World’s First Stacked Conformable Sand Screen Technology Utilizing Open Cell Matrix Polymer in Indonesia - A Case Study Review

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Abstract

With more producing wells shut in due to issues with sand production, remedial sand control has become of paramount importance across the life of producing wells. Presented is a novel remedial conformable sand control system which was recently conveyed by slickline in the first installation of the stacked conformable sand screen system. The results also illustrate the obtained incremented production and well intervention performance efficiency.

The use of a conformable open cell matrix polymer (OCMP) as the sand retention mechanism is the key factor of this technology which enables the tool to be fully compressed during deployment but will enlarge when at the required depth, filling the annular gap, holding the sand in the formation and preventing any further sand infill. The system is stackable, increasing coverage of the older damaged screen or cased and perforated section simply by latching a seal assembly into a fishing neck at the top of the lower screen until the whole section is covered. The OCMP filter layer creates a tortuous flow path and removes the energy out of any sand grain impingement resulting in an erosion-resistant filtration system.

A recent well intervention in an oil field in Indonesia deployed the stacked system for the first time. The operator had historic sand control issues which had resulted in the well being shut in due to a 3000ft sand pack in the tubing. Other conventional remedial sand control techniques had not regained sand control integrity. In other fields run by the same operator, the remedial conformable sand control system had been previously deployed as a single installation with extremely successful results. In this installation, three screens were deployed and stacked on a retrievable packer. The ease of the slickline deployment was quickly recognized even in the high angle deviation up to 54 degrees. The deployment of the stackable screen solution resulted in a sand free oil flow rate of 1253 bldp when well was put back onto production. The installation was found to be highly efficient with zero hours nonproductive time (NPT) and lost time incident (LTI), demonstrating the effectiveness of appropriate job planning and the ease of deployment on slickline.

Ultimately, the stacked remedial conformable sand control system was successfully installed and supported the oil production during 6 months of observation without any new sand production into the wellbore.

For the first time, an innovative and highly effective stackable sand control system was deployed in an oil field in Indonesia. Three conformable screen systems were deployed and latched into a single retrievable packer. Further benefits gained from using this technology, includes screen standardisation as the filtration layer does not require to be sized to a particular sand and can negate the requirement to stock various micron-sized screens and gravel.