REPUBLIC OF SIERRA LEONE

Offshore Partnership and Opportunities

Sub Saharan Africa International Petroleum Exhibition and Conference
13-15 February 2024

Office of the President

Presented By: Petroleum Directorate of Sierra Leone

Table of Contents

Table of Contents

Mission & Vision

Our Mission is to:

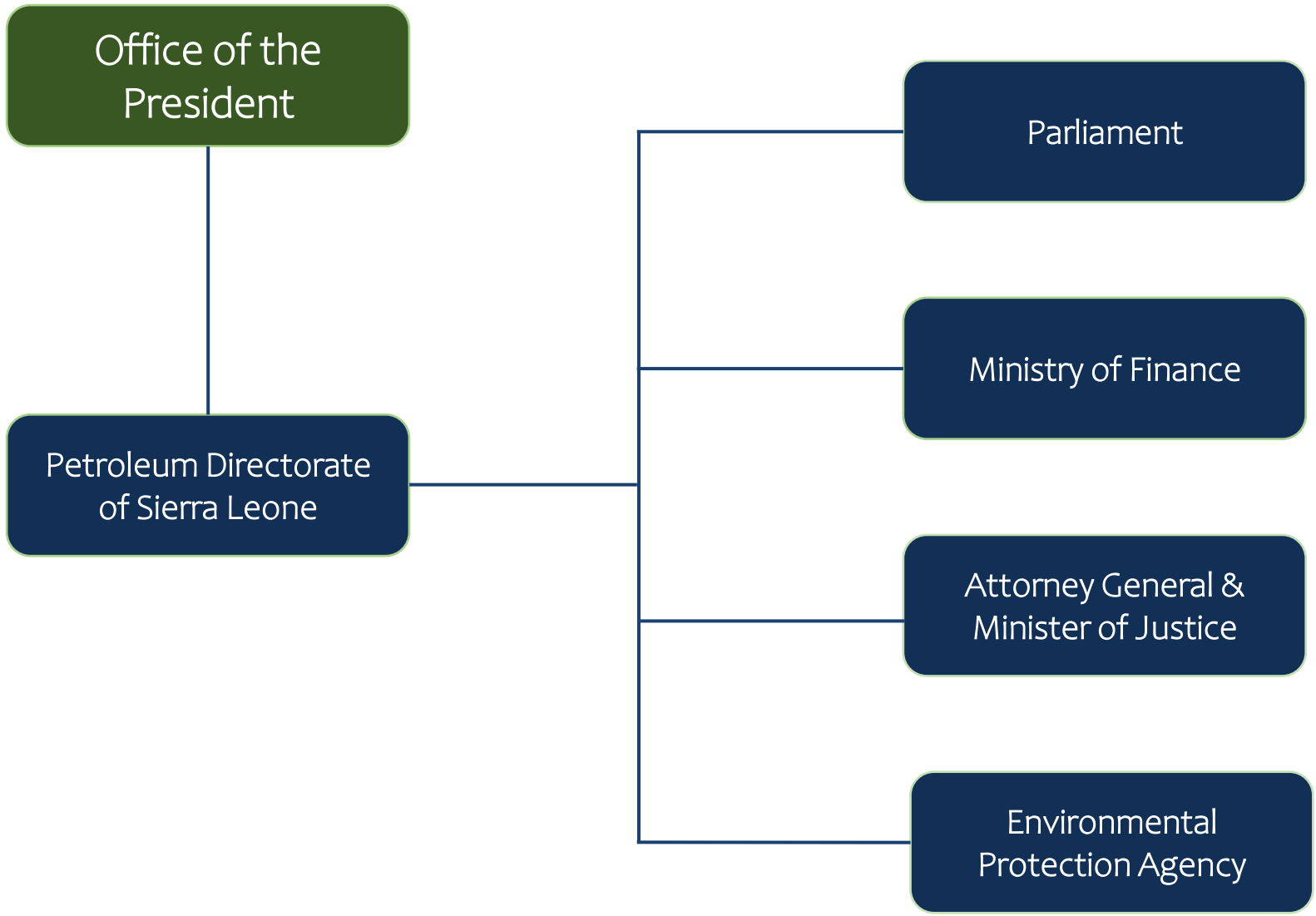
"Facilitate the optimal exploration, development and production of Sierra Leone's Potential Petroleum Resources for the long term benefit of its people, through the development of regulatory guidelines and monitoring contract compliance, having due regard for the economy, the environment, safety, technology, as well as balancing the interests of the nation and investor"

Petroleum House, Freetown

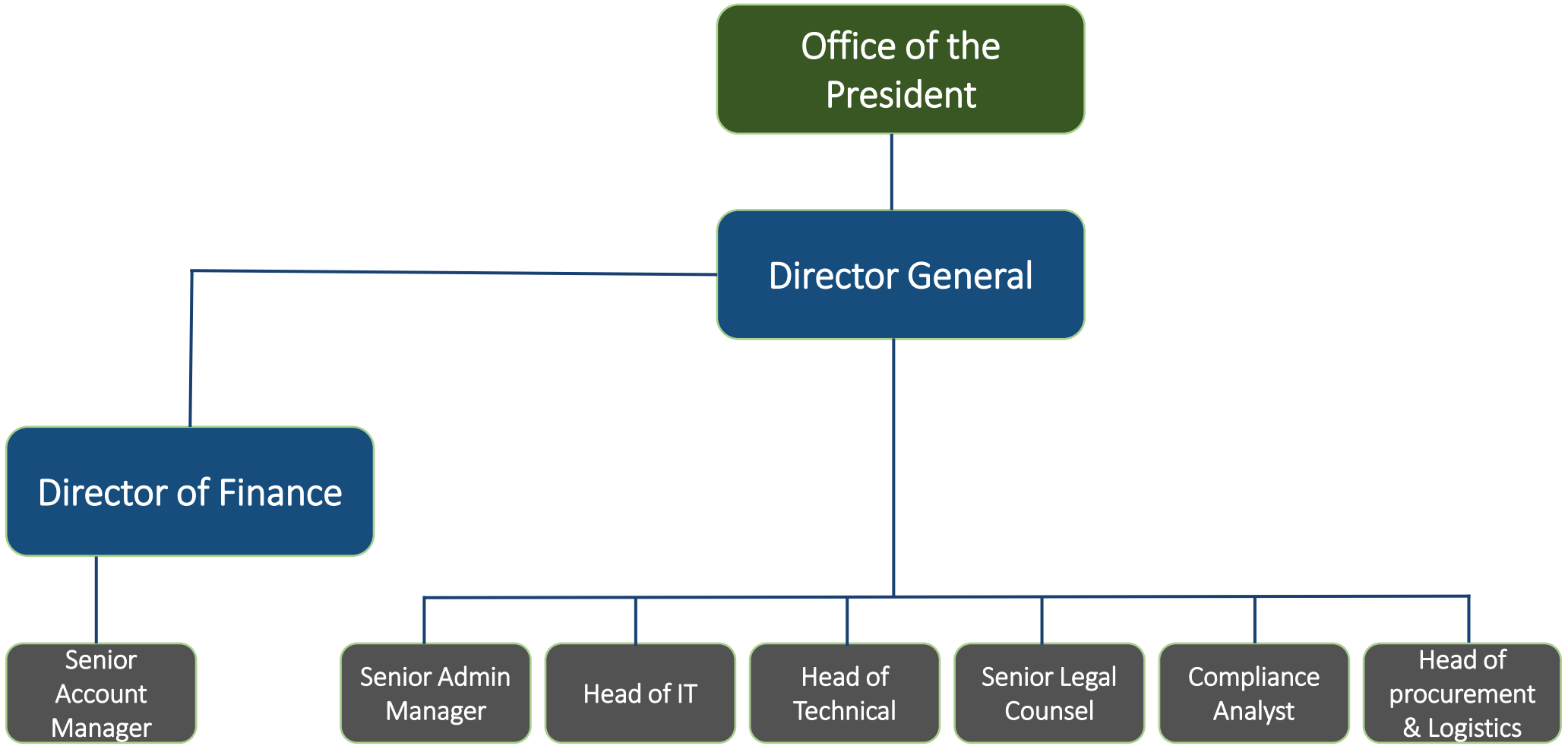
Vision :

Our vision is to lead the process of unlocking and realizing The Republic of Sierra Leone's petroleum resource potential and transform the country's growth agenda through the sustainable development of the petroleum sector

Line of Authorities



Management


Office of the President
Director General
Director of Finance
Senior Account Manager
Senior Admin Manager
Head of IT
Head of Technical
Senior Legal Counsel
Compliance Analyst
Head of procurement & Logistics

Our Partners

TGS

AFRICA ENERGY PARTNERS

GeoPartners

IN-VR

Legal & Regulatory Framework

Petroleum Policy , Exploration & Production Act

The contractual relationship between Investor and State is governed by PEPA 2011

- All Petroleum Rights are vested in the State – enshrined in the Sec. 7 of the Constitution of Sierra Leone, 1991 and Sec.2 of the PEPA 2011.

- Principal legislation governing upstream oil and gas operations is the PEPA 2011.
  - Provides the Administration, Regulation and Management framework of the upstream and midstream petroleum sector and covers:

Environmental Protection Agency Act 2008

Income Tax Act 2000

Finance Act 2020

Local Content Act 2016

Fiscal Framework

Non-Negotiable Fiscal Elements

Royalty

- SL operates a Tax-Royalty Hybrid System
- 10% on Gross Production for Crude Oil
- 5% on Gas

Corporate Income Tax

- 25% of Gross Profit

Petroleum Resource Rent Tax

- Superficial Tax based on excess profit set by IMF
- Financial modelling shows PRRT is only applicable when the price of oil is $60/bbl and above

Negotiable Fiscal Elements

1. Paid Interest	2. License Fees	3. Training, R&D Fund	4. Technology Bonus	5. Extension Fee
✓ The State maintains the option to negotiate Paid Interest	✓ Negotiable ✓ Set per sq.km	✓ Negotiable ✓ Set per graticular block		

6. Production Bonus	7. CSR	8. Assignment / Farm-out Fees	9. Signature Bonus	10. Seismic Data Acquisition
✓ Negotiable ✓ When total average daily production reaches a defined threshold for a period of 30 consecutive producing days	✓ Negotiable ✓ Set per graticular block			✓ Purchase existing or New Acquisition ✓ 2D and/or 3D Seismic Data from TGS

Types of Petroleum Rights

1. Reconnaissance Permit

- Pre-qualification
- Payment of Application Fee
- Reconnaissance Work Program
- Payment of minimum annual license fee
- Payment of minimum annual training funds
- For a period not exceeding two (2) years
- Non-Exclusive

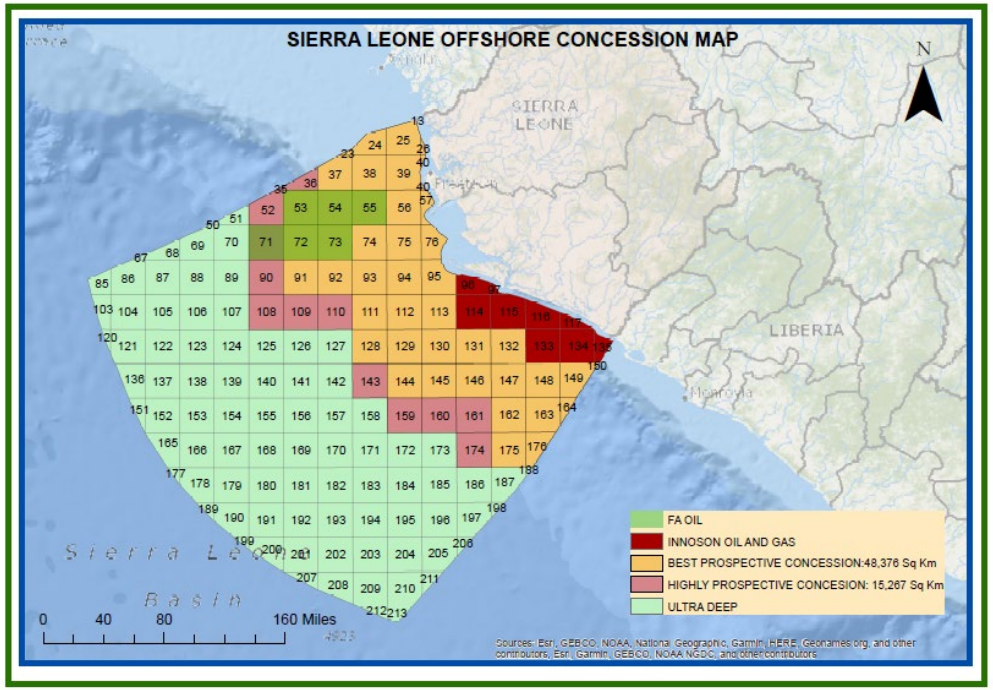
2. Petroleum License

- Pre-qualification Fees
- Application Fees
- Minimum Work Program

3. Permit for Laying & Operation of Pipeline

- A permit for the laying and operation of pipelines to transport petroleum produced from fields

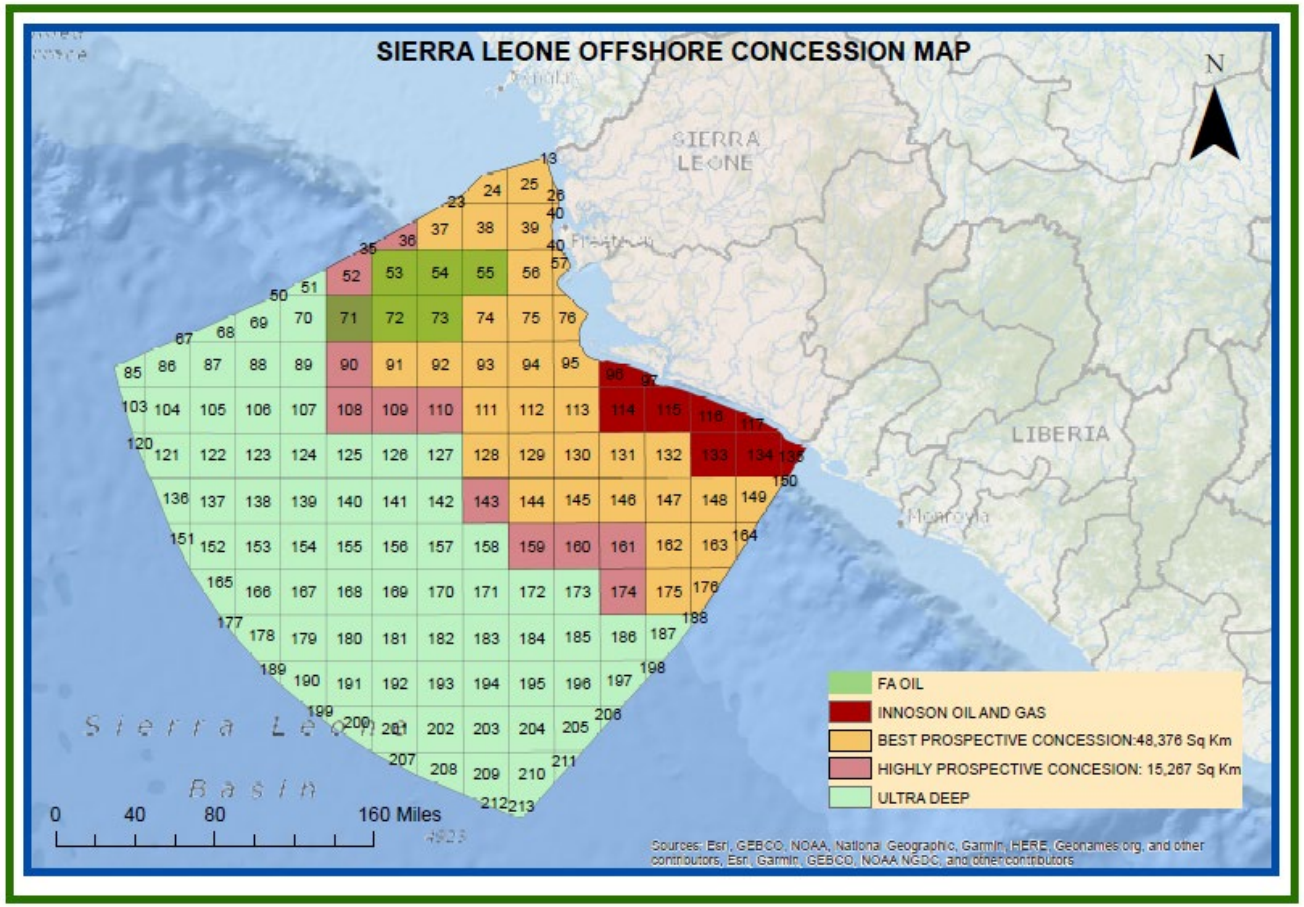
Offshore Acreage Opportunities



Fiscal Framework

Contract Areas on Offer

- Offshore covers approximately **170,000 km²**, with **140,000 km²** of offshore **open acreage available**
- MSGBC and Guyana-Suriname Basins are developing oil and gas from Cretaceous reservoirs, offshore Sierra Leone is located along this trend.
- After a block re-demarcation in 2018, the PDSL now has a series of smaller blocks that align with the ECOWAS north-south grid system
- Each block is approximately **1360 km²**
- Minimum of **Three (3) Graticular Blocks** constitute a Contract Area



Step by Step Guide to Direct Negotiations

Step 1 – IOC Expression of interest (EOI)

- Party provides EOI letter to initiate communication
- Petroleum Directorate Sierra Leone (PDSL) would invite the party to submit Pre-Qualification documentation

Step 2 – Pre-Qualification Criteria

- Financial Strength
- Operational/technical pre-qualification
- Q-HSE policy statement
- Data room visit and purchase of seismic

Step 3 – invitation

- PDSL will invite IOC for Data Room Visit (London or Freetown) and negotiations upon approval.

Step 4 - Provisional License

- PDSL will offer a Provisional license to the IOC

Step 5 - IOC Action

- IOC acceptance of Provisional license

Step by Step Guide to Direct Negotiations

Step 6 - Draft Petroleum Agreement

- A Draft Agreement will be sent to the IOC from PDSL
- IOC and PDSL negotiate the agreement and PDSL awaits a “NO Objection” reply from the IOC

Step 7 - Response

- The agreed upon Petroleum Agreement is sent to the following Government institutions for approval:
  1. Ministry of Finance
  2. The Attorney General - Ministry of Justice

Step 8 – Signing

- Upon approval, PDSL & IOC will sign Agreement

Step 9 – Parliament

- The agreement is sent to parliament for ratification
- Parliament’s ratification is the last approval seeded for the signing

Step 10 – Ratification

KINDLY NOTE THAT:

- Entire Process is expected to take 85 Business Days.
- Application Fee for Prequalification is US$15,000
- Application Fee per Contract Area (3 Graticular Blocks) is US$30,000. A fee of US$5,000 applies for any additional graticular block
- Applicants MUST clearly state their wish to apply as:
  - ✓ Operator or
  - ✓ Petroleum Right Holder (Partner/Non-Operator)

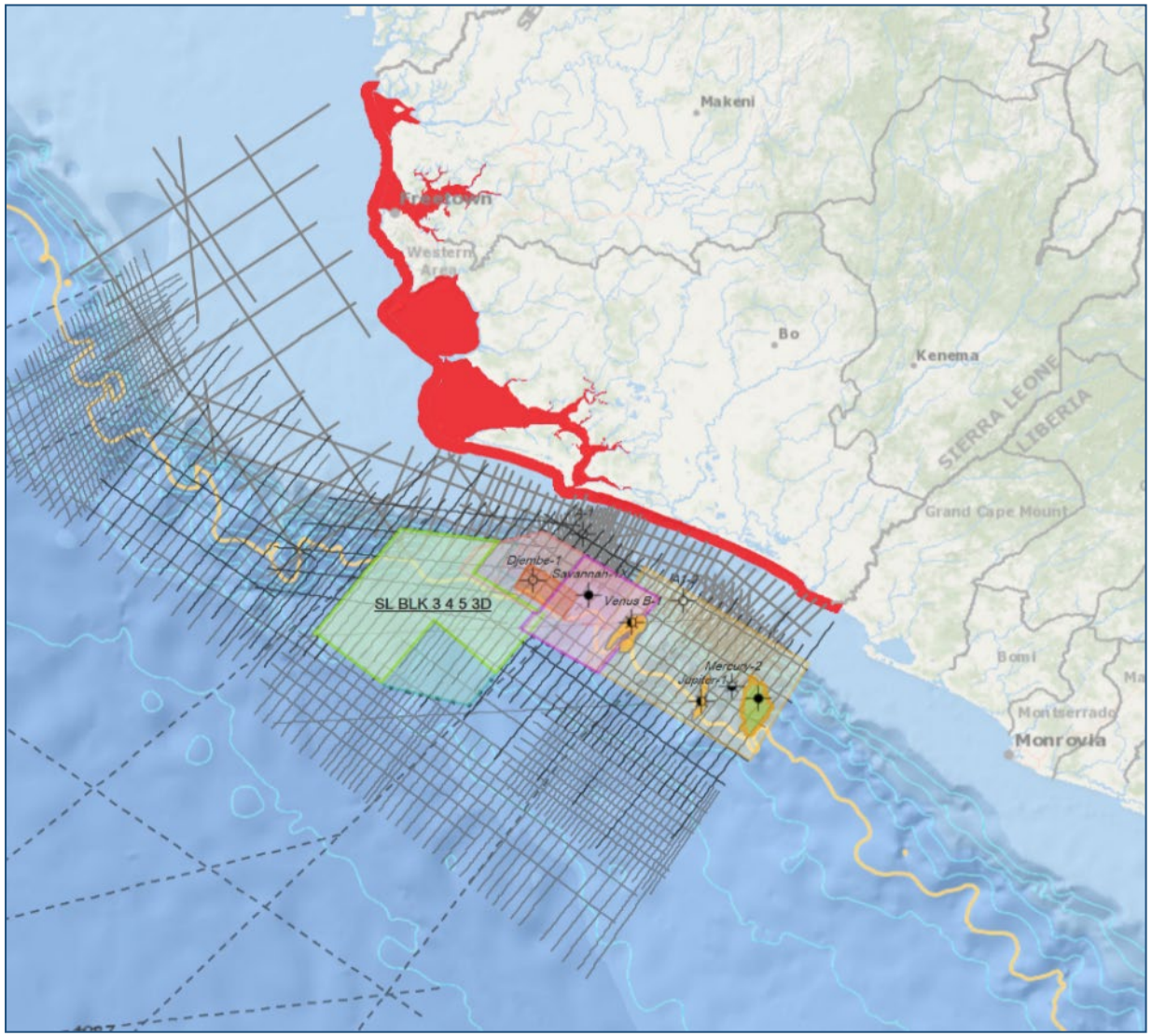
Exploration History & Available Data

- Exploration began in the **early 1980s,** initial work focused on shallow waters with 2D seismic & gravimetric surveys offshore

- Subsequent drilling of A-1 (Mobil) and A1-2 (Amoco) between 1982-85 on the inner shelf **(<100m water depth)** encountered hydrocarbon shows

- More exploration work followed with the acquisition of speculative 2D data (5,800 sq. km) by **TGS between 2000-01** sparked another exploration cycle

- From the early 1980's to present, **eight wells** have been drilled in the basin



Discoveries

Exploration History & Available Data - Discoveries

1. Venus – B1 (2009) – Anadarko

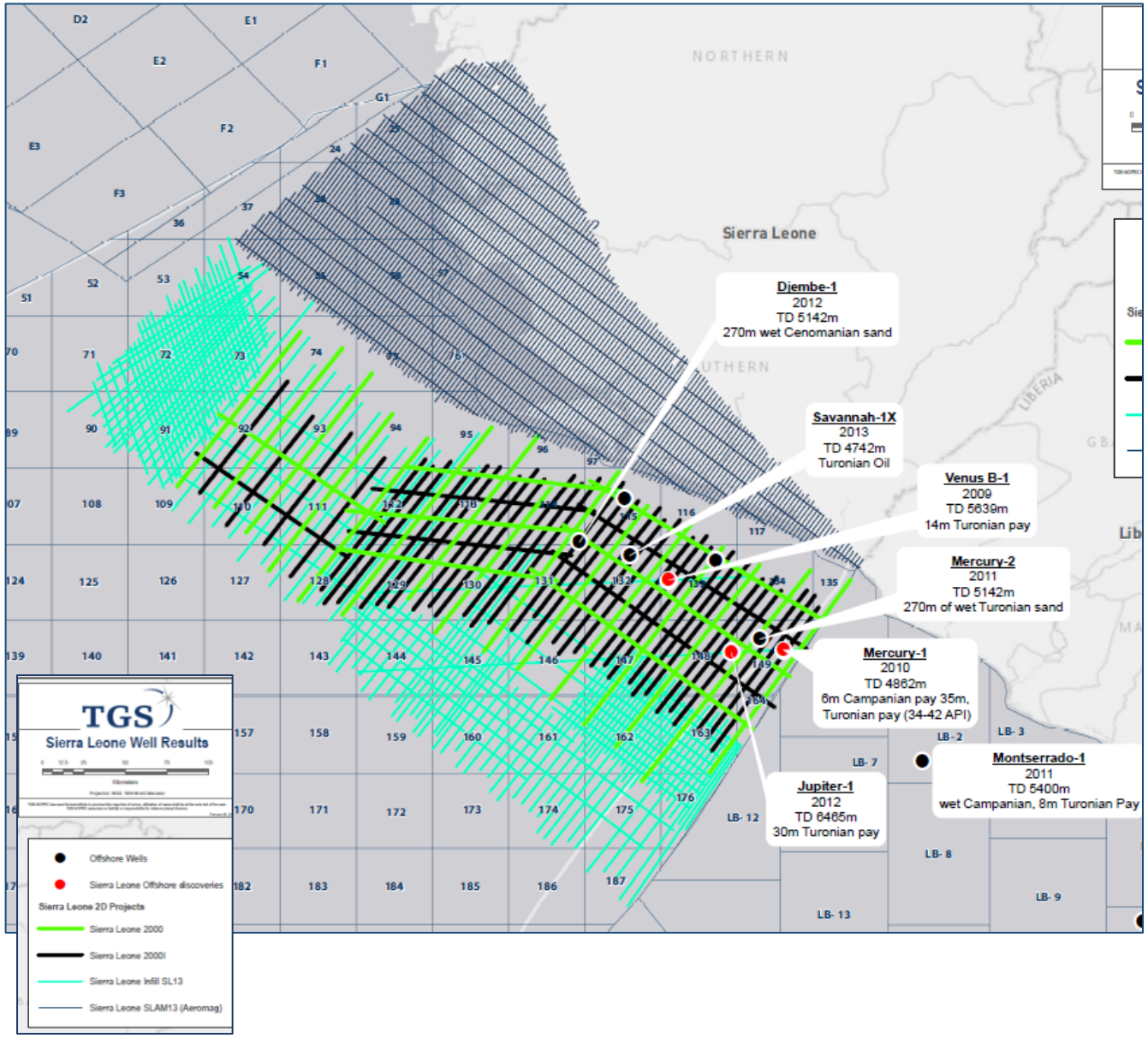
Water Depth: **1,800m**, TD: 5,636m in Albian

- **14m net oil pay** (condensate) in Cretaceous age sediments
- Good quality reservoir sand (channel/fan)
- Several good reservoir quality intervals all the way down to TD.

2. Mercury – 1 (2010) – Anadarko

Water Depth: 1,600m, **TD:** 4,862m in Albian

- **41m net oil pay** in Cretaceous age fan system
- 35m net oil pay in primary objective – light sweet crude **(34º – 42º API)**
- 6.4m of 24º API oil in a shallower secondary objective.



Discoveries

Exploration History & Available Data - Discoveries

3. Jupiter-1 (2012) – Anadarko

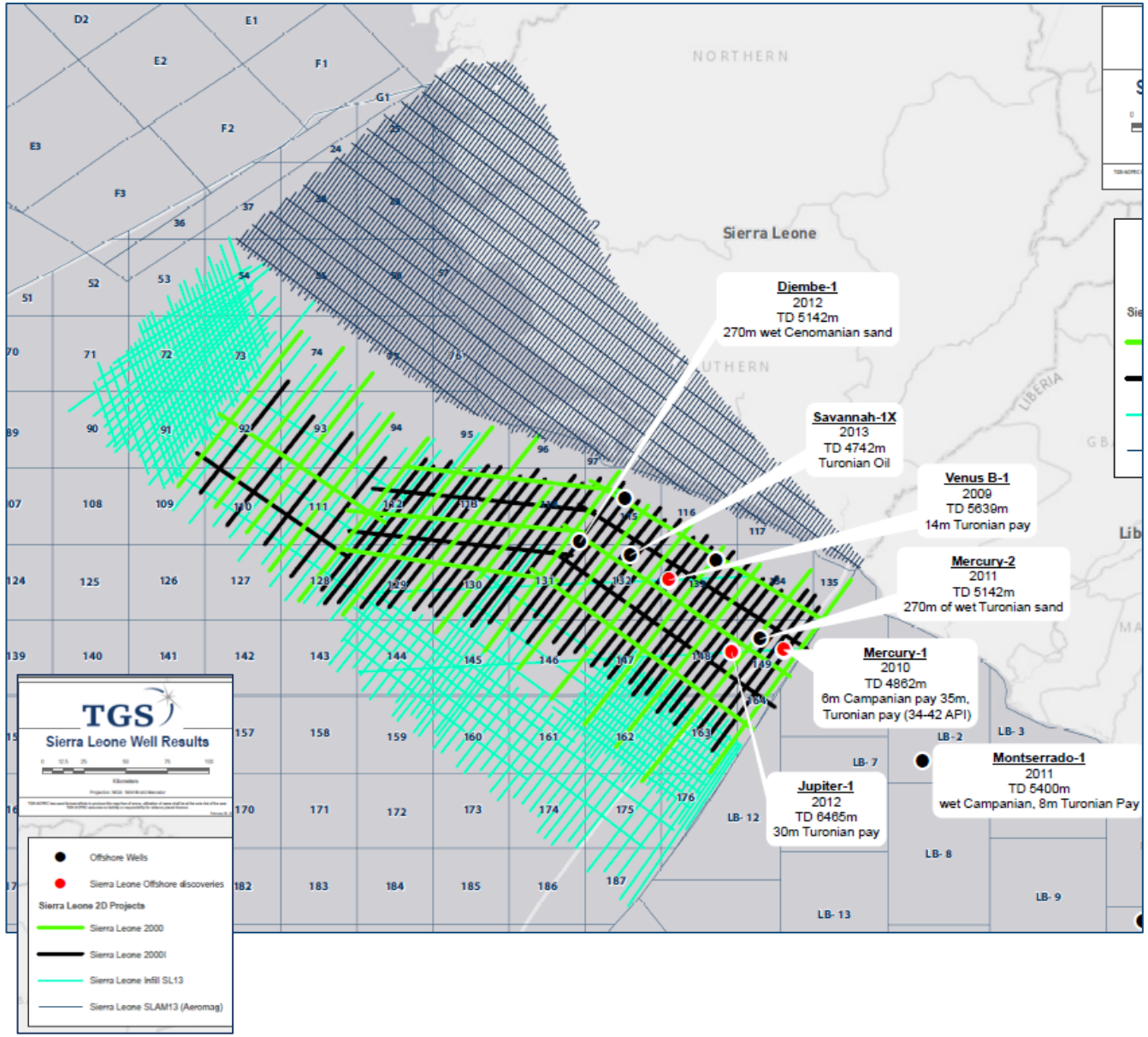
Water Depth**: 2,199**m, TD: 6,465m

- The well intersected ~ **30m of pay** (condensate) in the primary Upper Cretaceous objective and encountered an OWC.

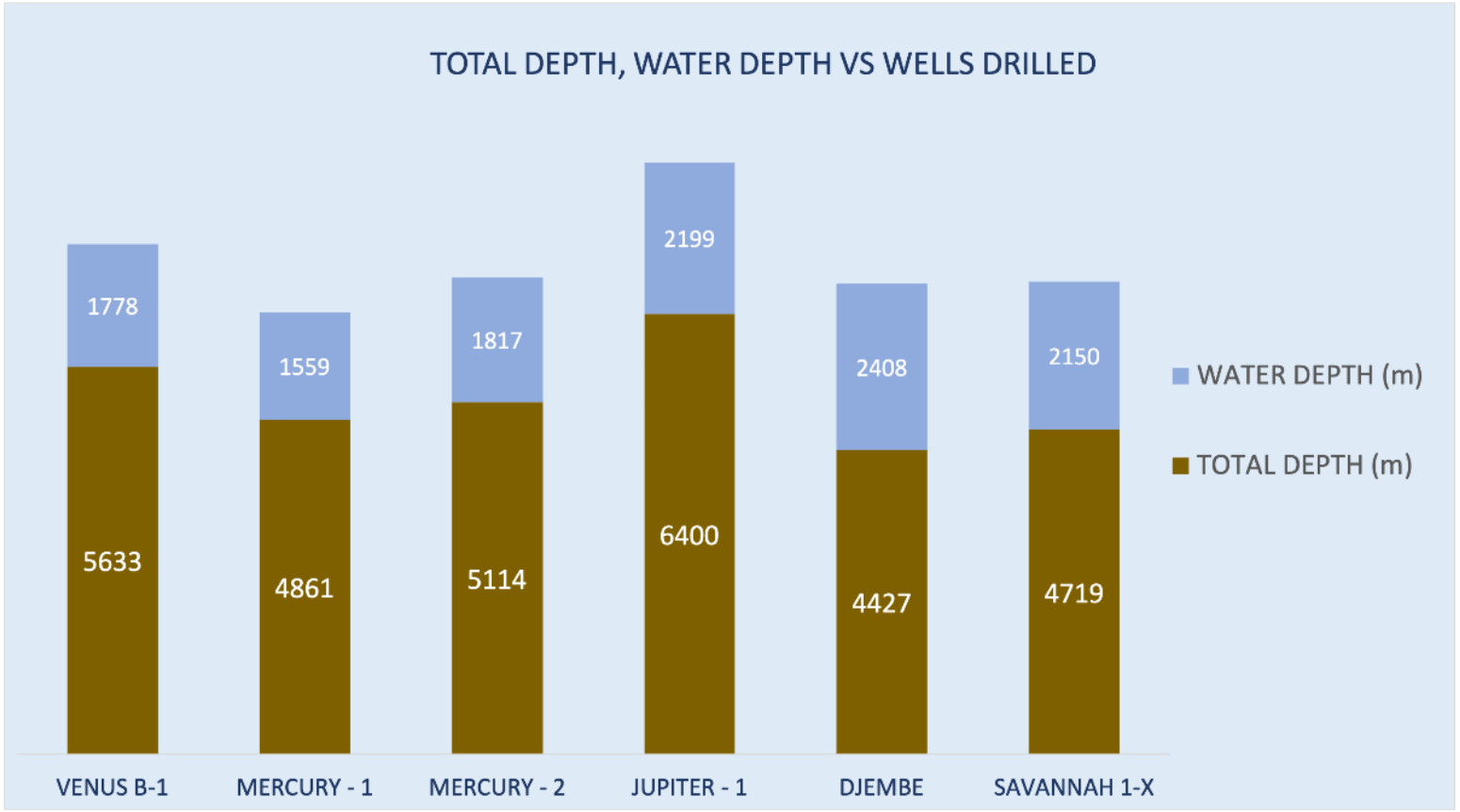
4. Savannah-1X (2013) - Lukoil

Water Depth: **2,153m,** TD 4,737m

- The well intersected ~**3m oil pay** in the primary objective.
- Tested numerous high-quality reservoirs



Wells Insight



Average Well Depth – 3217m

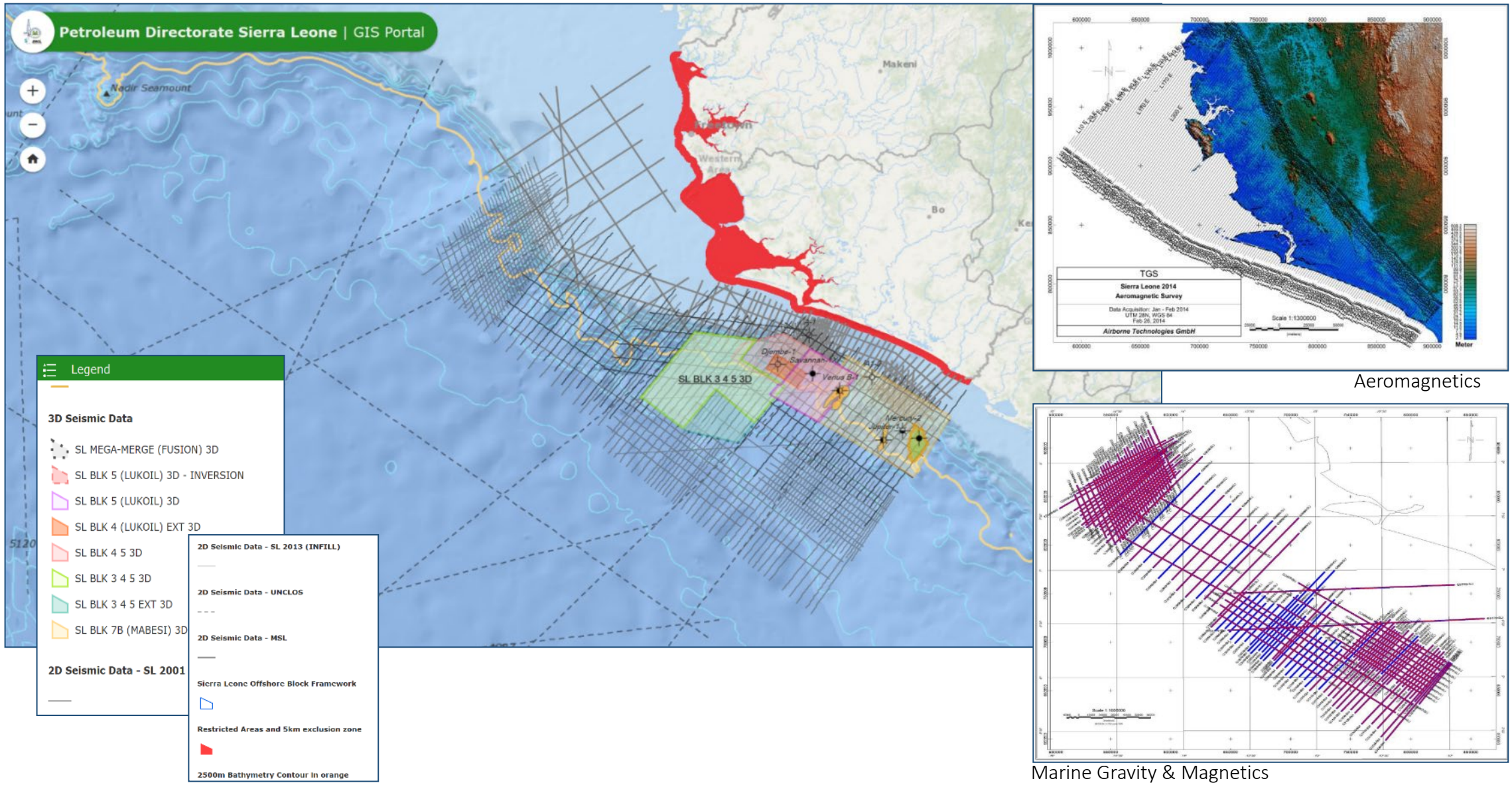
Average Duration of drilling a Well – 52.2 days

Average Water Depth – 1985m

Average Cost of drilling a Well - $60MM as of 2013

Data Coverage – 2D and 3D Seismic

Exploration History & Available Data – Data Coverage



Aeromagnetics

Marine Gravity & Magnetics

Data Coverage – Well Data Packages

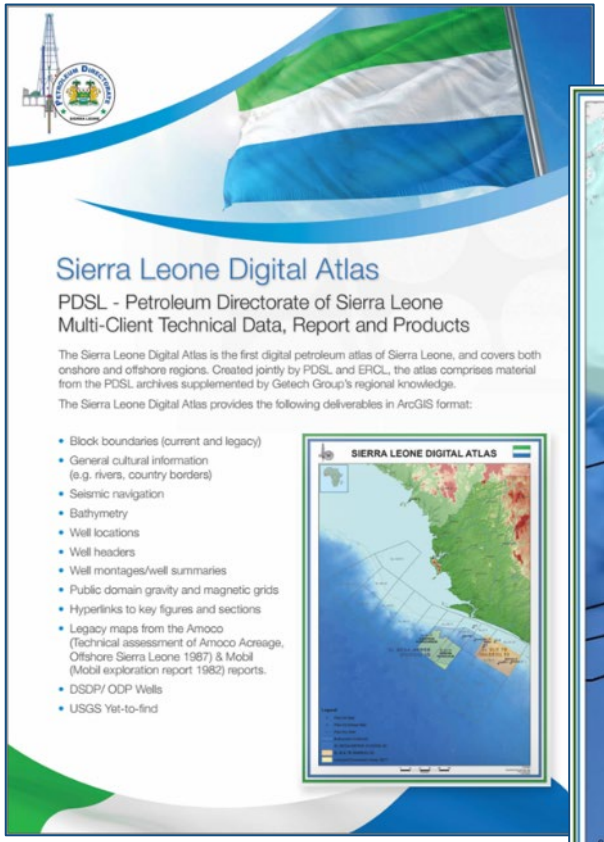
Exploration History & Available Data – Data Coverage

		BASIC WELL DATA PACKAGE												
WELL NAME	YEAR DRILLED	WELL LOGS							TIME-DEPTH		DEVIATION	FINAL WELL REPORT	RE-ENTRY WELL REPORT	
		DRILLING DATA LOG	FORM EVAL LOG	PRESSURE EVAL LOG	TEMP DATA LOG	LITHOLOGY LOG	COMPOSITE LOG	MUD LOG	CHECK-SHOT	VSP				
A-1	1982								✓			✓		
A1-2	1985	✓	✓	✓	✓		✓	✓		✓		✓	✓	
DJEMBE-1	2012					✓	✓							
JUPITER-1	2011	✓				✓	✓	✓	✓		✓			
MERCURY-1	2010	✓		✓		✓	✓	✓	✓	✓	✓	✓		
MERCURY-2	2011						✓			✓	✓	✓ (DRAFT)		
SAVANNAH-1X	2013	✓					✓	✓		✓	✓	✓		
VENUS-B1	2009	✓	✓	✓		✓	✓	✓ (gas log)		✓		✓		

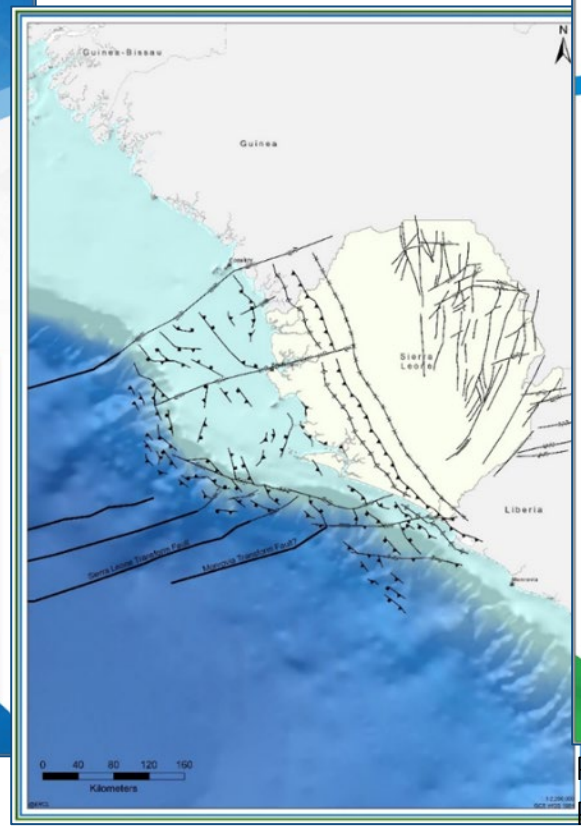
		ENHANCED WELL DATA PACKAGE													
WELL NAME	YEAR DRILLED	POST COMPLETION REPORT	PRE-DRILL REPORTS/ PROGNOSI	GEOLOGICAL REPORT	PETRO-GRAPHIC REPORT	CORE		PETRO-PHYSICS	BIOSTRAT REPORT	GEOCHEM REPORT	FLUID INC. STUDY	FLUID ANALYSIS STUDY	MISC GEOLOGICAL REPORTS	GEOHAZARD REPORT/EIA	DRILLING REPORTS
						CONVEN.	SWC								
A-1	1982	✓				✓	✓								✓
A1-2	1985					X	✓		✓	✓			✓		✓
DJEMBE-1	2012		✓			X	✓								✓
JUPITER-1	2011				✓		✓	✓	✓	✓			✓		✓
MERCURY-1	2010			✓	✓		✓	✓	✓	✓	✓		✓	✓	✓
MERCURY-2	2011				✓	✓	✓	✓	✓	✓	✓	✓			✓ (some)
SAVANNAH-1X	2013			✓	✓	X	X		✓		✓	✓	✓		✓
VENUS-B1	2009				✓		✓	✓	✓	✓	✓	✓	✓	✓	✓

Interpretation Data Packages

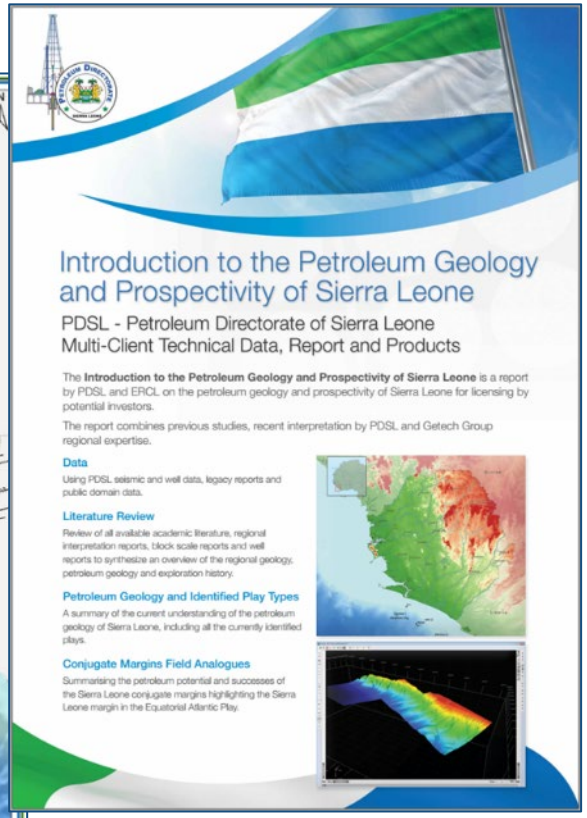
Exploration History & Available Data – Data Coverage



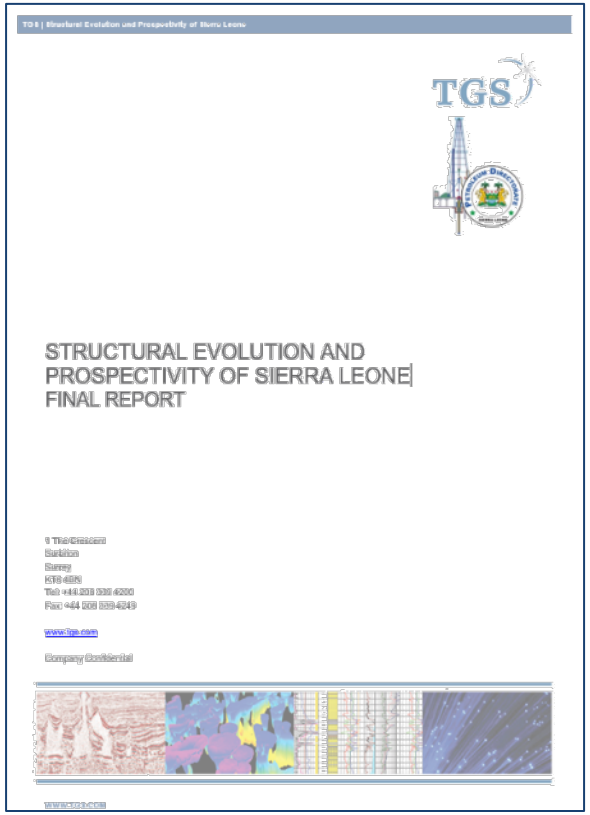
Petroleum Digital Atlas



Structural Studies



Petroleum Geology & Prospectivity



Structural Evolution & Prospectivity Report

Data Rooms

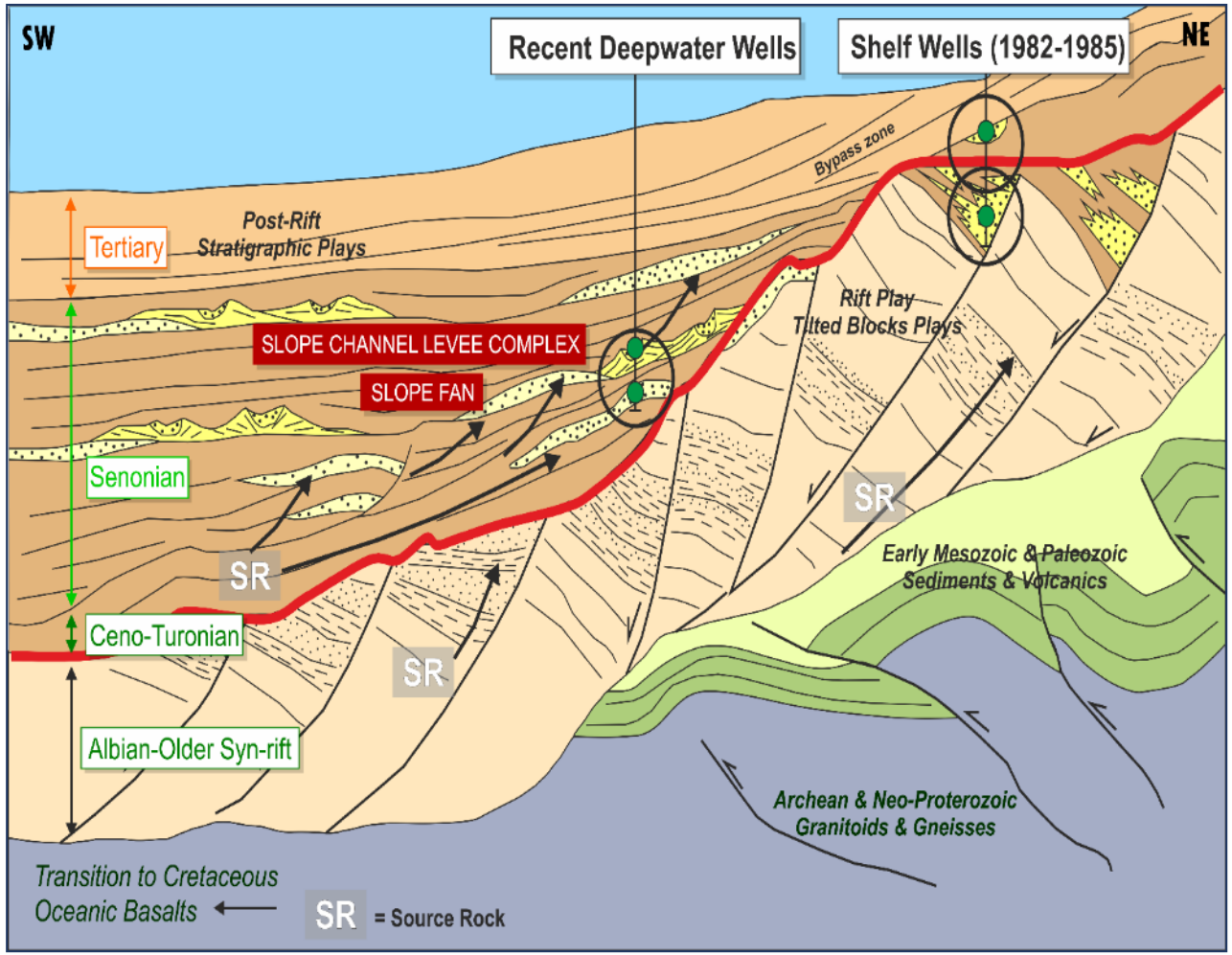
The technical data available to view in the data room includes:

- Technical Presentations
- Technical Reports
- 16,000-line km of 2D seismic
- 11,000 km^2 of 3D seismic
- 8 well reports

Partnership Opportunities

Onshore, Shallow Waters and Deep Water

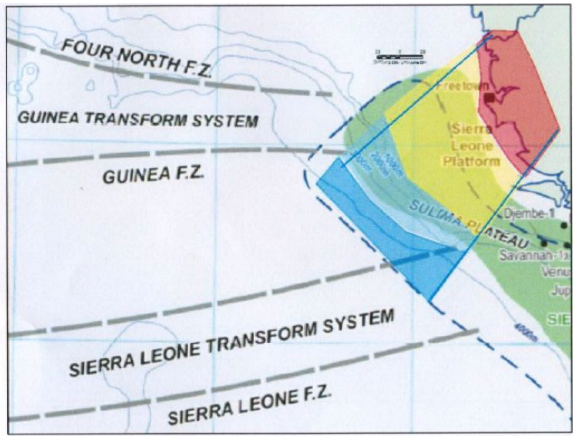
Petroleum System

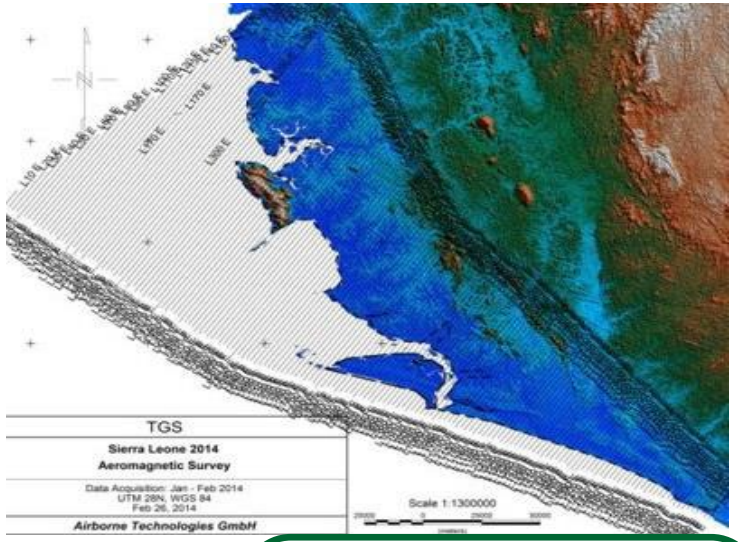


Cartoon section based on a seismic line offshore Sierra Leone showing pre-rift, syn-rift and pos-rift sections of the margin [Anadarko, 2012]

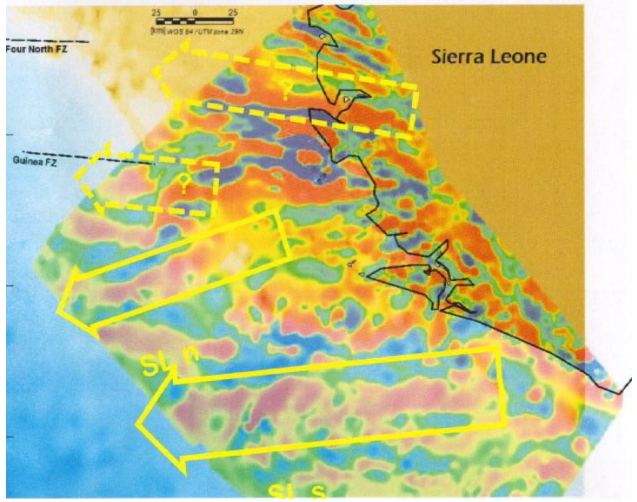
- Reservoirs
  - Basin formed in the Late Jurassic Period (146 million years ago)
  - Most proven HC basins fall in Jurassic to Cretaceous period
- Source Rocks
  - Hydrogen Index (HI):
    - SL: 482-795 (Type 2 SR)
    - Guyana: 450-613
- Total Organic Carbon (TOC):
  - SL: 4-20%
  - Guyana: 4-10% (Liza-1)
  - Source Rocks have been proven on the conjugate margin
- Traps
  - The basin has structural, stratigraphic and combination traps
- Seals
  - Lateral Transformational Shales (effective seals)

Prospectivity (On-shore)





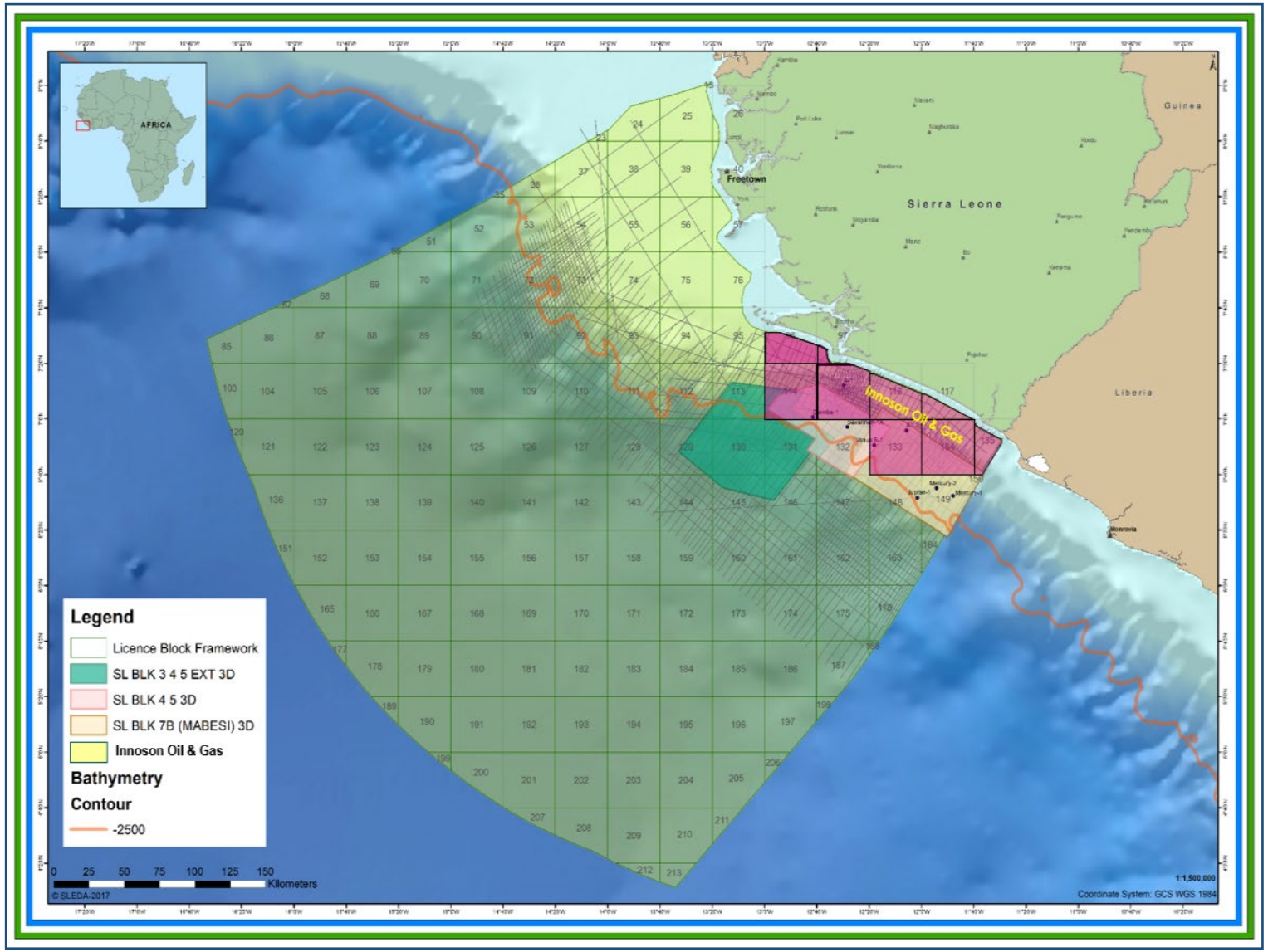
The 2013 Sierra Leone aeromagnetic survey is 24,000 km² offshore with water depths of up to 150m.



- 24,000 km^2 aeromagnetic survey
- Survey covers on shore and partly shallow offshore
- Prolongations of the Sierra Leone FZs onto the shelf and onshore are clearly visible as ridges in the high pass filtered magnetic merge.

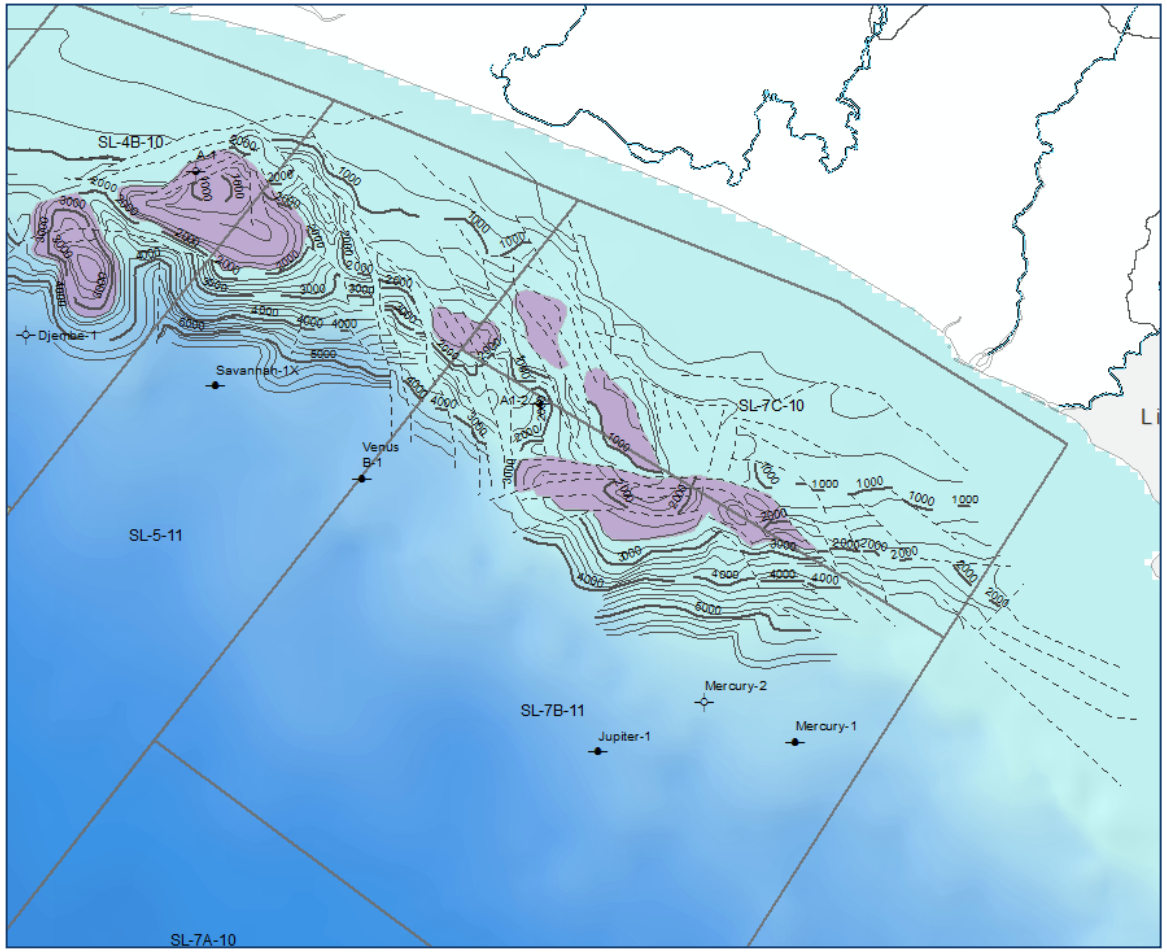
Farm-in Opportunity

- Innoson Oil & Gas
- Nine Blocks
- Approximately 12,000 km^2



Partnership Opportunities – Firm-in opportunity

Prospectivity (Shallow Water)

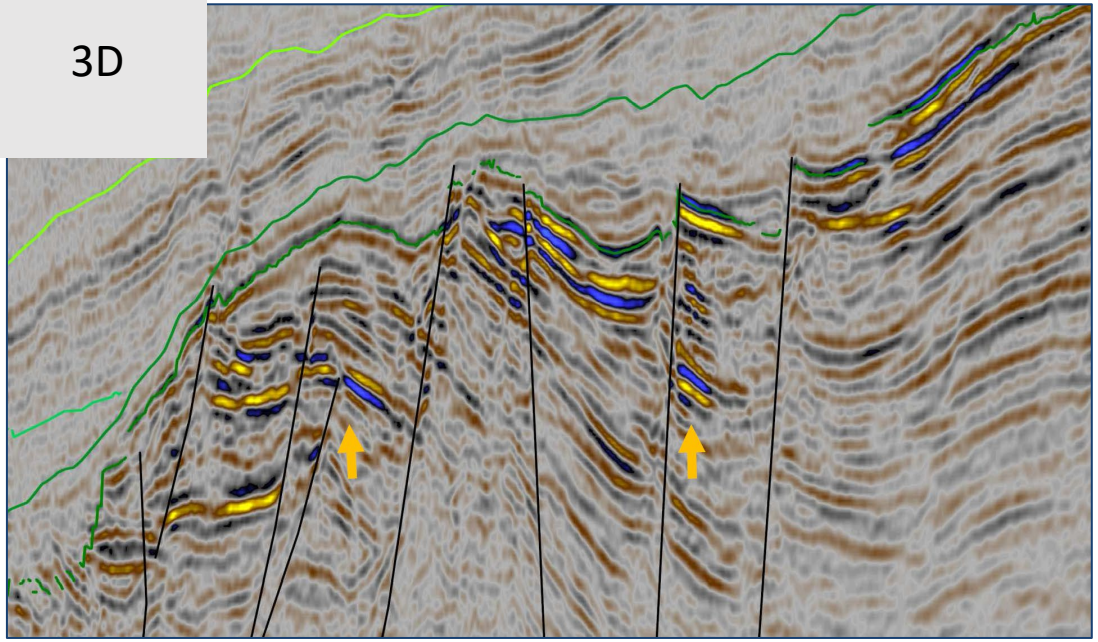


Re-digitized 80's data with ArcGIS [PDSL, 2018]

- Targets in water depths of less than **150m**
- Targets **up-dip of deep-water discoveries** [reduced drilling costs]

- Rifted fault blocks in **proximal offshore** areas
- Additional seal and traps due to Sierra Leone **Fracture zones extending onto shore**, as detected in high pass filtered magnetics.

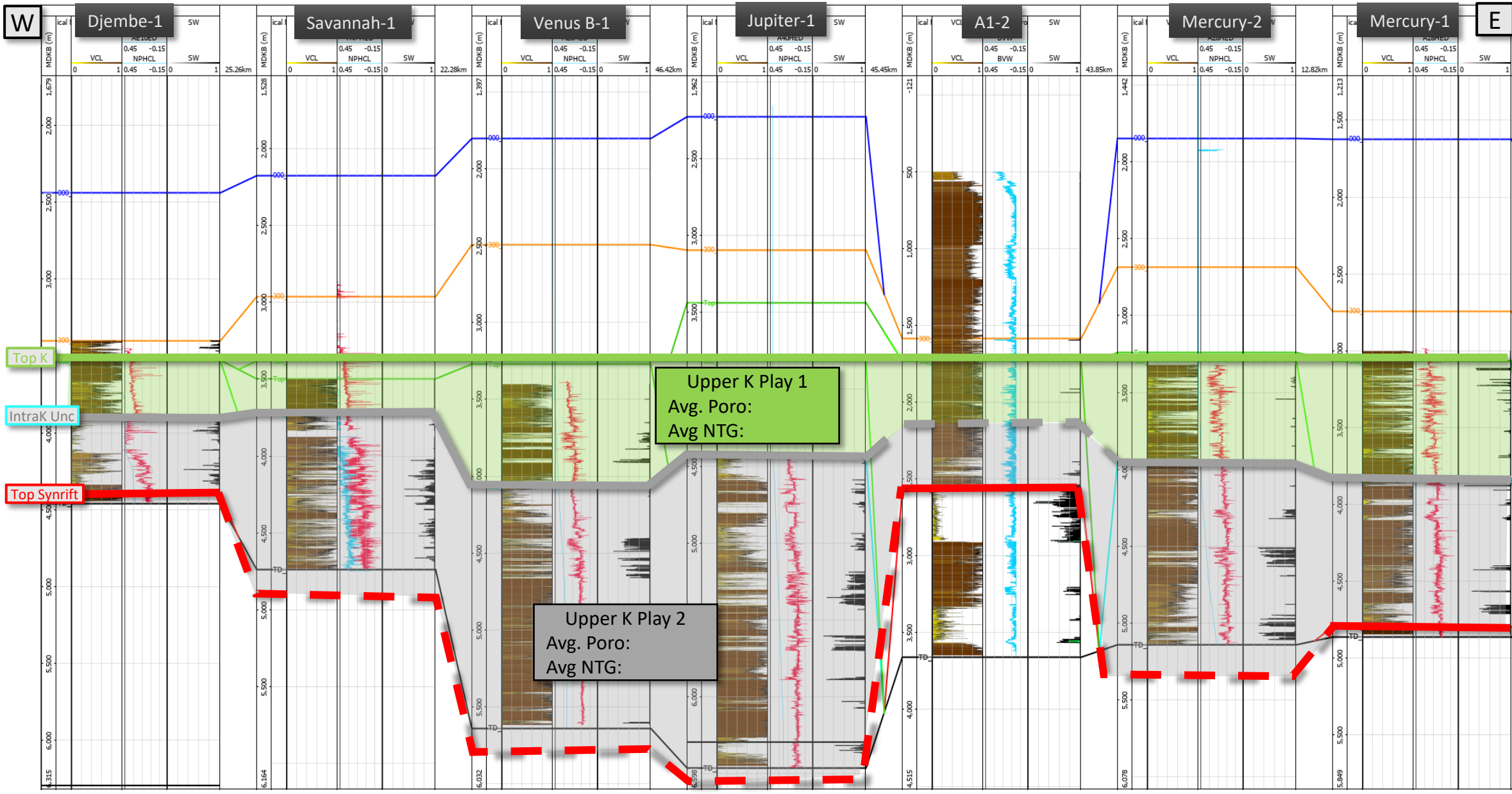
3D



Rotated fault blocks brightening into fault seal

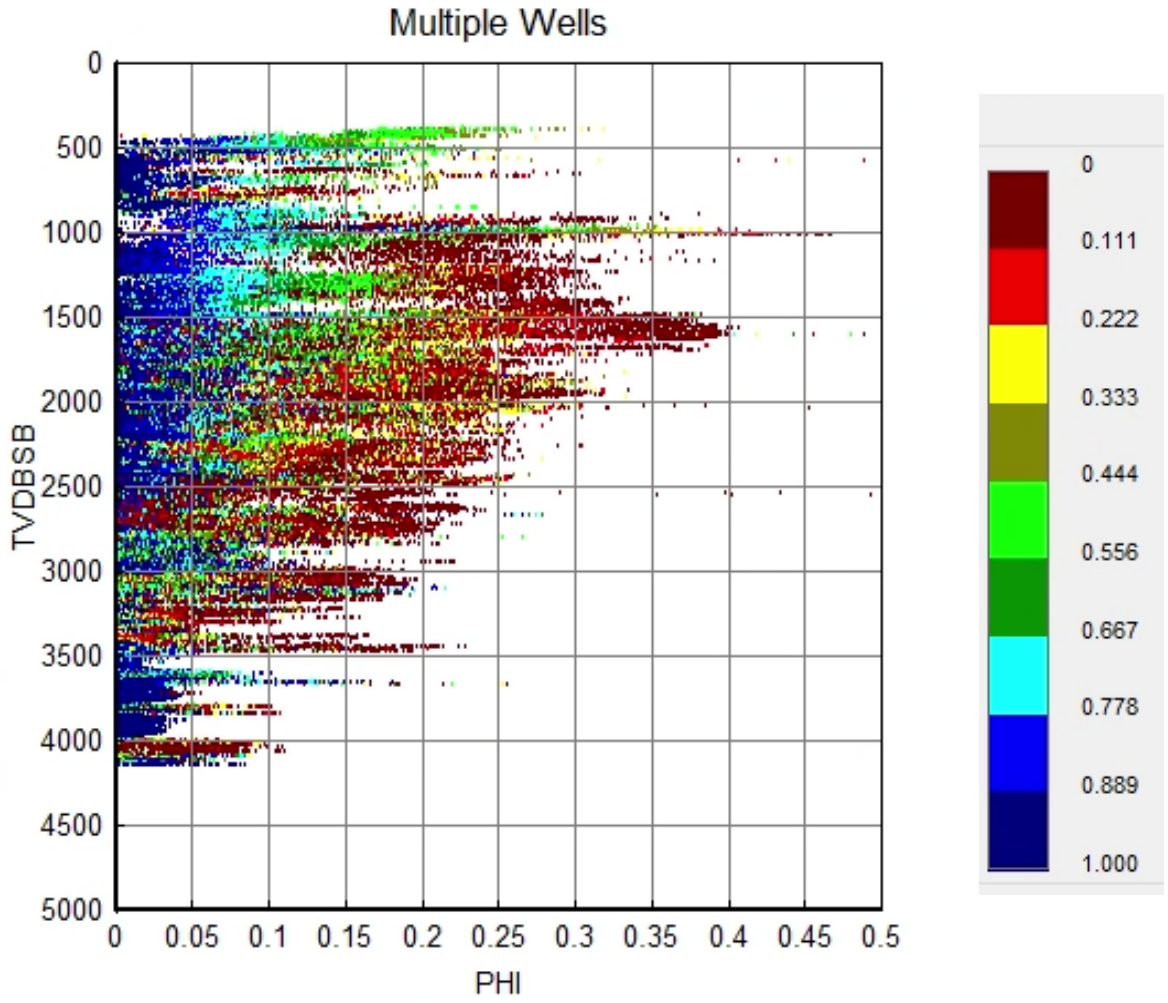
Partnership Opportunities – Prospectivity

Well Correlation – proven reservoirs



Partnership Opportunities – Prospectivity

Multiwell cross plots, Porosity

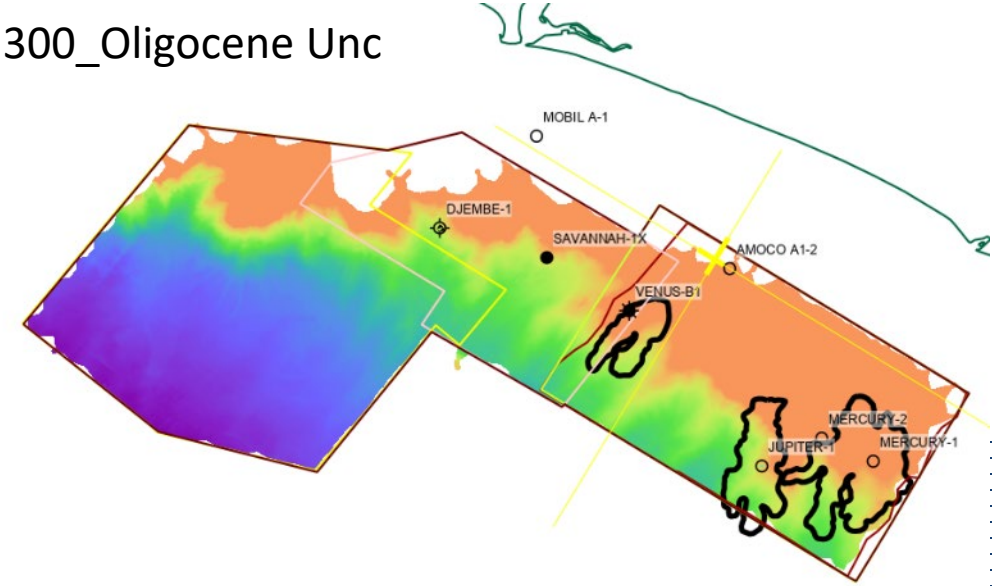


Amoco-A1-2 Djembe-1, Jupiter-1, Mercury-1, Mercury-2, Venus-1, Savanah-1, Mobil-A-1

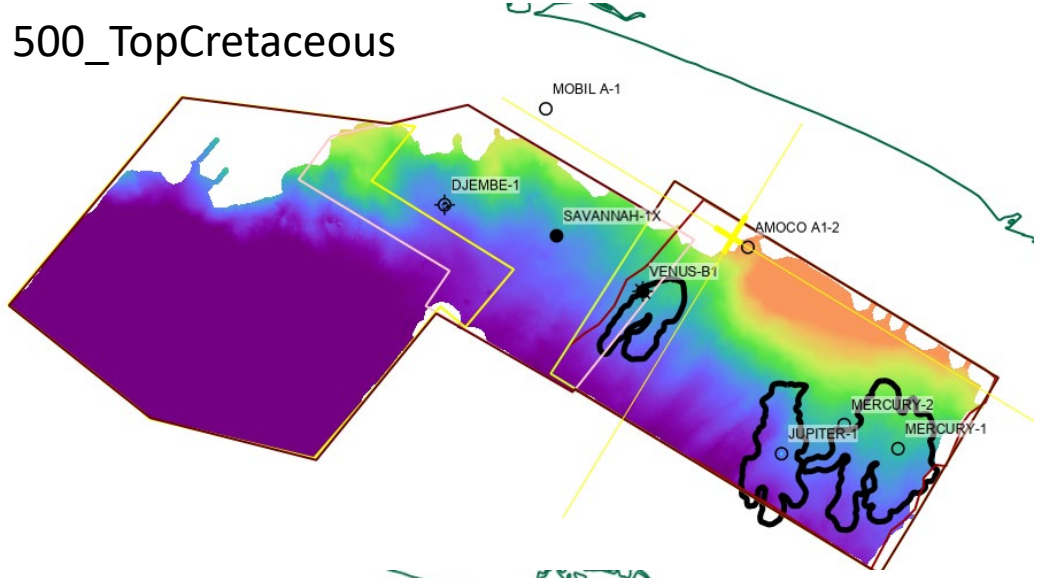
3D Regional Surfaces

Partnership Opportunities – Prospectivity

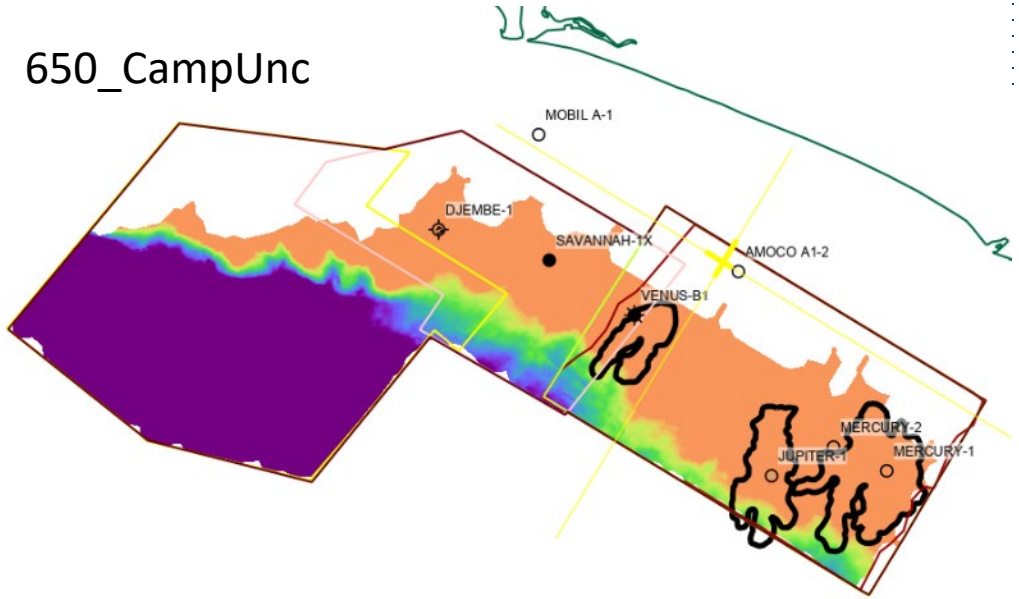
300_Oligocene Unc



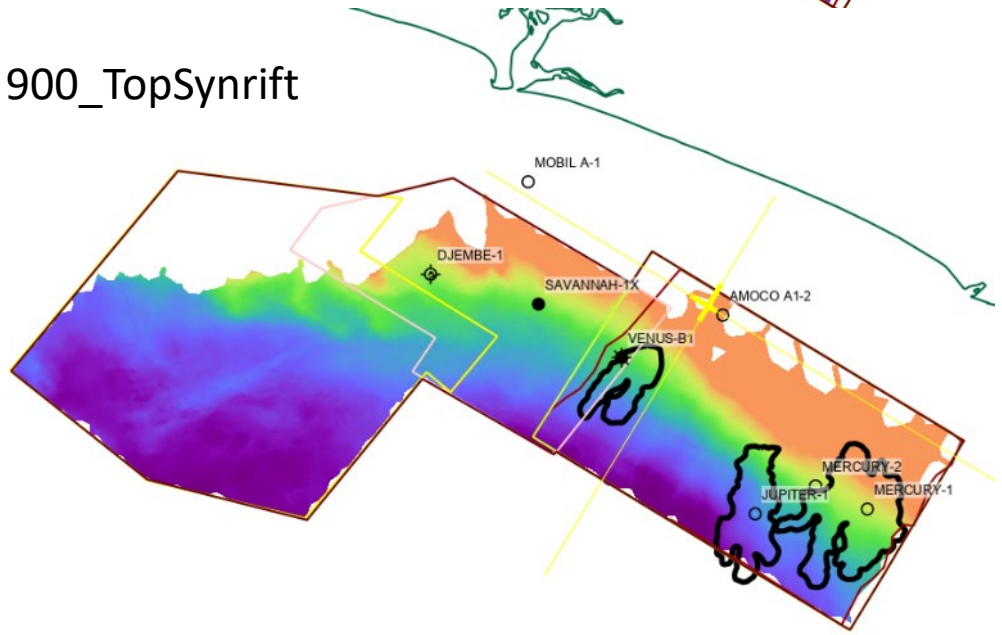
500_TopCretaceous



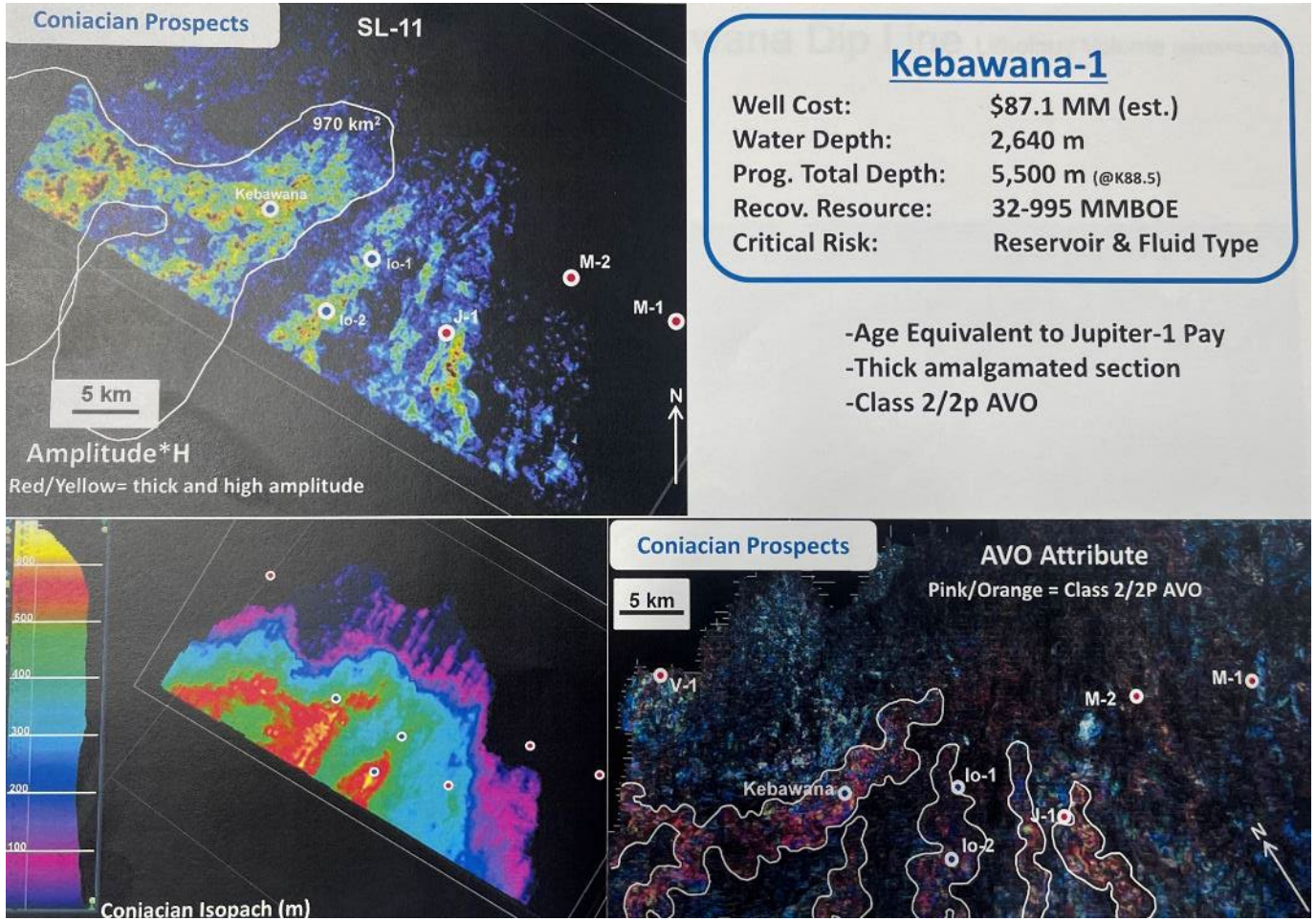
650_CampUnc



900_TopSynrift



Upper Slope Undrilled Opportunities

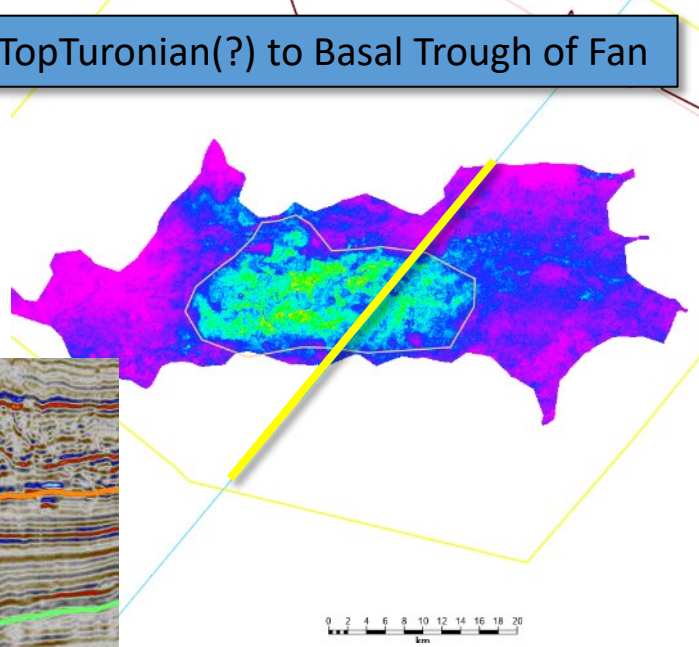


- Down-dip along strike from Jupiter-1 discovery.
- Thick amalgamated section having a potential for stacked pay
- Deeper reservoirs are closer to source and more likely to be charged
- Large prospect of 970 km^2
- Resource Potential of Kebawana 32-995(P90-P10) MMBOE

Partnership Opportunities – Coniacian Opportunities

“Vega Prospect” - structure

RMS Amp 600-TopTuronian(?) to Basal Trough of Fan



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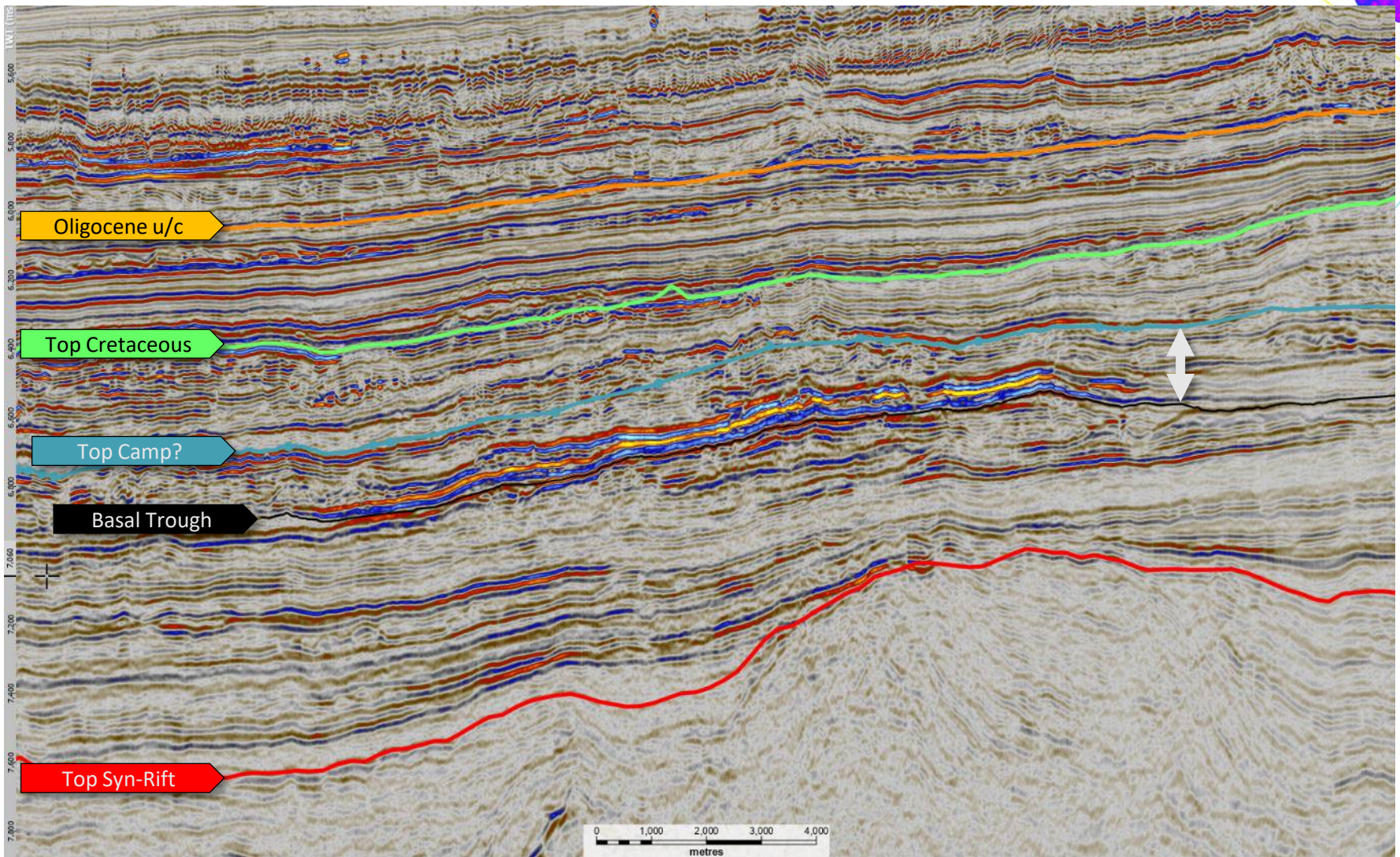
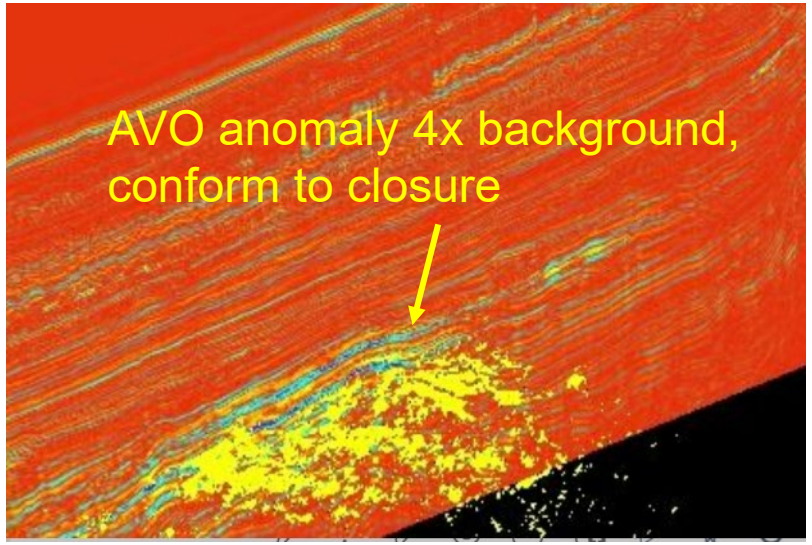
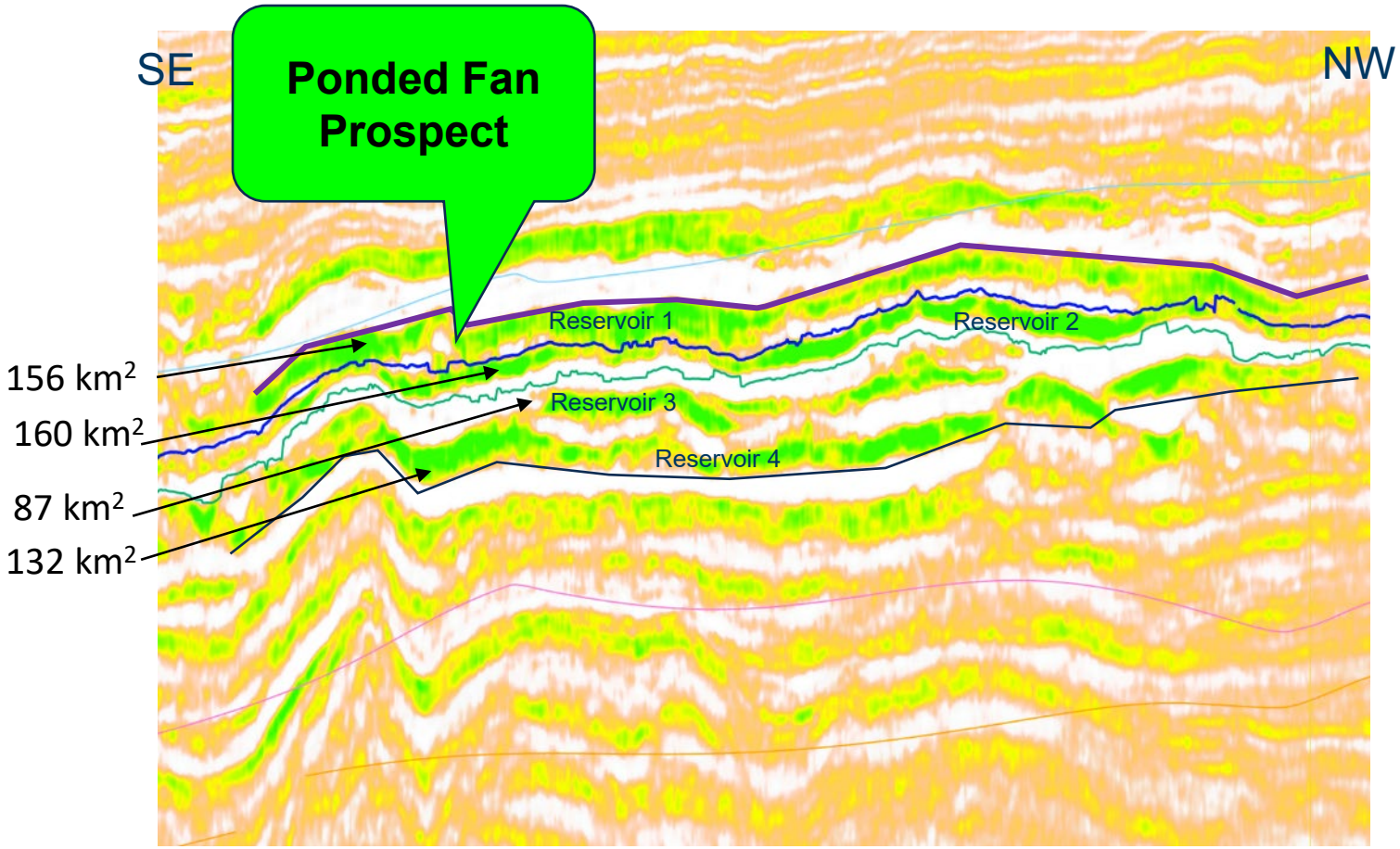


Partnership Opportunities – Prospectivity

“Vega Prospect” – Fluid anomaly





Green colours – good chance of hydrocarbons
Yellow colour – water bearing sands

green – distinctive anomaly on intercept/gradient cross-plot

Partnership Opportunities – Undrilled Prospects

Conclusion

Proven Working Petroleum System

Extensive Data Coverage

Competitive Fiscal Regime

Favorable Legal Terms

Stable and Peaceful Political Environment

Data Purchase

- Technical Data is available to purchase from the Petroleum Directorate and its data brokerage partners TGS

- Further information is available on the Petroleum Directorate's websites at: www.pd.gov.sl

THANK YOU

Contact Us

www.pd.gov.sl