TerraStation II – Pressure & Geomechanics

Technical Specifications

Overburden Pressure Modeling

- Density derivation using Ludwig, Gardner or Faust & Gardner equation.
- Allows for presence of water column – user supplied depth and water density.
- Provides for 'missing' density data above first logged value.
- Allows user definable local gravity constant.

Pore Pressure Modeling

- User supplied hydrostatic pressure gradient – gradient and mud weight can be varied down the hole.
- Interactively pick the normal trend line (NTL) using a user selected curve.
- Interactively select the base of the normal pressure trend.
- Pore pressure model uses Eaton, Bowers or Equivalent Depth method. Model exponent can be varied for Eaton and Bowers equation.

Display

- Display all pressures against depth.
- User definable color maps for display of borehole stress.
- Borehole Stress display of Sigma-Min, Sigma-Max, Tau-tangential, Sigma-Theta-Theta, Sigma-Z-Z, Tau-Theta-Z.
- Display of minimum mud pressure under any of the failure criteria – Linearized Mohr-Coulomb, Modified Lade, Inscribed or Circumscribed Drucker-Prager.
- Display units of pressure can be selected from PSI, PSI/foot, MPascal or pounds per gallon.
- Display shale intervals via a shale indicator curve and cutoff.

Rock Properties Computations

- Compute unconfined compression strength data (UCS) using a variety of models including Mason, Cook Inlet (Moos), Bowen Basin (McNally), Worldwide (Bradford), Australia, North Sea and Gulf of Mexico.
- Computes Poisson's Ratio, Vp/Vs, Young's modulus, bulk and shear moduli.
- Computes Brittleness Index if a porosity curve is supplied.

Horizontal Stress Computations

- Compute fracture pressure using Poroelasticity, Matthews & Kelly, Eaton (with a tectonic component) or Total models, or from leak off test data.
- Interactively interpret leak off test and other pressure test data to provide the leakoff and closure pressure points.
- Model the SHmax component. Using breakout information directly or an overburden/fracture pressure based model.
- Compute the Khmax values at breakout edges.

Critical Mud Pressure
- Compute critical mud pressure envelope (minimum require and maximum allowed) as pressure or equivalent mud weight (EMW) data. User can select any of the failure criteria – Linearized Mohr-Coulomb, Modified Lade, Inscribed or Circumscribed Drucker-Prager.
- Allows computations to be done assuming a specific well orientation.

Additional capabilities
- Display critically stressed features picked from borehole images on Mohr circle plots and stereonets.
- Use the Stress Analysis module to display plots of well tangential stress, critical mud pressures, compression and tensile failure angle and more at any depth in the well.
- Use IMAGELog capabilities to display stress plots on composite logs at user defined intervals.
- Display in multiwell cross sections. (*)

* May need to license additional module.

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