Title : Comparative Economic Evaluation of Extended Reach Drilling and Subsea Completions in the UK Continental Shelf

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Introduction

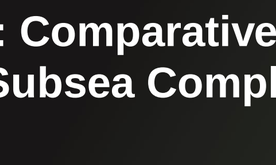
•Trends over the last decade reveal that, the drilling performance across the UKCS has generally declined to an all – time low level.

•The key contributing factors are the falling oil prices and inflationary cost pressures.

•This study aims to suggest the most cost effective technology to develop three small gas fields in the Southern North Sea.

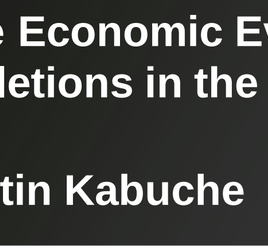
•Additionally, it identifies the barriers of ERD Technology as it is not commonly applied in the UKCS.

Platform Offshore Development using ERD Wells



Source: (De Verteuil, McCourt 1998)

Fields' Development using Subsea Completions



Source: (Schlumberger 1999)

•A key feature is that an ERD technology can reach significant lateral distances from an existing platform.

• Subsea Completions utilise the assembly of subsea equipment that controls and connects individual subsea wells to the production facility.

Methodologies

•Economic modelling and quantification of economic risks associated with ERD and Subsea Wells.

•A cost benefit analysis model was used to determine the key decision variables.

Sensitivity Analysis

Gas price, Reserves ,Number of Well Construction Days ,Discount Rate, Operating Costs and Development Costs(including Well Construction and Tie In costs)

Monte Carlo Simulations

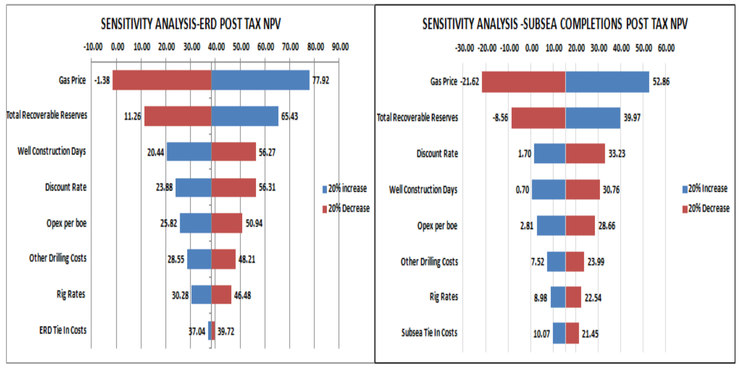
Gas price, Reserves, Well Construction Time, Rig Rates ,Discount Rate and Operating Costs**.**

Main Findings

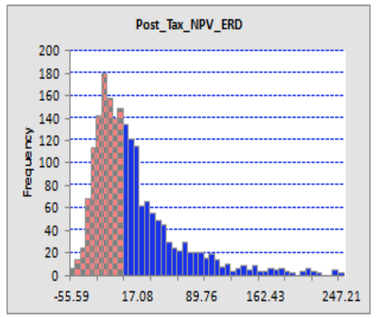
➢Discounted Cash Flow Results

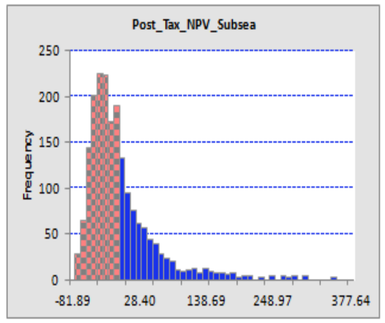
Decision Variable	ERD	Subsea Completions
Pre Tax NPV (£ Mil)	49.71	13.13
Post Tax NPV (£ Mil)	38.38	15.76
Post Tax IRR	16.48%	12.27%
Profitability Index	0.22	0.09
Approximated Simple PayBack (Years)	6	7

➢Sensitivity Analysis Results



➢Monte Carlo Simulations Results





The EMV under ERD option was approximately £22.65 Mil while under the Subsea Completions was £7.48 Mil.

Conclusion and Recommendations

•An ERD technology is the most cost effective technology to develop very marginal fields.

•Its appropriateness largely depends on the gas price, recoverable reserves and well construction time.

•There is more than 50% chance of securing profit under the ERD option and less than 50% under the Subsea Completions.

•An incentive to apply the ERD technology depends on the investor's perception of ERD risks ,the commodity price and production rates.

•. Generally , returns are slim and very sensitive to the changes in the gas price and amount of recoverable reserves.

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