

Exercise Soldat Propre The Spray'n' Wash Line

It started out as just another parking lot at Canadian Forces Base Valcartier – a dusty patch of gravel and dirt on the grounds of Camp Vimy, the summer training site for Canadian Armed Forces (CAF) reservists and cadets. But, within hours this fall, it was converted into what looked more like a Starship Troopers truck wash and shower facility manned by a herd of camo-suited, masked soldiers.

CAF soldiers undergo decon shower.



As odd as the sight might have been, it was a point of pride for the CAF Directorate of Chemical, Biological, Radiological and Nuclear (CBRN) Defence. The exercise taking place in that parking lot, dubbed *Soldat Propre*, was the culmination of the Directorate's many years of research and procurement processing to acquire a world-class system for decontaminating vehicles, military personnel and fighting equipment exposed to CBRN hazards or toxic materials – a decontamination system as good as or better than any fielded by our NATO allies.

"This was a very beneficial exercise for the Canadian Armed Forces," said Captain Christian Doucet, project director of the CBRN Decontamination System, after the exercise. "We were able to demonstrate this important new capability and convince the CAF Decontamination Company that we now have what we need to meet mission needs."

The system is not huge. It fits into two sea containers, along with a flat rack,

making it easily transportable for expeditionary operations anywhere in the world. In fact, the complete system and the personnel needed to man it can be easily airlifted by a single C-17 Globemaster transport plane for rapid deployment.

Unpacked, it consists of a series of three tents to house decontamination of equipment, and to accommodate up to three personnel intake lines where they will undergo CAF protocol personal decontamination and shower procedures. The separate vehicle decontamination system includes a flat-rack-mounted sprayer system and a series of wash stations, which include tarpaulin-like catch mats for collecting waste water and decontaminant.

The Department of National Defence began looking into an upgrade of its CBRN decontamination capability some years ago when it became clear that existing equipment had become deficient. Since there was, and certainly now is, a risk of Canadian troops operating in a CBRN threat

environment, inadequate access to decontamination systems could mean that the CAF would have to abandon or destroy fighting equipment.

After a competitive bidding process in 2014, DND issued contracts totaling \$21.3 million to an Ottawa-based firm for the delivery of six systems. The contracts included in-service support for five years, as well as options for an additional three complete systems and for three five-year extensions of support.

The contractor, an experienced designer, manufacturer, and integrator of complex systems for the defence industry, supplied the decontamination system designed and manufactured by a company based in France, complete with decontaminant fluid and mixing and spraying equipment, as well as personnel decontamination systems.

The decontaminant fluid is DF-200, developed and commercialized in the United States. It is effective for neutralizing both chemical and biological warfare agents, and most industrial chemical threats, to below negligible risk values within 15 minutes of application. It is environmentally friendly, which is a key CAF consideration, works on all anticipated surfaces, and can be incorporated into a variety of high-quality delivery systems, including foams, liquid sprays and fogs.

DF-200 has been widely used by the U.S. military and is the decontaminant of choice in hospital procedures, and in emergency response situations where the agent may not be known. DF-200 is well-known to kill Ebola and is used world-wide to control this particularly dangerous virus.

The complete decontamination system consists of a vehicle module for the thorough decontamination of large surfaces such as vehicles, roads and tarmac; a personnel module for the thorough decontamination of personnel and non-sensitive personal equipment; and an environmental protection component for the capture of effluents.

The vehicle module uses the DF-200 decontaminant applied as a foam using the flatrack-mounted sprayer system. To minimize water consumption and the need for scrubbing, operators will use high-pressure water jets for washing and rinsing. The module also allows for the spraying of hot, soapy water as either a low- or high-pressure wash.

In the personnel module, DF-200 decontaminant will be used for pre-decon-



Personnel processing line (above) and vehicle decon in progress (below).

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tamination in the shuffle basin (a tub filled with decontaminant that soldiers walk through to clean their rubber boots), while regular, commercial body-wash soap will be used in the showers. Non-sensitive personal equipment will be decontaminated by immersing it in the liquid DF-200 decontaminant, followed by a water rinse.

Captain Doucet notes that the Canadian system is the only known NATO system to collect waste water from the decontamination process. "It was important to us throughout the project that the system be environmentally friendly," he says. "We have attended NATO exercises where decontaminant waste water is allowed to flow into the ground."

The delivery of the first complete decontamination system is expected in 2016. Meanwhile, the project team negotiated with the vendor to receive an expedited version, which was delivered in May 2015. Since its delivery, the system has been used for operational development and testing, training development, individual training, and exercises such as *Soldat Propre*. It has also become an integral part of the CAF's decontamination capability pending the arrival of the first complete, updated version.

"This first system not only gave the Canadian Armed Forces some initial,



modern decontamination capability," said Captain Doucet, "but also allowed us to demonstrate the system and solicit feedback from a wide range of users on ways to improve the design of the final systems to be delivered over the next year."

This new CAF decontamination capability is among the best in the world, according to Lieutenant-Colonel Alain Rollin, the CAF's Director of CBRN Defence. It's similar to the systems used in France, Belgium, Spain and Germany, he says, but the CAF system is more comprehensive.

"First, ours is the only one that combines simultaneous vehicle and personnel decontamination into one system and can decontaminate with both modules simul-

taneously," he says. "Other NATO countries can perform combined vehicle and personnel decontamination, but cannot decontaminate personnel, vehicles and equipment simultaneously. Also, ours is the only system that can decontaminate ambulatory and non-ambulatory personnel simultaneously."

The decontamination system project is but one of many that CAF's Directorate of CBRN Defence has managed in recent years. The Directorate has overseen the delivery of modern chemical sensor systems, a collective protection tenting system to protect troops in a CBRN threat environment in the field, a biological agent detection system, remotely operated vehicles equipped with CBRN sensors, and a world-leading CBRN information management system.

Next up, the Directorate is expected to complete procurement for new gas masks to replace the aging C4 gas mask and C7A filter. The Joint General Service Respirator Project will see the CAF acquire up to 77,800 new respirators that will provide improved protection against not only traditional battlefield concentrations of chemical or biological agents, but also toxic industrial materials.

Research – into standoff detection, for instance, or the ability to detect chemical, biological and radiological agents well before they are a direct threat to our uniformed Forces – is the key to safety in the future. **FLD**

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