Calculating Reservoir Fracture Density in Near-Vertical Wells

Randolph J. Koepsell and Robert T. Becker Schlumberger Oilfield Services—Data and Consulting Services, Denver, CO koepsell 1@denver.oilfield.slb.com

Traditional fracture evaluation from wellbore image data provides quantitative and qualitative properties of individual fractures as they relate to the borehole. The customary products provide fracture orientation in dip and strike; fracture aperture is sometimes modeled. Image log-derived fracture density calculations reflect the number of fractures per foot selected along the wellbore path. While each of these parameters is helpful, a more complete petrophysical understanding of individual fracture connectivity to the borehole is desirable. Reservoir fracture density is a better indicator of reservoir permeability than is wellbore fracture density. The concepts of fracture trace length and wellbore drift orientation to fracture strike are used to correct image log fracture density for a refined reservoir fracture density.