Case study: Ivory Coast, West Africa

SnapScreen solution revived shut-in well, stopped sand production, and extended well life for three years

One of the best producing wells on an unmanned offshore platform near the Ivory Coast began producing sand, damaging the completion and surface equipment, and had to be shut in. After being shut in for over six months the operator determined the sand was entering the production string through a failed gravel pack in a section of the lower completion. The operator challenged the industry to provide a live-well deployment remedial sand control solution. This would omit the need to kill the well to deploy the extended-length remedial sand control BHA which was approximately 600 ft (182.9 m), which would risk reduced hydrocarbon production after the well was brought back online.

To keep from having to kill the well, Baker Hughes recommended using its **SnapScreen™ live-well sand screen deployment system** combined with a **Slim-Pak™ sand control screen** and **Velox™ packer. MICRO-WASH™ fluid treatment** was also utilized to treat and clean the existing screens in the well.

The SnapScreen system can be used to run an entire length of screens downhole through an industry standard 5 1/8-in. blowout preventer (BOP), while well integrity is maintained through the coiled tubing pressure control stack.

The SnapScreen system is ideal for deploying an extended length remedial sand control BHA into a well with a failed sand control completion, or a cased and perforated well with early onset of sand with marginal and low bottomhole pressures. The system can be used in formations that are sensitive to overbalanced conditions or kill weight fluid. Unlike other live-well deployment connection methods, the SnapScreen system doesn't rely on string rotation, splines, or unnecessarily complicated latch types. This results in a robust deployment system that is predictable, immune to debris, and suited to both free-standing and standard rig environments.

The Slim-Pak screen provides the benefits of a pre-packed screen without sacrificing critical OD or ID dimensions. It consists of a wire cloth wrapped around a perforated pipe base, a pre-cured layer of Bakerbond™ resin and a Bakerweld™ screen jacket welded to a perforated pipe base.

Flawless execution

Coiled tubing pressure control equipment with a surface gate valve package made it possible to remove the injector head while operating under live-well conditions. SnapScreen connectors were used to join each screen section at the BOP, enabling the team to run the entire 400-ft (121-m) length of sand control screens in a single run.

The team successfully deployed all twenty five screen assemblies under live-well conditions, eliminating the time, costs, and HSE risks associated with killing the well, allowing the operator to restore production immediately. The solution stopped the sand production and restored the well back to initial production rates, exceeding the operator's expectations. The well continued to produce without any issues for an additional three years.

Challenges

- Sand intrusion across a failed gravel-pack zone
- Shut-in offshore well
- Long interval preventing conventional deployment
- Remote location
- Short project reaction time

Results

- Installed 400-ft string of sand screens in a single run under live-well conditions
- Eliminated time, cost, and risks associated with killing the well
- Provided an integrated solution, reducing head count on location
- Stopped inflow of sand
- Restored hydrocarbon production back to initial production rates, exceeding the operator's expectations
- Extended the life of well by three years
- Completed the whole operation below the customer's AFE cost estimate
- Executed without any HSE incidents