

LIVE Perf Service Identifies and Adjusts for Error in Well Sketch for Successful Perforation

Real-time depth correlation locates blast joints and prevents misruns

CHALLENGE

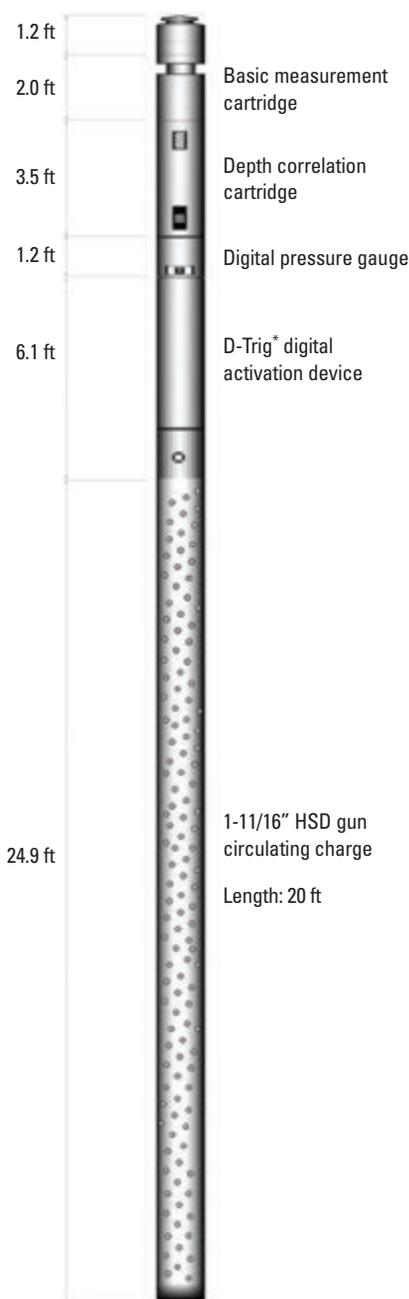
Establish circulation in a dual-zone, single-string completion using slickline conveyance.

SOLUTION

Deploy LIVE Perf® digital slickline perforating services with surface read out (SRO) capability and continuous depth correlation in real time to ensure that operations are on depth.

RESULTS

Identified error in completion diagram that would have resulted in an unsuccessful attempted perforation of a blast joint, while downhole with gun. Immediately identified an acceptable tubing perforation depth, fired, and successfully established circulation with no additional runs.



LIVE Perf toolstring used.

Perforation required to establish circulation

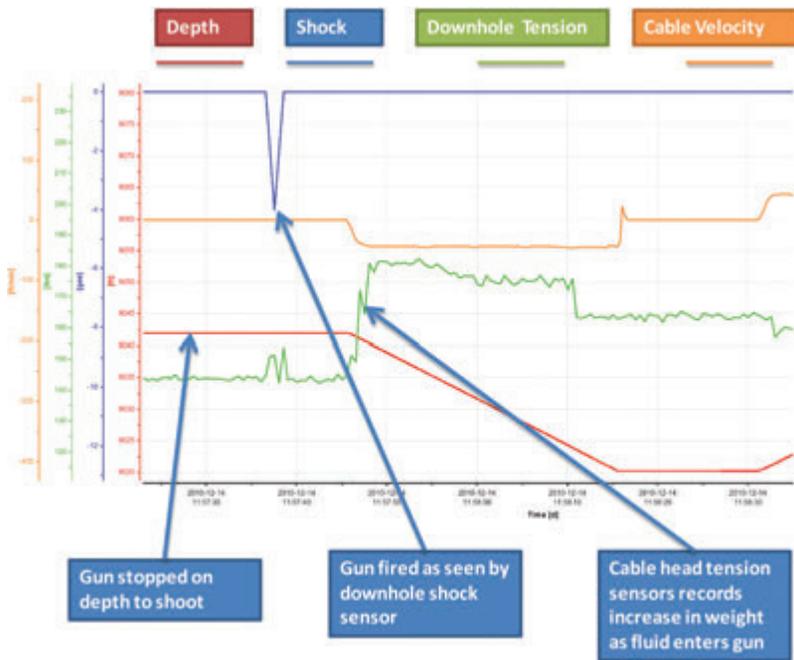
In a well in Texas, a client needed to establish circulation in a dual-zone, single-string completion. A 20-ft gun loaded with circulating charges would perforate a 2 3/8-in tubing joint between an inoperable sliding sleeve and a 100-ft length of blast joints. A slickline operation was selected for cost effectiveness and to simplify logistics.

Correlation, control, and confirmation with LIVE Perf services

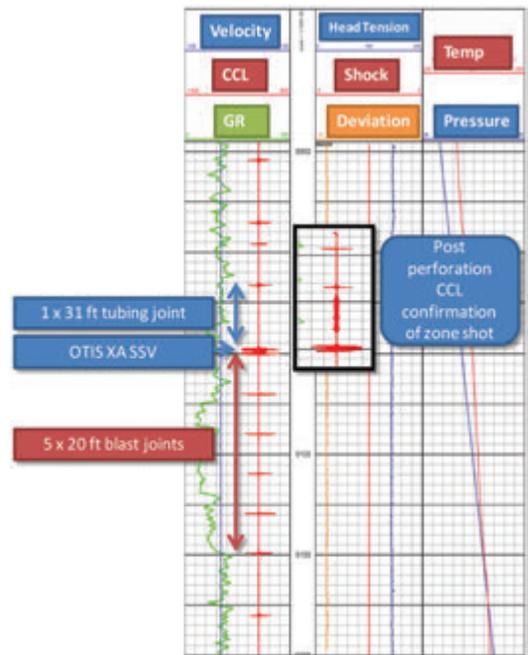
LIVE® services use digital two-way communication and are deployed using a standard slickline unit and pressure control equipment. A depth correlation cartridge containing a casing collar locator (CCL) and gamma ray (GR) sensor can be run with LIVE Perf services, for continuous depth correlation in real time.

Once depths have been accurately determined, the LIVE Perf service positions and fires the gun. The downhole telemetry cartridge contains sensors to continuously monitor and record downhole parameters like shock and cable tension during the gun firing procedure. Data transmission is not affected by well completions, conditions, fluids, or gun firing. With SRO capability, downhole actions and the success of the job can be confirmed before pulling out of hole.

CASE STUDY: Real-time depth correlation locates blast joints and prevents misruns



Surface monitoring of downhole shock and tension confirms successful firing.



GR-CCL log shows no standard 2 3/8-in tubing between sliding sleeve and blast joints.

Real-time correction enables successful operation

A GR-CCL survey prior to perforating detected an error in the existing well sketch. The specified tubing perforation interval was in the middle of a blast joint; there was no regular 2 3/8-in tubing between the sliding sleeve and the blast joints, as the well sketch had indicated. This would have led to an unsuccessful run because the blast joint thickness is beyond the design specifications of the charges used.

Real-time monitoring of GR and CCL at surface revealed the error and a new perforating interval was selected above the sliding sleeve in a suitable joint. The gun was positioned, and fired. Continuous monitoring of downhole parameters registered the shock of the explosions. Tension at the head of the tool—indicative of tool weight—increased after firing because the gun filled with liquid. This was further positive confirmation of the success of the operation.

A survey across the perforated interval immediately after firing the gun clearly showed the perforations on the CCL log. The temperature across the zone registered an increase because of the heat released by the explosives.

Continuous depth correlation in real time with the LIVE Perf service enabled accurate, cost-effective completion of the job.

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