An Assessment of the Economics of Undeveloped Discoveries in the Southern North Sea of the UK Continental Shelf through Employment of Cluster Developments and the Introduction of Floating CNG Technology (FCNG)

Sermphon Klaiseengern

**Methodology**

**Mapping Exercise**
In each scenario, the fields were tied-in to the existing facilities and/or potential common infrastructure, based on GIS data from the UKCS Interactive Map.

**Financial Simulation Models**
- **Deterministic Model**: Determination of Cash Flows. Calculation of NPVs, IRRs and NPV/I Ratios (Pre-Tax & Post-Tax).
- **Sensitivity Analysis**: Analysing all input variables - Tornado Chart. Spider plot to locate breakeven points of 4 main parameters on Scenario 3 & 4.
- **Probabilistic Model**: MC Simulation on Gas Price (Log-Normal Distribution), Reserves, DEVEX and OPEX (Normal Distribution).

**Main Findings**
- Less than half of the small pools show positive returns since most of them have relatively low P50 reserves (less than 3.4 mmboe).
- Only Scenario 3 shows positive aggregate pre-tax and post-tax returns (for ongoing investor); very marginal profits. But project investor’s post-tax returns are substantially negative because many small fields cannot recover their costs.
- Project investor requires higher reserves & gas price, and lower costs to justify his investment.
- Economies of scale of cluster developments would be very worthwhile, but still have high risks to encounter negative aggregate returns & very low likelihood that more than half of fields will be economic.
- FCNG is currently uneconomic and not yet a suitable alternative for SNS marginal gas fields. Require much lower FCNG costs & higher aggregate reserves to enable this technology.

**Conclusions**
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**Background**
- Small size of discoveries in the SNS provides challenges in encouraging new investments. Many of them may not be economically viable to be developed individually.
- This study accesses the economics of 27 small unsanctioned discoveries in the SNS, with raw data provided by the OGTC, whether they can be economically viable via the employment of 4 development scenarios:
  1. Standalone Development
  2. Cluster Development 1
  3. Cluster Development 2
  4. FCNG Deployment
- Scenarios 3 & 4 consider the absence of some existing infrastructure which are ageing and due to be decommissioned.

- Each scenario is examined through the investor in 2 taxation situations: Ongoing Investor (in a full tax-paying position) & Project Investor (not in a full tax-paying position), to analyse the impact of the current taxation system.