Novel Perforating Charges Maximizes Oil Production
verifying the Modeled Perforation Performance

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Outline:

- Background
- Challenges of Horizontal Well Perforating
- Workflow & Method
- Gun Comparison
- Results and Discussions
- Conclusion
BACKGROUND

- Anon-active; unconnected promising field within a mature cluster was re-discovered
- A right decision drilling & completion technique to be reviewed
- Heavy oil is the main factor to be considered
**CHALLENGES**

- Available Well location and target made the decision to complete the well – highly deviated
- Time and outcome as the constraint
- Perforating long intervals on horizontal wells requires a dedicated understanding of the reservoir properties and diligent perforation design.
- Medco decided to perforate the long interval (133 m) of a highly deviated well
- minimizing the number of runs required throughout three reservoir intervals.

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**WORKFLOW & METHOD**

- An underbalanced perforating strategy was embraced to better clean the perforation tunnels.
- Perforating design was performed by perforation analysis software to compare the various gun systems and the resulting well productivities.
- Perforations were conveyed on tubing and the gun shock models were created.
RESULTS:

- The perforation operation was successfully performed without any operational and HSE issues.
- The actual production was in line with the expectations as predicted by the perforation analysis software.
- Production from the well was actually better than the neighboring wells in the same region.
DISCUSSION

• The incremental cost on the perforation gun system has imperatively paid off by the gained production of oil.

• The rock based perforation penetration and a productivity model is an important input.
CONCLUSION

• The lessons learned from the operational stand point as well as the well to reservoir communication efficiencies as predicted and actually occurred.
• The choice on the novel perforation charge selection proved to be a fulfilling the needs
• The predicted production rates were matched by actual oil production proving the certainty of the input parameters for productivity modeling such as
  • reservoir permeability,
  • porosity
  • the fluid characteristics
ACKNOWLEDGEMENT

The authors would like to thank to:
• The Sultanate of Oman Ministry of Oil and Gas
• PDO
• the management of Medco LLC Oman, for giving their permission for this presentation to be published.

We also thank many to
• Our dedicated colleagues, either in the field or in Muscat office, who provided valuable support for the project execution.
• The special contribution from the Schlumberger Oman team is gratefully acknowledged.