COSTS OF SOURING OIL AND ITS OPTIMISATION A Construction of a Decision Tree Model and Sensitivity Analysis of Each Option

Sarris Dimitriou

Introduction

The phenomenon of souring reservoir which is strongly related to the H2S content affects crude's oil quality, generates corrosion of tubular goods and brings unexpected considerable costs to Oil companies



- There are many ways to treat sour oil however • information about if this event will occurred, when it will occurred and to what extent wasn't applicable until Rawwater provided the TVS model.
- Even though this information has a value Rawwater claimed that this information could obtained cost optimization to oil field operators

Methodology

Sensitivity analysis has been undertaken for current real costs of an oil field that suffers from souring reservoir





- The cost of the forecast information that Rawwater provides has been identified under realistic assumptions
- A decision tree model has been constructed in order to verify options and probabilistic outcomes



+44 (0) 754 148 5807 Sarris Dimitriou s.dimitriou.14@aberdeen.ac.uk www.abdn.ac.uk MSc. Petroleum, Energy Economic and Finance University of Aberdeen, King's College, Aberdeen, AB24 3FX



EMVC HIG

EMVC MED

EMVCLOW

£ 141,817,68

£ 490.088.40

£ 1,221,076.80

0.2 Non Sourin

0.33 High H2s & Inj Water

0.33 Med. H2S & Inj Wate

0.33 Low H2S & Inj Water

Capex-Retrofit

Souring

0.2 Non Sourin

0.8 £ 600,000.0

Results

£ 1,861,500.00 £1,489,200.00

260.442.00 £ 104.176.8

130,221.00 £ 52,088.

0.6 Scavenger £ 1,861,500.00 £ 1,116,900.00

0.6 Scavenger £ 730,000.00 £ 438,000.00

0.6 Scavenger £ 219,000.00 £ 131,400.00

0.4 Inj chemical £ 26,044.20 £ 10,417.68

£ 1,861,500.00 £2,089,200.0

Non Souring



Sensitivity analysis via VBA identified grades of H₂S content, cost of information, wells and water injection rate







Conclusion

- The second option is the most cost efficient (option which includes forecast information)
- The monetary value of the information that Rawwater provides is much lower than its perceived value in the market