

TANZANIA 3RD OFFSHORE
LICENCE ROUND
2004/2005

PETROLEUM
EXPLORATION HISTORY

Halfani R. Halfani

**Director of Exploration, Production
and Technical Services**

Tanzania Petroleum Development Corporation

INTRODUCTION

- ◆ Exploration for Hydrocarbons in Tanzania dates back to 1952
- ◆ Initiated by British Petroleum (BP) and SHELL International
- ◆ Tanzania intermittently explored for hydrocarbons for more than 50 years
- ◆ Exploration History divided into Four Phases

EXPLORATION HISTORY OF TANZANIA

Phase I: 1952 - 1964

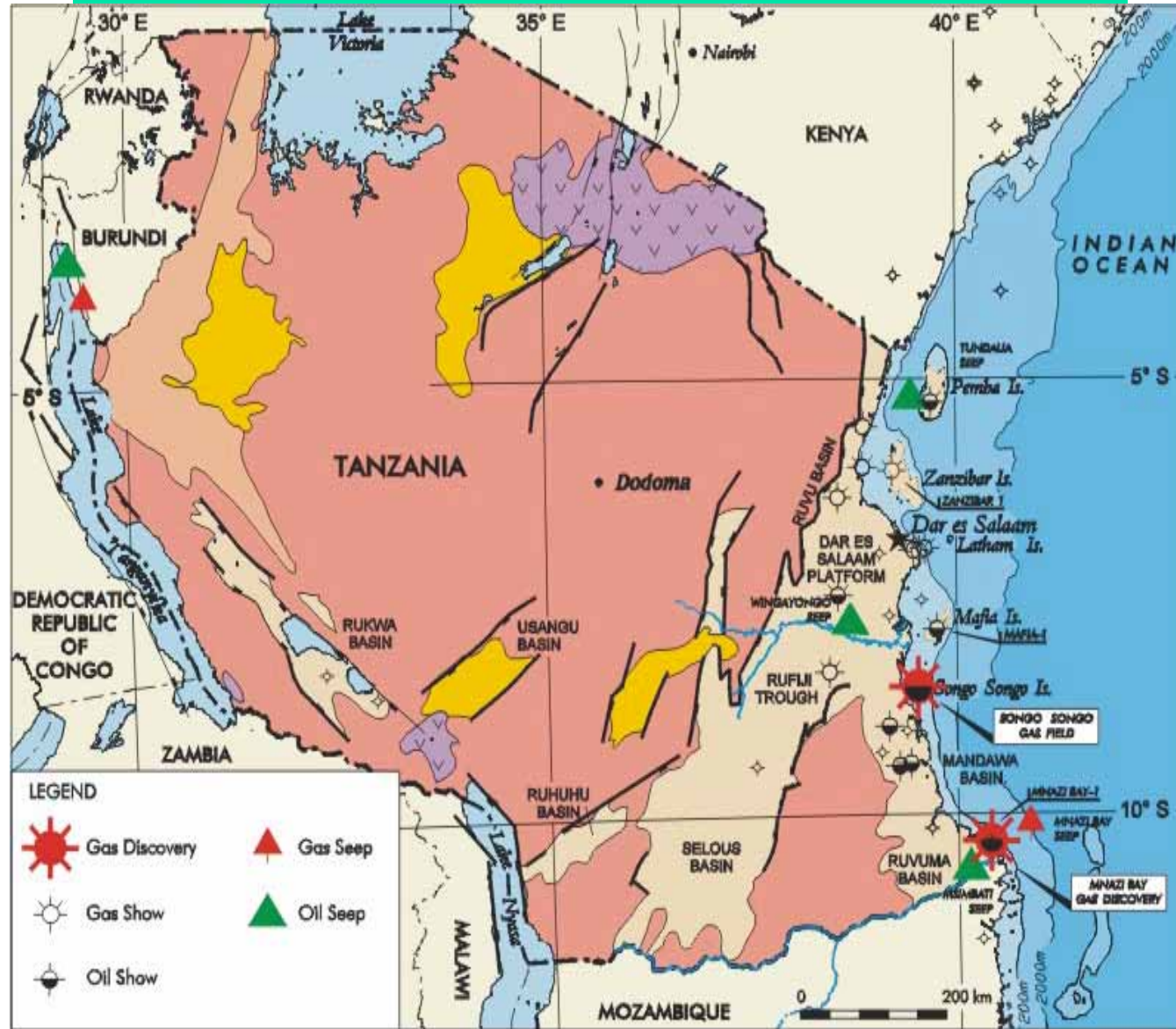
◆ BP/SHELL –

- Coastal Basin, Zanzibar, Pemba and Mafia
- Acquired both refraction and reflection seismic, gravity and magnetic
- Drilled > 100 boreholes and 4 wildcats
- Relinquished concession acreage in 1964

Phase II: 1969 - 1979

- ◆ Formation of TPDC, 1969
- ◆ AGIP was licenced over the areas previously held by BP/SHELL
 - Joined by AMOCO 1973, AGIP as operator
 - Drilled five deep wells, discovered gas at Songo Songo (1974)
 - Relinquished Songo Songo Block, 1974
- ◆ TPDC undertook evaluation of the Songo Songo gas discovery
 - TPDC drilled confirmation wells (SS3, SS4) and acquired further seismic data

DEEP WELL LOCATIONS



Map 2. Tanzania Well Location Map

Phase III: 1980 – 1991

- ◆ Petroleum (Exploration and Production)
Act 1980 enacted
- ◆ Increase in exploration activities
- ◆ Signed PSAs:
 - SHELL - Ruvu, Selous, Mandawa and Mafia
 - IEDC - Tanga, Ruvu
 - Amoco - Inland Rift Basins
 - Texaco - Ruvuma

Phase III: 1980 – 1992

contd..

- ◆ AGIP discovered gas at Mnazi Bay in Mtwara (1982)

- ◆ TPDC carried the following activities:
 - Acquired seismic onshore and offshore
 - drilled five appraisal wells (SS5 to SS9) at Songo Songo,
 - drilled 3 wells at Kimbiji: 2 onshore, 1 offshore
 - Acquired gravity data in the Inland Rift Basins

Phase IV: 1992 - 2004

- ◆ Production Sharing Agreement (PSA) terms reviewed
- ◆ Investment climate improved
- ◆ A number of Oil Companies entered into PSAs
 - **Dublin International Petroleum** of Canada - Mandawa Basin – drilled 3 wells (1996 – 2002)
 - **Canop** of Canada – Mafia Island, Dar Platform, Kisangire Block (1998 – 2001)

◆ **Antrim Resources** of Canada (1997)

- Pemba and Zanzibar areas
- Awaits Government approval to start operations

◆ **Ndovu Resources** of Australia (2000) – Nyuni/East

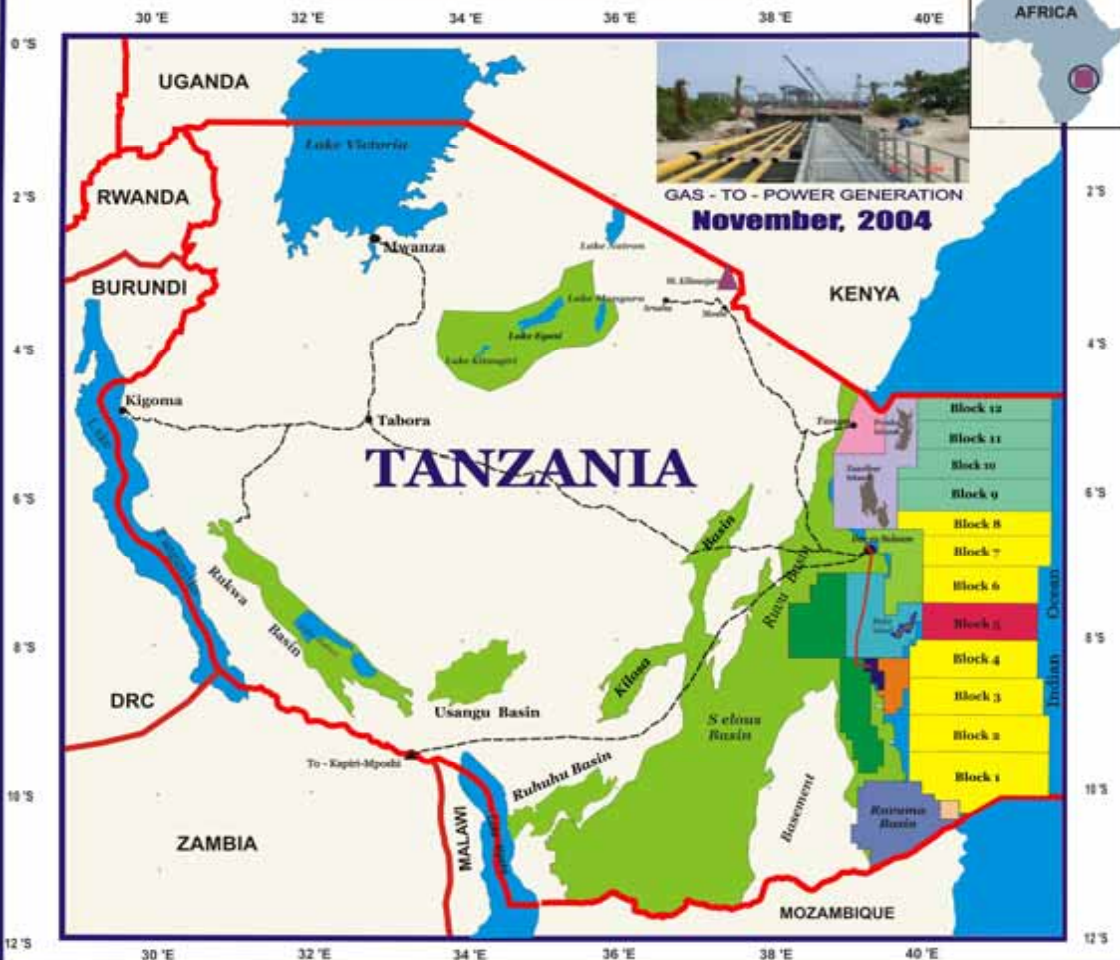
Songo Songo Block

- Drilled one well

Phase IV: 1992 – 2004 Contd..

- ◆ **Maurel & Prom** of France (2004) – Mafia, Bigwa and Rufiji areas
- ◆ **Petrobras** of Brazil (2004) – Block 5 Deep-Sea
- ◆ **Artumas Group** of Canada – Mnazi Bay development area
- ◆ The latter three are now mobilizing to start petroleum operations

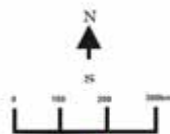
EXPLORATION ACTIVITY MAP



LICENSING SITUATION

- SongoSongo Development License
- Artumas Mnazi Bay Development License
- Antrim Resources License
- Ndovu PSA Application
- Open Acreages
- Mandawa-Kisangire onshore Open Acreages
- JEBCO PSA Option

- 3rd Round Licensing Blocks
- Ndovu Resources License
- PETROBRAS License
- Shell PSA Application
- Maurel & Prom License
- Railway line
- Songo Songo Gas Pipeline route



DEEPSEA EXPLORATION

- ◆ **WesternGeco** undertook speculative surveys in two phases:
 - phase I: **7,034** line km in 1999,
 - phase II: **4,285** line km in 2000;
- ◆ Data acquired: seismic, gravity and magnetic data in the Deepsea (200m to 3,500m) of water depth

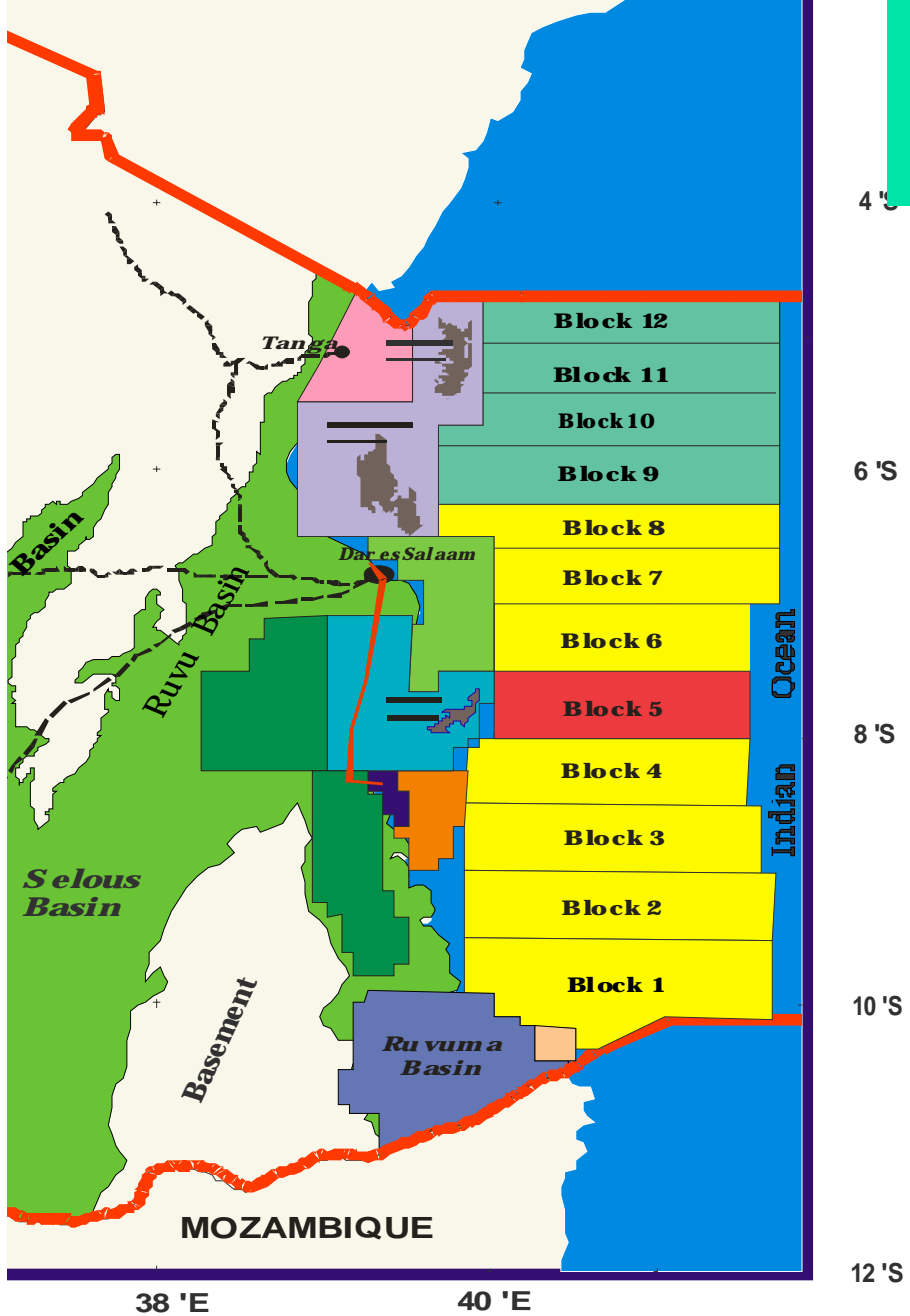
FIRST TANZANIA OFFSHORE LICENSING ROUND

- ◆ Phase one data acquisition culminated in the launching of 1st Offshore Licensing Round
- ◆ Round closed in May 2001
- ◆ Petrobras won the bid for Block 5
 - PSA signed in June 2004

SECOND TANZANIA OFFSHORE LICENSING ROUND

- ◆ Covered phase two areas including phase one Blocks that were not bid in the 1st Round
- ◆ SHELL International awarded deepwater blocks 9 -12
- ◆ Negotiations with SHELL finalized, Contract awaits Government endorsement

DEEPSEA EXPLORATION



 3rd Round Licensing Blocks

SONGOSONGO GAS TO ELECTRICITY PROJECT

- ◆ **Objective:** To produce least cost energy for the national electricity system
- ◆ Main components:
 - **Gas Field Development**
 - ✓ installed a 70MMSCFPD gas processing plant on the island; in two trains
 - ✓ Rehabilitated 5 gas production wells
 - ✓ Installed a gas gathering system from the wells to the processing plant
 - ✓ Constructed a 25-km, 12-inch diameter, sub sea pipeline from SS to Somanga Funga

SONGOSONGO GAS TO ELECTRICITY PROJECT

◆ Pipeline Construction

- A 207-km, 16-inch land pipeline from Somanga Funga to Dar
- Overall capacity 105 MMscf/d of gas
- A 16-km, 8-inch tie-line from Ubungo to Wazo Hill cement plant
- Gas replaced liquid fuel as feedstock in the manufacture of cement

SONGOSONGO GAS TO ELECTRICITY PROJECT

◆ Ubungo Power Plant

- Retrofitted four turbines and converted to run on both liquid and natural gas
- Combined capacity 115MW of electricity-fed to the national grid
- Plans underway to increase power generation at the plant to 180MW by 2005

SONGOSONGO GAS TO ELECTRICITY PROJECT

◆ Environmental and Social Management

- Project to provide electricity to villages along the pipeline route
- Project will provide clean, safe drinking water from processing plant to SongoSongo villagers
- Preservation of environment and cultural heritage
- Improvement of satellite townships

SONGOSONGO GAS TO ELECTRICITY PROJECT

- ◆ The project is being implemented by Songas, the joint venture company between CDC Globeleq, TANESCO, TPDC and TDFL
- ◆ Construction started in 2003, Completed in 2004; estimated cost was nearly US\$ 300 million
- ◆ Project became operational in July 2004, officially inaugurated in October 2004

MNAZI BAY GAS FIELD DEVELOPMENT

- ◆ Estimated Reserves in place between 0.5 to 1TCF from one well
- ◆ GoT decided to develop the gas field to generate electricity for Mtwara and Lindi regions
- ◆ May, 2004 GoT signed a PSA with Artumas Group of Canada

MNAZI BAY GAS FIELD DEVELOPMENT

- ◆ The PSA will involve well re-entry and testing to confirm quantities of gas
- ◆ If positive, then Artumas will implement the project by:
 - constructing a gas processing plant
 - Constructing a 50-km, 8-inch diameter pipeline to bring gas from Mnazi Bay to Mtwara
 - Install turbines to generate 18MW of electricity for Mtwara, Lindi and Masasi towns

MNAZI BAY GAS FIELD DEVELOPMENT

- ◆ Mnazi Bay gas project
 - Will upgrade the power transmission system
 - Will take over the electricity distribution system
 - Is a build, own and operate project
- ◆ The Contractor is mobilizing a work-over rig for the well re-entry

CONCLUSIONS

- ◆ Twenty-five deep wildcat exploration and eight development wells have been drilled
- ◆ Sedimentary basin Area of 700 by 400 km with only 25 wells, gives a density of one well for more than 12,000 sq. Km
- ◆ The conclusion: Tanzanian Sedimentary basins are under explored

CONCLUSIONS

- ◆ Tanzania is endowed with well documented oil seeps (at Tundaua on Pemba Island, Wingayongo on Rufiji basin, Kivinje and Nyuni in Kilwa area, Msimbati on Ruvuma basin)
- ◆ Two gas discoveries at Songo Songo and Mnazi Bay

CONCLUSIONS

- ◆ Work so far done confirm the existence of a potential petroleum system
- ◆ Subsequently, more exploration should be made in the basins including the deep offshore
- ◆ Hence these seminars

THANK YOU FOR YOUR
ATTENTION