

Shallow Gas Play in the Netherlands Takes Off

Introduction

In the northern part of the Dutch offshore many amplitude anomalies can be identified on seismic. These *bright spots* often indicate the presence of shallow gas, defined as gas in unconsolidated sediments of Miocene-Pliocene age.

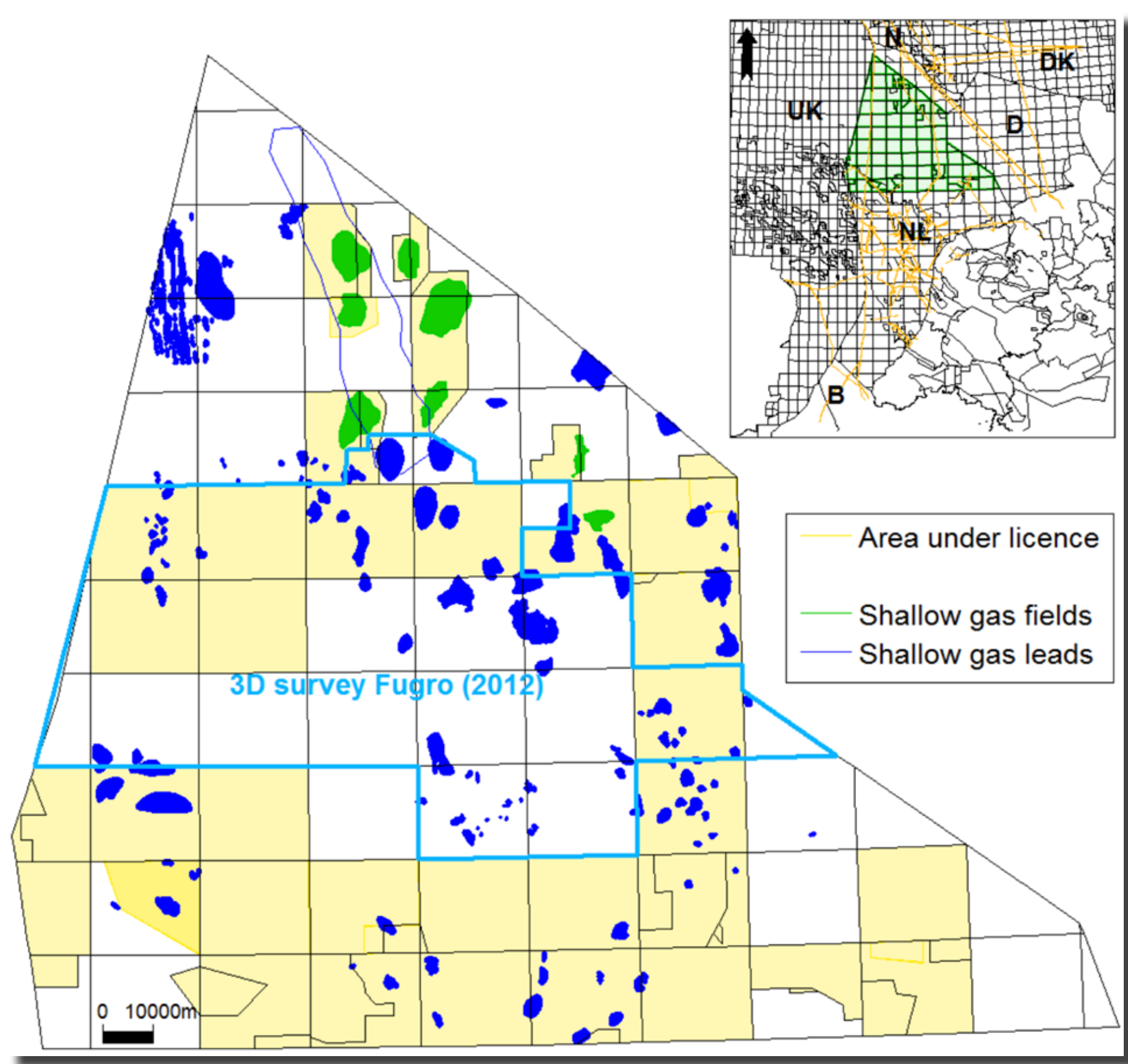
Depth ranges typically from 300 to 800 m. The traps are generally low relief anticlines related to salt domes. Shales act as seal. Venting to shallower units often creates a stacked pattern of *bright spots* with separate gas columns.

Sediments include clean or finely laminated sandstones and shales that are part of a large-scale fluvio-deltaic delta system, the *Eridanos Delta*. This system developed during the Late Cenozoic due to the uplift of the Fennoscandian shield. Sediments were transported from the NE towards the SW into the present-day North Sea area.

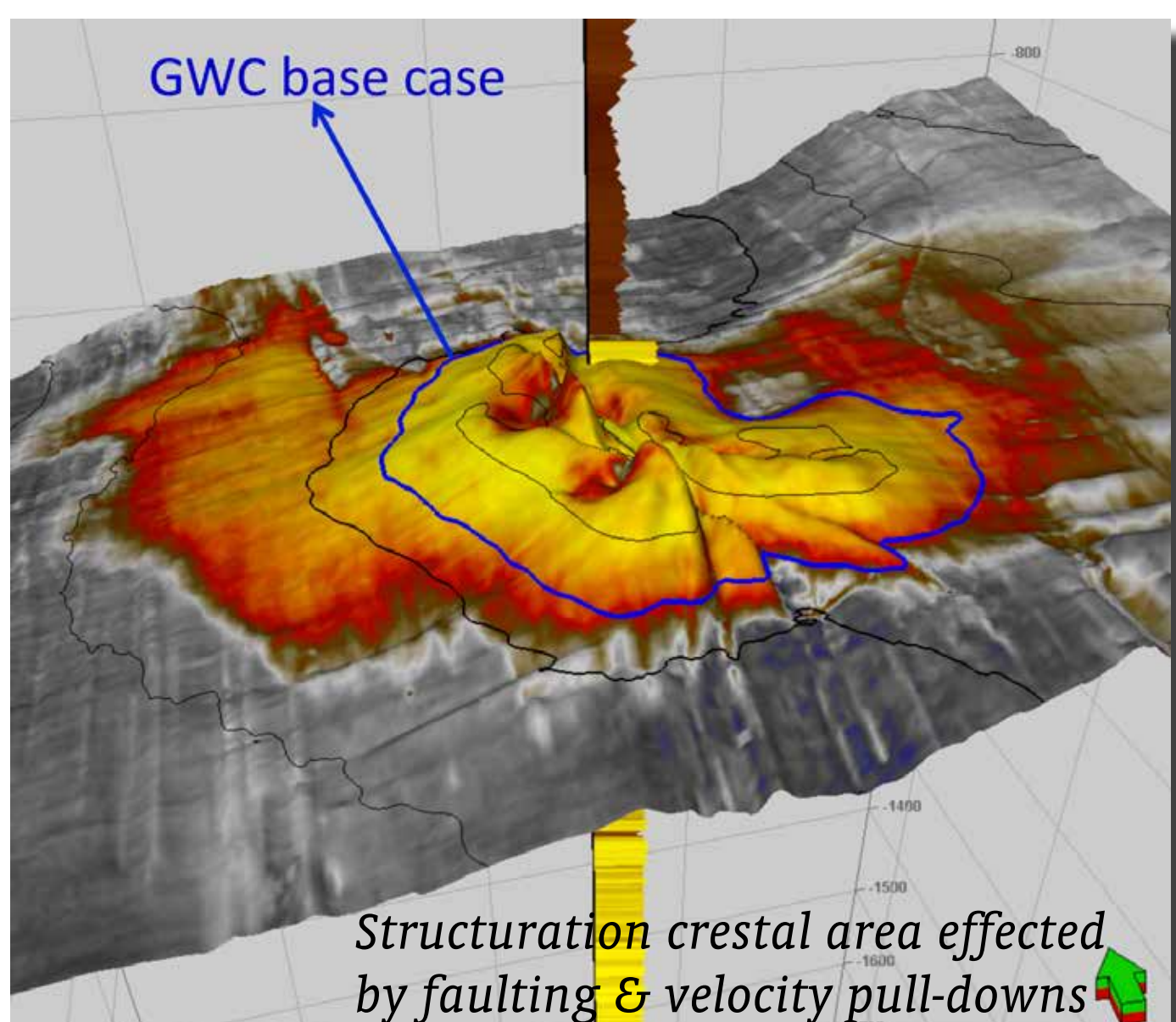
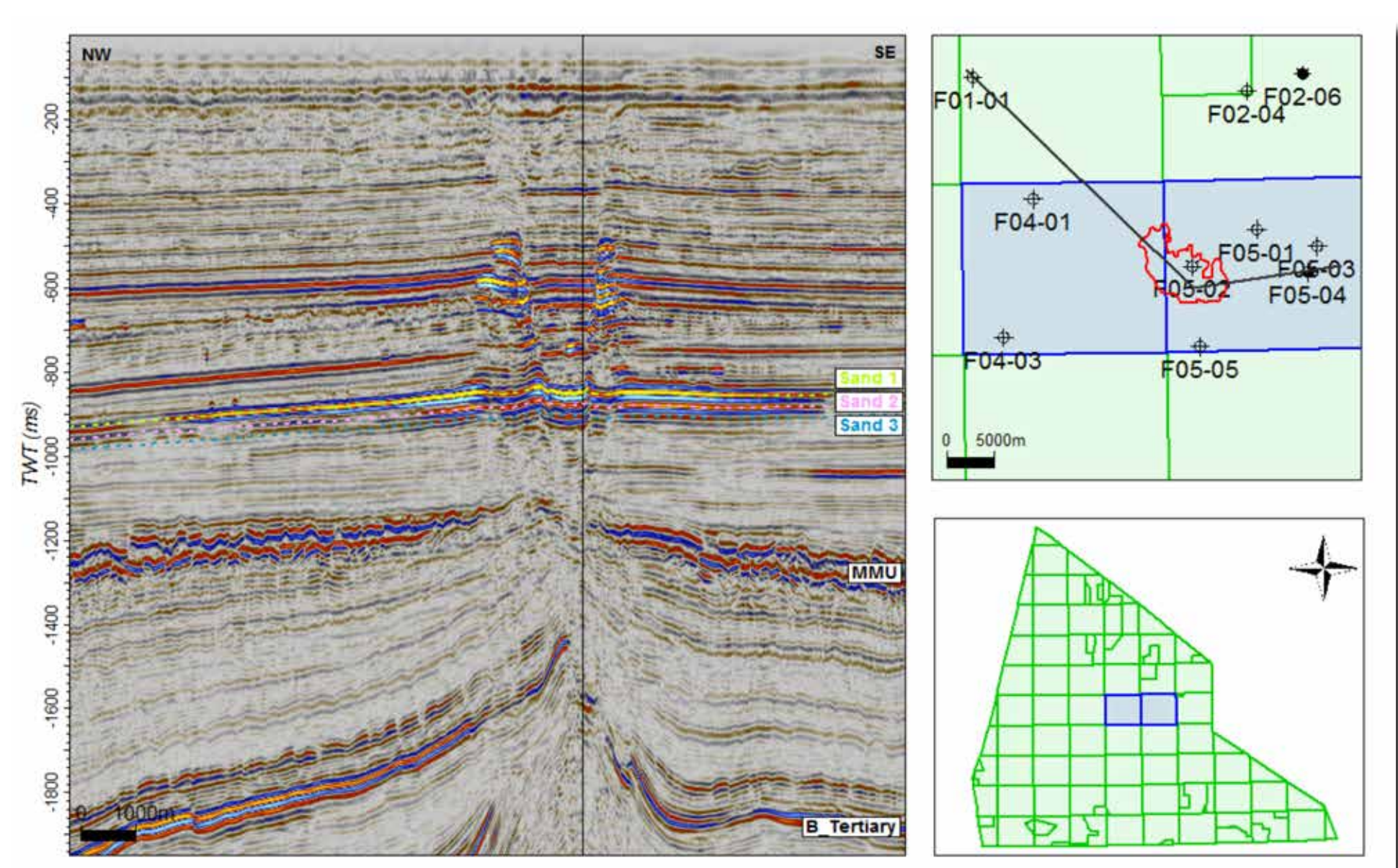
Why exploring for Shallow Gas now?

Currently there are 3 producing shallow fields in the Dutch offshore amongst 5 other proven accumulations.

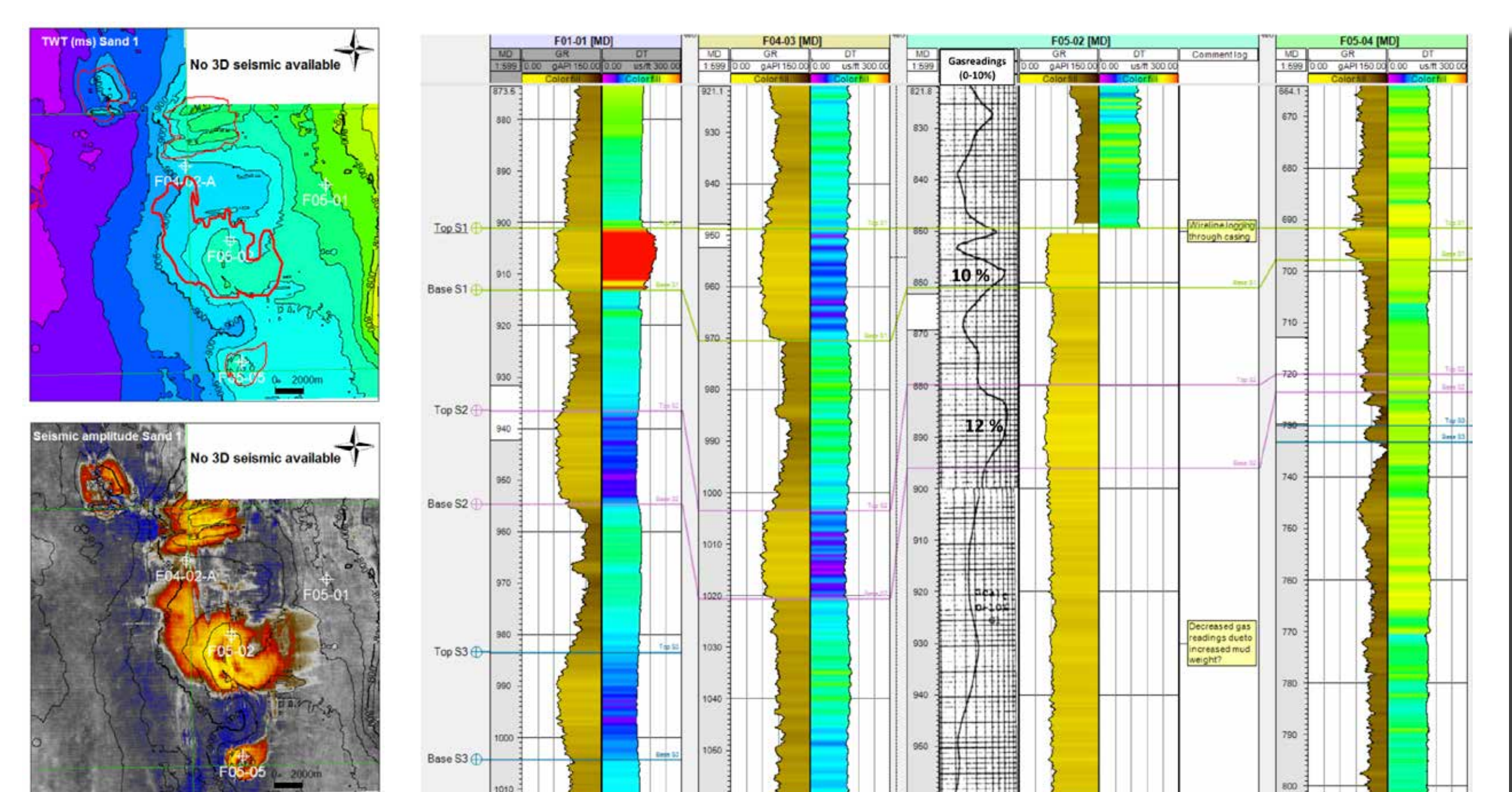
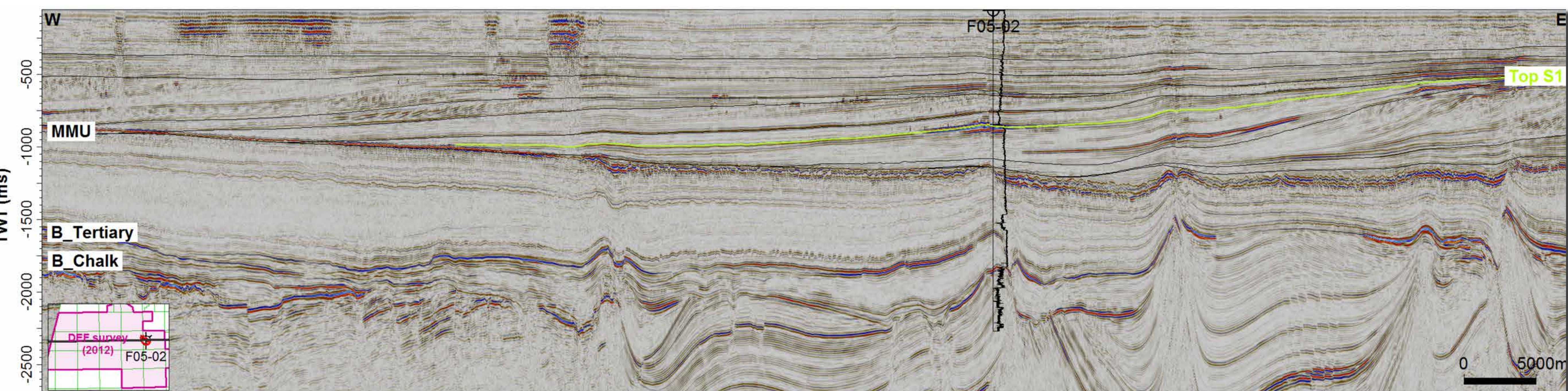
1. There is significant potential for more shallow E&P activities.
2. The area is largely covered by 3D seismic, incl. a large, new multientient survey (2012).
3. A marginal field tax incentive is applicable to all shallow fields.



Shallow Lead F04/F05-P1*



Summary F04/F05-P1	
Status	Lead
License	F04 & F05: Open acreage
GIIP (P50)	2.7 BCM (3 sand layers)
Offset Well	F05-02: 1982, targeting Cretaceous & Triassic; Dry plugged and abandoned; gas shows at depth bright spots
Seismic Coverage	3D multientient survey Z3FUG2011A (Fugro, 2012)
Bright Spot Characteristics	Fault-dip closure, Upper North Sea Group FM, alternation of sand and clay, partially conform to structure, several reservoirs



Seismic & Log Interpretation

Volumetrics & Uncertainties

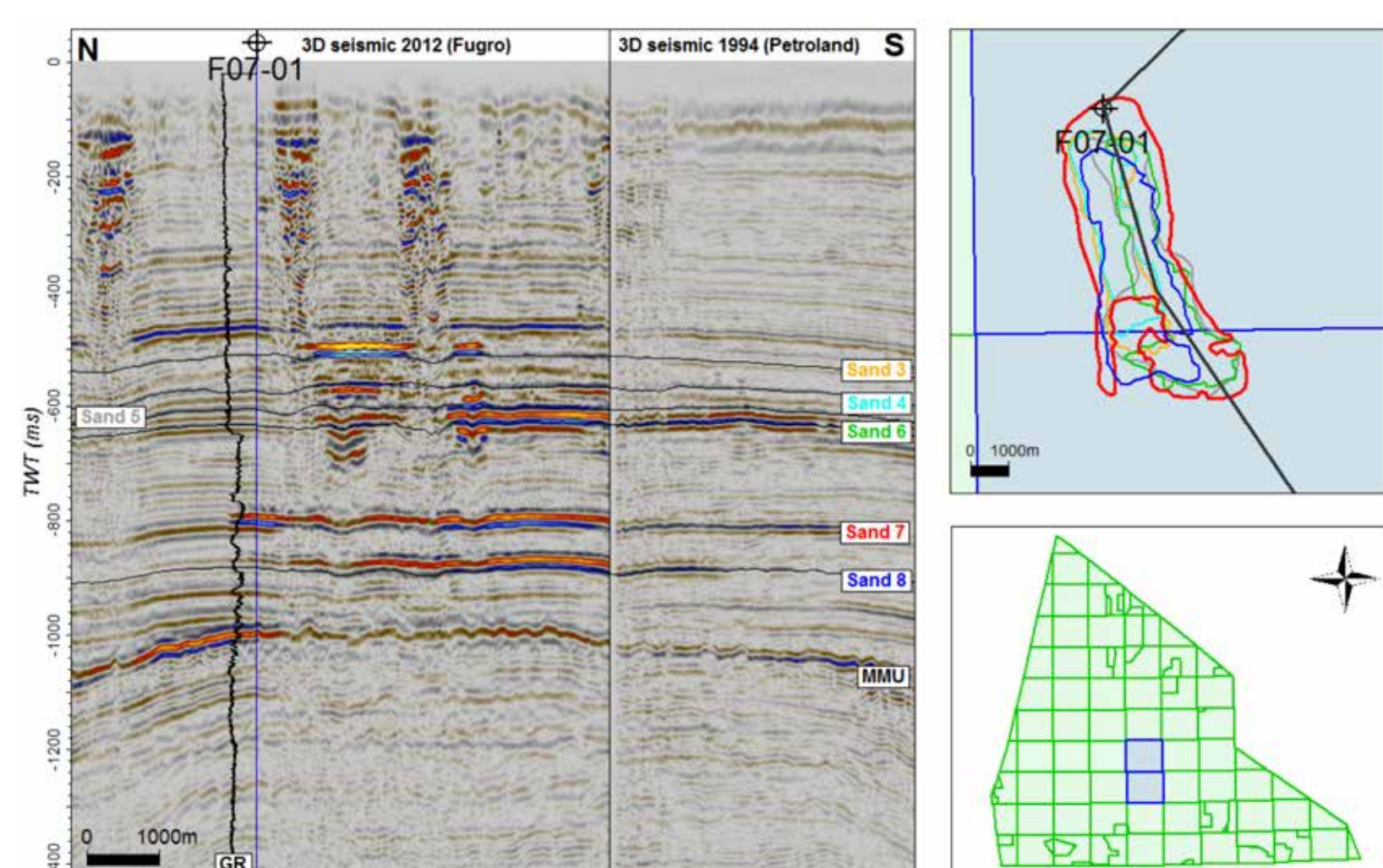
Zone	GIIP (BCM)		
	P90	P50	P10
Sand 1	0.4	1.0	2.0
Sand 2	0.4	0.8	1.6
Sand 3	0.4	0.9	2.0
Total	1.2	2.7	5.6

Key uncertainties are:

- Gas saturation
- GWC
- Porosity

* Detailed factsheets on www.ebn.nl

Shallow Lead F07/F10-P1*

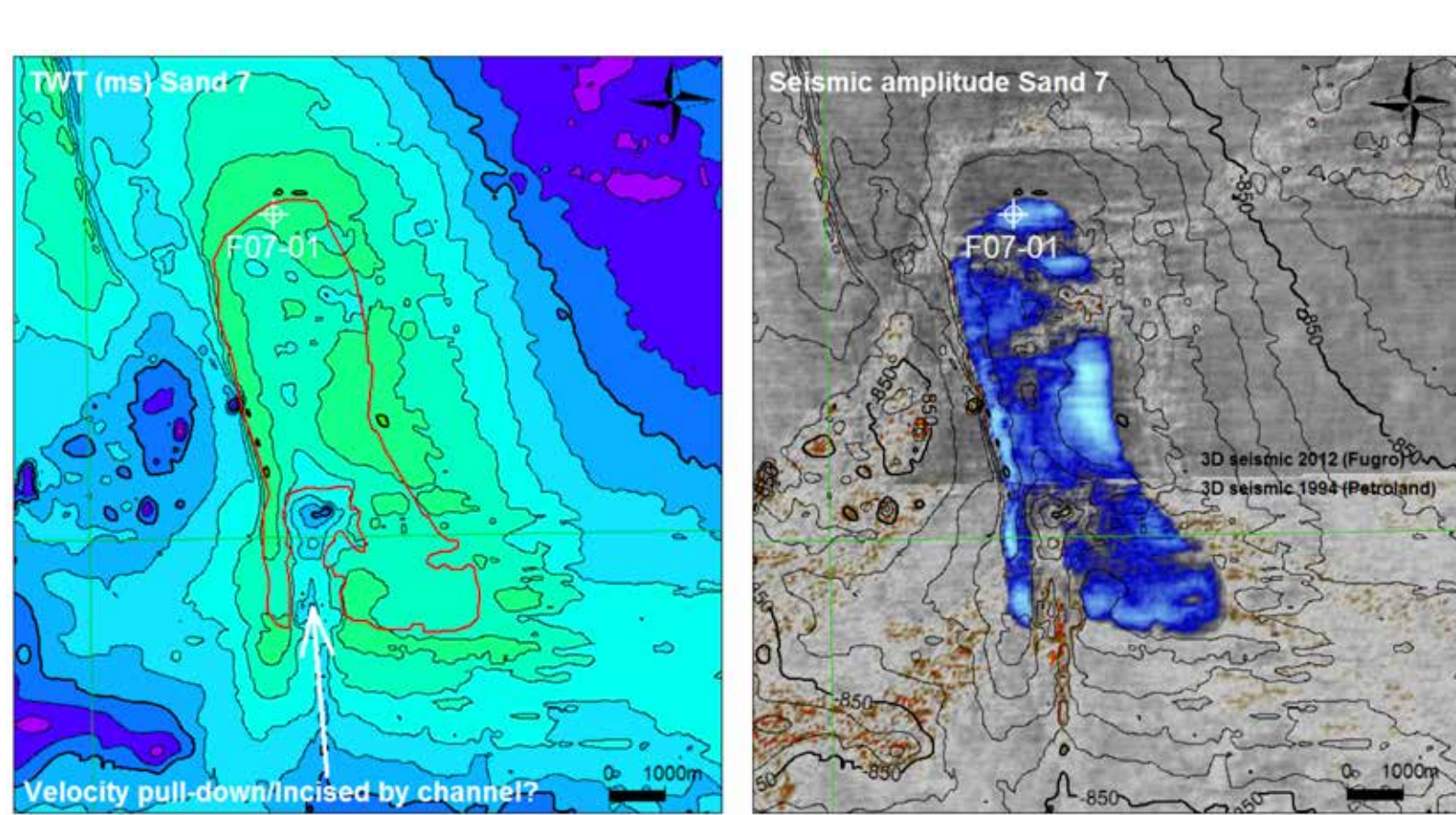


Summary F07/F10-P1	
Status	Lead
License	F07 & F10: Open acreage
GIIP (P50)	2.1 BCM (2 sand layers)
Offset Well	F07-01: 1970, targeting Triassic; Dry plugged and abandoned
Seismic Coverage	North: 3D multientient survey Z3FUG2011A (Fugro, 2012); South: 3D vintage Z3PET1994B acquisition (1994), reprocessed (Fugro, 2009)
Bright Spot Characteristics	Fault-dip closure, Upper North Sea Group FM, alternation of sand and clay, conform to structure. 3 major bright spots of which 2 are main target.

Volumetrics & Uncertainties		
Main target		GIIP (B)
	Zone	P90
	Sand 7	0.3
	Sand 8	0.4
	Total	0.7

Possible additional discoveries

	GIIP (BCM)		
Zone	P90	P50	P10
Sand 3	0.1	0.2	0.5
Sand 5	0.1	0.4	0.9
Sand 6	0.1	0.3	0.7
Total	0.3	0.9	2.1



* Detailed factsheets on www.ebn.nl



For all information and data on Exploration and Production in the Netherlands, see the Netherlands Oil and Gas Portal

www.nlog.nl & www.ebn.nl

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