

Tandem offloading simulations for the Agbami FPSO

The world's largest production vessel

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The Agbami Floating Production, Storage and Offloading (FPSO) vessel is one of the largest production vessels ever built and is currently being installed 70 miles offshore Nigeria. MARIN previously conducted model tests for the Agbami FPSO. These tests have now been followed by a nautical study and several training sessions on MARIN's full mission bridge (FMB-I).

Ordered by Star Deep Water Petroleum Limited, an affiliate of Chevron Corporation, the Agbami FPSO was built in South Korea and production is expected to start in the third quarter of 2008. Next to the FPSO, a SPM buoy will be installed in the field as well.

Initially, MARIN conducted model tests for the Agbami FPSO in order to investigate the possibilities of a safe journey to the field and for reliable mooring once the vessel arrived. Last year, these tests were followed by a nautical study that aimed to determine the operational limits for approaching, connecting and tandem offloading from the FPSO.

Under normal circumstances the FPSO will be offloaded via the SPM buoy. However, to continue oil production during for example, down-time periods of the SPM buoy, there is also a need to be able to offload directly from the FPSO. This is done by mooring the export tanker to the FPSO in tandem.

The limits for tandem offloading were determined using fast-time manoeuvring simulations, whereby the necessary tug power, hawser loads and abort scenarios were identified.

Following the fast time simulations, two training programmes for the company's mooring masters were carried out on MARIN's FMB-I. This bridge has a 360° visual system. For these simulations, the same database was used as for the fast time



simulations. The training periods were used to refine the outcome of the fast time simulations, as well as to prepare the mooring masters to conduct tandem operations with the Agbami FPSO.

These real time simulations confirmed the conclusions of the fast time simulations and gave a very good insight into the best approach strategy and related nautical procedures. Extreme weather conditions and numerous emergencies were included in the sessions and the mooring masters are now prepared for the worst circumstances that can be expected.

In the near future, the training sessions may be repeated but this time including side-by-side mooring operations.

Star Deep Water Petroleum Limited, an affiliate of Chevron Corporation, is the operator of the Agbami Unit. Other partners are:

- Texaco Nigeria Outer Shelf Inc. (a Chevron affiliate)
- Petroleo Brasileiro Nigeria Limited
- Statoil Nigeria Limited
- Famfa Oil Limited
- Nigerian National Petroleum Corporation (NNPC)

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