

# QUICK NOTES

## INTERVENTIONLESS SLEEVE TRIAL IN POWDER RIVER BASIN DEEMED 100% SUCCESS BY OPERATOR

In December 2023, a Powder River Operator completed a Parkman formation well in Wyoming, US. A hybrid completion design was implemented, using Stage Completions Bowhead II™ frac sleeves in the toe portion of the ~9,600 ft lateral, with 81 conventional CT shiftable sleeves above.

### BOWHEAD SYSTEM

#### OPERATOR OBJECTIVES

- To prove out reliability and efficiency gains during running in hole on rig and during frac execution, utilizing a fully mechanical, interventionless technology
- Reduce the overall wellbore risk and cost associated with coil shiftable sleeves
- Allow for future increased frac rates that are limited with annular fracs, allowing for uniformity of frac across the full lateral

#### JOB EXECUTION

After establishing a stabilized injection rate, **5 Bowhead II™ sleeves** were sequentially opened and each zone fraced by launching unique and paired collets for each target sleeve. Stage over stage isolation achieved utilizing a degradable ball selected specifically for operator's source fluid and bottom hole temperature. The collets we pumped through the lateral at **30-40 bbl/min**, slowing to landing rate of **20 bbl/min** prior to reaching target sleeve. Operational certainty was maintained by monitoring with high-resolution acoustic and pressure sensors which confirmed the exact location of the collet as it traversed the lateral, all the way to target sleeve. This monitoring also provided a unique signature of collet seat, shear and subsequent sleeve opening of each stage.

#### BY THE NUMBERS

**5**  
Bowhead II™ Frac Sleeves @ Toe



**100%**  
Sleeve-Opening Rate



**60,000 lb** per Stage  
of Proppant Pumped



Maximum Slurry Rate of  
**50 bbl/min**



**66 Minutes**  
Average Time/Stage Including Pump-Down



**BOWHEAD** is a multistage single point entry frac system offering a near limitless number of fracs per well. Cemented or uncemented, this system allows operators to target optimal spacing and distribution while providing unprecedented confidence in valve-opening accuracy.

01

#### Single Point Entry

A cementable multi-stage single point entry frac valve system offering near limitless fracs.

02

#### Continual Pumping

Individually profiled collets pumped with dissolvable balls result in continual pumping.

03

#### Safer, Smaller

Large-bore, fluid-conveyed collets eliminate the need for wireline, coiled tubing and perforating guns at the wellsite.

