

# N989: Unconventional Reservoir Rate-Transient Analysis

Instructor(s): Chris Clarkson

## Format and Duration

Classroom - 3 Days Virtual - 6 Sessions

## Summary

This course provides petroleum engineers and geoscientists with a comprehensive review of ratetransient analysis (RTA) methods as applied to unconventional reservoirs such as shale. Using the framework of a comprehensive workflow for quantitative RTA, the fundamentals of RTA, as applied to low-permeability oil and gas reservoirs exhibiting simple reservoir and fluid characteristics, are first reviewed. Next, application of RTA methods to unconventional reservoirs exhibiting complexities such as multi-phase flow and stress-dependent permeability is demonstrated. Throughout the course, practical application of RTA methods is illustrated using field cases.

Business Impact: Rate-transient analysis (RTA) is a reservoir engineering method used to extract important hydraulic fracture and reservoir parameters and fluid-in-place estimates that can be used in development planning and for reserves estimation.

# Learning Outcomes

Participants will learn to:

- 1. Identify and appraise typical flow regimes for hydraulically-fractured vertical wells and multi-fractured horizontal wells (MFHWs).
- 2. Develop an understanding of the origin of RTA models.
- 3. Perform corrections for variable operating conditions and fluid properties.
- 4. Perform straight-line and type-curve analysis to derive fracture/reservoir properties and fluid-inplace.
- 5. Develop an understanding of how unconventional reservoir properties may be incorporated into RTA models.
- 6. Utilize a rigorous workflow for the analysis of unconventional reservoir production data.

# Training Method

A virtual classroom course divided into six webinar sessions (equivalent to a three-day classroom course), comprising lectures, discussion, case studies, and practical exercises to be completed by participants during sessions.

# Who Should Attend

This course is designed for petroleum engineers and geoscientists who wish to learn the state-of-the-art in RTA as applied to unconventional reservoirs.



# N989: Unconventional Reservoir Rate-Transient Analysis

Instructor(s): Chris Clarkson

## Format and Duration

Classroom - 3 Days Virtual - 6 Sessions

## Course Content

## Session 1

- Introduction
- Course Learning Objectives
- Fundamentals of RTA

## Session 2

- Fundamentals of RTA (cont'd)
- RTA Workflow
- Preparing and Assessing Data

## Session 3

- Flow-Regime Identification
- Straight-Line Methods

### Session 4

- Straight-Line Methods (cont'd)
- Type-Curve Methods
- RTA for Coalbed Methane Reservoirs

### Session 5

• RTA for Shale Gas Reservoirs

### Session 6

- RTA for Multiphase Tight/Shale Reservoirs
- Numerically-Enhanced RTA