



## MaxFire® TCP Electronic Firing System

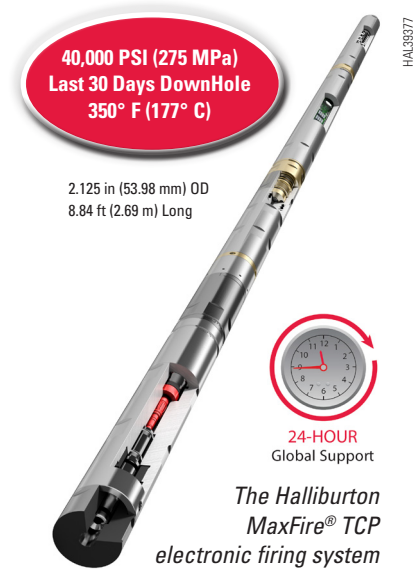
### Halliburton collaboration saved operator over USD 500,000, while improving safety and efficiency

The first MaxFire® TCP electronic firing system successfully deployed in The Netherlands

Location: The Netherlands

#### Overview

A large Dutch operator wanted an electronic firing system that would complement its wireless communication system for a drillstem test (DST). The electronic trigger that would be used could not compromise the need for nitrogen in the underbalance. The underbalance was designed to provide maximum effective perforations and prevent damage to their formation from wellbore fluid invasion. An additional focus for the client was safety and operational flexibility as a contingency if there was any potential for unplanned wellsite operational changes. Halliburton recommended its MaxFire® electronic firing system (EFS), which successfully initiated the perforating string in an underbalance condition with a low actuating pressure. The ability to capture, pressure, temperature, and time at the perforated interval—before, during, and after the event—later proved to be very valuable. This is the first run of the MaxFire® EFS in The Netherlands.



CHALLENGES	SOLUTIONS	RESULTS
Operator wanted to use an EFS that would complement the wireless DynaLink® communication* system used for the drillstem test. This electronic trigger couldn't compromise the need for nitrogen to incorporate the underbalance.	The MaxFire® EFS is a safe, precise, and adaptable perforating control tool that can initiate a gun system through a predetermined sequence of pressure cycles.	The perforated interval was at 12,000 ft (3,660 m) and was accomplished with 1,450 psi (100 bar) underbalance. The MaxFire® EFS initiated the perforation event with a low actuating pressure. The underbalance was achieved with a nitrogen displacement.
Needed a contingency plan focused on safety and operational flexibility for unplanned wellsite operational changes.	Firing can be aborted with reset pressure at any time, and the tool can last up to 30 days in extreme downhole conditions – the longest in the market.	With round-the-clock full support of Halliburton's Global Team and effective communication with the operator, the job was successfully executed as planned, saving the client USD 500,000.
Desired an independent digital accounting of job operation.	The MaxFire EFS records temperature, pressure, and time before, during, and after the perforation event.	The tool captured before, during, and after perforation event data which was provided as a post-job report.

\* Communication system is a registered trademark of DynaLink Communications, Inc.

### **New electronic firing system run in The Netherlands**

A large Dutch operator was looking for a high-tech solution to perforate and perform a well test. They wanted to use an electronic firing system (EFS) that would complement the wireless DynaLink® communication system used for the drillstem test. The electronic trigger could not compromise the need for nitrogen to incorporate the underbalance. The underbalance was designed to provide maximum effective perforations and prevent damage to the formation from wellbore fluid invasion. An additional focus for the client was safety and operational flexibility as a contingency if there was any potential for unplanned wellsite operational changes. In addition to flexibility, the ability to capture pressure, temperature, and time at the perforated interval before, during, and after the event proved valuable.

Understanding their challenges, the operator approached Halliburton for a solution. Their recommendation was the MaxFire® EFS. The industry-leading ultrahigh-pressure 40,000-psi (276-MPa), fully programmable MaxFire EFS is a safe, precise, and adaptable perforating control tool that can initiate a gun system through a predetermined sequence of pressure cycles. Firing can be aborted with reset pressure, at any time, and the tool can last up to 30 days in extreme downhole conditions—the highest in the market. This unmatched technology is also capable of low pressure-cycle operation and can be run on top or bottom of a bottomhole assembly (BHA). In collaboration with Halliburton, the operator agreed to the first field trial for this tool in The Netherlands. This tool performed successfully, initiating the perforation string in an underbalance condition with a low actuating pressure.

The perforated interval was at 12,000 ft (3,660 m) and was accomplished with 1,450 psi (100 bar) underbalance. The MaxFire EFS initiated the perforation event with a low activation pressure. The underbalance was achieved with nitrogen displacement, which provided maximum effective perforations and prevented damage to their formation from wellbore fluid invasion. The tool captured before, during, and after perforation event data, which was provided as a post-job report.

With round-the-clock full support of Halliburton's global team and effective communication with the operator, the job was successfully executed as planned, saving the client USD 500,000.