Enhanced Oil Recovery On Troll Field By Implementing Autonomous Inflow Control Device

Based on SPE 180037. Martin Halvorsen et al. Bergen 2016
Introduction

Troll oil field –
• Thin oil column
• Huge gas cap
• Subsea wells
• Long horizontal wells
• Multilateral wells
• Inflow control devices
• Downhole monitoring and control
• Gas coning/contact movement
Well placement
Completion design

Control:
- Inflow control devices (AICD - Autonomous Inflow Control Device)
- Branch control
- Monitoring
- P/T gauges
- Zone isolation
- Swellable packers
The ‘levitating disc’ AICD

\[ F_{\text{mom}} + F_{\text{lift}} + F_{\text{drag}} = 0 \]
AICD function from experimental tests
Technology advancements
AICD Implementation on Troll

AICD Implementation at Troll

- Original Design
- Improved Design

Number of Laterals

Year
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
Reservoir simulations
Strong results

10 mths (SPE159634)

2 years
The AICD technology has been implemented successfully at the Troll Oil Field (75 laterals)

Success Criteria

- no associated problems during completion, startup or production,
- no negative effect on production
- a favourable GOR development and cumulative oil production.

The AICD wells are producing better than expected and have contributed to an increased oil production at Troll.
Tendeka combines field proven production technologies to measurably improve how today’s completions perform.

From sand-prone formations to shale gas plays, we deliver results across your reservoir.

Any Questions?