

National Shipbuilding: Where We Are and Where We're Headed

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On 21 July 2011 three shipyards submitted detailed proposals to the federal government in response to the National Shipbuilding Procurement Strategy (NSPS) Request for Proposal (RFP). Three months later the government announced that Halifax Shipyard and Vancouver Shipyards had been selected respectively to build Canada's next generations of combat ships for the navy and non-combat ships for the navy and coast guard. Now, one year later, while actual shipbuilding contracts have not yet been awarded, the NSPS shipbuilding programs are moving ahead and the future looks promising for these two shipyards – and for the marine industry.

The main reason there was an NSPS stems in part from recent failures in ship procurement programs, namely the navy's Joint Support Ship (JSS) and the coast guard's Mid-Shore Patrol Vessel (MSPV) projects, both of which were terminated because customer expectations could not be met within the available budget.¹ The problem from the perspective of the shipyards is that the time between shipbuilding projects has been long – 20-25 years or more – and that most of the risk gets passed to the shipyard. Thus there's a significant learning curve which, when coupled with onerous terms and conditions, increases the overall cost to the government.

This experience, combined with independent studies, government analysis and the practice of allied countries, pointed to the need to move to a long-term, strategic relationship with a limited number of shipyards. So, in the fall of 2008, the federal departments involved in shipbuilding and procurement established a National Shipbuilding Procurement Strategy Office. The office was led by the Department of National Defence (DND) and included professionals from Public Works and Government Services Canada (PWGSC), Fisheries and Oceans, and Industry Canada.

The NSPS office concluded that approximately 70 million person-hours of federal fleet new-build labour were affordable within the constraints of existing DND and Canadian Coast Guard (CCG) project budgets. It also determined that shipbuilding and procurement practices needed to be improved if the navy and coast guard were to be successful in procuring ships to fulfill their operational commitments. In January 2010, the office transferred to PWGSC and the NSPS Secretariat was created.



Credit: Seaspan for NSPS

A shipbuilder at work at Vancouver Shipyards.

The NSPS was formally announced on 3 June 2010 and has since followed a set schedule beginning with an Industry Day on 27 August 2010 that engaged members of the shipbuilding industry and encouraged their comments. On 20 September 2010 a Solicitation of Interest and Qualification (SOIQ) was issued with responses received on 8 October 2010. From this, five shipyards were shortlisted to receive the NSPS RFP.

The approach taken by the secretariat – and endorsed by DND/Canadian Navy and Fisheries and Oceans/CCG – was to create a process whereby two shipyards would be identified and offered the opportunity to build combat and non-combat ships over 1,000 tonnes. The competitive process involved extensive dialogue between government and shipyards, and its objective was to be as fair and open as possible.

The secretariat also engaged an independent third party – First Marine International (FMI) – to assess the current (pre-RFP) capabilities of the five shipyards.² These assessments, along with FMI's 'target state' assessments (the state at which shipyards needed to be in order to build



Credit: Ships Start Here

An aerial photograph of Irving Shipbuilding's Halifax Shipyard site.

the combat and non-combat ships), were individually provided to each shipyard. Thus, going into the RFP, each shipyard knew where it stood and where it needed to improve. The competitive questions were how they would propose to do it and how much it would cost – to Canada and the shipyard.

The RFP was issued on 7 February 2011 to the five pre-qualified shipyards and required the bidders to respond in terms of:

- the shipyard's plans to get from the FMI-assessed current state to the target state;
- the cost to get to the target state and how much would be borne by the shipyard and how much by Canada;
- the financial capability of the shipyard to undertake the work package; and
- a 'Value Proposition' whereby the shipyard would commit to growth and sustainment of the greater marine industry.

When the RFP closed on 21 July 2011, three of the five qualified shipyards submitted proposals – two for the combat ship package and three for the non-combat package. Evaluation of the proposals resulted in Halifax Shipyard (Irving Shipbuilding Inc.) and Vancouver Shipyards (Seaspan Marine Corporation) being selected respectively for the combat ship package (Arctic Offshore Patrol Ships and Canadian Surface Combatants) and the non-combat ship package (Offshore Oceanographic and Fisheries Science Vessels, Joint Support Ships, and Polar Icebreaker). From all indicators the process and evaluation achieved the NSPS objectives of openness, competitiveness and transparency – and it was unique and innovative.

Although media reports led Canadians to believe differently, selection of the Irving and Seaspan shipyards did not result in actual contracts to build ships. Instead, the government invited the shipyards to enter into Umbrella Agreements which, in essence, would lead to their being asked to submit, in due time, detailed cost, schedule and technical information for the respective shipbuilding projects.³

Where We Are Today

NSPS was designed to create a long-term relationship between government and the shipyards with the Umbrella Agreements providing for direct discussion on schedule, cost, risk and performance issues, and a commitment by the shipyards to allow their accounting books to be scrutinized during the process. As well, the government has the opportunity to examine the shipyards periodically – within three years for the non-combat package and six years for the combat package – to confirm they are attaining their commitments.

As a preliminary risk reduction step for each project, shipyards will be asked to undertake design studies and/or to quantify and qualify schedule, cost and supply chain risk. Under a 'design-then-build' process, the shipyard will respond to requirements, statements of work, and terms and conditions in two or three separate stages in what amounts to project definition, detailed design and production design phases.

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An artist's depiction of the Arctic Offshore Patrol Ship.

Credit: BMT Fleet Technology

rework and error contingencies. It is also expected to be a significant factor in reducing cost and schedule risk to the government.

This design-then-build approach has already commenced with both shipyards and negotiations are currently underway for the lead project in each package. The lead projects are the Arctic Offshore Patrol Ships in the combat package, and the Science Vessels (the Offshore Fisheries Science Vessel (OFSV) followed by the Offshore Oceanographic Science Vessel (OOSV)) in the non-combat package. Preliminary JSS project discussions are also underway.

One benefit of NSPS is that Canada can work iteratively with the selected shipyard to determine the optimum solution that marries project requirements with shipyard capabilities. Industry Canada is also engaged with the shipyards to determine how the shipyards will satisfy their Industrial and Regional Benefit and Value Proposition commitments.

Another benefit of NSPS is that the shipyards will work with ship designers to ensure the final designs are efficient and affordable. In this regard, some design work has already been initiated separately by both the navy and the coast guard. In general, the shipyard will be responsible for detailed design and final production design. Other particulars are as follows.

- *Arctic Offshore Patrol Ships*: the definition design has been completed by BMT Fleet Technology and the ship specification and drawing package has been shared with the shipyard.
- *Offshore Fisheries Science Vessel*: the final design and construction specifications have been completed by RALion, the Robert Allan and Alion Science and Technology (Canada and US) joint venture.
- *Offshore Oceanographic Science Vessel*: the final design and construction specifications have been completed by STX Canada Marine.
- *Joint Support Ship*: domestic and military off-the-shelf (MOTS) designs, to be evaluated based upon affordability, capability, risk and best overall package, are under consideration and will be provided to the shipyard in early-2013:
 - the domestic design is being developed by BMT Fleet Technology.
 - the MOTS design, based on Germany's *Berlin*-class, is being provided by ThyssenKrupp Marine Systems Canada Inc.
- *Polar Icebreaker*: the design is being undertaken by STX Canada Marine (to be complete by November 2013).



An artist's depiction of the Offshore Fisheries Science Vessel.

- *Canadian Surface Combatant*: the project is in the options analysis phase; design work has not yet commenced, and extensive industry consultations will be held to determine the most appropriate process.

What about Industry?

There's no question that Irving's Halifax Shipyard and Seaspan's Vancouver Shipyards were aggressive and competitive in responding to the NSPS RFP and were extremely pleased when selected to build the ships for Canada. It was the start of an excellent opportunity to end the boom-and-bust shipbuilding cycle that has traumatized Canada's shipyards for many years.

Both shipyards have indicated their satisfaction with the NSPS process, and thought that it was fair and transparent. As well, both are aware of the opportunities and challenges that they will face in the future – not just in building the ships but also in terms of providing employment and industrial and regional benefits in their provinces and throughout Canada. According to the Conference Board of Canada, the projected economic impact of the work at Irving in Nova Scotia is estimated to be “an annual average of 8,400 direct, indirect and induced jobs for Nova Scotia and 12,400 if you look at all of Canada. A peak of 11,500 new jobs is anticipated for Nova Scotia, 16,000 across Canada, in 2020.”²⁴ Irving Shipbuilding estimates that its workforce, which is currently about 1,300 employees, “may grow by a further 1,400 to meet peak production periods over the 30-year program.”²⁵ The Conference Board of Canada also noted that the work at Irving is “projected to create average annual real GDP for Nova Scotia of \$661 million and generate an average of \$66 million in federal income tax and \$51 million in provincial income tax revenues. Personal income in Nova Scotia has been projected to rise by \$447 million on average each year.”²⁶

In British Columbia the impact of the shipbuilding contract at Seaspan will be huge. According to Jonathan Whitworth, Chief Executive Officer Seaspan Marine Corporation, the contract will “create some 4,000 direct, indirect, and induced jobs with between 1,200 and 1,500 being direct jobs (new employees) at Seaspan.” These will be a combination of skilled, professional and administrative workers, and all will contribute to the economy of British Columbia. According to Whitworth, “every 2-3 years of the NSPS ship construction will have the same economic impact to BC as all of the construction projects associated with the 2010 winter Olympics in Vancouver!”

Lessons Learned and Conclusions

To date, the NSPS has provided some valuable lessons. First, we have learned how valuable engagement is. This may seem obvious, but it is important to listen to those with a stake in the process. Historically this meant only clients. In the future it will mean clients and suppliers in equal measure. Suppliers often have valuable ideas about how to supply the government with what it needs.

Second, governance of the project is important. It is useful to adopt a governance or decision-making process that allows for business choices to be made by clients and



Credit: STX Marine Canada

An artist's depiction of the Offshore Oceanographic Science Vessel.

The NSPS indirectly makes provision for other shipyards to benefit as construction of ships smaller than 1,000 tonnes, to be competed on a project-by-project basis, has been set aside for shipyards other than Halifax Shipyard and Vancouver Shipyards. As well, all shipyards will have the opportunity to compete for the repair, refit and maintenance of vessels and will be open to sub-contracts from Halifax Shipyard and Vancouver Shipyards. Small and medium enterprises will have the opportunity to provide goods and services to all shipyards and other suppliers involved in building and servicing the ships.

procurement staff with direct input from suppliers. And the process will run more smoothly if you make sure there is a robust dispute-resolution process to address concerns and manage risks.

Third, it is tremendously helpful to utilize third-party experts. Participants in the process should seek advice and input from those who are knowledgeable or expert but who do not have a stake in the process.

Application of the NSPS lessons – engagement, governance and involvement of third parties – has been important



An artist's depiction of the Polar Icebreaker.

on several fronts. By holding consultations with suppliers and working to develop a long-term relationship with shipbuilders, the government was able to create an environment of trust and dialogue. PWGSC made it clear that it wanted to know what industry had to say before beginning the procurement process and shipyards were consulted on all aspects of the process.

Third-party consultants – such as First Marine International – helped maintain a fair and transparent process. Other independent parties helped assess the capabilities of competing shipyards, validated the process, and provided expertise on financial aspects of the evaluation. Each helped ensure the integrity of the process.

The NSPS program will create and sustain thousands of jobs in shipbuilding and supporting industries across Canada, and generate significant economic spin-offs, perhaps 5-10 times the original investment. Skilled workers will be required in many trades and this will benefit the marine technology training centres across Canada and also universities with marine programs. Some of the beneficiaries will be the large corporations but Canadian small/medium enterprises will also benefit – directly in some cases and indirectly and/or induced through ‘flow-down’ or ‘spin-off’ in others.

In the space of about three and a half years, Canada, with its NSPS, has progressed to a point which countries (including Canada on previous programs) have typically spent anywhere between seven and 10 years to accomplish. Even though contracts for construction of any of the ships have yet to be signed, some benefits to the approach followed by the NSPS Secretariat include:

- fostering establishment of productive, sustainable shipyards that will motivate technology, production and innovation;
- providing opportunities for systems commonality across platforms;

- continuous build activities, as part of a long-term, strategic relationship, enabling long-term, tailored investments in facilities, tools and processes, management and labour competencies;
- encouraging development of a national marine manufacturing/supply chain capacity and increasing skilled trades training and development; and
- learning curve benefits within fleet builds and from fleet to fleet will create cost efficiencies and will maximize return on initial capital investment.

As ships that will be procured under the NSPS will last through much of this century, our approach to acquiring those ships needed to be modernized. NSPS has been, is and will continue to be a major step in that modernization. 🍷

Notes

1. The MSPV project twice went to tender with unsuccessful results. Re-tendered a third time, a contract was awarded to Irving's Halifax Shipyard. The ships are now under construction.
2. The Secretariat also engaged KPMG, PricewaterhouseCoopers (PwC), and a Fairness Monitor to support the process.
3. The two work packages are spread over quite different time periods – about 8-10 years for the non-combat ship package compared to 30 years for the combat ship package.
4. Conference Board of Canada statistics (May 2011) are cited in “Measuring the Potential Impact of the National Shipbuilding Procurement Strategy on Nova Scotia,” prepared by Jupia Consultants Inc. for The Greater Halifax Partnership.
5. Mike Roberts, Vice-President Corporate Development at Irving Shipbuilding, 25 May 2012, written response to the author's NSPS questionnaire.
6. Conference Board of Canada, cited in “Measuring the Potential Impact of the National Shipbuilding Procurement Strategy on Nova Scotia.”
7. Jonathan Whitworth, Chief Executive Officer Seaspan Marine Corporation, interview by the author addressing the author's NSPS Questionnaire, 8 May 2012.

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