



GOHFER TRAINING COURSE AGENDA (3 Day)

Objective: To demonstrate, along with class participation, the GOHFER project workflow with actual data while discussing individual inputs, functions and features of the application. Provide basic understanding of how to use and navigate the user interface and apply the program to individual projects.

Day 1 – Administrative / Vertical Well Class Example / Pressure Diagnostics / History Matching

- **Introductions**
- **Software Overview**
 - Installation
 - License Access
- **Vertical Well Class Example**
 - Simple Project Workflow Example
 - LAS (Log Processing)
 - Input Data Requirements
 - Mechanical Property and Stress Profile Construction
 - Geologic Section
 - Define wellbore segment(s) – treatment string / wellbore fluid
 - Define Grid Dimensions
 - Treatment Design
 - Perforations
 - Pump Schedule
 - Engine Output Viewer
 - Output Grid Data
 - Production
 - Conductivity & Well Performance
- **Class Exercise - Economic Optimization**
 - Design / Production / Economic Optimization
- **Lunch** (12 – 1 PM)
- **Pressure Diagnostics**
 - Import Data / Analysis Input
 - Input File Preprocessor
 - Pre-Falloff / Closure / After Closure Analysis
 - Synchronize 2 Data Files
 - Rate Schedule
- **Vertical Well Class Example – History Match**
 - How to build an actual pump schedule
 - Pressure Matching Strategies
 - Matching Stresses (Pore pressure, Closure pressure, PZS) and leakoff
 - Matching Frictional Effects (Pipe / perf / near wellbore)
- **GOHFER Variable Sensitivity**
 - Demonstration / discussion of individual input variables and their impact on the model

Day 2 – Horizontal Well Example

- **Treatment / Reference Wells**
 - 3D Surveys
 - LAS (Shale / Carbonate Log Processing)
- **Treatment Stage**
 - Wellbore
 - Grid Setup
 - Asymmetric modeling
 - Longitudinal vs. Transverse Fractures
 - Building Geologic Structure
 - Breakdown Pressure
 - Fracture Orientation
 - Breakdown Gradient
 - Breakdown Angle
- **Lunch** (12 – 1 PM)
- **Treatment Design**
 - Perforations
 - Interference / Stress Shadowing
 - Single Horizontal Transverse stage (multiple clusters)
 - Multiple Horizontal Transverse stages (individual treatments)
 - Stress Anisotropy
 - Ball Drop Horizontal Transverse stages (single treatment / multiple stages)
- **Engine Output Viewer**
 - 3D Grid Output
- **Production**
 - Longitudinal / Transverse production parameters

Day 3 – Microseismic Class Example / Fluid & Proppant Databases / Real-Time

- **Microseismic Class Example**
 - Import Microseismic data into GOHFER
- **GOHFER Databases**
 - **Proppant Database**
 - Review proppant database inputs and functions
 - **Fluid Database**
 - Review fluid database inputs and functions
 - How to add a fluid to the fluid database
- **Reports**
 - Report management/editing
 - Adding images to reports
- **Real-Time Data Acquisition Demonstration**
 - Real-Time Settings / Monitoring
 - Real-Time Pressure Diagnostics
 - Real-Time Pumping Schedule Creation / Simulation
- **Lunch** (12 – 1 PM)
- **Individual Class Assignment**
- **GOHFER Review**
- **Wrap-up / Discussion**