The Halifax Class Modernization Project

Even during a routine training cruise up the coast of Vancouver Island, the red-lit room in the very heart of HMCS *Calgary* hums with activity – sailors and officers clustered around computer screens or discussing streams of data in muted tones – no matter that the most threatening vessel on the *Calgary's* sophisticated radar and infrared cameras this morning is a B.C. ferry hell-bent to keep its schedule.

Lieutenant (Navy) Angus Topshee, the frigate's combat officer, proudly ushers rare visitors into the Operations Room. "This is the nerve centre of the ship," he announces, "this is where it all happens."

But the *Calgary's* Ops Room looks more like a jury-rigged IT department than the combat centre of a modern warship. Maps and grease-pencil job boards line the ship's grey bulkheads, sailors and officers on errands from other stations must pick their way carefully through a maze of chairs and cables that snake across the deck. The long, low tables are crowded with laptop computers stacked atop and around the built-in terminals and screens that the ship was built with.

The Ops officer who is supposed to coordinate all the activity in the room has no less than six computer screens clamouring for his attention. "Yeah, there's a bit of information overload," Lt(N) Topshee says laconically, "but we're working on that..."

The *Halifax Class* patrol frigates, the pride of Canada's blue water navy when they were launched between 1990 and 1996, are beginning to look if not exactly shopworn then at least a little frayed at the edges.

The Department of National Defence (DND) has a $3-billion plan to upgrade the frigates: the Halifax Modernization Project. But what was to have been a mid-life refit and modernization has been pushed back by funding shortfalls to the point that the oldest vessels of the class are not scheduled to begin their nine-month facelift until 2011.

Commander Hugh Fitzpatrick, director of the project, says the modernization is one of the largest and most complicated initiatives the navy has taken on in years. The project is, in fact, a compendium of nearly 30 major sustainment and stand-alone upgrade projects, and more than a dozen smaller improvement and maintenance projects, he says, all of them intimately inter-connected.

"We're talking a level of complexity that is just unbelievable. It's a complex beast of a project."

Cdr Fitzpatrick says some of the projects are "housekeeping" changes, the kind of upgrades and replacements necessary for any warship more than a decade old: adding new air-conditioning, renovating the vessels' power generation and distribution systems, rebuilding the massive turbines that drive the ships, strengthening the hulls, improving the ballast that stabilizes the ships and reconfiguring the towering mast that carries most of the frigates' sensors and communication arrays.

"There is a maintenance issue – things are starting to break down and need to be replaced," says Cdr Fitzpatrick. "We're doing a pretty comprehensive strip-out and refit."

But the most complicated – and expensive – projects are driven by the increasingly digital battlespace in which the frigates are operating and their changing role, especially since the terrorist attacks of September 11, 2001.

"Things are a lot more challenging, a lot more complex. There are a lot of threats out there that the ships weren't made for and all of your equipment's affected by that," says Cdr Fitzpatrick. "It's still a hell of a ship, but its role has changed. We're operating in a littoral environment with systems that were designed for the open ocean."

From his perch on the starboard side "wing" off HMCS *Calgary's* main bridge, Lt(N) Topshee says that since the suicide attack on USS *Cole*, Canada's navy has been alert to the threat from small boats packed with explosives aimed at crippling or sinking a much larger modern warship.

A crew member on board HMCS Calgary at the controls in the ship's machinery control room.

Halifax Class
Multi-Role Patrol Frigate

Known as the work-horse of the Canadian Navy task group concept, the 12 Canadian-designed, helicopter-carrying Halifax Class frigates combine traditional anti-submarine capabilities with systems to deal with surface and air threats.

HMCS Calgary 335
HMCS Charlottetown 339
HMCS Fredericton 337
HMCS Halifax 330
HMCS Montreal 336
HMCS Ottawa 341
HMCS Regina 334
HMCS St. John's 340
HMCS Toronto 333
HMCS Vancouver 331
HMCS Ville de Québec 332
HMCS Winnipeg 338

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PHOTO: MCPL RON FLYNN, FLEET IMAGERY SERVICES, HALIFAX

Feb '02 – Deployed on Operation APOLLO, Canada's military contribution to the international campaign against terrorism, HMCS Charlottetown passes the ancient fortress of Senglea, Malta.

U.S. NAVY PHOTO: PHOTOGRAPHER'S MATE AIRMAN TINA R. LAMB

May '02 – Canadian frigate, HMCS Vancouver, steams alongside USS John C. Stennis as the Stennis Battle Group returns from deployment in support of Operation Enduring Freedom.

As the alert sounds throughout the *Calgary's* corridors for a defensive drill, he explains that during Operation Apollo the navy learned that many of the Canadian patrol frigate's high-tech weapons were ill-suited to defending her from this new danger.

"For small boats our best defence is probably to run away, so we always try to put them on the stern quarter," he says, gripping a railing as the frigate heels over in a hard turn to carry her away from the small fishing boat unwittingly standing in for the threatening craft.

Lt(N) Topshee says the frigate's main gun, a 57-mm Bofors Mk. II automatic cannon, can fire 220 rounds a minute and throw shells up to 17 kilometres away to hit enemy warships or incoming missiles with pinpoint accuracy. But it is little use against a Zodiac speeding towards the ship at very close range.

"Our fire control radar probably wouldn't even lock on to it," he says. "We're asking the gun to do something it's really not designed for."

The biggest changes under consideration in the Halifax Modernization Project are being driven by the information technology explosion in the past decade, which has left the frigates limping along with computers several generations behind those now in most Canadian homes and offices.

"You've got to remember – when they were put in the water, the 286 was state of the art," he says. "We've managed to adapt them ... it's workable now, but it needs to be improved. Nobody anticipated this wave of IT, especially at sea. ... but it's not easy for the guys in the Ops Room."

Cdr Fitzpatrick says the upgraded command and control system will be the largest and arguably most important "stand-alone" project. "This is going to make a big difference to a lot of systems on the frigates – almost every system on the ships in fact," he says. "It's the base for a lot of the other changes."

"Given the vast amount of information that's available to our ships, it's essential that we manage that information."

The major projects include a new, protected military satellite communication system, and integrated shipboard communication system, and upgrades to the radar systems which act as the eyes of the Halifax-class – the Raytheon SPS-49 long-range air-search radar, Ericsson Sea Giraffe SPS-503 medium-range air/surface-search radar, and the two Thales STIR 1.8 fire control radars.

The ships will also get a new infrared-video search and track system called Sirius, which will continuously search the horizon around the ship for incoming threats in all kinds of weather and sea conditions.

The frigates will get new main guns, upgraded long-range, short-range and surface-to-air missiles with fully integrated fire control systems and a new improved close-in defence system. As well, the ships electronic warfare and underwater sensors and defences will be overhauled or replaced entirely.

All of these maintenance, sustainment, and stand-alone projects will be managed and coordinated under the Frigate Life Extension (FELEX) project, which also covers refits of the basic hull and platform systems and upgrades or replacements to on-board equipment which has become outdated or for which parts have become difficult or impossible to find.

HMCS Calgary

PHOTO: SGT RICK RUTHVEN

The end result will be an almost entirely new ship, with a more modern bridge and operations room and more efficient arrangement of corridors and passageways below decks.

The key, according to Cdr Fitzpatrick, is co-ordination – making sure that the hundreds of changes proposed under the modernization project work together seamlessly.

"We're looking at a greater level of integration than we've ever had before," he says. "The cabling, the steel, the guns, the people, are all a single system."

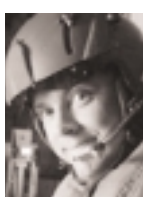
The only open questions around the project seem to be its funding and timing.

Contracts have been awarded for some projects, while others are still working their way through the government's often convoluted financial approval process. Cdr Fitzpatrick estimates that the modernization project is now about a quarter of the way through the process of getting departmental and Treasury Board approvals.

"Our timing's not off by that much," he says.

Meanwhile, on frigates such as HMCS *Calgary* the officers and crew are waiting impatiently for the modernization project to begin, well aware that their beloved ships are beginning to show their age.

"Can't come soon enough for us," Lt(N) Topshee says with a tight smile. FL



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