

STATUS REPORT ON THE JUBILEE FIELD OIL AND GAS DEVELOPMENT

(TANO DEEPWATER AND WEST CAPE THREE POINTS)

By

MANAGEMENT OF GHANA NATIONAL PETROLEUM CORPORATION (GNPC)

1. INTRODUCTION

In June and September 2007, a consortium of companies comprising Kosmos Energy Ghana (Kosmos), Tullow Ghana Limited (Tullow), Anadarko Petroleum Corporation, Sabre Oil and Gas Limited, and the E. O. Group, in conjunction with the Ghana National Petroleum Corporation (GNPC), announced discoveries of significant quantities of oil and gas in offshore deepwater Tano/Cape Three Points Basins. Since the announcement of these discoveries, a great deal of work has been conducted on the discoveries with the view to producing the oil and the gas from the fields.

The Board and Management of GNPC respectfully take this opportunity to apprise the Government and the public of the status of work on the discoveries and planned development of the field for production in year 2010.

The discoveries which were made in two deepwater blocks of Deepwater West Cape Three Points and Deepwater Tano blocks are under two separate Petroleum Agreements and operated by Kosmos and Tullow respectively. The discovered oil and gas resources in the two blocks were found to be in pressure communication, and, therefore, are said to be contained in the same reservoir.

Under this circumstance, the Petroleum Law requires that the discovered oil and gas resources in the two blocks be produced as one unit to reduce cost and optimize the recovery of the oil and gas in the field. This position has been accepted by the partners and an appropriate Unitization Agreement is being prepared.

The two discovered fields to be unitized have been designated as '*Jubilee Field*', in commemoration of the country's jubilee year celebration.

The various key activities currently being undertaken for the development and production of the field are described below.

2. UNITIZATION AGREEMENT

The draft Unitization and Unit Operating Agreement, to determine the interests of the various partners in the discoveries, and also govern the rights and obligations of the partners in the development and production of the discoveries as one unit, has been prepared and it is being finalized by the Legal Subcommittee set up by the Partners. GNPC is represented on this committee by its lawyers and officers and officials from the Attorney-General's Department, Internal Revenue Services (IRS) and the Ministry of Energy.

The Unitization Agreement whose sole purpose is to govern the relationship between partners in the development of the field as one unit, is being negotiated within the framework of the existing two Petroleum Agreements governing the two blocks and the relevant laws governing oil and gas operations in Ghana: PNDC Law 84 of 1984, the GNPC Law – PNDC Law 64 of 1983 and the Petroleum Income Tax Law – PNDC Law 188 of 1988.

3. JUBILEE FIELD APPRAISAL

The purpose of the appraisal is to ascertain the recoverable reserves and gather static and dynamic information to enable a more efficient development of the field. The core area of the Jubilee Field has been appraised with the acquisition of high quality three-dimensional (3-D) seismic data and the drilling of a step-out well, the Mahogany-2 well, in April 2008. This well was flow tested to ascertain the flow rates (productivity of each well) to enable the partners design an appropriate development plan for the production of the field. The appraisal so far indicates that the field contains recoverable reserves at 90% probability of at least 800 million barrels of light crude oil, with an upside potential of about 3 billion barrels. The current development of the Jubilee Field is based on the 800 million barrels recoverable reserves.

4. FIELD DEVELOPMENT PLAN

The partners and GNPC have agreed to develop the Jubilee Field in phases. The field development plan is driven by three key requirements of GNPC and the Ghana Government, namely,

1. There shall be no gas flaring (burning);
2. First oil production by 2010; and
3. A production philosophy of maximizing resource value.

4.1 Phase I

Phase I seeks to commence production of oil and gas from the Jubilee Field by mid 2010. The Phase involves the drilling of seventeen (17) wells, out of which twelve (12) would be used for oil and gas production, three (3) to inject water into the reservoir and two (2) to

inject part of the produced gas back into the reservoir to maintain pressure in order to achieve a high oil recovery rate. During Phase I, the daily production of oil would be 120,000 barrels of oil and about 120 million cubic feet of gas. This would be achieved through the subsea production installations. The Christmas trees will be placed on the seabed and the produced oil will be brought onto a floating production storage and offloading facility (FPSO)) for processing and storage. A shuttle tanker will be brought in from time-to-time to offload the crude oil from the FPSO for sale.

4.2 Phase II

Phase II will be carried out between 2010 and 2012. When completed, the total daily output of oil and gas from the entire field would be about 250,000 barrels and 250,000 million cubic feet respectively.

4.3 Front End Engineering Design (FEED)

The front end engineering design (FEED) for the concept is ongoing, but in practical terms, a substantial part of the work has been completed. The partners have assembled 30 engineers from the partner companies, including GNPC to form the Integrated Project Team (IPT). The IPT is working on various aspects of the design, including subsurface work, subsea architecture, surface and subsea facilities, environmental, health and safety facilities, contracting and procurement, legal, etc. A team of four GNPC geologists, geophysicists and engineers are attached to the Integrated Project Team based in Dallas. In addition, GNPC is represented on all the committees and subcommittees established to deliver the project. Where GNPC has not got the relevant capacity, the Corporation engages consultants to advise it on the proceedings of the committees.

The partners are required by the two Petroleum Agreements and the Unitization Agreement to submit a detailed Development Plan to GNPC and the Government for approval before the Plan can be implemented. The Development Plan must include detailed descriptions and analyses of the following:

1. Subsurface Evaluation analysis;
2. Surface and Subsea Facilities;
3. Gas Commercialization Plan;
4. Financing Plan for the development and production of the field;
5. Schedule and Estimates of Capital and Operating Expenditures;
6. Environment, Health and Safety (EHS) Plan;
7. Decommissioning Plan; and
8. Local Content and Training Plan.

4.3.1 Subsurface Evaluation Analysis (Phase I)

The subsurface evaluation has been conducted in detail, using the seismic and well data gathered so far. The number of wells needed for optimum production of the reservoirs in an efficient manner has been determined to be seventeen (17). Twelve (12) will be production wells, three (3) will be water injection wells and two (2) will be gas injection wells. The spacing, location and target for each of these wells for the initial phase have been designed. The partners and GNPC have conducted simulation of depletion scenarios. Well design and completion work have almost been completed.

4.3.2 Surface and Subsea Facilities

The main offshore surface facility, the FPSO, has been tendered and the bid proposals are being evaluated. Partners are expected to choose the FPSO supplier and submit same to GNPC for approval by August 2008. The subsea facilities, comprising the Christmas trees, umbilicals, risers and flow lines, have also been tendered and submission of tender documents is expected by end of July 2008.

4.4 Gas Commercialization Plan

The Jubilee Field oil is of light quality and has high gas content. For every 1,000 barrels of oil that is produced, it would necessarily come out with one million standard cubic feet of gas. During Phase I, production of 120,000 barrels of oil per day, the gas production would be 120 million cubic feet of gas. At the second phase when oil production is increased to 250,000 barrels of oil per day, gas production would increase to 250 million cubic feet of gas. Given GNPC's 'zero flaring' ('zero gas burning') policy, GNPC and the partners have evolved a plan to monetize this associated gas from the Jubilee Field in line with the phased development of the field.

During Phase I, a pipeline would be constructed to Effasu to ship 30 – 50 million cubic feet of gas to feed the 'Osagyefo' Thermal Plant and the rest of the gas produced would be re-injected to maintain reservoir pressure to improve on the oil recovery. During the second phase, when a lot more gas (over 250 million cubic feet would be produced, another pipeline would be constructed to evacuate the gas to Takoradi to supply gas to the Aboadze power plant and meet other gas needs. The Takoradi pipeline would be tied into the West African gas pipeline.

The wet gas would be processed into dry gas and liquefied petroleum gas (LPG).

The processing and transportation of the gas, being a midstream activity, would be undertaken, operated and controlled by an independent company but would be owned by the Jubilee Field partners, GNPC and other investors and financiers.

This arrangement would have the following benefits:

- i) Fair access to the use of the pipelines by other petroleum block holders who may find gas in the Cape Three Points and Tano basins;
- ii) Would encourage the development of marginal gas fields that would be discovered in the basins;
- iii) Would also ensure that the ultimate gas price at the point of sale to the offtaker is competitive. This is because an independently owned gas pipeline and infrastructure would be amortized over a longer period under the Petroleum Agreement as against a five-year amortization period if the infrastructure were to be developed as part of the Jubilee Field infrastructure and owned by the partners. GNPC is spearheading this gas commercialization project to ensure that the infrastructure would be in place by the commencement of Phase I production of crude oil.

4.5 Financing Plan for the Development and Production of the Field

The partners have agreed that Phase I would be financed through equity contributions from each unit interest holder in proportion to its interest.

4.6 Project Schedule and Budget

The complete Development Plan for Phase I is expected to be sanctioned by the partners by the end of July 2008 and submitted to GNPC and the Government for consideration and final approval by the end of August 2008. Execution of the Development Plan is expected to commence by September 2008 in order to be able to deliver first oil by mid 2010. The full field development (Phases I and II together) is expected to cost about US \$6 – 8 billion. The estimates of both the capital and operational expenditure would be known when the tender for the various facilities and services have been fully evaluated.

4.7 Environmental, Health and Safety Plan (EHS)

A comprehensive environmental, health and safety policy has been developed by the Project's EHS sub-committee and is under consideration by the Unit Operating Committee (UOC), after which it will be submitted to GNPC and the Environmental Protection Agency (EPA) for consideration and approval. The Jubilee Field development and production project has been registered with the Environmental Protection Agency as required by the EPA Law and regulations. The EHS Subcommittee is currently undertaking the Strategic Environmental Impact Assessment itself before the execution of the project. Where EPA requires specialized knowledge to be able to evaluate any aspect of the EHS plan, GNPC would assist them to acquire that knowledge.

4.8 Decommissioning

The Petroleum Agreements require that a decommissioning plan be submitted together with the Development Plan for approval by GNPC and the Minister for Energy. This will include the estimated cost for decommissioning of all facilities, at the end of production. It will

provide for the establishment of a decommissioning fund into which a defined amount will be set aside from the crude oil production to be used to decommission the field at the end of production. The partners will be required to take insurance to cover any shortfall that may arise when decommissioning is due.

4.9 Local Content and Training

The two Petroleum Agreements require the partners to utilize Ghanaian goods and services where they are available in qualities and quantities acceptable in the petroleum industry and at competitive prices. This requirement is being enforced through the contracting and procurement strategy for the entire spectrum of the Jubilee Field project. The partners have accepted secondees from GNPC in their offices. In addition, all the international equipment and service suppliers are required to source some aspects of the contract in Ghana and also train Ghanaians to manage and maintain the equipment supplied. All service providers are required to register with GNPC. These provisions are being strictly enforced by GNPC to ensure Ghanaian participation in the industry.

5. IN-COUNTRY PREPARATIONS

The Unit Operating Committee of which GNPC is a member has started the in-country preparations for the start of development and production operations. The Jubilee Field development and production will be run from Ghana.

5.1 Shorebase Facilities

Some local investors have registered with GNPC to construct dedicated shorebase facilities (offshore port) to support all offshore exploration and production operations. However, pending the

completion of such dedicated facility, the partners would use parts of the main Takoradi Harbour and the Naval Harbour in Sekondi to support the offshore operations. The Air Force Base in Takoradi would be upgraded by the Partners and used as offices and storage areas for pipes and other equipment.

5.2 Management of In-country Operation

The offshore operations as already mentioned, would be run from Ghana. It would start with a manpower of about 50 personnel in Accra and about 30 in Takoradi for this year, after which the number is expected to be increased to about 200 in year 2009 and beyond. The partners would submit the recruitment plan to GNPC for approval in line with the provisions of the Petroleum Agreement. The office premises for the in-country operations has already been acquired.

There is in place, a recruitment committee made up of GNPC and the Unit Operator (Tullow) to recruit the staff for the operations. About 60 – 70% of the available places will be filled with Ghanaians. A plan will be drawn up to gradually increase the Ghanaian component to about 90% in the next 5 – 10 years.

6. FIELD DEVELOPMENT OPERATIONS

Drilling

To enable the Partners achieve the first oil deadline, four (4) rigs have been contracted on long term basis to drill the seventeen wells needed for the Phase I and to drill other exploration prospects within the two blocks. The rigs will start arriving in the country by September this year.

7. **CONCLUSION**

The Jubilee Field development is progressing on fast-track basis, and with close monitoring and guidance from GNPC, it is expected that the country would see first oil from the field by mid 2010.