Well Intervention Pressure Control

Abbreviations used in this document

kPa	=	KiloPascal (pressure)
kPa/m	=	KiloPascal per metre
BHP	=	Bottom Hole Pressure
kg/m^3	=	Kilogram per cubic metre
m^3/m	=	Cubic metres per metre
m^3/min	=	Cubic metre per minute
$m^3/stroke$	=	Cubic metre per stroke
M	=	Metre
MD	=	Measured Depth
TVD	=	True Vertical Depth
SIWHP	=	Shut in Well Head Pressure
0.00981	=	Constant factor

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1. PRESSURE GRADIENT (kPa/m)

Mud Density (kg/m^3) x 0.00981

2. FLUID DENSITY (kg/m^3)

Pressure (kPa) ÷ TVD (m) ÷ 0.00981

Or

$$\frac{Pressure\ (kPa)}{TVD\ (m)\ x\ 0.00981}$$

3. HYDROSTATIC PRESSURE (kPa)

Mud Density (kg/m^3) x 0.00981 x TVD (m)

4. FORMATION PRESSURE (kPa)

Hydrostatic Pressure in Drill String (kPa) + SIDPP (kPa)

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

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

6. TIME TO PUMP (minutes)

a. Tubing
$$\frac{Tubing\ Capacity\ (m^3/m)\ x\ MD\ (m)}{Pump\ Rate\ (m^3/min)}$$

b. Annulus
$$\frac{Annulus\ Capacity\ (m^3/m)\ x\ MD\ (m)}{Pump\ Rate\ (m^3/min)}$$

7. STROKES TO DISPLACE (Strokes)

a. Tubing

$$\frac{\text{Tubing Capacity (m}^3\text{/m) x MD (m)}}{\text{Pump Displacement (m}^3\text{/stroke)}}$$

b. Annulus

$$\frac{\text{Annulus Capacity (m}^3\text{/m) x MD (m)}}{\text{Pump Displacement (m}^3\text{/stroke)}}$$