Capital territory.
- **Type of Government:** Democracy
- **Legislative Branch:** Supreme Court, federal High Court, Federal Court of Appeal, High court, Magistrate Court, Customary Court.
- **Legal System:** Based on English Common Law, legislative laws, Islamic Laws and Customary Law.
## GEOGRAPHY

<table>
<thead>
<tr>
<th>Feature</th>
<th>Measurement</th>
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<tbody>
<tr>
<td>Location:</td>
<td>923,768 km²</td>
</tr>
<tr>
<td>Land Area:</td>
<td>910,768 km²</td>
</tr>
<tr>
<td>Water:</td>
<td>13000KM²</td>
</tr>
<tr>
<td>Coastline:</td>
<td>853Km</td>
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<tr>
<td>Land Boundaries:</td>
<td>4047Km</td>
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<tr>
<td>Border Countries:</td>
<td>On the west by the Republic of Benin 737Km, and Cameroon 1,690Km, north by Niger 1,497Km, and Chad Republic 80Km, and south by the Atlantic Ocean.</td>
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MARITIME CLAIMS

- Continental Shelf: 200m depth or to the depth of exploitation
- Exclusive Economic Zone: 200NM
- Territory Sea: 12NM
- CLIMATE: Varies
  - Equatorial in the south
  - Tropical in the centre and north
OTHER DEMOGRAPHICS

- **TERRAIN**
  Southern lowlands merge into central hills and plateaus. Mountain in south-east, plain in north

- **NATURAL RESOURCES:**
  petroleum, Tin, Columbite, Iron Ore, Coal, Limestone, Lead, Zinc, Natural Gas, Hydropower and Arable land.

- **ECONOMY**
  **Major Industries:** Oil and gas, Tin, Columbite, Palm oil, Peanut, Cotton, Rubber, Wood, Hides and Skin, Textile, Cement and other construction materials, Food product, Footwear, Chemicals, Fertilizer, Printing, Ceramic, Breweries and Steel, etc

- **AGRICULTURE**
  **Cash Crops:** Cocoa, Peanut, Palm oil, Rubber,
  **Food Crops:** Corn, rice, sorghum, millet, cassava, yam potato, banana, coconut, carrots, etc.
  **Livestock:** Cattle, sheep, goat, pigs, fishing, poultry, etc.

- **Time:** GMT +1 EST +6

- **CURRENCY:**
  1 Naira (₦) = 100 kobo
  $1 = ₦ 145 (NOT STABLE)
NIGERIAN FOREIGN POLICY

- Nigeria foreign policy aims at maintaining good relations with other countries of the world, particularly, USA, Britain, France, China, Canada, Germany, and other countries of the world.
- Nigeria belongs to almost all international organizations. E.g., UN, AU, OPEC, G–34, etc.
EXXONMOBIL IN NIGERIA

- The merger between EXXON and Mobil Corporations in December 1999 brought together three major oil companies in Nigeria; ESSO Exploration and production Nigeria Limited [EEPNL], Mobil oil Nigeria PLC, and Mobil Producing Nigeria Unlimited [MPN]. The three companies have notable history, proven experience and strong record of contributions to Nigeria’s Development, which have been pulled together for even greater attainment.

- EXXONMOBIL is a joint venture operation with the Federal Government of Nigeria through the Nigerian National Petroleum Corporation (NNPC), the Federal Government has 60% ownership while the remaining 40% is owned by EXXONMOBIL corporation.
EXXONMOBIL IN NIGERIA (CONTD.)

- Over 90 offshore platforms comprising about 300 producing well at a production capacity of over 700,000 barrels a day of crude, condensate and natural gas Liquids (NGL). Other products recently added include the EAST AREA PROJECTS (EAP). The EAP has about 18000 tones Gas compression facilities platforms. This was set in place in early November 2005, with a float-over technology. In January 2006, Yoho project with the heaviest lift of 11600 tones was set up.

- The Natural Gas Liquid (NGL II) project, the second phase of the East Area Project, started up in early 2008 will add 45 KBD of Natural Gas Liquid to a total production. This project covers the Engineering, procurement, construction, start-up and commissioning of the offshore NGL extraction platform, undersea pipeline infrastructure and expansion of the existing onshore fraction and storage facilities at Bonny River Terminal (BRT).
Together with the NNPC, EXXONMOBIL maintains a very active community relations program. It made substantial contribution in the areas of health, education, sports, water supply, electricity and roads, especially around its operational base in Akwa Ibom State and Rivers State of Nigeria.

EXXONMOBIL Corporation in Nigeria is a petroleum and petrochemical company, operating to the highest standards of financial and technical excellence, business ethics, safety, health and environmental awareness.
OTHER OIL COMPANIES IN NIGERIA

Other multinational corporations and indigenous company in Nigeria includes Shell, Chevron, Texaco, Agip, Atlas Petroleum, Canadian Petroleum, Conoco Energy, Schlumberger, Pan Ocean, Western Atlas, Western Geophysical, Halliburton, Statoil, Nalco, Henkel, Rymex, etc. All operates under the control of the Nigerian National Petroleum Corporation (NNPC), and directly supervise by the Directorate for Petroleum Resources (DPR). The combine daily production capacity for international market is estimated at 2.5 million barrel and 0.5 million barrel for local consumption.
OIL AND GAS EXPLORATION IN NIGERIA PRODUCTION/OPERATION CHALLENGES

- Oil whether crude or refined is generally referred to as black gold. Nations have gone to war for it. Nations that are not endowed with oil have envied those that have oil. On the other hand, countries are endowed with oil have problems arising from its exploration, hostilities by host communities, ethnic unrest, environmental problems from spill and gas flaring. Being an international commodity, oil and gas speak only one language that is the “US dollars”. In other words the commodity is priced in US dollars.

- The Niger Delta region in Nigeria is the centre of the country’s oil industry. The region extends over an area of about 70,000 square km and account for 7.5% of Nigeria’s landmark. It transverses nine out of the 36 states that make up Nigeria. These are Abia, Bayelsa, Akwa Ibom, Cross River, Delta, Edo, Ondo and Rivers state. The estimated population of the region is about 20 million, comprising over forty (40) different ethnic groups speaking 250 different dialects across about 3000 communities. The predominant occupation of the area is farming and fishing.
The growth of the country’s oil industry combined with a population explosion and lack of environmental regulations led to substantial damage to Niger Delta environment through oil spills and gas flaring. Today we have ten (10) gas flaring in point in an area of no more than 600 sq km.

The region of Niger Delta has experimental agitations and youth restiveness over the years because of the progressive deterioration of environment, lack of employment, poor infrastructure development, general poverty, hopelessness and marginalization. This agitation has resulted in a new dimension of criminal assaults called the kidnapping of oil workers whether local or foreign. This is to raise alarm for international community to pressurize the government to provide infrastructure to the Niger Delta Region.
 OPERATIONS CHALLENGES (CONTD.)

The challenge to oil and gas production in Nigeria also has to do with restiveness of the Niger Delta region, the domain of oil and gas reservoir. It is no longer news that “militancy” has become a household word in the pages of the Nigerian newspapers. For the past four years there has been a continuous and increasing militant attack on oil platforms, oil vessels, and oil pipelines. It is even no longer safe for oil workers both white and black to walk the Niger Delta streets due to the increasing number of kidnappings. These acts are perpetrated by emerging groups within the communities. The problem of militancy and kidnapping can itself be linked with deplorable condition of the Niger Delta communities as a result of oil and gas exploitation and exploration by oil and gas companies operating in the region. The slack in maintaining safety standards has led to Oil spills and gas flaring which has rendered farmlands in the Niger Delta region useless for agriculture, the major occupation of the villagers. With the emergence of such a situation, the people began agitating, complaining and protesting to the companies and the Federal Government for the preservation of their land. When their demands were not met, the response of the people gradually evolved from demands for fair use of land, employment of persons whose source of livelihood have been taken away, to the use of outright violence as seen in the acts of militancy and kidnappings. For a smooth production of oil and gas in Nigeria it is imperative that oil and gas companies in the region impact positively and meaningfully on the lives of the citizens through job creation, development projects, etc.
It is a very pitiable condition in the Niger Delta that it remains impoverished despite the huge amount of money accruing from export of crude oil. Really this is poverty amidst plenty. Apart from oil and gas companies in the region, the Government of Nigeria has its own fare share of blame. Over the years, corruption and funds mismanagement has been the order of the day. Indeed, this has resulted in more restiveness and a slowing down of production process. A number of companies, Shell, Chevron, etc has had to shut down flow stations due to militant attack. It is no understatement that the 13% of oil revenues is being paid to the nine states that make up the Niger Delta states. Despite the monthly allocation, the area remains poor. Corrupt government officials have denied the communities their dues, even when development plans have been virtually designed in most Niger Delta states.
CHALLENGES TO QUALITY PRODUCTION

- The process and production of oil in a vast Delta and swampy region of Niger Delta brings serious challenges to quality production.
- Cost of Production: Over 300 wells are drilled and directed to QIT terminals for process and treatment. Each well was discovered to have its unique characteristics from another. To obtain an international standard of crude oil, it needs the effort of lab operators to use all technical experiences to carry out blending and bottle testing both at the front and at transfer to storage point to identify specific chemical out of many to treat the crude. This entails that these chemicals should give a result that is good for the crude and also provides a better result for the effluent water test as accepted by the country environmental protection agency. DPR regulation in Nigeria is that effluent water to sea in PPM should not be above 20PPM. The sediment and water result for exportable crude oil should not be above 0.5% vol.
- To achieve these goals, it is a must that the operator in the lab must be sound and competent. The equipment must be routinely calibrated and compared to standard. ASTM procedures must be duly followed. The sampling must be done in such a way as to a representative sample. All parameters needed to ascertain the quality of this crude oil such as pour point, Sulphur test, total acid number; APIG, S &W Test, Temperature Test, etc must be conducted. At the pre-treatment: Tank profiling, drain line test, Sediment and water test and composite test are always conducted to ascertain the tank preparation for loading. All these processes are cost effective.
CHALLENGES TO QUALITY PRODUCTION (CONTD.)

- Another aspect of the challenge is safety. ExxonMobil take safety as paramount. Safety of all operators, safety of equipment and health of the environment. Safety training, awareness, procedure developed through many aspects. Such includes job safety analysis, safety checklist, safety symbols, safety meeting, safety alarms, safety drills and safety recitation. Job safety analysis is developed along generic JSA or General JSA if the job is not routine. All tasks have JSA & procedure and has to be followed. In the lab, JSA is attached with permit and MSDS. Each operator must know how to operate safety equipment, such as SCBA, fire extinguisher. Complete and appropriate PPE must be worn before carrying out any task. Violation of PPE rules affect yearly appraisal of individual.

- Oil spills: Nigeria loses 47,941.7 barrels of oil in 802 spills between January 2008 and January, 2009. The National oil spill Detection and Response Agency (NOSDRA) reported that Shell Petroleum Development Company (SPDC) recorded 165 spills and lost 35,299.4 barrels, Nigeria AGIP Oil Company (NAOC) lost 7,909.2 oil barrels in 255 spills. ExxonMobil lost 2519.4 barrels in 276 spills, Chevron Nigeria Limited (CNL) lost 324.2 oil barrels in 97 spills, Elf Petroleum Nigeria Limited EPNL lost 1869 oil barrels in three spills, and ADDAX Petroleum Development Nigeria Limited also lost 20.5 oil barrels in six spills. Spills are blamed on sabotage, equipment failure, operational maintenance error and corrosion. But oil spill cause serious environmental pollution, destroying aquatic life and ecosystem.
CHALLENGES TO QUALITY PRODUCTION (CONT'D.)

- DATA INTEGRITY ASSESSMENT FRAMEWORK (DIAF): Data generated by Laboratory operators are used by plant operators. The quality of crude oil depends on the integrity of the data generated by the lab. The result must be accurate based on ASTM, API or other International Standard Procedures. Result must be given on time to avoid demurrage. The 2009 certification of ExxonMobil lab in Qua Iboe Terminal by the International DIAF body was based on the fact that all analyses procedures are followed, equipment calibration done, test process check conducted, Test method assessment done as well as Operators competence and requalification assessment done from time to time. Data manipulation is a serious violation of DIAF.

- SAMPLING: proper sampling contribute to accurate results. Sampling starts from the presentation of sampling containers whether cans or bottles. Proper cleaning is necessary. The volume of crude produced depends on proper sampling because the result obtained from the lab is used for the certificate of quality and quantity. Wrong sampling gives wrong result. If the sampler is not devoted to his work, there is a tendency to manipulate result.
RECOMMENDATIONS

- To curb the declining rate of production of crude oil and gas in Nigeria requires stringent measures to:
  - Improve equipment maintenance and calibration
  - Reduce widespread corruption among oil companies, government officials, etc.
  - Impact positively on the lives of the citizens of Niger Delta through employment, environmental management, infrastructural development and provision of basic amenities by oil companies and the government
  - Perform routine staff training
  - Improve safety standard implementation
CONCLUSIONS

Crude oil and gas production faces major challenges in Nigeria. Such challenges include cost of transportation, equipment maintenance, environmental degradation, Niger Delta militancy, Government policy and regulations, operations integrity, safety standards and widespread corruption. Nigeria is gradually losing her stage as a major exporter of crude oil in the world. Ranked 12th as producers and 8th as exporters as at 2006, but falls to 37th position as producers a year after. Unless an urgent action is taken, then her contribution to global market would have been lost and the price of her “sweet crude” would have risen considerably.