

Case study, 321 detonator

Situation: A major operator completing a horizontal well in a major U.S. shale basin, planned to perforate 10 strings of 10 gun clusters with two foot loadable guns for stimulation, using multiple 2 in. retrievable tubing guns (RTG). Each cluster of guns would be selectively fired. Top priority was given to achieving 100% safety and reliability.

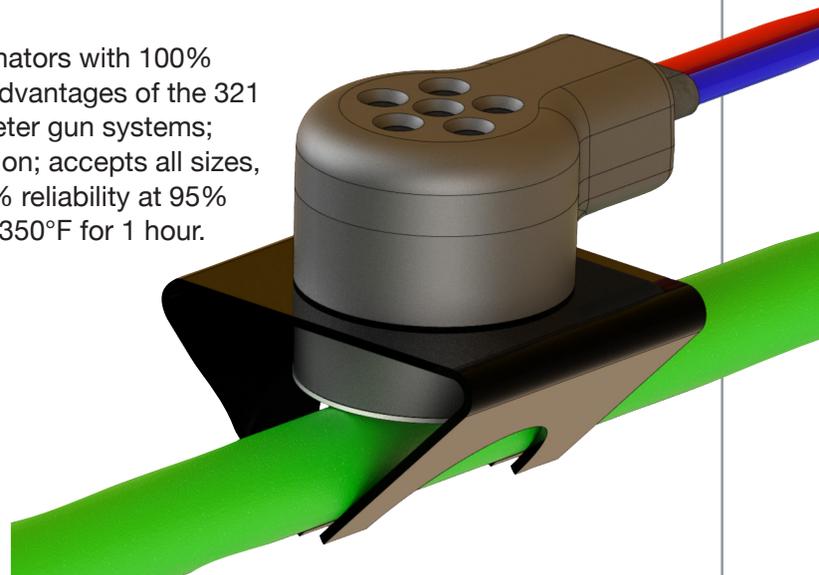
Analysis: Service company personnel planned to arm the guns with non-Owen, commonly used interruptable crimp on detonators using the 40 grain/foot ribbon detonating cord required for 2 in. RTG guns. The service company reported high failure rates with this current configuration.

Clusters would be selectively fired using alternating-polarity EB style pressure switches, activated by the pressure surge when the previous gun initiates. However, concerns were noted from prior experience with this combination.

1. Guns would be ballistically connected in the gun shop before electrical connections were made. An interruptor that would be pulled just before entering the wellbore would prevent surface detonation. This adds transportation risk.
2. Crimp on detonators require very careful handling during connection to the detonation cord. A duck-bill adaptor must be used with the 40 gr ribbon cord. This complexity raises the risk of a misfire.
3. If a gun misfires, the next subsequent gun is not armed by the EB switch so the live gun system must be pulled out of the hole, resulting in additional risk and lost time.
4. Arming steps are more complex than normal, risking human error.

Solution: Perforating experts from Owen Oil Tools recommended Owen's new 321 detonator. Its features include a compact size allowing it to be easily deployed through the loading port. It safely and reliably accommodates all detonating cord sizes and configurations, and no cutting or crimping is required. Most detonators feature a fluid hole that prevents the detonator from initiating the detonating cord should water leak into the gun string. The 321 is no exception, but its fluid hole is uniquely sealed from accidental contact with water such as during a rainstorm. The seal is the last thing the perforating crew removes before sealing the loading port.

The job was loaded and run using 35 Owen 321 detonators with 100% success. All clusters fired safely with zero lost time. Advantages of the 321 detonator include: compact size, ideal for small diameter gun systems; detonating cord clip rotates freely simplifying installation; accepts all sizes, shapes and configurations of detonating cord; 99.99% reliability at 95% confidence level; fluid sensitive; temperature rated at 350°F for 1 hour.



Owen Oil Tools

P.O. Box 568, 12001 County Road 1000

Godley, Texas 76044

P. 800.333.6936 - www.corelab.com/owen