Well Intervention Pressure Control

Abbreviations used in this document

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>bar</td>
<td>Bar (Pressure)</td>
</tr>
<tr>
<td>bar/m</td>
<td>Bar per metre</td>
</tr>
<tr>
<td>BHP</td>
<td>Bottom Hole Pressure</td>
</tr>
<tr>
<td>kg/l</td>
<td>Kilogram per litre</td>
</tr>
<tr>
<td>l/m</td>
<td>Litre per metre</td>
</tr>
<tr>
<td>l/min</td>
<td>Litre per minute</td>
</tr>
<tr>
<td>l/stroke</td>
<td>Litre per stroke</td>
</tr>
<tr>
<td>m</td>
<td>Metre</td>
</tr>
<tr>
<td>MD</td>
<td>Measured Depth</td>
</tr>
<tr>
<td>TVD</td>
<td>True Vertical Depth</td>
</tr>
<tr>
<td>SIWHP</td>
<td>Shut in Well Head Pressure</td>
</tr>
<tr>
<td>10.2</td>
<td>Constant factor</td>
</tr>
</tbody>
</table>

1. PRESSURE GRADIENT (bar/m)

   \[
   \text{Fluid Density (kg/l)} \times 10.2
   \]

2. FLUID DENSITY (kg/l)

   \[
   \frac{\text{Hydrostatic Pressure (bar)} \times 10.2}{\text{TVD (m)}}
   \]

3. HYDROSTATIC PRESSURE (bar)

   \[
   \frac{\text{Fluid Density (kg/l)} \times \text{TVD (m)}}{10.2}
   \]

   or

   \[
   \text{Pressure Gradient (bar/m)} \times \text{TVD (m)}
   \]

4. FORMATION PRESSURE (bar)

   \[
   \text{Pressure Gradient (bar/m)} \times \text{TVD (m)}
   \]

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

   \[
   \text{Hydrostatic pressure of Gas (bar)} + \text{Hydrostatic Pressure of Oil (bar)} + \text{SIWHP (bar)}
   \]
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
      \[ \frac{\text{Annulus Capacity (l/m) x MD (m)}}{\text{Pump Displacement (l/stroke)}} \]