

Packers Plus® Case Study



Packers Plus technology captures bypassed oil pay from Pembina - Cardium

StackFRAC Multi-Stage Fracturing System delivers on joint venture well

Background

The Pembina field is located approximately 120 km southwest of Edmonton and extends over an area of 800 square miles. Discovered in 1953, Pembina is the largest conventional onshore oil field in Canada containing an estimated 7.4 to 7.8 billion barrels of original oil in place. The field produces light gravity crude from the tight sandstone Cardium formation. Approximately 1.2 to 1.4 billion barrels of oil (16 to 18%) have been recovered from the Pembina reservoir, but new technology is required to extract the remaining reserves.

The Challenge

A junior operator took a chance on an area of the Pembina previously exploited by vertical wells, which they felt had bypassed potential in tight rock zones. To capitalize on the unexploited reserves, they turned to horizontal open hole wells and multi-stage fracturing, which they knew had been successfully utilized by other large operators in the area and in similar resource plays in western Canada.

The Solution

Working together with a second operator, the first joint-venture, discovery well was drilled and completed using a 7-stage StackFRAC® system. The system was installed to a MD of 2,450 m and TVD of 1,350 m to target the Cardium formation. All seven fracture stimulation stages were completed in one day.

The Results

Initial production from the well came on at over 250 bbl/d of light oil with no water cut. This well is away from areas where secondary waterflooding has been used to maintain reservoir pressure, so there is minimal risk of fracturing into water. A second well has been completed with a 9-stage StackFRAC system and is performing similar to the first well with production values in excess of 250 bbl/d with minor solution gas and no water.



ERA	PERIOD	AGE IN MILLIONS OF YEARS	CENTRAL PLAINS
CENOZOIC	QUATERNARY	1.6	LAURENTIDE DRIFT HAND HILLS SWAN HILLS GRAVELS
	TERTIARY		PASKAPOO ✱
		66.4	SCOLLARD EDMONTON BATTLE WHITEMUD HORSESHOE CANYON BEARPAW
MESOZOIC	UPPER CRETACEOUS		BELLY RIVER ● ✱ ✕ RIBSTONE VICTORIA VROSSEAU
			BASEL BELLY RIVER
		97.5	LEA PARK FIRST WHITE SPECKLED SHALE WAPIABI CARDIUM ● ✱ BLACKSTONE SECOND WHITE SPECKLED SHALE ● ✱
	LOWER		COLORADO FISH SCALE UNNAMED SHALE
			VIKING ● ✱ BASEL COL ✱ JOLI FOU

Some or all of the systems, methods or products discussed herein may be covered by one or more patents, or patents pending, including US patent numbers 6,907,936; 7,134,505; 7,108,067; 7,543,634; 7,431,091; 7,021,384; 7,353,878. Copyright © 2010 Packers Plus Energy Services Inc. All rights reserved. CAN-11-AUG-10

