

ACREAGE PORTFOLIO OF NAMIBIAN SEDIMENTARY BASINS

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Outline

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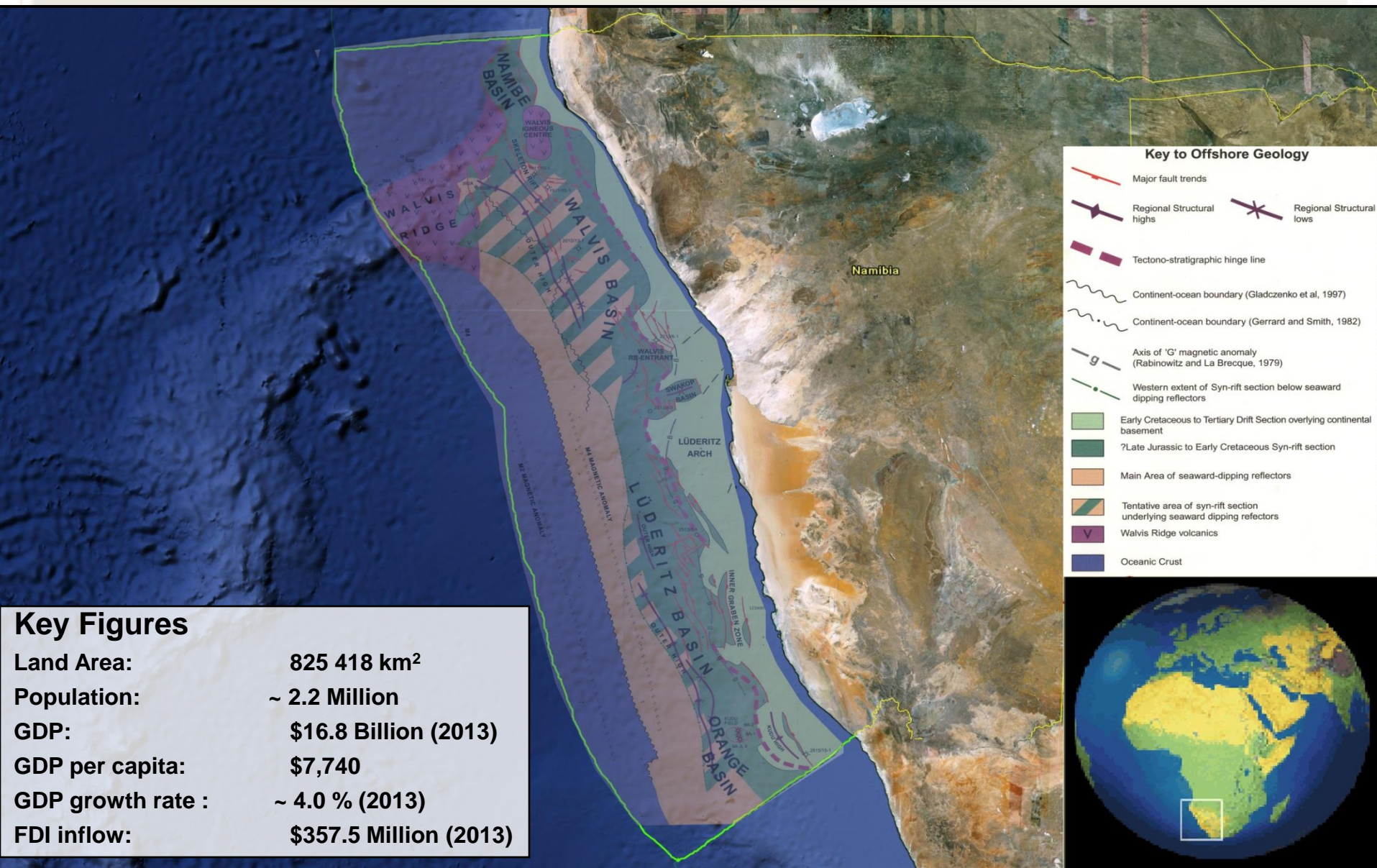
Introduction



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Namibia Overview



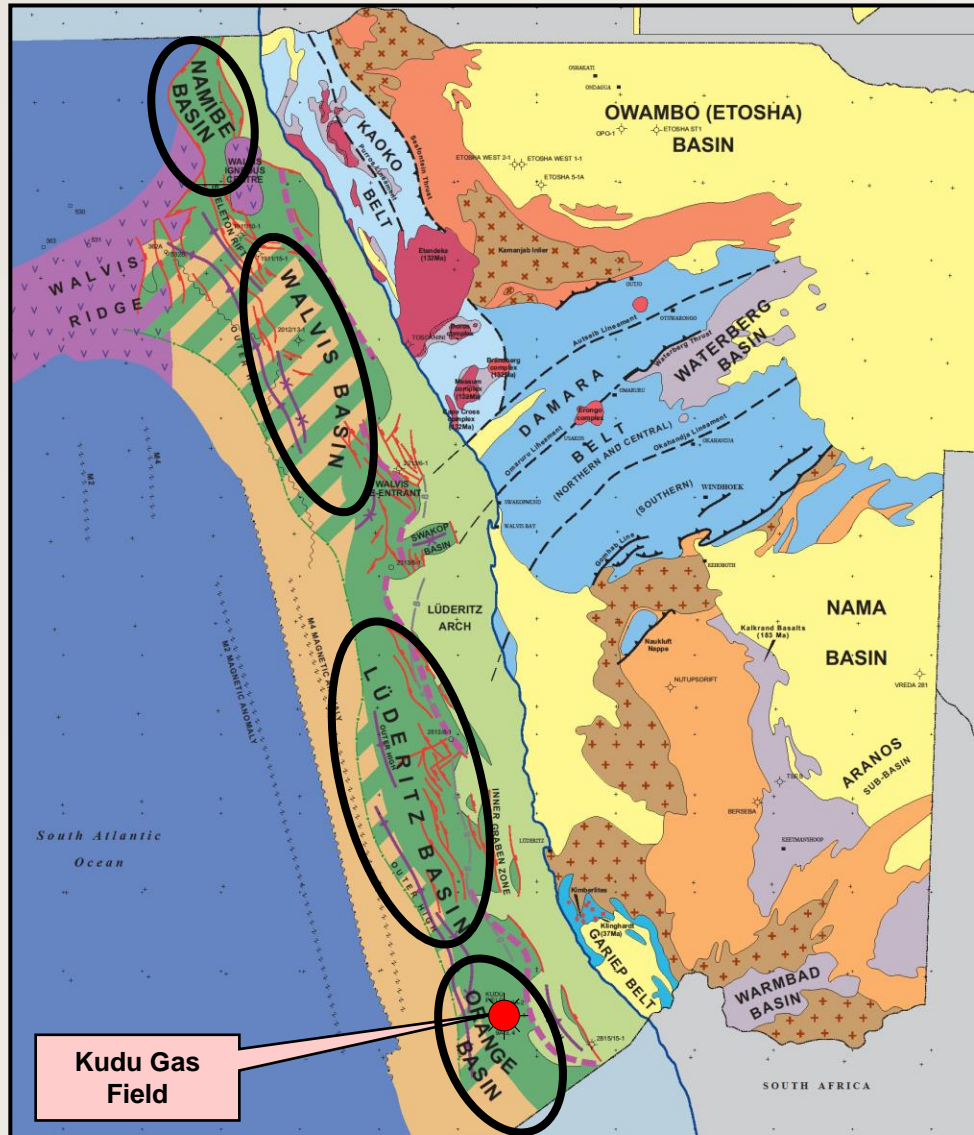
Petroleum System Offshore Namibian Basins



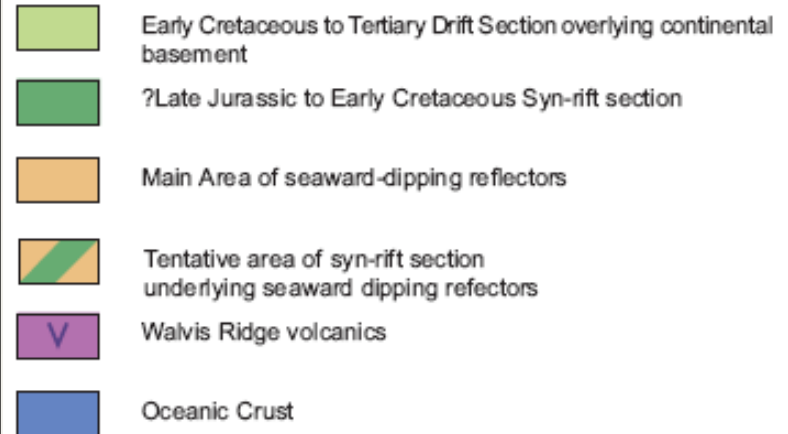
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Sedimentary Basins of Namibia



Legend: Offshore Geology



- 4 Sedimentary basins offshore
- 2 onshore Basins
- First exploration well drilled in 1974 discovered Kudu Gas Field
- Kudu is a significant discovery (mid-case c.1.6 TCF of GIIP) with additional upside

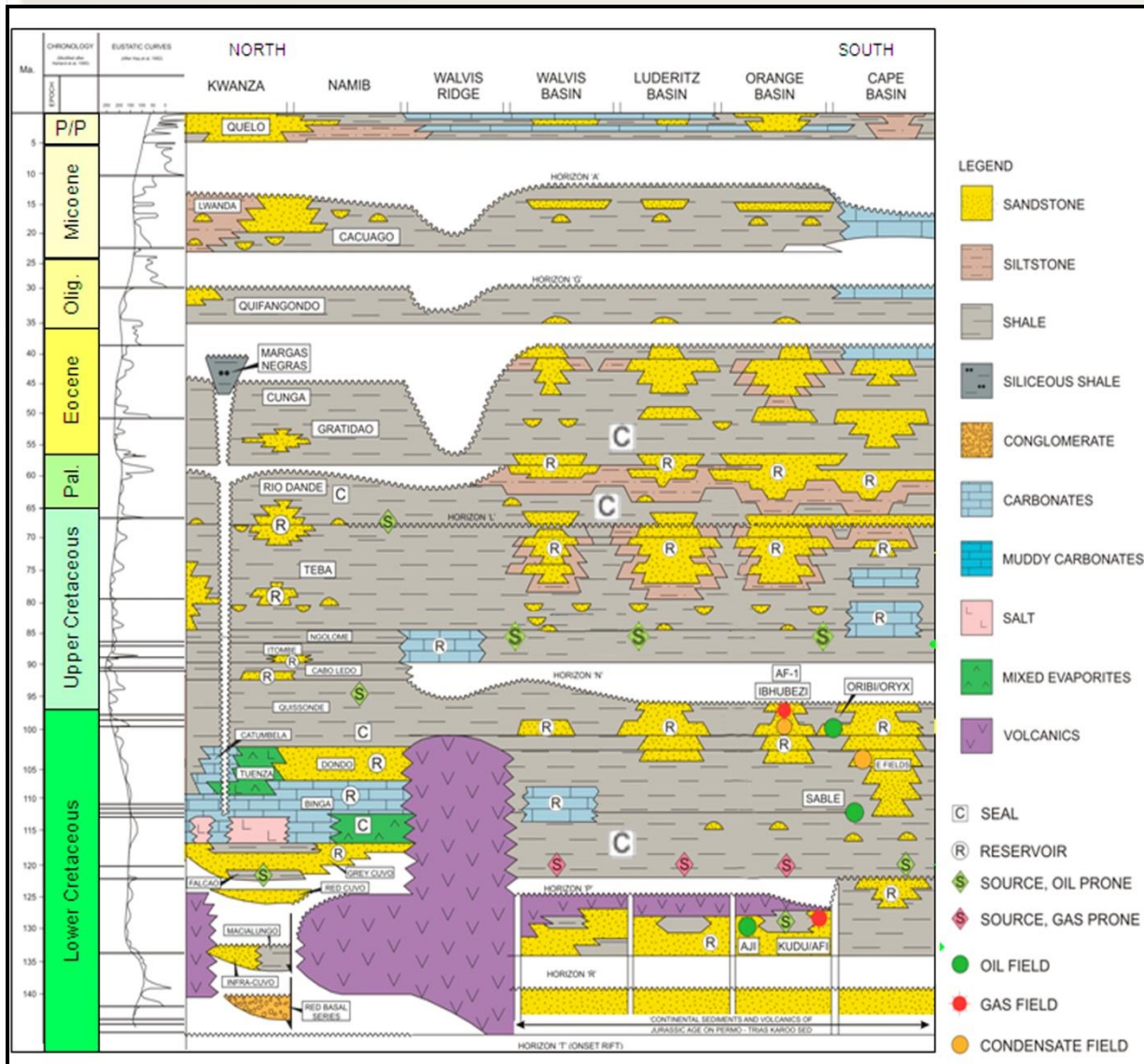
Source Rocks

Based on available existing geochemical and oil extracts data offshore basins. At least two possible active petroleum system can be recognized offshore Namibian basins:

- I. **Barremian- Aptian petroleum system.** This source rock system is also present in the Campos and Santos Basins, **Brazil** and **Congo** and Cuanza Basins, **Angola**. In Brazil and Angola such system is overcharged and represents more than ***50 billion bbl of hydrocarbon reserves***.
- II. **Albian- Cenomanian petroleum system.** Similarly, this source rock system is also present in the Campos and Santos Basins, **Brazil** and **Congo** and Cuanza Basins, **Angola**.



Reservoir Rocks



Walvis ridge formed a transition zone.

- Northern basins largely dominated by carbonates and minor siliciclastics sediments.
- Walvis basin recovered 370 m and 170 m of Barremian to Middle-Albian(?) carbonates - average porosity ~20 %.
- Southern basins largely dominated by siliciclastics sediments.



Petroleum Regulatory System



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Legislative Framework

The legislative framework governing the Namibian upstream petroleum industry is modern and well developed, and has been specially formulated for the international oil and gas industry.

The main legal documents that regulate the petroleum industry in Namibia are:

- Petroleum (Exploration and Production) Act, 1991 (Act 2 of 1991);
- Petroleum Taxation Act, 1991 (Act 3 of 1991);
- Petroleum Laws Amendment Act, 1998 (Act 24 of 1998); and the
- Model Petroleum Agreement (MPA), 2007



Fiscal Regime

Summary of main tax charges :

Income tax	<ul style="list-style-type: none">• 35%, plus Additional Profits Tax (“APT”).• APT levied on after-tax net cash flows from petroleum operations• Levied separately for each licence area
Royalties	<ul style="list-style-type: none">• 5% of gross revenue• Value of crude oil or gas for royalty and tax purposes based on market value
Withholding tax	<ul style="list-style-type: none">• 25% on services
Licence fees	<ul style="list-style-type: none">• Initial (license application), annual rental charges, annual training fees



Current Licensing Updates



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Petroleum Exploration Licensing Model

The Government of Republic of Namibia has an **Open Licensing System** adopted in 1999.

- Open to national and international oil and gas companies
- Companies can apply at any time for acreage

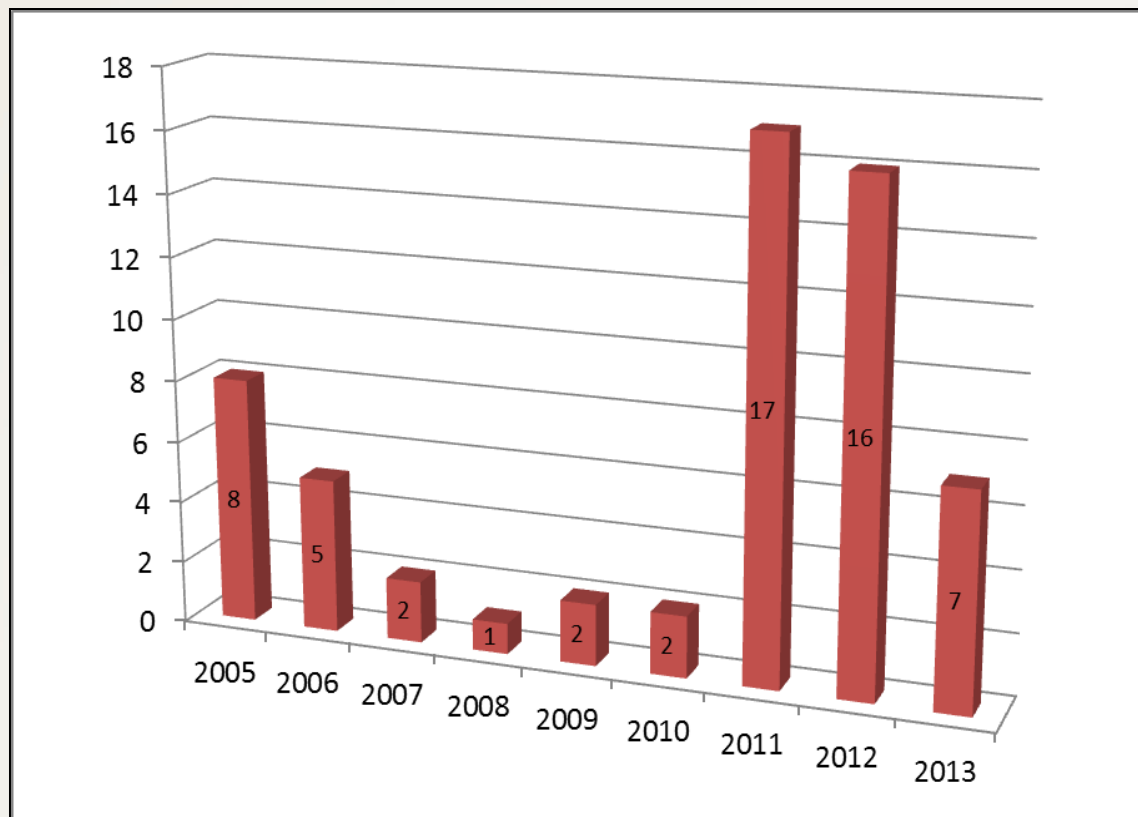
MME on the verge of closing the open licensing system and likely to revert back to bidding rounds in future.



Status licenses issued

From 1999 the Government of the Republic of Namibia started issuing licenses

- To date over 50 licenses have been granted.
- **NAMCOR** – Interest in 40 blocks.
- Demand for Namibian acreage - favourable oil prices and encouraging drilling campaigns.

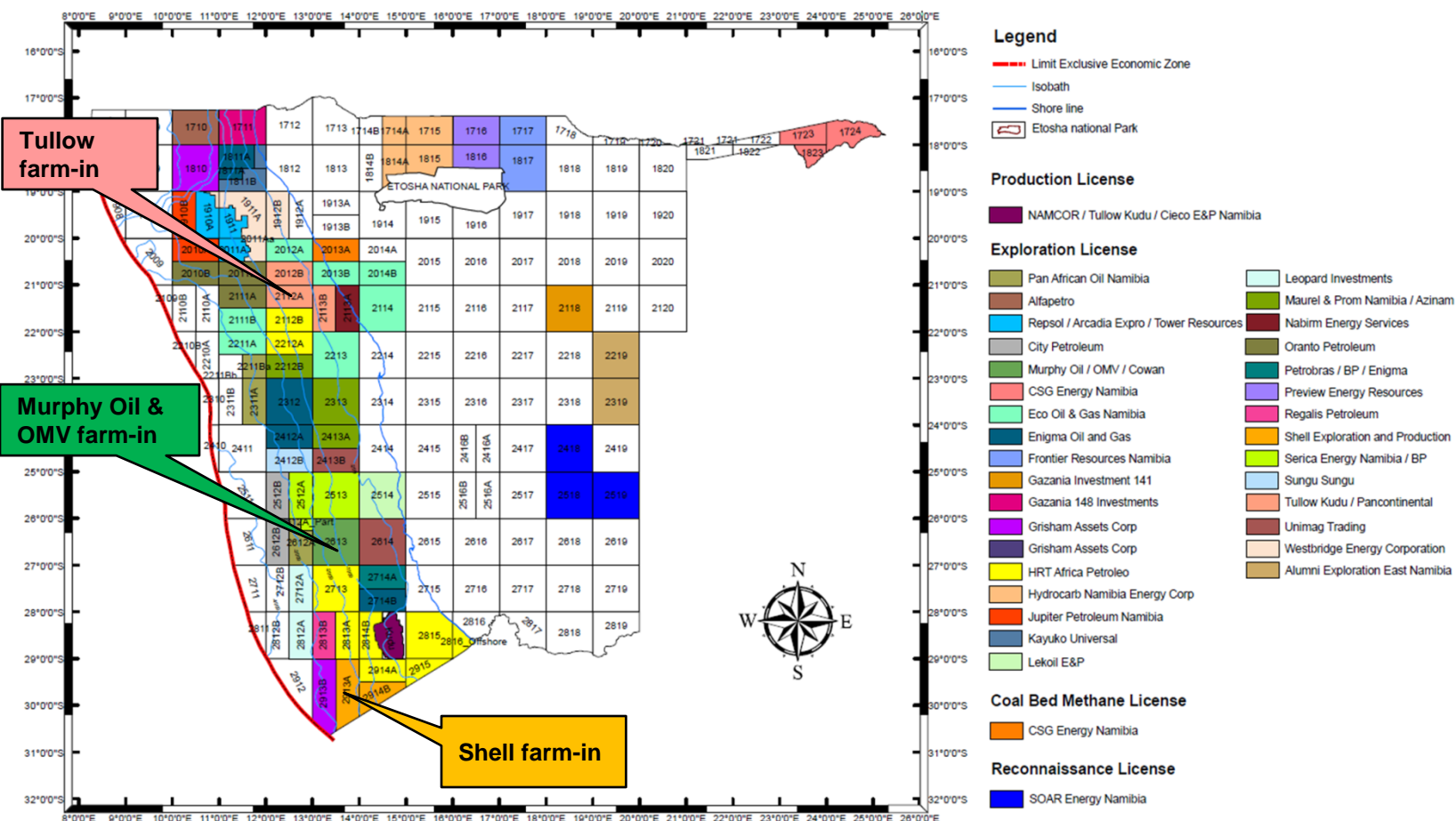


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Main Players in Namibia

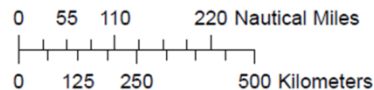
HYDROCARBON LICENSE MAP



For further information:

www.namcor.com.na
www.mme.gov.na

Updated: 28 March 2014



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Namibia's Geological Database Seismic & Wells

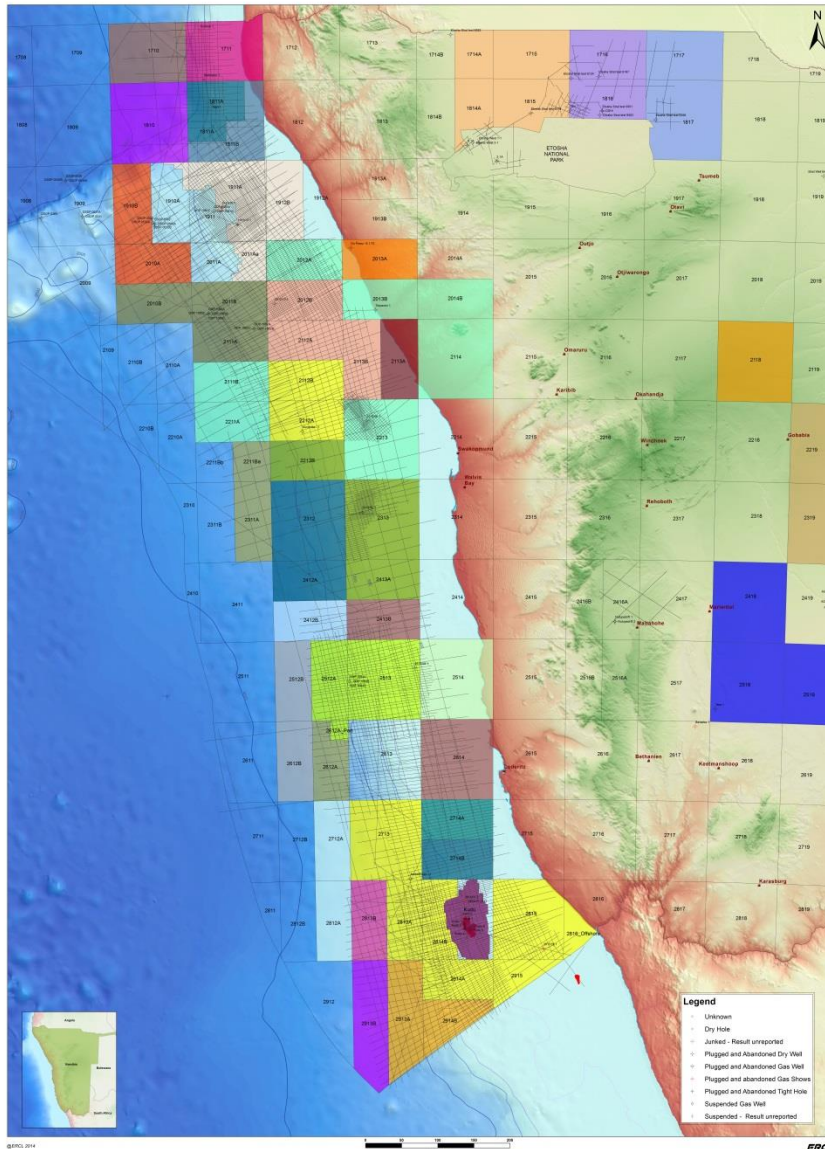


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ERCL Project

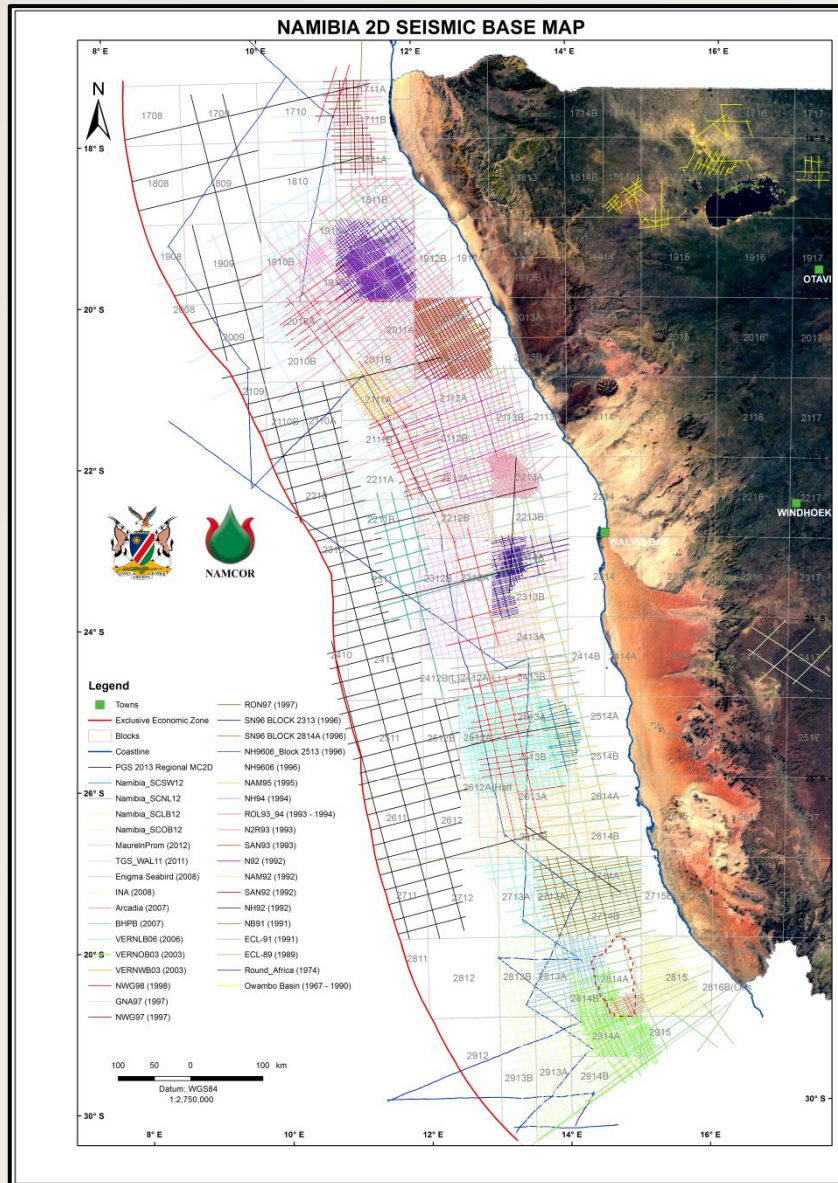
- Reviewed all existing datasets
- QC's
- Reprojection 2D vintage surveys
- Data loaded into SMT projects
- More confident database for exploration



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2D Seismic



Offshore Basins

- Excellent 2D data coverage
- Database consist ~131 236 line Km of 2D seismic (mainly non-exclusive)

Onshore Basins

- Poor 2D data coverage
- Hydrocarb and Preview Energy have plans to acquire: Owambo Basin and CSG Energy in the Caprivi area in 2014

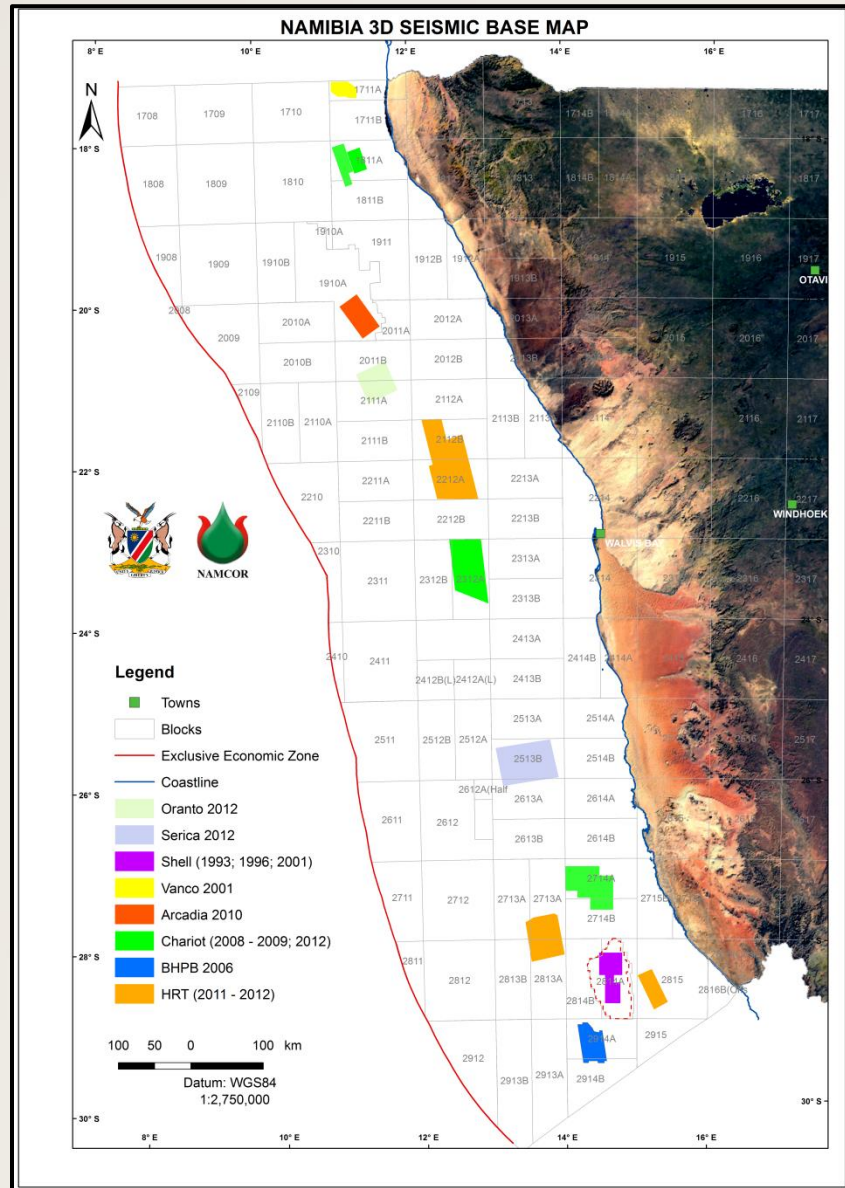
“ERCL completed comprehensive data management of 2D seismic and well database of Namibia”.



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3D Seismic



- Database consist of 24 313 km² of 3D seismic surveys - Sparsely coverage
- About 12 000 km² have been planned for 2014.
- Tullow and Pancontinental acquired 3000 km² in Block 2012B in Jan 14.

MME emphasis on acquiring 3D before drilling of any prospect .

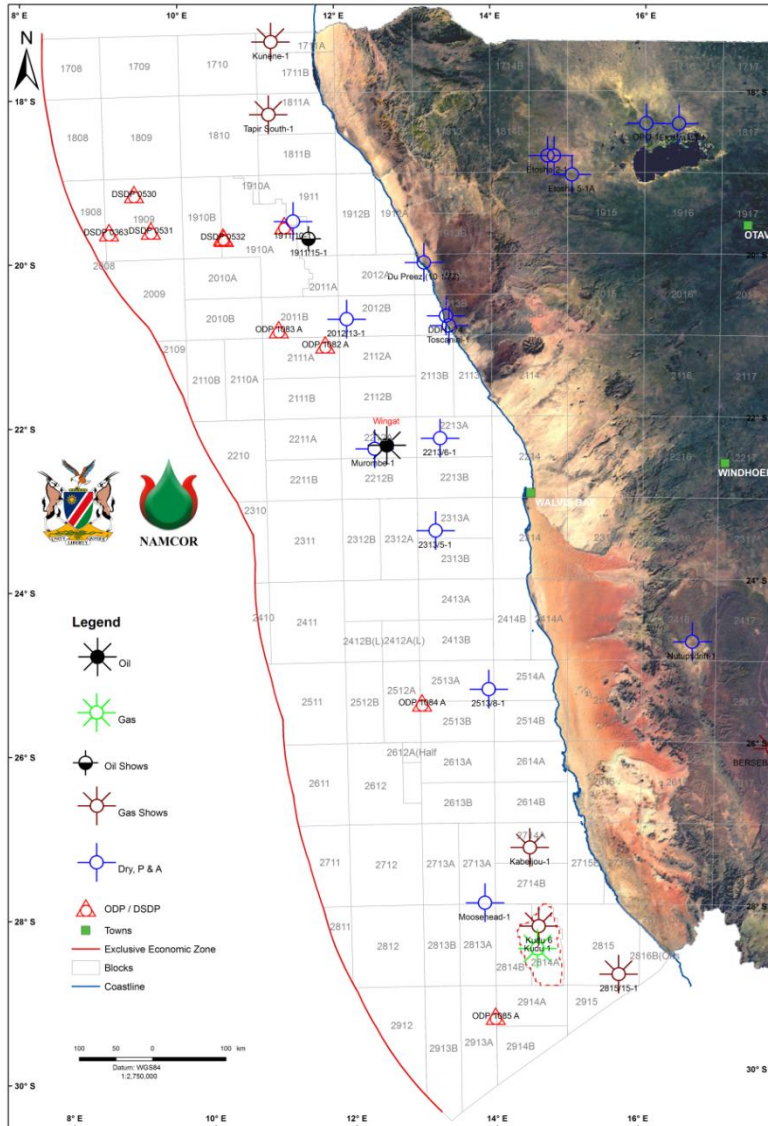


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Wells

NAMIBIA EXPLORATION WELLS BASE MAP



- Total of 21 Wells drilled offshore
 - 14 Exploration & 7 Appraisal wells (Kudu)
 - 4 ODP & 5 DSDP well locations
 - In 2012, 2 wells drilled by **Chariot Oil & Gas**.
 - In 2013, 3 wells by drilled by **HRT&Galp**.
 - 3 wells potentially to be drilled in 2014.
- Repsol** drilling underway, **Chariot** and **BP-Serica** potentially in 4Q-2014.



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Recent Exploration Activities



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Welwitschia-1 well to be drilled by Repsol & Tower

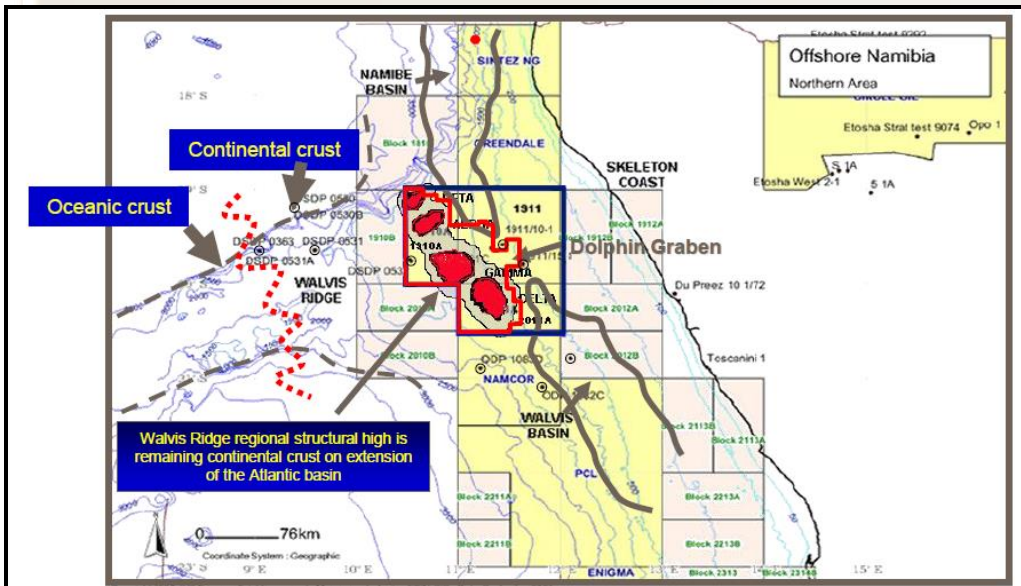
Welwitschia-1

Water depth: >1000m

TD estimated: 3000m (SubSea)



Rowan Renaissance, drillship



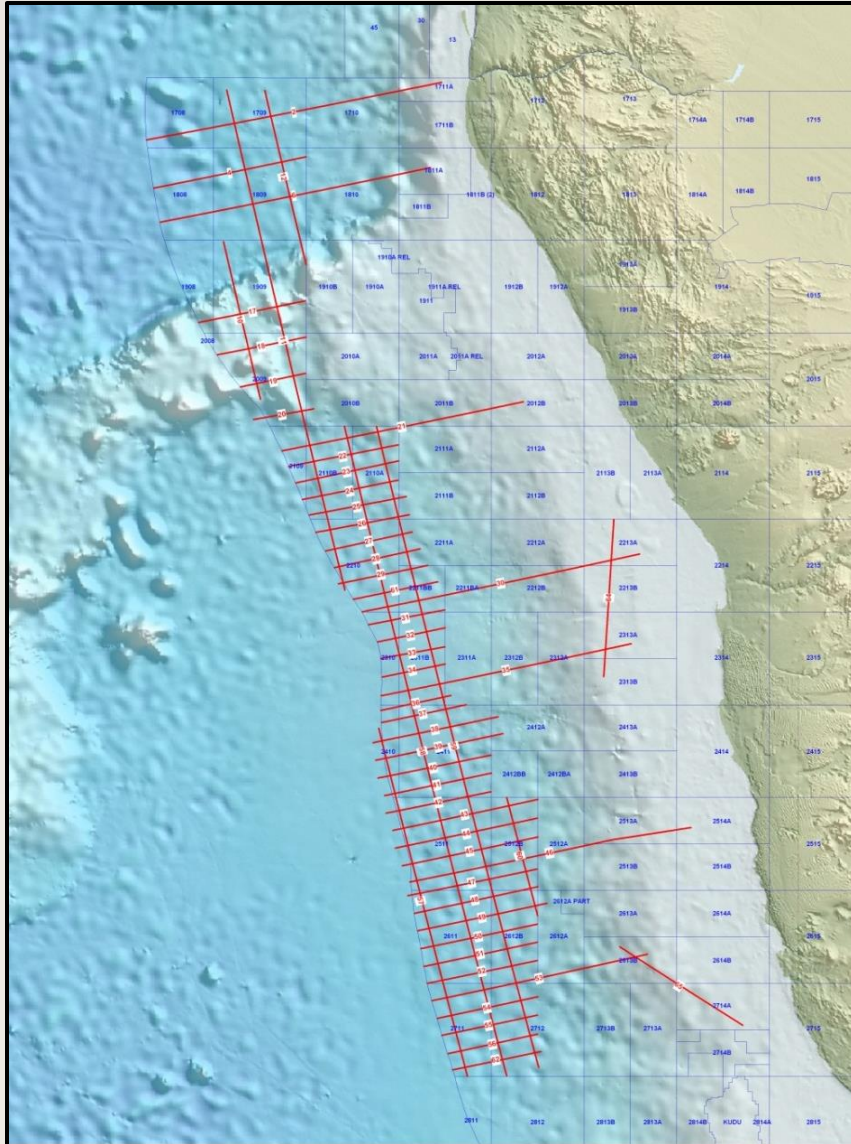
- Well selected in order to evaluate primary and secondary target reservoirs in both the Maastrichtian and Aptian-Albian reservoir sequences.
- Target risked potential resources of **~496 million barrels** of equivalent net across multiple reservoir horizons.



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PGS Multi-Client 2D Regional Survey



- Acquired total of 9972 km and (9949 km full fold). PSTM data available from April 2014
- High quality data over unlicensed offshore blocks - Deepwater
- PGS used GeoStreamer GS technology

Wingat-1

Wingat-1 (2212/07-1)

Water depth: 1005m

TD: 5000m

Drilled in 68 days



Main target:

Albian carbonate platform

- Low porosity in carbonate target.
- Two well developed source rocks penetrated.
- Reservoir saturated by light oil - 41 °API.



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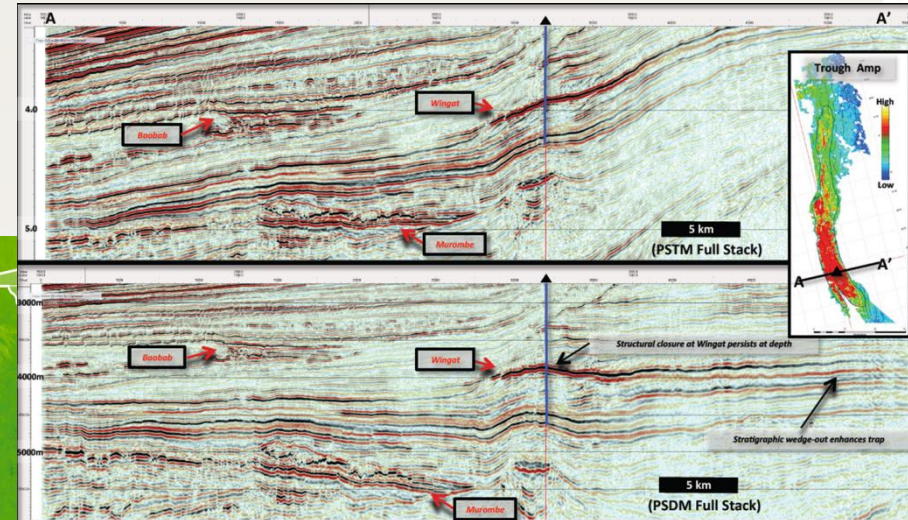
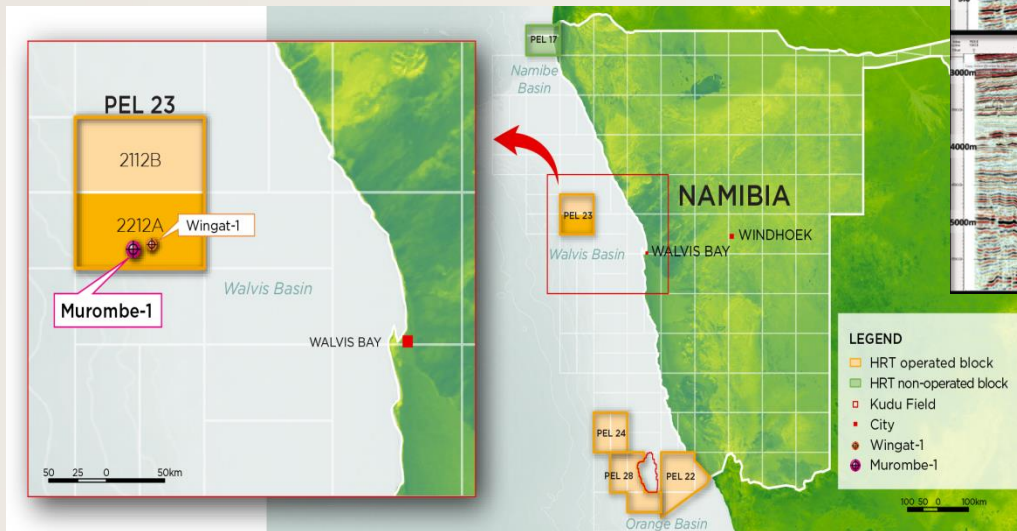
Murombe-1

Murombe-1 (2212/06-1)

Water depth: 1417m

TD: 5729m

Drilled in 62 days



Main target: Barremian basin floor fan turbidites.

Secondary target: Santonian confined channel complex.

- Penetrated same source rock as Wingat-1.
- The Baobab (secondary) target - Contained 36m net sand within a 242m interval (15% N/G). Average porosity of 19%.
- **Poor reservoir quality** - main target.



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Moosehead-1

Moosehead-1 (2713/16-1)

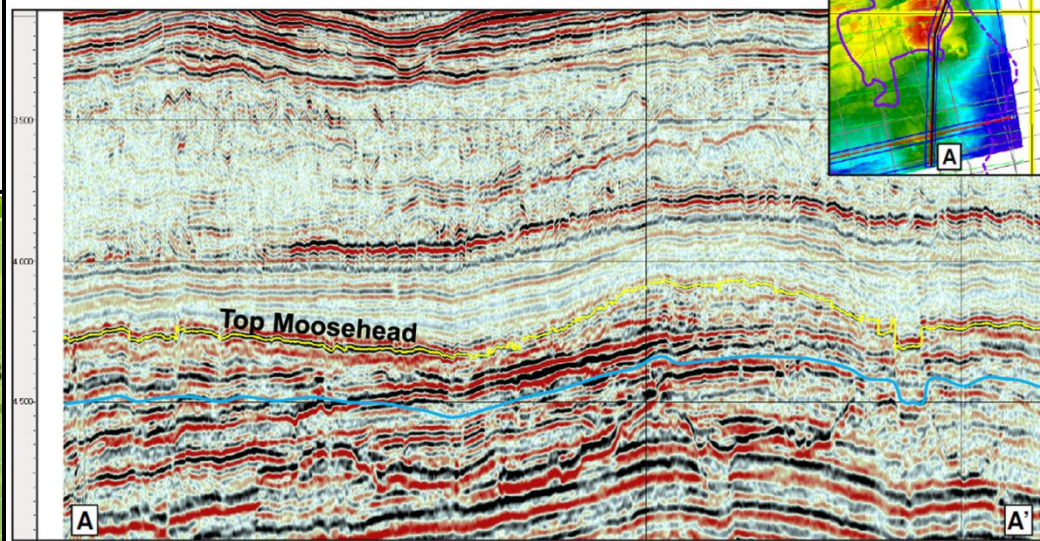
Water depth: 1716m

TD: 4170m

Drilled in 47 days

PEL 24/28

Moosehead Prospect (Barremian)



Main target: Barremian carbonate reservoir.

- Penetrated two well developed source rocks.
- Penetrated approximately 100m of carbonates at primary target but with very low porosity.
- Wet gas shows were encountered & increased in wetness with depth.



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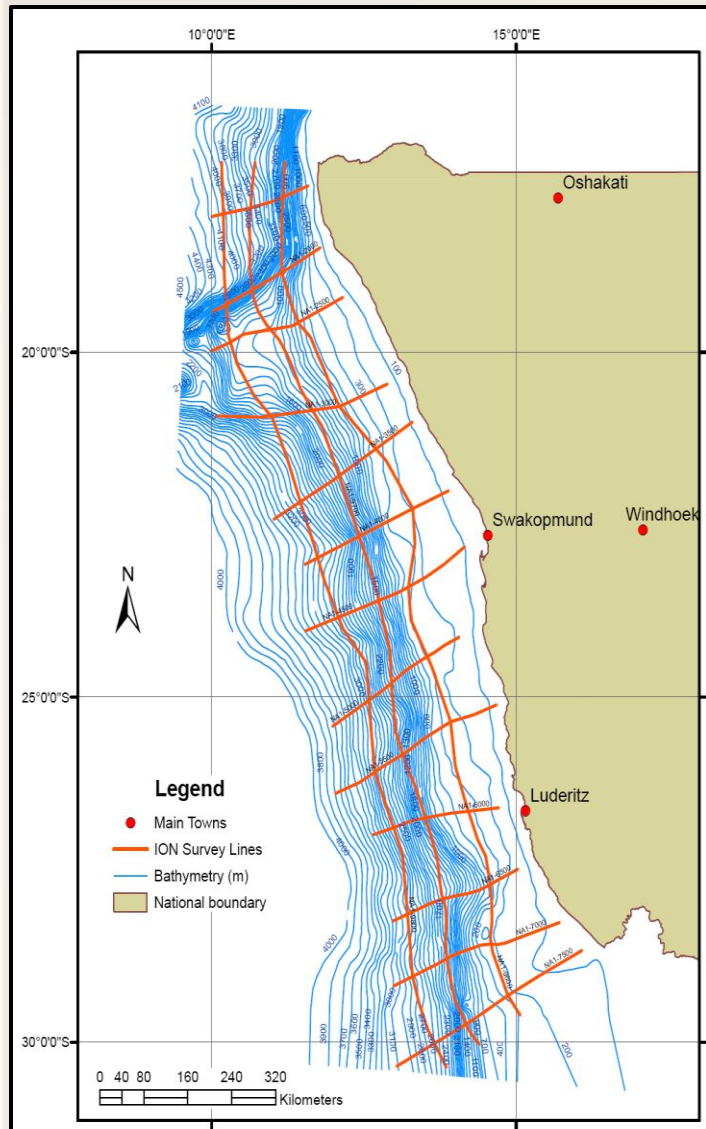
Future Exploration Activities



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ION-GXT SPAN. Namibia Regional Survey



- Operating Contractor – **SeaBird Exploration**
- Implementation Date – Variable starting early Q2
- Estimated survey duration – **3 months**
- Full-fold line length (km) – **7,905**
- Number of Lines – **16**

Combining both PGS and ION surveys we will have a powerful tool for regional study and better understanding of Namibia Offshore geology.



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Kudu Project

Current ownership structure

Upstream partners	Interest
NAMCOR	54%
Tullow	31%
Cieco	15%

Downstream partners	Interest
NamPower	51% ¹
CEC	c. 30% ¹
Foreign investor	c. 19% ¹

Source: Tullow Oil, NAMCOR and NamPower

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Conclusions

- Progressive seismic acquisition and drilling helps to de-risk Namibia offshore basins.
- Huge petroleum potential, suggest offshore Namibia can be considered as a future giant petroleum province in the South Atlantic margin.
- It is not only a conducive fiscal environment that makes international companies invest in countries rich in natural resources, its also the existence and accessibility of research and modern pre-competitive geoscientific data.
- New multi-client data acquired will open up new opportunities for future exploration and enhance geological understanding of the offshore basins.
- Ministry has been successful in creating exploration momentum resulting in huge interest from various reputable oil and gas companies.
- Kudu Gas to Power Project a strategic project, decrease Namibia's reliance on imported power and accelerate economic development.



THANK YOU

Please visit us @ **BOOTH 525, International Pavillion Hall**

or

www.namcor.com.na

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