

Fracture Design for Minimum Off-Balance Growth

1.6 CEUs (Continuing Education Units/16 hours) awarded for this 2-day course.

Instructor

A. Ali Daneshy, Ph. D., Daneshy Consultants Int'l

Intended Audience

Completion, petroleum, production, reservoir and stimulation engineers, geologists, geoscientists, managers, and others involved and interested in improving the outcome of their hydraulic fracturing treatments. The participants need to be familiar with basic aspect of hydraulic fracturing.

Description

Higher well productivity increases the net present value of the reservoir, lowers operational costs per barrel of produced fluid, and, increases economically recoverable reserves. Hydraulic fracturing is the most popular and wide-spread method for enhancing well productivity.

Most hydraulic fractures grow off-balance; i.e., the fracture is not purely tensile, it occupies multiple planes and includes large amounts of shear fracturing and branching. This growth pattern results in fractures that are shorter, narrower, and have substantially less conductivity than computed by simple tensile fracturing theory. All of these outcomes are undesirable for well stimulation. Minimizing off-balance growth thus results in minimizing the undesirable features of the fracture.

With over 30 years of experience in operations and technology of fracturing, the moderator offers a unique perspective on propagation of actual hydraulic fractures and how, through a prudent completion, mini-frac, and main treatment design one can minimize the intensity of off-balance growth and optimize the production effectiveness of the treatment.

Topics covered include the following:

- Definition of off-balance growth
- Case histories of actual pressure variations inside real hydraulic fracture
- Causes of off-balance growth
- Effects of design parameters on off-balance growth
- Designing for minimum off-balance growth
- Post-treatment fracturing pressure analysis
- Case histories

About the Instructor

Dr. Ali Daneshy is president of Daneshy Consultants Int'l, Inc. He has participated in the design and evaluation of many fracturing treatments in virtually all the producing fields of the world. He is an SPE Distinguished Member and recipient of its Distinguished Service Award for his contribution to hydraulic fracturing, as well as an SPE Distinguished Lecturer and Distinguished Author on Hydraulic Fracturing.

Daneshy's contribution to hydraulic fracturing include over 30 published articles which include his pioneering work on numerical techniques for fracture design and computations of proppant transport, experimental work on fracturing inclined boreholes, naturally fractured formations, layered formations, effect of perforations, and, in-situ stress measurement, among others. He has lectured on the subject in many universities in US, Europe, Middle East, and Latin America, and taught industry courses on the subject all over the world.

He holds an MS degree in Mining Engineering from University of Tehran, an MS in Rock Mechanics from University of Minnesota and a PhD in Rock Mechanics from the University of Missouri-Rolla.