

# Why all the interest in the Porcupine Basin, offshore Ireland?

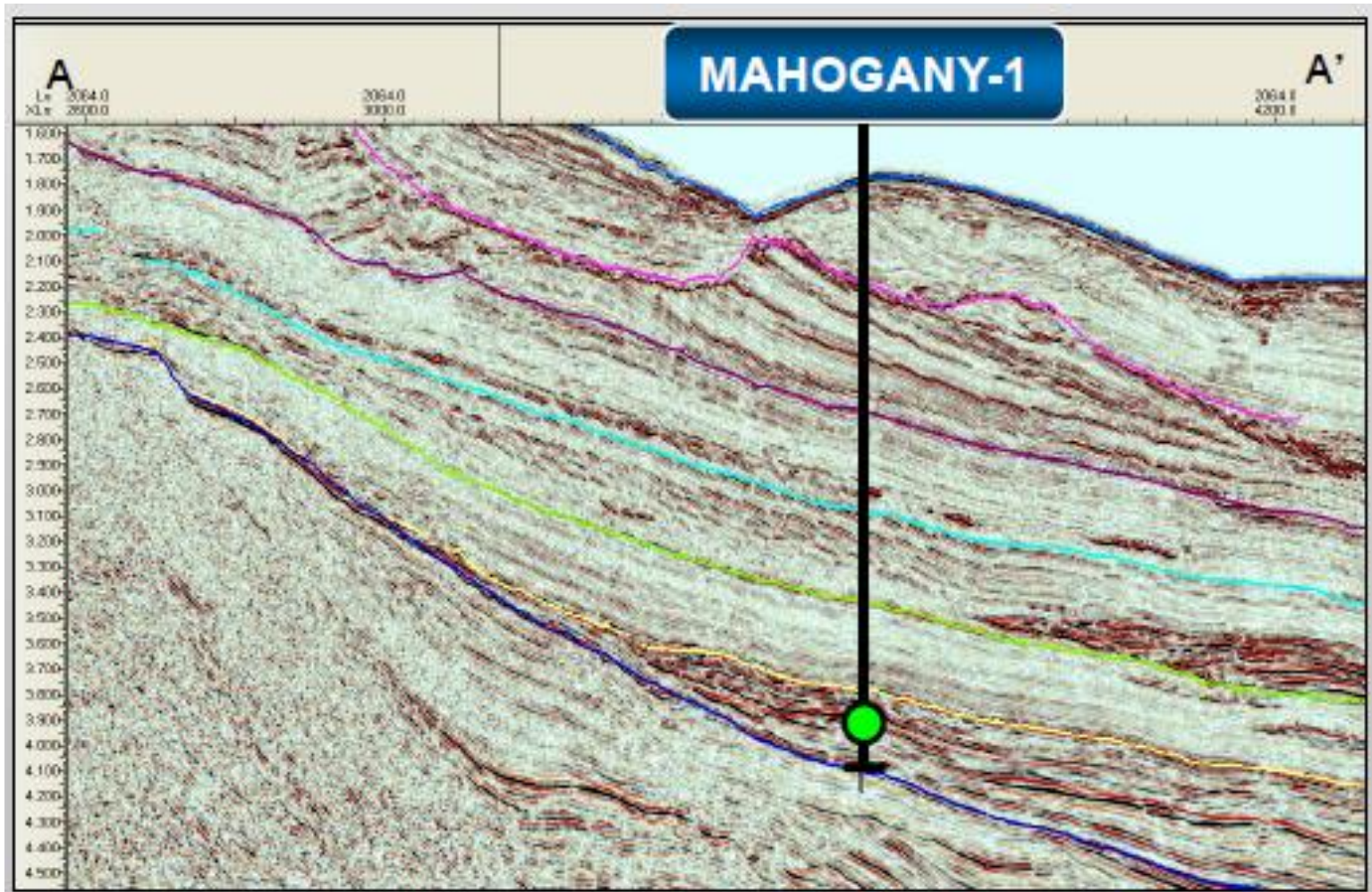
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APPEX London 10-13 March 2014

[www.europaoil.com](http://www.europaoil.com)

# The inspiration – West African Cretaceous stratigraphic play



Cretaceous turbidite sandstones in stratigraphic traps

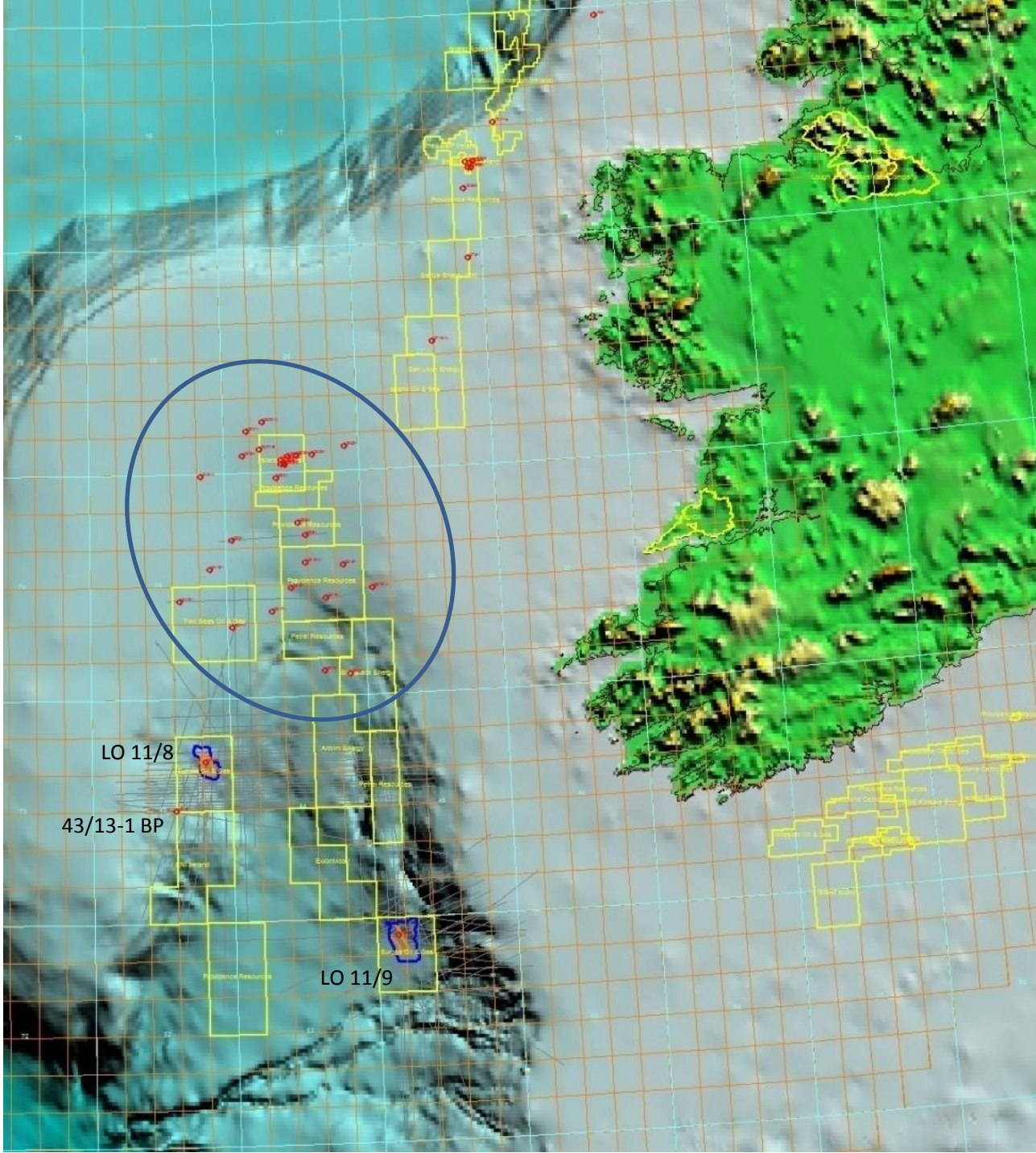
# Talk Outline



1. Historical activity
2. 2011 Atlantic Margin Licensing Round –  
Turning Point
3. Current Activity
4. What happens next



1977-2001

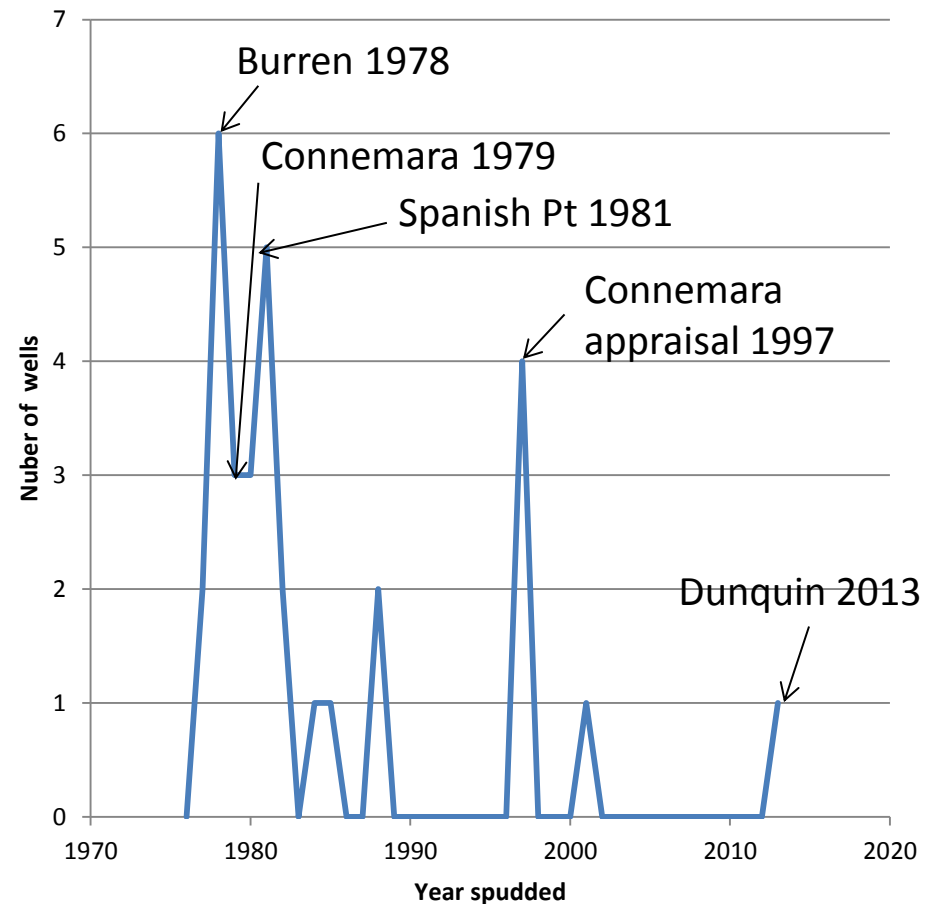


Porcupine basin  
operators 2014



# Basin statistics

- 60, 000 km<sup>2</sup> basin
- 31 wells in total since 1977
  - Amoco, BP, Britoil, Chevron, Deminex, Elf, Exxon, Gulf, Phillips, Marathon, Shell, Statoil, Total
- 3 prospects flowed hydrocarbons
  - Burren, Connemara, Spanish Point
- No commercial success
- 1 well, Dunquin, in last 12 years

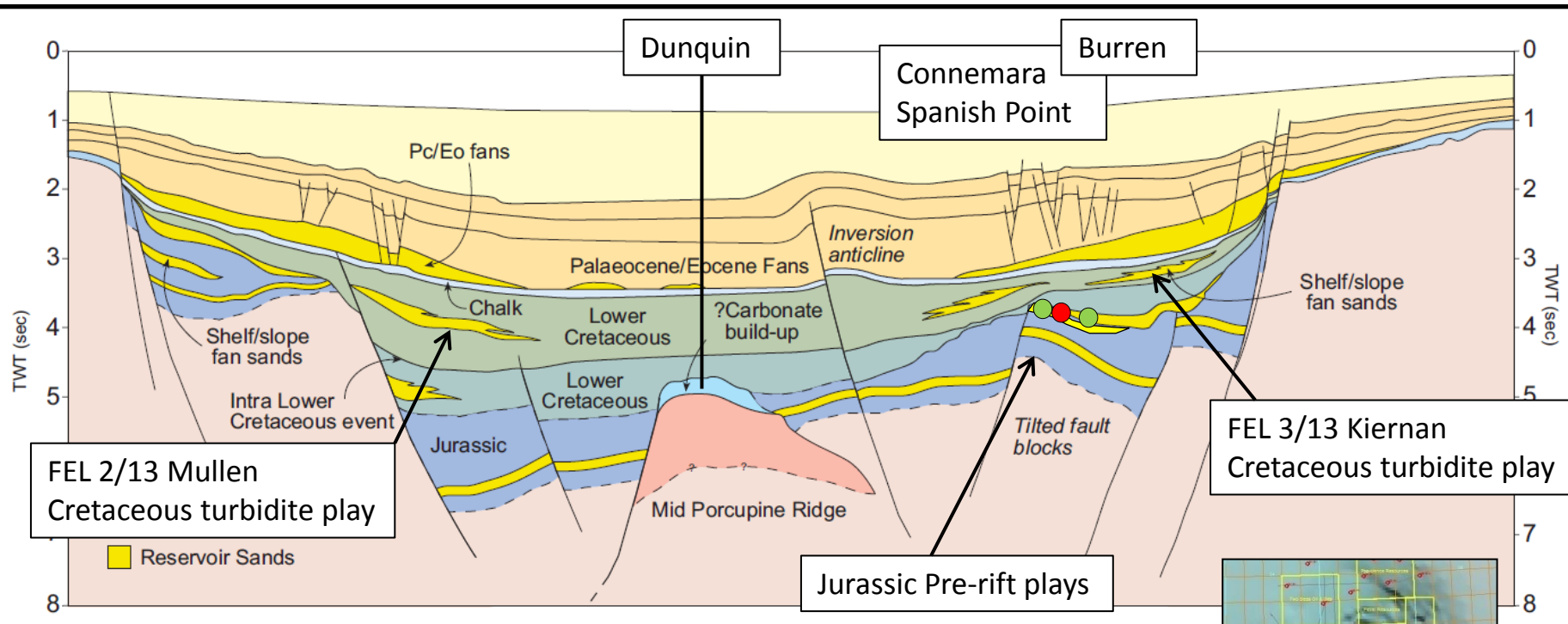


# 1977-2001



- Seeking the next “North Sea” and using Brent Province geological model
- Constraints
  - Water depth: most wells drilled in <500 m, technical limit of 3<sup>rd</sup> generation semi-sub
  - 1000 m harsh environment production not pioneered
  - 2D seismic only
- Most drilling was in North Porcupine basin – no quick wins and drilling ceased in 2001
- South Porcupine basin virtually unexplored
- Tantalising results with reservoir, trap, source and hydrocarbons all found, but no commercial discoveries

# South Porcupine Basin Cross Section



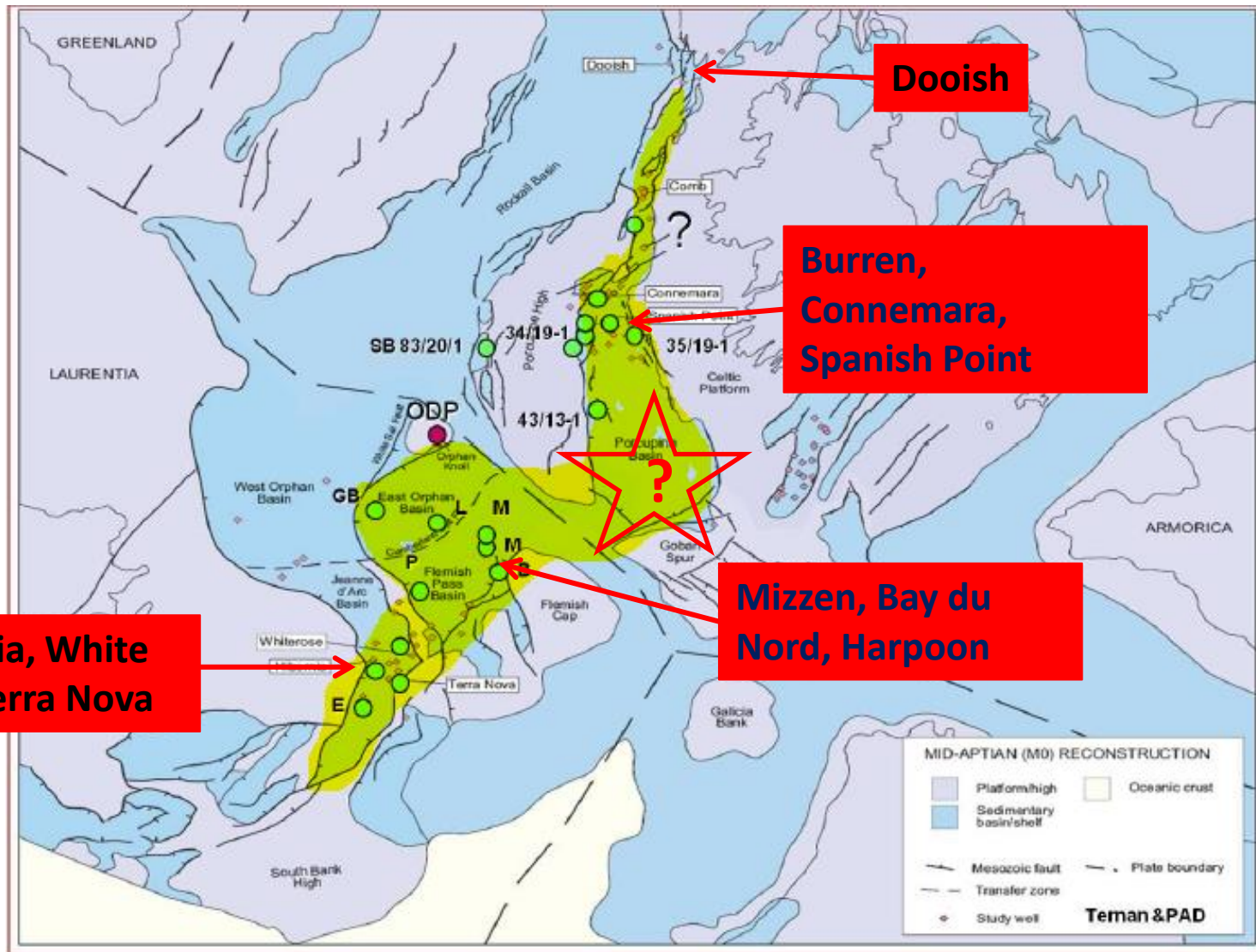
FEL 3/04. Exxon P&A Dunquin exploration well July 2013.

Residual oil shows reported in Lower Cretaceous carbonate reservoir. Suggest an oil prone source rock is present in the basin potentially de-risking the source rock component.

Cross-section taken from PAD , 2006.



# Late Jurassic source rock superhighway



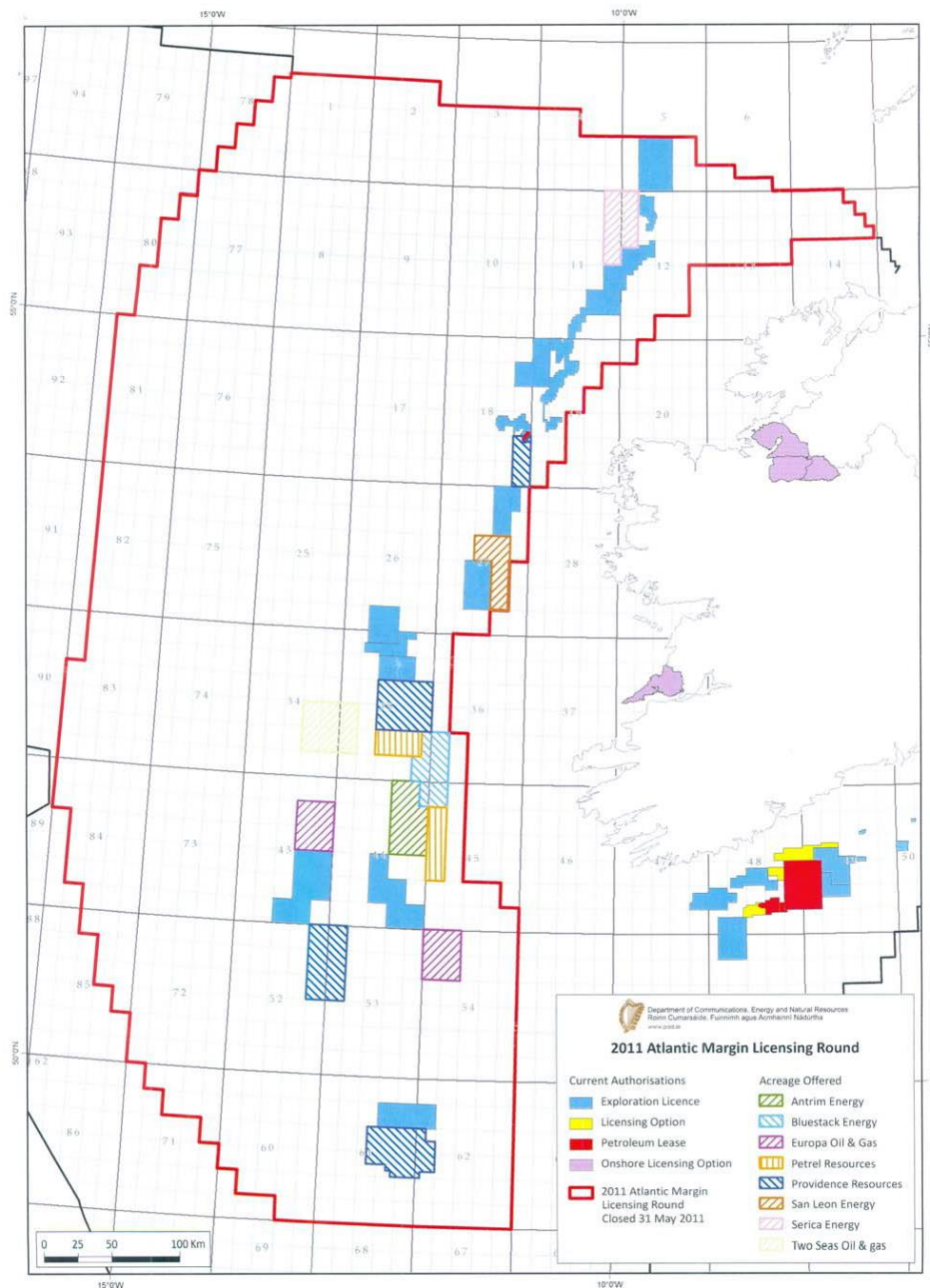


# North Porcupine & Flemish Pass discoveries



Name	Operator	Date	Well	WD	
Burren	Phillips	1978	35/8-1	430 m	733 bopd 34° API oil E. Cret. SST reservoir. 66 mmbo
Connemara	BP	1979	26/28-1	374 m	5589 bopd 32-38°API U. Jur. SST reservoir. 172 mmbo
Spanish Point	Phillips	1981	35/8-2	422 m	1000 bopd and 5 mmscf/d U. Jur. SST reservoir. 200mmboe
Mizzen	Statoil	2009	Mizzen O-16	1100 m	100-200 mmbo Upper Jurassic reservoir
Bay du Nord	Statoil	2013		1100 m	300-600 mmbo Upper Jurassic SST reservoir
Harpoon	Statoil	2013		1100 m	Under evaluation Upper Jurassic SST reservoir

# **2011 ATLANTIC MARGIN LICENSING ROUND – TURNING POINT**



## 2011 Atlantic Margin Licensing Round

- Announced Oct 2010
- Offered 1,017 full blocks, 55 part blocks 257,500 km<sup>2</sup>
- Closed May 2011
- Awards November 2011
- Awarded 53 full blocks and 11 part blocks
- 13 Licensing Options issued to : Antrim, Bluestack, Europa, Petrel, Providence, San Leon, Serica, Two Seas

# 2011 turning point

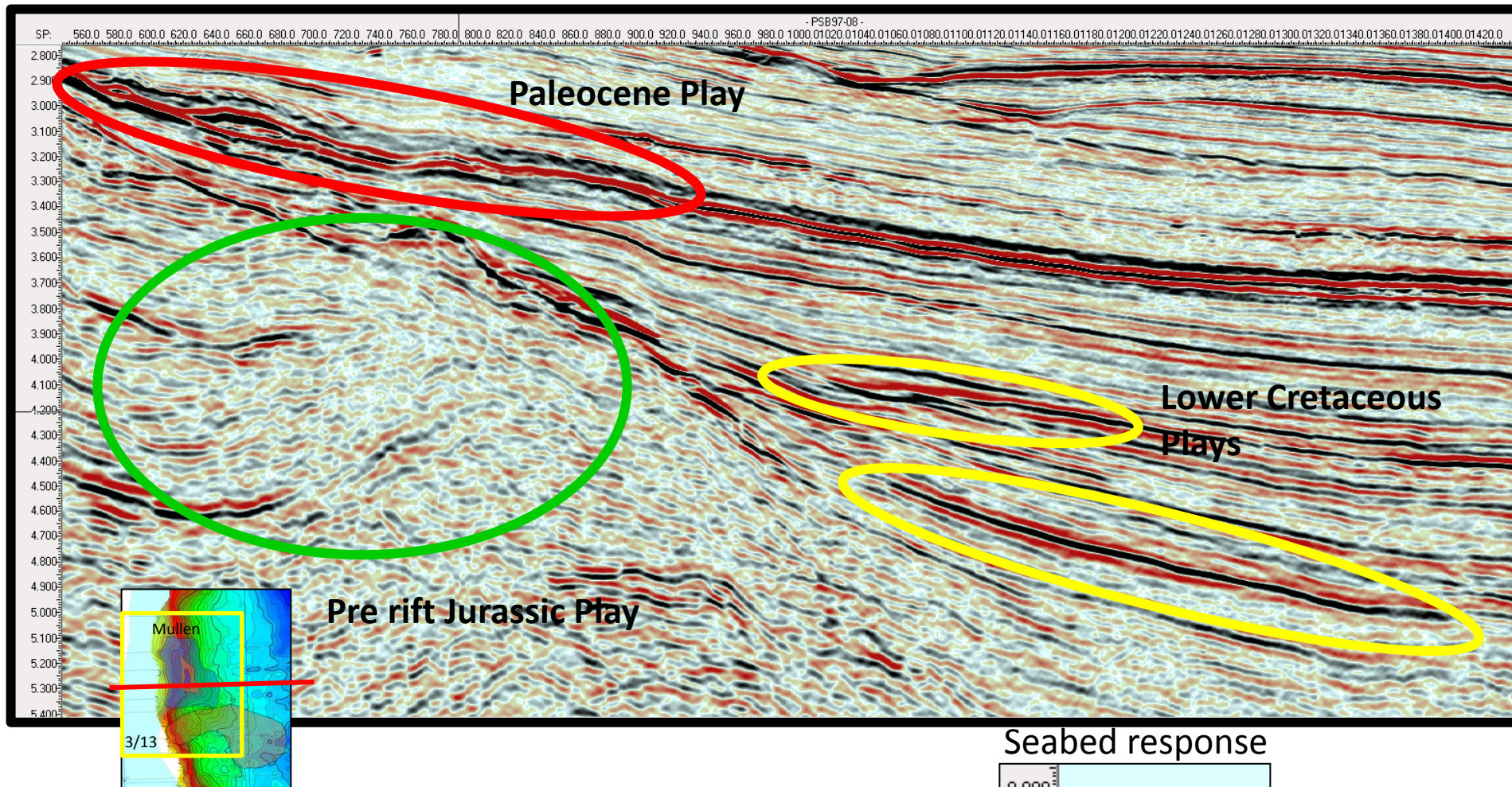
- 2011 Atlantic Margin Licensing Round brought in innovative companies with new ideas on hydrocarbon plays
- Licensing Option strategy bearing fruit with 2013 entry of Kosmos (3 licences), Cairn (3 licences) and Woodside (4 licences) by farmin as operators
- Mainstream industry is following exploration of the new Cretaceous play closely
- Exploration success will create a race to be second



‘Polarus Amani’ vessel used to acquire Kosmos 3D in 2013



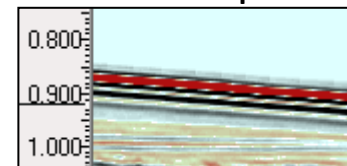
# Line PSB97-08 FEL 3/13 Mullen Plays



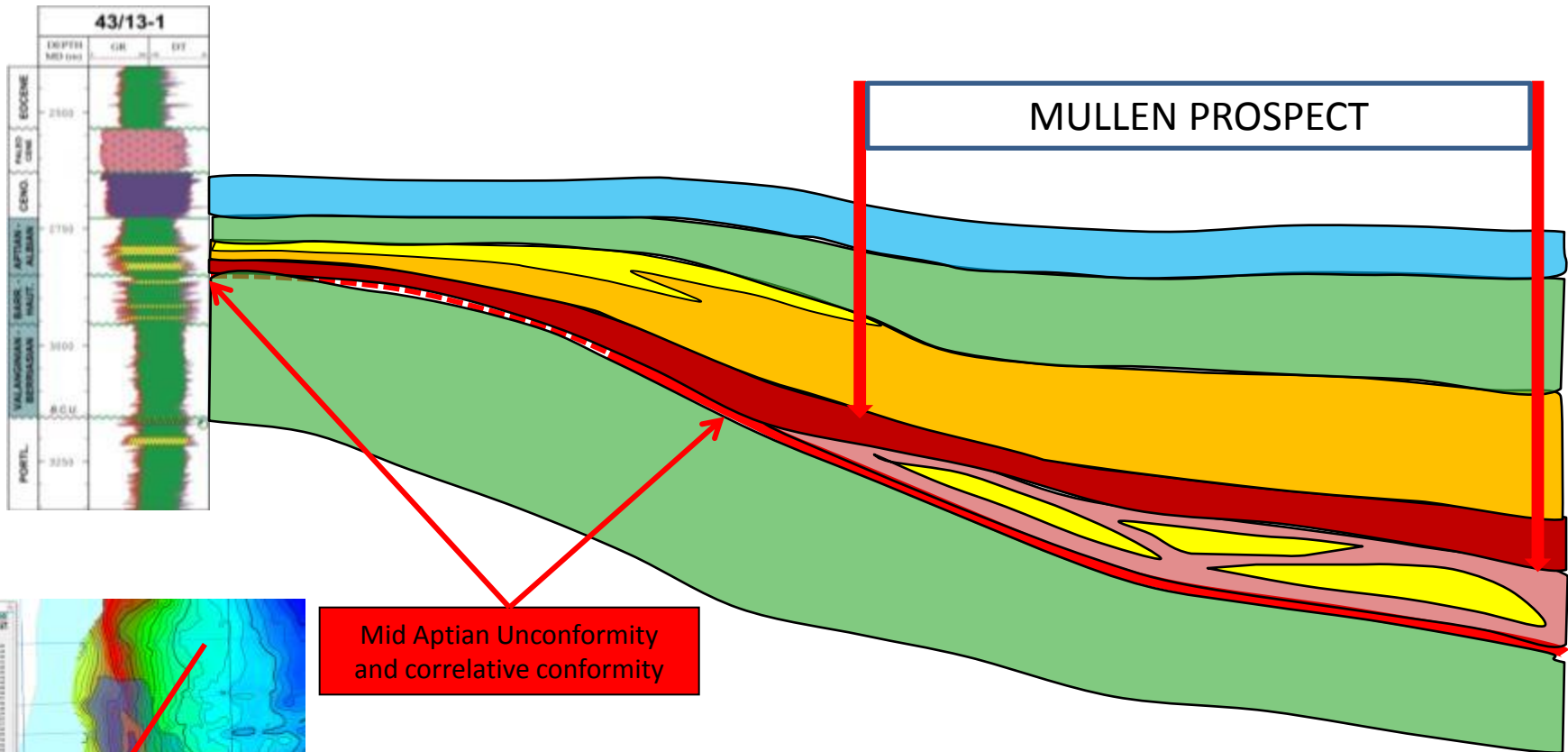
Polarity : black peak decrease in acoustic impedance

Data shown courtesy of TGS and WesternGeco

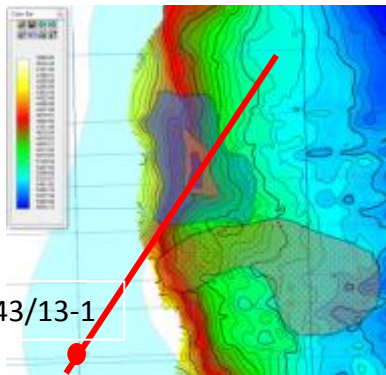
Seabed response



# Geoseismic Section



Mid Aptian Unconformity  
and correlative conformity



# 2014 state of the art



- 1000 m water depth exploration drilling is routine
- Ultra-deepwater units capable of 3650 m water depth
- North Atlantic harsh environment developments proven: Hibernia, Snohvit, Foinaven
- 3D seismic – stratigraphic trap definition and fluid content from rock physics
- New geological model – Cretaceous turbidite sands in stratigraphic trap – proven in Atlantic margin province in West African and South America



# Costs are escalating

- Rosebank discovered 2004, FEED start 2012, currently under review
- 130 km NW of Shetland
- 1100 m water depth
- 240 mmbo
- \$300+ million E&A
- \$6-8 billion capex
- Plateau rate 75,000 bopd & 100,000 mmscf/g
- Would be first N. Atlantic 1000m development
- Would offer an economic value proposition in Ireland

In a statement, Chevron said the project “does not currently offer an economic value proposition that justifies proceeding with an investment of this magnitude”. It said it had conveyed that message to the UK government.





# IRISH FISCAL REGIME



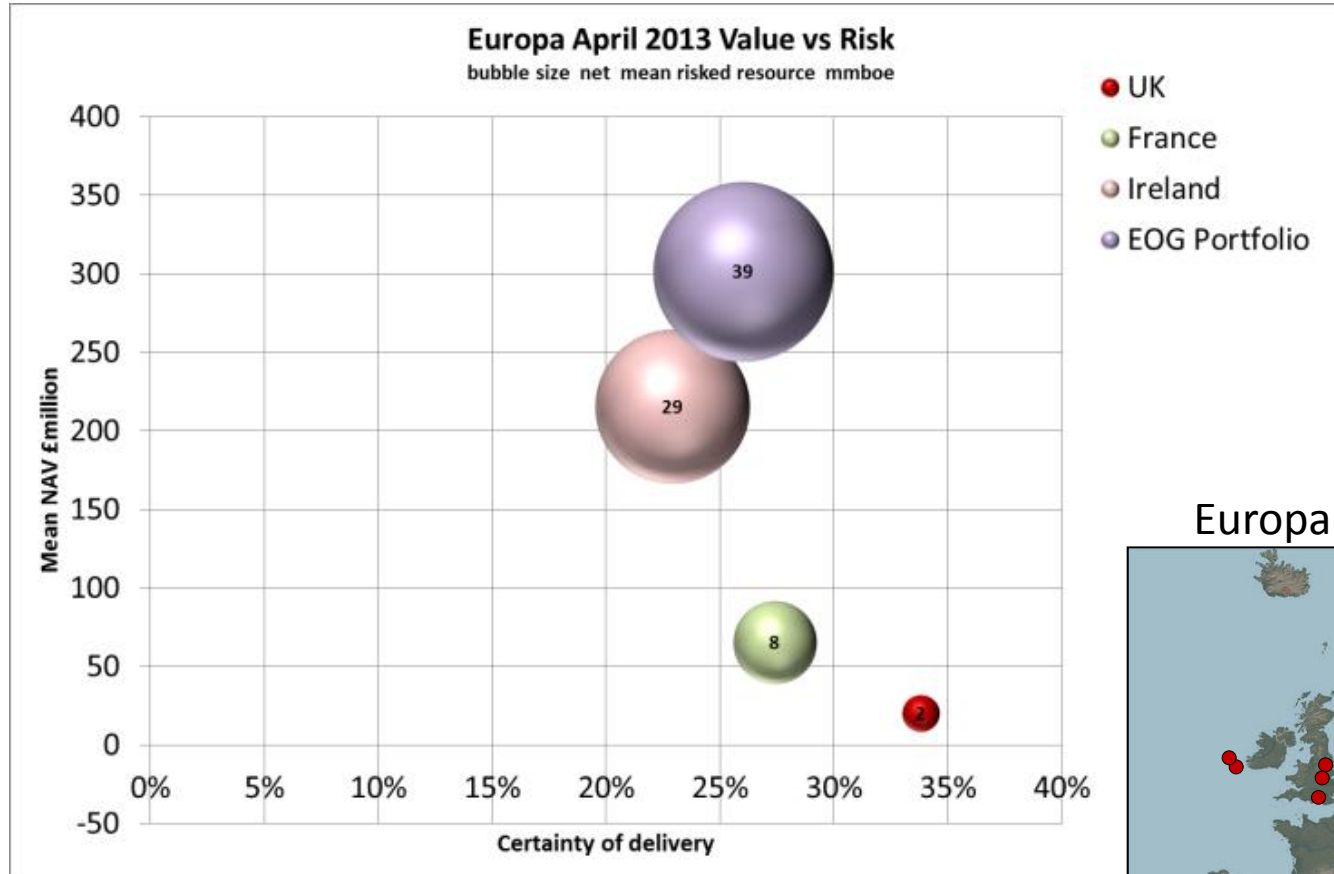
Fiscal Regime designed to encourage deep water frontier exploration

- No royalty, 25% corporate tax rate
- Additional Tax in form of Profit Ratio\* “R factor”
- 15% tax in respect of fields where the profit ratio exceeds 4.5
- 10% where the profit ratio is between 3.0 and 4.5
- 5% where the profit ratio is between 1.5 and 3.0
- No change where the profit ratio is less than 1.5

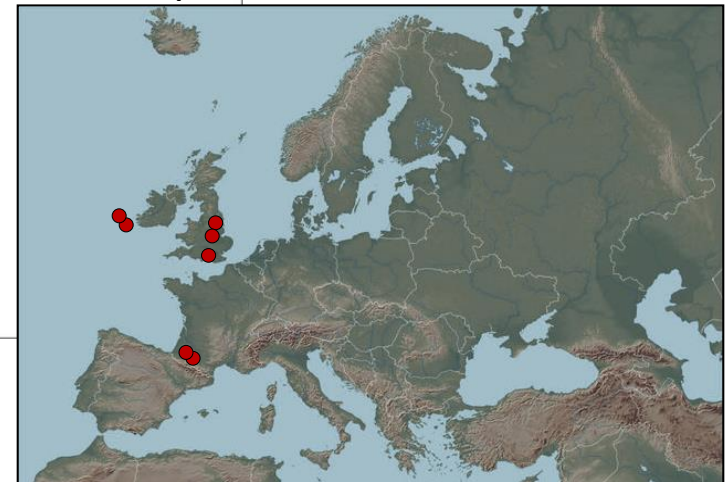
Country/Region	Government Take (%)
North America	42-60+
South America	25-90
Ireland	25
Europe excluding Ireland	35-65
Sub Saharan Africa	44-85
FSU, Middle East, North Africa	60-90+
Asia (exclude Central)	40-84

Source: DCMNR (2007)

# Transformational Asset



Europa Oil & Gas Portfolio



### **3. CURRENT ACTIVITY**

# PORCUPINE BASIN: EXPLORATION HOTSPOT



FEL 2/04, FEL 4/08, FEL 1/14  
Cairn Energy farm-in to Chrysaor  
and Sosina

Drill Spanish Point Q2/3 2014,  
3D acquisition 500km<sup>2</sup> 2014  
FEL 1/14

LO 11/10  
Woodside acquires Two Seas  
interest

FEL 1/13  
Kosmos Energy farm-in to  
Antrim. 3D acquisition 2013

FEL 2/13: Mullen Prospect  
Cretaceous stratigraphic play.  
Kosmos Energy farm-in to  
Europa. 3D acquisition 2013

FEL 2/14 Drombeg  
Cretaceous stratigraphic play.  
3D acquisition 2014

Connemara and Spanish Pt  
Jurassic oil discoveries

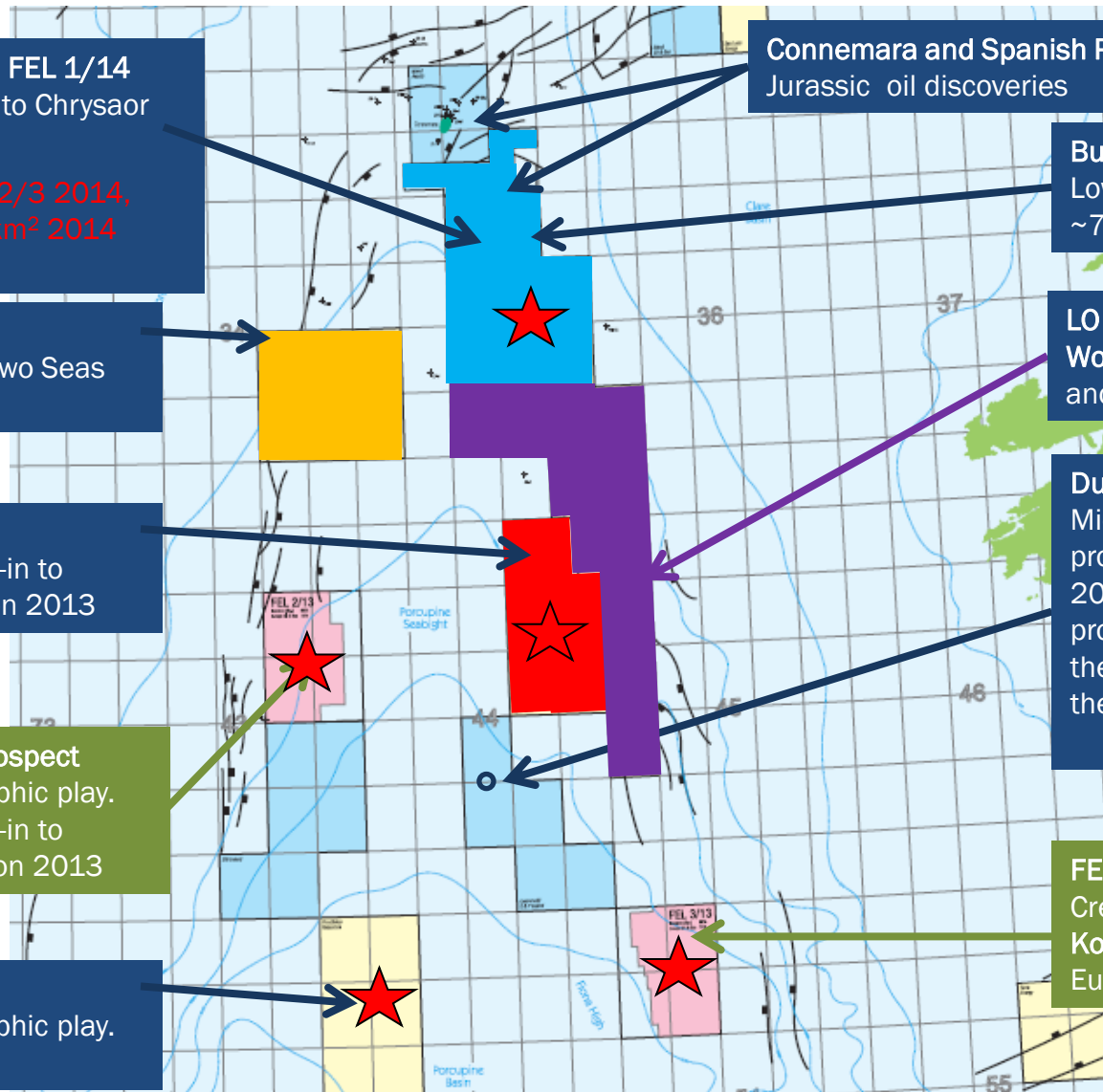
Burren  
Lower Cretaceous oil discovery  
~700 bopd

LO 11/03, FEL 3/13, FEL 4/14  
Woodside farm-in to Bluestack  
and Petrel

Dunquin  
Middle Cretaceous Carbonate  
prospect drilled by EXXON in July  
2013 - oil shows suggest an oil  
prone source rock is present in  
the basin potentially de-risking  
the source rock component

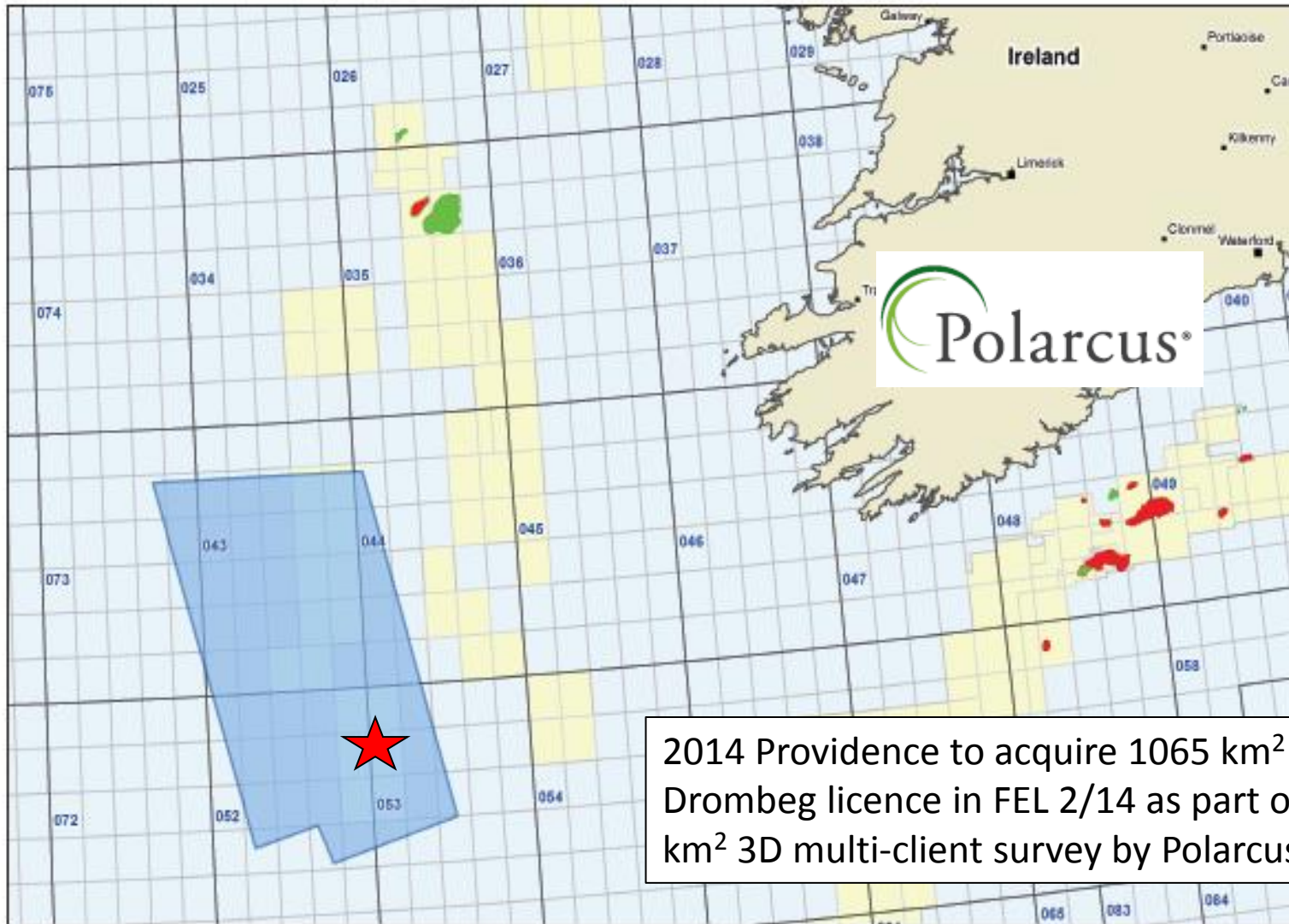
FEL 3/13: Kiernan Prospect  
Cretaceous stratigraphic play.  
Kosmos Energy farm-in to  
Europa. 3D acquisition 2013.

★ 3D surveys



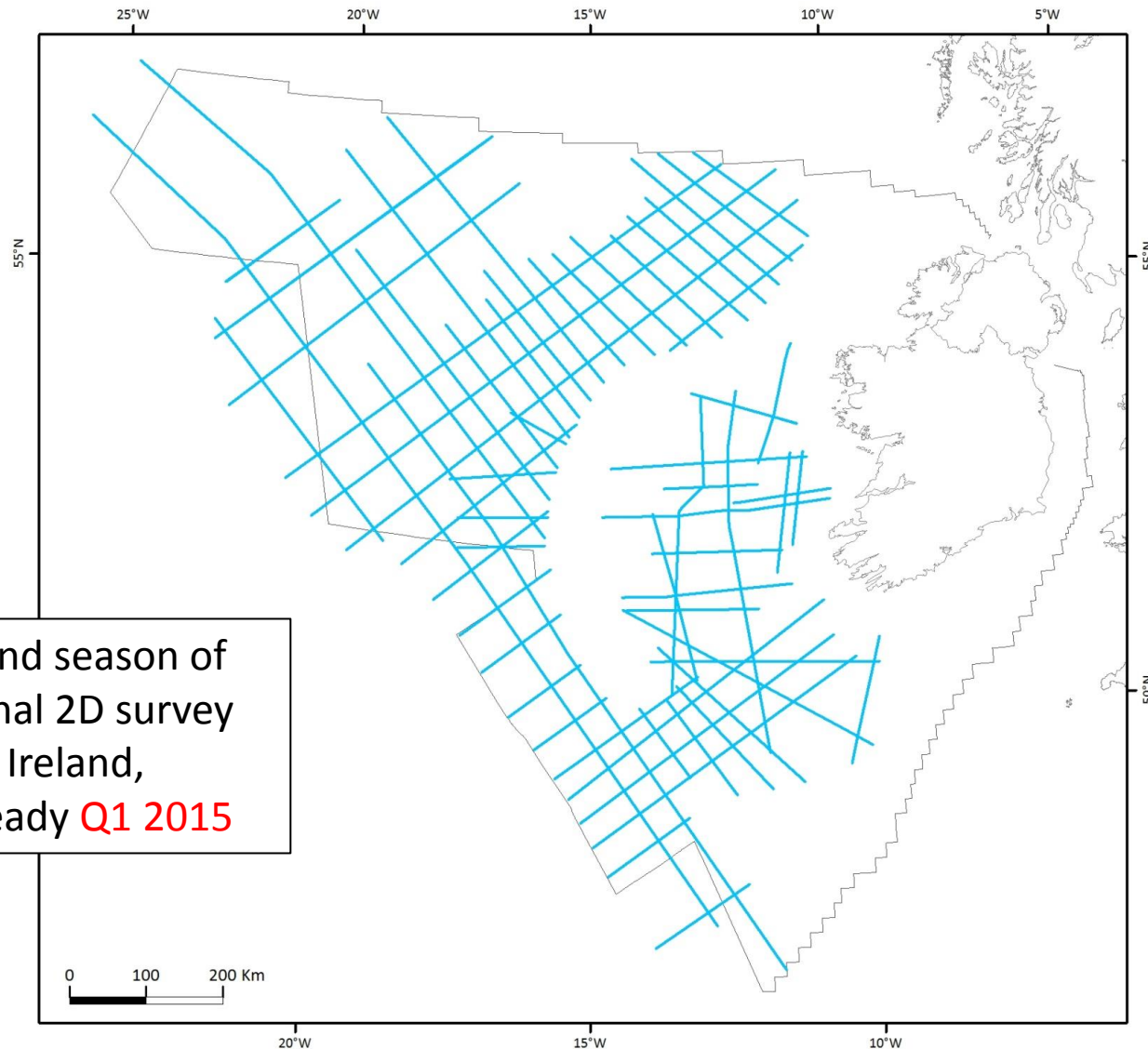


# Polarcus multi-client 3D survey



Map provided by courtesy of Polarcus

# Regional PAD 2D seismic survey 2013/14



2014 second season of  
PAD regional 2D survey  
in Atlantic Ireland,  
product ready **Q1 2015**

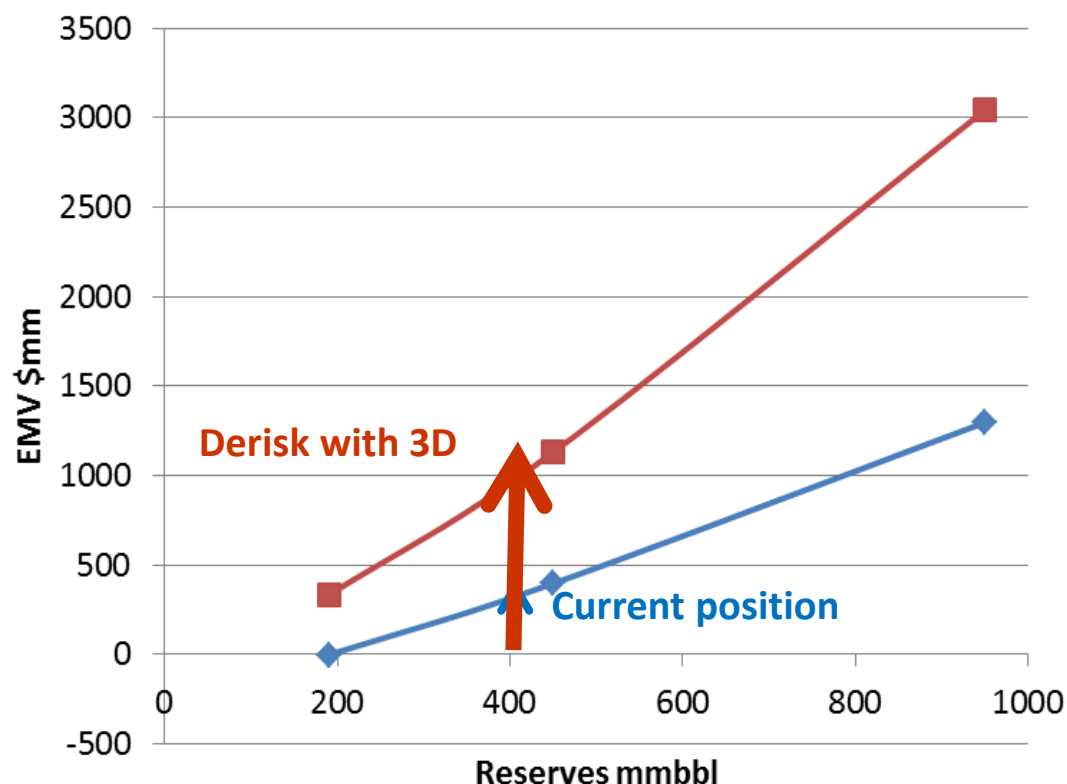


## **4. WHAT HAPPENS NEXT**

# 3D impact – de-risk prospects



Porcupine EMV vs Reserve Size



Europa considers risks to be around 1 in 10. 3D seismic has potential to reduce this to 1 in 5, particularly if flat events, conformance and AVO anomalies identified. Europa expects to de-risk its prospects in Q2 2014.

NPV10 \$18 bbl  
Minimum economic field size 100 mmbbl  $\pm$  20

Structures are large and potential reserves sizes are large : 100's of millions of barrels. 3D will clarify the size ranges . Europa expects to clarify reserves in Q2 2014



# Drill timings for 2011 entrants

- Phase 1 of each FEL  
July/Nov 2013-July/Nov 2016,  
Seismic obligation only
- Phase 2 of each FEL  
July 2016 – July 2020,  
Commitment well
- Earliest feasible stretch case  
spud: summer 2015, 2 years  
after 3D acquisition.



Atwood Achiever under construction in South Korea. Due for delivery in June 2014 to Kosmos on 3 year contract.

# Porcupine drilling plans



- Cairn to drill Spanish Point appraisal well in Q2/3 2014 with Blackford Dolphin. If successful suspend and return to test and further appraise in 2015.
- Kosmos have indicated two possible wells in Ireland in 2016 and 2017 on their latest corporate presentation, first one could be as early as 2015
- Intentions of other operators not announced

# Next Atlantic Ireland license round

- Fiscal terms review completed in May 2014
- Licence round expected to open June 2014
- Licence round closes September 2015
- PAD regional 2D seismic available Q1 2015
- We anticipate a different demographic to the 2011 round with participation of mid-cap and large oil companies in addition to small caps

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