AAPG/SEG IMAGE 2022

The Reimagined and Refocused Exploration Potential and Outlook for Belize

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Presentation Outline

- Belize Country Profile and the History of Successful Exploration
- The Progression of Hydrocarbon Exploration in Belize
  - Geology of Belize
  - Seismic reprocessing and data acquisition techniques
  - Seismic Interpretation
  - Basin Modeling
- The Advancement of Hydrocarbon Production techniques in Belize
  - A new look at existing fields
- Proposed Revised Regulatory Framework and Fiscal System
- The Outlook for Belize
  - Available Data and Blocks
  - Integration of Data Sets
- Why Invest in Belize

Belize Country Profile and History of Successful Exploration

- Belize is a member of CARICOM and is located in Central America adjacent to Mexico and Guatemala on the south-eastern edge of the Peten Basin.
- Belize is a stable democracy structured on the Westminster system.
- The economy is built on tourism, agriculture and productive sectors such as petroleum; the GDP is US$1.79 billion as at 2021.
- The population is 419,199 as of July 2020.
- Belize has a square area of 39,024 square kilometres including the EEZ.
- Currently its territory, excluding the EEZ, is divided into 447 exploration blocks.

1800s- First Recorded oil seeps in Ambergris Cay (sailors used this to mend ships)

1930- Exploration began in the with new geological maps

1955-The First Exploration well drilled

1960s-1990s- Majors such as Shell, Esso, Texaco and Chevron explored Belize

2000s- Data collection and onshore drilling ramped up

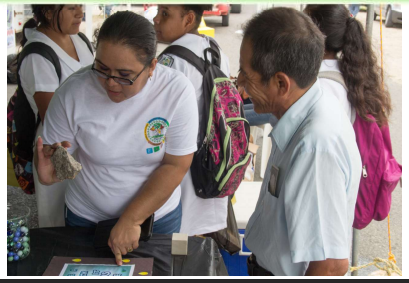
2005- First Commercial Discovery Spanish Lookout

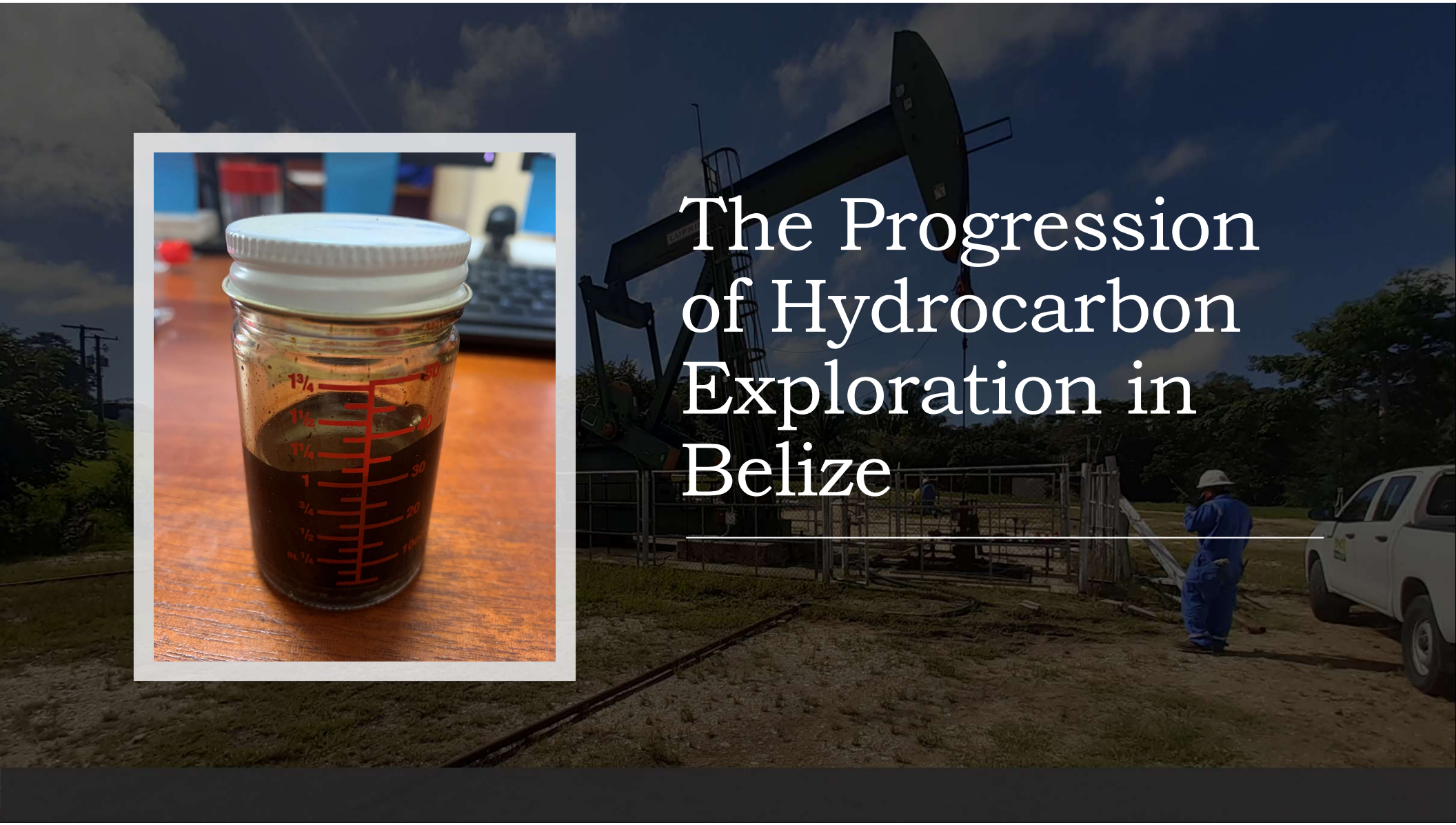
2006- First Oil and Gas Production

2009- Second Commercial Discovery Never Delay

2010s- Aggressive PSA License Bids

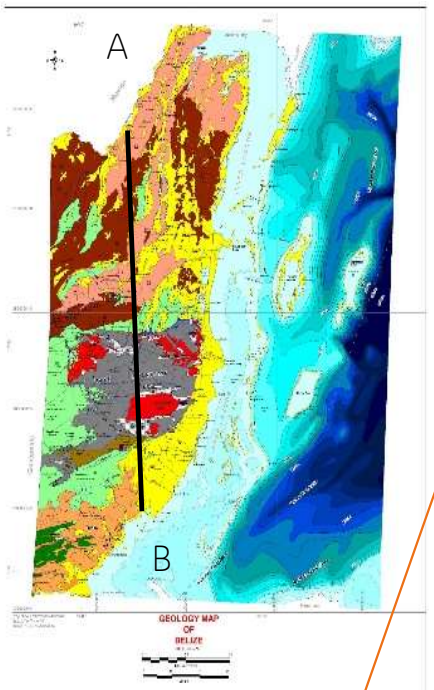
2022- Production in excess of 12.00 MMSTB

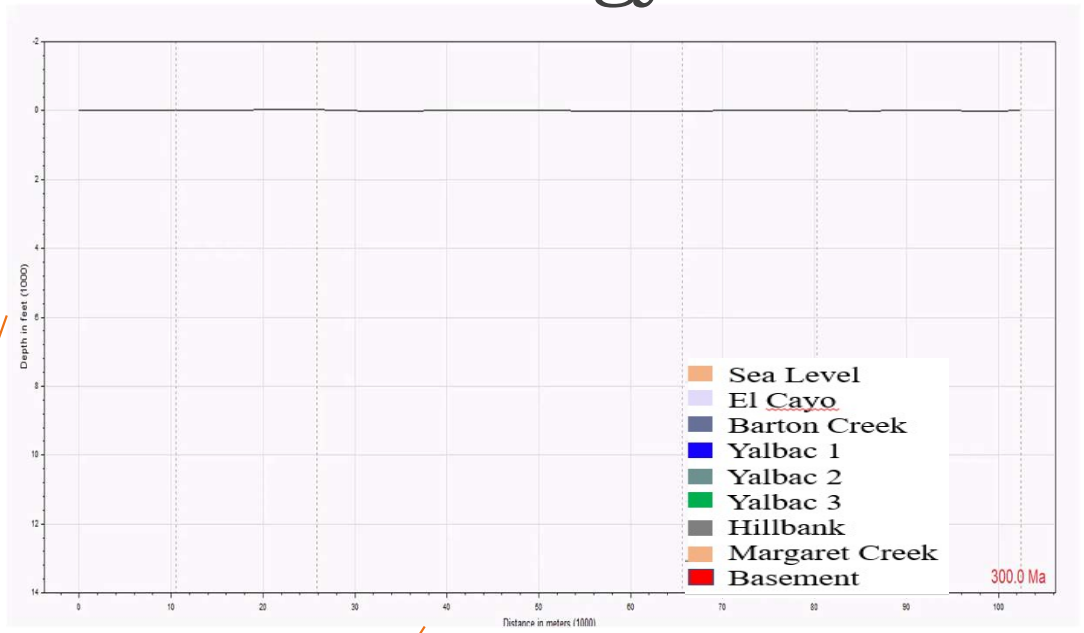


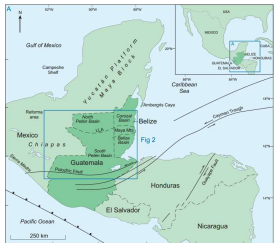


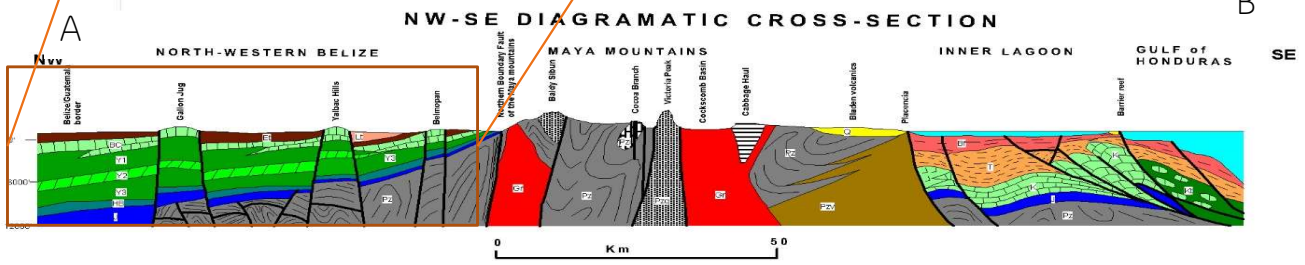
The Progression of Hydrocarbon Exploration in Belize

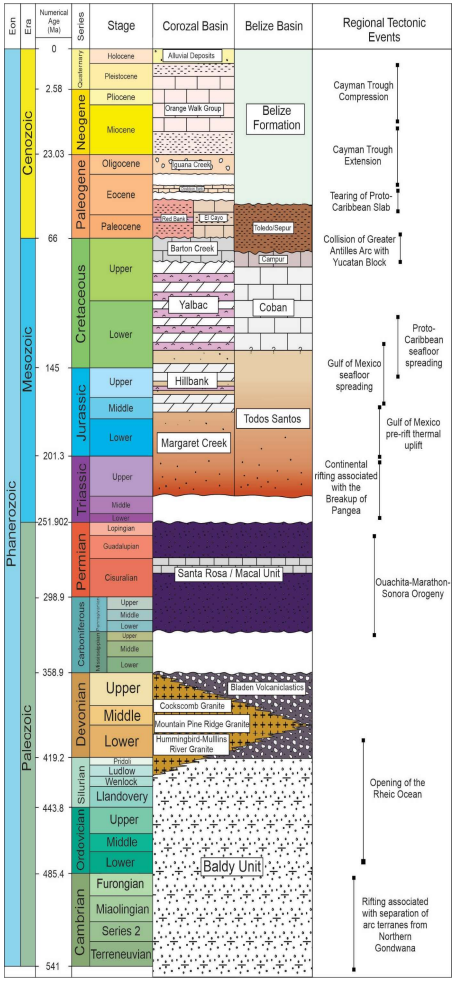
The Progression of Hydrocarbon Exploration in Belize- Geology of Belize





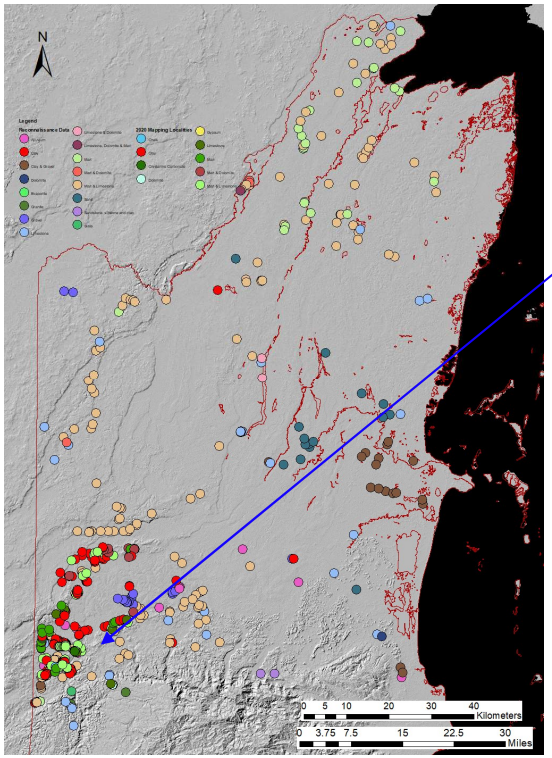


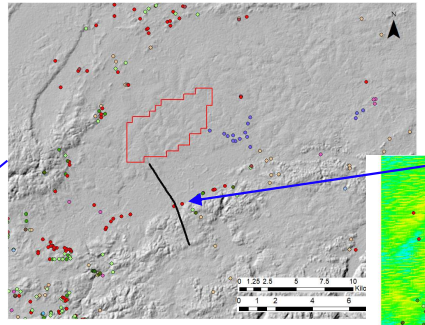


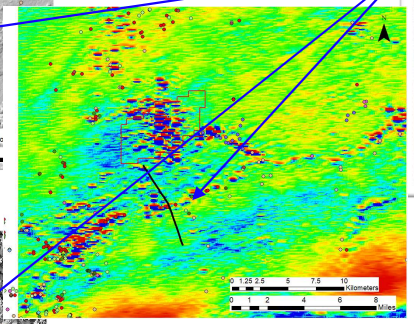


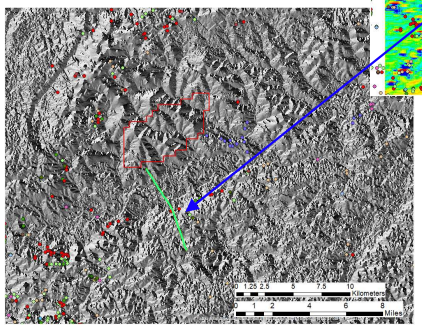
The Progression of Hydrocarbon Exploration in Belize-Geology of Belize

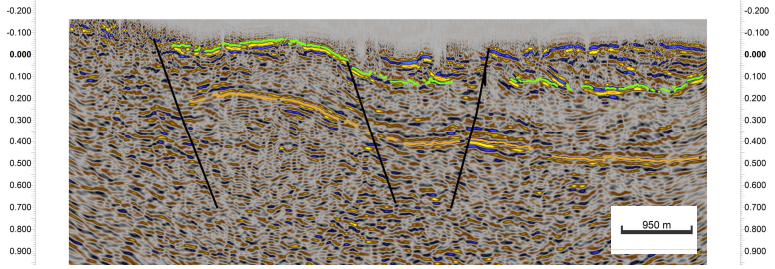
- Field mapping integrated with satellite imagery, aeromagnetic data, well and seismic data has been aiding in a better understanding of the geological history of Belize.



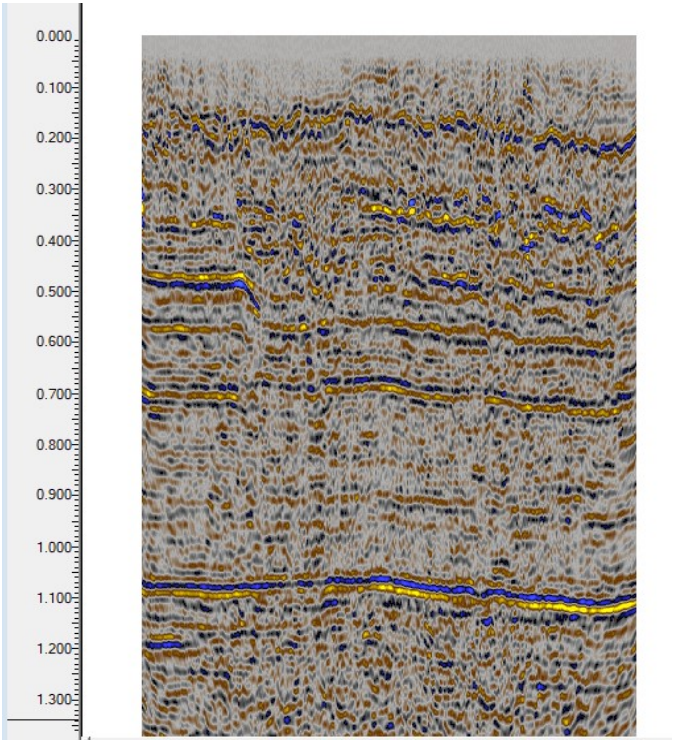




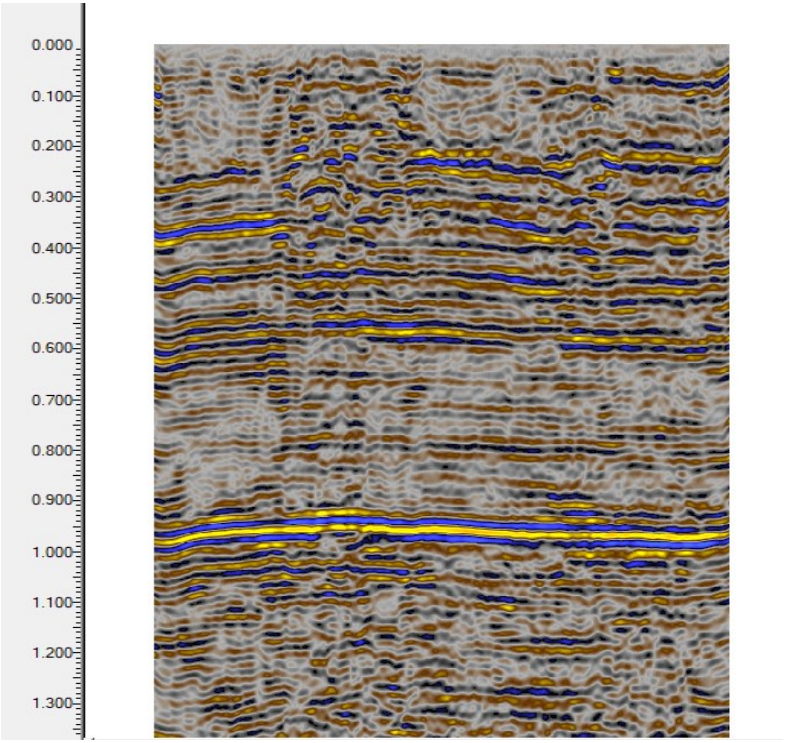




The Progression of Hydrocarbon Exploration in Belize-Reprocessing of Seismic Data (Corozal Basin)



Original Data
Acquired in 2004



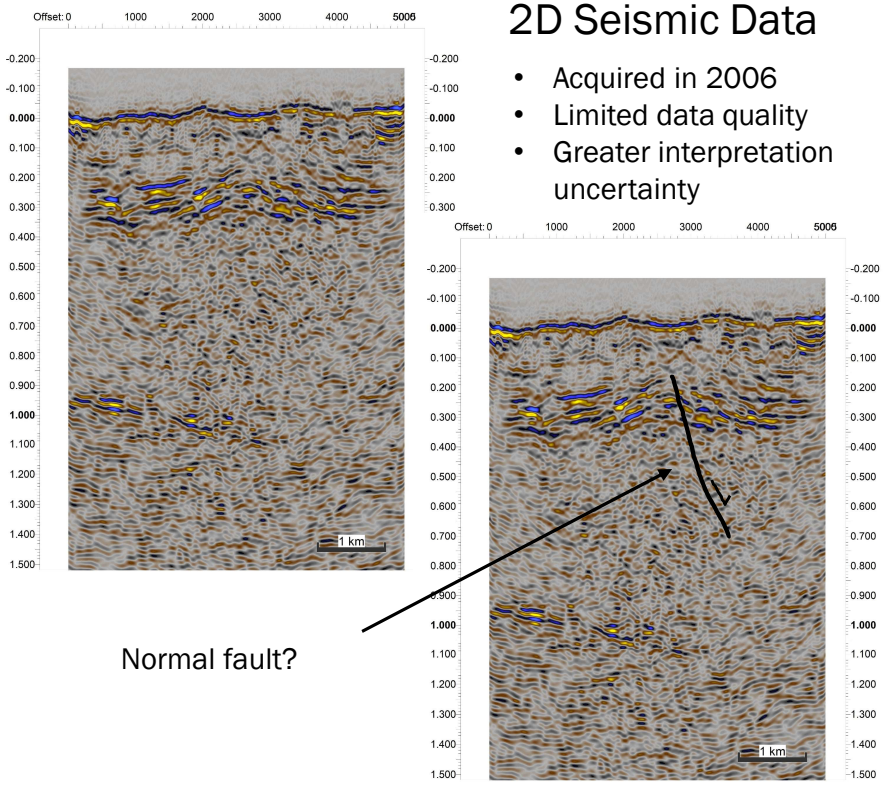
Reprocessed Data
Reprocessed in 2011

- Seismic data reprocessing has allowed for improvements in subsurface imaging
- Reprocessed image shows greater reflector continuity and more balanced amplitudes

The Progression of Hydrocarbon Exploration in Belize- Seismic Interpretation (Corozal Basin)

2D Seismic Data

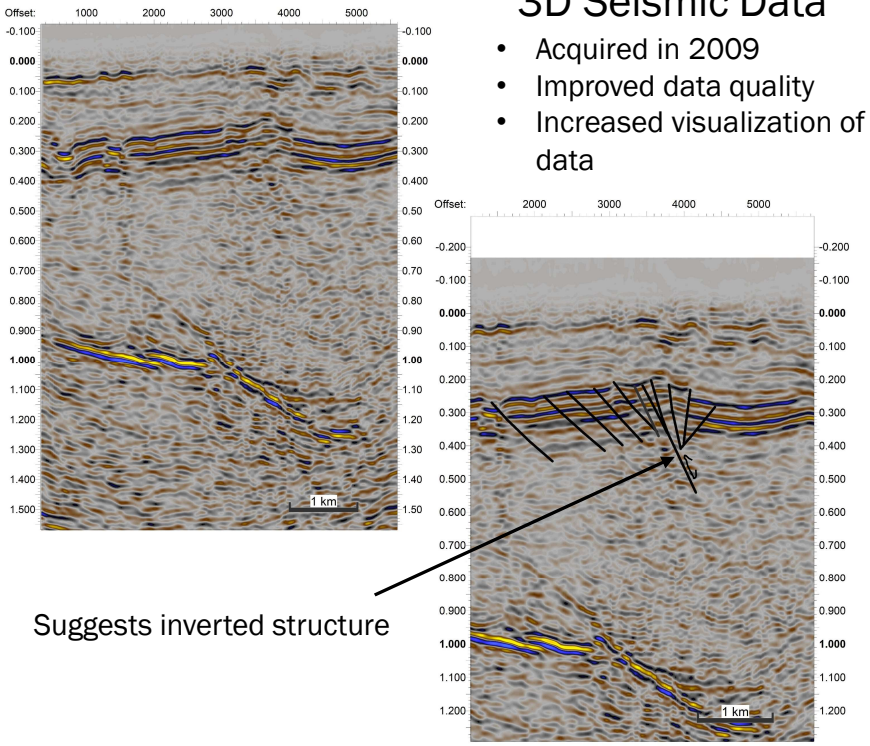
- Acquired in 2006
- Limited data quality
- Greater interpretation uncertainty



Normal fault?

3D Seismic Data

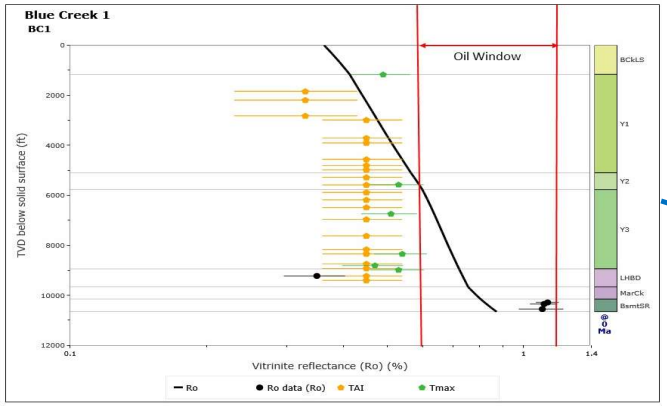
- Acquired in 2009
- Improved data quality
- Increased visualization of data

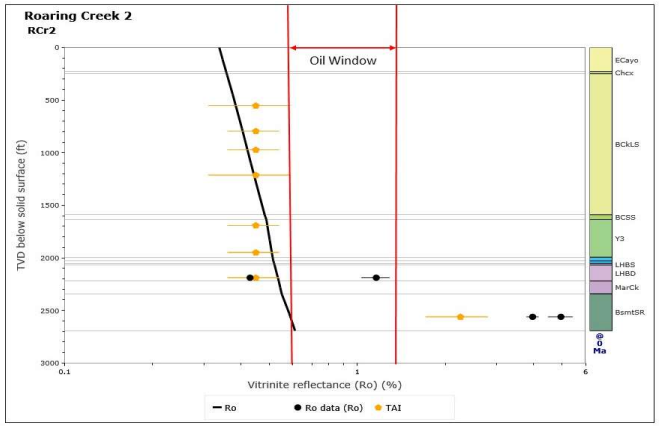


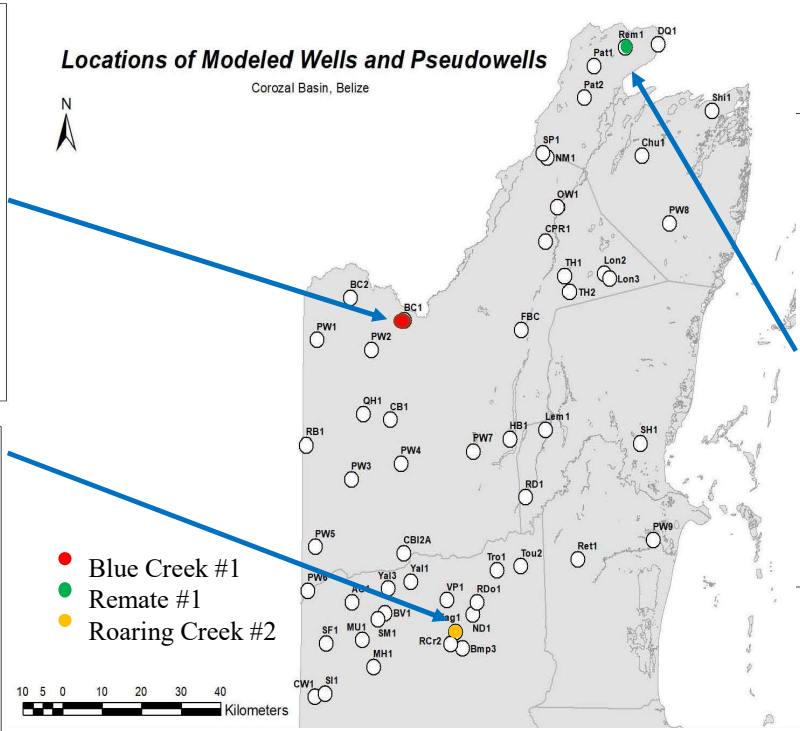
Suggests inverted structure

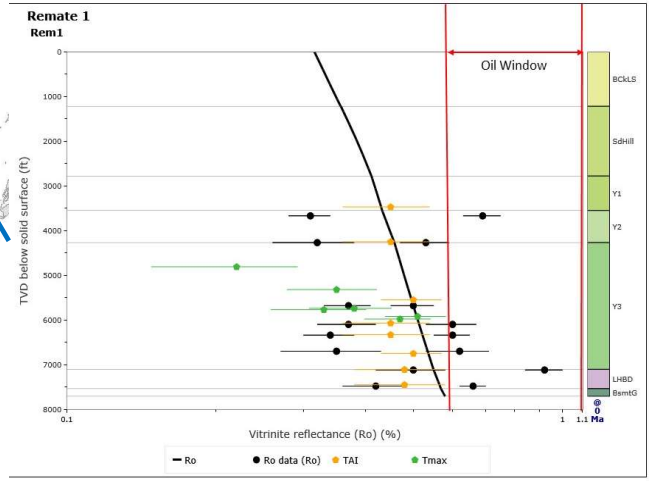
The Progression of Hydrocarbon Exploration in Belize- 1D Modelling

Corozal Basin Thermal History





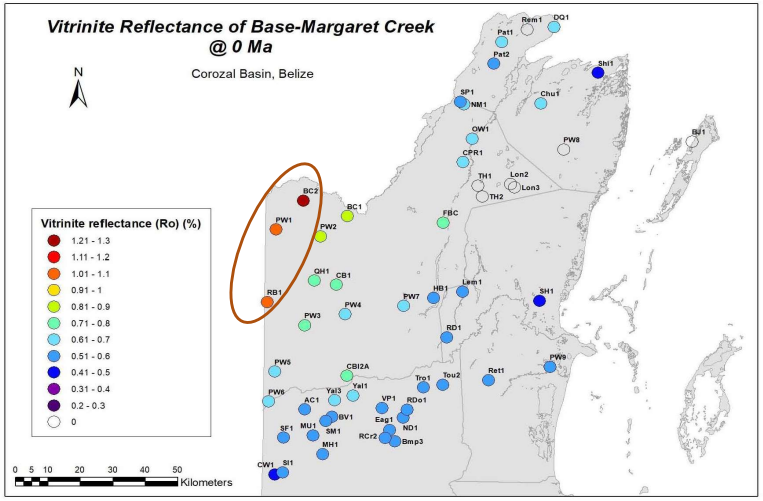


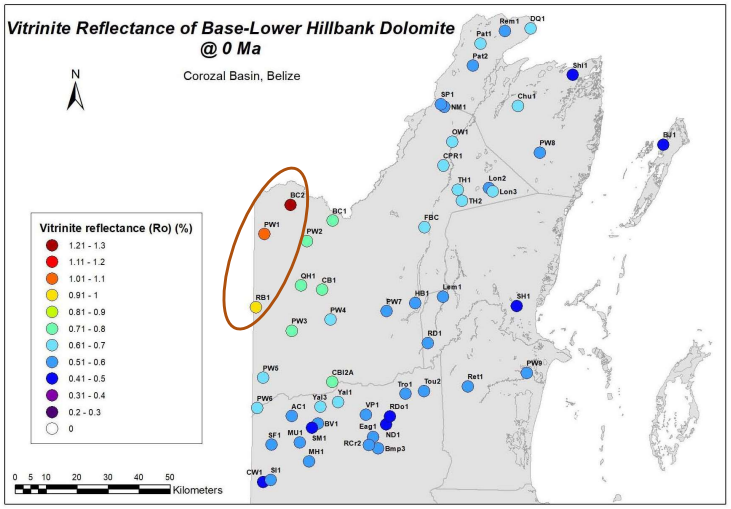


The Progression of Hydrocarbon Exploration in Belize- 1D Modelling (Corozal Basin)

Source Rock Maturity

Source layer	Kerogen name	Kerogen type	TOCo (%)	HIo (mg HC/g TOC)	% SR in layer	Effective TOC (%)	% Oil in HC
Lower Hill Bank Dolomite	Organofacies A	II-S	4	617	5	0.2	82.6
Margaret Creek	Organofacies C	I	3.3	600	3	0.1	82.8
Margaret Creek	Khatatba 4	III	20	169	3	0.6	72.2

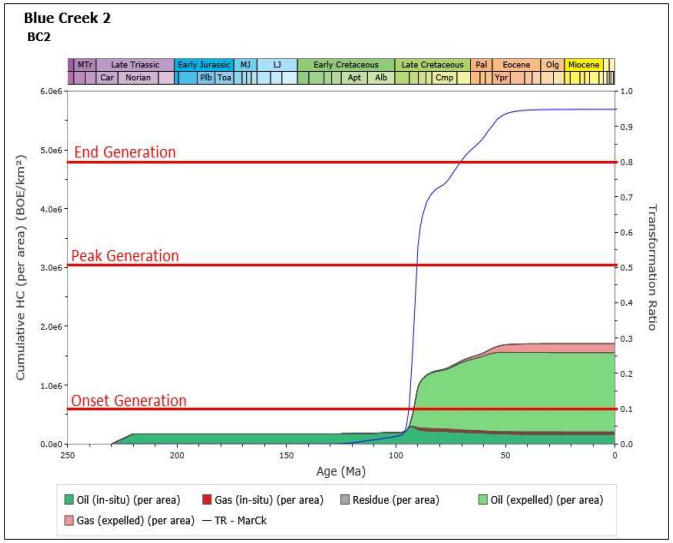


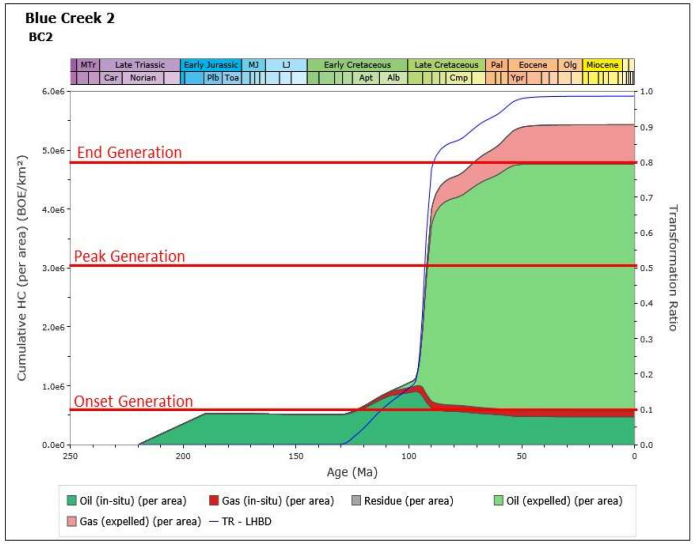


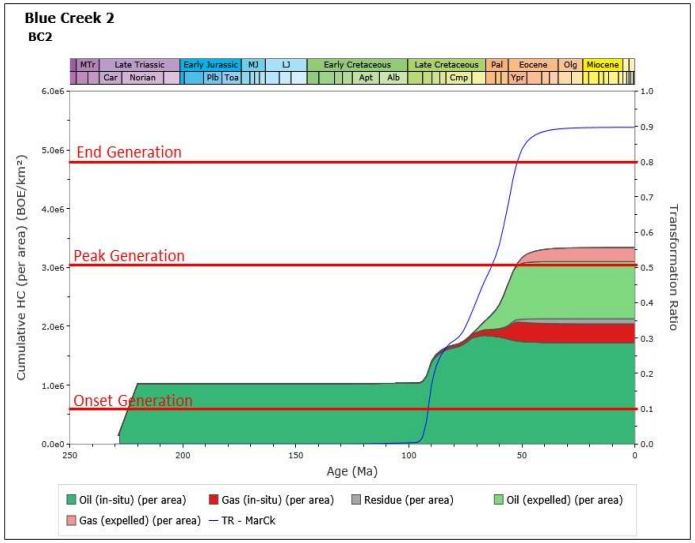
Calculated vitrinite-reflectance (Ro) trends for all three source rocks are similar across the Corozal Basin. The highest values are between the BC2 and RB1wells in the western Corozal Basin, while values decrease southward toward the Maya Mountains.

The Progression of Hydrocarbon Exploration in Belize- 1D Modelling (Corozal Basin)

Timing of Hydrocarbon Generation and Expulsion



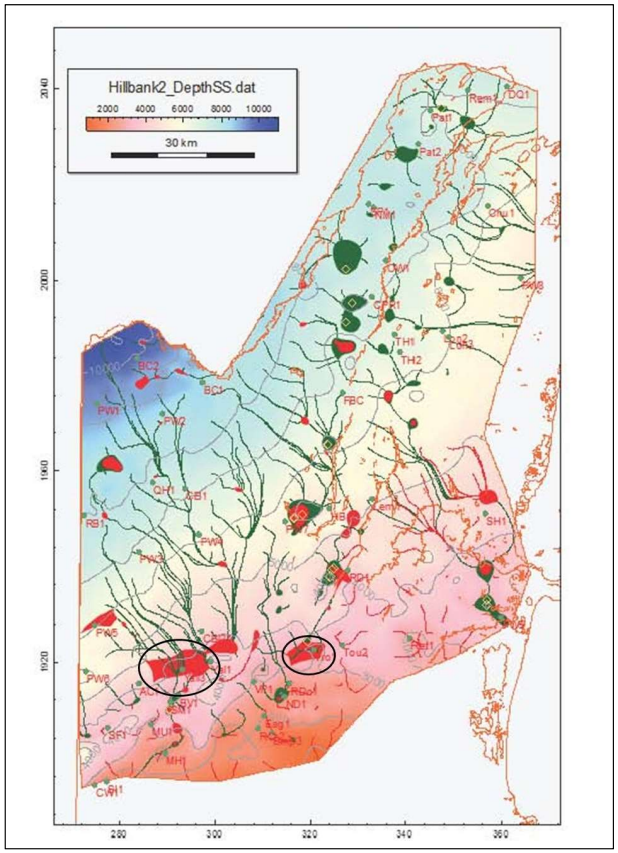


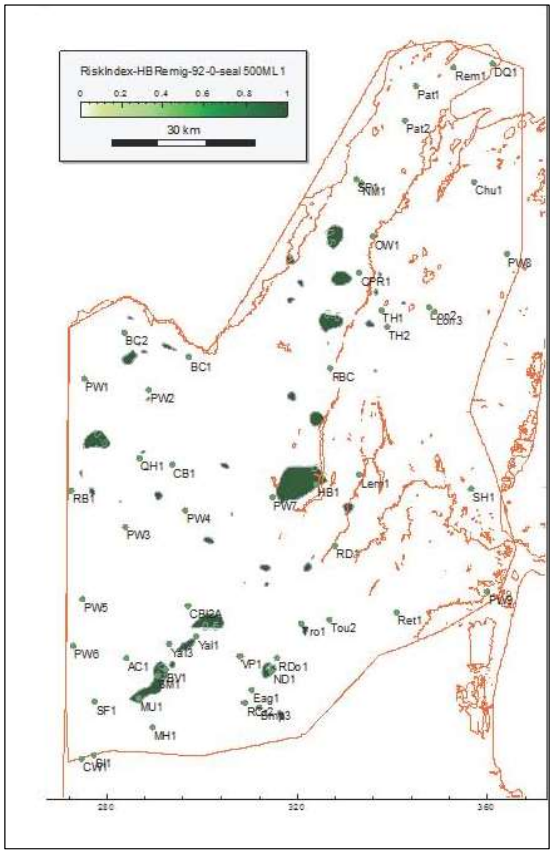


Transformation Ratios show that the earliest phase of generation occurred between 100 Ma and 90 Ma during the deposition of the Yalbac formation and was limited to the north-western portion of the Corozal basin. The second phase of generation was more diffuse, and occurred between the onset of Barton Creek deposition (80 Ma) and the end of El Cayo deposition (53 Ma).

The Progression of Hydrocarbon Exploration in Belize- 3D Basin Modelling (Corozal Basin)

Map of migration modeling along the top of the Hillbank formation, moderate sealing at this horizon(200 ft column height), and zero migration loss. Stacked columns are present at several locations.

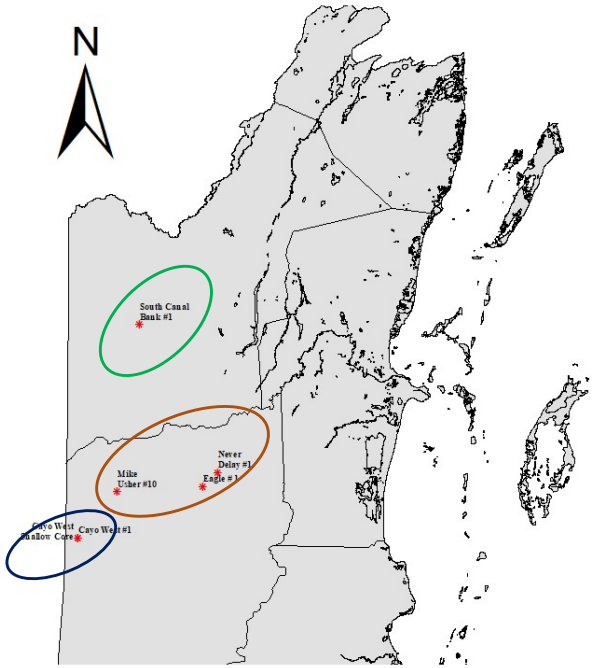




Example of a Risk Index Map of a migration scenario of migration along the top of the Hill Bank horizon through time from 92 Ma to present day, assuming a very good seal (500 ft) and a migration loss of 1 MMbbls/km .

The Progression of Hydrocarbon Exploration in Belize- Geochemistry (Corozal Basin)

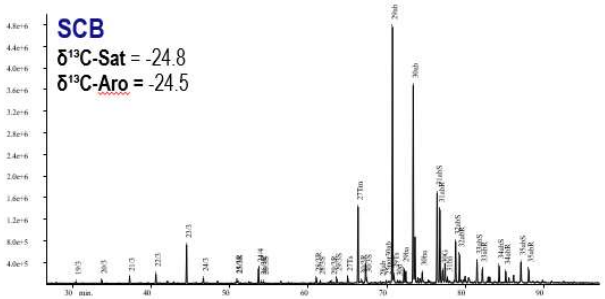
Geochemical Analysis Well Location

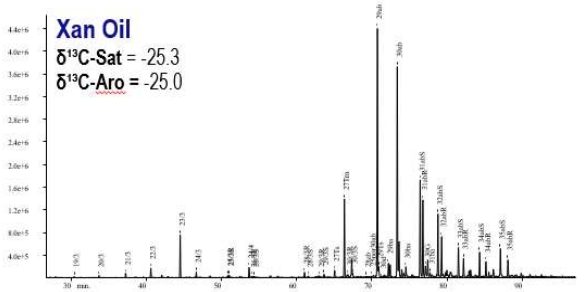


There are three distinct oil families in Belize:

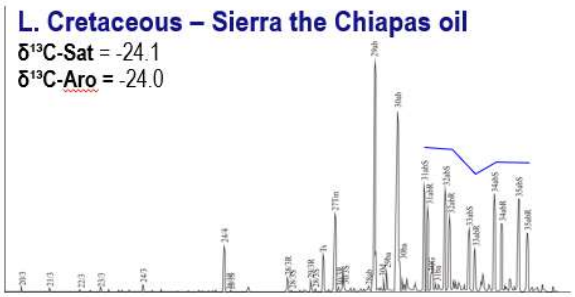
- Family 1- South Canal Bank Oils (similar to Xan Oils)
- Family 2- Cayo West Oil (similar to Chiapas oils)
- Family 3- Never Delay and Spanish Lookout Oil

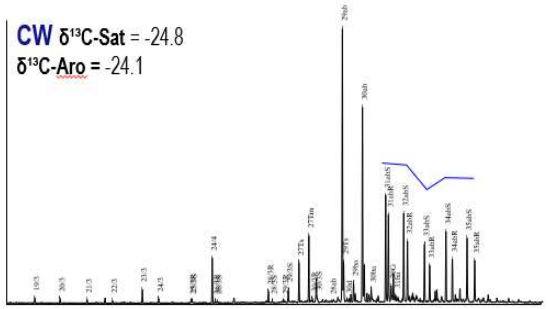
Family 1





Family 2





The Progression of Hydrocarbon Exploration in Belize (Corozal Basin)

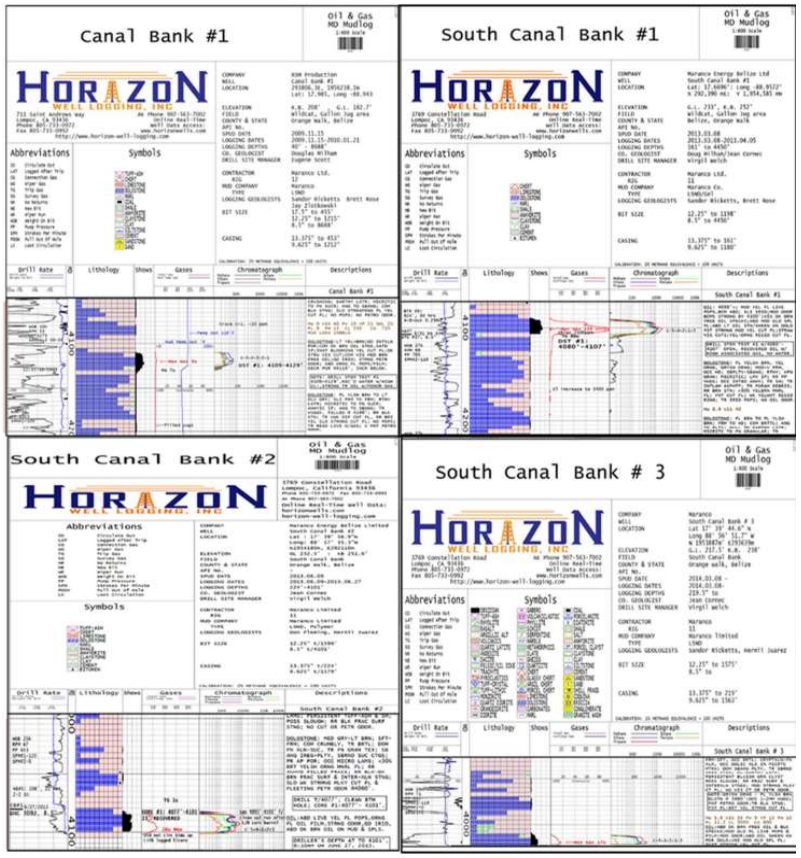
What does the New Data tell us?

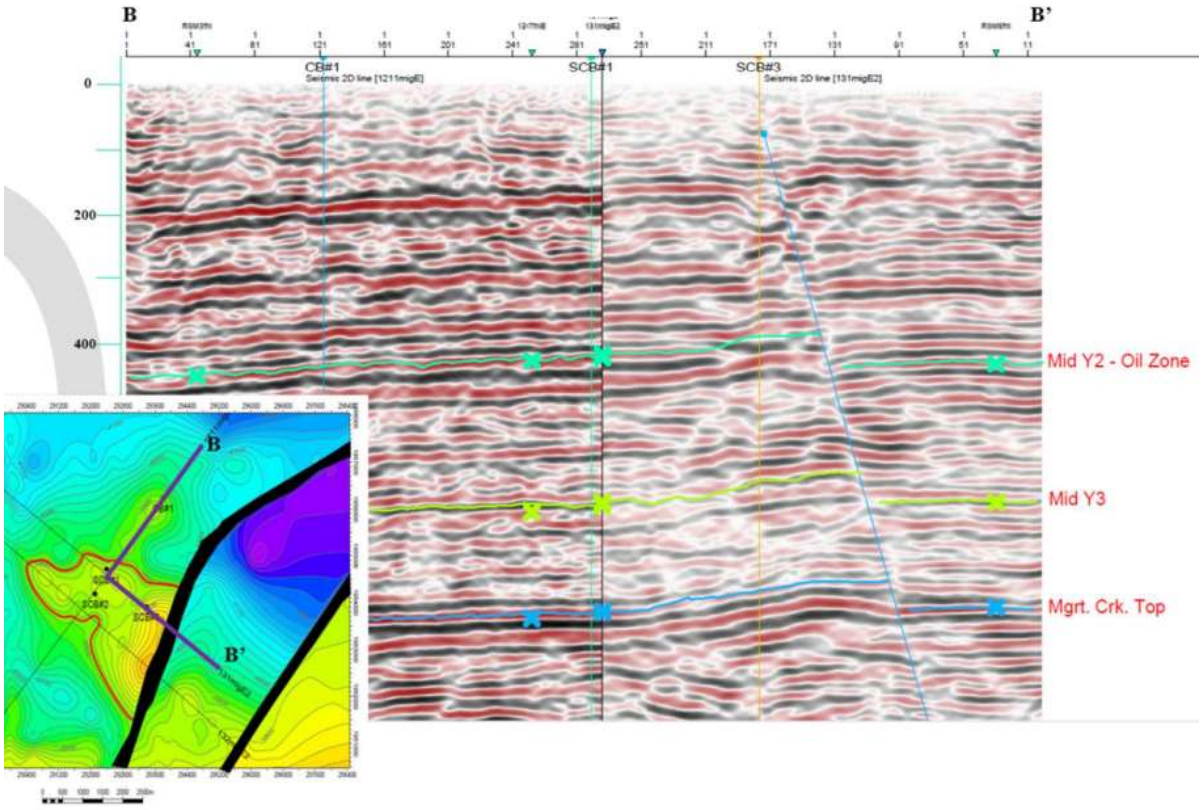
- The Basin is very large and stretches into Guatemala as oils are very similar.
- Source Rock maturity increases westward into Guatemala and is the likely source of generation.
- Regional play fairway analysis is very important in unlocking and de-risking the oil and gas potential in the wider Peten/Corozal Basin.
- The Spanish Lookout oils are of a high quality (40 API), have unique biomarkers and have no H2S which symbolizes a new play that is underexplored in the Corozal Basin.
- A carrier bed could be present that allows for migration of expelled hydrocarbons into Belize.
- Data integration offers the best solution for the development of this rich hydrocarbon region.
- 1D and 3D basin modelling points to more accumulations and fields in the wider basin.

The Advancement of Hydrocarbon Production Techniques in Belize

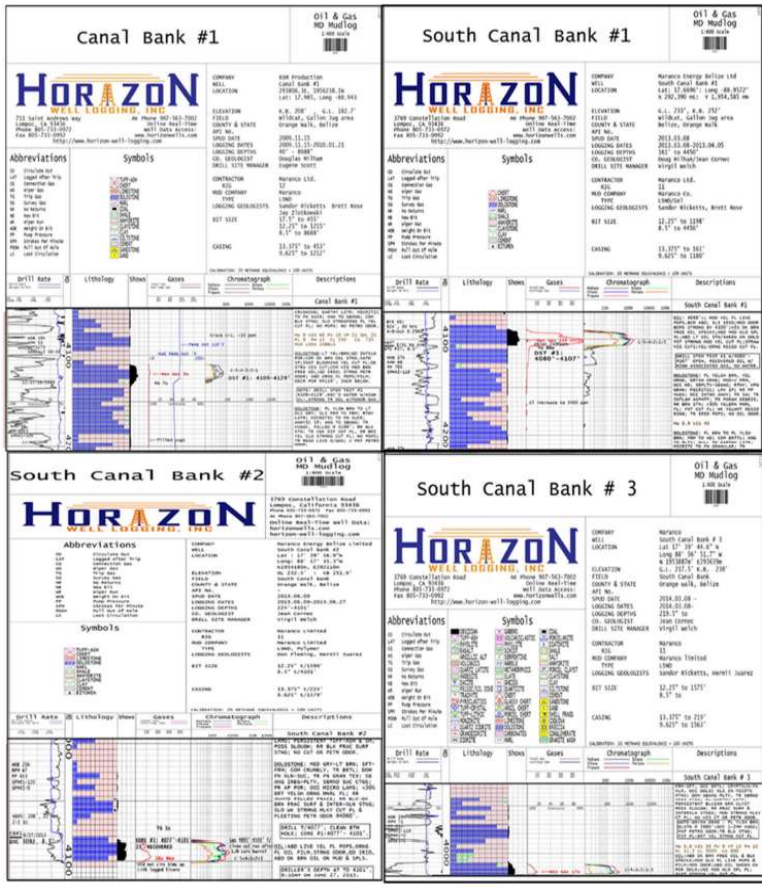
- The second commercial hydrocarbon discovery in the Never Delay field offered a new oil and gas play onshore Belize.
- Unlike the first discovery in the sandstone reservoirs, the second discovery was found in very thin (15ft) tight dolomites (porosity avg 4.00% and permeability avg .03 md) sealed by in-situ anhydrites.
- Vertical wells into these reservoirs had very little success due to inflow performance issues of the reservoir.
- Multiple sub commercial discoveries have been made but eventually plugged due to the small amounts of flow when tested.
- With new technology and the need to commercialize these old discoveries, new techniques are being used to revisit these old wells.
- Many of these fields have a good API of 30-38 degrees however they had high concentrations of hydrogen sulphide.

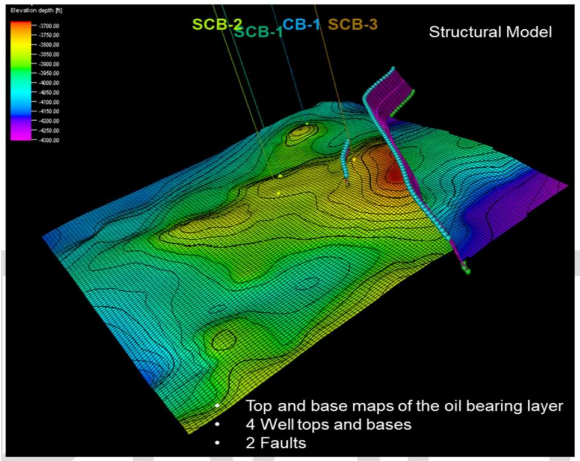
The Advancement of Hydrocarbon Production Techniques in Belize

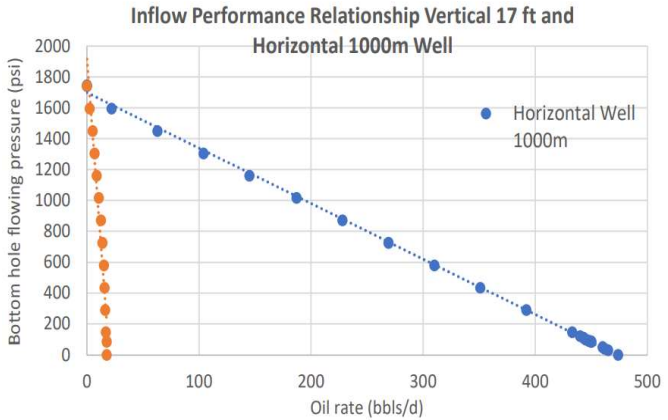


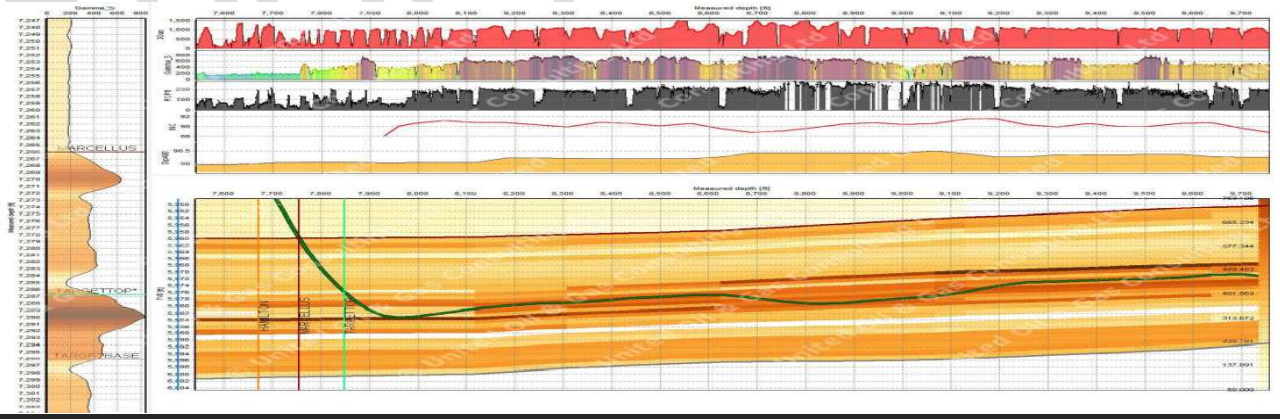


The Advancement of Hydrocarbon Production Techniques in Belize







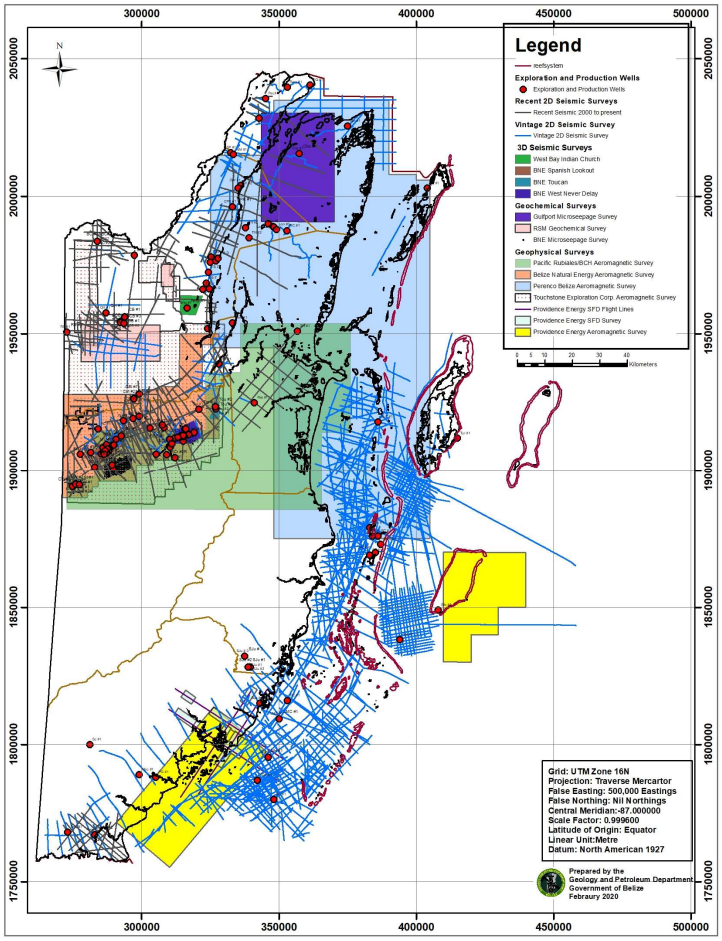


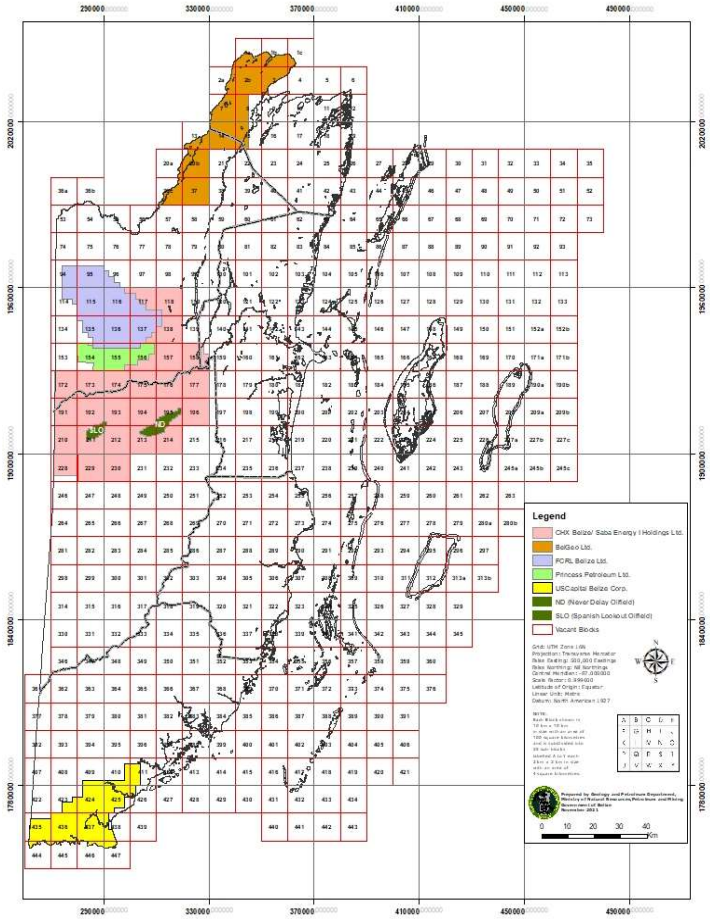
Proposed Revised Regulatory Framework and Fiscal System

- Makes marginal or otherwise sub-economic fields potentially commercial
- Simple fiscal calculations
- Progressive and Equitable
- Reduces administrative burden on Contractor and Government
  - Existing regime consists of 5 instruments (royalty, production share, state participation, income tax, windfall tax), proposed consists of 3 (royalty, income tax and APT).

EXISTING FISCAL SYSTEM		PROPOSED NEW FISCAL SYSTEM
Royalty	min. of 7.5% Oil, 5% Gas	Maintain ad valorem rates
Production Share	Based on production	None
State Participation	Negotiable	None
Corporation Tax	40% per IBTA	40% as per IBTA
"Windfall Instrument"	**Petroleum Surcharge** Price Threshold Basis • $90/bbl existing field • $100/bbl new	**Additional Petroleum Tax** Rate of Return based on accounting net cash flow

The Outlook for Belize- Available Data and Blocks





- With available data packages and available blocks, in a known hydrocarbon province the outlook is to build on proven reserves in the country.
- All seismic and data is available through Lynx and TGS in computer ready formats which can be integrated into any software.
- New exploration data and integration of data sets will being forward new ways of assessing the oil and gas potential in the country.
- New Production techniques will make thin pay reservoirs onshore more economical and will increase production in the country.
- The revision of the fiscal system and the laws will provide benefit by:
  - Making smaller fields more economical
  - Less burdensome administration components
  - Allow data to become public quicker

Integration, Integration, Integration….Data Package


WHY INVEST IN BELIZE?
STABLE DEMOCRACY
SIMPLIFIED REGULATORY AND FISCAL SYSTEMS
GROWING ENERGY DEMAND IN LATIN AMERICA AND THE CARIBBEAN
PROVEN HYDROCARBON HISTORY
LOW COST & LOW RISK EXPLORATION AND PRODUCTION
SUPPORTING INFRASTRUCTURE
STEP FOUR
STATES OF AMERICA
New Orleans
Gulf of Mexico
Miami
Havana
CUBA
BELIZE
HONDURAS
JAMAICA
Caribbean Sea
Colon
Caracas
VENEZUELA
Bogota
COLOMBIA
DOMINICAN REP.
Santo Domingo
Guadeloupe (Fr.)
ST. LUCIA
GRENADA
TRINIDAD & TOBAGO