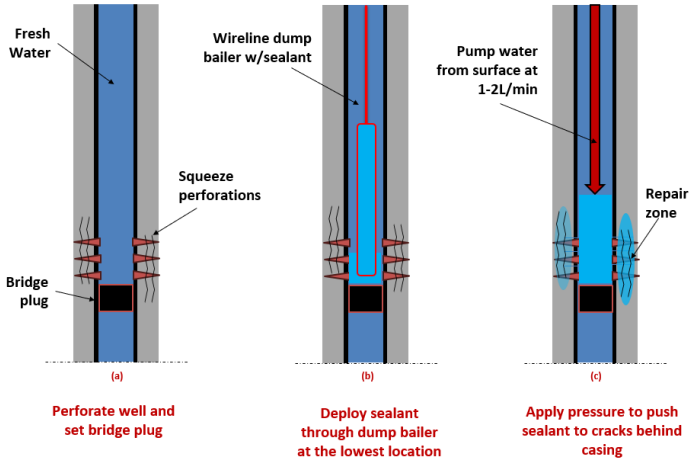
Case Study: SCVF Remediation Using TSN-25 in British Columbia, Canada

The subject well located in British Columbia, Canada, in a region is known for tight shale formations. Surface casing vent flow (SCVF) gas was detected and measured at the wellhead. Traditional cement squeeze operations are often less effective in repairing SCVF in the region.

Based on a suite of diagnostic logs and geological review, it was suspected that fugitive methane was originating from two distinct gas sources. The well owner decided to first isolate the deeper gas source.

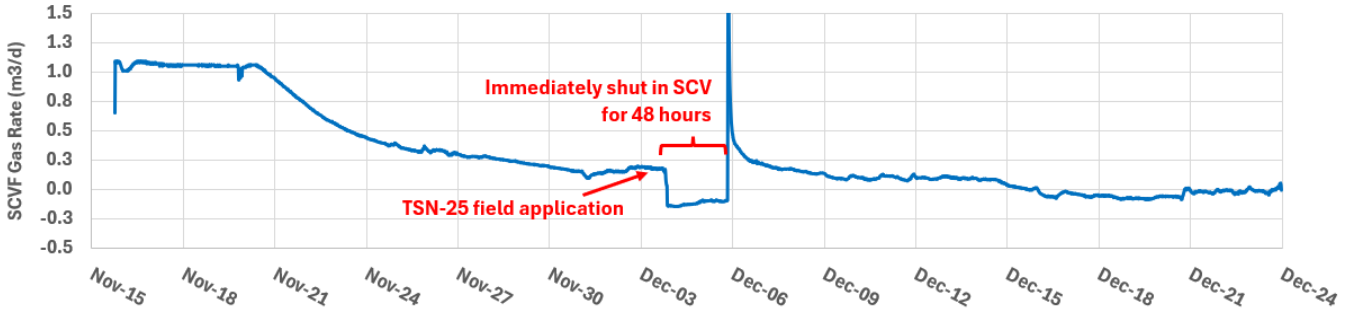
Prior to any intervention, the SCVF gas rate averaged at ~1.0 m^3/d (35.3 scf/d). Perforations near the target gas zone created interceptive pathways in the cement behind the casing, and the SCVF rate decreased following the intervention. However, despite an acid squeeze being conducted, the water feed rate behind the casing remained less than 2 L/min (0.5 gal/min).



The TSN-25 nano-modified polymer sealant was selected due to its low viscosity and ultra-flowable characteristics.

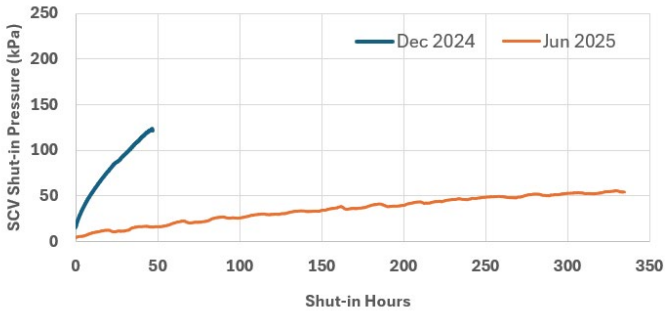
In December 2024, the TSN-25 was mixed and deployed to the perforations via dump bailer. By applying pressure at the surface, a total of 20 L (5.3 gallons) of TSN-25 was squeezed behind the casing at an average rate of 1 L/min. The well was then shut in for 48 hours to allow the TSN-25 to cure under pressure.

As shown in the graph on the next page, the SCVF gas rate continued to decline following the operation and eventually stabilized at 0.06 m^3/d (2.12 scf/d).



The well operator revisited the subject well six months after the TSN-25 sealant squeeze operation. At that time, the measured SCVF gas rate averaged 0.05 m^3/d (1.77 scf/d). More than 300 hours of surface casing vent shut-in pressure data were recorded.

Compared to pre-treatment conditions, the post-squeeze shut-in pressure build-up rate was significantly lower and eventually stabilized at 54 kPa (7 psi), whereas the pre-intervention shut-in pressure continued to rise above 120 kPa (17 psi) with no indication of stabilization. The well operator concluded that the TSN-25 squeeze successfully achieved its intended objective.



Why TSN-25 Was Selected for This Well?

- Post-acidizing injectivity remained **too low for effective placement** of microfine cement
- TSN-25 can be placed at **very low feed rates**, enabling access to restricted leak pathways
- Residual **acid does not inhibit** TSN-25 curing, avoiding compatibility and placement risk
- Rigless operation **reduced operating cost**.

Performance Specification

Characteristic	TSN-25
Crack Penetration	< 20 microns
Workable time*	2 hrs +
Downhole temperature	10 – 120 °C / 50 – 250 °F
Bond Strength to steel	7.0 MPa / 1,000 psi
Elongation at break	8 – 12%

**** Workable time can be engineered to tailor operation needs.***

Contact Us

info@ts-nano.com | **www.ts-nano.com** | ☎ **+1 (505) 385-8930** US
+1 (587) 707-9384 Canada