Liner-Conveyed Gravel-Pack System

A SINGLE-TRIP SYSTEM TO DEPLOY SCREENS, CEMENT THE LINER, AND GRAVEL PACK
Liner-Conveyed Gravel-Pack (LCGP) System Overview

**FEATURES**

- Heavy hang-weight HPT service tool conveys assembly to TD, sets and tests liner hanger/packer
- Provides hydrostatic pressure maintenance at all times
- Shrouded closing sleeve (SMCS) provides flow path for the slurry in the open hole to avoid reservoir erosion
- Cambering closing sleeve (CMCS) with check valve prevents back flow of cement after cementing operation

**PERFORMANCE BENCHMARKS**

- Conventional lower completion type wells with various sandface completion options: slotted liner, standalone screens, compliant screens, alpha/beta gravel pack or shunt gravel pack
- Field proven reliability with extensive run history of the service tool used in the Single-Trip Gravel Pack and Treat (STGP&T) system

**BENEFITS**

- Performs standalone gravel pack and cement liner in single trip
- Maximizes screen O/D-ID to help increase production rates while reducing risk of screen erosion
- Saves rig time and costs by minimizing number of runs for drilling and completion
- Compatible with alpha/beta wave or shunt gravel-pack operations
- Can be run with standalone screens, slotted liner or compliant screens applications where gravel pack is not required
- Can be run on wells where cement is not required such as multilaterals
- Liner is fully centralized while running in hole
- Openhole packer provides isolation between gravel pack and liner prior to cementing operations
- Field proven reliability with extensive run history of the service tool used in the Single-Trip Gravel Pack and Treat (STGP&T) system

**OPERATIONAL SEQUENCE**

1. Run in hole with screens, LCGP system, liner and liner hanger/packer to total depth
2. Drop ball, set the liner hanger/packer, and release service tool
3. Perform liner hanger/packer anchor and pressure test
4. Pressure up on the annulus side to set openhole isolation packer
5. Move tool to weight-down position and perform gravel-pack operation
6. Upon screenout, pick up to reverse position and reverse out excess gravel
7. Pull the service tool up to cementing position and perform cementing operation
8. Close cement sleeve and reverse out excess cement
9. POOH, close fluid loss control device (when applicable) and run upper completion

**TECHNOLOGY AND FIELD CASE STUDIES**

SPE-109070: New Method of Well Construction Requiring Sand Control Increases Production Potential and Reduces Recovery Costs.

SPE-170798: Multilateral Level-5 Dual Long Horizontal Openhole Gravel Pack Completion on the Peregino Field.
# VARIETY OF COMPLETION CONFIGURATIONS

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<thead>
<tr>
<th>Liner Hanger</th>
<th>Versa-Trieve® Packer</th>
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<tr>
<td>Cementing or Non-Cementing</td>
<td>Circulating MCS or Non-Cemented Liner</td>
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<tr>
<td>Openhole Isolation</td>
<td>ZoneGuard® Packers or ZoneGuard and Swellpacker® Systems or Swellpacker Systems</td>
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<tr>
<td>Gravel Pack or No Gravel Pack</td>
<td>Gravel-Pack MCS or No MCS</td>
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<td>Fluid Loss Device</td>
<td>FS2 Valve or Flapper Valve or No Fluid Loss Device</td>
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<tr>
<td>Sandface Options</td>
<td>SAS (PetroGuard® Wrap or Mesh Screen) or Gravel Pack or EquiFlow® ICD/AICD or PetroGuard® Shunt Screen or Endurance Hydraulic Screen®</td>
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<tr>
<td>Washdown or No Washdown</td>
<td>Float Shoe or Bull Nose</td>
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