

One-Trip Liner Hanger and Gravel Pack Installation

Over ten installations to date with operators in Poland, providing significant rig-time savings

Background

Single-trip liner-conveyed gravel pack systems are generally synonymous with high-profile wells and technology often not considered by geothermal customers due to prohibitively high cost. Available low-cost alternatives are commonly associated with failures, and consequences could include settings tools not being retrieved back to surface, resulting in a large amount of non-productive time (NPT) and remediation costs.

NOV Completion Tools was approached by a customer in Poland to develop a solution to run a gravel-packing operation of a 6 $\frac{5}{8}$ -in. screen to TD, complete setting the hanger, release tools, and pull out of hole in one run. After working with the customer and understanding their previous failures with inferior market offerings, we approached them to discuss the job and improve the system. We designed and developed a complete system solution to meet all operational objectives, stay within budget, and ultimately save the customer an entire trip.

Solution

Using our completion tools expertise, we utilized our existing field-proven liner hanger technologies and combined them with a bespoke gravel pack solution to perform the liner run and gravel pack in one combined trip. A dedicated system was developed that allowed them to complete their operation successfully, but also reduced and eliminated the occurrence of failures and NPT related to stuck pipe. An addition of selective circulating subs and improved liner top packer functionality increased the system's reliability and had a significant improvement over all predecessors. We provided a customer-focused solution comprised of a premium technology at a feasible price point for their geothermal-specific applications.

Results

- Over ten successful installations to date across two Polish operators
- Significant improvement in reducing and eliminating stuck tools due to excess gravel in the well
- Cost savings to the customer
- Liner hanger systems successfully run to TD with liner hanger set and activated and gravel pack jobs completed, saving ~24-hour round-trip rig time per run
- Positive indications of calculated displaced gravel reaching the liner top

Case study facts

Location: Poland

Products

- Gravel pack R-setting sleeve
- Mechanical liner hanger packer
- Gravel port collar
- Mechanical rotating setting tool
- Gravel packing cup tool
- Selective shifting tool
- Series of integrated contingency circulation ports