PL 674BS and CS Relinquishment Report

November 2017

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1. Summary and conclusion

The evaluation of PL 674BS and CS identified one prospect called the Zulu prospect. The prospect was identified as a fan-shaped with high amplitudes Well 26/10-1 tested the prospect which had Miocene Utsira Formation sandstones as the objective. The well encountered a gas column of 24 meters in Utsira Fm sandstones with excellent reservoir quality. Subsequent evaluation and interpretation resulted led to the conclusion that the discovery was too small to be economically viable. Consequently, the decision to relinquish the license was made by the partnership in October 2017.

2. Introduction

PL 674BS comprises 80.1 km2 of blocks 17/1 and 26/10, while PL 674CS comprises 163.2 km2 of block 26/10. The licenses are located in the southern part of the Stord Basin, on the Patch Bank Ridge, some 130 km WSW of Haugesund and approximately 35 km northwest of the Johan Sverdrup discovery (Fig. 1).

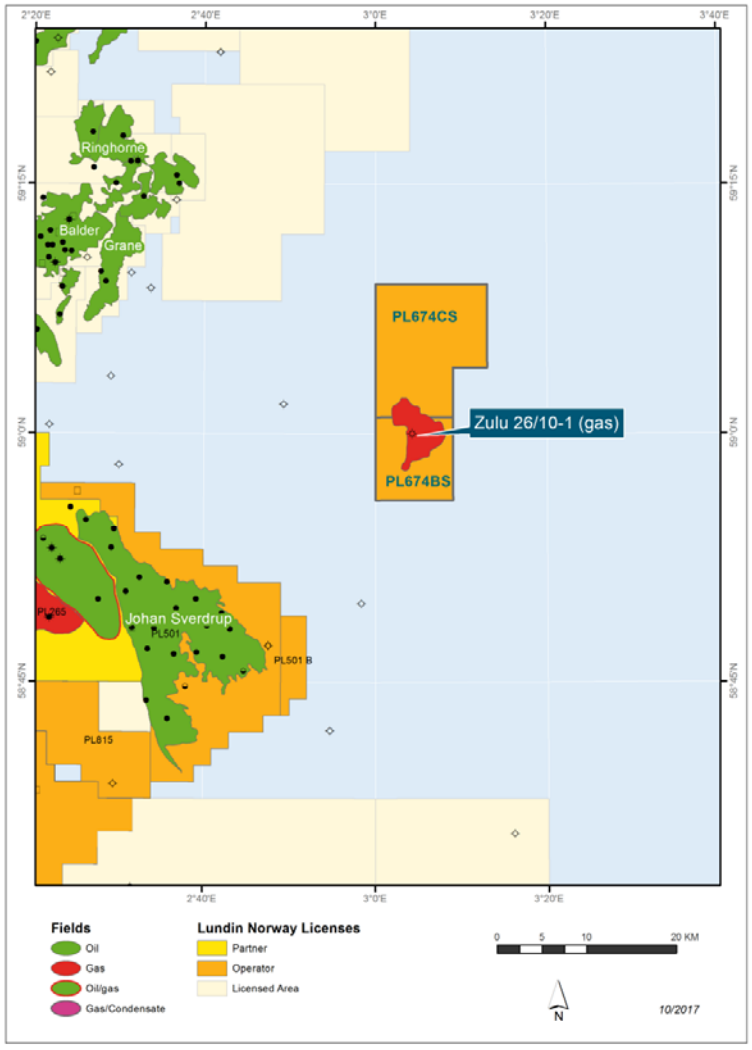

Figure 1: PL 674BS and CS location and well 26/10-1.

3. License award

PL 674BS was carved out of PL 674 as a separate License 28th October 2014, at the same time as the current partnership was established and Lundin was appointed as the operator. The partners are Lundin (40%), Petrolia (35%) and DEA (30%). PL 674CS was awarded as a license extension to PL674BS the 6th February 2015 in APA 2014.

The work programme for PL674BS was to make a drill or drop decision by 28th October 2015.

4. Completed work program and studies

The decision to drill was made shortly after the license being established.

Well 26/10-1 was drilled in January/February 2015, and thus the work obligation for the license was fulfilled.

The well was drilled as a vertical exploration well designed to investigate the hydrocarbon potential of the Zulu prospect. The prospect was a prominent fan complex expected to consist of Miocene age sands/sandstones of the Utsira Formation. It encountered about 24 metres of gas filled reservoir with very good reservoir qualities.

Post well evaluations included biostratigraphy, sedimentological description and interpretations, geochemical analysis and detailed re-interpretation of the seismic data (site survey and 3D).

5. Pre-drill prospectivity evaluation

The Zulu prospect was situated southern part of the Stord Basin, east of Johan Sverdrup field. The prospect was at shallow depth and was recognized as a prominent submarine fan of Miocene age with bright seismic amplitudes interpreted to be representing a hydrocarbon response (see Figure 2). The well tested a model in which ongoing oil migration vertically from the Johan Sverdrup discovery into Skade and Utsira Fms sands and continued horizontally into and trapped in the Zulu structure, see Figure 3.

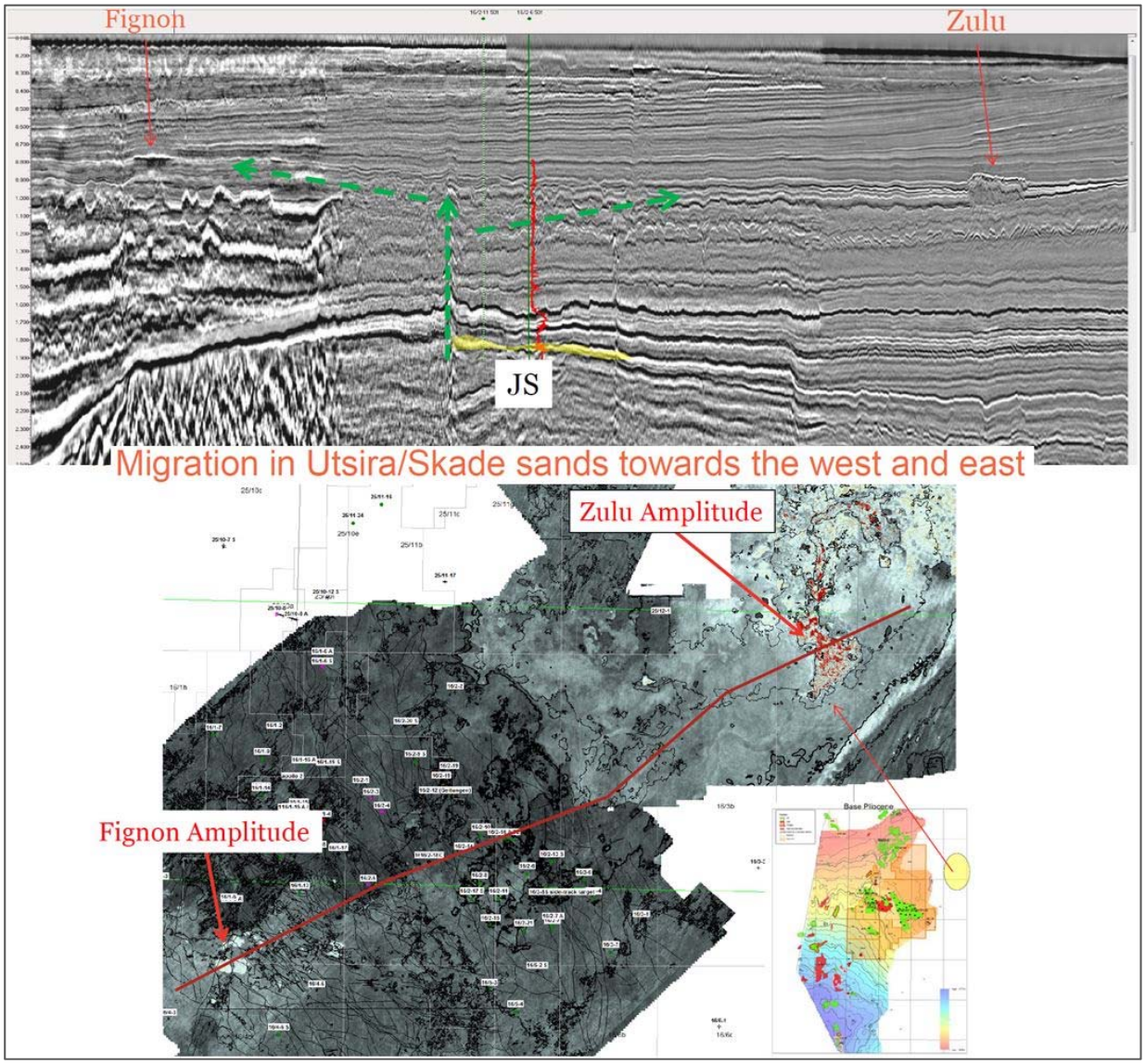

Figure 3: Migration model, pre-drill.

The trap covered a closure of approximately 22 km^2, with the apex at approximately 785 m MSL. Base case pre-drill volumes (oil case) in place was estimated to be 185 mmbbl (with 80% in PL674BC, the remaining in PL674CS)

A top Utsira Fm depth map is shown in Figure 4, and seismic-cross section is shown in Figure 5.

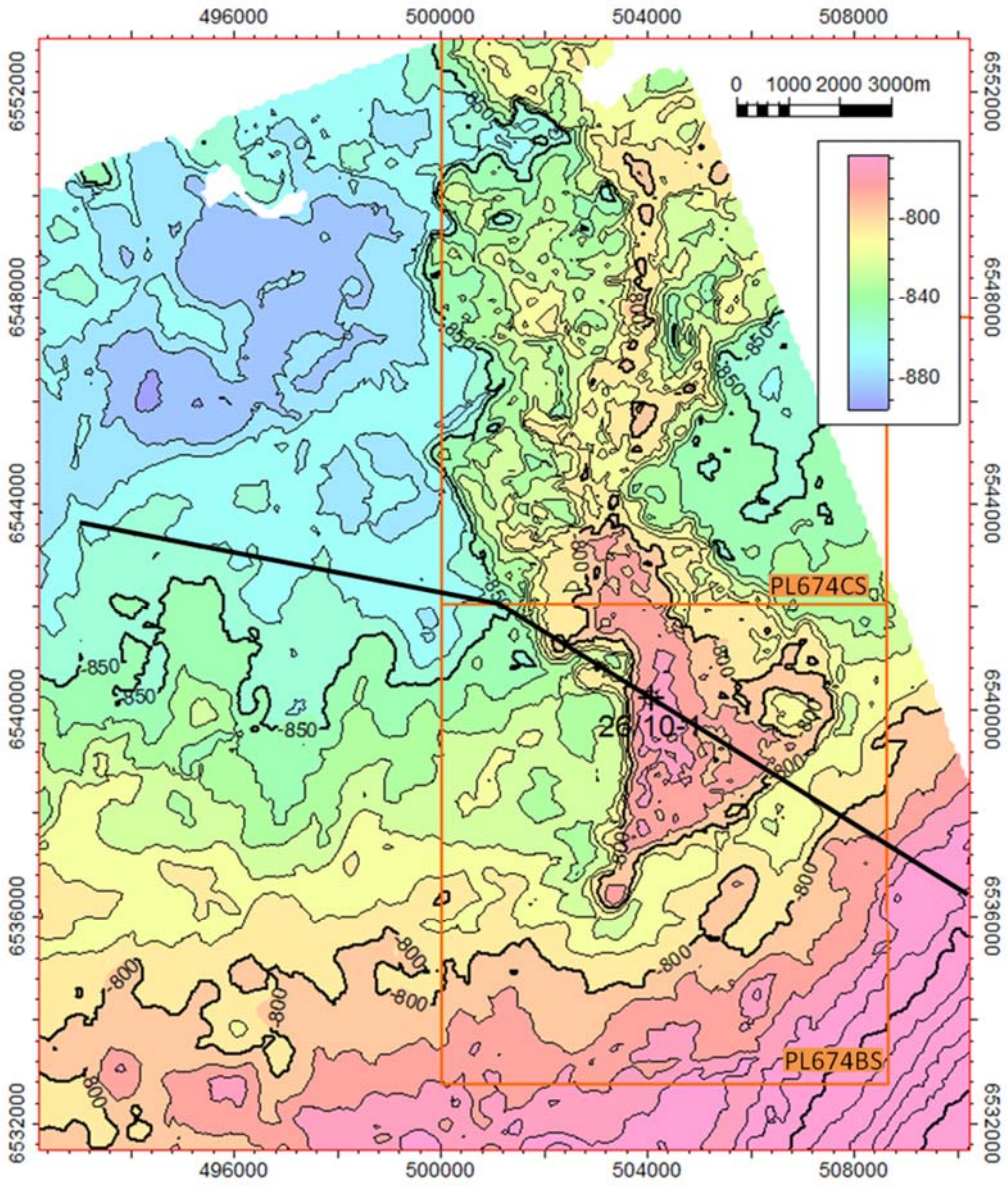

Figure 4: Utsira Fm (top reservoir) depth map. Line location for Arb line in Figure 5.

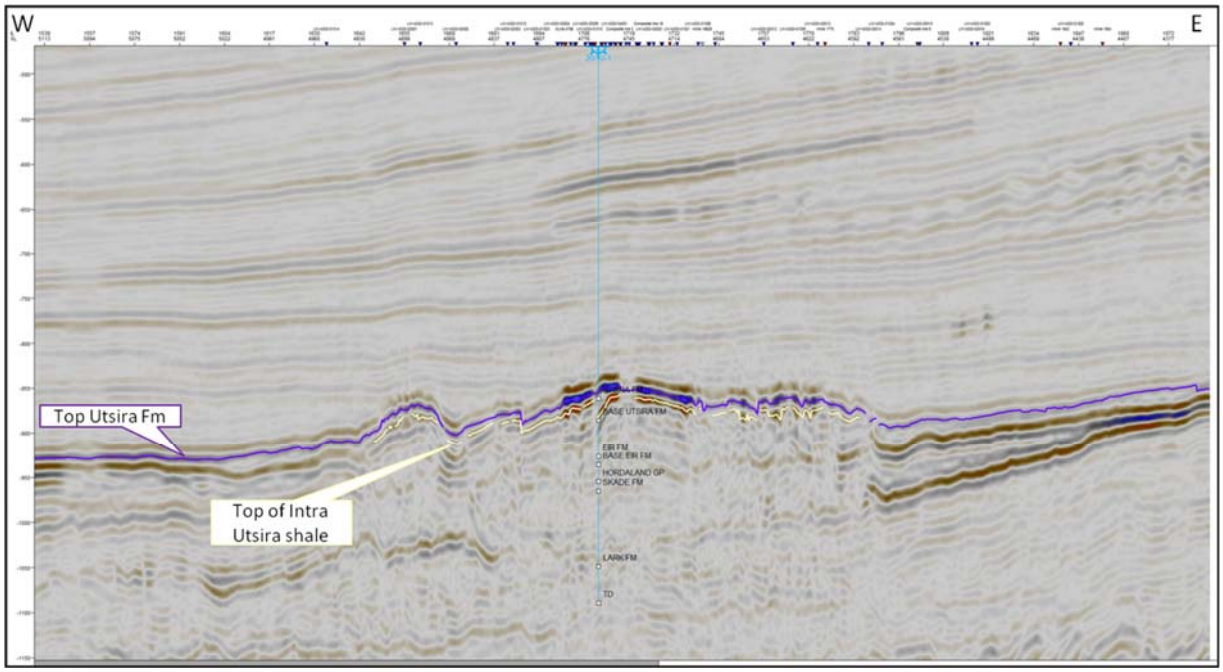

Figure 5: Arbitrary line across Zulu from Gloppe 3D survey. (See figure 4 for location)

6. Well results

Well 26/10-1 was planned as a vertical exploration well at the following location:

X: 504 064.90 m E	Y: 6 540 262.88 m N	UTM Zone 31N
Lat: 59° 00' 01.87" N	Long: 03° 04' 14.70" E	ED-50
Line intersection: (MC-3D Utstord)	Crossline 4769	Inline 1712

The well was spudded on the 20.01.2015 and reached a TD of 1025.0 m RKB in the Lark Fm. The well was plugged and abandoned on the 13.02.2015.

Well 26/10-1encountered very well developed Utsira Fm sandstones. The Utsira sandstone was filled with gas from top at 802.5 m MD RKB to the base of the sand at 825.5 m MD RKB. A gas-water contact (GWC) was estimated at 838 m MD RKB in the Nordland Gp claystones, based on the gas and water gradients established from the MDT log run.

A total of six MDT samples, comprising four gas samples and two water samples were taken and analyzed. The analysis showed that the gas is a biogenic C1-Metane (99.2%) with traces of CO_2 and N_2 (0.1% and 0.6% respectively).

Average reservoir properties for the reservoir sections are shown in the table below.

Zone Name	Interval m MD RKB	Gross m	Reservoir Summary			
			Net m	N/G	PHIE frac	SW* frac
Gas Zone	802.5-838.0	35.5	23.45	0.661	0.362	0.162
Water Zone	838.0-986.9	148.7	92.35	0.621	0.350	1

The cut-off criteria used for all formations:

Net reservoir:

Volume of clay: ≤ 0.5

Porosity: ≥ 0.1

Results versus prognosis

The formation tops associated with the main interpreted seismic reflectors were within given uncertainty ranges. Formation top prognosis vs actual is shown in Fig 6.

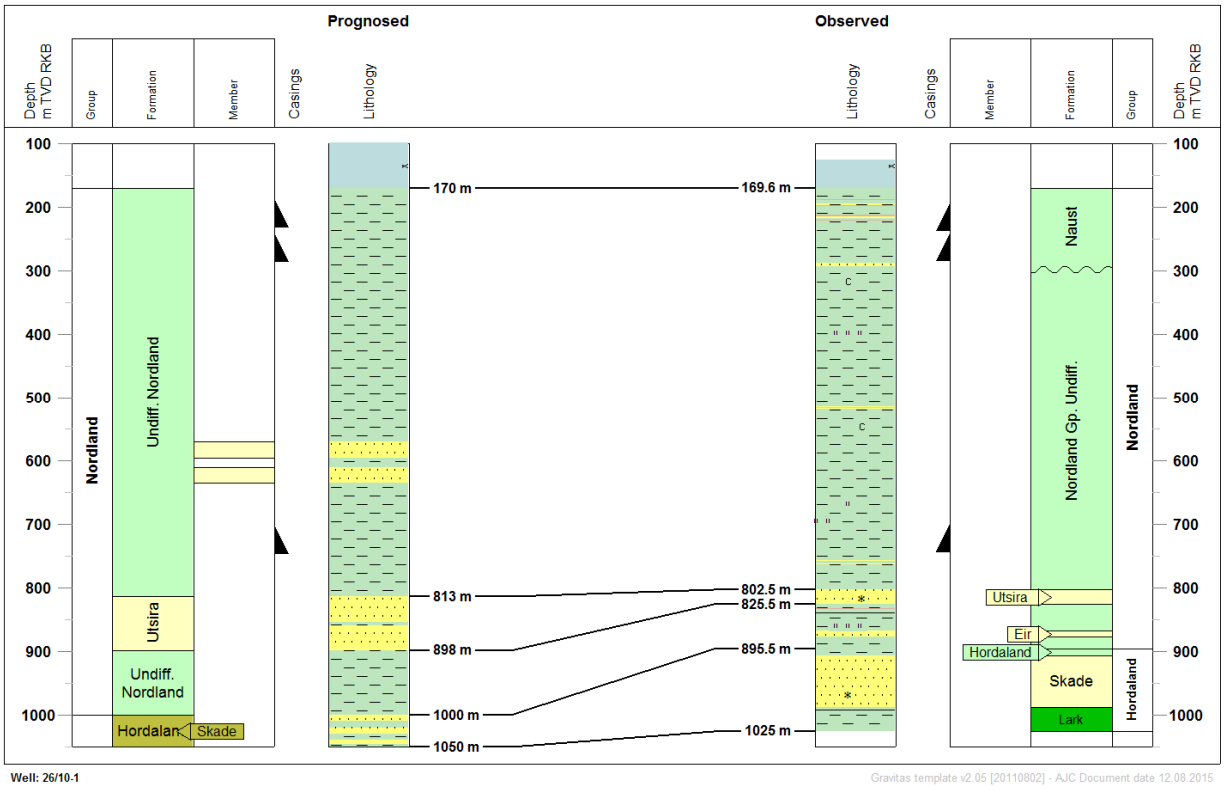

Figure 6: Well 26/10-1, Formation top prognosis vs actual.

The petrophysical interpretation plot is presented in Figure 7.

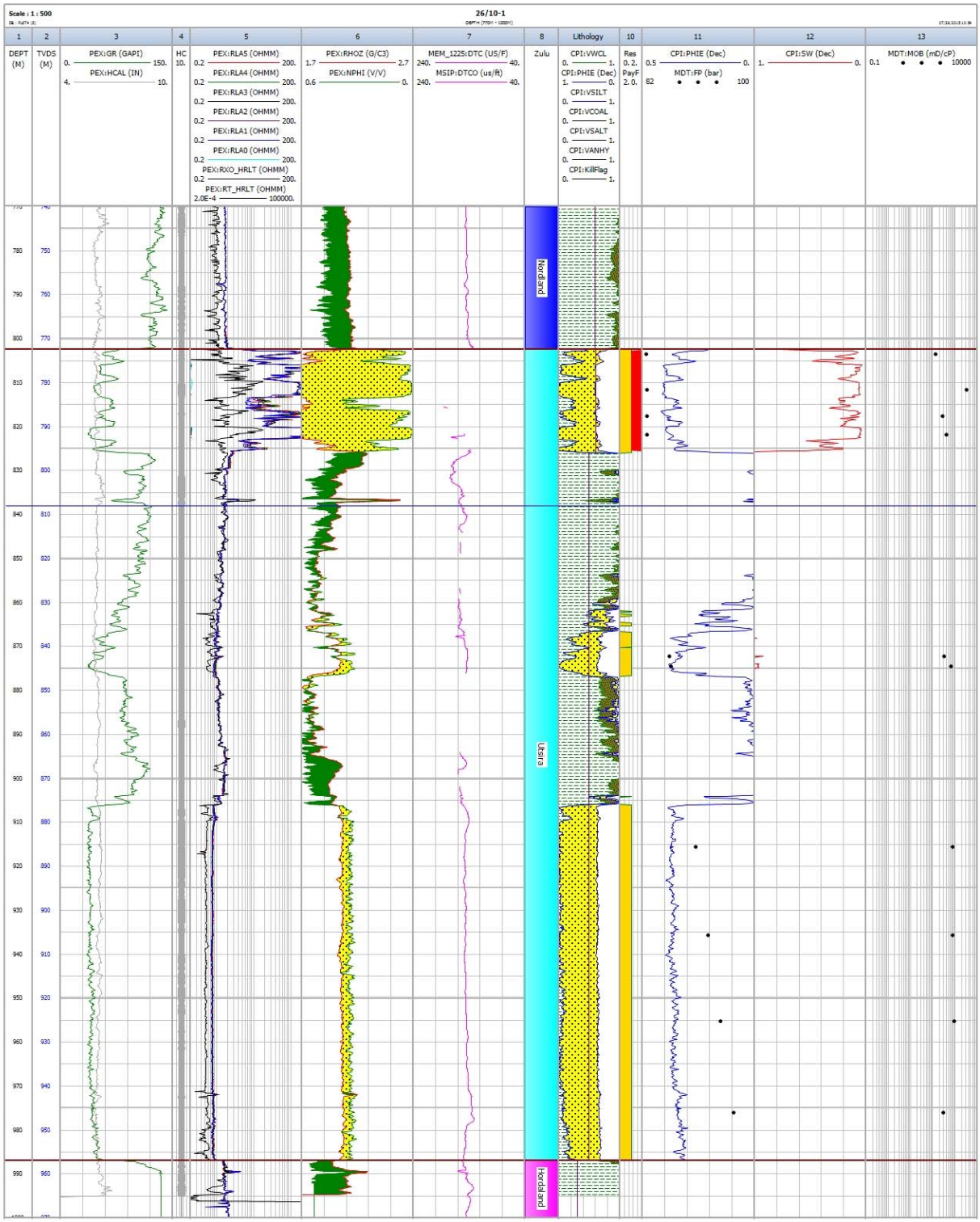

Figure 7: Well 26/10-1, petrophysical interpretation.

7. Volumetrics end economical evaluation

Remaining prospectivity evaluation

No remaining prospectivity in PL 674BS and CS is identified. The well drilled within the license area (Zulu 26/10-1) proved presence of gas, 99% C1 Methane. The pre-well volume estimate (gas case) was reduced by approximately 50% (base case from 2.02GSm3 to 1.07GSm3).

Post well work concluded that the Zulu discovery was not commercial and therefore could not be taken into the next phase, and a decision to relinquish the license has been made by the partnership.