



# Radial Drilling Completes Challenging Production Zones in the Cerro Dragon Field for Pan American Energy

Lateral jetting technique significantly increases completion effectiveness in horizons where conventional fracturing is challenged.

## CHALLENGE

Cerro Dragon field wells exhibit multiple producing formations of 2-3 meters thickness over a 150 meter interval, separated by impermeable barriers. Each horizon is an independent single producing zone.

## SOLUTION

Apply multiple laterals with precise depth accuracy to penetrate target horizons.

## RESULTS

Increased oil production rates of between 20% to 200%

## Large percentage of unproductive & under performing wells

Operating in the Cretaceous, Mina Del Carmen and Castillo sandstones, wells exhibited thin multi-layered formations that presented a challenge to conventional frac completions. The sands being fluviolacustrine in origin presented occasions of inter-bedded clay/shale bodies, difficult to navigate.

Surface core tests and analysis indicated good formation response to stimulation fluids.

## Effective solution through sequenced lateral placement.

The operator decided to evaluate the effectiveness of sequential placement of laterals in response to low production rates associated with conventional frac completions.

Four wells were chosen and laterals were systematically placed to navigate the thin horizons and to allow delivery of maximum natural flow returns to the main wellbore and to surface.

Laterals were achieved using fluid volumes no more than 1,000 liters per lateral and configured for zero formation invasion.

## 20% - 200% higher production without loss of efficiency or added cost.

Following lateral placement, the wells flowed back and produced using similar choke sizes. A comparison cumulative oil volumes normalized by lateral length, showed that placement of the laterals had increased production of between 20%-200%, far exceeding the operators original expectations.

