

CASE STUDY

Achieving 6X Rod-Pump Runtime Improvement & Restoring Production in a Sand-Producing Vertical Well

Pump Saver

EXECUTIVE SUMMARY

A mature vertical oil well began experiencing **severe sand production** after a 2020 re-frac, resulting in repeated rod-pump failures, costly interventions, and declining production.

In January 2024, the operator installed a **Pump Saver** with a sand-chamber tail joint to capture solids before they reached the pump.

Region: Central Alberta, Canada
Application: Produced-sand management & pump protection
Lift Method: Rod Pump
Customer: Confidential Canadian Operator

KEY RESULTS

- ~2 years of uninterrupted runtime after Pump Saver installation.
- Oil production stabilized above 10 BOPD, peaking near 30 BOPD.
- Major reduction in pump failures and intervention frequency.
- Improved operational efficiency in a high-sand environment.

Pump Saver delivered long-term pump protection, restored production, and reduced workovers—improving well economics immediately.

▶ BACKGROUND

The well, drilled in 1987, performed reliably until a 2020 re-frac triggered heavy solids production. Persistent sand inflow overwhelmed the pump intake and accelerated mechanical failures.

Challenges After the Re-Frac

- Abrasive solids repeatedly damaged the rod pump
- Runtime became highly inconsistent
- Increasing downtime due to flushes and cleanouts
- Production declined to ~3.6 BOPD oil and 86% water cut by October 2023
- The well was eventually shut in pending a solution

▶ WELL SHAPSHOT

| | |
|---------------------|---|
| Well Location | Central Alberta (Confidential) |
| Well Type | Vertical |
| Producing Formation | Belly River Sandstone |
| Casing | 5.5 in., 20.8 kg/m |
| Key Issue | Post re-frac onset of severe solids |
| Lift System | Rod pump with chronic sand interference |

▶ PUMP SAVER INSTALLATION

To control solids, the operator deployed a **Pump Saver** with an ~28 m sand-chamber tail joint.

- **Date Installed:** ~January 20, 2024
- **Purpose:**
 - Separate and capture produced sand
 - Minimize abrasive wear
 - Reduce intake plugging
 - Extend pump runtime and reduce interventions

Pump Saver introduces a buffer zone where solids can settle—shielding the pump from damaging sand loads.



▶ PERFORMANCE OUTCOMES

Production Response

| | | |
|------------------------|---------------------|--------------------|
| Pre-Install (Oct 2023) | ~3.6 BOPD | Well later shut in |
| Post-Install | Sustained > 10 BOPD | Stable operation |
| Peak (Feb-Apr 2024) | ~30 BOPD | Strong recovery |

Runtime Reliability

- ~2 years of continuous operation with no sand-related pump failures
- Significant reduction in downtime and workovers

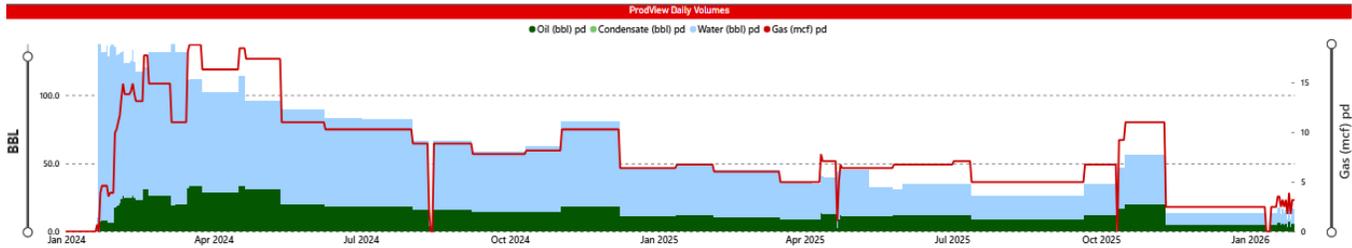


Figure 1. Oil, water, and gas production trend post-Pump Saver installation in early 2024 shows stable, consistent operation.

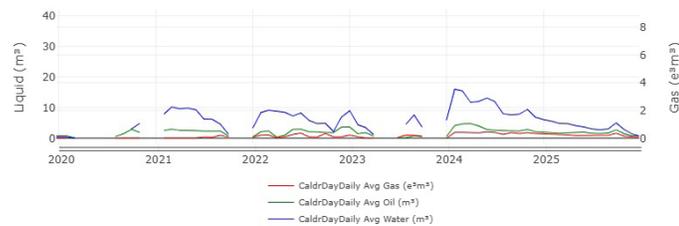


Figure 2. Daily average oil rate and downtime timeline (Feb 2020-Dec 2025) showing reduced downtime gaps post-Jan 2024 installation.

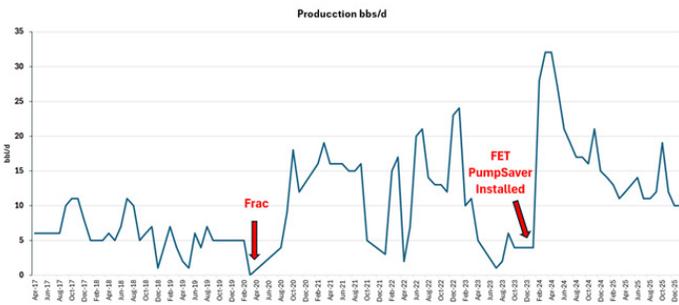


Figure 3. Daily average oil rate (bbl/d); Frac date and Pump Saver installation date.

▶ WHY PUMP SAVER WORKED

The tool mitigates the well’s primary failure mode—solids entry into the pump—by **separating the solids from the produced liquid and capturing these solids in the settling chamber**, which reduces:

- Abrasive wear
- Intake plugging
- Stuck pump valves
- Torque anomalies

Operators should monitor these indicators to determine when the sand chamber may require cleaning:

- Reduced fluid levels or intake restriction signatures
- Unexplained rate decline
- Differential pressure increases
- Pump fillage changes

▶ CONCLUSION

Pump Saver transformed a declining, sand-prone well into a stable, low-maintenance producer, delivering:

- **Recovered production** from 3.6 BOPD to sustained double-digit rates
- **Extended runtime** and fewer failures
- **Lower OPEX** through reduced interventions
- **Longer equipment life**