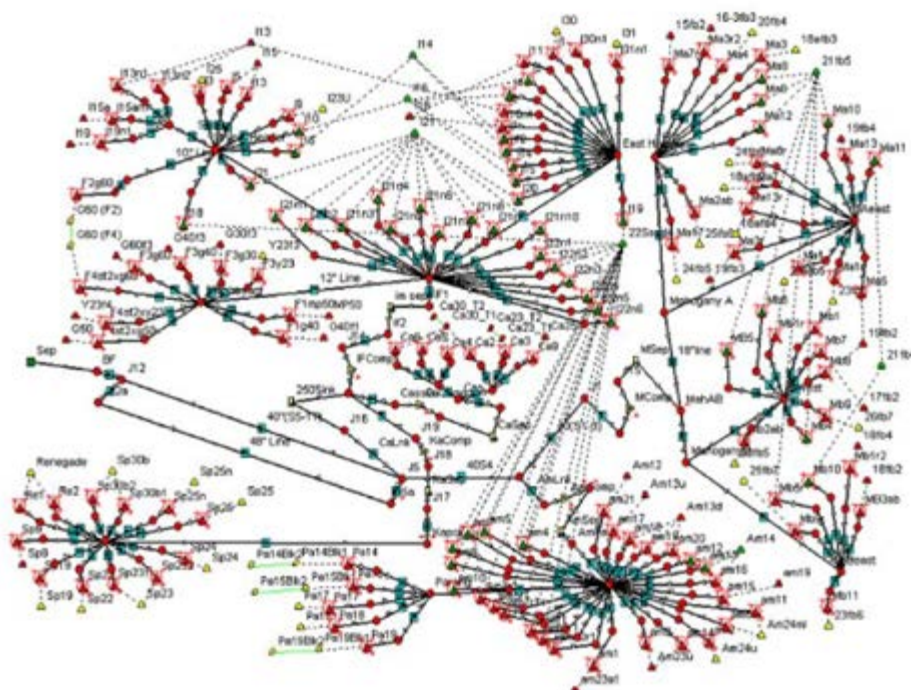


Evaluating Operation Strategies via Integrated Asset Modeling

Tony Tianlu Liao, Michael H. Stein, BP America Inc.

An IPM model (GAP, MBAL and PROSPER) was built for six fields in offshore Trinidad to evaluate gas compression and operating strategies. Evaluating the increased gas rates is complicated by the fact that various gas fields can interfere with one another via the common pipeline which they all share. The IPM approach allows the simultaneous modelling of; flow through the reservoir, into the well, up the wellbore, through the pipeline network and through the compressor all the way up to the onshore LNG plant:



This project was built in six months and has accurately captured and predicted the performance of the volumetric gas reservoirs, compartmentalised volumetric gas reservoirs and water-drive gas reservoirs.



This paper describes in detail the steps taken to history matching, validating and quality checking the reservoir and well models before integrating them to run forecasts and make management decisions concerning scheduling and compressor selection.

Conclusions:

- The IPM model was built and history matched for 140 wells and 72 sand units as well as the individual fields. They were successfully used to evaluate the benefits of compression and looping of a pipeline segment.
- Compression was predicted to increase the gas recovery by between 8.8% and 11.8% of the OGIP.
- Debottlenecking problems will still be carried out and the IPM model will be adjusted as the new well and reservoir data become available.