



Integrated Solution Helps Woodside Senegal Successfully Complete First Well of Deepwater Project with Zero Issues or NPT

EXTENSIVE PLANNING AND COLLABORATION ENABLES FLAWLESS DELIVERY OF OPENHOLE GRAVEL PACK COMPLETION IN CHALLENGING ENVIRONMENT

WEST AFRICA

CHALLENGES

New field development in remote location

- » Specific equipment type, material and preparation requirements
- » Extensive logistic and customs clearance process

SOLUTIONS

Engage product service line (PSL), region and support function to ensure flawless execution

- » Early involvement of Halliburton technology, manufacturing, logistic and product management
- » Highly competent team hired for design, tool preparation and field execution

RESULTS

SNP-20 well successfully completed with zero lost time incidents (LTI), non-productive time (NPT), health, safety, and environment (HSE) and service quality (SQ) issues

- » First shunt screen Installation in Senegal helped ensure 100% pack efficiency
- » Fluid loss isolation barrier valve remotely opened successfully

ZERO

SNP-20 well successfully completed with ZERO LTI - NPT HSE and Service Quality issues.

OVERVIEW

Sangomar Phase 1 is a standalone 23-well subsea development designed to exploit oil volumes from the Rufisque, Sangomar and Sangomar Deep Offshore (RSSD) Production Sharing Contract (PSC) area, approximately 90 km offshore Senegal.

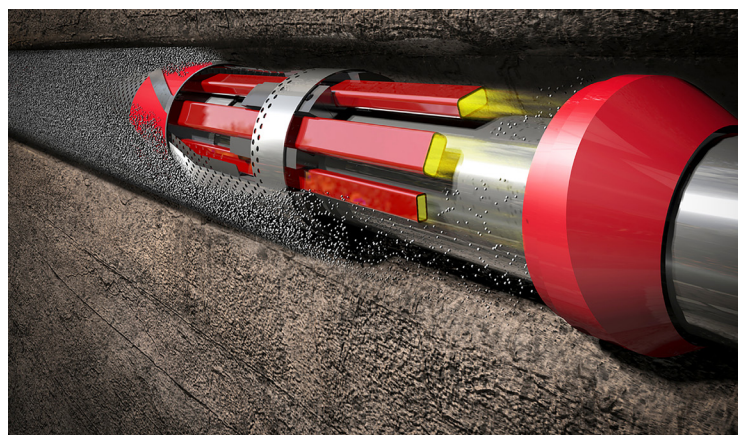
The development consists of 11 gas lifted oil production wells, two gas injector wells and 10 water injector wells, which will be drilled and completed over a period of approximately three years with first spud in July 2021.

SNP-20 is the first well to be completed in this country new to oilfield operations both from a local administrative and operations point of view, resulting in numerous challenges to overcome to successfully deliver this well.

CHALLENGES

This new field development presented several challenges:

- » Products customization engineering, manufacturing and testing requirement to meet customer expectations.
- » Deliver in country and complete completion assemblies for delivery at wellsite in accordance with customer preventive maintenance inspection and test program.
- » First deepwater completion installation in country in the first well of a 23-well campaign.
- » Deploy a reliable, robust sand face completion and ensure successful gravel-pack placement while yielding savings to the operator.
- » Operating in a new base facility in a challenging environment



PetroGuard® Openhole Shunt System

HCT1779-040

SOLUTIONS

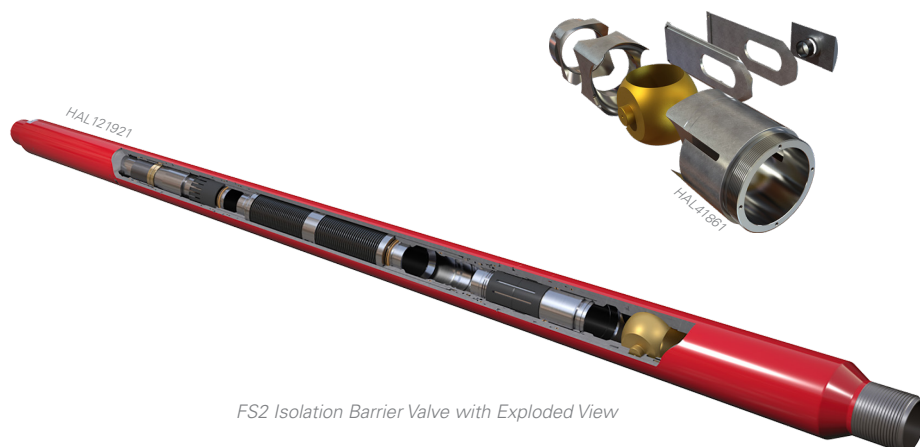
Halliburton collaborated with the operator to define objectives and develop a strategy to help ensure safe, successful operations:

- » Involve Completion Tools (HCT) core segments — product management, technology and manufacturing — during planning, development and execution to help ensure customized products meet or exceed customer requirements.
- » Abide by Service Quality Minimums:
 - » Collaborate with customer to develop a detailed design of service capturing the job execution plan
 - » Follow control points to provide assurance that the job purpose is achieved
 - » Assign competent personnel to tasks
 - » Determine the root cause of any issues while correcting them
- » Utilize the following Halliburton products:
 - » STGP&T™ single-trip gravel pack and treatment system to hydraulically set a gravel-pack packer, perform gravel-pack operations, and treat the formation down the washpipe in a single trip.
 - » FS2 fluid loss isolation barrier valves to isolate reservoirs after gravel-pack operations.
 - » PetroGuard® Openhole Shunt system as an alternative to conventional gravel-pack screens to ensure gravel packing of any voids created by unplanned wellbore issues and ensure completion success.

RESULTS

Integrating field-proven technology from the HCT, Production Enhancement and Baroid PSLs, Halliburton successfully delivered the sand face solution, with zero NPT, HSE or SQ issues, meeting the customer objectives and maximizing asset value.

- » Successfully installed more than 2,460 feet (750 meters) of 5-inch PetroGuard® Openhole Shunt system, enabling operator to achieve significant time savings.
- » Shunt activation helped ensure 100 percent pack efficiency.
- » Gravel-pack tool successfully converted for formation treatment. FS2 isolation barrier valve successfully closed and tested, ensuring reservoir isolation before running the upper completion.
- » FS2 fluid loss device remotely opened successfully, with a total of 10 cycles as planned
- » High safety focus — 10 rig crew safety recognitions
- » Successful operation in a new location in a challenging environment



FS2 Isolation Barrier Valve with Exploded View

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