

**CURRENT UPSTREAM OPPORTUNITIES_NAMIBIA
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NAMCOR**



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Exploring & Fuelling Namibia!

Presentation Outline

- **Introduction**
 - NAMCOR Business Overview

- **Update on Upstream Operations**
 - Sedimentary Basins
 - License Participation
 - Exploration database
 - NAMCOR blocks (Block 1711, Block 1811A, 2714 A & B, Block 2914A)

- **Conclusion**



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Introduction



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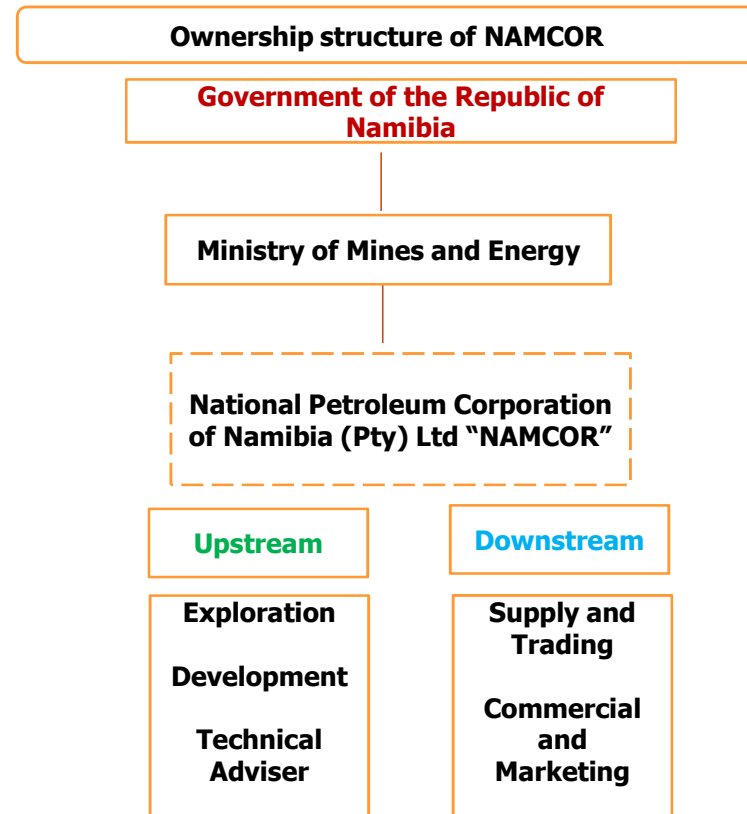
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NAMCOR Business Overview

Legally enacted entity established under the Petroleum (Exploration and Production) Act of 1991

Main functions:

- Ensuring optimum exploitation of Namibia's petroleum resources and meaningful Namibian participation in petroleum-related activities
- Marketing and Promotion
- Technical Advisory Services to the Ministry of Mines & Energy



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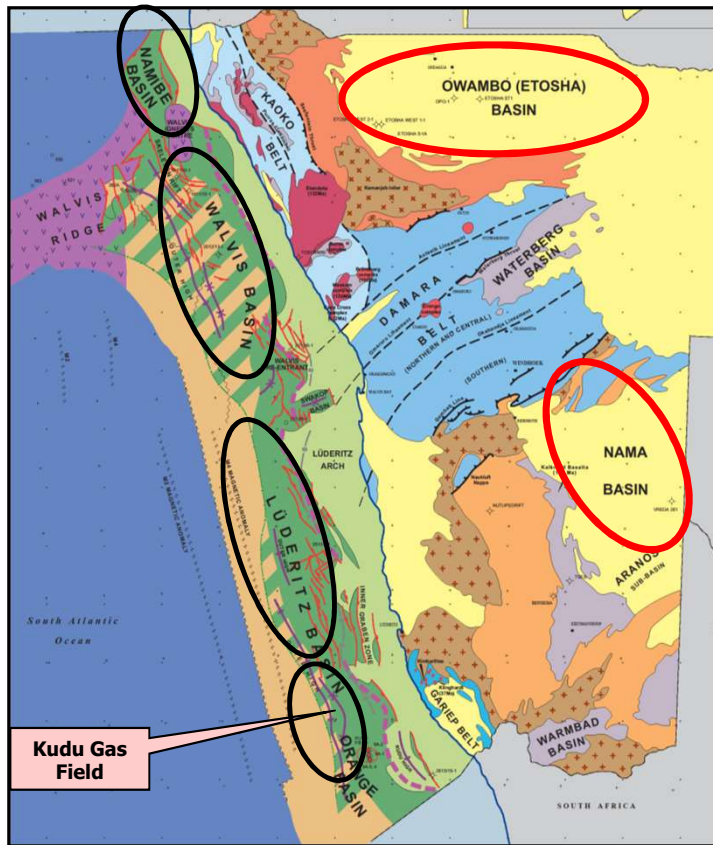
Update on Upstream Operations



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Sedimentary Basins

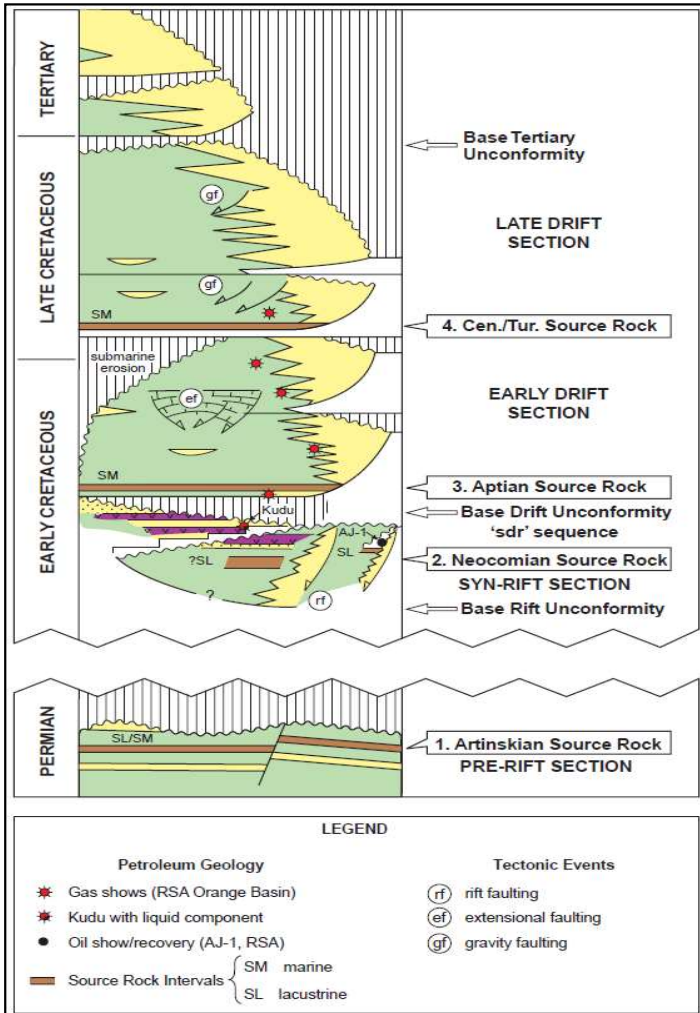


Legend: Offshore Geology

- Early Cretaceous to Tertiary Drift Section overlying continental basement
- ?Late Jurassic to Early Cretaceous Syn-rift section
- Main Area of seaward-dipping reflectors
- Tentative area of syn-rift section underlying seaward dipping reflectors
- Walvis Ridge volcanics
- Oceanic Crust

- 4 Sedimentary basins offshore
- 2 onshore Basins
- First exploration well drilled in 1974 discovered Kudu Gas Field

Potential Source Rock



Turonian-Cenomanian

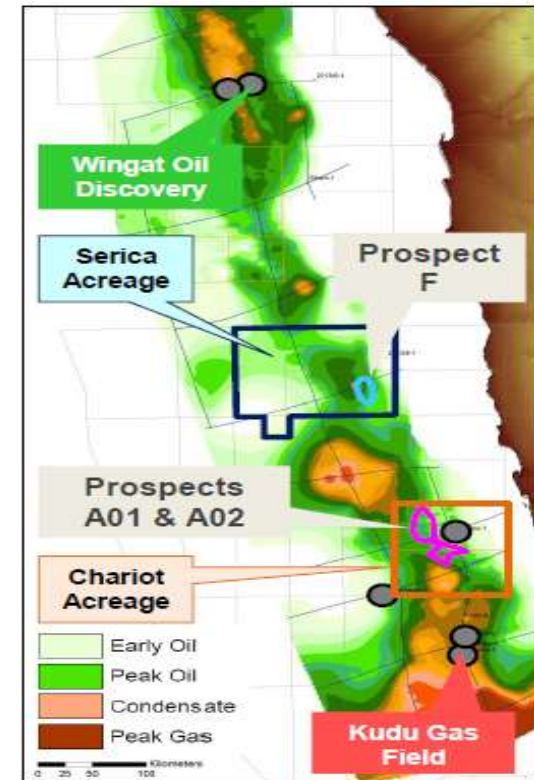
- Proven in Walvis and Orange Basins (excellent in DSDP 530A Well and immature in 1911/10-1 and 1911/15-1, Moosehead-1)
- Marine, oil-prone
- Early to late mature
- TOCs up to 10%;

Apto-Albian

- Proven in Walvis (Wingat-1 & Murombe) and Orange Basin (Kudu)
- Marine, oil and gas-prone
- Early to Late mature
- 2 % TOC proven in the Kudu field

Neocomian, syn-rift

- Proven in Orange Basin, South Africa (A-J1 well)
- Lacustrine, oil-prone



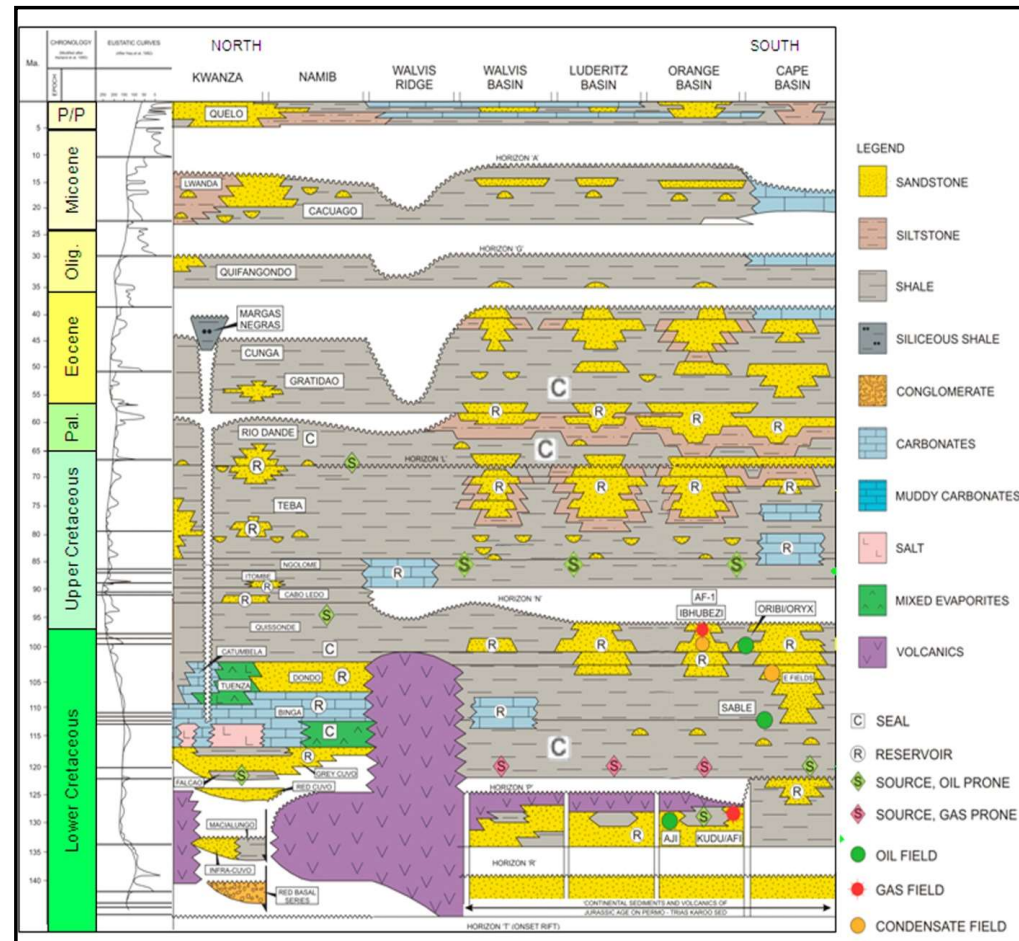
Aptian Source Rock Maturity (after Chariot, APPEX 2016)



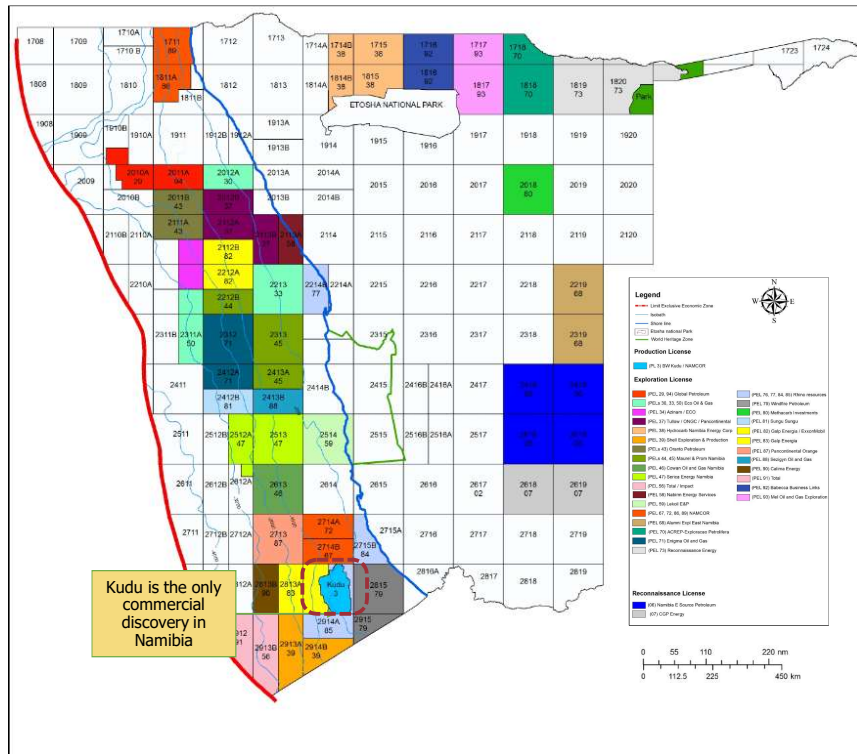
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Reservoir Rock Potential

- Northern basins largely dominated by carbonates with minor siliciclastics sediments.
- Walvis ridge formed a transition zone.
- Southern basins largely dominated by siliciclastics sediments minor carbonates.
 - Aeolian sands
 - Marine sands



Namibian hydrocarbon licensing map



- Namibia is believed to hold significant potential for HC due to a geological similarity with Brazil and Angola.
- Namibia is relatively unexplored with only 17 exploration wells drilled so far in an area that covers more than 500,000 km² offshore.
- Eight of the wells located in the Kudu gas field have 1.4 TCF of proven reserves and estimated upside of 5 TCF.
- A database of seismic data acquired includes a total of approximately 200,000 km of 2D seismic data and 40,000 km² of 3D seismic data.
- Namibia has a comparatively simple and attractive fiscal package to incentivise petroleum resource development.
- Namibia adopted an open licensing system in 1999, through which the country can accept onshore and offshore bids at any time.
- To date, 42 exploration licences, 1 production licence and 4 reconnaissance licences have been issued.

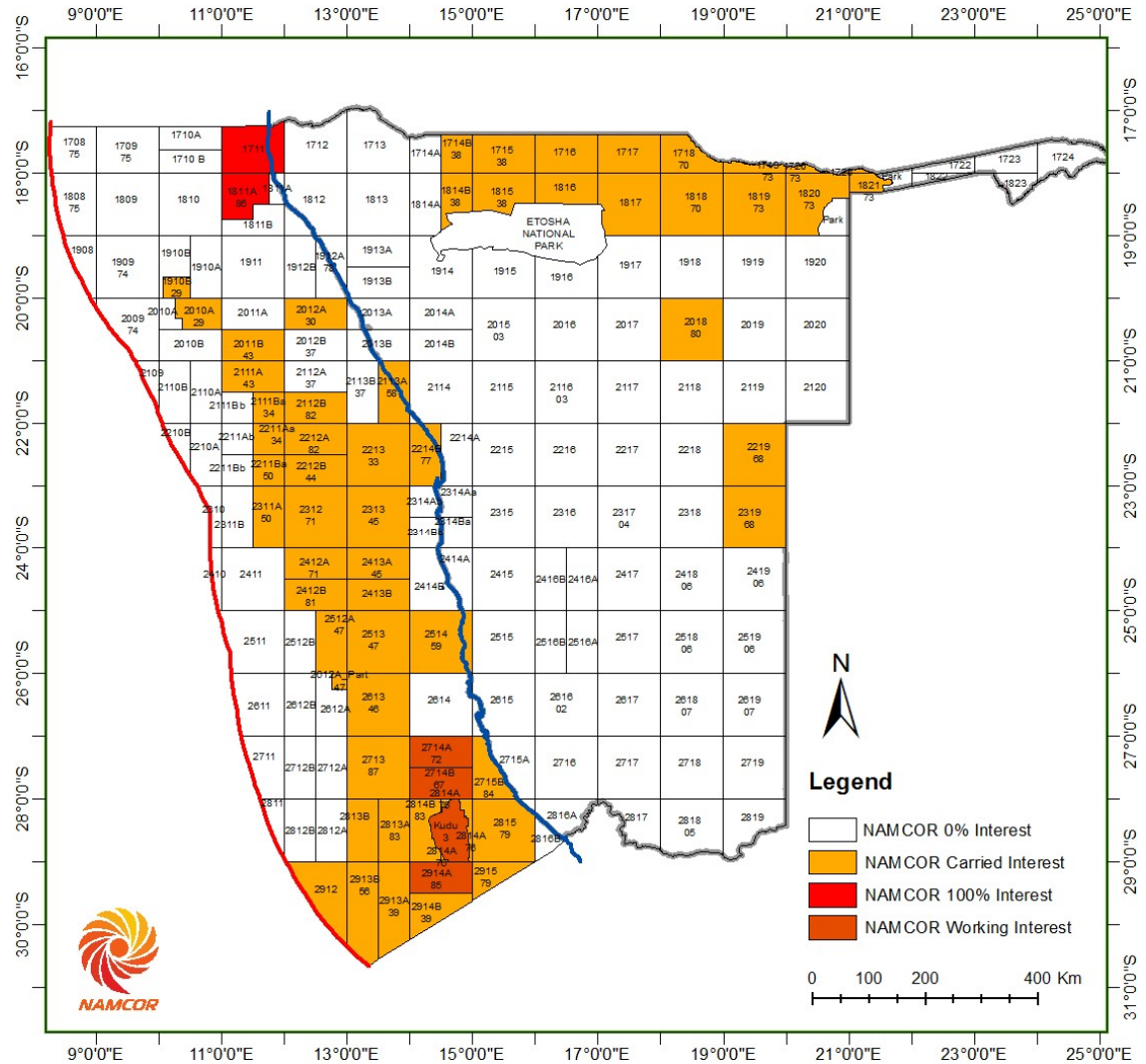
Namibian licensing – key features	
Licensing policy features	Specific fiscal requirements
<ul style="list-style-type: none"> • Majority of E&P items can be imported duty free. • Oil companies exempt from non-resident shareholder tax. • NAMCOR may participate in licences if agreed during negotiations 	<ul style="list-style-type: none"> • Royalty of 5% for new entrants. • Petroleum income tax (PIT) of 35%. • First tier additional profit tax (APTs) of 25%. • Negotiable second and third tier APTs. • Negotiable signature bonuses



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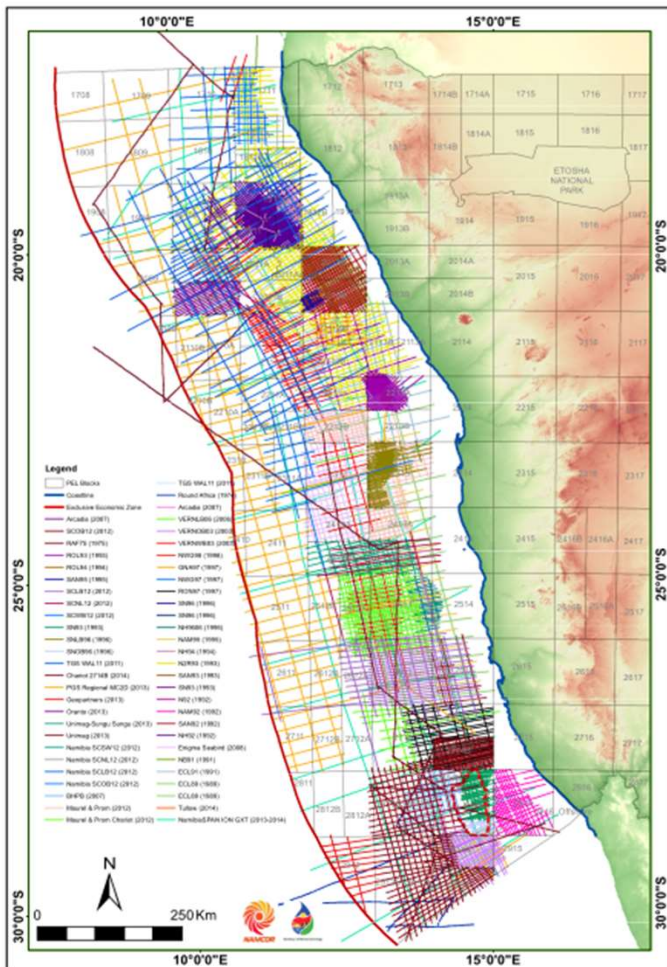
NAMCOR's participation

- NAMCOR has working interest in five (5) PELs and operates four (4) license block.
- It also has an average of 10% carried interest in more 97% of the issued licenses.

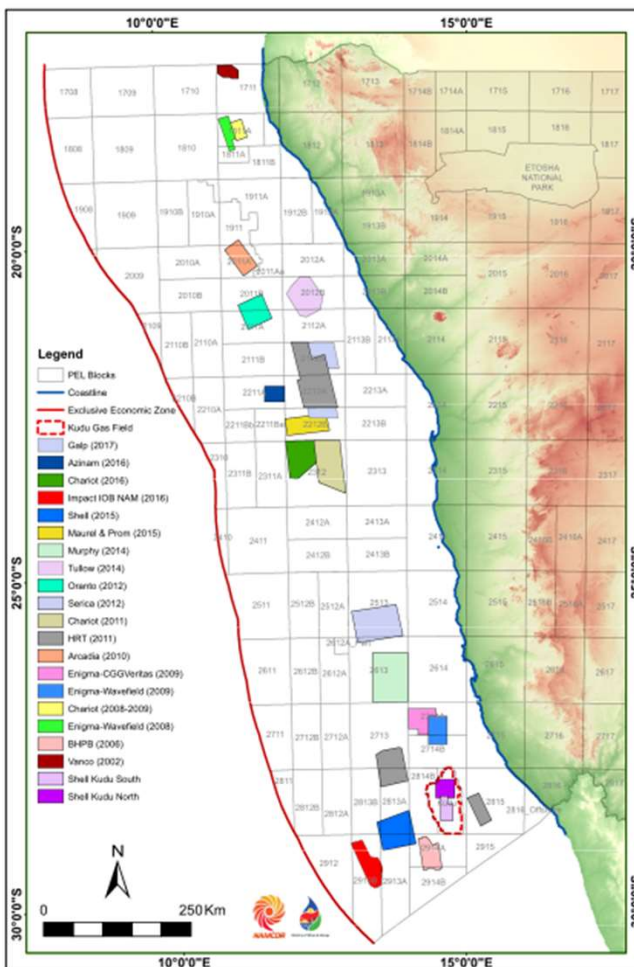


Hydrocarbon Exploration Datasets

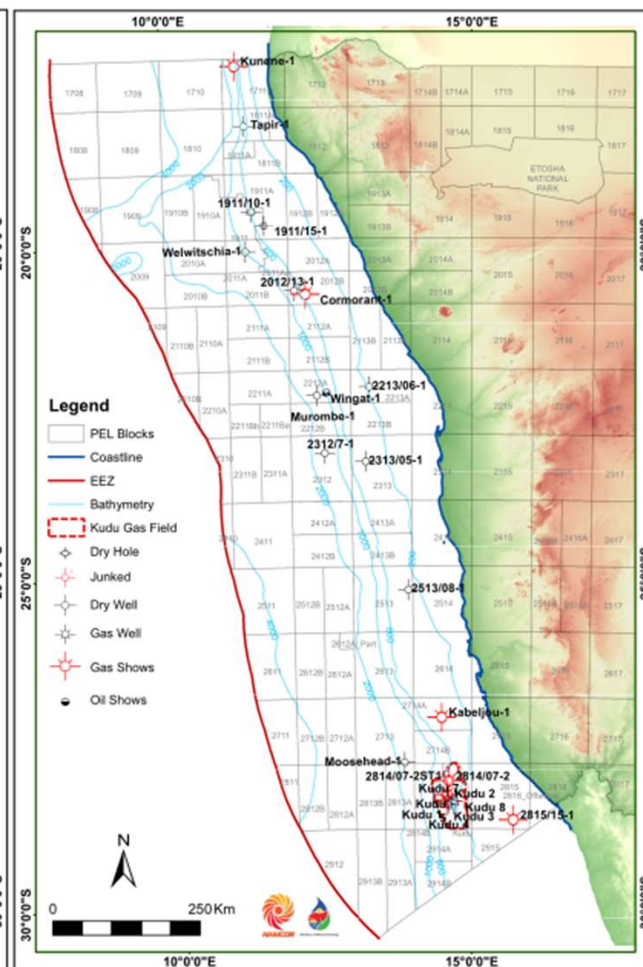
2D



3D



Wells



NAMCOR LICENCE BLOCK WITH WORKING INTEREST

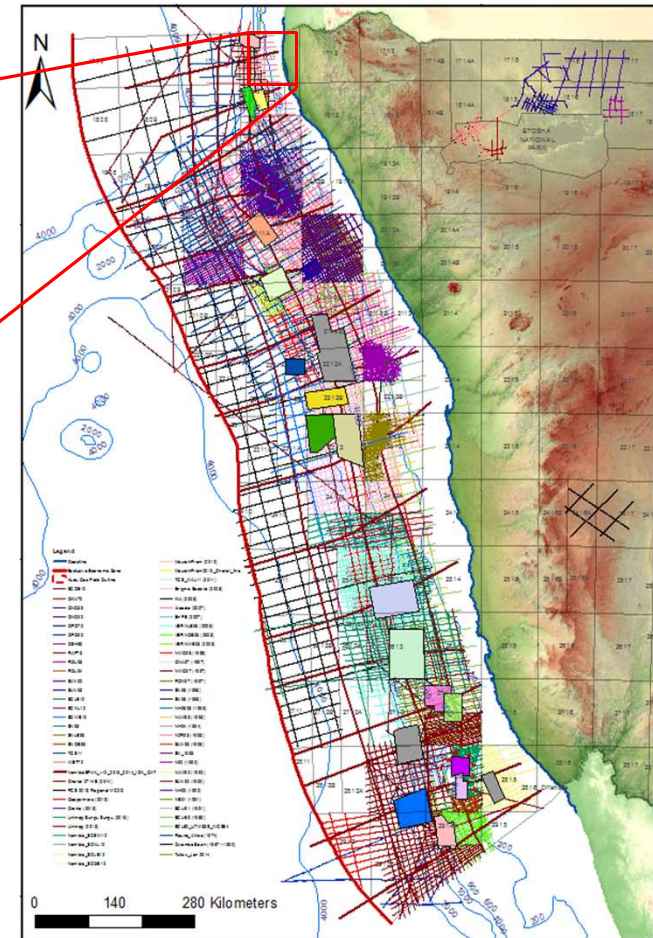
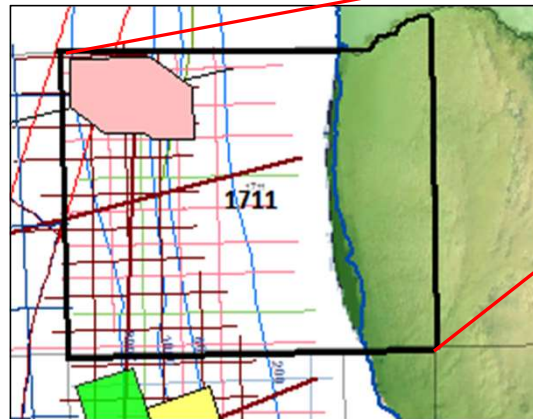


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PEL 89 (Block 1711): License Summary

License Activities	
Licence	PEL 89
Water Depth Range	100 - 2,600m
Blocks	1711
Operator (WI%)	NAMCOR (100%)
Location	Namibe Basin
Licence award	May 2018



The exploration datasets in Block 1711 includes:

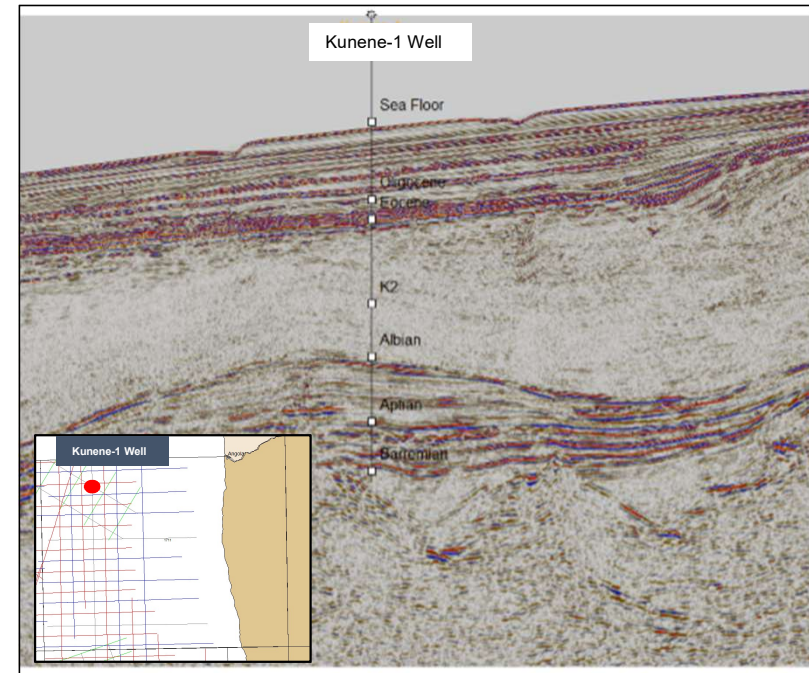
- About 3 000 km of 2D seismic data
- 780 km² 3D seismic data
- Kunene-1 Well (TD 5052 m)

In addition NAMCOR is also has access to:

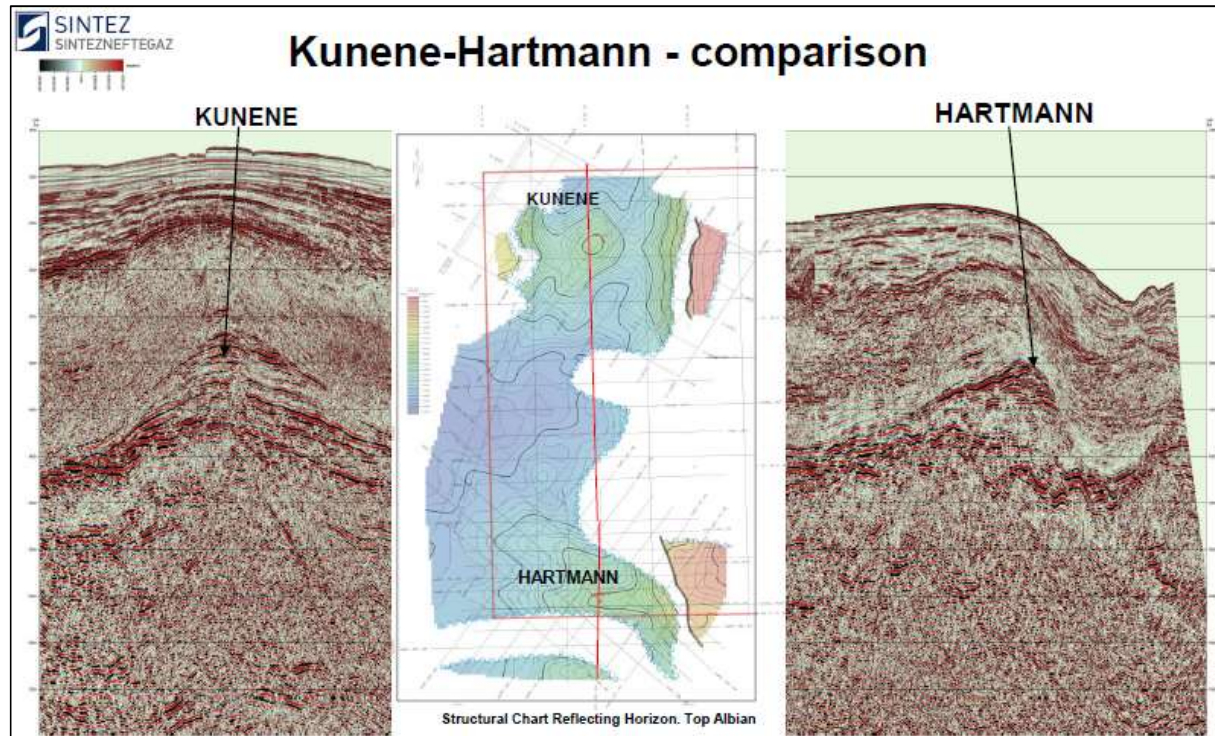
- Oil Seep study report
- DSDP well reports
- Regional reports

Block 1711 Prospects

- Theoretical basin modelling of the Namibe Basin indicates that the syn-rift source rocks are in the late-oil to wet-gas maturity window, while the Aptian-Albian source rocks are early to mid-mature for oil.
- There are a number of potential reservoirs in the Namibe Basin, including pre-rift sandstones and carbonates, syn-rift continental sandstones, Early Cretaceous carbonates and turbidites, and Tertiary turbidites.



Location of Kunene-1 Well. After Sintezneftegaz, 2009



After Sintezneftegaz, 2009

Potential Targets		
Prospect	Reservoir	Lead Age
Kunene	Cretaceous Carbonates	Albian
Hartmann	Cretaceous Carbonates	Albian

PEL 86 (Block 1811A): License Summary

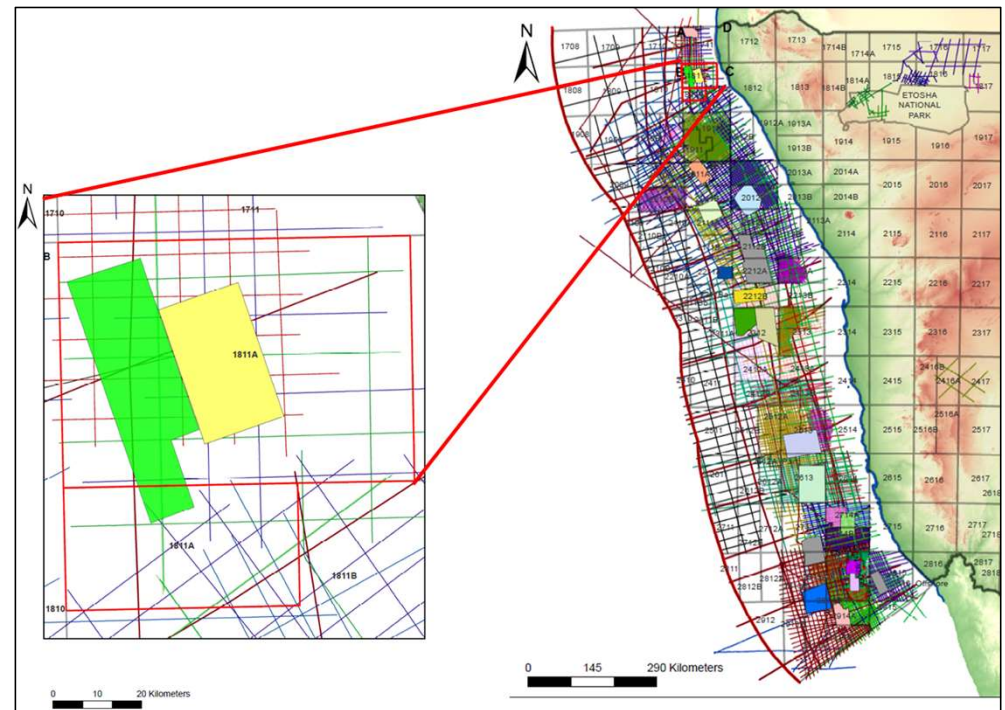
Licence Activities	
Licence	PEL 86
Water Depth Range	100 - 2,600m
Blocks	1811A
Operator (WI%)	NAMCOR (100%)
Location	Namibe Basin
Licence Award	August 2017

The exploration datasets acquired by Chariot in Block 1811A includes:

- About 1 000 km of 2D seismic data (reprocessed)
- 1 500 km² 3D seismic data
- Tapir South-1 Well

In addition NAMCOR is also has access to:

- Oil Seep study report
- DSDP well reports
- Aerial Gravity (Sandwell & Smith)

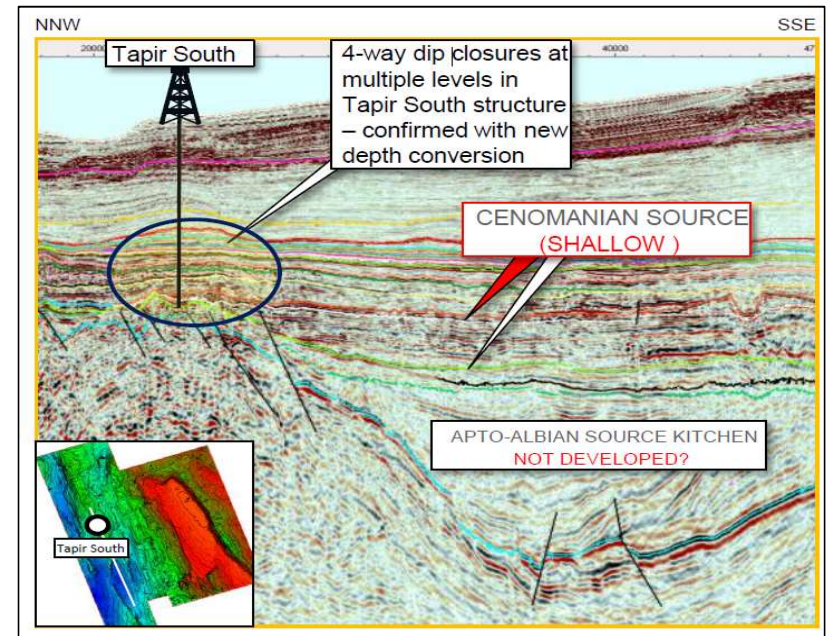


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Block 1811A Prospects

- Intersected shallow geological units above the Cenomanian-Turonian source rock which is known to be immature in the northern part of offshore Namibia.
- Deeper source rock proven in nearby wells: Lacustrine syn-rift and Aptian marine shale source rocks with the right maturity will contribute in charging the potential leads and prospects.



Location of Tapir south on seismic section. After Chariot, 2013.

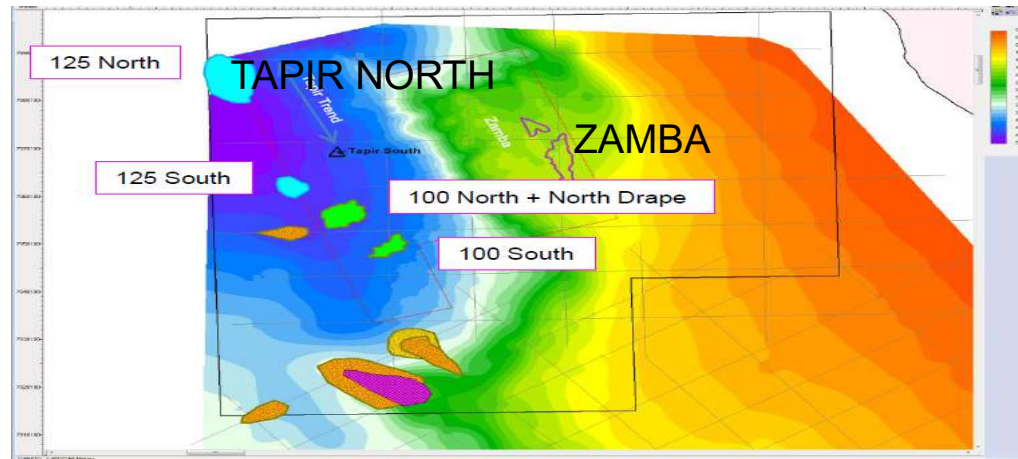


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Leads and Prospects of 1811 A

- **Zamba Prospect(Purple)** -Albian Carbonate:
Areal Extent(P50): 95 km²
- **Tapir North Prospect**
Areal Extent(P50): 35 km²
- **125 North(Light Blue)**-carbonate:
Areal Extent:51 km²
- **125 South (Light Blue)**-carbonate:
Areal Extent: 12 km²
- **100 North + North Drape (Light green)**-Albian carbonate:
Areal extent:33 km²
- **100 South (Light green)**- Albian Carbonate:
Areal Extent: 12km²

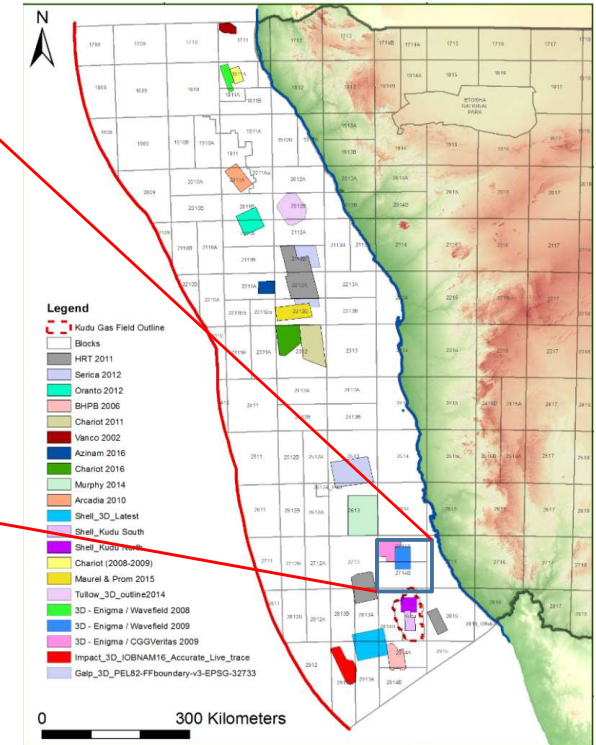
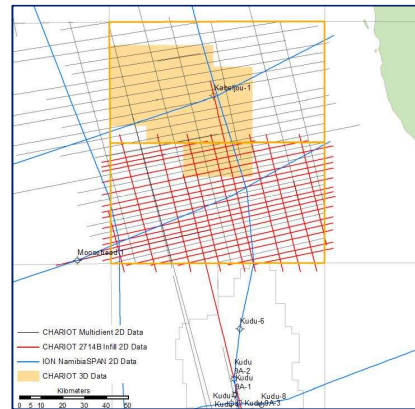


Block 1811A Remaining Potential Targets		
Prospect	Reservoir	Lead Age
Zamba	Cretaceous Carbonates	Albian
Tapir North	Cretaceous Carbonates	Albian
125 North	Cretaceous Carbonates	Aptian
125 South	Cretaceous Carbonates	Aptian
100 North + North Drape	Cretaceous Carbonates	Albian
100 South	Cretaceous Carbonates	Albian
Potential Clastic basin floor fans + channels	Cretaceous Clastic(channels +Basin floor fan)	Late Cretaceous

Source: Chariot, 2013

PEL 72 & 76 (Block 2714A & 2714B): License Summary

Licence Activities	
Licence	72 & 76
Water Depth Range	200-1,500m
Blocks	2714A and 2714B
Operator (WI%)	NAMCOR 67%
Partners (WI%)	Quiver 33%
Location	Orange Basin Namibia
Licence award	2017
Size	10,945 sq.km



The exploration datasets acquired in Block 2714:

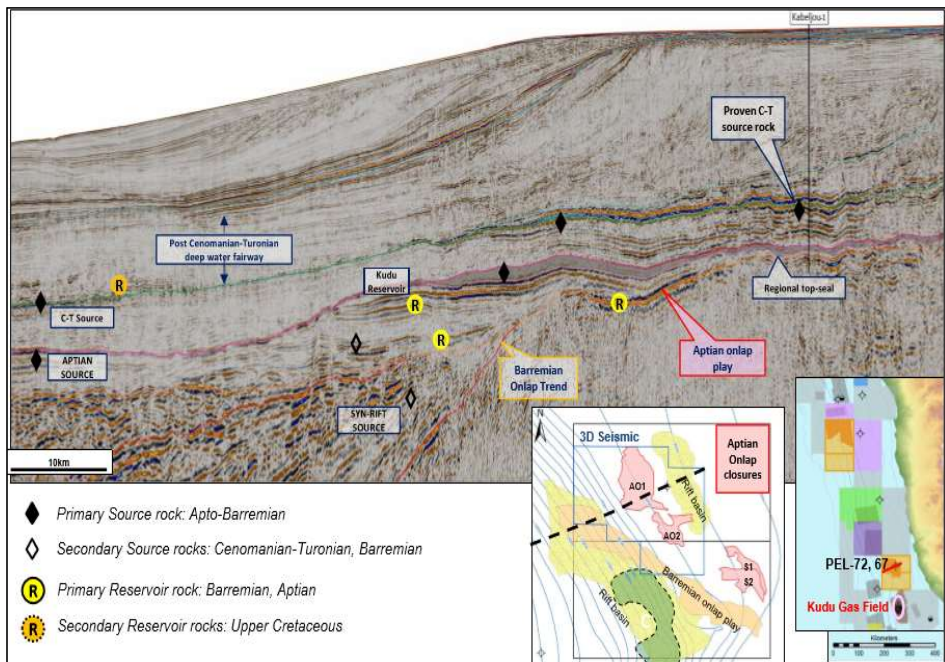
- About 6930 km of 2D seismic data
- 3 500 km² 3D seismic data
- Kabeljou-1 Well

In addition NAMCOR is also has access to:

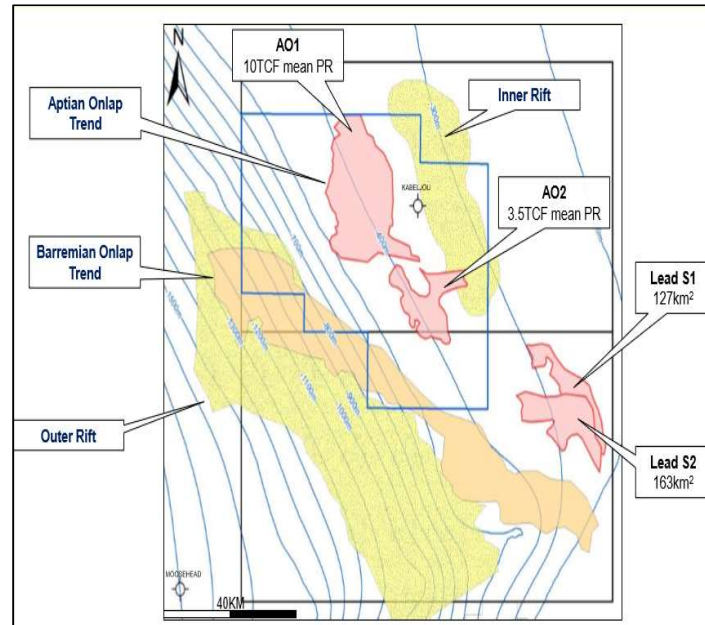
- Orange Basin Regional Reports
- Other well reports from nearby Orange Basin wells
- Aerial Gravity (Sandwell & Smith)



Leads and Prospects of 2714A & 2714B



(After Chariot, 2017)



Potential Targets

Leads/Prospects	Reservoir	Lead Age
Inner Rift	Lower Cretaceous sandstone	Barremian or Older (Lower Cretaceous)
Barremian Onlap Play	Lower Cretaceous sandstone	Barremian
Aptian Onlap Play	Cretaceous sandstone	Aptian



PEL 85 (Block 2914A): License Summary

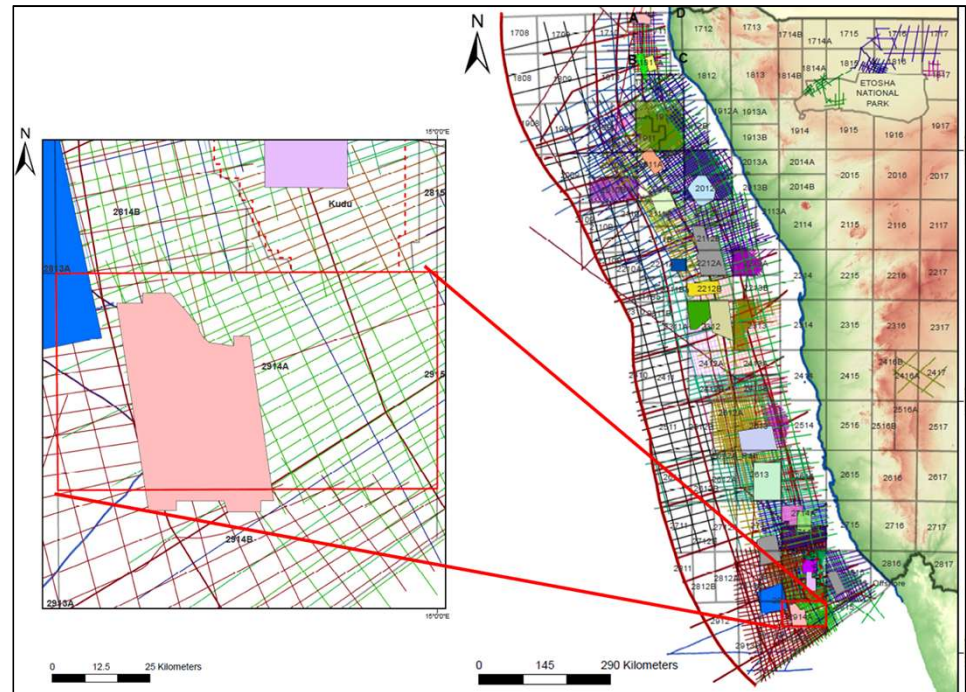
Licence Activities	
Licence	PEL 85
Water Depth Range	100-2,000m
Blocks	2914A
Operator (WI%)	Rhino Resources (55%)
Partners (WI%)	NAMCOR (30%) Korres (15%)
Location	Orange Basin Namibia`
Licence award	July 2017

The exploration datasets acquired in Block 2914A:

- Over 3300 km of 2D seismic data
- 1 518 km² 3D seismic data

In addition NAMCOR is also has access to:

- Orange Basin Regional Reports
- Other well reports from nearby Orange Basin wells
- Aerial Gravity (Sandwell & Smith)

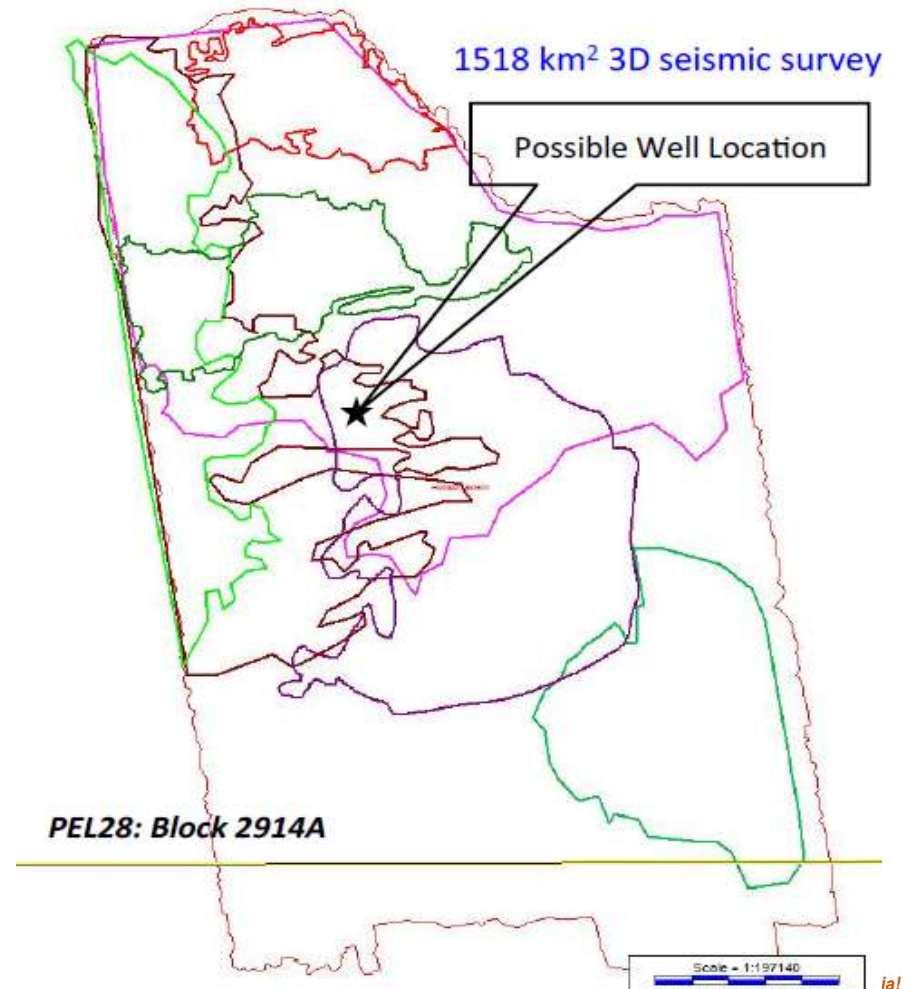


Leads and Prospects of 2914 A

- **Shoebill (Pink)**-Basin floor fan: Areal Extent: 300 km²
- **Blue Waxbill (Brown)**-Basin Floor fan: Areal Extent: 180 km²
- **Scops Owl (Light green)**-Basin Floor fan: Areal Extent: 165 km²
- **Flamingo (Purple)**-confined fan complex: Areal extent: 140 km²
- **Guineafowl (Red)**-Basin Floor fan: Areal Extent: 80 km²

Primary mapping has been done on the 2006 3D seismic Pre-stack depth migration volume.

Block 2914A Potential Targets		
Prospect	Reservoir	Lead Age
Shoebill	Cretaceous Turbidites	Cenomanian
Blue Waxbill	Cretaceous Turbidites	Barremian
Scops Owl	Cretaceous Turbidites	Aptian
Guineafowl	Cretaceous Turbidites	Barremian



Conclusion

- Namibia remains one of the underexplored regions with considerable potential of hydrocarbon accumulations and it has attractive fiscal regime.
- Increased exploration activities have unlocked hydrocarbon potential of Sedimentary Basins of Namibia. This has attracted major oil and gas companies which will play a vital role in developing hydrocarbon resources in our country.
- NAMCOR is now actively involved in Hydrocarbon Exploration in Namibia and we are open to new partnerships.



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Thank You

For more information visit NAMCOR's booth

or

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