



Serious Alberta Vent Flow

LOCATION



Vermilion River, AB

RESULTS



SCVF Permanently Eliminated

Vent flow reduced from 17.9 m³/d to 0 m³/d after 2 days of treatment

CHALLENGE

Serious Classification Surface Casing Vent Flow (SCVF)

BioSqueeze Inc. was contracted by an operator to eliminate vent flow on a vertical well being plugged near Lloydminster.

- Drilled in 2006 targeting the Sparky formation.
- Logging suite consisting of RCBL, Noise/Temp, and CHAT run to inform remediation.
- Two conventional cement squeezes conducted with little to no effect on gas flow.
- 177.8 mm x 244.5 mm annulus leaking at ~ 17.9 m³/d, with buildup exceeding 1,700 kPa after 11 hrs.

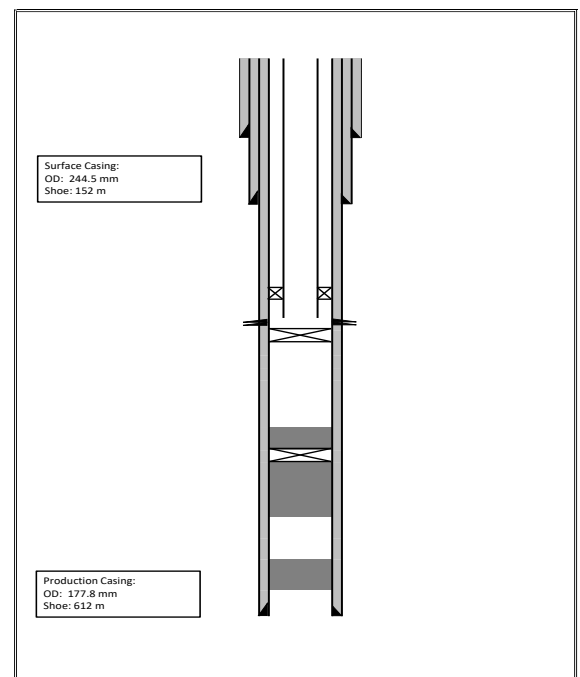
PREPARATION

Perf & Squeeze

Lea Park identified as likely source of gas via prior diagnostics and Advanced Cement Imaging (ACI®).

To prepare the well for treatment via a Downhole BioSqueeze® the following actions were taken:

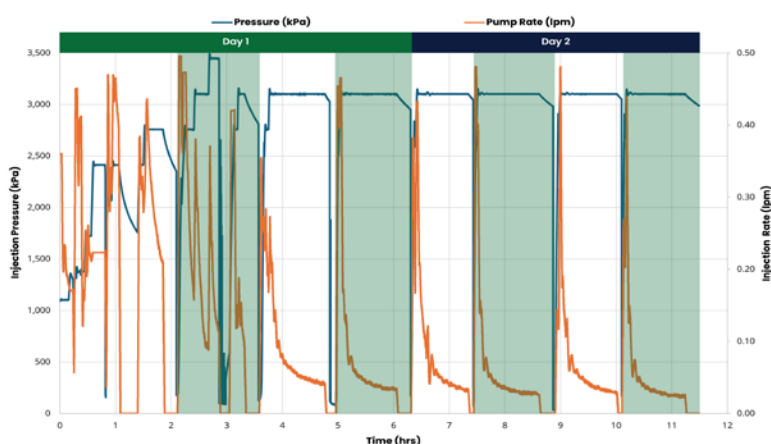
- Cut production casing with hydraulic tool 208 - 209 m
- Set bridge plug at 210 m
- Trip packer and work string
- Tension set packer at 207.5 m



Solution

Downhole BioSqueeze®

Prior to injecting low-viscosity biomineralizing fluids one stage of acid was pumped into the perforated interval to clean up debris and enable access into gas channels. Upon completion of the acid stage, the well was flushed clean with freshwater and biomineralization treatment began. Over the course of two days seven stages of biomineralizing fluids were injected. The pumping strategy consisted of holding pressure constant and allowing rate to fluctuate. A pronounced downward trend in the injection rate was observed over the course of treatment, indicating sealing of leakage pathways as crystalline calcium carbonate precipitated in leakage pathways to form a gas-tight barrier.



Stage	Constant Pressure	Pump Time	Injection Rate	Volume Injected
1	2,758 kPa	126 min	0.204 lpm	82.9 L
2	3,103 kPa	73 min	0.093 lpm	30.1 L
3	3,103 kPa	71 min	0.040 lpm	21.2 L
4	3,103 kPa	66 min	0.035 lpm	18.1 L
5	3,103 kPa	62 min	0.033 lpm	19.4 L
6	3,103 kPa	71 min	0.025 lpm	17.2 L
7	3,103 kPa	67 min	0.028 lpm	21.7 L
8	3,103 kPa	68 min	0.025 lpm	16.0 L

RESULTS

Sealed Leakage Pathways, Allowing Plugging to Proceed

73.1% Reduced injection rate from 0.093 lpm to 0.025 lpm with 143.7 L injected.

71.7% Reduced pressure falloff from 27.6 kPa/min to 7.8 kPa/min.

100% Reduced vent flow from 17.9 m³/d to 0 m³/d.

“ The Most Effective Solution For Eliminating Vent Flow ”



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