

Intelligent tracers identify optimum frac strategy

Operator realizes an improvement of 270,000 bbl per well per year

Challenge

An operator needed to identify the optimum stimulation strategy to maximize production in multi stage frac wells using a reliable, low risk, and interventionless solution.

Solution

RESMAN intelligent tracers (RES•OIL) with uniquely identifiable signatures were installed in the 12 stages of an 8,000-ft horizontal well to measure inflow performance along the lateral.

Unlike conventional pumpable tracers, RESMAN Intelligent Tracer® technology enables higher reliability when assessing inflow performance and years of monitoring because the surveys can be repeated throughout the life of the systems.

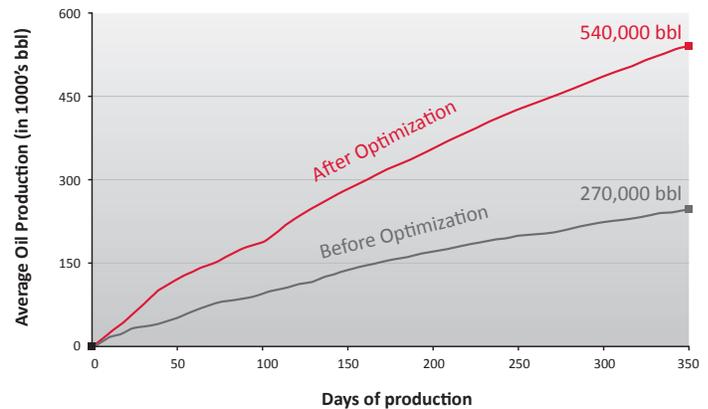
Application

The RES•OIL systems, which were integrated into the completion equipment before wellsite operations began, were run in-hole without deviating from normal procedures and with no additional rig time or extra personnel at the site.

The operator used two distinct stimulation techniques along the lateral: two thirds of the stages were treated with a mechanical diversion, and one third was treated with dynamic diversion.

During production startup, RESMAN's patented Flush Out Model* was used to quantify the amount of inflow from each stage, thereby providing a direct performance comparison between the two stimulation techniques.

Fig. 2 – RESMAN findings enabled the optimization of frac treatment strategy and helped the operator double the average oil production per well from 270,000 to 540,000 barrels of oil per year.



Results

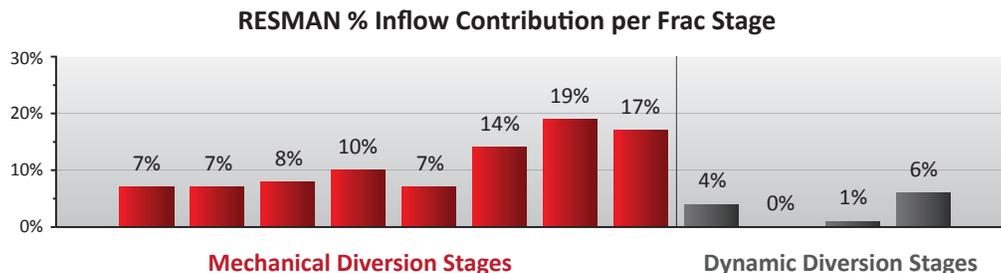
The inflow distribution calculated for each stage (Fig. 1) revealed that the stages stimulated using mechanical diversion were significantly better performers than those where dynamic diversion was used, contributing (on average) three times more production.

Based on this finding from RESMAN, the operator deployed the optimum stimulation method field-wide and realized an average improvement of 270,000 barrels of oil per well per year (Fig. 2).

Following the successful results of this campaign, the operator installed RES•OIL systems in every new producer to monitor inflow distribution along the laterals and further refine its reservoir models and its drilling and completion strategies.

Fig. 1 – RESMAN relative inflow contribution per stage reveals the optimum stimulation technique.

* Refer to Technical Bulletin 2



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