

SPE 160924 To Develop the Optimum Field Development Plan for Condensate Wells Using Integrated Production Modelling (IPM)

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Integrated asset modelling is the approach to model the entire asset from reservoir to final delivery point and is today considered a vital part of the oil industry with many important decisions regarding field development depending upon it.

In this paper, IPM has been used to determine the optimum field development strategy using the appropriate real field data to evaluate different production scenarios while accounting for the economics. An IPM model provides a holistic overview of the entire asset so that the following can be determined:

- How different branches of the delivery chain affect one another.
- Capturing how different field operations interact with one another: field constraints, pipeline bottlenecks, well potential, etc.
- Defines the design and operating criteria for a given field.

As the fluid being produced is a gas condensate, it is important to understand the fluid critical pressure and when liquid dropout is likely to occur. The resulting changing composition over the production time will also need to be captured. As such, PVTP was used to characterise the fluid.

PROSPER was used to model the wells to evaluate the performance of various parameters on the well productivity.

MBAL was used to model the reservoir to achieve a greater understanding of the current reservoir behaviour and to perform forecasts in order to predict the depletion.

CONCLUSION:

- The approach taken for the field development plan was determined by looking at case studies with real field data.
- Studies indicated that there was no external aquifer support resulting in a rapidly decreasing reservoir pressure.
- Assuming a constant production rate of 14MMscfD, the reservoir production could not be maintained after 3 years.
- The overall gas recovery is excellent with 84.9% of the OGIP and 41.6% of the condensate.
- Applying a gas recycling option at an assumed rate of 30% increases the well life to 5 years and the condensate recovery to 57.5%.