August, 1999 Update – Version 2.71/3.11

StimPlan

- Added new, animated, fracture profile (Cross-Section) plots.
- Continued to expand the new "browser" based Help System.

E-StimPlan

- Developed the implicit solution for 2-D Flow/Width/Height. In this solution, the 2-D flow pressure distribution and the resulting width distribution are calculated simultaneously. In addition, this is formulated in a manner, which can use numerically derived width/pressure relations in the future. This will allow the use of a 2-D finite element calculation to define the width/pressure relations, and thus allow a rigorous solution for layered modulus cases. This would then be the ONLY hydraulic fracture simulator rigorously including the effects of layered modulus on fracture width. This is also formulated in terms of a "stiffness matrix", thus allowing more rigorous solution for fracture height recession and fracture closure on proppant. This should also provide a much more robust, stable solution than previous versions of E-StimPlan.
- Added capability to simulate "0" rate (i.e., shut-in periods) stages. This allows the simulation of cases where a preceding mini-frac may affect the spurt loss or fluid loss during a subsequent propped fracture treatment.

Analysis Module (Version 3.11 only)

- Added a data handling capability to "merge" two pressure variables (such as annulus pressure and tubing pressure) into a third, new pressure variable. The primary intent is for frac-pack operations where a "semi-" live annulus is available during pumping, but a bottomhole check valve makes this data meaningless immediately after shut-in. This new "data handling" feature allows analysis using the annulus pressure during pumping, and tubing pressure during the shut-in decline periods.
- Added a capability to calculate a bottomhole pressure using a measured gauge pressure from any position in the wellbore and correcting for hydrostatic head changes (and pipe friction) from the gauge to the perforations.
- Added a "Volumes Plot" to the Frac Job Analysis. This allows a comparison of "Actual" versus "Design" Proppant Volume versus Fluid Volume for QA/QC analyses.
- Added capability for the individual defined tests to be "named" and reordered for user convenience.
- Improved scaling of Analysis Plots such that "zoomed" or user set scales are not lost while switching from plot-to-plot