Doc. No.

AU-EXP NUKE 00240

Valid from: 25.5.2020 Rev. no. 1.0

PL864 License Surrender Report

Parts of blocks 6/3, 7/1, 7/2, 7/4, 7/5, 7/6, 7/8, 16/11 &16/12

Reference is made to the email sent to MPE dated 08.05.2020 (our reference AU-EXP NUKE ANS-00233) regarding surrender of production license PL864. This report outlines the key license history, database, and prospect evaluations of PL 864, and fulfils the requirement by the NPD for a license status report.

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1 KEY LICENSE HISTORY

Production license PL864 located on the Jæren High, east of the main Central Graben (Figure 1.1), was awarded 10th of February 2017 as a part of the 2016 APA award. Equinor Energy AS was awarded the operatorship with 40% and with A/S Norske Shell (20%), AkerBP ASA (20%) and Petoro AS (20%) as partners. Work obligations were either to reprocess existing seismic or acquire new seismic and decide on a Drill or Drop within 10.02.2020. The partnership applied for a 3 month extension of the DoD decision due to the fact that important analysis results from the well GB 22/10b-9A was not finalized and fully implemented into the PL864. The license was granted a 3 month extension with a DoD date at 10.5.2020. After implemented all the important analyses from the GB 22/10b-9A the partnership has made a unanimous drop decision for PL 864.

Work commitment

Work obligations were to:

- Reprocess/Acquire new seismic: 10.02.2020 - Fulfilled
- Drill or Drop Decision: 10.02.2020. Extended to 10.05.2020
- BoK: 10.02.2022

- BoV: 10.02.2024
- PDO: 10.02.2025

Reasons for license surrender

Mapping with the new broadband seismic has identified 3 prospects in the license; Dalhaug, Dalsnakken and Dalsniba. The best prospect, the Dalhaug was mainly dependent on long distance migration of oil from the mature Central Graben located in the UK sector. This model was tested in the recent Equinor operated well GB22/10b-9A which was dry. The dry Lifjellet well verifies the very high risk on the possible oil migration from the mature Kimmeridge Clay in the deep Central Graben (Fisher Bank Basin) and all the way up to the Dalhaug prospect. Although the Kimmeridge Clay./Mandal Fms. represents a good to excellent source rock in the area, the limited size and general immaturity indicate limited expelled oil volume from the possible local source rock. Partners in PL 864 do not see enough value in the prospects to continue with a drill decision in 2020.

2 DATABASE

2.1 Seismic data

Table 2.1: List of seismic surveys in the common database.

Survey/Dataset	Type	Data owner	Year	NPDID	Market available
PGS17003CGR	Broadband	License	2017	8428	Y
PGS16008	Broadband	License	2014	8339	Y

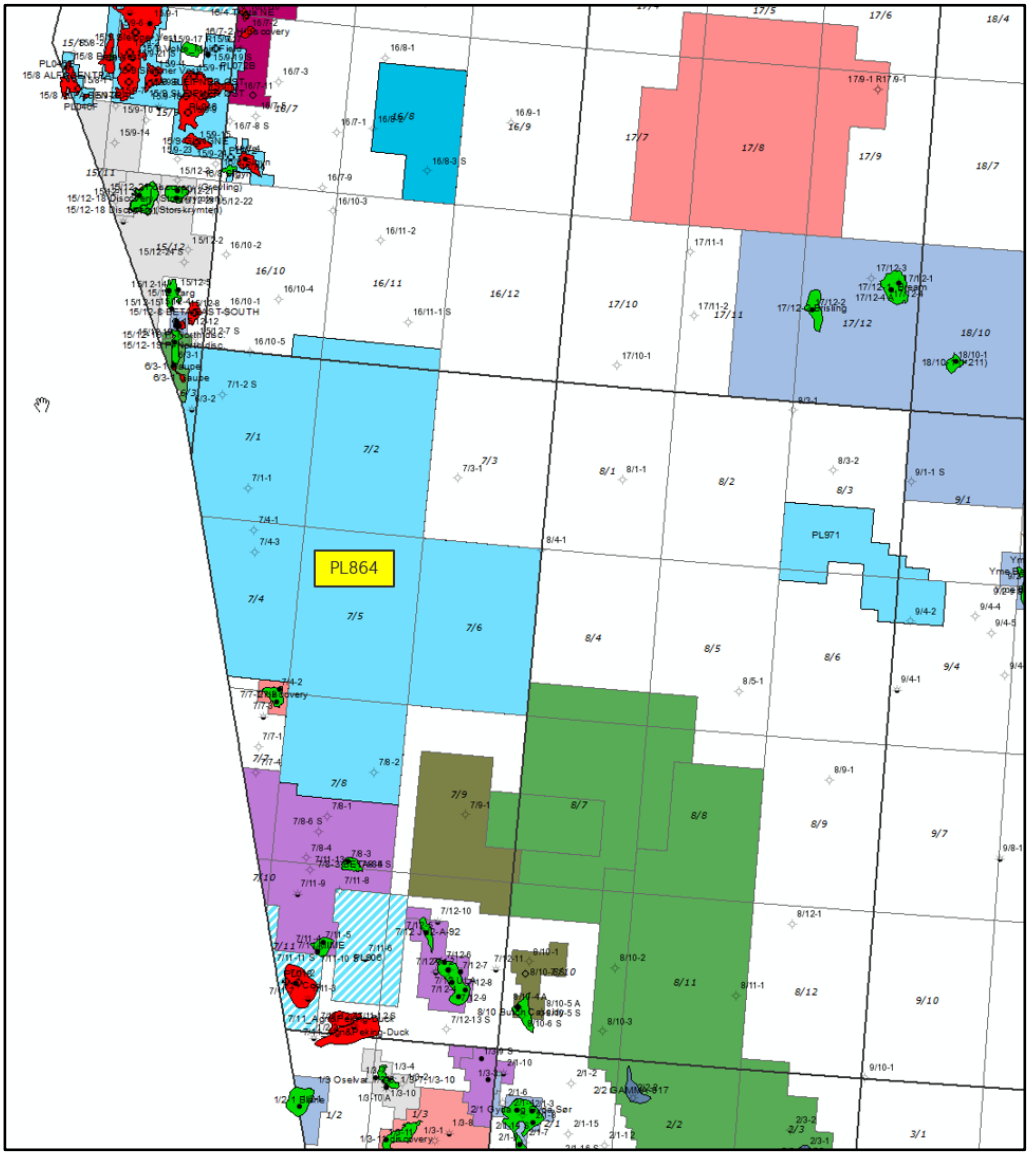

Figure 1.1 – Location map for PL 864 on the Jæren High.

The work program in the license was to reprocess or acquire new seismic. The license decided to purchase the new PGS17003CGR multiclient broadband seismic covering a large part of the license and also to include parts of the existing broadband seismic PGS16008 in the southern part (Figure 2.1 & Table 2.1). The new PGS17003 PSDM

seismic data has high resolution, and relative amplitudes are preserved for AVO analysis, and is of good quality, with relatively good imaging of the salt structures, Triassic pods and Jurassic interpods (Figure 2.2).

The well database used in the evaluation of PL864 includes wells from Norway and UK and is given in Tables 2.2 and 2.3 respectively.

3 REVIEW OF GEOLOGICAL AND GEOPHYSICAL STUDIES

In the APA 2016 application, the HC charging of the main prospect, Dalhaug, was deemed to have the highest risk. The main task has therefore been to map possible migration pathways from the deep and mature Central Graben (Fisher Bank Basin) and all the way up to the Dalhaug prospect. The updated mapping shows that the Ula sandstone interpod system (within the Lifjellet-Dalhaug fairway) are generally disconnected from the basin in the west by the Triassic pods (Figure 3.1). This lack of direct connection to the mature source rock in Fisherbank Basin demonstrates the increased risk of charging the Dalhaug prospect. The updated mapping also shows that the Lifjellet prospect located in UK P2378, has to be completely filled before it can spill HC eastward to the Dalhaug prospect (Figures 3.1 & 3.2). The recent dry well on the Lifjellet prospect (GB22/10b-9A) have now resulted in a very high risk for the long-distance migration source model for the Dalhaug prospect.

Geochemical analyses of the Kimmeridge Clay Fm. in the Lifjellet well indicate a good to excellent source rock, but the maturity of the source rock is at the early oil to beginning of mid oil maturity. The limited size of the Dalhaug local kitchen and the general immaturity, indicate limited expelled oil volume.

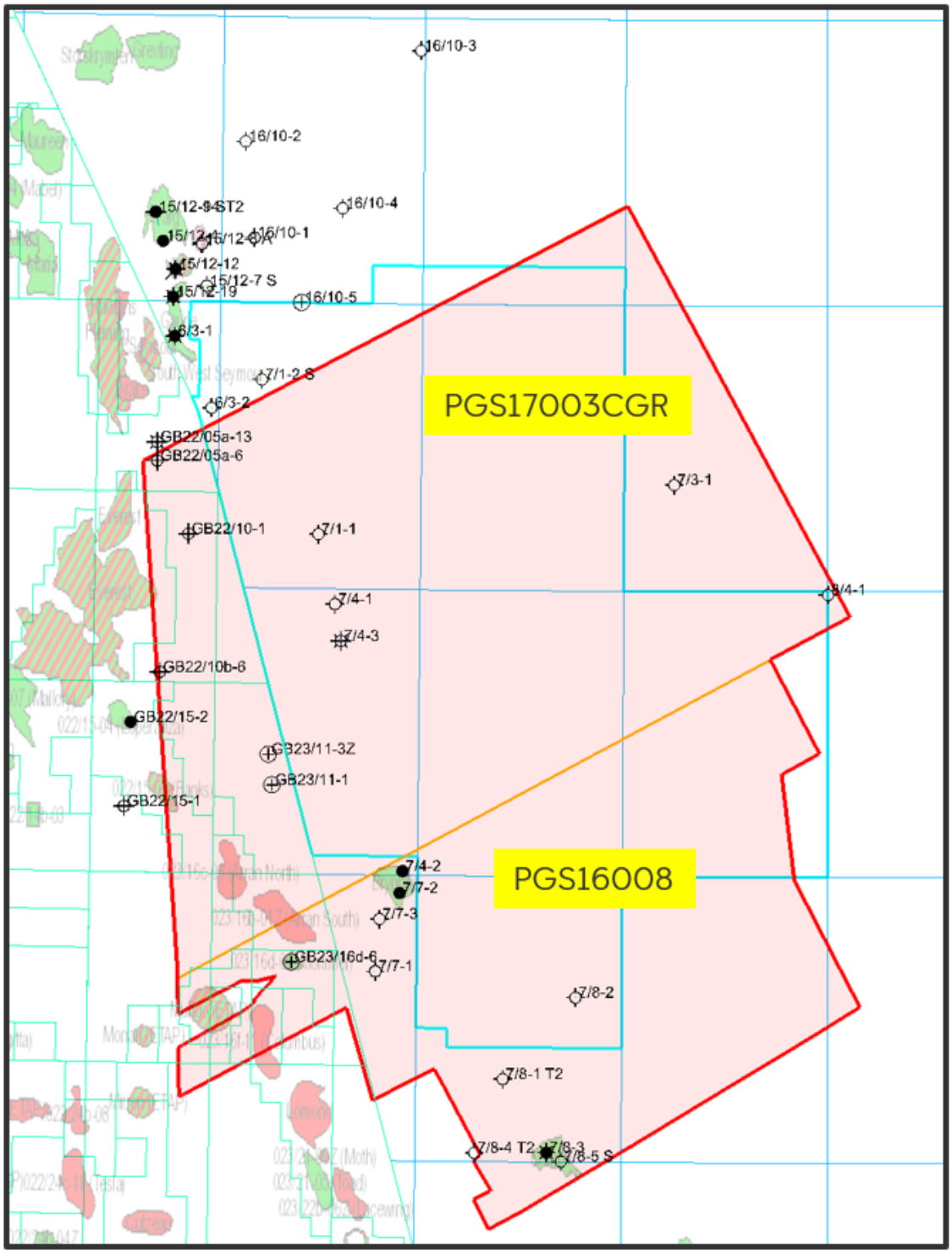

Figure 2.1 – Seismic survey and well database.

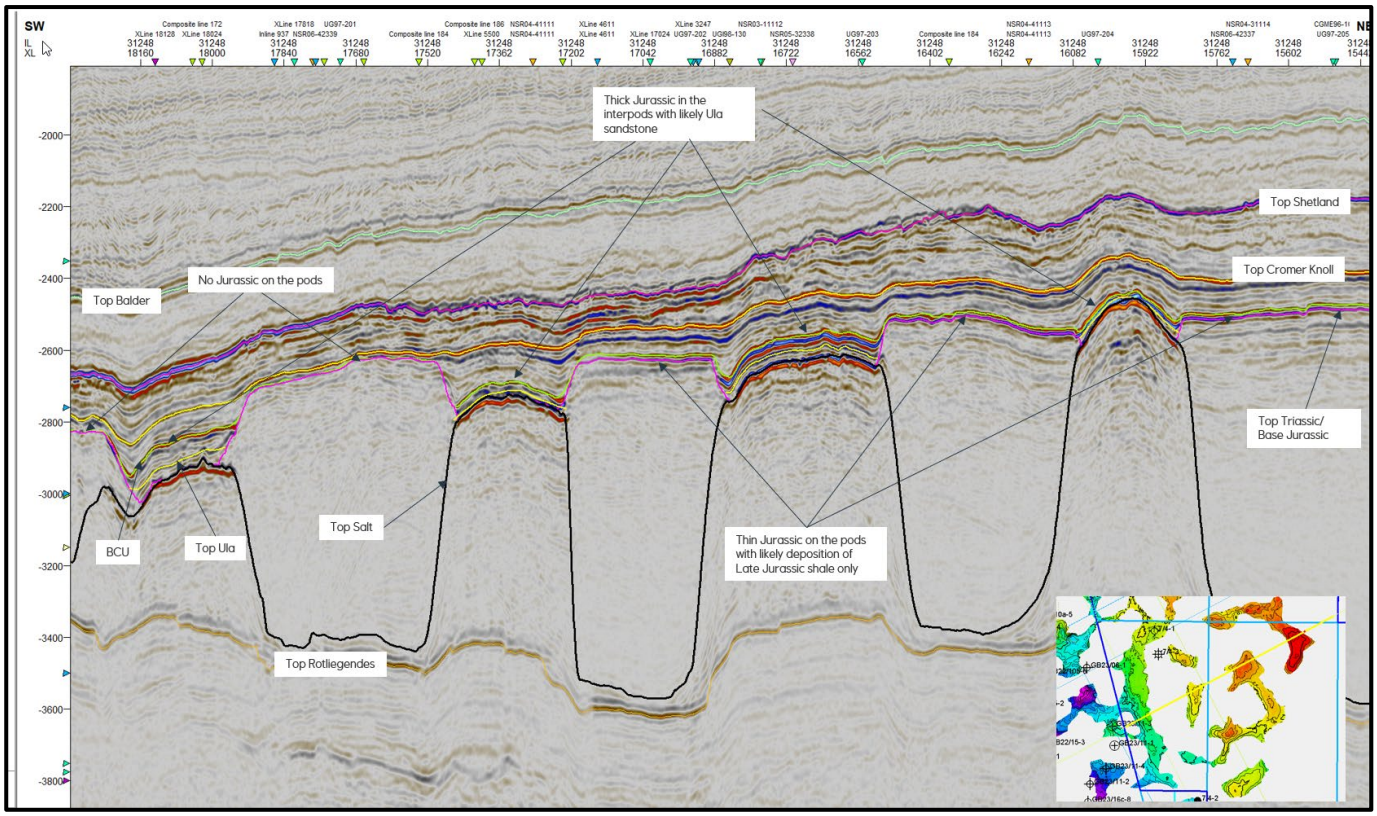

Figure 2.2 – PGS17003CGR Inline 31248.

4 PROSPECT UPDATE

Mapping with the new PGS17003CGR confirms the robust 4-way closure of the Dalhaug prospect (Figure 4.1) with a vertical closure of 92m, and confirming the low trap risk (Pg trap = 0.9). Although the Fulmar - Ula sandstone encountered in the Lifjellet well was thinner than expected, the reservoir risk in the Dalhaug prospect is still very low (Pg reservoir = 0.9). However, the recent dry well on the Lifjellet prospect have now resulted in a very high risk for charging the Dalhaug prospect. (Pg source = 0.19) and a high degree of underfilling of the structure is expected. The limited size of the Dalhaug local kitchen and the general immaturity, indicate limited expelled oil volume. The updated volumes and risks are shown in tables 4.1 & 4.2.

well	year	date of completion	released	public	years old	drilling operator	current license	status	age at TD	additional	
7/4-3	2013	03.06.2013	2015	2015	4	Lundin	PL864	dry with shows	triassic	Carlsberg	no Jurassic, no sst in triasssic
16/10-5	2012	27.11.2012	2014	2015	5	Talisman	PL865	dry	middle Jurassic	Isbjørn	Ula sst
15/12-19	2008	20.05.2008	2010	2010	9	BG	PL292B, Gaupe	oil	triassic	Pi North	4m Draupne shales above triassic Skagerrak sst
7/1-2S	2008	08.05.2008	2010	2010	9	StatoilHydo	PL864	oil/gas	middle Jurassic	Yoda	Ula sst
7/4-2	2008	13.03.2008	2010	2010	9	Lundin	PL148, Brynhild	oil/gas	late permian	Nemo, appraisal	Ula sst
7/8-5S	2006	03.06.2006	2008	2008	11	Talisman	open, Krabbe	dry (below OWC)	triassic		Ula sst
15/12-14	2003	31.12.2003	2005	2005	14	Pertra	PL038, Varg	oil	middle jurassic	appraisal Varg West	Hugin sst
15/12-12	2001	09.02.2001	2003	2006	16	Saga	PL038C, Rev	oil/gas	triassic	Rev	intra Heather sst
16/10-4	1998	10.08.1998	2000	2003	19	Norsk Agip	PL865	dry	late permian	Trond	Gas chimney, Hugin sst
16/10-3	1996	01.12.1996	1998	2003	21	Norsk Agip	PL865	dry	triassic	Tyr Central	Hugin sst
7/4-1	1993	21.08.1993	1995	2003	24	Statoil	PL864	dry with shows	late permian	Alpha	Ula sst
7/7-3	1993	04.07.1993	1995	2006	24	Statoil	open	shows	late permian	appraisal Varg West	Ula sst
15/12-9S/9ST2	1992	08.10.1992	1994	2015	25	Statoil	PL038, Varg	oil	triassic	Varg	Hugin sst
7/7-2	1992	25.04.1992	1994	2006	25	Statoil	PL148, Brynhild	oil/gas	late permian	A	Ula sst
15/12-7S	1991	07.01.1991	1993	2005	26	Statoil	open	dry	triassic	Theta North	intra Heather sst
15/12-8/8A	1991	14.07.2007	1993	2007	26	Statoil	open, Beta South	gas/condensate	triassic	Varg discovery	Vestland gp sst, Skagerrak sst
16/10-2	1991	01.08.1991	1993	2004	26	Norsk Agip	PL627	dry	triassic	Delta	Hugin sst
7/7-1	1990	20.02.1990	1992	2004	27	Statoil	open	dry with shows	late triassic		no jurassic, Smith Bank sst
16/10-1	1986	14.07.1986	1988	2004	31	Norsk Agip	open	dry	late permian	Alpha	Hugin sst
6/3-2	1986	10.03.1986	1988	2005	31	Statoil	PL864	dry with shows	early permian		Hugin sst
6/3-1	1985	01.02.1985	1987	2005	32	Statoil	PL292, Gaupe	oil/gas	late triassic	Pi	intra Draupne fm sst
7/8-4/4T2	1985	20.02.1985	1987	2006	32	Conoco	open	dry	triassic		triassic sst, no jurassic
15/12-4	1984	31.10.1984	1986	2008	33	Statoil	PL038, Varg	oil	middle jurassic		jurassic sst
7/8-3	1983	12.12.1983	1985	2006	34	Conoco	open, Krabbe	oil	late permian		Ula sst
8/4-1	1977	25.07.1977	1979	2005	40	Unocal Norge	open	dry, with shows (?)	late permian		middle jurassic Bryne fm, triassic
7/8-2	1973	29.08.1973	1975	2007	44	Phillips	PL864	dry	late permian	Cero	triassic sst
7/1-1	1971	05.08.1971	1973	2009	46	Amoco	PL864	dry with shows	triassic		no Jurassic
7/3-1	1969	10.06.1969	1971	2004	48	Amoco	open	dry with shows	carboniferous	reference for Ran sst unit	Vestland ggp, Sandnes fm
7/8-1/1T2	1969	05.02.1969	1971	2007	48	Phillips	open	dry, with spotted shows	late triassic		middle jurassic sst (Sandnes, Bryne fms)

Table 2.2 - Well database for PL 864 (Norway)

well	year	years old	drilling operator	current license	status	age at TD	additional
GB22/05a-13	1990	27	Amoco	UK P2217	dry with shows?	early triassic	Upper Jurassic sst
GB22/05a-6	1983	34	Amoco	UK P2217	dry	late jurassic	Upper Jurassic siltstone
GB22/10-1	1970	47	Amoco	open	dry with shows	late permian	no Jurassic, Triassic Smithbank
GB22/10b-6	1988	29	Amerada Hess	open	dry, traces of oil?	early triassic	no Jurassic, Triassic Smithbank
GB23/11-1	1975	42	Ranger Oil	open	dry	early triassic	no Jurassic, Triassic Smithbank
GB23/11-3 and 3Z	1992	25	Amoco	open	dry, traces of oil?	early triassic	Upper Jurassic sst
GB23/16d-06	1994	23	Amerada Hess	open, Mortimer	oil	late permian	Upper Jurassic and Triassic sst
GB22/15-2	1987	30	Total	P2182, Ezperanza	oil	late permian	Upper Jurassic sst
GB22/15-1	1983	34	Total	open		late permian	Upper Jurassic sst
GB22/10b-9A	2019	0	Equinor	UK P2378		late permian	Upper Jurassic sst

Table 2.3 - Well database for PL 864 (UK)

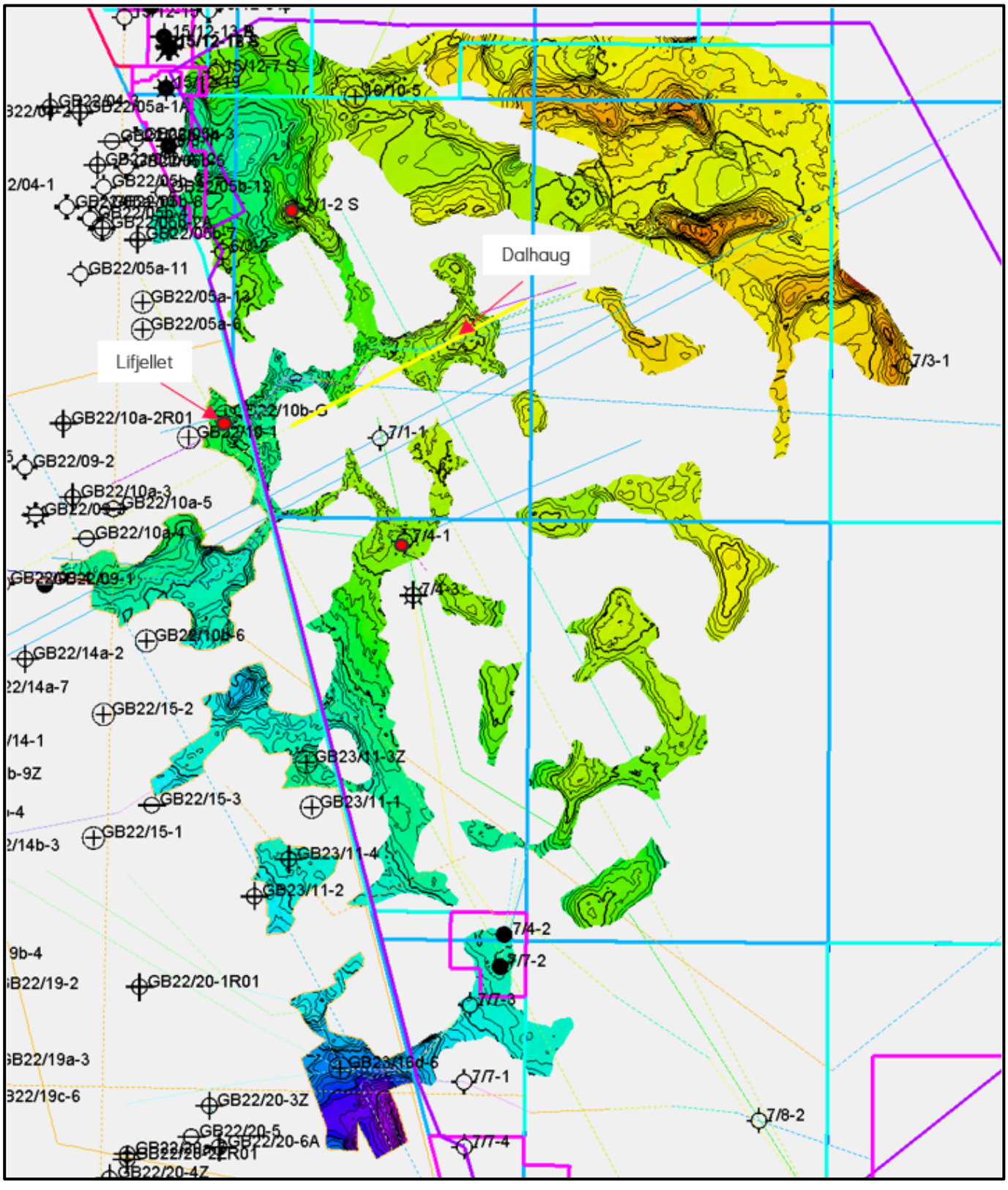
Dalhaug
Lifjellet
GB22/05a-11
GB22/05a-12
GB22/05a-6
GB22/10a-2R01
GB22/09-2
GB22/10a-3
GB22/10a-5
GB22/10a-4
GB22/14a-2
GB22/15-2
GB22/15-3
GB22/15-1
GB23/11-3Z
GB23/11-1
GB23/11-4
GB23/11-2
GB22/20-1R01
GB22/20-3Z
GB22/20-5
GB22/20-6A
GB22/20-4Z
7/1-2 S
7/1-1
7/3-1
7/4-1
7/4-3
7/4-2
7/7-2
7/7-3
7/7-1
7/7-4
7/8-2

Figure 3.1 Top Ula Formation depth, deposited within the interpods in the greater Jæren High area.

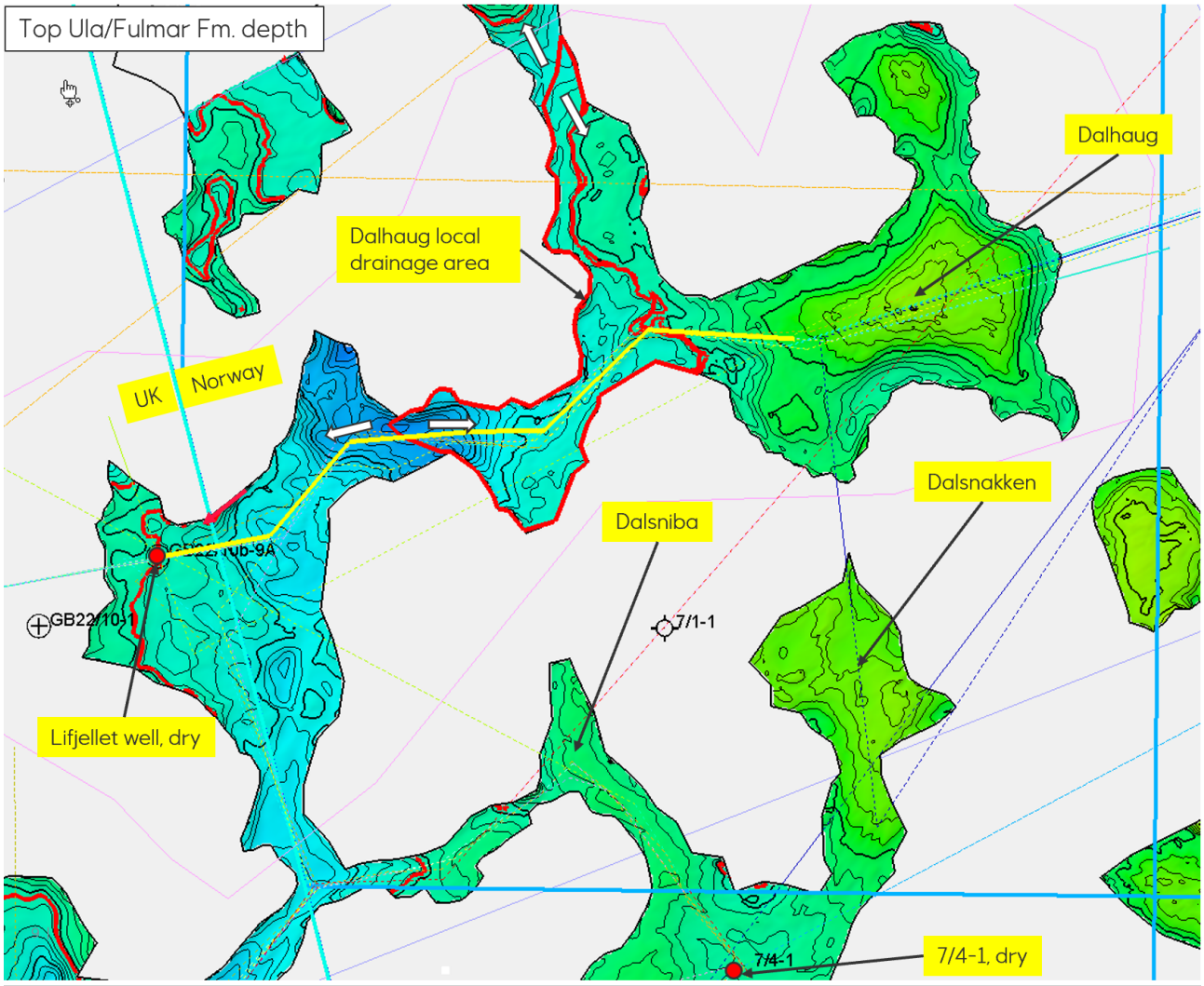

Figure 4.1 Top Ula/Fulmar Fm. depth.

Well:		***Prospect/discovery name:***						
UNDISCOVERED	Prospect segments	In-place res. (MSm^3) main phase 100%, Total Structure			Recoverable res. (MSm^3oe) 100%, Total Structure			Pg %
		P90	Mean	P10	P90	Mean	P10	
Pre drill segment	Dalhaug	4,62	9,8	14,8	2,08	4,41	6,65	15
Pre drill segment	Dalsnakken	5,47	14,3	23,6	1,97	5,13	8,54	11
Pre drill segment	Dalsniba	6,16	12,2	20,1	2,18	4,36	7,23	13

Table 4.1 Volume distribution for the Dalhaug, Dalsnakken and Dalsniba prospects.

Prospect segments	**P-Play**			**P-Prospect/Segment**							**Discovery**	
	Reserv.	Source	Seal	Reservoir		Source			Trap		**Pg**	**Pg (DFI)**
				pre-sence	produc-ability	pre-sence	migra-tion	hc-phase	geo-metry	seal		
Dalhaug	1,00	1,00	1,00	0,90	1,00	0.25	0,75	1,00	1,00	0,90	0,15	
Dalsnakken	1,00	1,00	1,00	0,90	1,00	0,70	0,30	1,00	1,00	0,60	0,11	
Dalsniba	1,00	1,00	1,00	0,90	1,00	0,80	0,30	1,00	1,00	0,60	0,13	

Table 4.2 Risk distribution for the Dalhaug, Dalsnakken and Dalsniba prospects

5 TECHNICAL EVALUATIONS

No valuation has been carried out on the Dalhaug prospect given the expected low volumes and high risk.

6 CONCLUSIONS

The potential HC volumes are relatively small with a comparatively low chance of success. Partners in PL 864 do not see enough value in the Dalhaug prospect (or Dalsnakken – Dalsniba) to continue with a drill decision in 2020, and the license is consequently dropped.