



**A Report on the Accomplishments of the
Canadian Naval Defence Industrial Base (CANDIB) Project**

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The Canadian Naval Defence Industrial Base (CANDIB) subcommittee to the Canadian Naval Technical History Association (CNTHA) was established in 2001 under the chairmanship of Rolfe Monteith.

The CANDIB committee's mission under CNTHA was to gather and document as much historical information as possible on Canadian naval construction programs and the effect they had on Canadian industry. In April 2002 the mission of the subcommittee was established "To describe the development of the Canadian industrial base as it evolved in support of warship construction and naval equipment programs between 1930 and 2000, and to record the relationship between the military requirement and the industrial response during this period." In September 2003 the following elaboration of the mission statement was agreed upon: "To assemble as thorough a historical record as we can of the influence which the warship requirements of the Royal Canadian Navy has had on the development of a defence industrial infrastructure in this country. CANDIB hopes to also trace the legacy of this developmental activity, calling on the experience and recollections of as many people as possible who were involved in any way in these important events in Canada's history." The ultimate aim was to acquire information as a research aid for official historians, researchers and casual readers alike.

The subcommittee activities were broken into these areas: ships, shipyards, design houses and Research & Development. The areas of interest include marine systems, combat systems, naval architecture, naval aviation and personnel.

In 2004 CANDIB entered into a contract with the Department of National Defence's Directorate of History and Heritage (DHH) to run an oral history program that was to be headed by Douglas Hearnshaw. We obtained \$5K and produced two taped and transcribed interviews by 31 March 2005. We signed a follow-on contract for \$5K to provide two more interviews by 31 March 2006. DHH made it known that while the money was to support the oral history program, the aim was broad enough to include other CANDIB and perhaps CNTHA endeavours as well. By December 2013 CANDIB had conducted 47 interviews, including several written interviews, more than meeting the DHH contractual requirements.

In July 2004, under the direction of Don Wilson, work was started on a website [www.cntha.ca] to showcase the work done. The website when fully implemented offered a public area for anyone having an interest in naval technical history, and a private area for committee members to collect and store information for future access. It was further upgraded in 2013. Photographs, interview transcripts and the entire collection of the Maritime Engineering Journal are some of the items available on the website. This has been a success and we receive ongoing visits from interested persons.

In 2008 CANDIB was brought back into CNTHA, which carries on the CANDIB mission as part of its larger mandate. During 2013 DHH reaffirmed CNTHA's important role in acquiring first-hand personal accounts of DDH-280 and later class ships in the Royal Canadian Navy for the next volume of the official history.

The CANDIB Contribution to the DHH Collection

To date CANDIB has gathered various technical history material to add to the CNTHA collection. Series I Naval Technical History Project Material contains somewhat in excess of 500 items; about 100 concern the industrial base in some form or another. One of the items is Jim Williams' study on design houses - a tour de force. Another, in a subsection, is supporting material for the hydrofoil interview with Tom Bennett. Series IV DDH-280 Class Main Propulsion Machinery Design & Acquisition Proposal is all pertinent to the industrial base. Series V is CANDIB Interviews. [Series II and III contain CNTHA material.]

The type of information gathered by the CANDIB committee includes the following:

DND

- a. Dockyard organization post-World War II and some aspects of dockyards' capabilities up to about year 2000.
- b. The method and experiences in the design and build of all naval warships and AORs since 1949.
- c. Various reorganizations of the technical authorities within headquarters.
- d. The effects of CF unification on senior naval technical leadership.
- e. Naval overseers; the close oversight by Resident/Principal Naval Overseers, with inspection and testing done by DND on site and through NEDIT (Naval Engineering Design Investigation Team) and NETE (Naval Engineering Test Establishment). These were put in place as there was not a great deal of competence in the industry.
- f. Evolution of management of ship programs and project management methodology.
- g. Inability to provide credible cost estimates at the start of a program.
- h. Use of outdated technical standards during the DDH-280 build.

Canadian Government

- a. The effect of change and reorganization in Department of Defence Production (DDP)/Department of Supply and Services (DSS)/Public Works & Government Services (PWGSC), Industry Canada (IC).
- b. Requirement for joint department oversight of major projects.
- c. Hardening up of the financial attitude toward shipyards.

Ships

Various experiences and opinions of personnel in headquarters, naval overseers, initial ship's engineering crew, trials personnel and shipyards for the design and build and acceptance of:

- a. DDE-205/257/261 and DDH-265 classes
- b. HMCS *Provider*
- c. FFE-400 *Bras D'Or*
- d. DDH-280 class
- e. HMCS *Protecteur/Preserver*
- f. CPF
- g. MCDV (Kingston Class)
- h. Orca Class

Problems encountered in various programs included late delivery of drawings, starting building before the engineering package was complete, provision of Government Supplied Material (GSM) and Government Furnished Equipment (GFE) different to the drawings and without sufficient technical

detail, lead yard/follow yard difficulties, shipyard unfamiliar with new or experimental equipment, lack of qualified suppliers.

Ship's Equipment

Various experiences of both naval, civilian and industry personnel indicated some key aspects:

- a. DDE-205 class – Canadian industry (49 main companies) successfully met the navy's requirement to build equipment. The move from British equipment to that of mainly US origin was a challenge.
- b. *Provider* – replenishment gear problems successfully overcome.
- c. DDH-280 – decision to use gas-turbine propulsion turned out to be good.
- d. TRUMP – Several Canadian industries provided state-of-the-art, Canadian-designed equipment.
- e. CPF – Canadian-designed equipment such as SHINPADS, SHINCOM, SHINMACS installed on ships and provided excellent capability even though they were initially immature.
- f. The shipbuilding period saw a shift from totally militarized equipment to some commercially specified equipment.
- g. The off-the-shelf policy for DND procurement for the CPF restricted Canadian industry from providing state-of-the-art equipment.

Design Houses

A detailed account of the history of the development of Canadian naval design capability and the Naval Central Drawing Office (NCDO) from immediately after the Second World War to build the DDE-205 *St. Laurent* class ships, through to 2002 when it had been essentially dispersed, was completed by Jim Williams in 2005.

Shipyards

- a. Growth from "Build-to-Print" to "Total System Responsibility".
- b. Evolution of quality assurance (QA). Quality control appeared in naval specifications during the 1960s for refits and ship builds.
- c. Growth of documentation and project management plans required by the government.
- d. Requirement for strict reporting and control of scheduling and payments.
- e. There was some conflict between the government and shipyard in various ship builds, mainly in areas of class society vs. naval standards, quality control/inspections, degree of change that the shipyard could make without seeking DND approval.
- f. Some naval build programs did not result in much profit for the shipyard.
- g. By the end of the CPF program Saint John Shipbuilding actually finished up with the best medium-sized shipyard facility in the world. The knowledge gained was used to upgrade Halifax Shipyard, thereby producing an excellent production learning curve for the later Maritime Coastal Defence Vessel (MCDV) project.

Research & Development

- a. Sonar – development of several key technologies for the CPF.
- b. Minor research and development projects are an excellent way in which to start a larger project; once that minor project has been proven successful it becomes easier to switch it to a major research and development project leading to a product that not only will get into a ship, but will help Canadian industry along the way.

Naval Dockyards

The naval dockyards did not take on any ship builds during the period of interest; however, two major ship upgrades were done: In the 1950s, HMCS *Crescent* was modernized in the Esquimalt dockyard, and in the 1960s the Halifax dockyard took on the conversion of HMCS *Terra Nova* to an IRE. These were the only times that the navy had taken in hand the complete conversion of its own ships, rather than contracting out to the private sector.

Commercial Industrial Base

The industrial base of Canada was initially greatly enhanced by DND's decision to build the DDE-205 ships in Canada. So many things were put in place, hoping that Canada would be able to compete in the world markets for, specifically, naval ship design, and also for some of the related marine systems, but most of this never came to pass. Unfortunately, it was a similar story with all other ship programs. Firms which had enhanced capability initially as a result of these programs included Saint John Shipbuilding, Dominion Engineering, John Inglis, Peacock Brothers and Westinghouse. While some industries benefited greatly from ship build programs, the overall effect on the naval industrial base was temporary since most companies involved in the various programs have gone out of business or shifted out of naval work.

Work Remaining

The current priorities of DHH in preparing for the writing of Volume IV (1968-1990) of the official naval history have been accepted by CNTHA. This information is needed by 2015:

- a. Building and trialling the DDH-280
- b. Improved Restigouche Class (IRE)
- c. Destroyer Life Extension Project (DELEX)
- d. Submarine Operational Update Project (SOUP)
- e. Tribal Class Update and Modernization Project (TRUMP)
- f. CFAV *Quest*
- g. HMCS *Cormorant*

The following aspects are of interest to DHH when interviewing:

- a. Project Management Team
- b. Concepts of Project Management
- c. Project Milestones
- d. What kind of influence did an individual have?
- e. Was the project innovative with respect to other navies?
- f. How did the project run?
- g. What was the relationship with dockyards/shipyards?
- h. Describe the industrial side. (Some industries of interest are C-Tech, Westinghouse Sonar, Marconi Radar.)

To meet these aspects CNTHA is pursuing:

- a. Developing time lines showing links between R&D and equipment/system development and integration into ships.
- b. Background behind major departmental decisions.

While these are goals for the CNTHA, the aims of CANDIB will be kept in mind during these investigations.

Conclusion

CANDIB has met its mission in a highly productive manner and while its mission continues to be a relevant topic, the acquiring of this information can continue to be done under the auspices of CNTHA.

