PL 854 – Licence Status Report

Summary

The prospectivity in PL854 has been updated based on seismic interpretation, AVO revisit using rock physics in the nearby wells, and the results of Well 7322/6-1 S (Shenzhou) which was drilled in PL722 about 20 km to the south-southeast. The remaining prospectivity is basically related to the Lower-Middle Jurassic play, the Realgrunnen Subgroup. The original trap defined at the crest of a SW-NE running faulted horst block, was based on hydrocarbon filling of the closure down to structural spill (23rd concession round application, 2015). The seismic reinterpretation and AVO revisit during licence work, did however change the Mir Realgrunnen closure. Full stack amplitudes and AVO responses are suggesting updip and eastward pinch-out of the Stø Formation, as well as a deeper hydrocarbon-water contact towards southwest. The revised Mir prosect is named Mir Down in order to distinguish this one from the original Mir prospect. The Mir Down prospect is a potential candidate for tie-back of oil to the Wisting development (Figure 1). The recoverable oil volumes are however too small and the risk too high, and Mir Down is currently not considered as a valid drilling candidate. Mir Snadd Norian is a prospect in the Upper Triassic play, but the reservoir quality is challenging and the recoverable volumes are small.

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1 Licence history

Licence: PL854

Awarded: 10.06.2016

Licence period: Initial period: 10.06.2016 – 10.06.2021

Licence group:

Equinor Energy AS	40% (Operator)
Sval Energi AS	40%
Petoro	20%

Licence area (initial): 576,938 km^2

Work programme:
Reprocessing of 3D seismic within 2 years from award
Drill or drop decision within 2 years from award
Fulfill drilling commitment within 4 years from award

Meetings held:

30.08.2016	MC startup meeting
14.11.2016	ECMC meeting
31.05.2017	EC status meeting
13.11.2017	ECMC meeting
13.12.2017	EC CSEM meeting
05.04.2018	EC meeting
12.11.2018	ECMC meeting
05.04.2019	EC meeting
31.10.2019	ECMC meeting
18.06.2020	ECMC meeting
21.10.2020	ECMC meeting
27.05.2021	ECMC meeting

Work performed:
Seismic reprocessing of 3D survey HF13 upgrade, and hence the work commitment is fulfilled. Seismic interpretation. AVO revisit using rock physics in the nearby wells. CSEM inversion and modelling. Prospect evaluation of Jurassic, Triassic and Late Paleozoic play levels. Field development studies on Mir Realgrunnen prospect.

Partial relinquishment
The licence applied for partial relinquishment to be valid from 10.06.21 in the case of applying for extension of the initial period. The retained area was supposed to be 177.32 km^2 and the relinquished area 399.49 km^2. However, after the negative results of Well 7322/6-1 S it was decided to relinquish the whole licence when the initial period expired.

Reason for surrender:
The results of Well 7322/6-1 S (Shenzhou) in the neighbouring licence PL722 have negative impact on the remaining prospectivity within PL854. The Jurassic Mir Realgrunnen prospect is potentially commercial for oil with tie-back to Wisting, but this is currently not considered as a valid drilling candidate due to high risk.

Reservoir presence in the Triassic play is challenging as well as presence of a working Paleozoic petroleum system for the Late Carboniferous-Early Permian play. The licence decided to let the licence lapse on the expiry of the initial period on 10.06.2021.

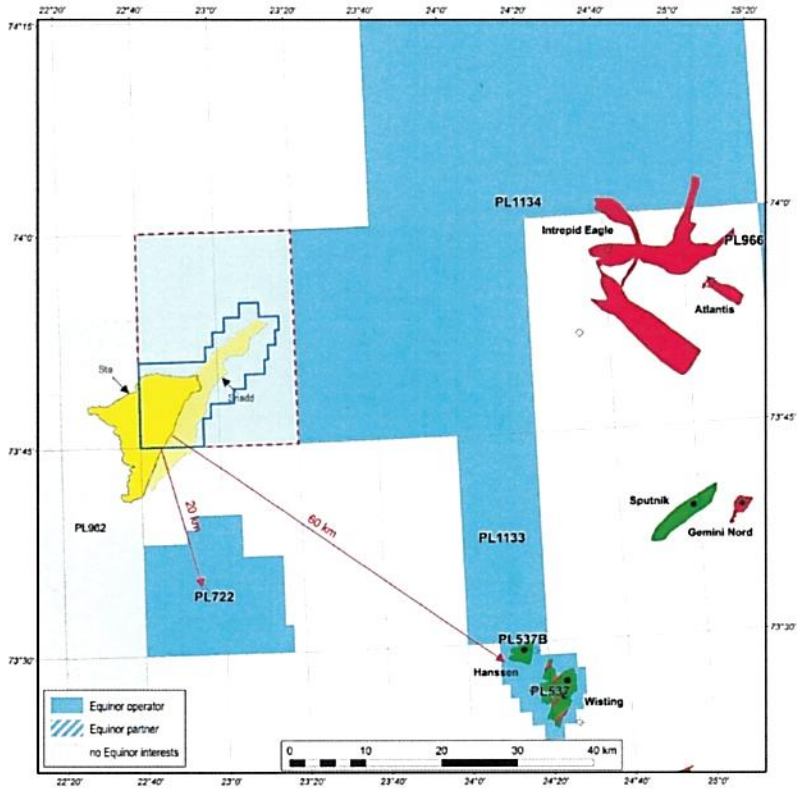


Figure 1. Licence overview showing PL854 and the surrounding licences. The light blue area and the red dashed polygon shows the original outline of the licence, the block 7322/3 and 7323/1. The blue polygon shows the outline of the licence acreage supposed to be retained from 10.06.2021. The remaining prospects are Mir Down Realgrunnen (yellow) and Mir Snadd (light yellow). The distance to Well 7322/6-1 S is around 20 km towards south-southeast.

2 Database overview

2.1 Seismic data

The common seismic database (CSD) consists of reprocessed vintages from the 3D surveys HF13 and HFC11 (CFI 4ms) as separate surveys or a merged product of the two named Hoop 3D (Figure 2). CSD covers the original licence acreage including the blocks 7322/3 and 7323/1 as well as the structural closure of the main Jurassic Mir prospect which extends into the northern part of block 7322/6. A 3D seismic corridor (HFC11_4ms) and well tie to 7324/2-1 (Apollo) and 7325/1-1 (Atlantis) are also included in CSD.

3D data:

- HF13: Full stack and angle stacks (HF13 NPDID: 7791; multiclient data).
- HFC11_CFI_4ms: Full stack and angle stacks (Hoop11 NPDID: 7424; multiclient data).

2.2 CSEM data

The CSEM survey BS1301 is included in the common database for PL854 with full coverage of the original licence acreage, the block 7322/3 and 7323/1 (Figure 3). The data was aquired by EMGS in 2012.

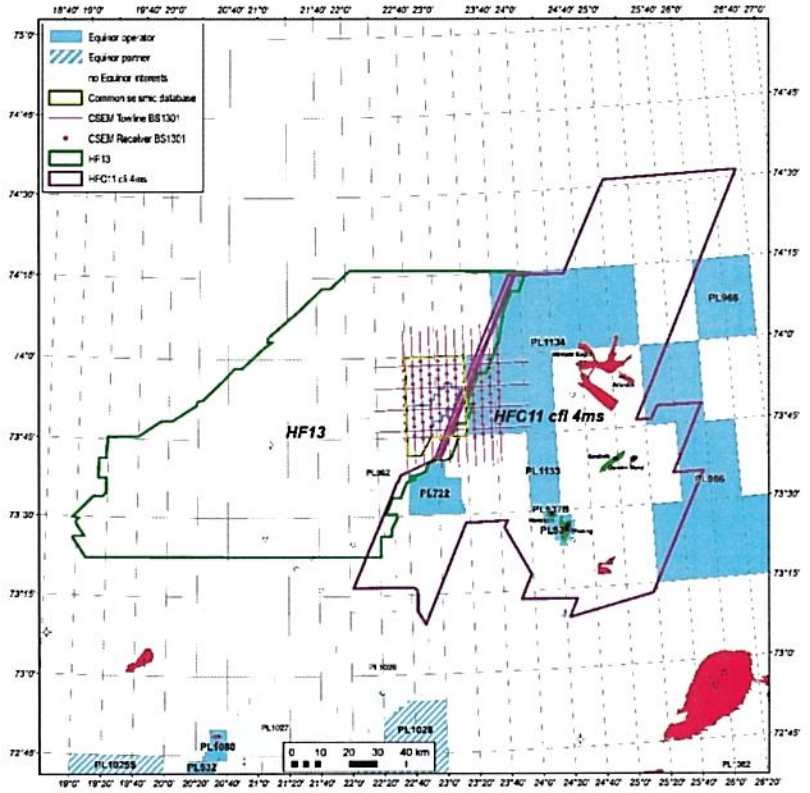


Figure 2. Common 3D seismic and CSEM database for PL854. The common 3D seismic database (within yellow outline) consists of the reprocessed vintages from the 3D surveys HF13 and HFC11 (CFI 4ms) and the merged Hoop 3D, whereas the CSEM database is the BS1301 survey acquired by EMGS in 2012.

2.3 Well data

The common well database consists of released exploration wells drilled in the Hoop area and shallow wells on the Svalis Dome (7323/3-U-1 to -11), which are all important for the geological understanding and evaluation of PL854. Well 7324/2-1 (Apollo) and the wells in the Fingerdjupet Subbasin, 7321/9-1 and 7321/7-1, were used for well tie. Well 7322/6-1 S (Shenzhou) was not a part of the common well database, but the published results (press release) impacted the shareholders view on the remaining prospectivity within PL854, and thereby the relinquishment decision.

3 Results of geological and geophysical studies

The understanding of the prospectivity in PL854 is briefly summarised in subsections below.

Source and Migration

The Middle Triassic Steinkobbe Formation source rocks are the main source for hydrocarbons in the Hoop area. The source rock has a mixed marine and terrestrial kerogen composition and is of good to excellent quality. At maximum burial it is oil mature in the PL854 area. The Steinkobbe Formation was encountered in Well 7322/6-1 S. There were also found good indications of migrated oils in Snadd Carnian channel sandstones which can be correlated to the Steinkobbe Formation. The low gas readings in Well 7322/6-1 S in the Permo-Carboniferous succession suggest absence of any effective Paleozoic source rocks, and hence a non-working petroleum system for this part of the stratigraphy.

Reservoir Quality

The Middle Jurassic Stø Formation which constitutes the main reservoir within the Realgrunnen Subgroup, has been the main target for almost all the exploration wells in the Hoop area. Good to excellent reservoir properties have been proved through comprehensive analyses of core data and petrophysical evaluations. In Well 7322/6-1 S situated 20 km towards south-southeast, a 35 m thick Realgrunnen Subgroup was penetrated in the top hole with returns to seabed and only with MWD-logs available. The Stø Formation is possibly 11 m thick with moderate to good reservoir quality. The Snadd Formation of Late to Middle Triassic age has reservoir potential at several intervals within the PL854. These are identified within relatively small intra Snadd Carnian channels and at the upper Snadd Norian sheet sand (beach) mainly with gross thickness <10 m. However, the reservoir quality is challenging. The porosity is reasonable, but the permeability is mostly moderate to poor which thereby have negative impact on the producibility. Together with the low hydrocarbon saturation observed in the Hoop wells, reservoir quality is the main risk for the Triassic play in the PL854 area. The Gipsdalen carbonates have likely experienced a maximum burial of around 5.5 km (>180°C) in PL854, and therefore exposed to extensive diagenesis due to high temperatures. Dolomitized carbonate buildups were encountered in Well 7322/6-1 S almost with the predicted reservoir quality which is characterized as poor to moderate.

Trap and Seal

The remaining prospectivity in PL854 is basically related to the Lower-Middle Jurassic Mir Realgrunnen prospect (23rd concession round application, 2015), in which the trap is defined at the crest of a SW-NE running faulted horst block (Figure 4). The original trap was based on hydrocarbon filling of the closure down to structural spill located to the northeast. The cap seal was provided by Fuglen and Hekkingen formations, whereas the Lower Cretaceous Knurr/Kolje/Kolmule formations provided lateral seal along the main western and eastern bounding faults (Figure 7). However, based on seismic reinterpretation and AVO revisit during licence work, the Mir Realgrunnen closure has been modified. Full stack amplitudes (RMS, minimum amplitudes; Figure 5) as well as AVO responses are displaying a pattern suggesting updip and eastward pinch-out of the Stø Formation (Figure 6). The implication is possibly absence or presence of a thin/discontinuous Stø sheet sand towards northeast. Furthermore, the AVO response suggests a depth conformant amplitude shut-off along the 1167 m depth contour (1061 ms TWT) towards southwest (Figure 6; Figure 7), which may reflect hydrocarbon-water contact. The revised Mir prosect is named Mir Down in order to distinguish this one from the original Mir prospect. The minimum hydrocarbon filling of Mir Down is within the 3-way dip closure at 1050 m, whereas maximum is 94 m deeper than spill point and thereby contingent of a combined structural-stratigraphic trap (Figure 4).

The upper Snadd Formation sheet sand appears as a parallel unit to the Stø Formation (Figure 7). The trap is defined by a 3-way dip closure along the same faulted horst block as the overlying Stø Formation (Figure 8).

Spill point is to the northeast at 1120 m, but fault seal along this compartment may be working which push spill down to 1130 m farther north. The minimum hydrocarbon-water contact in Mir Snadd is at 1070 m which is within the 3-way dip closure of the overlying Stø Fomation, and maximum at 1130 m. Cap seal is provided by the Lower Fruholmen shaly unit, and lateral seal along the bounding faults by Fuglen/Hekkingen as well as the Lower Cretaceous Knurr/Kolje/Kolmule formations.

The Realgrunnen Subgroup is normally pressured in all the Hoop wells. However, slightly under-pressured reservoirs are proven in traps of Ladinian to Carnian Snadd channel sandstones, hence suggesting presence of a strong vertical pressure barrier.

Geophysical studies
AVO revisit using rock physics in the nearby wells was performed in 2020 in order to predict the expected AVO responses in the Mir Realgrunnen prospect. The extent of a relative AVO anomaly was the foundation for definition of Mir Down in terms of hydrocarbon filling of the Stø Formation sand below the 3-way dip closure (Figure 6C).

CSEM data has been inverted using BFGS (before 23rd round) and 3D Gauss Newton (2018) algorithms. Several CSEM anomalies are observed, but no anomalies are consistent with the Mir Realgrunnen or Mir Down prospect. Furthermore, the 3D Gauss Newton study indicates that the anomalies occur in the middle of the Snadd Formation. CSEM is therefore evaluated to be inconclusive with regards to de-risking of hydrocarbon potential in Mir Realgrunnen.

4 Prospect update report

The original prospects and leads from Statoil's 23rd round application is shown in Figure 3, and the resource potential for these are given in Table 1. The remaining prospects within PL854 after the results of Well 7322/6-1 S (Shenzhou) drilled in the neighbouring licence, PL722, is the Lower-Middle Jurassic Mir Down Realgrunnen and Upper Triassic Mir Snadd Norian. A common contact has been applied due to juxtaposition along bounding faults. These prospects have oil potential which can be tied back to the Wisting development (Figure 1), but they are currently not considered as drilling candidates due to the small recoverable volumes and the high risk.

The mean recoverable oil volume in the Mir Down Realgrunnen prospect is 10.6 MSm^3 (
Table 2; Figure 6). However, approximately 60% is outside PL854, i.e. within PL962 and open acreage in block 7322/6. Probability of success is evaluated to be 14.9% for oil and 10.4% for gas. The mean recoverable oil volume in the Mir Snadd Norian prospect is estimated to 3.6 MSm^3 (
Table 2) within beach/marine bar sand as shown in Figure 8. Probability of success is evaluated to be 4.3% for oil and 4.4% for gas.

Five Snadd Carnian channel prospects were described in Statoil's 23rd round application. Based on the results of Well 7322/6-1 S and the experiences from previously drilled wells in the Hoop area, the reservoir quality is challenging. Due to the small volumes and poor reservoir, these are not considered as valid prospects anymore. Tempelfjorden and Gipsdalen leads as well as the Cretaceous leads described in the application, are also removed due to the negative well results.

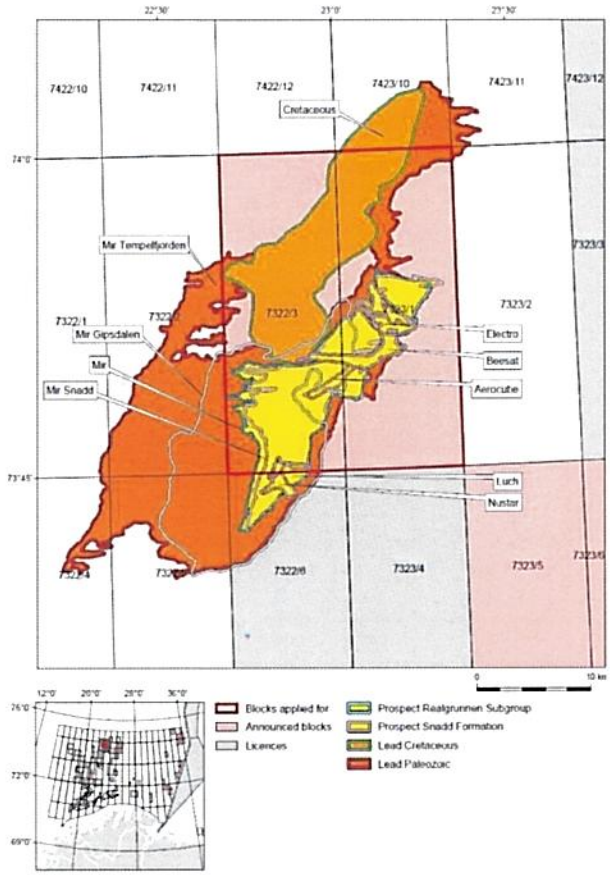


Figure 3. Overview map of prospects and leads from Statoil's 23rd round application.

Table 1. Resource potential of prospects from Statoil's 23rd round application.

Discovery/ Prospect/ Lead name [1]	D/ P/ L [2]	Case (Oil/ Gas/ Oil&Gas) [3]	Unrisked recoverable resources [4]						Probability of discovery [5] (0.00 - 1.00)	Resources in acreage applied for [%] [6] (0.0 - 100.0)	Reservoir		Nearest relevant infrastructure [9]	
			Oil [10^9Sm^3] (>0.00)			Gas [10^9Sm^3] (>0.00)					Litho-/ Chrono-stratigraphic level [7]	Reservoir depth [m MSL] (>0)	Name	Km (>0)
			Low (P90)	Base (Mean)	High (P10)	Low (P90)	Base (Mean)	High (P10)						
Mr	P	Oil	13.40	32.00	54.00	0.78	7.01	11.68	0.16	90.0	Sto Fm / Lower - Middle Jurassic	1000		
		Gas	3.01	7.01	11.68	0.02	0.06	0.13	0.06	90.0	Sto Fm / Lower - Middle Jurassic	1000		
Mr Snadd	P	Oil	5.56	12.40	20.60	0.80	1.86	3.20	0.05	90.0	Snadd Fm / Norian	1040		
		Gas	2.40	5.03	8.07	0.04	0.10	0.17	0.04	90.0	Snadd Fm / Norian	1040		
Aerocube	P	Oil	0.80	2.54	4.38	0.15	0.49	0.89	0.09	100.0	Snadd Fm / Carnian	1800		
		Gas	0.43	1.25	2.17	0.02	0.07	0.12	0.09	100.0	Snadd Fm / Carnian	1800		
Luch	P	Oil	0.12	0.55	1.11	0.21	0.69	1.31	0.09	100.0	Snadd Fm / Carnian	1800		
		Gas	0.06	0.27	0.55	0.00	0.01	0.03	0.09	100.0	Snadd Fm / Carnian	1800		
Beesat	P	Oil	1.10	3.55	6.48	0.21	0.69	1.31	0.09	100.0	Snadd Fm / Carnian	1926		
		Gas	0.61	1.91	3.52	0.03	0.10	0.19	0.09	100.0	Snadd Fm / Carnian	1926		
Electro	P	Oil	0.29	1.85	3.70	0.05	0.36	0.74	0.09	100.0	Snadd Fm / Carnian	1771		
		Gas	0.15	0.91	1.80	0.01	0.05	0.10	0.09	100.0	Snadd Fm / Carnian	1771		
Nustar	P	Oil	0.10	0.91	1.85	0.02	0.18	0.37	0.09	100.0	Snadd Fm / Carnian	1920		
		Gas	0.06	0.49	1.01	0.00	0.03	0.05	0.09	100.0	Snadd Fm / Carnian	1920		
Cretaceous	L									80.0	Kolje Fm / Lower Cretaceous	800		
Mr Tempelfjorden	L									40.0	Tempelfjorden Grp / Upper Permian	2750		
Mr Gipsdalen	L									60.0	Gipsdalen Grp /Lower Permian	3740		

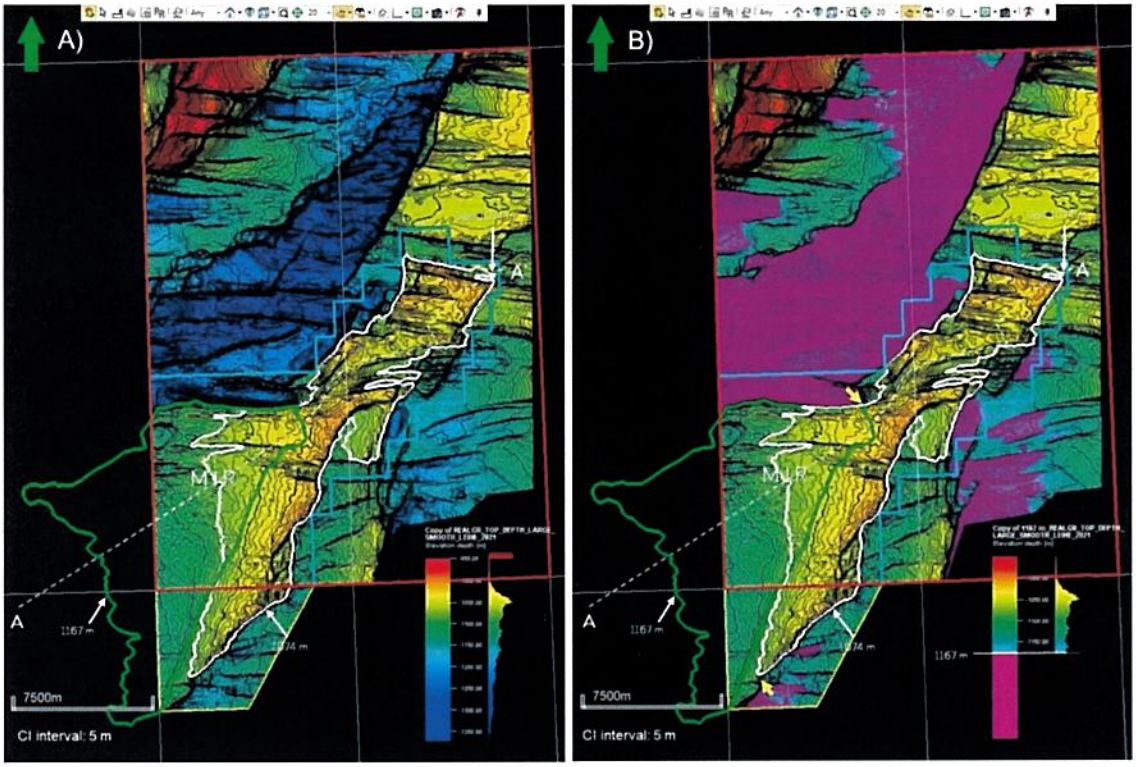


Figure 4. A) Top Realgrunnen Subgroup depth map showing the Mir Realgrunnen prospect. The white outline is the original prospect, the 3-way dip closure with hydrocarbon filling down to maximum at spill contour at 1074 m (spill point to the northeast), whereas the green outline is the modified prospect, Mir Down, based on deeper hydrocarbon filling down to maximum at 1167 m. The Stø reservoir unit is pinching out towards east-northeast. PL854 is outlined in turquois and original licence in red. B) Same as A), but with transparent overlay of depths >1167 m to visualize the structural trap component west of the yellow arrows and the stratigraphic component east of these. The dashed white line A-A' is index for seismic section shown in Figure 7.

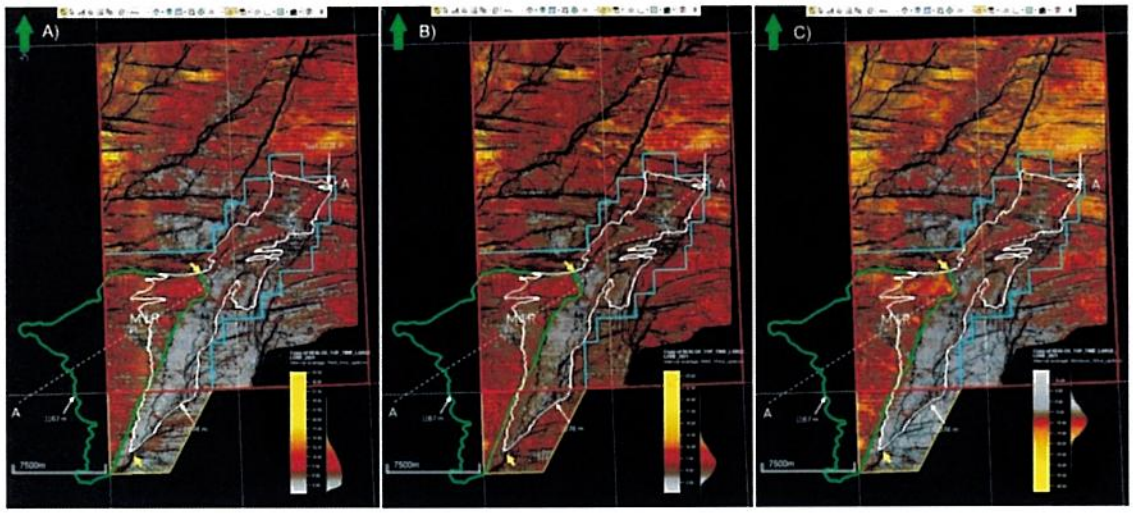


Figure 5. Amplitude maps extracted from HF13 full stack data at Top Realgrunnen Subgroup, A) and B) RMS amplitudes respectively 5 and 10 ms up/down, and C) Minimum amplitudes 10 and 5 ms up/down. The Mir Down prospect is indicated by the green outline and the structural 3-way dip closure is light blue. Notice the dim area east of the yellow arrows which may represents laterally sealing facies.

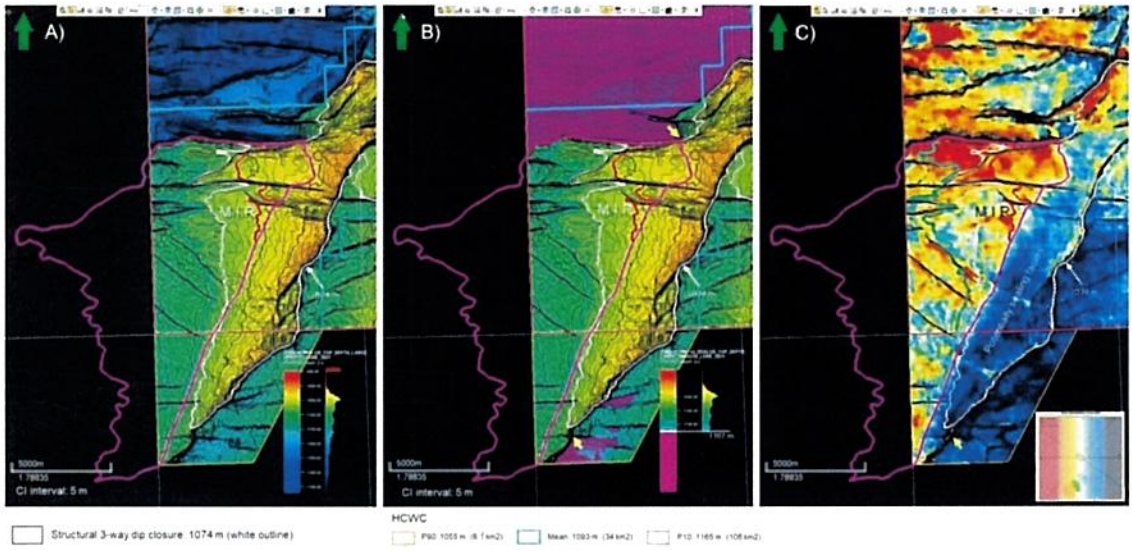


Figure 6. A) Top Realgrunnen Subgroup depth map showing the Mir Realgrunnen prospect, with hydrocarbon-water contact outlined at P90, mean and P10. B) Same as A), but with transparent overlay of depths >1167 m to visualize the structural trap component west of the yellow arrows and the stratigraphic component east of these. C) AVO response map showing average relative P-impedance extracted from a window of 12 ms below Top Realgrunnen. Notice the change in P-impedance along the eastern flank of Mir between the yellow arrows, which is possibly reflecting pinch-out of Stø sand and presence of laterally sealing facies. A weak change P-impedance along the 1167 m contour to southeast outside PL854 may suggest a possible hydrocarbon-water contact.

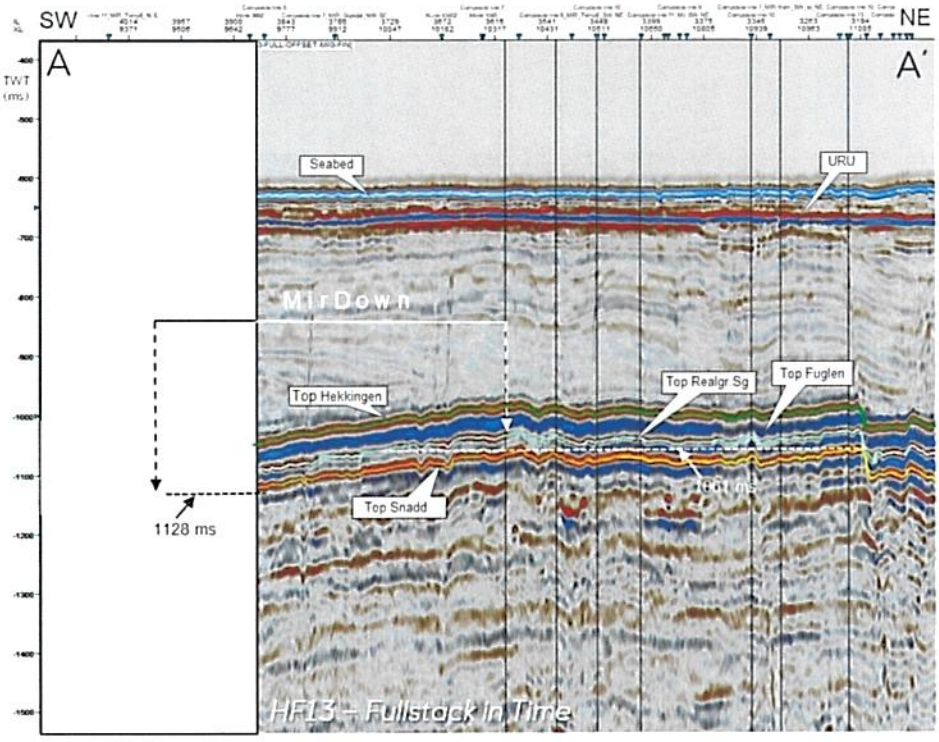


Figure 7. Random seismic section A-A' in time (HF-13 fullstack) through Mir Down Realgrunnen prospect. 1128 ms corresponds to max. HCWC at 1167 m for Mir Down, and 1061 ms is max. HCWC at spill 1074 m for the original Mir Realgrunnen. For line index, see Figure 4.

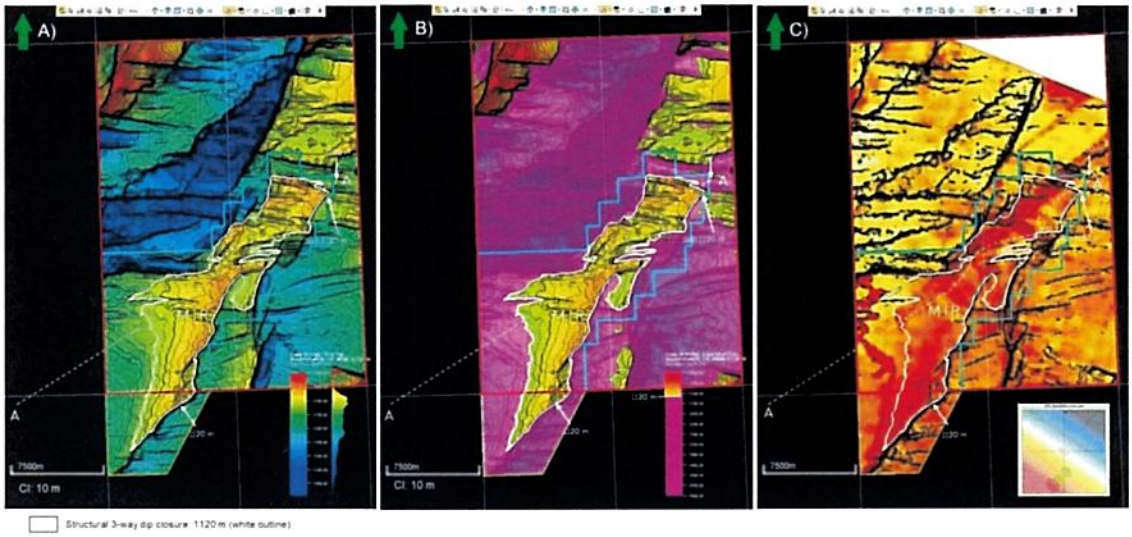


Figure 8. A) Top Snadd Norian depth map showing the Mir Snadd prospect. The white outline is the 3-way dip closure at spill contour at 1120 m (fault seal may push spill to 1130 m). PL854 is outlined in turquois and original licence in red. B) Same as A), but with transparent overlay of depths >1120 m to visualize the closure. C) AVO anomaly geotiff map showing hints of beach/marine bar sand deposits (read area). The dashed white line A-A' is index for seismic section shown in Figure 7.

Table 2. Remaining resource potential within PL854. Evaluation is updated after 23rd round award and finally the results of Well 7322/6-1 S (Shenzhou).

Prospect	HC	In-place (MSm^3/GSm^3)			Recoverable (MSm^3/GSm^3)			Probability (%)	Depth (m)	Lithostrat
		P90	Mean	P10	P90	Mean	P10			
Mir Down Realgrunnen	Oil	7.87	44.69	122.84	1.73	10.18	27.89	14.9	1027	Stø Fm
	Gas	1.45	8.45	23.21	0.72	4.20	11.43	10.4		
Mir Snadd	Oil	4.84	21.5	48.9	0.76	3.63	8.13	4.3	1052	Snadd Fm
	Gas	0.88	4.02	9.03	0.44	2.01	4.6	4.6		

5 Technical evaluation

The oil volume potential of the Mir Down Realgrunnen prospect was regarded as feasible to be tied back to the Wisting development located 60 km to the southeast (Figure 1). Technical-economical evaluation carried out early 2021 showed that deep filling of the trap and hence, a large oil volume (>P10) was required to give positive value. Reservoir engineering and production profiles were based on a gross reservoir thickness of 20 m. Updates after Well 7322/6-1 S reduced the maximum oil volume by a thinner reservoir (11 m). Therefore, the Mir Down Realgrunnen prospect contains non-commercial oil volumes, and is currently not considered as a drilling candidate.

6 Conclusion

The licence partners have unanimously decided to let the licence expire when the initial period ended 10.06.2021, due to limited remaining prospectivity and currently lack of a drilling candidate.

References

Statoil (2015). Application blocks 7322/3 and 7323/1. 23rd licensing round, Norwegian continental shelf.

Appendices

1. NPD form no 5, Mir Down Realgrunnen prospect, oil case
2. NPD form no 5, Mir Down Realgrunnen prospect, gas case
3. NPD form no 5, Mir Snadd Norian prospect, oil case
4. NPD form no 5, Mir Snadd Norian prospect, gas case

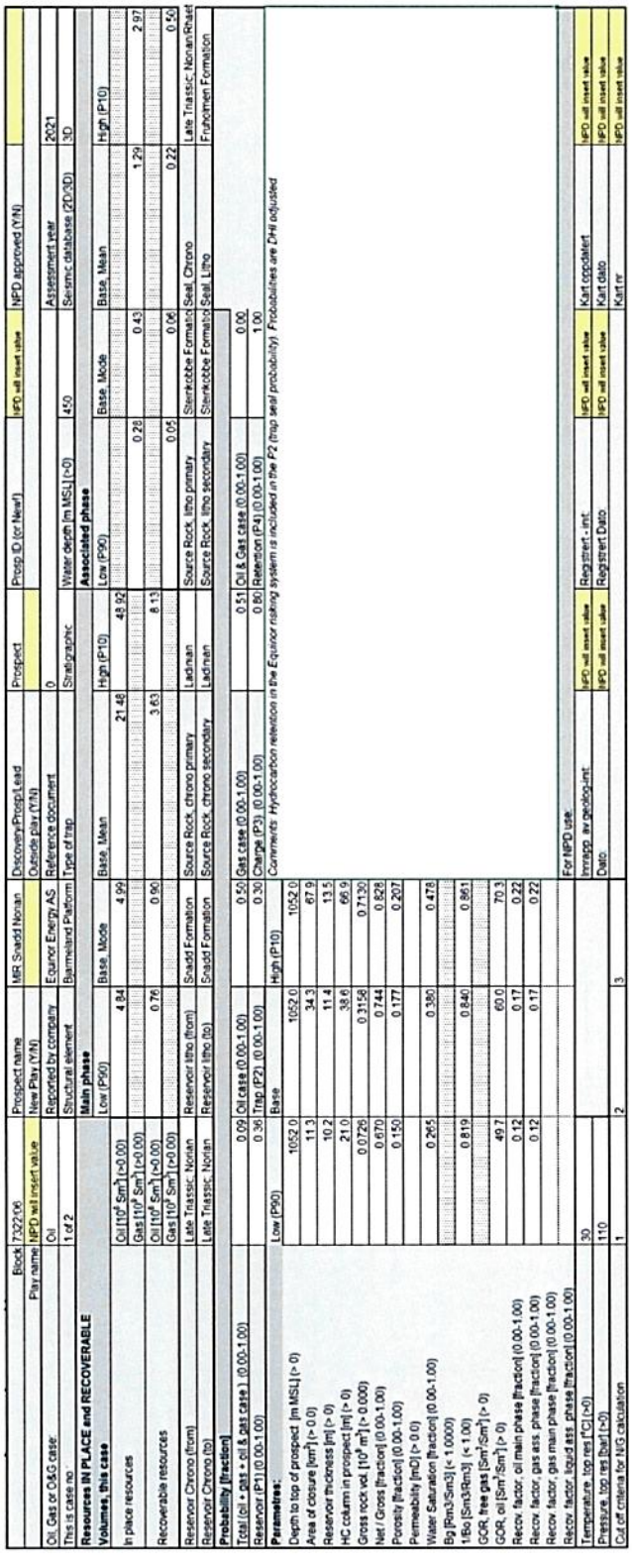
1. NPD form no 5, Mir Down Realgrunnen prospect, oil case

Block	7322/03	Prospect name	Mir Realgrunnen Dow	Discovery/Prosp/Lead	Prospect	Prosp ID (or Near)	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 C&G case	Oil	Reported by company	Equinor Energy AS	Reference document	0			Assessment year	2021
This is case no	1 of 2	Structural element	Balmeland Platform	Type of trap	Stratigraphic	Water depth [m MSL] (>0)	450	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)	7.87	9.95	44.69	122.84				
	Gas [10^9 Sm^3] (>0.00)					0.45	0.68	2.67	7.34
Recoverable resources	Oil [10^6 Sm^3] (>0.00)	1.73	2.18	10.18	27.89				
	Gas [10^9 Sm^3] (>0.00)					0.10	0.13	0.61	1.65
Reservoir Chrono (from)	Early Jurassic, Toarcian	Reservoir litho (from)	Sta Formation	Source Rock, chrono primary	Ladinian	Source Rock, litho primary	Stenkobbe Formation	Seal, Chrono	Late Jurassic
Reservoir Chrono (to)	Middle Jurassic	Reservoir litho (to)	Sta Formation	Source Rock, chrono secondary	Ladinian	Source Rock, litho secondary	Stenkobbe Formation	Seal, Litho	Fuglen/Hekkingen formation
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0.26	Oil case (0.00-1.00)	0.50	Gas case (0.00-1.00)	0.50	Oil & Gas case (0.00-1.00)	0.00		
Reservoir (P1) (0.00-1.00)	0.68	Trap (P2) (0.00-1.00)	0.48	Charge (P3) (0.00-1.00)	0.79	Retention (P4) (0.00-1.00)	1.00		
Parameters:	Low (P90)	Base	High (P10)	*Comments: Hydrocarbon retention in the Equinor risking system is included in the P2 (trap seal probability). Probabilities are CHE adjusted*					
Depth to top of prospect [m MSL] (> 0)	1019.3	1027.0	1034.7						
Area of closure [km^2] (> 0.0)	8.7	37.6	99.5						
Reservoir thickness [m] (> 0)	10.3	11.8	14.1						
HC column in prospect [m] (> 0)	28.2	66.4	138.3						
Gross rock vol. [10^9 m^3] (> 0.000)	0.0702	0.3971	1.1017						
Net / Gross [fraction] (0.00-1.00)	0.778	0.880	0.967						
Porosity [fraction] (0.00-1.00)	0.154	0.180	0.207						
Permeability [mD] (> 0.0)	120.261	200.435	290.361						
Water Saturation [fraction] (0.00-1.00)	0.101	0.140	0.179						
Bg [Rm3/Sm3] (< 1.0000)									
1/Bo [Sm3/Rm3] (< 1.00)	0.819	0.840	0.861						
GOR, free gas [Sm^3/Sm^3] (> 0)									
GOR, oil [Sm^3/Sm^3] (> 0)	49.7	60.0	70.3						
Recov. factor, oil main phase [fraction] (0.00-1.00)	0.20	0.23	0.26						
Recov. factor, gas ass. phase [fraction] (0.00-1.00)	0.20	0.23	0.26						
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)	27.00			Innlagt av geologiint:	NPD will insert value	Registrert - int:	NPD will insert value	Kart oppdatert	NPD will insert value
Pressure, top res [bar] (>0)	108.00			Dato:	NPD will insert value	Registrert Dato:	NPD will insert value	Kart dato	NPD will insert value
Cut off criteria for NPD calculation	1	2	3					Kart nr	NPD will insert value

2. NPD form no 5, Mir Down Realgrunnen prospect, gas case

Block	7322/3	Prospect name	Mir Realgrunnen Dow	Discovery/Prosp/Lead		Prospect		Prosp ID (or Near!)		NPD approved (Y/N)		
Play name	NPD will insert value	New Play (Y/N)		Outside play (Y/N)								
Oil, Gas or Oil/G case	Gas	Reported by company	Equinor Energy AS	Reference document		0				Assessment year	2021	
This is case no:	2 of 2	Structural element	Bjarmeland Platform	Type of trap		Stratigraphic		Water depth [m MSL] (>0)	450	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)							0.03		0.04	0.19	0.50
	Gas [10^9 Sm^3] (>0.00)		1.45	1.36	8.45	23.21						
	Oil [10^6 Sm^3] (>0.00)							0.01		0.02	0.07	0.20
Recoverable resources	Gas [10^9 Sm^3] (>0.00)		0.72	0.88	4.20	11.43						
Reservoir Chrono (from)	Early Jurassic-Toarcian	Reservoir litho (from)	Sto Formation	Source Rock, chrono primary		Ladinian		Source Rock, litho primary		Stenkobbe Formation	Seal, Chrono	Late Jurassic
Reservoir Chrono (to)	Middle Jurassic	Reservoir litho (to)	Sto Formation	Source Rock, chrono secondary		Ladinian		Source Rock, litho secondary		Stenkobbe Formation	Seal, Litho	Fuglen/Hekkingen formation
Probability (fraction)												
Total (oil + gas + oil & gas case) (0.00-1.00)	0.29	Oil case (0.00-1.00)	0.50	Gas case (0.00-1.00)		0.50		Oil & Gas case (0.00-1.00)		0.00		
Reservoir (P1) (0.00-1.00)	0.68	Trap (P2) (0.00-1.00)	0.48	Charge (P3) (0.00-1.00)		0.79		Retention (P4) (0.00-1.00)		1.00		
Parameters:	Low (P90)	Base	High (P10)	Comments: Hydrocarbon retention in the Equinor risking system is included in the P2 (trap seal probability). Probabilities are Chi adjusted								
Depth to top of prospect [m MSL] (> 0)	1019.3	1027.0	1034.7									
Area of closure [km^2] (> 0.0)	8.7	37.6	99.5									
Reservoir thickness [m] (> 0)	10.3	11.8	14.1									
HC column in prospect [m] (> 0)	28.2	66.4	138.3									
Gross rock vol. [10^9 m^3] (> 0.000)	0.0702	0.3971	1.1017									
Net / Gross [fraction] (0.00-1.00)	0.778	0.880	0.967									
Porosity [fraction] (0.00-1.00)	0.154	0.180	0.207									
Permeability [mD] (> 0.0)	120.261	200.435	290.361									
Water Saturation [fraction] (0.00-1.00)	0.101	0.140	0.180									
Bg [Rm3/Sm3] (< 1.0000)	0.0059	0.0065	0.0072									
1/Bo [Sm3/Rm3] (< 1.00)												
GOR, free gas [Sm^3/Sm^3] (> 0)	33341.0	45685.8	68531.2									
GOR, oil [Sm^3/Sm^3] (> 0)												
Recov. factor, oil main phase [fraction] (0.00-1.00)												
Recov. factor, gas ass. phase [fraction] (0.00-1.00)												
Recov. factor, gas main phase [fraction] (0.00-1.00)	0.45	0.50	0.55									
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)	0.35	0.40	0.45	For NPD use:								
Temperature, top res [°C] (>0)	27.00			Innsjøp. av gassog.init:		NPD will insert value		Registrert - init:	NPD will insert value	Kart oppdatert	NPD will insert value	
Pressure, top res [bar] (>0)	108.00			Dato:		NPD will insert value		Registrert Dato:	NPD will insert value	Kart dato	NPD will insert value	
Cut off criteria for NVG calculation	1	2	3							Kart nr	NPD will insert value	

3. NPD form no 5, Mir Snadd Norian prospect, oil case



Block 7322/06		Prospect name	Mir Snadd Norian	Discovery/Prosp/Lead		Prospect		Prosp ID (or Near)		NPD will insert value		NPD approved (Y/N)	
Play name		New Play (Y/N)		Outside play (Y/N)									
Oil, Gas or O&G case	NPD will insert value	Reported by company	Equinor Energy AS	Reference document		0						Assessment year	2021
This is case no	Oil	Structural element	Barmeland Platform	Type of trap		Stratigraphic		Water depth [m MSL] (>0)		450		Seismic database (2D/3D)	3D
1 of 2													
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)	4.84		4.99	21.46	48.92							
	Gas [10^9 Sm^3] (>0.00)							0.28		0.43		1.29	2.97
	Oil [10^6 Sm^3] (>0.00)	0.76		0.90	3.63	8.13							
Recoverable resources	Gas [10^9 Sm^3] (>0.00)							0.05		0.06		0.22	0.50
Reservoir Chrono (from)	Late Triassic, Norian	Reservoir litho (from)	Snadd Formation	Source Rock, chrono primary		Ladinian		Source Rock, litho primary		Stenkobbe Formation		Seal, Chrono	Late Triassic, Norian/Rhaet
Reservoir Chrono (to)	Late Triassic, Norian	Reservoir litho (to)	Snadd Formation	Source Rock, chrono secondary		Ladinian		Source Rock, litho secondary		Stenkobbe Formation		Seal, Litho	Fruholmen Formation
Probability [fraction]													
Total (oil + gas + oil & gas case) (0.00-1.00)		0.09	Oil case (0.00-1.00)		0.50	Gas case (0.00-1.00)		0.51	Oil & Gas case (0.00-1.00)		0.00		
Reservoir (P1) (0.00-1.00)		0.36	Trap (P2) (0.00-1.00)		0.30	Charge (P3) (0.00-1.00)		0.80	Retention (P4) (0.00-1.00)		1.00		
Parameters:		Low (P90)	Base	High (P10)		*Comments: Hydrocarbon retention in the Equinor risking system is included in the P2 (trap seal probability). Probabilities are DHI adjusted*							
Depth to top of prospect [m MSL] (> 0)		1052.0		1052.0									
Area of closure [km^2] (> 0.0)		11.3		34.3		67.9							
Reservoir thickness [m] (> 0)		10.2		11.4		13.5							
HC column in prospect [m] (> 0)		21.0		38.6		66.9							
Gross rock vol. [10^9 m^3] (> 0.000)		0.0726		0.3158		0.7130							
Net / Gross [fraction] (0.00-1.00)		0.670		0.744		0.828							
Porosity [fraction] (0.00-1.00)		0.150		0.177		0.207							
Permeability [mD] (> 0.0)													
Water Saturation [fraction] (0.00-1.00)		0.265		0.380		0.478							
Bg [Rm3/Sm3] (< 1.0000)													
1/Bo [Sm3/Rm3] (< 1.00)		0.819		0.840		0.861							
GOR, free gas [Sm^3/Sm^3] (> 0)													
GOR, oil [Sm^3/Sm^3] (> 0)		49.7		60.0		70.3							
Recov. factor, oil main phase [fraction] (0.00-1.00)		0.12		0.17		0.22							
Recov. factor, gas ass. phase [fraction] (0.00-1.00)		0.12		0.17		0.22							
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)	30					Immapp. av geolog.int.		NPD will insert value	Registrert - int.	NPD will insert value	Kart oppdatert	NPD will insert value	
Pressure, top res [bar] (>0)	110					Date:		NPD will insert value	Registrert Dato	NPD will insert value	Kart dato	NPD will insert value	
Cut off criteria for NTG calculation	1	2	3								Kart nr	NPD will insert value	

4. NPD form no 5, Mir Snadd Norian prospect, gas case

Block	7322/06	Prospect name	MIR Snadd Norian	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:	Gas	Reported by company	Equinor Energy AS	Reference document	0			Assessment year	2021
This is case no.:	2 of 2	Structural element	Bjarmeland Platform	Type of trap	Stratigraphic	Water depth [m MSL] (>0)	450	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)					0.02	0.02	0.09	0.20
	Gas [10^9 Sm^3] (>0.00)	0.88	0.87	4.02	9.03				
Recoverable resources	Oil [10^6 Sm^3] (>0.00)					0.01	0.01	0.04	0.08
	Gas [10^9 Sm^3] (>0.00)	0.44	0.40	2.01	4.55				
Reservoir Chrono (from)	Late Triassic; Norian	Reservoir litho (from)	Snadd Formation	Source Rock, chrono primary	Ladinian	Source Rock, litho primary	Steinkobbe Formatio	Seal, Chrono	Late Triassic; Norian/Rhae
Reservoir Chrono (to)	Late Triassic; Norian	Reservoir litho (to)	Snadd Formation	Source Rock, chrono secondary	Ladinian	Source Rock, litho secondary	Steinkobbe Formatio	Seal, Litho	Fruholmen Formation
Probability [fraction]									
Total (oil + gas + oil & gas case) (0.00-1.00)	0.09	Oil case (0.00-1.00)	0.50	Gas case (0.00-1.00)	0.51	Oil & Gas case (0.00-1.00)	0.00		
Reservoir (P1) (0.00-1.00)	0.36	Trap (P2) (0.00-1.00)	0.30	Charge (P3) (0.00-1.00)	0.80	Retention (P4) (0.00-1.00)	1.00		
Parametres:	Low (P90)	Base	High (P10)	*Comments: Hydrocarbon retention in the Equinor risking system is included in the P2 (trap seal probability). Probabilities are DHI adjusted.*					
Depth to top of prospect [m MSL] (> 0)	1052.0	1052.0	1052.0						
Area of closure [km^2] (> 0.0)	11.3	34.3	67.9						
Reservoir thickness [m] (> 0)	10.2	11.4	13.5						
HC column in prospect [m] (> 0)	21.0	38.6	66.9						
Gross rock vol. [10^9 m^3] (> 0.000)	0.0726	0.3158	0.7130						
Net / Gross [fraction] (0.00-1.00)	0.670	0.744	0.828						
Porosity [fraction] (0.00-1.00)	0.150	0.177	0.207						
Permeability [mD] (> 0.0)									
Water Saturation [fraction] (0.00-1.00)	0.265	0.380	0.478						
Bg [Rm3/Sm3] (< 1.0000)	0.0059	0.0065	0.0072						
1/Bo [Sm3/Rm3] (< 1.00)									
GOR, free gas [Sm^3/Sm^3] (> 0)	33341.0	45685.8	68531.2						
GOR, oil [Sm^3/Sm^3] (> 0)									
Recov. factor, oil main phase [fraction] (0.00-1.00)									
Recov. factor, gas ass. phase [fraction] (0.00-1.00)									
Recov. factor, gas main phase [fraction] (0.00-1.00)	0.45	0.50	0.55						
Recov. factor, liquid ass. phase [fraction] (0.00-1.00)	0.35	0.40	0.45	For NPD use:					
Temperature, top res [°C] (>0)	30			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)	110			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