



CASE STUDY

A Rigless Installation of the Complete™ MST System; A First for Superior in Offshore Operations.

ROUGH WEATHER CONDITIONS MADE WORKING WITH AN HWU UNIT, BARGE, AND CRANE A CHALLENGE.

In the Makassar Strait of Indonesia, Superior Energy successfully installed a two-trip 7" Complete™ MST system, stacking two MST's for the 3,100 feet of BHA, for a total of nine zones, including three HRWP. The installation was rigless, using a Hydraulic Workover Unit (HWU) in lieu of a drilling rig; a first in offshore operations for Superior.

High wind up to 25 knots and sea swells created challenging weather conditions. The barge was set perpendicular to achieve the highest reach for the crane to the deck platform. In this position, the barge also experienced the high swells, making the job more complicated.

Timing was crucial. With the crane arm limit 55 feet above the work basket, the crew picked up the BHA in high tide and calm weather, so that it could be transferred to the platform and made-up vertically. The crane was key in the make-up of the screen assembly and the gravel-pack assembly. With the HWU traveling slip limited to 10 feet, each BHA was made-up vertically, one by one. With the top gravel-pack assembly at 45 feet, the team used the BHA skyline and crane together to make the connection.

Through all the challenges presented, Superior provided solutions for a rigless multizone completion. Due to the weather and uniqueness of this job, a risk assessment was created for each sub-assembly pick up and make-up. Two MST's were stacked together to meet the length of the BHA. With proper planning, Superior was able to pick-up the service tool in two sections, a first for Superior.

Using a HWU instead of drilling rig was a challenge, but it brought a huge costs savings to the customer. Moreover, this job was Superior's first rigless Complete MST system installation for offshore operations, and it was successfully completed in a reasonable timeframe in severe weather conditions.

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CHALLENGES

- » Rough weather - wind up to 25 knots and large swells
- » BHA - vertical make-up in high tide
- » Barge
 - Perpendicular set up
 - No space to lay out equipment
- » Crane
 - Arm limit 55 feet above HWU basket required pick-up on high tide and calm weather
 - Working with HWU unit's limitations of a 10 foot traveling slip

SUPERIOR ENERGY SOLUTION

- » **Risk assessment** of make-up and pick-up
- » Stacked **two MST's** to accommodate 3,100 feet BHA length
- » Picked up service tool in two sections, a first for this Superior team
- » Measured blank pipes prior to job to save time

VALUE

- » **First time** installation of multizone single trip gravel-pack in an offshore **rigless operation**
- » **Cost savings** for operator
 - **Day rate of HWU, crane and barge significantly less** than drilling rig
- » **MST experience** level of Superior team kept trips in the hole to an absolute minimum
 - In Indonesia, Superior has completed over 270 zones in 69 wells since 2012



COMPLETION SERVICES