

CANADIAN FORCES ACCELERATES TRAINING AND ENHANCES TRAINING EFFECTIVENESS WITH NGRAIN INTERACTIVE 3D TORPEDO TRAINING SOLUTION

BACKGROUND

The Canadian Forces 404 Maritime Patrol and Training (MP&T) Squadron at 14 Wing Greenwood is the principal provider of aircrew and technician training for the CP-140 Aurora fleet. The 404 (MP&T) Squadron conducts weapons procedure training, specifically armament training for the MK-46 lightweight torpedo on the CP-140 Aurora. Similar training is conducted on the CH-124 Sea King helicopter at Canadian Forces 12 Wing Shearwater.

Facing a shortage of qualified technicians, the Canadian Forces is adopting cutting edge/innovative training technologies to accelerate training of new personnel. The Directorate of Air Requirements, responsible for the development and advancement of strategic Air Force projects, sponsored the development of an interactive 3D MK-46 torpedo training aid for use at 404 (MP&T) Squadron, as well as for 12 Wing Shearwater, home of the Sea King helicopter.

CHALLENGE

The MK-46 torpedo, a NATO standard, is designed to protect Canadian interests against naval threats from foreign submarines or surface vessels on both Atlantic and Pacific coasts. The torpedo may be launched from submarines, helicopters, and fixed-wing aircraft. The torpedo course, conducted at 404 (MP&T) Squadron, trains technicians on how to install/remove flight accessories, component description and interaction, safe handling procedures, as well Otto Fuel response. The school is facing a number of training challenges. In a year, the course is conducted four times, has an average of four students per course, and currently takes 13 days to

complete. With a shortage of qualified technicians, there is a need to train new personnel faster.

The course currently utilizes PowerPoint presentations, manuals, and videos to train personnel, all of which are limited in their ability to effectively convey information about tasks and procedures. In addition to these training methods, two physical torpedo training aids are used in the practical portion of the course. While these physical training aids provide personnel with hands-on practice, it is difficult to show and train on the internal components of the torpedo and related loading procedures. Given these limitations, the school needed a more effective training method that would enhance the training.

Courseware development time also presented a problem. Each time a procedure requires updating, instructors must make time in their busy schedules to update the training materials. On average, it takes instructors two hours to prepare one hour of instruction.

"Our first use of the NGRAIN solution in a course resulted in higher student success rates. With NGRAIN we are extremely confident in our ability to accelerate future training and to provide more effective training to our students."

- Sergeant Colin Drolet, 404 Squadron

SOLUTION

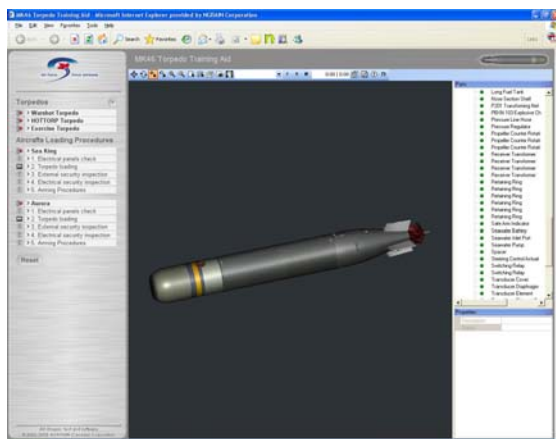
The Directorate of Air Requirements, responsible for the development and advancement of strategic Air Force projects, sponsored the development of an interactive 3D MK-46 torpedo training aid as the means to train personnel more effectively and efficiently. The 404 (MP&T) Squadron and 12 Wing at CFB Shearwater provided the subject matter experts and access to equipment necessary to develop the training aid. The training aid allows for:

- **Parts Familiarization:** NGRAIN created interactive 3D simulations of three types of the MK-46 torpedo. Students are able to explore the torpedo by cross-sectioning the torpedo to view internal components, and clicking on a

part to view it within the context of the entire torpedo assembly. The solution offers students greater opportunity for virtual hands-on practice.

- **Skill Acquisition** – NGRAIN created 3D procedural animations demonstrating how to load a torpedo on an Aurora aircraft and a Sea King helicopter. These 3D simulations support the visual learning style of today's students, thereby improving knowledge retention and student success rates.

In addition to a virtual 3D hands-on experience of the torpedo and related loading equipment, the NGRAIN solution also includes a digitized manual of aircraft loading procedures, which are supported with screenshots of the 3D torpedo simulations. The 3D object of the Torpedo and related loading equipment is a visual index of supporting Canadian Forces manuals and digital photos.

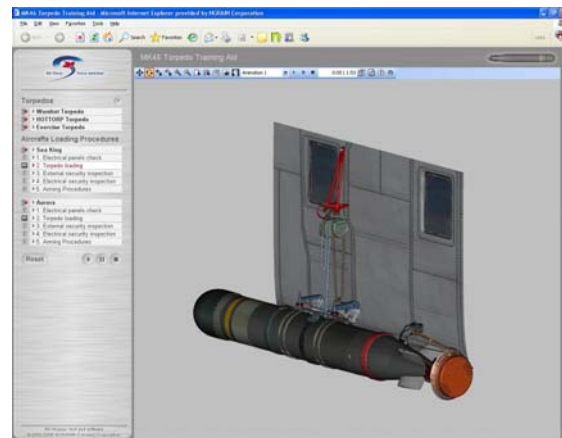


MK-46 Torpedo Training Aid

RESULTS

A prototype of the NGRAIN training aid has already been used during a recent instance of the course, garnering extremely successful results. In its first time use, the 3D training aid increased student success rates through improved knowledge retention. Test results averaged 91%; the average previous score was 85%. This significant increase in student success rates demonstrates the school's ability to improve student's comprehension through the use of NGRAIN 3D software. "NGRAIN's interactive 3D simulations support the visual learning style of today's students. I had a student express how interacting with and watching the 3D simulations made it easier and faster for him to comprehend the procedures we were

training on," said Master Corporal Robert Drapeau, Instructor, 404 Squadron.



Animation of Torpedo Loading Procedure on a Sea King Helicopter

In addition to being used for instructor-led training in the classroom, the long-term goal of the school is to use the training aid for distance learning, and to distribute a copy of the training aid to field units for on-site refresher training.

Contact army@ngrain.com for more details on this project.

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