



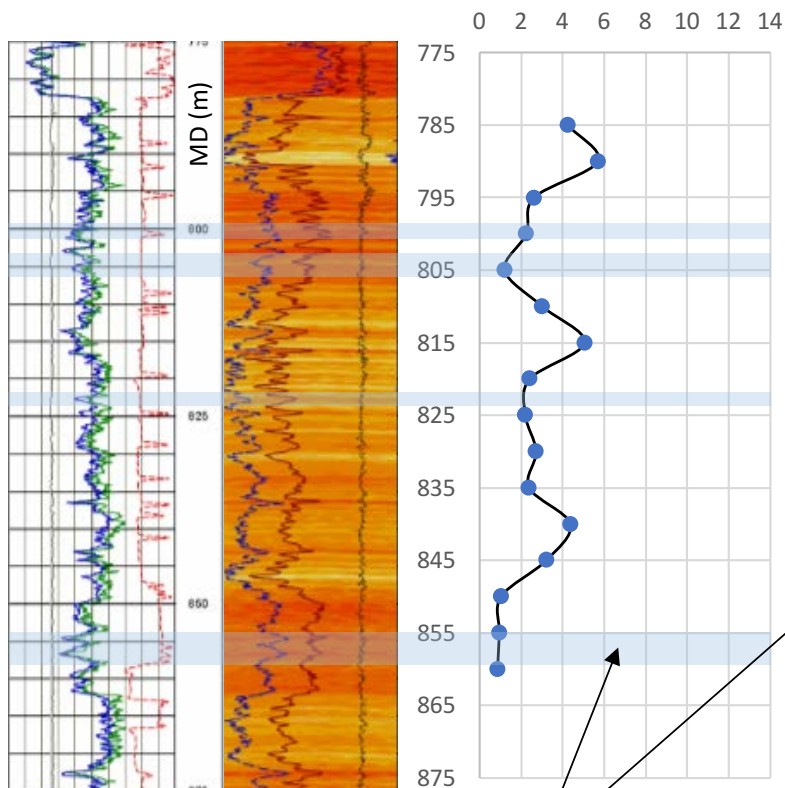
LIDSEY-X2: Geochemical Analysis Update

NOVEMBER 2017

Lidsey X2 – Similarities to Brockham?

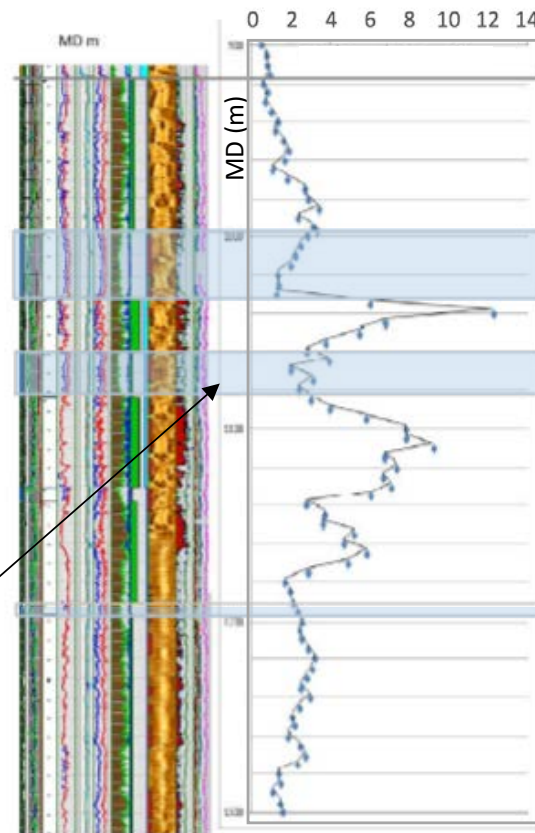
Lidsey X2

Total Organic Content %



Brockham X4Z

Total Organic Content %



IS THERE OIL IN THE KIMMERIDGE AT LIDSEY?

- As at Brockham, thin **naturally fractured limestone beds** are penetrated at Lidsey
- Values of **Total Organic Content (TOC)** are similar to that at Horse Hill & Brockham
- Based on geochemical analysis (VR, Tmax, TOC), the Kimmeridge at Lidsey (although a thinner interval) shows **similar characteristics** to the corresponding interval at Brockham
- TOC is not necessarily a direct indicator of oil (depending on maturity and oil generation)

ARE THERE SIMILARITIES TO HORSE HILL?

- The Horse Hill discovery flowed oil from naturally fractured Kimmeridge limestone intervals
- Although the Kimmeridge is thinner at Lidsey, the presence of naturally fractured limestone intervals similar to those at Horse Hill is encouraging
- The limestones at Horse Hill have already flowed oil in the Weald Basin, and therefore there is potential to develop these at Lidsey
- Lidsey has, in places, higher organic content than at Horse Hill, and shows the same multi-layered shale and Limestone succession



Similar TOC values to Horse Hill



The presence of naturally fractured limestones



Multi-layered shales and limestones



Similar Type I/II oil-prone organic matter



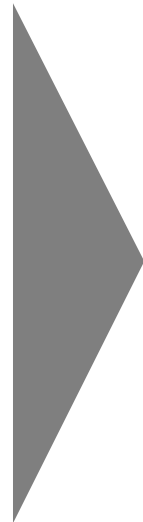
→ The Kimmeridge at Lidsey, although thinner, has similar characteristics to the flowed Horse Hill discovery

Horse Hill data sourced from UKOG RNS, 18th March 2013

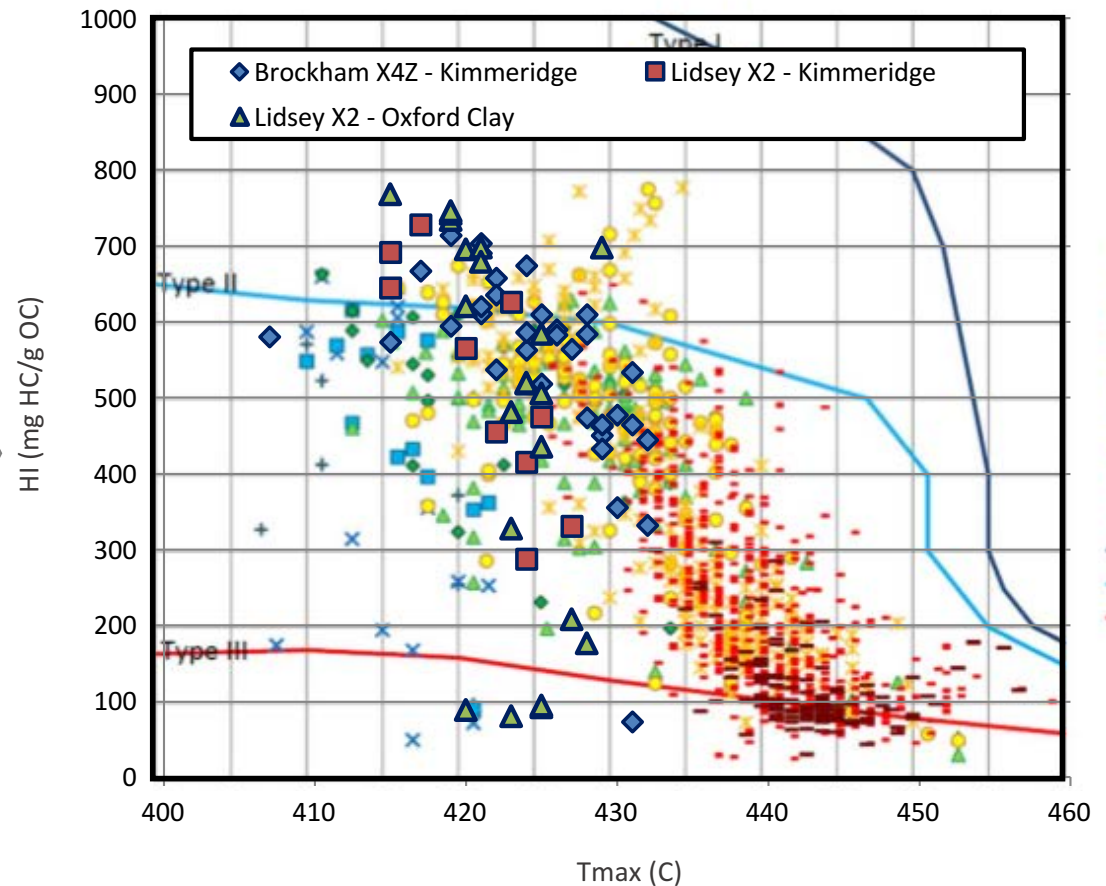
Lidsey X2 – Comparison with the Bakken Shale

HOW DOES LIDSEY COMPARE WITH THE WORLD CLASS BAKKEN SHALE OIL PLAY?

- The Bakken Shale is a hybrid ‘shale oil’ play analogous to the Kimmeridge. In both plays, **natural fractures** allow for production
- Hydrogen Index (HI) and Tmax are **maturity indicators** for hydrocarbon source rocks
- The data from Lidsey compares well with Brockham, and both overlap extensively with the Bakken Shale data, showing a low to medium **level of maturity**
- The data from the Weald sits in the fairway delineated by the Bakken Shale, indicating a **similar potential** to develop as a shale oil play
- The max temperature (Tmax) reached by the Kimmeridge & Oxford at Lidsey and Brockham sits **in the range** reached by the Bakken Shale



Tmax vs HI



→ Lidsey & Brockham geochemical analyses indicate a strong similarity to the Bakken Shale analogue play

Lidsey X2 – Potential for Development

IS THERE POTENTIAL FOR DEVELOPMENT IN THE KIMMERIDGE AT LIDSEY?

Field	Kimmeridge Thickness	Average TOC (%)	AVG. Tmax (Degrees C)	Avg. HI
Lidsey	75m	2.76	421	521
Brockham	385m	3.87	425	542
Bakken Shale	~450m	~1.5– 11	425	<650

Conclusions:

- The geochemical properties of the Kimmeridge at Lidsey are **similar to that at Brockham, and at Horse Hill** (which has already flowed oil from the interval)
- TOC values at Lidsey reach up to **5.69%** in the Kimmeridge, confirming the interval is a uniformly rich source for oil
- Although thinner at Lidsey, the **naturally fractured micrite limestone** beds seen at Brockham and Horse Hill are present, and offer the opportunity to develop the interval using conventional methods (no hydraulic fracturing required)
- Comparison with the analogous naturally fractured **Bakken Shale** play in the USA indicates a good potential for the Kimmeridge in the Weald Basin