The Navy’s Technical History: Should the Past guide the Future?

by

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Canadian Naval Technical History Association

- Mission is to capture and preserve Canada’s oral and written naval technical history
- Endorsed by Department of History & Heritage (DHH)
- Actively gathering information on ship programmes and their effect on the Canadian industrial base
- Conducted 46 oral and written interviews to date
RCN and Shipbuilding

- Successively through its ship programs in 60 or so years Canada established a naval ship design, construction and equipment/payload infrastructure.
- Industrial infrastructure was not sustained between each ship program.
- Various organizational and project management discipline changes made in response to problems it recognized in the ship programs.
RCN and World War II

- After WWII the shipbuilding capability dwindled from lack of government support and uncompetitive costs.
- WWII shipbuilding legacy was a robust steel production industry, machine tool industry, cadre of trained workers.
- RCN did not design ships or payload equipment. UK designs and equipment.
- RCN had a significant cadre of technical personnel and a modest ship repair capability.
By 1949 RCN recognized the need for shipyards to produce vessels rapidly

- Innovative design - US weapons/electronics
- Ships and as much equipment as possible built in Canada
- Canadian design - Naval Central Drawing Office established to do design
- Naval Engineering and Test Establishment set up to test machinery system
- 7 shipyards participate in builds

DDE/DDH 205/257/261/265 Class
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- Very good design with reserve for growth
- Joint departmental panel set up to exercise oversight of programme
- Industrial capacity for shipyards and equipment withered afterward
OSS - PROVIDER

- Canadian design, commercial standards
- Innovative design
- Provided valuable experience for construction of other AORs
AOR - PROTECTEUR Class

- Canadian design, commercial standards
- Navy insistence on inspections in addition to Lloyd's inspections caused additional cost
- Shipyard finds it impossible to do commercial work and naval work in parallel because of the differences in methodology and documentation
FHE - BRAS D’OR

- Canadian design, innovative design - included automated digital command and control system with VDS
- Ushered in new acquisition management (Glassco Commission)
- Department of Defence Production given government procurement
- Joint interdepartmental project office for project management
- Lessons learned on risk management and insurance after fire
DDH 280 Class

- Canadian design, innovative design – all gas turbine propulsion, major advance in Combat System integration
- High degree of both combat and propulsion systems and equipment were Canadian designed and manufactured
- Project begun before the concepts introduced by the BRAS D’OR were put in place
- Central project authority did not have full control on all the design and cost areas
DDH 280 Class

- Scope creep and hence additional cost from the original concept approved by government resulted in severe criticism from government by the Pennefather Commission.

- Highly capable ships and excellent value (despite criticism and perceived cost overruns).
CPF - Halifax Class

- Acquisition strategy and project management of this project reflected lessons from DDH 280
- Joint Departmental Management Review Board
- Joint project office to manage project (DND/DSS/DOI) under a total project management basis
- Shipbuilder given Total Systems Responsibility under a Target-Ceiling-Incentive contract
- Canadian design and shipbuilder to meet Industrial & Regional Benefits requirements
CPF - Halifax Class

- Design reflected many advances in ship construction and in system integration
- Command and Control System with its distributed architecture was innovative
- The contractor’s use of Canadian technology in its prototype phase added risk but proved to be worthwhile
- Despite building up a world class shipyard the facility and naval equipment manufacturing infrastructure most was lost when follow-up contracts did not materialize
Innovative design for combat systems
USN had good confidence in Canadian industry to permit use of state of the art USN equipment
Prime Contractor given Total Systems Responsibility
Government designated the shipyard. This proved to be difficult and resulted in delays and increased costs
MCDV - Kingston Class

- Cost reduction measures taken prior to awarding the contract to keep the project within the cost ceiling
- Total Systems Responsibility under a fixed price contract
- Off the shelf commercial equipment except for the Route Survey system and Mine Warfare system
- Ships delivered on time, within budget, met industrial benefits requirements
Observations

- Need for appropriate Risk Management between government and industry
- Technical advancement led by naval technical innovation
- Establishment of both sustained shipyard infrastructure and payload infrastructure
- Government funding for sustainment of industrial infrastructure may be necessary when there are gaps in procurement activity