TETRA TECH RPS ENERGY | **TRAINING**

N957: Forecasting Production and Estimating Reserves in Unconventional Reservoirs

Instructor(s): John Lee

Format and Duration
Classroom - 4 Days

Summary

Forecasts of future production and reserves are fundamentally important in evaluating the economics of any resource development and operation, and are critical for the evaluation of unconventional oil and gas resources, allowing for better business decisions. More accurate forecasts and reserves estimates also lead to greater credibility with investors in both public and private companies.

Business Impact: This course provides engineers, geoscientists, and decision makers with the skills and understanding required to **forecast production** and **estimate reserves** in **unconventional** (ultra-low permeability) **oil and gas reservoirs**. The course will emphasize oil/gas-shale, as well as tight oil and gas formations.

Learning Outcomes

Participants, including geoscientists, engineers, and ddecision-makerswill learn to:

1. Appraise the strengths and limitations of empirical production decline models for forecasting production and estimating reserves in low permeability reservoirs.
2. Predict future production and reserves using empirical production decline models in low permeability reservoirs.
3. Evaluate the strengths and limitations of theoretical production decline models for forecasting production and estimating reserves in low permeability reservoirs.
4. Predict future production using theoretical production decline models in low permeability reservoirs.
5. Judge the strengths and limitations of selected rate-transient analysis and reservoir stimulation techniques for forecasting production and estimating reserves in low permeability reservoirs.
6. Construct type wells (a.k.a. type curves) using both empirical and model-based techniques.
7. Predict and evaluate the influence of interference in infill or "parent-child" well interactions.

Training Method

A four-day classroom course consisting of lectures with worked examples, hands-on exercises, and discussion.

Who Should Attend

This Skilled Application level course is designed for mid to senior level engineers, geoscientists, and decision makers and engineering managers with interests in unconventional reservoir evaluation.

Course Content

Concepts covered in this course are:

N957: Forecasting Production and Estimating Reserves in Unconventional Reservoirs

Instructor(s): John Lee

Format and Duration
Classroom - 4 Days

- Basic fluid flow theory
  - Transient flow
  - Radial and linear flow
  - Constant rate and constant BHP production
  - Radius of investigation
  - Boundary-dominated flow
- Empirical production decline methods of forecasting production and estimating Reserves in Unconventional reservoirs
  - Arps decline model
  - Minimum terminal decline methodology
  - A priori determination of Arps decline parameter "b"
  - Advanced decline curve analysis and its limitations
  - Stretched exponential model
  - Blasingame modified power-law model
  - Long-duration linear flow model. Duong model
  - Comparison of models and recommended workflow
- Use of analytical reservoir models in forecasting production and estimating Reserves in Unconventional reservoirs
- Use of statistical resource analysis in estimating Reserves in Unconventional reservoirs
- Applications of appropriate methodology to example situations