RapidStart® Initiator CT sleeve delivers consistent results for operator

Location: Powder River Basin, Wyoming, USA

**Overview** – A well operator in Wyoming planned to drill unconventional horizontal wells for multistage fracturing operations averaging approximately 11,500 ft measured depth (MD) with a 7,000 ft total vertical depth (TVD). The wells were completed with a 4 ½-in. cemented production casing liner to isolate zones and to help ensure wellbore integrity, prior to plug and perf fracturing operations.

The operator needed an economical and reliable alternative to tubing conveyed perforating (TCP) in order to establish a flow path at the toe of the lateral before pumping down the perforating guns for the first stage.

State and federal regulations require that a casing pressure test be performed prior to beginning frac operations. The operator was concerned about being able to reliably operate a hydraulic toe valve that is pinned higher than the casing test pressure.

**Solution**

Halliburton proposed a full lower completion solution that included a VersaFlex® expandable liner hanger system and a RapidStart® Initiator CT sleeve at the toe of the cemented production casing string.

The RapidStart Initiator CT sleeve allows operators to achieve a true casing test, without exceeding the test pressure to open the valve. Pre-job planning for the toe sleeve metering initiation pressure takes into account the installation, cementing, and pressure test requirements needed to establish an activation pressure that is well below the casing test pressure. The sleeve is designed to open after a predetermined hold period.

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<td>Provide a flow path at the toe to enable pump-down of perf guns for first stage, while eliminating need for a wet shoe or TCP toe prep</td>
<td>RapidStart® Initiator CT sleeve provides an interventionless, hydraulically activated flow path in the casing string</td>
<td>After cementing the production string and prior to pumping down the first stage’s perf guns, surface pressure was applied to test the casing and open the sleeve for a pump-down flow path</td>
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<td>Achieve a true casing test to satisfy state and federal regulations, without having to pin the sleeve too high</td>
<td>RapidStart Initiator CT sleeve can be pinned lower than a standard toe sleeve, so casing test pressure is not exceeded when opening it</td>
<td>The 9,000 psi casing pressure test was performed and the sleeve opened after 37 minutes of holding just 8,000 psi at surface</td>
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Result

The lower completion was successfully installed and the RapidStart Initiator CT sleeve performed exactly as designed. With 9.1 ppg brine in the wellbore, a five-minute casing pressure test was executed at 9,000 psi surface pressure. A pressure hold of 8,000 psi was performed for a total time period of 37 minutes, at which point the tool opened.

Above: Actual pump chart of the operation
Right: Operating range (metering time vs. absolute pressure) of the RapidStart® Initiator CT sleeve

Opened at 37 minutes with ~11,300 psi absolute pressure