

Sílver-Fox.Net

'BRIDGE PLUG' PRACTICES

Recommend Practices when using the Silver-Fox Spartan Composite Bridge Plug:

The Spartan Composite Bridge Plug is designed for **TEMPORARY ZONE ISOLATION DURING FRAC OPERATIONS** meaning that the Plug is to be set in a well for the purpose of isolating a treated zone from the subsequent zone to be treated. The Plug is not intended to be utilized as a long-term barrier.

The Plug utilizes what is known as a "Floating Mandrel" in its design & construction. When the Plug is set in a well-bore, the Slips and Sealing Element are forced down the Mandrel and compressed against the Shoe of the Plug. This movement traps the setting force between the Upper & Lower Slips while the Sealing Element is extruded and 'sealed' against the both casing wall and the Mandrel body. The amount of force utilized to set the Plug and is captured between the Slips varies according to the size and type of Plug (between 28,000 - 48,000lbs).

After the Plug is set and the appropriate Setting Tool disconnects from the Plug, the Mandrel is in the 'Up' position leaving an approximate 3" uncovered section of the Mandrel between the bottom of the Mandrel Head (Shear Pin Portion) and the Upper Slip Stop. If positive pressure is applied from above, the Mandrel will shift down until the Mandrel Head meets and bottoms out on the Upper Slip Stop which transfers the uncovered section of the Mandrel to the area between the Lower Slip and Shoe. If the above applied pressure is bled off and the pressure differential from below exceeds the hydrostatic pressure from above, the Mandrel will shift (float) back upwards. Mandrel shifts create a tremendous amount of friction between the Mandrel and the Sealing Element and each shift can jeopardize the element surface and the integrity of the seal so these shifts must be minimized when possible.

A 'Kill Plug' is a plug used at the end of frac operations to isolate the treated zones from the remainder of the well bore to facilitate operations in the well without pressure. It is not recommended to utilize a Composite Bridge Plug for this purpose as this is not the intended design. If the Spartan Composite Bridge Plug is utilized as a 'Kill Plug' against our recommendations, the operator should set the Plug, lift the BHA up and then go back in order to tag the plug to verify that it is set in position (recommended speed is 30 ft/min). After the Plug is tagged, bleed the pressure off from the well bore to verify that the Plug is holding pressure. This will verify the integrity of the plug, allow the Mandrel of the Plug to remain in the 'Up' position, and maintain the sealing function of the Plug in the best condition possible. Again, the Spartan Composite Bridge Plug is designed for **TEMPORARY ZONE ISOLATION DURING FRAC OPERATIONS**, and Silver Fox offers no warranty when utilized for any other purpose.

Note:

- If 1st Test Fails: Bleed down to 0 PSI through the choke and then attempt a 2nd Casing Test.
- If 2nd Test Fails: Shoot ~2 perf clusters as deep as possible, verify injectivity for pumpdown, POOH, pickup new guns with a Bridge Plug, and RIH. Set Bridge Plug above perforations and attempt 3rd Casing Test.