Well Intervention Pressure Control

Abbreviations used in this document

bar	=	Bar (Pressure)
bar/m	=	Bar per metre
BHP	=	Bottom Hole Pressure
kg/l	=	Kilogram per litre
l/m	=	Litre per metre
l/min	=	Litre per minute
l/stroke	=	Litre per stroke
m	=	Metre
MD	=	Measured Depth
TVD	=	True Vertical Depth
SIWHP	=	Shut in Well Head Pressure
10.2	=	Constant factor

1. PRESSURE GRADIENT (bar/m)

$$\frac{\text{Fluid Density (kg/l)}}{10.2}$$

2. FLUID DENSITY (kg/l)

$$\frac{\text{Hydrostatic Pressure (bar) x 10.2}}{\text{TVD (m)}}$$

3. HYDROSTATIC PRESSURE (bar)

$$\frac{\text{Fluid Density (kg/l) x TVD (m)}}{10.2}$$

or

Pressure Gradient (bar/m) x TVD (m)

4. FORMATION PRESSURE (bar)

Pressure Gradient (bar/m) x TVD (m)

5. TOTAL PRESSURE AT A GIVEN DEPTH IN A SHUT IN WELLBORE (bar)
(Where BHP = Formation Pressure)

Hydrostatic pressure of Gas (bar) + Hydrostatic Pressure of Oil (bar) + SIWHP (bar)

6. TIME TO PUMP (minutes)

a. Tubing

$$\frac{\text{Tubing Capacity (l/m) x MD (m)}}{\text{Pump Rate (l/min)}}$$

b. Annulus

$$\frac{\text{Annulus Capacity (l/m) x MD (m)}}{\text{Pump Rate (l/min)}}$$

7. STROKES TO DISPLACE (Strokes)

a. Tubing

$$\frac{\text{Tubing Capacity (l/m) x MD (m)}}{\text{Pump Displacement (l/stroke)}}$$

b. Annulus

$$\frac{\text{Annulus Capacity (l/m) x MD (m)}}{\text{Pump Displacement (l/stroke)}}$$