

Paper Title: Case Study of Using Degradable Fibers for Leakoff Control to Extend the Life of a Mature Field

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Abstract

Romania has been producing oil and gas for more than 150 years, and many of the oil fields discovered in the early days remain productive. However, many fields still possess unlocked potential. The decade starting in 1970 was a period of intensive drilling and exploration in Romania. At that time, many discoveries were considered uneconomical, and further development could not be justified based on available technology. Progress in hydraulic stimulation technologies enabled a review of the production potential and economics for many of these marginal fields, including the Abramut field. This field was first drilled in 1972 with 40 wells intended to assess reservoir quality and extent. Poor economics precluded further field development, however 32 wells in the area remain active.

To improve well productivity existing wells in the Abramut field, hydraulic stimulation was attempted without notable results. Geological complexity, low fluid efficiency and high bottom hole static temperature combined to make proppant placement challenging in this region. Consequently, hydraulic fracture treatments were relatively small, resulted in limited fracture geometry and did not create the contact required to maximize the reservoir potential.

Application of novel technologies led to the first successful pilot of hydraulic propped stimulation in Abramut and surrounding fields. The technologies applied enabled placement of larger stimulation treatments, which delivered significant production enhancement. These technologies included fit-for-purpose fracturing fluids and technologies for fluid loss control. A new application of degradable fiber technology played a critical role in avoiding screen outs in these low-efficiency formations. This pilot and subsequent campaigns resulted in a substantial production increase that enabled a reevaluation of the field potential.

The novel stimulation techniques have justified a field redevelopment plan that combines new wells with fracture stimulation to extend the life of this field after more than 48 years in production. The information in this paper will be of interest to any operator with under stimulated mature fields.