



Driller's Toolkit *for Desktop PC*

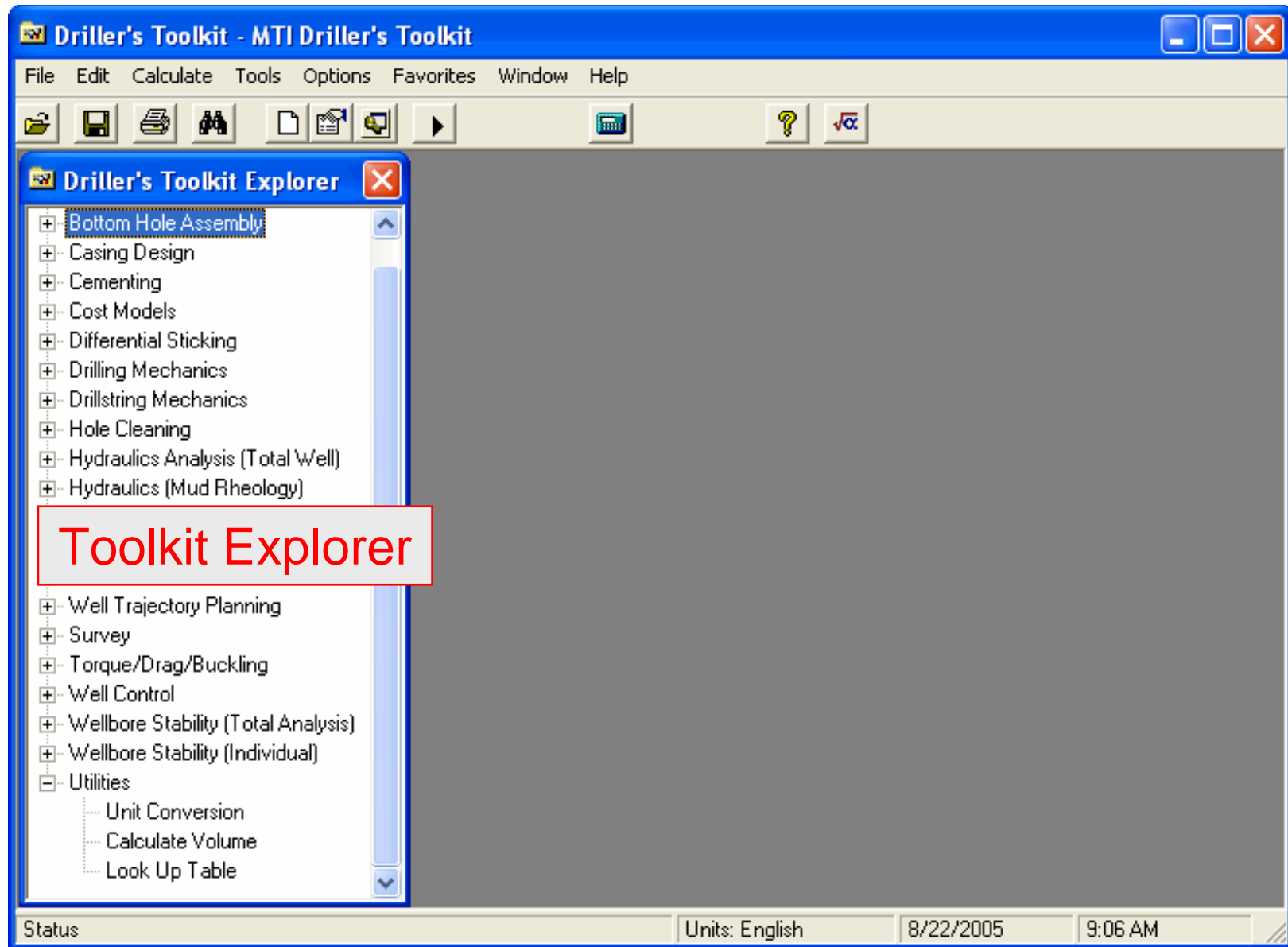
Maurer Technology has been helping the Drilling Community solve engineering problems for over 24 years. During that time, we have collected over 100 Drilling Engineering Tools that are commonly used in the industry. These have been packaged into an easy-to-use PC program.

To avoid the inconvenience of looking up formulas and equations, we created the **Driller's Toolkit** as a simple, easy-to-use resource that we believe our customers will also find useful.

NOTE: Computer screens within this PDF document may appear slightly distorted. This is due to limitations in the Adobe Acrobat Viewer when displaying graphics. To clearly view details in the graphics, zoom in or print the document.

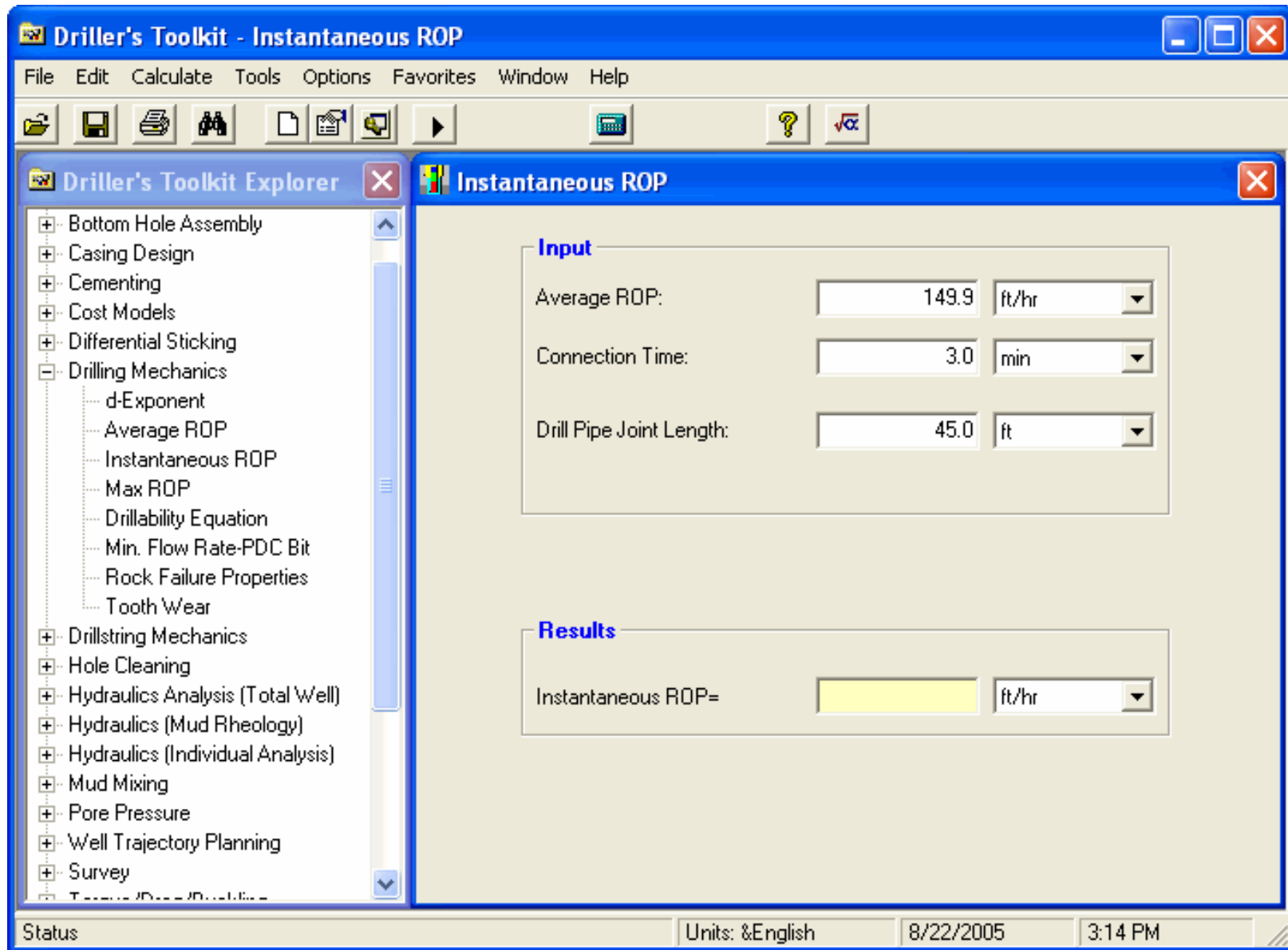
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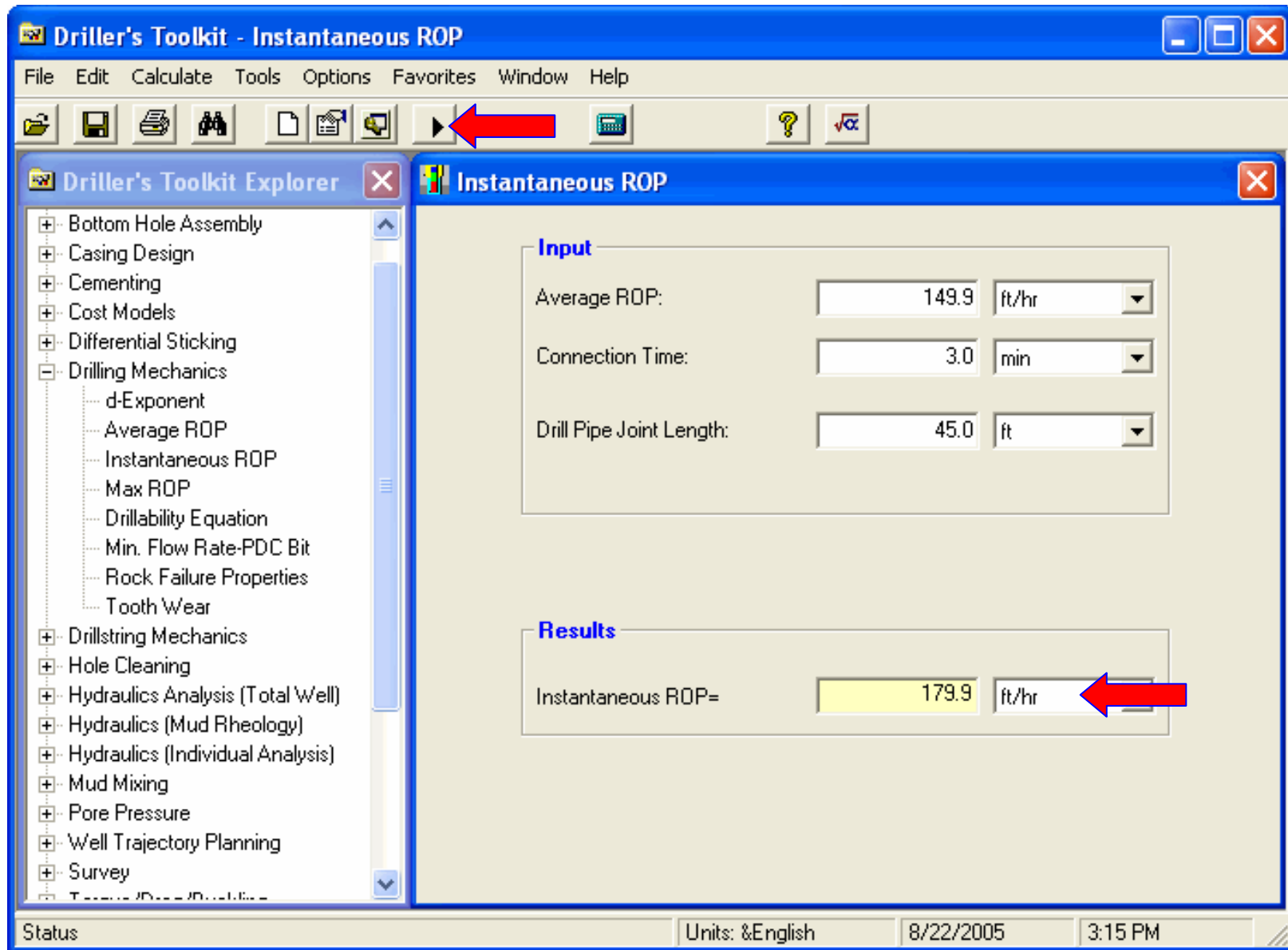


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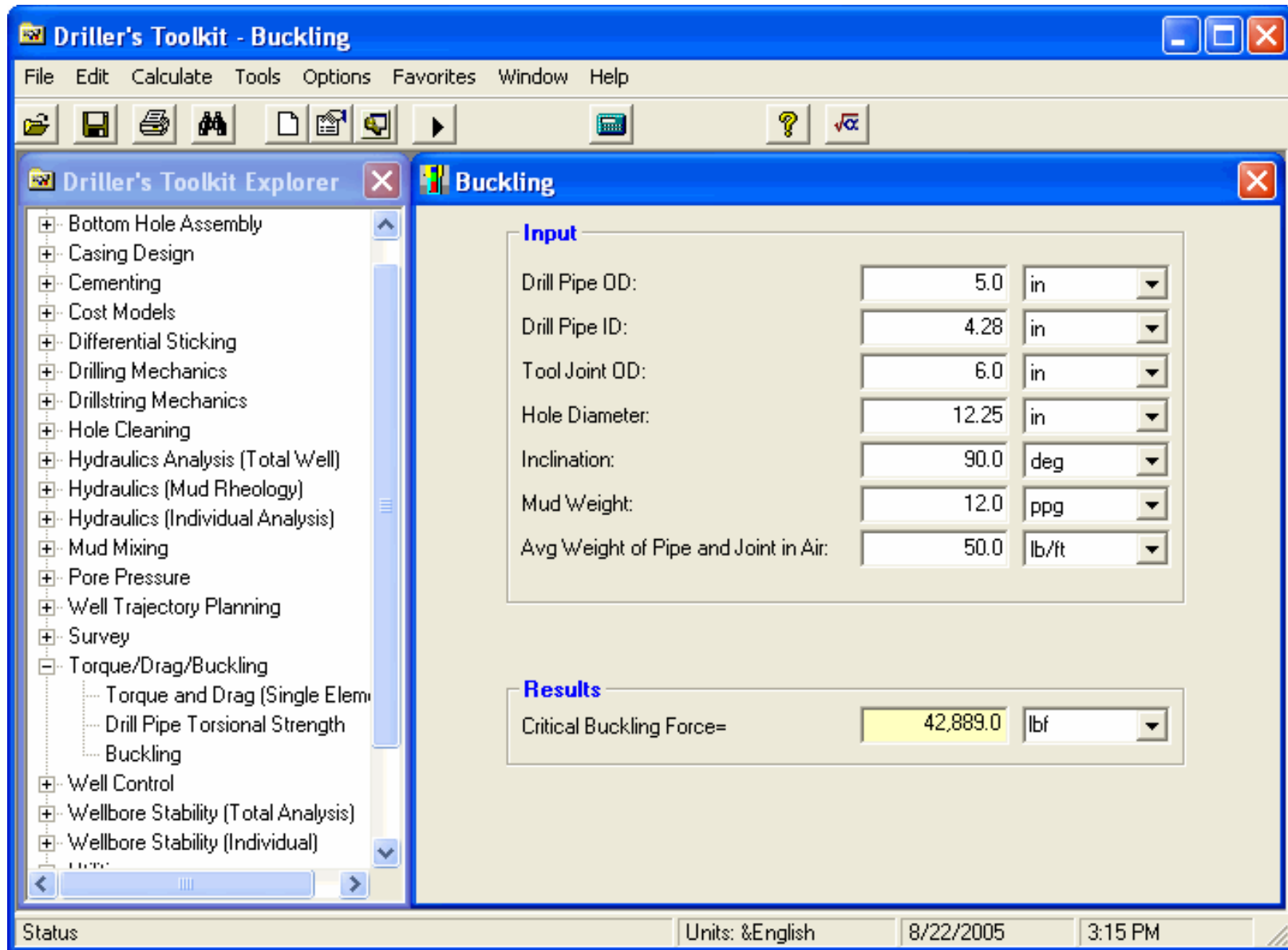
MTI's **Driller's Toolkit** is a convenient engineering software package that is very easy to use. The Toolkit Explorer allows you to quickly choose any of the 100+ Calculators you need.



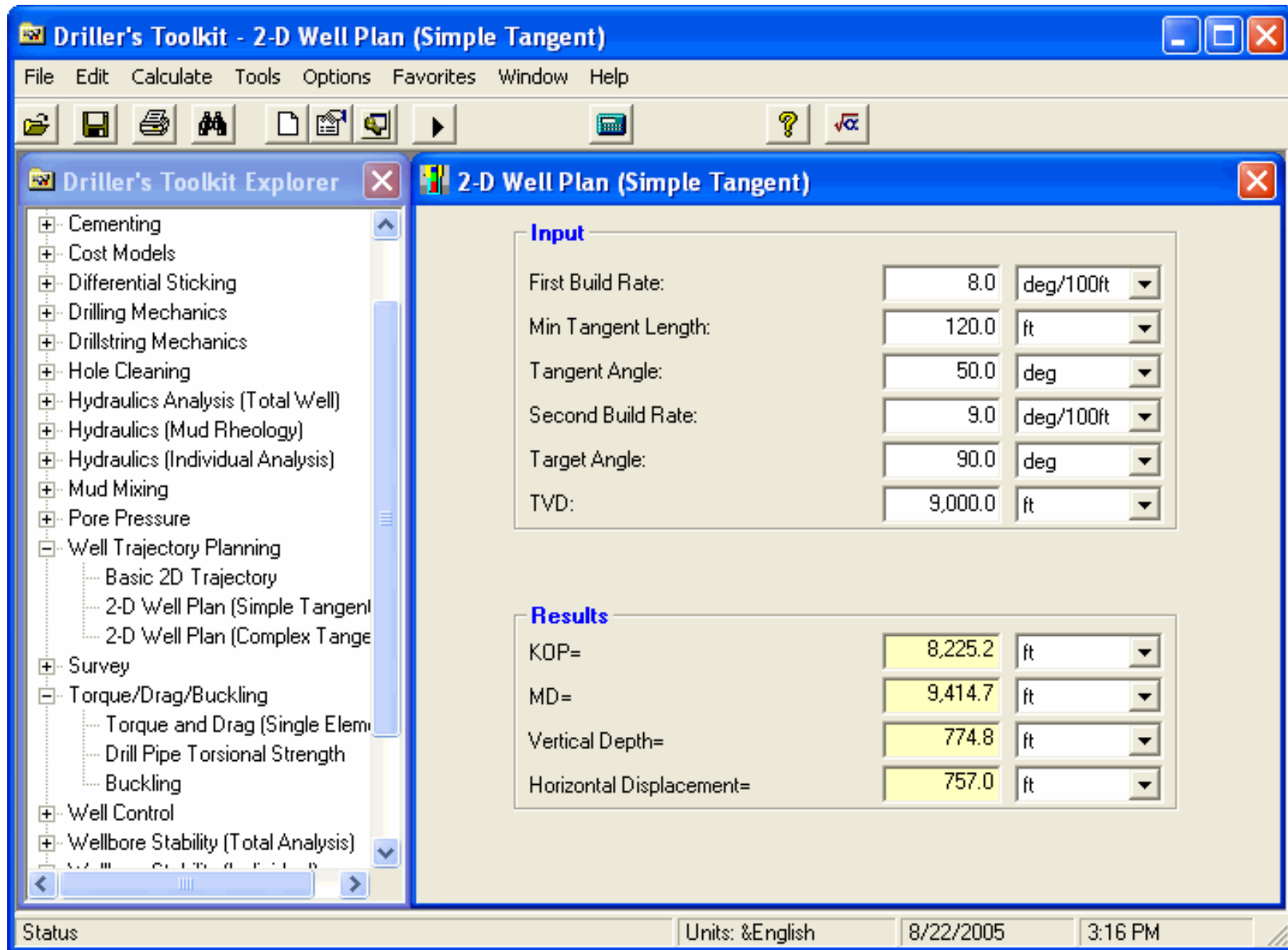
Click on an individual Calculator to open it. Enter all required input data in the upper section of the panel. Units may be changed by clicking on the box next to each parameter.



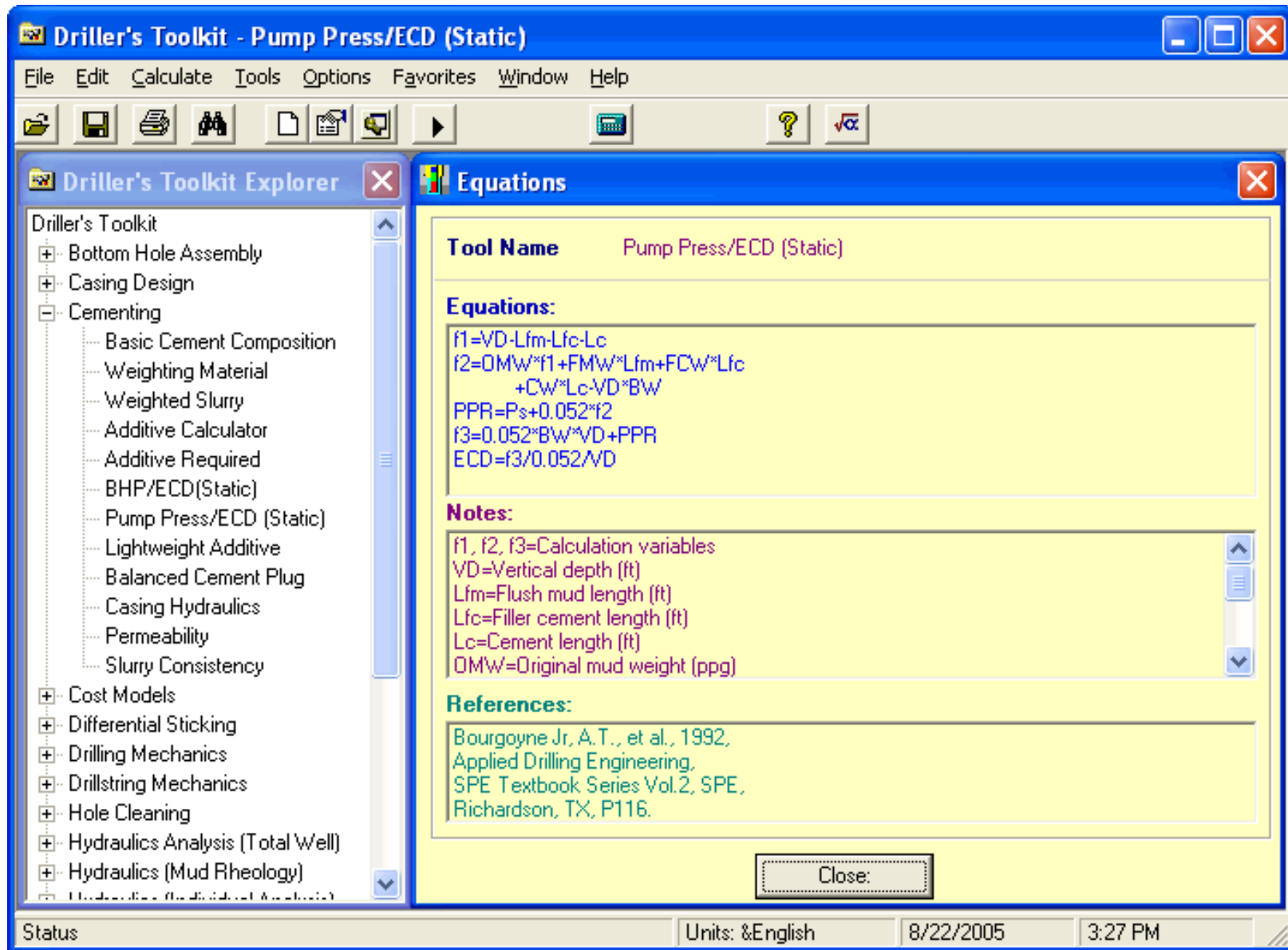
After input data are ready, click Calculate. Results are displayed in the lower section of the panel.



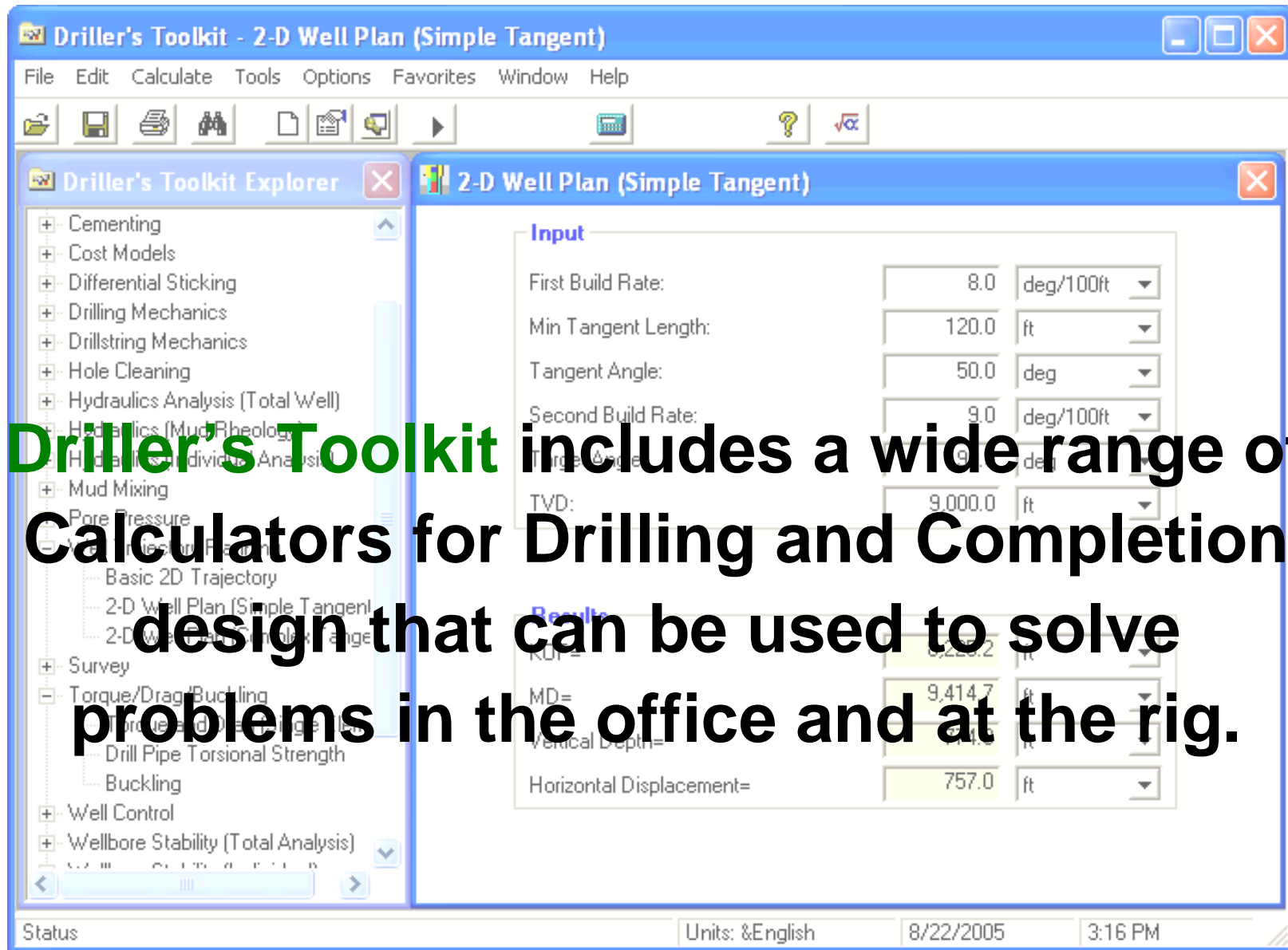
A wide variety of Calculators are included in the package. Shown above is the Buckling Calculator, which calculates Critical Buckling Force (the axial load above which buckling will occur).



Another example Calculator is the 2-D Well Plan/Simple Tangent. This is used to quickly develop a wellpath trajectory that includes a tangent section.



You can also review the equations behind every Calculator along with additional reference material for more information.



Individual Calculators are listed on the following slides...



Drilling Mechanics

BOTTOM-HOLE ASSEMBLY

- Min. Drill Collar Length
- Drill Collar Stiffness
- Drill Collar Buoyed Weight
- Number Collars Required
- WOB (Inclined Well)
- Tapered Drill Collar

DRILLING MECHANICS

- d-Exponent
- Average ROP
- Instantaneous ROP
- Max ROP
- Drillability Equation
- Min Flow Rate - PDC Bit
- Rock Failure Properties
- Tooth Wear

DRILLSTRING MECHANICS

- Free Point
- Basic Properties of Drill Pipe
- Buoyancy Factor
- Buoyed String Weight
- Critical RPM
- Max Drill Pipe Length
- Ton-Miles
- Drill Pipe Washout Depth
- Pipe ID/Wall Thickness



Drilling Hydraulics

MUD MIXING

- Weighted Mud
- Starting Volume (Weighting)
- Add Oil/Water
- Oil/Water Ratio
- Mud Dilution (O/W)
- Tank Volume
- Mud Weight Reduction

TOTAL WELL

- Wellbore Pressure Loss
- Surge/Swab Pressure

MUD RHEOLOGY

- Viscometer Calculations
- Flow Models
- Critical Velocity
- Annular Rheology
- Reynolds Number
- Fann Viscometer

DIFFERENTIAL STICKING

- Differential Sticking

INDIVIDUAL

- Optimized Hydraulics
- Break Circulation Pressure
- ECD
- Fluid Velocity
- Pump Flow Rate
- Pump Pressure Change
- Drill Pipe Pressure Loss
- Annular Pressure Loss
- Chokeline Pressure Loss
- Pipe Fittings Pressure Loss
- Press in Drillstring at Bottom
- BHP/Gas Columns

PORE PRESSURE

- PP (Log Data)
- Normal PP (Theoretical)
- Abnormal PP (Regional)



Drilling & Completion

CASING DESIGN

- Casing Properties
- Casing Burst Subsea
- Casing Collapse Pressure
- Min Conductor Depth

COST MODELS

- Footage Cost (Simple)
- Footage Cost (Complex)

WELL CONTROL

- Kill Mud Weight
- Kill Sheet
- Kick Tolerance
- Max Allowed SICP
- BOP Pressure
- Boyle's Law
- Influx Height
- Influx Gradient
- Influx Density
- Influx Analysis

CEMENT

- Basic Cement Composition
- Weighting Material
- Weighted Slurry
- Additive Converter
- Additive Required
- BHP/ECD (static)
- Pump Pressure/ECD
- Lightweight Additive
- Balanced Cement Plug
- Casing Hydraulics
- Permeability
- Slurry Consistency



Directional Drilling

HOLE CLEANING

- Mud Weight in Annulus
- Cuttings Slip Velocity
- Annular Velocity Requirements
- Rate of Cuttings Addition
- Retort Calculations
- Flow Rate

TORQUE/Drag/BUCKLING

- Torque and Drag (Single Element)
- Drill Pipe Torsional Strength
- Buckling

SURVEY

- Directional Survey
- Dogleg Severity
- TVD
- Wellbore Departure

WELLBORE STABILITY

- Safe Mud Weight
- Lost-Circulation Analysis
- Leak-Off Test
- Mud Weight for Inclined Hole
- Fracture Pressure - Regional
- Fracture Gradient - Offshore
- Fracture Gradient - Onshore
- Rock Mechanical Properties

WELL TRAJECTORY PLANNING

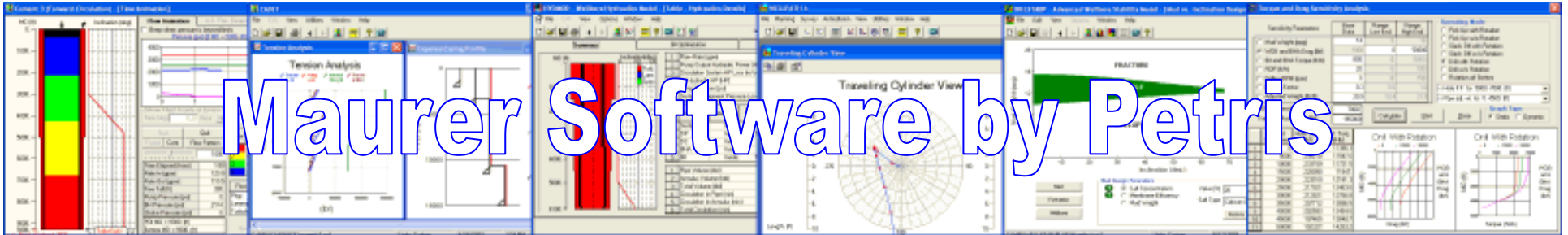
- Basic 2D Trajectory
- 2D Well Plan (Simple Tangent)
- 2D Well Plan (Complex Tangent)



Utilities

DTK UTILITIES

- Unit Conversion
- Calculate Wellbore/Drillstring Volume
- Look-up Table of Tubular Properties



Thanks for your interest in Driller's Toolkit

*For more information on Maurer Software by Petris,
email:*

sales@petris.com

or visit us on the web at

www.petris.com

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