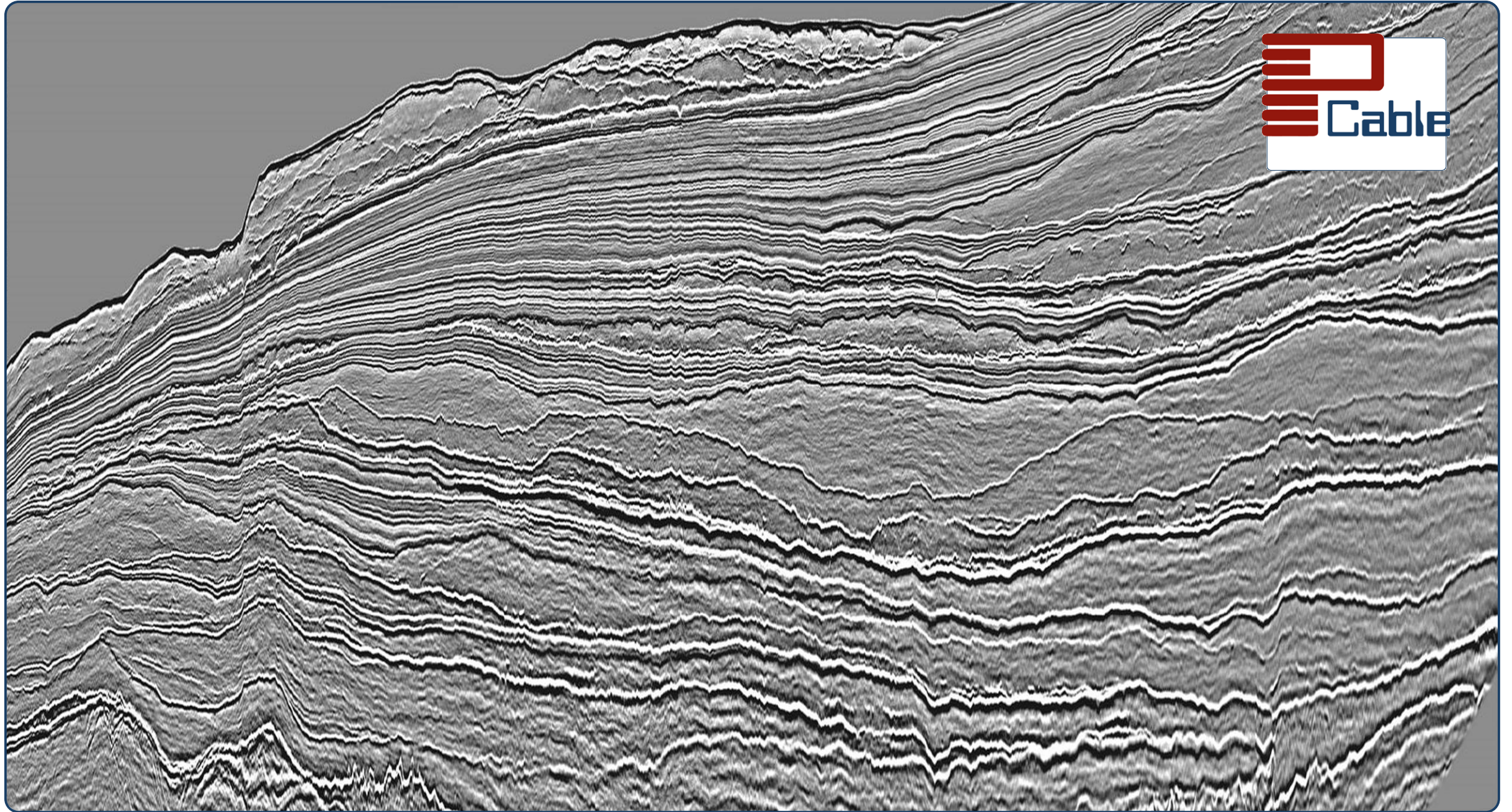




A decade of P-Cable

Confidential Presentation | Trademark by P-Cable 3D Seismic AS | www.p-cable.com

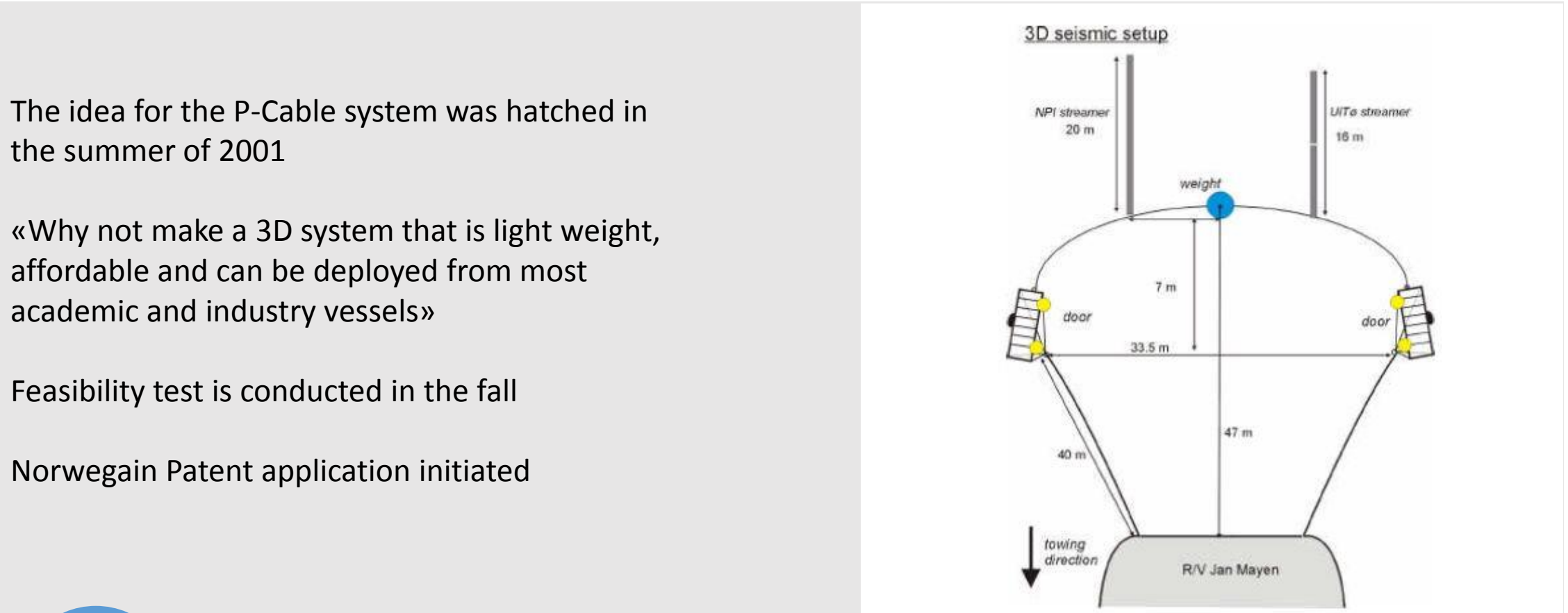


The idea for the P-Cable system was hatched in the summer of 2001

«Why not make a 3D system that is light weight, affordable and can be deployed from most academic and industry vessels»

Feasibility test is conducted in the fall

Norwegian Patent application initiated



2001



A concept is shaped

The P-Cable project was established with the following partners: VBPR, Fugro Survey, NOC and UiT

Goal to develop UHR and HR 3D systems



2002

2000

2005

2010

2015

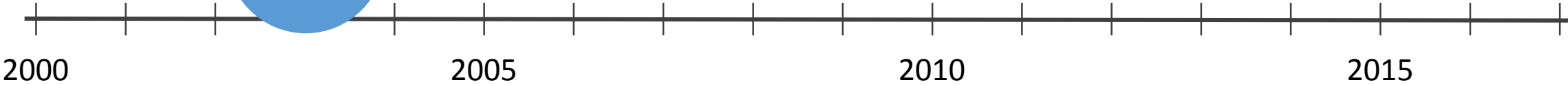
A project is initiated

Norwegian patent application filed

A small scale signals test for UHR system is conducted with Fugro Survey



2003

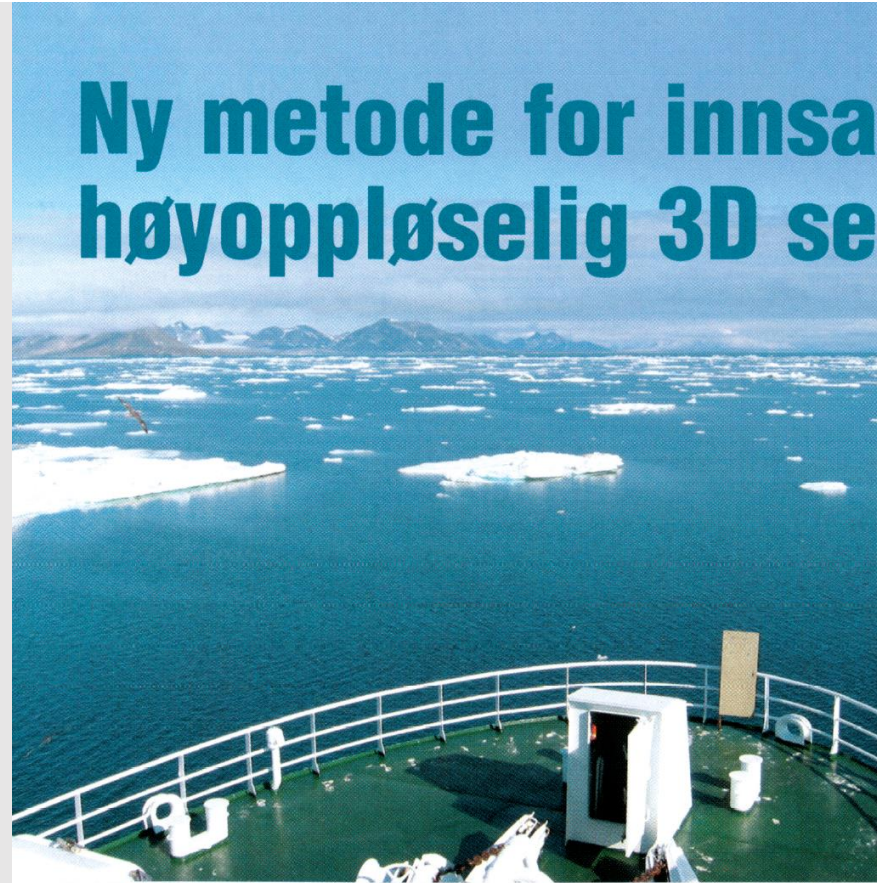


The analogue HR prototype system is built.
Financed by NOC and tested with the
help of UiT.

Norwegian Patent granted

Patent holders:
Sverre Planke, VBPR
Christian Berndt, Geomar

Ny metode for innsamling av høyoppløselig 3D seismikk



Vanlige 3D seismiske skip kan ikke kartlegge alle ønskelige arbeidsområder. Sommerens tokt på den isgående Jan Mayen viste at det nye 3D systemet også kan brukes i vanskelige farvann fordi det ikke kreves spesialfartøy.

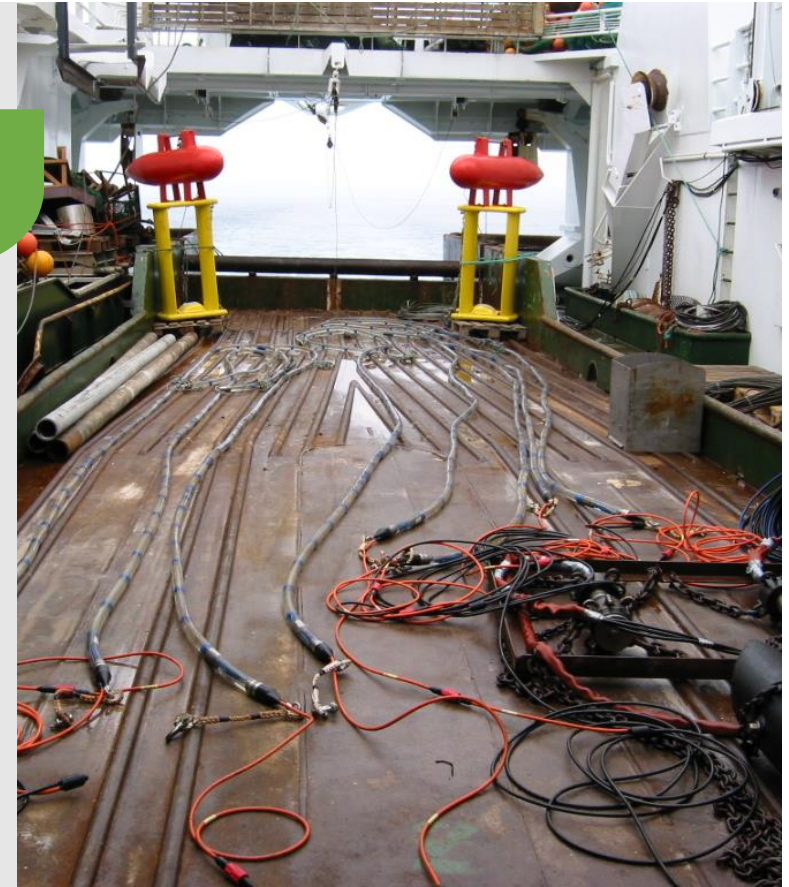
2004



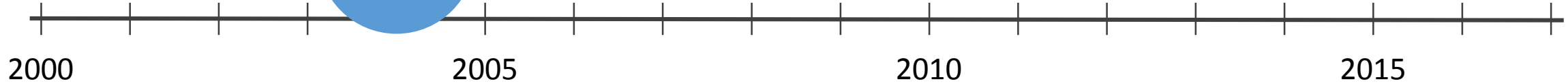
VBPR & NOC & UiT	System test, Balsfjorden, Norway
VBPR & NOC & UiT	Open water test, Svalbard

2

The prototype system is still operational



2004



First scientific program

P-Cable system chosen as technology provider in the EU's 6th Framework program, HERMES project

Initiation of navigation and QC software development

HERMES Hotspot Ecosystem Research on the Margins of European Seas

A major international research project funded by the EC's Framework Six Programme



2005

2000

2005

2010

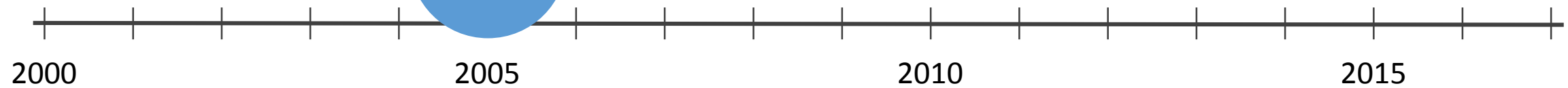
2015

VBPR & NOC	Haakon Mosby Mud Volcano, Barents Sea
VBPR & UiT	Vestnesa, Svalbard

2



2005



Peon P-Cable JIP signed with Hydro to develop a fully digital P-Cable prototype system.

Goal to image the Peon, better than available technology

Navigation and QC software tested



2006



VBPR & NOC	Mercator Mud Volcano, Morocco
VBPR & NOC	Gulf of Cadiz, Marocco
VBPR & NOC	Formentera, Spain
VBPR & NOC	Eivissa, Spain
VBPR & UiT	Vestnesa, Svalbard

5



2006



JIP developed system proven

Peon P-Cable project completed.
Project prove that P-Cable provide superior data over existing data on Peon

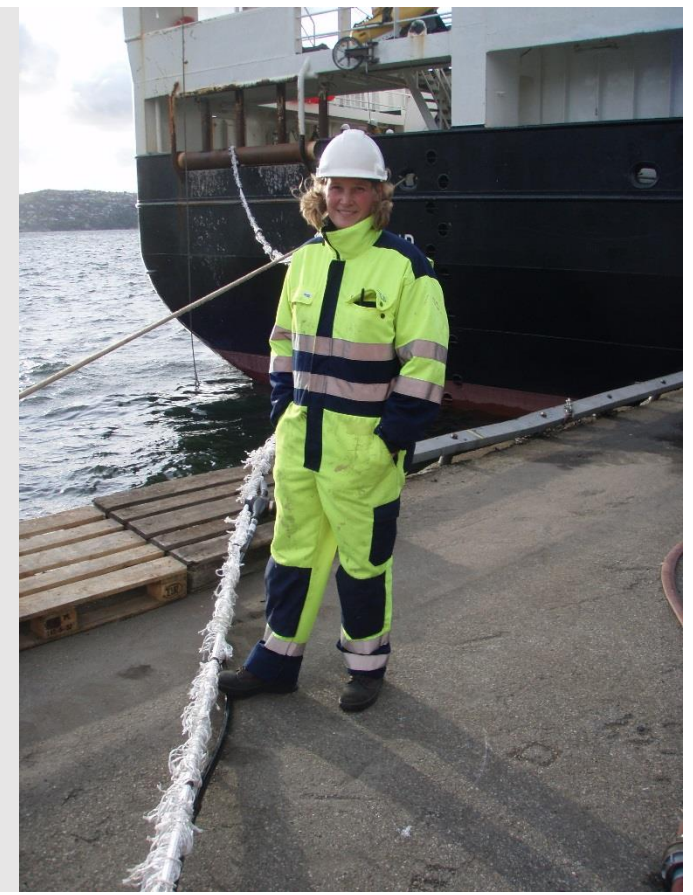


2007

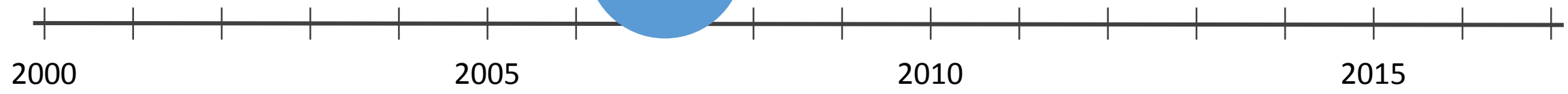


VBPR & Hydro	Project test, Peon
VBPR & UiT	Vestnesa, Svalbard

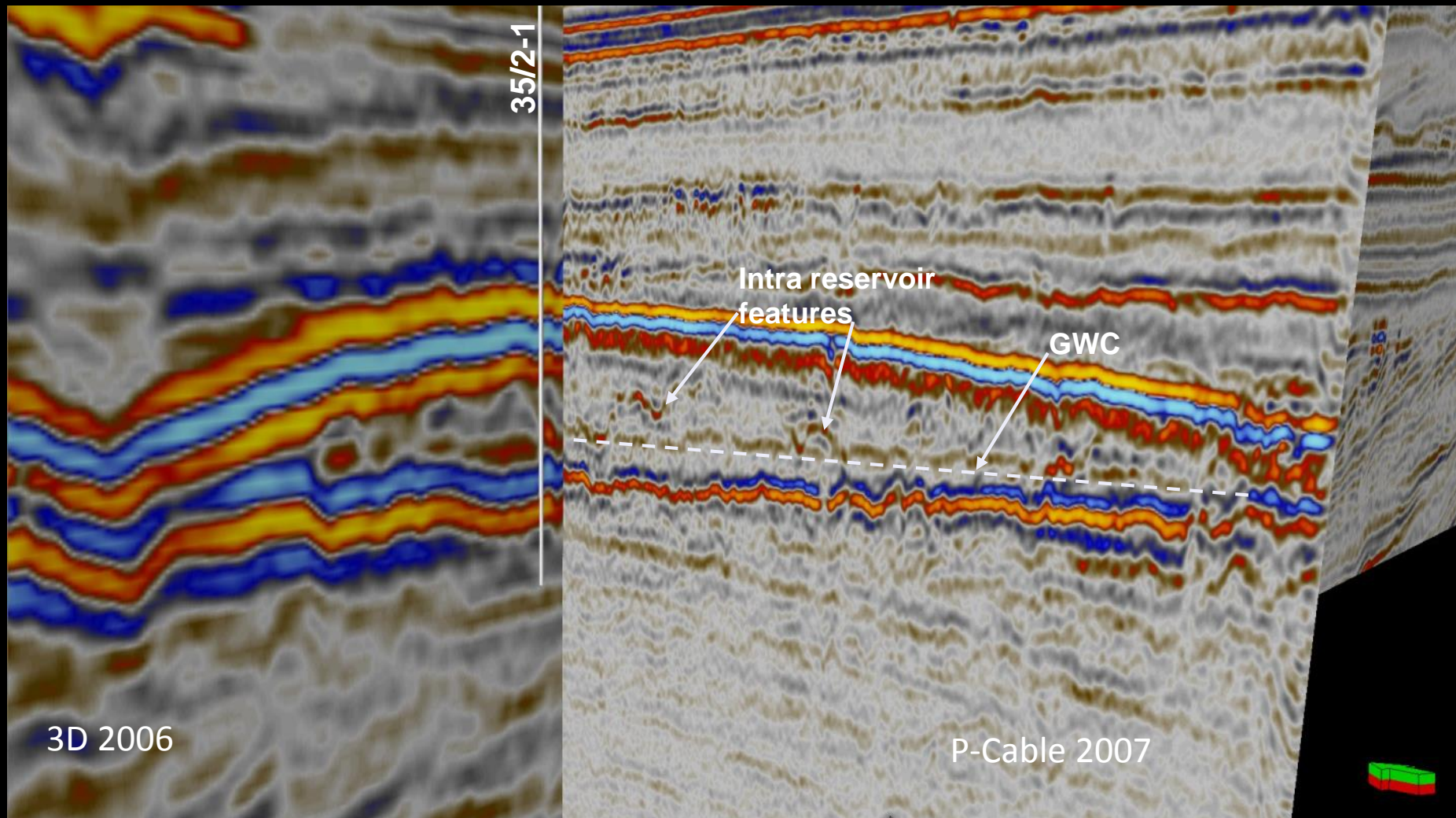
2



2007



Peon test data



The independent company



P-Cable 3D Seismic AS established as an independent seismic R&D company to commercialize the P-Cable system

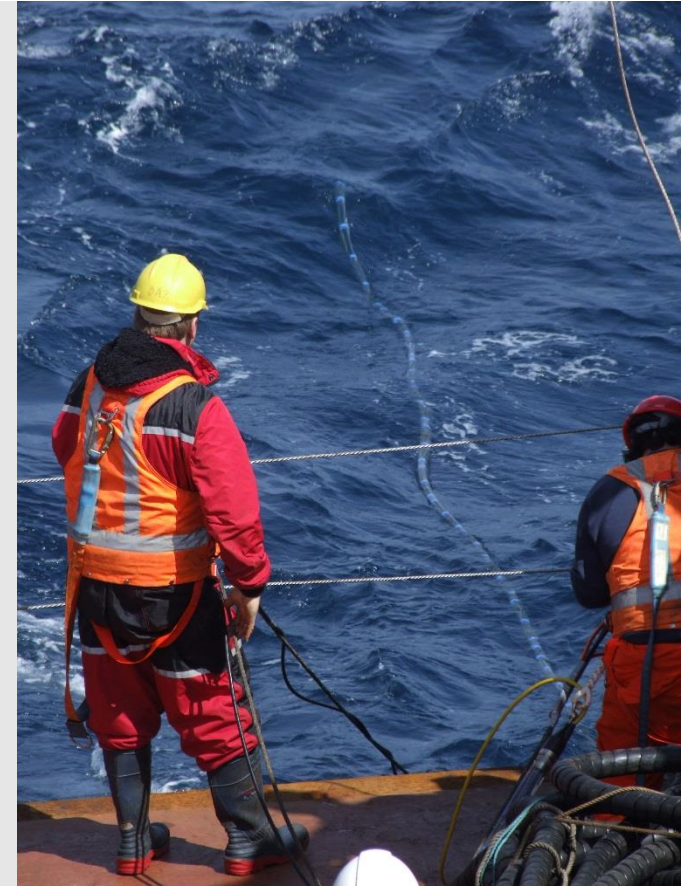


2008



P-Cable & UiT	Ullsfjorden, Norway
GEOMAR, Oregon University	Hydrate Ridge, Oregon, U.S.
P-Cable	Test survey, Oslofjorden, Norway
P-Cable & UiT	Nyegga, North Sea
GEOMAR & P-Cable	Test survey, Bay of Kiel

7

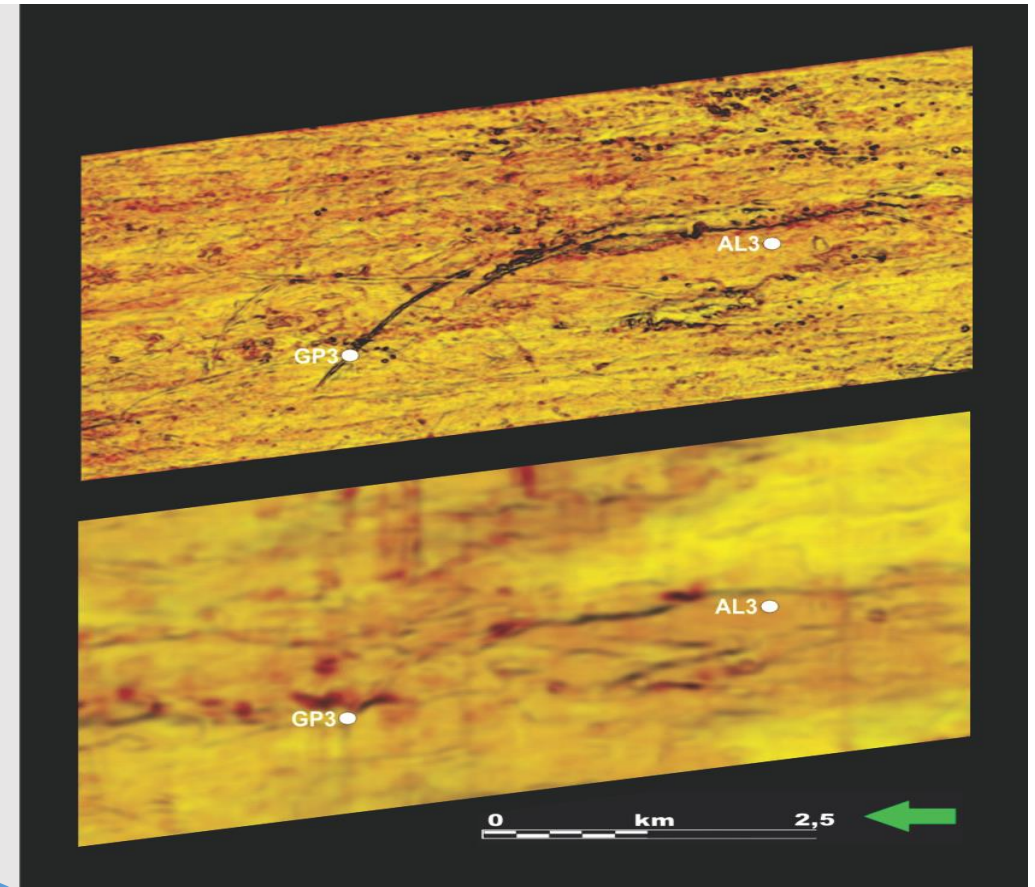


2008



P-Cable 3D Seismic identify partners to undertake a commercial survey, mapping the Peon license, investigated during the Hydro JIP 2007

P3S plan the first use of the system in the Barent Sea



2009



P-Cable	Peon, North Sea
P-Cable & UiT	Polheim area, Barents Sea
GEOMAR	West Nile Delta, Egypt
GEOMAR	Valetta (Malta)



2009



P-Cable 3D Seismic AS sign a license agreement with Geometrics Inc. for development and sale of the P-Cable Seismic System



2010

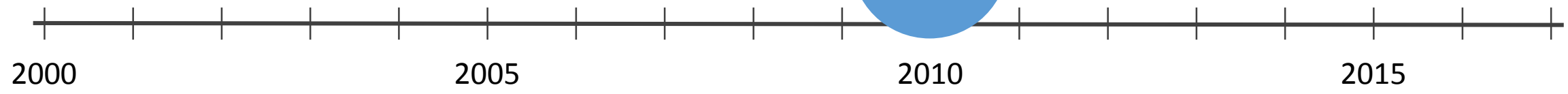


P3S & Geometrics & UiT	Test survey, Vestnesa
NOC & GEOMAR	Montserrat, Lesser Antilles, Caribbean

2



2010

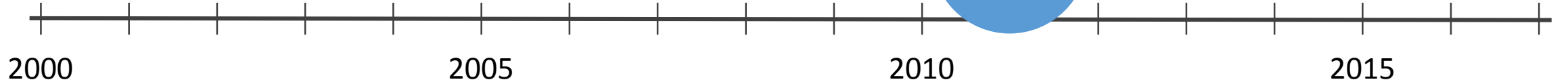


Redesign of the system

Parts of the in-water equipment is redesigned and tested in the spring

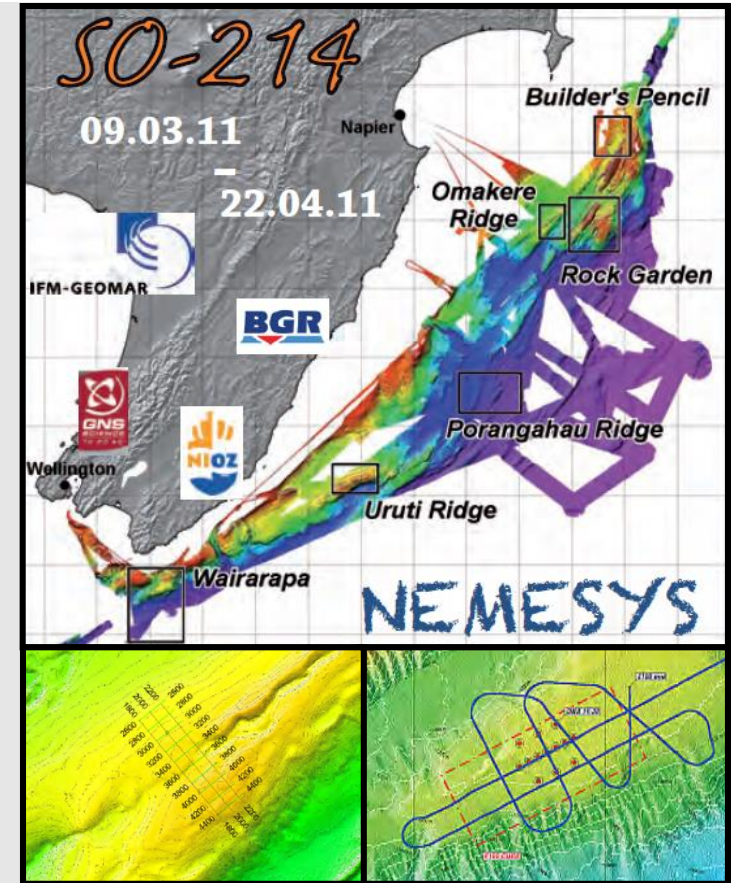


2011



GEOMAR	Omakere Ridge, New Zealand
GEOMAR	Opouawe Bank, New Zealand
SubSea & Fugro W. & PG&E	Diablo Canyon
UiT	Hammerfest basin, Snøhvit field

4



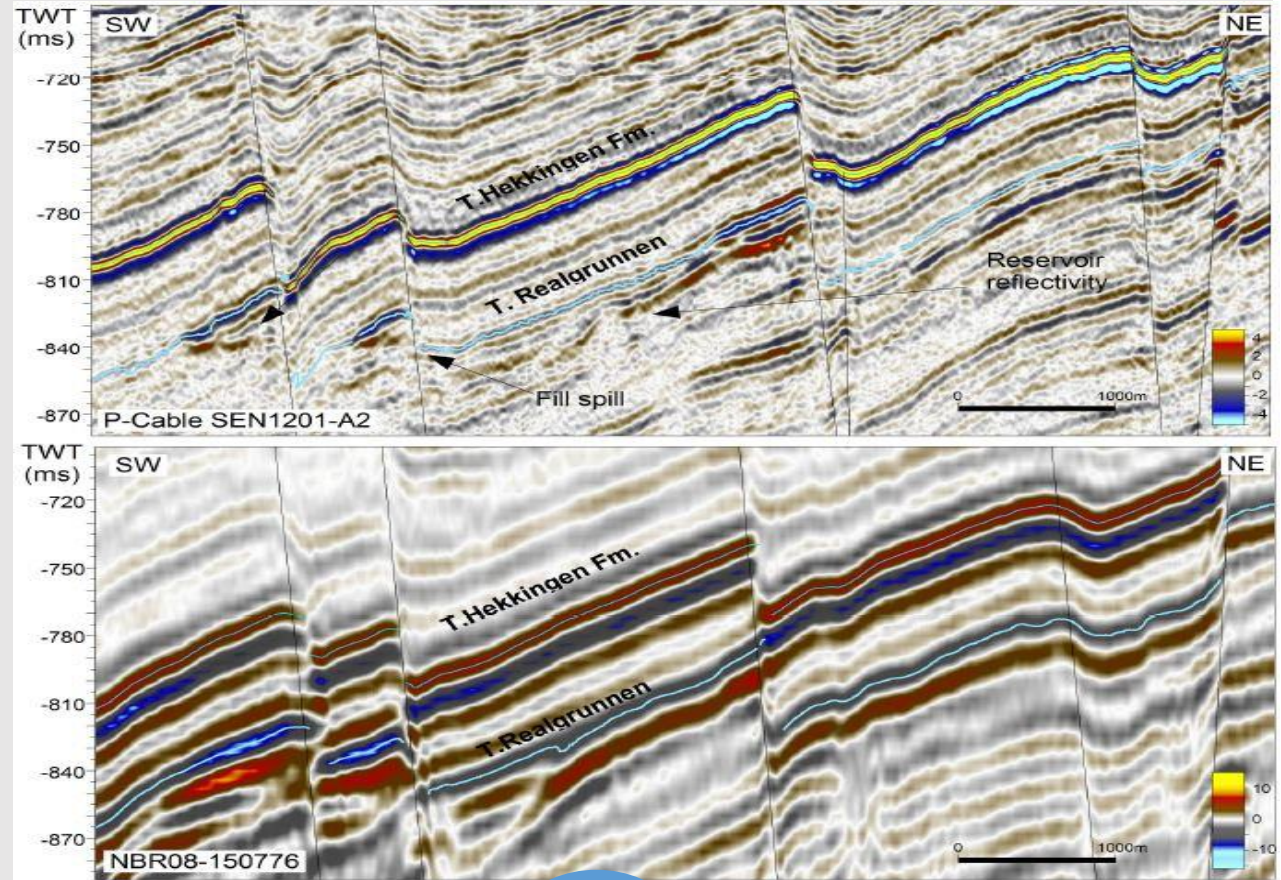
2011



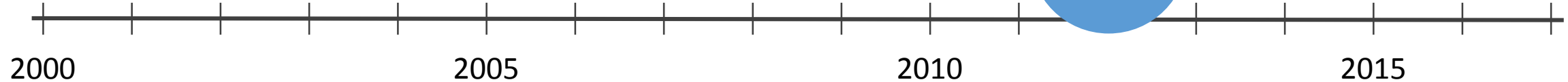
New system – commercial surveys

P-Cable 3D Seismic AS and WGP conduct first commercial survey in the Barents Sea for Spring Energy, 22nd concession round

Method for demultiple of P-Cable data is tested by Deco

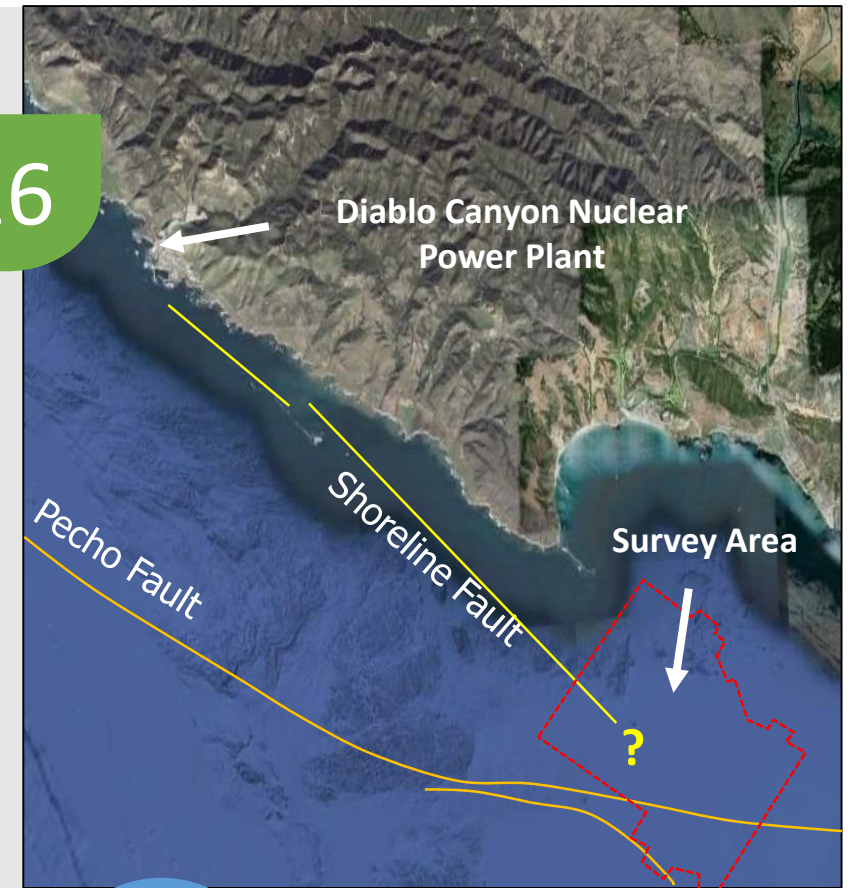


2012



SubSea & Fugro W. & PE&G	Diablo Canyon, California
UiT	Vestnesa, Svalbard
P-Cable & UiT	Ullsfjorden, Troms
P-Cable & TGS & WGP	Hoop area, Barents Sea
P-Cable & UiT	Lyngen
UiT	NCS Block: 714
UT Austin	San Luis Obispo, Gulf of Mexico
GEOMAR	Kerch Fan, Black Sea, Ukraine
GEOMAR	Schwedeneck, Baltic Sea, Germany
UiT	Norwegian Continental Shelf
UiT	Fugløy
GEOMAR	Mediterranean

16



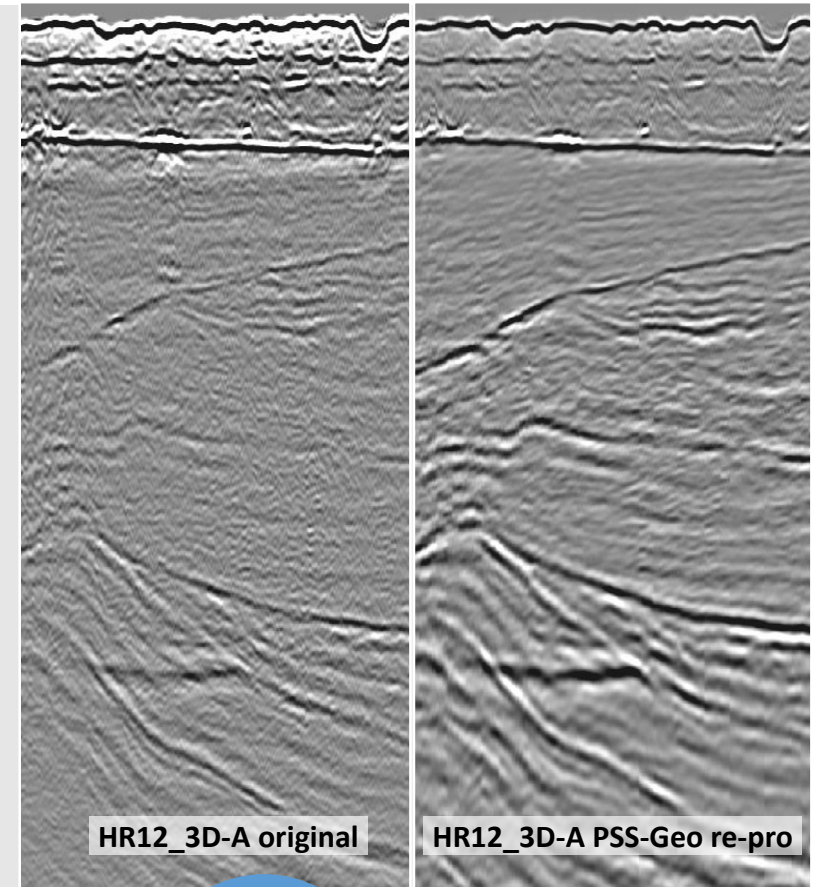
2012



Improved processing

P3S start looking at new processing techniques to enhance the data quality

Data quality improved



2013

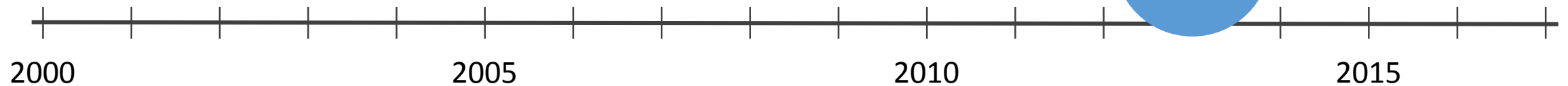


GEOMAR	Farmosa ridge, Taiwan
P-Cable & UiB	Salhusfjorden, Bergen
P-Cable & UiT	Lyngen, Norway
UiT	Barents Sea
UiT	Snøhvit, Hammerfest basin, Norway
UiT	Vestnesa, Svalbard
GEOMAR	Yuan-An Ridge, Taiwan
GEOMAR	Chatham Rise East, New Zealand
GEOMAR	Chatham Rise West, New Zealand
UT Austin Texas	San Luis Obispo, Golf of Mexico

10



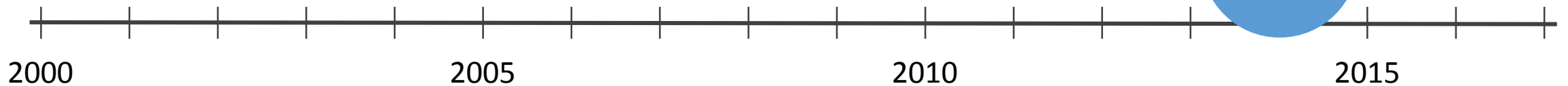
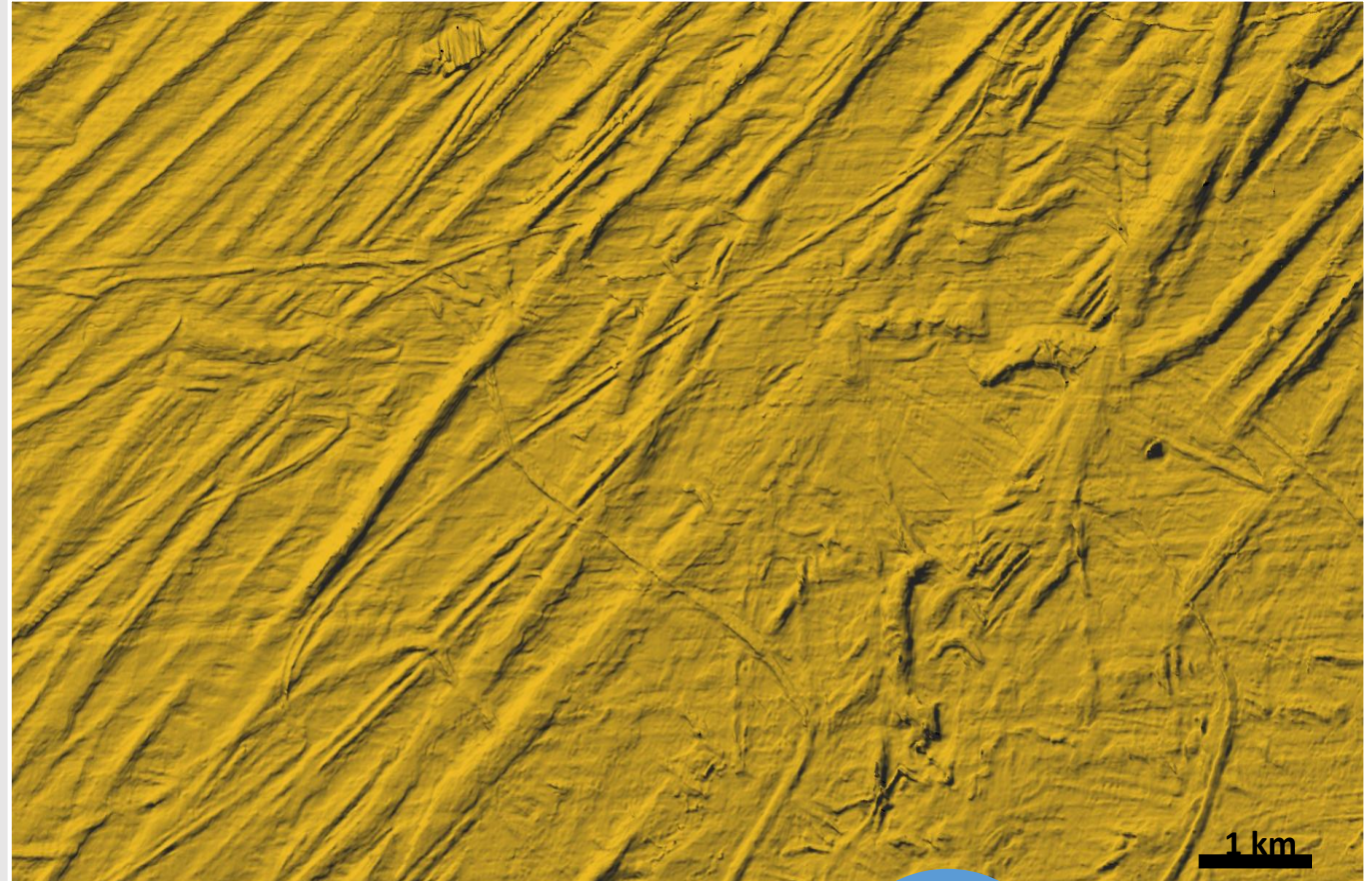
2013



Processing steps up

In partnership with TGS and WGP MC HR3D data is collected for the 23rd concession round in the Barents Sea

All P-Cable data is processed with new flow including deghosting

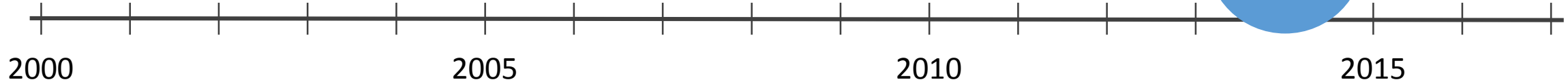


12

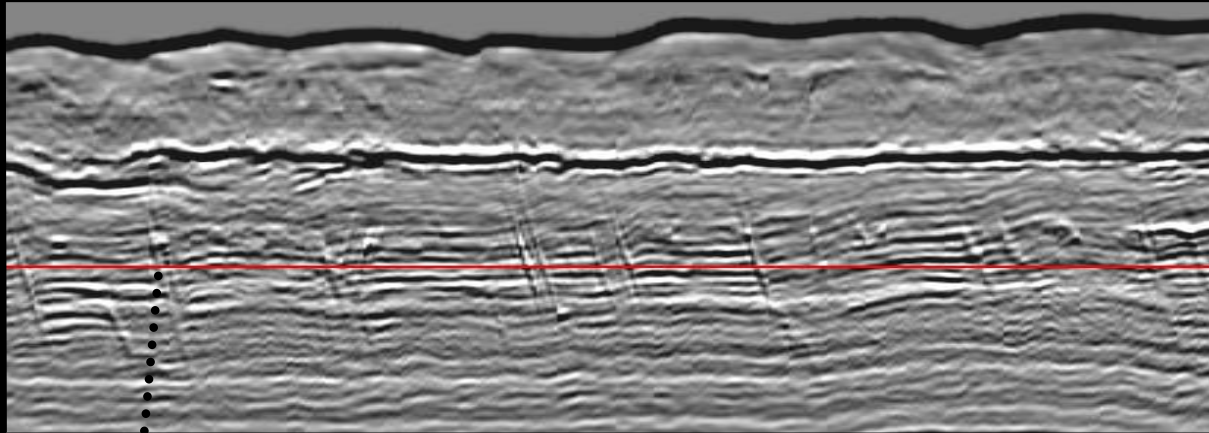
P-Cable & UiT	Lyngen, Norway
UiT	Svyatogor Ridge, Barent Sea
P-Cable & TGS	MC Hoop area, Barent Sea
GEOMAR	MV12 Mud Volcano, Taiwan
GEOMAR	Hikurangi Slide, New Zealand
GEOMAR	Tuaheni Slide, N Zealand
NCS Subsea	MC Golf of Mexico



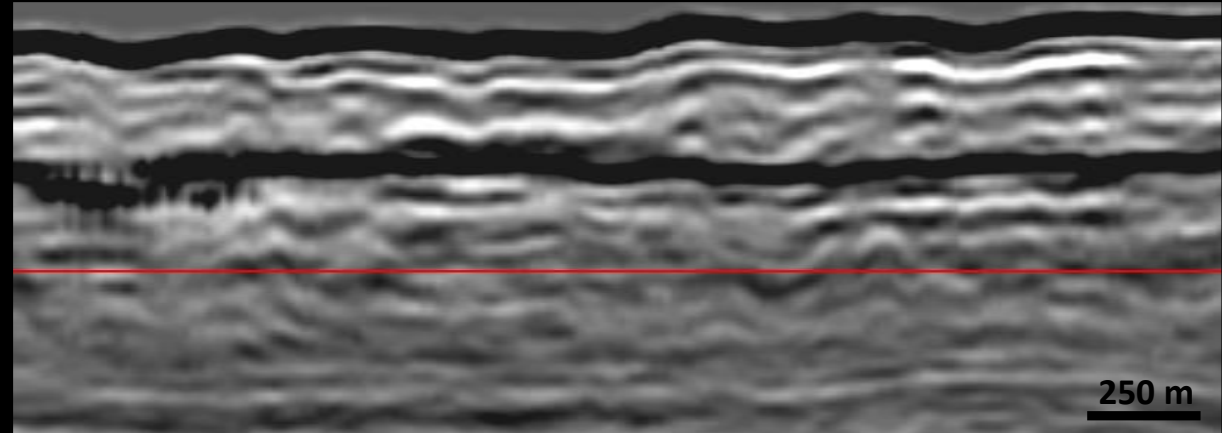
2014



Horizontal Resolution | Polygonal Faults

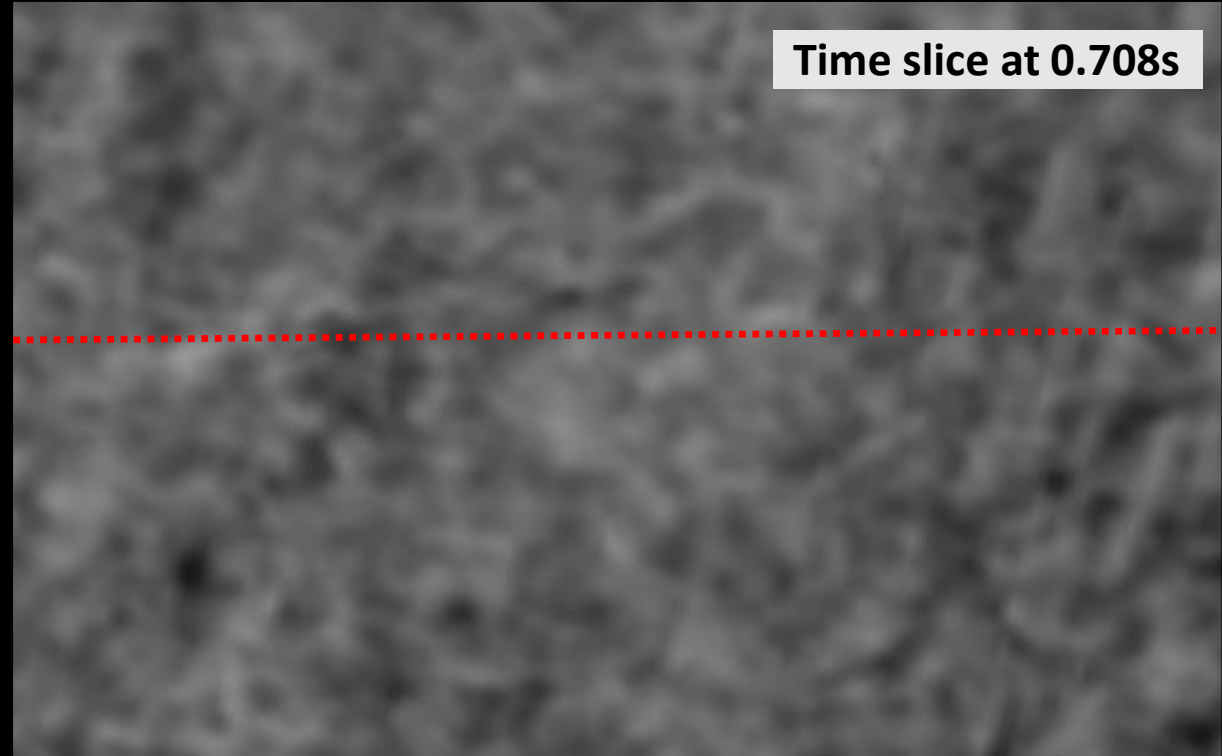
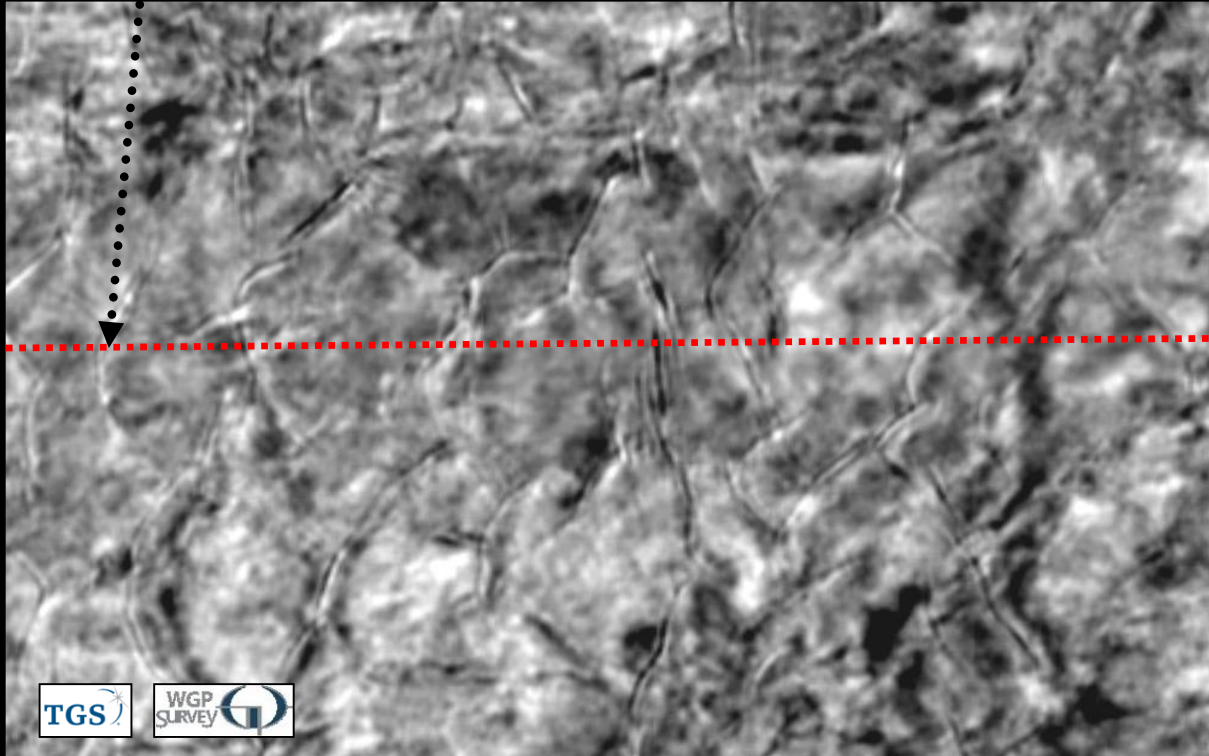


P-Cable 3D



Conventional 3D

250 m



Time slice at 0.708s

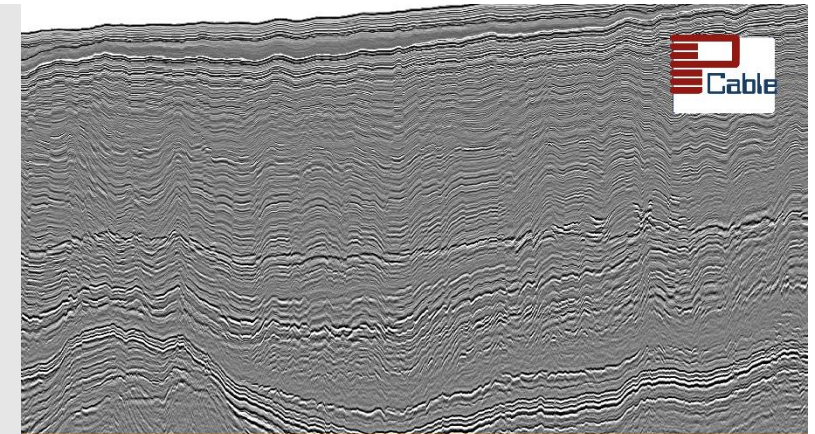
Completion of MC 23rd round



P3S and TGS MC HR3D data for the 23rd concession round in the Barents Sea completed

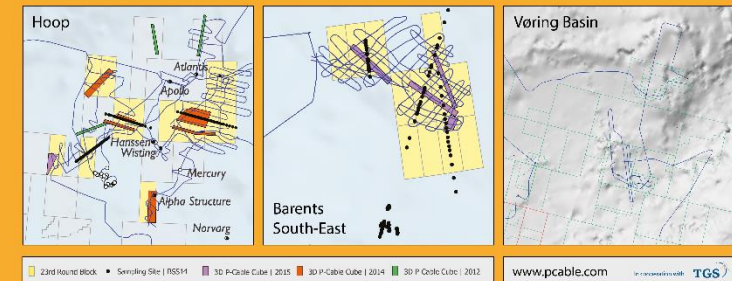
Regional 2D swat lines acquired in Barents south east and Mid-Norway

Data is delivered Fast track off the vessel



When Resolution Matters

P-CABLE 3D SEISMIC DATA | BARENTS SEA - VØRING BASIN

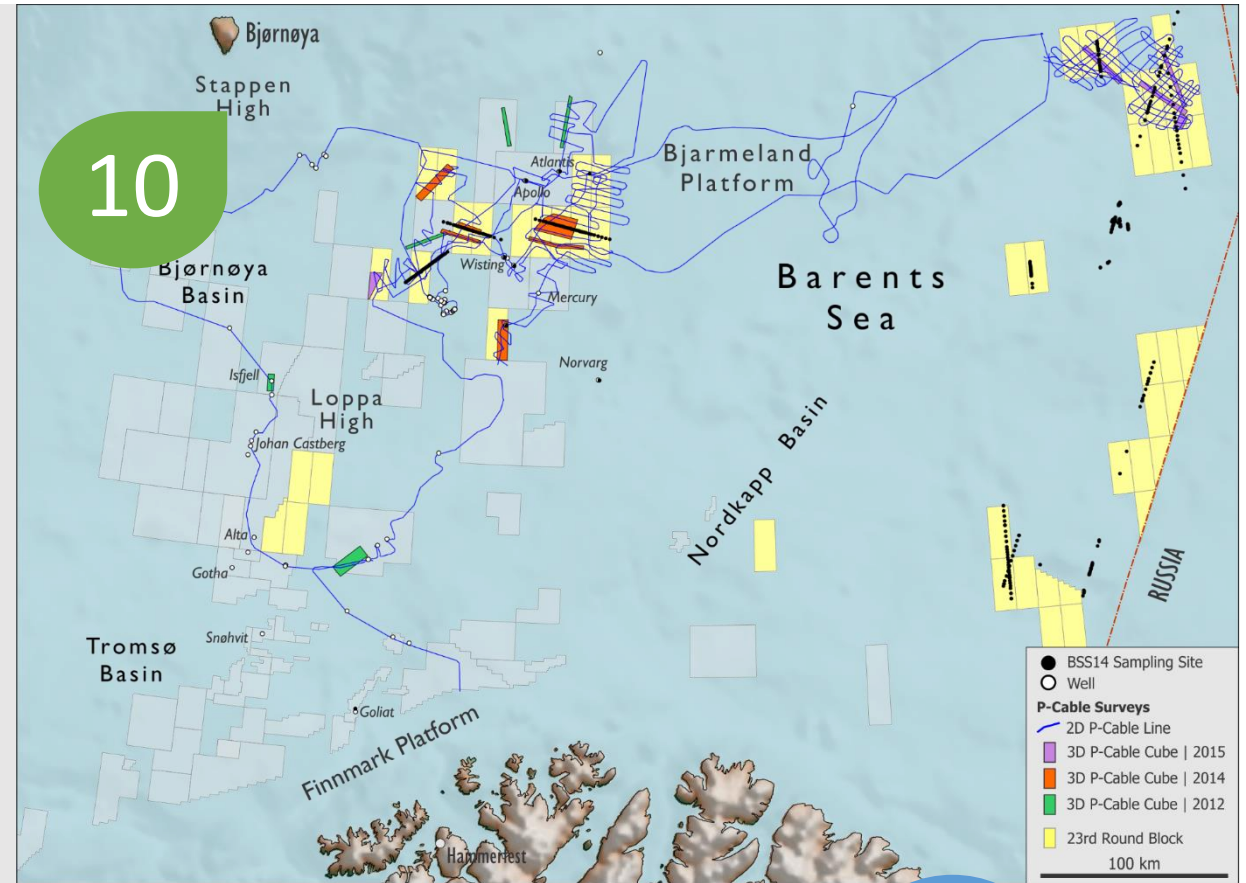


2015



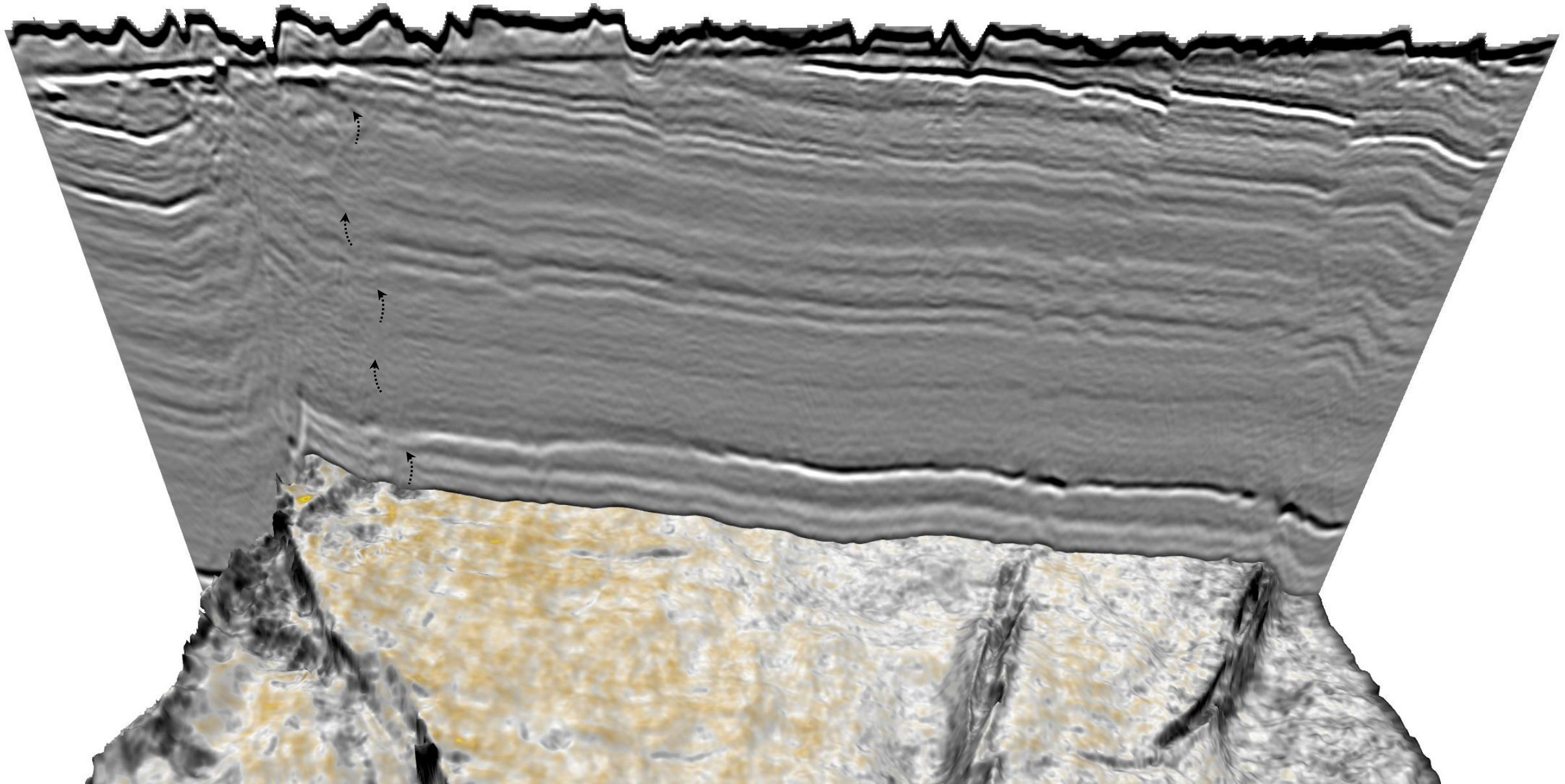
Completion of MC 23rd round

LDEO	Atlantic Ocean, New Jersey, US
P-Cable & TGS	MC South East, Barents Sea
P-Cable & TGS	MC Mid Norway
UiT	North Barents Sea
UiT	Vestnesa Ridge, Svalbard
GEOMAR	Danube Fan, Romania
GEOMAR	Baja californica, Mexico



2015

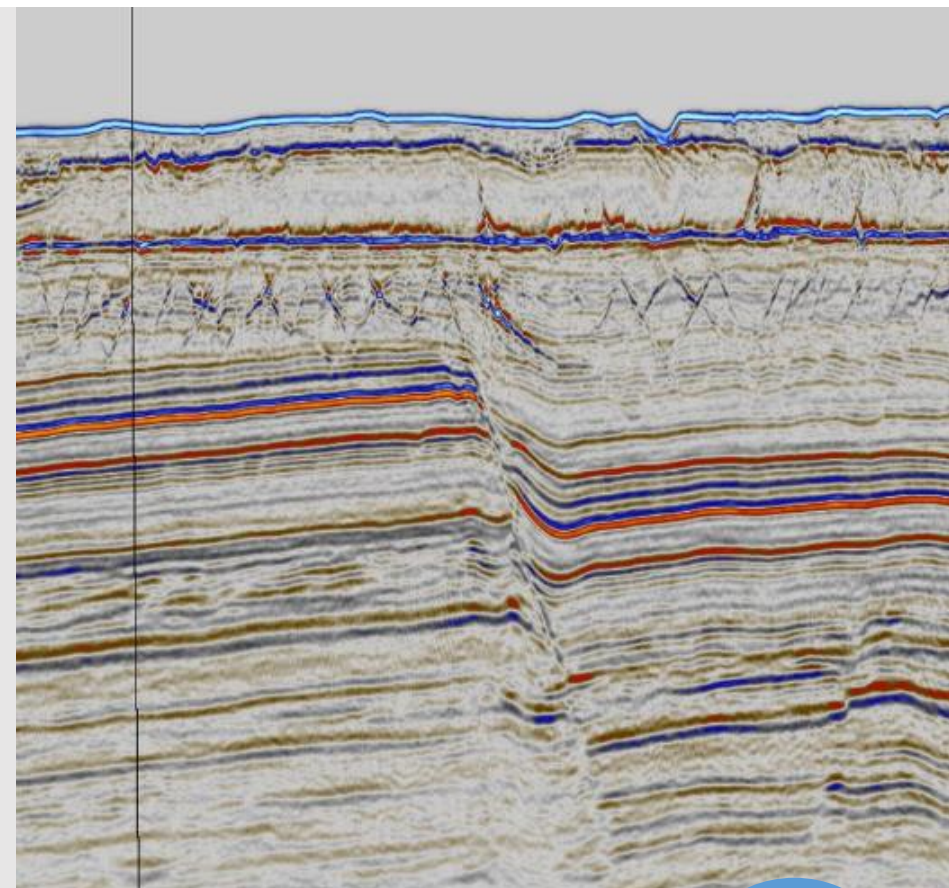




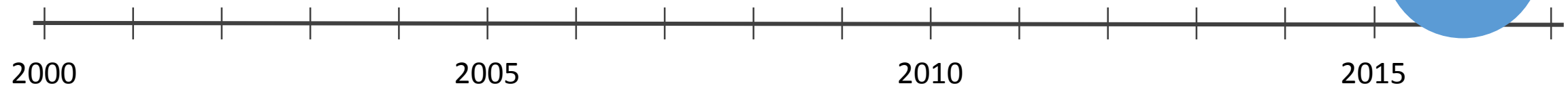
2016

P-Cable 3D data was acquired over the Wisting oil field, Barents Sea. The astonishing high-quality high-resolution data has contributed to a 26% increase in Wisting reserves.

NCS and P-Cable also successfully acquired 3D seismic at Shell production unit Perdido & Mars in GoM



2016





New owner



On July 1 2016 **NCS-Subsea Inc.** purchased the P-Cable 3D Seismic company

NCS-Subsea is a Houston based service company that focus on UHR3D and bespoke navigation services for the industry

NCS Subsea a OYO Group Company

