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**Considering the Vertical Variation in Rock Mechanical Properties of a Lithologic Zone Using Laboratory Derived Data – Is it Time for Geomechanical Stratigraphy?**

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**Abstract**

In both vertical and horizontal hydraulic stimulation schemes the geomechanical properties of the rock volume to be stimulated are of primary consideration when designing the fracturing process and understanding reservoir geomechanical behavior (see Zoback, 2007). Typical rock mechanical properties such as Young’s Modulus and Poisson’s Ratio, various pressure gradients, density, pore pressure, porosity, permeability, general lithology and fluid content are generally derived from a variety of borehole logs. These borehole log values are usually derived from the vertical section of the well and applied across any subsequent horizontal section for both geo-steering and determination of completion intervals. For hydraulic stimulation planning, an average of wireline geomechanical values across the zone of interest is typically used. If core is taken, then geomechanical values from lab results may also be utilized. As more and more rock mechanical property data are collected both in the lab and from the field, then observations on the variation of geomechanical properties over reservoir height, and in adjacent intervals in the borehole may be made. It also becomes possible to compare lab derived versus log derived values, even seismic derived values, and look for potential patterns that may have meaning, leading to the development of a possible geomechanical stratigraphy.