



# NEWS

Canadian Naval Technical History Association

## WHERE HAVE ALL THE INNOVATORS GONE?

By Cdr Pat Barnhouse, RCN (Ret'd)

The Royal Canadian Navy has a laudable history dating back to the late 1940s of innovation in designing equipment to meet operational requirements. Some of the developments have been uniquely Canadian, while others have found more universal application with other navies.

Over the past 15 to 20 years, however, the pace of innovation seems to have decreased appreciably, moving one to wonder whether this is by design or default. Surely there must exist today operational deficiencies for which our naval technical people might devise solutions – so why are we no longer seeing much in the way of breakthrough in-house innovation?

Consider what has been accomplished in the past:

When German U-boats in the fall of 1943 began deploying the GNAT acoustic torpedo that homed in on ship propeller noises, losses among allied convoy escorts were felt immediately. A swift response was needed. RCNVR Special Branch officers at the Naval Research Establishment got to work, and within a month had developed, manufactured and deployed CAT noisemaking gear that could be streamed behind a ship as an effective countermeasure. The innovative device was simple, yet it was an elegant and timely solution to an immediate operational problem. CAT gear stayed in operational use long after the war ended.

The spirit of innovation carried on into the postwar years. In the late 1940s, Lt. Jim Belyea conceived the idea of DATAR (digital automated tracking and resolving) as the first system to collate and communicate operational information between ships using digital technology. For a number of reasons, the RCN did not follow up by installing the system in ships, but it did provide the impetus for the development and implementation of naval tactical data systems, the first being the United States Navy's NTDS.

Another early postwar innovation solved a problem that had been encountered during the war – that of detecting submarines hiding beneath temperature gradients in the waters of the St. Lawrence estuary. In 1949, the Naval Staff issued an operational requirement to overcome the problem, and, in turn, the Naval Research Establishment under the direction of Capt. Arthur Peers came up with the concept of putting the sonar "below the layer." This technique of variable depth sonar (VDS) has been almost universally adopted among navies concerned with antisubmarine warfare.



Above water, the development of today's RAST shipboard helicopter recovery assist, secure and traverse system, first known as the 'Beartrap' helo haul-down system, came from a Canadian initiative to operate large ASW helicopters from destroyer-size warships. In the 1950s, a team led by Cdr Roger Dickinson was instrumental in developing and implementing the device which is still used by several navies today.

In the 1960s, a team headed by Cdr Joe Stachon took the VDS concept into its second generation, thereby keeping the VDS project alive through the turmoil of the integration/unification years. This ensured

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Pat Barnhouse asked delegates at the Ottawa Marine Technical Symposium in February, ***“Has the spirit of innovation been lost?”***

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Please address all correspondence to the publisher, attention Michael Whitby, Chief of the Naval Team, Directorate of History and Heritage, NDHQ 101 Colonel By Dr Ottawa, ON K1A 0K2 Tel. (613) 998-7045 Fax (613) 990-8579

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that a state-of-the-art sonar system would be available for both the Improved *Restigouche*-class escorts and the DDH-280 Tribal-class destroyers.

In the 1970s, LCdr Jim Carruthers (today, president of the Ottawa branch of the Naval Association of Canada) came up with the concept of SHINPADS, a shipboard integrated processing and display system that decoupled sensors, weapons and their associated control systems, then connected them all through a common bus and common displays. At first rejected by NATO and other navies, SHINPADS became widely used in various forms. The follow-on SHINCOM (interior communications) and SHINMACS (machinery control) arose out of the fertile minds of naval technical staff, with successor systems still being deployed in ships.

These innovations represented huge advances in naval technology. And there were more, notably in the areas of computer-aided sonar detection and tracking, and towed arrays. During the late 1980s and early '90s there were, at one time, about 75 minor development projects (i.e. less than \$1 million each) and five major development projects underway. Impetus for these came from a variety of sources in industry and the defence science world, and also from naval technical staff who were largely responsible for identifying the potential of these developments and pushing the projects forward.

There have been some successful developments in the last 15 to 20 years, but nothing like the major innovations we were spawning up until the 1990s. Again, one is moved to ask why. I would submit that the RCN has an ongoing need of innovation to meet unique Canadian requirements that might arise out of the Canada First Strategy, and to ensure access to sensitive technologies that might not always be available to us through foreign channels.

Has the pace of operational commitments consumed all available resources? Is there a lack of resources? Has Defence R&D Canada changed its modus operandi? Is industry not interested in developmental work? Where is the spirit of innovation in navy technical circles today? The RCN has been through lean times before, and yet somehow we managed to be continually innovative. *Why not now?*

***Pat Barnhouse is Chairman of the Canadian Naval Technical History Association.***

