

**Reservoarfluider og Strømning**

Reservoir Fluids and Flow  
Course TPG 4145

**Homework Problem #3 –  
OBM Contamination**

Handed Out: 17. 02, 2016

Due Date: 26.02, 2016

**General**

When drilling with Oil Based Mud (OBM), the collected fluid samples are often contaminated by hydrocarbons originating from the OBM. To obtain a proper measure of the in-situ reservoir fluid, the sample composition needs to be decontaminated.

In this exercise, we are considering oil and gas MDT samples collected from the subsurface. Known reservoir fluid, mud and sample compositions are given in *TPG4145-HW-Problem-3.xlsx*.

**Problem 1:**

- A. Assuming an OBM contamination level of a new reservoir oil with MDT could be as high as 32 wt-% (on a C<sub>7+</sub> basis), what composition do you expect the MDT oil sample to have?

**Problem 2:**

- A. Given the (contaminated) MDT sample composition of the gas cap fluid, determine the OBM contamination level graphically. Report the answer both on a mol-% basis,  $f_{obm} = n_{obm} / (n_{obm} + n_{RO})$ , and on a C<sub>7+</sub> wt-% basis,  $f_{obm7+wt} = m_{obm7+} / (m_{obm7+} + m_{RO7+})$ .
- B. What is the original composition of the in-situ reservoir gas (RG)?