MEDIA RELEASE

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SHOT selected for additional NASA contracts

GREENVILLE, Ind. (March 19, 2002) – The National Aeronautics and Space Administration (NASA) has selected Space Hardware Optimization Technology, Inc.(SHOT), for four Small Business Innovation Research (SBIR) contracts -- totaling more than $1.3 million -- for further development of the company's latest biotechnology research devices.

"Through these contracts we'll add products to our catalog of spaceflight research hardware, and transfer the technologies we invent along the way into equipment for our Earth-based customers," said SHOT President and CEO Mark S. Deuser. "The technical challenges we'll be addressing under these new agreements will really showcase the ingenuity and resourcefulness of our engineers and scientists."

NASA's SBIR program office, which competitively selects proposals for funding, awarded SHOT Phase One contracts to establish the feasibility and technical merit of two of the company's recent biotechnology innovations. The contracts are valued at approximately $70,000 each.

This first, an automated (robotic) optical monitor for high-throughput crystal growth experiments, is expected to have applications in pharmaceutical research. The other is a system for robotically conducting multiple simultaneous cell-culturing experiments. Both are ultimately intended to function within a cassette about the size of a lunchbox which, in its spaceflight configuration, is then inserted into SHOT's on-orbit bioproccesing facility. Cell culturing is important to cancer, immunodeficiency and diabetes research as well as the development of new treatments for neurological diseases like Parkinson's, Alzheimer's and Huntington's.

Awards for Phase Two are based upon the results of Phase One and the scientific and technical merit of the Phase Two proposal. Approximately 40 percent of Phase Ones go on to Phase Two -- the principal research & development effort. A greater emphasis also is placed on evidence of the development of commercial applications for the technology. The SHOT innovations recently earning Phase Two contracts are known as Dynacult and Dynascope. Contract values are approximately $600,000 each.

Also intended for use in space in SHOT's on-orbit bioprocessing facility, Dynacult is a robotic cell-culture bioreactor system. Some of the experiments performed in space by John Glenn with SHOT hardware in 1998 utilized several of the fundamental systems being proposed for Dynacult.

(more)

Tissue engineering is emerging as one of the most feasible applications of microgravity in the development of space biomedical products. In the United States each year, millions of individuals are in need of replacement tissues and organs and the shortage of these tissues is a major limiting factor to survival and quality of life. Research focused on growth of individual cells into functional three-dimensional aggregates similar to human tissues requires special culture devices. Using Dynacult in space, scientists will be able to grow cells and tissues without them falling to the "bottom" of a vessel. This enables the differentiation of tissues, such as those needed in transplants, to be developed and observed. Both the biomedical research community and NASA are actively engaged in maturing this technology as an eventual alternative source of transplantable tissue.

The second Phase Two contract is for a product called Dynascope -- a modular microscopic observation chamber system for studying specific biological components in, or interactions between fluids. Ideally suited are materials like blood, emulsions of liquids that do not mix, suspensions of particles used in drug delivery and solutions used in making thin films like filter membranes.

SHOT's system employs a single microscopic slide that can be observed under a variety of conditions. Rather than maintaining a large inventory of slides and culturing dishes, researchers can work with a modular system of components that can be assembled to perform a multitude of experiments and a variety of applied field research involving motion under a microscope.

Dynascope will meet requirements of automated microscopy on the International Space Station. And on Earth, companies and research laboratories pursuing cell therapy and gene therapy are expected to be most interested, as are diagnostic firms. Improved techniques for observation of moving cells, cellular particles, proteins, microcapsules, and fluids in general, also are commercially important to scientific research areas such as immunology, physiology, biochemistry and microbiology, as well as medical areas such as hematology, endocrinology, oncology, infectious diseases and biotechnology.

SHOT has been very successful in competing for SBIR contracts and progressing them through the phased development process. In the past 10 years, the company has earned nearly two dozen such contracts – ranging in value from tens of thousands to tens of millions of dollars. Over the 16-year life of the program, SHOT has received more SBIR contracts than any other Indiana or Kentucky company.

Founded in 1988, SHOT is an applied-technology company that provides engineering services and equipment to a broad spectrum of customers. Most current contracts are with NASA to develop biological and medical research hardware for flight aboard the space shuttle and the International Space Station. Hardware produced by SHOT has been launched on seven space shuttle missions and three sub-orbital rocket flights.

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