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Workover Assistant

Help Document

This handy app is for the field personnel who work a lot with workover rigs on various types of wells. The calculations it provides are those most commonly used during well workovers.

To calculate Hydrostatic Pressure, the formula is as follows:

fluid/mud weight in pounds per gallon multiplied by 0.052 multiplied by true vertical depth in feet, or pressure gradient in psi/ft multiplied by true vertical depth in feet

ex: $10.2 \times 0.052 \times 7600 = 4031$ or $0.5304 \times 7600 = 4031$

To calculate Formation Pressure, the formula is as follows:

hydrostatic pressure in drill string as psi plus shut in drill pipe pressure as psi

ex: $4031 + 200 = 4231$

To calculate Initial Circulating Pressure, the formula is as follows:

slow circulating rate (SCR) as psi plus shut in drill pipe pressure as psi

ex: $150 + 200 = 350$

To calculate Final Circulating Pressure, the formula is as follows:

slow circulating rate (SCR) as psi multiplied by kill mud weight as pounds per gallon divided by current mud weight (CMW) as pounds per gallon

ex: $150 \times 10.4 / 10.2 = 153$

To calculate Test Pressure, the formula is as follows:

(equivalent mud weight as pounds per gallon minus current mud weight as pounds per gallon) multiplied by 0.052 multiplied by shoe true vertical depth as feet

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ex: $(10.4 - 10.2) \times 0.052 \times 7600 = 79$

To calculate Max Allowable Annular Surface Pressure (MAASP), the formula is as follows:

(max allowable mud weight as pounds per gallon minus current mud weight as pounds per gallon) multiplied by 0.052 multiplied by shoe true vertical depth as feet

To calculate Pressure Gradient, the formula is as follows:

mud weight as pounds per gallon multiplied by 0.052, OR, pressure as psi divided by true vertical depth as feet

To calculate Pressure Drop Per Foot (when tripping dry pipe), the formula is as follows:

(mud weight as pounds per gallon multiplied by 0.052 multiplied by pipe displacement as barrels per foot) divided by (casing capacity as barrels per foot minus pipe displacement as barrels per foot)

To calculate Pressure Drop Per Foot (when tripping wet pipe), the formula is as follows:

(mud weight as pounds per gallon multiplied by 0.052 multiplied by (pipe displacement as barrels per foot plus pipe capacity as barrels per foot)) divided by (casing capacity as barrels per foot minus pipe displacement as barrels per foot minus pipe capacity as barrels per foot)

To calculate Internal Capacity, the formula is as follows:

inside diameter (ID)² / 1029.4

To calculate Annular Capacity, the formula is as follows:

(inside diameter (ID)² - outside diameter (OD)²) / 1029.4

To calculate Pipe Displacement, the formula is as follows:

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$(\text{outside diameter (OD)}^2 - \text{inside diameter (ID)}^2) / 1029.4$ OR pipe weight in pounds per foot / 2747

To calculate Mud Weight, the formula is as follows:

gradient as psi per foot divided by 0.052 or hydrostatic pressure as psi divided by 0.052 divided by true vertical depth as feet

To calculate Kill Mud Weight, the formula is as follows:

shut in drill pipe pressure (SIDPP) as psi divided by 0.052 divided by true vertical depth as feet plus current mud weight (CMW) as pounds per gallon

To calculate Max Allowable Mud Weight (MAMW), the formula is as follows:

pressure (at the shoe) in psi divided by 0.052 divided by true vertical depth as feet at test depth

To calculate Equivalent Mud Weight, the formula is as follows:

(pressure as psi divided by 0.052 divided by true vertical depth as feet) plus current mud weight as pounds per gallon

To calculate Kill String Length, the formula is as follows:

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