

<b>Client</b>	<b>Keppel Verolme, Rotterdam, The Netherlands</b>
<b>Project</b>	<b>Lifting of the drill tower of semi-submersible drilling-rig Blackford Dolphin</b>
<b>Year</b>	<b>2007 / May</b>
<b>Contractors</b>	<ul style="list-style-type: none"> <li>- Scaldis: shearlegs Rambiz</li> <li>- Bonn &amp; Mees: shearlegs Matador 3</li> <li>- Siri Marine: remote inclination / motion monitoring</li> </ul>

**Scope of Work:**

As a part of the refurbishment of the semi-submersible drilling-rig Blackford Dolphin by Keppel Verolme (Rotterdam, The Netherlands) a new drilling tower and drill floor was fabricated and installed.

The complete drill tower had to be lifted in one single lift onto the drill floor of the rig

The lifting height was approx. 60 meters; once at height the lift had to be shifted sideways over approx. 80 meters.

The lifting operations were carried out by two shearlegs in tandem



The lifting operation was considered critical. Accurate monitoring and control of the inclination of the lift was essential.

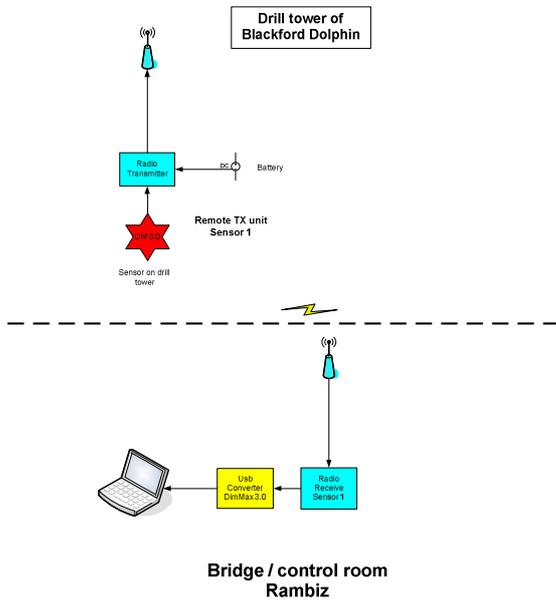
The CoG of the lift was well above the lifting points, making it into an unstable lift. The maximum allowable inclination was only a few degrees. During the lifting operations personnel was not allowed on the lift to monitor the condition and inclination.

Siri Marine provided an inclination / motion monitoring system, with a sensor on the drill tower and a monitoring system on one of the shearlegs (Rambiz). Wireless data transmission between sensor and PC, including battery power, ensured continuous real-time inclination and motion information in the shearleg's control room.

During the lifting operations Siri Marine personnel worked closely together with the shearleg's Master to ensure continuous information on the condition and control of the lift.



**Siri Marine Motion Monitoring System**  
Heavy lift operations Keppel Verolme



**Equipment in use:**

**Shearlegs Rambiz:**

- PC Notebook with SafetyMax Software installed
- Radio receiver (Satel 3ASd modem and antenna)

**Drill tower Blackford Dolphin:**

- SiriMarine motion sensor
- Radio transmitter (Satel 3ASd modem and antenna)
- Battery
- The complete sensor and transmitter assembly is housed inside a Pelicase 1610 box

**Summary & Conclusions**

The services of Siri Marine were requested by Keppel Verolme and the Warranty Surveyor because the critical lifting operations required accurate and remote inclination and motion monitoring and control of the lift.

The system was first used during the assembly of the top section onto the bottom section of the drill tower.

Prior to the main lifting operations the assembled drill tower was lifted onto a barge with the 2 shearlegs.

During the main lifting operations the master of the Rambiz, who was in control of the tandem lift, and a Siri Marine operator worked closely together. This has resulted in a continuous and quick lifting operation with full control of the lift at all times.

A quote from the project manager of Keppel Verolme:

The lifting job of the drill tower of the Blackford Dolphin is still considered as a very impressive “piece of work”, also by heavy lift specialists. Thanks to the input of all parties, including Siri Marine, it became a success.

**Contact:**

Siri Marine BV, Stationsweg 1, 9901 CP Appingedam, The Netherlands  
 T: +31 596 620 997 F: +31 596 650 810  
 Mail: [info@sirimarine.nl](mailto:info@sirimarine.nl) Web: [www.sirimarine.nl](http://www.sirimarine.nl)