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# Republic of Congo 2016 License Round

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**SNPC**

**March 2016**  
**APPEX Global, London, UK**

Republic of Congo  
**2016 License Round**

# Republic of Congo 2016 License Round



## AGENDA

Overview

Details

Data

Conclusions

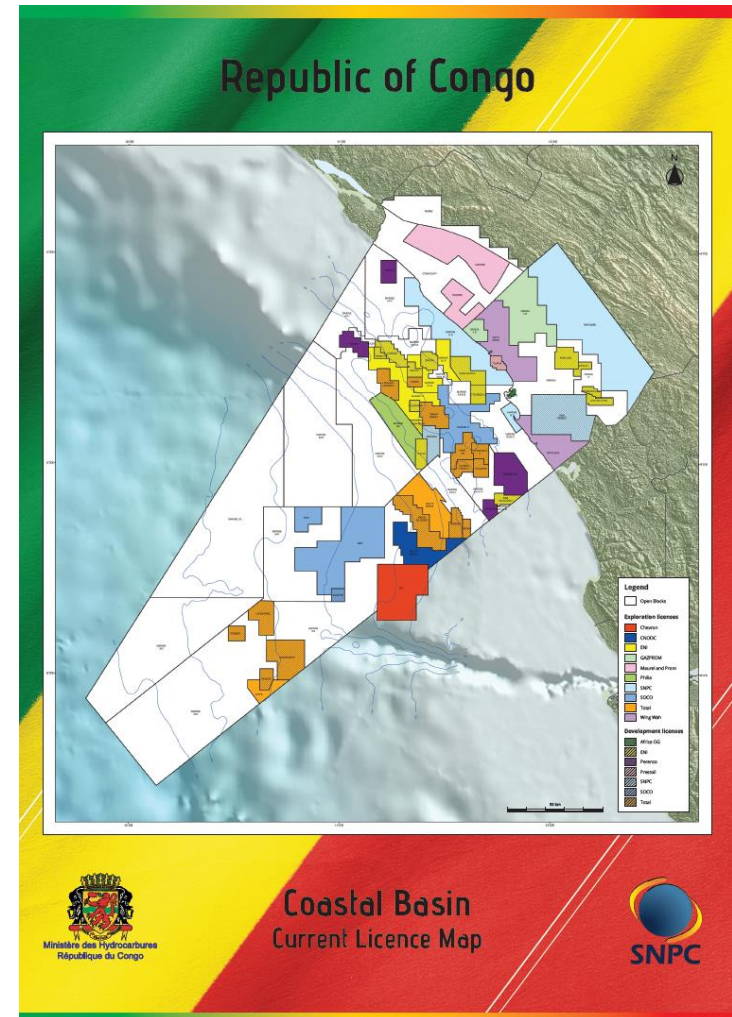


# Republic of Congo 2016 License Round



## Overview

- **Congo Mining Domain**
  - Length of coastline 145 km
  - Surface area 27,800 km<sup>2</sup>
  - 13 Exploration Permits
  - 31 Development Permits
  - 22 Open Blocks
- **9 different Operators on Exploration Permits**
- **8 different Operators on Development Permits**
- **Production: 250 kbep/day**

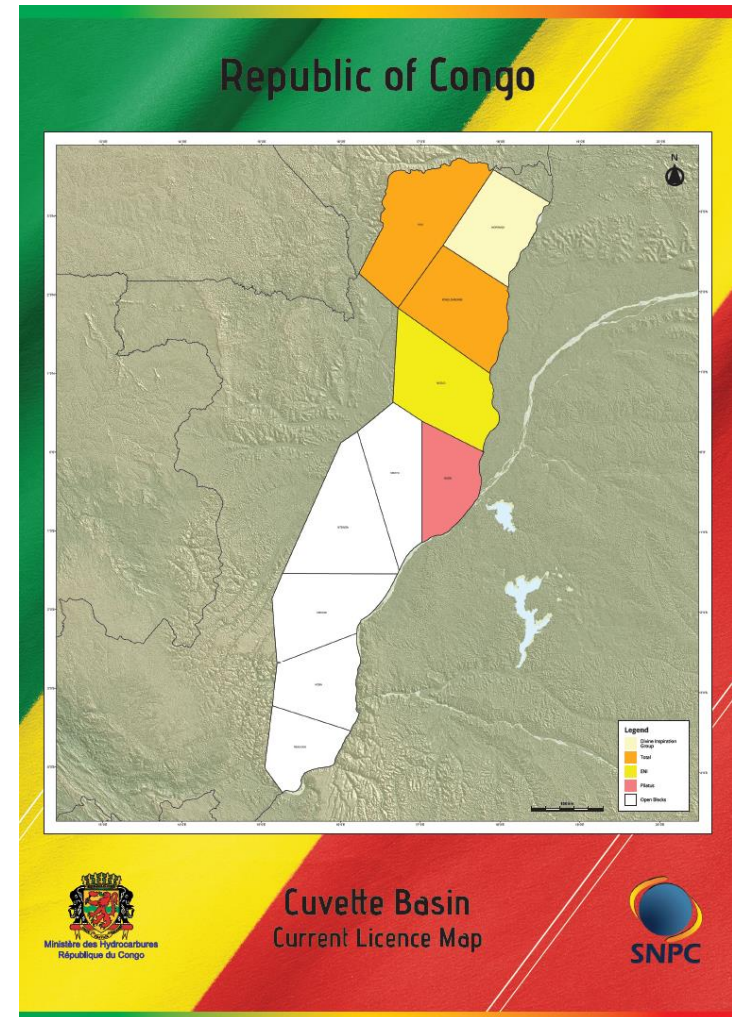


# Republic of Congo 2016 License Round



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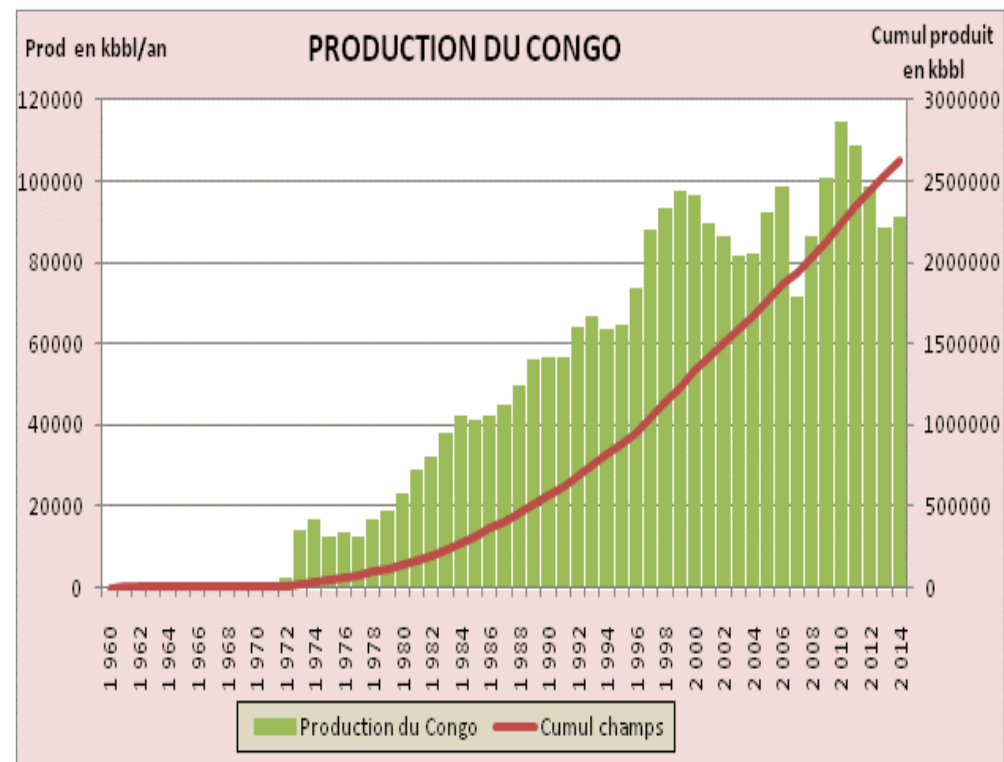


# Republic of Congo 2016 License Round



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Congo License Round 2016



## Details

### **Available Blocks**

#### **Coastal Basin**

Marine XIX

Marine XX

Marine XXI

Marine XXII

Marine XXIII

Marine XXIV

Marine XXVII

Marine XXX

#### **Cuvette Basin**

Koba

Mbesse

Mboloko

Mboto

Ntsinga





# Republic of Congo 2016 License Round



Congo License Round 2016



## Details

### Timetable

- 28 October 2015: Official Announcement of Launch of 2016 License Round
- by 21 November 2015: Preparation of Data Packages
- from 21 November 2015: Registration by interested companies via website - [www.congolr2016.com](http://www.congolr2016.com)
  - Bid Documents available to registered companies
  - Closing date for submission of offers from companies to the Ministry of Hydrocarbons in Brazzaville
  - Assessment of bids and publication of results

Republic of Congo  
Presidential Election  
March 20, 2016

Extended timetable  
(to be advised)



# Republic of Congo 2016 License Round



## Details

### Congo License Round 2016



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# Republic of Congo 2016 License Round

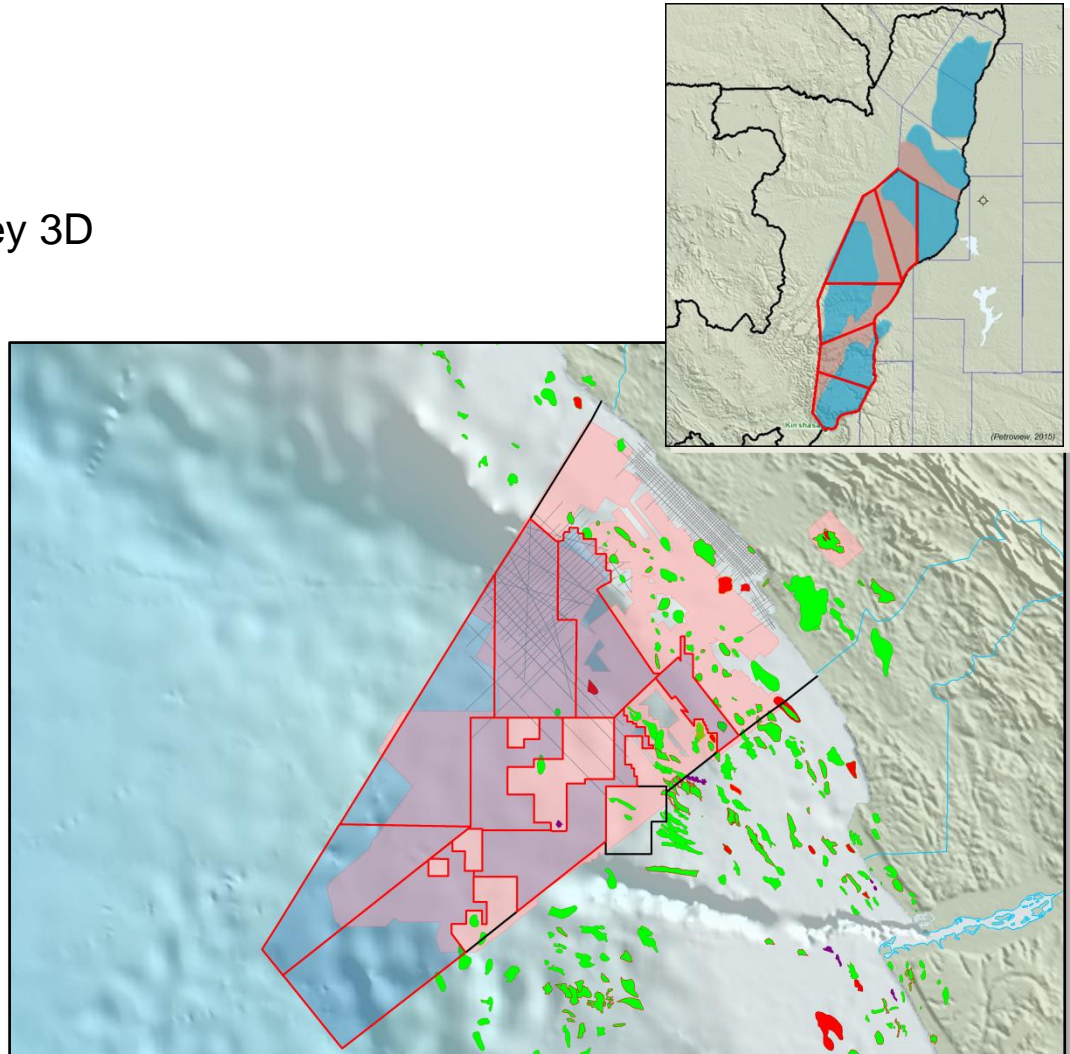


## Data

### Offshore: Coastal Basin

- PGS/SNPC Congo MegaSurvey 3D
- MPN/MPS-2011 Brokerage
- MC3D Marine XX (2016)
- Workstation Ready Well Data

### Onshore: Cuvette Basin





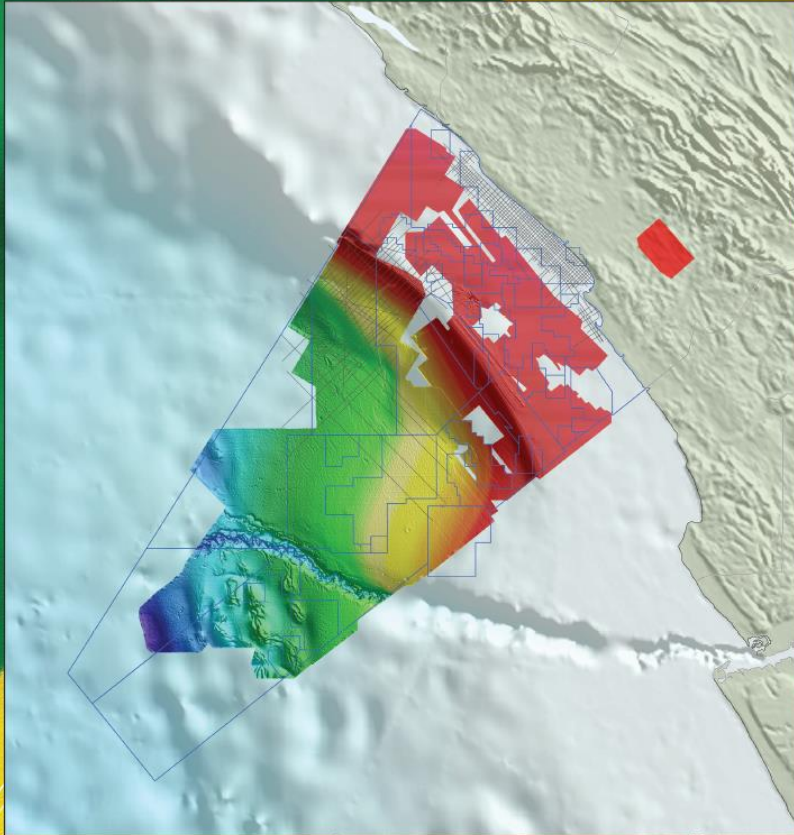
- 6 sequence constrained horizons over whole dataset



# Republic of Congo 2016 License Round



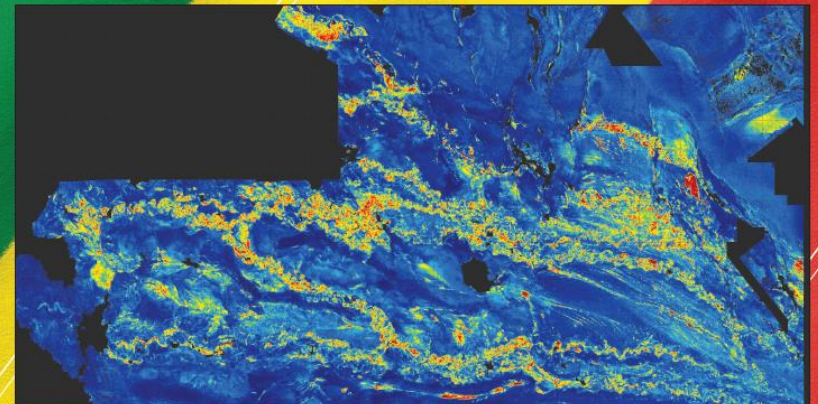
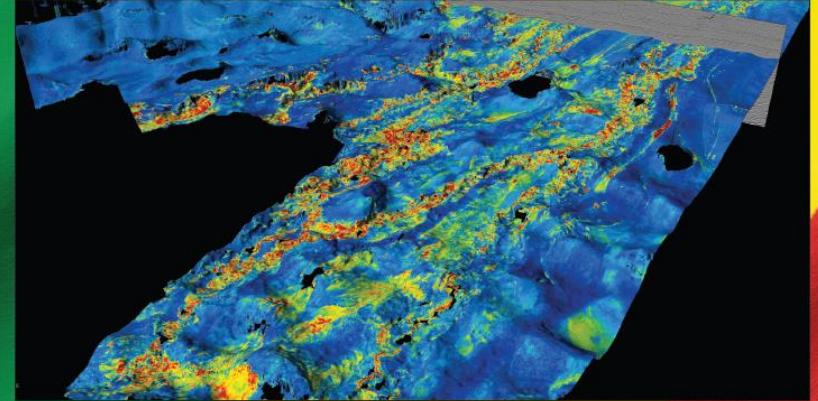
Republic of Congo



PGS MegaSurvey  
Sea bed interpretation



Republic of Congo

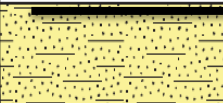
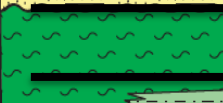
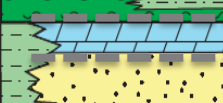






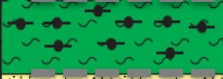







PGS MegaSurvey  
Miocene Channels

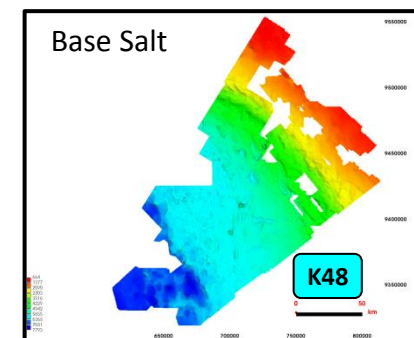
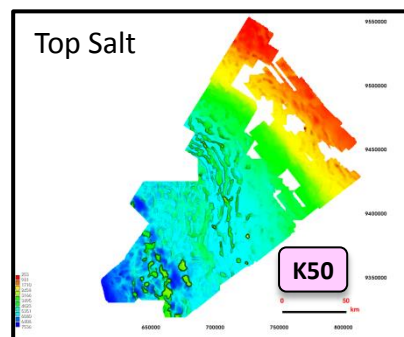
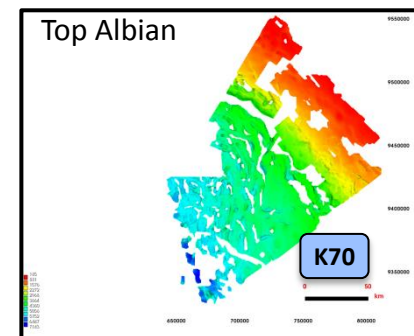
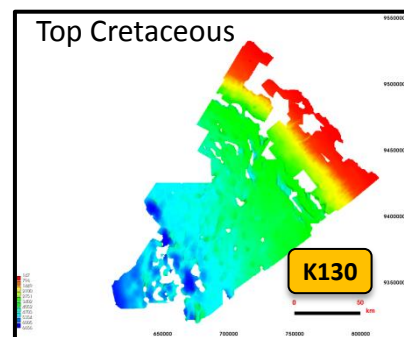
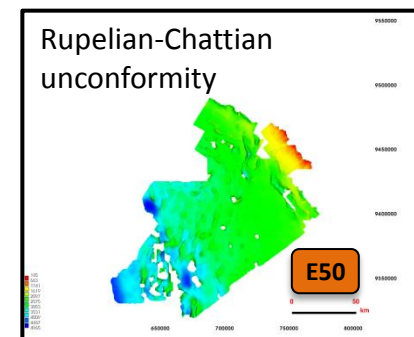
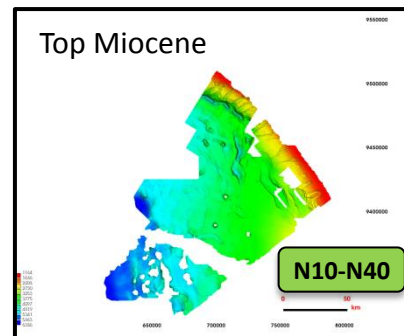


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Series or stage		Lithology	Formation	Tectonic stage
Tertiary	Miocene		Paloukou	N10-N40
	Eocene and Paleocene		Emeraude Silt	E50
Cretaceous	Senonian		Makoua Marl	K130
	Turonian		Loango Dolomite	K88
	Cenomanian		Tchala Sandstone	K82-K86
		Albian		Sendji Dolomitic sandstones
	Aptian		Loeme Salt	K50
		Barremian		Chera Sandstone
			Pointe Indienne Shale	K38
			Toca Mengo	K36
			Pointe Noire Marl	K34
	Neocomian		Djeno Sandstone	K10
		Sialivakou Shale		
		Vandji Sandstone		
Pre-Cretaceous			Basement	Pre-rift

(USGS, 2006)



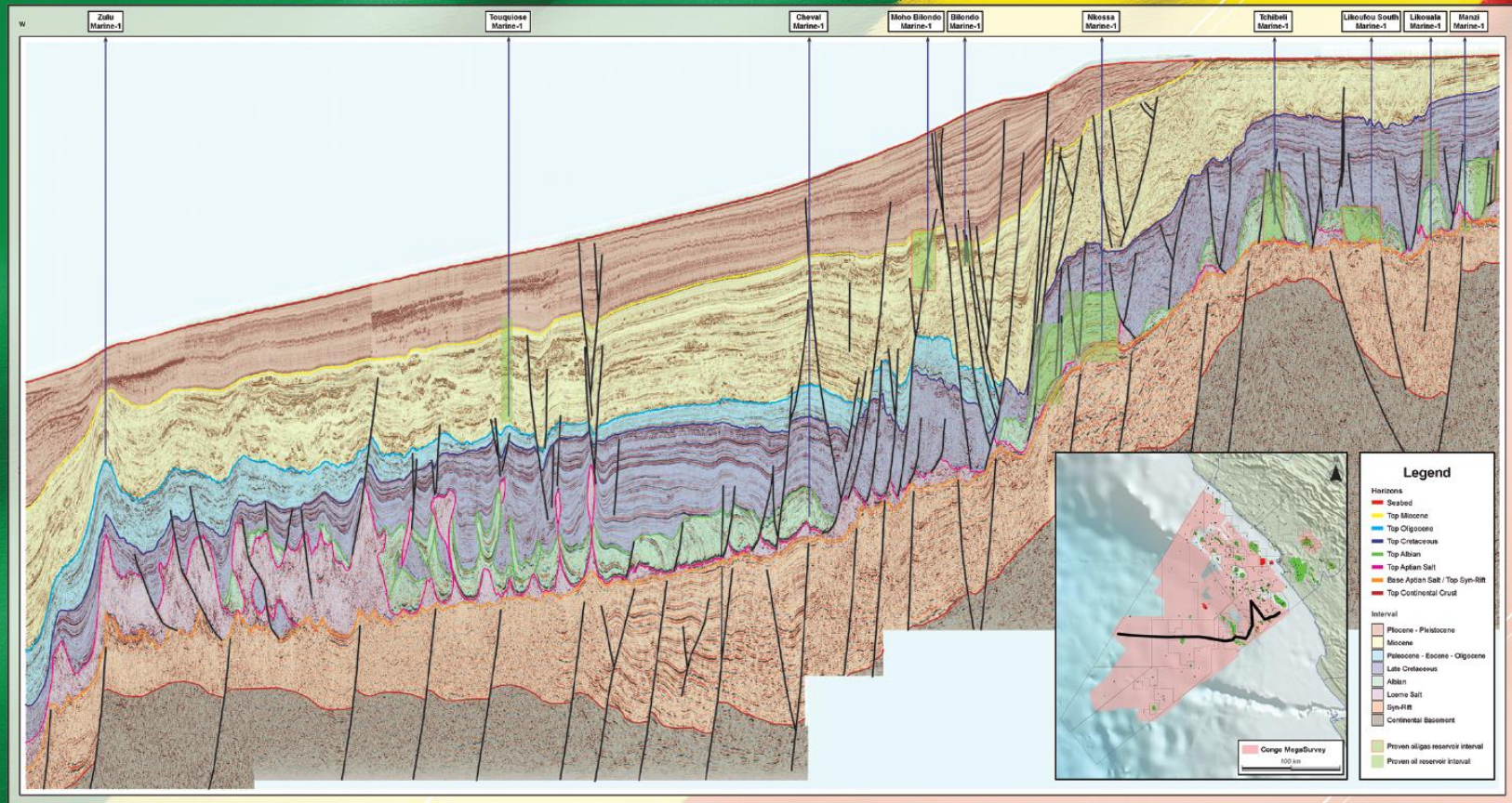
Congo MegaSurvey  
Interpreted Horizons



# Republic of Congo 2016 License Round



## Republic of Congo



Ministère des Hydrocarbures  
République du Congo

## PGS MegaSurvey Regional Section





# Republic of Congo 2016 License Round



## Data

### Congo License Round 2016



#### Permis Marine XX

Permis Marine XX is located offshore in the Congo Basin. It borders Permis Marine XXI to the south, Permis Marine XXIII and Permis Marine XXX to the east and the maritime border with Gabon to the west. It has an area of 3315.8 Km<sup>2</sup>. The bathymetry of this ultra-deepwater block is generally greater than 2000 m.

Permis Marine XX contains one well, Zulu Marine-1B which recorded oil and gas shows within the Miocene Paloukou Formation (Fm) turbidite sandstones. Typical plays expected in Permis Marine XX include Upper Miocene channel systems, Lower Miocene turbidite channels, Cenomanian sandstones, Sendji carbonates and Pre-salt sandstones

##### Miocene Sandstones

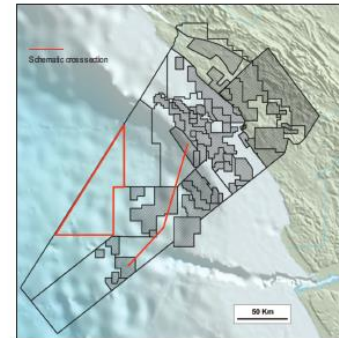
Miocene channels and turbidites of the Paloukou Formation (Fm) consist largely of medium grained, well sorted sandstone. These sandstones form the reservoir for the Azurite and Turquoise fields to the east

##### Cenomanian Sandstones

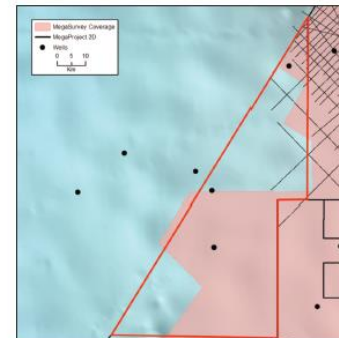
The Cenomanian Tchala Sandstone Fm is a secondary reservoir for the nearby Yombo Field. Hydrocarbons are sourced from the Neocomian Marnes Noires Fm. Trapping structures are typically related to salt-induced rollover anticlines

##### Sendji Carbonates

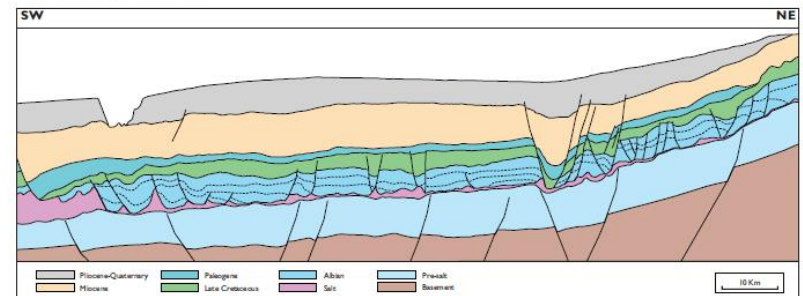
The Albian Sendji Fm is the primary carbonate reservoir for the N'Kossa Field to the east. Hydrocarbons are sourced from the Neocomian Marnes Noires Fm. Trapping structures are typically related to salt withdrawal turtle-back features.



Congo Coastal Basin



Seismic available, Permis Marine XX



Schematic cross section

# Republic of Congo 2016 License Round



## Data

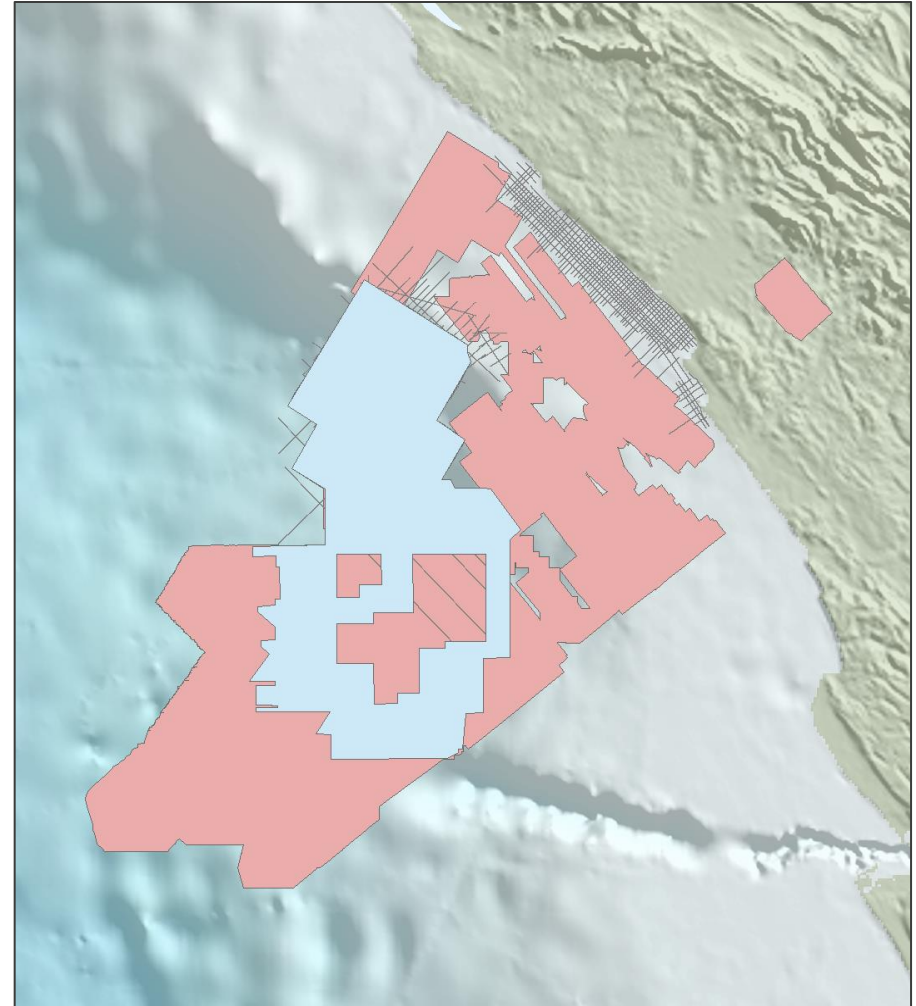
### MPN/MPS-2011

#### Time Processing Deliverables

- Raw & Enhanced PSTM Stack
- Enhanced Angle Stacks - Full, Near, Mid, Far
- PSTM Gathers
- PSTM & Final Residual Velocities
- Bin Centre Navigation
- Nav-Seis Merge SEG-Y

#### Depth Processing Deliverables

- Raw & Enhanced KDMIG Stack
- Kirchhoff PSDM in Time and Stretch Velocities
- KDMIG PSDM Gathers



# Republic of Congo 2016 License Round



## Data

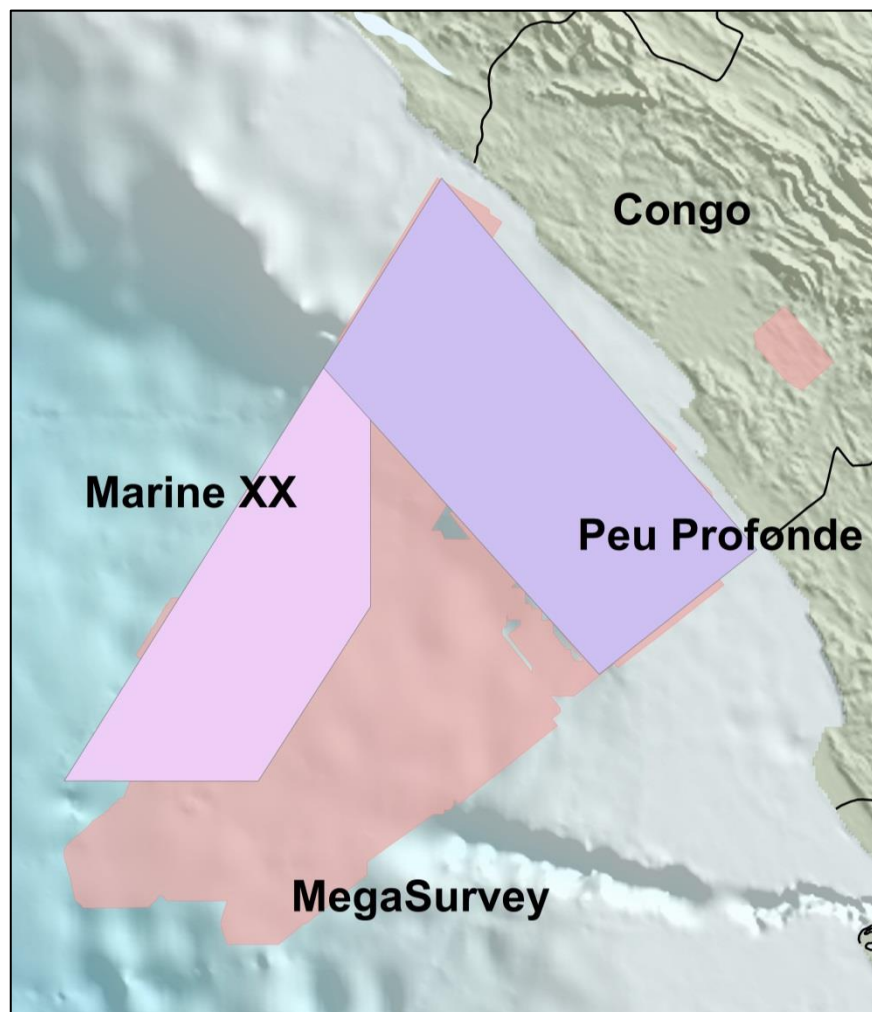
### New MC3D Acquisition (2016)

#### Marine XX:

- 2918 km<sup>2</sup> (completed Feb 2016)
- Long-offset 3D (14km) GeoStreamer®
- Designed to provide a clearer image of the currently untested deep-water pre-salt
- Fast-track PSDM available mid-May 2016

#### Peu Profonde (Congo Shelf):

- up to 9000 km<sup>2</sup> (planned for late 2016)
- High-density 3D GeoStreamer®
- Designed to target shallow water acreage with high quality broadband seismic, to image both pre- and post-salt targets





# Republic of Congo 2016 License Round

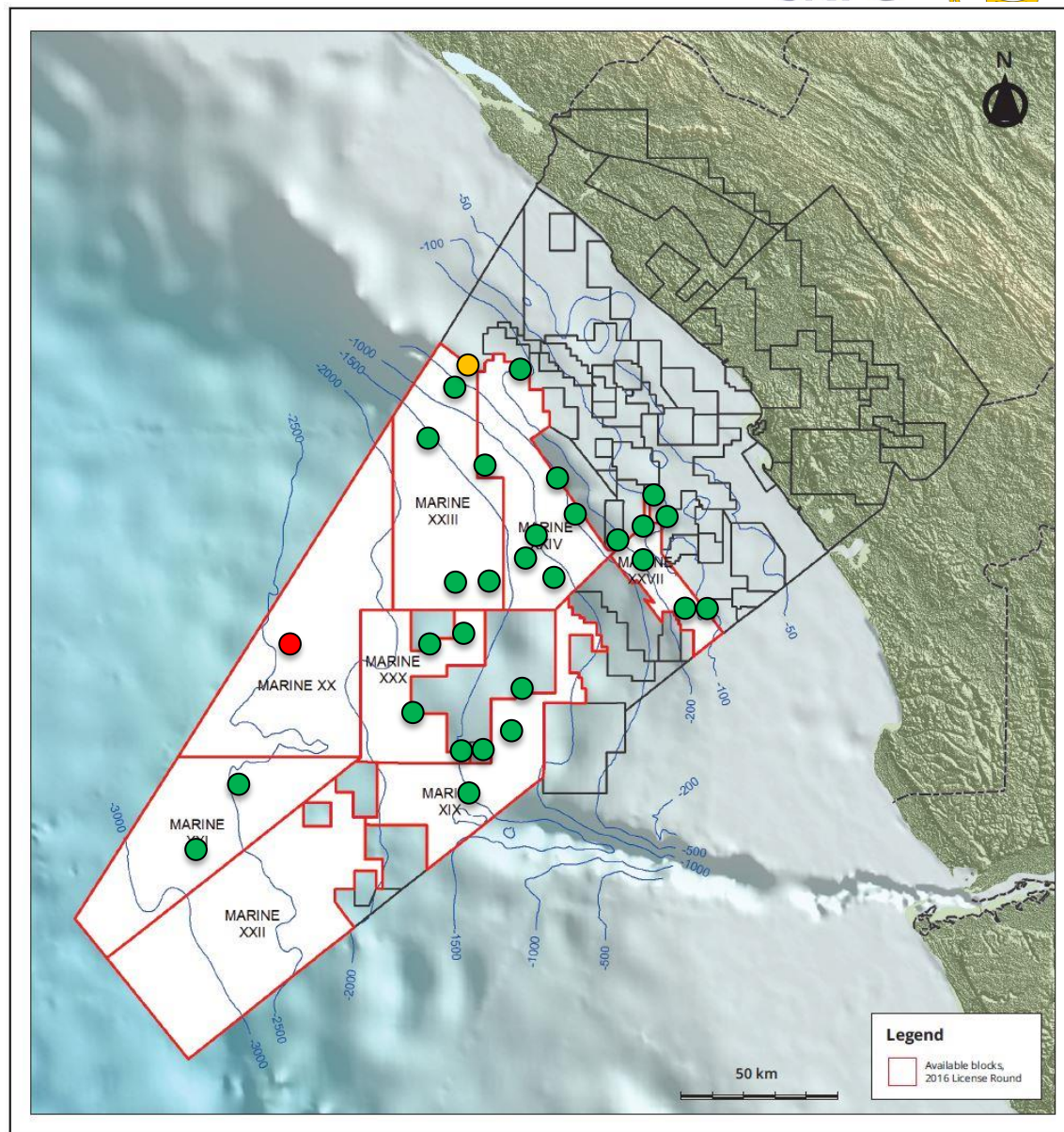


## Data

Within the 8 license round blocks:

- 34 exploration wells drilled
- Data available for 32 wells

- Wells with wireline log curves & reports
- Wells with reports only at present
- Wells without data available at present



# Republic of Congo 2016 License Round



Data

## Who we are:

- Global presence, office locations worldwide
- Multi-skilled Geoscience team
- International portfolio of projects
- Knowledge base from over 600 projects
- Leading edge technology

## Well Log Management Services:

- In country efforts to support Ministries
- In country data collection and management
- Well data cataloguing and formatting
- Compilation of well data packages

## Well Log Processing Services:

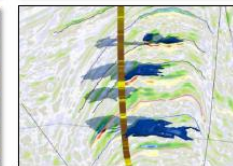
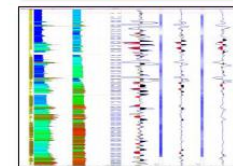
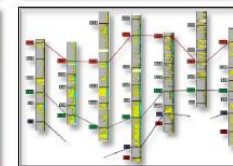
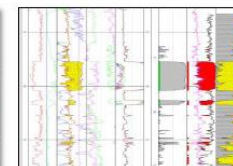
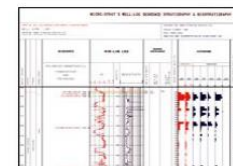
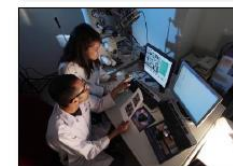
- Scanning & vectorising of film or paper log data
- Wireline log digitising
- Wireline log processing
- Wireline log environmental corrections

## Well Log Interpretation Services:

- Lithology interpretation
- Cement and modifier interpretation
- Formation and member tops
- Sequence stratigraphic interpretation
- Biostratigraphic interpretation
- Sequence constrained depositional environment and facies interpretation
- Composite log generation
- Velocity data analysis (VSP, checkshot)
- Well-to-seismic tie calibration

## Well Log Reservoir & Fluid Services:

- Computer Processed Interpretations (CPIs)
- Elastic attribute logs
- Depth dependent rock physics analysis



## Well Log Services

A Clearer Image | [www.pgs.com](http://www.pgs.com)

MultiClient  
Marine Contract  
Imaging & Engineering  
Operations





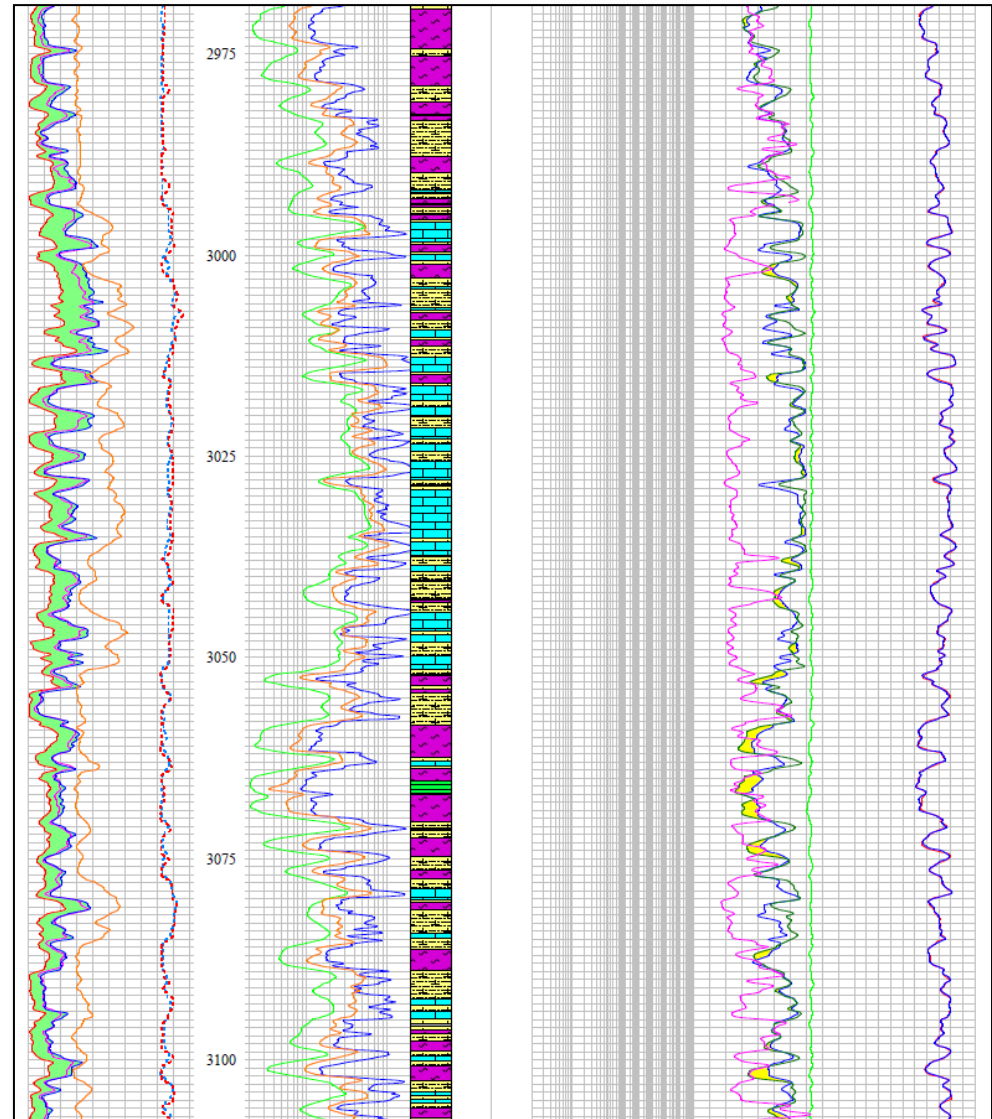
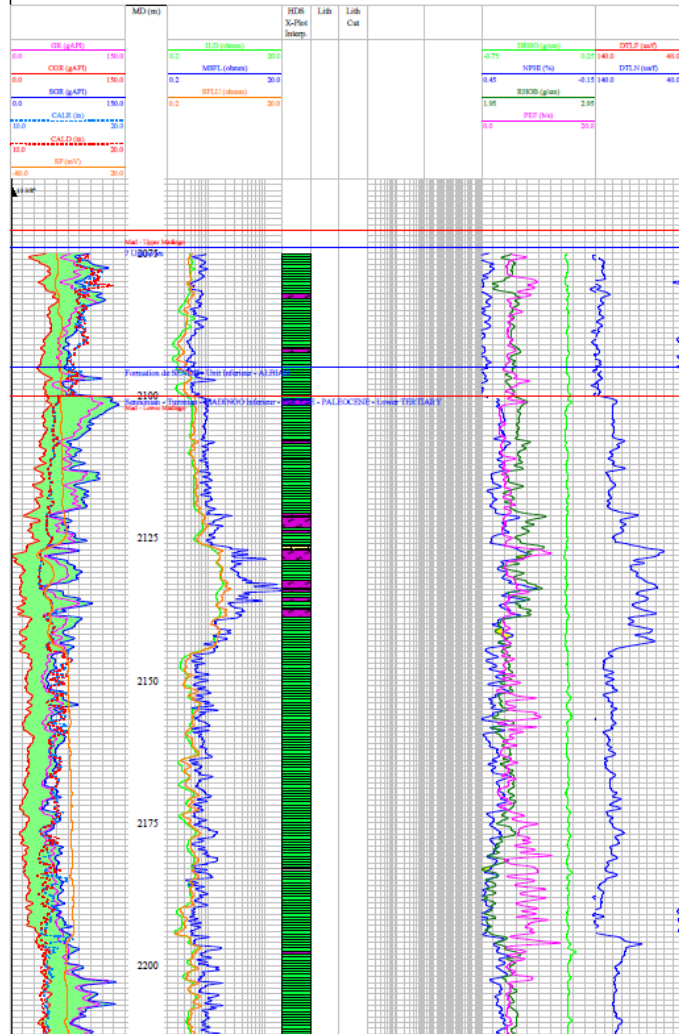


## LOUBOSI MARINE 1



Country: CONGO  
Block: Marine XXVII  
Field: Loubosi  
Company: ELF Congo  
Spud Date: 04/05/1990  
KB Elevation: 25  
GL Elevation: -399

UTM Zone: 32 S  
X (UTM): 769799  
Y (UTM): 9433351  
Latitude: 05° 07' 20.482" S  
Longitude: 11° 26' 00.611" E



Final Composite Logs - Workstation Ready Well Data



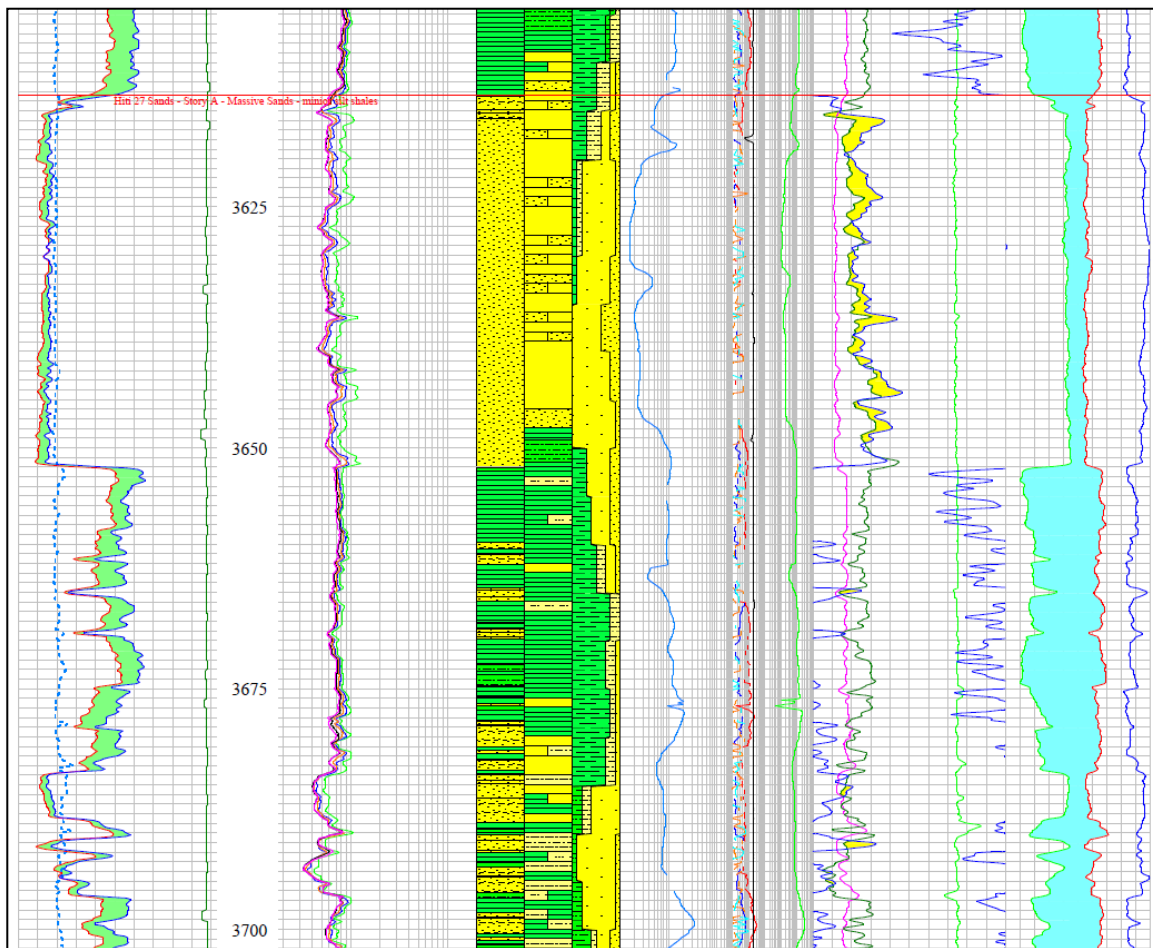
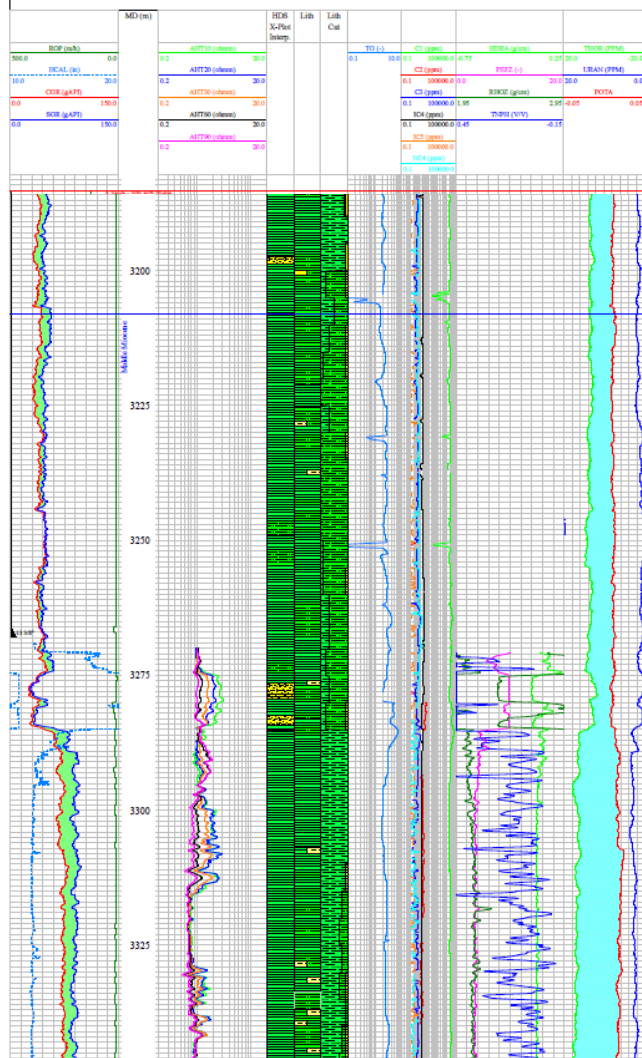


## HITI NORD MARINE 1



Country: CONGO  
Block: Marine XXI  
Field: Hiti Nord  
Company: AGP Congo  
Spud Date: 15/02/2001  
KB Elevation: 24  
GL Elevation: -2419

UTM Zone: 32 S  
X (UTM): 643163.17  
Y (UTM): 9361537.74  
Latitude: 05° 40' 38.456" S  
Longitude: 10° 17' 37.144" E



Final Composite Logs - Workstation Ready Well Data

# Republic of Congo 2016 License Round

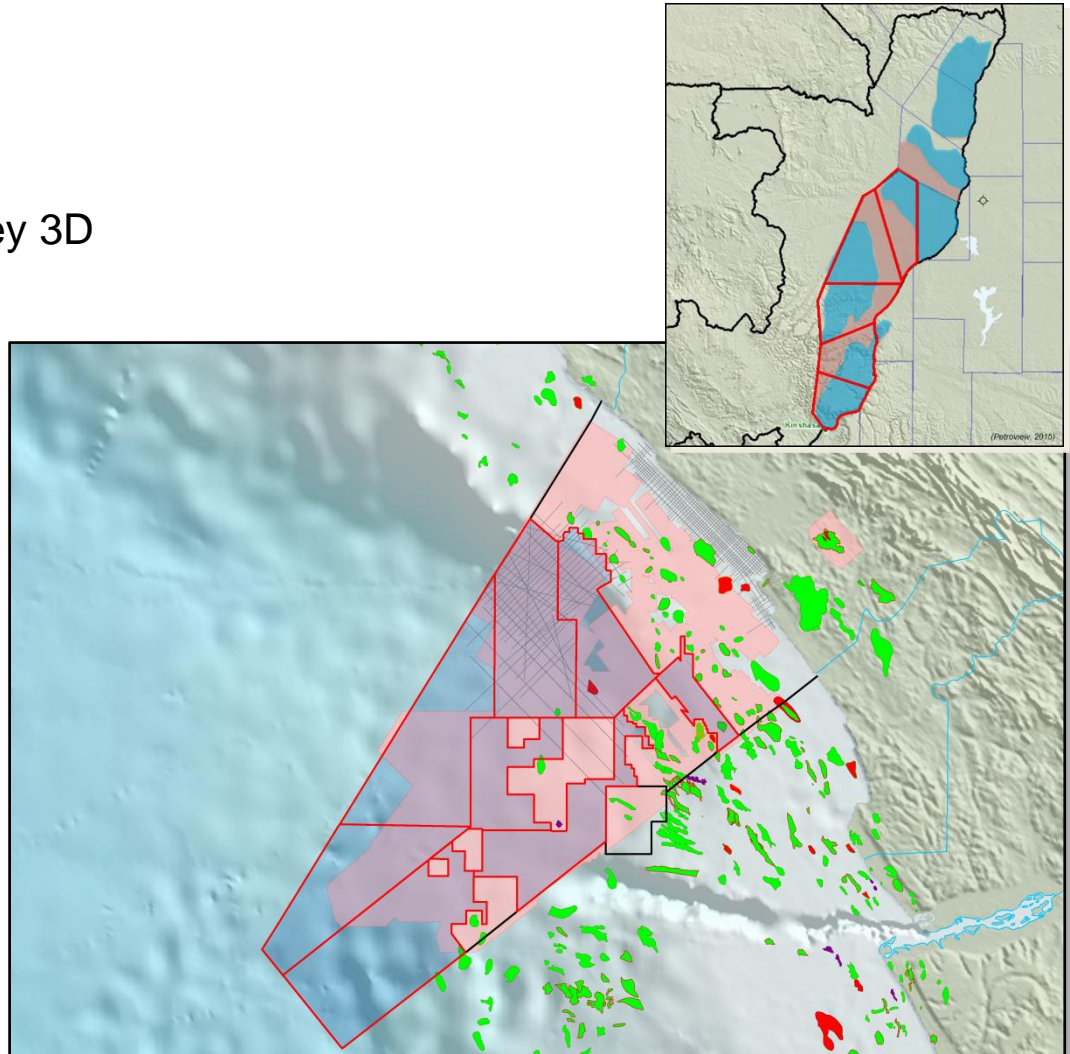


## Data

### Offshore: Coastal Basin

- PGS/SNPC Congo MegaSurvey 3D
- MPN/MPS-2011 Brokerage
- MC3D Marine XX (2016)
- Workstation Ready Well Data

### Onshore: Cuvette Basin



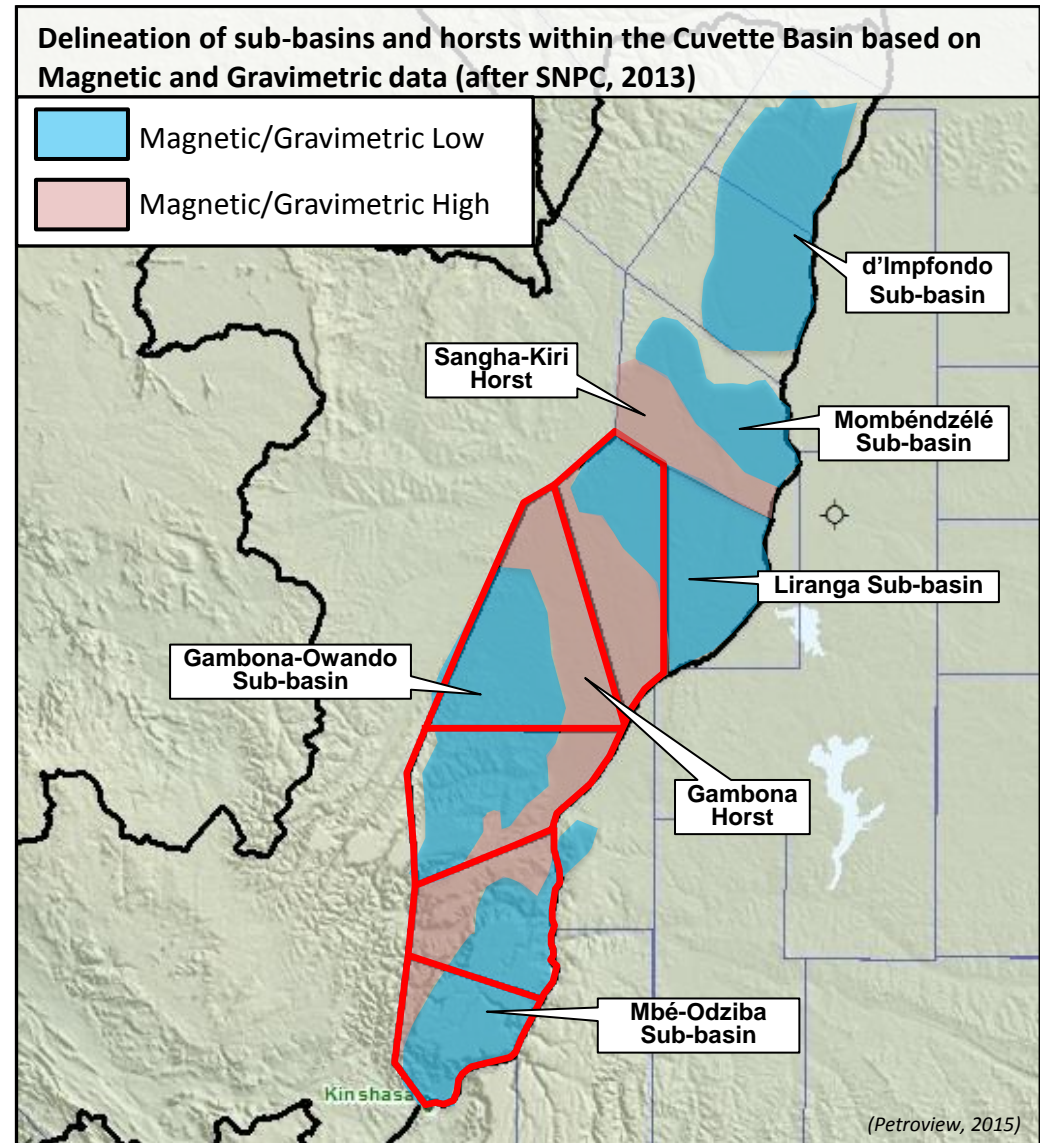
# Republic of Congo 2016 License Round



## Data

- **Seismic data has yet to be acquired in these open blocks**
- **One well to be drilled in Ngoki Block (2016)**
- **Magnetic and Gravimetric Data available**

Available Blocks in License Round





# Republic of Congo 2016 License Round



## Data Data Packages

Congo License Round 2016		Basic Data Packages		
BLOCK	WELLS	BASIC DATA PACKAGE (pre-requisite for bidding)		
		WELL DATA Composite Logs & Reports	SEISMIC DATA 3D MegaSurvey	SEISMIC DATA MC3D 2016
MARINE XIX	BERYL Marine-1 CHEVAL Marine-1 MALACHITE Marine-1 ONYX Marine-1 SAPHIR Marine-1	SNPC Pointe-Noire	PGS (1,723 km <sup>2</sup> )	n/a
MARINE XX	ZULU Marine-1 *	SNPC Pointe-Noire	PGS (1,887 km <sup>2</sup> )	PGS
MARINE XXI	HITI NORD Marine-1 HIVOUA Marine-1	SNPC Pointe-Noire	PGS (1,176 km <sup>2</sup> )	n/a
MARINE XXII		SNPC Pointe-Noire (reports only)	PGS (1,151 km <sup>2</sup> )	n/a
MARINE XXIII	BOUENZA Marine-1X LITELA Marine-3 * OPALE Marine-1 TEMBO Marine-1 TITANE Marine-1	SNPC Pointe-Noire	PGS (2,471 km <sup>2</sup> )	n/a
MARINE XXIV	FRIDA Marine-1 JEAN CENTRE Marine-1 MOEMBILI NORD Marine-1 NESTOR NORD Marine-1 RITA Marine-1 SANGHA Marine-1 THERESA Marine-1 YANIKA Marine-1 YANIKA SUD Marine-1	SNPC Pointe-Noire	PGS (1,619 km <sup>2</sup> )	n/a
MARINE XXVII	BOATOU Marine-1 BOATOU Marine-2 BOATOU Marine-3 LOUBOSS1 Marine-1 MINDOU Marine-1 NKABA Marine-1 SOUNZA Marine-1 VOUMA Marine-1	SNPC Pointe-Noire	PGS (551 km <sup>2</sup> )	n/a
MARINE XXX	AZURITE Marine-1 COBALT Marine-1 MUHANGA Marine-1 PUNDA Marine-1	SNPC Pointe-Noire	PGS (1,348 km <sup>2</sup> )	n/a
	* Composite Logs in progress			
CUVETTE BLOCKS		SNPC Pointe-Noire (reports only)	n/a	n/a

# Republic of Congo 2016 License Round



## Conclusions

### License Round

- Announced and underway, with Q3 2016 closing\*
- 8 offshore deep- and ultra-deep water blocks in Coastal Basin
- 5 onshore blocks in interior Congo Cuvette Basin

### Petroleum Code

- In progress with ratification by parliament

*\* final timetable to be advised after Presidential Election in March 2016*

# Republic of Congo 2016 License Round



## Conclusions

### **Offshore Coastal Basin**

- Numerous shallow to ultra-deepwater leads have been identified on PGS/SNPC MegaSurvey data within the open acreage

### **Onshore Cuvette Basin**

- The Onshore Cuvette Basin is a frontier basin for exploration; several sub-basins and horsts have been identified across the basin using gravimetric and magnetic anomaly data. Multiple source, reservoir and seal units are present throughout the stratigraphic section; several periods of tectonic activity have resulted in the formation of a wide range of structural traps



# Republic of Congo 2016 License Round



## Conclusions

### **PGS and SNPC have a comprehensive data package**

- 3D MegaSurvey seismic
- 2D seismic data matched
- MPN/MPS-2011 3D with pre-stack data and angle stacks, depth migrations
- Catalogued operator well data and reports
- WRLS Workstation Ready Composite Log Suites with lithology interpretation (PDF & LAS)
- **New Marine XX MC3D survey acquired, with fast-track PSDM available May 2016**

# Republic of Congo 2016 License Round



Conclusions

**Thank you !**