

Subminiature Telemetry Technology

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ABSTRACT

STATEMENT OF NEED. Current telemetry instrumentation systems are subject to space and weight limitations for use in bombs, dispensers, submunitions, projectiles and other tactical weapons systems. It is not now feasible to instrument submunitions and projectiles for weapon effectiveness data because of state-of-the-art telemetry devices cannot be rapidly and cost effectively installed in unmodified munitions. Furthermore, aircraft modifications for flutter/loads testing are extremely expensive and time consuming. This program will develop a low cost telemetry chip-set consisting of integrated sensors, signal conditioning, transmitters and encryptors. "Peel-and-Stick" telemetry devices which contain a specific chip-set with integrated sensors, a battery, and antenna in an extremely small package will also be developed.

APPLICATIONS. Subminiature Telemetry will directly impact all future tactical submunition development programs during pre-production RDT&E. This program will support comparability and safe separation testing done in the SEEK EAGLE program. Conventional and kinetic energy projectile programs and advanced missile programs will have long-term benefit. Telemetry and encryption designs developed in this program will advance the state-of-the-art in telemetry fabrication from hybrid to monolithic providing smaller, more shock resistant systems at a much lower cost.

CAPABILITIES. Subminiature Telemetry will provide for the first time a means for obtaining telemetry data during live munitions and submunitions testing. The program will also offer a cost effective alternative to costly SEEK EAGLE testing.

PERFORMANCE. The performance period for the proposed contract was set based on available technology, level of risk, and projected funding. A 36 month effort is planned

consisting of six tasks and four options. The six tasks will be an applications analysis, chip-set design, packaging design, receiver design, brassboard fabrication and a technology demonstration. The four options will be peel-and-stick design, advanced testing of brassboards including flight tests, peel-and-stick advanced testing and encryption chip-set development. The proposed contract will call for the delivery of reports, test plans, engineering drawings, test results and analyses.

END PRODUCT. The basic six tasks will deliver a chip-cell library foundry specification, along with packaging and receiver designs that will allow fabrication of subminiature telemetry systems. Option 1 will deliver a foundry specification for peel-and-stick devices. Option 2 will provide performance specifications for the chip-set, packaging and receiver designs.

Option 3 will provide performance specifications for the peel-and-stick design. Option 4 will provide manufacturable specifications for an encryption chip to be integrated into the subminiature telemetry designs. Government purpose license rights to the data and design, as appropriate, will be pursued during negotiations.