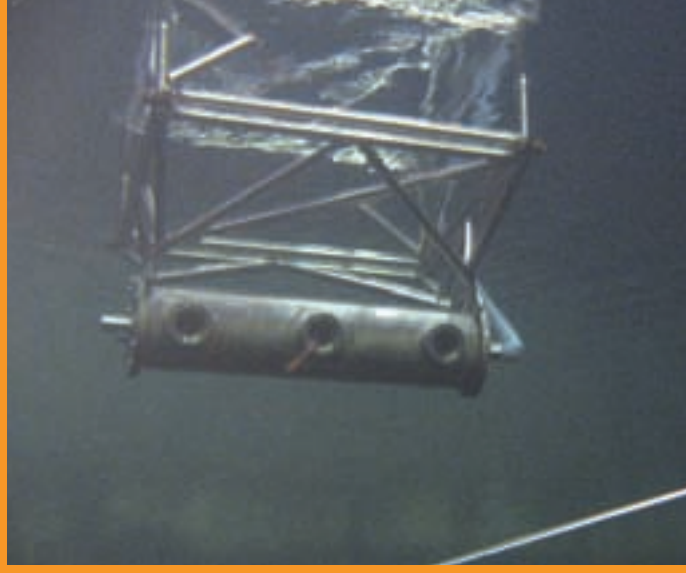
UMS: MARIN's special underwater eye



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The Underwater Measurement System (UMS): MARIN's special eye for underwater behaviour.

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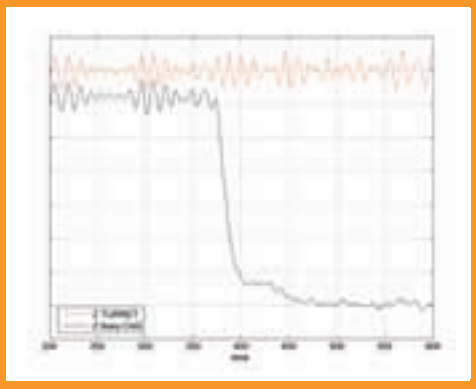
For areas with an overall benign environment but with occasional extreme conditions, disconnectable turret buoy systems are a good option to moor FPSOs and this is also the case for deep water. BHP Billiton decided to use this system for their Stybarrow FPSO which is offshore Australia, in a water depth of more than 850 m. The job was awarded to MODEC and FMC Technologies Floating Systems Inc. (formerly FMC SOFEC). The tests were carried out at MARIN. The mooring and riser system is supported by a 'spider' buoy, which remains at a depth of approximately 30 m below the waves when disconnected.



Time trace of the vertical motions of the vessel and the buoy before, during and after the disconnection of the buoy.

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The BHP Billiton Stybarrow disconnectable FPSO developed by FMC Sofec.

This project was the first to make use of MARIN's new Underwater Measurement System (UMS), developed in co-operation with Metris. This system follows the motions of the buoy underwater in six degrees of freedom, a unique capability for subsea model testing. In the tests, it tracked the motions of the buoy during disconnection and connection, (see time traces). The tests confirmed that a safe disconnection is feasible – even in large waves – without contact after disconnection. Connection can be carried out safely and it was concluded that the submerged disconnected buoy could survive cyclonic conditions.

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