PL 673 RELINQUISHMENT REPORT

A COMPANY IN THE VNGGROUP

VNG Norge

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1 Key licence history

The production license 673, located in the Block 16/1 in the North Sea (Fig. 1.1), was awarded to VNG Norge AS and Lundin Norway AS February 8th 2013. VNG was the operator with participation share of 40 % and Lundin 60 %. The initial work period was seven years with first phase of two years until drill or drop decision in February 8th 2015. The work obligation was to reprocess 3D seismic dataset within the two year first phase. The licensees applied for one year extension of the initial period deadlines October 20th 2014, and it was granted in December 10th of 2014 resulting in a new deadline for the drill or drop decision on 8th February 2016. The licence meetings held are listed in Table 1.1.

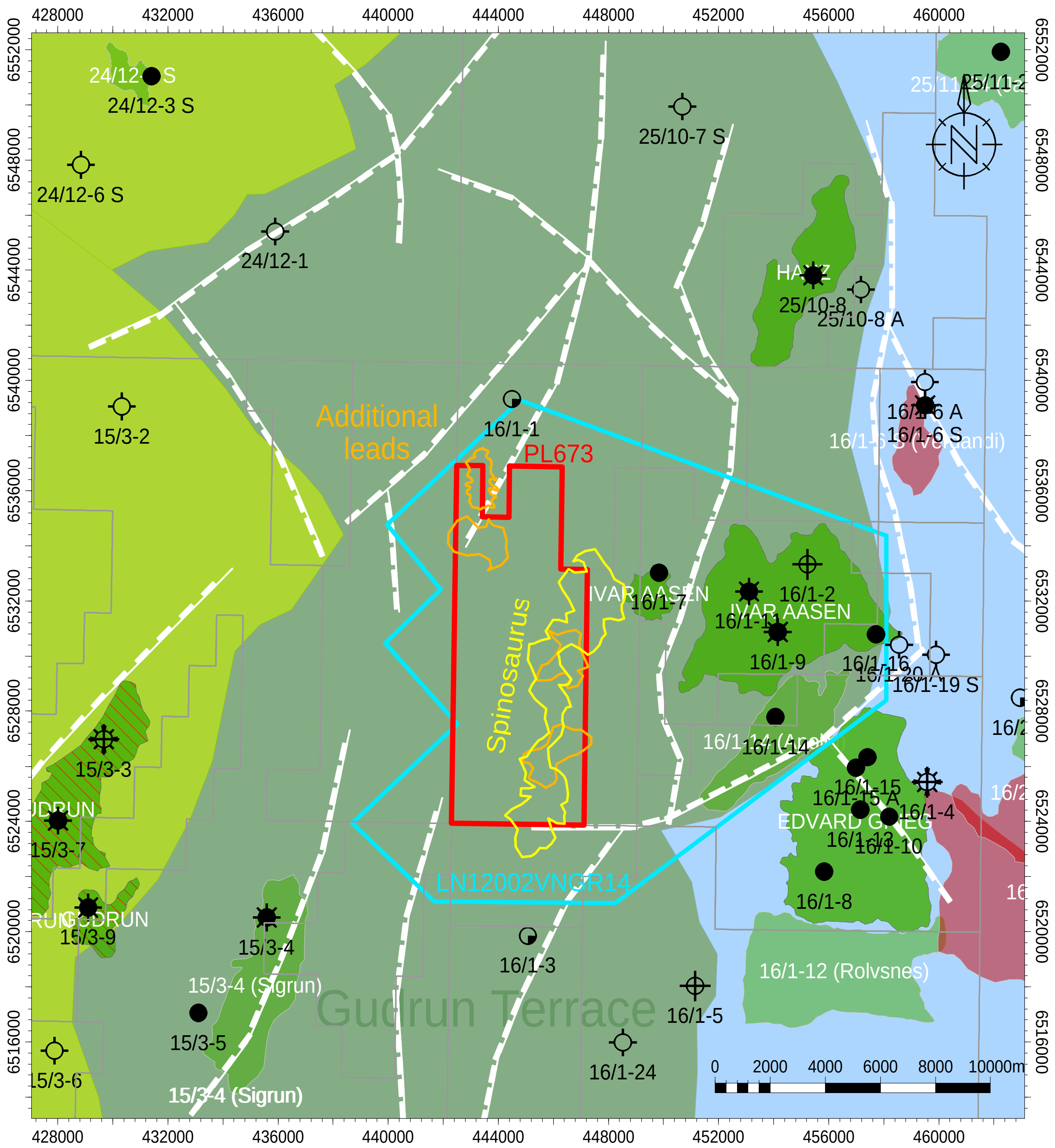

Fig. 1.1 Location map

A map showing the location of the PL673 license, the Spinosaurus prospect and additional leads as well as the outline of the reprocessed seismic

Table 1.1 Committee meetings held in PL 673

Date	Management Committee (MC) Meeting	Exploartion Committee (EC) Meeting
March 12th 2013	MC No 1	EC No 1
November 19th 2013	MC No 2	EC No 2
March 18th 2014		Informal EC
June 2nd 2014	MC No 3	EC No 3
October 27th 2014	MC No 4	EC No 4
June 18th 2015		EC No 5
October 28th 2015	MC No 5	EC No 6

Work Program

The license work program was as follows:

1. Within two years from award reprocess 3D seismic.
2. Within two years from award make the decision to drill an exploration well or drop the license.
3. Within four years from award make a decision about concretization (BOK)
4. Within six years from award make a decision about continuation (BOV)
5. Within seven years from award submit a plan for development (PDO)

At the request of the license group the 3D seismic dataset LN12002 was reprocessed by CGG between October 2013 and June 2014 delivering the 3D dataset LN12002_VNGR14. Key objectives for the reprocessing were to improve the multiple attenuation, improve the velocity model and reduce noise in the final image. The data was processed through two separate migration methods, Amplitude preserving controlled beam migration and Kirchoff pre stack depth migration. These data have been loaded to Diskos.

The conclusion of the technical evaluation of the hydrocarbon potential in the license is that the probabilty of discovering economical resources is low. The licensees, therefore decided not to drill an exploration well and to surrender the license.

2 Database

The license database comprised all released wells in the area including the Wells 16/1-14, -15, -16, -19, -20 and 25/10-11. The Wells 16/1-16,-19 and -20 added valuable information about Åsgard Formation sands presence and quality.

LN12002VNGR14 was used for the seismic interpretation over the prospect. This was a reprocessing of approximately 200 km^2 of the LN12002 seismic 3D dataset as described in the previous section (Fig. 1.1). The polarity for the zero phase seismic data set is SEGY reverse, a downward increase in acoustic impedance results in a negative event. The final result showed a significant improvement in the resolution of reflectors beneath the chalk and a reduction in the low frequency multiples which masked the image in the original processing. However, challenges remain and the reprocessed data still has high frequency noise in the near traces as well as multiples at the reservoir depth. These issues are due to irregularities in the shallower section, particularly injectites in the Palaeocene and the high acoustic impedance contrast across the chalk.

Throughout this document a downward increase in relative acoustic impedence (hard event) is shown in black and a decrease is shown in white.

Studies

Since the proposed reservoir model with deep marine sand deposits in the Åsgard Formation not had been proven in the area, there was assumed a medium play risk on the reservoir model. In order to reduce the risk on the reservoir model a study of sedimentology, petrography and reservoir properties of the Åsgard Formation has been conducted by (Baunack, 2015). Cores from the Wells 16/1-12, -13, - 14 T2, -15 and -15 AT2 have been described and 29 thin sections, provided by partner Lundin, from wells 16/1-14 T2, 16/1-15 and 16/1-15 AT2 have been interpreted.

In summary, it is suggested a prograding delta depositional model for the Åsgard Formation sandstones sourced from the Utsira High. Furthermore, it is suggested that deep marine gravity flow sediments derived from the delta might have been deposited down dip further to the west.

A regional biostratigraphy study by Ichron limited (Ichron 2014) was used to ensure consistent biostratigraphic interpretation between wells and increase confidence in correlation across the area.

3 Review of geological framework

PL 673 is situated in the Viking Graben on the one of sub terraces of the Gudrun Terrace with the Vilje Sub-basin to the West. The Utsira High on the Horda Platform is to the East of the license. The geology of the area shows an overall transgression from fluvial systems of the Triassic Skagerrak formation, through the shallow marine sequences of the middle Jurassic Hugin Formation which are drowned as rifting commences, giving way to deeper marine systems across much of the area in the Late Jurassic and Cretaceous. A generalised stratigraphic section is shown in Fig. 3.2. Despite this general trend, the Utsira High remained a positive feature and a source of clastic sediment into the Cretaceous. The Mosterøy prospect was developed based on the concept that thin shallow marine, Lower Cretaceous sediments to the west of the Utsira High have a deep marine equivalent further out in the basin.

Fig. 3.1 shows a regional section from Ivar Aasen Field in the East, across the Gudrun Terrace, through PL 673 and over to the Gurdrun Field in the West. Seismic amplitude data from the PGS megamerge dataset is shown in the background. A downward increase in acoustic impedance (hard event) is shown in black whilst and increase is shown in white.

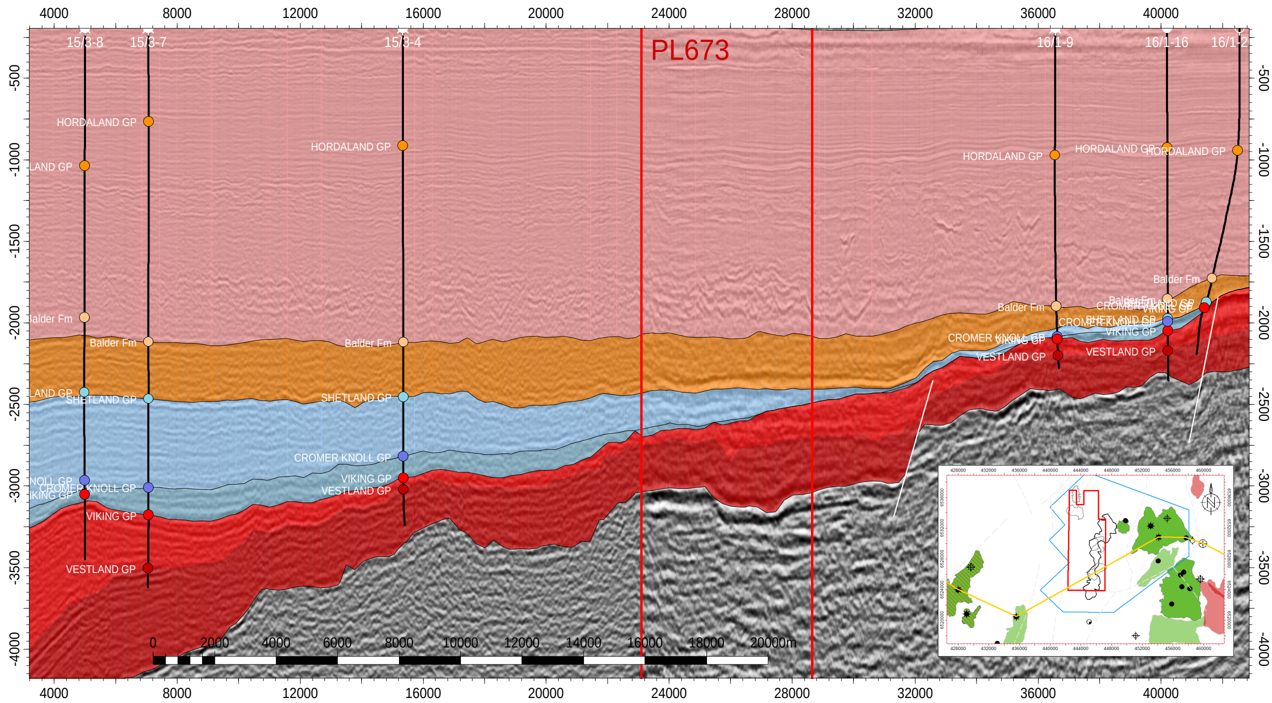

Fig. 3.1 Regional section

A regional section from Gudrun Field in the west over the Gudrun Terrace and PL673 to Ivar Aasen Field and the Utsira High in the east

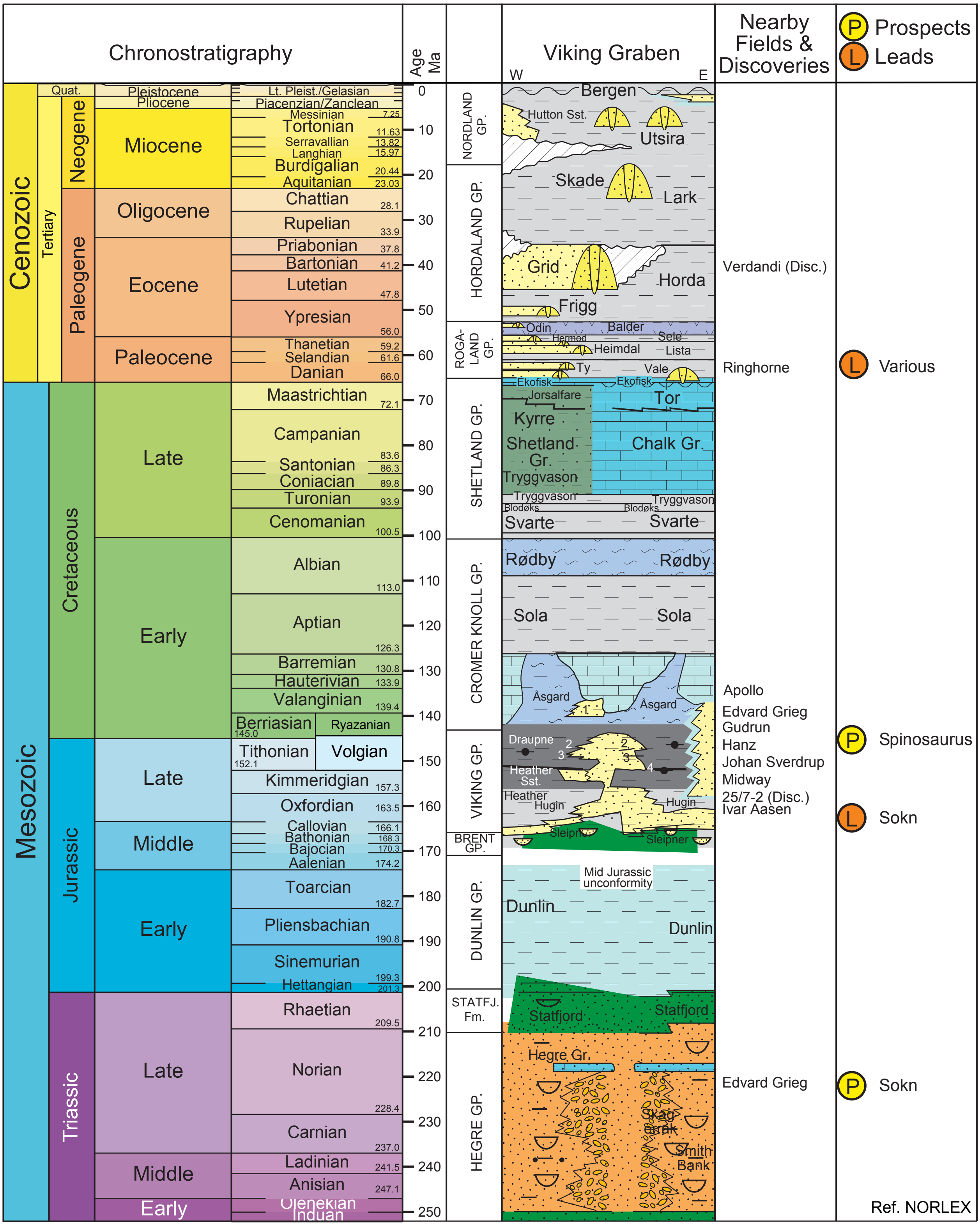

Fig. 3.2 A regional stratigraphic section

The relative position of the Spinosaurus prospect and nearby discoveries in the stratigraphic section

Several seismic horizons and faults have been mapped with varying degree of confidence level (Table 3.1). A typical section through the license is shown in Fig. 3.3. The background in this figure is a phase shifted version of the seismic amplitude data approximating to acoustic impedence. Hard layers are shown in dark colours in this data whilst soft layers are shown in light colours.

Table 3.1 Horizons interpreted, relative acoustic impedance response and interpretation confidence level.

Horizons	Relative acoustic impedance response	Confidence level
Seabed	increase	high
Intra Skade Fm	increase	high/medium
Top Balder Fm	decrease	medium
Top Sele Fm	decrease	medium
Near top Lower Lista Fm	decrease	medium
Top Shetland Gp	increase	high
Near top Åsgard Fm	increase	low/medium
Base Cretaceous Unconformity	decrease	high
Intra Heather Fm	increase	high/medium
Near top Vestland Gp	decrease	low
Near top Triassic	decrease	high/medium
Intra Triassic	increase	high/medium
Near top Permian	increase	high

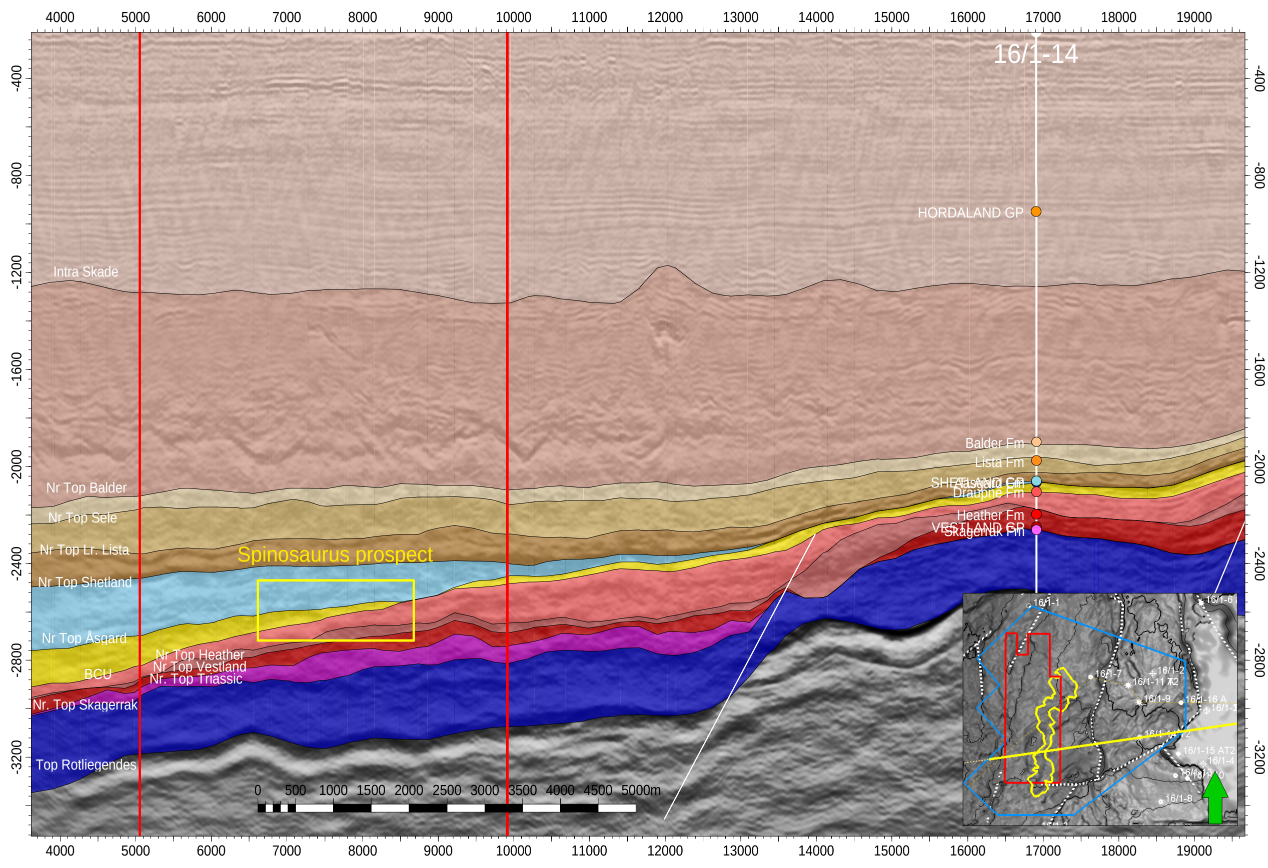

Fig. 3.3 Section through the license

A detailed section through the license showing the horizons mapped on seismic and highlighting the Spinosaurus prospect

Velocity model

A new semi-regional velocity model was constructed based on available well data. This new model was needed to determine possible contacts and spillpoints in a part of the stratigraphy affected by high velocity intervals. In short, the methodology was designed to optimise fit to the available well data whilst minimising extrapolation to avoid creating artificial structure in depth. Velocity contrasts from wells were used to create velocity zones. A single constant velocity (or a constantly increasing velocity with depth) was then estimated for each zone, based on all of the well data. Even with this simple velocity model it proved possible to match most of the wells to within a few tens of metres. Local corrections around the wells were then applied, quality checked and smoothed. This velocity model was then used to depth convert the time interpretations for generating depth structure maps, isopach thickness maps and volume input to GeoX.

Fig. 3.4 shows the measured velocities at the well location in green (calculated fron the sonic log) together with the velocities from the velocity model at the well locations. Trends within each of the layers identified are relatively consistent and the model is a fair representation of the measured velocities as well as providing a good match at the well tops.

- Datum to seabed, v = 1480 m/s
- Seabed to Top Balder Fm, v = 1695 m/s + 0.4 x Z
- Top Balder Fm to Top Shetland Gp, v = 254 m/s + 1.15 x Z
- Top Shetland Gp to Cromer Knoll Gp, v = 3928 m/s
- Cromer Knoll to Base Cretaceous Unconformity (BCU), v = 3349 m/s
- Base Cretaceous Unconformity (Viking Gp) to Near top Vestland Gp, v = 3306 m/s
- Below Near top Vestland Gp, v = 3549 m/s

The key factor in the velocity model was the chalk layer (Top Shetland Group to Cromer Knoll Group) which, due to its high velocity, greatly influenced how the deeper stratigraphy was positioned in depth.

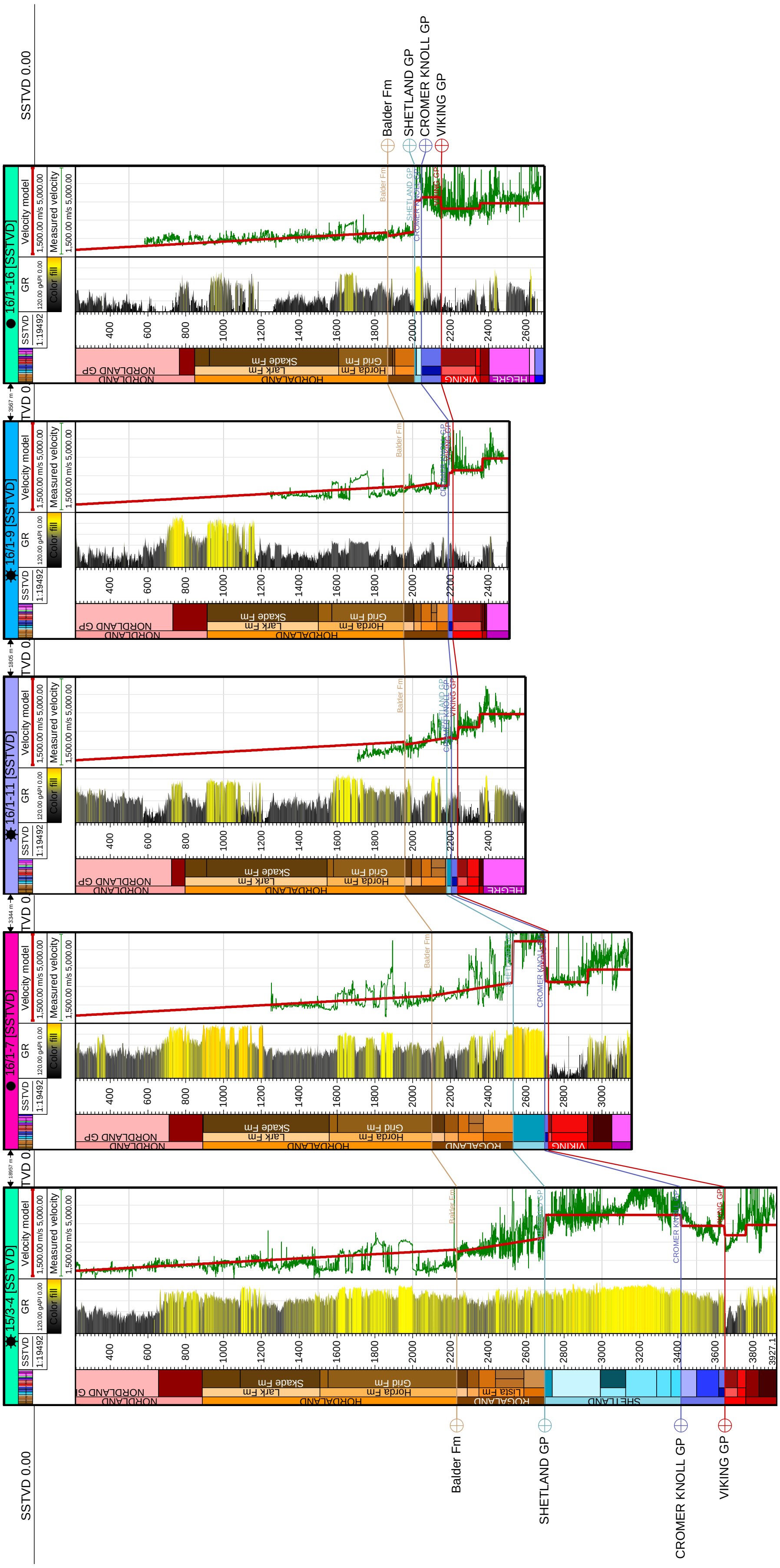

Fig. 3.4 Modelled seismic velocities

Measured velocities (calculated from sonic log) versus modelled velocities at well locations

Hydrocarbon plays

There are mapped potential hydrocarbon reservoir sandstones in the lithostratigraphic units Skagerrak Formation, Vestland Group, Draupne Form, Åsgard Formation, Lista Formation (Heimdal Formation sandstones), Sele Formation (Hermod Formation sandstones) and Balder Formation. In the Palaeocene units the sandstones are generally widespread in the west and pinching out towards the Utsira High. Some low relief 4 way closures do exist though these are often small and sensitive to depth conversions. In the West of the region the thick shales of the Lower Cretaceous mean that migration is a challenge. In the Jurassic pre-rift section the existing discoveries are trapped in 4-way structural closures or stratigraphic traps based on pinchout / erosion of the reservoir units up dip. Fault seal has not been proven as an effective trapping mechanism in this area.

Upper Jurassic shales, Lower Cretaceous shales and marls, Upper Cretaceous limestones and chalks, and Lower Paleogene shales are proven to be sealing rocks for hydrocarbon accumulations in the area.

Hydrocarbon source and Migration

Upper Jurassic hydrocarbon source rocks are interpreted to be present within the oil expulsion window downdip just west of the license area. The source rocks are mapped within the license area and thickens towards the graben (Vilje Sub-basin). It is suggested that the hydrocarbons migrates through permeable rocks and fault planes from the Vilje Sub-basin and Gudrun Terrace towards the Utsira High. The many oil and gas discoveries made in reservoirs of Devonian to Paleogene age in the area prove that the hydrocarbon system works and it seems likely that the accumulations in Ivar Aasen and Edvard Grieg Fields have passed through or close to the license area. In addition, there is discovered a hydrocarbon accumulation (Apollo) in Åsgard Formation reservoir sandstones in the 16/1-14 well located updip east of the license.

4 Prospect update

The Spinosaurus prospect was developed based on the concept that thin shallow marine, Early Cretaceous sediments to the west of the Utsira High have a deep marine equivalent further out in the basin. A study of cores and thin sections in these Early Cretaceous sediments was initiated to investigate this concept (Bunack, 2015). The key findings of this study are outlined below.

The Early Cretaceous section of well 16/1-14T2, the Apollo discovery, is an important data point in the investigation of the Early Cretaceous play in this area. The cored section in this well samples the upper 2 cycles of a total of 4 cycles of approximately 15 m thick medium to coarse grained sandstone intervals, interrupted by thinner calcareous / cherty hetrolithic sections (Fig. 4.1). The hetrolithic sections contain potential karst like features and root traces, indicating subaerial exposure. The sandstones are interpreted to be deposited as high-density turbidites with belemnite fragments indicating an open water setting. A greenish colour to the sandstones has been identified using XRD techniques by Lundin to be due to ferric illite which is indicative of terrestrial influence. This ferric illite results in the apparent inversion of the gamma log with sandy sections showing the highest response and finer grained sections showing a lower response.

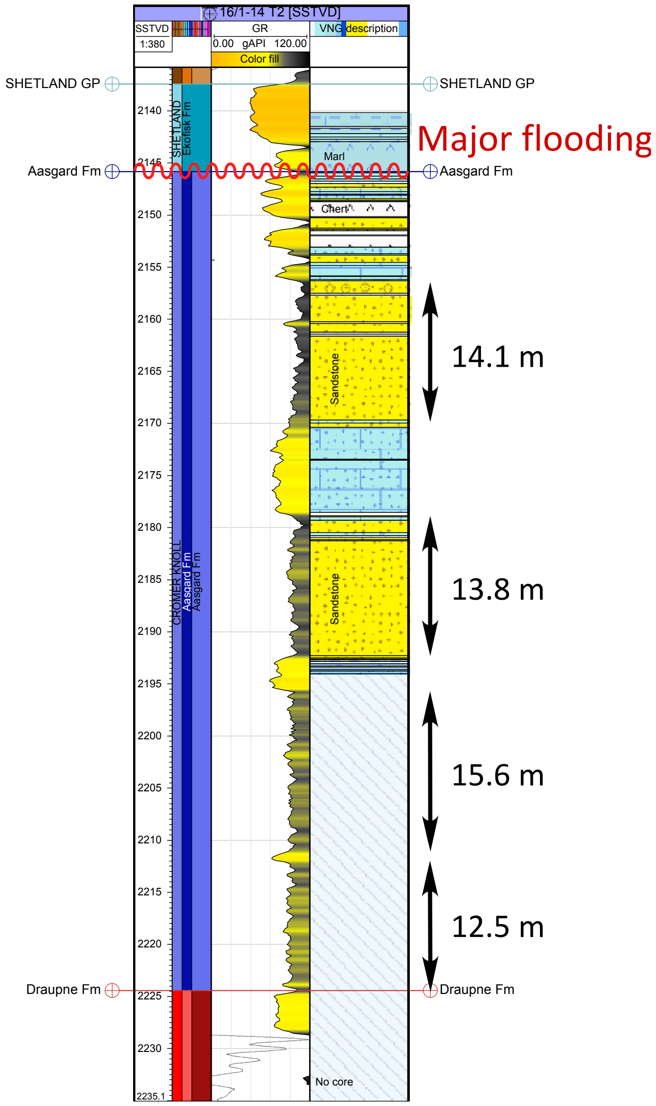

Fig. 4.1 Well 16/1-14T2 core interpretation

Gamma and porosity loga together with a core interpretation of the lower Cretaceous section in the 16/1-14T2 well

These sediments are interpreted to represent a deltaic sequence developing on the western side of the Utsira High and with the long standing Luno Graben functioning as the primary sediment conduit into this area. Hetrolithic intervals represent periods where this area of the delta is less active, either because of drowning (with clastic deposition updip) or because the delta has filled the available accommodation space, leaving the sediments subaerially exposed. Fig. 4.2 shows an image of the Luno Graben (Rønnevik and Jørstad, 2014) positioned on a map of 'edges' on the Base Triassic regional reflector to highlight the main structural elements in the area. Although the Luno Graben had been an important sediment transport route for an extended period and was probably an efficient transport system at this time, the Utsira High was also relatively flat after prolonged erosion. These factors combined ensure that relatively minor changes to the relative sea level (due to filling or subsidence) could rapidly turn on or off or the sedimentation. Periods of aerial exposure are particularly important for the Spinosaurus prospect because they represent times when accommodation on the shelf was restricted and sediments were likely to be bypassing this area to be deposited further out into the basin, possibly in the Spinosaurus area.

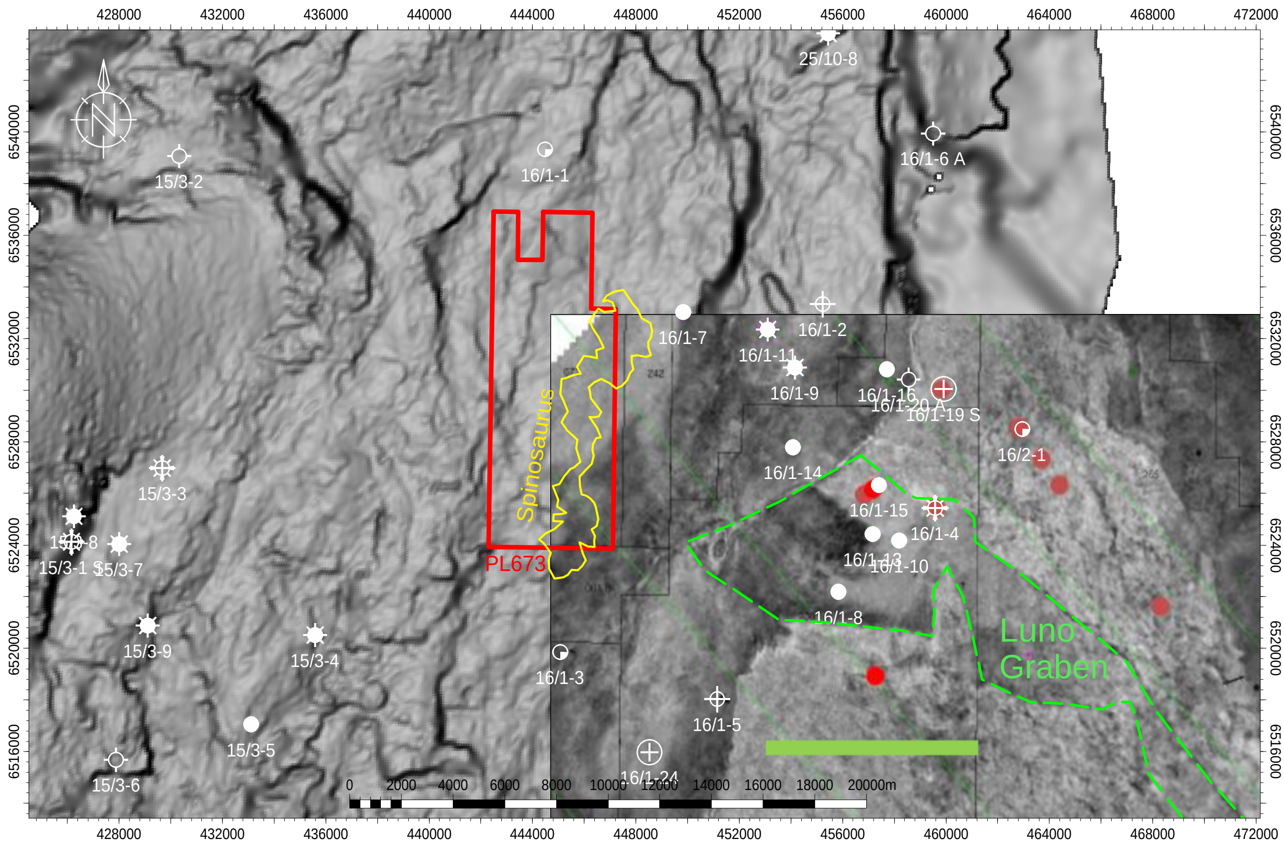

Fig. 4.2 Luno Graben

A figure showing the position of the Luno graben relative to the Spinosaurus prospect.

Reservoir geometry

Spinosaurus is a stratigraphic 3 way pinchout closure in the Lower Cretaceous succession. The maximum closure outline is elongated in the North-South direction, approximately 20 km^2 in area (Fig. 4.3). The closure is well defined to the East, South and Northeast by seismic mapping, however the closure is poorly defined to the North and there remains questions with regards to the lateral seal up dip, in the direction of sediment transport. The Åsgard Formation sediment thickness map indicates several possible sand fairways into the prospect with the main fairway being in the Southeast. This is also directly aligned with the Luno Graben and the prime candidate for sediment delivery to Spinosaurus. If this acts as a point source for sand delivery then the reservoir would be expected to shale out towards the North. A small fault towards the North of the license, stepping up to the North, is taken as the maximum extent of reservoir.

The top seal is considered to be the shales and marls of Early Cretaceous age (Barremian, Aptian, Albian) and base seal of shales of Late Jurassic age.

At the prospect location the top of Åsgard Formation reservoir sandstones is interpreted on a seismic "hard event" reflector and the base of the reservoir on a seismic soft reflector (BCU). However, it is uncertain if these reflectors represent the top and the base of the reservoir. On the terrace updip of the prospect and west of the Ivar Aasen Field terrace, the top of the Åsgard Formation sandstones was interpreted on a zero-crossing to capture seismic signatures that could represent sandstones.

The Åsgard Formation deposits varies in thickness up to 100 m within the closure (Fig. 4.3). It is expected that sandy gravity flows will follow the lows at the BCU level and be deposited in the prospect area.

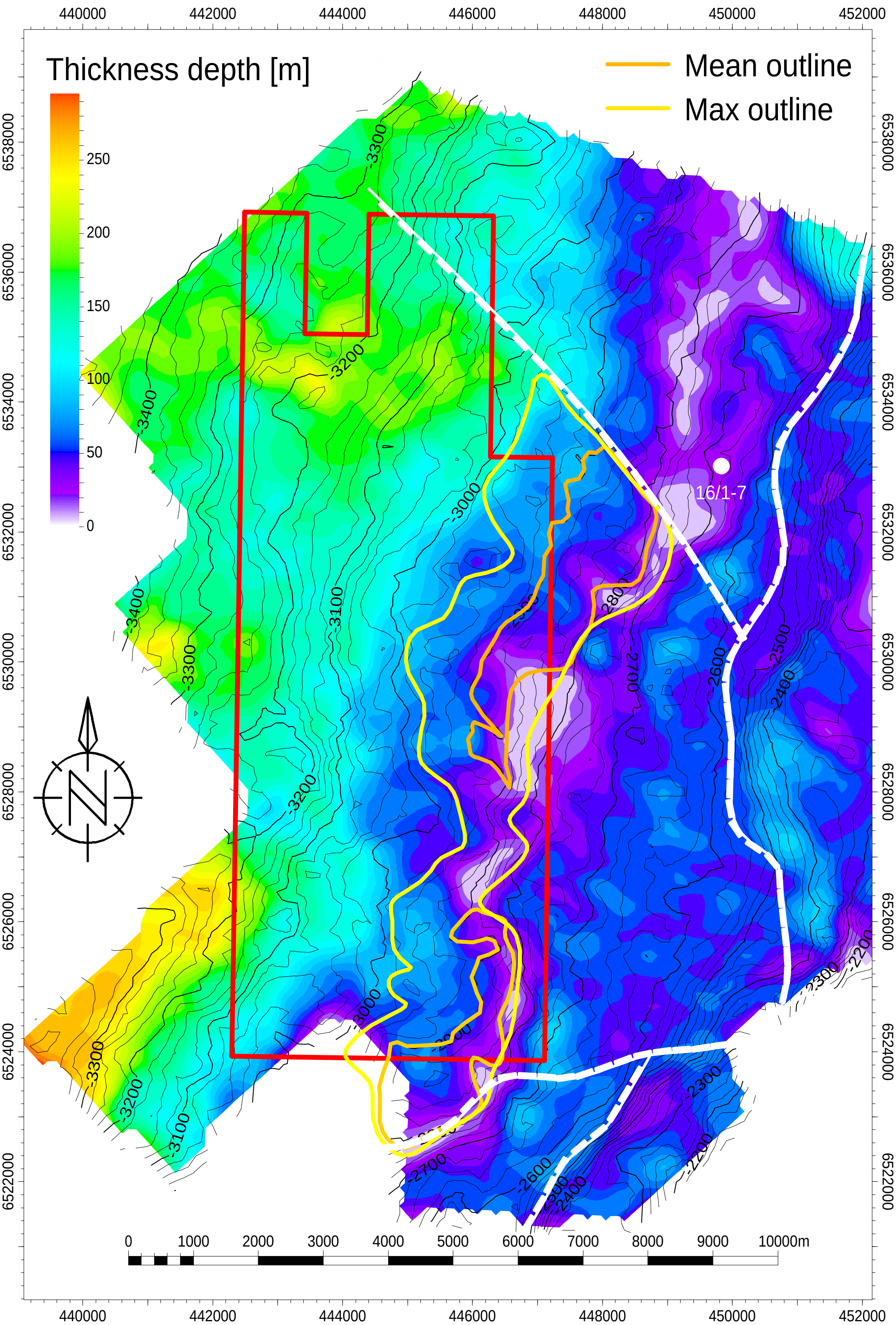

Fig. 4.3 Prospect map

A map showing contours in depth to the top Åsgard surface overlain with the thickness between top Åsgard & the Base Cretaceous Unconformity.

Seismic attribute studies and frequency decomposition studies were conducted with focus on the interval between BCU and near top Åsgard Formation. No clear evidence was identified that could differentiate reservoir from non-reservoir or highlight geometries indicative of depositional environment.

An investigation was made to assess the potential to use seismic data analysis (pre-stack and angle stack seismic techniques) to differentiate reservoir from non-reservoir or identify fluid fill in the prospect area. A number of combined issues meant that seismic data analysis results were not useful for this prospect:

- Seismic quality is relatively poor due to shallow disturbances and effects around the presence of the hard chalk giving high frequency noise and residual multiples
- The reservoir is relatively thin
- There is a limited acoustic impedance contrast between sandstones and shales

Risk assessment

Although the probability for geological success on the Spinosaurus prospect has improved, significant risks remain.

Evaluation of well data updip of the prospect has provided significant new support for the model of a deep marine equivalent to the shallow marine Åsgard Formation sandstone seen in wells. However this deep marine equivalent is still unconfirmed and a play risk remains. This has been set at 0.9. Reservoir quality Åsgard Formation sandstones are identified in wells but uncertainty remains as to the thickness and quality of the sands in the deep marine setting and in the prospect area. The probability for reservoir is set to 0.7. The overall probability for reservoir is 0.63 (Pres play x Pres prospect).

The interpreted closure is a stratigraphic pinchout. There is still uncertainty associated with top reservoir interpretation and the probability for closure as been designated as 0.6.

A sand bypass zone, at least 300 m in width and 3 km in length, is believed to separate the sands from the sand fairways updip to the east of crest. In addition, there are wells pentrating sandstones of Upper Jurassic age just beneath the Åsgard Formation sandstones. Therefore, there are significant seal (lateral and base) risk associated to the prospect, and the probability of retentention/seal is decreased from 0.6 in the application to 0.5.

The probability for charge remains unchanged and is set to 1.0, primarily based on the nearby hydrocarbon accumulations and the location of the prospect, directly above the Upper Jurassic source rock.

The probability of geological success is 0.19 compared to 0.13 in application.

Resources

The prospect crest is at 2780 m tvdss. The gross rock volume ranges from P(90) of 0.095 x 10^9 m^3 to P (10) of 0.351 x 10^9 m^3, with P(mode) of 0.210 x 10^9 m^3. The hydrocarbon column height varies from P (90) of 90 m to P(10) of 150 m with a maximum height of 180 m which corresponds to a depth of 2960 m tvdss. In the application the hydrocarbon column height was set to P(90) of 100 m and P(10) of 420 m. The net reservoir of the gross rock volume fraction, the socalled net to gross parameter, is set to 0.5 for P(90) and 0.7 for P(10) with 0.6 P(mode) and has slightly increased from the values presented in the application (P(mode) = 0.5). The reservoir temperature and pressure are estimated to be 110 ^{0}C and up to 450 bar, respectively.

Gross rock volume for the prospect was calculated in Petrel then entered into GeoX for the estimate of recoverable oil and associated gas resources. The recoverable resources are calculated at P(90), P(mode), P (mean), and P(10) are 2.26, 4.49, 5.71 and 10.0 x10^6 Sm^3 o.e, respectively (Table 4.1). The resources have decreased compared to the resources presented in the application with P(mean) of 20.3 x10^6 Sm^3 o.e mainly because of changes in gross rock volume due to more detailed mapping.

Table 4.1 Prospect data

NPD Table 5

Table 5: Prospect data (Enclose map)

Block	16/1	Prospect name	Spinosaurus	Discovery/Prosp/Lead	Prospect	Prosp ID (or New!)	NPD will insert value	NPD approved (Y/N)	
Play name	NPD will insert value	New Play (Y/N)		Outside play (Y/N)					
Oil, Gas or O&G case:	Oil	Reported by company	VNG Norge AS	Reference document				Assessment year	2015
This is case no.:	1 of 1	Structural element	Gudrun Terrace	Type of trap	stratigraphic and str	Water depth [m MSL] (>0)	110	Seismic database (2D/3D)	3D
Resources IN PLACE and RECOVERABLE		**Main phase**				**Associated phase**			
Volumes, this case		Low (P90)	Base, Mode	Base, Mean	High (P10)	Low (P90)	Base, Mode	Base, Mean	High (P10)
In place resources	Oil [10^6 Sm^3] (>0.00)	5,24	10,24	12,62	21,62				
	Gas [10^9 Sm^3] (>0.00)					0,73	1,15	1,83	3,22
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	1,96	3,17	4,98	8,87				
	Gas [10^9 Sm^3] (>0.00)					0,27	0,53	0,72	1,29
Reservoir Chrono (from)	Valanginian	Reservoir litho (from)	Åsgard Fm	Source Rock, chrono primary	Oxf. Kimm. Tithon.	Source Rock, litho primary	Draupne Fm	Seal, Chrono	Kimm. - Bar./Apt./Albian
Reservoir Chrono (to)	Valanginian	Reservoir litho (to)	Åsgard Fm	Source Rock, chrono secondary		Source Rock, litho secondary		Seal, Litho	Draupne - Sola/Rødby Fm
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)		Oil case (0.00-1.00)	1,00	Gas case (0.00-1.00)		Oil & Gas case (0.00-1.00)			
Reservoir (P1) (0.00-1.00)	0,63	Trap (P2) (0.00-1.00)	0,60	Charge (P3) (0.00-1.00)	1,00	Retention (P4) (0.00-1.00)	0,50		
Parametres:	Low (P90)	Base	High (P10)	*Play reservoir probability of 0.9 and prospect reservoir probability of 0.7. Oil case scenario. The base fluid and resevoir parameters are represented by mean values. For most parameters the mean value is equal to mode except for the Water Saturation, Recovery factor oil, Recovery factor gas and GOR oil with mode values of 0,3, 0,37, 0,37 and 139, respectively.*					
Depth to top of prospect [m MSL] (> 0)		2780							
Area of closure [km^2] (> 0.0)	6,5	10,3	19,6						
Reservoir thickness [m] (> 0)	30	40	50						
HC column in prospect [m] (> 0)	90	120	150						
Gross rock vol. [10^9 m^3] (> 0.000)	0,095	0,210	0,351						
Net / Gross [fraction] (0.00-1.00)	0,50	0,60	0,70						
Porosity [fraction] (0.00-1.00)	0,17	0,20	0,23						
Permeability [mD] (> 0.0)									
Water Saturation [fraction] (0.00-1.00)	0,40	0,30	0,20						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0,71	0,68	0,65						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	116	145	177						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0,30	0,40	0,50						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0,30	0,40	0,50						
Recov. factor, gas main phase [fraction] (0.00-1.00)									
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)				For NPD use:					
Temperature, top res [°C] (>0)	110			Innrapp. av geolog-init:	NPD will insert value	Registrert - init:	NPD will insert value	Kart oppdatert	NPD will insert value
Pressure, top res [bar] (>0)	450			Dato:	NPD will insert value	Registrert Dato:	NPD will insert value	Kart dato	NPD will insert value
Cut off criteria for N/G calculation	1.	2.	3.					Kart nr	NPD will insert value

Additional prospectivity

A small 4-way closure, the Sokn prospect has been identified in the far north-west of the license, straddling the boundary between PL 673 and PL 779. This closure exists in the Triassic and in the middle Jurassic although the total volume is too small to be of interest as an isolated prospect.

Three 4 way structural closures have been identified in the Palaeocene though the relief on the closure is very limited and therefore sensitive to depth conversion. These too are too small to be of economic interest.

5 Technical evaluations

A full project evaluation was performed to assess the technical and economical aspects of the Spinosaurus prospect. The P(mean) truncated volumes of 6.8 x10^6 Sm^3 o.e. have been used in the technical evaluations.

Exploration drilling

The exploration program used in this analysis is based on drilling an exploration well to test the Southern part of the closure in 2017. If successful, an appraisal well with an option to perform a drill stem test, will be drilled to test the Northern part of the closure in 2018.

Using an exploration well with a slim well design to a total depth of approximately 3000 m, the drilling time is estimated to be 56 days in the dry well scenario. The water depth is 110 m. A mid-water depth harsh environment semi-sub or high specification jack-up rig is required. The operational daily cost is estmated to be 6 MNOK including a rig cost rate of 250 kUSD/d. The total drilling cost in the dry well scenario is estimated to 404 MNOK.

Production forecast

It assumed an undersaturated oil similar to that found at Ivar Aasen and Edvard Grieg Fields. The gas oil ratio, GOR, ranges from P(90) of 116 to P(10) of 177 Sm^3/Sm^3, with a P(mean) of 145 Sm^3/Sm^3 (Table 4.1). The formation fluid factor for oil, Bo, is estimated to be 1.40 in the P(90) case, 1.47 is the P(mean) and 1.55 in the P(10) case. The expected recovery factor for oil and associated gas are in the range of 0.30 to 0.50, with a P(mean) of 0.40.

With two horizontal production wells in the base case 1000 to 3000 m in length, the average oil rate is assumed to be 1500 Sm^3/d. The drainage strategy is to inject water pressure support. The oil plateau rate is expected to be 0.9 x10^6 Sm^3 over a two year period.

Field development

A four slot subsea template was adopted for field development investigations with two oil producers and two water injectors and a 15 km long tie-back solution to the Edvard Grieg Field (Fig. 5.1). The estimated production time is 15 years with a production start in 2024. The Edvard Grieg overall processing constraint for oil is 19873 Sm^3/d, and for Spinosaurus it is set to 6300 Sm^3/d.

It is assumed that Edvard Grieg and relevant infrastructure is available for entire economical field life for Spinosuarus. It is also assumed that oil and gas export capacity, including SAGE, is available when required. The Edvard Grieg design life time is to 2040, while the plan is to produce from Spinosaurus up to 2038. However, the exploration and development drilling activity is relatively high in the area and there might be other tie-in candidates that could be prioritized and delay the Spinosaurus production plan.

Health, safety and environment (HSE)

No HSE concerns have been identified for the Mosterøy prospect at this time. The PL 673 licence is located in a well established area with no particular vulnerable resources in the vicinity. There are also no seasonal restrictions related to drilling activities. The reservoir conditions do not classify the Spinosaurus prospect as high pressure high temperature (HPHT).

Economy

The economical analysis show that the prospect does not meet the Operators' economical requirements.

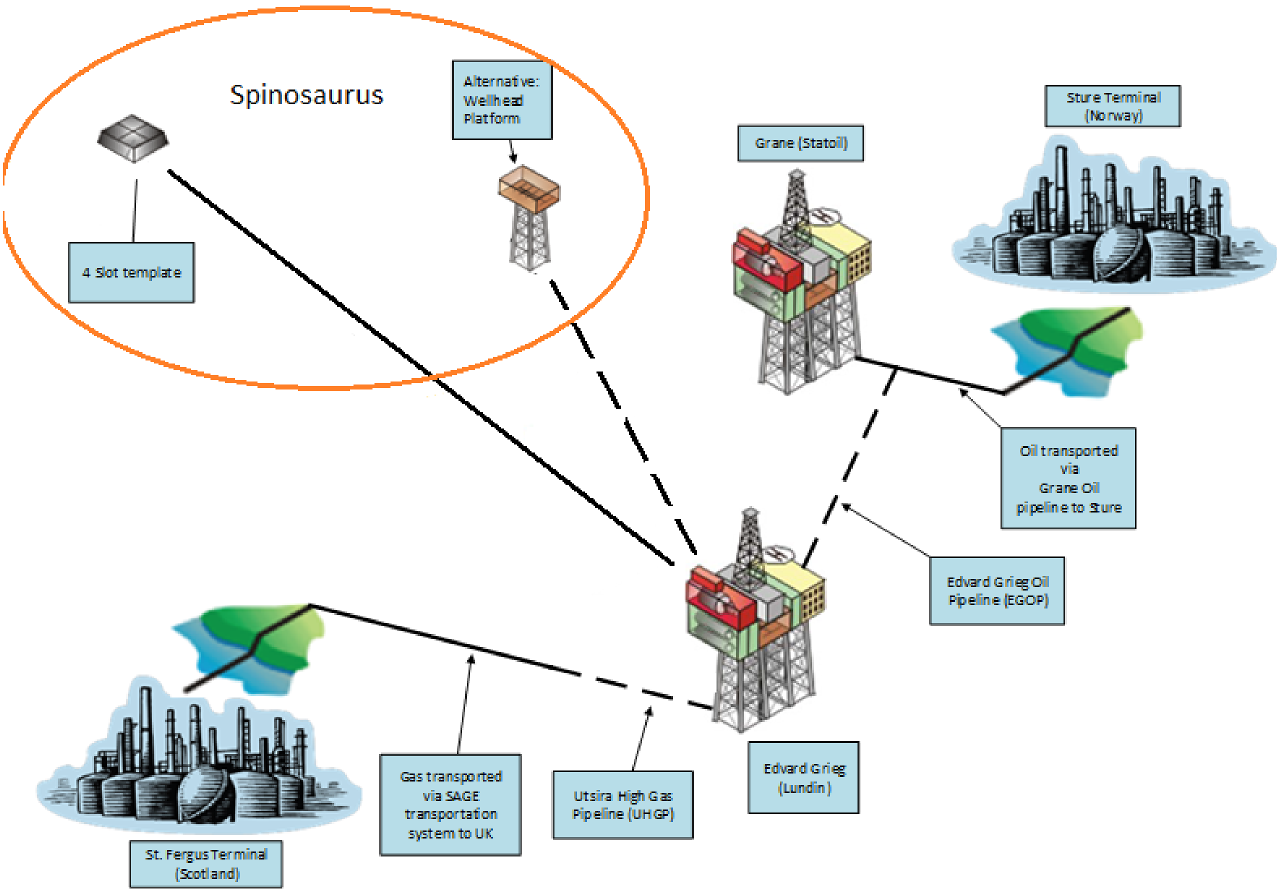

Fig. 5.1 Field development
One potential field development solution

6 Conclusions

PL 673 is located in a favorable position close to existing infrastructure however despite making progress on some of the key prospect risks, the license was unable to mature the Spinosaurus prospect sufficiently to make a positive drill decision. Significant risks around reservoir presence, trap definition and updip seal still remain and the probability of a geological success, though improved, is still low at 0.19. The possibility of further improving the probability through an additional work program is seen as low.

Estimated recoverable resources for the Spinosaurus prospect are 5.71 $x10^6$ Sm^3 o.e. however these volumes are spilt between two separate accumulations and are assessed as uneconomic. The conclusion of the technical evaluation of the hydrocarbon potential in the license is that the probabilty of discovering economical resources is low. The licensees have therefore decided not to drill an exploration well and therefore surrender the license.

7 References

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