Quick! analytical simulation of
- *Fractured Shales*
- *Coalbed Methane*
- *Tight Gas Sands*

PMTx 2.0

multilayer tight gas simulator

- Analyze and forecast production
- Estimate reserves
- Determine reservoir properties by layer
- Evaluate stimulation effectiveness
- Select optimum completion methods

PMTx[TM] users include BG Group, ExxonMobil, Halliburton, Petrobras, Petrohawk, and Shell.

Models horizontal wells with multi-stage fracs!

www.phoenix-sw.com
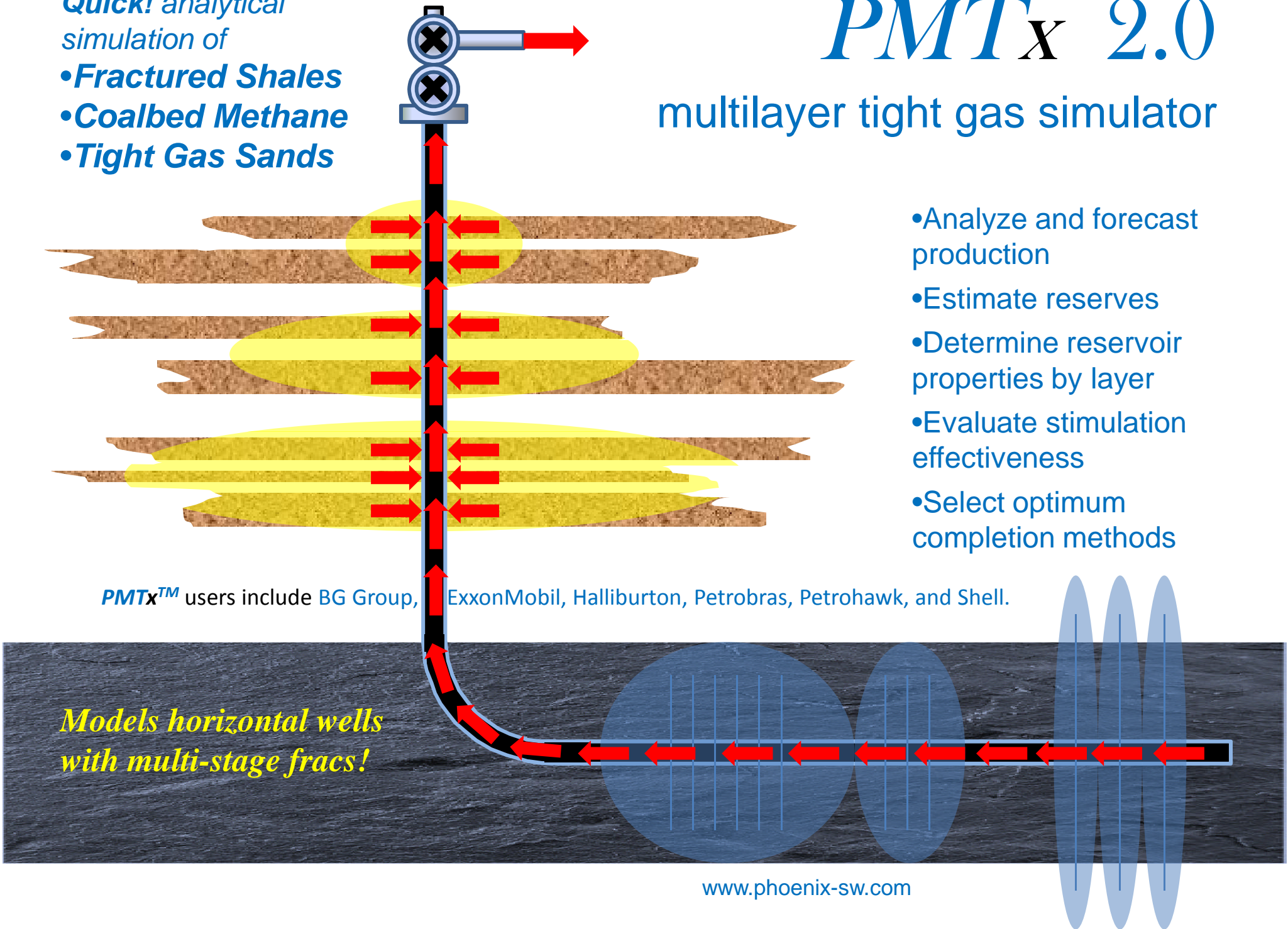
PMTx™—Production History Matching for Multilayer Gas Reservoirs

- **Applications**
  - Forecast Future Performance
    - Forecast by time or by date
    - Estimate ultimate recovery
  - Evaluate Completions
    - Skin factor
    - Fracture half-length
    - Fracture conductivity
  - Estimate Reservoir Properties
    - In-situ permeability to gas
    - Drainage area
    - Original gas in place
  - Conduct Sensitivity Studies
    - Up to 255 different scenarios
    - Compare fracture treatment designs
    - Study effect of wellbore orientation on horizontal well productivity
    - Study effect of anisotropy on apparent fracture half-length
  - Optimize Fracture Treatment Design
    - Reduce fracturing costs
    - Reduce risk
    - Increase production

- **Interface Designed For Ease of Use**
  - Minimize Pre-Processing
    - Import production data from commercial databases
    - Enter production and pressure data by date
    - Enter deviation survey data at recorded depths
    - Enter spinner survey data at recorded steps
    - Upscale by merging layers
  - Minimize Post-Processing and Formatting
    - Generate presentation-quality reports and graphs
    - Export reports in RTF or CSV format
    - Define custom graphs
    - Export graphs in metafile format

- **Commingled Production Options**
  - Up to 255 Independent Layers
    - Different initial pressures, temperatures
    - Different reservoir models
    - Different rock properties
    - Add/plug layers at different times
  - Tubing Pressure Gradient Calculation
    - Surface to top layer
    - Between adjacent layers
    - Incorporates deviation survey data
  - History Matching
    - Well production data
    - Spinner survey data

- **Extensive Reservoir Modeling Options**
  - Well and Completion Models
    - Vertical wells
    - Hydraulically fractured wells
    - Horizontal wells
    - Horizontal wells with multiple hydraulic fractures –*NEW!*
  - Reservoir Models
    - Homogeneous
    - Pseudosteady state dual porosity
    - Transient dual porosity
    - Coalbed methane
    - Naturally fractured shale
    - Pressure-dependent permeability –*NEW!*
    - Pressure-dependent porosity –*NEW!*
  - Permeability Anisotropy
    - Horizontal isotropy ($k_x = k_y \neq k_z$)
    - Full anisotropy ($k_x \neq k_y \neq k_z$)
  - Reservoir Boundary Models
    - Infinite-acting
    - Closed circular
    - Rectangular
    - Infinite radial composite
    - Finite radial composite

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