Creating MBAL file, TPG4230, Milan Stanko, 20170314.

Fluid information:

Use the black oil correlation of Glasø (p_b, R_s, B_o) and Beal (viscosity) to model your PVT behavior.

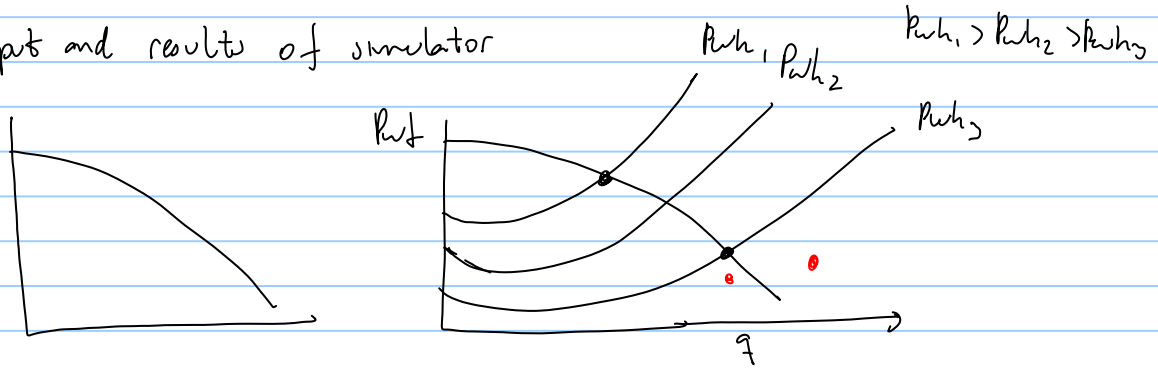
Solution GOR = 142 Sm^3/Sm3 Producing GOR = 142 Sm^3/Sm^3 Oil gravity = 30 API (876 Kg/m^3) Gas gravity = 0.76 At initial conditions no water.	Formation Water salinity = 23000 ppm No H2S, CO2, N2.

Temperature: 100 C
Initial pressure: 360 bara
Porosity: 0.3
Connate water saturation: 0.15
Original oil in place: 60 MSm^3
Start of production: 01.04.2017
Water influx: Small Pot aquifer, 180 MSm^3
Rel Perm: Corey Functions

	Residual Saturation	End Point	Exponent
	fraction	fraction	
Krw	0.15	1	1
Kro	0.15	0.8	1
Krg	0.01	0.9	1

Some comments about the usage of commercial simulators:

- QC input and results of simulator



- Garbage in → Garbage out. USE THE MANUAL!!

information.

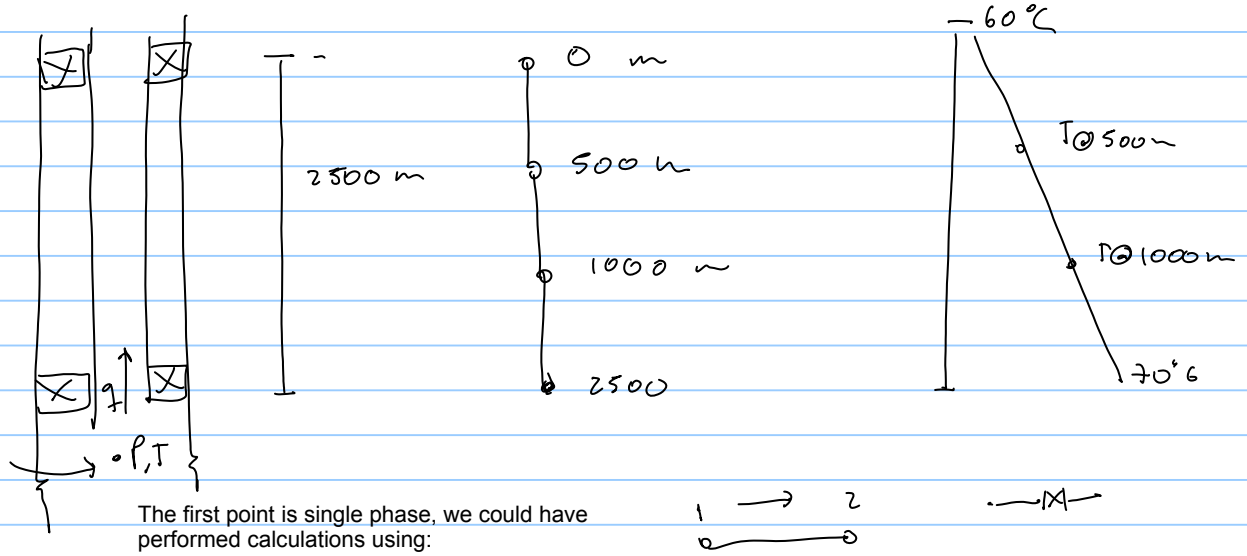
Information comes from many different sources

PVT model — Layout production network (subsea department) — Reservoir (reservoir engineer) — well (drilling and completion engineer) — Productivity (well test eg.)

Extremely important for I AM integrated asset modeling.

-Have up-to-date information
-QC information

- Class exercise about pressure drop calculations in conduits with multiphase flow



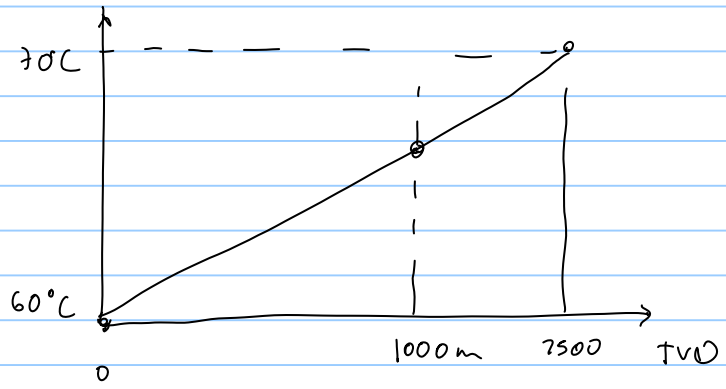
The first point is single phase, we could have performed calculations using:

$h_1 = h_2$

$$\frac{P_1}{\rho_1 g} + z_1 + \frac{v_1^2}{2g} = \frac{P_2}{\rho_2 g} + z_2 + \frac{v_2^2}{2g} + h_f$$

Bernoulli conservation equation for incompressible fluid

$$h_f = f \frac{L}{D} \frac{v^2}{2g} \qquad h_c = K \frac{v^2}{2g}$$



$$\left(\frac{70-60}{2500-0}\right) = \left(\frac{70-T}{2500-1000}\right)$$

T

1500 $\rho = 1000\ kg/m^3$

$1500 \cdot 1000 \cdot 9.81$

$\frac{1500000}{5}$

30 bar

	TVD	p	T	Liquid Mass fraction	mo	mg	deno	deng	qo	qg	vso	vsg	dp/dx
	[m]	[bara]	[C]	[-]	[kg/s]	[kg/s]	[kg/m^3]	[kg/m^3]	[m^3/s]	[m^3/s]	[m/s]	[m/s]	[bara/m]
1	2500	147	70	1	11.9	0.0	500.5	-	0.024	0.000	2.11	0.00	0.050285
2	1000	72	64	0.933	11.1	0.8	578.4	52.9	0.019	0.015	1.70	1.34	0.032234
3	500	55											
4	0