



eRED® Valves

Save 88 Hours of Rig Time for Upper Completion Project

REMOTELY OPERATED VALVES ELIMINATE REQUIREMENT OF COSTLY INTERVENTIONS

MALIKAI FIELD, OFFSHORE MALAYSIA

CHALLENGES

- » Minimize well intervention
- » Increase upper completion operational efficiency
- » Reduce HSE exposure

SOLUTION

- » Remotely operated eRED® valves to provide shallow barriers without the requirement of interventions

RESULT

- » Increased operational efficiency
- » Saved 88 hours of rig time
- » Achieved 22 remote actuations with 100 percent success rate

eRED® VALVES
 PROVIDE
88 HOURS
 OF RIG-TIME
 SAVINGS

OVERVIEW

Shell Malaysia wanted to minimize well intervention risks; increase operational efficiency; and reduce health, safety, and environmental (HSE) exposures during the completion phase of its deepwater oil wells in the Malikai field, offshore Sabah, Malaysia. Shell also required a more efficient method of setting a shallow barrier, and the chosen solution would have to adapt to Shell’s completion design.

HALLIBURTON RECOMMENDS ERED VALVE AS EFFECTIVE SHALLOW BARRIER

To achieve its goals, Shell elected to pre-install the remotely operated Halliburton eRED® valve as a shallow barrier in the tubing hanger. This allowed Shell to have a secondary barrier in place without the requirement of an intervention before removing the blowout preventer (BOP) and installing the Christmas tree.

In total, the eRED valves were installed 11 times for 10 wells. The additional installation was due to one of the wells being completed and worked over at a later date.

On all 11 installations, the eRED valve was made up to a 3.9-inch QXT lock in the closed position and set in the tubing hanger nipple profile onshore. The assembly was then pressure tested to confirm the integrity of the eRED valve, crossover, and lock. Upon a successful test, the eRED valve was remotely opened via a pressure command and the tubing hanger was mobilized to the rig.

At the rigsite, the tubing hanger was picked up and run in hole with the pre-installed eRED valve. With the eRED valve in the open position, it allowed fluid bypass while the tubing hanger was landed.

Once at depth, the tubing hanger was landed and locked in place. To confirm the correct space-out, a low-pressure tubing test of 250 psi was performed through the open eRED valve in the tubing hanger against the Halliburton FS2 fluid loss isolation barrier valve in the lower completion.

Following confirmation of correct space-out, the tubing pressure was increased to 600 psi and held for 10 minutes, initiating the closing sequence of the eRED valve. A 10-minute closing delay allowed the pressure to be bled off to zero prior to the eRED valve closing, thus preventing any pressure being trapped below the eRED valve.

The closed eRED valve was successfully pressure tested to 2,500 psi, giving Shell a secondary tested well barrier before removing the BOP and installing the Christmas tree – without the use of an intervention.

Upon completion of testing the Christmas tree, the tubing pressure was increased to 1,250 psi and held for 10 minutes, initiating the opening sequence of the eRED valve. A 10-minute opening delay allowed the pressure to be bled down to 200 psi prior to the eRED valve opening. A tubing pressure drop at the end of the 10-minute delay confirmed that the eRED valve was open and allowed slickline to recover the eRED assembly without the need for pressure-control equipment.

SUCCESSFUL VALVE PERFORMANCE INCREASES OPERATIONAL EFFICIENCY

The unique design of the eRED valve allowed the closing and opening pressure commands to be set on a loop, thus giving Shell the added flexibility of being able to open and close the eRED valve as many times as required if the operational plan deviated from the original work scope.

Using the eRED valve in the Shell Malikai upper completion design saved Shell approximately 88 hours of rig time over the 11 installations. In total, the eRED valves were remotely functioned 22 times, with a 100 percent remote actuation success rate and with zero service quality issues. These positive results brought significant financial savings to the project, in addition to greatly reducing risks to personnel and to the operation as a whole.



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