

## Tartan Cemented Initiation Sub Provides Reliable First Stage Stimulation in Extended Reach Horizontals

### OBJECTIVE

Extended reach horizontals with cemented completions are being used by operators to economically exploit tight formations. The challenge in these long wells is how to efficiently and reliably initiate stimulation operations at the toe. Both coiled tubing and plug-and-perf completion methods are limited by operational issues and the inability to run equipment to depth. In addition to initiation, operators are looking to perform a full stimulation treatment at the toe to capture pay that is often bypassed by other methods.

■ **The CIS has been run by over 30 operators, and both customers and frac crew personnel have provided positive feedback.**

“ We have never been able to pump a full stage in anyone’s toe tool before now, not even our own. ”

– Frac Company

“ We have never pumped a stage through a toe tool before because we never achieved enough rate when we have run toe tools in the past. We will be programming this properly going forward to use the toe sleeve as a stage to start our wells. ”

– Customer

### SOLUTION

Tartan’s Cemented Initiation Sub (CIS) is placed at the toe of the well to eliminate the need for running tubing conveyed perforating (TCP) guns in plug-and-perf completions. The Ball-Drop CIS provides the option to pressure test the casing to the customer’s desired value.

Applied tubing pressure fully opens the patent-pending BurstPoint™ ports in the CIS to provide communication with the annulus. The design and manufacturing of the BurstPoint ports ensures reliability with +/- 0.25% accuracy for the opening pressure.

The CIS gives the operator the ability to not only initiate flow to pump guns downhole for the remaining stages, but it can also be used to stimulate the toe stage of the well. The large flow area provided by the BurstPoint ports enables pumping designed treatment rates to effectively fracture the toe stage. Figure 1 shows a pressure chart from a toe stage stimulation in North America.

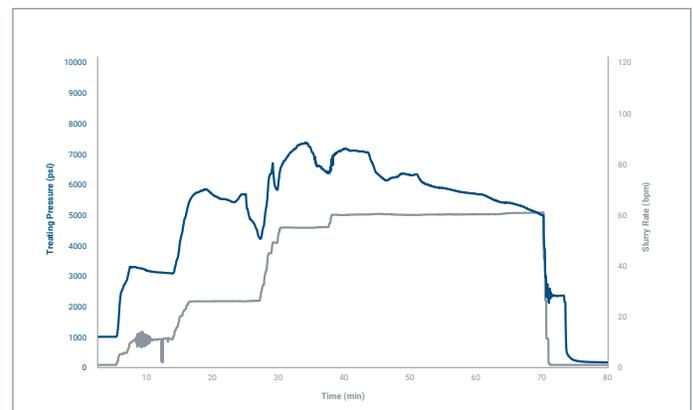


Fig. 1—Treating pressure chart showing stimulation of toe stage through CIS.

## RESULTS

Tartan has installed over 950 CIS with 720 showing 100% successful activation and opening (the remainder are pending activation). The simple, reliable design has proven itself in fields developed with extended reach wells across North America (see run history) with formation temperatures of up to 365°F (Haynesville).

Run History		
Formations	Bakken, Bossier, Cleveland, Eagle Ford, Frontier, Haynesville, Marcellus, Meramec, Montney, Niobrara/Codell, Notikewin, Parkman, Utica, Wolfcamp, Woodford	
	Avg.	Max.
MD ft (m)	17,030 (5,190)	24,670 (7,520)
TVD ft (m)	9,310 (2,840)	14,320 (4,365)

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## ABOUT TARTAN COMPLETIONS

Tartan Completions is a multifaceted energy services company that engineers and manufactures innovative, customized multistage stimulation solutions and provides completions milling services globally. For over 20 years, Tartan has followed the philosophy of engineering our products with simplicity, reliability, flexibility and performance in mind, providing outstanding field service and value to our customers. From design to installation, we continue to meet the high expectations of our customers.

Please contact Tartan Completions for any of your downhole completion system and milling requirements.

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