SPE 146986 Best Practices and Lessons Learned in the Construction and Maintenance of a Complex Gas Asset Integrated Production Modelling (IPM)

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This paper addresses the lessons learned and the best practices in using IPM software based on one of Chevron's largest and complex assets. A number of aspects are discussed ranging from framing the problem to quality assurance checks.

As previously mentioned, this is one of Chevron's largest assets based on NPV and consists of a mixture of gas fields at different stages of maturation with diverse fluid properties. Multiple LNG trains, offshore platforms, dual trunklines to onshore plant, subsea and dry wellheads, compressors and big bore wells capable of producing more than 300mmscf/d all need to accounted for.

The objectives for the model were:

- Achieve a credible forecasting tool which accurately predicts new project start ups and helps Chevron in the internal project evaluations.
- A model which captures the complexity of the subsurface characterisation while remaining simple enough to understand the major drivers in the forecasting.

The model was created using MBAL, PROSPER and GAP and the learned lessons ranged from more effective and efficient use of the software to ensure that the reservoirs and wells reproduced the reality as closely as possible (overcoming any limitations) and a greater understanding of the available options in GAP to reduce human error.

An accurate and useful GAP model which represented the reality of the system as closely as possible was achieved and the conclusion from developing and maintaining a large IPM model is defined below:

- The model should be kept as simple as possible. Any complexities should only be added as necessary to meet the modelling objectives.
- A peer review made up of the right mix of experience and skillsets was very useful in uncovering issues in the model.
- Good documentation is essential. A record of the historical decisions and knowledge which contributed to the model is necessary.
- Ensure that an understanding of the physics in use is achieved to understand what does and does not make sense in the model.