



## Chevron improves efficiency using BlueDock® connectors in Angola

Chevron chose the BlueDock® connector to promote efficiency and reduce running times in the offshore Mafumeira Sul major capital project, in Angola.

### Summary

#### An integral solution for Angola

Chevron was looking for reliable products that are easy to run for the offshore Mafumeira Sul major capital project, located in Angola. Tenaris introduced its TenarisHydril BlueDock® connectors and the companies jointly conducted qualification tests to confirm that these products and their manufacturing process complied with Chevron's technical and quality standards.

After successfully verifying their performance through full scale testing, Chevron decided to run BlueDock® connectors in Angola for the first time. The operator chose 20" x 0.625" API 5L X56 pipes with BlueDock® connectors with metal-to-metal seals for four wells located in Block 0.

As part of its integral offer, Tenaris supplied Chevron with an external coating for corrosion protection and field services. Tenaris's full range of OCTG products is manufactured under a unified and integrated production system covered by one quality management system.

The operations were successfully conducted and the connectors were easily run, with no re-makeups nor rejects and with reduced running times compared to the products that Chevron had been using in this project.

### Challenges

#### In search for efficient solutions

Chevron was searching for reliable products that would be robust and easy to install and run in this offshore project in Angola. The tubular products for this operation required consistent sealability throughout the entire life of the wells. In addition, an external coating system was required to prevent corrosion in the splash zone.

### PROJECT PROFILE

**Operator**  
Chevron

#### Products highlighted

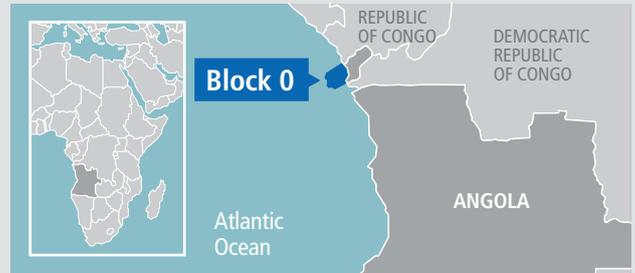
- TenarisHydril BlueDock® connectors

**Location**  
Angola

#### Services provided

- Technical Consulting Services
- Field Services
- Coating

**Application**  
Offshore



- ▲ Tenaris supplied Chevron with TenarisHydril BlueDock® connectors with external coating for corrosion protection and certified field services specialists that provided running assistance at the rig site.

## Solution

### A well-founded decision

Connectors with metal-to-metal seal were considered the right choice to achieve the high level of sealability performance that Chevron was looking for. Therefore, the oil and gas company chose 20" x 0.625" API 5L X56 pipes with TenarisHydril BlueDock® LR 70 MTM connectors, a reliable product that is easy to install and run in even the most complex environments.

Chevron arrived to that decision after jointly conducting with Tenaris a series of full scale testing on the connector and auditing its manufacturing process. The BlueDock® connector passed Chevron's qualification protocol for internal gas sealability, based on the API RP 5C5 CAL I protocol, thus formally enabling Chevron to use BlueDock® connectors.

The BlueDock® connector has also been qualified for gas and water sealability by full-scale testing at 95% pipe body VME, according to latest revision of the API RP 5C5 CAL I protocol.

This connector has up to three anti-rotational keys (ARKs) that prevent unintended buck-off and provide additional support to torque retention. These ARKs come pre-installed directly from the mill and feature a very easy activation, with no special tools required. This feature makes the connector extremely reliable and easy to run, a fundamental driver for Chevron.

The BlueDock® connector's high fatigue performance under bending and tension or compression cyclic loads is provided by the unique connector design that avoids stress-risers. The connector's fatigue performance has been proven as the best-in-class by full scale testing as well.

Tenaris's integral package of solutions for Chevron included a modified epoxy external coating for corrosion protection. The coating was applied in the same mill where the conductors were manufactured, minimizing pipe handling operations, reducing production times and optimizing the supply chain through an integrated supply operation.

### Customized technical and field services

Tenaris's technical experts worked side-by-side Chevron to help select the best products for the operation in Angola. They agreed on and conducted the qualifications and testing required by the oil and gas company.

Moreover, Tenaris's manufacturing facilities and processes successfully passed Chevron's quality audits.

Tenaris regularly provides field service support to Chevron in Angola, with certified specialists that are qualified to run all the products supplied by Tenaris for these operations.



▲ TenarisHydril BlueDock® connectors were easily installed and run in the four wells drilled by Chevron in Angola.

## Results

### An efficient and time saving solution

Chevron successfully ran the TenarisHydril BlueDock® connectors in four wells without re-makeups or rejects. The first two runs took place in the producer well MAF-C08 (CAV) and in the water injector well MAF C09 (CBJ), in a top hole batch drilling operation conducted from a Jack-Up rig in October 2016. The other two runs were conducted in the water injector MAF-B17 (BW10) and MAF B18 (BBY) wells, also in a top hole batch drilling operation carried out from another Jack Up rig in late November 2016.

The products were easily installed and run by a local running service company, using standard equipment and applying conventional techniques. The connections were made-up with belt tongs, with the final torque controlled in the driller's control panel and the final make-up position was easily verified on the external shoulder (make up indicator feature), avoiding the need for torque-turn charts. The anti-rotational keys were activated using a conventional hammer, in a very fast and efficient operation.

Chevron, the running service company and the rig crew highlighted the benefits provided by TenarisHydril BlueDock® connectors, which were easier and faster to run than other types of connectors.

A comparison between the running times achieved by the BlueDock® connector and other connectors applied by the same crew in the same rigs of this project showed that the BlueDock® connector runs around 20% faster.

Chevron endorsed the results achieved in the four wells and confirmed Tenaris as the preferential supplier of 20" connectors under the long-term agreement held by both companies in Angola.



For contact information, please visit our site:  
[www.tenaris.com](http://www.tenaris.com)