

CLOSE CALLS

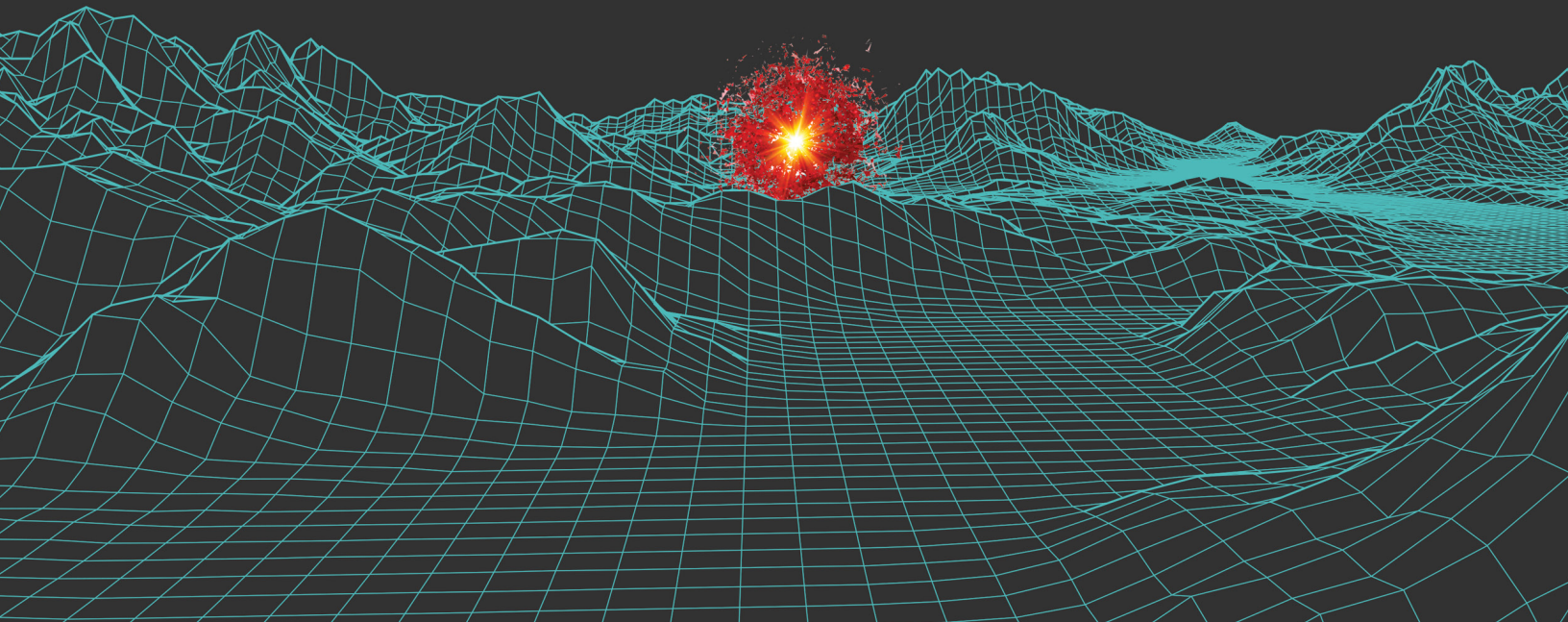
SBIR HELPS TEXAS COMPANY DEVELOP NEXT-GENERATION
PROXIMITY SENSOR TECHNOLOGY

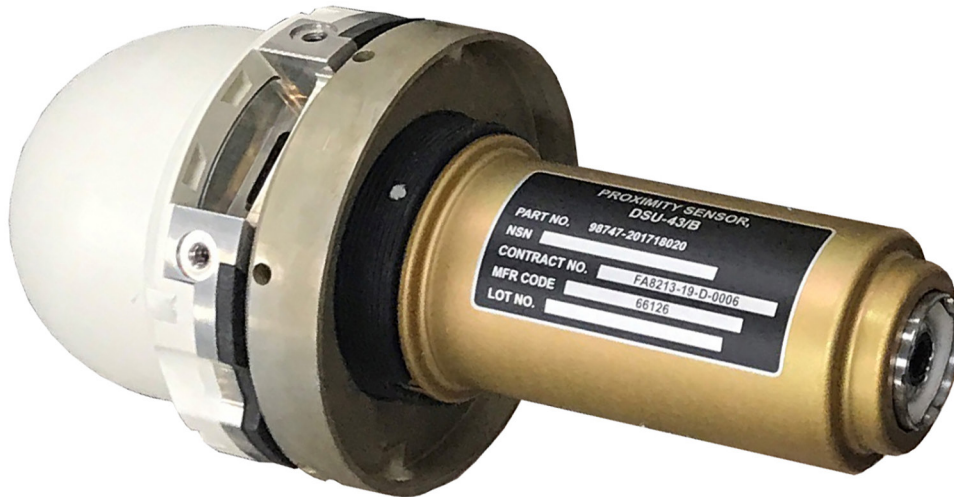
In the last decade, the U.S. Department of Defense (DoD) has sought to improve the proximity sensors used on its weapons.

These sensors are critical in determining the height and timing at which ordnances detonate, helping to dictate the effectiveness of bombs and munitions.

The DoD's typical technological solution to this problem was to utilize a circuit that would be tripped and set off the detonation. Imagine a sphere around the weapon, and when something crossed that sphere it would explode. But that was a system that could easily be scuttled, either by complex terrain or weather, or by anti-munitions devices. The military wanted something more robust, so the Army issued an SBIR in 2013 calling for "the next generation" of precision end-game proximity sensors.

That call was answered by Mustang Technology Group, a Plano, Texas-based small business that is now a part of L3Harris Technologies. Mustang's solution was to develop an entirely new class of proximity sensor based on digital profile signaling. The invention, which has overlap with technologies used in cell phones, profiles the ground near the munition, as well as the intended target, and uses those calculations to determine when to detonate the device.





The C-HOBS technology from Mustang Technology group evolved from an Army SBIR.

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The company's initial prototypes were successful and innovative, particularly given that the technology was reprogrammable, meaning that it could be easily fitted to the needs of different military branches or weapons manufacturers. In the following years, Mustang improved the technology through "numerous" offshoots that could handle situations such as different ordnance size or changing the height at which the ordnance explodes during flight. The company called the resulting technology Cockpit-Selectable Height-of-Burst Sensor, or C-HOBS.

"Previous generations of proximity sensors would set the height of burst pre-flight, but once in flight, they couldn't change it. So if there was a change in mission, they wouldn't have the optimum selection," Michael Stephens, senior fellow in engineering at L3Harris said. "Now they can change it in flight, which will certainly give the pilots more flexibility."

That 2013 SBIR contract, which allowed Mustang to continue its work developing the C-HOBS sensors, was one of many such contracts it received over the course of a 10-year



period starting in 2002, with several Air Force SBIRs contributing to its development. Following that, it was granted additional funding through the Air Force Rapid Innovation Fund (RIF), as well as through Air Force follow-on contracts, which helped bring the technology to a point of production.

"All this great technology is really wonderful, but our goal is to help the Warfighter," Stephens said. "We wanted to actually get something built to get out and help our country. That's where the RIF program came along, to bridge that gap between the lab and the Warfighter. It's a huge effort for programs to take that tech and get it into production and into the field. And the SBIR and RIF programs helped us do that."

The company has since supplied its state-of-the-art system to the Army and Air Force, among others. But that success would have been much more difficult to come by without the help of the SBIR and RIF programs, Stephens said.

"Both the RIF and SBIR programs were huge to the growth of Mustang Technology Group," he said. 🌟



Mustang Technology Group (L3Harris) • Plano, TX (Melbourne, FL)

Modernization Priorities: Microelectronics, General Warfighting Requirements (GWR)

SBIR contract: W15QKN-13-C-0055 • Agency: Army • Topic: A13-049, Innovative Technologies for Miniaturized Affordable Battlefield Hardened Proximity Sensor

SBIR contract: FA8651-04-C-0139 • Agency: Air Force • Topic: AF03-143, Fuze Proximity Sensor Aided Guidance

SBIR contract: FA8651-06-C-0117 • Agency: Air Force • Topic: AF05-160, Urban FAST

SBIR contract: FA8651-10-C-0147 • Agency: Air Force • Topic: AF083-098, Focused Miniature Ordnance Technologies

2013 Air Force (AFNWCC) RIF contract: FA8656-14-C-0171 • Topic: Precision Selectable Height-of-Burst Sensor

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