



# CAPITAL MARKETS DAY

London, United Kingdom

23 May 2013

## **IF YOU DISCOVER A FIRE**

1. Immediately operate the nearest fire alarm call point
2. Try to put out the fire if possible with the appliances provided but without taking personal risks

## **ON HEARING THE FIRE ALARM**

1. The alarm will sound for a short time and then go off. If it does not sound again, it was a practice or a false alarm
2. If the alarm sounds again and remains on, then evacuate as quickly and calmly as possible through the nearest fire exit
3. The duty manager or receptionist will call the fire brigade immediately
4. All persons who leave the building should report to a TGS representative
5. The assembly point is **COOPERS ROW**

## **PLEASE REMEMBER**

- Use the nearest available exit
- Do NOT use the lift
- Do NOT stop to collect personal belongings
- Do NOT re-enter the building until you are told it is safe to do so

# Forward-Looking Statements

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*All statements in this presentation other than statements of historical fact, are forward-looking statements, which are subject to a number of risks, uncertainties, and assumptions that are difficult to predict and are based upon assumptions as to future events that may not prove accurate. These factors include TGS' reliance on a cyclical industry and principal customers, TGS' ability to continue to expand markets for licensing of data, and TGS' ability to acquire and process data products at costs commensurate with profitability. Actual results may differ materially from those expected or projected in the forward-looking statements. TGS undertakes no responsibility or obligation to update or alter forward-looking statements for any reason.*

14:00 **The Leading Global Provider of Quality Geoscience Data**

*Robert Hobbs, CEO*

14:25 **Performing Through The Cycles**

*Kristian Johansen, CFO*

14:45 **Q&A**

15:00 **A Global Multi-client Business**

*Stein Ove Isaksen, SVP Eastern Hemisphere*

15:20 **Break**

15:40 **Delivering Quality to Customers**

*Rod Starr, SVP Western Hemisphere*

16:00 **Extending Quality to Onshore**

*Wayne Millice, VP US Onshore Multi-client Data*  
*Brad Torry, Director of Geosciences, Western Hemisphere*

16:20 **Q&A**

16:30 **Why are Explorers Hooked on Seismic?**

*David Bamford, Guest Speaker*

16:50 **Closing Remarks: A Sustainable Business**

*Robert Hobbs, CEO*

17:00 **Informal Drinks with Management**



# The Leading Global Provider of Quality Geoscience Data

Robert Hobbs, CEO

# Leading Global Provider of Quality Geoscience Data

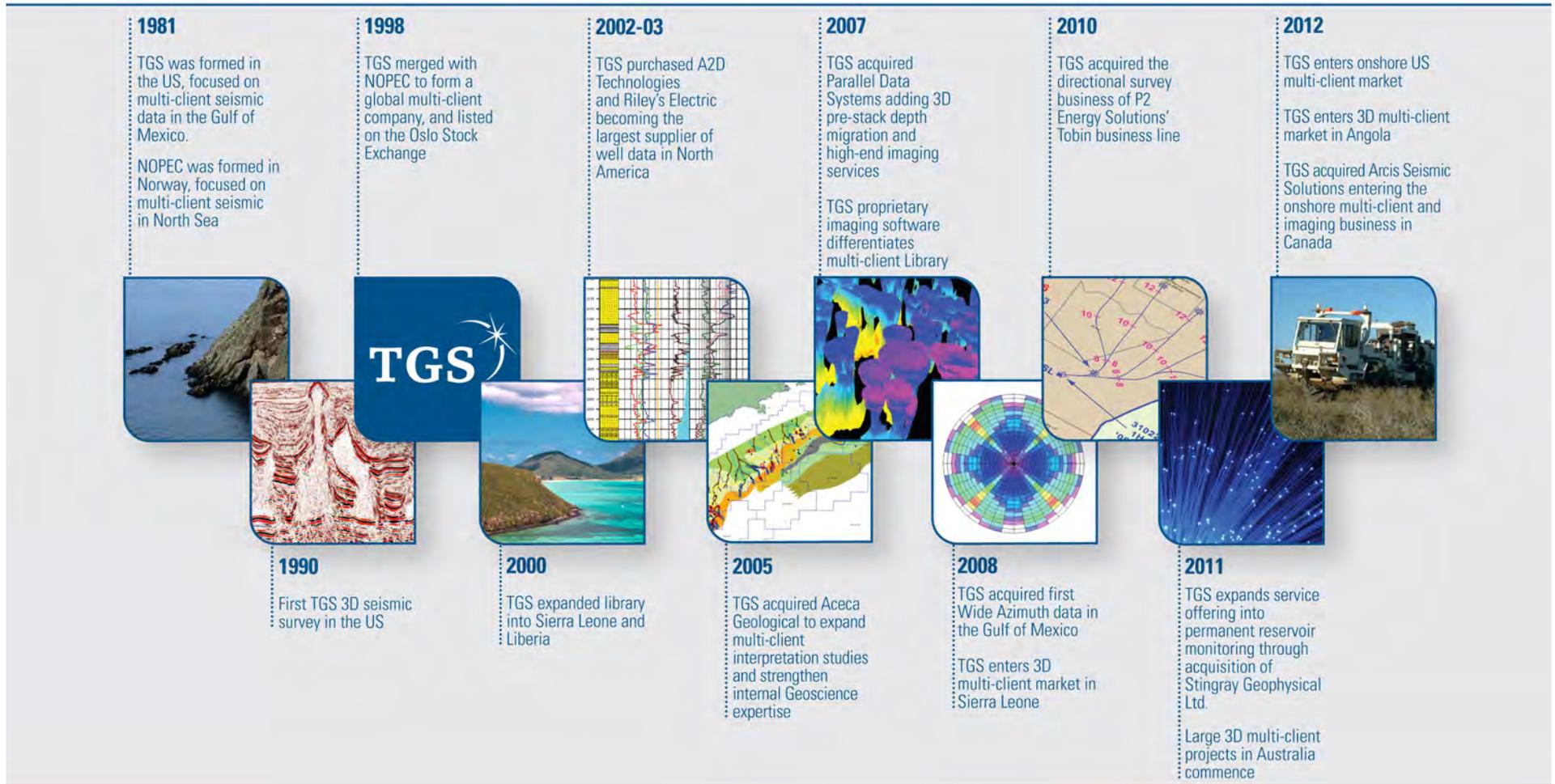


- Leading provider of multi-client seismic data and related geoscientific products to the oil and gas industry
- Main offices: Houston and Oslo  
Regional offices: London, Perth, Calgary, Singapore and Rio de Janeiro
- Fundamental objectives
  - Unmatched quality and service
  - Growth for stakeholders
- Approximately 850 employees
- Traded on Oslo Stock Exchange, in OBX Index (25 most liquid shares at the OSE)
- Market Cap: ~\$4 billion

## TGS Main Offices



# Company Milestones



# Multi-client Data Model Explained



## Geophysical services business



Answer customer need through tendering (client-driven)

Client funds project

Client owns data

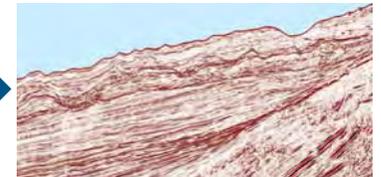
## Multi-client data business

Identify project opportunity (TGS collaboration with client)

Secure customer commitment (pre-funding)

TGS invests in and controls project

Licenses data to multiple clients



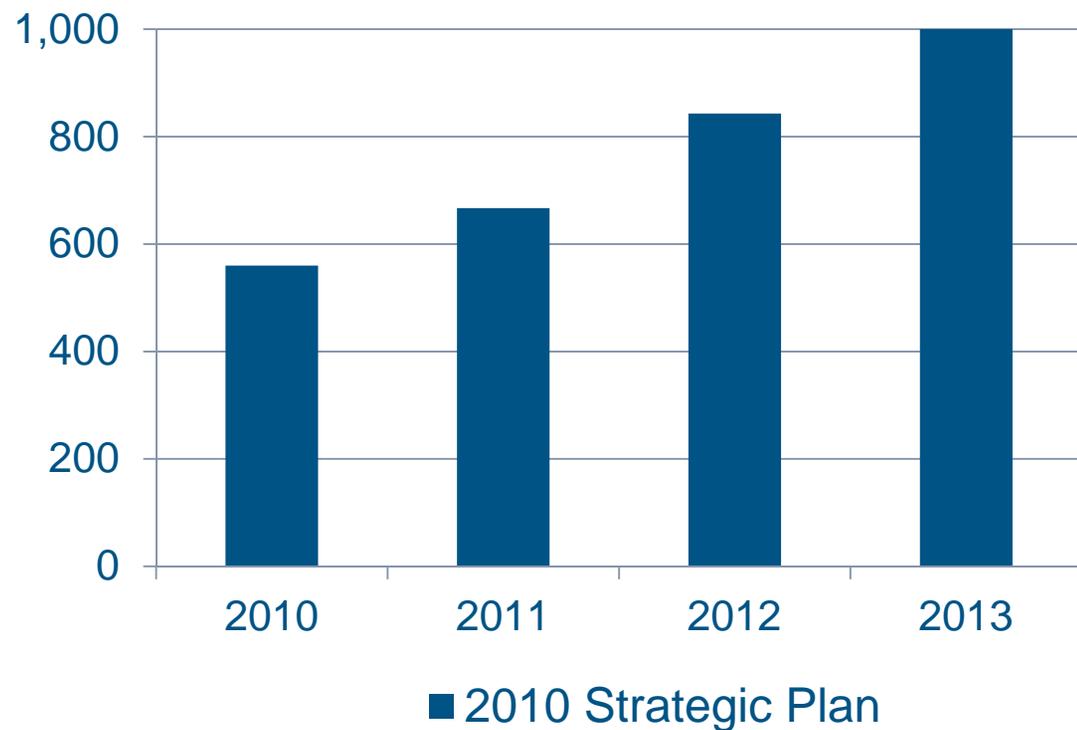
- Unique high-quality data in the right place at the right time
- Customers access data at a reduced cost
- Select appropriate technology to address client needs

## 2010 Strategic Plan

### Results:

- Geographic expansion
- US Onshore
- New products
- M&A
- Build organization
- Leverage existing library

## Revenue Growth (MUSD)



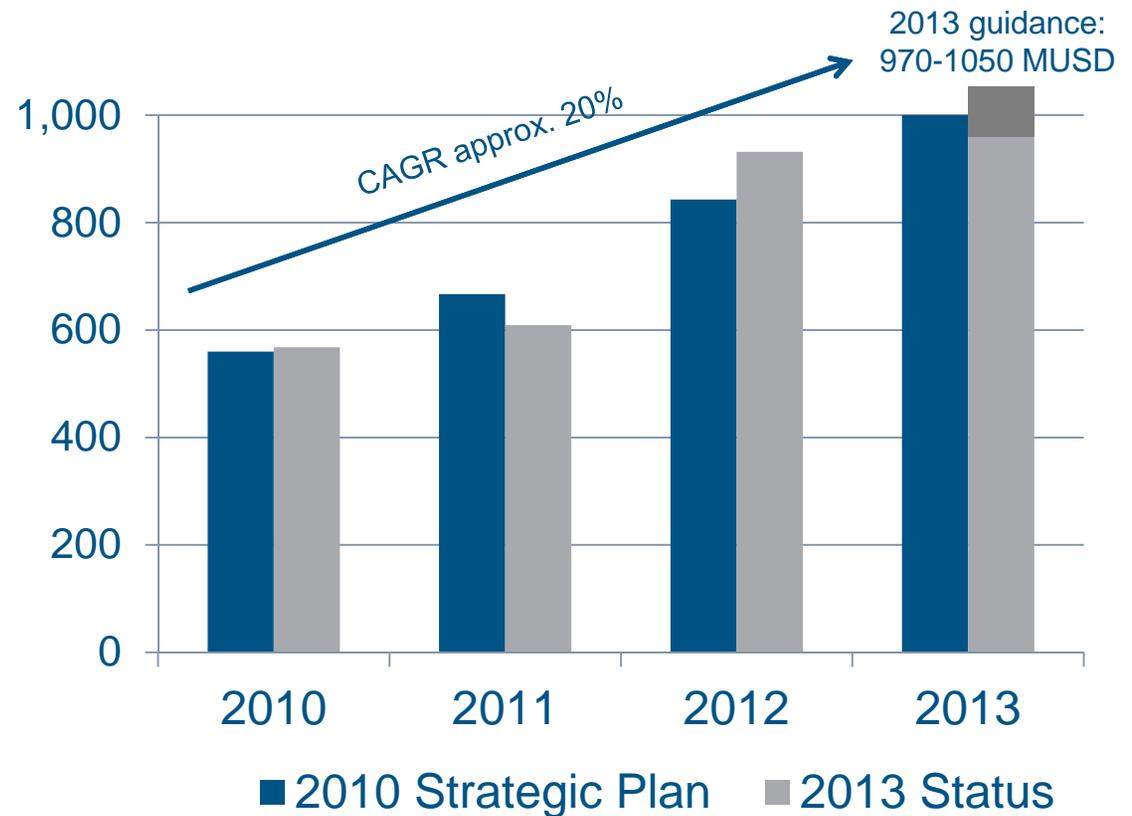
# 2013 Status versus 2010 Strategic Plan



## 2010 Strategic Plan Results:

- Geographic expansion
- US Onshore
- New products
- M&A
- Build organization
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## Revenue Growth (MUSD)



# Highlights from TGS 2013 – 2015 Strategic Plan



## Capital allocation

- Flexible dividend policy which allows increased investments in combination with shareholder friendly capital allocation policy
- Take advantage of strong balance sheet to increase sales

## Geographic expansion

- Build a 2D and 3D portfolio that combines project variability in terms of risk and maturity with prefunding
- Establish a structured approach to nurture government relationships in frontier areas. Consider partnering in areas where TGS does not have established relationships

## New products and services

- Further efforts to be taken to prove technology readiness level within PRM
- Evaluate new product offerings that would leverage TGS strengths
- Carefully monitor new technology offerings that can be applied to the existing library

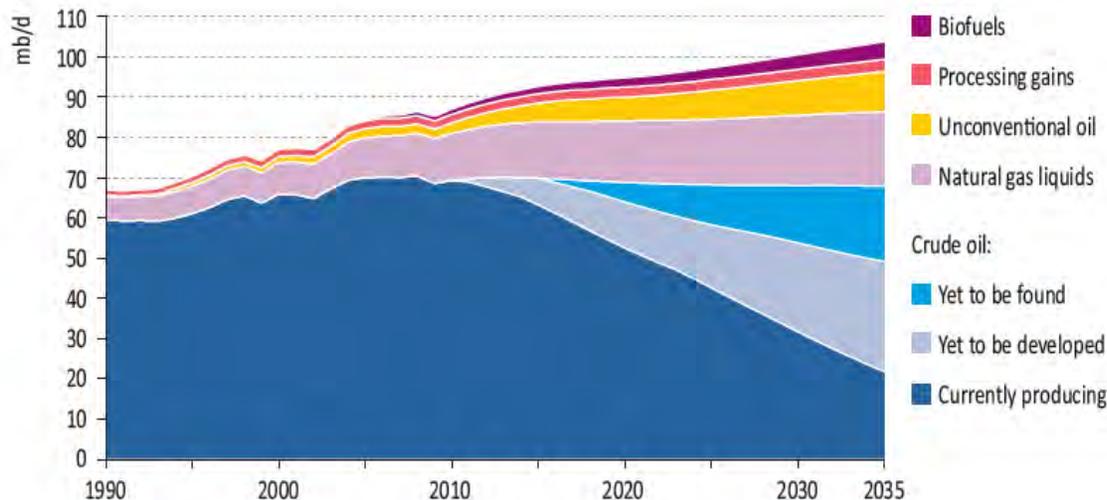
## M&A

- Multi-client seismic is the "sweet-spot" of the oil services industry with strong growth and good margins – acquisition targets should be mainly within our core business
- Bolt on acquisitions to expand and enhance data processing and GPS technical capabilities and product offering

## Technology development

- Continued development of new and improved processing technologies within TGS will allow us freedom to choose vessel providers on all surveys.
- Opportunistic approach to test new technologies where TGS' core competence can be utilized

## World Liquid Fuel Supply



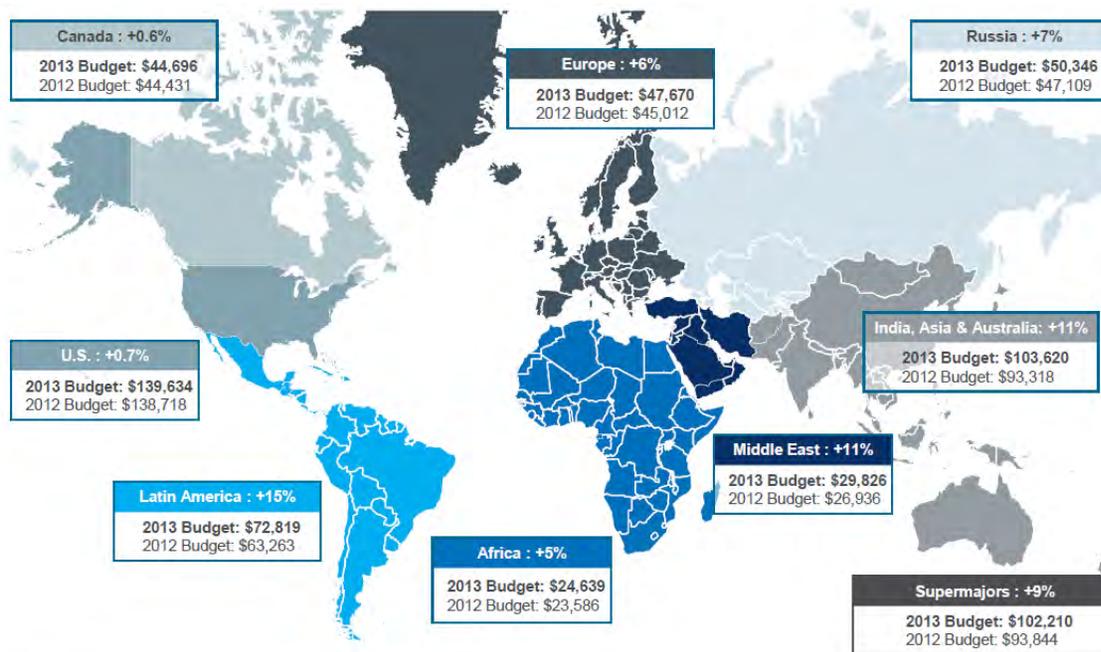
Source: IEA World Energy Outlook 2011

- Oil and gas reserves continue to decline
- More oil produced from existing reserves than we are discovering
- Political instability and closed markets reduces available acreage in known oil producing areas, putting more pressure on exploring new frontiers offshore and onshore

**Increasing investments are required just to maintain reserve replacement**

# E&P Spending Increase of 7% Expected For 2013

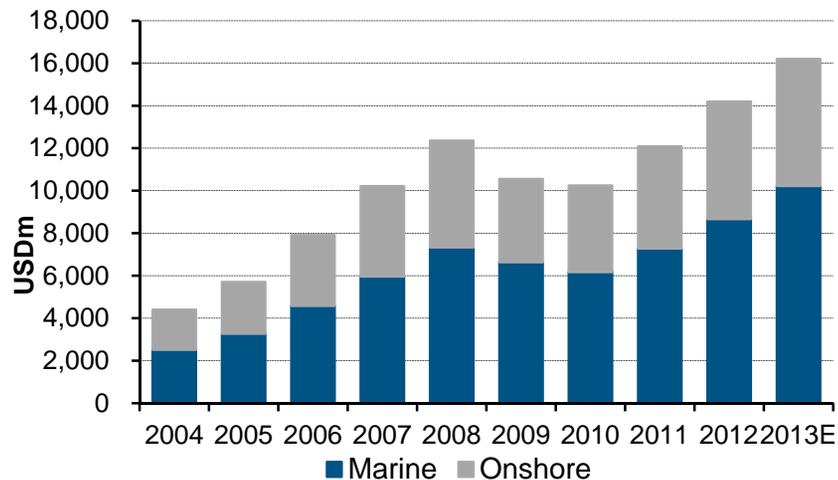
## Barclays expect 2013 global E&P spending to surpass 640 BUSD



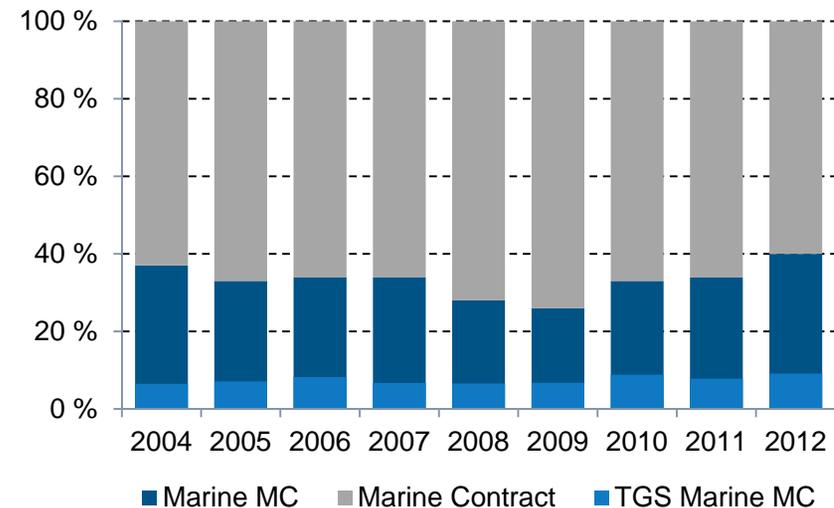
Note: \$ in millions  
Source: Company data and Barclays Research

- More than 300 oil and gas companies worldwide participated in the Barclays Capital survey about their spending intentions for 2013
- According to the Barclays Capital survey, global E&P spending in 2013 is expected to increase 7% to 644 BUSD, versus 604 BUSD in 2012
- Acceleration expected to be led by increased expenditures internationally (up 9%)
- Companies are on average basing 2013 capital spending budgets on an average oil price of \$85 WTI and \$98 Brent

## Seismic spending steadily increasing...



## Multi-client outgrowing contract



## TGS available market growing:

- Strong growth in seismic spending both marine and onshore
- Total seismic revenues expected to reach USD 16 bn in 2013 according to SEB research
- Multi-client driving growth – represented 40% of total marine seismic revenues in 2012

Source: SEB, ABGSC, TGS

# Business Update

EUR



- Application of modern seismic technology aids recent discoveries in mature North Sea market
- Developing a dominant position in Barents Sea
- Potential uplifts expected following 22<sup>nd</sup> Norwegian License round awards
- New investments executed in preparation for 2014 license rounds

NSA



- BOEM 5 year plan 2012-2017 provides visibility of GOM lease sales
- 2013 GOM Central Lease Sale had good alignment between areas of interest and TGS data
- Technology developments generate new opportunities in mature areas
- 2013 Brazil license rounds fuel further industry interest
- Exciting opportunities in Latin America, Arctic and Eastern Canada

AMEAP



- Strong industry interest in the West African transform margin with proven potential
- South Atlantic pre-salt plays in Africa could prove potential similar to Brazil
- Increasing industry interest in Australia and legal framework facilitates new multi-client projects

# TGS Announces Strategic Partnerships



- Three year agreement with BGP to jointly acquire, process and market 2D and 3D multi-client seismic data offshore Madagascar and East Africa
- Leverage respective strengths to build a strong portfolio of new multi-client projects in highly prospective region



- Cooperation agreement signed with EMGS to develop joint multi-client projects in defined areas in NW Europe
- TGS gains access to 2D/3D CSEM data to design and acquire new 3D seismic projects, while EMGS will be given access to TGS' 2D grid as the basis for planning new 3D CSEM projects

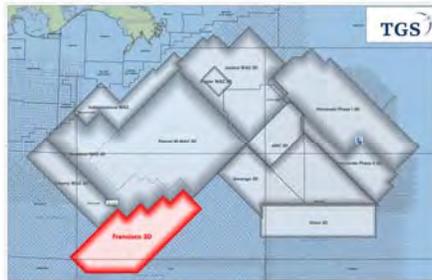


- LOI signed with Magseis covering exclusive multi-client partnership using new Ocean Bottom Seismic technology
- Joint projects being planned with promising customer feedback

# TGS Announces New Multi-client Surveys



## Francisco 3D



- 4,662 km<sup>2</sup> multi-client 3D survey in the Atwater Valley area of the central Gulf of Mexico
- First 3D survey in this frontier area of the Gulf of Mexico
- Broadband processing using Clari-Fi™ technology.

## Cheyenne 3D



- Cheyenne 3D land survey covering 1,689 km<sup>2</sup> in Cheyenne and Kiowa Counties in Colorado
- Area produces from several horizons in both the Mississippian and the Pennsylvanian petroleum systems
- Acquisition expected to commence during Q3 2013 with final data available to industry during Q2 2014.

## Denmark



- TGS returns to Denmark after 14 years
- 7,000 km multi-client 2D survey
- Broadband processing using Clari-Fi™
- Data will be available for the industry prior to the Danish 7th round which is planned to be announced in late 2013.

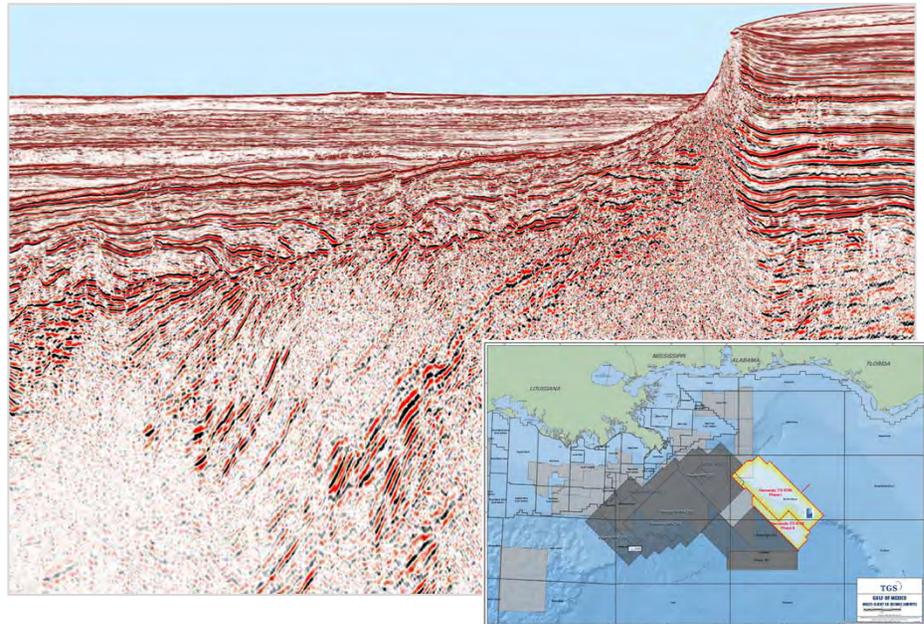
All of these surveys are supported by industry funding.

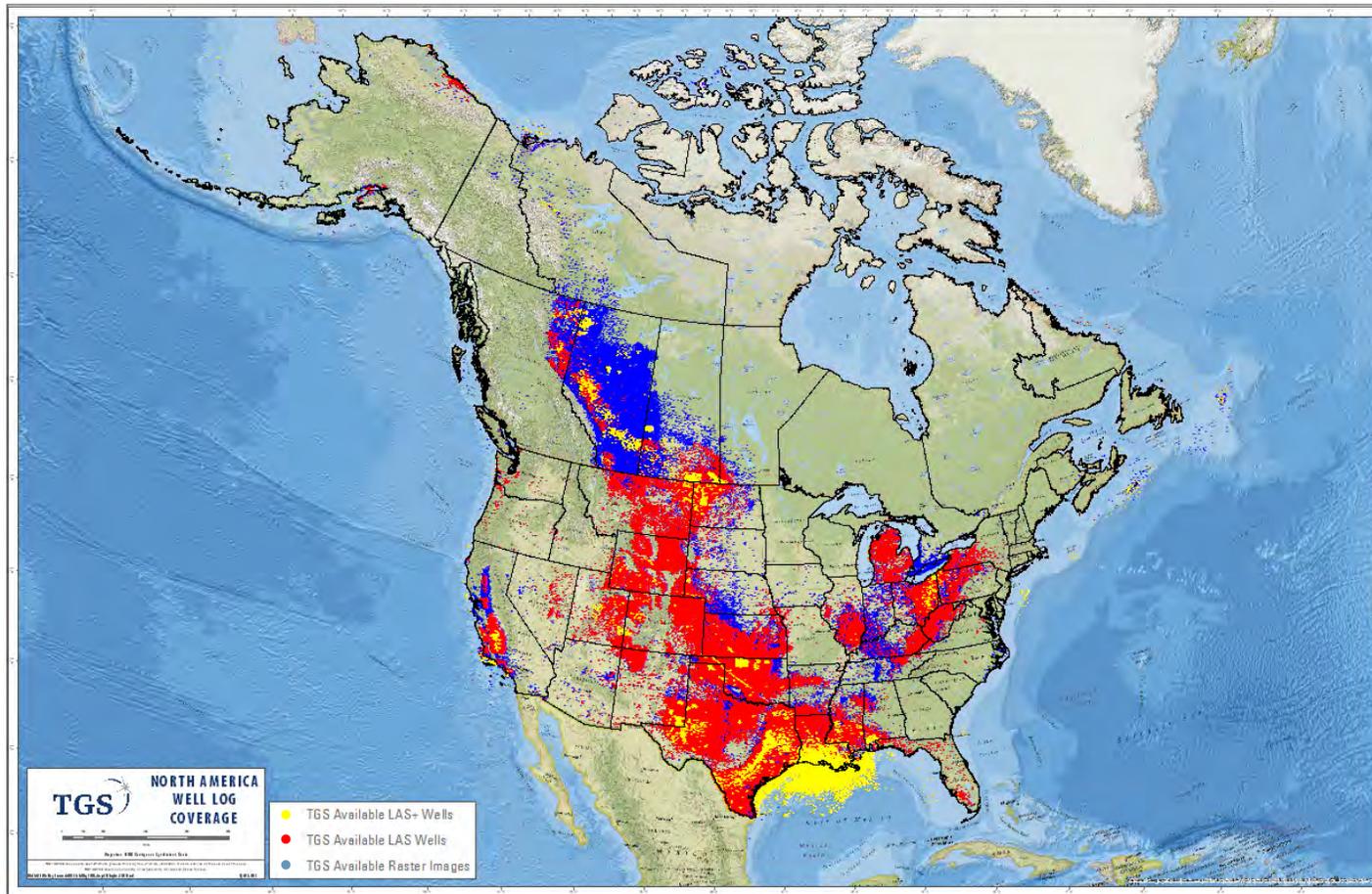
## Clari-Fi™

- Processing methodology that increases bandwidth and improves imaging
- May be applied to conventionally acquired pre- or post-stack data
- Addresses ghost and filtering effects

## Gulf of Mexico Hernando

- 11,400 km<sup>2</sup> of 3D data reprocessed using pre-stack depth TTI anisotropic RTM, Kirchhoff and Clari-Fi™
- Benefits include improved subsalt imaging and imaging below the karst layer with better fault definition
- Reprocessing of other parts of the Gulf of Mexico library (eMC project) underway



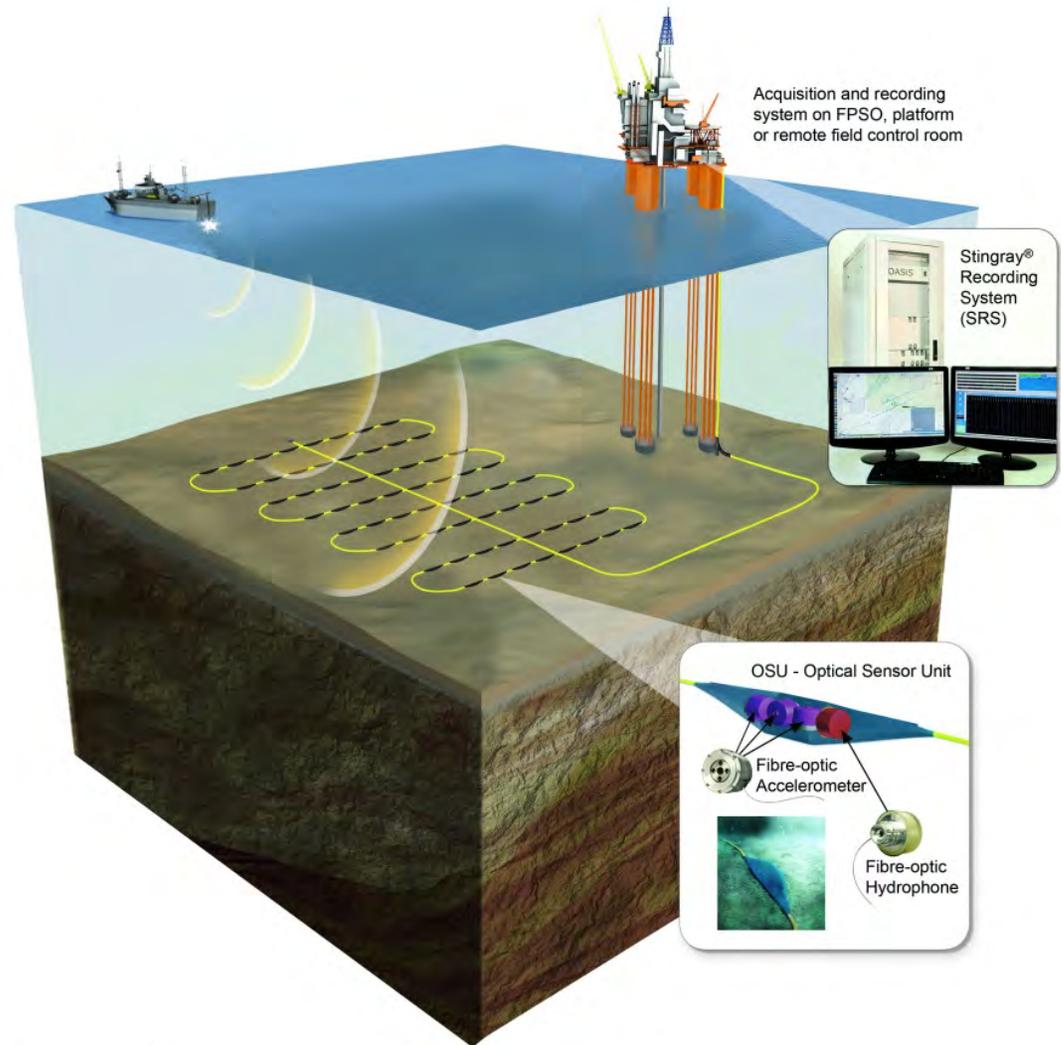


- TGS owns and manages the largest well log database in North America
- Strong synergies with multi-client seismic data business

# Reservoir Solutions



- Value proposition for permanent reservoir monitoring remains strong
- High level of interest from customers
- Expect to see more integrated contracts (provision of data, not just equipment)



## Asset light business model

- Flexibility
- Investment decisions not driven by vessel utilization

## Quality

- Financial position, balance sheet
- People and culture
- Project development
- Customer service
- Sales and marketing capabilities
- Data processing
- Geoscience

## Global

- Data library
- Geographic knowledge
- Customer relationships
- Operations and project management
- Sales and marketing reach
- Leadership in mature basins
- Leadership in frontier basins



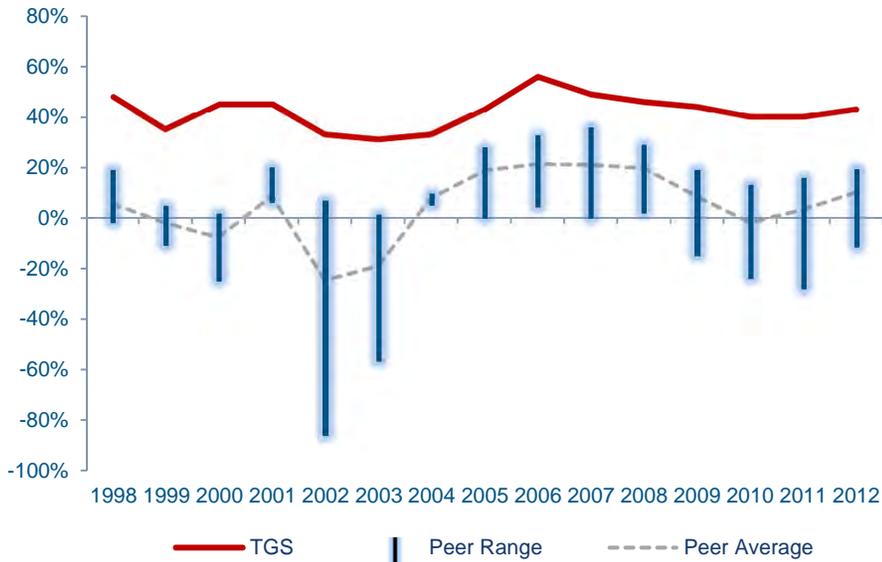
# Performing Through the Cycles

Kristian Johansen, CFO

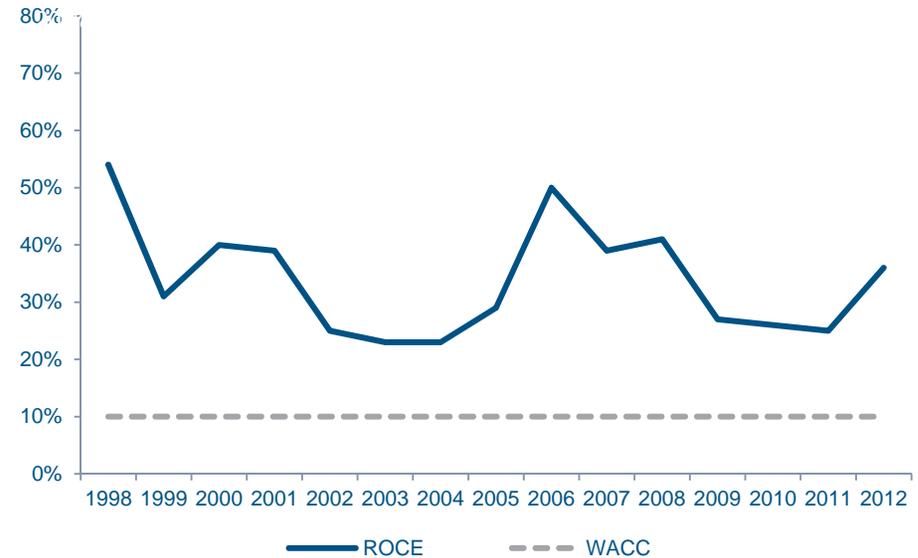
# TGS Performs in all Cycles



### EBIT margin vs. Seismic peers



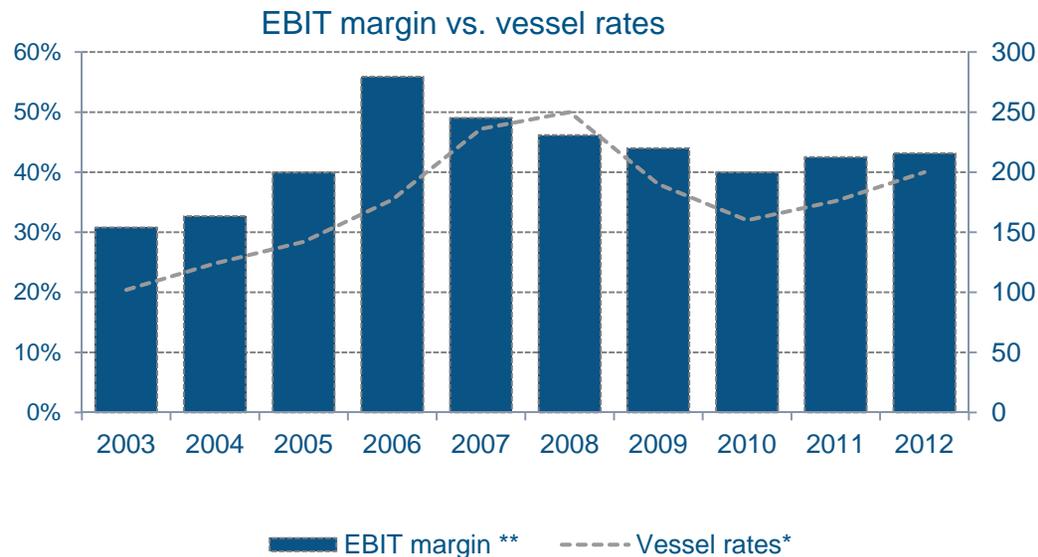
### Return on Capital Employed



- Average EBIT margin above 40% - Stable EBIT – performance through the cycles
- ROCE significantly above WACC – substantial value creation in any industry cycle

\*Peer group includes CGG, Fugro, Geokinetics, ION Geophysical, PGS, Western Geco, GGS  
Source Platou Markets and TGS

# Multi-client Model Yields Highest Returns at the Peak

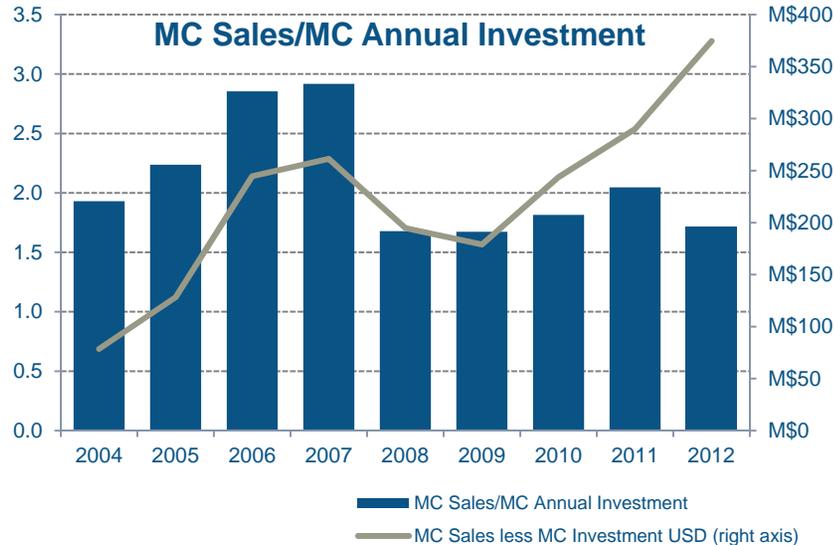


- Demand for data drives TGS performance
- TGS best at top of the cycles, but multi-client model also provides protection at the bottom of the cycle
- EBIT margin correlates strongly with oil price, E&P spending and vessel prices due to increased library sales

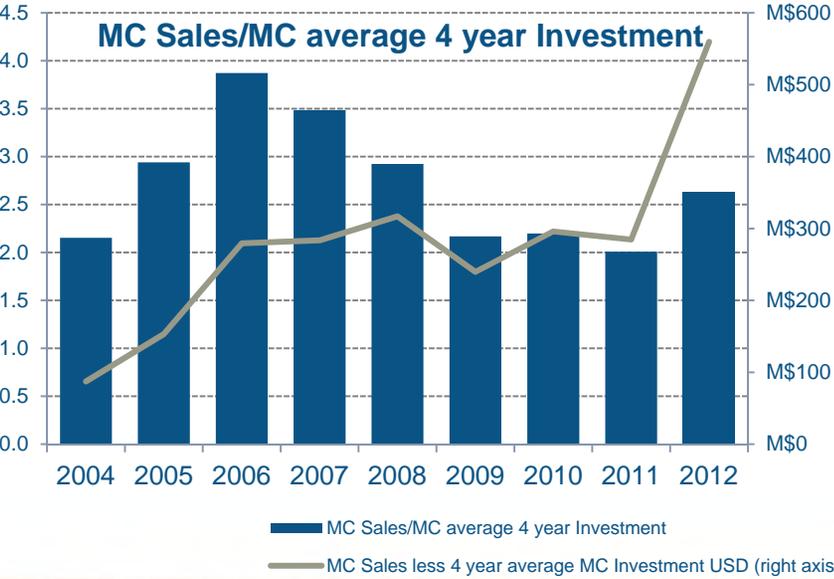
\* Average vessel rates per year for an 8 streamer 3D boat.  
Source: ODS Petrodata. (Note that rates may differ from actual rates paid by TGS).

\*\* TGS historical EBIT margins excluding one off items.

# Solid Sales to Investment Ratios and High Volume Growth

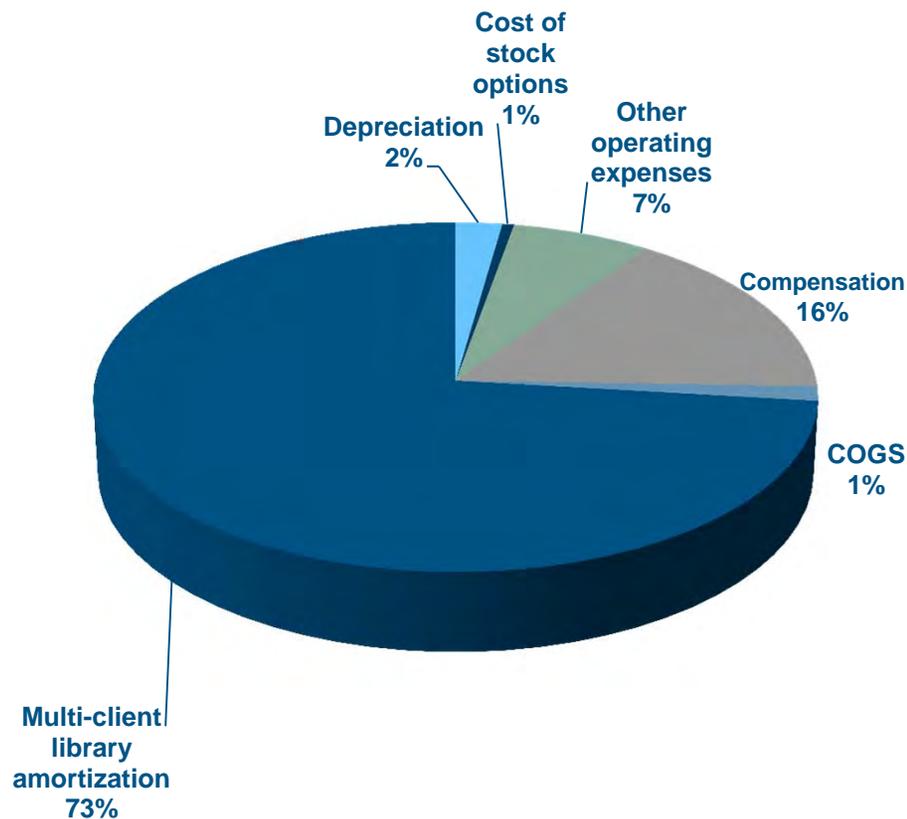


- TGS' average multi-client projects return 2-2.5 times cost
- Significant investment growth in recent years
  - Stable returns in %
  - Substantial increase in USD returns



# Flexible Cost Base With High Operational Gearing

## 2012 Breakdown



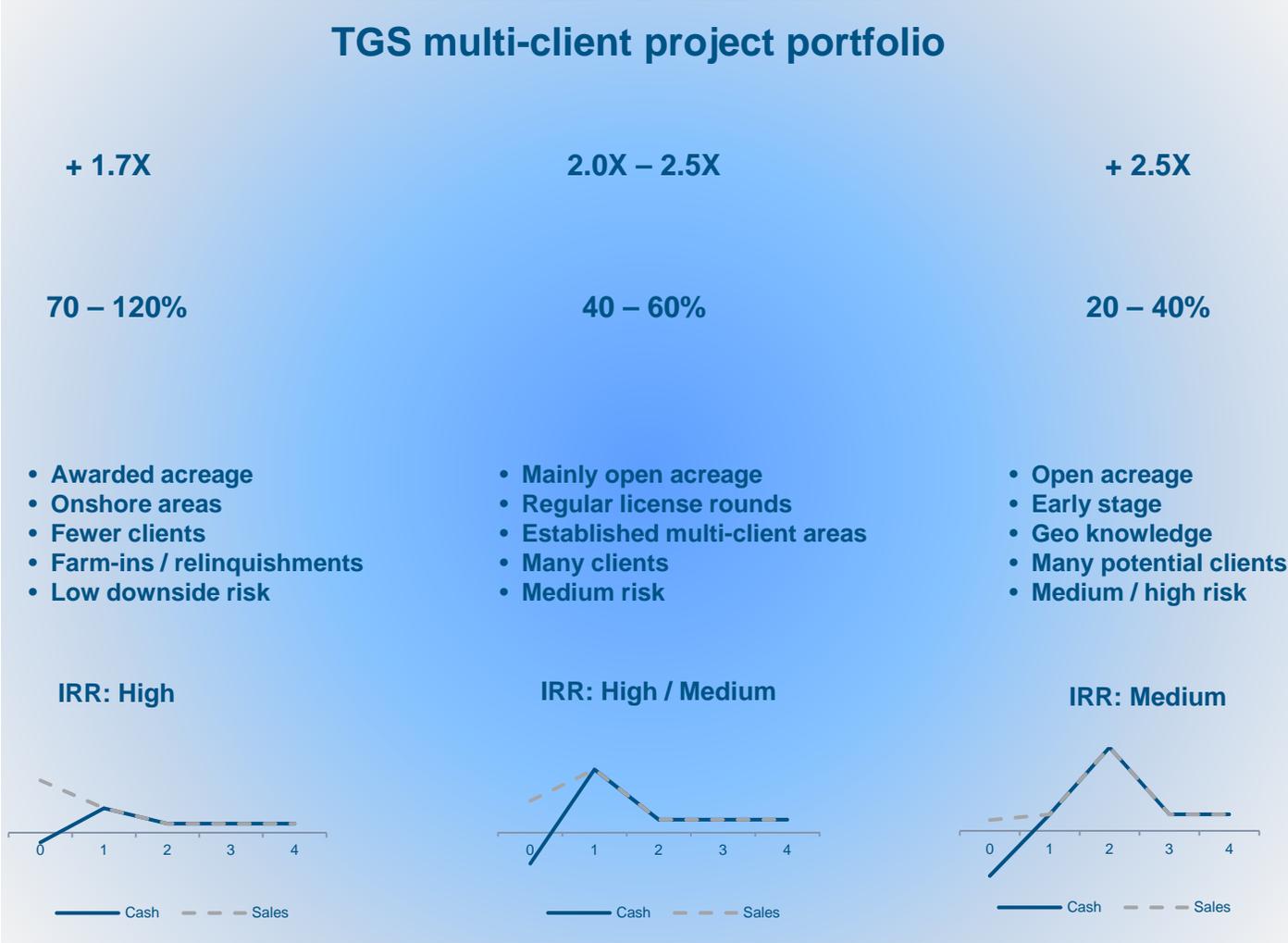
## Cost components

- **Cost of goods sold:**
  - *Direct cost related to proprietary contract projects*
- **Multi-client library amortization:**
  - *Fluctuates quarterly depending on the sales mix*
  - *Percentage tends to be lower when sales are increasing*
- **Compensation:**
  - *Fixed salaries, overtime, bonuses, SARs and taxes*
  - *In 2012 bonuses accounted for 38 % of compensation*
- **Cost of stock options:**
  - *Cost depending on outstanding options, share price, risk free rate and volatility*
- **Other operating expenses:**
  - *Third party services as auditors, consultants, lawyers. IT expenses, marketing cost and travelling*
- **Depreciation:**
  - *Depreciation and impairment of fixed and intangible assets*

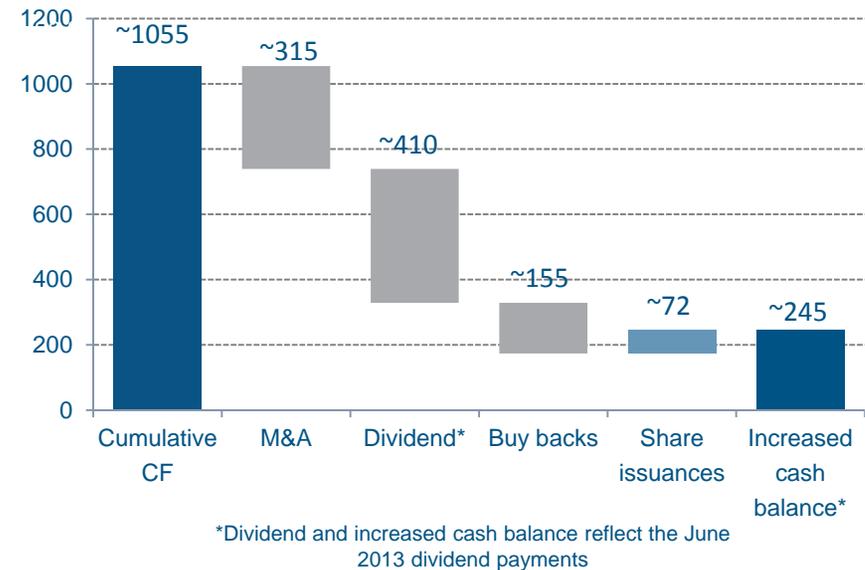
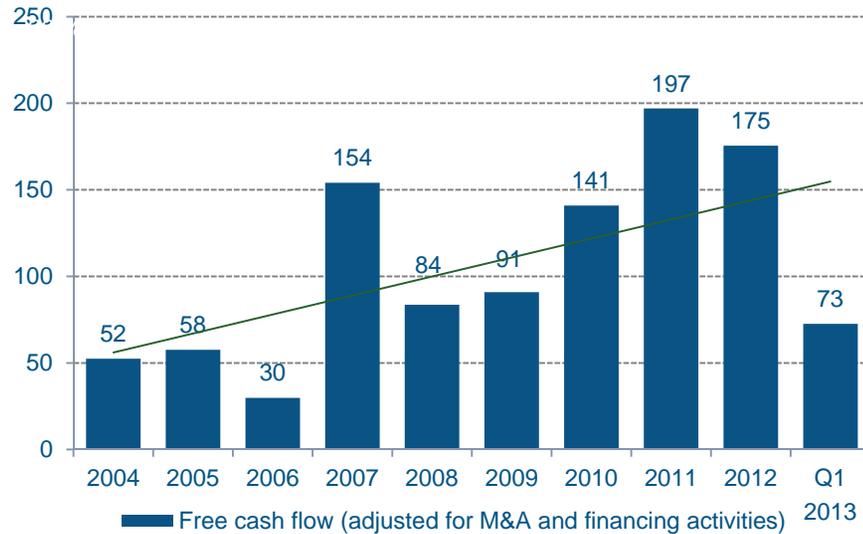
# Diversified Portfolio With Different Characteristics



- Return targets
- Prefunding requirements
- Project characteristics
- Illustrative IRR / cash profile



# 10 Year Cash Flow Development

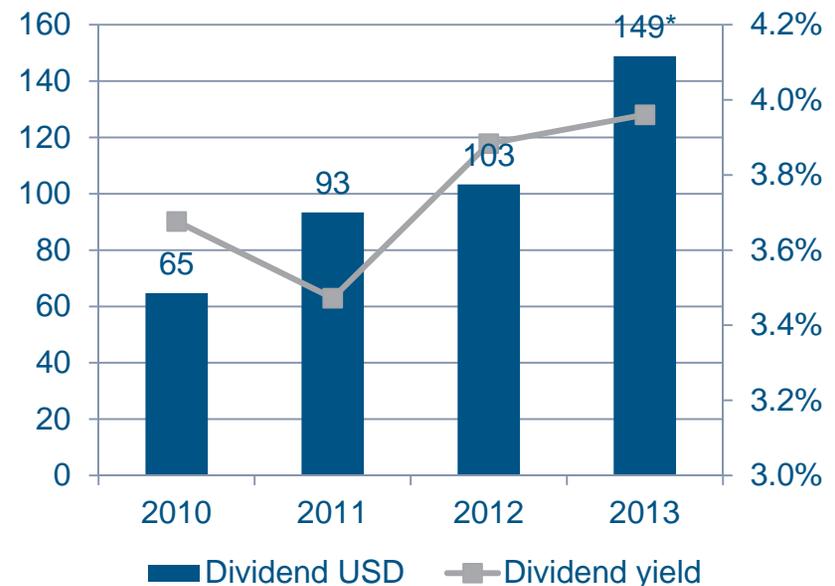


- Strong cash flow through the cycles with significant dividend capacity also when the cycle bottoms out
- Cumulative free cash flow of USD 1.1 billion from 2004 to Q1 2013
- Cash flow after multi-client investments should be invested in:
  - Dividend
  - M&A
  - Share buy backs

# Maintaining Dividend Capacity

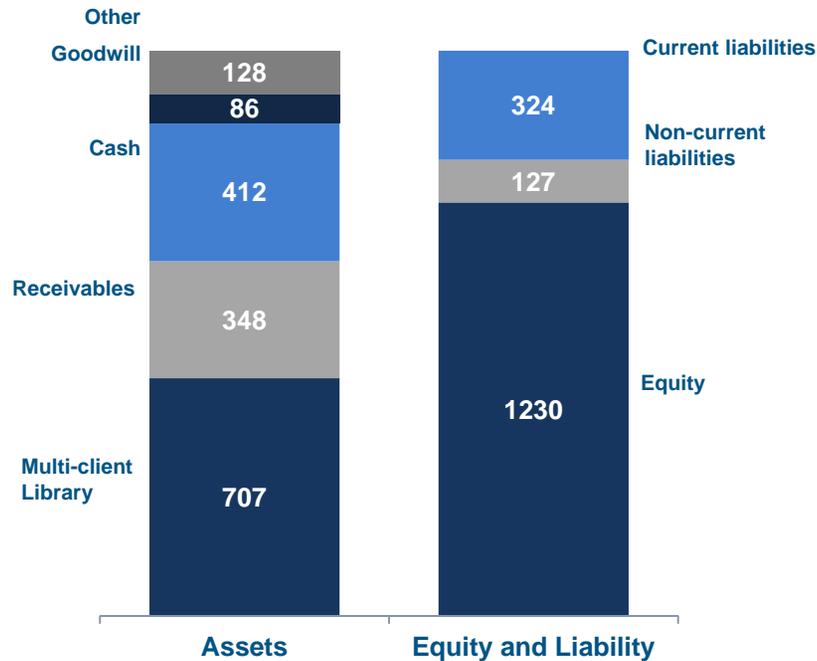


- Dividend yield of 3.5% to 4.0% during last 4 years
- TGS holds approximately 1.2 million treasury shares
  - ~1% of shares
  - AGM has authorized to buy back up to 10% of shares
- Buy backs may be considered to adjust capital structure



\* Proposed dividend NOK 8 per share  
Dividend yield calculated based on share price at day of announcement

# Strong Balance Sheet Backing TGS Strategy



- Cash balance per Q1 2013 represents 412 MUSD
- Proposed dividend of 149 MUSD in June 2013
- Strong balance sheet provides excellent opportunities to continue growth
  - M&A
  - Strong credit quality attracts prefunding
  - Flexibility

**No interest bearing debt and strong cash balance**

# How a Typical Multi-client Investment Works

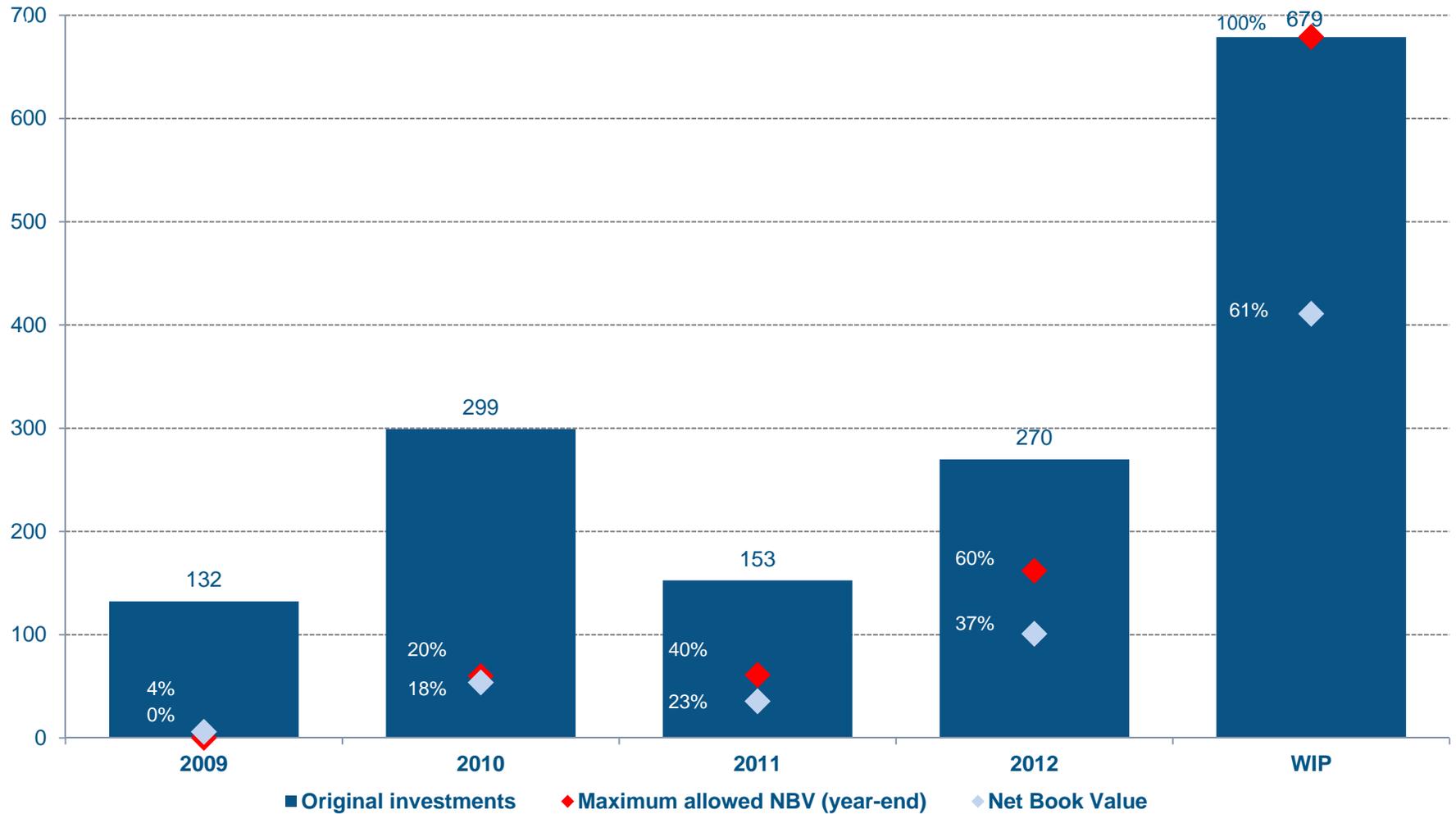


## Example x2.5 ROI Project with 50% pre-funding

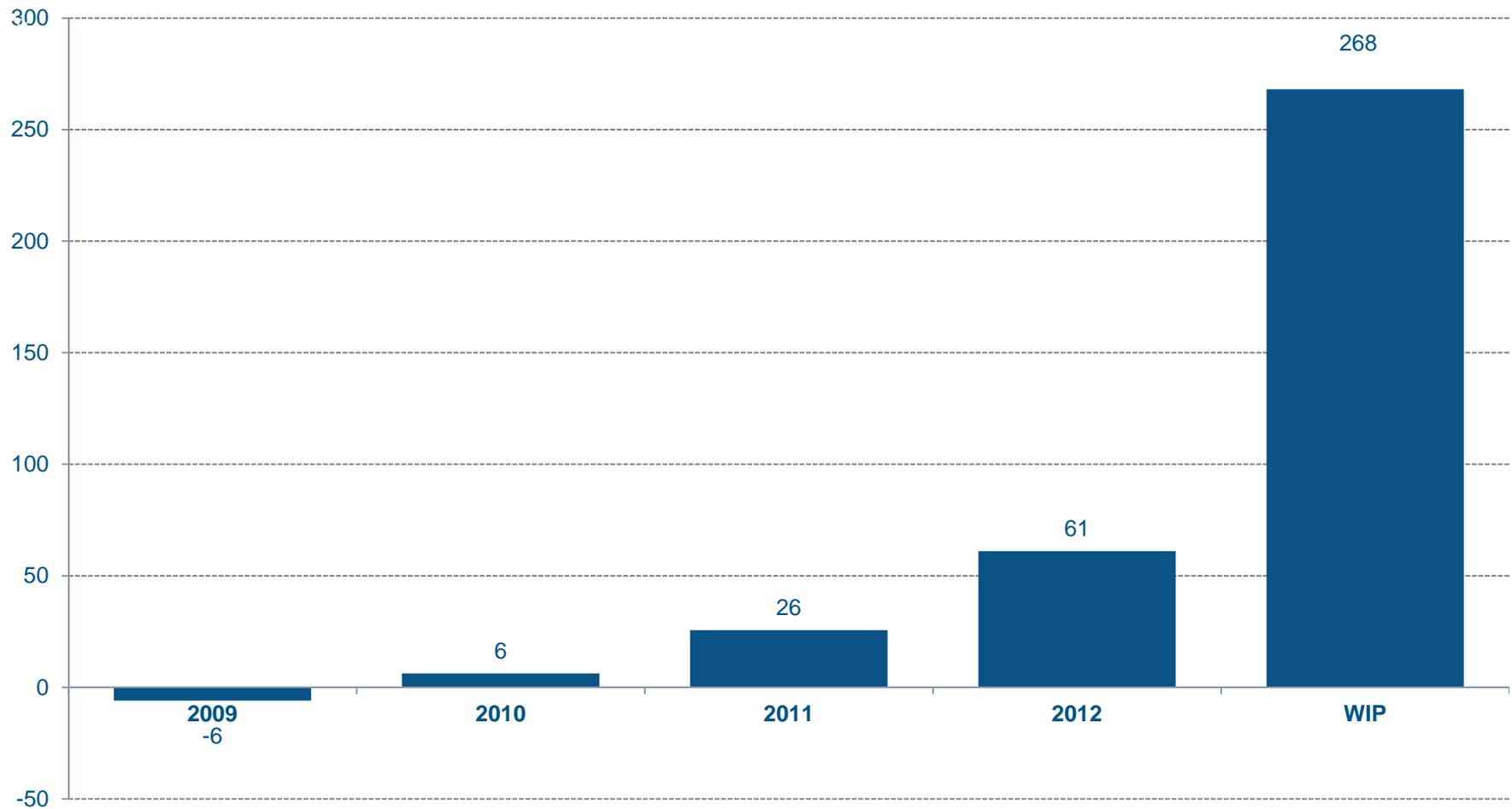
- Accounting standards recommend to match revenues and costs in time
- TGS capitalizes the direct costs of surveys as investments in the balance sheet and amortizes them over 5 years (including the first year – WIP) as a function of expected ratio sales/investment
- If sales are lower than expectations, a minimum amortization kicks in:
  - Maximum NBV one year after completion is 60%, then 40%, then 20%, then zero
  - At end of the fourth year after survey completion, each survey is fully amortized

Year	0	1	2	3	4
Investment	50	-	-	-	-
Pre-funding	25	-	-	-	-
Late Sales	-	50	20	20	10
Amortization	10	20	8	8	4
Amortization Rate	40%	40%	40%	40%	40%
Gross Profit	15	30	12	12	6
Remaining NBV %	80%	40%	24%	8%	0%
Max NBV Allowed	100%	60%	40%	20%	0%
Cash Flow	(25)	50	20	20	10
Cumulative Cash	(25)	25	45	65	75

# Investments per Vintage – Q1 2013

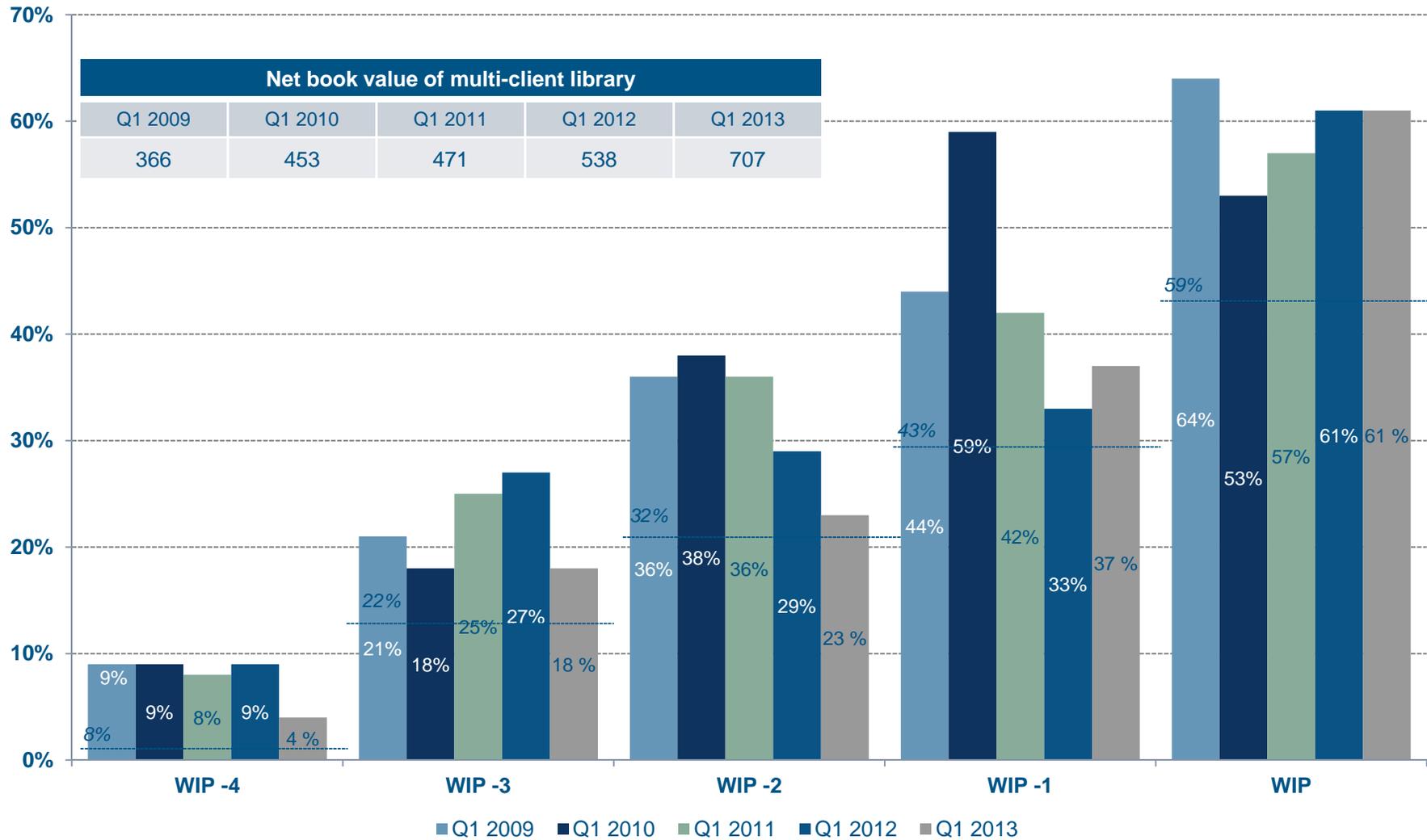


# Actual Amortization vs. Minimum Amortization Policy (USD) TGS



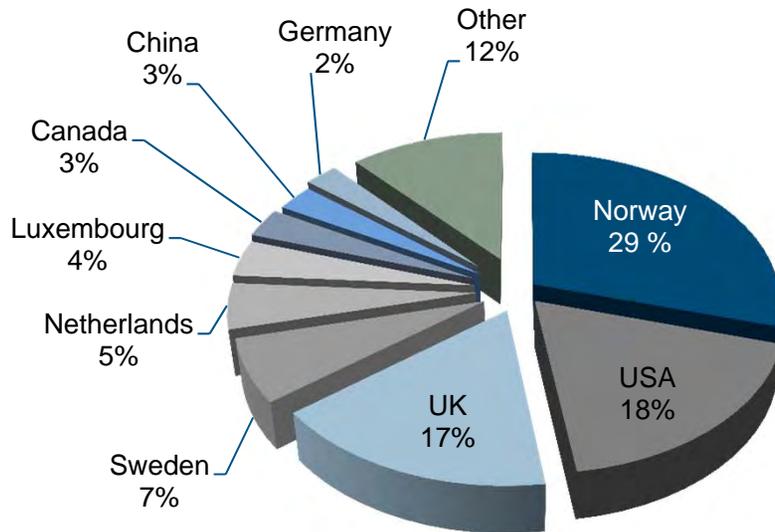
■ Actual amortization per vintage vs minimum amortization policy - Q1 2013

# Demonstrating Financial Health of Multi-client Library

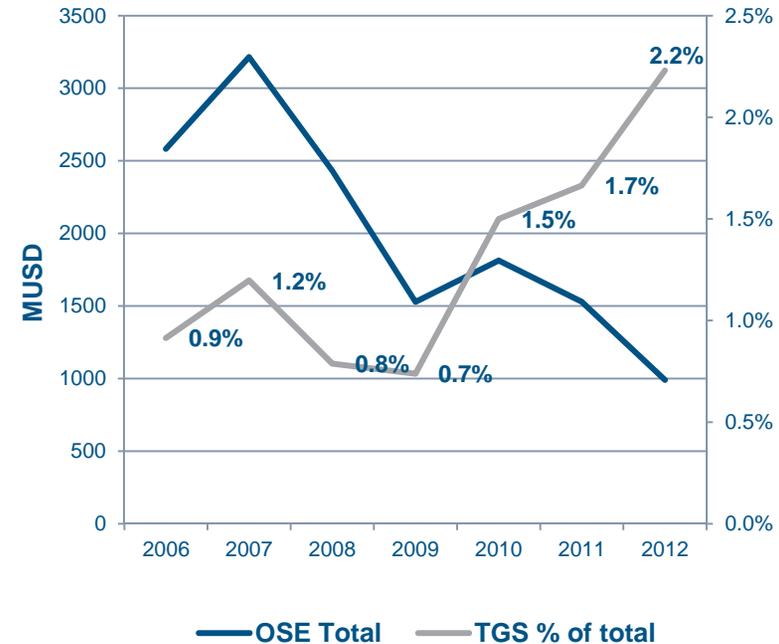


- Why does TGS perform better than peers in down-cycle
  - Low overheads with high percentage of variable pay
  - Spending flexibility
  - Countercyclical investments
  - Maintain quality
  - Clients still need seismic
  
- Why does TGS also perform in up-cycle
  - Increased Seismic Demand (offsets vessel price)
  - Vessel capacity planning
  - Library pricing power

## TGS Shareholder Distribution



## OSE Trading Statistics



- Sponsored American Depositary Receipt (ADR) program:
  - Implement in Q2 2013 subject to completion of the U.S. Securities and Exchange Commission filings
  - Expand visibility and investor base within the U.S. capital markets

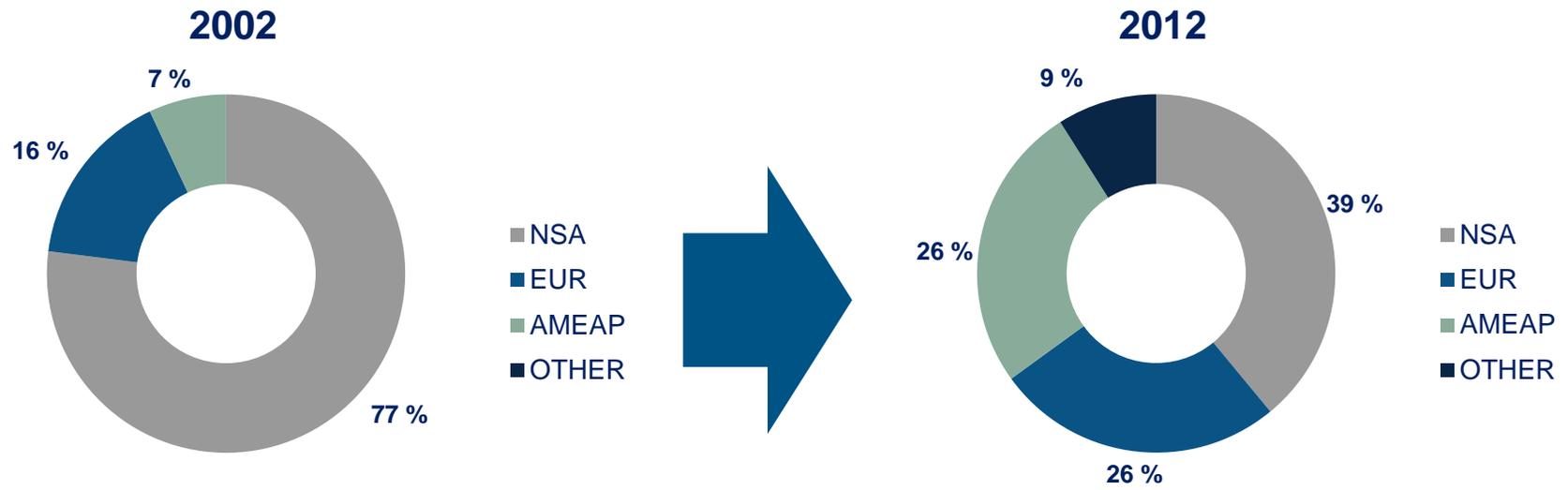
# Q&A



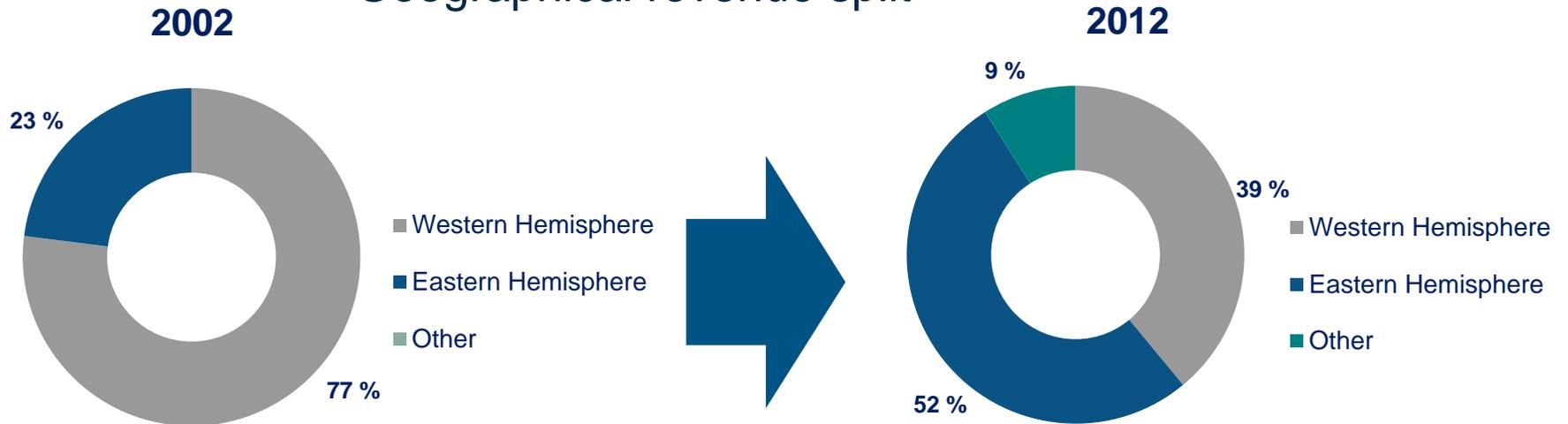
# A Global Multi-client Business

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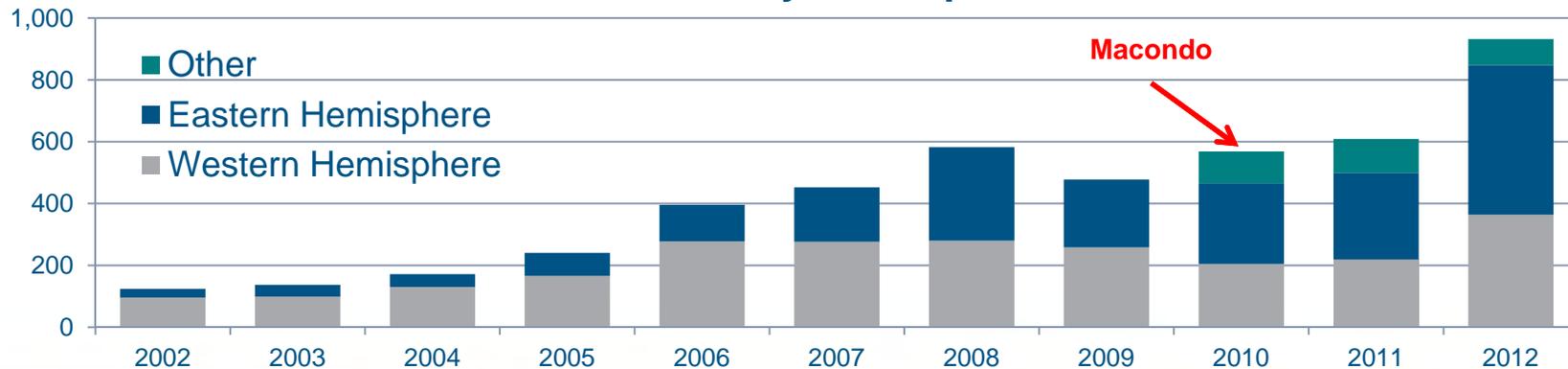
## Geographical revenue split



## Geographical revenue split



## Revenue diversity development

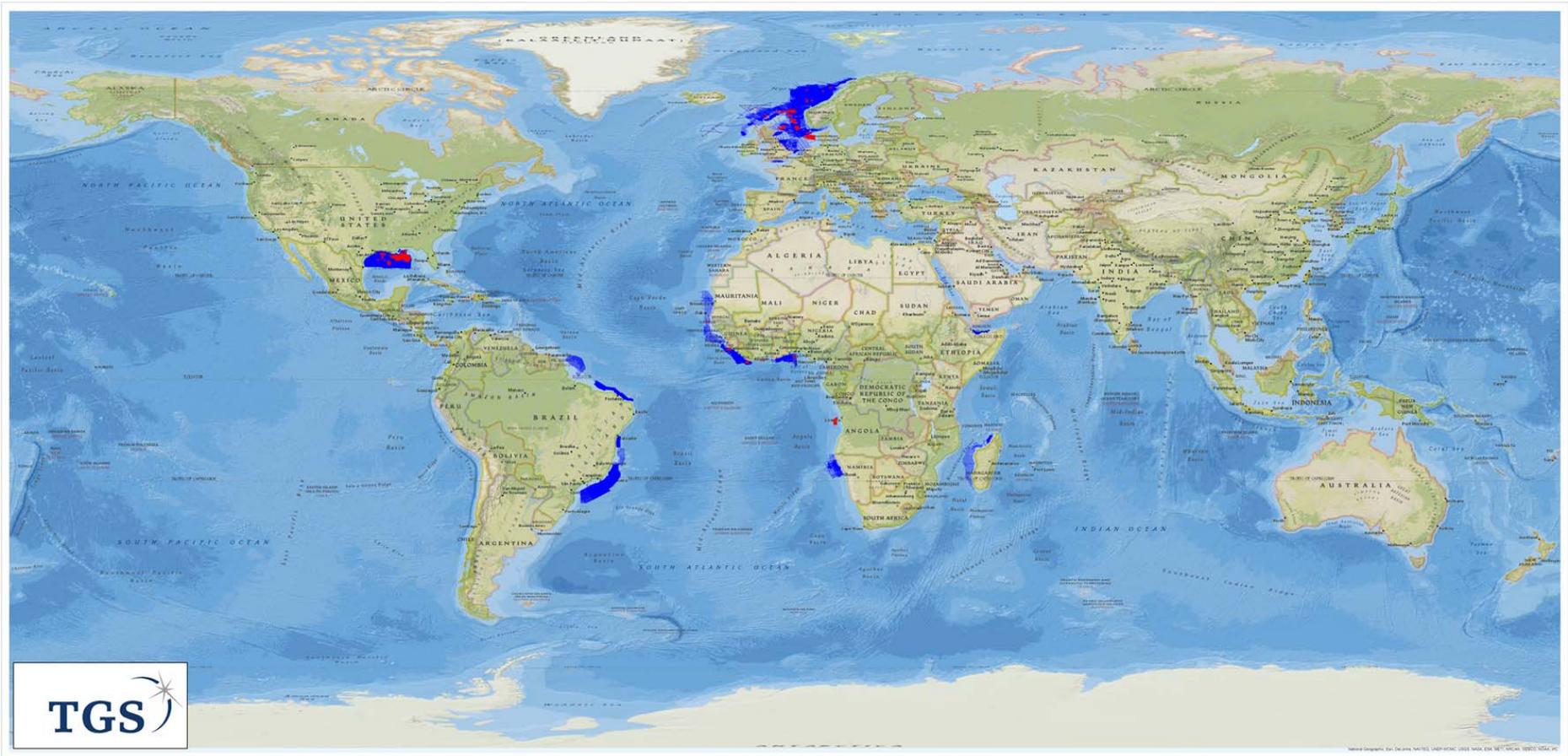




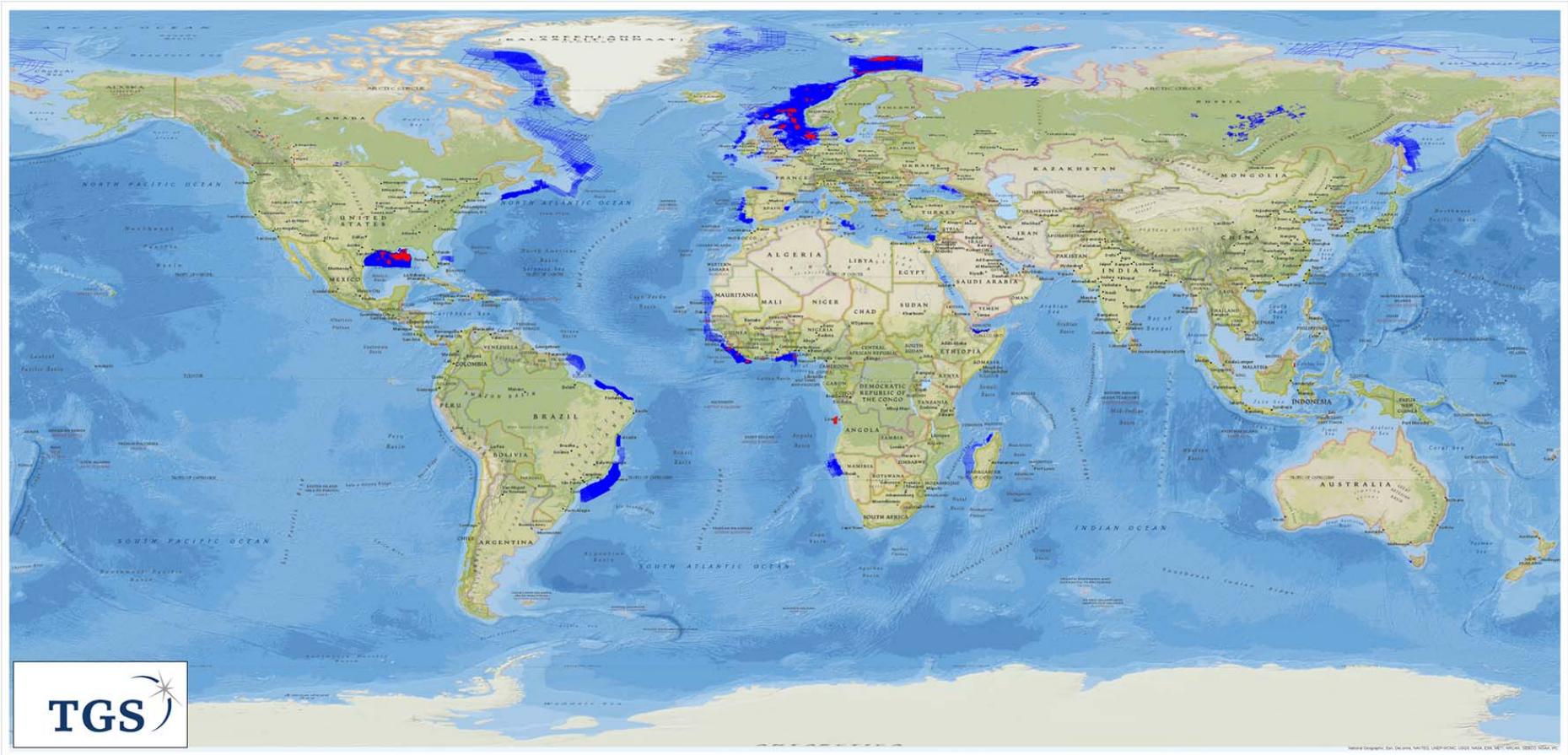
# A Global Data Library



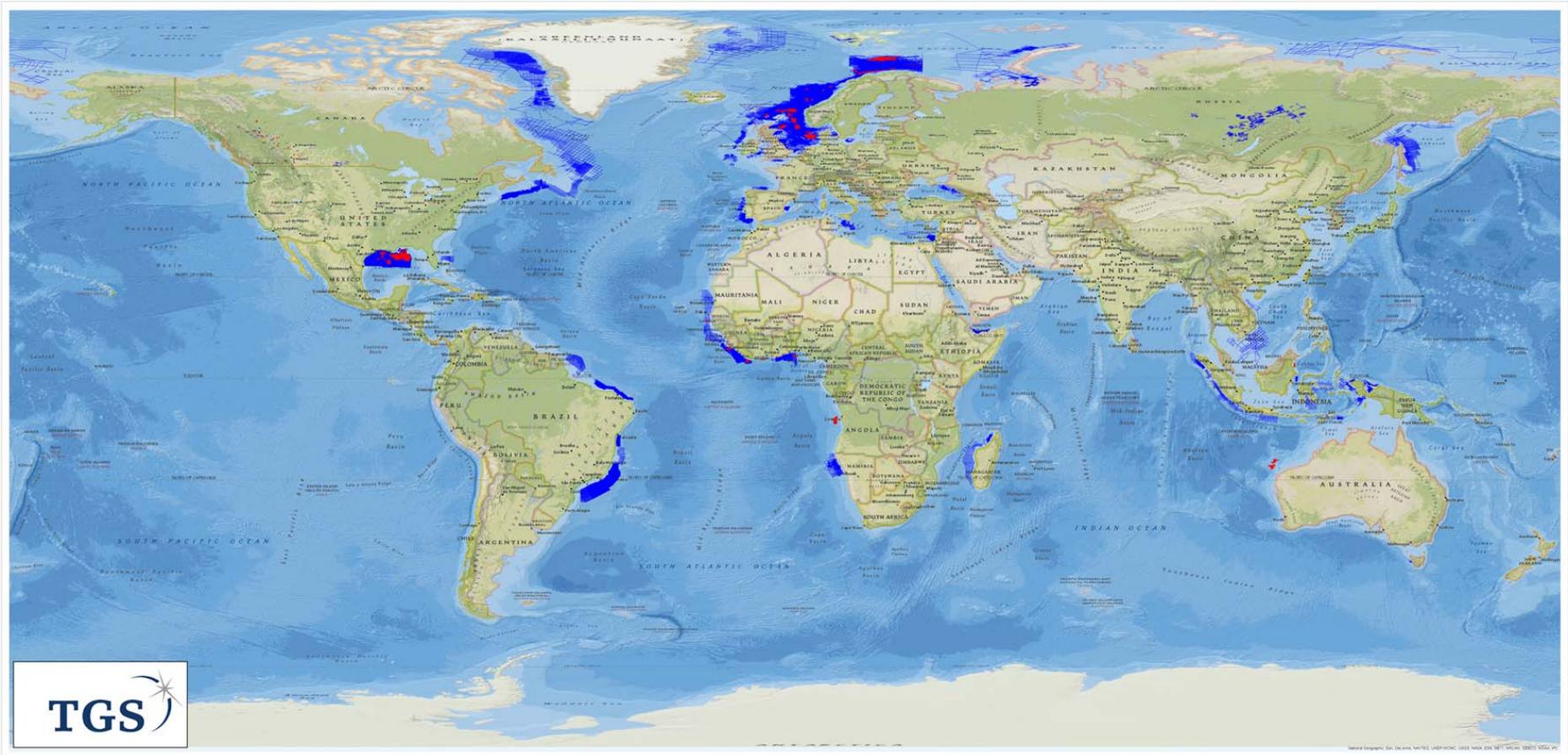
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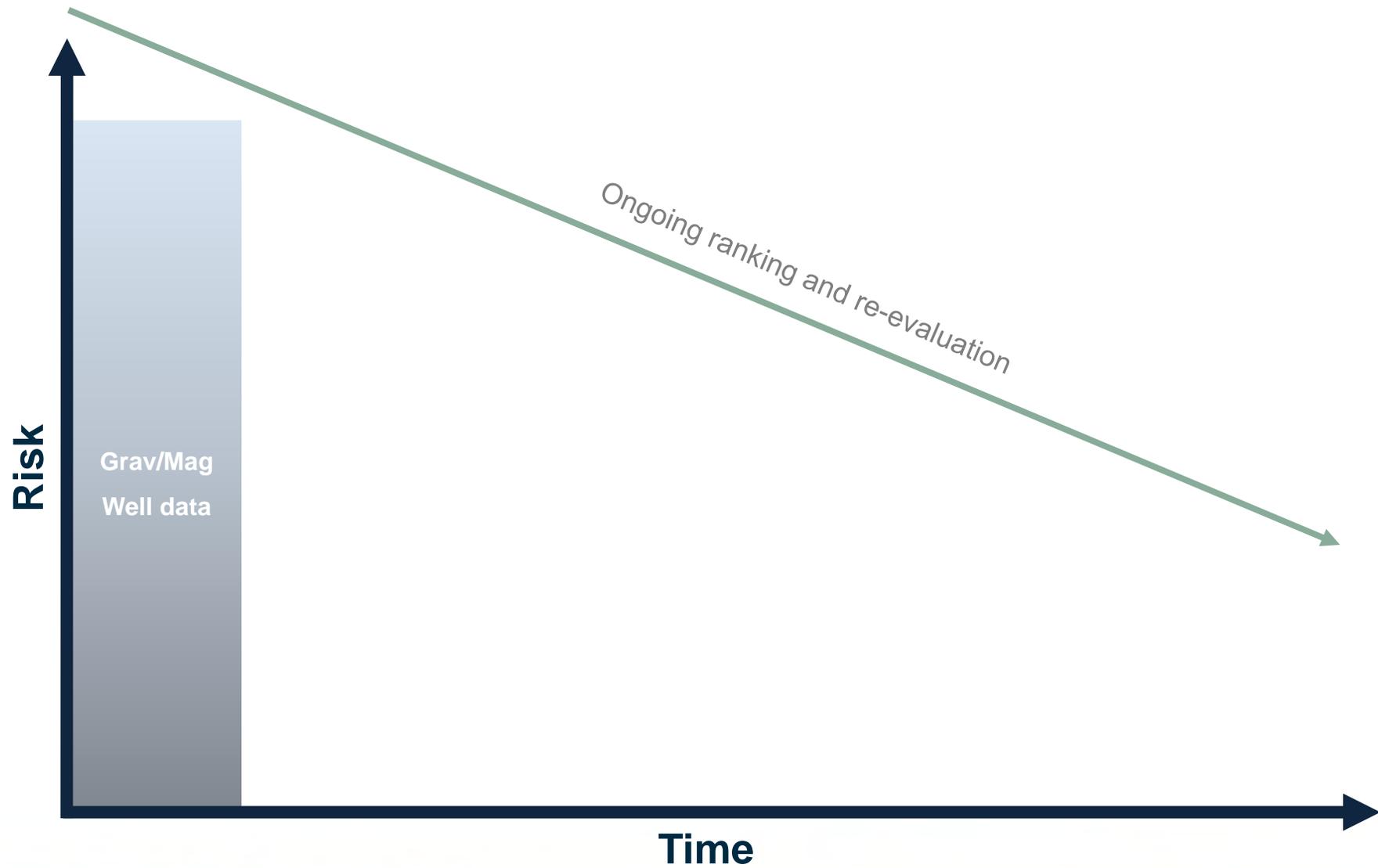


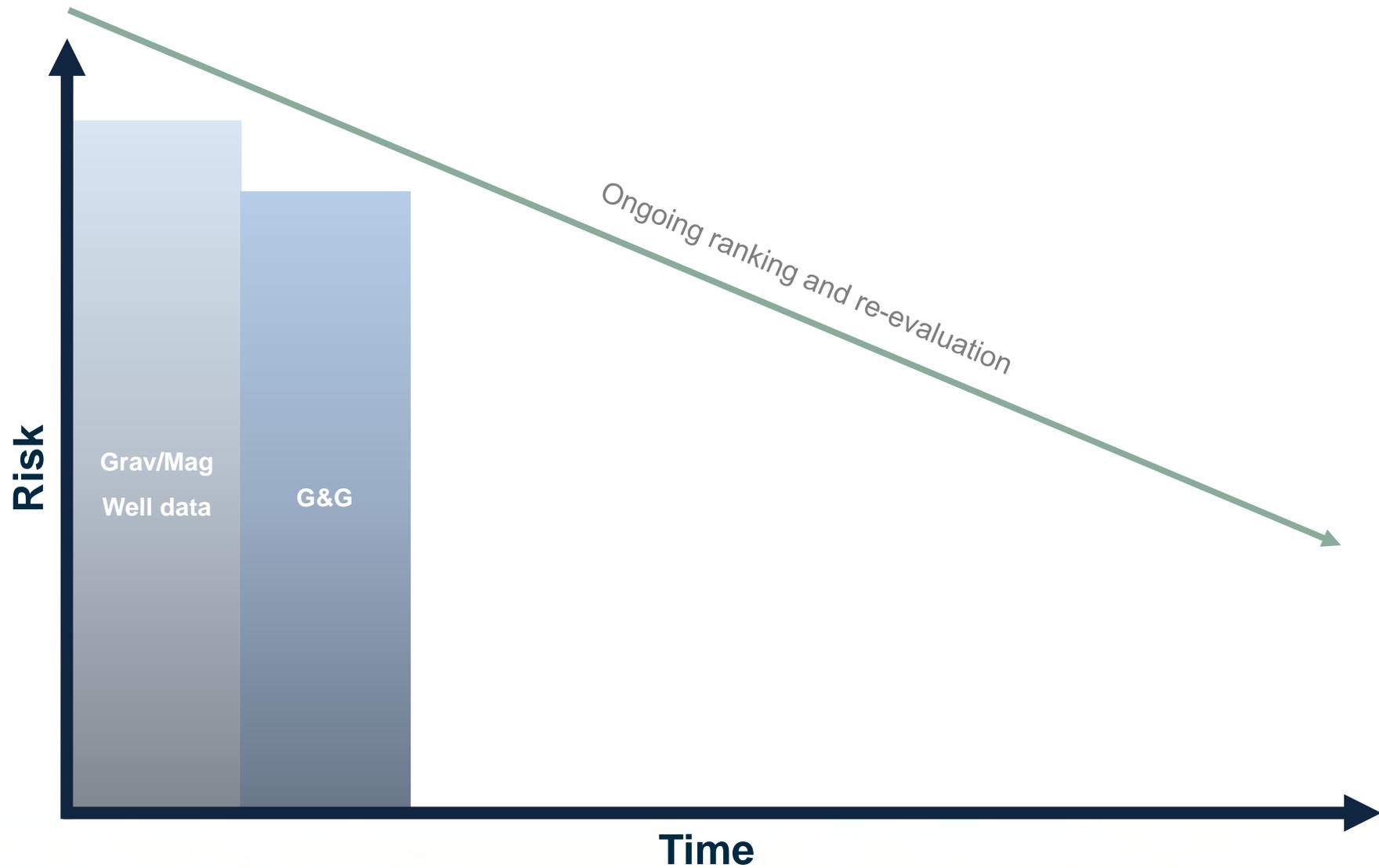
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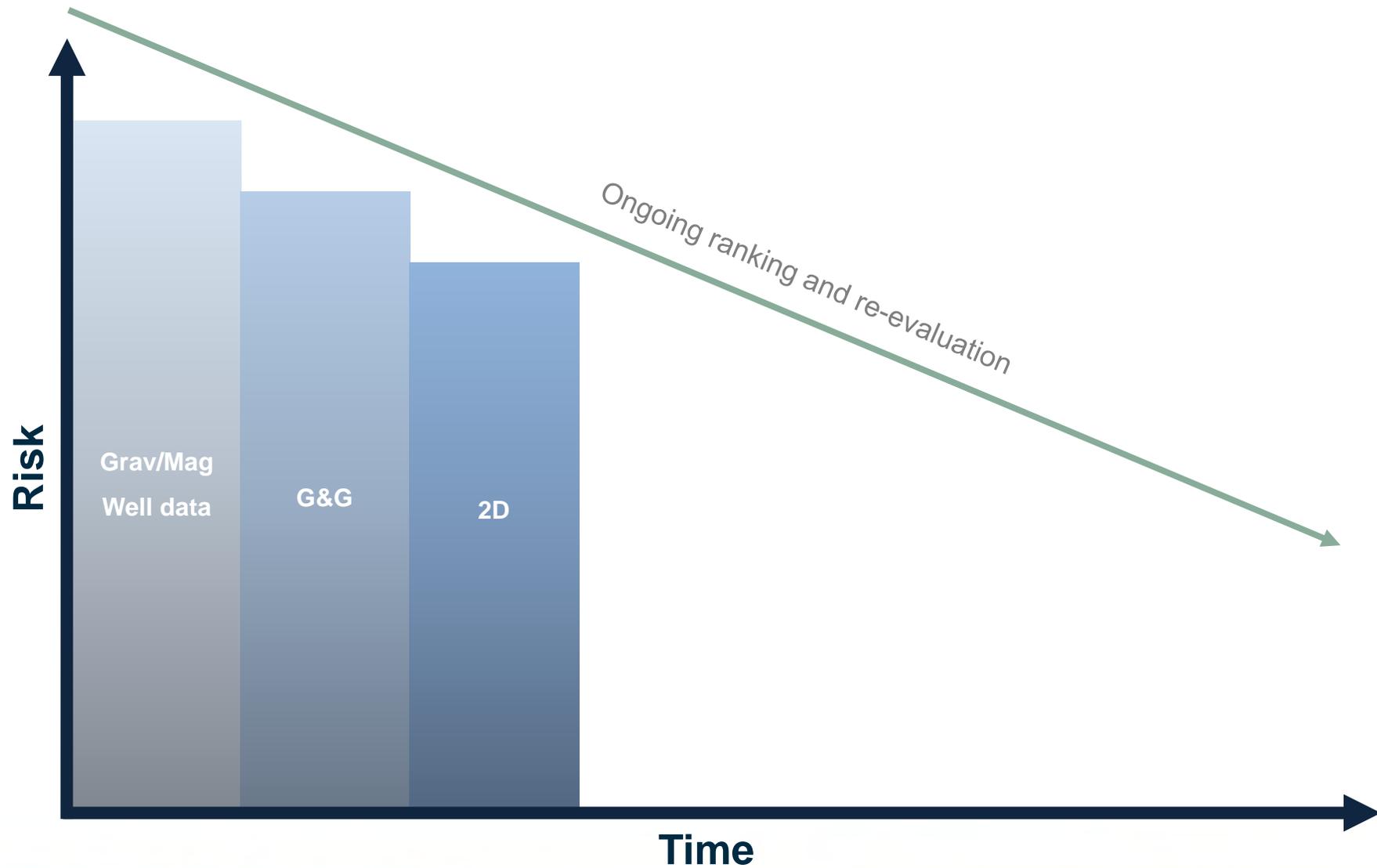


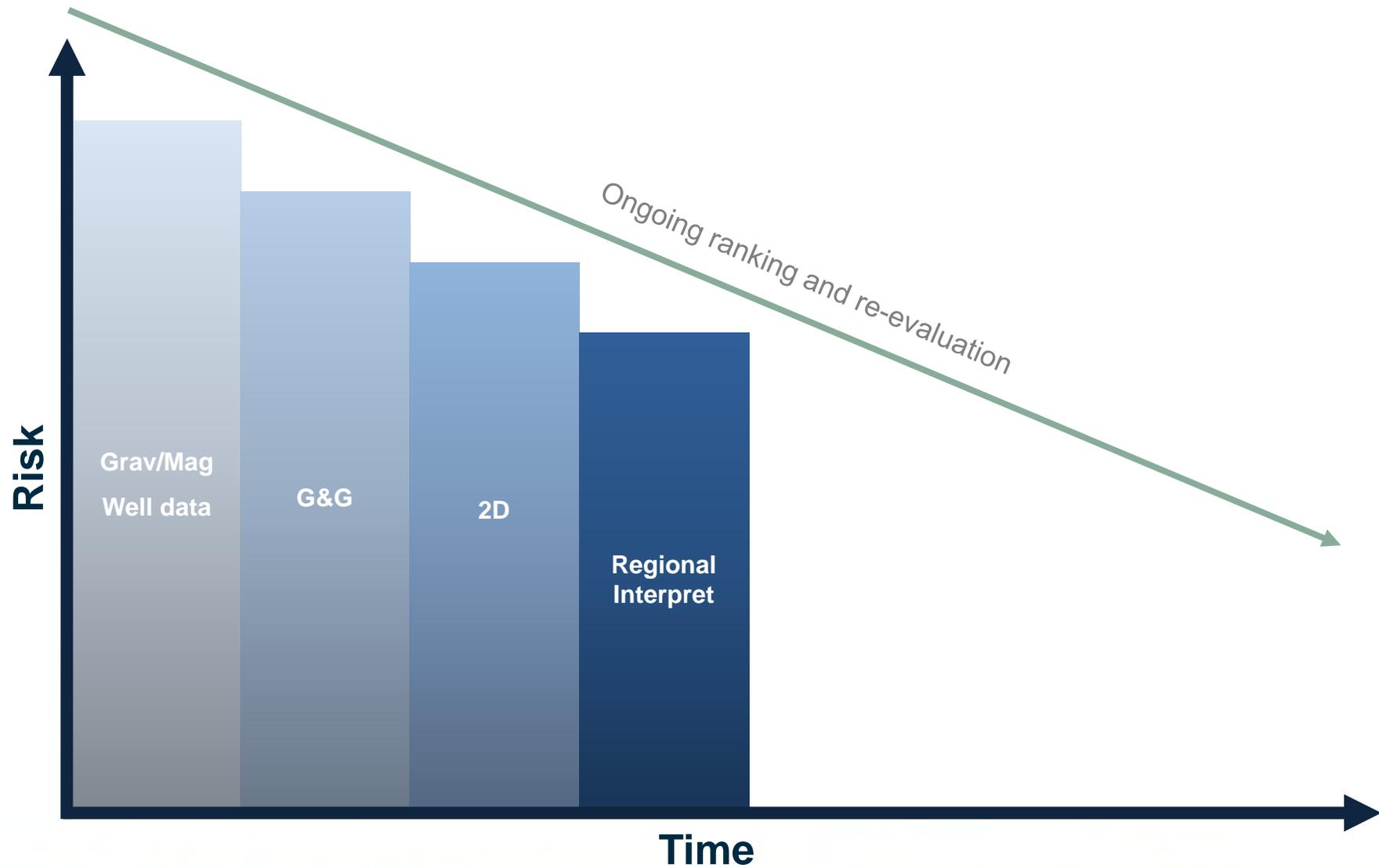
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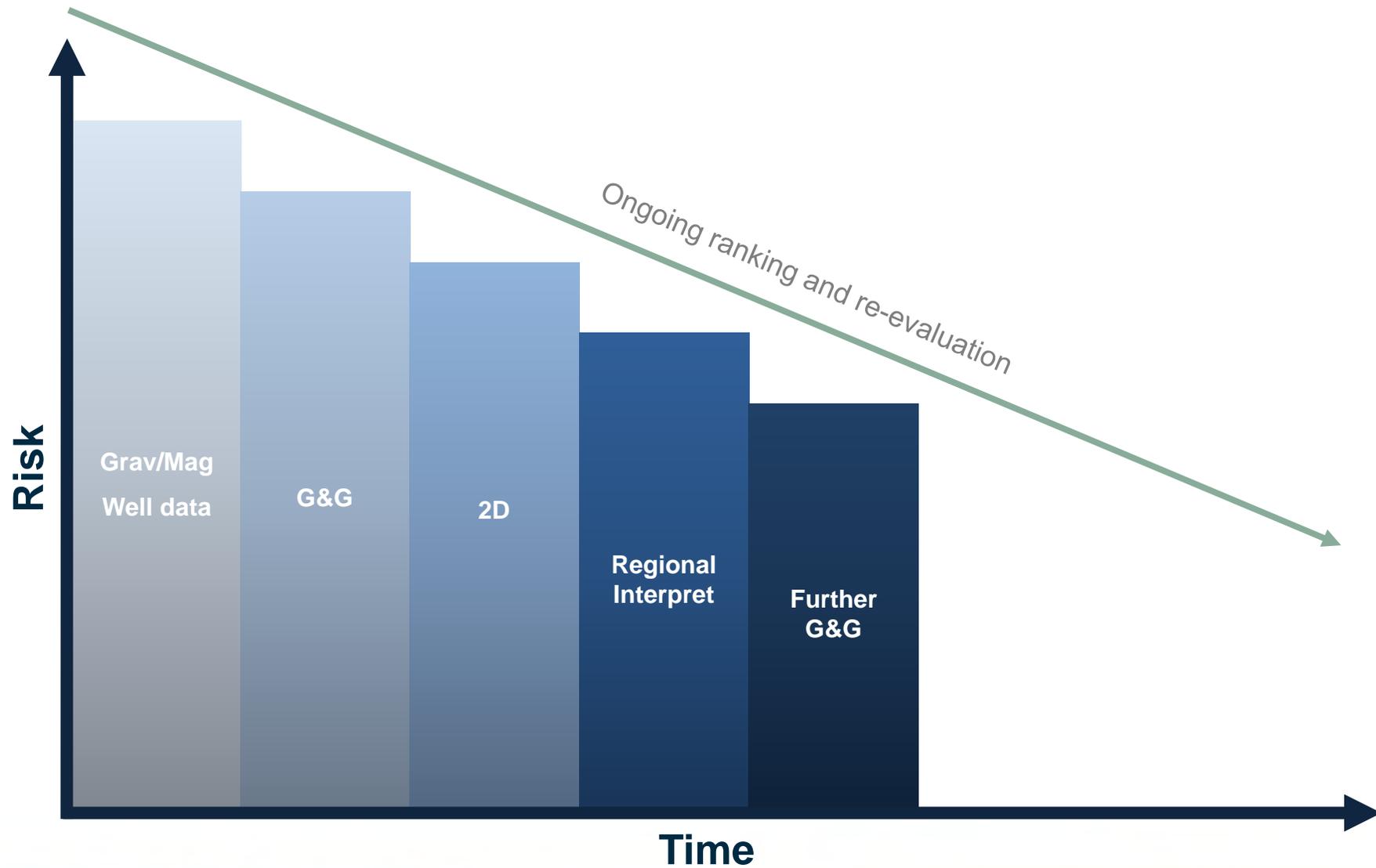


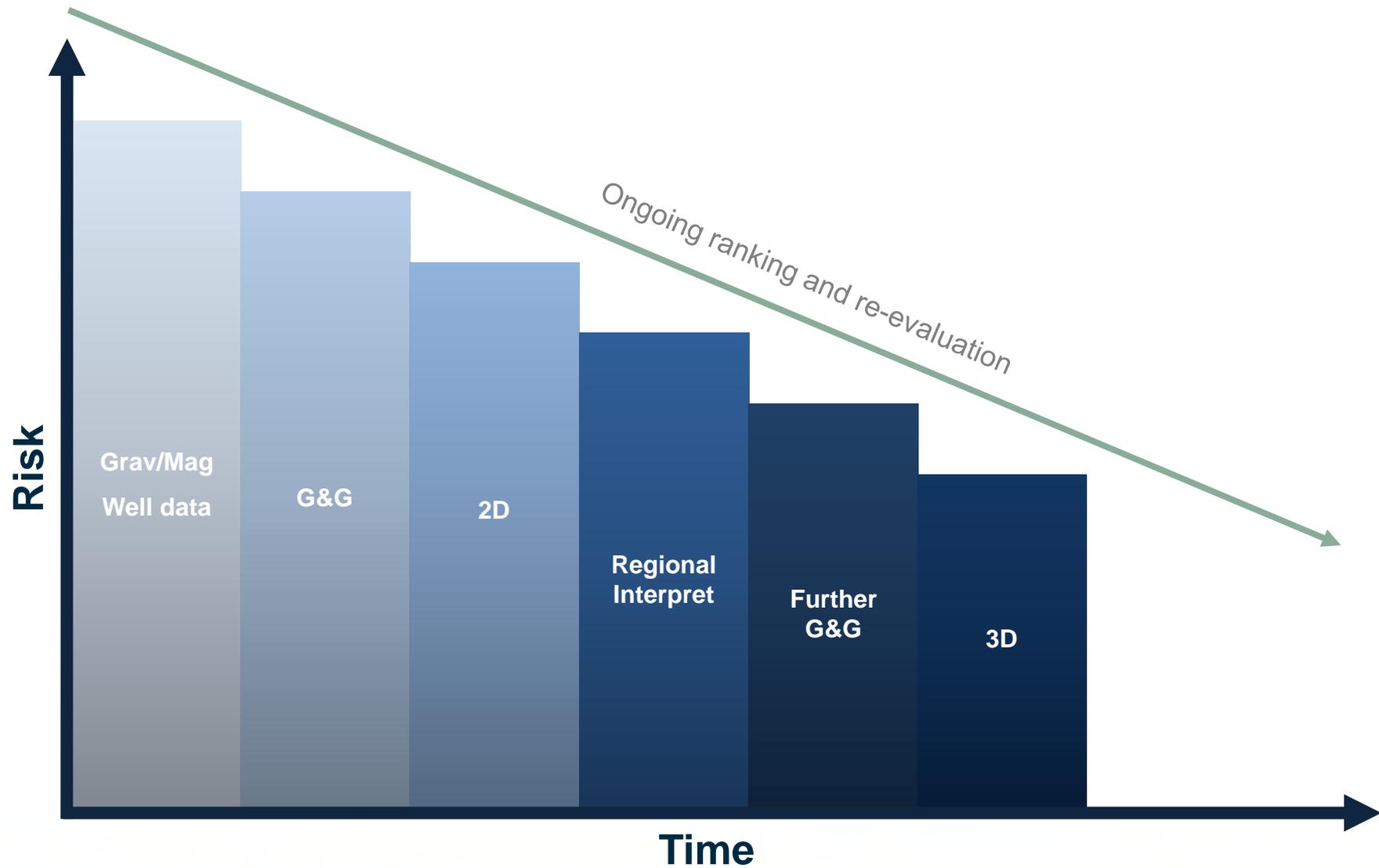




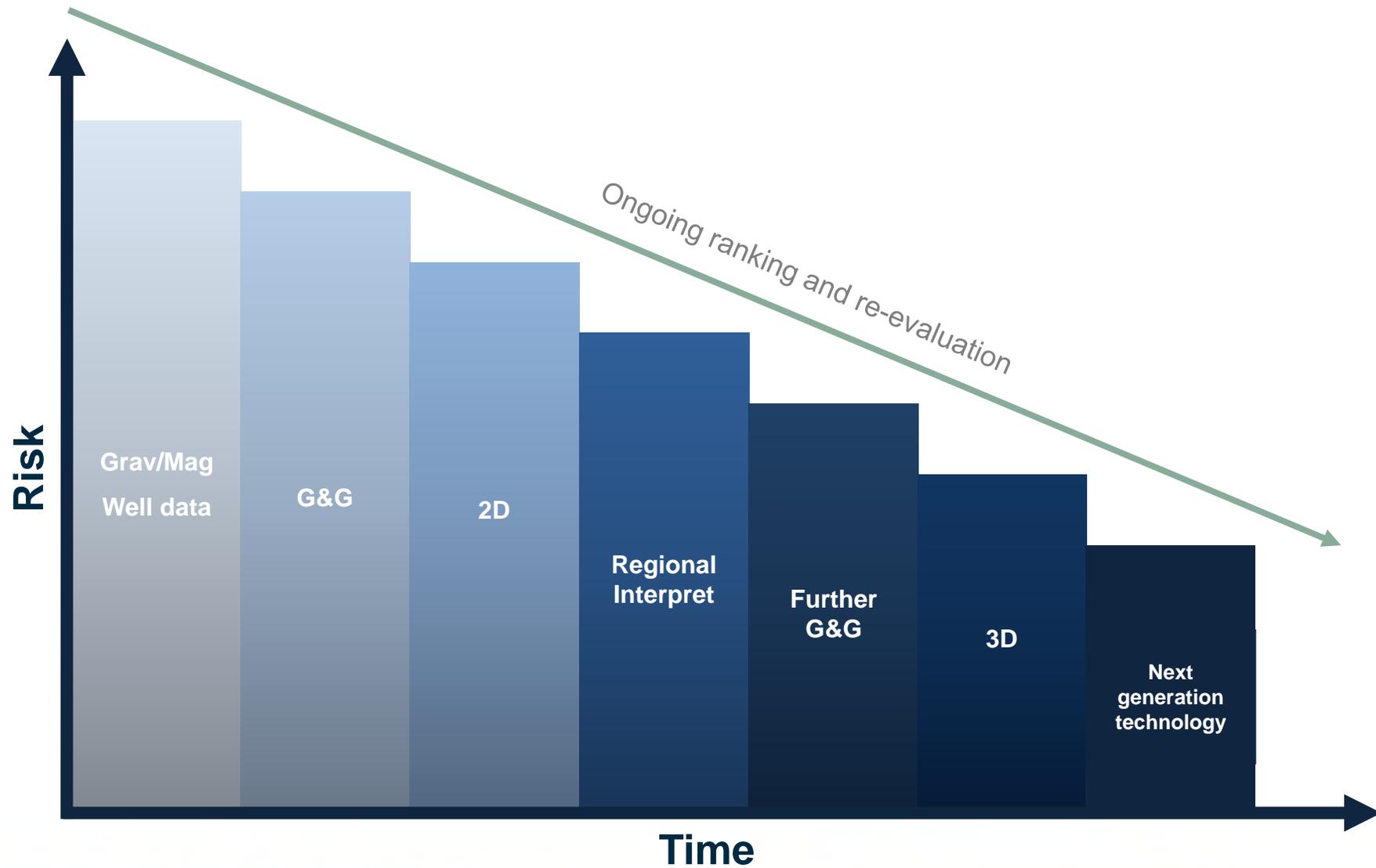








# TGS Approach to Developing a Basin



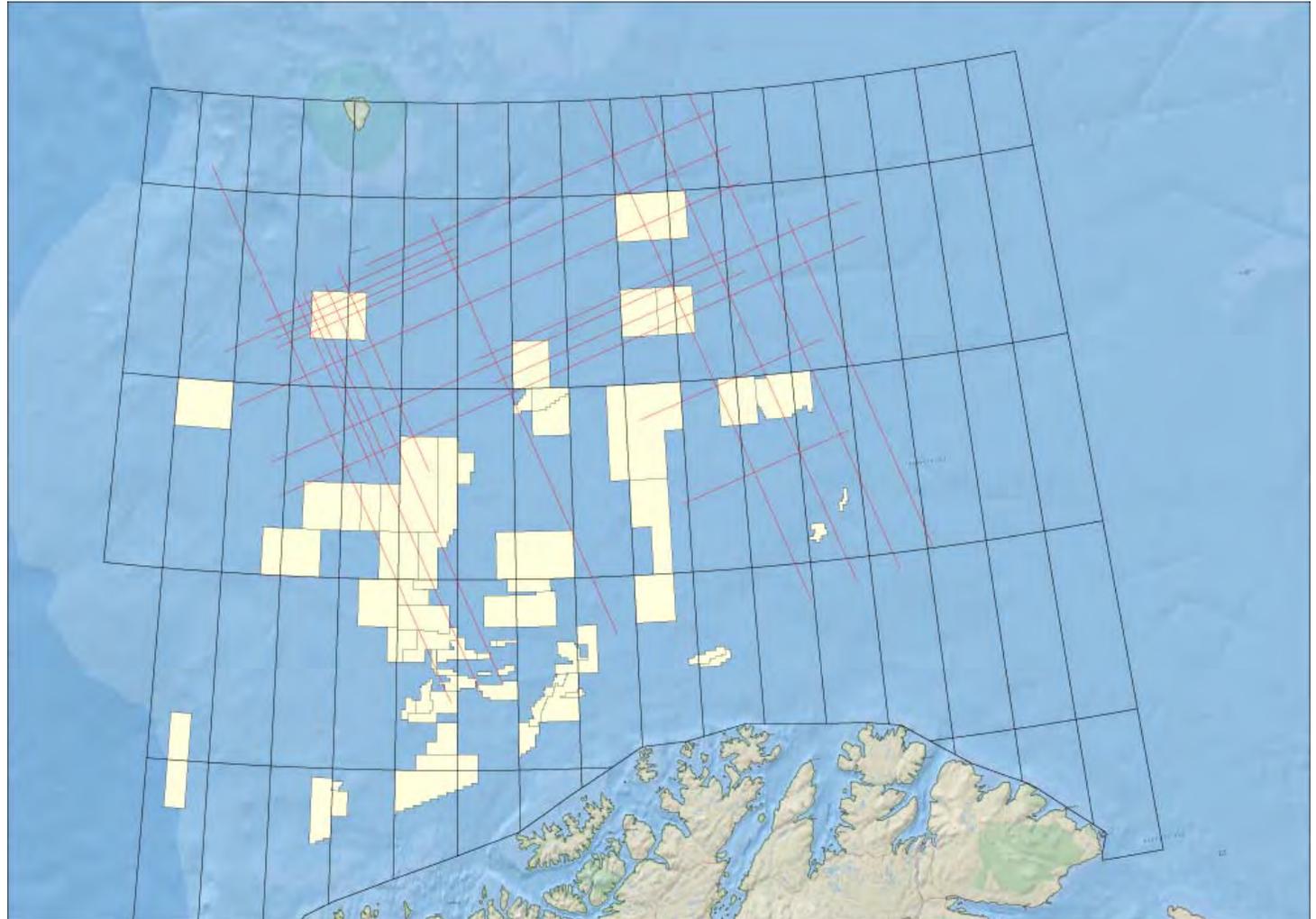
## Case Study – Barents Sea

- Proven petroleum system, available acreage and regular concession rounds
- Statoil Skrugard & Havis discoveries: 400 - 600 million boe
- Total Norvarg gas field >200 million boe
- Barents Sea delimitation deal ratified between Norway and Russia in 2011
- Whisting well expected to spud in Hoop area during May, Statoil's Apollo expected to follow in 2013



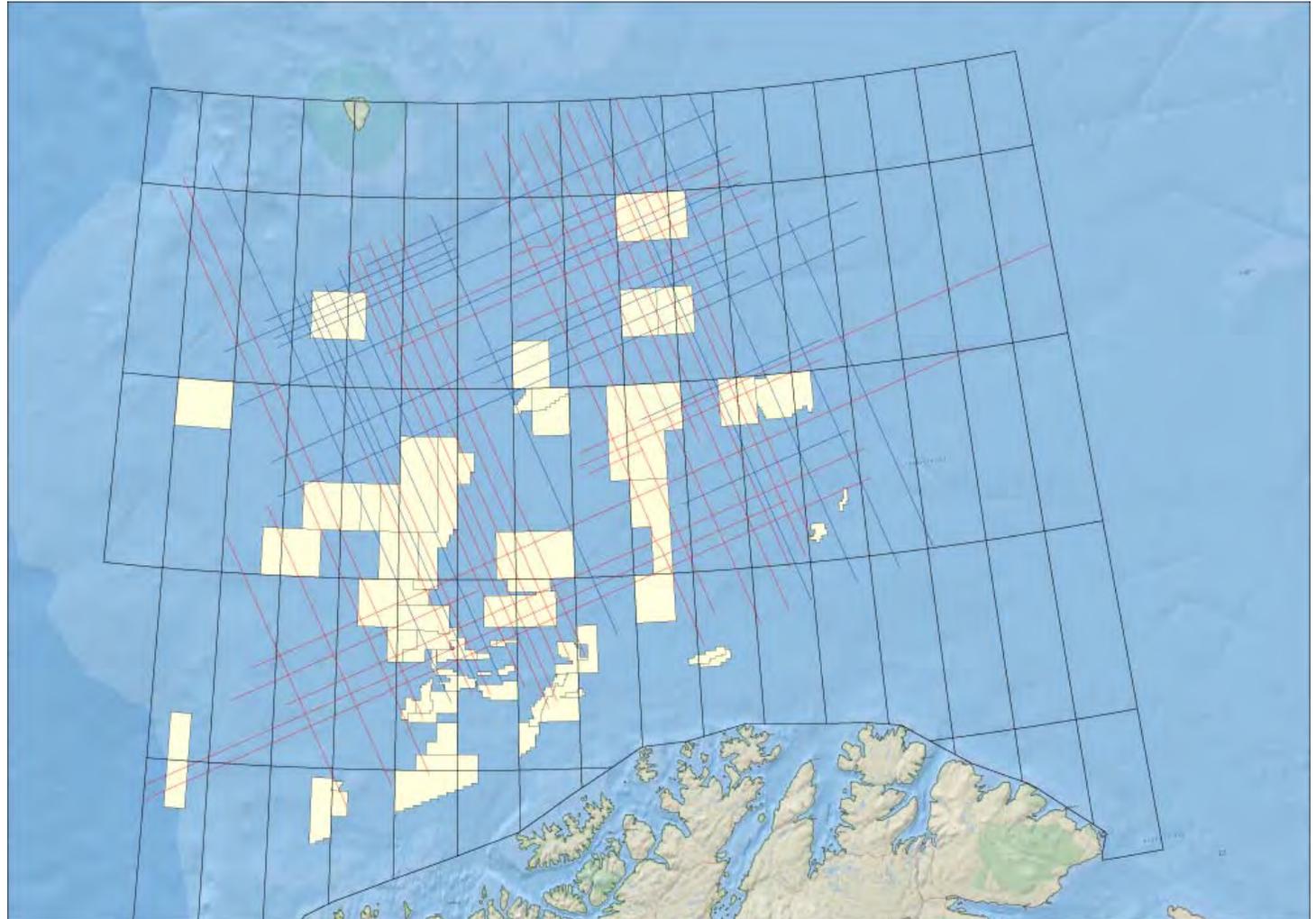
# Long-term Strategy Put to Life – Barents Sea 2D

- 2006



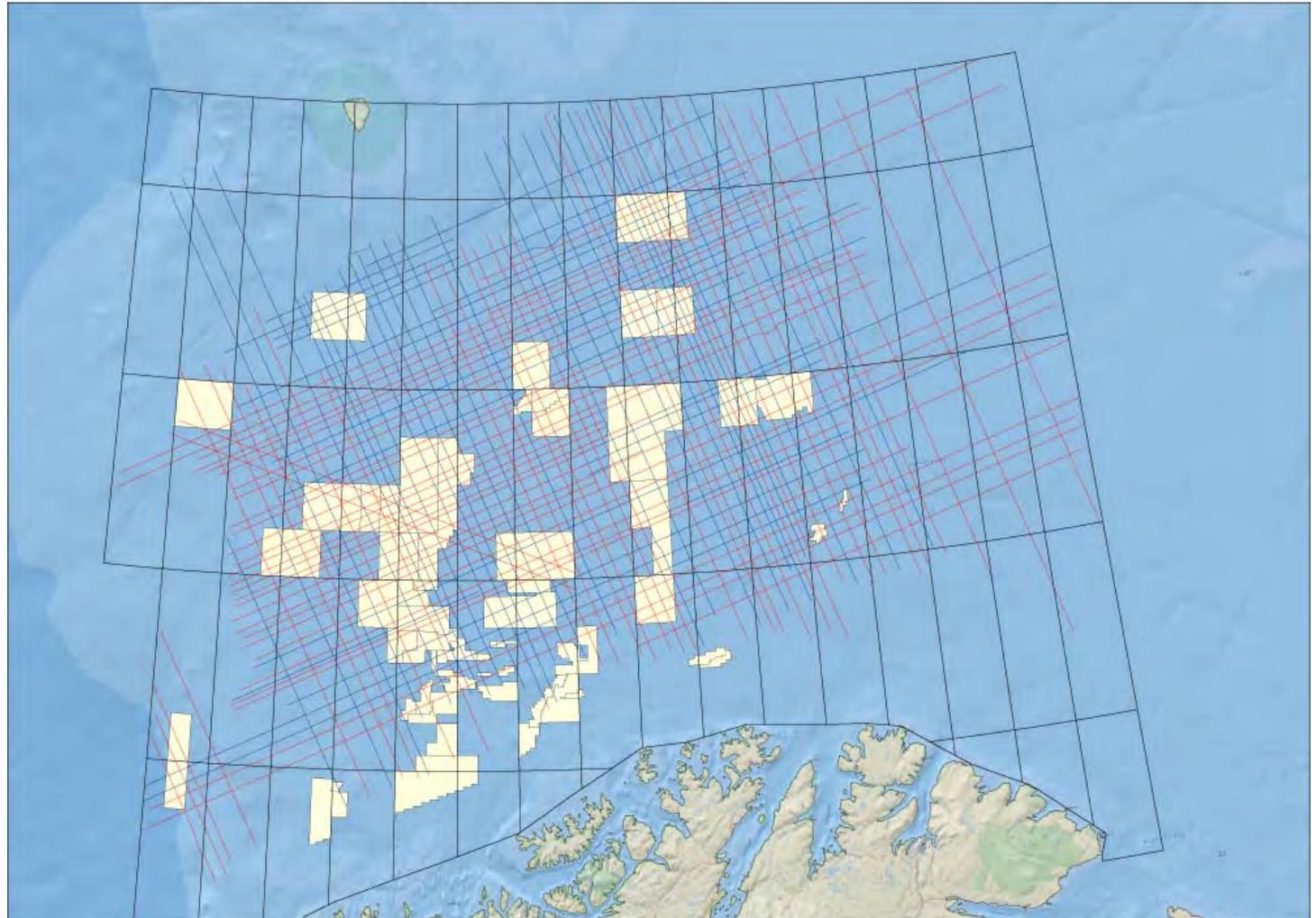
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- 2006
- **2007**



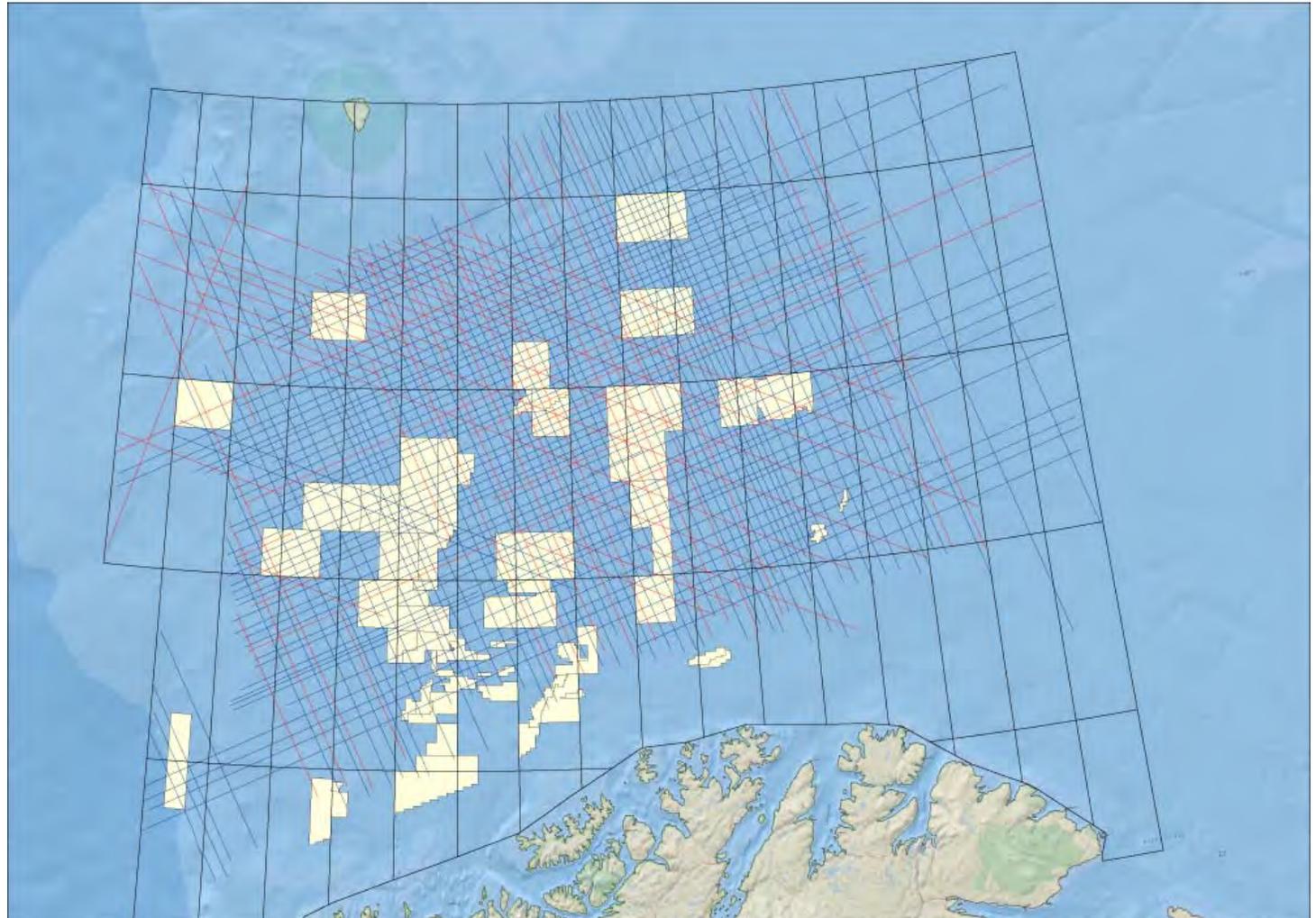
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- 2006
- 2007
- **2008**



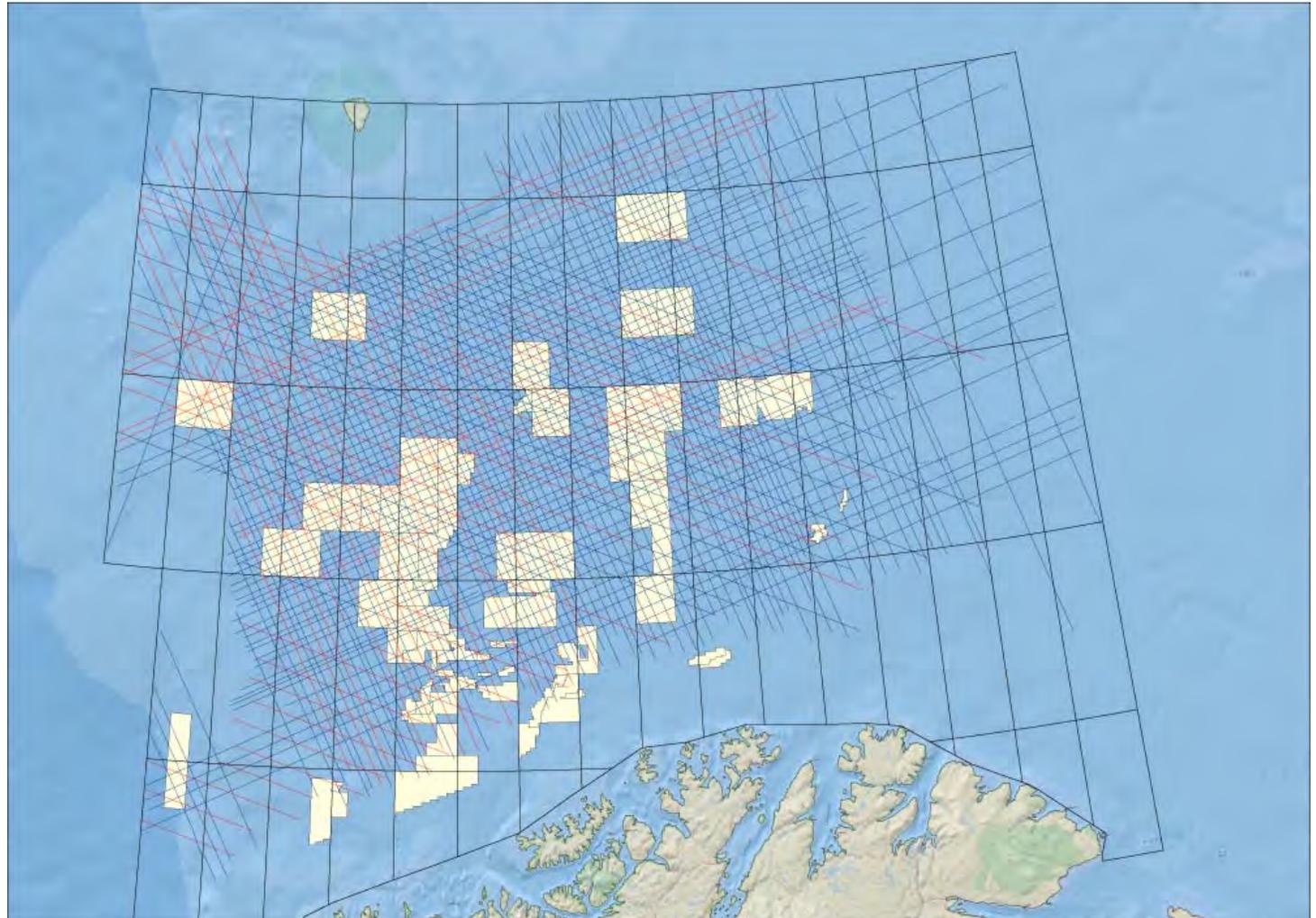
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- 2008
- **2009**



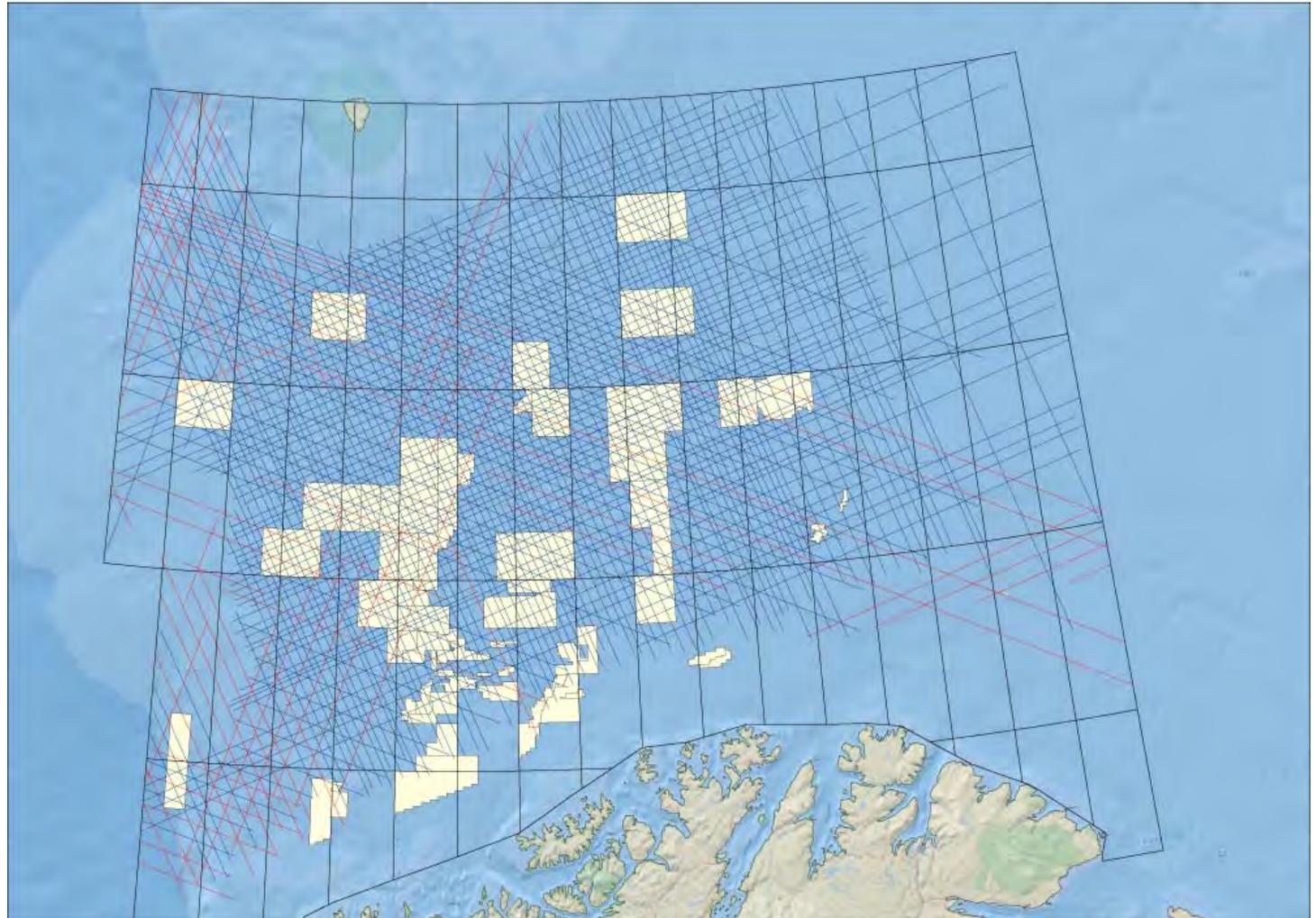
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- 2006
- 2007
- 2008
- 2009
- **2010**



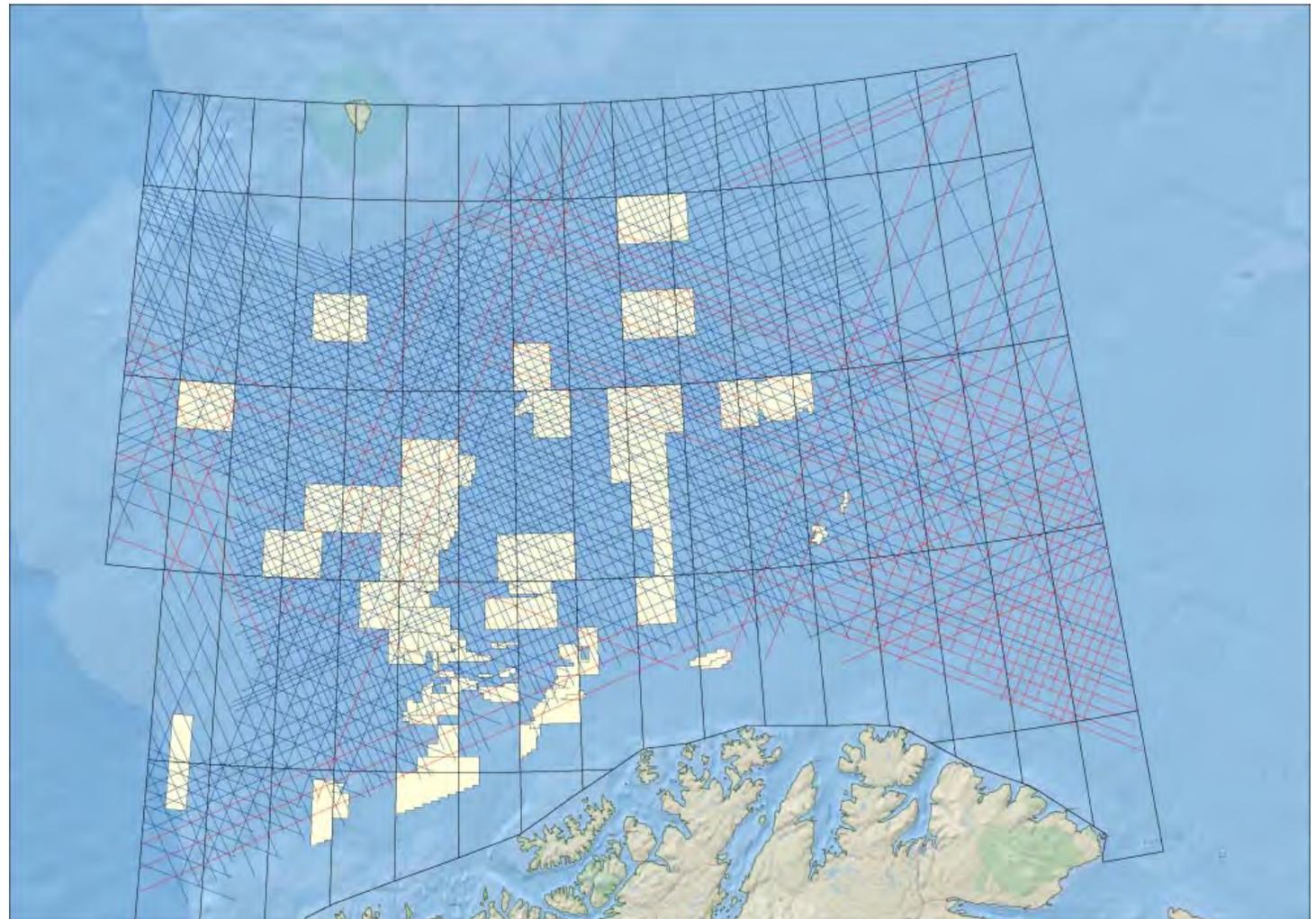
# Long-term Strategy Put to Life – Barents Sea 2D

- 2006
- 2007
- 2008
- 2009
- 2010
- **2011**



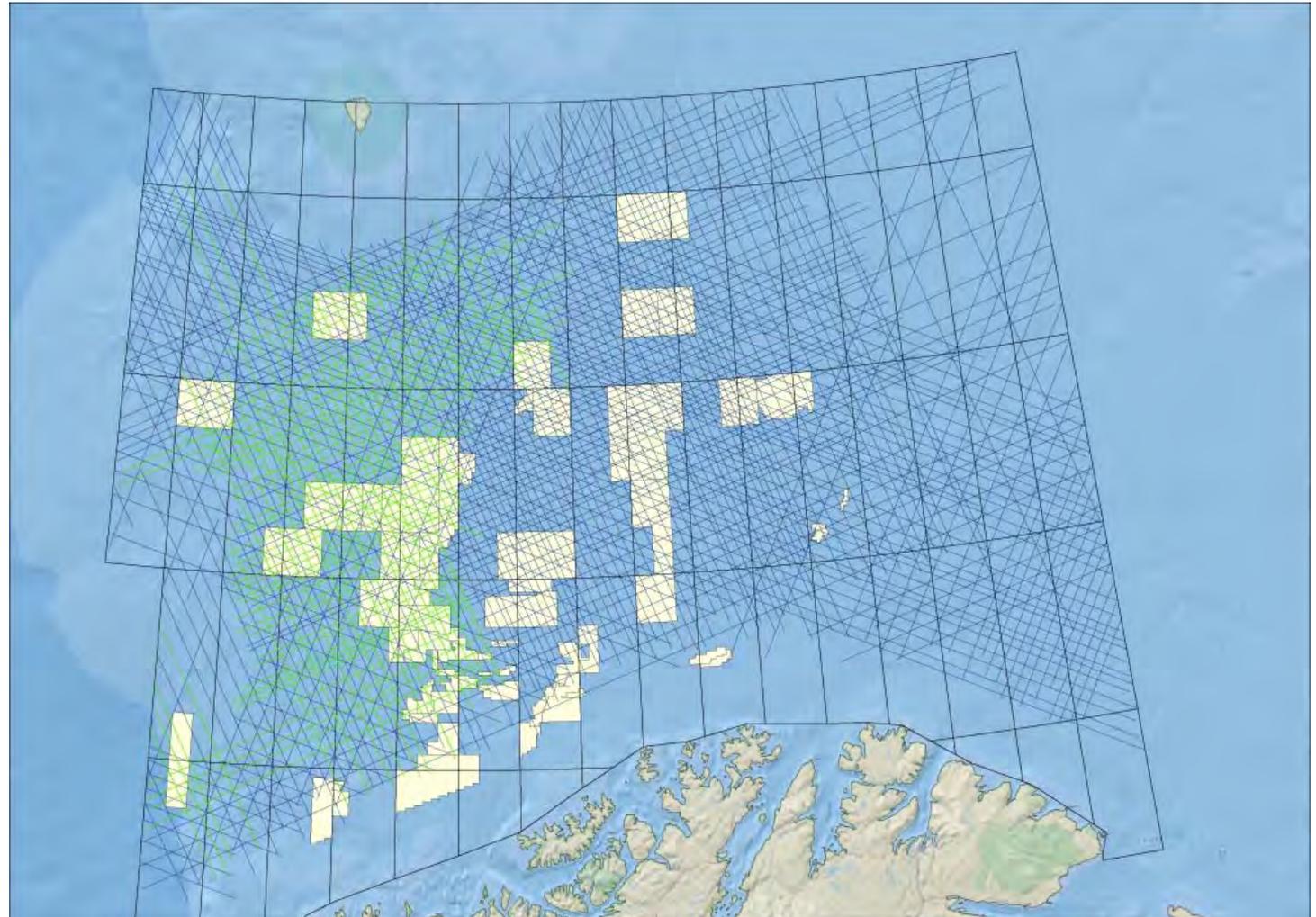
# Long-term Strategy Put to Life – Barents Sea 2D

- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- **2012**



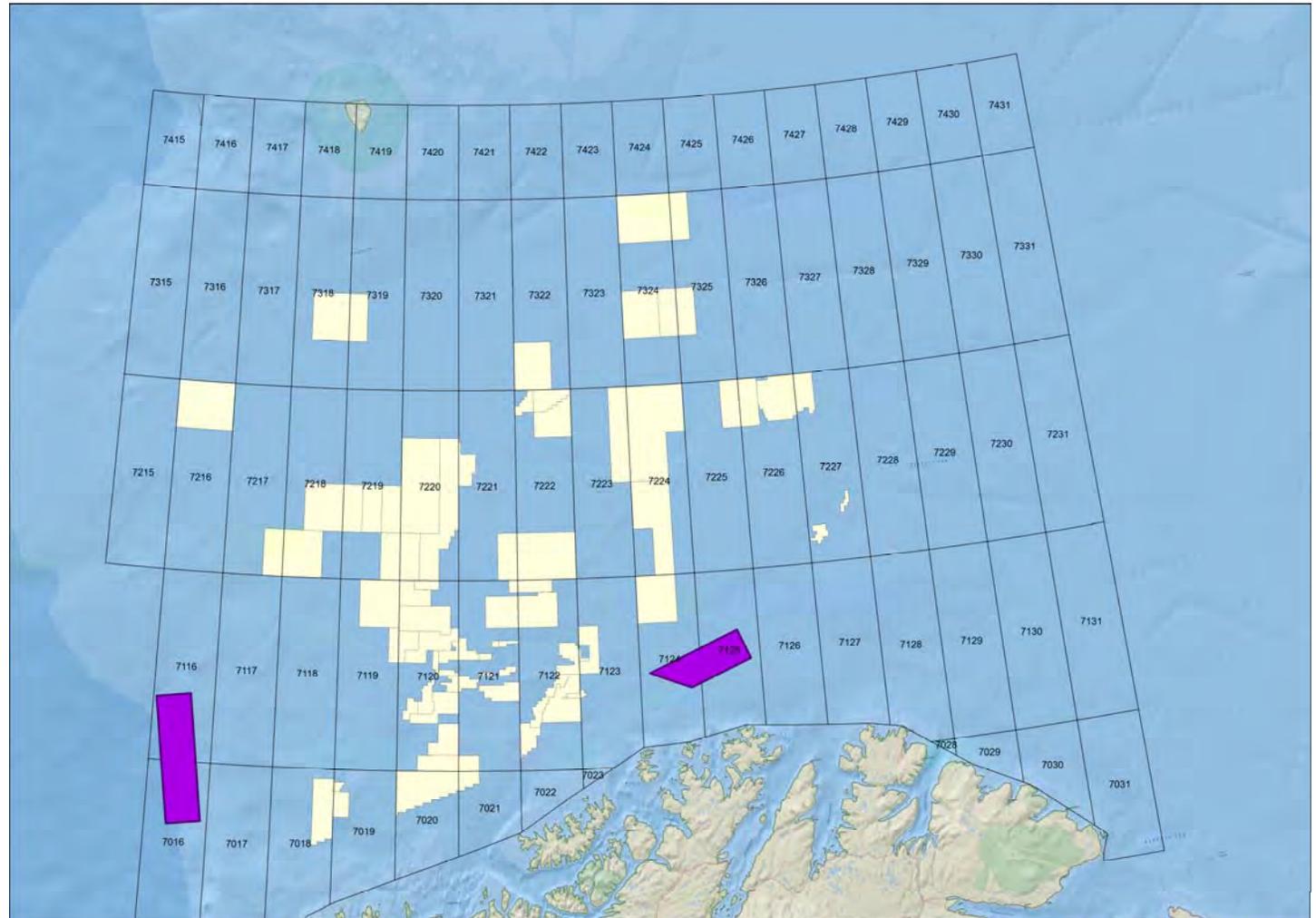
# Long-term Strategy Put to Life – Barents Sea 2D

- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- **AMR\_NBR**



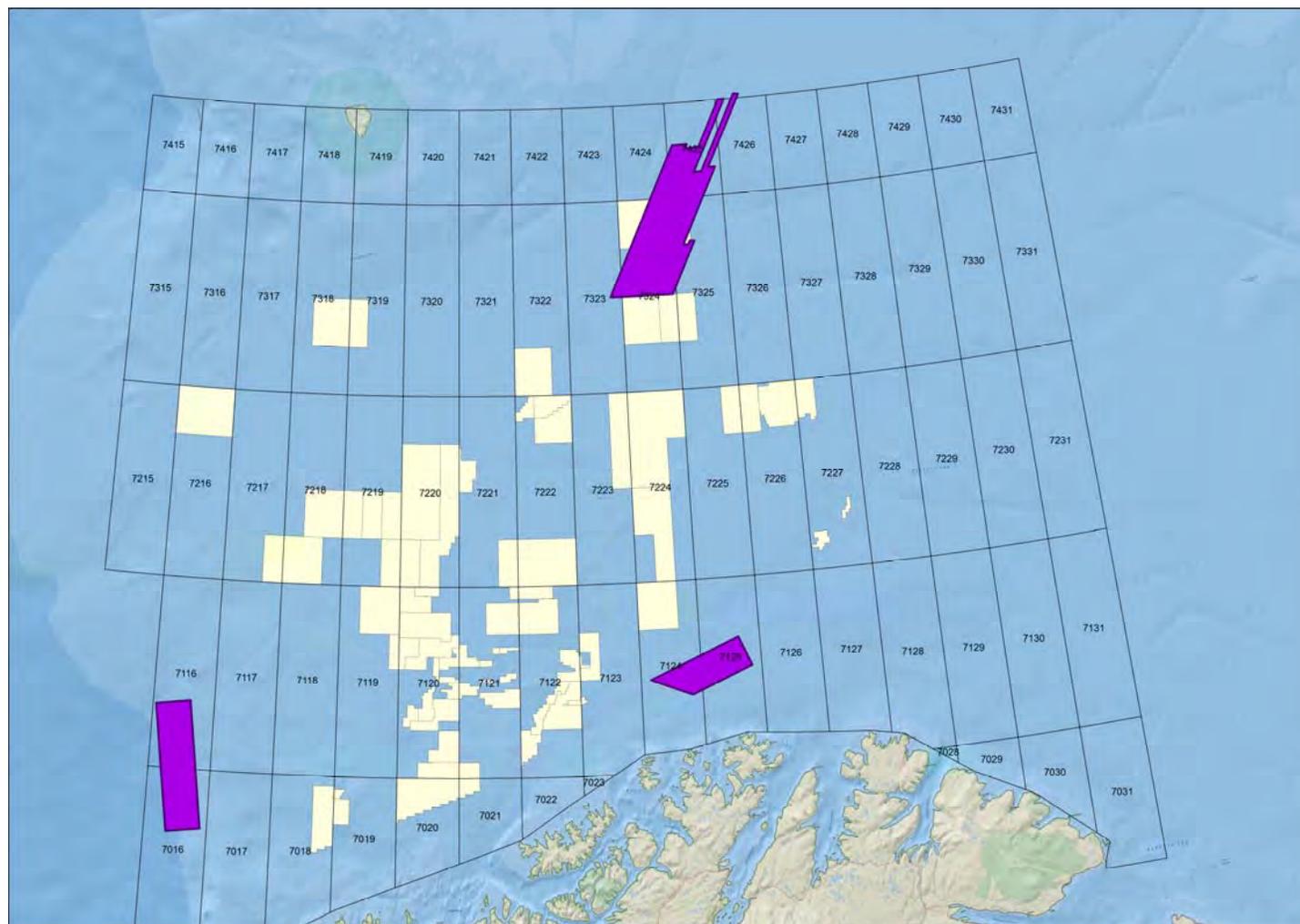
# Long-term Strategy Put to Life – Barents Sea 3D

- Pre 2005



# Long-term Strategy Put to Life – Barents Sea 3D

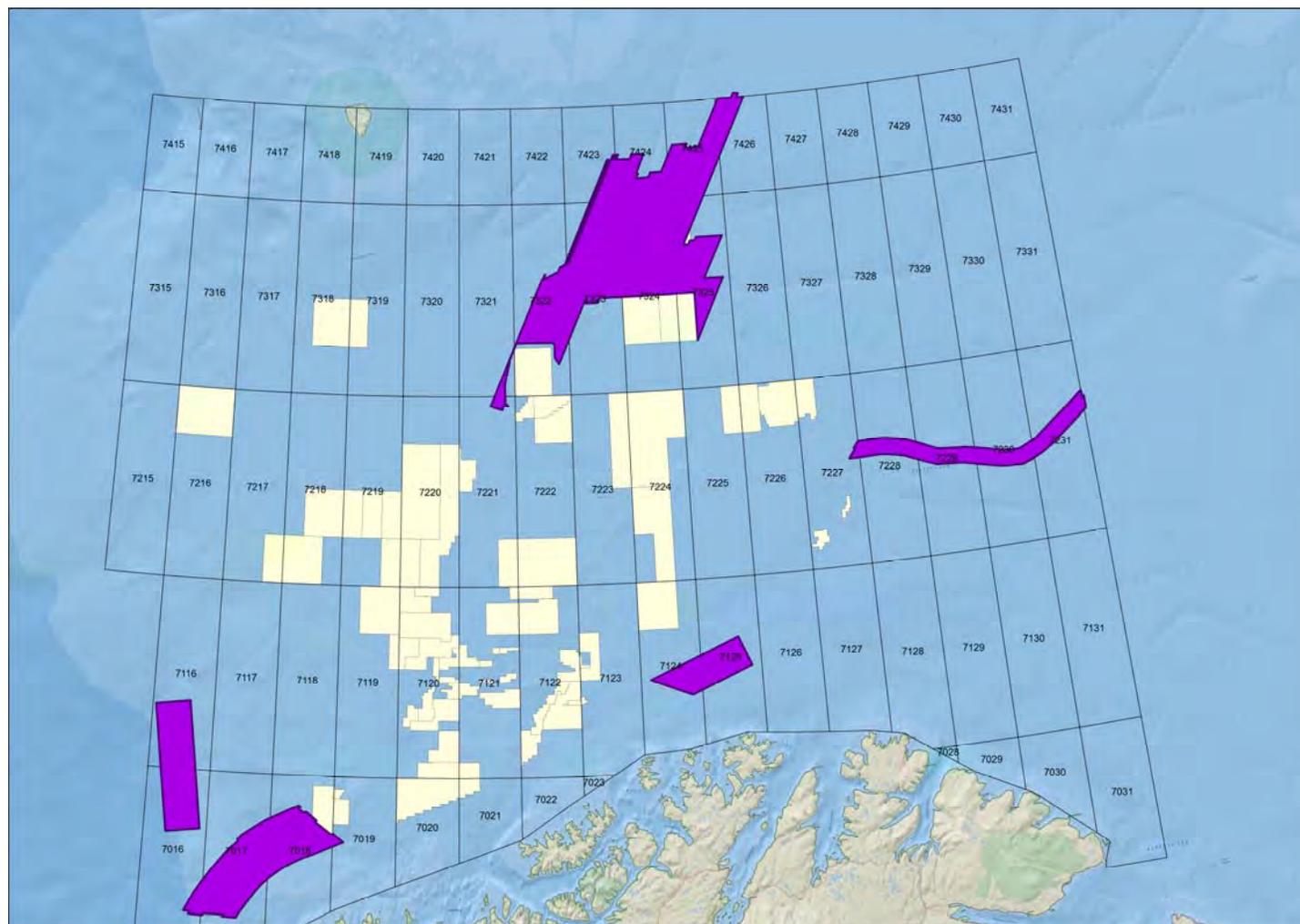
- Pre 2005
- **Pre 2010**





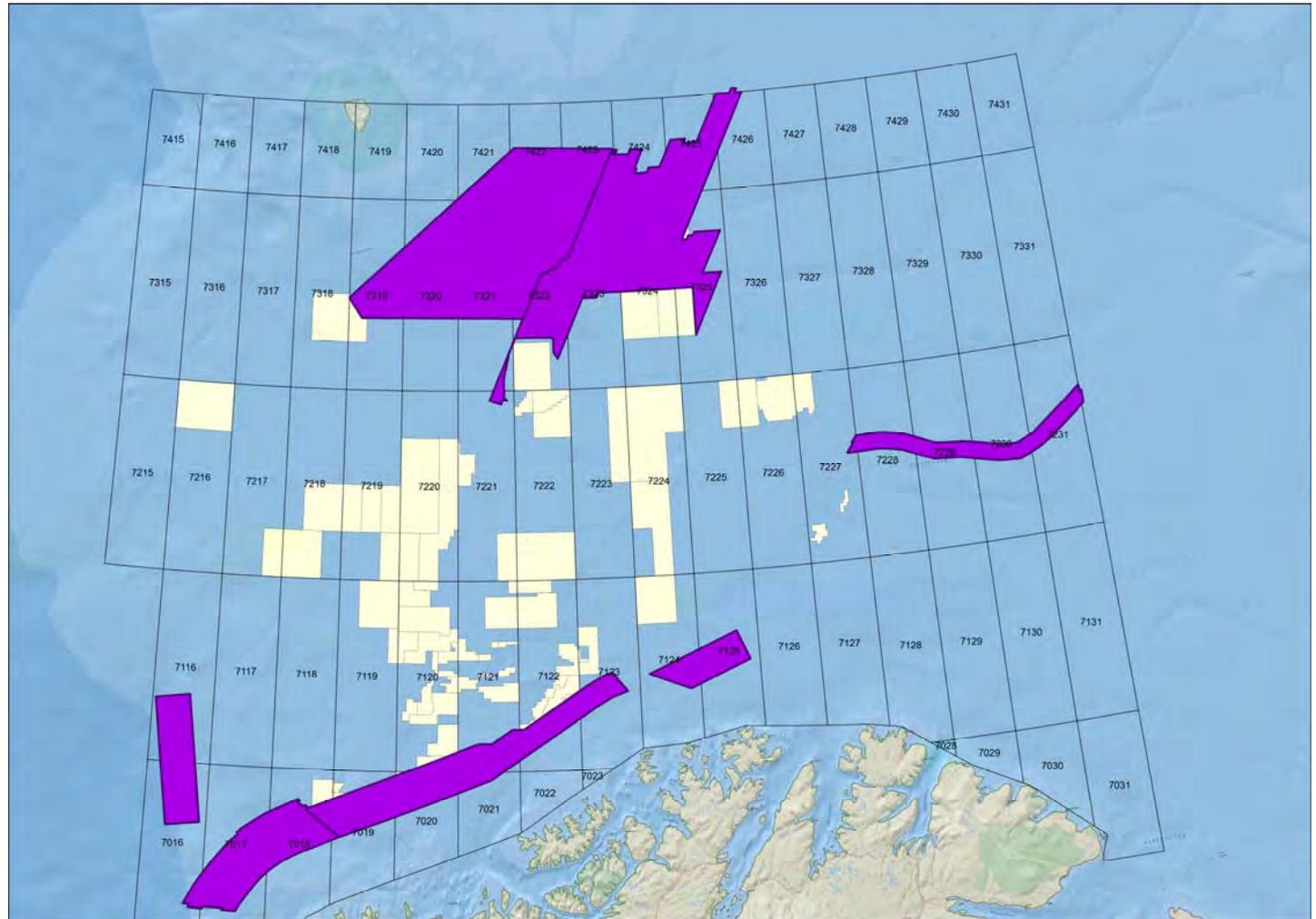
# Long-term Strategy Put to Life – Barents Sea 3D

- Pre 2005
- Pre 2010
- Pre 2012
- **TGS 2012**



# Long-term Strategy Put to Life – Barents Sea 3D

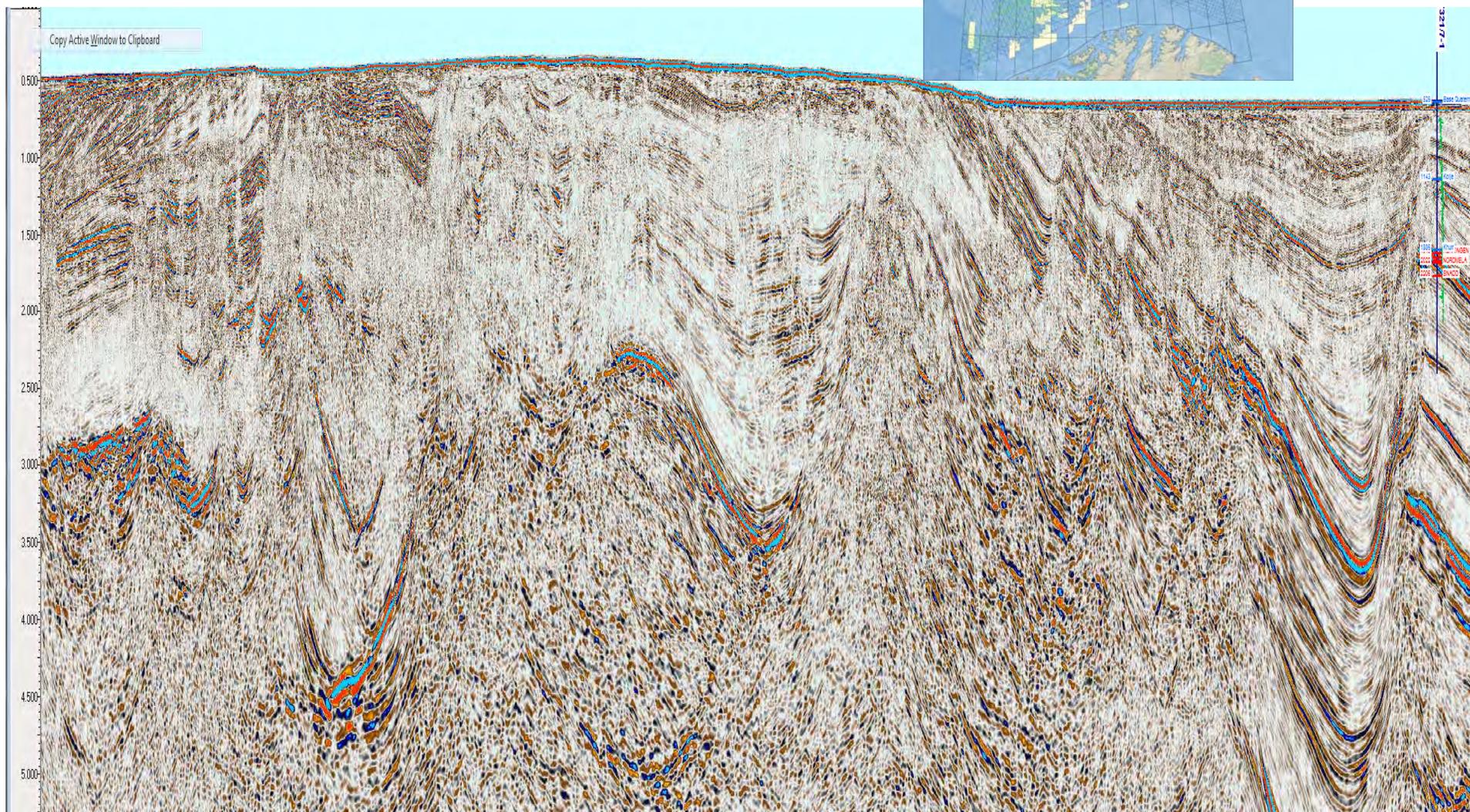
- Pre 2005
- Pre 2010
- Pre 2012
- TGS 2012
- **TGS 2013**



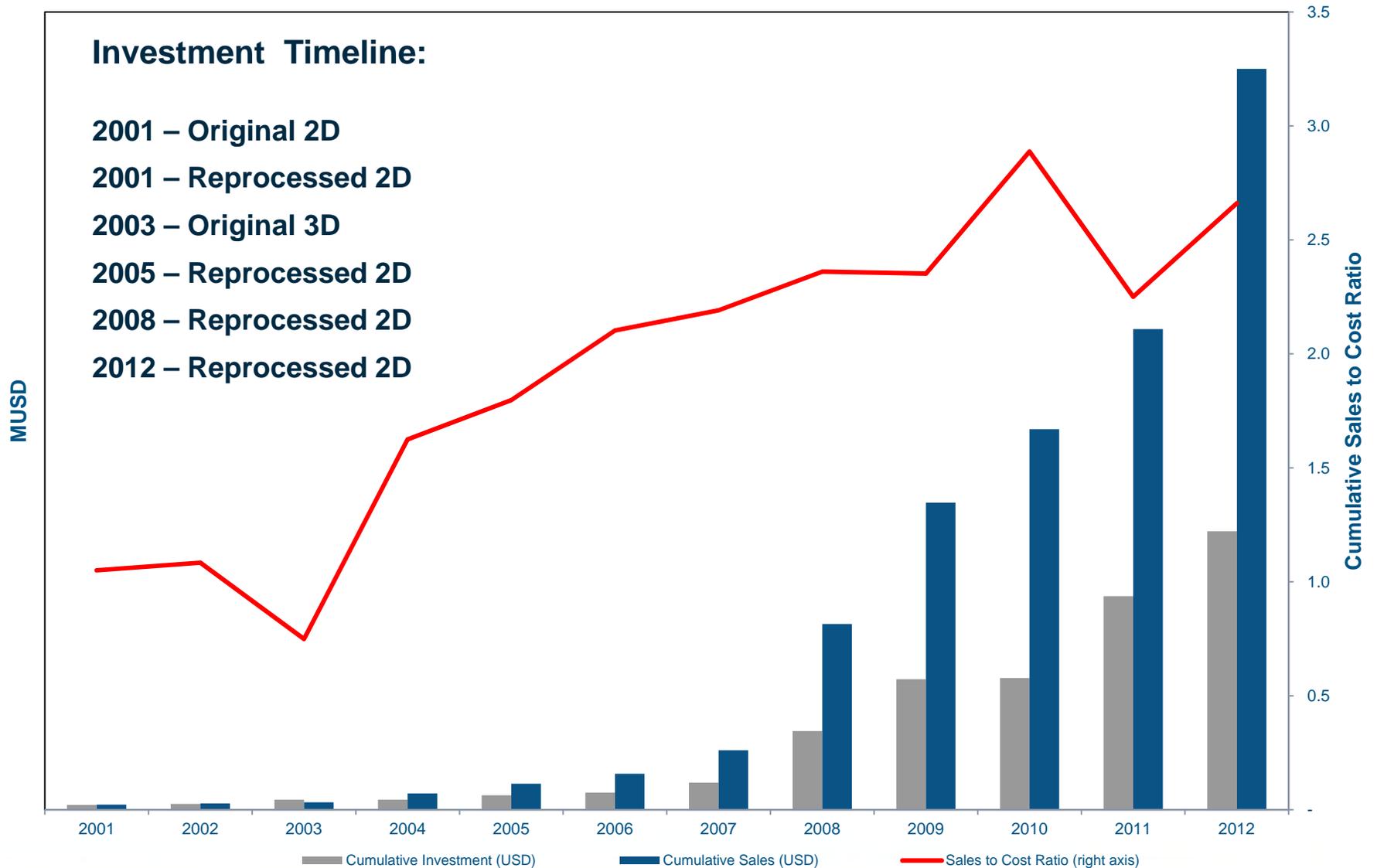


# NBR09 Stappen

## High Broadband Processing (AMR)

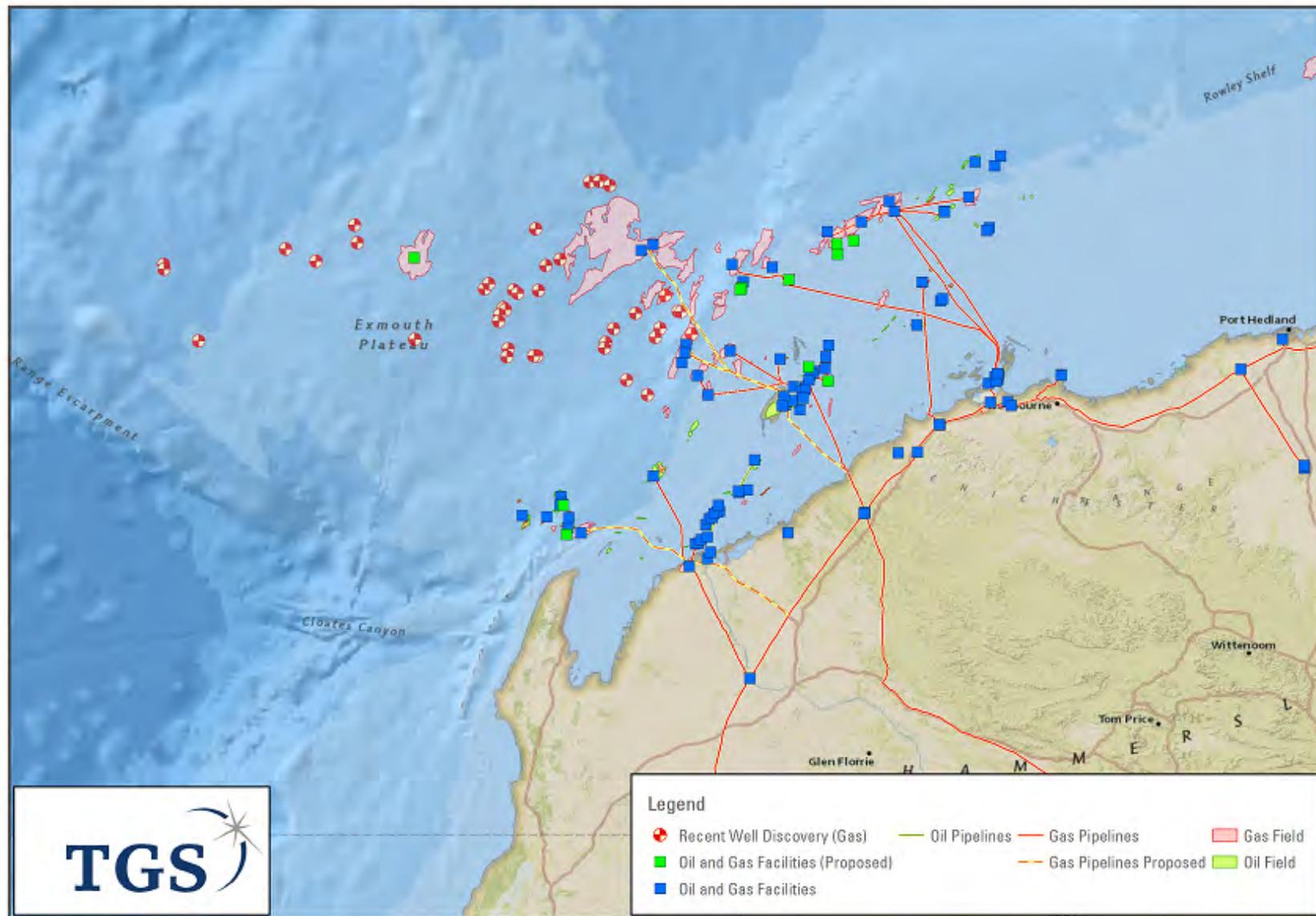


# Barents Sea Cumulative Financial Performance



- LNG demand drives exploration in Northwest Australia
  - Long term LNG contracts with Asia, mainly Japan and increasingly to China
  - Large LNG projects in production, under construction and proposed
- TGS in leading position to dominate this market:
  - Local office
  - Growing 3D portfolio
  - 2D Fugro database – will help expand into other basins

# Carnarvon Basin Reserves 94.4 Tcf



# Long-term Strategy put to life – Carnarvon Basin



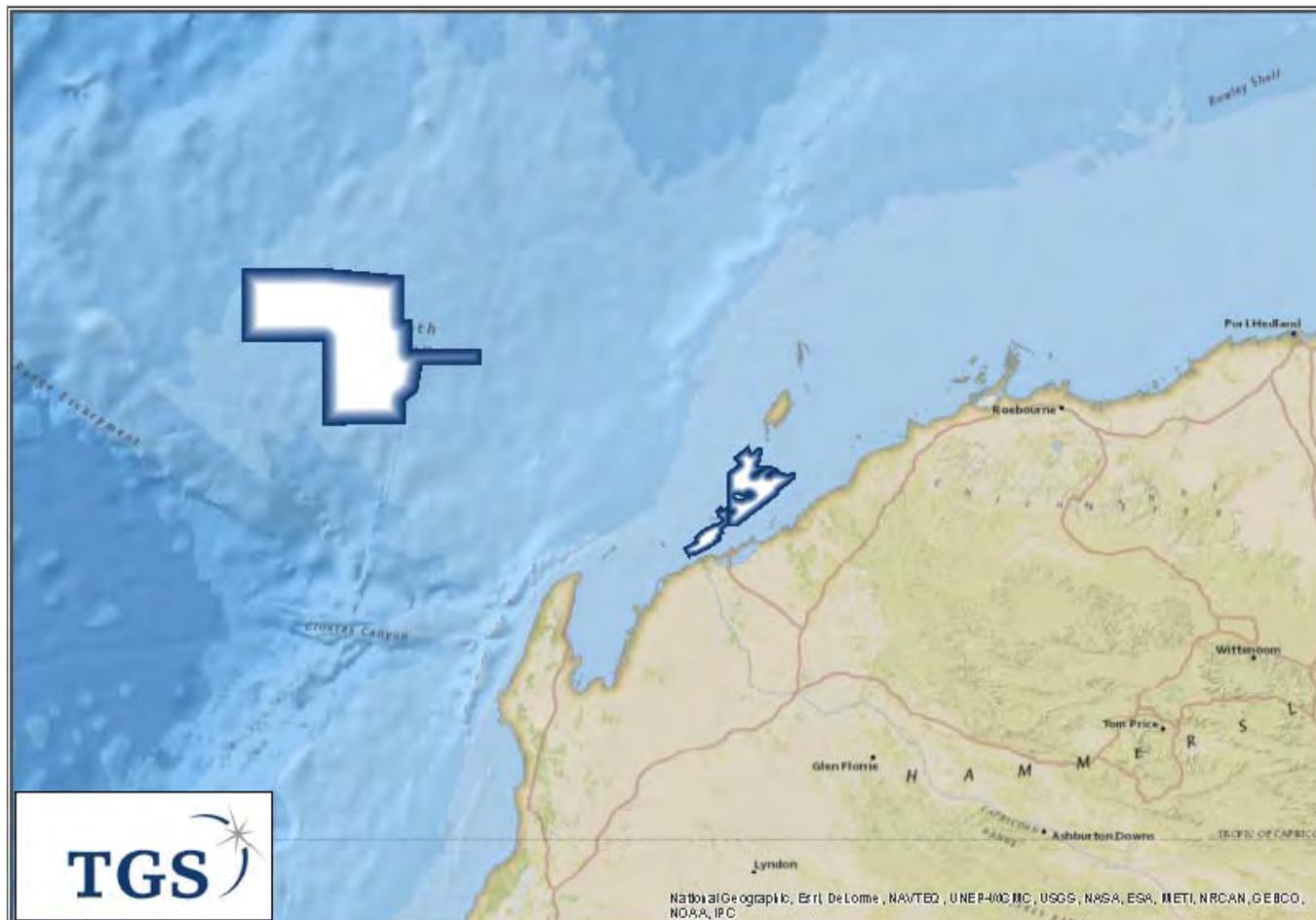
- Flinders multi-client 3D 2001



# Long-term Strategy put to life – Carnarvon Basin

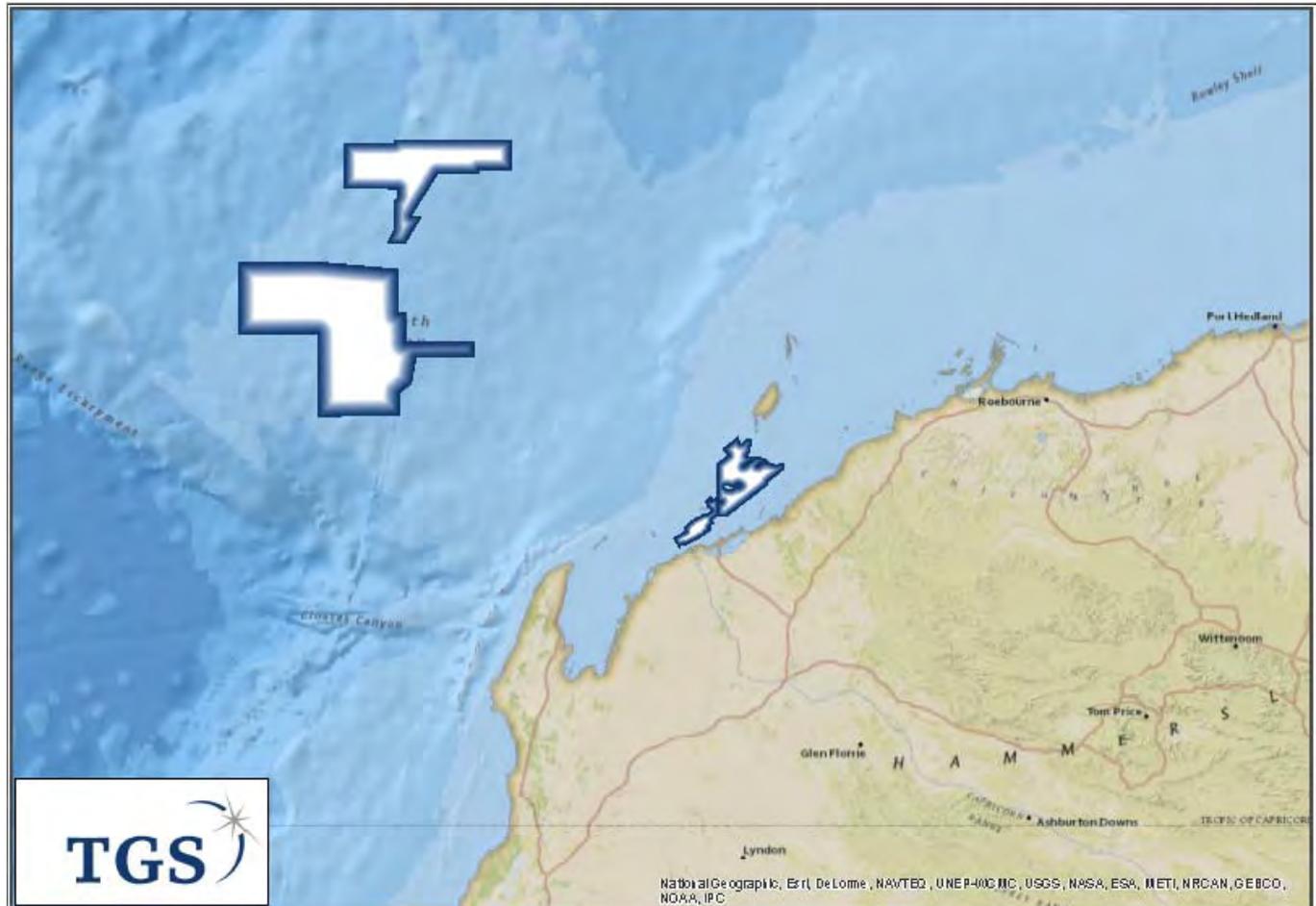


- Flinders multi-client 3D 2001
- **Mary Rose multi-client 3D 2011**



# Long-term Strategy put to life – Carnarvon Basin

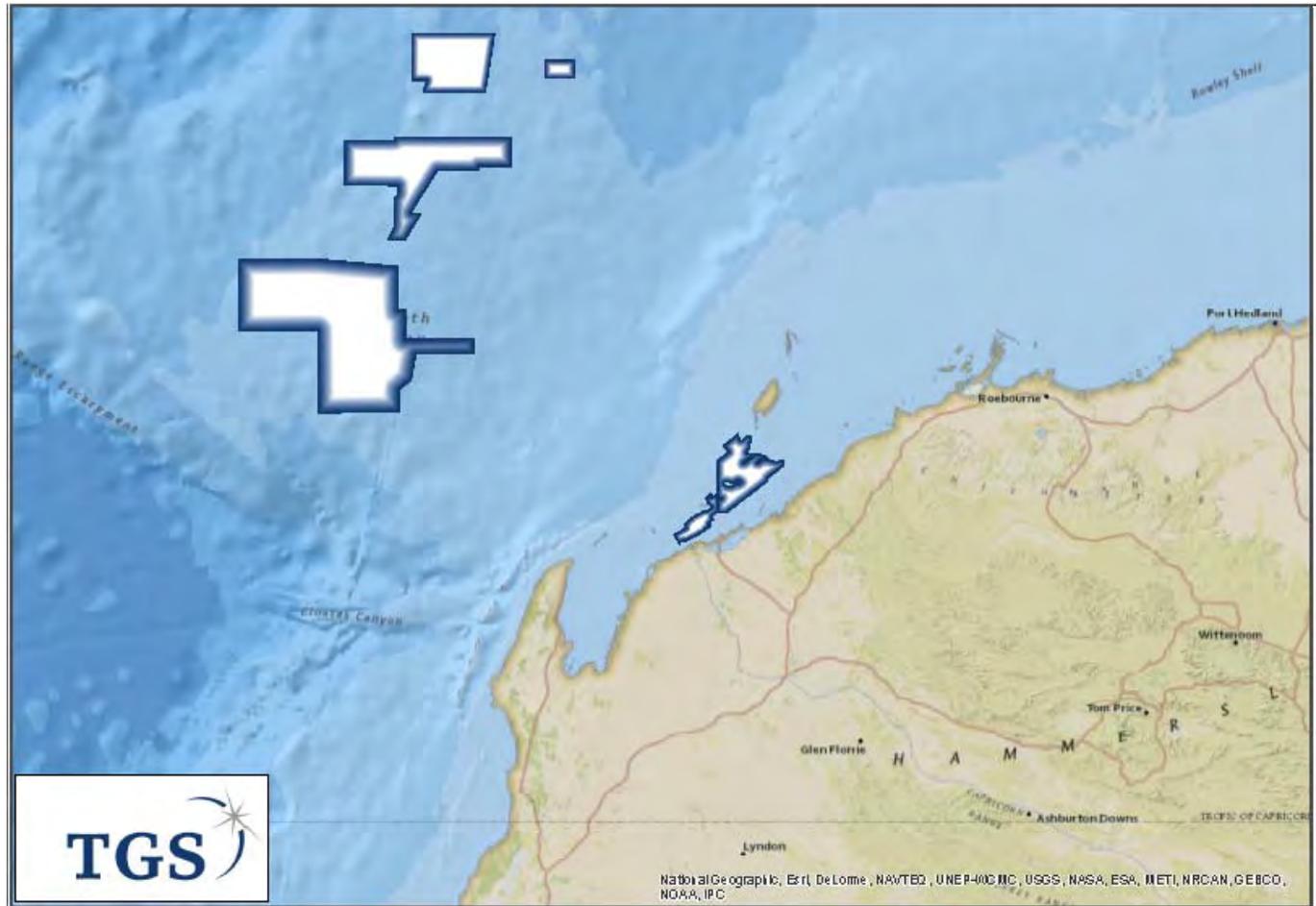
- Flinders multi-client 3D 2001
- Mary Rose multi-client 3D 2011
- **Mary Rose Northeast Extension multi-client 3D 2011**



# Long-term Strategy put to life – Carnarvon Basin

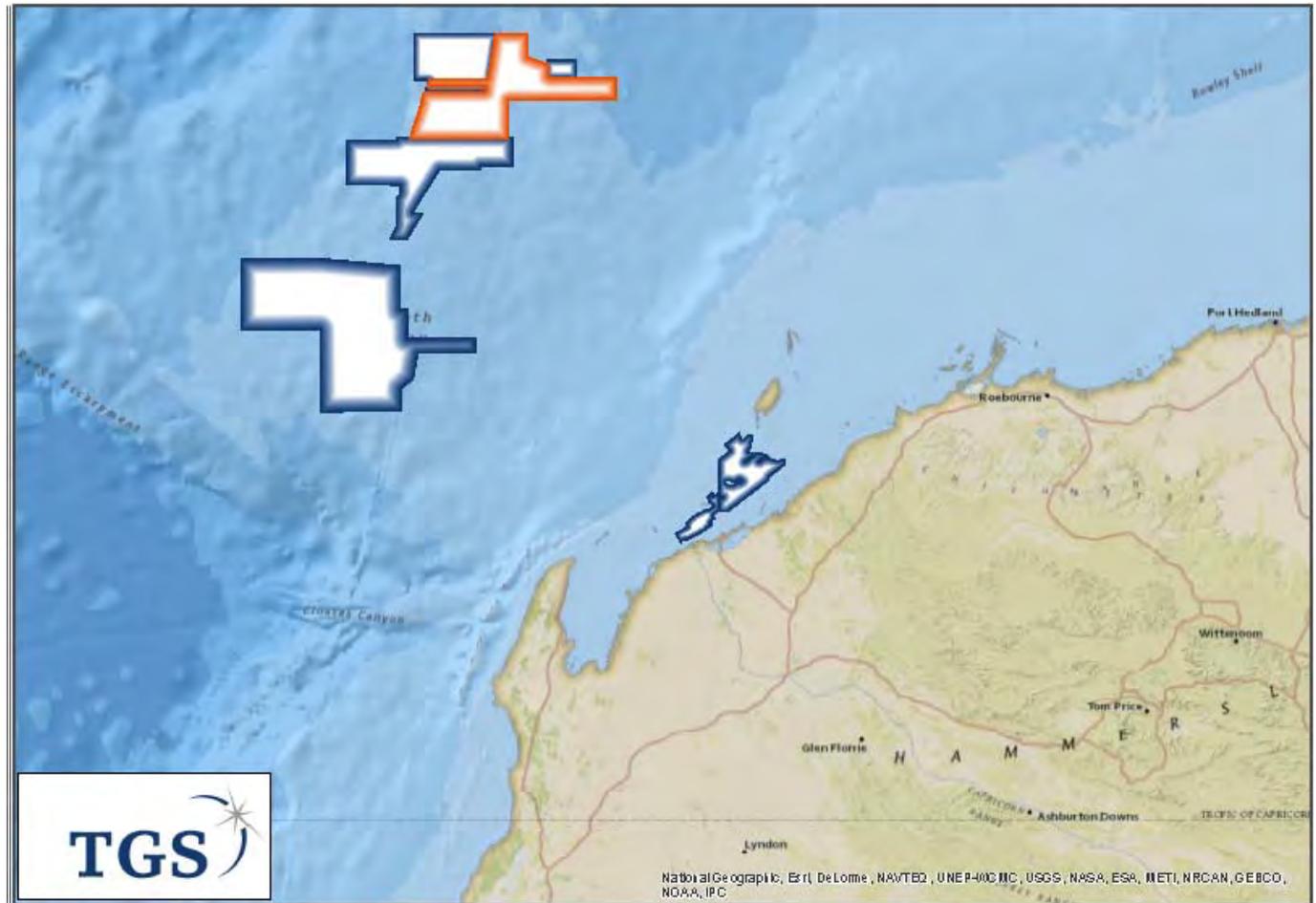


- Flinders multi-client 3D 2001
- Mary Rose multi-client 3D 2011
- Mary Rose Northeast Extension multi-client 3D 2011
- **Gnaraloo multi-client 3D 2012**



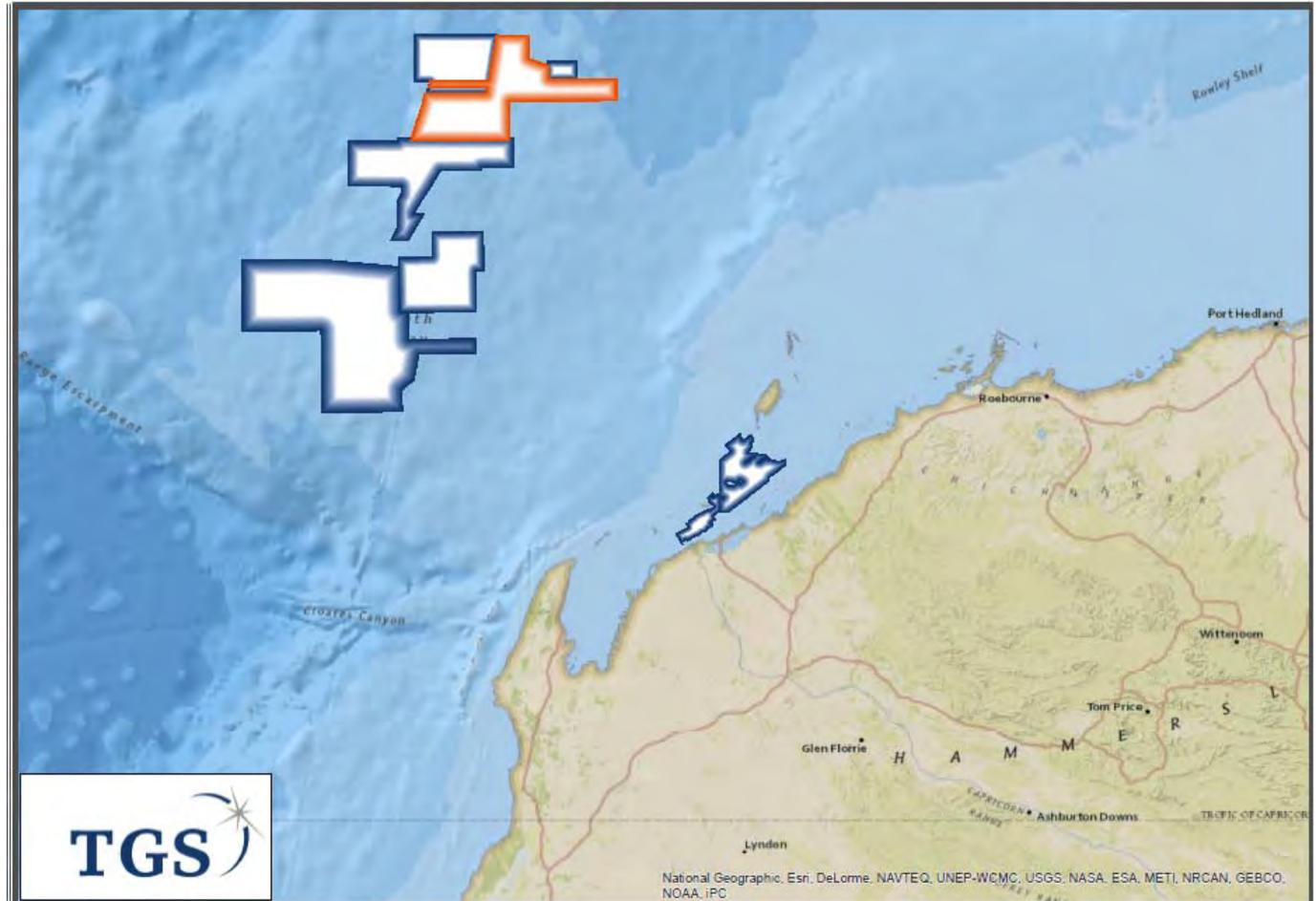
# Long-term Strategy put to life – Carnarvon Basin

- Flinders multi-client 3D 2001
- Mary Rose multi-client 3D 2011
- Mary Rose Northeast Extension multi-client 3D 2011
- Gnoraloo multi-client 3D 2012
- **Cazadores reprocessing 2012**



# Long-term Strategy put to life – Carnarvon Basin

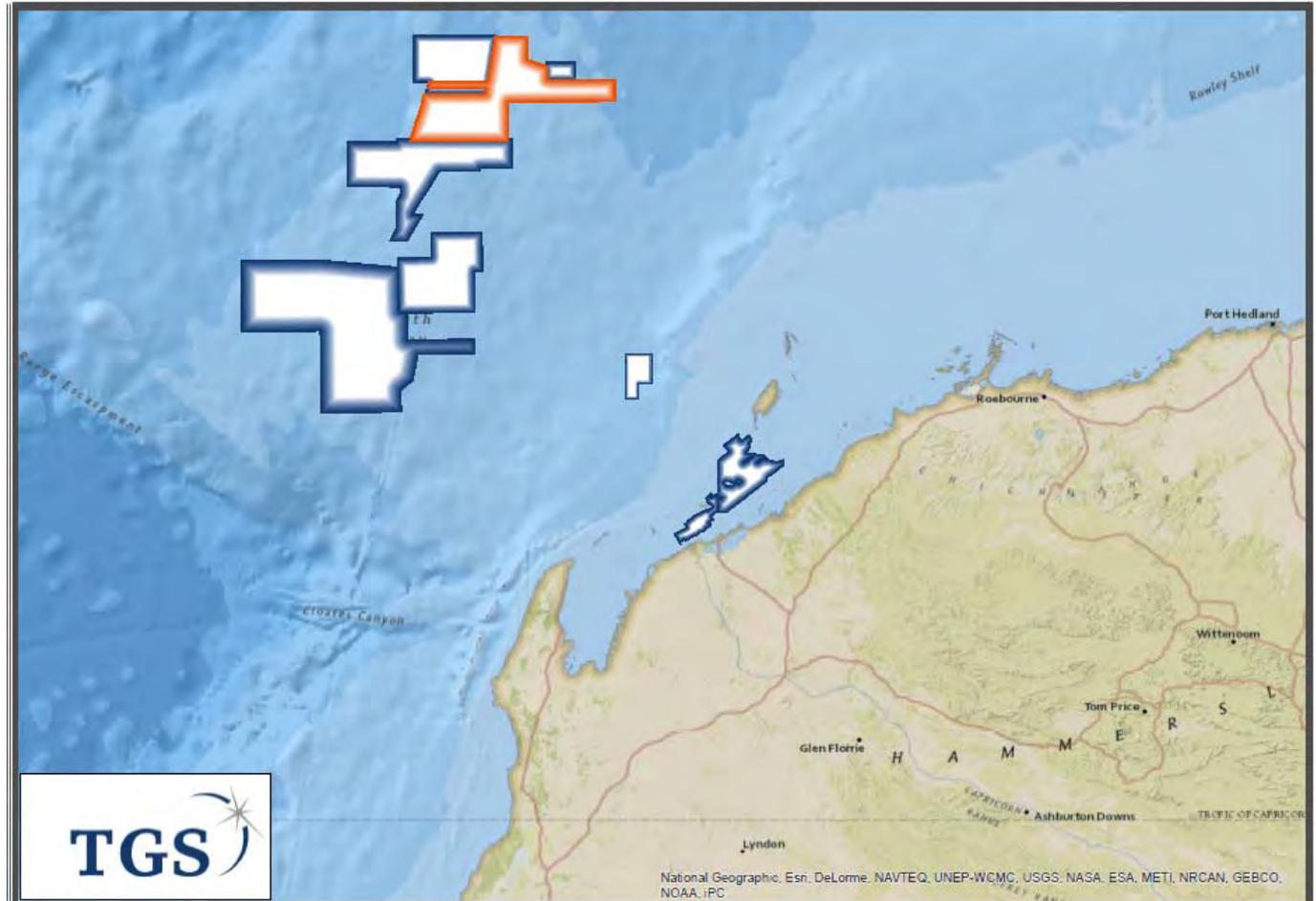
- Flinders multi-client 3D 2001
- Mary Rose multi-client 3D 2011
- Mary Rose Northeast Extension multi-client 3D 2011
- Gnaraloo multi-client 3D 2012
- Cazadores reprocessing 2012
- **Honeycombs multi-client 3D 2012**



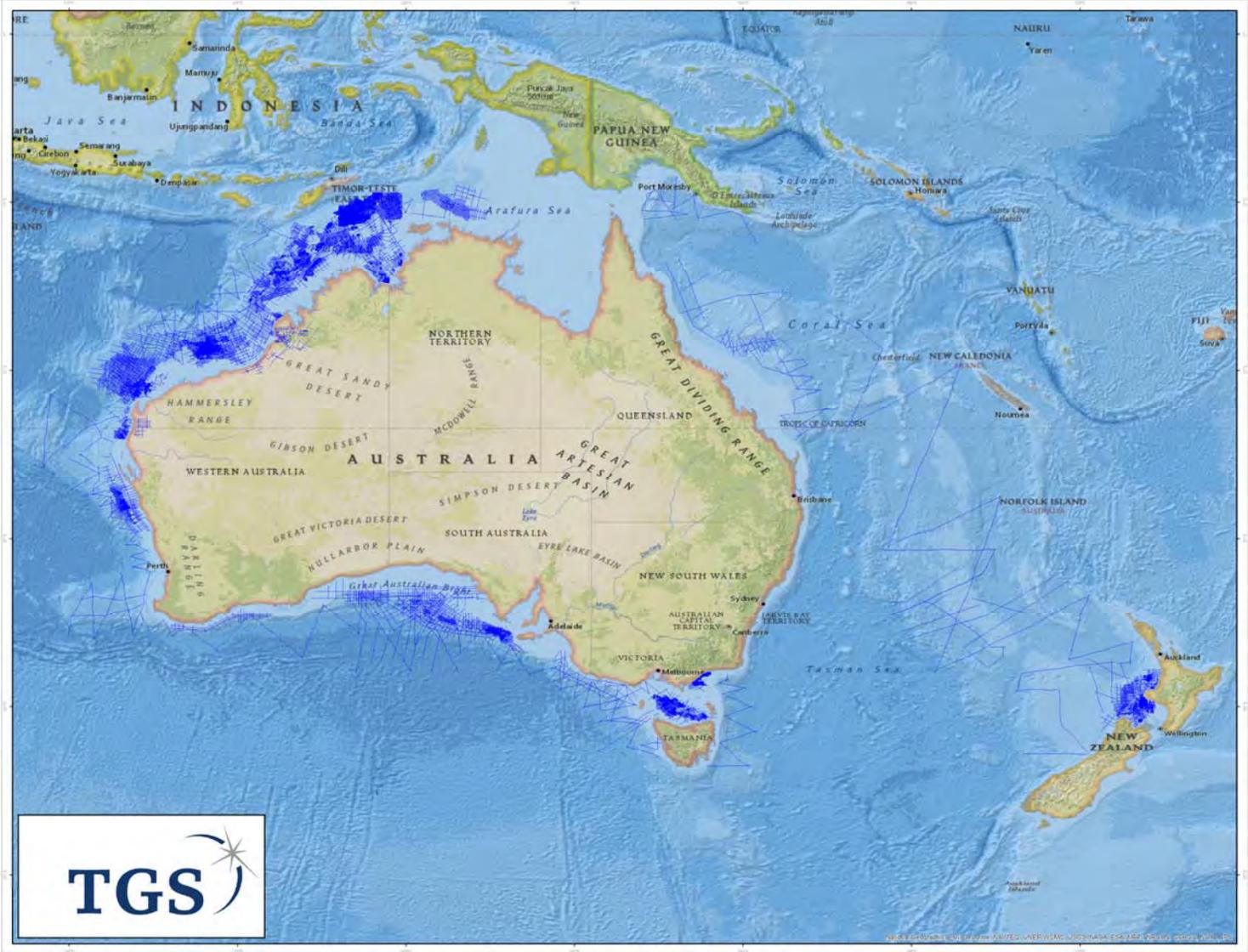
# Long-term Strategy put to life – Carnarvon Basin



- Flinders multi-client 3D 2001
- Mary Rose multi-client 3D 2011
- Mary Rose Northeast Extension multi-client 3D 2011
- Gnaraloo multi-client 3D 2012
- Cazadores reprocessing 2012
- Honeycombs multi-client 3D 2012
- **The Three Bears multi-client 3D 2012**



# Fugro 2D Brokerage – Offshore Australia



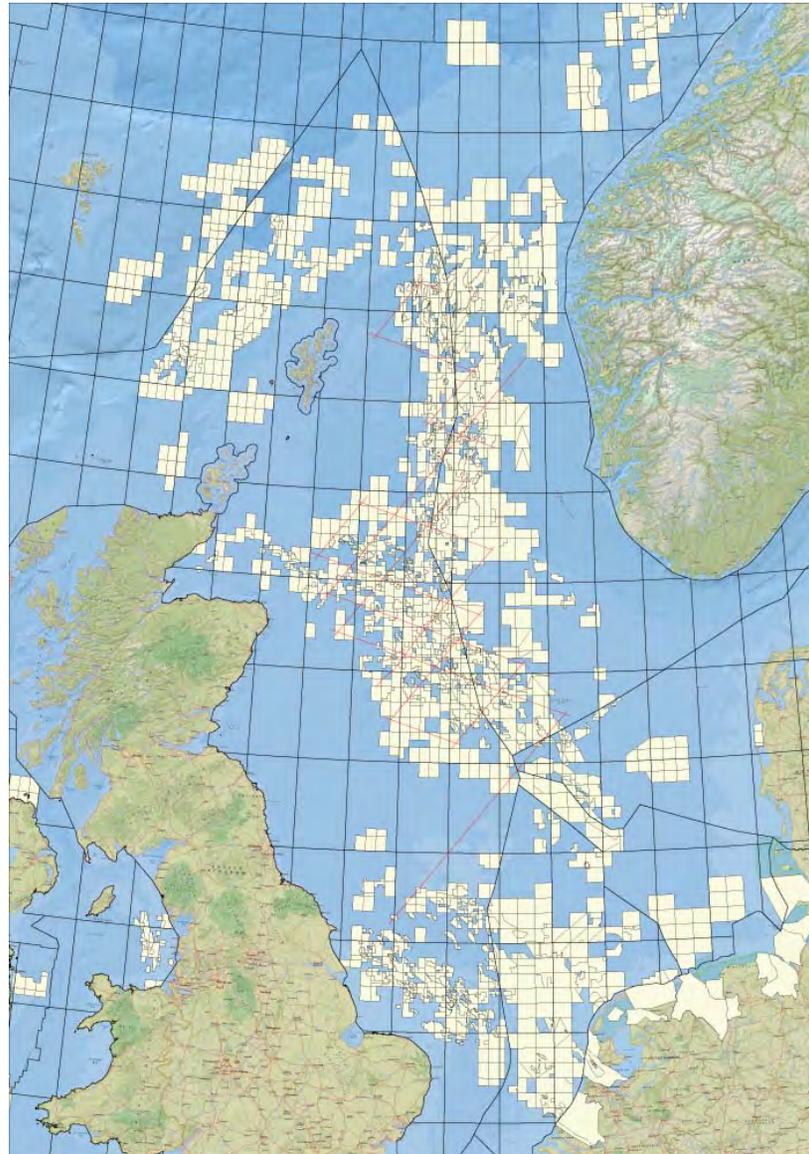
- TGS has treated the Carnarvon basin as a frontier area with high pre-funding
- Sales performance from recent projects are meeting expectations
- Further opportunities to grow library drawing on 2D and 3D library

- In recent years, drilling success rate has improved dramatically
- Record number of acreage awards in the 28th license round
- Development of recent discoveries will enhance West of Shetland infrastructure and help to drive further growth



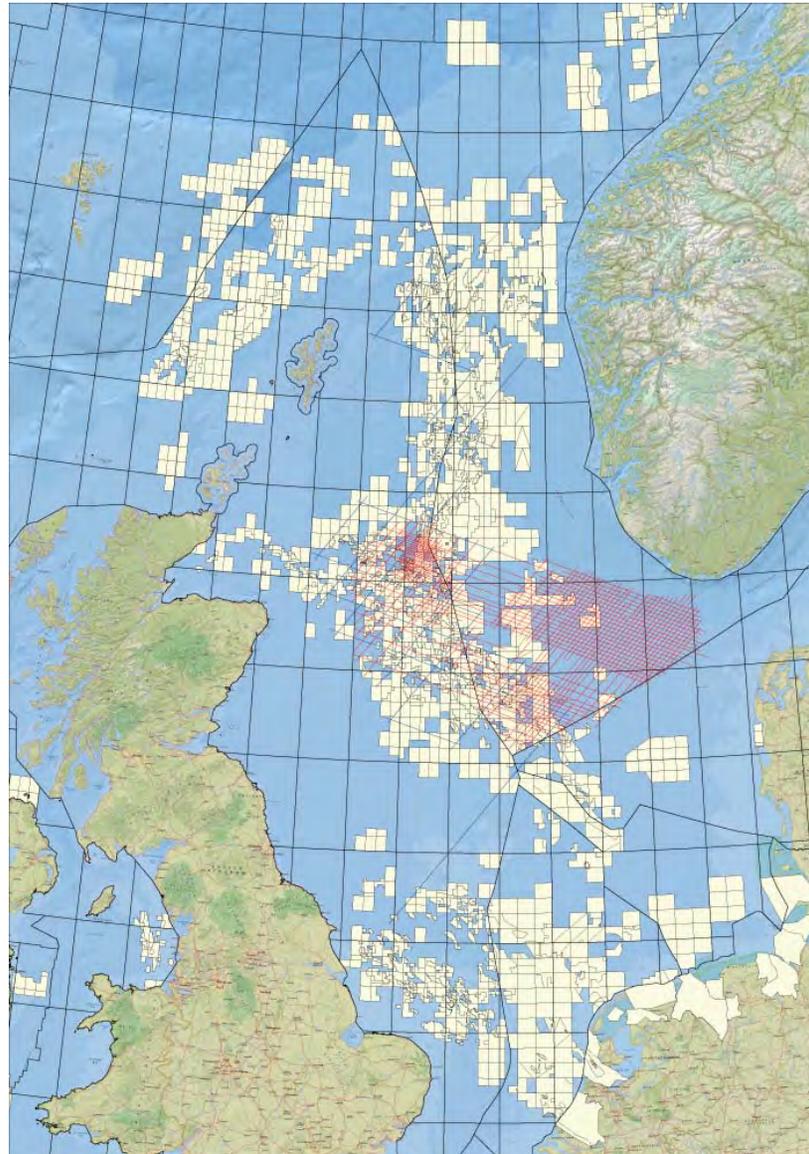
# Rejuvenate Mature Basins

- 2003



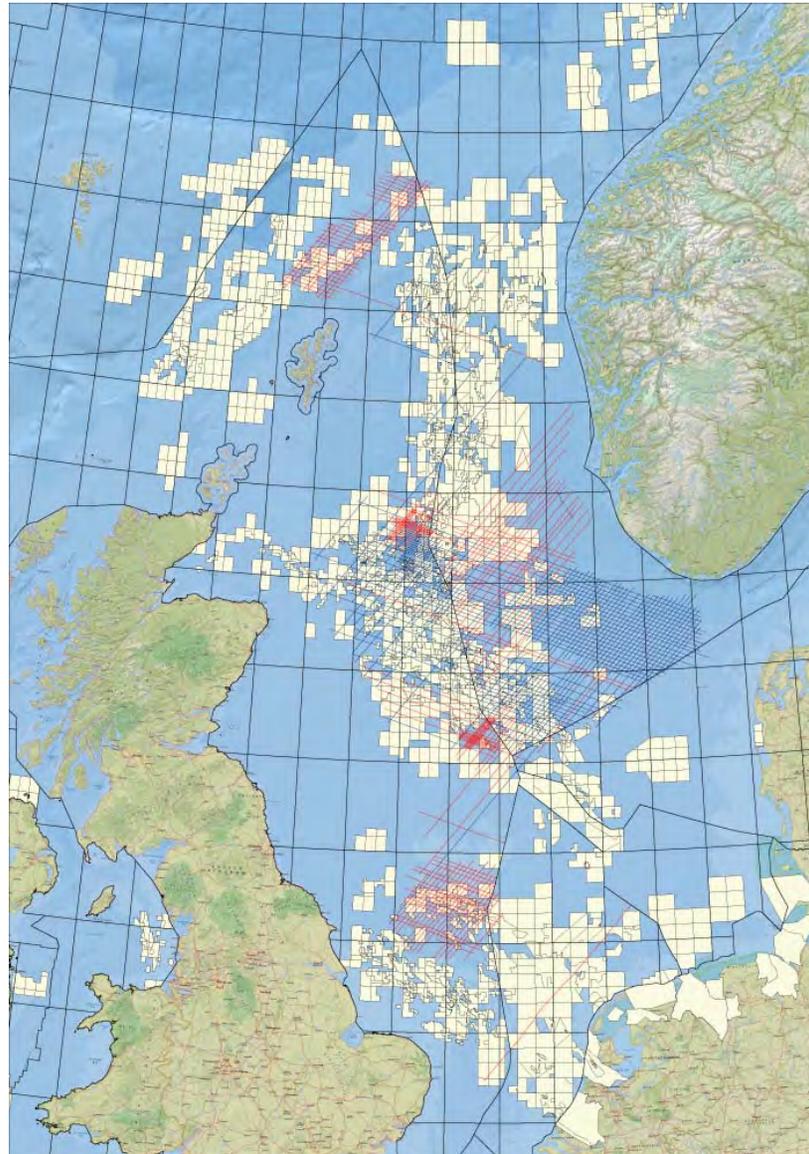
# Rejuvenate Mature Basins

- 2003
- **2004**



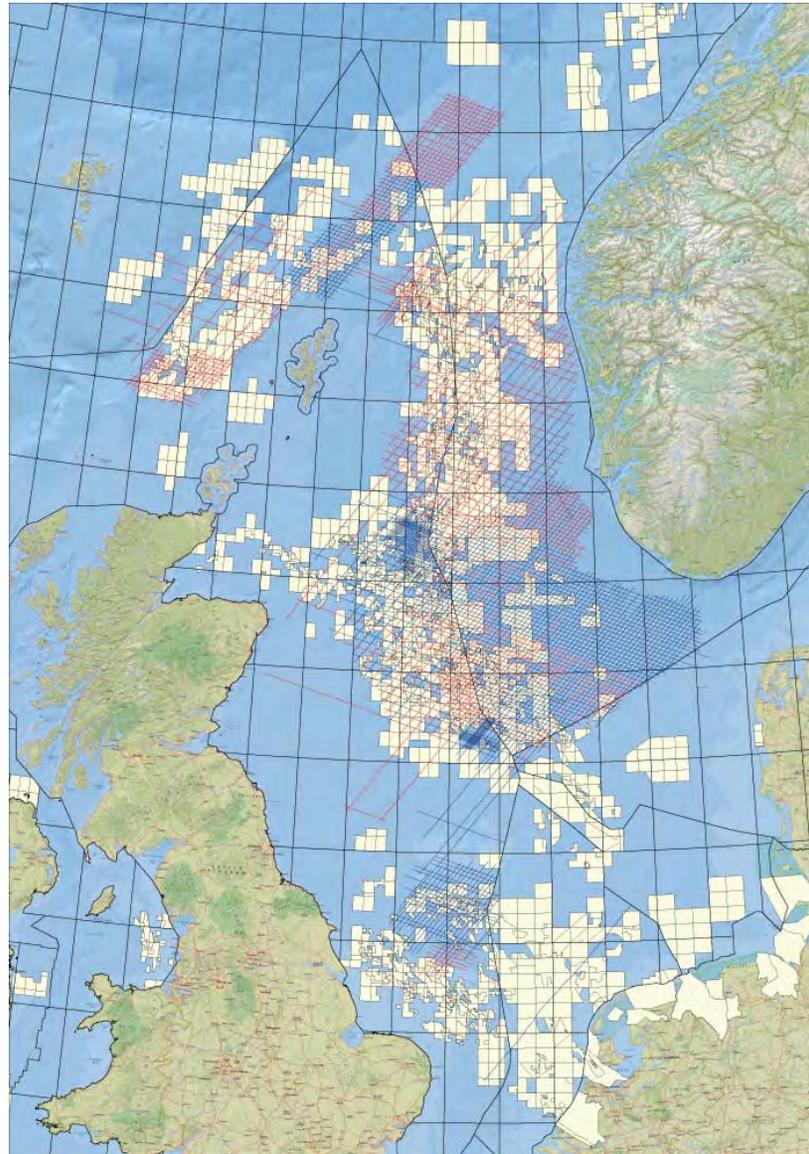
# Rejuvenate Mature Basins

- 2003
- 2004
- **2005**



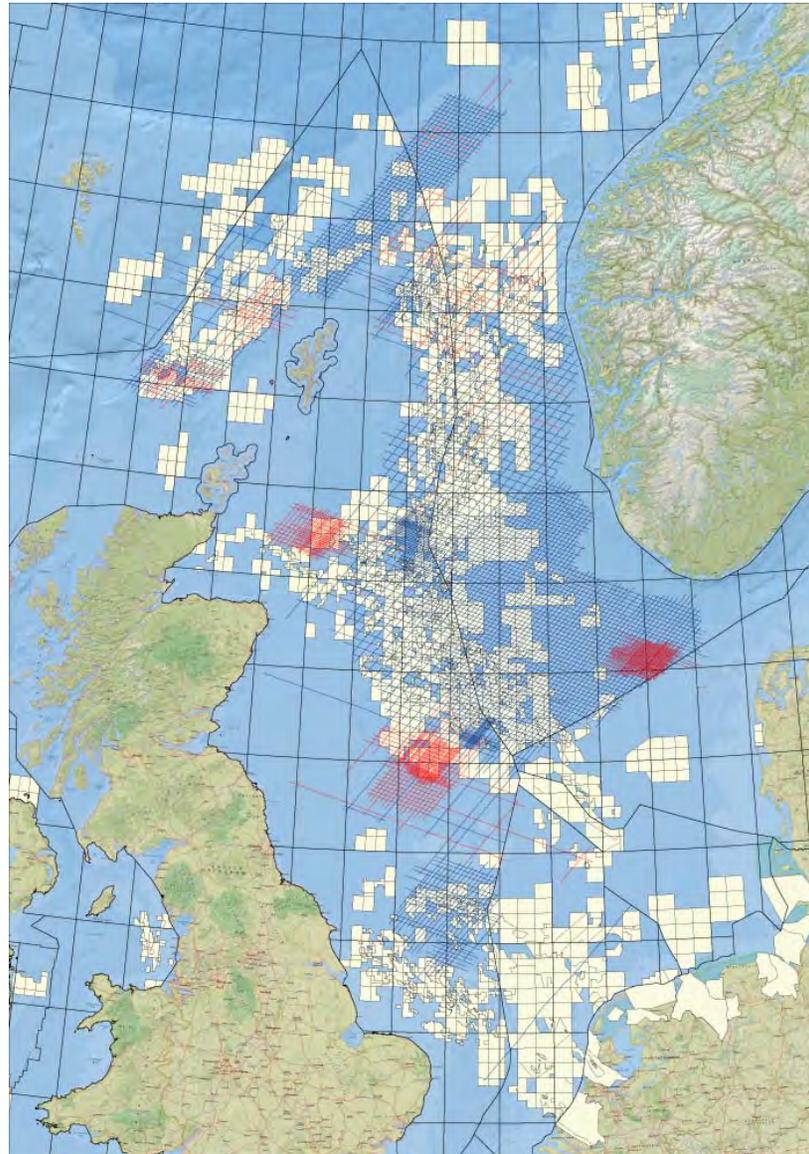
# Rejuvenate Mature Basins

- 2003
- 2004
- 2005
- **2006**



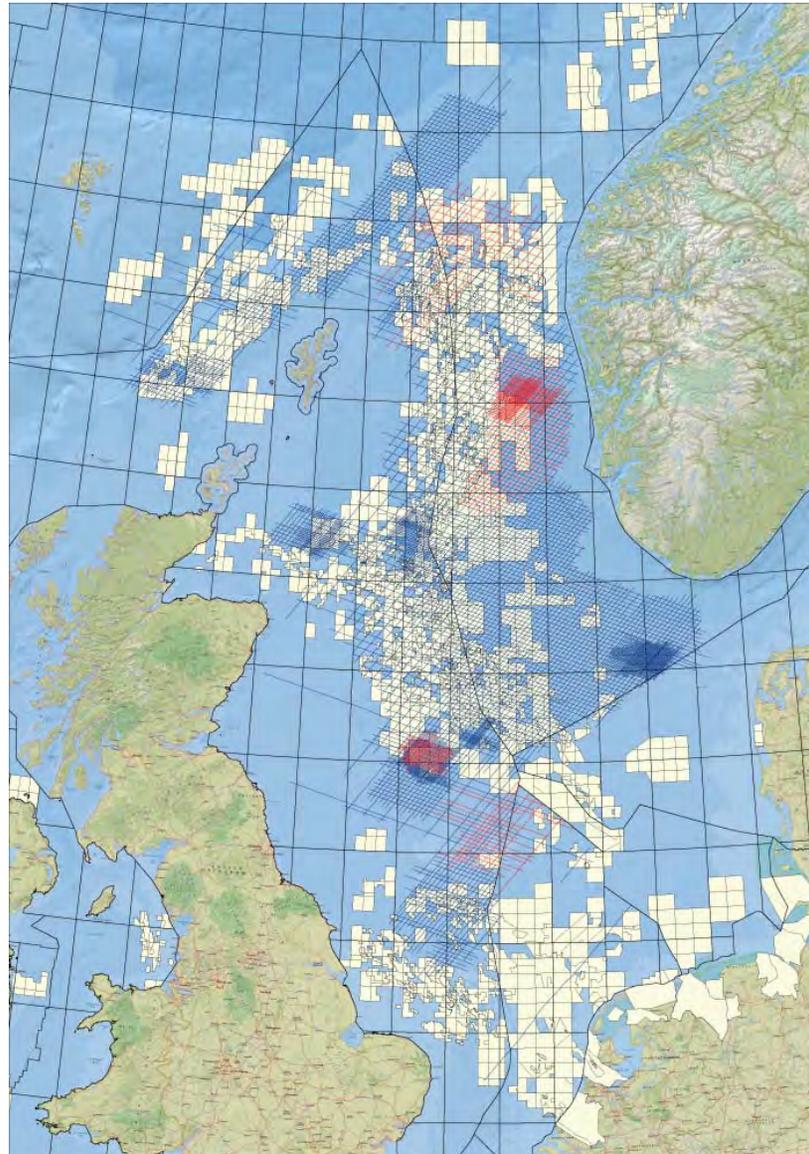
# Rejuvenate Mature Basins

- 2003
- 2004
- 2005
- 2006
- **2007**



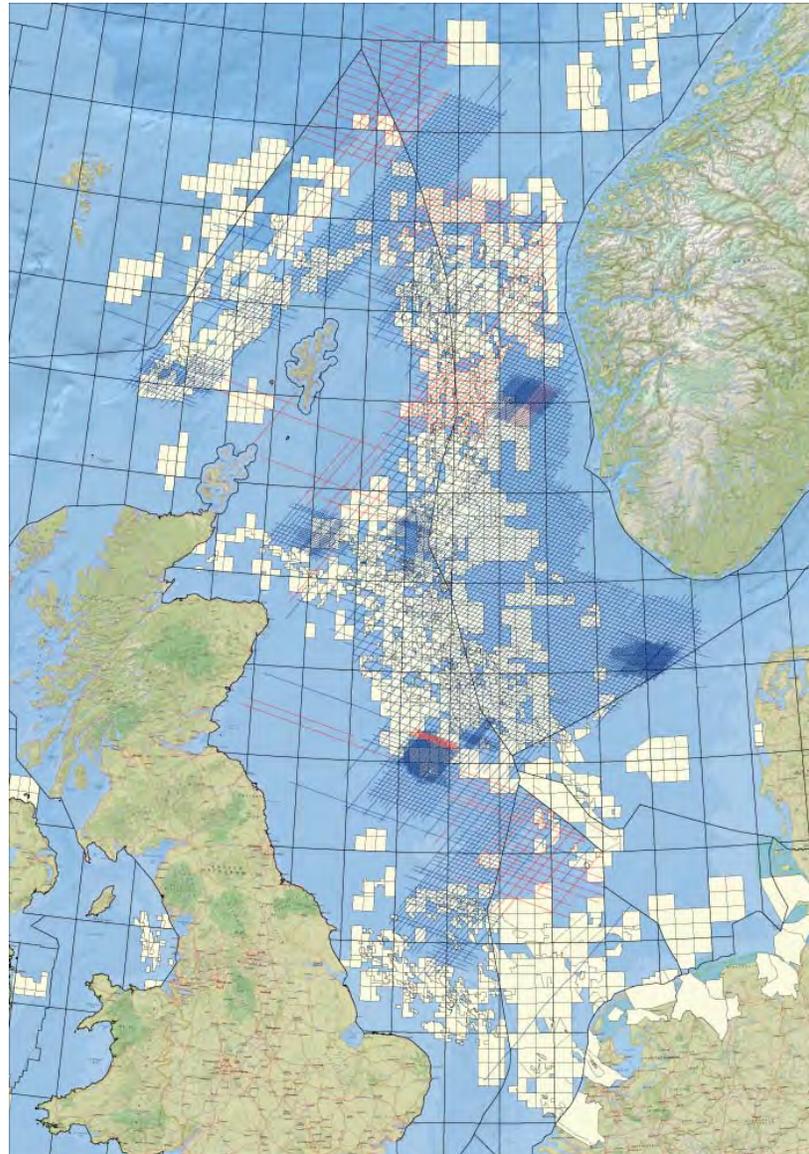
# Rejuvenate Mature Basins

- 2003
- 2004
- 2005
- 2006
- 2007
- **2008**



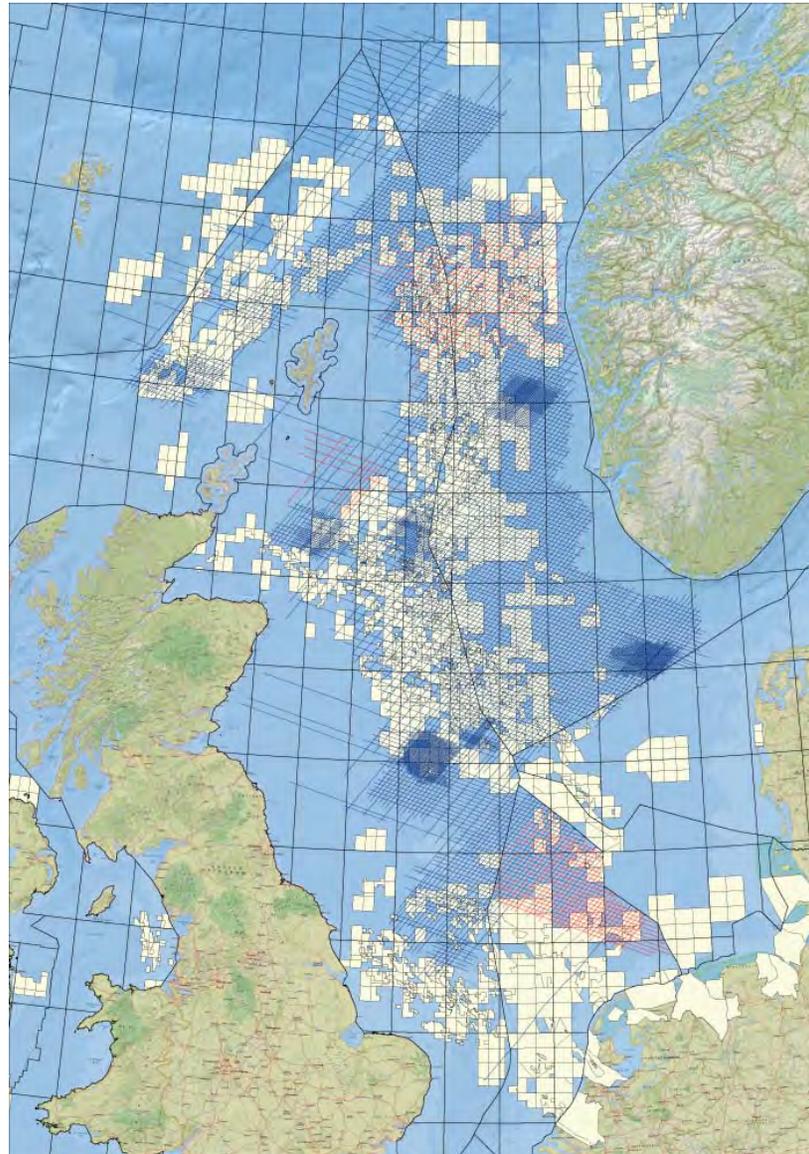
# Rejuvenate Mature Basins

- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- **2009**



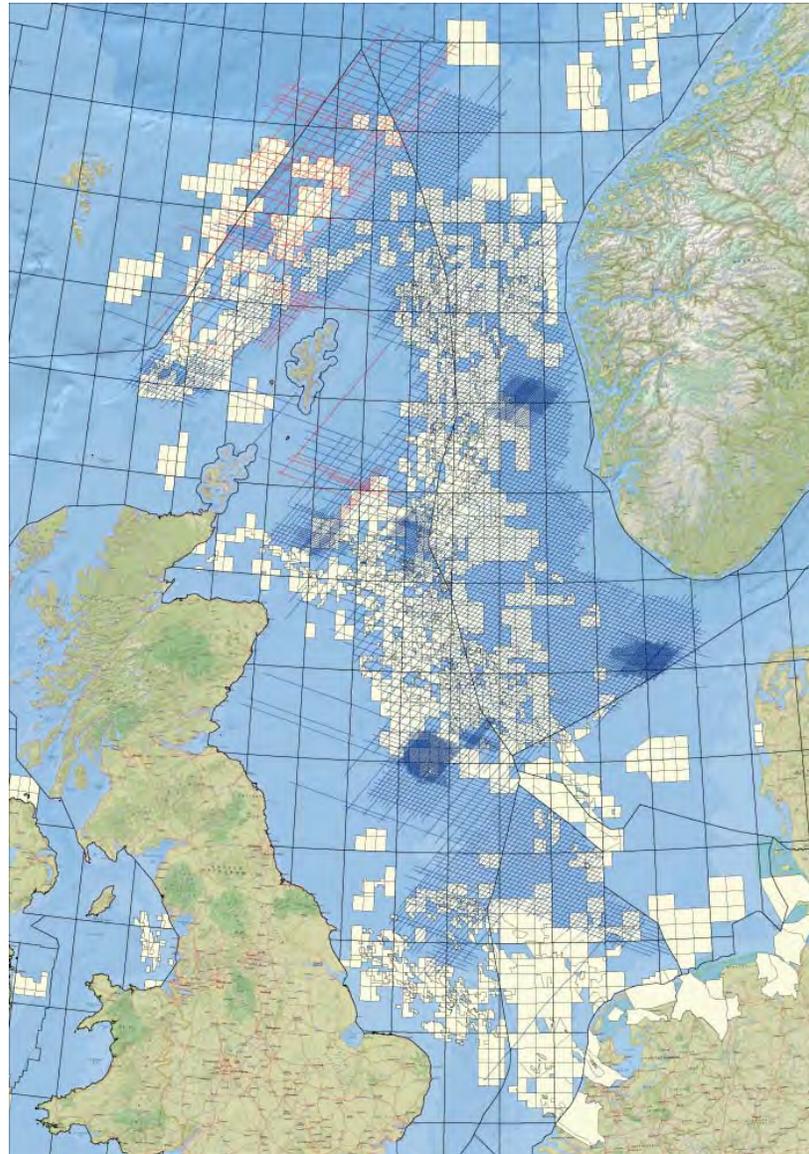
# Rejuvenate Mature Basins

- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- **2010**



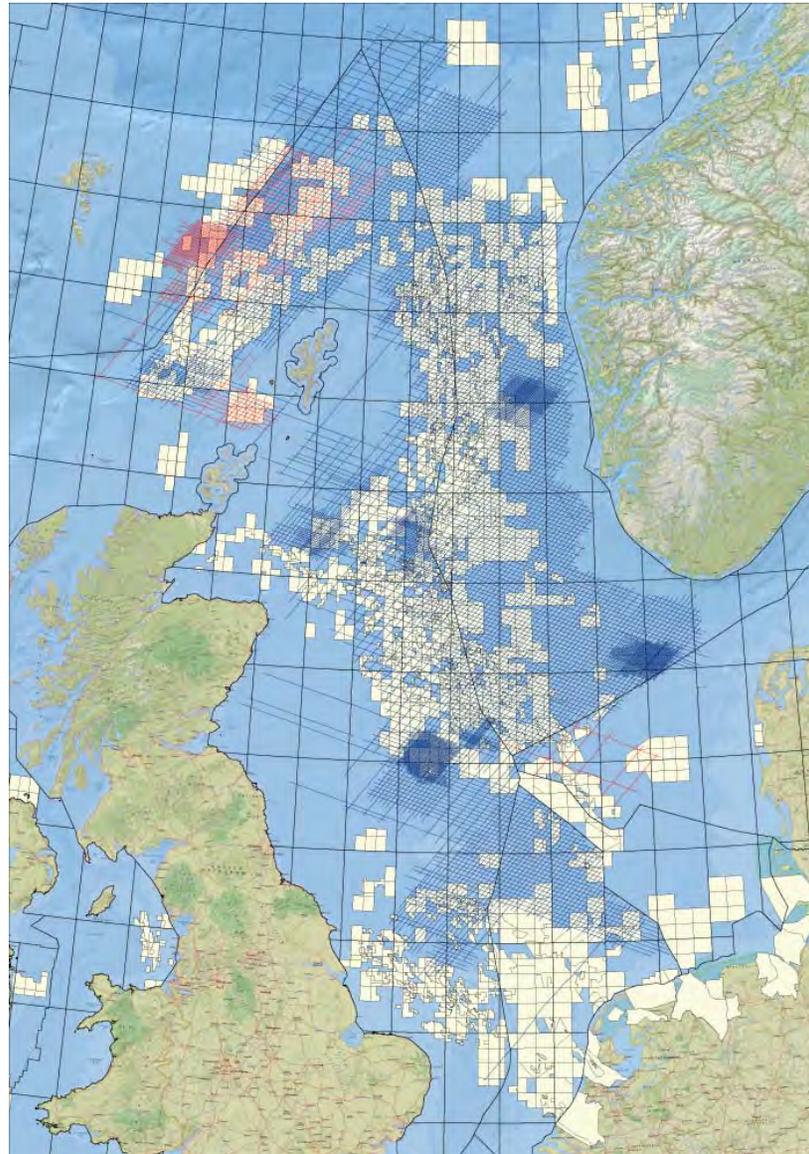
# Rejuvenate Mature Basins

- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- **2011**



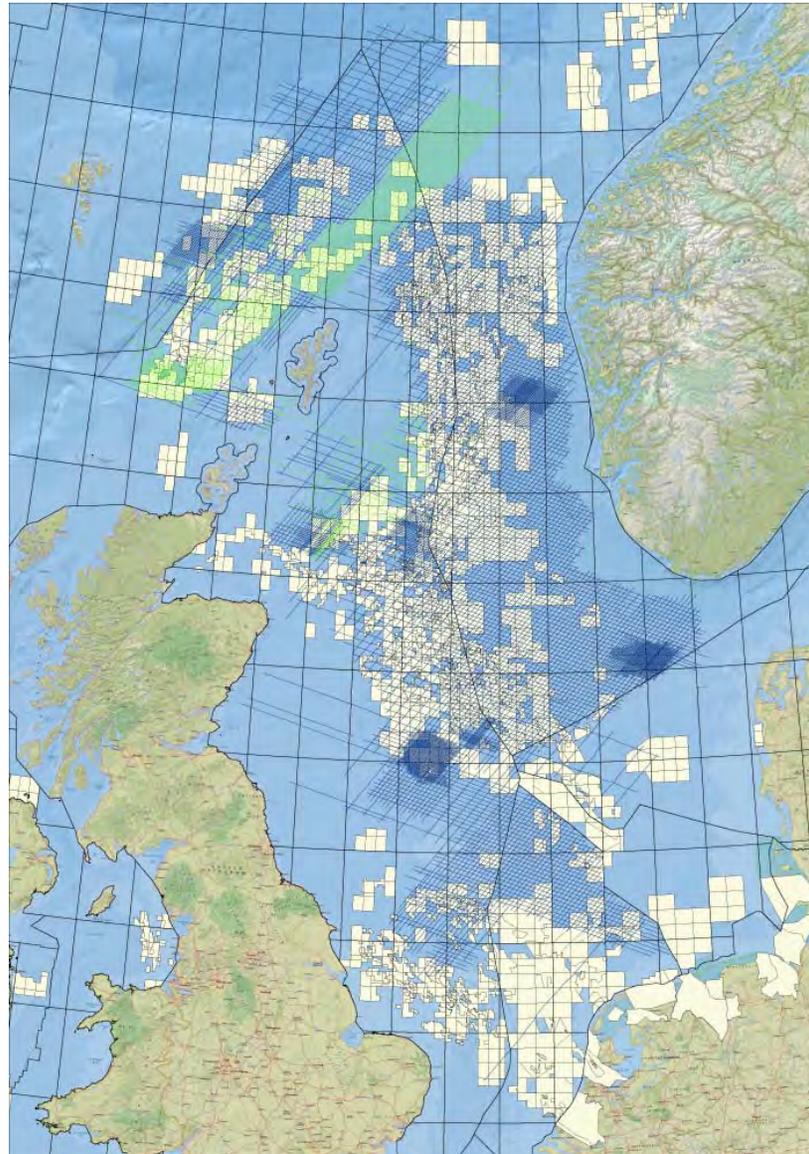
# Rejuvenate Mature Basins

- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- **2012**

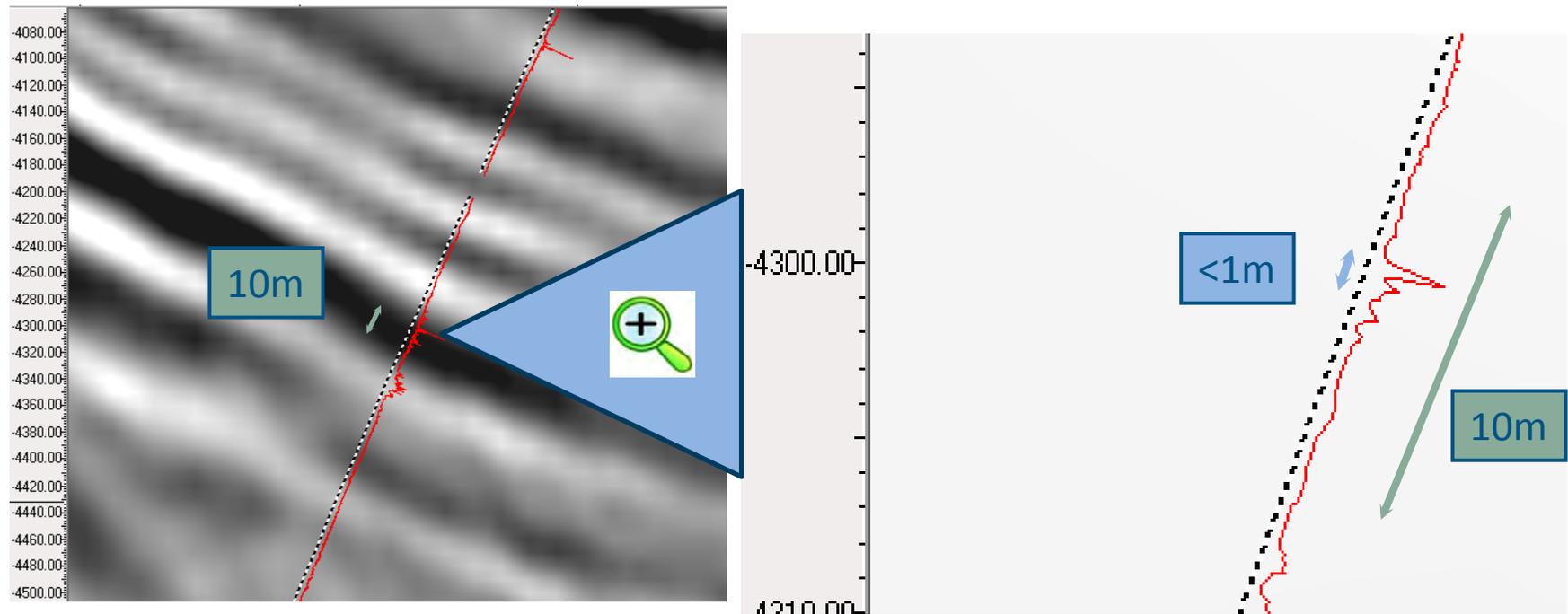


# Rejuvenate Mature Basins

- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- **AMR\_NBR**



# Seismic Resolution vs. Well Log Resolution



Resolution in well data 30 times better than seismic vertically

- Our customers are global; TGS database has unmatched global coverage
- TGS has a unique approach to project development
  - Start with a regional approach (mainly 2D)
  - A mature basin today, can be a frontier basin tomorrow.....
  - Leverage regional 2D investments and G&G knowledge to high-grade 3D investments
  - Upgrade existing 2D and 3D library with new processing technology
  - Re-enter basin with new acquisition technology
  - Proactive, not reactive. Lead, not follow

Break



# Delivering Quality to Customers

Rod Starr, SVP Western Hemisphere



# Data Investment Quality Considerations



## Challenge

## Opportunity

Availability of existing data



Customer activity



Exploration success



E&P maturity



Environmental challenges



Geoscience



Technology



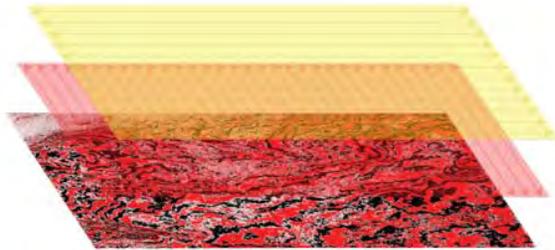
Geopolitics



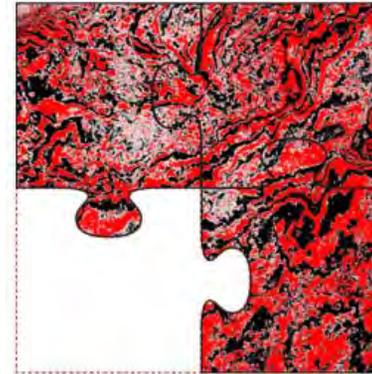
Industry pre-funding



## Intensify



## Expand



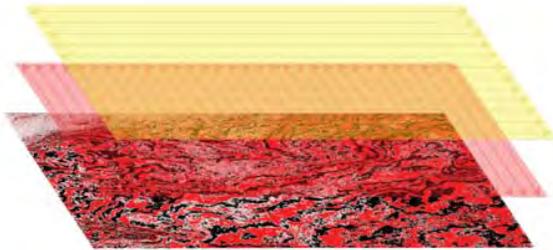
## New Entry



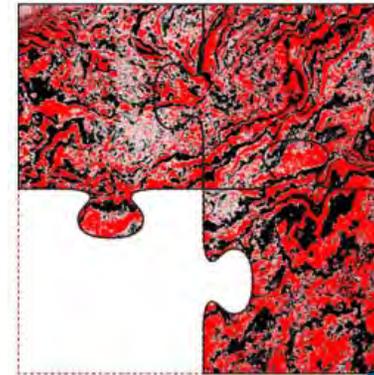
## Technology Selection



**Intensify**



**Expand**



**New Entry**



**Technology Selection**

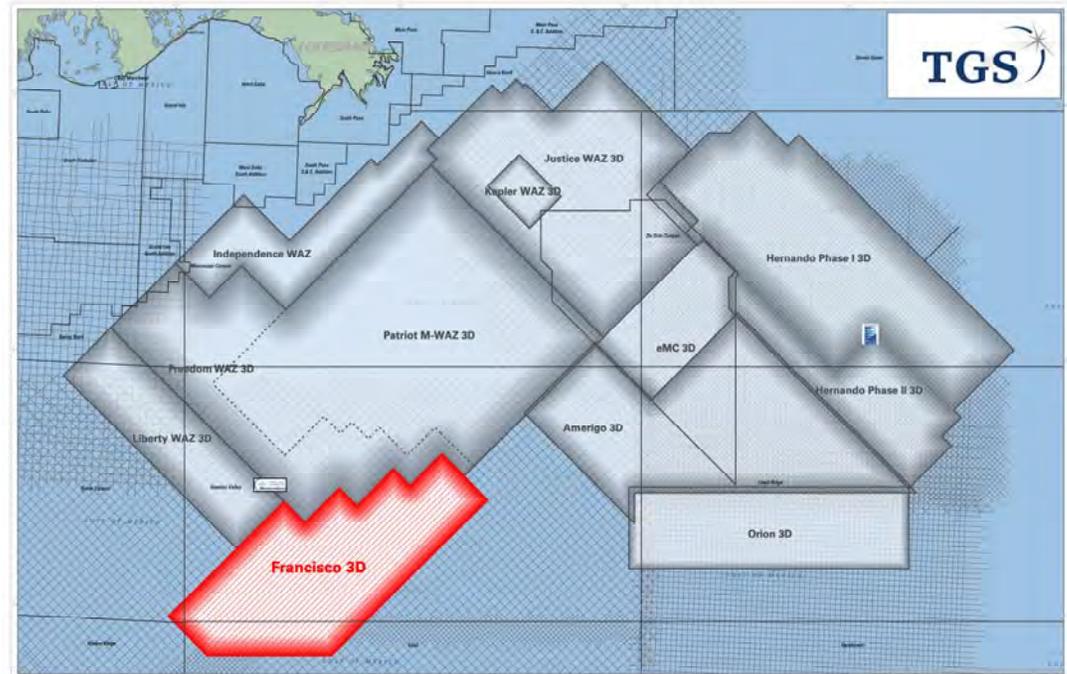


## World-class producing hydrocarbon province

### Significant TGS data library

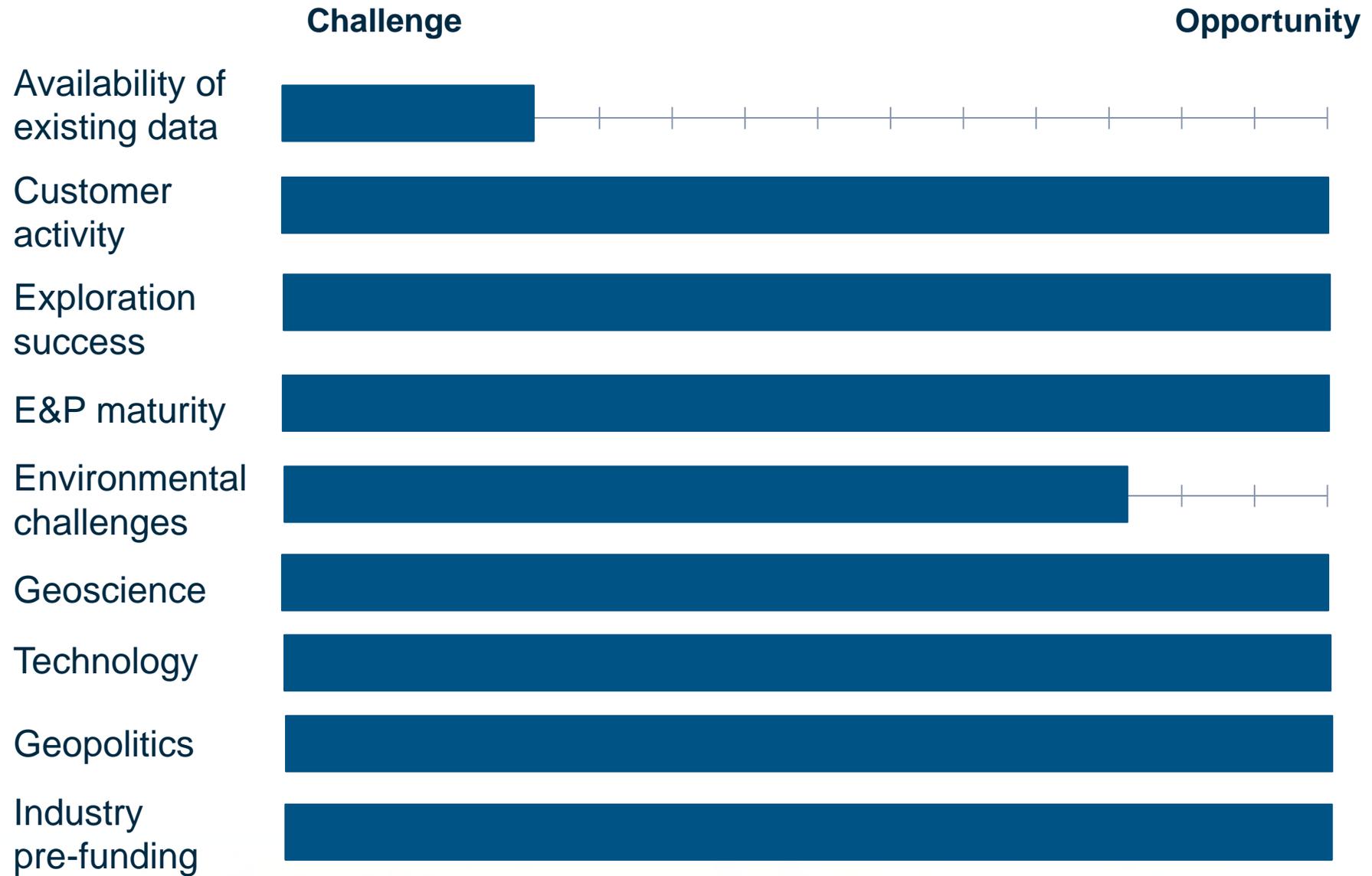
- 615,280 km 2D
- 536,050 km 2D reprocessed
- 92,037 km<sup>2</sup> 3D
- 185,970 km<sup>2</sup> 3D reprocessed
- 43,124 km<sup>2</sup> WAZ

...and growing



- Stable geo-political regime
- Regular license rounds under BOEM 5-year plan
- ~75 E&P companies active in CGOM
- 30% oil and 23% natural gas production in US from GOM
- Significant discoveries continue to be made
- Seismic imaging is still needed in complex and new areas
- TGS has >30 years experience in this region

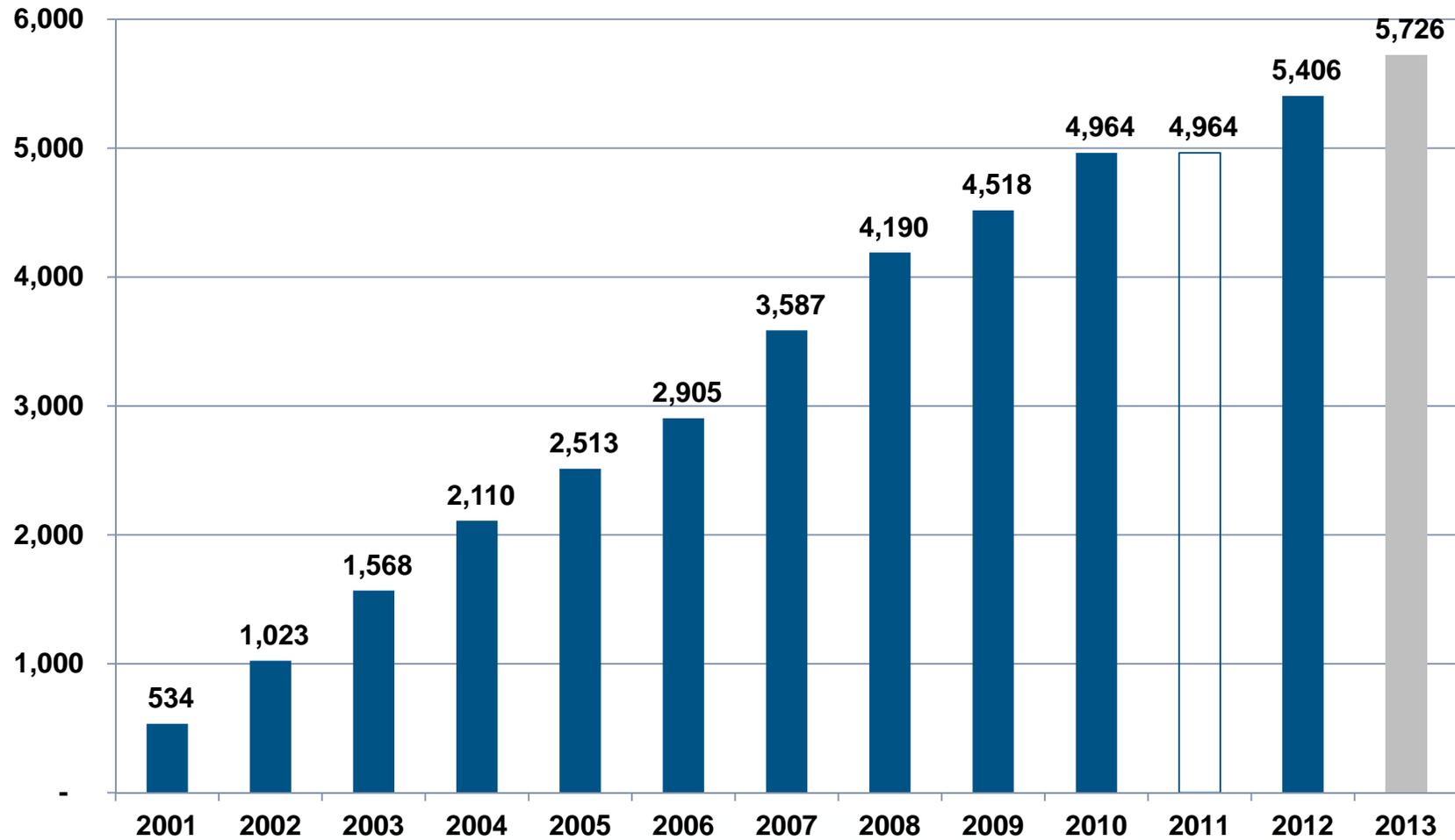
# CGOM – Investment Quality Considerations



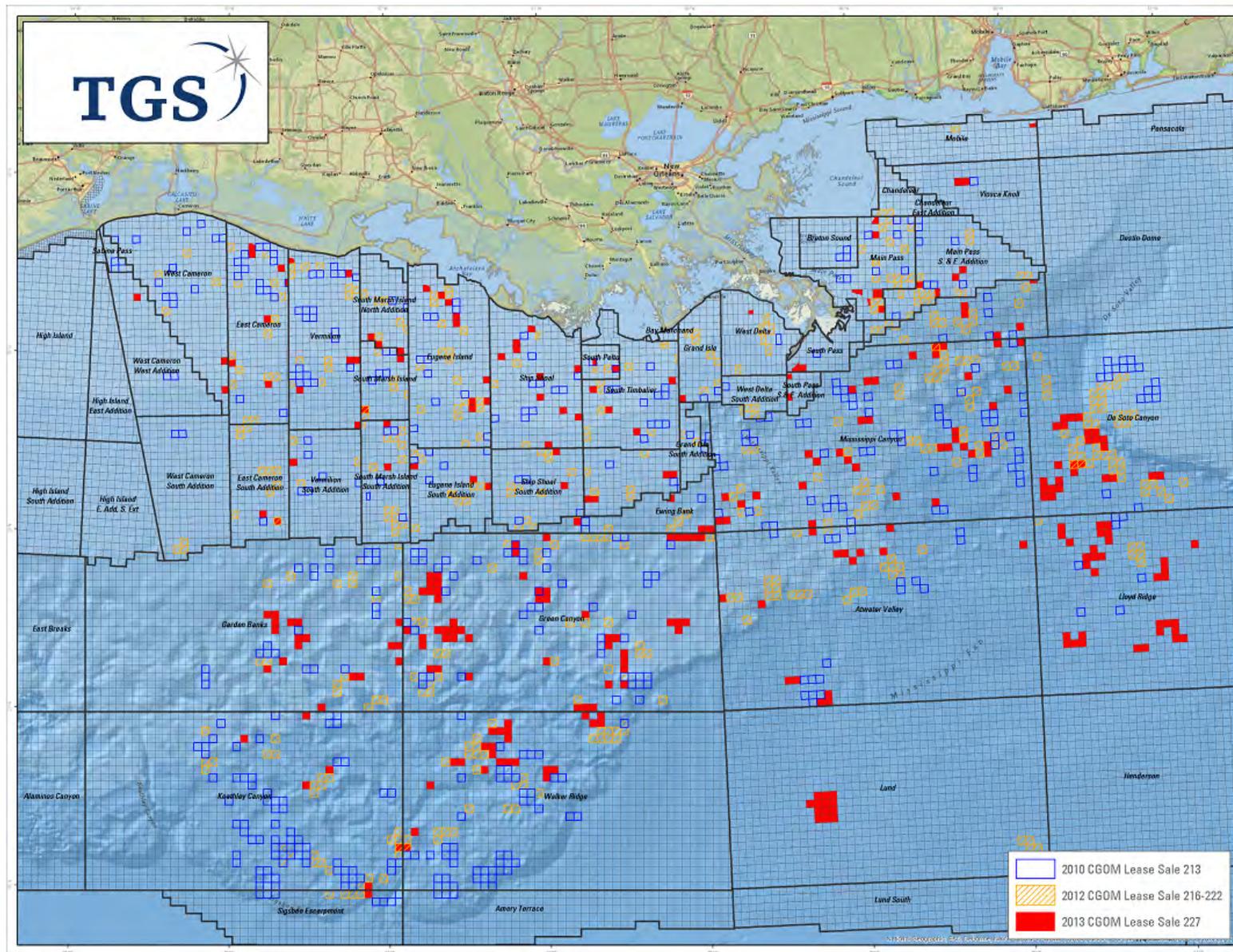
# Continued Industry Growth in CGOM



Number of leased blocks (cumulative)



# CGOM Lease Picture 2010, 2012 and 2013

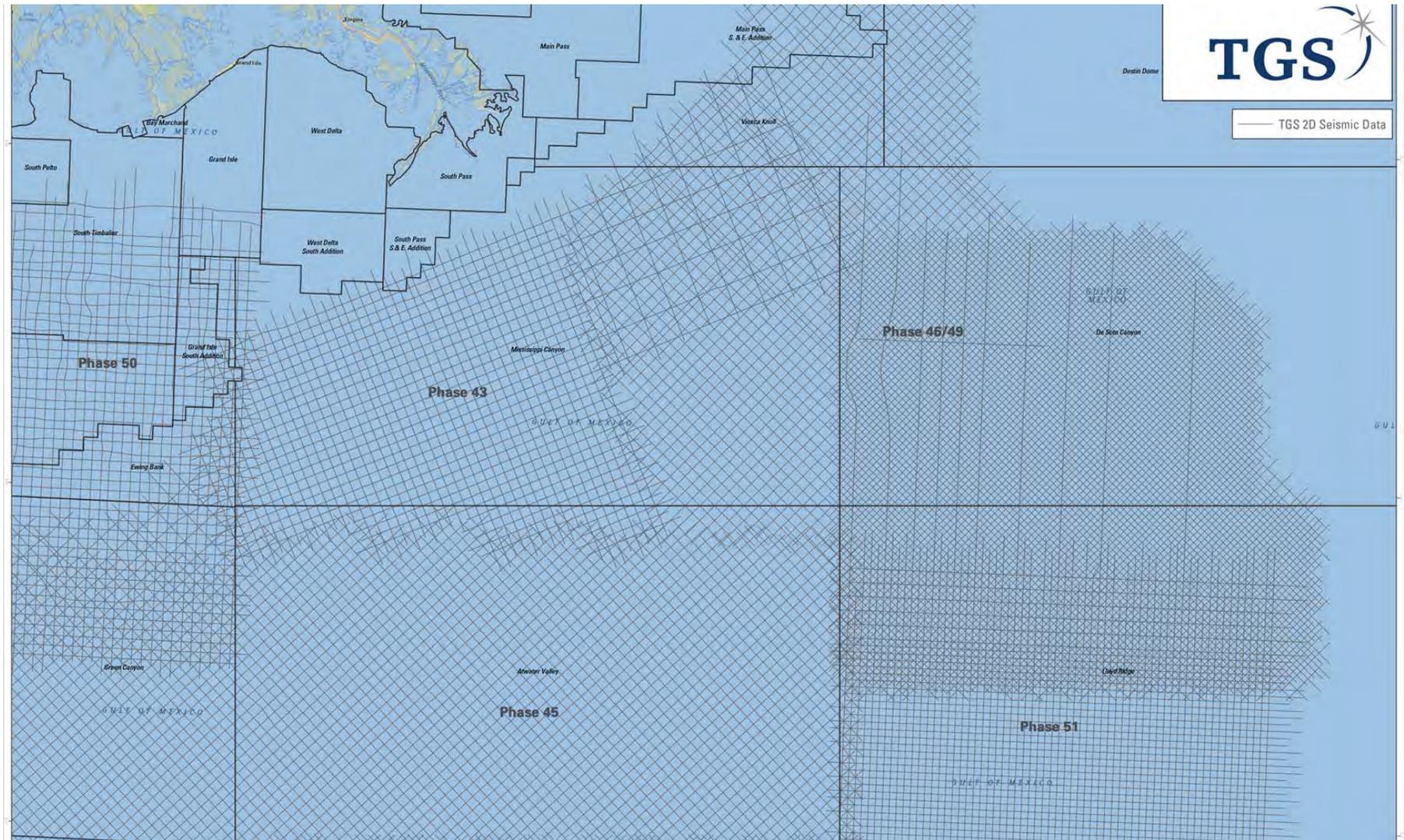




# Intensify Data Investments



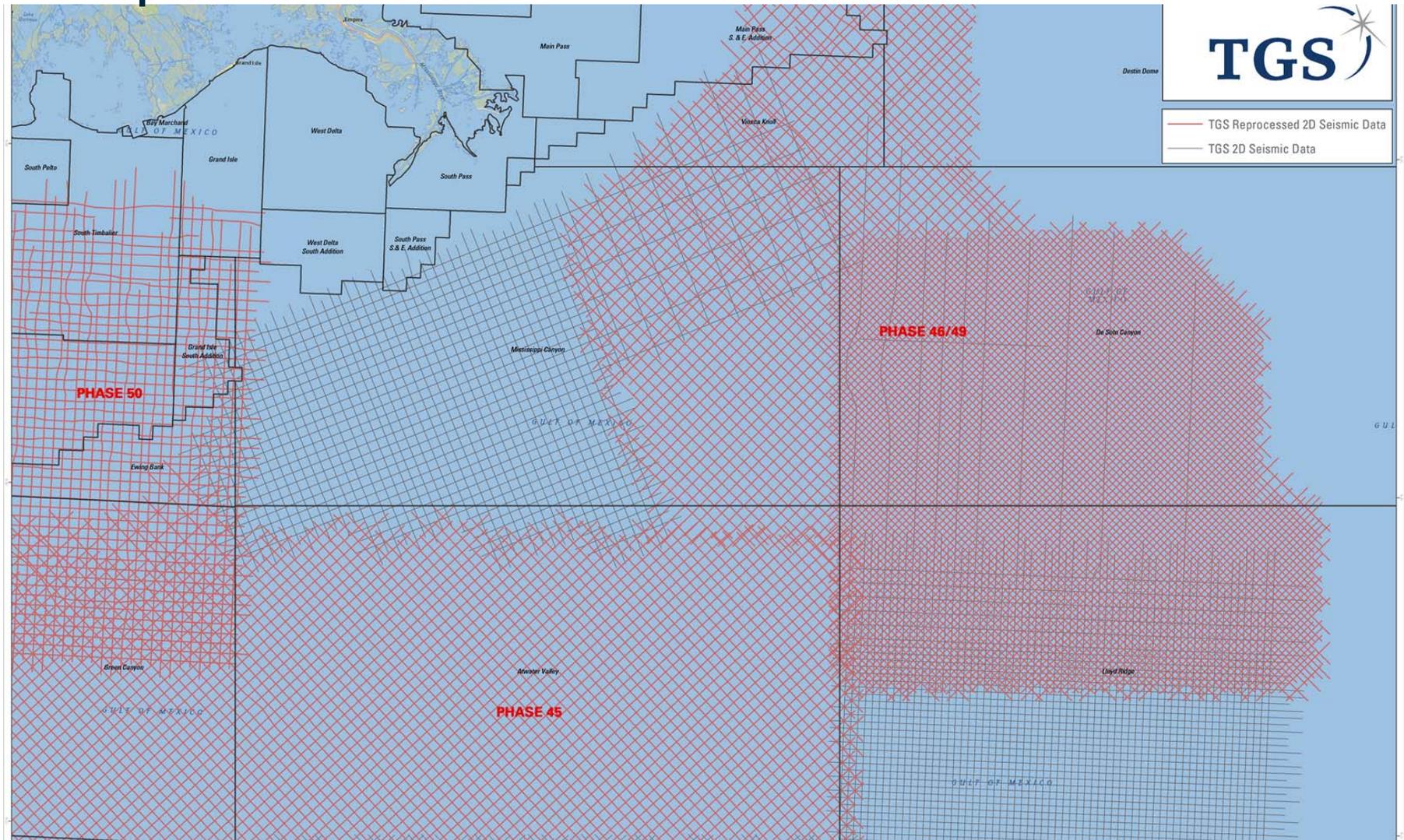
## 2D: 1998 – 2000



# Intensify Data Investments



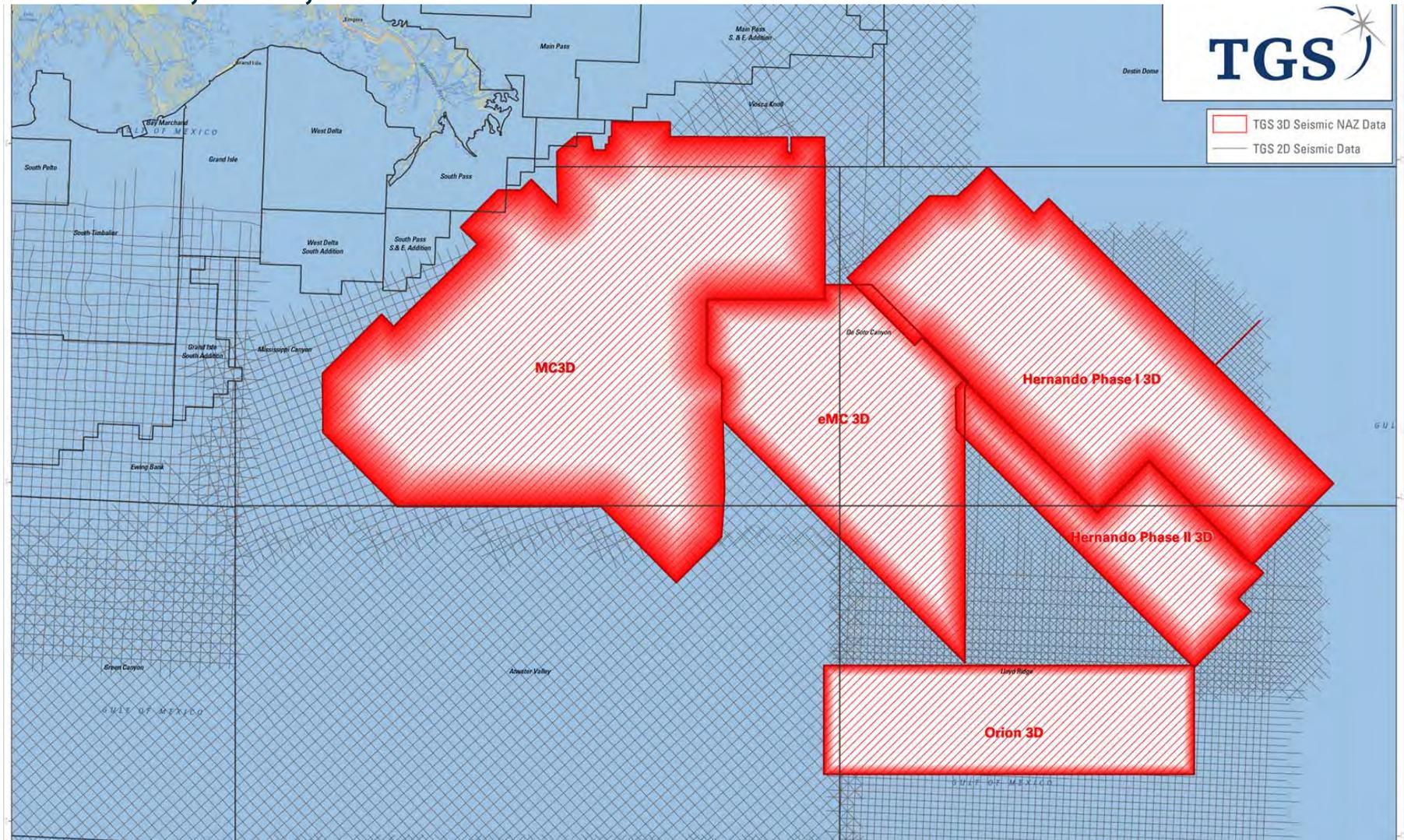
## 2D Repro: 2001 – 2006



# Intensify Data Investments



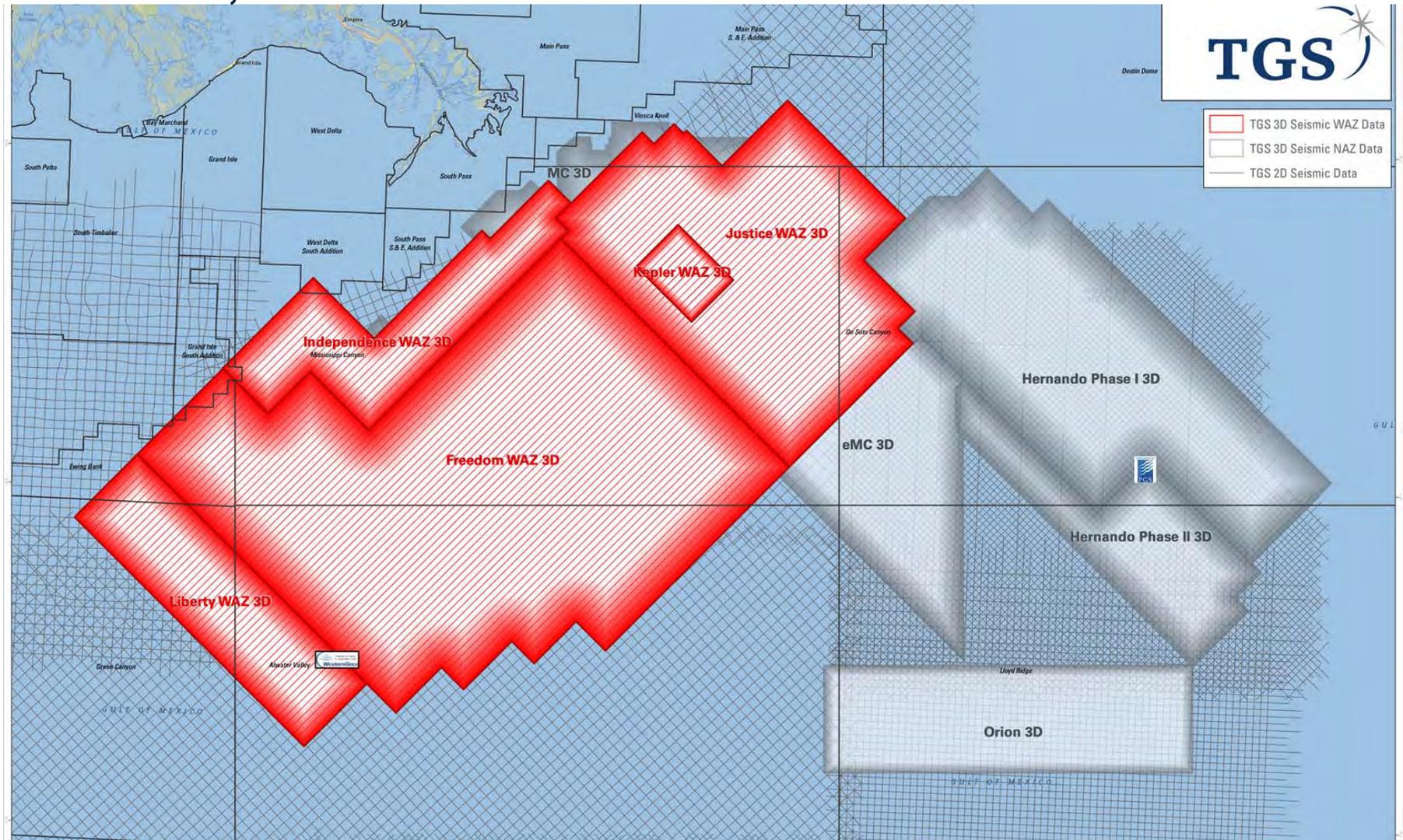
## 3D: 2001, 2004, 2009



# Intensify Data Investments



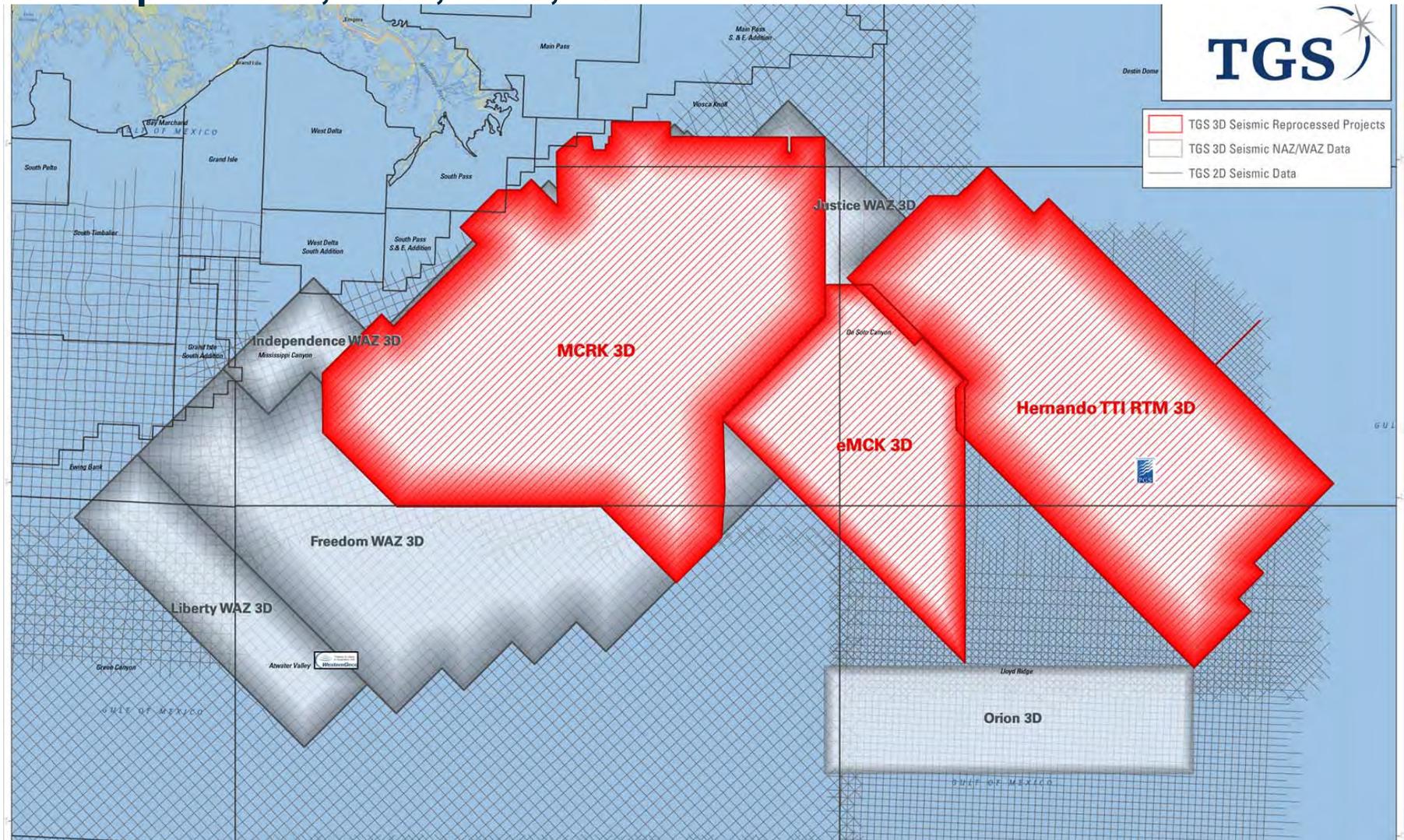
## WAZ: 2010, 2013



# Intensify Data Investments



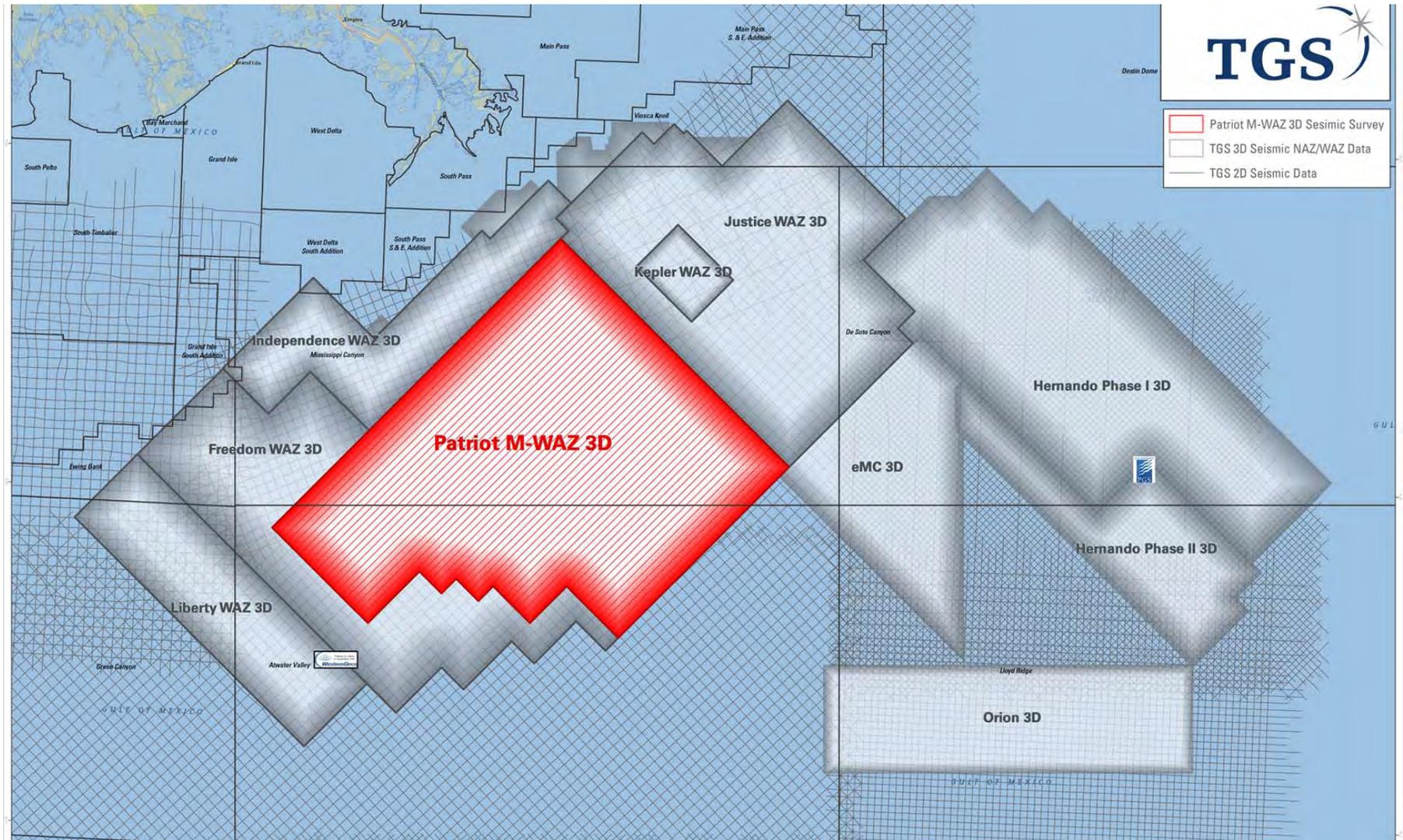
## 3D Repro: 2004, 2006, 2009, 2012



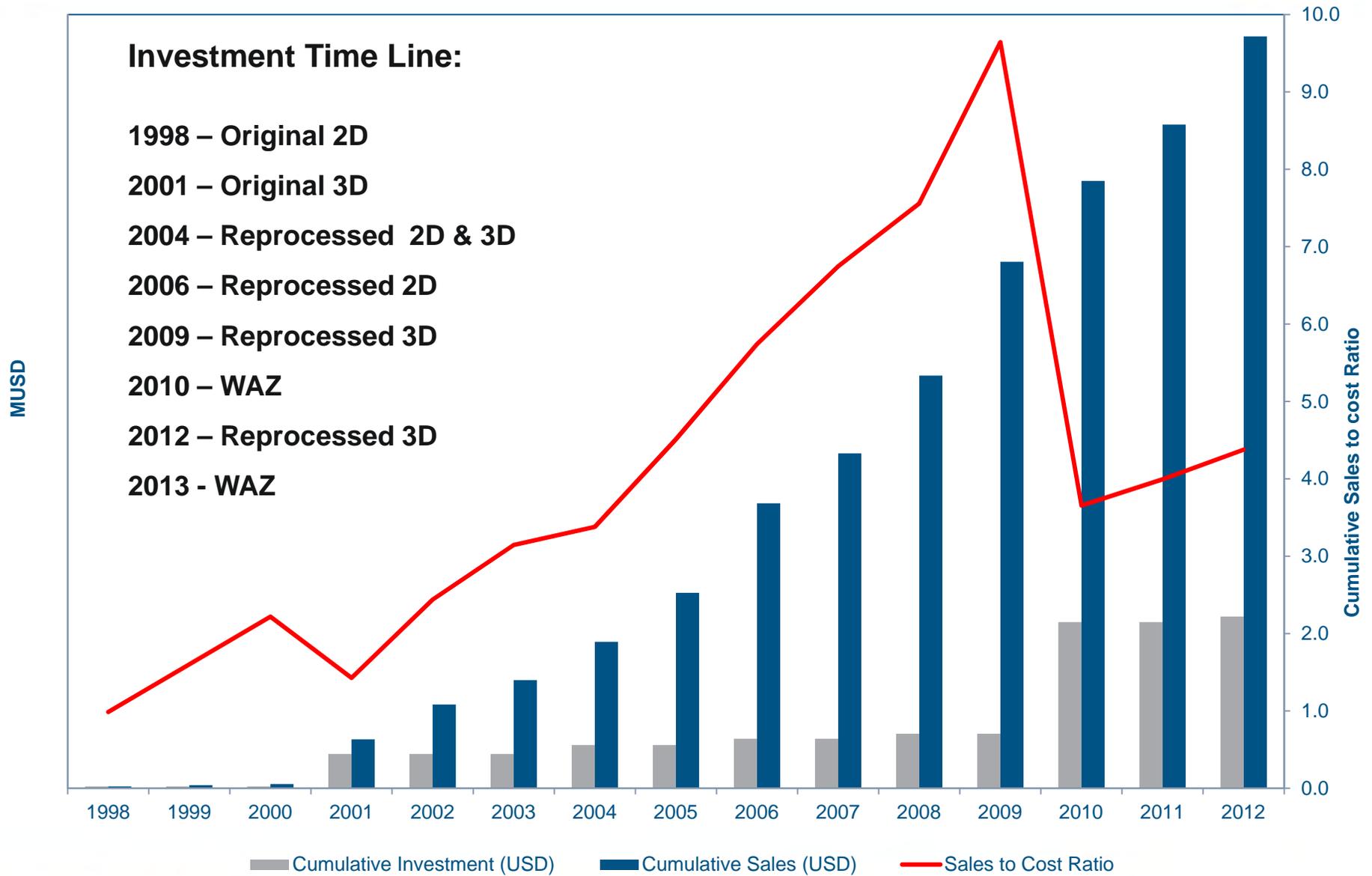
# Intensify Data Investments



## M-WAZ: 2013



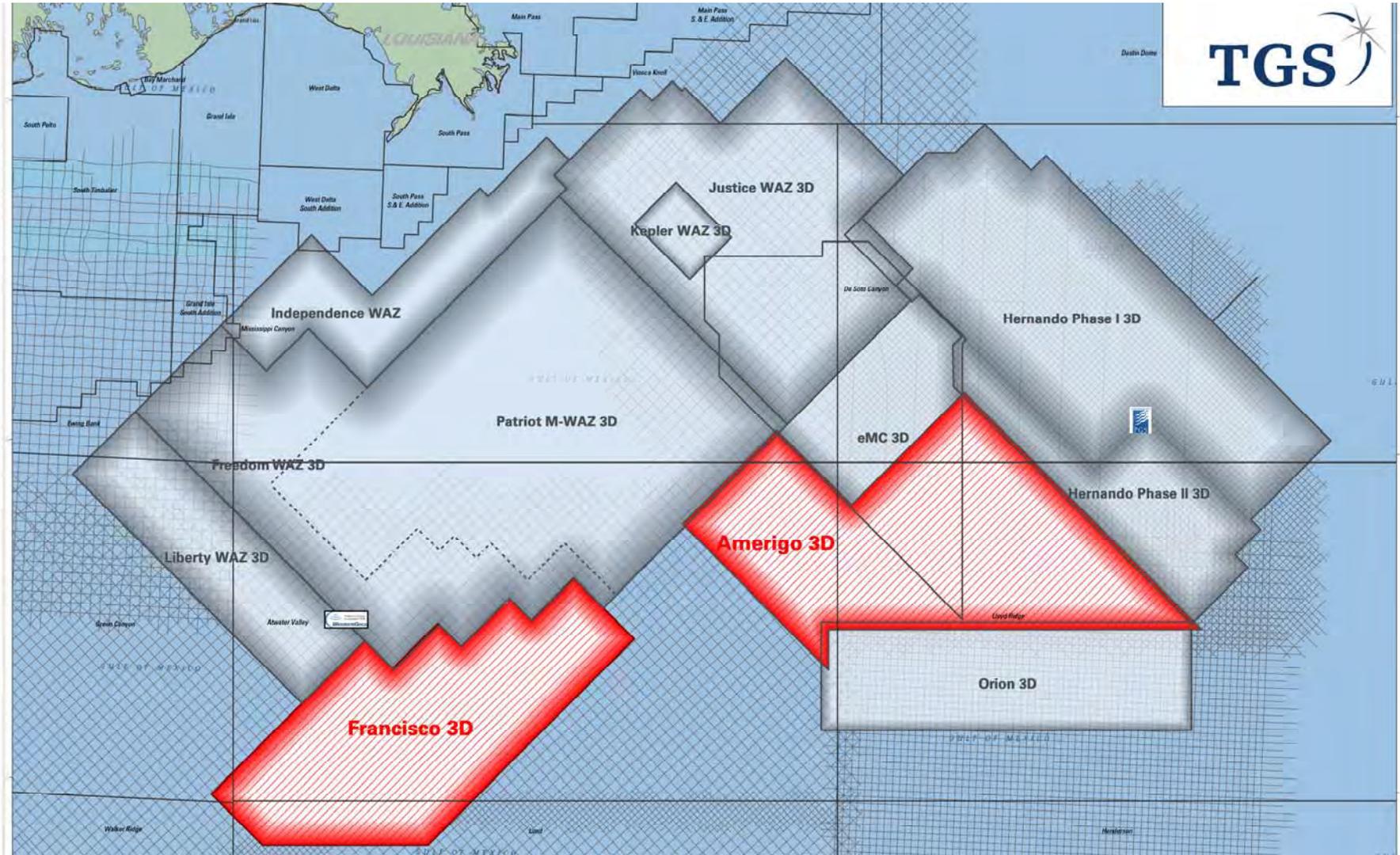
# Patriot Area Cumulative Financial Performance



# Expand Data Investments

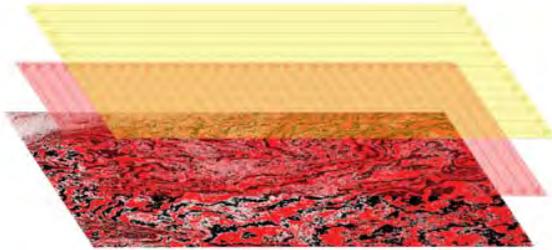


## 3D: 2013+

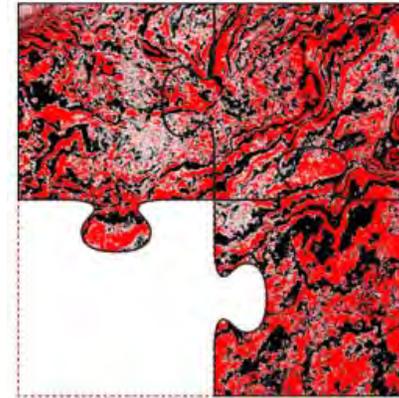


- Modern, long-offset 3D coverage
- Amerigo fills TGS data gap in extension of the Norphlet Sandstone play
- Francisco extends TGS coverage into the Atwater Valley frontier area of the central Gulf of Mexico
- Leverages adjacent modern data from TGS 3D surveys
- Processed with TGS' latest processing technology, Clari-Fi™
- Images deeper plays

## Intensify



## Expand



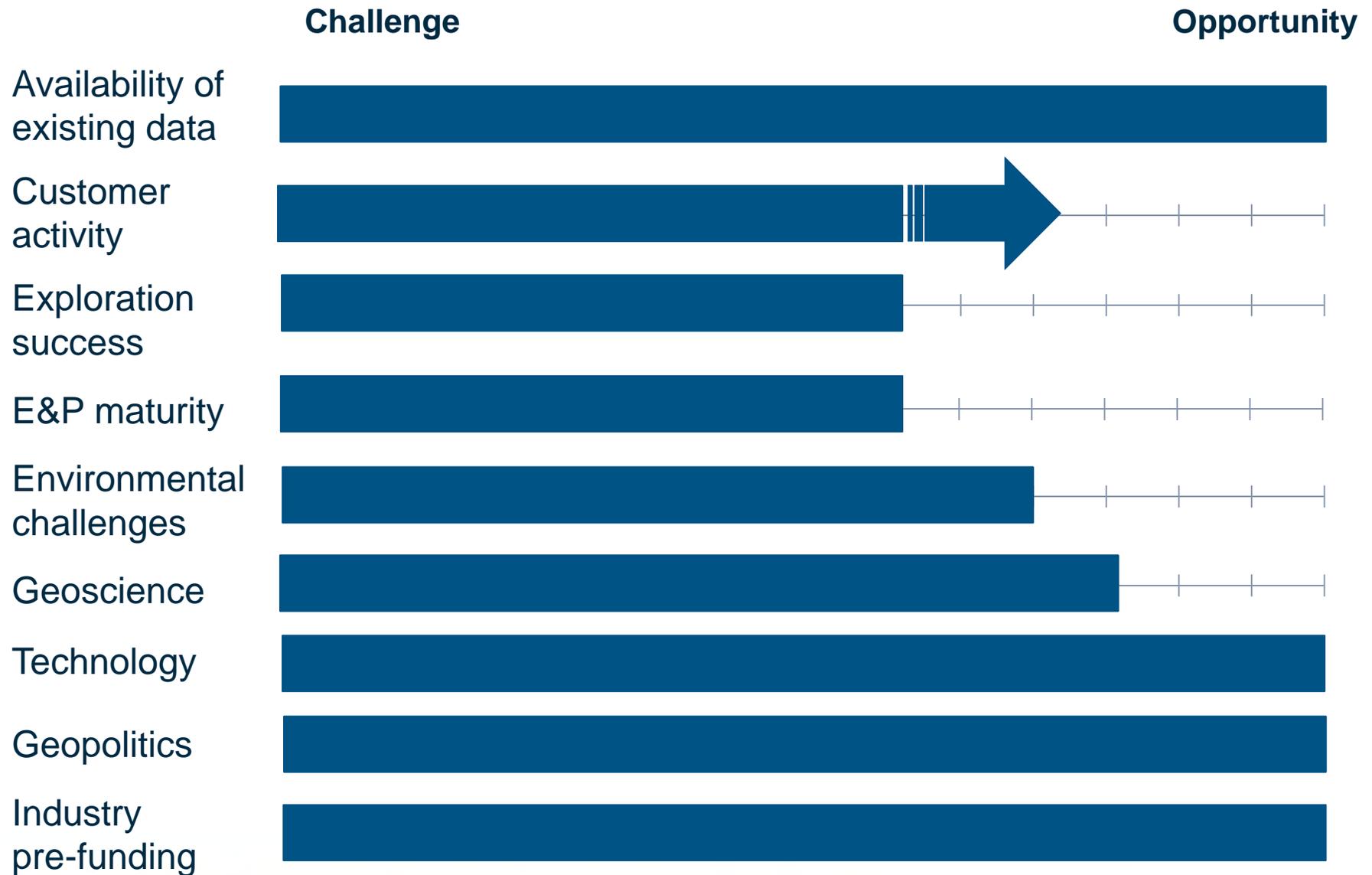
## New Entry



## Technology Selection



# E. Canada Offshore - Investment Quality Considerations **TGS**

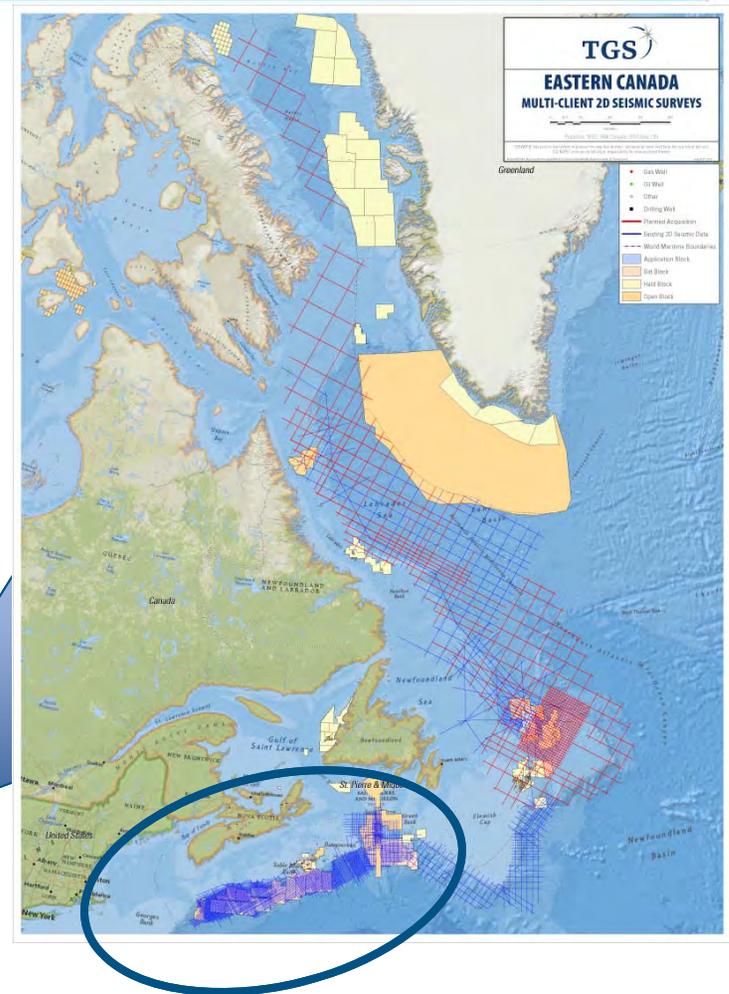


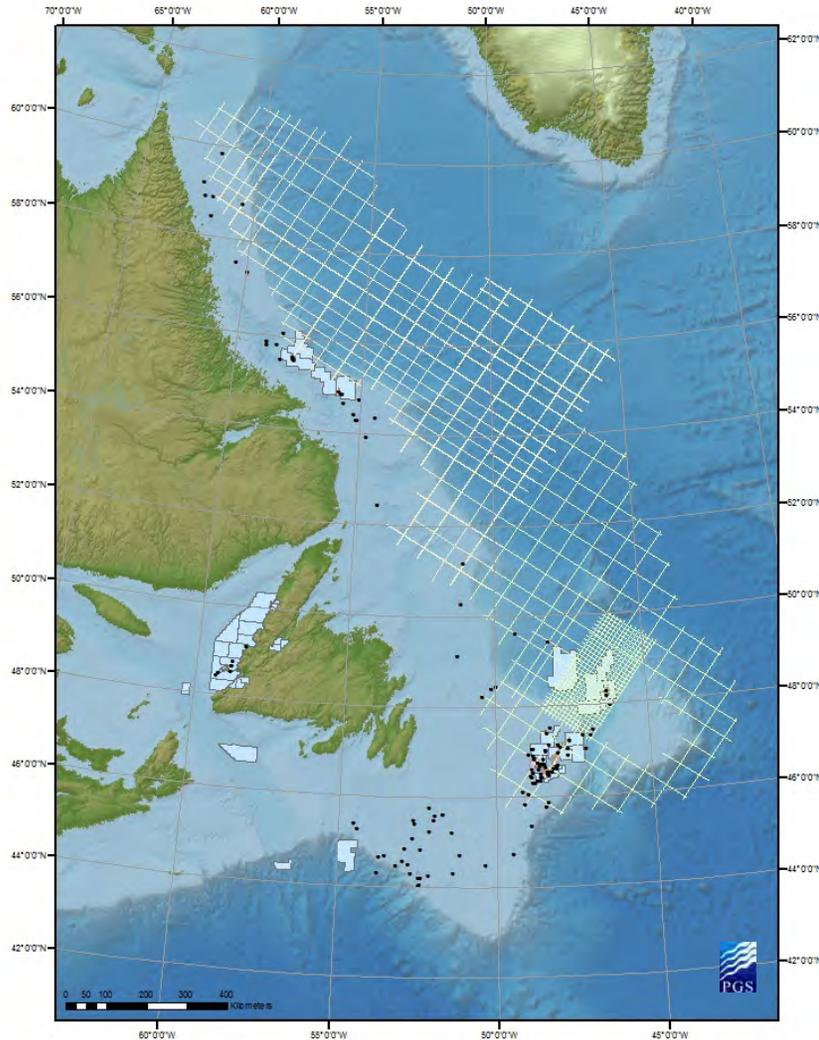
# Eastern Canada Offshore



## Existing Library

- 84,000 km 2D – largely Nova Scotia





## New Entry

### Labrador Sea 2D

- 22,000 km 2011 and 2012
- 2D Infill program 2013

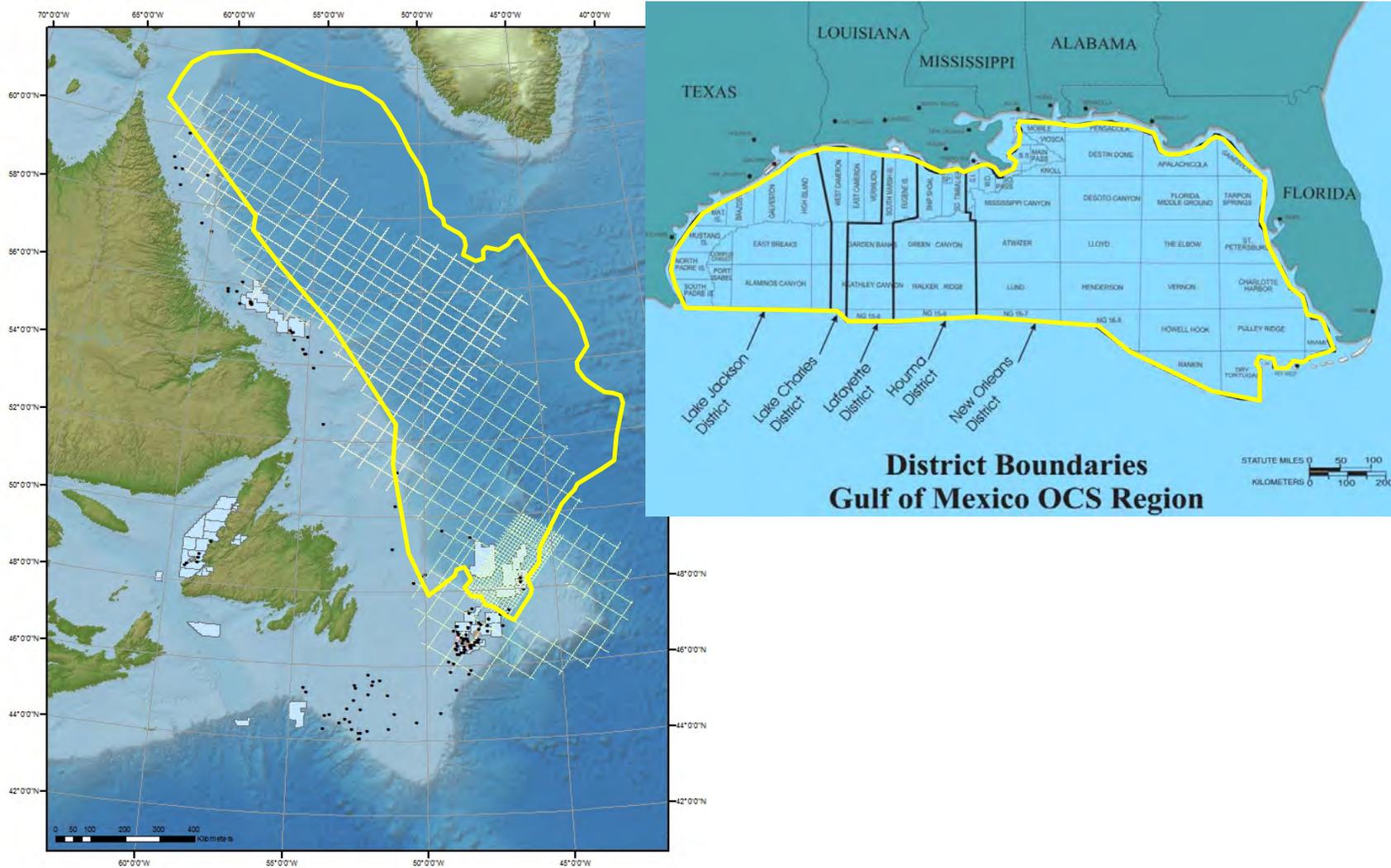
### NE Newfoundland 2D

- 20,000 km 2012 and 2013

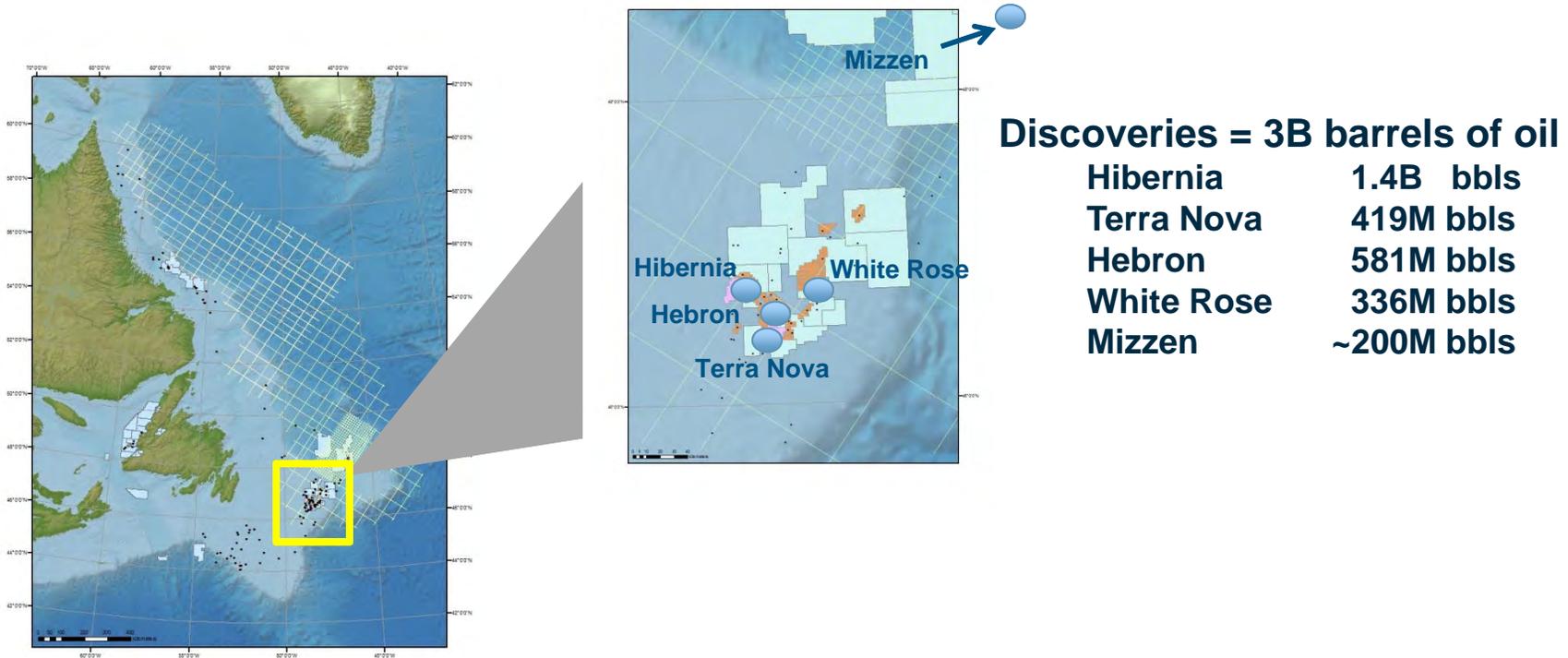
## Technology Selection

- Joint venture with PGS
- GeoStreamer® Technology
- TGS data processing
- TGS marketing

# Offshore Labrador-Newfoundland Comparison to GOM



## Quality seismic with significant growth potential



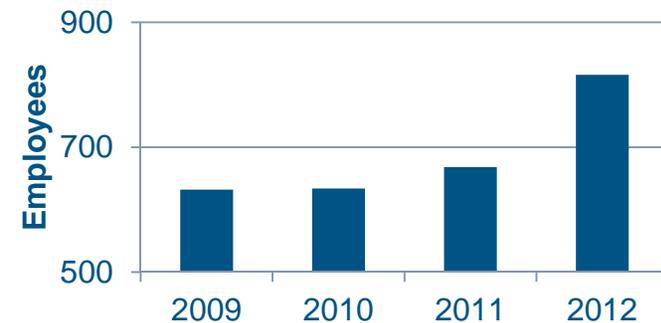
- Recent discoveries
- State-owned 'Nalcor Energy' investing in data, promoting area
- Ministry expected to announce scheduled lease rounds

## Why Nalcor and Newfoundland Labrador Ministry chose TGS:

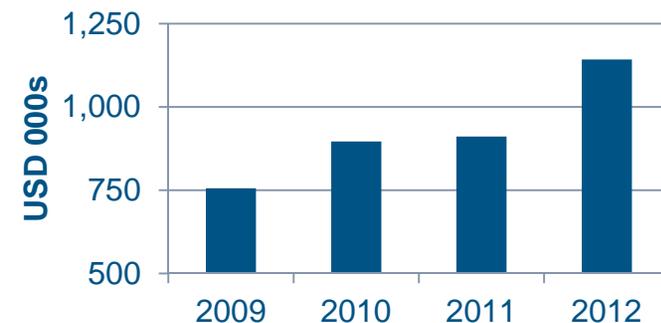
- Global presence
- Focus on multi-client
- Customer relationships and service (government and industry)
- Corporate values and reputation

- Highly skilled, flat organization
- Functional expertise
  - Project development and sales
  - Data processing
  - QC and client support
- Project development requires a unique skill set
  - Client relations
  - Government relations
  - Project management

**TGS Employees at Year End**



**Revenue per Employee**



# Quality People

- TGS values help to maintain a unique culture
- Shared success, reward philosophy



- Quality is a fundamental part of TGS corporate strategy and is relevant to
  - Our investments
  - Our data
  - Our people



- TGS track record of **quality** has been and will continue to be fundamental to our profitable growth



# Extending Quality to Onshore

Wayne Millice, VP US Onshore Multi-client Data

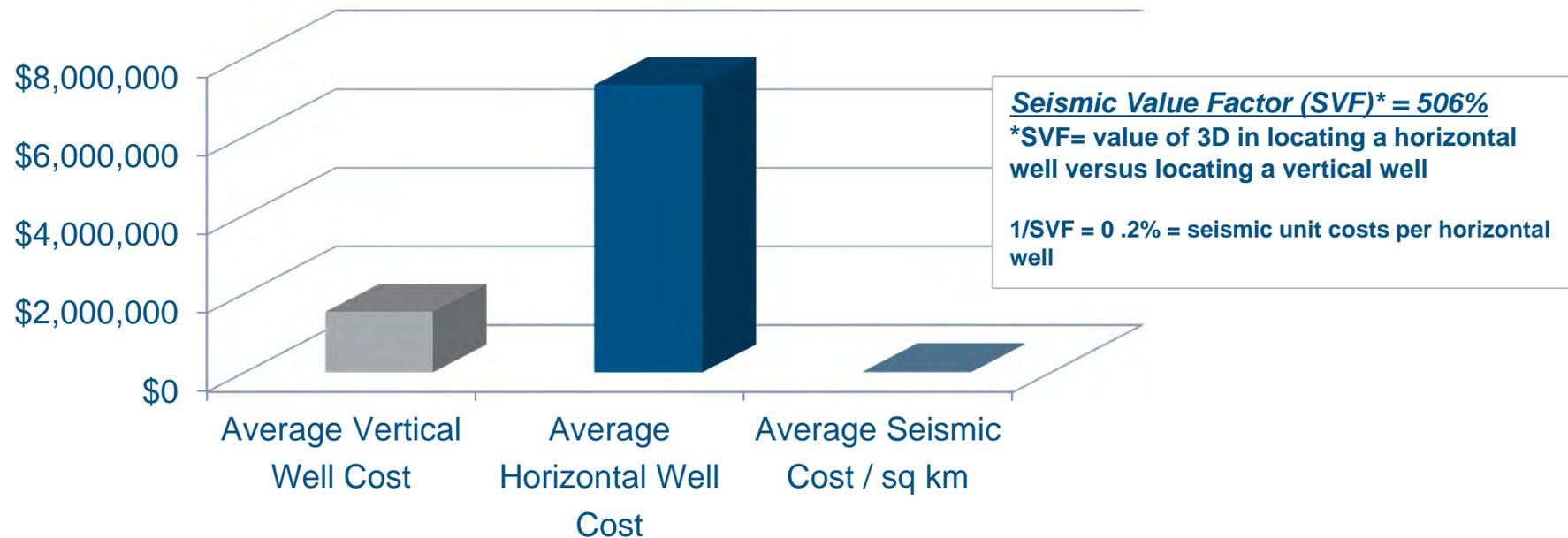


# Overview and Key Milestones



- Emergence of large unconventional resource plays drive need for seismic
- Re-entry of Majors and entry of NOCs to North American onshore
  - Strong pull from clients based on TGS reputation for quality and financial strength
- North America remains an attractive investment for E&P companies:
  - Low political risk
  - Established infrastructure
  - Known business practices
  - Regulatory stability
  - Reduced operational risk

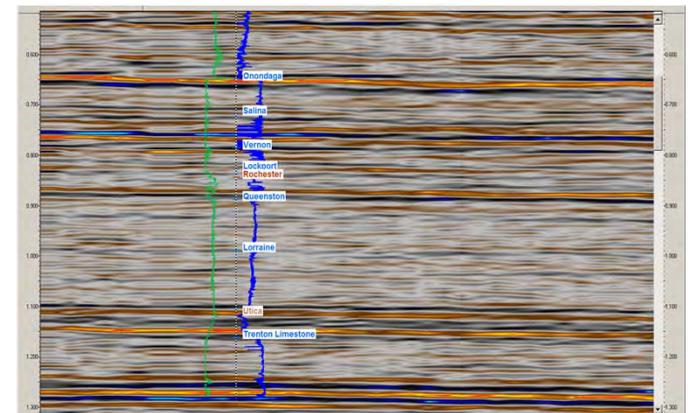
## Unconventional Plays: Drilling versus Seismic Costs



***“Companies are now beginning to see the value of seismic in well placement decisions to optimize productivity and mitigate D&C risks”***

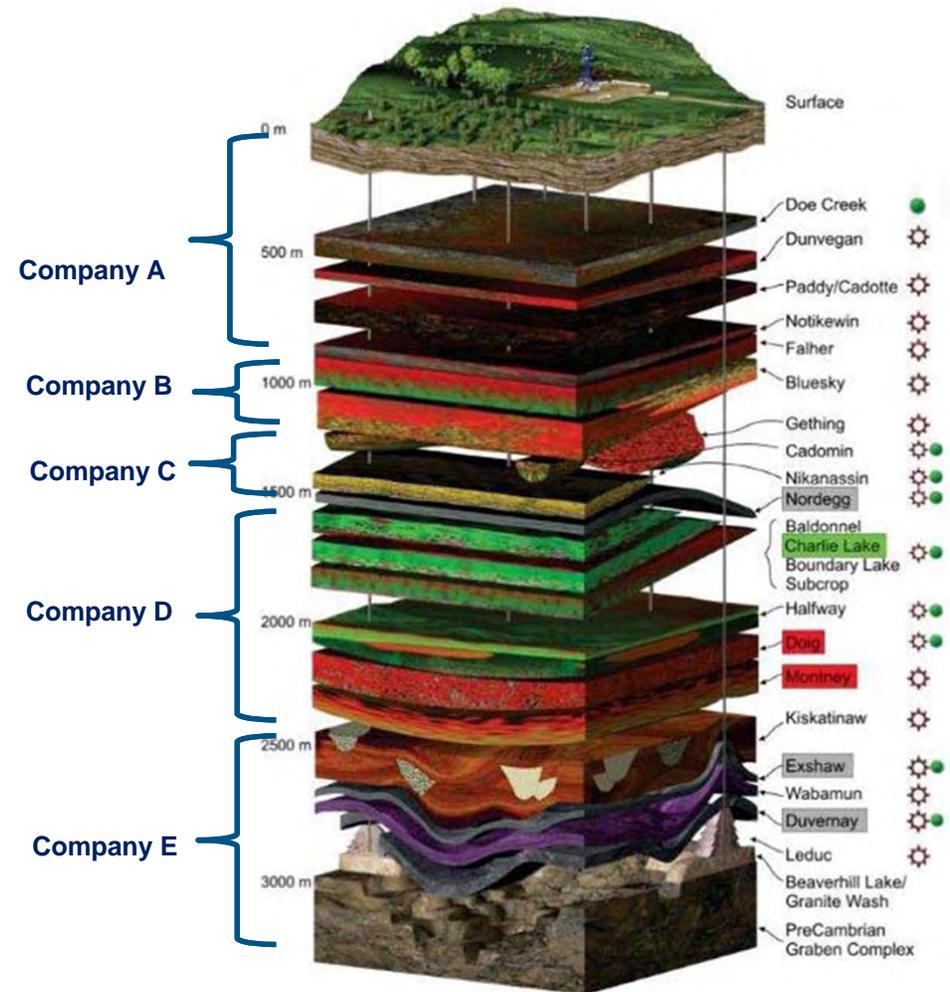
Hart's E&P 2013

- Long-life assets
  - Data owned in perpetuity
  - Limited risk of overshoot (cost prohibitive)
  - Financial models supports build and hold
- Synergies with Geological Product business
  - Well logs, production data, regional studies
  - Bundled solutions
- Operational expertise and access to capacity
  - Asset light model
- Split Mineral Rights x Land Turnover



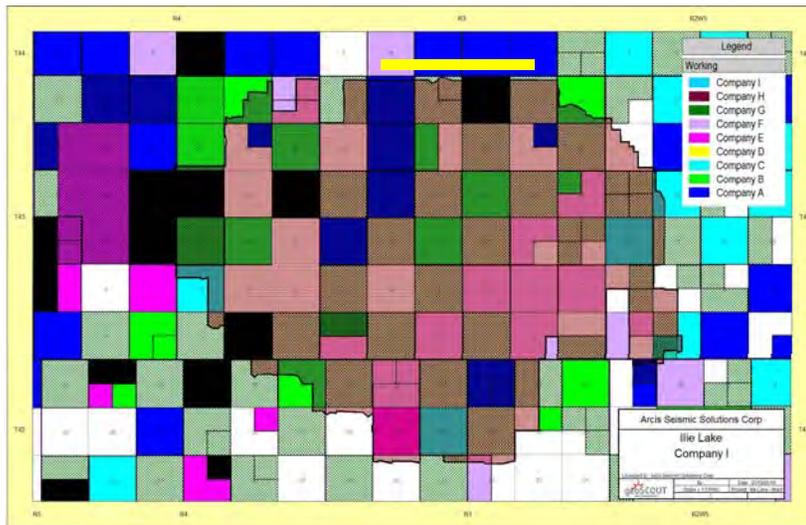
# Split Mineral Rights x Land Turnover

- Companies target and own “vertically” isolated intervals
- Rights generally only held by proving production capability
- New technology opens new or older potential zones
- Some areas better than others – our “Geoscience Initiative”



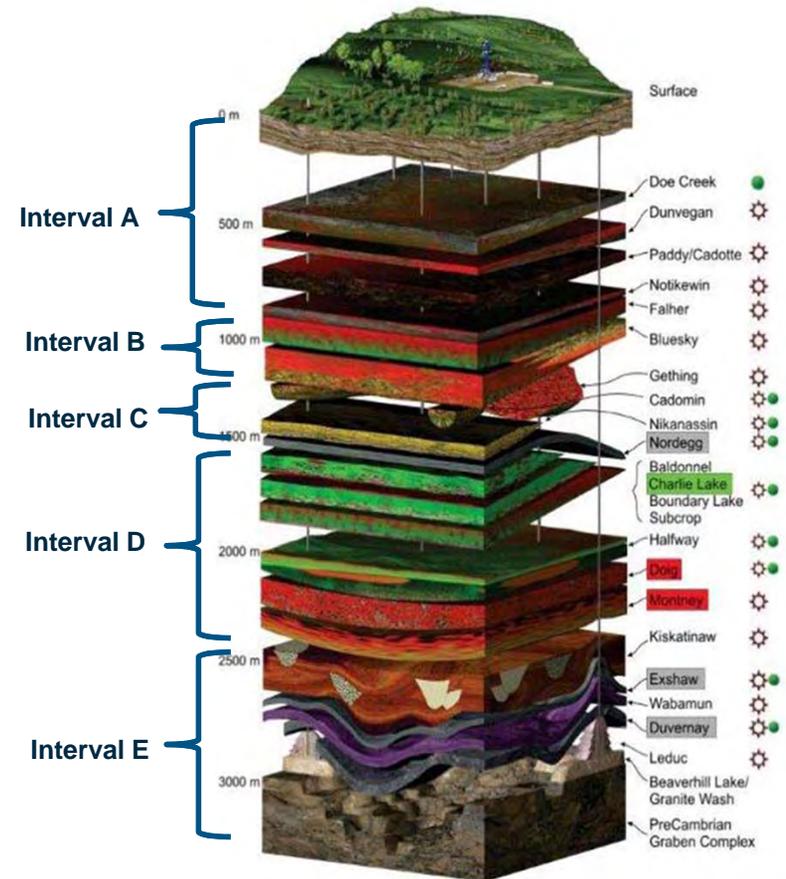
Geologic / Stratigraphic Column of Western Canadian Sedimentary Basin

# Project Example: Mineral Rights x Land Turnover



Land Summary Map: Each color represents different mineral rights holder at that specific interval.

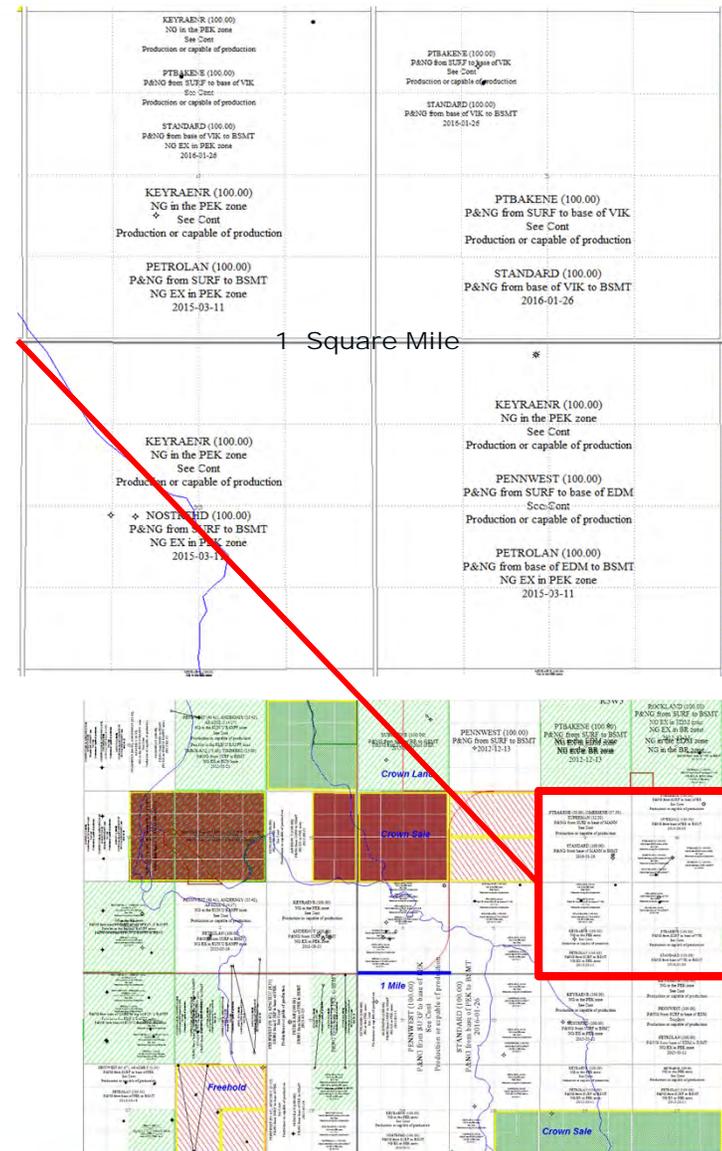
- 490 km<sup>2</sup> (190 mi<sup>2</sup>) project
- Potential # of mineral blocks/ clients @ 640 acres = 190+
- Equivalent mineral blocks/clients in GOM = 21
- Equivalent mineral blocks offshore international = 1-4



Geologic / Stratigraphic Column of Western Canadian Sedimentary Basin

# Split Mineral Rights x Land Turnover

- Generally land (mineral rights) change hands every 3-5 years unless held by production (HBP)
- Acreage positions as small as 40 acres ( 1 GOM block = 5760 acres - 144:1)
- Regular consolidations, farm-in's, joint ventures = partnership fees license fees, transfer fees, new direct licensing fees

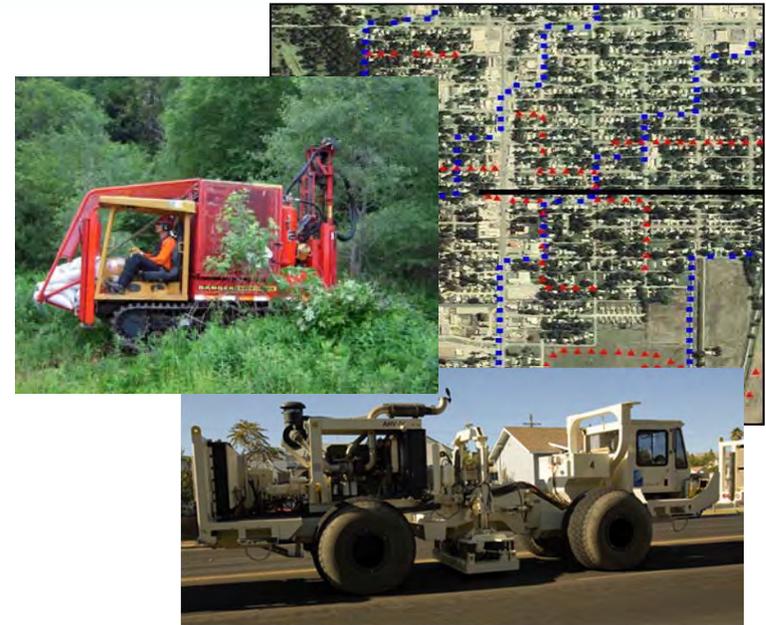


Example of diverse mineral rights holdings

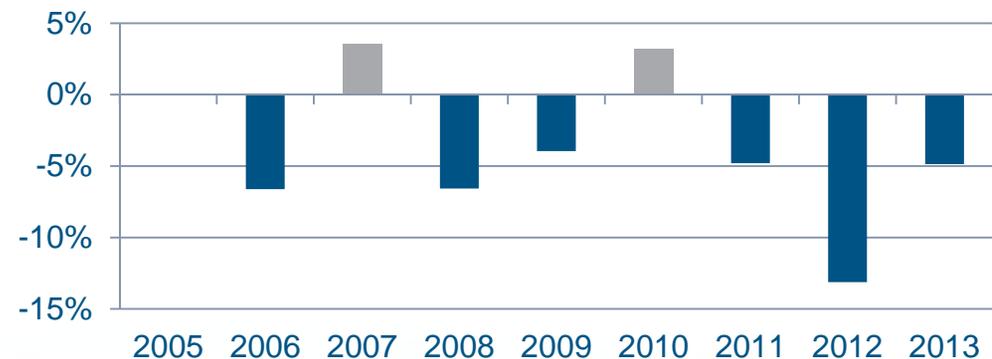
# TGS Onshore: Our Differentiators



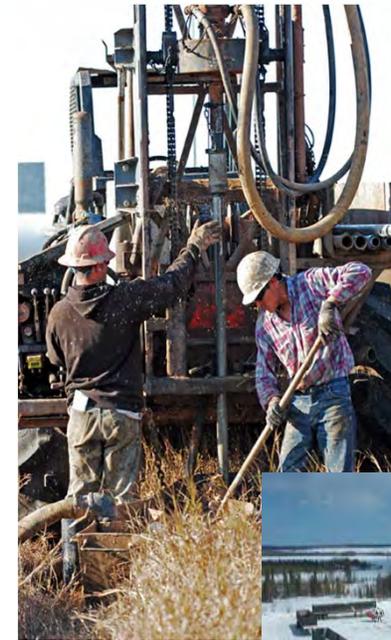
- Acquired personnel and Company with proven track records of outperforming peers
  - Operations – superior execution, on time on budget
  - Historical knowledge - understand the mistakes
  - TGS Performance based compensation
    - no commission based sales
- Best in Class Budget to Actual performance



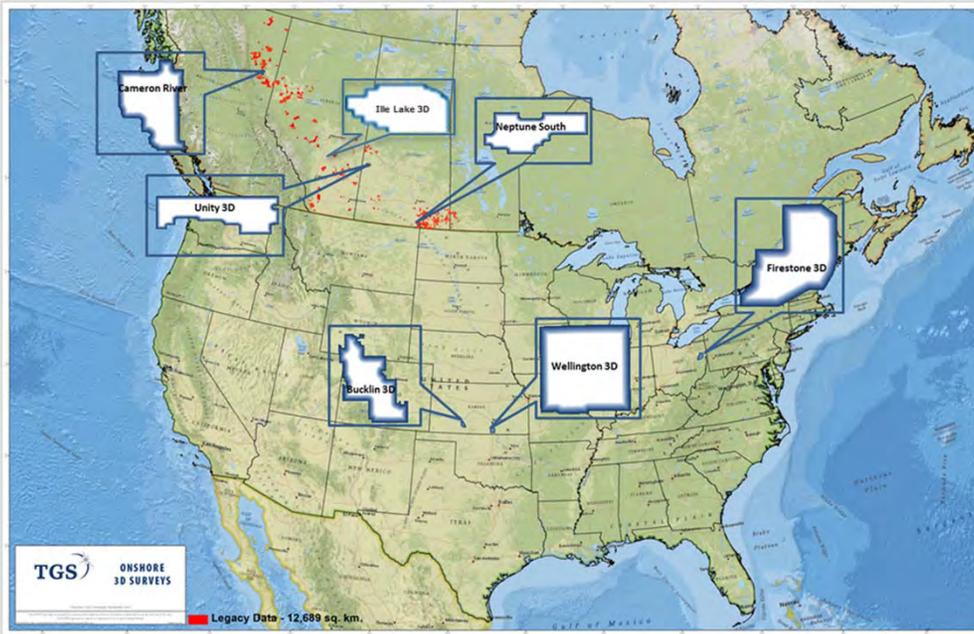
**Onshore Project Cost Analysis  
Over/(under) Variance by Year**



- Application of TGS business model
  - Disciplined Investment – well funded EP – minimal capital at risk
  - **Asset Light**
    - Access to idle capacity
    - Firm costs with turnkey contracts
    - No pressure to mobilize idle assets
- Ability to choose the right contractor for a given project
  - HSE performance
  - Experience in the area
  - Experience with the type of operations required
  - Technology proposed
  - Timing



# Multi-client Onshore Highlights Through Q1 2013



- US
  - Acquired 2,500 km<sup>2</sup>
    - Positioned as key driver in two trends
  - Late sales realized
- Arcis/Canada
  - Executed and delivered three projects since close of acquisition (800+ km<sup>2</sup>)
  - Completed operations on fourth project to be delivered in Q2 2013
  - Initial LP on all new projects
- Current library size
  - 17,994 km<sup>2</sup> 3D
  - 6,070 km 2D





# Extending Quality to Onshore

Brad Torry, Director of Geosciences, Western Hemisphere

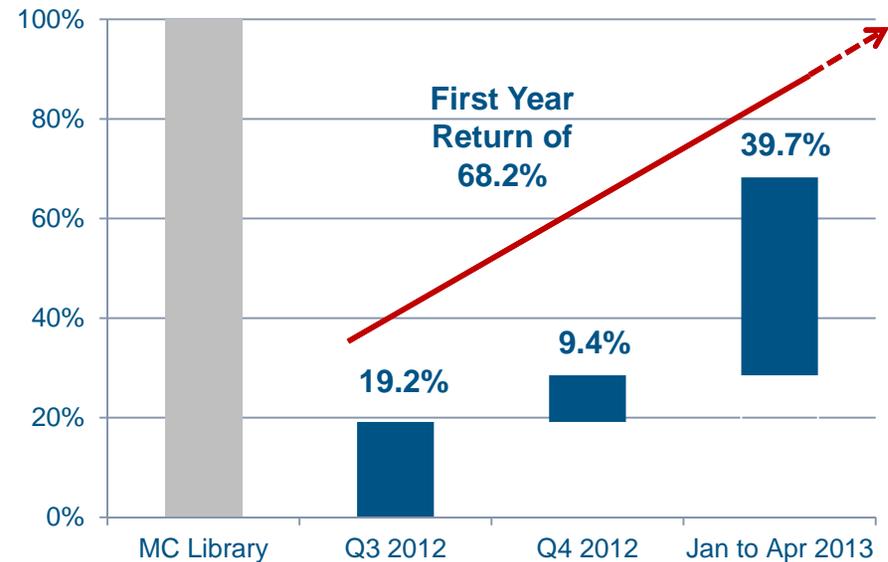
# Return on Investment in Arcis



## Cash Flow Return



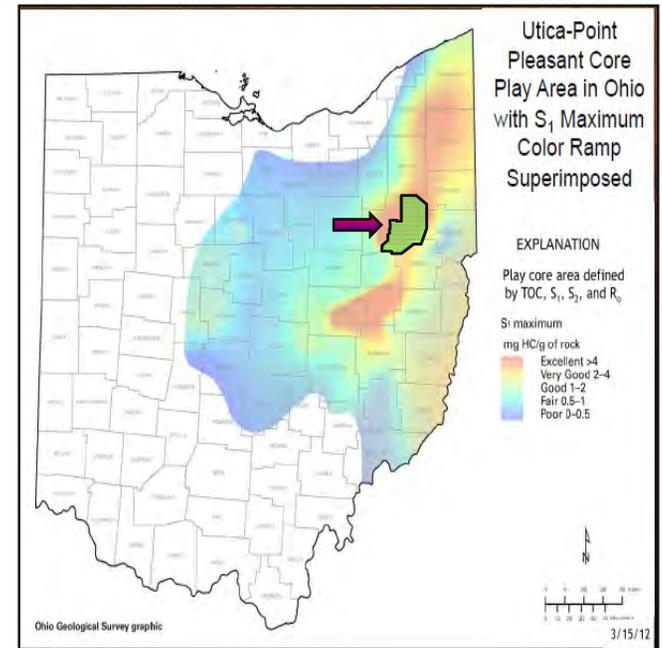
## Return on Existing Library



- Acquisition of Arcis has generated strong returns from July 2012 through April 2013
  - 39% ROI including the investments in new surveys
  - 68% ROI on existing multi-client library valued at USD 29 million
- Strong synergies on processing and sales

# Opportunity Funnel

- How do we build the funnel
  - Geoscience initiative – stay ahead of our peers
  - Client outlines vetted internally
- Significant exploration potential remains to control high potential regions
- Huge future exploration potential in onshore “frontier” regions
  - Geoscience team ongoing evaluation – goal to be first in



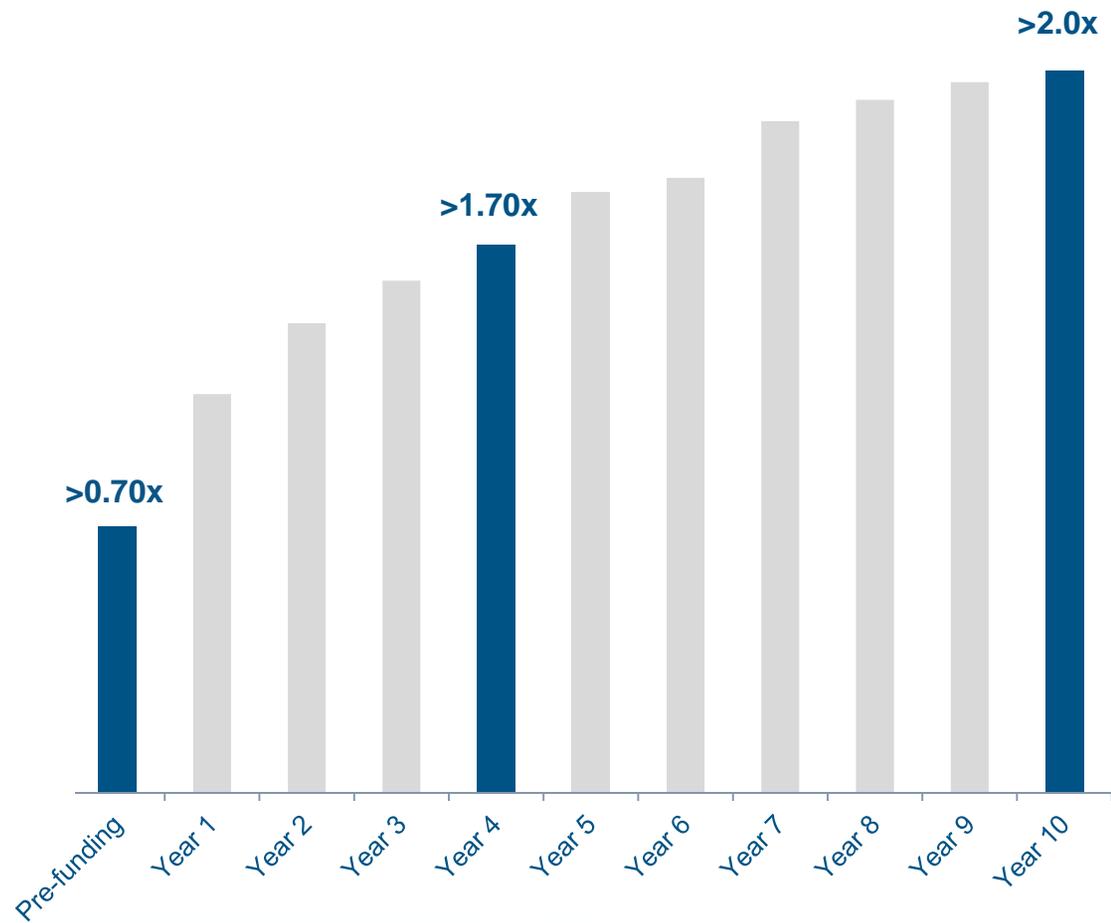
# Illustrative Onshore Investment Opportunity



- Natural land turnover (3-5 years)
- New lease rounds
- New entrants (i.e. NOCs, new capital)
- Farm-ins
- Mergers
- Joint ventures
- Transfers

Sales to Cost Ratio Profile

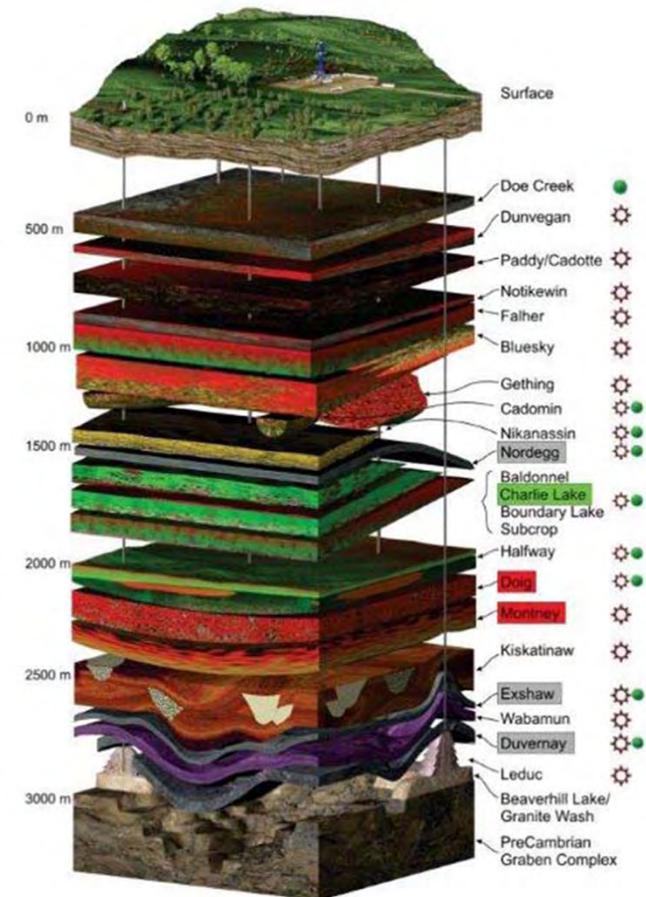
*Split Mineral Rights x Land Turnover = Long-term Sales Potential*

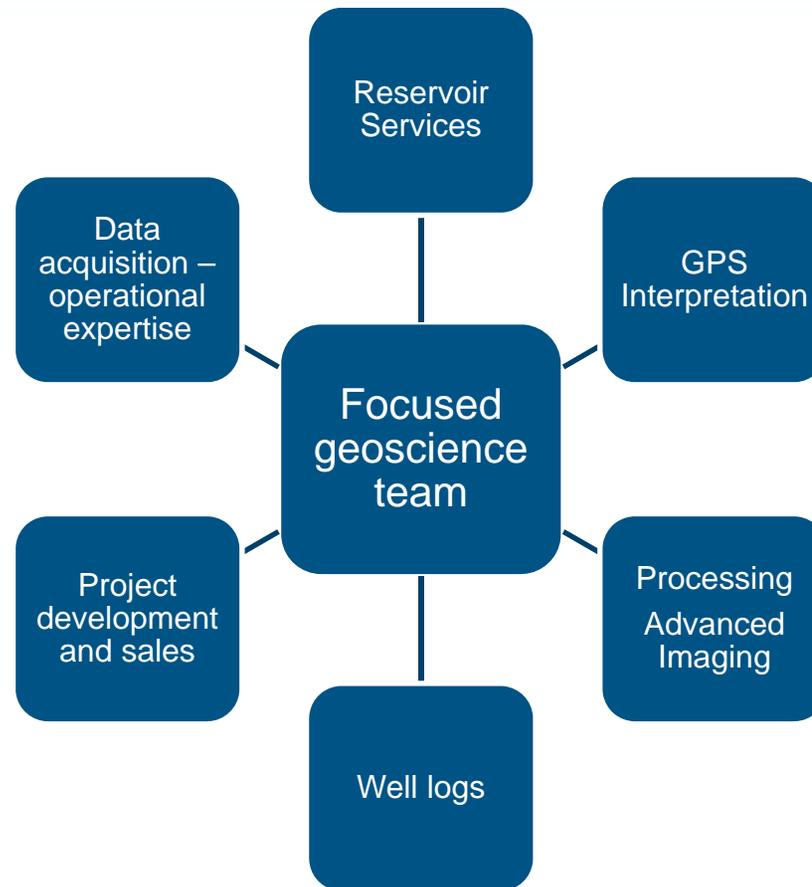


# Geoscience Initiative – Quality, Growth, Leadership



- Drive prefunding, late sales and technical brand
- Proactively ‘Exploring’ to high grade areas for investment (avoid mistakes)
- Leveraging TGS Geologic data
  - Fairway mapping /play definition
  - Well log analysis/petrophysics (key wells)
  - Trend analysis : petroleum systems, basin modeling, maturation, depositional models
  - Regional stress/strain models
- Application of seismic derivatives to advance play understanding – late sale driver
  - Assess attributes and rock physics





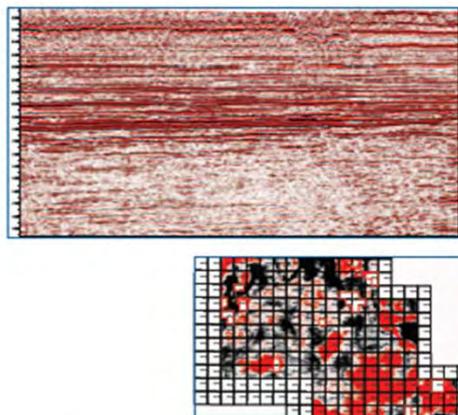
- Application of exploration fundamentals to “high-grade” projects
- Application of technology to advance emerging / new and future trends
- Integrated solution offering: well data, seismic data, imaging and reservoir services

# Geoscience Initiative: Drives Quality Results

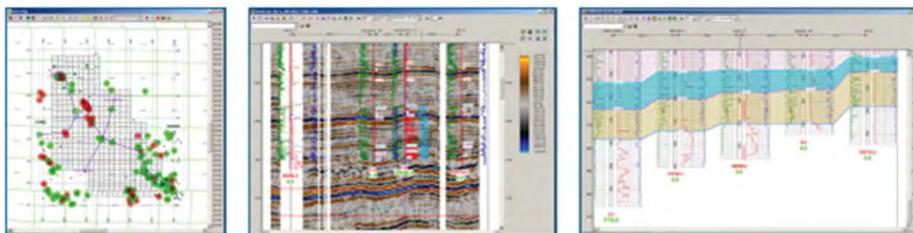
Onshore multi-client project management, design and acquisition



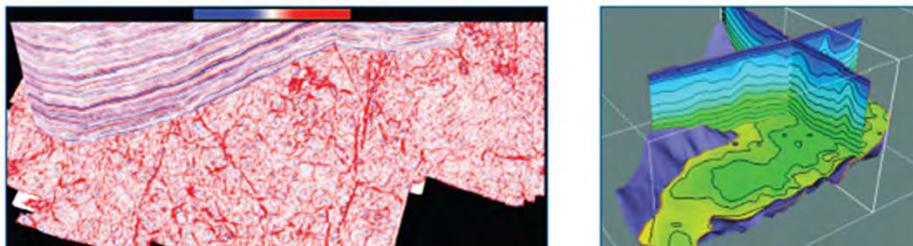
Onshore multi-client processing



Onshore multi-client Interpretation



Onshore multi-client data - Attribute analysis

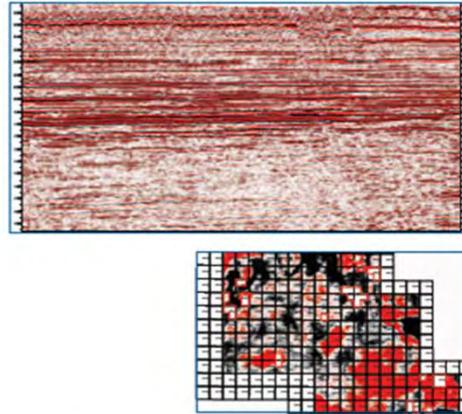


# Geoscience Initiative: Drives Quality Results

Onshore multi-client project management, design and acquisition



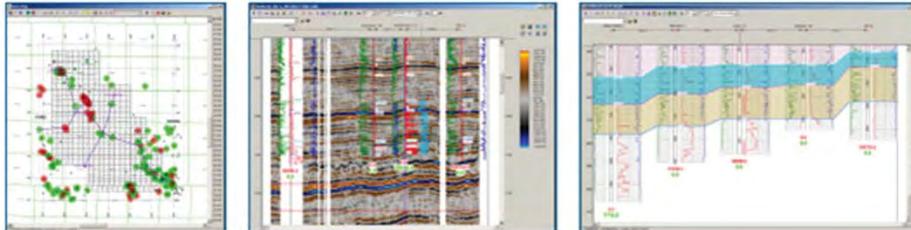
Onshore multi-client processing



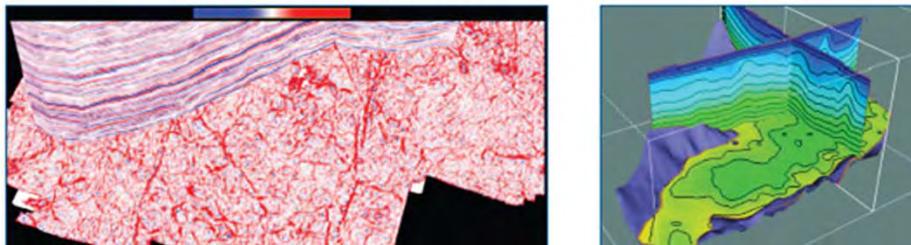
## *TGS benefits*

- Integration of complementary products
- Grows core business
- Expanding offering attracts new clients

Onshore multi-client Interpretation



Onshore multi-client data - Attribute analysis



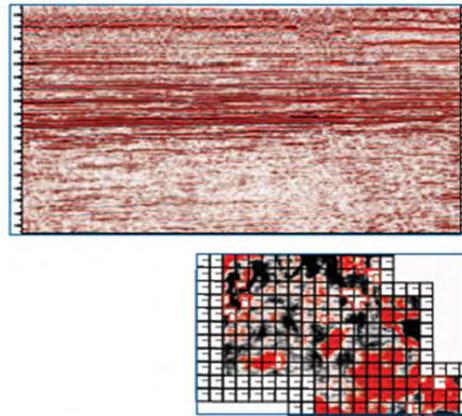
# Geoscience Initiative: Drives Quality Results



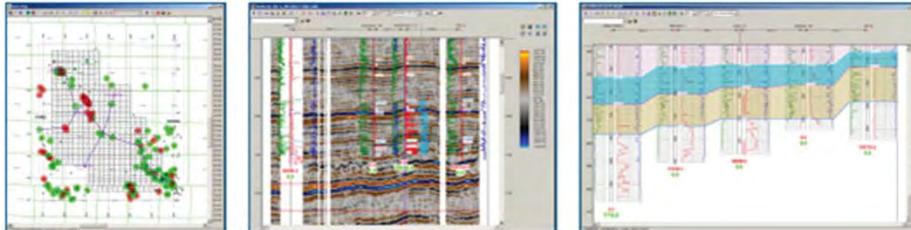
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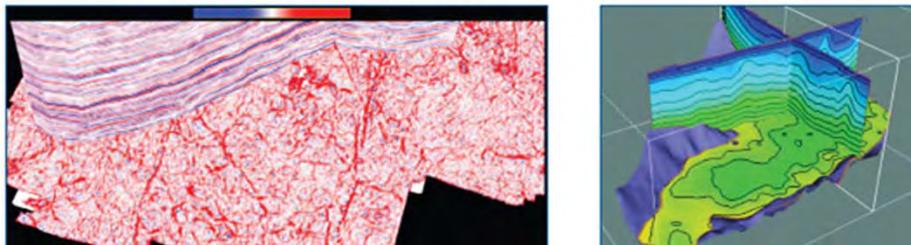
Onshore multi-client processing



Onshore multi-client Interpretation



Onshore multi-client data - Attribute analysis



## *TGS benefits*

- Integration of complementary products
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- Expanding offering attracts new clients



## *Client benefits*

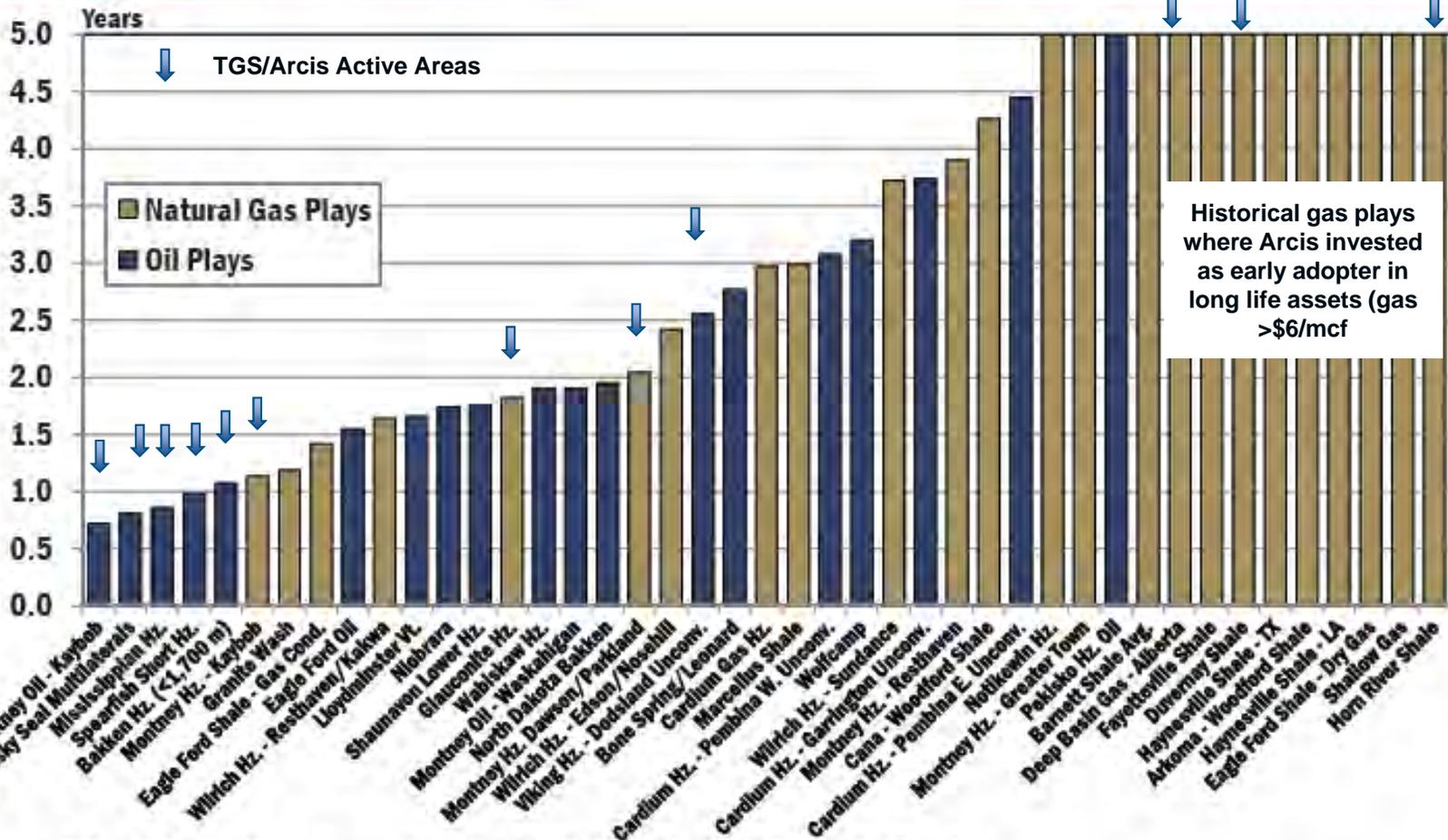
- Improved well performance (prediction)
- Reduced # wells – improved economics
- Improved geo-hazard identification

# Geoscience Initiative: Drive Prefunding (Portfolio Management/Early Adopters)



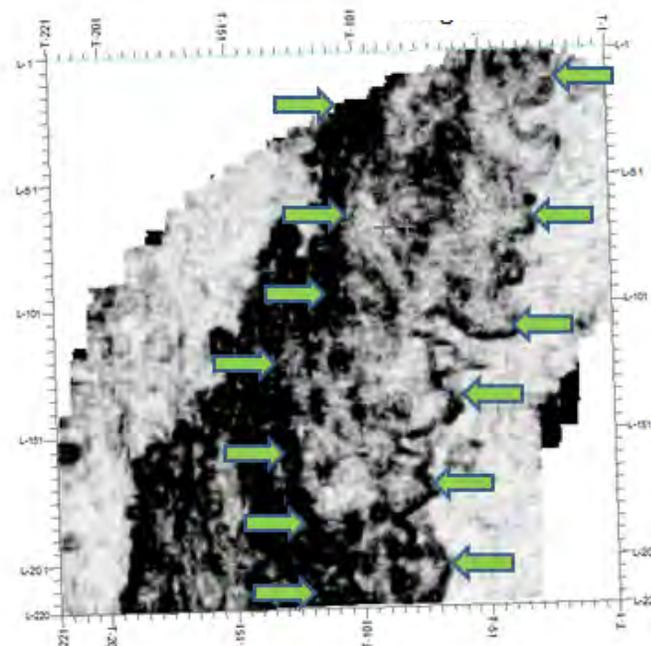
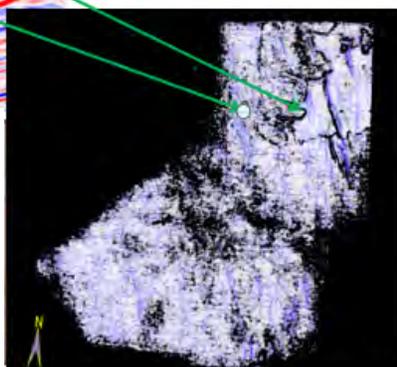
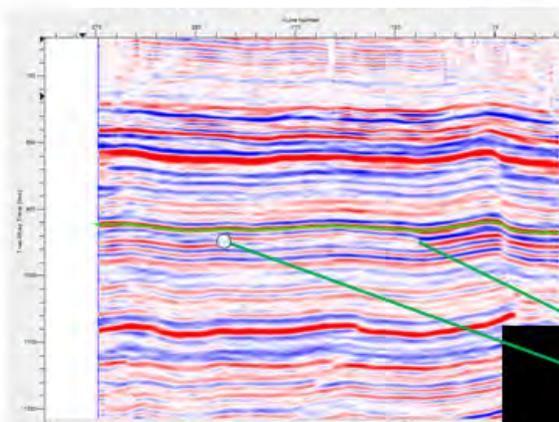
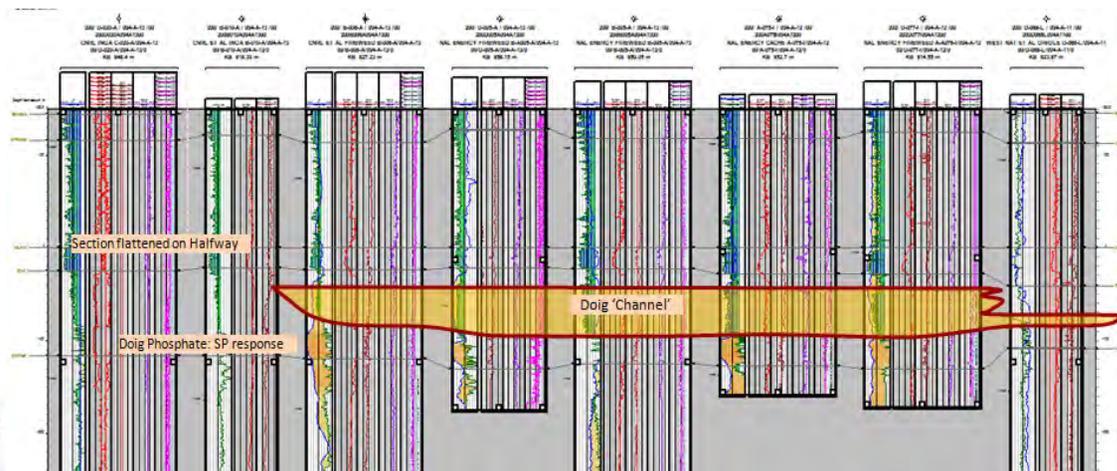
North American Oil and Natural Gas Plays  
Half-Cycle Payout at Current Strip Prices

Half-Cycle Payout reflects the time to Payout a new well in a given play on a go forward basis – **Shorter Payout = Higher IRR**



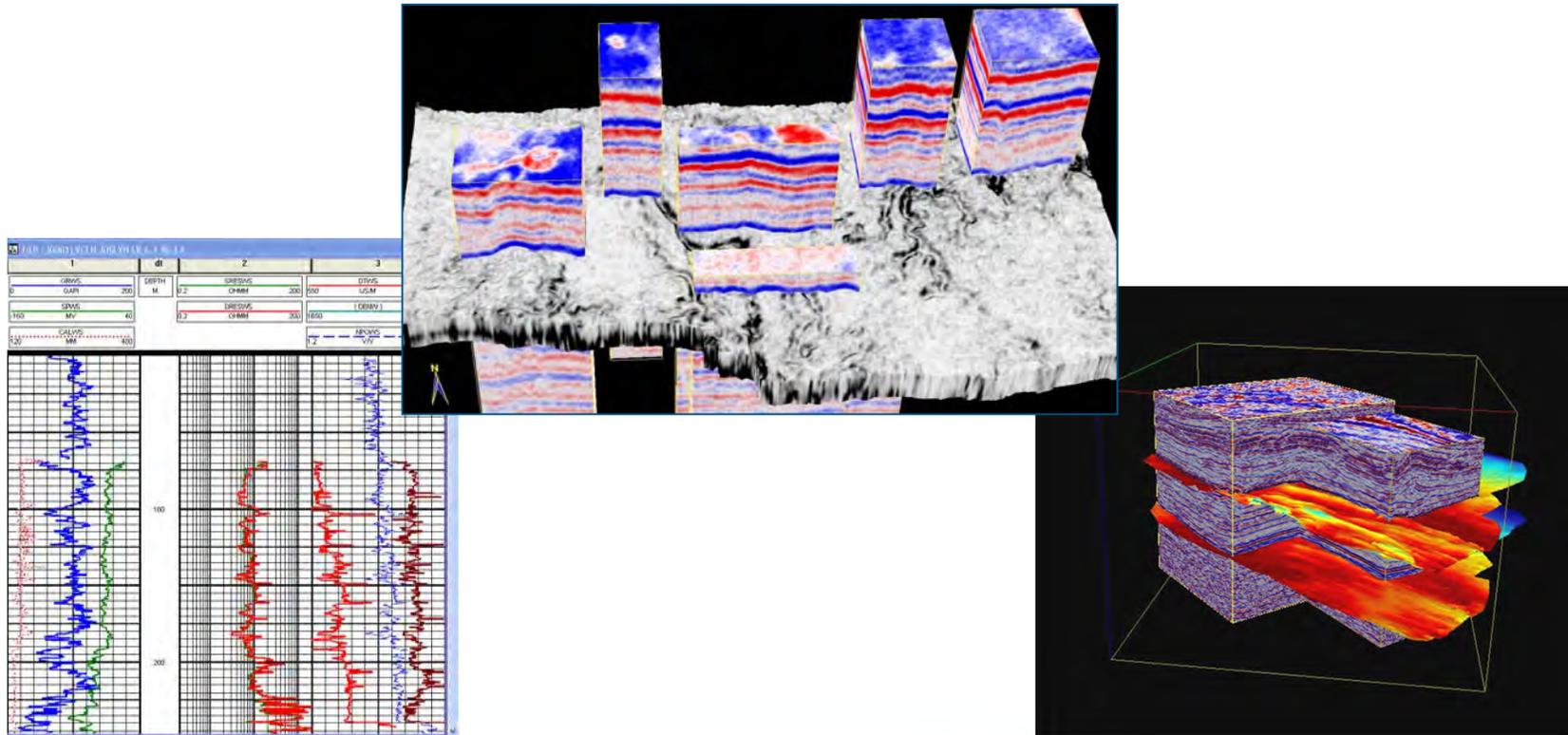
Source: Peters & Co. Limited estimates based on a 10% discount rate and current strip prices.

# Geoscience Initiative: Grow Late Sales



# Onshore: Summary

- Modern high quality data library with proven long-term value and track record (Arcis)
- Operationally best in class – Asset light model
- Integrated offering provides growth opportunity and leverage
- Quality long life assets



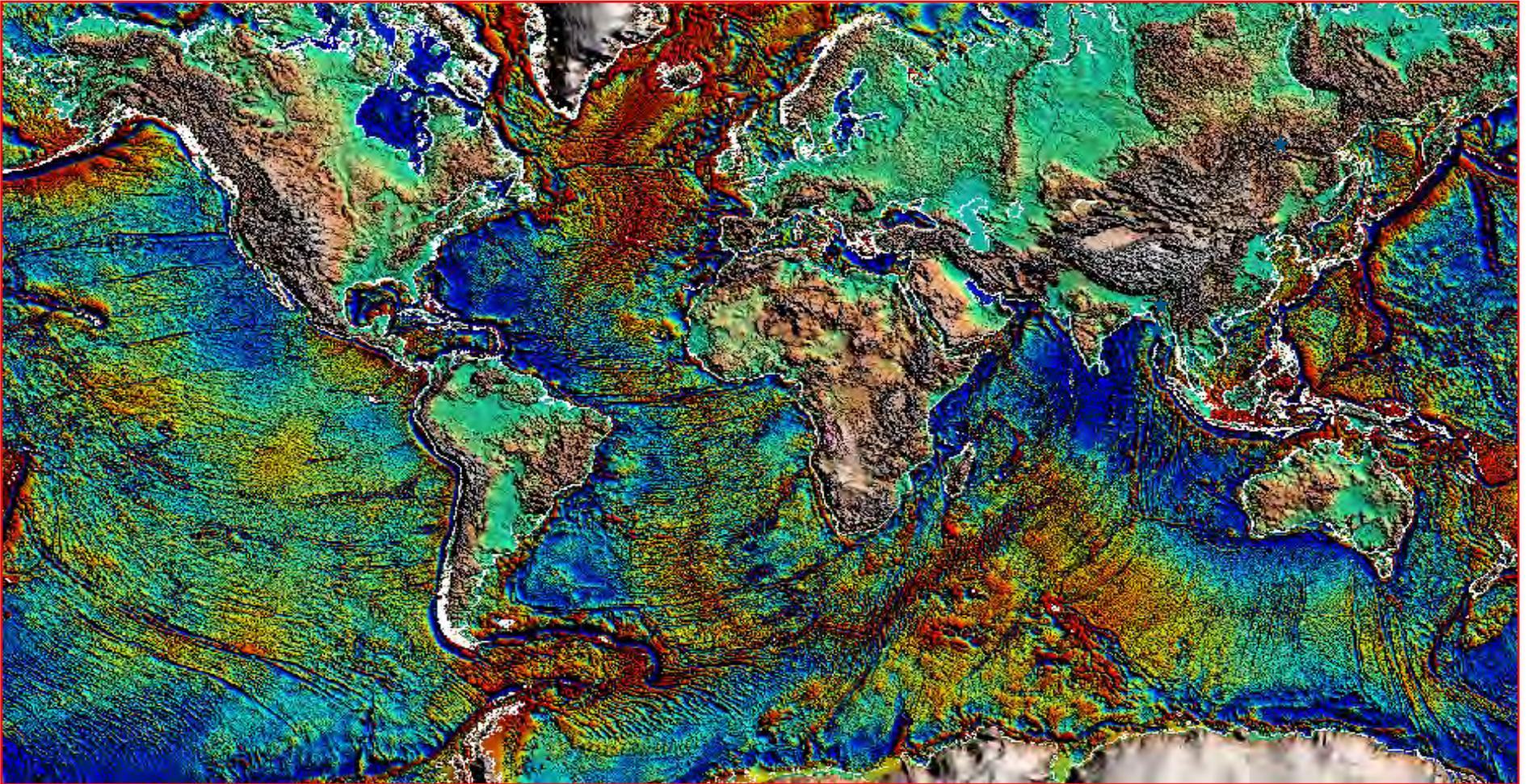
# Q&A

# Why Are Explorers Hooked on Seismic?

David Bamford

# Why Are Explorers Hooked on Seismic?

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## Why Seismic?

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- Physics offers us a number of possible techniques for exploring the earth – gravity, magnetics, electro-magnetics, seismic....
- The theoretical basics were written down by such as Poisson, Maxwell, Zoeppritz “when Queen Victoria was a lass”
- ONLY seismic offers both the depth of penetration and the resolution needed to explore for oil & gas
  - We need the depth of penetration because we are drilling to depths of several kilometers....
  - We need the resolution because we have to produce geological images on the scale of meters

# Continuous Improvements in Seismic Technology

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- Acquiring it:
  - bigger seismic vessels, towing more equipment = deeper penetration, higher resolution, faster, cheaper seismic
- Processing it:
  - transmission of data by satellite, high-performance computing = rapid availability of data, try more ideas
- Analysing it:
  - complex analyses = more complex geological problems can be solved (e.g. sub-salt); rock type and fluid content can be predicted
- Interpreting it:
  - high-performance desk-top workstations = geoscientists can work with vast amounts of data rapidly

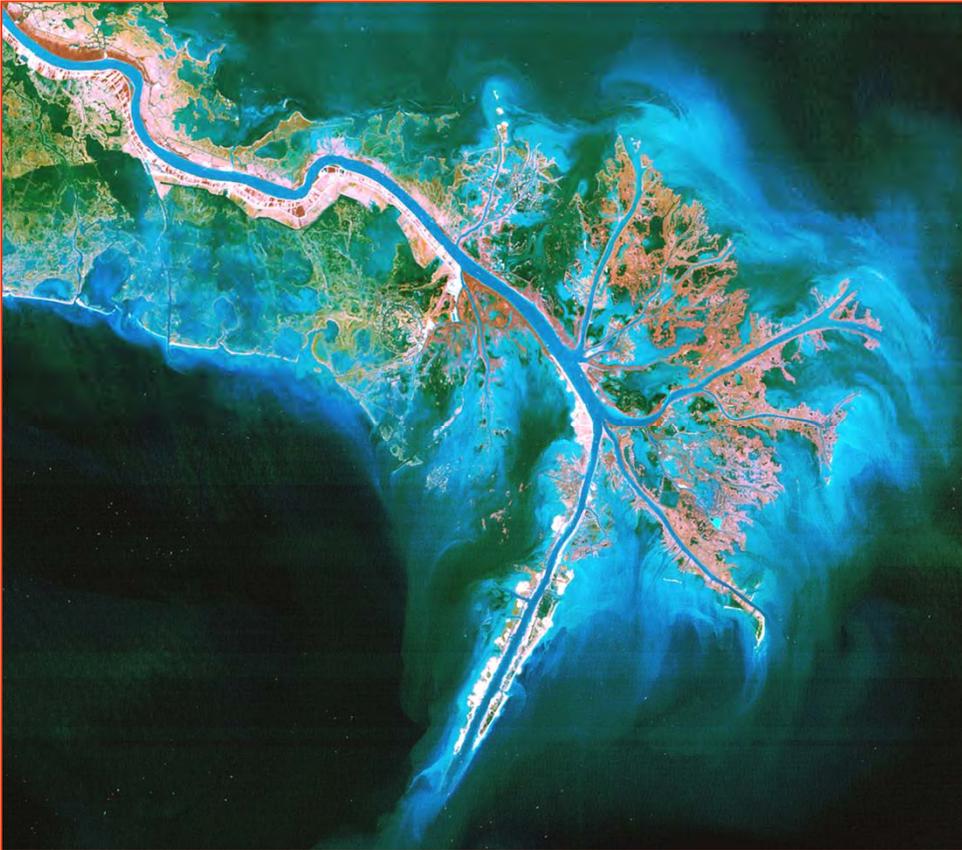
## For 15 Years, Exploration Has Focussed on Deepwater.....

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- Successful Deepwater Basins are downslope of major present or palaeo-fluvial entry points onto the depositional slope:
  - Some are 'obvious' – the Nile, Congo, Niger, Mississippi....
  - But some don't work – the Amazon, Zambesi, Indus....
  - Some are 'ancient' – Ghana discoveries rely on sediments that came from the Sahara, for example
    - Figuring this out → leads to being in the right basin
- These depositional systems are complex and dominated by gravitational processes modified by base-level controls on sediment entry onto the depositional slope.
- The key to success:
  1. being in the right basin.....
  2. and in the right place in that basin.....
  3. and then drilling in exactly the right place

## We Are Looking For Things That Look Like This.....

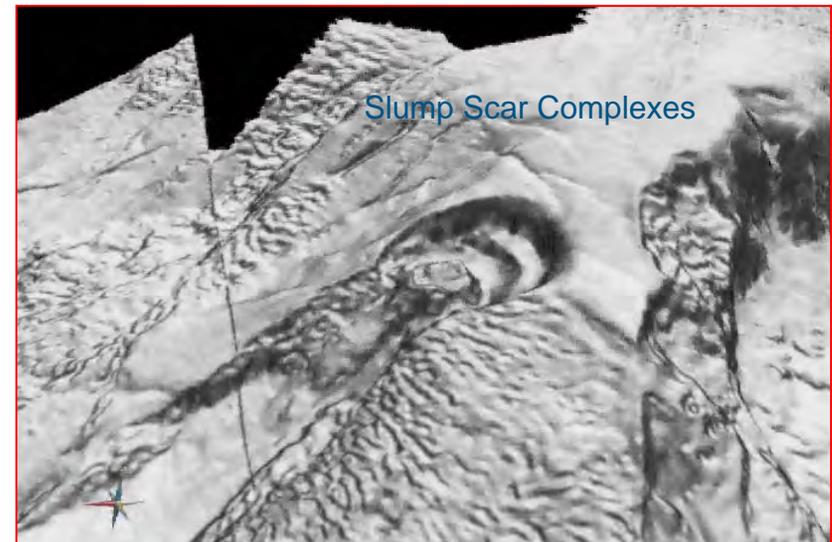
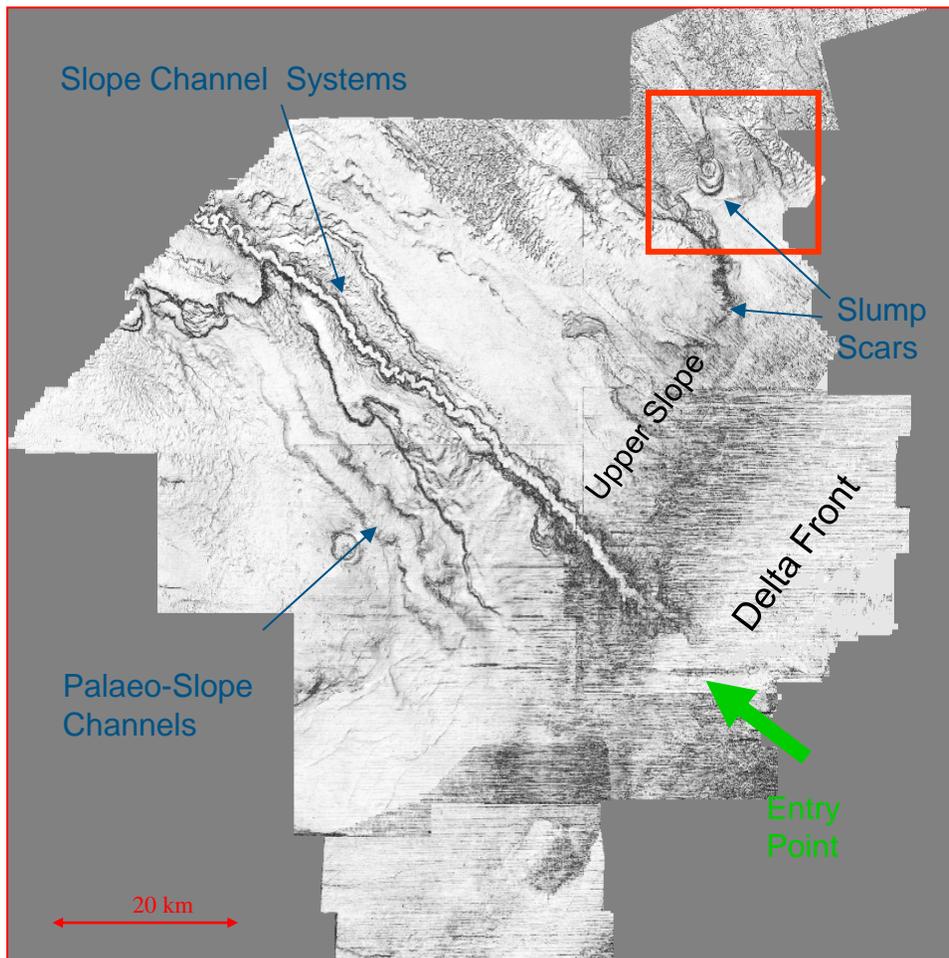
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Modern Day Mississippi Delta, Gulf of Mexico

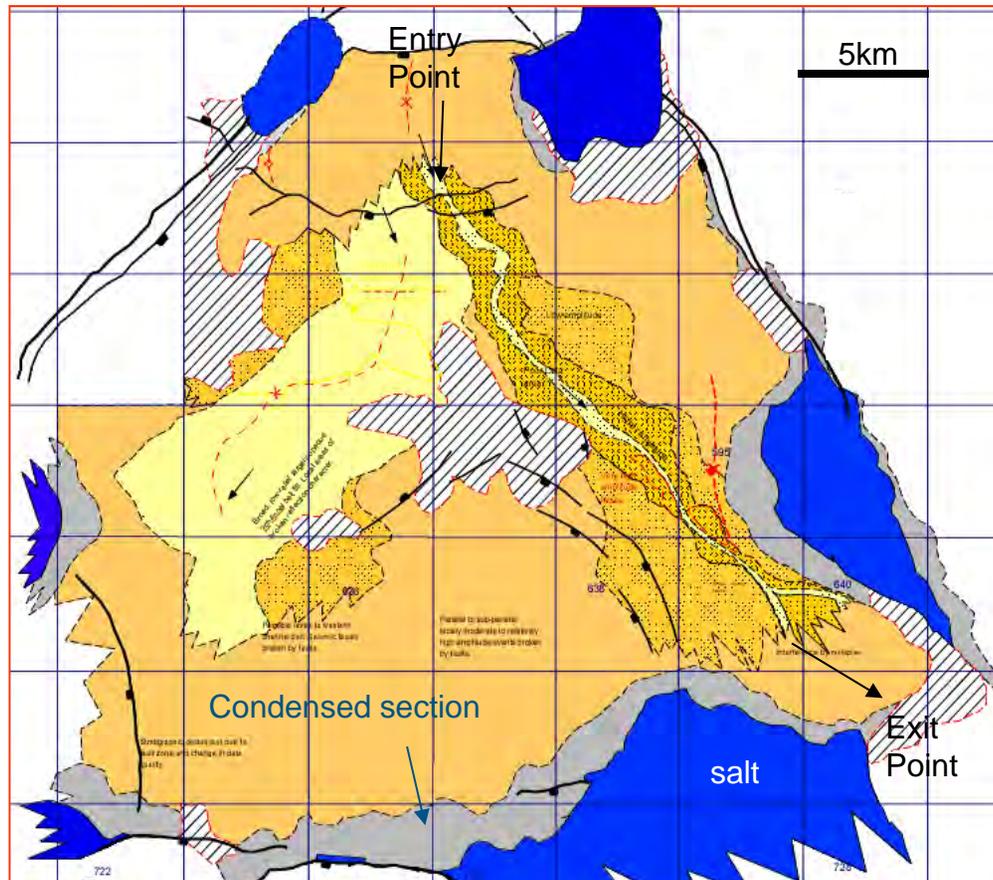
- ..at depths from a few to many kilometers and with a resolution of meters.....
- The key to success is being in the right basin; and in the right place in that basin; and then drilling it in the right place

# ...or Like This!



3D Coherence image of present-day seabed, Nile Delta

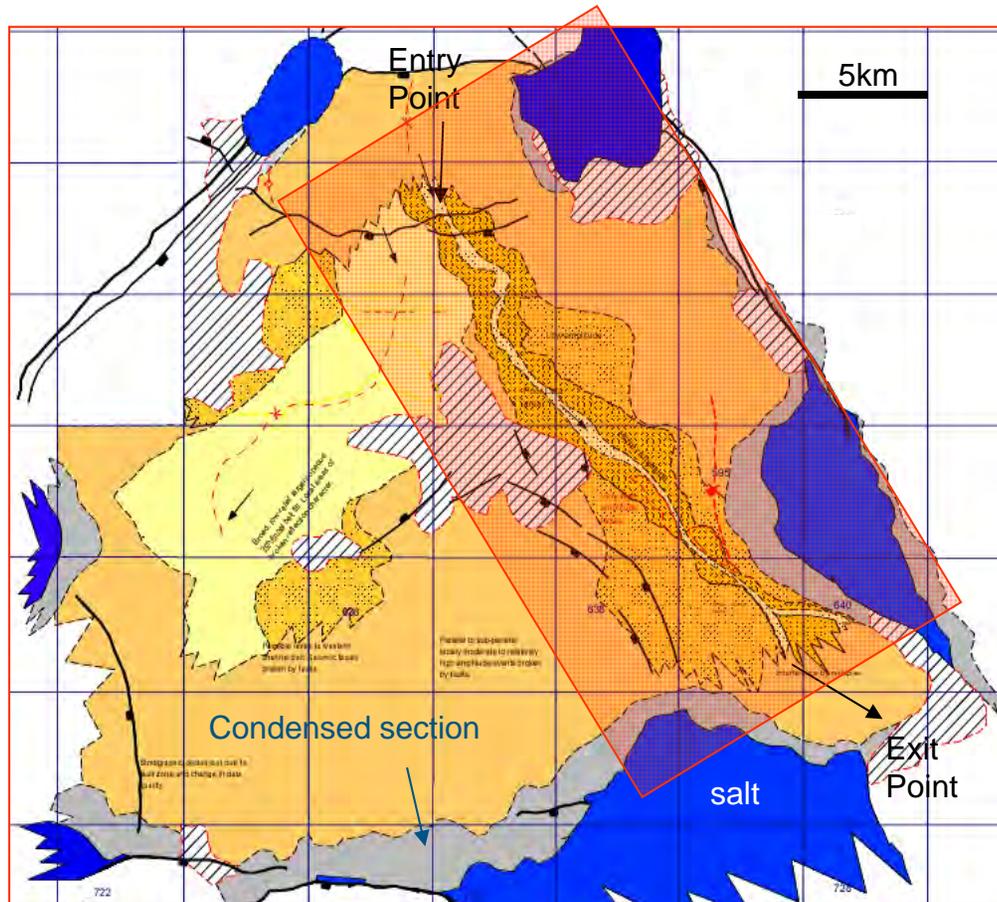
# 2D Interpretation of Reservoir Systems



- Getting to the “right place” in a basin..... a basin-wide analysis is generally undertaken on 2D seismic datasets.
- The key products are a sophisticated stack of geological maps to systematically describe the basin fill from seabed down to the base of the sedimentary section.
- These maps are used to identify the distribution of potential petroleum reservoir units and to focus the exploration effort.

Example map for one individual depositional sequence:  
Area of Mississippi Canyon; Late Miocene sub-basin

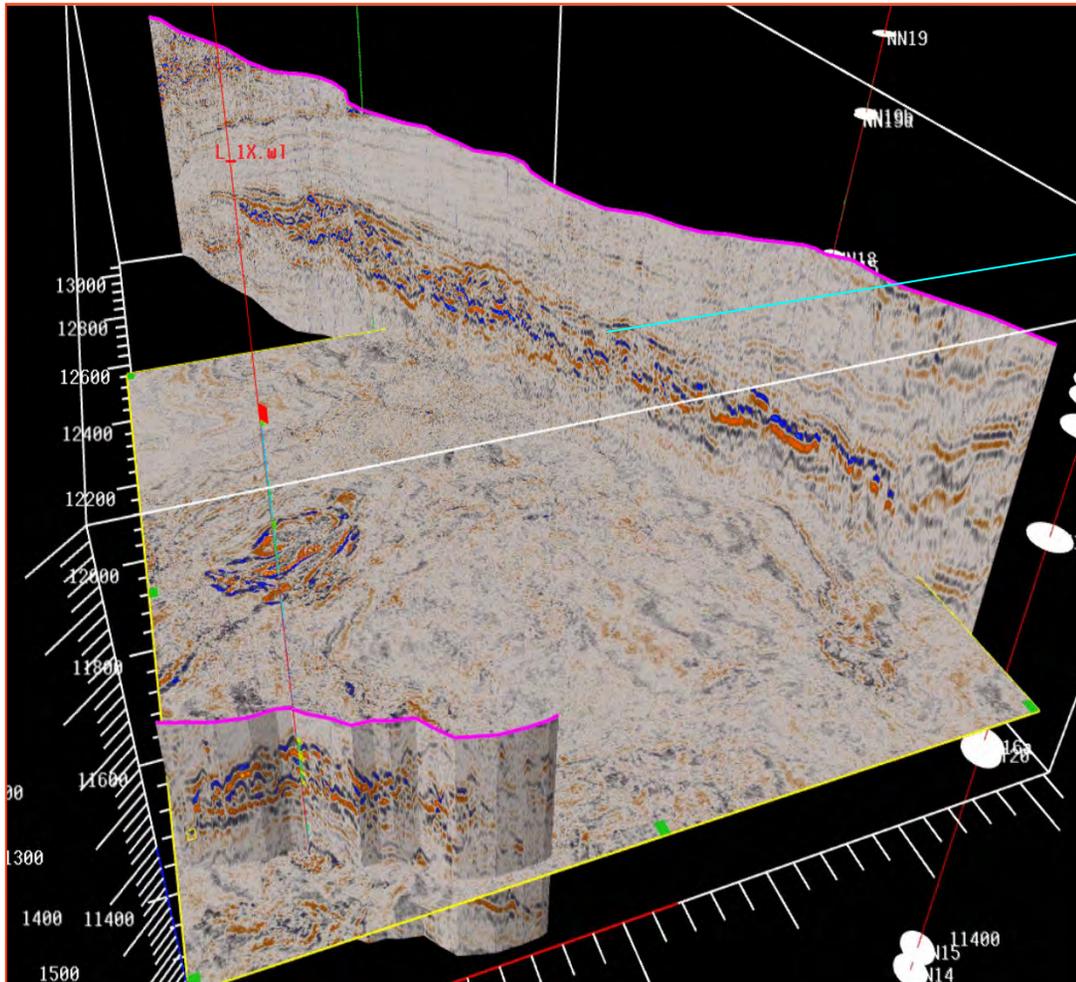
## ...Leading to a Targeted 3D Seismic Survey



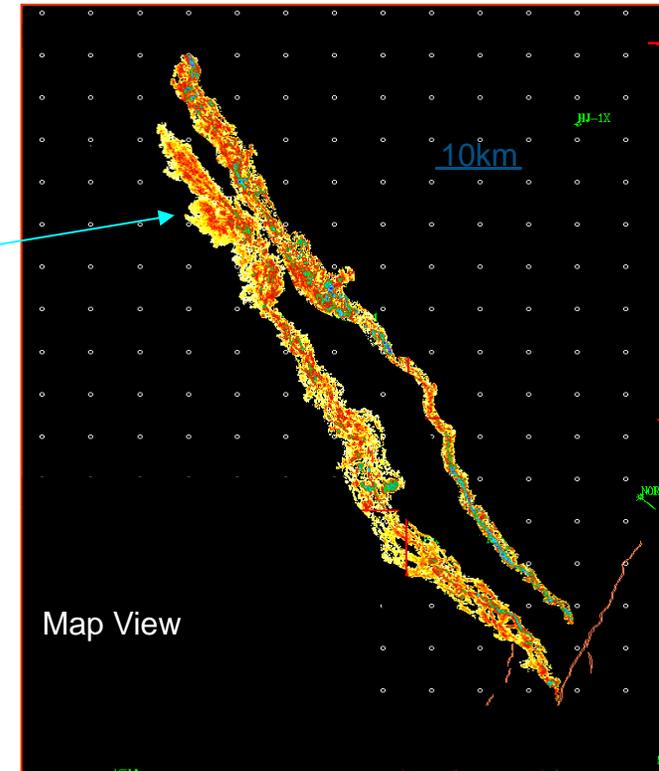
- in the “right place” in a basin
- allowing us to build an information-rich 3D geological interpretation

Example map for one individual depositional sequence:  
Area of Mississippi Canyon; Late Miocene sub-basin

# 3D Reservoir Description



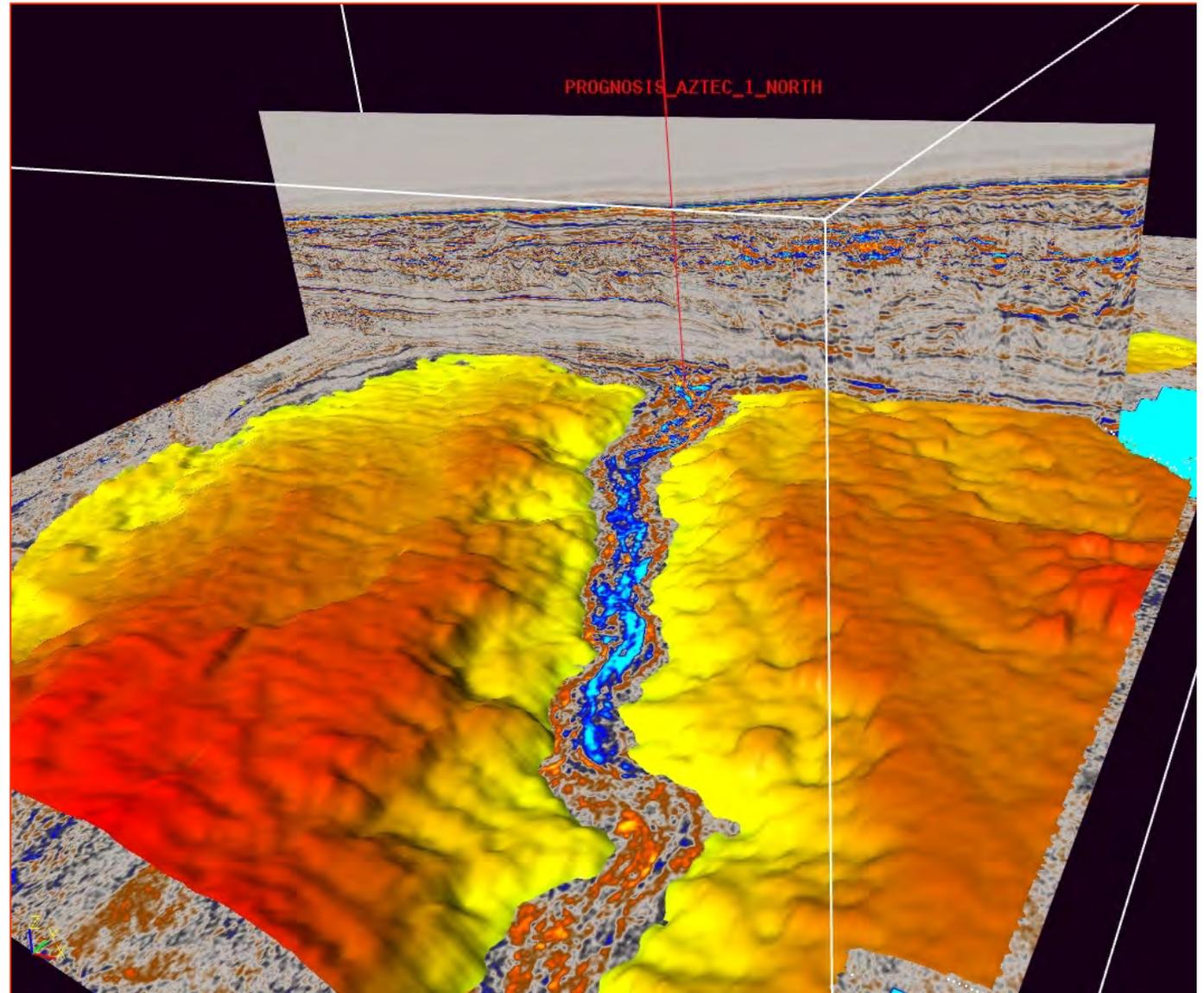
3D visualisation Slope channel complexes



Large area 3D data volumes frequently show remarkable images of deepwater channel complexes and, together with modern analogue studies, allow a sophisticated understanding of depositional process. The Pliocene slope channel examples here show amplitude responses associated with lithology and gas saturation.

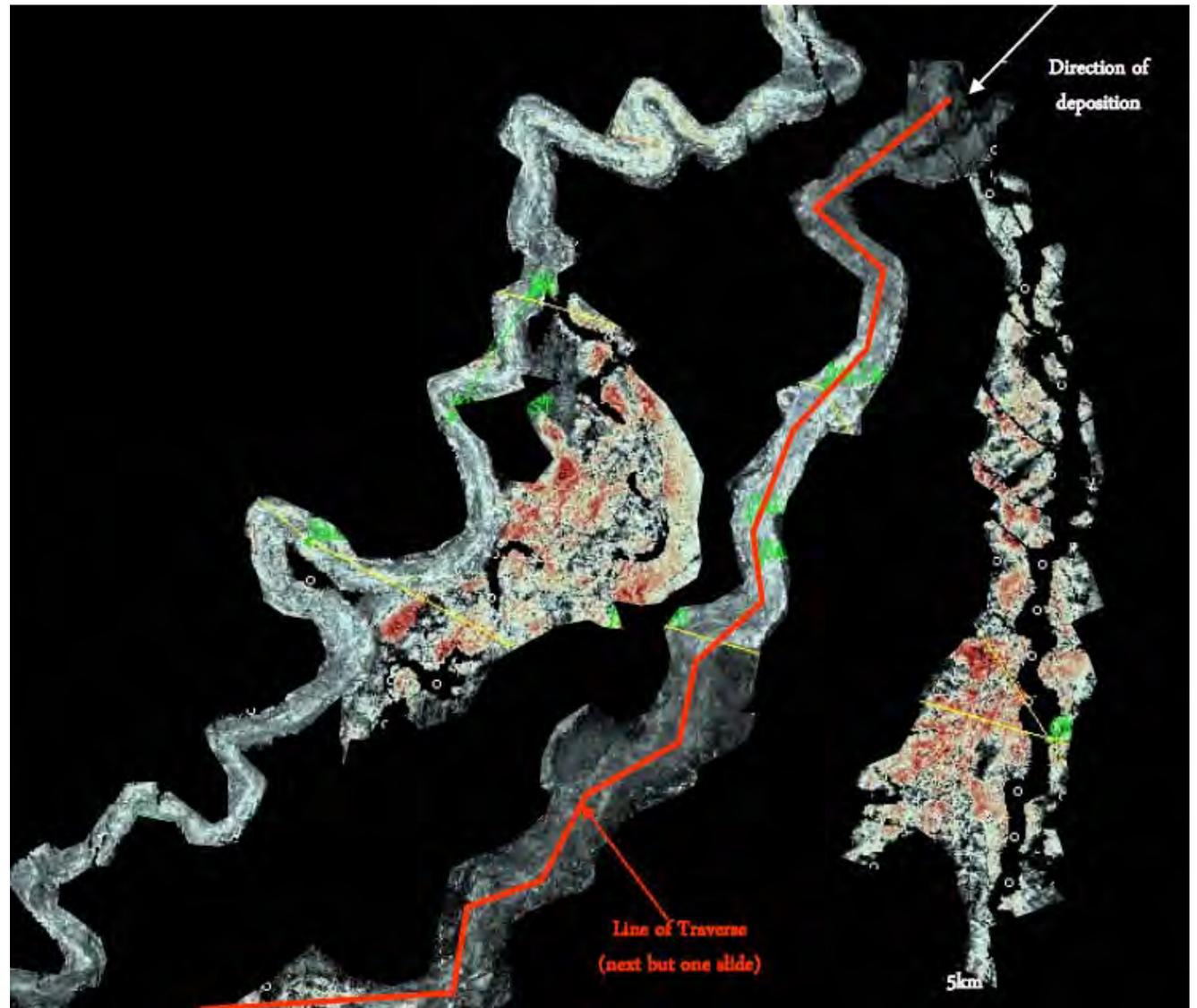
# 3D Reservoir Description

Visualisation of  
Upper Slope  
Pliocene slope  
canyon system



# High Resolution 3D Surveys

- In map form, HR data allow spectacular imaging of depositional systems down to approximately 2.4 seconds below seabed.
- This degree of resolution is critical to resolve the reservoir uncertainty and minimise the number of wells required for field development

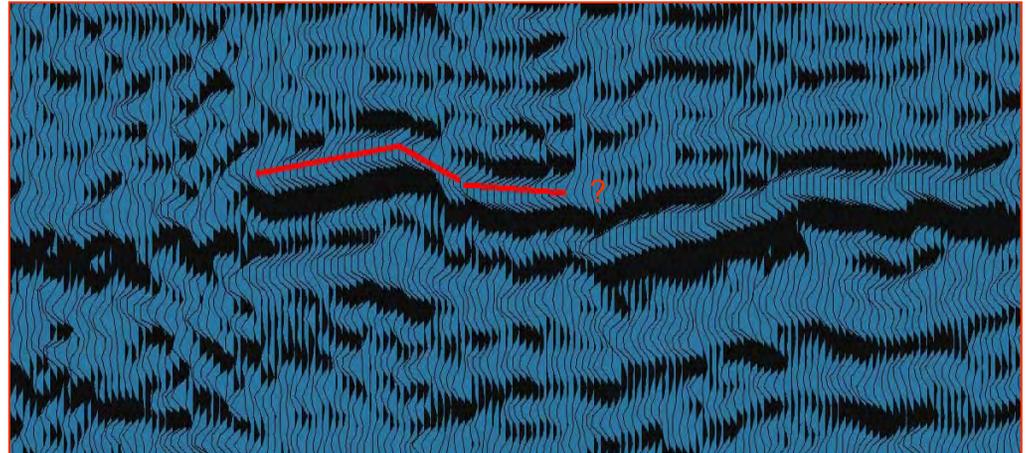


# Geophysical Risk Reduction

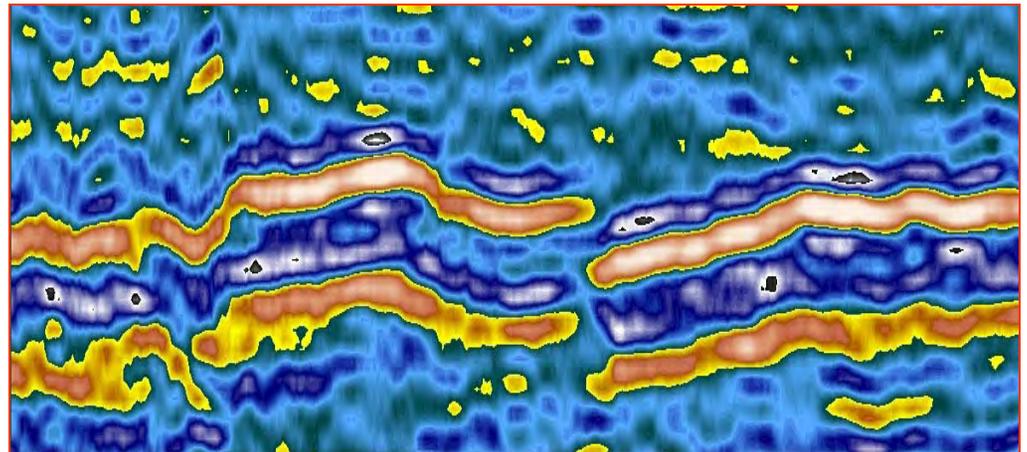
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- We can look at various seismic data volumes for detailed interpretation
- Leading us towards drilling in the right place

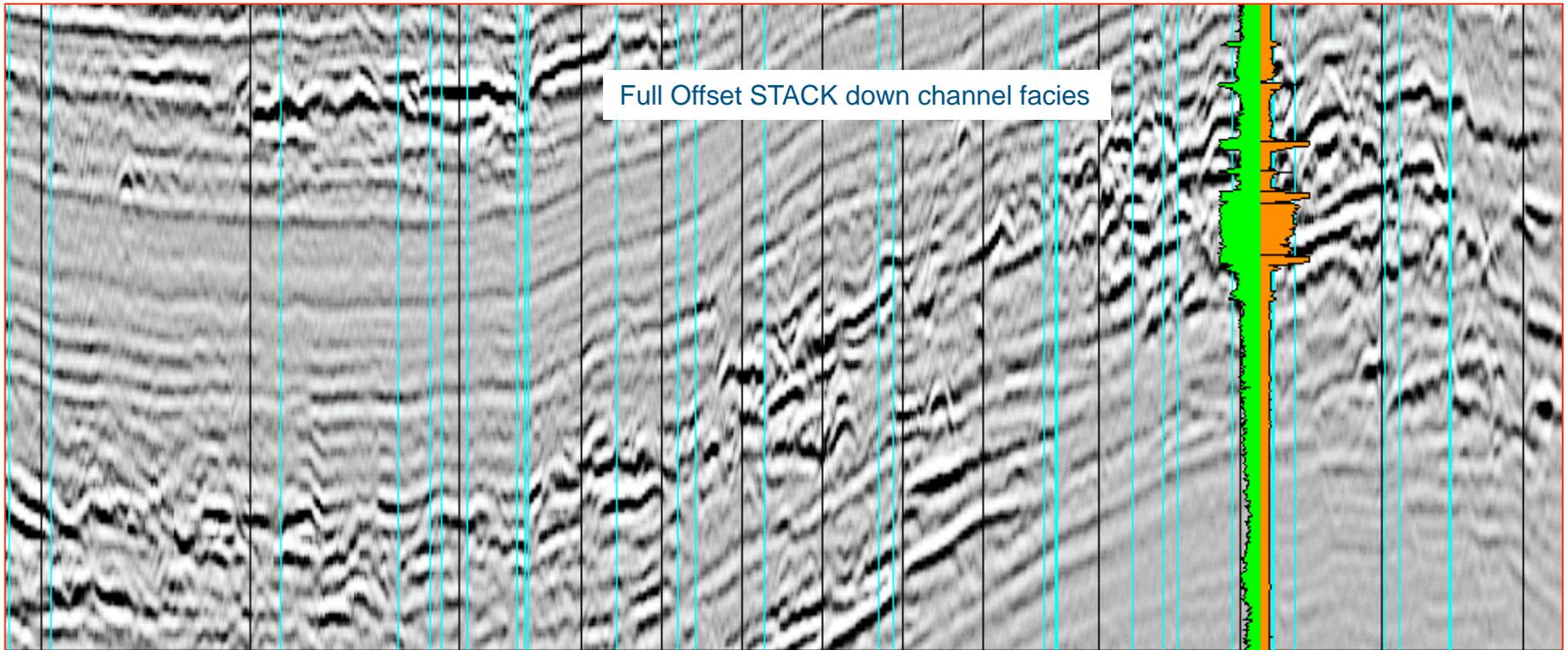
Full Offset Stack



Colored Inversion



# Direct Hydrocarbon Indication?



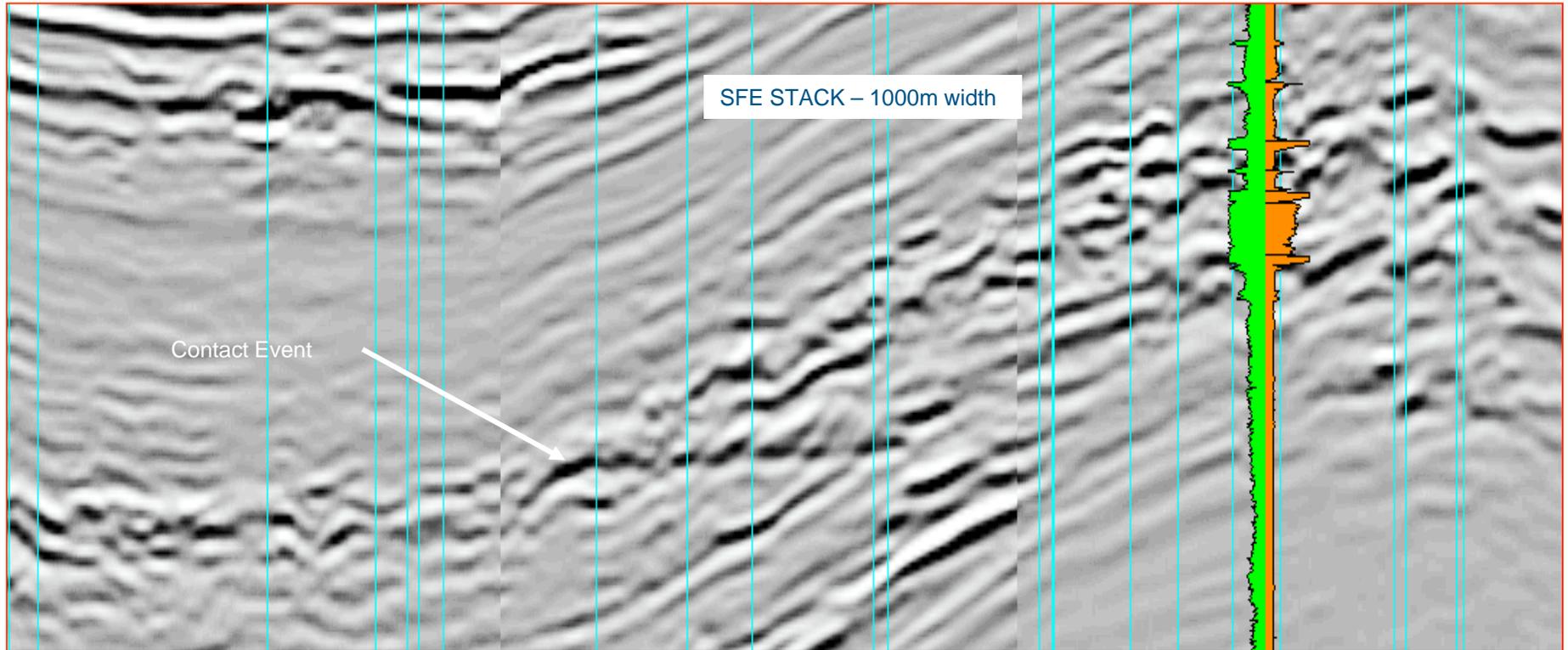
- Conventional data down a channel or depositional body axis shows the complex lithology and the amplitude signature suggests charge. However, there is significant risk the amplitude strength is reflects porosity and not pay.

# Direct Hydrocarbon Indication!

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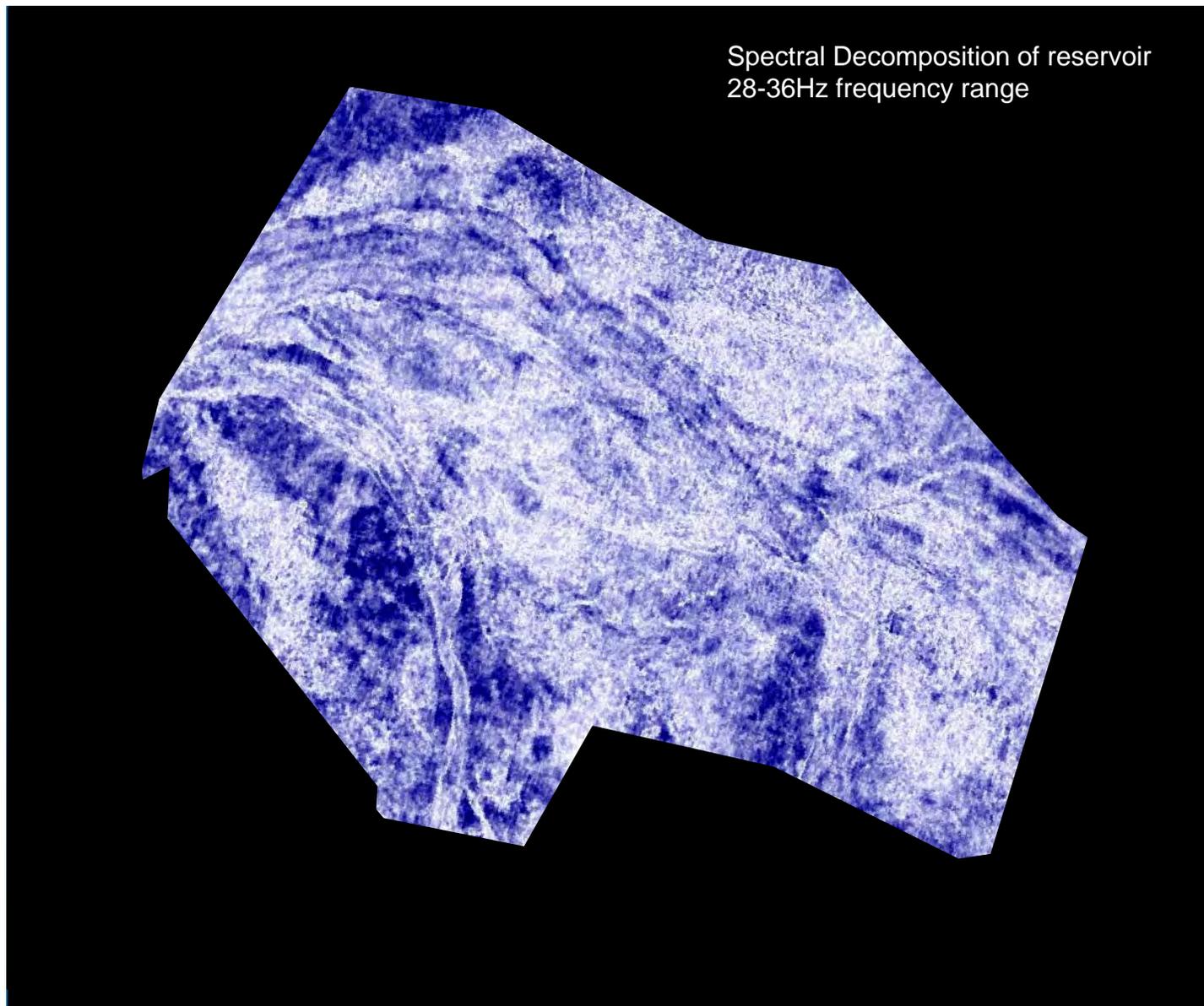
# Direct Hydrocarbon Indication!



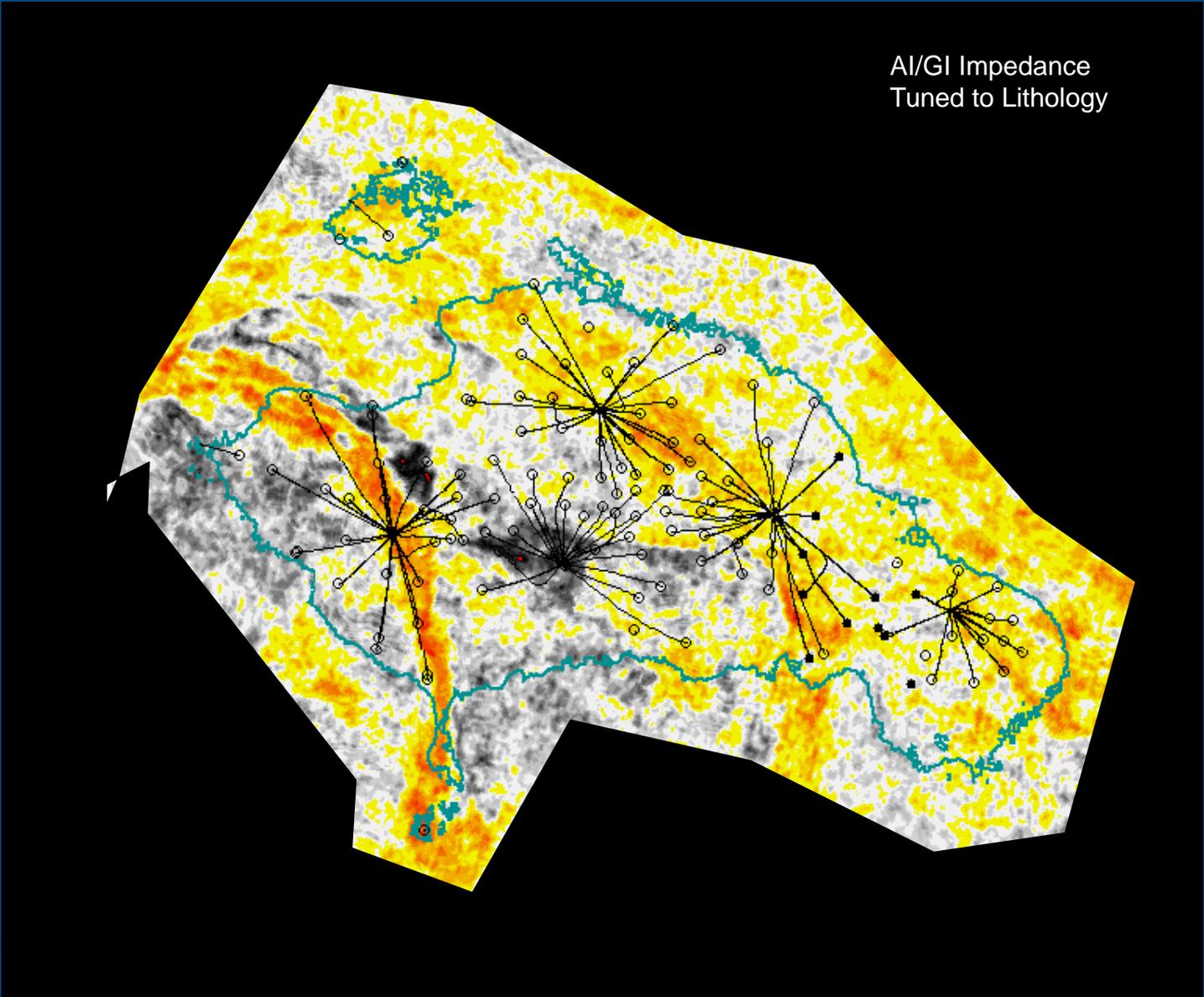
- Conventional data down a channel or depositional body axis shows the complex lithology and the amplitude signature suggests charge. However, there is significant risk the amplitude strength is reflects porosity and not pay.
- By stacking all the traces within a depositional body onto a single vertical section time or depth constant surfaces such as flat events are enhanced. This is a key exploration risk reducing tool.

# Forties Field UKCS Lithology and Fluid Description

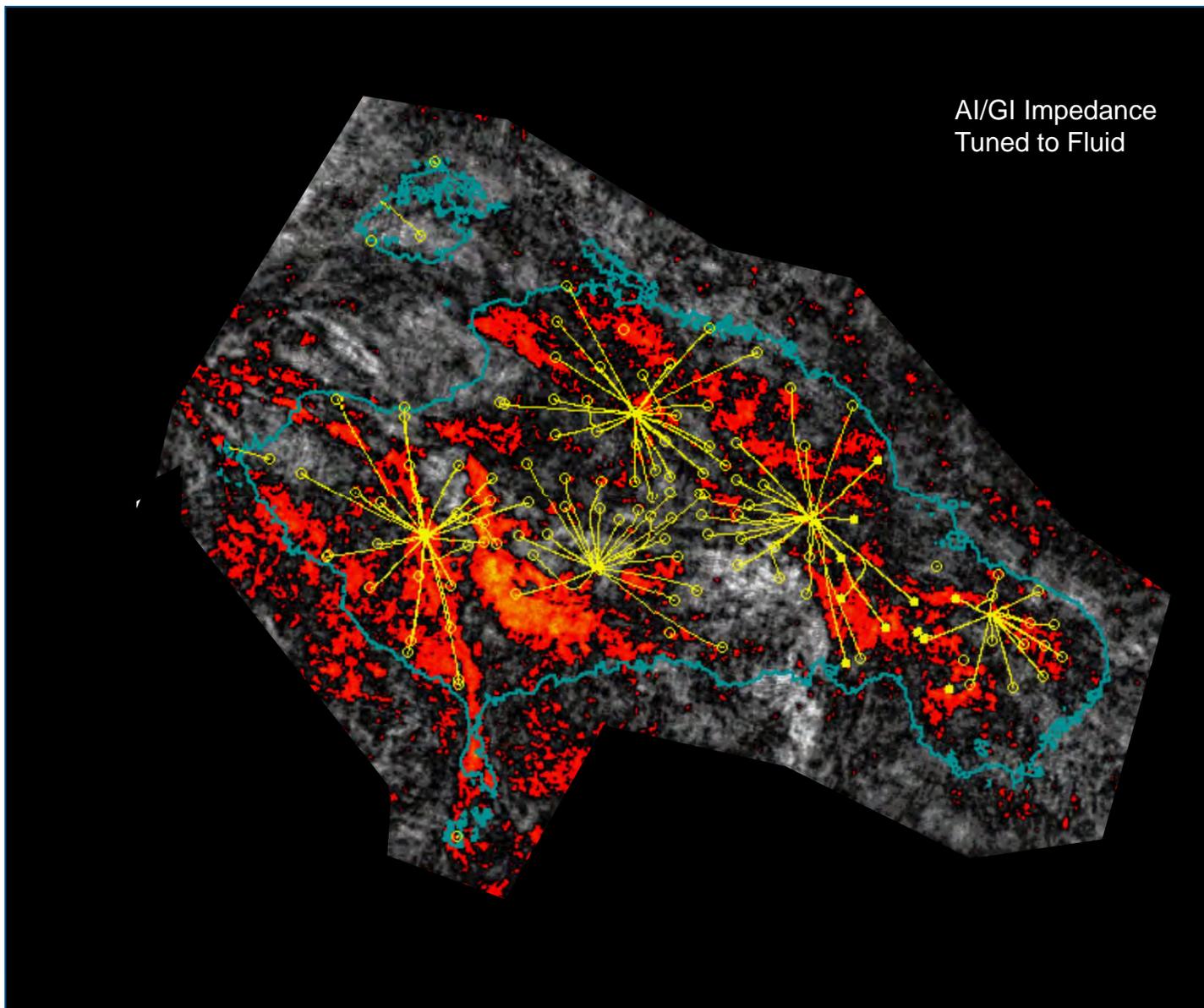
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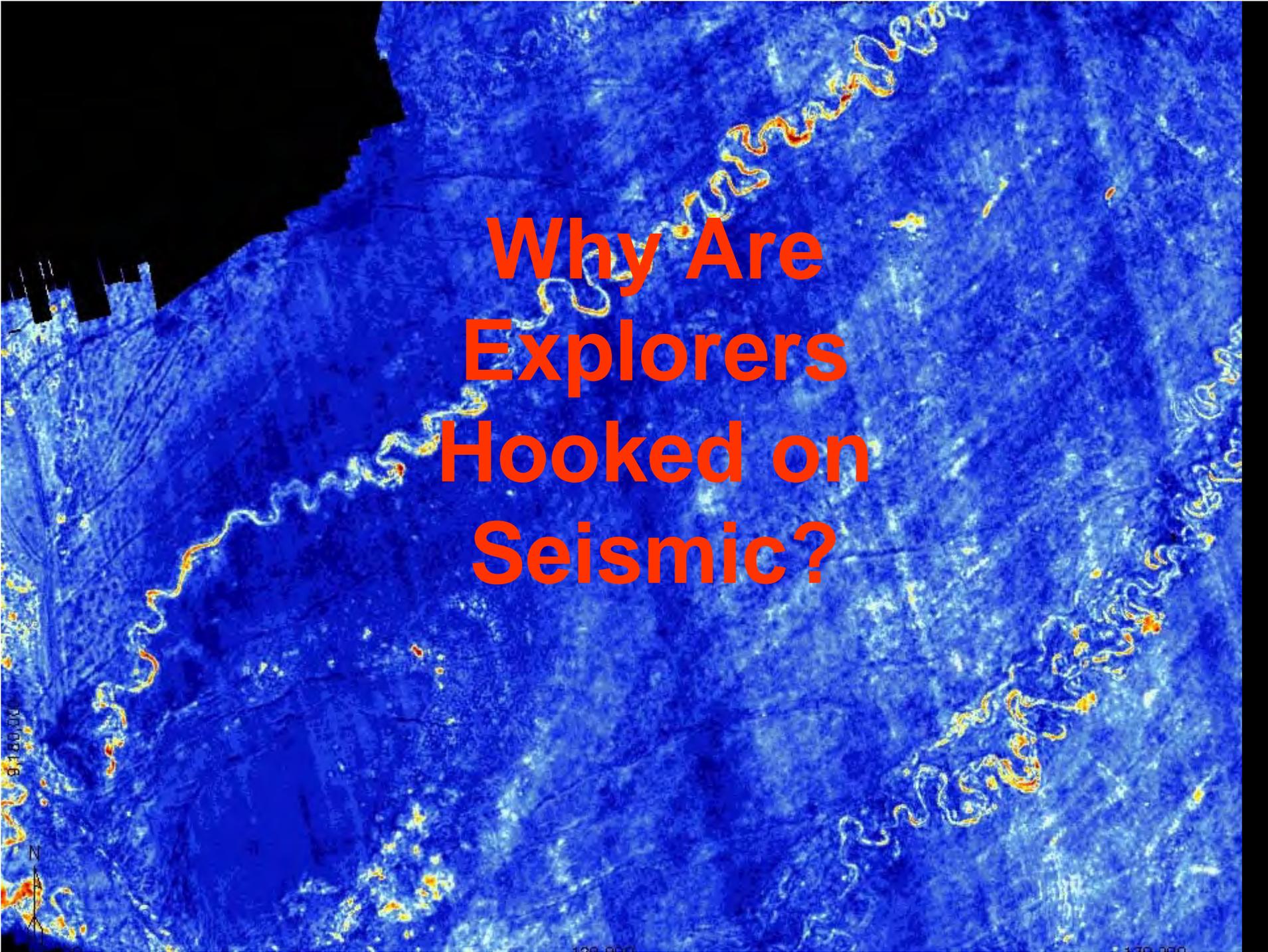


# Forties Field UKCS Lithology and Fluid Description



# Forties Field UKCS Lithology and Fluid Description



The image is a seismic data visualization, likely a time-lapse or difference map, showing subsurface geological structures. The background is a complex pattern of blue and yellow/orange, representing different seismic velocities or amplitudes. A prominent, wavy, yellow/orange line runs diagonally across the center, possibly indicating a fault or a specific geological feature. The text "Why Are Explorers Hooked on Seismic?" is overlaid in a large, bold, orange font in the center. In the bottom left corner, there is a small north arrow and the number "9180,000". At the bottom center and right, there are faint numbers "100,000" and "170,000" respectively, likely representing distance or time scales.

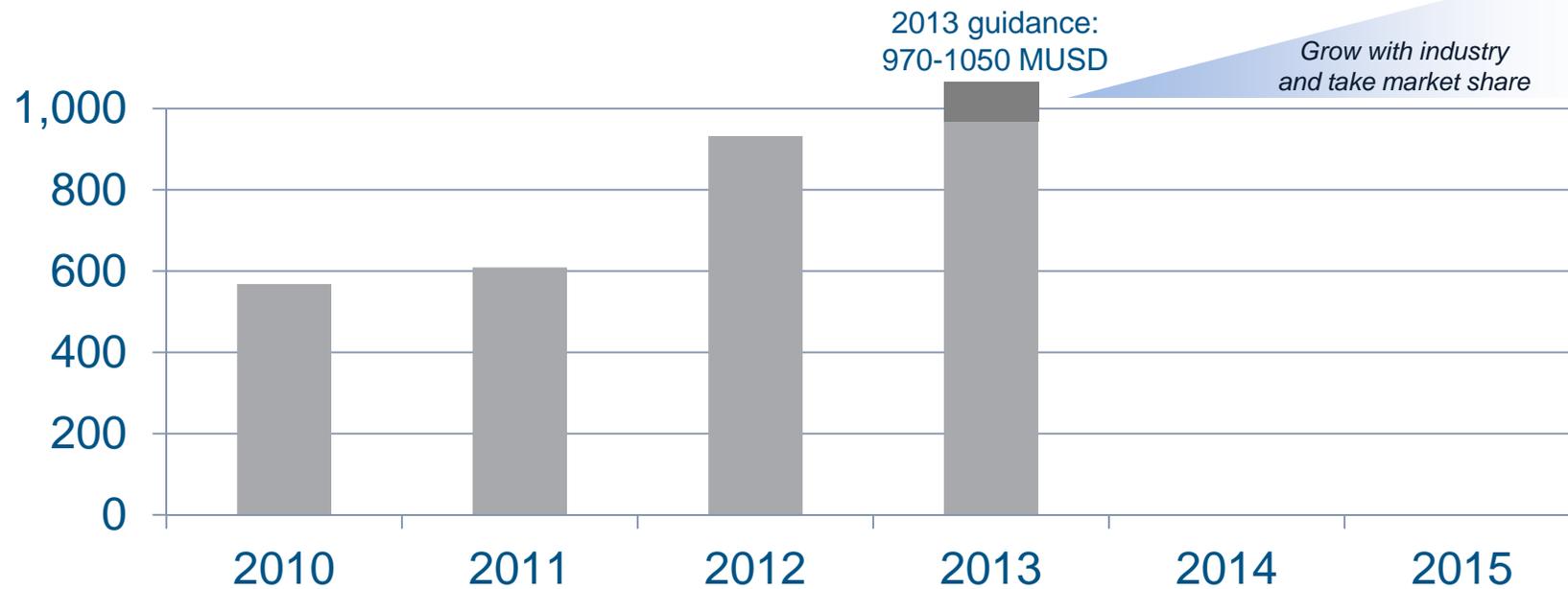
# Why Are Explorers Hooked on Seismic?



# Closing Remarks

Robert Hobbs, CEO

## Revenue Growth (MUSD)



- TGS is responsible
  - To our customers by providing quality products and exemplary service
  - To our employees, we commit to treat one another with respect and dignity, recognizing the merit of each and every individual
  - To the communities in which we live and work by caring for the people and environment with integrity
  - To our shareholders for growth and profitability
- Honesty, integrity and fairness form the cornerstones of all our relationships
- Growth is fundamental to our success

## Asset light business model

- Flexibility
- Investment decisions not driven by vessel utilization

## Quality

- Financial position, balance sheet
- People and culture
- Project development
- Customer service
- Sales and marketing capabilities
- Data processing
- Geoscience

## Global

- Data library
- Geographic knowledge
- Customer relationships
- Operations and project management
- Sales and marketing reach
- Leadership in mature basins
- Leadership in frontier basins



- Multi-client investments 530 – 600 MUSD
- Average pre-funding 50 – 60%
- Average multi-client amortization rate 40 – 46%
- Net revenues 970 – 1050 MUSD
- Contract revenues approximately 5% of total revenues



Thank you