

Workshop on Multilateral and Extended Reach Wells

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FINAL REPORT

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MMS Project 439

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Executive Summary

OTRC is conducting a multi-year (2002 – 2004) research project entitled “Development and Assessment of Well Control Procedures for Extended Reach and Multilateral Wells Utilizing Computer Simulation” (MMS Project 440). Additionally, the MMS requested that OTRC provide a Workshop for MMS engineers to familiarize them with the current state of the art and practice for Multilateral and Extended Reach Wells.

Workshop materials were prepared that described

- state of the art and practice for drilling and completing multilateral and extended reach wells
- applications and economic benefits of multilateral and extended reach wells
- limitations for multilateral and extended reach wells

Steve Walls, Cherokee Offshore Engineering, Bjorn Gjorv, TAMU, and Jerome Schubert, TAMU prepared and presented the workshop materials.

Two one-day workshops were held at the

- Pacific Region Office for engineers and geologists from the Pacific and Alaska regions on November 21, 2002
- Gulf of Mexico Region Office for engineers from the Gulf regions on December 5, 2002

Agendas for the two Workshops are presented in the Appendix.

In the workshop held in the Pacific Region, there was more discussion on the topics presented in the morning session (definition of extended reach and multilateral wells, torque and drag, dual gradient drilling, and expandable tubulars) than was anticipated. The session on drilling fluids was also longer than expected. The additional time spent on these subjects resulted in a somewhat abbreviated discussion of some of the state of the art for ERD and ML wells.

Based on the experience and feedback from the Pacific Region workshop, the topics were rearrange for the Gulf of Mexico Region workshop. The discussion on torque and drag, dual gradient drilling, and high lubricity muds was shortened. Further, since representatives of Shell Oil Company and Enventure (the developers of Expandable Tubulars) were at the MMS offices on the same day, we decided to omit the presentation on expandable tubulars. These changes allowed us to spend more time on the state of the art and practice in multilateral and extended reach wells.

Based on the feedback from both workshops, the MMS engineers were well satisfied with the workshops.

The Workshop presentation materials are attached.

Agenda
Extended Reach and Multilateral Workshop
MMS Pacific Offices, Camarillo, CA
Presented by
Jerome J. Schubert, TAMU
Steve Walls, Cherokee Offshore Engineering
Bjorn Gjorv TAMU

- 8:30 am Welcome and Introductions
- 9:00 am Introduction to Extended Reach and Multilateral Wells
Define ERD and ML levels
How ML and ERD wells are drilled
Economic benefits
Technical difficulties
Lost circulation and other well control problems
Casing wear
Torque and drag
Cementing
- 10:30 am Break
- 10:45 am New drilling technologies that could enhance ML/ERD
Dual Gradient Drilling
Expandable tubulars
- 12:00 pm Lunch
- 1:00 pm New drilling technologies, continued
High lubricity muds
Hole cleaning
State of the art in ERD
State of the art in MLD
- 2:30 pm Break
- 2:45 pm Completion, workover, and fishing concepts
Horizontal gravel-packed sand control completions
Downhole completion tools for ER and ML wells
- 3:45 pm Questions and discussion
- 4:40 pm Adjourn

Agenda
Extended Reach and Multilateral Workshop
MMS Gulf of Mexico Region Offices, New Orleans, LA
Presented by
Jerome J. Schubert, TAMU
Steve Walls, Cherokee Offshore Engineering
Bjorn Gjorv TAMU

- 8:30 am Welcome and Introductions
- 9:00 am Introduction to Extended Reach and Multilateral Wells
Define ERD and ML levels
How ML and ERD wells are drilled
Economic benefits
- 10:00 am Break
- 10:15 am New drilling technologies that could enhance ML/ERD
Dual Gradient Drilling
Expandable tubulars
High lubricity muds
Hole cleaning
State of the art in ERD
State of the art in MLD
- Lunch
- 1:30 pm Completion, workover, and fishing concepts
Horizontal gravel-packed sand control completions
Downhole completion tools for ER and ML wells
- 2:30 pm Technical difficulties
Lost circulation and other well control problems
Casing wear
Torque and drag
Cementing
- 3:30 pm Questions and discussion
- 4:00 pm Adjourn