

# The Future Operational Environment

## Army Transformation and Simulation Technologies

The future waits for no-one. All military forces must continually push forward to meet the challenges of uncertainty and complexity that the future holds. It is no surprise then that Simulation and Training Technologies are important components of the Canadian Army's Transformation efforts as it refines and develops capabilities that are relevant to the battlefield of the future. The goal is for the Army to transform itself into a medium-weight, information-age army by becoming a more agile, lethal and survivable force. The objective must necessarily also include developing doctrine appropriate to the new equipment and the capabilities of the transformed force. When the transformation is fully implemented, simulation technology will support all phases of Army training and will be a key part of its future development.



*WES soldiers dismount*

The Canadian Army believes that simulation technology will help it transform itself from the "Army of Today" into the "Army of Tomorrow." In addition to enhancing Army training, and perhaps more importantly, simulation technology will provide an important stepping-stone for the development of the Army of the Future. The foundation of this capability will be based on the Army's new Weapon Effects Simulation (WES) system.

WES is a highly advanced and fully integrated simulation system that will allow soldiers to accurately simulate their weapon fire using lasers and radio signals to produce near realistic effects during force-on-force collective training events. The system will include Direct Fire Weapon Effects using coded laser transmitters and detectors; Area Weapon Effects Simulation using radio and location devices; and Observer Controller devices linked to a control center and database. This central control facility and data base will permit comprehensive control, monitoring, analysis and debrief of engagement results.

Several suites will be delivered to the Canadian Army over the next two years with the principal training site being established in Wainwright, Alberta. All this will occur in the sprawling 670 square kilometre complex at Wainwright, Alberta, which will become home to the newly established Canadian Manoeuvre Training Centre (CMTC), where the Army will conduct large-scale force-on-force exercises.

When fully operational, Army Tactical Units of up to 2,200 soldiers and hundreds of vehicles will conduct training at the facility. An Exercise Control centre, staffed by operator analysts, and equipped with the latest technology will monitor, capture and record all exercise data using Global Positioning System devices imbedded into the vehicles, weapon systems and soldiers' equipment. Sophisticated computers will monitor all participants, recording their actions for after-action analysis. The data will flow between players in the field and the Exercise Control centre over a state-of-the-art communication and information system.

Experience has demonstrated that simulation systems such as WES allow soldiers to train very close to the way they fight and this realism significantly improves the probability of mission success. WES will permit the Canadian Army to continue developing what it views as its most important asset and the key to any success on the future battlespace: its

*Army's new Weapon Effects Simulation (WES) system enhances training opportunities..*



soldiers. To this end, in addition to the main complex at Wainwright, a WES suite capable of equipping a Combat Team of 500 soldiers and vehicles will be located at the Army's Combat Training Centre (CTC) in Gagetown, New Brunswick. CTC is where the Army's combat arms schools are located. Current plans call for WES to be fully incorporated into the Schools' individual training programs, which is expected to dramatically enhance the realism of the soldiers training experience. There will also be a number of non-instrumented, dismounted company suites, allocated to both the Regular and Reserve Forces for realistic home-station training.

Although, realistic exercise play is important for the development of the soldier, the Canadian Army recognizes that the ability to accurately assess engagement results and provide feedback to soldiers will be central to the WES's success. Critical to this capability will be the Army's use of observer controllers. Observer Controllers will be experienced officers and senior non-commissioned members who will accompany soldiers undergoing training and provide feedback on ways to improve performance.

However, more realistic training with objective feedback to improve the soldiers' performance is only one of the applications that WES technology will provide to Canadian Army's plans for transformation. The introduction of a fully integrated WES system will move the Canadian Army beyond the realm of pure simulation by merging the reality of the future battlefield into the simulation environment allowing the Army to explore future possibilities. The ability to monitor soldiers and equipment and to record their actions for later analysis will allow the Army to develop and evaluate new weapons, organizations, tactics and doctrine. In addition to its primary training function, CMTTC will become an integral part of the Canadian Army's combat development process.

Combat Development is the process of developing doctrine, tactics and equipment relevant to the future operational environments and depends on extensive experimentation, evaluation and comparison of various capabilities. The use of modeling and simulation is a very cost effective manner for the Canadian Army to test and evaluate at a range of options. The ability to rapidly reconfigure and

confirm whether a proposed force structure is viable is becoming more important as the Canadian Army moves from traditional idea of fixed organizations to the concept of task-tailored forces fitted to the specific requirements of each mission.

Simulation is quickly becoming a key element of the Canadian Army's Transformation process. The technology is proving extremely flexible as it enables senior commanders to confirm that their troops have reached the high levels of readiness needed for the complex operations they are now expected to carry out. More importantly, the ability to capture and record results provided by the simulation environment provides objective data that can be used for analysis and evaluation.

The integration of WES into the Army's training, validation and combat development process will play an essential role in keeping the organization relevant to the changing needs of Canada and the changing operational environment. **FL**

*Major Tony Balacevicius is the Director of the Weapons Effects Simulator Project.*

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225, boul. du Séminaire Sud, Saint-Jean-sur-Richelieu (Québec) J3B 8E9 • 450.358.2000