

Naval Maintenance Procedures Trainer



20 June 2002 – Crew from HMCS Ottawa replace 20mm Tungsten ammunition in the Close-In Weapons System (CIWS) Block 1A, while patrolling the Arabian Gulf region in support of Operation APOLLO (Canada's military contribution to the international campaign against terrorism). Its successor system, the Block 1B, relies upon the MPT to train its maintainers.

PHOTO: CPL CHARLES BARBER, DND

Recent issues of *FrontLine* have discussed the use of simulators in the field of maintenance training. The Canadian Navy was a world leader in the decision to migrate to PC-based maintenance training. This migration began as a result of decisions made in 1992 to support the evolving training requirements of the Canadian Patrol Frigate (CPF) project.

The project requirements included the acquisition of a Maintenance Procedures Trainer (MPT) to assist combat systems technicians to learn to operate and maintain shipboard systems and sub-systems. The first prototype MPT was delivered in November, 1994. An MPT system today consists of networked computers in an electronic classroom, a large screen projection system, the IN-CONTROL Training Management software and various software models of shipboard systems and equipments (referred to as a Synthetic Equipment Trainer (SET)).

Each MPT SET mimics the target system operation and its fault conditions, allowing the technician to follow fault finding procedures to identify the fault, to conduct the actions needed to rectify the fault and verify system performance. The MPT software provides each learner with their own free-play model of the combat system equipment, a large library of certified fault scenarios and functional models of the tools and test equipment that would be used to diagnose and maintain the actual equipment.

Following an Independent Verification and Validation (IV&V) of the prototype system completed in 1993, the Navy has continually acquired SETs for the MPT classrooms. This process is gaining wide coverage under the acronym SEBA, for Synthetic Environment Based Acquisition, a concept currently being explored in Defence R&D Canada's Collaborative Capability Definition Engineering and Management (CAPDEM) Technology Demonstration Project. The Canadian core MPT system has been extended to include modules for twelve combat systems including the Advanced Harpoon

(anti ship missile) Weapon Control System, the SPS-49 Air Search Radar and the Canadian Towed Array Sonar System. For newly acquired systems, the MPT SET may frequently be the sole method of maintenance training and the technicians under training never see the real combat system except for a familiarization tour.

The acquisition of Synthetic Equipment Trainers (SETs) became Navy policy in 1998. A network enabled variant is acquired for use in an instructor-led MPT classroom and a standalone SET variant is acquired for use in a learner-centric, refresher-training environment.

The United States Navy became aware of this technology in late 1996 and issued a contract for this Canadian-developed solution in 1998. These MPT systems are now in service at the AEGIS Training and Readiness Center; the Mine Warfare Center; Fleet training Centers at Norfolk and Dam Neck; Submarine Learning Centers at Groton and Norfolk; the 'A' School in Great Lakes; NAVAIR training facilities in North Island and Jacksonville; and others. The USN also regularly supplies the Canadian-developed SETs to their clients under the Foreign Military Sales (FMS) program.

In their announcement of their "Revolution in Training" in 2002, the USN highlighted their intention to follow the Canadian Navy's lead and migrate their technical training into a hybrid system of MPTs and part-task trainers.

The Royal Navy (RN) became aware of this technology and issued its first contract for this Canadian solution in 1999. SETs are now in service for the RN's KH 1007 Navigation Radar and for a sensor

on the Trafalgar-Class submarine, and they have contracted for a SET for the NAVYSTAR LAN. The RN has announced that they will acquire SETs as their primary technical training environment for the systems and equipment on their new Type 45 destroyer project.

SETs are now in production for the Japanese Maritime Self Defence Force, and the Norwegian, Spanish and Korean Navies.

The most recent SET to be delivered to the Canadian Navy is for the Close-In Weapon System (CIWS) MK 15 Phalanx Gun Block 1B. The CIWS is a system designed particularly to engage incoming missiles with a high volume of fire. Given the high approach speeds, short distances and small frontal area of the target, the CIWS requires fast reaction time and high reliability, hence a high serviceability rate. The Canadian MPT for the CIWS has proven to be an excellent maintenance trainer for a weapon system that will be used by the USN, who co-funded the development of this SET with the Canadian Navy, and will likely be adopted by other Allied navies. Once again, Canada is leading the world in maintenance training, this time for the CIWS Block 1B.

Such a Canadian success story does not happen in isolation or overnight. It has taken a close partnership among the

The Canadian Navy, RN and USN are exploring means of supporting each other to cost-effectively add to their inventories of Synthetic Equipment Trainers. As part of this dialogue, the Canadian Navy has just requested the following SET (VISTA) applications delivered to MPT for evaluation:

- 2445A Oscilloscope: CSE Div, OT Div, E&T Div, MSE Div
- Fluke Multimeter: CSE Div, E&T Div, MSE Div
- Spectrum Analyzer: CSE Div, OT Div, E&T Div, MSE Div
- Logic Analyzer: CSE Div, E&T Div, MSE Div
- Signal Generator: CSE Div, OT Div, E&T Div, MSE Div
- Power Meter: CSE Div, E&T Div, MSE Div
- Network Management (PCs, Laptops, NICs, CISCO Switches, HUBs): CSE Div, OT Div, E&T Div, CFNOS
- Generic Radar: CSE Div, OT Div, E&T Div
- Kelvin Hughes Type 1007 Radar

naval training establishment, the headquarters equipment and trainer acquisition and in-service support staff, the SET developer (Lockheed Martin Canada) and the Canadian and US Navies.

Maintainers in the Navy realize that SET solutions, such as those within the MPT, can provide much more effective, less expensive, more flexible and more comprehensive cognitive skills training than can be accomplished using the actual operational equipment, and they can train more people more quickly. SET solutions, blended where necessary with Part Task Trainers for physical skill training, are becoming the accepted norm for technical training. **FL**



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HON. ANNE MCLELLAN SPEAKS FOR WIDS

11 May 2005 – In her role as Honorary Chairperson for **Women in Defence & Security (WiDS)**, the **Honourable Anne McLellan**, Deputy Prime Minister and Minister of Public Safety and Emergency Preparedness Canada, highlighted women in the Canadian Forces, Security and the Defence industrial base. She also provided an update to the Canadian Security Policy that was launched one year ago – “Canada’s First National Security Policy, One Year On.”



Minister McLellan (right) accepts a plaque from WiDS President, Wendy Allerton.

WiDS promotes the advancement of women leaders in defence and security professions across Canada; provides its members with a forum and activities for professional development, exchange of ideas,

experiences and networking. **WiDS** also supports women pursuing careers in defence and security through mentoring and scholarships. **WiDS** is affiliated with the Canadian Defence Industries Association (CDIA), an industry-led association of more than 400 member firms in the defence and security industries in Canada. **WiDS** Membership consists of men and women in the public and private sector

and we encourage you to join this dynamic team.

WiDS features conferences, seminars and networking events including:

• Defence & Security: Public & Private Sector Partnerships

• International Business Forum

• **WiDS** Annual Networking Golf Tournament

More information about **WiDS** can be obtained at www.cdia.ca/wids or by contacting Sarah Pike, **WiDS** Communications Director, at (613) 612-9224.

