



ACTORS AND STAGES OF WARSHIP PROCUREMENT

In Briefing Note #8 Naval Procurement, Dave Perry lays out the complex process of procuring defence equipment, naval equipment in particular. This Briefing Note will look in general terms at the actors involved in the process and the stages noted in BN #8, and should be read in conjunction with BN #8.

Over the years, layers of bureaucracy have been added to the defence procurement process. This is understandable because it involves significant amounts of money. But, as explained by Dave Perry, it means that the process is tremendously complicated and glacially slow. For many years, the federal government has talked about simplifying the procurement process. In 2019 the Justin Trudeau government proposed locating the process in one office called Defence Procurement Canada but as yet this has not been done.

What we have had since 2014 is the Defence Procurement Strategy, an initiative that was designed to improve defence procurement. As well, the Independent Review Panel for Defence Acquisition (IRPDA) was established in 2015 to provide independent advice and oversight of major defence projects valued over \$100 million. In 2018 the government introduced the Defence Investment Plan 2018 to supplement the strategy.¹ This is to streamline the approval, costing and project governance processes for low-complexity and low-cost projects. But as you will see here, it is still an arduous process.

Part of the challenge is the number of actors involved. The maritime procurement process of the National Shipbuilding Strategy (NSS) involves four core federal departments – Department of National Defence (DND), the Department of Fisheries and Oceans (DFO)/Canadian Coast Guard (CCG), Public Services and Procurement Canada (PSPC), and Innovation, Science and Economic Development (ISED). The plan was for these departments to work together to develop efficient, timely and streamlined processes. This is still a work in progress.

For major maritime/naval procurements, these departments have different responsibilities. The government outlines them as follows:

- Department of National Defence and Canadian Coast Guard:
 - define requirements
 - develop specifications
 - analyze associated options and cost estimates
 - obtain policy and funding approval
 - provide technical expertise and manage integration of equipment or services during the project or procurement
- Public Services and Procurement Canada:
 - lead the stakeholder and industry engagement before and during the procurement process
 - develop the procurement strategy
 - lead the solicitation process

¹ See Government of Canada, Department of National Defence, “Defence Investment Plan 2018 | Part II: Transforming the Way National Defence Works,” <https://www.canada.ca/en/department-national-defence/corporate/reports-publications/defence-investment-plan-2018/defence-works.html>.

- oversee the technical benefits and price evaluation
- manage the resulting procurement, contract and vendor performance
- Innovation, Science and Economic Development:
- administer the Industrial and Technological Benefits (ITB) Policy
- make recommendations on the application of the policy to procurements
- determine evaluation criteria to leverage economic benefits from resulting contracts and export components of those criteria, with advice from Global Affairs Canada.²

Having looked at the actors, let us now look at the general stages of the defence procurement process. The stages are Identification, Options Analysis, Definition, Implementation and Close-Out.³ We will briefly examine these stages in terms of a naval ship procurement project – the Canadian Surface Combatant (CSC).

Identification Stage

In this stage, the Royal Canadian Navy (RCN) identifies a capability deficiency based on an operational requirement – in other words, a capability it needs in order to perform its duties. The RCN then takes this to DND to act as project sponsor and convince the government that the project should proceed and be funded. (See BN #8 for more details.)

Options Analysis Stage

Having decided to proceed with getting the RCN what it needs, the process begins to narrow down how this will be done. At this stage, there will be discussion about what type of design would satisfy the requirements of the navy (e.g., destroyer, frigate, coastal defence vessel), how many would be required, and whether the ship will be purchased off-the-shelf outside the country or built in Canada. If built in Canada, where would it be built?⁴ In this stage, there can be different objectives. For example, the government will likely stress industrial strategy, jobs and benefits to the economy; the RCN might stress speed of the build and capabilities of the ship; and Treasury Board (and the government) might focus on the project budget.

Within this stage will be considerations of cost. What are the cost parameters of the project? How much is the government willing to commit to the project? What is included in the cost projections? How does the cost compare to similar builds elsewhere? This may seem like an easy question, but different countries include different things in the cost and this makes comparisons across countries difficult. Some argue that build costs should cover the whole scope of the project, i.e., logistics, project management, human resources as well as life-cycle maintenance.⁵ Others would include only the cost of the build itself.

² From Government of Canada, “Defence Procurement Strategy,” updated 3 November 2021, <https://www.tpsgc-pwgsc.gc.ca/app-acq/amd-dp/samd-dps/index-eng.html>.

³ Note that not all procurement projects will be laid out in this way. The AOPS, for example, was to proceed through what was called a ‘design then build’ procurement strategy.

⁴ Irving Shipyard in Halifax was selected by Canada as the builder of the Canadian Surface Combatant through an earlier competition, so regardless of who won the contract the ships would be built in their yard.

⁵ Malay Pal, “Ship Work Breakdown Structures through Different Ship Lifecycle Stages,” paper presented at International Conference on Computer Applications in Shipbuilding 2015, Bremen, Germany, https://f.hubspotusercontent10.net/hubfs/663810/Digitread%20Assets/ICCAS_BreakdownStructuresThroughLifecycleStages.pdf.

Once the general parameters of the project have been determined and laid out in a Statement of Requirements document, the government issues a Request for Proposals laying out the conditions of the build and parameters for financing, and asking bidders to submit a proposal. Interested parties will submit their design. The designs are then evaluated through a points-based scoring process which looks at the technical, financial and industrial benefits aspects of each proposal. After the bids have been assessed, the government selects a design, often referred to as the Total Ship Reference Point (TSRP). In the case of the CSC project, three companies submitted bids. The BAE proposal of the Type 26 frigate design was selected and the contract was awarded in 2019.⁶

Definition Stage

The CSC is currently in this stage and has been since the end of May 2019. Why is it taking so long to get to the implementation stage? You would think that having selected a design – the Type 26 frigate – it would now simply be a matter of building the ship. But that is not the case. Countries invariably make changes to designs to reflect their specific operational requirements and national regulations – perhaps on pollution control, or accommodation spaces for crew, or weapon systems. For the RCN this is referred to as the ‘canadianization’ of ships. In order to canadianize the CSC, the design will be examined and adjusted. It is important to note that the original design is often referred to as the ‘parent design’ which provides the DNA for the new ship.⁷ The offspring of the parent design will have significant similarities to the parent but also differences – and these differences are determined during this stage.

So what happens in the definition stage? With the parent design in hand, RCN project managers and engineers at Irving Shipbuilding are now considering a multitude of things. The definition contract work consists of supplier engagement, ship design and production engineering activities in preparation for vessel construction.

A second ship design will be completed to produce a more detailed level of design. Then, there will be a third phase of ship design which includes highly detailed design and simulations of the actual build of the ship. During this stage, an effort will be made to finalize supply chains and procure long-lead items, which must be purchased prior to the start of construction to ensure all materials are available when required. As well, this stage will include all the work required to establish and verify production processes and produce a test module prior to beginning vessel construction.

The size of the ship is a key question. This will affect and be affected by what you want the ship to do and how. Greater size may mean greater capability but also greater requirements for power generation. What weapons will be put on the warship? This requires consideration of weight, placement and power requirements, as well as interoperability with allies. As well,

⁶ Note that the CSC procurement was originally set up so the outcome would be two separate contracts, one for the design and the second for the combat systems integration package. There was a total of 12 qualified bidders in the two streams. The government later narrowed this down by telling the qualified bidders to form teams amongst themselves. Some companies dropped out and of the remainder, three teams (not companies) submitted bids. At the end of the day, it was the team of Lockheed Martin as the prime and combat system integrator paired with BAE Systems as the owner of the Type 26 Global Combat Ship design which was selected.

⁷ See Justin Katz, “For Navy’s New Frigate, Design Changes Carry Risks and Rewards,” *Breaking Defense*, 24 January 2022, <https://breakingdefense.com/2022/01/fremm-or-frigate-after-promises-to-congress-how-far-should-the-navys-design-stray/>.

communication, weapon control systems, fire suppression and other computer systems have to be determined and built into the design. The CSC project is in the midst of determining the answers to these questions, and many others. The definition phase will also finetune cost estimates, cash flow projections and production engineering documentation in preparation for construction.

Implementation Stage

Now the actual build can commence. Having made the major decisions about the ship – although many minor decisions will be made as the build occurs – the shipyard can begin to cut steel. As the project enters this stage, shipyards will have already established supply chains for building material, ordered long-lead time materials, weapon systems, electronics, etc. For the CSC, the build will be broken into sections with a delivery schedule for the first three ships and necessary shore infrastructure, followed by additional batches of ships, each having separate contracts.

Close-out Stage

This, as the name implies, is when the project is completed. The last ship has been built, completed builder's trials, completed RCN acceptance trials, and has been handed over to the navy. The process can now be wrapped up, and a final tally of bills can be made. Given the multiple components of shipbuilding projects, this stage may occur many years after the initial requirement is flagged by the navy.

Conclusions

We have tried to simplify what is a tremendously complicated process. At all stages, multiple government departments are consulted about budgets, risk assessments and regional and industrial benefits, and there are parallel discussions with industry, and among industry providers. Throughout the five stages of the CSC project, contracts between the federal government and Irving are negotiated and signed to ensure the flow of funds to support all the work. (And there will also be contracts Irving negotiates with suppliers and Lockheed Martin.)

From this it should become clear that defence procurement is a slow process. And within this, warship procurement projects are the slowest projects. This is in part because of the size and complexity of the ships but also because construction of naval ships occurs so rarely in Canada that project management personnel, shipyards, suppliers, etc., all take a while to get up to speed. One of the goals behind the National Shipbuilding Strategy was to end the boom-and-bust cycle of shipbuilding in Canada by implementing a long-term plan to build ships. The hope is that this will mean that each project takes less time and costs less as there would be no long learning curve as shipyards hire personnel and rebuild facilities, and government retraining procurement personnel. The hope is also that Canadian manufacturers of naval equipment will continue to produce and employ people over the long term as new shipbuilding projects commence.