PL 413 Relinquishment Report

August 2010

Summary

The evaluation of PL 413 has resulted in a prospect portfolio consisting of five small prospects with mean recoverable resources and Pdiscovery ranging between 0.4 to 2.0 MSm3 oil and 0.13 to 0.35, respectively. All prospects are considered uneconomical and a decision to relinquish the license has been made by the partnership.

License overview and work commitments

PL 413 comprises parts of blocks 25/1, 2 and 4 located in the North Viking Graben. The license lies immediately north of the Alvheim and Heimdal fields.

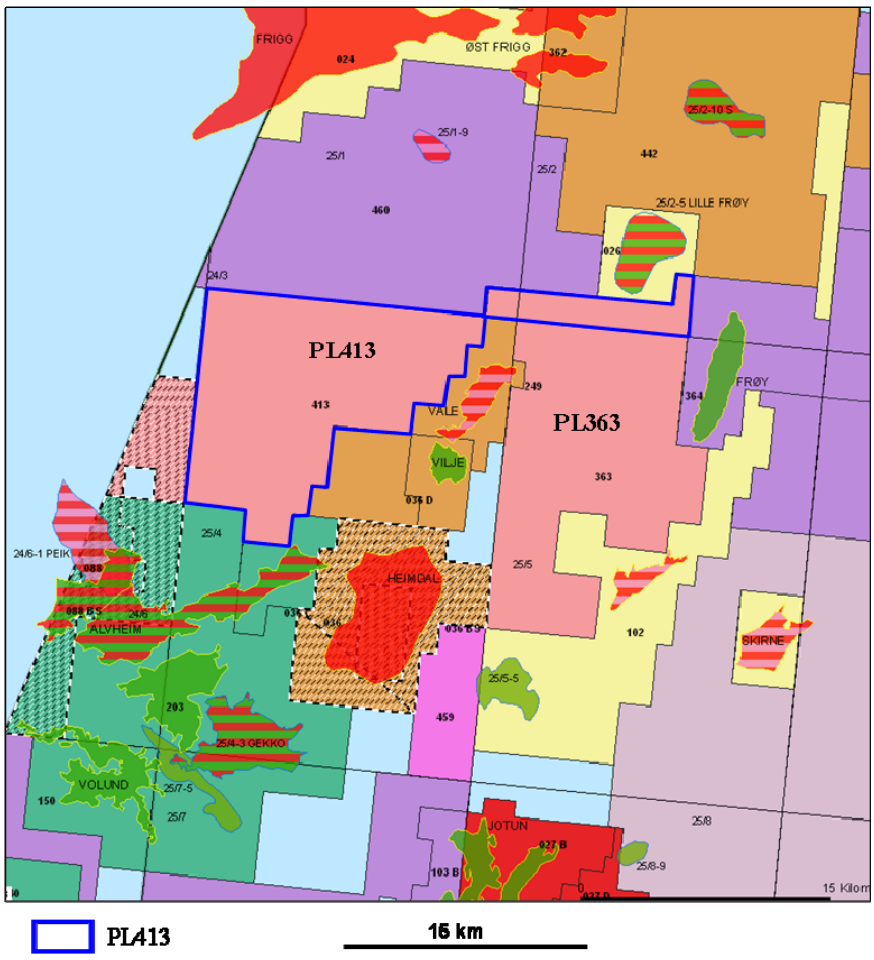

Fig.1 License location

PL 413 was awarded in the APA 2006 on 16th February 2007 with a 5 years initial license period to Lundin Norway AS (Operator and 45%), Endeavour Energy Norge AS (30%) and Bridge Energy AS (25%). Endeavour's interest was taken over by VNG Norge AS in 2009.

The work commitments comprised acquisition and reprocessing of 3D data over the license area and a drill-or-drop decision within 2 years. The first part of the work commitment was fulfilled in 2007 by the purchase of the 3D surveys NH9603 and TO06R06M1. The deadline for the drill-or-drop decision was initially 16th February 2009, but the license applied for and was granted a 1.5 year extension of the license period postponing the deadline for the drill-or-drop decision to 16th August 2010.

License history

Bridge Energy applied for the area in APA 2006 with a prospect portfolio consisting of four small prospects (up to 2 MSm3 mean recoverable oil reserves) at Heimdal level in block 25/4, in addition to a larger prospect at Frigg level located in the intersection between blocks 25/1, 25/2, 25/4 and 25/5. The latter was named the Mon prospect and contained mean resources of 8 MSm3 rec. oil.

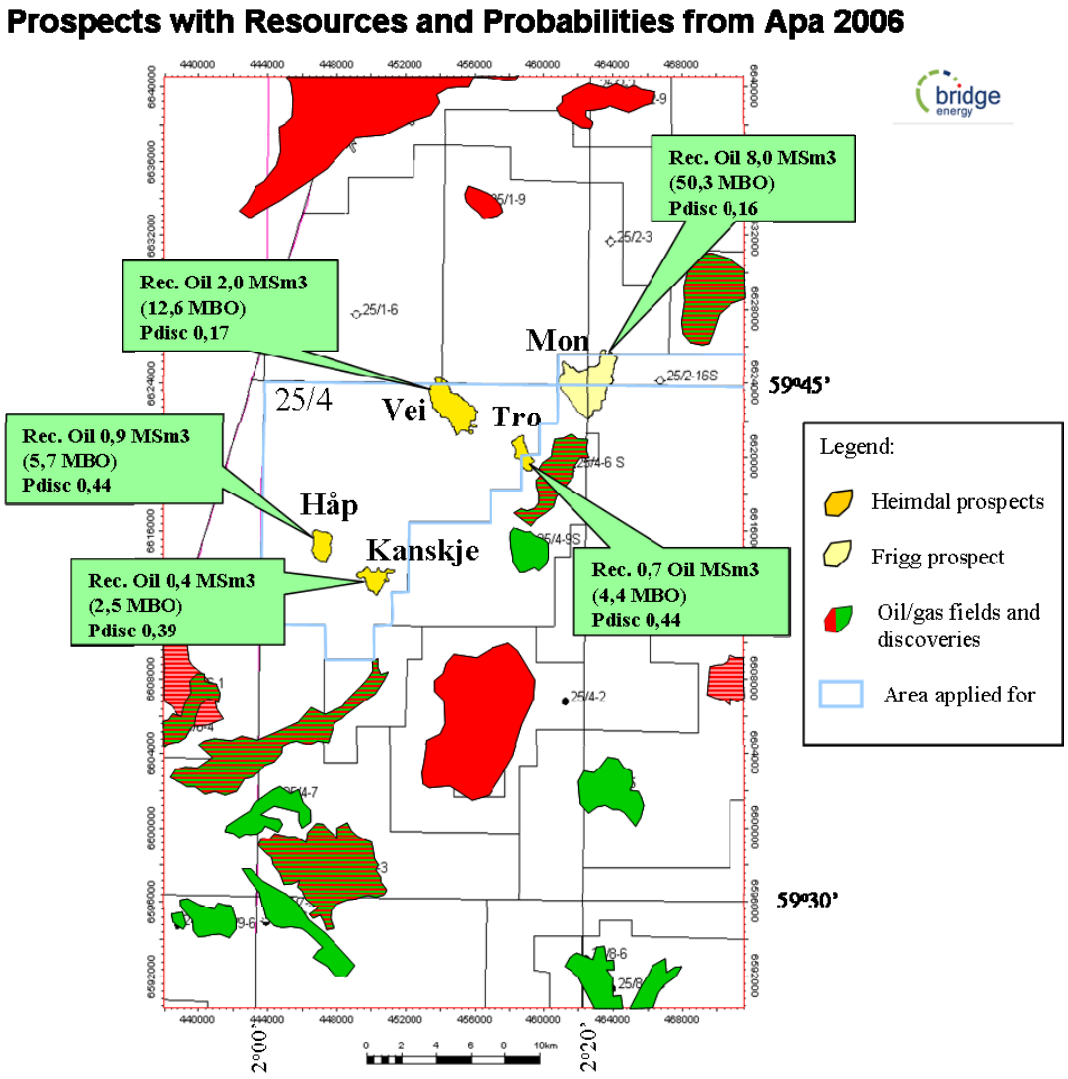

Fig.2 Prospect portfolio from Apa 2006

The prospects were re-evaluated in 2007/2008 based on new seismic data with offset cubes (surveys NH9603 and TO06R06M1).
The Heimdal prospects in block 25/4 were confirmed but found commercially unattractive due to small volumes and relatively high risks.
The Mon prospect was matured to a drilling decision in the neighbouring license PL 363. PL 413 obtained a 1.5 years license period extension to await the results from the Mon well.

Mon well results, 25/5-6

The Mon prospect was interpreted to comprise a stratigraphic trap with channelised Hermod Member sandstones as the primary objective. The prospect definition was based on amplitude and AVO anomalies.
The well encountered very good quality Hermod sandstones as prognosed, but they were water-bearing. Secondary objective Odin Mbr sandstones were also found water-bearing.

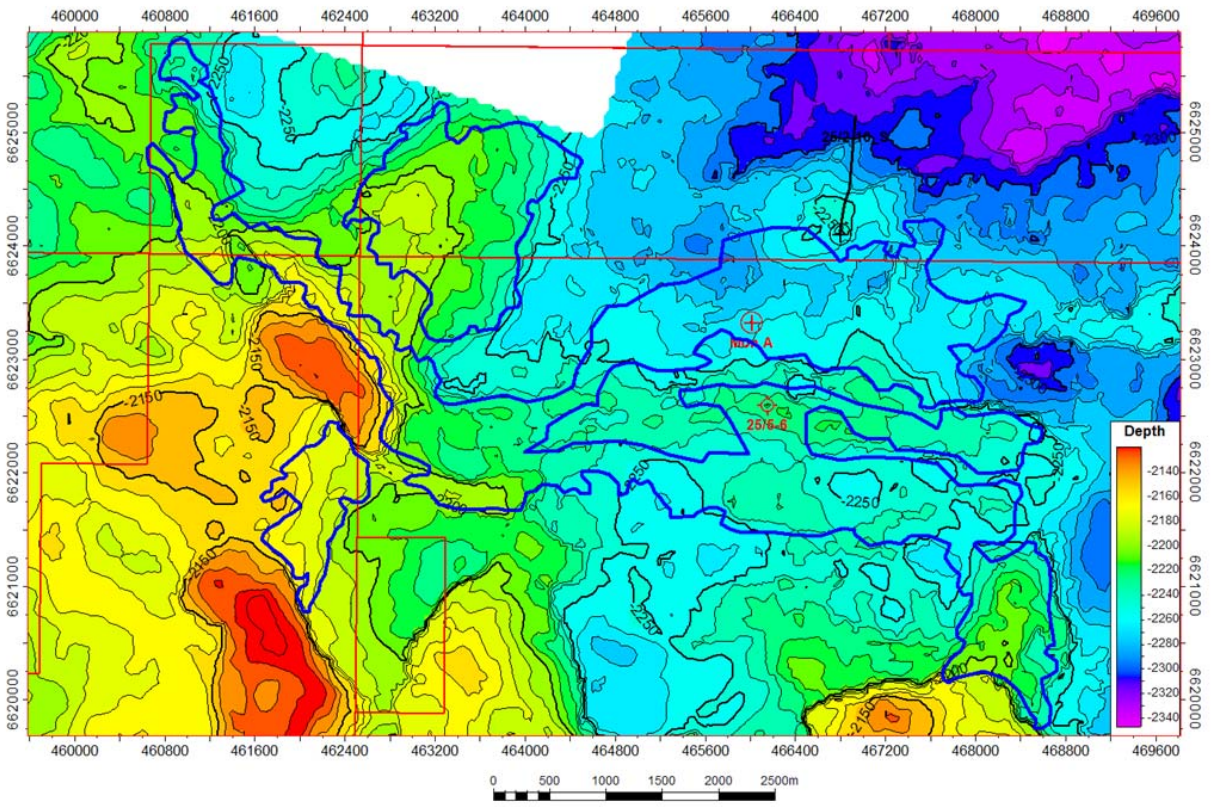

Fig.3 Mon prospect outline (Top Hermod depth map) with the location of the well 25/5-6

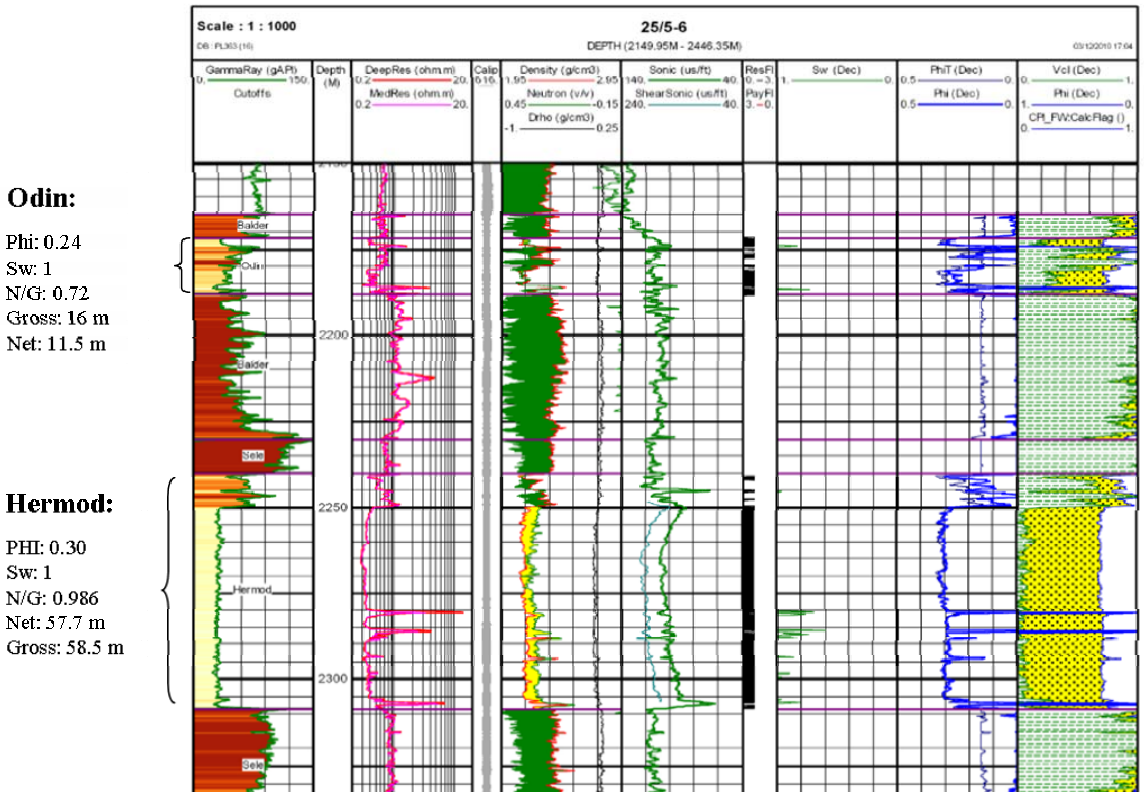

Fig.4 Well 25/5-6 results

The post-well evaluation concluded that the well 25/5-6 conclusively tested the Mon_Hermod prospect and that remaining prospectivity in the area is related to a structure at Odin level, called the Four Corner prospect.

Four Corner prospect

The Four Corner prospect comprises a combined structural/stratigraphic trap with the Odin Member sandstones as potential reservoir. The trap is formed by a 3-way dip closure at near top Odin level against the reservoir pinch-out line towards southwest (figures 5 and 6). The areal extent of the mapped structure is around 4 km^2 and the column height is 35 m in the maximum case.

No clear amplitude anomaly is seen over the prospect, neither on the full offset data or on the offset cubes. The lack of amplitude response is regarded as a negative evidence for hydrocarbon fill as the Four Corner prospect is believed to be analogous to the Storklakken discovery located some 8 kms to the northwest. The wells 25/1-11 and 11A encountered gas and oil in a similar combination trap at Frigg (Odin?) level earlier this year. A hydrocarbon column of 20 m (1 m gas and 19 m oil) was found in a structure measuring some 2 km^2 in areal closure. A strong amplitude anomaly is interpreted over the Storklakken trap.

Lundin's mean recoverable volumes for the Four Corner prospect are calculated to be 1.8 MSm^3 oil and 0.18 GSm^3 gas with a chance factor of 13%. Figure 7 summarizes the prospect volumetrics and risking.

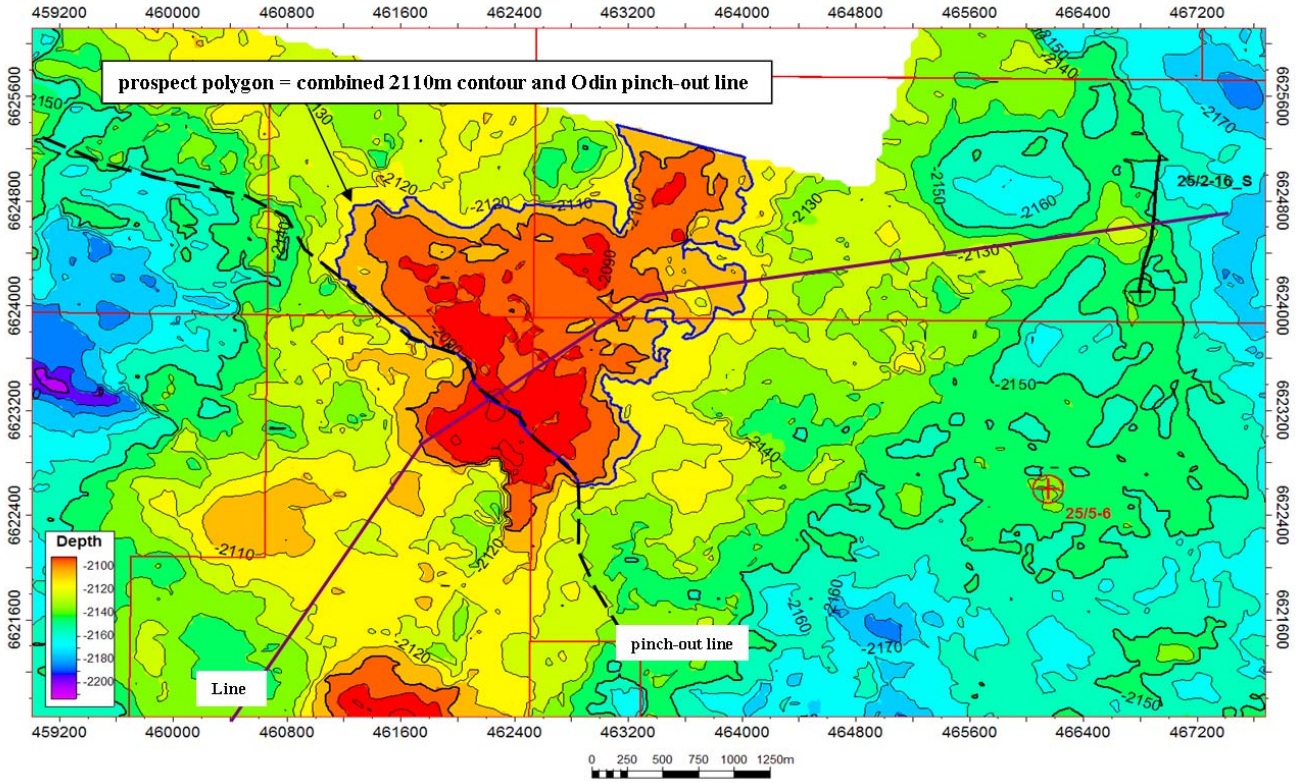

Fig.5 *Four Corner prospect outline (Top Odin depth map)*

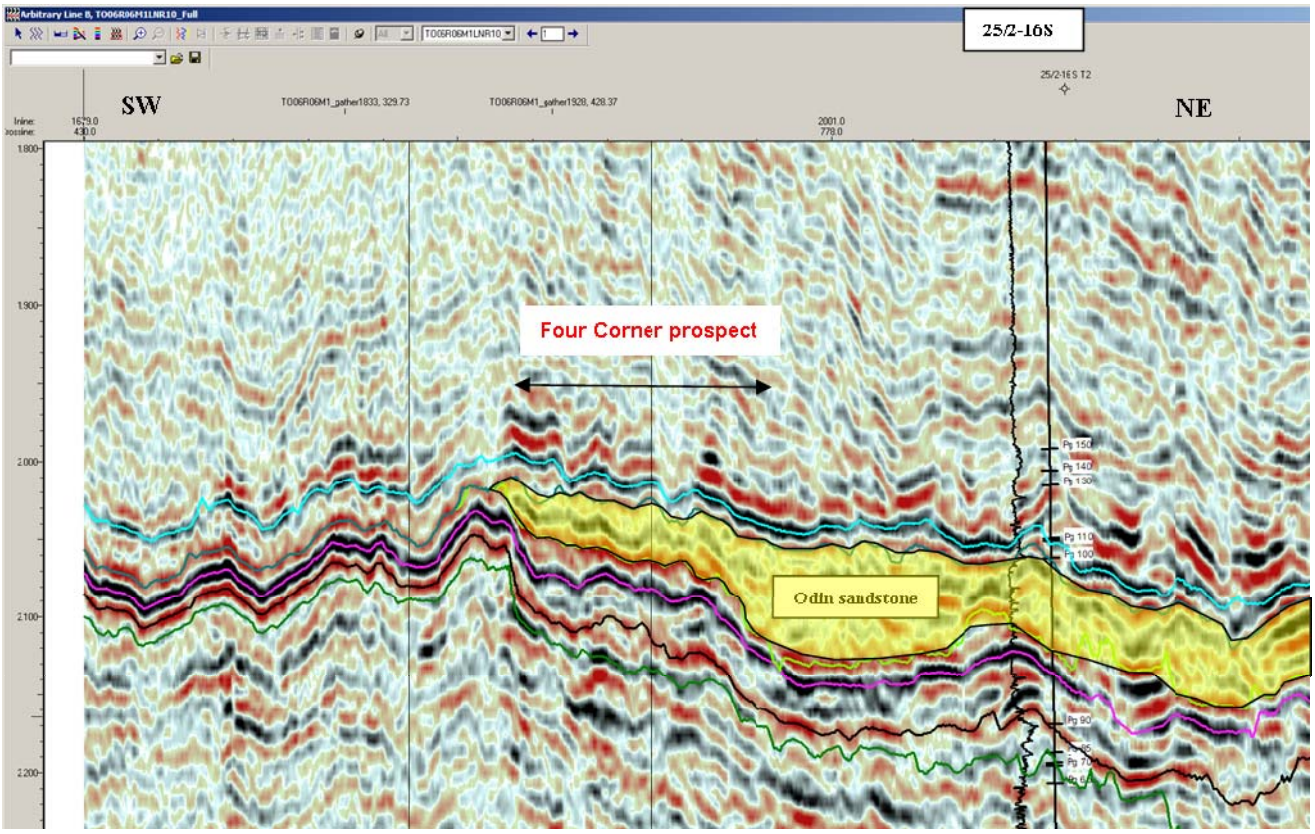

Fig.6 SW-NE line over the Four Corner prospect

Prospect	Four Corner		
Reservoir level	Odin		
Depth top reservoir@crest	2075		
	Low	Base	High
Depth contact	2100	2105	2110
HC column (m)	25	30	35
Closure area (km2)	2.6	3.2	4
Gross reservoir thickness	15	25	40
GRV (mill m3)	18	33	50
N/G	0.5	0.7	0.9
Porosity	0.2	0.24	0.3
So	0.75	0.8	0.85
Bo	1.3	1.2	1.1
GOR	80	100	120
Rf oil	0.35	0.5	0.6
	P90	Mean	P10
STOIIP (MSm3)	1.88	3.92	6.24
GIIP (GSm3)	0.18	0.39	0.63
Rec. Oil (MSm3)	0.84	1.79	2.94
Rec. Gas (GSm3)	0.08	0.18	0.29

P reservoir	0.7
P trap	0.8
P charge	0.6
P seal	0.8
P total	0.27
DFI modification	0.5
P discovery	0.13

Fig.7 Four Corner volumetrics results

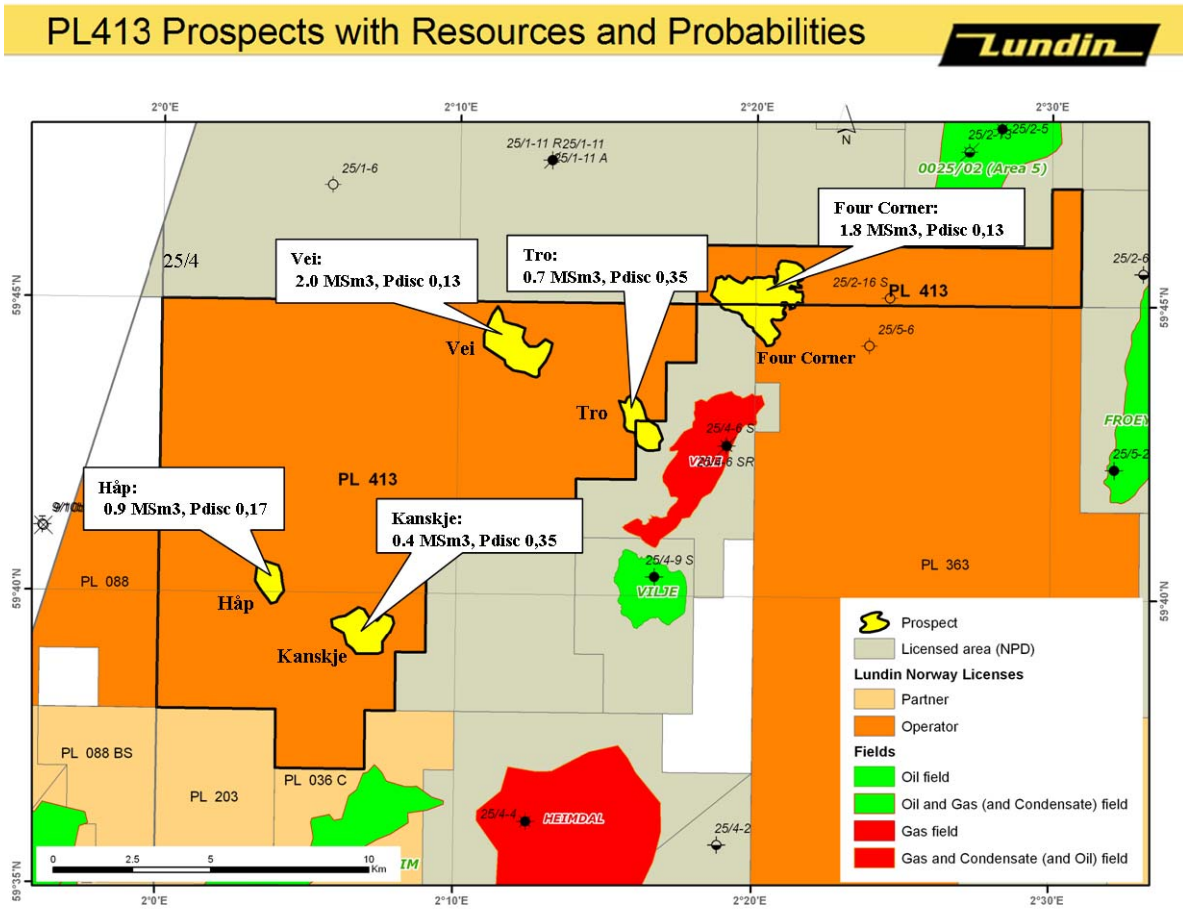

Fig.8 PL413 prospect portfolio

Conclusions

Figure 8 summarises the prospect portfolio in PL 413. Five small prospects have been defined in the license. Mean recoverable resources vary from 0.4 to 2.0 MSm3 oil and Pdiscovery range from 13 to 35%. All the prospects are considered uneconomical and a decision to relinquish the license has been made by the partnership.