

**MALIN  
ABRAM**

## **CASE STUDY** M468

**LOADOUT, TRANSPORTATION AND  
INSTALLATION OF SATURATION DIVE SPREAD  
MODULE TO THE WELL-SAFE GUARDIAN**



Figure 1: Drone shot showing SDS module loaded on barge at Burntisland facility, ready for transit to Rosyth

### OVERVIEW

Malin Abram were delighted to complete the load-out, transportation and installation of the Saturation Dive Spread (SDS) module for Well-Safe Solutions. At 30 years old, the Well-Safe Guardian is an established rig and the SDS Module brings new capability to the Well-Safe Guardian, allowing for sat-diving operations to be conducted from the Rig itself.



Figure 2: SDS module leaving Burntisland facility on SPMT's, heading for load-out

### THE CLIENT AND CARGO

The Well-Safe Guardian is a highly efficient and very experienced Earl & Wright 700 series mid-water semi-submersible unit which has been optimised specifically for well decommissioning operations in the UK as part of multi-well, multi-operator well campaigns. The SDS module holds 12 divers in saturation allowing 24-hour diving operations. With this dive system and their current trendsetter trident system, it becomes the first rig (Well-Safe Guardian) in the North Sea to have the two capabilities. Saturation dive systems are typically installed on dive support vessels (DSV's), but this was a first off in the North Sea to build a modular dive system that can be lifted (single point lift) onto a rig.



Figure 3: View of SDS module on SPMT's from the South side

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## TRANSPORTATION AND INSTALLATION

Malin Abram were contracted to loadout, transport and install the module to the Well-Safe Guardian. The project consisted of several stages:

- Loadout of the module from the fabrication shed in Burntisland on SPMT's onto a Malin chartered barge
- Sailing up the River Forth to Rosyth for a test lift with the heavy lift vessel (HLV) Uglen
- Transportation, by barge, to the rig stationed in the Firth of Forth off Methil
- Installation to the Well-Safe Guardian using the HLV Uglen

The loadout took place in Burntisland in a tidally locked berth with a very narrow entry gate. This presented some challenges that required innovative thinking. The barge does not have any propulsion and was towed through the gate, with very small clearances by one tug tied to the bow, pushing through the gate then turned stern to the quay wall to allow the module to be rolled on. Although the berth is tidally locked, the water does flow over the gate at high tide and the load-out had to be carefully planned so that we were rolling the module onto the barge at high water.



Figure 4: Malin Abram team at quayside providing onsite marine superintendence

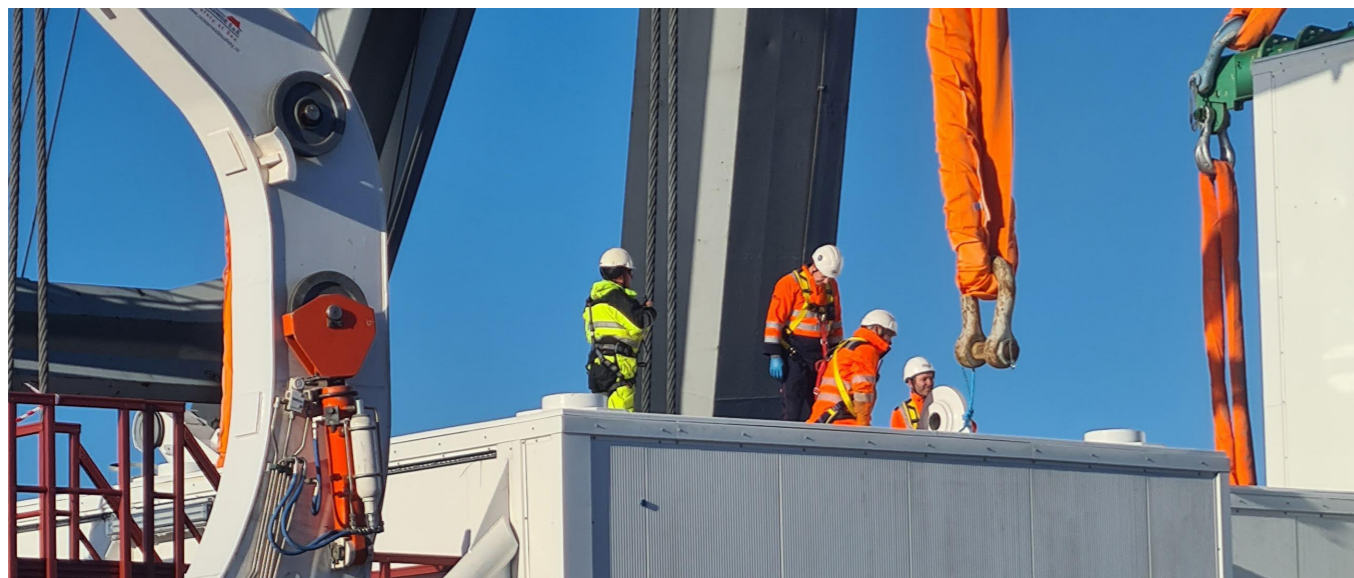


Figure 5: Riggers securing SDS module at Rosyth for test lift

The barge was then towed back out the berth in a similar manoeuvre and towed to Rosyth to allow the Uglen heavy lift vessel to perform a test lift. Rosyth provided a large enough berth to allow both vessels side by side to perform a test lift. The downside to this is that the Uglen had to lower its boom to then travel under the Forth bridges and raise it again on the other side meaning all rigging would need to be attached on the river. To avoid berthing again, the rigging was landed onto the barge after the test lift and re-rigged at the Firth of Forth nearby the Well-Safe Guardian.

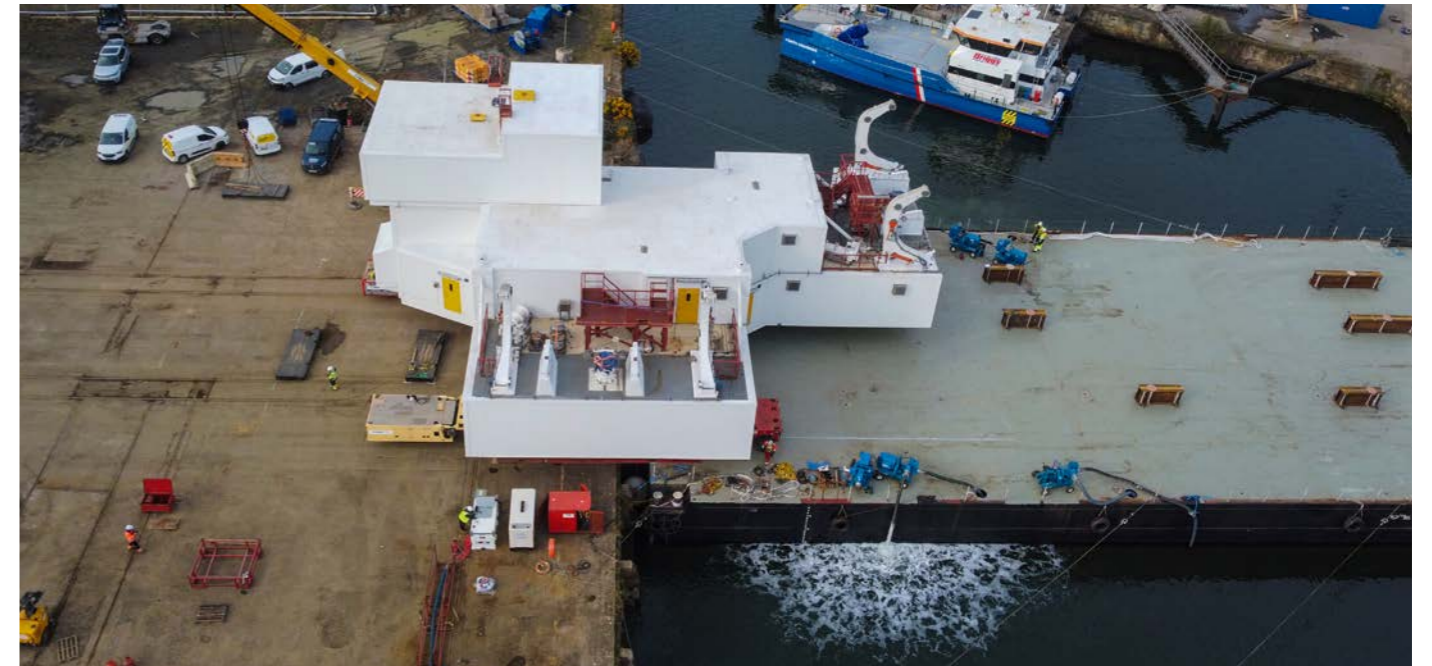


Figure 6: Drone shot of the SDS loading onto barge at Burntisland

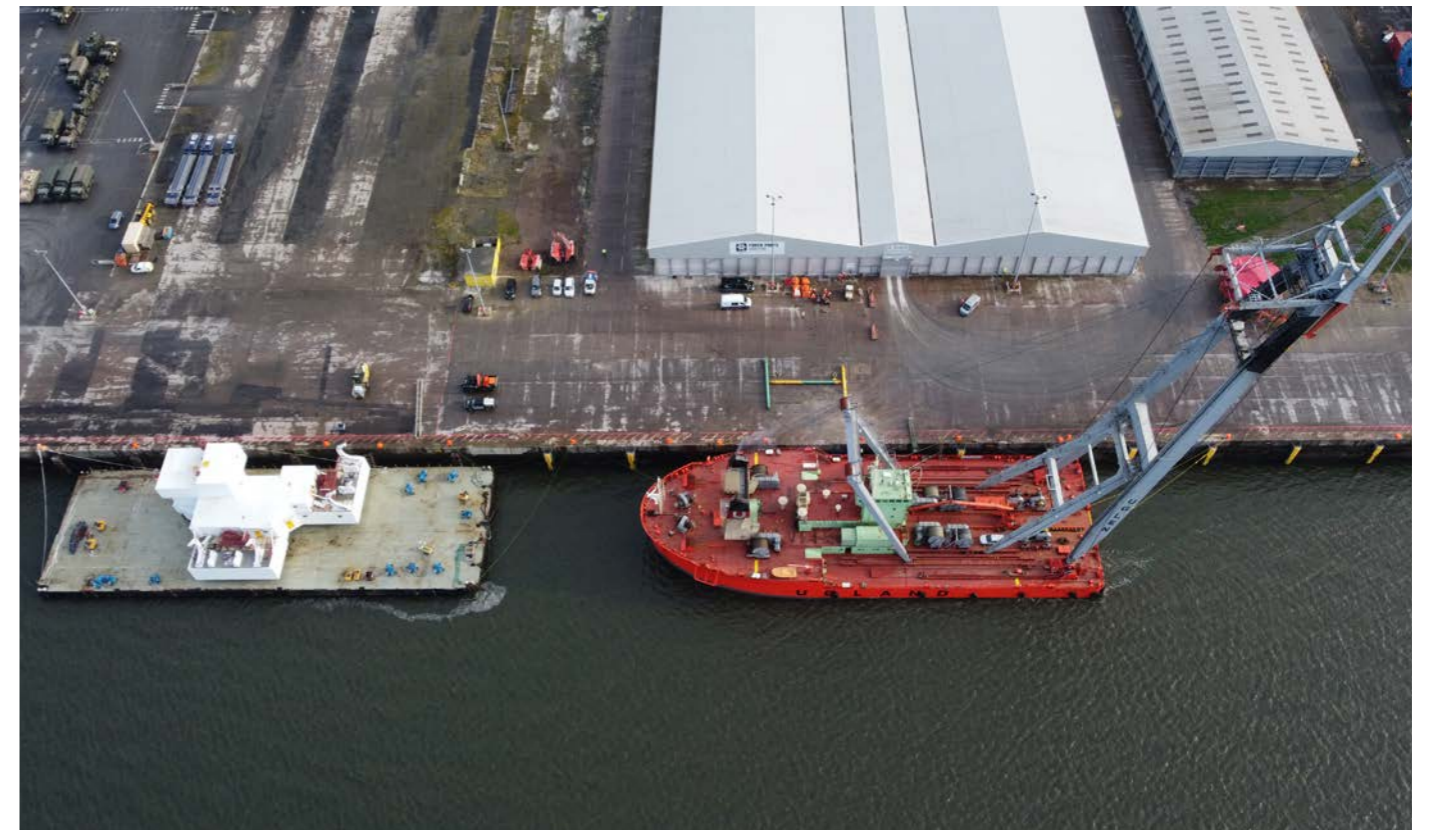


Figure 7: Aerial view of SDS module on barge and heavy lift vessel Uglen berthed at Rosyth

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The installation was heavily weather restricted, limited by both wind and swell. Presented with a good weather window, and the collaboration with experienced Mariners who have worked on the Forth for many years, we were able to complete the project safely and securely.

This was a complex operation with some key challenges; it did however provide the opportunity for Malin Abram to build their relationship with Well-Safe, and transport and install the module to their satisfaction.



Figure 8: SDS module suspended by the Uglen heading towards the Well-Safe Guardian



Figure 9: SDS module arriving at the Well-Safe Guardian for installation



Figure 10: Lifting SDS Module into position on the Well-Safe Guardian