**Operator Eliminates Sand Production in Complex Reservoir and Saves 5 Days of Rig Time per Well**

Use of Alternate Path shunt tubes improves frac-packing results in multiple zones over long intervals

**CHALLENGE**
Prevent sand production and achieve low skins in complex wells with long intervals and multiple zones.

**SOLUTION**
Frac-pack the wells with screens that use Alternate Path† shunt tubes to ensure a complete annular pack.

**RESULTS**
Eliminated sand production and achieved a near-zero skin value, saving 5 days of rig time per well; produced more reserves than would have been possible with conventional stacked completions.

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**Complex reservoir, complex challenge**
An operator was developing the Magnolia field in deepwater Gulf of Mexico. The wells targeted multiple zones in an unconsolidated, silty reservoir that required complex directional wells. To maximize well productivity with minimum solids production, the wells were to be completed with cased-hole frac packs. The completion design had to take into account the long intervals of the producing reservoirs, the large variations in sand grain size and permeability, and the potential for voids, plugging, erosion, and bridging in the screens and annulus pack.

**Frac-packing with shunt tube technology**
To reduce the high costs associated with stacked frac-packs in multiple zones, the operator chose to complete these long intervals in single stages. To help ensure optimal proppant placement in the screen and casing annulus over the entire interval, the operator wanted to use Alternate Path shunt tubes, which provide alternate, or redundant, gravel-pack slurry pathways that bypass bridges and fill any voids in the gravel pack. Schlumberger was brought into the project because of its exclusive license for the Alternate Path shunt tube technology. The operator’s goal was to propagate a fracture across most or all of the reservoir height with high pump rates and use the shunt tubes to ensure a complete gravel pack of the entire screen and casing annulus.

**Sand control, low skins, optimized production**
Use of the Alternate Path shunt tubes successfully eliminated sand production in all eight wells and enabled the wells to produce with near-zero to negative skin, exceeding the preproject estimate of a skin value of five. Frac-packing multiple zones in a single stage and covering intervals up to 571 feet long in one of the completed wells saved an estimated 5 days of rig time per well and allowed the operator to produce additional reserves that might otherwise have been bypassed using conventional stacked completions.

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