

TWBS

Thermal Wellbore Simulator

- ▶ **Detailed Modeling of the flow of fluids and energy in the various tubing strings of a vertical or horizontal well.**
- ▶ **Computes the Oil, Water, Gas and Steam Rates in the tubing strings and inflow/outflow to the reservoir.**
- ▶ **Displays the Steady State Pressure, Temperature and Fluid Saturation Profiles in the pipe strings.**

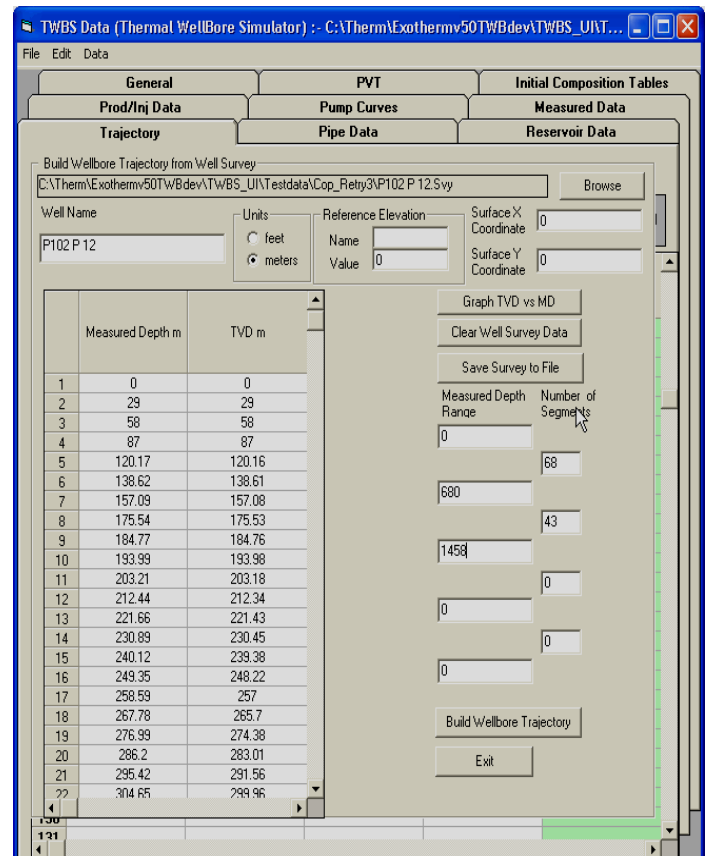
**Application:
Design of Wells**

- ▶ Steam Circulation
- ▶ Steam Injection
- ▶ Producer
- ▶ Investigate artificial lift such as gas lift or pumps.
- ▶ Optimize Injection and Production Flow Distribution
- ▶ Optimize Operating Rates, tubing lengths and sizing.

T.T. & Associates Inc.
c/o PetroStudies Consultants Inc.
 #204, 4603 Varsity Drive N.W.
 Calgary, Alberta, T3A 2V7
 Canada

Ph: (403) 265-9722 / Fax (403) 265-8842
 e-mail: tant@petrostudies.com
 Web site: www.petrostudies.com

**Microsoft Windows Operating System
User Friendly Interface, Data Input
Tabs, Spreadsheets**



Specifics :

- ▶ Enter PVT data for up to 7 components. Internal Steam Tables.
- ▶ Import a Well Deviation survey. Automatically subdivide the well trajectory into segments of various lengths
- ▶ Specify and enter up to 5 pipes of various lengths and diameters, concentric or side by side.
- ▶ Model reservoir boundary conditions. Change reservoir properties permeability, pressure, temperature, saturation along the well length.
- ▶ Set the inflow rates of oil, gas, water at each reservoir segment, or calculate the variable influx based on current reservoir and pipe conditions. Offtake and injection points may be set at any segment and offtake/injection pressures specified. Injection rates, steam quality, injection temperature may be set.
- ▶ For calibration, observed data versus measured depth can be entered
- ▶ Multiphase Flow correlation (Beggs- Brill) used to compute flow in the pipes.

Results:

- Tabular Reports – select from many series
- Graphs – plot multiple pipes, series
- Wellbore Schematics – colored segments of parameter values

