

## **Hydraulic Fracturing at the Root of the Field Development Plan**

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In conventional reservoirs of high to moderate permeability and sufficient flow capacity ( $k \cdot h$ ) to produce hydrocarbon naturally, hydraulic fracturing is a secondary technique used to improve productivity of wellbore. In this instance, fracturing is sometimes left to a point where skin damage reduces the actual performance where the well potential is much higher. However, this is not the case for complicated, low-permeable "tight" reservoirs. In these reservoirs, it is highly unlikely the reservoir will flow hydrocarbon without significant stimulation due to the low flow capacity.

The flow profile in hydraulic fractured well exhibits periods of bilinear, linear, and pseudo-radial flow. In tight reservoirs, the periods of bilinear and linear flow tend to dominate the producing profile for a fracture of significant length and conductivity. This lengthy bilinear and linear flow profile results in a well drainage pattern that differs from the circular pattern often planned for in field development planning. Moreover, since well drainage pattern is key to success and efficient well planning, the field development plan is dependent on the fracturing program to be implemented in the field. This presentation looks at the forecasted production profiles of both hydraulically fractured and unfractured tight gas reservoirs and the impact it has on the drainage pattern within the field. Furthermore, it allows for an economic comparison, justifying the need to incorporate potential post completion stimulation (fracturing) into early stages of the field development concept to ensure maximum value is obtained.