Remote diagnostic system may spur growth.

Centerville firm helping make aging jets safer

By Jacob Dirr
DBJ Staff Reporter

The B-2 Spirit stealth bomber's avionics system is a spaghetti warehouse of aging wires and interconnecting computers inside its recognizably sleek, black body.

While technicians previously had to remove panels from the jet — potentially compromising its stealthy attributes— to troubleshoot the wire system, a Centerville-based company has developed a way to inspect it without turning a screw.

ITCN Inc. successfully demonstrated a remote diagnostic system in early October that was developed for the B-2 Program Office after 13 months of research. The system remotely detects faults in the jet's wiring.

The success could create far-reaching growth for the 20-employee company as it hopes to integrate the technology into applications of hundreds of the other aircraft in the U.S. Air Force's fleet with aging wiring. It also could be applied in the commercial flight industry.

The B-2s, for example, have been flying since 1989 and communication on its internal network began as a problem that wasn't considered critical and still allowed the jets to fly. But as more and more B-2s exhibited the symptoms of aging wires, it became critical.

"The cables have been in there for a number of years and they become worn and break," said ITCN President Roy Penwell. "It is not only the B-2 program, the Air Force has a need to maintain the physical networks in all aircraft."

Bruce Long, an Air Force B-2 aging aircraft focal point contractor, said the health of the network is so critical that the program commander receives a daily briefing on each jet's internal network health status.

The Air Force has 21 B-2s, and while a break in the wiring wouldn't cause the plane to fall out of the sky, it could ground the aircraft — making it useless until the fault is fixed.

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A B-2 avionics system is a made up 32 computers, interconnected with more than 7,000 feet of wires, like a complicated version of the Internet cables people us in their home or office PCs. Each computer controls an aspect of the bomber, like the engine system or steering system, instantaneously.

If technicians could not pinpoint a break, they would have to search the entire cable length, like searching Christmas lights for a the broken bulb.

"In order to repair the cable, they have to remove panels from the exterior," Penwell said. "It is a very expensive application to take off the panels and make sure it is all stealthy."

Jim Pavliga, the Air Force B-2 chief avionics engineer, said that the new technology will save hundreds of man hours per jet, freeing up technicians to handle other problems.

"It was great boon to the warfighter capability, they want more of them," Pavliga said.

ITCN develops tools to inspect the health of any vehicle or machine that has its "guts" made up of computers. Penwell declined to release the company's current financial information, but said this will catapult it into a new market.

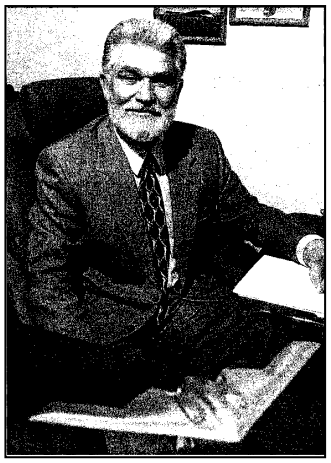
"We do expect that this will allow is to grow significantly," he said. "We expect the sales to double in the next couple in the years."

Long said that the same system used by the B-2s, called 1553, is pervasive across the existing Air Force fleet, as well as tanks, submarines and space shuttles.

"We are eager to see this deployed to other requirements and are talking to their potential users," Long said.

ITCN received $900,000 to develop the B-2 diagnostic system and has about seven active contracts valued at less than $5 million, Penwell said.

Under the Small Business Innovative Research initiatives, like the one the company was contracted to perform the work under, contractors retain the rights to the products they develop, Penwell said.



Roy Penwell, President of ITCN, Inc.

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