

The HARP™ - High Angle Reciprocating Pump addresses the critical challenge of producing oil, water and gas in aging and deviated horizontal wells with declining fluid levels.

Challenge:

A producer in Southeast Saskatchewan had been facing several issues with their horizontal oil wells in the Midale formation (35° API). Due to the corrosive environment of the formation (0.1% H₂S) as well as gas locking, they were experiencing very short pump life; 90 – 120 days. Additionally, the conventional pumps were gas locking which required operators to spend time placing pumps on tap. Frequent well interventions led to high operating costs for the field.

Solution:

By using a HARP™ - High Angle Reciprocating Pump, the travelling valve would be mechanically opened on every stroke, and the pump would no longer gas lock. It was decided to put a HARP™ in five wells to see how it would compare to their conventional pump. Immediately after installation, the operators noticed a significant reduction in the time they had to spend keeping the wells pumping. Not having to manually tap the pumps to remove gas locking also provided more consistent pump fillage, allowing the operator to slow down their pumpjacks while maintaining production rates.

Result:

Field: Alameda
Formation: Midale

| | Conventional Pump Run Life (Days) | HARP™ Run Life (Days) | HARP™ Depth (m) | HARP™ Inclination |
|---------|-----------------------------------|-----------------------|-----------------|-------------------|
| Well #1 | 90-120 | 802 | 1475 | 60° |
| Well #2 | 90-120 | 705 | 1510 | 61° |
| Well #3 | 90-120 | 783 | 1349 | 79° |
| Well #4 | 90-120 | 364 | 1450 | 60° |
| Well #5 | 90-120 | 340 | 1381 | 62° |

Utilizing HARP™ has:

- Increased pump run time by an average of over 280%
- Stabilized pump fillage
- Eliminated gas locking of conventional pumps
- Reduced operating costs