**RUSH ORDER FOR INNOVATION**

**SAVES COMBAT LIVES**

As theater leaders try to compete with the growing popularity of video games and films, SRC's research over the past several years has begun bearing fruit to protect soldiers on the battlefield.

**SYRACUSE COMPANY'S INVENTORS MEET THE ARMY'S CHALLENGE TO CUSTOMIZE ANTI-MORTAR RADAR**

“We’re a war-on-terror factory,” says Tom Wilson, SRC vice president and chief strategy officer. Wilson and Mark Condolora, director of radar programs, stand next to each other in the lab with portable radars.

“They are an imminent threat,” Wilson said. “The lightweight radar has a two-foot radar-testing chamber where the radar waves spread out in different directions. The machine can be used in any environment. It was designed to replace a radar from the U.S. military that was used to detect mortar rounds.

**THE DAY’S WEATHER**

**TODAY’S TUESDAY, MAY 4, 2010**

**WEATHER**

**TODAY’S WEATHER**

**TODAY’S HIGH:** 82°

**TODAY’S LOW:** 55°

**POTENTIAL SHOWER:** 10%

**HIGH:** Partly cloudy.

**LOW:** Clear.

**WIND 5-10 MPH.**

**HUMIDITY:** 50%

**FORECAST:**

**TUESDAY NIGHT:** Mostly cloudy.

**WEDNESDAY:** Showers likely.

**THURSDAY:** Cooler.

**WATER TEMPERATURE:** Lake Ontario: 47°F

**NATION**

A Massive oil spill threatens to make the gulf of Mexico into an oil slick. It is said to date back to the early 1960s when the first oil spill happened.

**BUSINESS**

How and when should parents step in?

**NEW PUZZLE**

Try our new SADIKU High-Five puzzle.

**COMICS SECTION**

**STARS**

**SPORTS**

**GOLF GUIDE 2010**

We reflect on how the game has changed through the centuries, thanks to new technology and techniques.

We’ve also compiled a complete list of public and private courses in Central New York and more than 100 charity tournaments.

**CONTACT US**

Call 470-8165 (470-8391)

**SECTION J**

**INSIDE**

**SUNSET MOVIE PREVIEWS**

**STARS**

**AUBURN COUNCIL COULD VOTE THIS WEEK ON EMINENT DOMAIN**

**FIRST EDITION $2.00**
HOW SMALL CAN IT BE?

SRC’s small, portable radar was known as the Lightweight Counter Mortar Radar (LCMR), with a tag request in 1999. The Army wanted a device that could locate artillery firing positions from any direction, and that soldiers could easily move. It didn’t have to be radar. But what was radar? Bruce said the device could empower Steve Bruce and Tom Wilson knew.

Over months, without any Army commitment, they developed a concept and kept a radar that electronically saw all in directions and mounted on a Humvee.

It was a first of its kind.

Existing artillery radar need big panels and weighed tons. Its field of view was roughly 90 degrees. Enemy forces could easily hide. To be useful, a big radar panel could mechanically rotate, in theory. Bruce and Wilson didn’t think the world would work for a lightweight version. To spin fast enough around a central axis, it would have to be two big wheels with lights smaller than any existing radar — but still too big, the Army said.

Here’s why:

The 75th Ranger Regiment, part of the Special Operations Forces, wanted the device to be portable. The elite airborne unit can’t load big radar to the remote places it goes. To track mortars, Rangers still rely on a technique as old as the Civil War. They analyzed the echoes.

Rangers wanted something that two paratroopers could carry on their backs when they jumped out of an airplane. It had to assemble without tools, like a portable barbecue grill.

That meant it had to break into two packs of 60 pounds — a paratrooper’s limit.

This was fantasy. Artillery-detecting radar was big and required lots of power. It was highly calibrated. It had to be used to be regularly tweaked and adjusted, usually in a factory.

Rangers were asking for something roughly 1100 lb. of the size, weight and power needs of existing artillery radar. Something that would run off batteries. Combat soldiers, not radar engineers, would assemble the unit. With precision. Where being shot at. Without tools. In the desert.

GEERS ON A MISSION

The challenge hooked Bruce and Wilson.

“I’ve always been kind of obsessed with problem solving,” Bruce said. “Once I get into these things, I think about it on the drive home, on the drive to work, in the car at night. I wake up at night as a teenager in a small northern Michigan town. I de-signed a gremlin to be a trick or treat pillow. I thought I could put on a costume and scare people.”

Bruce wanted to do work on tanks. Until he spent a year doing lit-tle else. Good at math, he earned an electrical engineering degree. His brother, who had become his ticket to General Electric, got him a job. He worked his way up to a degree in computer engineering at General Electric, and was hired in the mid-1980s by SRC, where he worked for almost two decades.

Wilson was an Army radar techni-cian. His brother, who worked for electrical engineering and computer systems company General Electric, like Bruce, he worked for the military. Wilson joined SRC as a special technician for computer systems in 1986. When Bruce left SRC, he convinced Wilson to come with him.

Where Bruce talks in a leisurely, almost crossword-clue kind of way, accelerating bursts of description, breaking into laughter and flushing

mischief.

Once, for an SRC picnic, he orga-nized a pet’s egg toss. Participants designed and built a trebuchet, a sophisticated catapult, which they assembled. For the Pet’s Egg toss, Bruce and Wilson’s model. It couldn’t see mortars, but the engineers dreamed up the device. Wilson typically was the one at the whiteboard, scribbling the sketches. Bruce worked algorithms on his computer. They consulted SRC specialists in software development, antenna technology and digital sig-nal processors.

Based on their antenna calculations, the device would have to be about 3 feet across and 3 feet high. — half the size of an oil drum. It was radically big by a soldier’s back, but the best they could do.

At that size, how would they make it light enough? How would it assemble? Come on? Should it collapse like an umbrella? Could it fit in two suitcases?

This was unfamiliar territory. SRC engineers were the idea people. They didn’t design consumer products. For that, they called an inventor.

JUST BUILD ONE

Bruce worked at Welch Allyn, and he had a slew of patents to his name. Among them, an ultrasound instrument that dissolved and removed cataracts, and a tiny scope that sees inside organs and tissue.

“I’ve done about 40 bowel sur-geries on my own,” he said. “I swtch because I wasव्यापकारकी बाहुल्यता.”

In August 2001, the United States was at war. SRC’s roof — an engineer’s version of “Can you see me now?”

Allred with the radar unit from Hancock Airport. Condolora, the first version of Bruce and Wilson’s radar concept that either disas-sembled or collapsed. The engineers closed the shock with a magnet that fits together, something like Legos. For the next six months, they worked on a computer graphic design that the Army liked.

They still hadn’t built anything. New SRC had to construct a proto-type — one small, portable radar unit it could field test. For that, it received $1 million from the Army.

“That might seem like a lot,” said Mark Condolora, SRC’s director of radar programs. “But in our busi-ness, that pays the salaries of a few guys for a year and a half.”

To start the process, Wilson enlisted his 4-year-old son, Luke.

One weekend, father and son took plum pie to cardboard. On their din-ning room floor, they build a full-scale model. It couldn’t see mortars, but people could touch it.

A TEST FLIGHT

The prototype looked like a thick automotive air filter on a tripod. Wilson and Bruce had tried it in a special foam-lined room at SRC. They needed to try it in the real world. Could it see airplanes? On a late summer day in 2001, Wilson took a special flight permit from the control tower. Allred flew the prototype over Hancock Airport. Condolora, freshly hatched from Lockheed to head the small-radar’s production, joined Allred in the cockpit, a GPS unit in his lap. Wilson and Bruce tracked Allred with the radar unit from SRC’s roof — an engineer’s version of “Can you see me now?”

The tests were a success. Could it see live mortars? They took it to the Aberdeen Proving Ground in Maryland. The prototype was still in science project stage. Antenna assembly here, digital signal processor there, all over, said all to a laptop inside a rented van.

The thing cost mortars almost instantly. Not only could it locate fomy locations from any direction, it detected fired mortars so fast that soldiers could have moments to protect themselves and maybe even shoot the mortars out of the sky.

Developing radar prototypes usually takes years. It had been 13 months since Bruce and Wilson’s com-pany started working on the $1 mil-lion prototype contract.

One month later on Sept. 11, 2001, the United States was attacked.

THE HOUSE THAT DEFENSE BUILT

Since its one-watt surge, SRC has built a new headquarters — a two-story, 12,000-square-foot energy-efficient structure with a green, 1200-square-foot window in a once coal-fired business park.

Carbon dioxide sensors trigger fresh air to ward off grogginess. LCD monitors in the reception area welcome visitors on the top floor, a shop in the basement. A coffee bar, a restroom.

U.S. ARMY Pvt. 1st Class Alysha Glenn (left) and Spc. Chad Eruin, both members of Counter Rocket, Artillery and Mortar Team, Farm, Echo Battery, 4th Battalion, 5th Air Defense Artillery Brigade, conducted maintenance on a radar station at Forward Operating Base Delta, in southeastern Iraq, last summer.

MICHAEI TRACHSLER works inside the SRC lab where the company makes small portable radars.

Michael Trachslzer/ Syracuse Post-Standard

Sunday, May 2, 2010

SRC’S INGENUITY DRIVES GROWTH IN JOBS, SALES

JUST BUILD ONE

Bruce and Wilson didn’t design consumer products. Among their inventions:

- A tiny scope that sees inside organs and tissue.
- A pet’s egg toss.
- A prototype that saw in all directions and mounted on a Humvee.
- A GPS unit.
- A green, 12,000-square-foot window.
- Oceanic Post-Standard
The LCIR's design evolved.

"Cars had been a constant problem. In one town, there was a guy riding around in a pickup truck shooting at us. We never knew from which way it would come. It (SRC's) radar made a difference. We wanted more of these things."

— Retired U.S. Army Col. Lee Flaake, of Merriam, on SRC's radars in Iraq

Allred said, "You want to be well rested when you go there. Everybody was tired. They had been on the road for over a week."

When people disappeared, it was techni-

cal signals, providing
capabilities that were prohibit-
canopy and tape record-

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