Relinquishment report PL512

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1 INTRODUCTION

1.1 Key license history

Owner of PL 512:

- **Det norske oljeselskap ASA 30% (operator)**
- Repsol Exploration Norge AS 25%
- Svenska Petroleum Exploration AS 25%
- Bayerngas Norge AS 20%

Voting Rules: 3 companies and minimum 50%

1.2 Award and work program

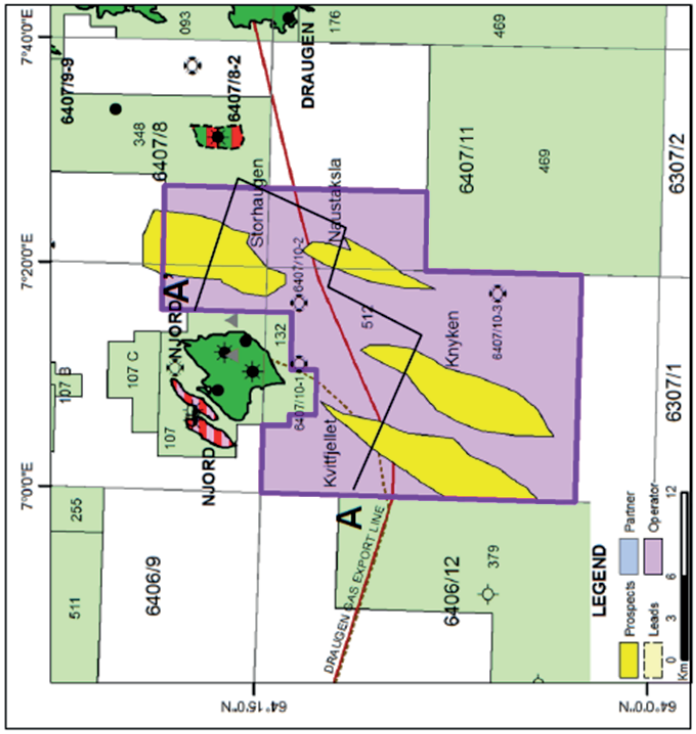
The PL512 license was awarded 23.01.2009 (APA 2008), valid to 23.01.2014. The license outline and nearby fields and discoveries are seen in Fig. 1.1 and cover parts of blocks 6407/7, 8, 10 and 11. Extentions of the initial period are summarized in Table 1.1.

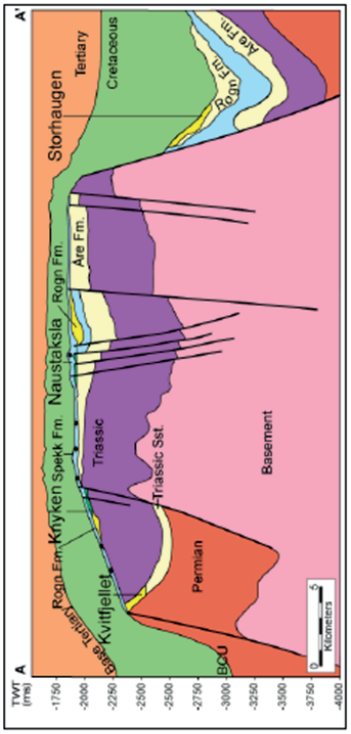
Table 1.1: Initial period extentions

From	To	Phase	Activity
23.01.09	23.01.16	INITIAL - DoD 23.01.12	Acquisition 3D (DN0902) with processing and interpretation. Evaluation of prospectivity
24.01.16	23.07.17	Extended first phase with 18 months. New DoD 23.07.13	Reprocessing of DN0902. Evaluation of prospectivity with focus on Knyken and Storhaugen.
24.07.17	23.01.18	Extended second phase with 6 months. New DoD 23.01.14	Further evaluation of Storhaugen.

Prospect and Leads mapped in PL512 as a part of APA 2008 are shown in Fig. 1.2. These are described in section 1.3.

MEETINGS
MC/EC meetings
February 18th 2009
November 11th 2009





Awarded : APA 2008, 23.01.2009

Valid to : 23.01.2016

Work Program : 3D seismic within 3 years
Drill or drop within 3 years
ROV within 5 years
PDO within 7 years

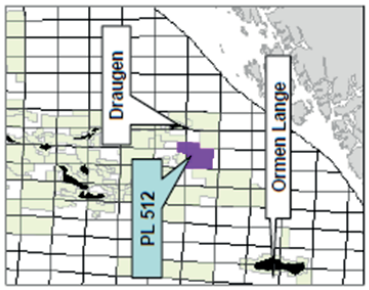
Licensees : Det norske 30% (operator)
Bayerngas 20%
Repsol 25%
Svenska 25%

Voting Rules : 3 companies and minimum 50%

Water Depth : 300m

Drilling Plans : None

Exploration / Appraisal wells :
6407/10-1 1987 TD 3347 mRKB (Late Triassic) Gas shows (Drilled in PL 132)
6407/10-2 1990 TD 3825 mRKB (Early Jurassic) Shows (Drilled in PL 132)
6407/10-3 1992 TD 2972 mRKB (Basement) Shows (Drilled in PL 132)



PL 512					GROSS RECOVERABLE RESERVES / RESOURCES								
					Low			Base			High		
CATEGORY	RESERVOIR LEVEL	HC	RF (%)	POS (%)	Oil (MSm^3)	Gas (MSm^3)	Oil (MSm^3)	Gas (GSm^3)	Oil (MSm^3)	Gas (GSm^3)			
PROSPECTS													
Stornaugen	Rogn Fm.(Kimm.)	oil /gas		17	1.25	0.1	18.9	1.2	45.51	5.1			
Naustaksla	Triassic Red Beds	oil /gas		20	0.80	0	2.5	0.17	4.90	0.3			
Knyken	Rogn Fm. (Kimm.)	oil /gas		17	1.40	0.1	14.1	1.0	38.49	4.2			
Kvitfjellet	Permian sst	oil /gas		12	1.50	0.1	22.1	1.56	51.70	2.8			

Fig. 1.1 PL512 - Prospects identified APA2008

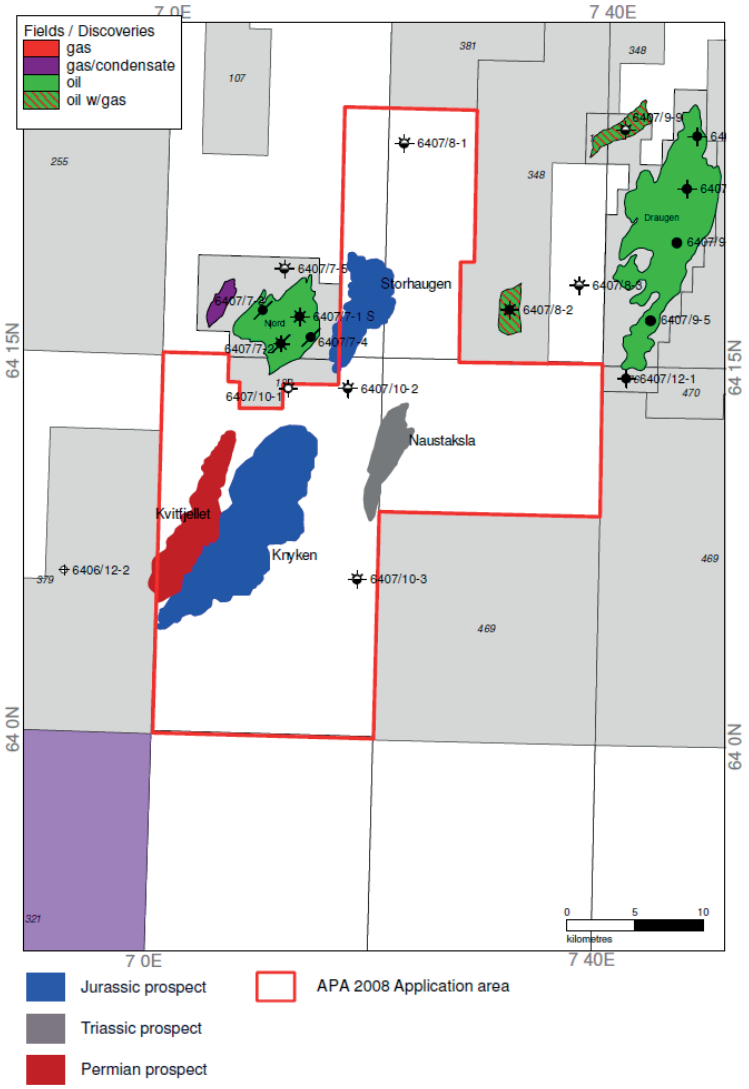


Fig. 1.2 Prospect identified TFO 2008

November 11th 2010
May 12th 2011
September 23rd 2011
November 28th 2011
January 24th 2012
October 26th 2012
January 30th 2013
April 17th 2013
December 12th 2013
Field Excursion and Workshop
March 2011 (Corinth/Greece)

REASON FOR RELINQUISHMENT
Partners in PL512 did not reach an agreement on prospect to drill

1.3 PL512 APA 2008 prospectivity

Naustaksla prospect is located in the Eastern part of the license, with parts into blocks 6407/10 and 6407/11. In Fig. 1.3 the prospect is shown in a seismic cross section and map.

The Naustaksla Prospect is defined by a rotated fault block that dips to the west and has been deeply eroded into Triassic strata by BCU, leaving what is interpreted to be a wedge of Triassic Grey Beds directly below the BCU.

Triassic Grey Beds are considered to be the main reservoir unit in the Naustaksla Prospect with Åre Formation as a possible upside. Well 6407/10-3 to the south of the prospect penetrated the Grey Beds with a gross thickness of 23.5m (1826.5m to 1850m). The Grey Beds are overlain by shale.

The Grey Beds in the well 6407/10-3 are interpreted as braided river system most likely sourced from Frøya High. The cored sequence consists of several fining upward sequences, each approximately 2 metres in thickness.

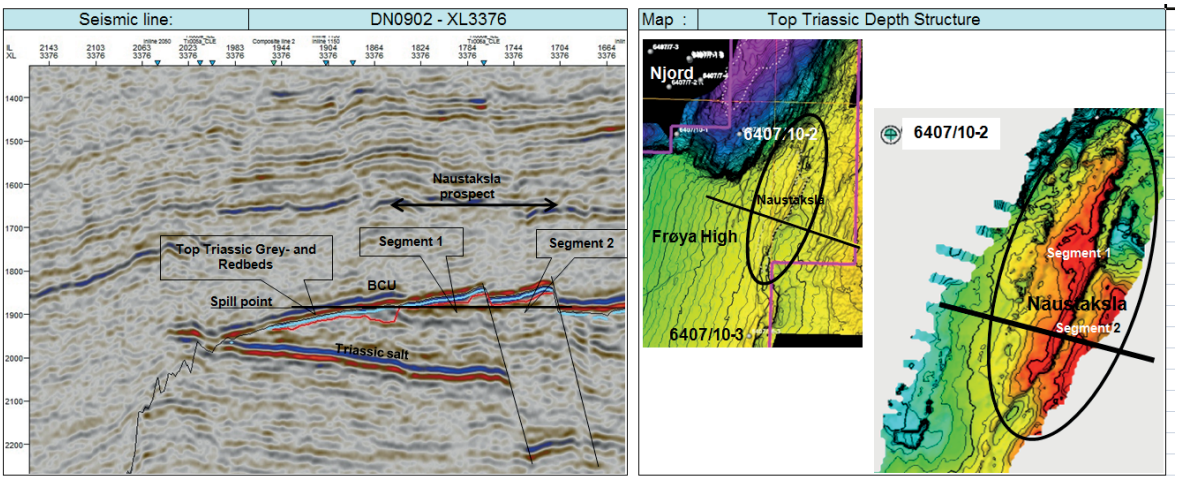


Fig. 1.3 Prospectivity APA 2008 - Naustaksla

Knyken prospect is located in the central area of the license in block 6407/10. In Fig. 1.4 the prospect is presented by a seismic cross section and map.

The Knyken Prospect was interpreted to be a Rogn sandstone equivalent in terms of reservoir section. Sandstones of Melke and Rogn formations were deposited on the Frøya High to the SE of the Njord Field.

Seismic mapping of the BCU/Top Triassic reflection on far and near offset data suggests that there is a former erosional topography with local NW-SE trending scours towards the northern flank of the Frøya High platform. These scours are filled in with younger sediments that result in compaction relief at the Spekk Formation level.

Kvitfjellet prospect is located in the western area of the license in block 6407/10. In Fig. 1.5 the prospect is presented by a geosection and map. The Kvitfjellet prospect is truncated by BCU (Fig 1.5 - index map).

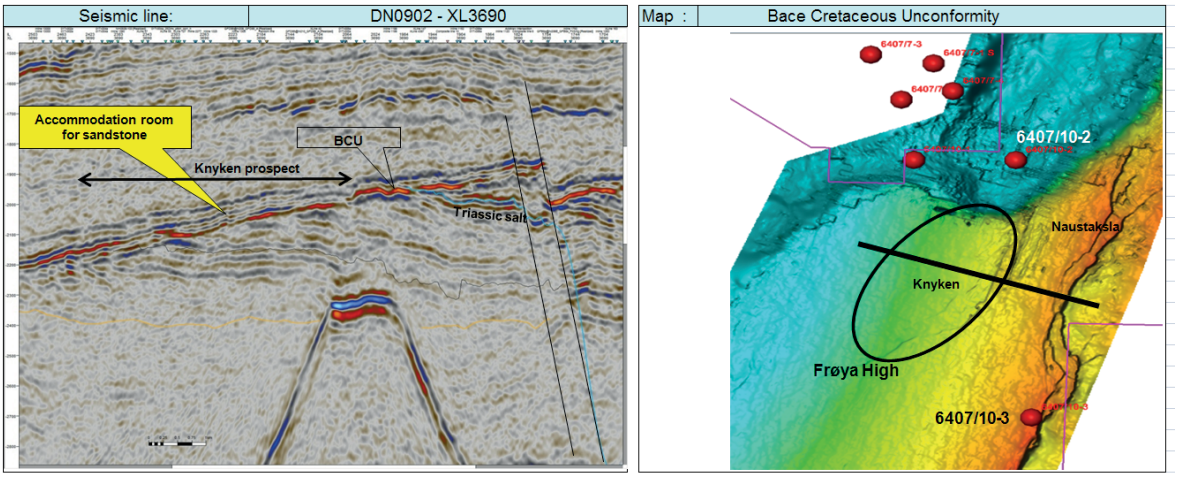


Fig. 1.4 Prospectivity APA 2008 - Knyken

Kvitfjellet prospect is mapped on both on 2D and 3D seismic data and represents a major rotated fault block of Early Permian age, Fig. 1.6. The prospect is defined as a dip closure, but due to sparse 2D seismic coverage, the seismic mapping is uncertain in the southern area.

The age of the reservoir is uncertain, but the interpretation indicates Early Permian or Carboniferous. These Plays have not yet been tested in The Norwegian Sea.

Observations in exploration well 6407/10-1 show a lower pressure in the Tilje Formation compared to that observed in the Ile Formation in the same well. We believe the reason for this is that the Tilje Formation in the Njord Field is in direct contact with the Lower Permian sandstone so the hydrocarbons migrate southwards across a major fault and into the Kvitfjellet prospect.

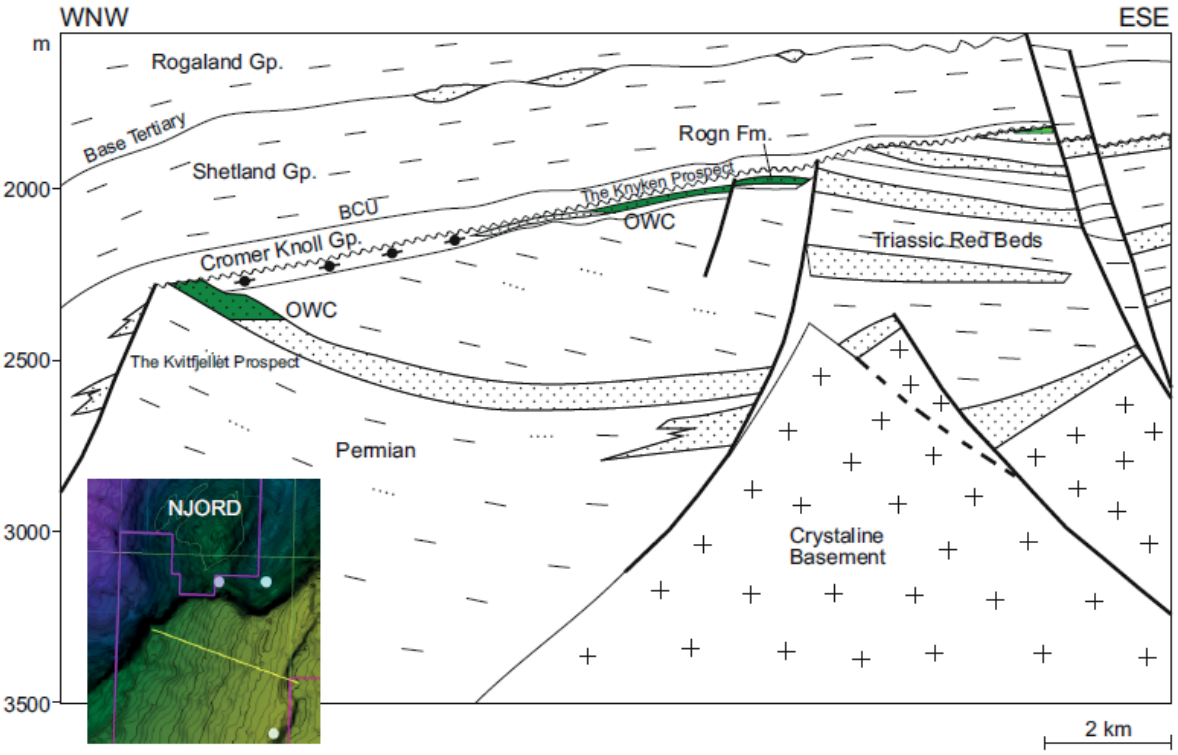


Fig. 1.5 Geosection Kvitfjellet and Knyken

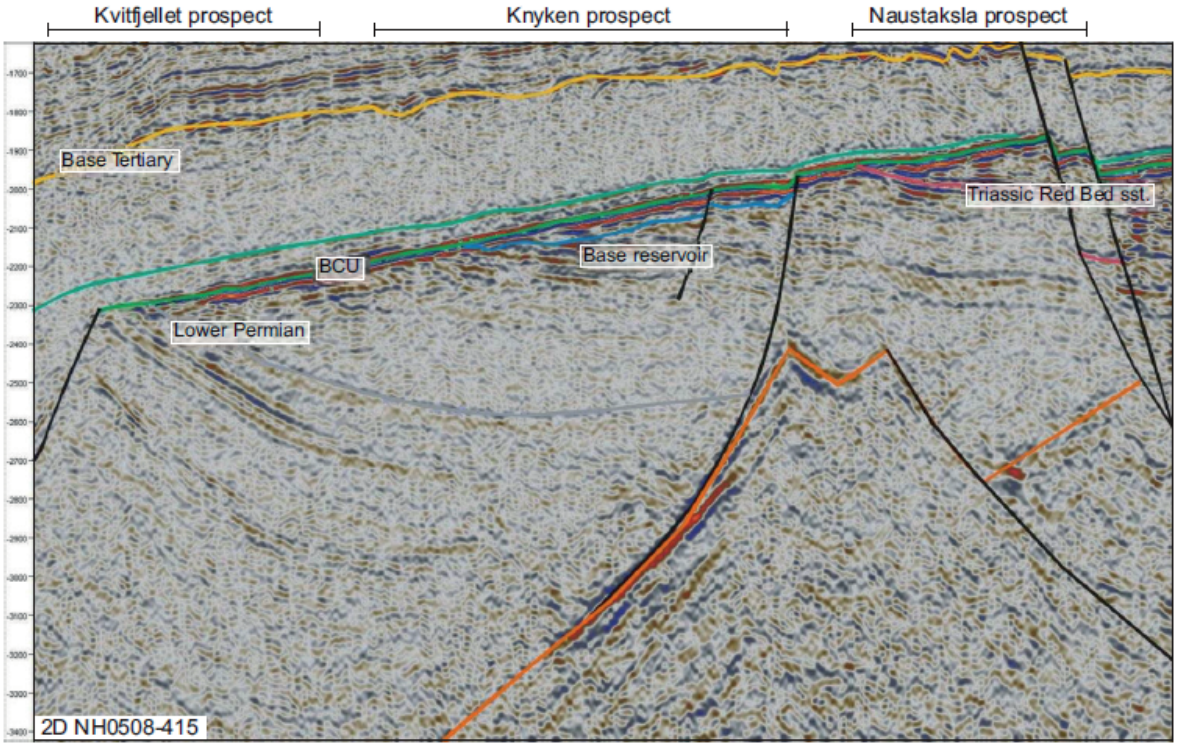


Fig. 1.6 Seismic section Kvitfjellet

The Storhaugen prospect is located in the northern area of the license in block 6407/7 and 8. In Fig. 1.7 the prospect is presented by a seimsic line with welltie.

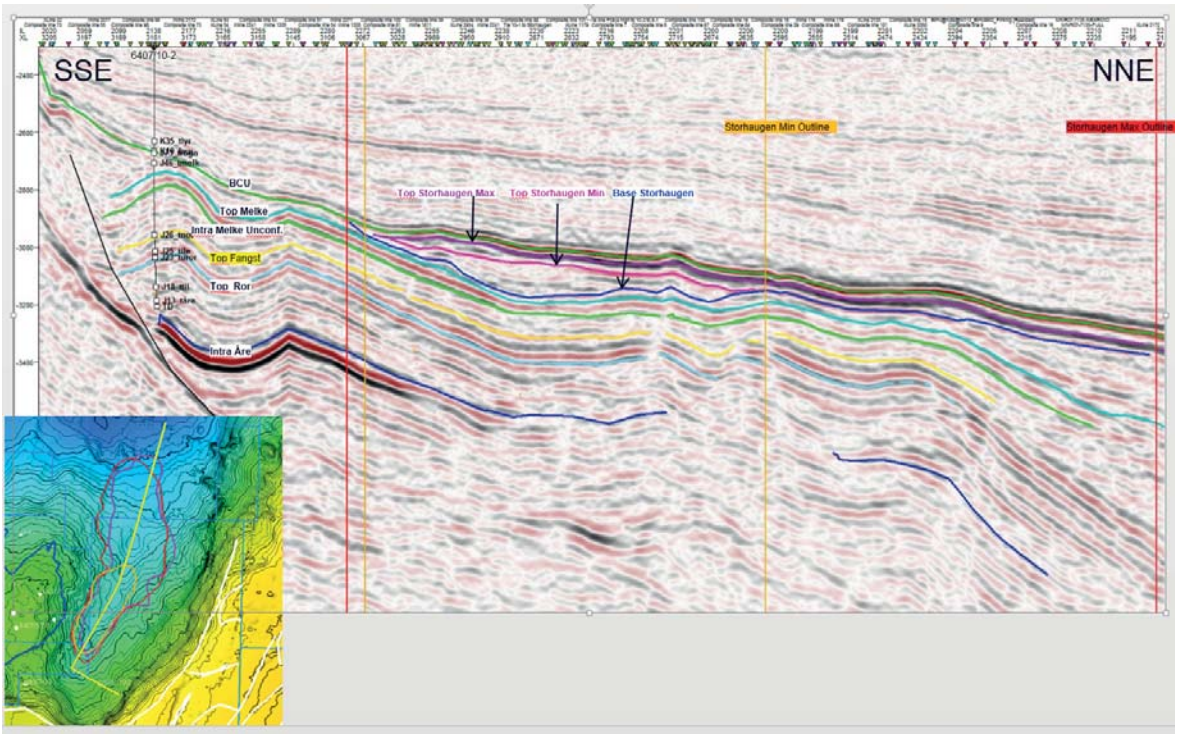


Fig. 1.7 Seismic section Storhaugen

Storhaugen is a Late Jurassic syn-rift accumulation in a sediment starved environment. The platform area was eroded by wave action at the time of deposition, and the sand is believed to have been re-deposited on the platform area before it was shed out across the fault

escarpment and entered the deep basin as turbidites. A clear positive compaction relief is a good argument for a sandy lithology in the elsewhere mud-prone system. The transport of clastics into Storhaugen terminated with final drowning of the platform area in Late Volgian to Ryazanian time and deposition of the draping shale of the Spekk Formation.

Resources and risk shown in Table 1.2

Table 1.2 Resources and risk PL512

Prospect name	Prospect	Unrisked recoverable resources						Probability of discovery	Reservoir		Distance to infra-structure [Njord Field] (km)
		Oil 10^6Sm^3			Gas 10^9Sm^3				Litho-/ Chrono-stratigraphic level	Reservoir depth (m MSL)	
		Low	Base	High	Low	Base	High				
Storhaugen	P	1.25	16.90	45.51	0.10	1.20	5.10	0.17	Rogn Fm./ Kimmeridgian	2900	2 km
Naustaksla	P	0.80	2.50	4.90	0.00	0.17	0.30	0.2	Triassic Grey Beds/Carnian	1850	7 km
Knyken	P	1.40	14.10	38.49	0.10	1.00	4.20	0.17	Rogn Fm./ Kimmeridgian	2000	9 km
Kvitfjellet	P	1.50	22.10	51.70	0.10	1.56	2.60	0.12	Permian sst	2240	10 km

2 DATABASE

2.1 Seismic database

The seismic database is listed in Table 2.1. Fig. 2.1 shows all 2D lines, while Fig. 2.2 shows the 3D surveys prior to acquisition of DN0902.

Table 2.1 Database 3D and 2D surveys TFO 2008

3D Survey	2D Survey
BPN9501, FH2006, SH9002	BPN8902, FH-92, FHM-91, FRD-90, FH91-shifted
HWM94, SH9602, ST98M10	GFB84, GFD85,GMME-94-2,GMME-94
NH8604, ST9302, SH9104A	GMNR-94-MERGE, GMT84, GMT84, HBGS83R86
SH9104B, ST9203, PD0401M01_sor	MB92, MN88, HBGS83R97, NA-87-2, NH8411
SH9002R06M, MD99, NH9701	NPD-FB-84, SG9205, ST8409R97, ST8501
	ST8110, ST8616, ST8615, ST8634, NA-84,NH0508

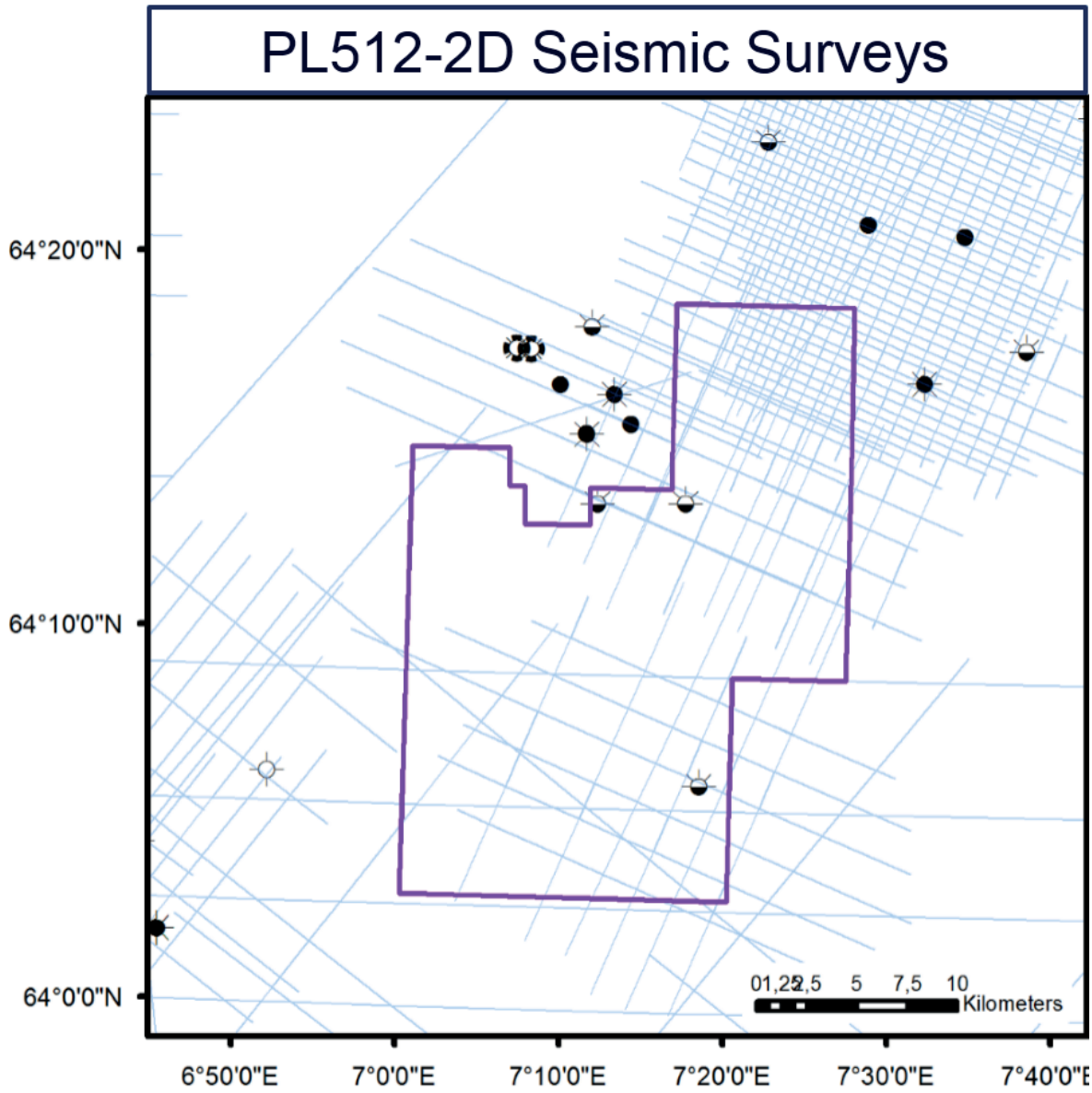


Fig. 2.1 Map with 2D surveys used in TFO2008

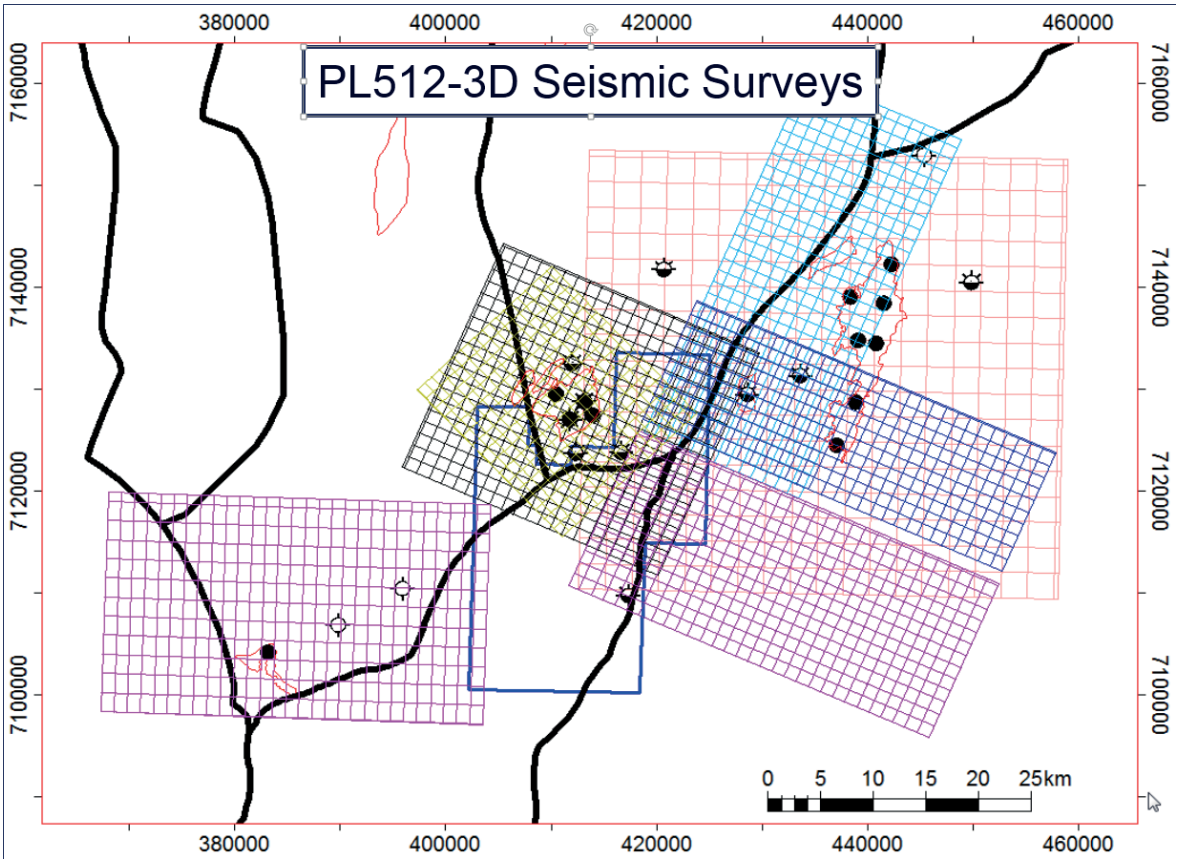


Fig. 2.2 Map with 3D surveys used in TFO2008

With reference to the committed work program, the seismic survey DN0902 was acquired and processed by Fugro in 2009, Fig. 2.3. The size of the survey area is 540 sq.km. A Table with final deliverables for processing seismic survey DN0902 is shown in Table 2.2.

In 2011 a 18 months extension was granted. A major part of the work programme was to reprocesses seismic survey DN-0902 . Key element in reprocessing the seismic data was to remove noise and multiples to improve imaging of Storhaugen and Knyken prospects.

CGGVeritas was given the reprocessing contract and products to be delivered were;

- Pre PSTM/PSDM gathers without NMO-correction
- PSTM & PSDM gathers in time with final NMO and parabolic radon applied
- Full raw stack & 3 angle stacks
- Fullk final stack & 3 angle stacks
- Migration & final velocities

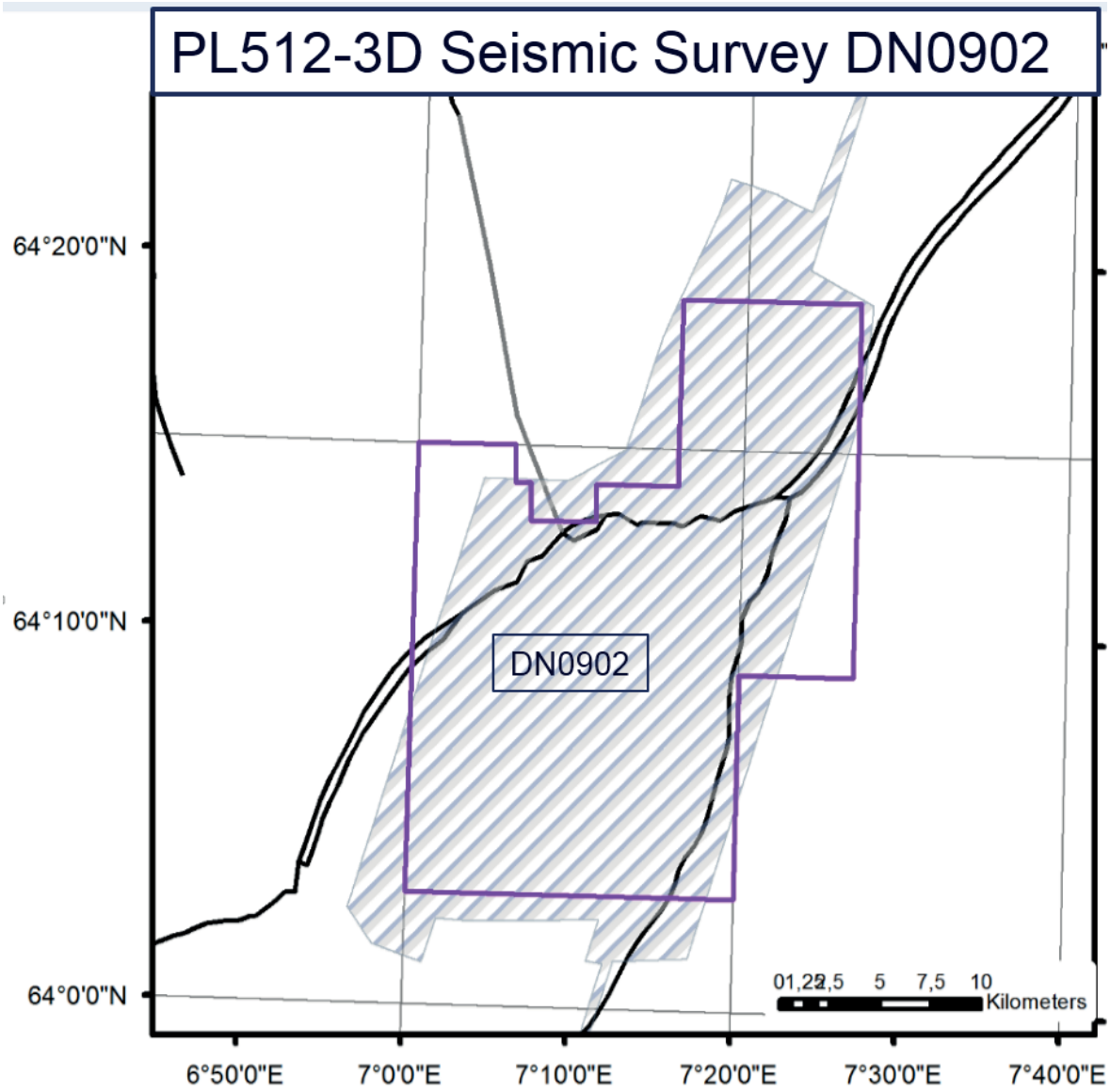


Fig. 2.3 Location map DN0902

Table 2.2 Processing DN0902 - final deliverables

Item	Format	Media	Date	Description
A set of gathers at en early stage	SEGY	3592		
Unmigrated CDP gathers	SEGY	3592		CDP gathers; NMO corrected with migration velocities; after multiple / noise attenuation (as input to PSTM).
Final PSTM gathers 1	SEGY	3592 USB disk	15/12/09	PSTM gathers; NMO corrected with final residual velocities and post-mig radon.
Final PSTM gathers 2	SEGY	3592 USB disk	15/12/09	PSTM gathers; NMO corrected with final residual velocities and 3 pass of residual radon.
Raw stack full offset and sub stacks volumes	SEGY	USB disk	25/11/09	Full offset PSTM stack and sub stacks with final residual velocities; includes post-mig radon, noise attenuation, outer trace mute, s/r statics
Extra sub stacks volumes raw / filtered	SEGY	USB disk	25/11/09	Ultra far and super ultra far angles stack with final residual velocities; includes post-mig radon, noise attenuation, outer trace mute, raw or bandpass filter, s/r statics
Final sub stacks volume	SEGY	USB DISK	17/12/09	Near, mid and far offsets final PSTM stacks;tacked with final residual velocities; includes post-mig radon, noise attenuation, outer trace mute, interpolation, time variant filter, residual gain
Final full offset stack volume	SEGY	USB disk	17/12/09	Full offset final PSTM stack; stacked with final residual velocities; includes post-mig radon, noise attenuation, outer trace mute, interpolation, time variant filter, residual gain, matching with 3 other surveys.
Bin centre navigation data	UKOOA	Memory stick	17/12/09	Navigation (IL,XL,CDP-X, CDP-Y)
Final migration velocity field	Essov2 diskos 98.1	CD		Smoothed migration velocities (RMS)
Final stacking velocity field	Essov2 diskos 98.1	CD		Final stacking velocities (RMS)
Final processing report	MS WORD PDF	CD hardcopy		

2.2 Well data

Fig. 2.4 shows the wells in the common database for PL512. The wells are also presented in Table 2.3, which includes well name, year drilled, status and Formation/Group.

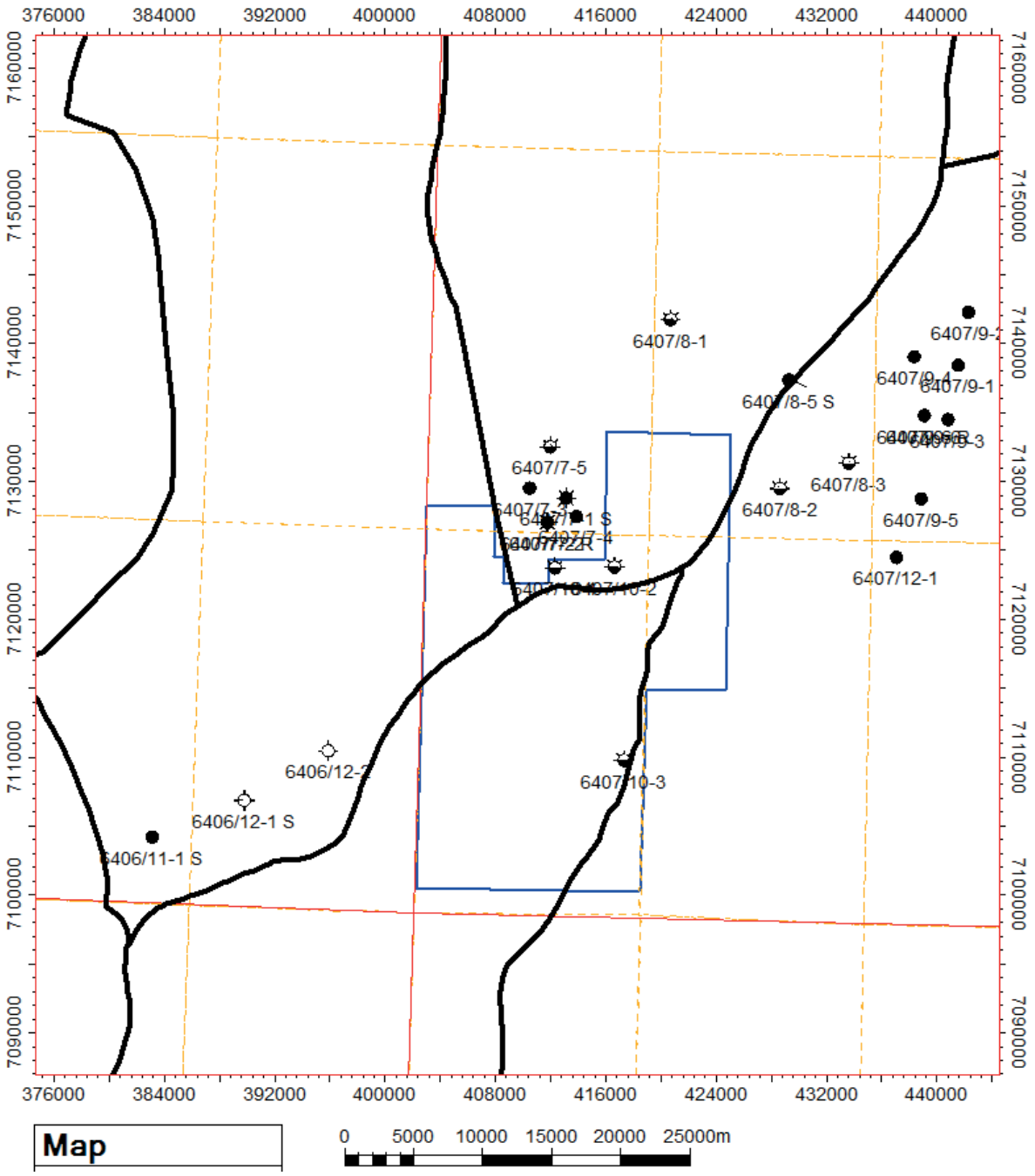


Fig. 2.4 Map Common well data base

Table 2.3 Common Well data base

Well	Year	Result	Penetrated
6407/9-1	1984	Oil (Rogn Fm)	Triassic
6407/9-2	1984	Oil (Rogn Fm)	Tilje Fm
6407/9-3	1985	Oil (Rogn Fm)	Tilje Fm
6407/9-4	1985	Oil (Rogn and Garn)	Tilje Fm
6407/9-5	1985	Oil (Rogn Fm)	Not Fm
6407/9-6	1986	Oil (Rogn Fm)	Ror Fm
6407/9-6R	1993	Oil (Rogn Fm)	Ror Fm
6407/9-7	1988	Dry	Triassic
6407/9-8	1992	Dry	Tilje Fm
6407/12-1	1999	Oil (Rogn Fm)	Garn Fm
6407/8-2	1994	Oil (Åre Fm)	Triassic
6407/8-3	1997	Shows	Åre Fm
6407/7-1S	1985	O&G shows (Garn,Tilje,Åre)	Triassic
6407/7-2	1986	O&G (Ile&Tilje)	Triassic
6407/7-2R	1990	Oil (Ile & Tilje)	Triassic
6407/7-3	1988	Oil (Ile, Tilje& Åre)	Triassic
6407/7-4	1989	Oil (Ile, Tilje & Åre)	Åre Fm
6407/7-5	1990	Oil shows (Tilje)	Åre Fm
6407/8-1	1992	Shows (Cromer knoll)	Melke Fm
6407/10-1	1987	Gas shows (Tilje & Ile)	Triassic (Grey beds)
6407/10-2	1990	Shows	Tilje Fm
6407/10-3	1992	Shows (Triassic grey beds)	Basement
6406/12-1S	1990	Dry	Melke Fm
6406/12-2	1995	Dry	Melke Fm
6406/11-1S	1990	Oil (Ile)	Triassic
6306/6-1	1994	Dry	Basement

2.3 Special studies

Several special studies have been carried out both in-house and by external parties to address the geological uncertainties of the PL512 prospectivity. These studies include:

1. Inversion study - Paleocene

To the east of PL512 a channel system from SE to NW was observed in Lower Paleocene. The channels and fans were mapped to see if the system continued into PL512 and possible strengthen the prospectivity Fig. 2.5. As seen in the figure, only the distal part of the fan stretch into PL512 and was not regarded as a viable prospect.

2. Basement study - Tectonic model and Structural evolution

In the APA2008 application several basement highs were identified and indicated discussed as prospective.

In an effort to obtain a better understanding of basement prospectivity and Kvitfjellet fault block, Exploro was chosen to undertake a study using all available data in in PL512 - 2D and 3D seismic data, gravimetry and magnetometry and well data including "basement wells". Regional data like COOP grav/mag was also included in the study.

Following subjects were given priority:

- Regional setting Fig. 2.6 (from Færseth et. al 2006)
- Basement onshore Fig. 2.7
- Basement offshore PL512
  - Basement setting
  - Basement composition

- Data integration -> Basement units
- Frøya High structural evolution

Aim of the study was to map the basement geometry, deformation pattern and composition of the basement rocks and to develop a model for the structural evolution of the Frøya High, Fig. 2.8. This study alone did not conclude on the basement prospectivity, but gave a better understanding of basement composition.

The study was presented to the partners and also used to support a proposal to apply for an extension of the license periode. This proposal was not supported by a majority in PL512.

3. Stratigraphical relationships within PL512

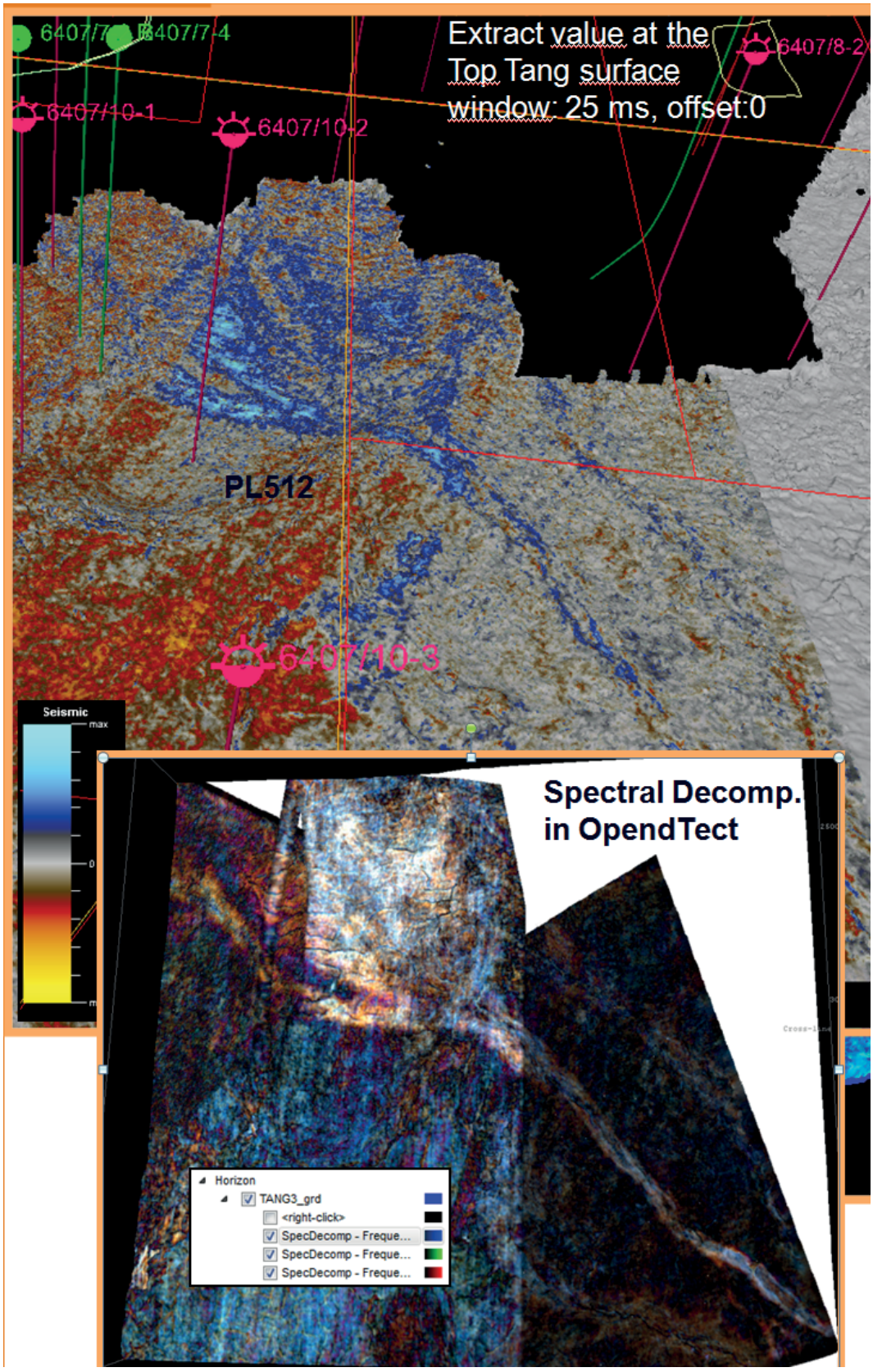


Fig. 2.5 Paleocene channel system - fan at Top Tang

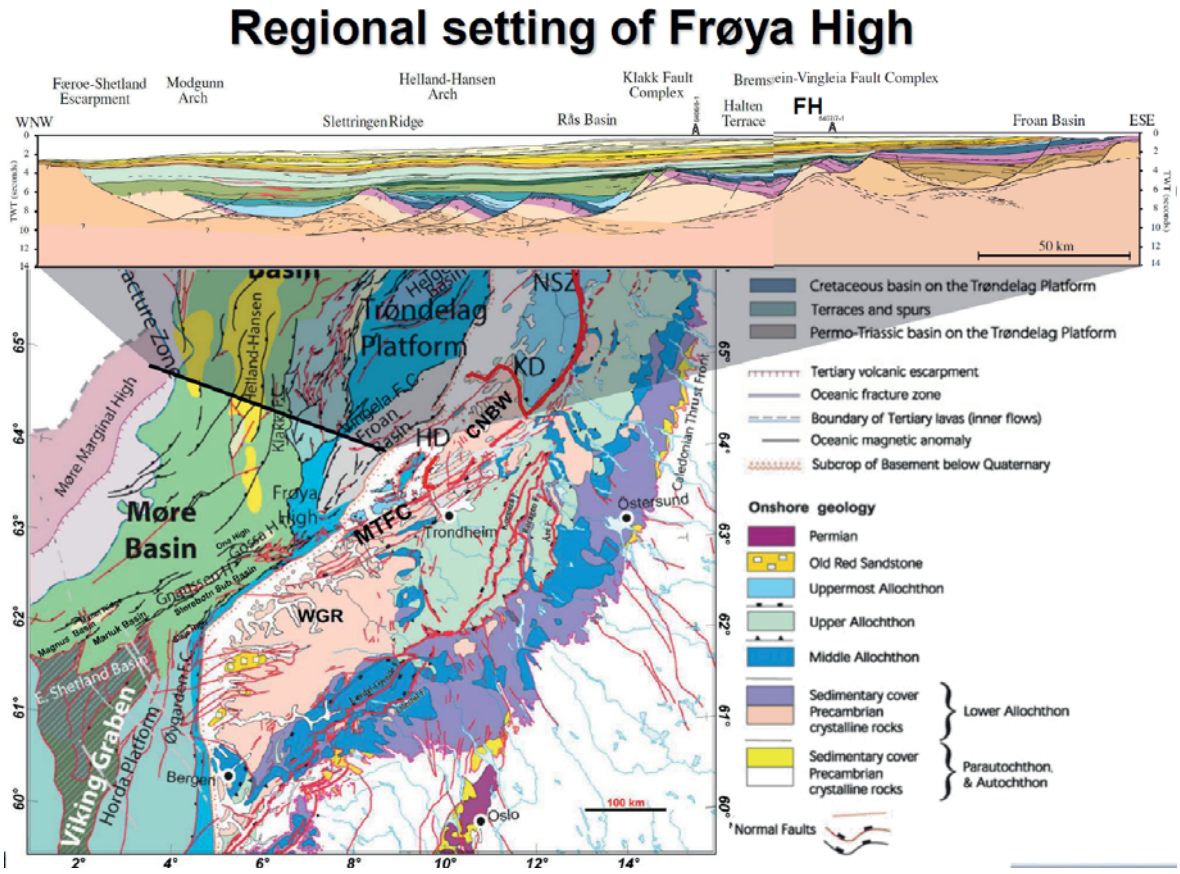


Fig. 2.6 Regional setting (From Færseth et. al)

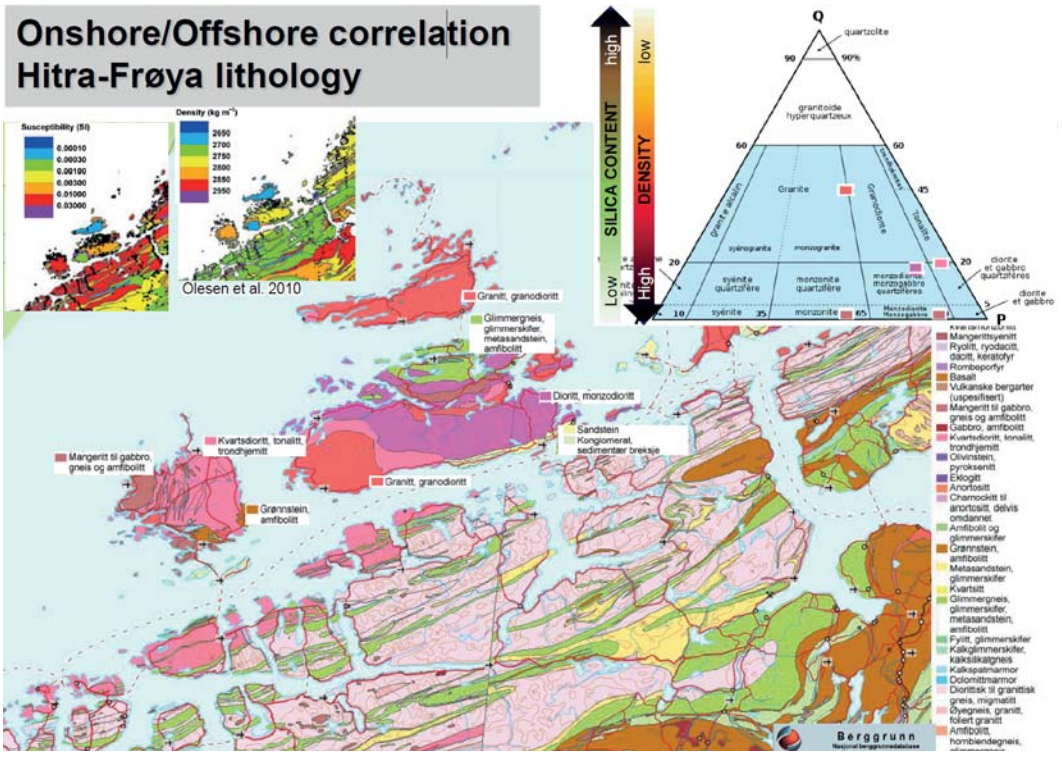


Fig. 2.7 Onshore Offshore correlation of basement rocks

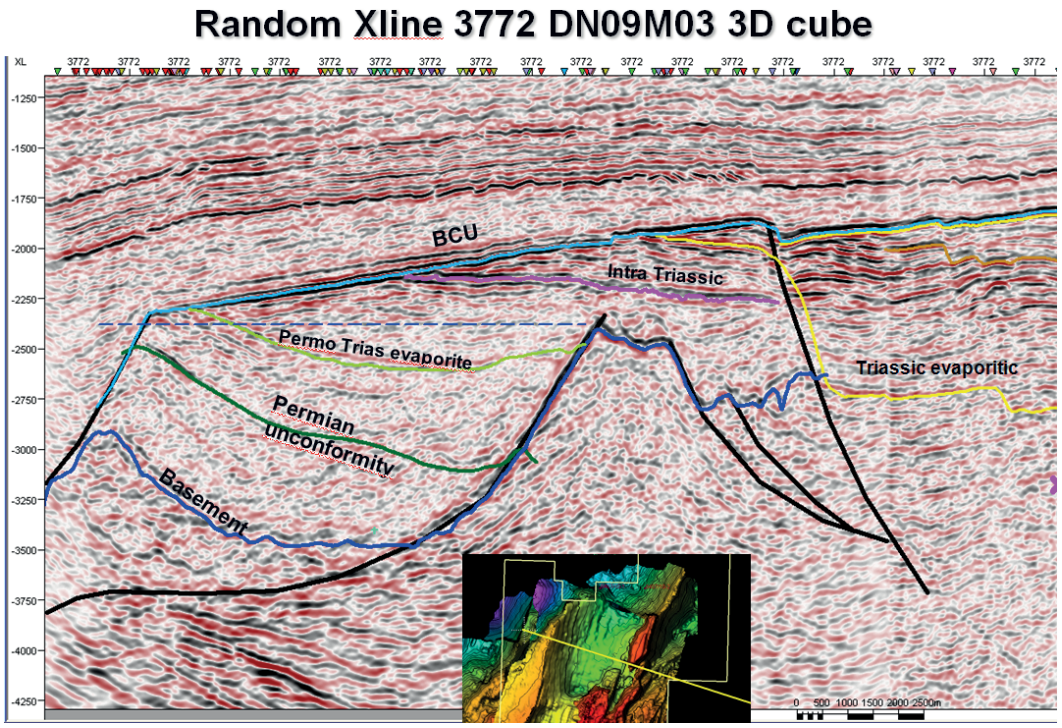


Fig. 2.8 Seismic line with basement bodies and unit boundaries

The study had focus on PL512 and Upper Jurassic reservoir units and built on a semiregional study performed by Det norske prior to APA 2008 application. Well data within and in the vicinity of PL512 were reviewed, Fig. 2.9

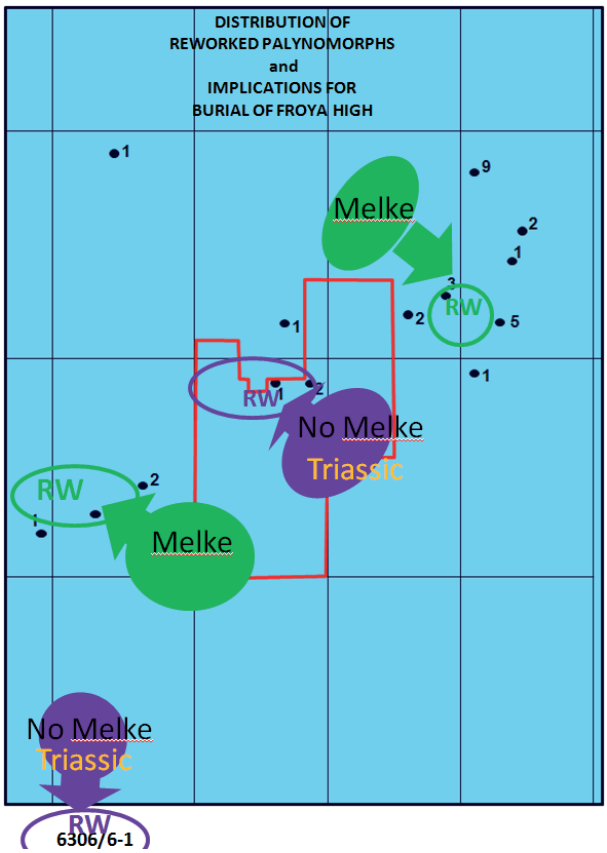


Fig. 2.9 Well data for analyses of "Distribution of Reworked Palynomorphs"

The study gave an improved understanding of erosion and redeposition of Mid to Late Jurassic sediments in PL512 (Fig. 2.10).

The complete regional study was presented to the partners and a "PL512" version was placed on L2S and made available to the partners.

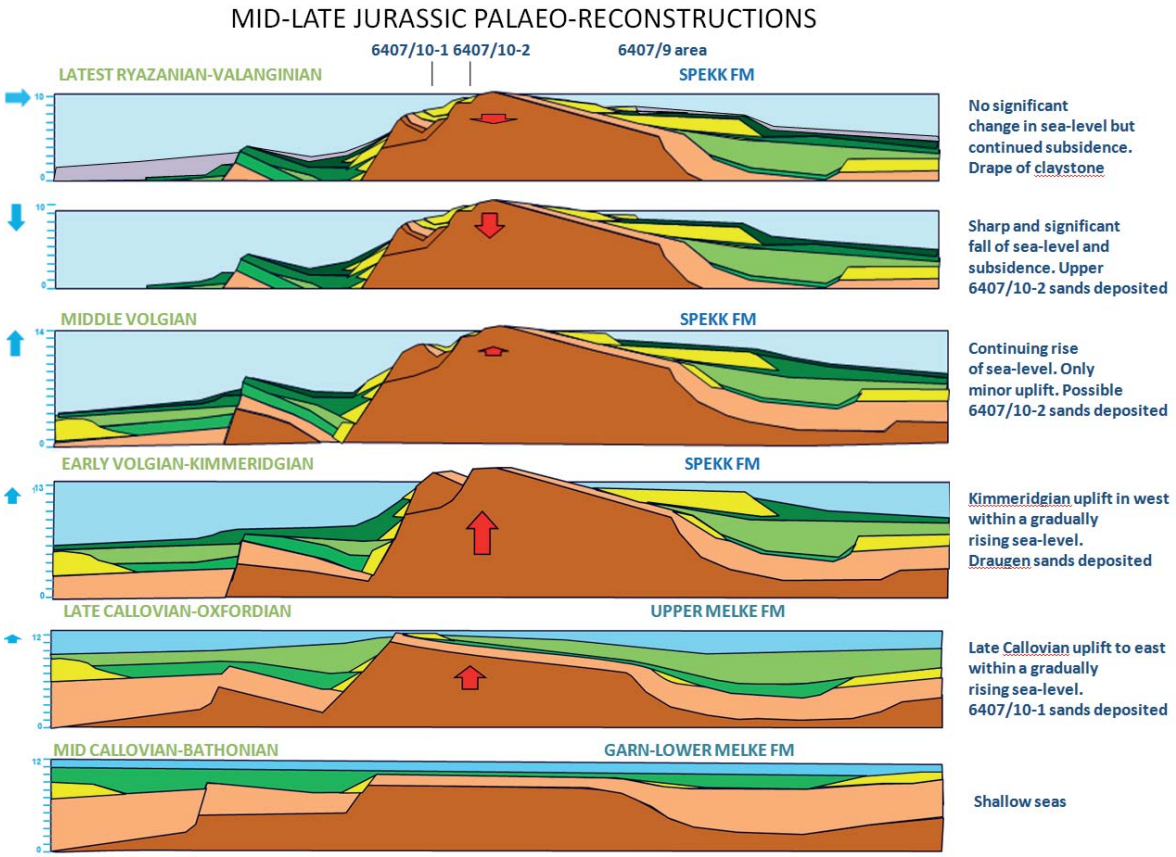


Fig. 2.10 Mid to Late Jurassic Palaeo reconstruction

4. Based on the elastic inversion, a lithology and fluid prediction study was done

The scope of the study was to deliver acoustic impedance, Vp/Vs ratio and possible density from ISIS simultaneous 3D AVO inversion. These results may be used for reservoir characterization of the prospects. See workflow Fig. 2.11.

Input data to the study was Seismic datasets, PSTM gathers, seismic stacking velocities, 8 interpreted horizons and well log data (6407/8-5S, 6407/10-1, -2 and -3).

Results from the inversion study that support evaluation with volumes and risks of prospects are included in Prospect description.

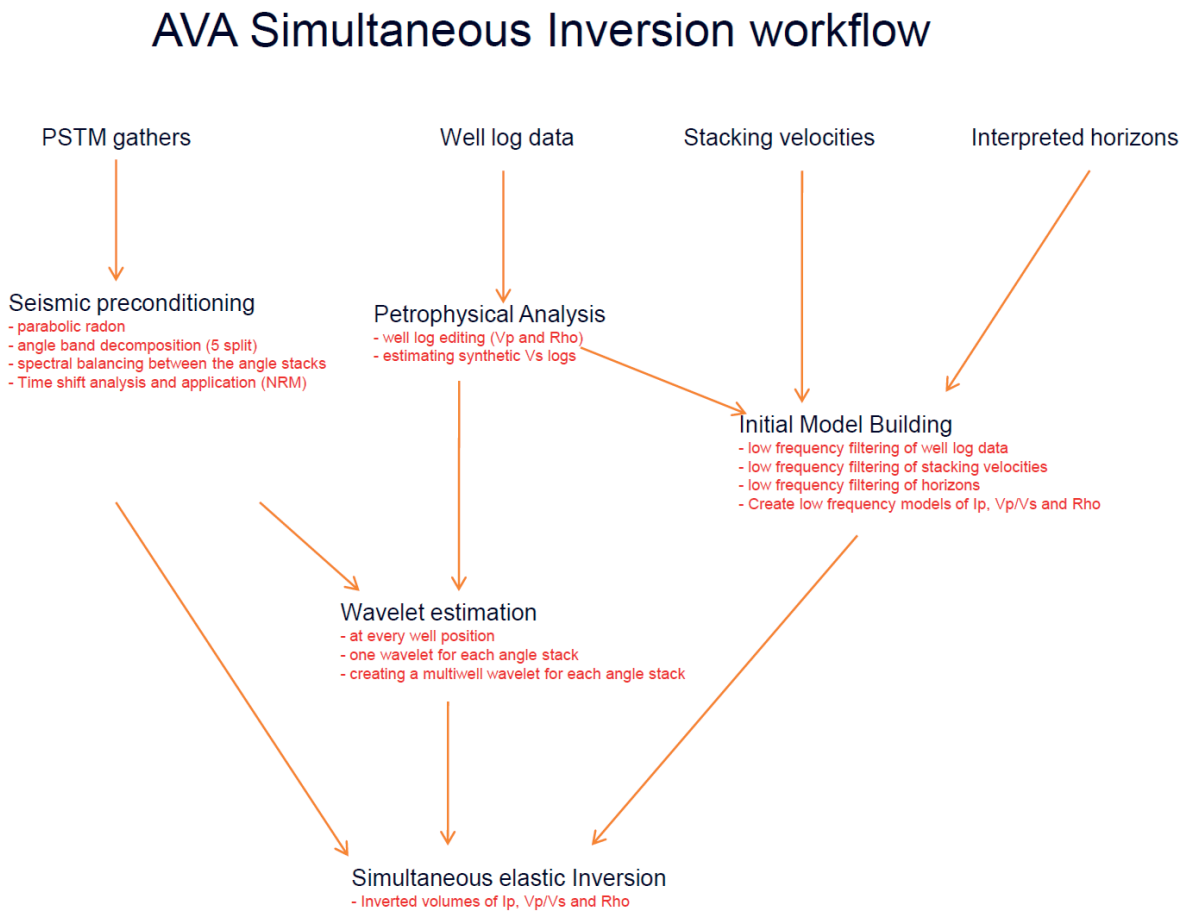


Fig. 2.11 AVA Inversion workflow

3 PROSPECT EVALUATION

3.1 Naustaksla

The Naustaksla Prospect is a rotated fault block with Triassic strata truncated by BCU, see Fig. 3.1. The prospect is defined by a three-way structural closure, bounded to the north and east by a fault complexes that form the boundaries of Frøya High.

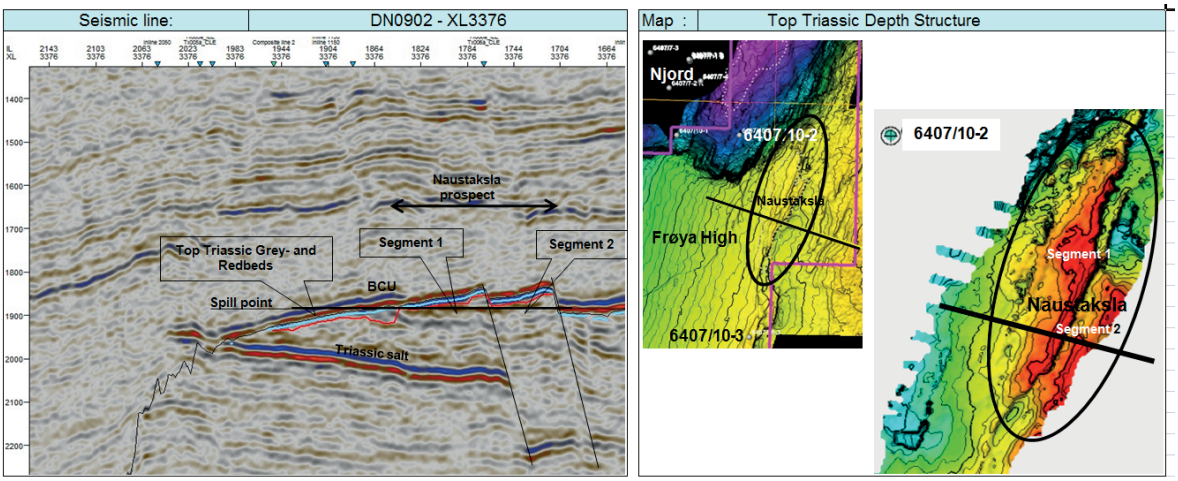


Fig. 3.1 Seismic cross section of Naustaksla

Dating of the Triassic section is uncertain, but it is assumed that Triassic Grey Beds is the main reservoir section in the Naustaksla Prospect Fig. 3.2

The 6407/10-3 well tested the fault block in 1992. Depth maps were derived from 2D seismic data. Detailed interpretation of 3D seismic data (DN0902) indicates that the well was drilled just outside closing contour. Thus, there are reasons to believe that the well missed the HC column in Naustaksla, Fig. 3.3.

The inversion study indicates a low impedance section at the crestal part of Naustaksla and hints of a HC contact is also seen Fig. 3.4

In Table 3.1 some of the key data for Naustaksla are presented and Fig. 3.5 shows the recoverable volumes and chance of success.

In the risking process Seal presence was set to 0.6, while Reservoir quality was set to 0.7 and Reservoir presence was set to 0.9. This gave a total P(Technical)=0.38.
Recoverable volumes are calculated to 3.3×10^6 Sm^3 OE (P(50)).

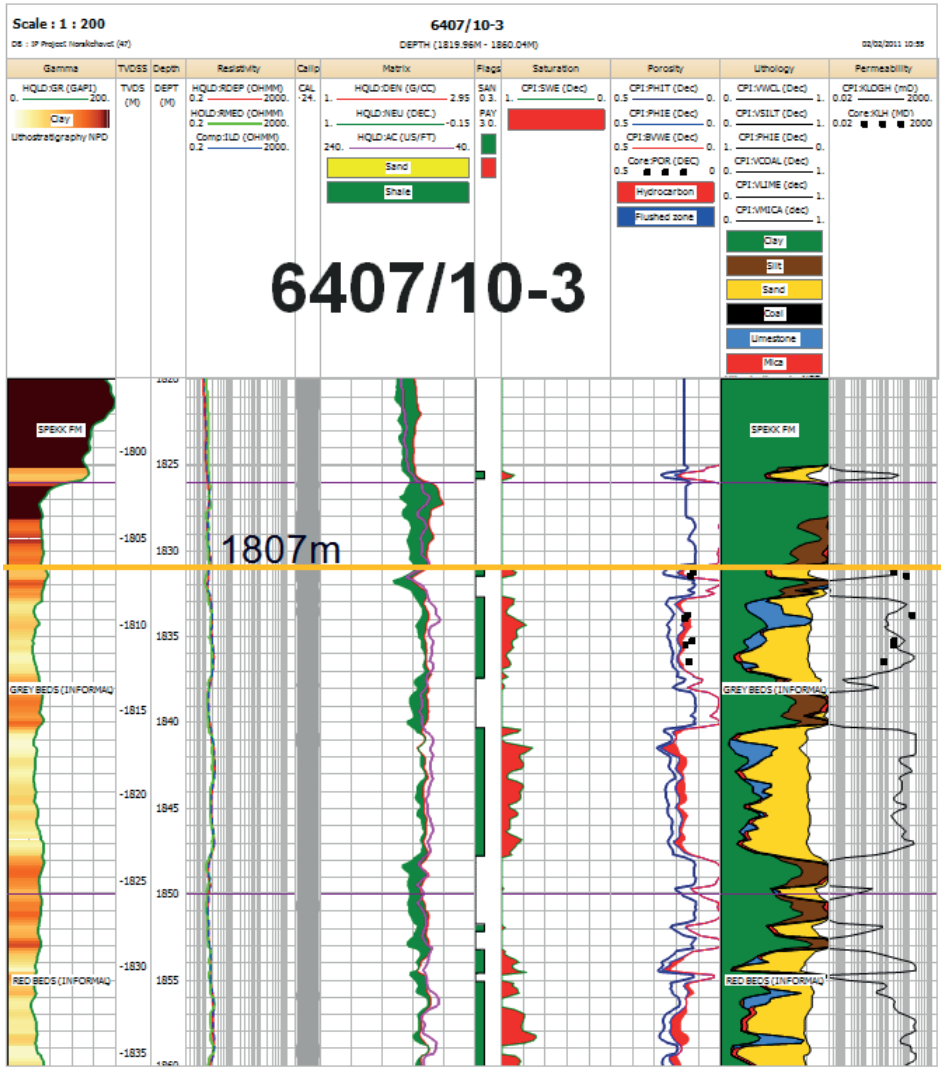


Fig. 3.2 Well 6407/10-3 with log data

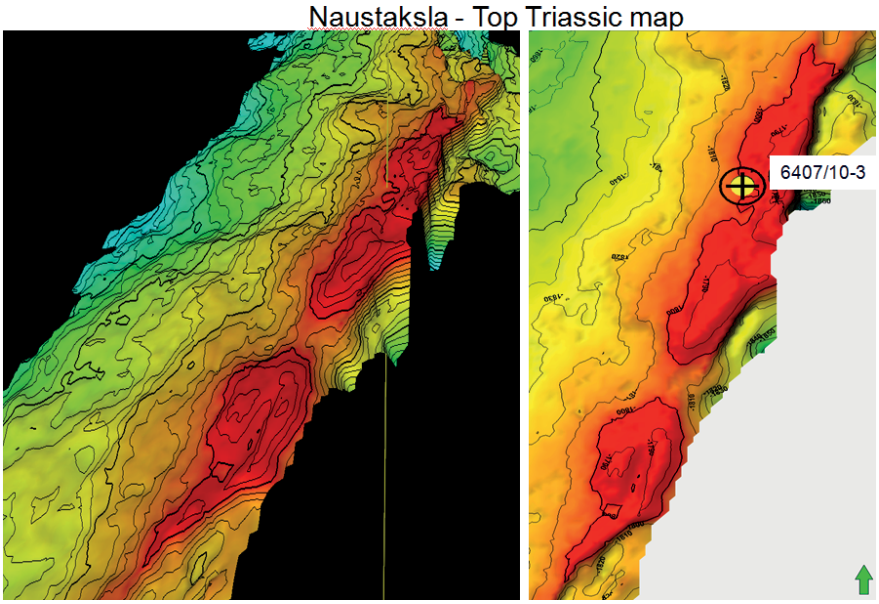


Fig. 3.3 Naustaksla struture with well 6407/10-3

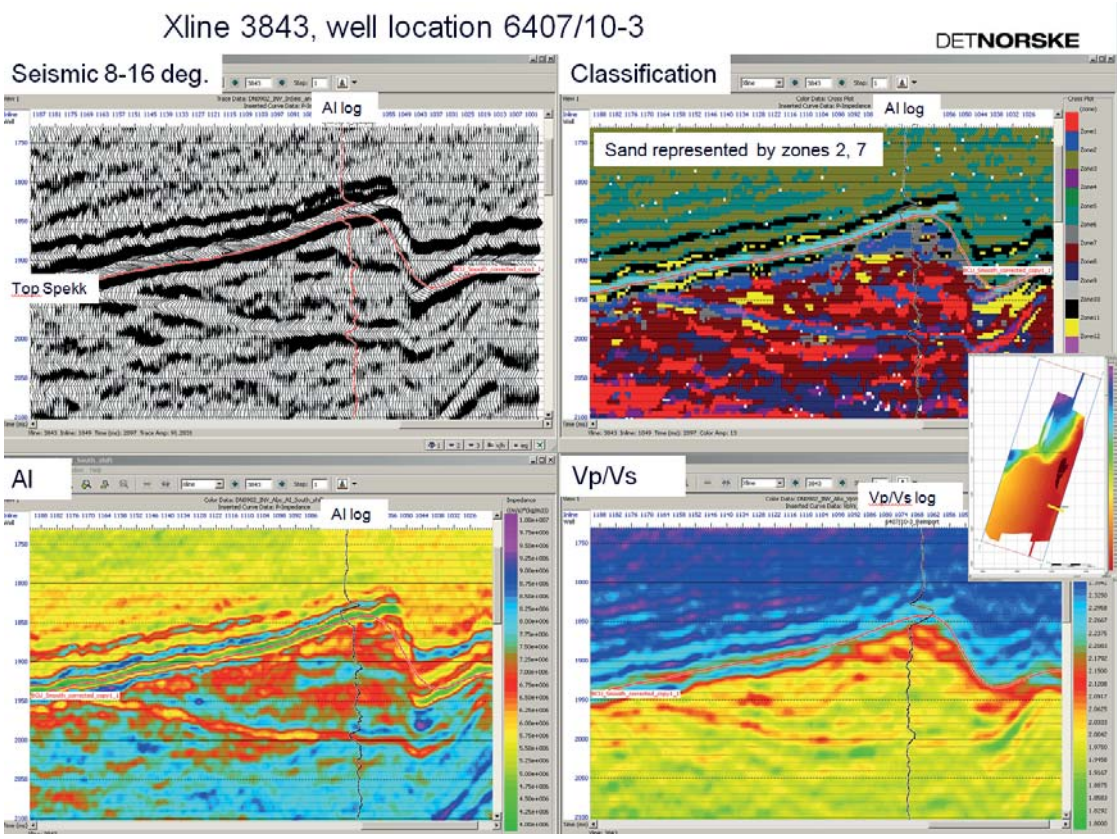


Fig. 3.4 Inversion of seismic dat aacross Naustaksla

Table 3.1 Naustaksla reservoar parameters, risk and reserves

Resources IN PLACE and RECOVERABLE Volumes, this case		Main phase Low (P90)	Base, Mode	Base, Mean	High (P10)	Associated phase Low (P90)	Base, Mode	Base, Mean	High (P10)
In place resources	Oil [10^6 Sm^3] (>0.00)	10,30	12,05	12,35	14,48	0,00	0,00	0,00	0,00
	Gas [10^9 Sm^3] (>0.00)	0,00	0,00	0,00	0,00	0,36	0,49	0,49	0,64
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	2,41	3,14	3,10	3,85	0,00	0,00	0,00	0,00
	Gas [10^9 Sm^3] (>0.00)	0,00	0,00	0,00	0,00	0,14	0,18	0,21	0,29
Reservoir Chrono (from)		Reservoir litho (from)		Source Rock, chrono primary		Source Rock, litho primary		Seal, Chrono	
Reservoir Chrono (to)		Reservoir litho (to)		Source Rock, chrono secondary		Source Rock, litho secondary		Seal, Litho	
Probability [fraction]									
Technical (oil + gas + oil & gas case) (0.00-1.00)	0,38	Oil case (0.00-1.00)	0,38	Gas case (0.00-1.00)	0,00	Oil & Gas case (0.00-1.00)	0,00		
Reservoir (P1) (0.00-1.00)		Trap (P2) (0.00-1.00)		Charge (P3) (0.00-1.00)		Retention (P4) (0.00-1.00)			
Parametres:	Low (P90)	Base	High (P10)	Comments					
Depth to top of prospect [m MSL] (> 0)									
Area of closure [km^2] (> 0.0)									
Reservoir thickness [m] (> 0)									
HC column in prospect [m] (> 0)									
Gross rock vol. [10^9 m^3] (> 0.000)									
Net / Gross [fraction] (0.00-1.00)	0,50	0,54	0,59						
Porosity [fraction] (0.00-1.00)	0,16	0,17	0,18						
Permeability (mD) (> 0.0)									
Water Saturation [fraction] (0.00-1.00)									
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0,09	0,91	0,93						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	30	40	50						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,22	0,25	0,28						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0,35	0,42	0,50						
Recov. factor, gas main phase [fraction] (0.00-1.00)									

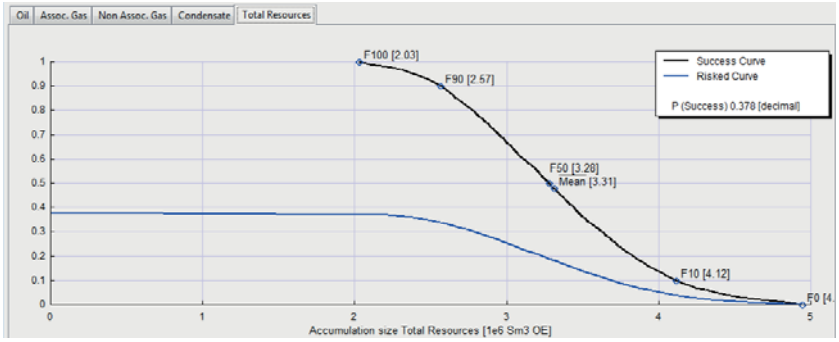


Fig. 3.5 Naustaksla recoverable volumes and risk

3.2 Knyken

Interpretation of the 3D seismic data DN0902 gave new insight into the prospectivity of Frøya High. The horison interpreted to be base reservoir in the Knyken prospect proved to be a peg leg, Fig. 3.6, but it was not until reprocessed seismic data (DN0902NR12) arrived that all partners agreed that Knyken ceased to excist as a Prospect, Fig. 3.7.

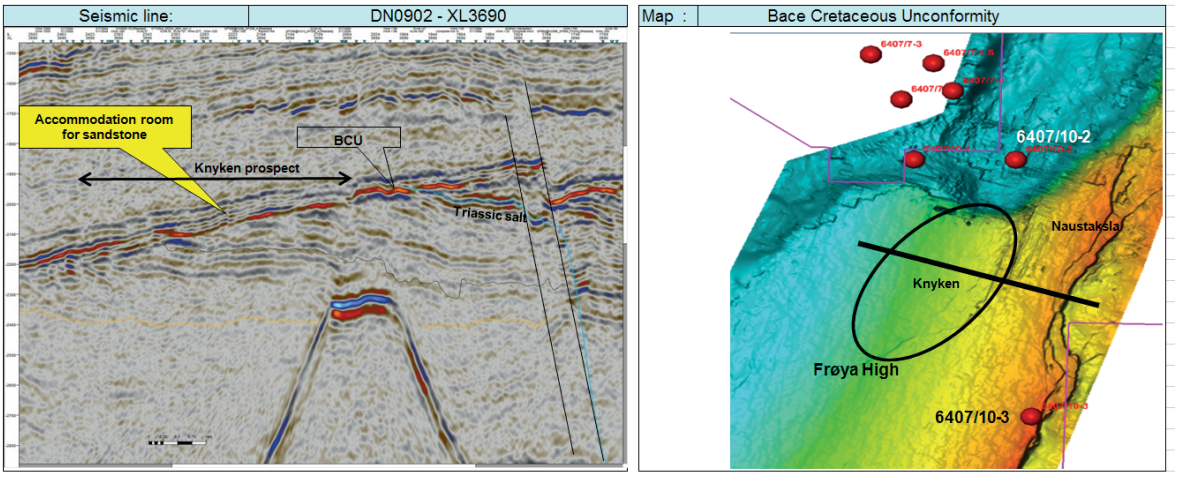


Fig. 3.6 GeoSeismic cross section of Knyken prospeect

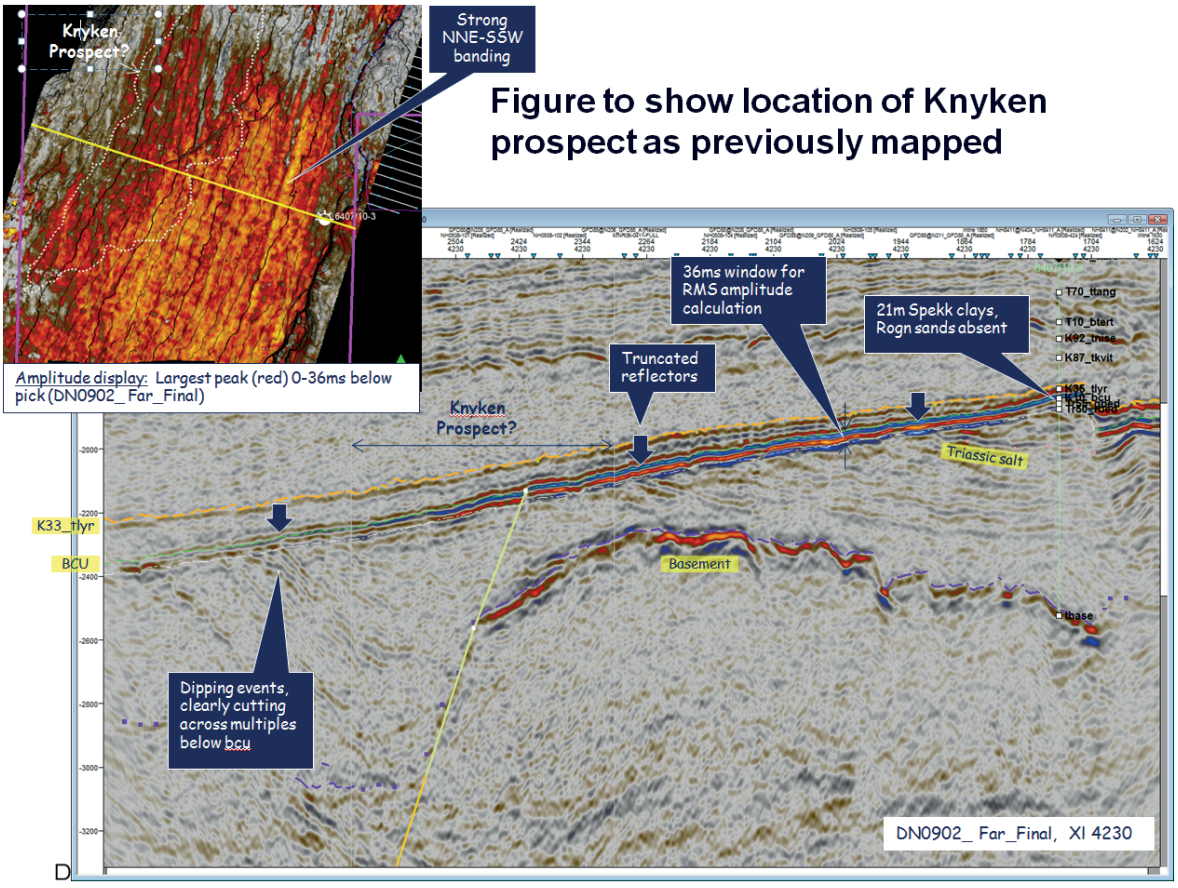


Fig. 3.7 Knyken prospect as previously mapped

3.3 Storhaugen

The Storhaugen Prospect is defined by a stratigraphic pinchout of sandbodies in Rogn formation. The prospect is located to the south of Gimsan Basin and downdip of the Njord field and wells 6407/10-1 and 2. Fig. 3.8 .

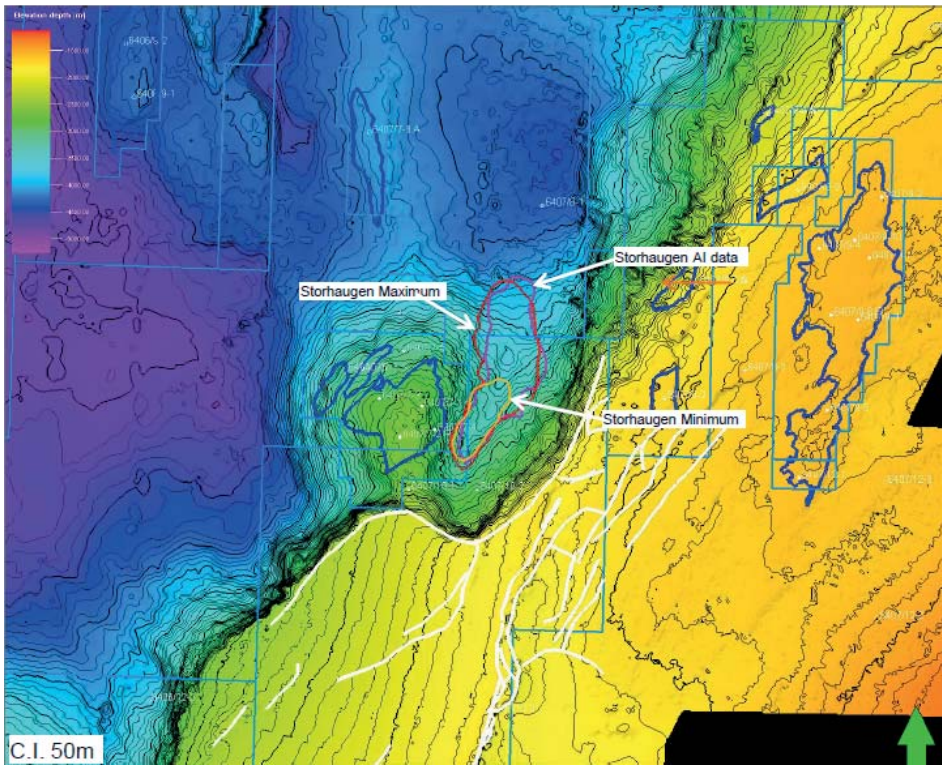


Fig. 3.8 Storhaugen prospect shown on BCU depth map

As these two wells have penetrated possible reservoir units in Rogn and Melke formations with hydrocarbon shows, it is likely that sandbodies of same age is located downdip further north, close to the Gimsan Basin, which is known to be a source of live hydrocarbons.

Three prospect cases were considered, see Fig. 3.9:

Storhaugen minimum - Lower part of Upper Jurassic wedge
Storhaugen maximum - Total thickness of Upper Jurassic wedge
Storhaugen medium - High acoustic unit within Upper Jurassic wedge based on AI data (See Fig. 3.10)

As all cases depend on sealing capasity updip towards west, south and east, sealing was the highest risk for all three cases.

The Storhaugen minimum and medium have been risked with COS=15.6%, while Storhaugen max came out with COS=5.6%.

In Table 3.2 some of the key data for Storhaugen are presented.

The volume and risk graphs are presented in Fig. 3.11. These graphs indicate a fairly high potential on recoverable volumes. As the risk is high, no drilling proposal was made.

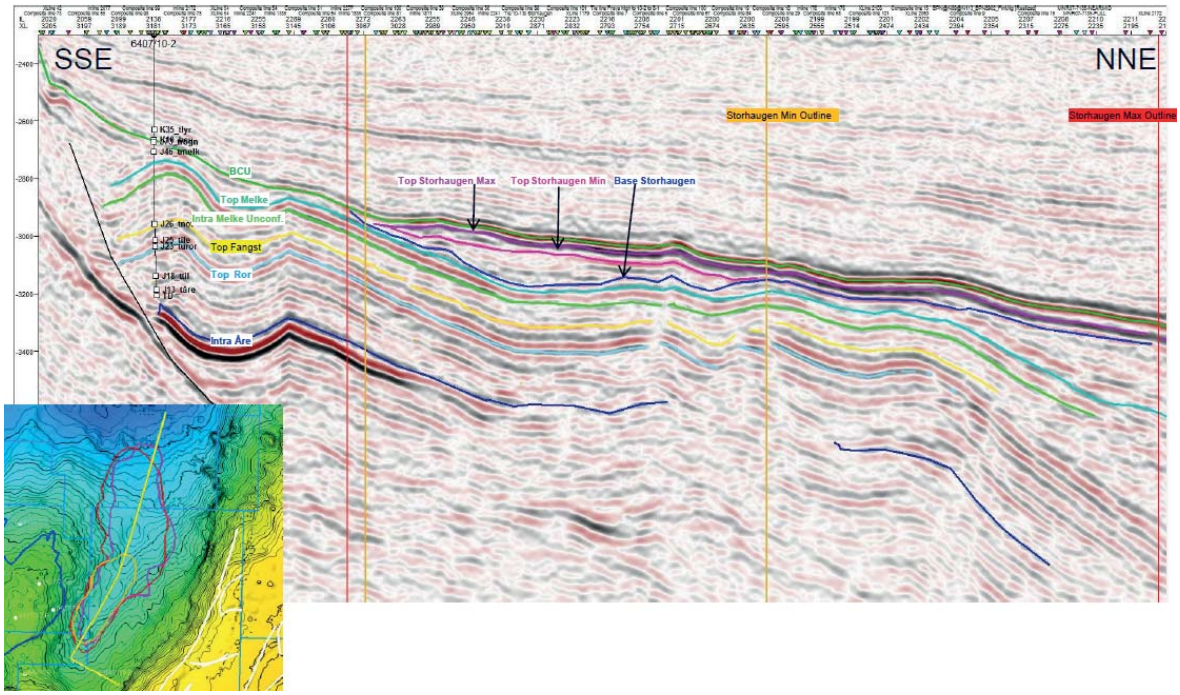


Fig. 3.9 Seismic section with outline of three cases

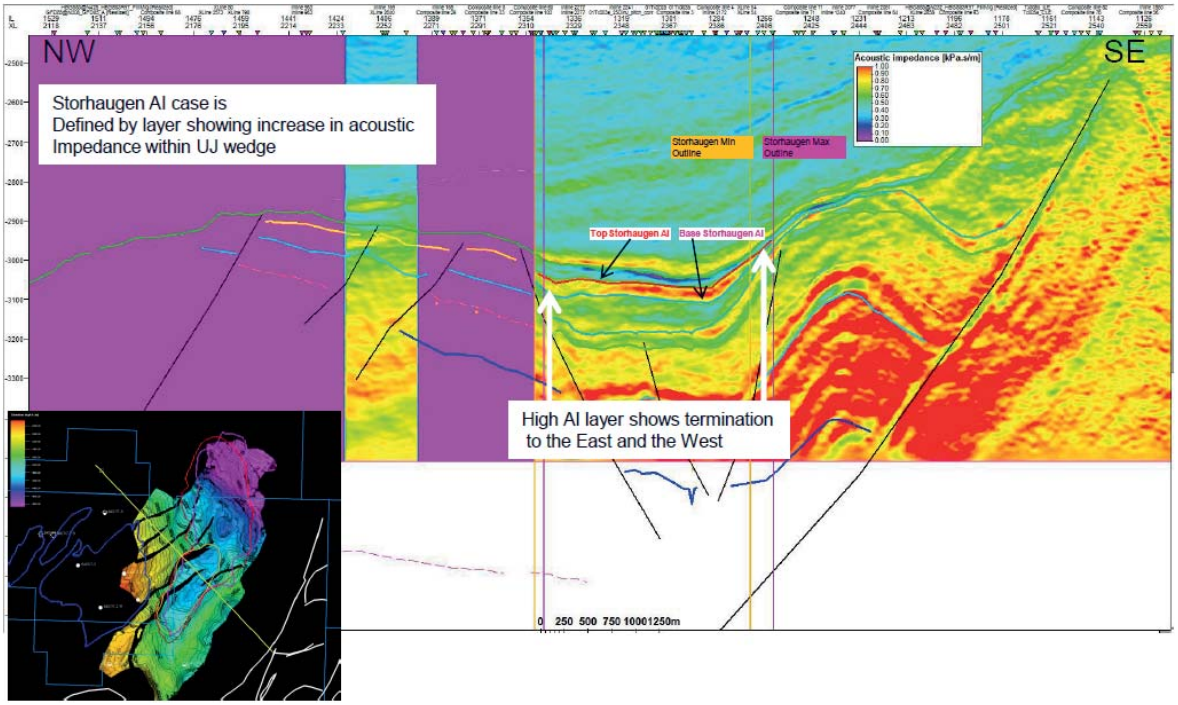


Fig. 3.10 AI data across Storhaugen

Table 3.2 Storhaugen reservoir parameters, risk and reserves

Resources IN PLACE and RECOVERABLE Volumes, this case		Main phase Low (P90)	Base, Mode	Base, Mean	High (P10)	Associated phase Low (P90)	Base, Mode	Base, Mean	High (P10)
In place resources	Oil [10^6 Sm^3] (>0.00)	2,49	4,49	10,14	21,60	0,00	0,00	0,00	0,00
	Gas [10^9 Sm^3] (>0.00)	0,00	0,00	0,00	0,00	0,15	0,24	0,61	1,30
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	0,87	1,46	3,55	7,56	0,00	0,00	0,00	0,00
	Gas [10^9 Sm^3] (>0.00)	0,00	0,00	0,00	0,00	0,05	0,06	0,21	0,45
Reservoir Chrono (from)		Reservoir litho (from)		Source Rock, chrono primary		Source Rock, litho primary		Seal, Chrono	
Reservoir Chrono (to)		Reservoir litho (to)		Source Rock, chrono secondary		Source Rock, litho secondary		Seal, Litho	
Probability [fraction]									
Technical (oil + gas + oil & gas case) (0.00-1.00)	0,16	Oil case (0.00-1.00)	0,16	Gas case (0.00-1.00)	0,00	Oil & Gas case (0.00-1.00)	0,00		
Reservoir (P1) (0.00-1.00)		Trap (P2) (0.00-1.00)		Charge (P3) (0.00-1.00)		Retention (P4) (0.00-1.00)			

Parametres:	Low (P90)	Base	High (P10)	Comments
Depth to top of prospect [m MSL] (> 0)				
Area of closure [km^2] (> 0.0)				
Reservoir thickness [m] (> 0)				
HC column in prospect [m] (> 0)				
Gross rock vol. [10^9 m^3] (> 0.000)				
Net / Gross [fraction] (0.00-1.00)	0,29	0,47	0,66	
Porosity [fraction] (0.00-1.00)	0,14	0,17	0,20	
Permeability [mD] (> 0.0)				
Water Saturation [fraction] (0.00-1.00)				
Bg [Rm3/Sm3] (< 1.0000)				
1/Bo [Sm3/Rm3] (< 1.00)	0,79	0,82	0,85	
GOR, free gas [Sm^3/Sm^3] (> 0)				
GOR, oil [Sm^3/Sm^3] (> 0)	55	60	65	
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,33	0,35	0,37	
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0,27	0,35	0,43	

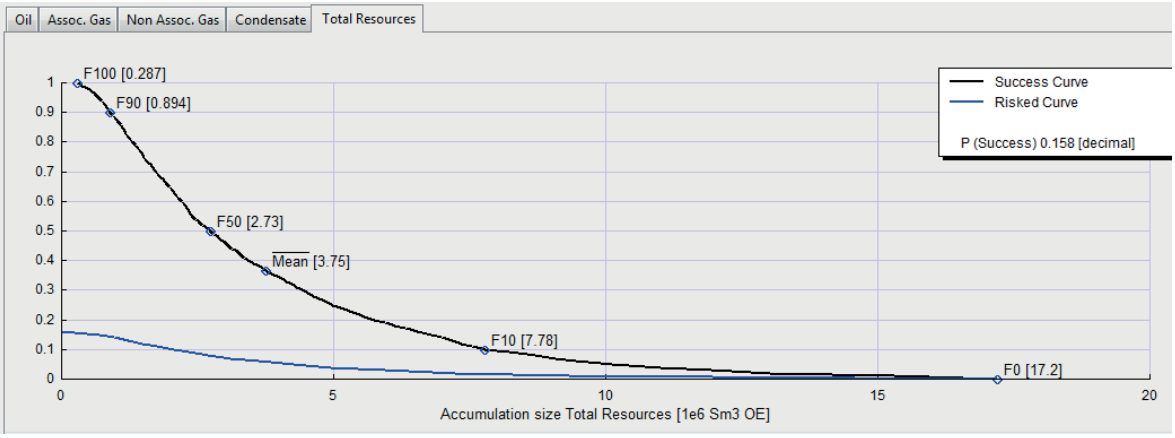


Fig. 3.11 Storhaugen recoverable volumes and risk

3.4 Kvitfjellet (Alias Blåfjellet)

Kvitfjellet (alias Blåfjellet) prospect is located in the westernmost part of PL512 Fig. 1.2. It is a well defined rotated fault block and interpreted to be of Early Permian age, Fig. 3.12. In the early phase of the license periode, both Kvitfjellet prospect and basement highs were reinterpreted. However, both dating of strata and closure to the SW is difficult with Kvitfjellet prospect. For the basement highs, reservoir rocks and migration will be very high risk. Thus, it was agreed to give priority to Naustaksla, Knyken and Storhaugen prospects as these prospects were considered to have a higher potential and less risk.

Even so, in 2012 a special study was undertaken to obtain a better understanding of basement prospectivity and Paleozoic strata. (See section 2.3).

The study was presented to the partners and used to support a proposal from the Operator to apply for an extension of the license periode. This proposal was not supported by a majority in PL512.

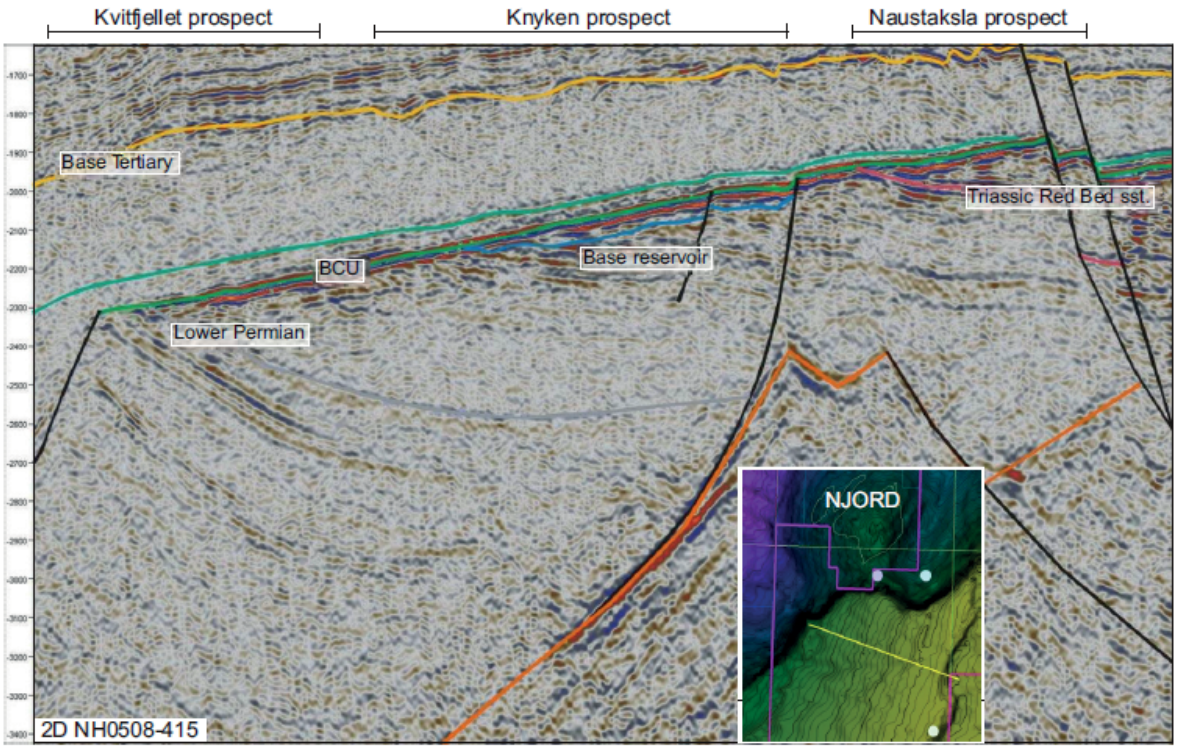


Fig. 3.12 Lower Permian rotated fault block

4 REMAINING PROSPECTIVITY

The partners never disagreed on the prospectivity in PL512, but in spite of two extension periods, new seismic data including reprocessing and several studies, none of the partners ever made a proposal on a drilling target.

Naustaksla was always highest ranked on risk (P(Technical)=38%). Because of limited upside volumes, it was ruled out as a drilling target.

Knyken had strong believers for a long time, but with reprocessed seismic data in hand all partners agreed that accomodation room for Upper Jurassic sandbodies was ruled out.

Storhaugen was the prospect a majority in PL512 considered to have the highest potential. Two wells, 6407/10-1 and -2, had proven reservoir sections in Melke and Rogn formations with indications of HC shows.

Det norske's semiregional study supported the theory that significant quantities of sand were shed off the Frøya High and transported into the Storhaugen depression, and studies of the hydrocarbon system gave reasons to believe in substansial flux of live hydrocarbons into the prospect from the Gimsan Basin.

Thus, the main risk for Storhaugen was Seal. Several models were discussed and tested to see if this risk element could be eliminated. However, neither reprocessed seismic data (including reprocessed) nor inverted cubes and attribute plots gave support to a reservoir unit without updip fingering and/or thiefsands.

This ment that the partnership agreed upon a high risk prospect but with a reasonable volume potential.

Table 4.1 is showing the expected recoverable reserves for remaining prospectivity in PL512.

Table 4.1 Gross Recoverable Resources PL512

PL 512					GROSS RECOVERABLE RESERVES / RESOURCES					
					Low		Base		High	
CATEGORY	RESERVOIR LEVEL	HC	RF (%)	POS (%)	Oil (MSm^3)	Gas (GSm^3)	Oil (MSm^3)	Gas (GSm^3)	Oil (MSm^3)	Gas (GSm^3)
PROSPECTS										
Naustaksla	Triassic Red Beds	o/g		38	2,4	0,14	3,1	0,2	3,8	0,29
Storhaugen	Rogn Fm. (Kimm.)	o/g		16	0,8	0,05	3,5	0,21	7,4	0,45