



SPE 49223

Well Evaluation using Early Time Post-Stimulation Flowback Data

James W. Crafton/Performance Sciences, Inc.

Copyright 1998, Society of Petroleum Engineers, Inc.

This paper was prepared for presentation at the 1998 SPE Annual Technical Conference and Exhibition held in New Orleans, Louisiana, 27–30 September 1998.

This paper was selected for presentation by an SPE Program Committee following review of information contained in an abstract submitted by the author(s). Contents of the paper, as presented, have not been reviewed by the Society of Petroleum Engineers and are subject to correction by the author(s). The material, as presented, does not necessarily reflect any position of the Society of Petroleum Engineers, its officers, or members. Papers presented at SPE meetings are subject to publication review by Editorial Committees of the Society of Petroleum Engineers. Electronic reproduction, distribution, or storage of any part of this paper for commercial purposes without the written consent of the Society of Petroleum Engineers is prohibited. Permission to reproduce in print is restricted to an abstract of not more than 300 words; illustrations may not be copied. The abstract must contain conspicuous acknowledgment of where and by whom the paper was presented. Write Librarian, SPE, P.O. Box 833836, Richardson, TX 75083-3836, U.S.A., fax 01-972-952-9435.

Abstract

Accurate measurement of all produced fluids and solids during the post-stimulation flowback following an acid or hydraulic fracturing stimulation, and the flowing wellhead pressure on a frequent basis provide the data necessary to assess several valuable reservoir, completion and stimulation parameters. The qualitative and quantitative analysis is performed using the Reciprocal Productivity Index procedures. Most flowback data sets will have sufficient quality to provide good estimates of the contributing effective permeability-thickness, the apparent fracture half-length or effective wellbore radius and unusual reservoir pressure conditions. Qualitatively, the evaluation provides information on effective or damaging flowback management strategies, such as the effect of shut-ins, or excessive drawdown during flowback and the duration of flowback necessary for maximum clean-up. It also provides a means of assessing multi-stage stimulation results and productivity profiles within the well. Although downhole data is always desirable, the method is effective when only surface data is available because of risk or cost issues. Examples are provided to demonstrate several of these situations, in addition to a brief discussion of causative factors.

Contact: Performance Sciences, Inc.
303-445-9062
or
support@performancesciences.com