

11:00 AM

LUNSKOYE BIG BORE GAS WELLS MAXIMISING GAS, MINIMISING SAND

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ABSTRACT

The Lunskoye gas field development is a part of the Sakhalin Phase II project. The gas from Lunskoye will provide the majority of the Sakhalin LNG plant capacity with 1800 MMscf/d for plateau production. The 1st six wells, which will initially feed this LNG plant, are expected to produce 300 MMscf/d per well.

This presentation will look at how the sand face completion design has impacted the project. Developments with Shell's Fully Integrated Sand Failure Prediction Tool enabled the sand volumes to be quantified and used for the first time during completion selection in Shell. The results predicted that unmanageable sand volumes would occur upon start-up, for open hole completions with pre-drilled liners (PDL).

This led to a revision of the sandface completion concept from PDL to cased and selectively perforated liner (C&P). A sand management strategy was developed, where the weakest zones are not perforated. Further studies from the exploration and appraisal wells indicated that, less than 10% of the net reservoir should be left un-perforated. The possibility of lower well productivities, resulting from C&P completion was assessed using inflow models. The resultant lower well deliverability has been more than compensated for, by deviating wells from near vertical to 55° through the reservoir and maximising the tubing size to a 9.5/8" monobore design. Well potentials are now over 500 MMscf/d, although they will be beamed back due to surface constraints.

With the selected completion minor amounts of produced sand are expected for C&P completions during the first 15-20 years of field-life, beyond which manageable amounts of transient sand are expected for remaining production lifetime. A sand management plan has been developed, to ensure the facilities and personnel are prepared and able to manage sand, in these high rate gas wells.

At the end of this presentation, you will see that cased and perforated completions are a sound form of sand control completion, optimizing production and minimizing risk.

BIOGRAPHY



Mike graduated from Bradford University with a Chemical Engineering degree before completing his MSc in Petroleum Engineering at Imperial College. He has worked for Shell for over 20 years, based mainly in Holland, while working all over the world on numerous projects (Bonga, Nigeria NLG, Brunei, Miri, Muscat, GOM, Canada, Brazil, New Zealand, and half of the North Sea). Mike has been a Production Technologist for most of his career working in Sand Control Completions Research & Development, developing the Ameland Gas Field, Course Director at the Shell Learning Centre, Produce the Limit Consultant and now as the Lunskoye Lead Production Technologist in Sakhalin Energy. Mike has also been a member of the SPE Netherlands Board for over 8 years, acting as Programme Chair and Board Chair.