**TUBING & CASING DATA**

**TUBING DATA:**
- **Tubing**
  - Outside Diameter (INCHES)
  - Inside Diameter (INCHES)
  - Capacity per Foot (BBLS/FT)
  - Length to E.O.T. (MD — FT)

**Tubing Collapse**
- Tubing Collapse (PSI)
- Safety Factor (0.70 or Less)
- Adjusted Tubing Collapse (PSI)

**Tubing Yield**
- Tubing Yield (PSI)
- Safety Factor (0.70 or Less)
- Adjusted Tubing Internal Yield (PSI)

**CASING DATA:**
- **Casing**
  - Outside Diameter (INCHES)
  - Inside Diameter (INCHES)
  - Capacity per Foot (BBLS/FT)
  - Length (MD — FT)

**Casing Internal Yield**
- Casing Internal Yield (PSI)
- Safety Factor (0.70 or Less)
- Adjusted Casing Yield (PSI)

**PRESSURE CONSIDERATIONS:**
- **Pressure Consideration PSI per “Step”**
  - Initial Max. Pressure on Tubing (PSI)
  - Final Max. Pressure on Tubing (PSI)
  - Number of “Steps”
  - PSI per “Step” (PSI/STEP)
  - Rating Pressure (PSI)

- **Volume per “Step”**
  - Volume per “Step” (GALS/STEP)

- **Strokes per “Step”**
  - Strokes per “Step” (STKS/STEP)

**PRESSURE CHART**

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<tr>
<th>Strokes</th>
<th>Volume in BBLS</th>
<th>Volume in GALS</th>
<th>Estimated Max. Static Pressure</th>
<th>Actual Tubing Pressure</th>
<th>Casing Pressure</th>
<th>Pump Rate</th>
<th>Notes</th>
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Field Units (psi, ft, ppg)

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FORMULAS

1. Pressure Gradient (psi/ft) = Mud Weight (ppg) x 0.052

2. Hydrostatic Pressure (psi) = Mud Weight (ppg) x 0.052 x Depth (ft, TVD)

3. Capacity (bbls/ft) = Inside Diameter$^2$ (in.) + 1029.4

4. Annular Capacity (bbls/ft) = (Inside Diameter of Casing$^2$ (in.) or Hole Diameter$^2$ (in.) - Outside Diameter of Pipe$^2$ (in.)) ÷ 1029.4

5. Pipe Displacement (bbls/ft) = (Outside Diameter of pipe$^2$ (in.) - Inside Diameter of pipe$^2$ (in.)) ÷ 1029.4

6. Maximum Allowable Mud Weight (ppg) = \( \frac{\text{Surface LOT Pressure (psi)}}{\text{Shoe Depth (ft, TVD) x 0.052}} + \text{LOT Mud Weight (ppg)} \)

7. MAASP (psi) = [Maximum Allowable Mud Weight (ppg) - Present Mud Weight (ppg)] x 0.052 x Shoe TVD (ft)

8. Formation Pressure (psi) = Hydrostatic Pressure Mud in Hole (psi) + SIDPP (psi)

9. Sacks (100 lb) of Barite Needed to Weight-Up Mud = \( \frac{\text{Bbls of Mud in System} \times 14.9 \times (\text{KMW - OMW})}{(35.4 - \text{KMW})} \)

   NOTE: This formula assumes that the average density of Barite is 35.4 ppg and the average number of sacks (100lb) per barrel is 14.9.

10. Volume Increase from Adding Barite (bbls) = Number of Sacks (100 lb) added ÷ 14.9

11. Equivalent Mud Weight (ppg) @ __________ depth (ft) = \( \frac{\text{Pressure (psi)}}{\text{Depth (ft, TVD) x 0.052}} \)

12. Estimated New Pump Pressure at New Pump Rate (psi) = Old Pump Pressure (psi) x \( \left( \frac{\text{New Pump Rate (SPM)}}{\text{Old Pump Rate (SPM)}} \right)^2 \)

13. Estimated New Pump Pressure with New Mud Weight (psi) = Old Pump Pressure (psi) x \( \frac{\text{New Mud Weight (ppg)}}{\text{Old Mud Weight (ppg)}} \)

COMMENTS

Field Units
(psi, ft, ppg)