Case Study

Innovative offshore multi-lateral completion results in top producer

International, Romania, Lebada Vest Field
StackFRAC HD System

A collaboration with an operator in Romania resulted in cost savings and high production. The completion included a StackFRAC® HD multi-stage system in each leg and was the first multi-lateral completion in Romania.

Challenge

Having space for one last wellhead on an existing offshore platform, an operator working in the Black Sea was looking to maximize reservoir coverage with a multi-lateral well. The operator wanted a completion solution that was both reliable and cost effective.

Solution

The operator was familiar with Packers Plus' extensive run history of onshore multi-laterals, and the success of an offshore multi-lateral project in the North Sea. The completion solution for the Black Sea was designed with two main priorities:

1. Minimize rig time to lower operational costs
2. Maximize operational efficiency

These principles guided the collaborative development of a number of innovative methods. Some of these include:

• Installation of 6-stage StackFRAC HD systems in each leg before stimulation
• Removal of the whipstock to release the drilling rig after drilling the second leg and using a workover rig for the rest of the operation to significantly reduce costs
• Operations allowed stimulation of one leg after the other, requiring minimal time to move the completion string from Leg 2 to Leg 1
• Isolation between the legs using a ball-activated baffle instead of a mechanical barrier
• Creating long-term stability of the open hole junction by tying the production string through the junction to Leg 2

Results

In most multi-lateral operations, each leg is drilled, installed, and stimulated separately. For this well, however, a more efficient system was implemented. With the drilling and installation of both legs completed, the stimulation of both legs could be done consecutively. Consequently, the transition between legs for stimulation was only a few hours.

After both legs were drilled and installed with 6-stage StackFRAC HD systems, a specialized assembly was built to help navigate the upper completion string out of the window and into Leg 2. Leg 2 was then stimulated first.

Instead of using a mechanical barrier to provide isolation between legs, a ball was pumped to land on a baffle at the top of the Leg 2 completion, followed by heavyweight fluid. This provided the hydraulic isolation and barrier needed for working on Leg 1.

After Leg 1 was stimulated, the production string was tied into Leg 2, creating a supported junction. This addressed a concern common to Level 2 TAML junctions – if the open hole junction collapses, production from the leg could be permanently lost. A sliding sleeve was installed in the upper completion to allow for commingled production from both legs.

The production string was tied into Leg 2 to provide a Level 3 TAML at the junction for long term stability.