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The Navy's Technical History: Should the Past Guide the Future?

(An abridged and edited short excerpt from a 2012 Mari-Tech presentation)

By Capt James G. Dean, RCN (Ret'd), with the assistance of various CNTHA members

On June 3, 2010, the Government of Canada announced the establishment of the National Shipbuilding Procurement Strategy (NSPS), a government/industry initiative designed to support Canadian marine industry, revitalize Canadian shipyards, and build ships for the Royal Canadian Navy and Canadian Coast Guard. On October 19, 2011, the government announced that large naval combat vessels would be built by Irving Shipbuilding in Halifax to naval standards, and that large non-combat vessels for both the Navy and the Coast Guard would be built by Seaspan's Vancouver Shipyards to commercial standards.

Since this new approach will not only provide much-needed new ships, but is anticipated to revive and provide a degree of stability to Canada's moribund shipbuilding industry, it is timely now (i.e. 2012 – Editor) to examine some of the historical aspects of Canadian shipbuilding underlying the NSPS approach. In this paper, the Canadian Naval Technical History Association (CNTHA) will examine the Navy's technical history associated with various naval shipbuilding programs, and ask whether the past should guide the future as the NSPS evolves.

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Auxiliary Oiler Replenishment Ships (AOR)

HMC *Provider* (AOR-508) was the RCN's first dedicated Auxiliary Oiler Replenishment ship. Built by Davie Shipbuilding and Repairing

Company Limited of Lauzon, Québec, she was laid down in July 1961, launched in July 1962, and commissioned in September 1963.

The ship was designed by the Davie shipyard, mainly by ex-UK personnel working in close collaboration with the Department of National Defence (DND). The design was innovative and went well beyond the traditional "oiler" concept to provide for replenishment at sea (RAS) in all its forms (an RCN concept). The ship was built to commercial standards and fitted with commercial equipment. The shipyard was unfamiliar with RAS equipment, so this had to be reworked after the ship was accepted from the yard. The propulsion machinery was steam-driven, but the ship was designed to accommodate nuclear propulsion should that ever have been considered a future enhancement. At full load the ship displaced 22,700 tons, was capable of 21 knots, and could carry three helicopters.

Provider was initially assigned to operations on the East Coast, but her open deck made her vulnerable to the heavy Atlantic weather. She was reassigned to the West Coast where she served until she was paid off in 1998. Overall, *Provider* was an excellent ship that served the RCN well, providing valuable experience for the construction of other AORs.

HMC ships *Protecteur* (AOR-509) and *Preserver* (AOR-510) — the two follow-on ships to *Provider* — were commissioned in 1969 and

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HMCS *Provider* in 1969 still with her forward goalpost.



1970, and deployed on both coasts. Displacing 24,700 tons fully loaded, their design took into account the problems experienced with *Provider*. The ships were built with larger bridges, paired funnels to permit a much wider hangar door, and were designed to accommodate the Canadian-designed and -built AN/SQS-505 sonar as well as an M22-based fire-control system and guided-missile launcher system. The missile and fire-control systems were never fitted, but for self-protection the ships were outfitted with a 3"/50-calibre gun on the bow. The gun was later replaced with a Phalanx anti-missile close-in weapon system (CIWS).

The preliminary design of the two *Protecteur*-class ships was carried out in-house by the Navy through the Naval Central Drawing Office. The contract for both ships was awarded by the Department of Defence Production to Saint John Shipbuilding in New Brunswick. The ships were built to commercial standards, with the Navy managing the technical aspects of the contract and providing oversight. Both ships were laid down in 1967, and launched in 1969. *Protecteur* commissioned August 30, 1969, and *Preserver* commissioned July 30, 1970. Both ships served for more than 40 years, but were hard to maintain and were manpower intensive.

Construction to commercial standards was reported to have caused significant problems and strain between the Navy and the contractor. Construction initially started out for commercial vessels built to Lloyd's standards, for which the ships would be inspected and approved by Lloyds, but the Navy did not want Lloyd's approval — it wanted Navy standards, which would have been more stringent and costly than the commercial ones. This disagreement created a serious problem... It is noted that the approach of the National Shipbuilding Procurement Strategy may significantly mitigate or avoid this problem. Time will tell.

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Observations and Conclusions (abridged)

Over the years the technical sophistication of Canadian warships has increased dramatically as each new class has been procured. Many of the technical advances were led by creative young naval officers who applied their operational experience and engineering creativity to develop new system and integration concepts. In 50 short years the Navy advanced from stand-alone equipment integrated by sailors talking on sound-powered telephones, to the Canadian Patrol Frigate's fully-automated, integrated command and control and weapon systems that can detect, identify, engage and destroy a threat without a human being in the loop. In the CPF Project, the combat system integration facility proved invaluable in the design, development testing, set-to-work and integration of the combat



HMCS *Preserver* in 1979.

system, saving time and money that would have been expended had it been done piecemeal in the lead ship. As we approach NSPS, in which 60% of a combatant warship's cost will be in the combat systems, the establishment of a sustained payload facility will be as important as a sustained shipyard.

For half a century, the Navy's shipbuilding projects have been completed successfully, creating good jobs and delivering excellent ships. It was evident, however, that the Navy's ship batch programs alone were insufficient to sustain the Canadian shipbuilding industry and its suppliers. Under NSPS it is anticipated that a continuing series of ship programs will sustain the industry and the supporting system and equipment manufacturers and integrators. This will depend on the government's provision of funds in its budget for both naval and other government ship projects.

The CNTHA believes that as implementation contracts begin under NSPS, the lessons of the past in system technology development and ship acquisition management must continue to guide the design, construction and project management of the new ships. If Canada is to continue as a serious maritime nation operating in three oceans, it will be important to retain a shipbuilding and ship repair capability as a national, sustainable resource.

Capt(N) James Dean, RCN Ret'd, crossed the bar on January 3, 2015 at age 77. His comprehensive and insightful 7200-word paper is well worth reading in its entirety at: <http://www.cntha.ca/static/documents/papers/mari-tech-cntha-paper.pdf>



HMCS *Protecteur* conducts a replenishment at sea (RAS) in 1981.

