

Efficient Sand Control Leads to Better Production

Case study: Oil production rates improved for Oxy and Ecopetrol in mature Colombian field

Challenge

Operator Oxy Occidental Petroleum Corporation and Ecopetrol needed to assess the tendency of its oil wells in the Cano Limon field to produce sand.

Solution

Schlumberger Data & Consulting Services (DCS) was called on to perform a full Sand Management Solutions (SMS) study. The SMS team analyzed the producing wells' tendency for sand production, recommended the optimal recompletion option for sand control, and executed all the sand control oilfield services, resulting in near-zero sand production.

Results

Provided nearly 100% efficient gravel packs and sand control. Increased production rates with the application of a higher well drawdown pressure.

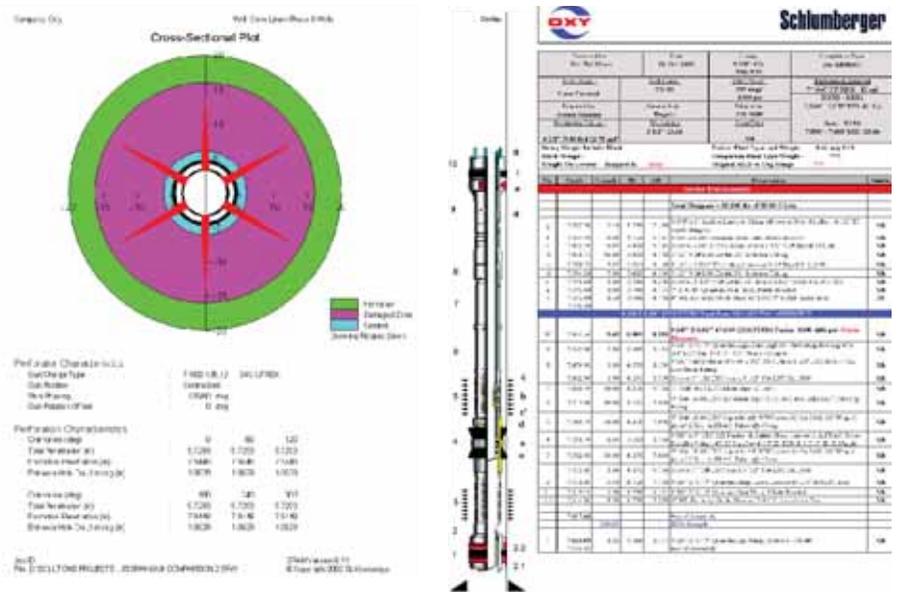
Assess sand production

Operator Oxy Occidental Petroleum Corporation and Ecopetrol needed to assess the tendency of its oil wells in the Cano Limon field to produce sand. DCS was called on to perform a full Sand Management Solutions (SMS) study. The SMS team analyzed the producing wells' tendency for sand production, recommended the optimal recompletion option for sand control, and executed all the sand control oilfield services, resulting in near-zero sand production.

Optimal recompletion options recommended

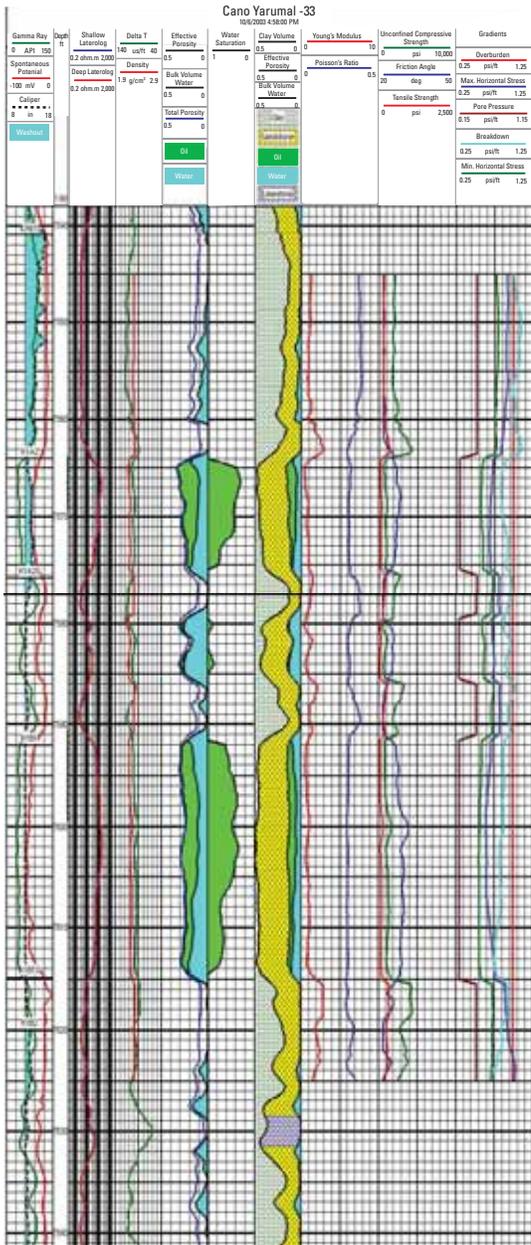
The SMS team first reviewed the field and chose six wells—three from Phase 2 of the field's production project and three from an extension of Phase 2—as the best candidates for the study. Next, a full SMS review was performed on the wells to determine the production conditions, such as drawdown and reservoir pressures, that would increase the potential for sanding.

Generating critical drawdown pressure curves gave the team an understanding of sanding propensity. The focus then turned to which recompletion option would be optimal for individual wells. A full range of sand control recompletion options was evaluated.



Perforation design and downhole sand control design.

Case study: Oil production rates improved for Oxy and Ecopetrol in mature Colombian field



Petrophysical, geomechanical, and critical drawdown logs for the zone of interest.

100% efficient gravel packs and sand control. Production rates increased with the application of a higher well drawdown pressure.

E-mail dcs@slb.com or contact your local Schlumberger representative to learn more.

Pack options included STIMPAC* fracturing and gravel-packing service, high-rate water pack, and gravel pack. Screenless options included screenless fracturing, selective perforations, oriented perforations, and formation or perforation chemical consolidation.

Based on the results of the study and past experience of sand control requirements in wells with increased production potential, the SMS team made the following recommendations for optimal completion:

- a high-rate water pack for wells with an oil/water contact
- STIMPAC service for wells without anticipated water contact
- the use of gravel or screens in wells with production rates of 5,000 bbl/d and higher.

The study also included a full analysis on reperforating the wells for a pack environment to minimize the pressure drop and damage seen when packing small-diameter perforations. This option provided the maximum area open for flow in the casing and cement sheath with minimal perforation pressure drop.

Sand controlled, production rates increased

Based on SMS recommendations, a pack design was used for the six wells. Seven months into the project, the workovers had provided nearly

www.slb.com/dcs