

Decision Driven Integrated Reservoir Modelling: Its Role in Delivering Robust Technical Solutions to Ensure Viable Projects

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ABSTRACT

Finding and developing hydrocarbon reserves is becoming more challenging and expensive. Our current climate is known as “Lower for Longer”, and hard decisions need to be taken on the number and choices of projects to be progressed, with affordability a key watch word. Competitive, effective, and robust field management and development are essential to ensure technical and economic success and such objectives can only be achieved if the decisions are underpinned by realistic forecast ranges developed from models that: capture a wide range of integrated subsurface uncertainties; are not anchored prematurely on a single subsurface realisation, and address specific decisions. Key to this is a scaled approach to decision based modelling that is tailored to answer the requisite development decisions that may vary from corporate portfolio ranking and external reporting at the highest level, to identifying well infill target locations and number of wells at the project level.

The emphasis for IRM in Shell is a focus on a broader description of uncertainty rather than ever-increasing attention to detail and complexity. It allows reservoir understanding to be built up systematically, starting from simpler high level interpretations to which detail is added where this is shown to be critical to a decision. This is consistent with the need to accelerate cycle times and provide more robust steer to field development decisions. Building fast and iterative models to capture the key uncertainties that impact recovery and forecasts is of prime importance. In addition, it is important to integrate the surface uncertainties and iteratively test these with economic measures to ensure that trade-offs between affordability and ultimate recovery are assessed.