

SHOT Stakes Claim in Space for Hoosier State

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Indiana is not known as a hotbed of commercial space activity. Neither a major aerospace contractor nor a NASA field center calls the Hoosier state home. But a small-town firm there wants to help position Indiana at the forefront of microgravity research.

With the support of Indiana's lieutenant governor and the backing of a freshly minted NASA Space Act Agreement, Greenville, Ind.-based Space Hardware Optimization Technology, Inc. - SHOT for short - is searching for biotechnology firms interested in taking their research to space in the year ahead.

SHOT's Advanced Separations processing facility - a self-contained biotechnology mini-lab that has flown in space twice since 1996 - is on the manifest for two more space shuttle flights in 2003. The second of those two flights, slated for October, will deliver an improved version of the mini-lab to the international space station where it will remain for a period of months.

While SHOT is willing to work with any qualified company, the firm's co-founder and president, Mark Deuser, said he has been looking especially hard for Indiana-based life sciences companies that might want to go along for the ride.

Indiana is home-base for two of the biggest names in the biotechnology and pharmaceutical industries: Dow AgroSciences and Eli Lilly and Company, both headquartered in Indianapolis. Baxter Healthcare and drug-maker Pfizer Inc. also have significant operations in the state.

Deuser said SHOT wants to help these and other Indiana firms extend their search for profitable new products into space.

Joining SHOT in its efforts to convince drug makers and other life sciences firms of the value of conducting experiments in space is Indiana's lieutenant governor, Joseph Kernan.

As chairman of the Aerospace States Association, a position he has held since 2000, Kernan said he has been looking for opportunities to promote Indiana's arguably limited role in space. On that count, Kernan said he sees tremendous potential for cooperation between Indiana's life sciences firms, its universities, and enterprising companies such as SHOT.

"SHOT has been a great success story for Indiana," Kernan said.

SHOT is taking advantage of a new state-backed 21st Century Research and Technology Fund that awards grant money to Indiana-based university and corporate partnerships to stimulate projects with commercial application.

SHOT recently received a grant to work with Purdue University and two other Indiana firms on the development of new technologies for separating biological materials such as cells in laboratories on the ground.

SHOT's grant is one of 43 grants totaling \$55 million that the 21st Century Fund has awarded since its inception in 1999.

Kernan said the fund is not Indiana's only effort to encourage new hi-tech commercial enterprises to take root in Indiana. Kernan said he is pushing to increase Indiana's corporate research and development tax credit from five percent to 10 percent and reduce the state's dependence on property taxes for revenues.

Deuser said Indiana has been helpful in promoting space-based research and supporting the company's effort to develop ground-based applications for some of its space hardware.

SHOT is also receiving help from NASA, which signed a partially reimbursable Space Act Agreement with the company in 2001 to fly its Advanced Separation facility on behalf of a large agricultural science firm.

Mark Uhran, director of mission integration for NASA's Office of Biological and Physical Research, said the agency views its partnership with SHOT as a good way to attract qualified commercial researchers to take advantage of the space shuttle and station's unique microgravity environments.

Despite help from NASA and the state of Indiana, SHOT is racing against the clock to line up additional customers for a May flight opportunity.

With just six months remaining until the company's Advanced Separations facility flies aboard the space shuttle, Deuser still has space available. If SHOT does not conclude negotiations with several prospective customers by the end of December, chances are good that those vacancies will remain when the mini-lab is launched in May, he said.

Deuser said convincing companies accustomed to conducting research on the ground to set their sights on space is still a challenge.

While supportive government officials and discounted flight opportunities are a big help, Deuser said what companies like SHOT need as much as anything is a stunning research-first that takes place aboard the international space station.

“I think that’s probably what will really open the flood gates,” Deuser said. “It’s probably going to take one big discovery, then there is going to be a lot of opportunity not only for SHOT but for a lot of other companies as well.”

While Uhran agreed that success stories help generate commercial interest in space-based research, he cautions that scientific breakthroughs tend not to be all that sudden or dramatic.

“Breakthroughs come in steps,” Uhran said. “I don’t think you are going to see one big earth-shattering breakthrough.”

Rather, Uhran said, NASA will continue to work with commercial ventures like SHOT “to demonstrate unequivocally the competitive advantage of [conducting research in] the space environment.”

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