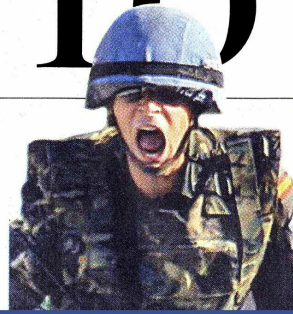


TORONTO STAR

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Quebec company doing battle to build better body armour

RICK WESTHEAD
STAFF REPORTER

GRANBY, QUE. — For 77 years, workers at a red-brick factory here in the foothills of the Appalachian mountains have churned out tents, rubber life boats and shoes.

Some of the factory's 100 employees have a more captivating assignment these days: reinventing military body armour.

Little-known outside this pastoral Quebec city of 50,000, Stedfast Inc. is one of two companies that have been contracted by the Department of National Defence to find new ways to protect soldiers deployed to Afghanistan from crippling roadside bombs.

The importance of the project was underscored last week when three Canadians in an unarmoured vehicle were killed by a roadside bomb. Sixty Canadian soldiers have now been killed in Afghanistan, 17 by roadside bombs, since 2002.

While Stedfast has produced cam-

ouflage material for Canadian military uniforms and has also sold DND large solar blankets to help Leopard tank crews stay cool under the scorching desert sun, it has never dabbled in body armour.

"Large companies are happy with tweaking body armour and getting 10 per cent more performance, maybe reducing weight by 10 per cent," said François Simard, a 46-year-old chemical engineer who is leading the company's body armour research. "In big companies it can take 10 or 11 years for a new product to work its way through development and approval. We work quick and we're flexible because we're small. We're hoping for a more drastic change by bringing the eyes of someone who has not been moulded by the industry."

Modern body armour features two components — a Kevlar vest and boron carbide ceramic plates held in front and back pockets that are capable of

stopping rounds from an AK-47 machine gun. But the space between the plates is vulnerable, prompting Stedfast to experiment with plates staggered on top of one another like a lobster tail, all the way around the body.

Stedfast is also experimenting with a lighter-weight alternative to the ceramic plates. Sitting in his Spartan office at the company's headquarters, Simard raps his knuckles on a piece of hard white material on his desk the size of a floor tile. He won't say what it is, but the company will begin testing its effectiveness against bullets in a lab as soon as this summer.

"We are looking at doing something that will drastically improve performance," Simard said of Stedfast, which has annual revenues of \$25 million and is privately owned.

Besides finding new ways to stop

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Military seeks body armour that's lighter, tougher, safer

ARMOUR from A1

lethal shards of flying metal, Simard said Stedfast is also looking to blunt the concussion-causing force of roadside bombs. To do so, the company is looking at having layered body armour "collapse" as way of absorbing the force.

The company also plans to experiment with a special material developed by the British company d3o that is lightweight and malleable. Any blow instantly triggers the molecules in the material to strengthen, transforming it into a rigid protective barrier.

For soldiers, armour has always been a necessary evil, burdensome and hot. In the 17th century, some countries paid soldiers an extra penny per mile for marching in it.

Master Cpl. Rick Crawford has served three tours of duty in Afghanistan and says many Canadian ground troops feel sluggish when wearing and carrying their full complement of gear.

A Kevlar vest, which on its own can stop rounds from a 9-millimetre gun, and a pair of ceramic plates – five times stronger than steel with half the density of fibreglass – weigh a total of 7.3 kilograms. While the combination is both better and lighter than the 11-kilogram flak jackets employed during the Vietnam War, some soldiers still feel overloaded. "You feel like you're one of those guys on the side of a street wearing a sandwich board," says Crawford, 50.

In 1993, some of the 18 U.S. sol-



IAN BARRETT FOR THE TORONTO STAR

Stedfast Inc. CEO Rob Kellock holds blowtorch-tested U.S. Air Force pants lined with a white material – undamaged – made by his company.

diers killed in an ambush in Mogadishu, Somalia, had stopped wearing body armour because it was cumbersome.

In Afghanistan's heat, soldiers also cart a fully loaded rucksack, a four-kilogram machine gun, extra ammunition and at least a litre of water.

"If it isn't 100 pounds, it sure feels like it. You sure don't feel very athletic or mobile."

Stedfast, which won an \$850,000 contract from Defence Research and Development Canada, a division of the Department of National Defence, isn't the only Canadian company working to improve the military's body armour. In Kelowna, B.C., Pacific Safety Products Inc. is testing whether layers of plastic embedded with fibres might be an alternative to Kevlar.