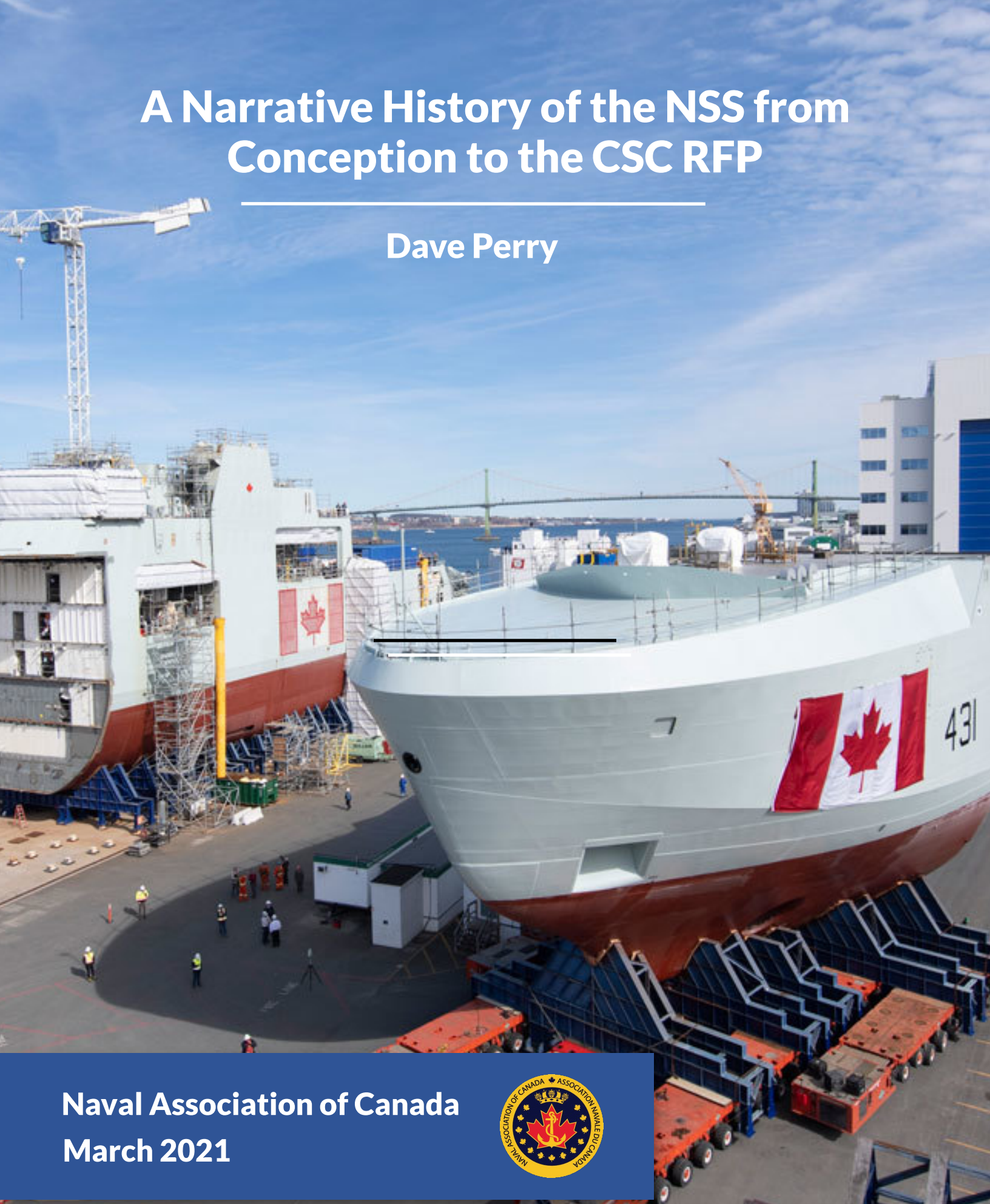
A Narrative History of the NSS from Conception to the CSC RFP

Dave Perry



Naval Association of Canada
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Foreword: Background to this Paper

In July 2018 the Naval Association of Canada (NAC) commissioned Dr. David Perry, Vice President at the Canadian Global Affairs Institute to research and write a paper on the history and background of the National Shipbuilding Strategy (NSS) (formerly known as the National Shipbuilding Procurement Strategy). The NAC's objective in this undertaking was to create a foundation paper which can serve as a reference for those individuals seeking to understand the background and development of the NSS as a government of Canada policy. The broad ask was to write a paper that would shed light on the strategic and political issues that influenced the development of the NSS in its early stages and, where possible, to expose the dynamics among the key players that may have influenced outcomes. NAC also wanted to 'set the record straight' on some of the misconceptions that persist related to the creation and overall intent of the NSS. Dr. Perry was asked to take on this project because of his pre-existing knowledge of the NSS and his ability to achieve a quality result.

Dr. Perry's assigned mandate was to conduct a comprehensive study and analysis of the NSS, including the study of policies and events that led to its creation. He was tasked to interview an extensive list of stakeholders and individuals across government and industry and to examine specific areas related to the NSS, the shipyards involved, and the projects spawned under the NSS. His work was not an easy task. Throughout there were significant changes which affected his ability to complete the required research and write his findings. The NAC believes that Dr. Perry has fully achieved the original objective. He has provided a detailed, unbiased narrative of Canada's efforts to shift the indigenous shipbuilding industry from the existing boom-and-bust cycle through a generational change to a situation of continuous output, employment and productivity.

This paper should be read from the perspective that it is a historical narrative as well as a critique, not on the success or failure of the NSS, but on the machinery of government and its ability to implement a major institutional change to Canada's shipbuilding industry.

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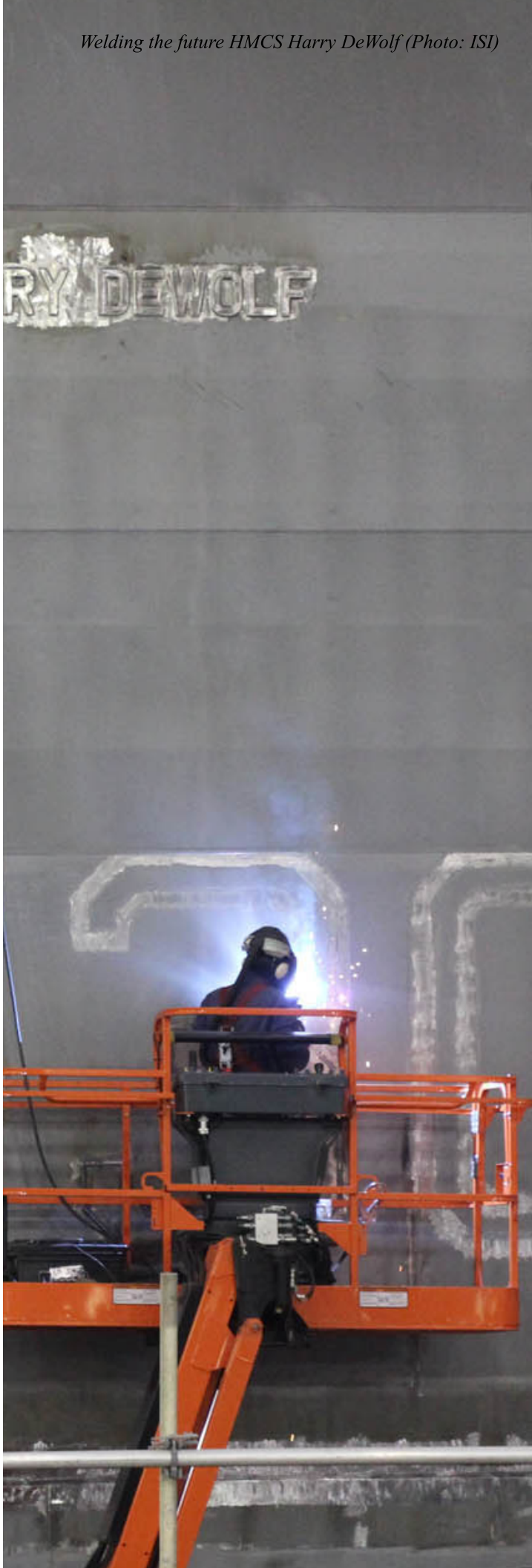

Welding the future HMCS Harry DeWolf (Photo: ISI)

HMCS Harry DeWolf near Frobisher Bay (Photo: Corporal David Veldman,

Executive Summary

This project is based on interviews with more than 60 stakeholders in industry, the public service of Canada, the Royal Canadian Navy (RCN), Canadian Coast Guard (CCG) and political staff who were directly involved in the creation or execution of the National Shipbuilding Procurement Strategy (NSPS), subsequently renamed the National Shipbuilding Strategy (NSS). The intent of the study was to draw on first-hand accounts to offer a narrative of Canada's effort to build and repair ships and rebuild Canada's marine industry. While no such effort can ever be truly comprehensive, the stakeholders interviewed represented most of the involved federal departments and key ministerial offices, and their involvement spanned from the initial genesis of the strategy within the Department of National Defence (DND) in the 2008 timeframe through to the selection of the preferred bidder for the Canadian Surface Combatant (CSC) project. To allow them to speak freely, all interviewees were granted anonymity.

The paper begins by situating the NSS in the context of the time in which it was formulated. It was a time when the Canadian Army was involved in Afghanistan, the Air Force had just received a series of aircraft, and the government of Stephen Harper was placing more emphasis on the Arctic. Furthermore, several major procurement projects had stalled – in particular, the Next Generation Fighter project and the supply ship replacement. This made it clear that something new was needed. The idea became to create something akin to the industrial strategy components of the Canada First Defence Strategy (CFDS), which was meant to link defence policy to a wider package of Canadian economic benefits. Ship projects would need to deliver an economic return to Canada, beyond the ships and their combat capability. From this came the National Shipbuilding Procurement Strategy. The paper outlines the process from the idea through selecting the shipyards, rebuilding the shipyards, and rebuilding the personnel to undertake massive procurement projects. It discusses the problems of communications and expectation management leading to high expectations that were never going to be met. It outlines the challenges of governance of the project, and the sometimes difficult relations among government departments, and between the government and the shipyards as the process unfolded. It discusses the questions of cost and efficiency and sequencing. And, finally, the paper examines the challenges associated with the largest element of the NSS – the Canadian Surface Combatant – including the questions of cost, design, organizational process and capabilities.

Overview

This project is based on interviews with more than 60 stakeholders in industry, the public service of Canada, the Royal Canadian Navy (RCN), Canadian Coast Guard (CCG) and political staff who were directly involved in the creation or execution of the National Shipbuilding Procurement Strategy (NSPS), subsequently renamed the National Shipbuilding Strategy (NSS). The intent of the study was to offer a narrative-based account of Canada's effort to build and repair ships for Canada and rebuild Canada's marine industry, drawing on first-hand accounts. While no such effort can ever be truly comprehensive, the stakeholders interviewed represented most of the involved federal departments and key ministerial offices and their involvement spanned from the initial genesis of the strategy within DND in the 2008 timeframe through to the selection of the preferred bidder for the Canadian Surface Combatant (CSC) project. To allow them to speak freely, all interviewees were granted anonymity.

A key observation of this research is that there is no consensus regarding what is, and is not, covered by the NSS. There are basically two schools of thought, one narrow and the other broad. The broader view holds that the strategy contained all three of the elements outlined in the strategy's release: large ship construction; construction of ships under 1,000 tonnes and maintenance and refit; as well as an industrial strategy aimed at developing the Canadian marine sector. The switch in nomenclature under the Trudeau government in 2016 to rename the strategy to the National Shipbuilding Strategy was undertaken with a view to emphasizing this broader view. The narrow view holds that the strategy is really only about the large ship construction under the combat and non-combat packages of work for the Canadian Coast Guard (CCG) and the Royal Canadian Navy (RCN). Within this narrow view there is a further split in understanding between those who understood the strategy to only relate to the work contained in the Umbrella Agreements negotiated for each of the two packages, and a more expansive understanding that the large ship construction portion of the NSS was really a long-term sourcing arrangement for *all* combat and non-combat shipbuilding work. The narrow view of NSS dominates, and is reflected in this project, but disagreement persists as to whether the strategy was a long-term sourcing strategy for all combat and non-combat ships, or not.

This study focuses on the projects contained within the narrow view of NSS and further on the key decision points in the strategy's evolution through to just before the selection of the winner of the CSC competition.

Of note, for the bulk of this study, the RCMP was conducting an investigation into Vice-Admiral Mark Norman related to the Interim AOR project (charges were filed, but subsequently stayed). Due to the sensitivity of that issue and the investigation, while the subject is important to the evolution of the NSS, it did not form part of the study.

Pre-NSS Context

Many stakeholders stressed that it is impossible to understand the creation of the NSS and its launch in 2010, and the early years of its implementation, without situating it within the wider defence context preceding it. Prime Ministers Paul Martin and Stephen Harper had both increased Canada's defence budget significantly, provided funding for a major recapitalization of the Canadian Armed Forces, including the RCN's refuelers and surface combatants. In their campaign for the 2006 election, the Conservative Party of Canada had also pledged to build armed naval icebreakers, an initiative designed to increase the Canadian military's ability to implement a 'Canada First' approach to national defence, which had taken most observers, and the RCN, by surprise. By 2008, Canada was at the height of the war effort in Afghanistan, which had seen a significant volume of war-related procurements executed in short order, much of which was delivered directly to theatre. Beyond the directly war-related equipment, a series of major air procurement for Chinook heavy lift helicopters, C17 strategic lift aircraft and C130Js medium and tactical lift aircraft had been launched by the Harper government. While the purchase of war-related equipment had been largely praised, some significant problems had arisen with some major procurements, notably for Fixed Wing Search and Rescue Aircraft and Maritime Helicopters. The difficulties experienced with the latter program in particular, and the misalignment between its management structure, predicated on an off-the-shelf procurement, and the project's developmental nature (as highlighted by the 2010 Office of the Auditor General (OAG) Report) increased the level of scrutiny on defence projects at the senior levels of government. This dynamic increased significantly following the scrutiny experienced by the Next Generation Fighter project following reports by

the Parliamentary Budget Officer and OAG.

Prior to the 2011 election which gave the Conservative Party of Canada a majority in Parliament, the minority government context of the Martin and Harper years influenced the naval leadership in supporting what became the NSS. What they perceived as short-term, election-focused thinking in minority contexts resulted in difficulty moving forward on naval modernization projects in the mid-2000s. This dynamic left senior naval leaders convinced of the desirability of a mechanism for ensuring a greater degree of continuity with respect to naval recapitalization that could have other stakeholders in the government of Canada sufficiently engaged to help 'pull' new projects forward, rather than relying on 'pushes' from the RCN and Department of National Defence (DND). Absent such an approach, naval leadership felt that, for good reasons, given operations in Afghanistan and the other major projects moving forward, they would have difficulty getting traction for naval recapitalization. They became convinced of the value of an 'election proof' shipbuilding plan by early 2008. Within the RCN, views of the strategy tended to favour a method of eliminating boom-and-bust shipbuilding dynamics. Regarding building the ships in Canada specifically, attitudes ranged from agnosticism about the location of the shipyards so long as capability requirements would be met, to a recognition that building ships in Canada would provide significantly greater political support than building the vessels overseas. For those with historical perspective, the Canadian Patrol Frigate program had demonstrated that the domestic economic and political benefit associated with building ships in Canada was critical to securing government approval for a large shipbuilding project.

Within DND's Materiel Group, there was support for building in Canada given the maintenance implications of building a ship outside of North America. Assuming that any Canadian warship would inevitably have some amount of controlled American equipment on it, it would require a degree of US government sign off for each maintenance period if it were sent abroad. It was therefore viewed that if maintenance in Canada was desirable, this almost required on-shore production to support that follow-on maintenance as a matter of practicality.

In the spring of 2008, the Harper government announced the Canada First Defence Strategy (CFDS). Most crucially for the RCN, it committed to procure 15 ships to replace Canada's destroyers and frigates, based on a common hull design but different systems for two variants. The policy reaffirmed the procurement of the Joint Support Ship (JSS), underway at the time CFDS was released, although by that point it had been reported that the project was over budget.

2008 JSS Failure

The failure of the first procurement for the JSS in 2008 was a seminal moment in the journey to create the NSS as it both confirmed and crystalized thinking already underway, and catalysed action. The process has seen two funded design teams producing ship designs that had to fit within a capped project budget that turned out to be vastly insufficient to execute the procurement in the way Canada desired. By the time the bids were submitted, this fact was well known in industry and by some government officials, but the solicitation process had prevented bidders from officially informing the

Hero-Class (Photo: pverdonk, Flickr)

Crown of the funding problem. The existing approach to the procurement had been risk averse in terms of communication, preventing effective dialogue. It had also passed most risks to bidders, who had priced that risk into their bid. The failure of the procurement, and the CCG's difficulty tendering for its *Hero*-class, revealed deep shortcomings in the government of Canada's understanding of the Canadian shipbuilding industry, the atrophied state of the industry itself and the Crown's capacity to undertake ship projects.

Some of the key takeaways from the JSS's failure were that early and continuous dialogue with industry was critical. A view expressed by some was that the sponsorship scandal that had been influential in the change from a Liberal to Conservative government and then underpinned some of the Harper government's initial agenda had exacerbated an underlying problem experienced by public servants trying to interact with industry when public contracts were involved. The JSS failure also highlighted that the government needed to shoulder more project risk, that a 'design to cost' approach was crucial to staying within budgets (which should only be set after an appropriate amount of homework had been done) and that imposing mandatory cost ceilings on projects was a major problem. The latter factor had created a dynamic where if procurement bids came in one dollar over budget, the projects could not proceed. Another lesson learned was that companies needed to have a path to profitability to be able to deliver for the Crown. There was concern in the summer of 2008 that Canada's existing shipyards were not well positioned even to keep performing repair and overhaul work for the government.

Unfortunately, Canada learned it had major issues setting shipbuilding project budgets at essentially the same time that CFDS assigned budgets to all three of the RCN's projects that would form part of the NSS, without much opportunity to have it informed by substantive analysis. In DND, the JSS project's failure had left some senior officials with the impression that they could expect no more project approvals until a new way forward had been found.

The key takeaway was that Canada needed a more strategic approach to buying ships, one that would emulate the practices of most Canadian allies in entering into strategic partnerships with domestic shipyards to become sources of supply for specified government work.

NSPS/NSS

The NSPS idea was credited to the Materiel Group's Chief of Staff in the summer of 2008. His idea was that the capital portion of CFDS, which was the largest share of the new investment, and hugely expensive, would need something to 'keep it sold' to the government. He envisioned something akin to the industrial strategy components of the CFDS, which was meant to link the defence policy to a wider package of Canadian economic benefits. The thinking was that the ship projects would need to deliver an economic return to Canada, beyond the ships and their combat capability alone, to keep the allocated money secure given how large the budgets were (even though those budgets were insufficient). The idea was predicated on the ability to come together with a fourfold package of the operational need, science and research and development, industrial capacity and the right procurement strategy to bring it all together. This was further premised on the fact that the RCN's share of the CFDS capital budget represented roughly half of the total, so the economic return would be powerful.

Other government departments were approached to participate in the early work going into the shipbuilding strategy, but only the CCG ended up doing so. Although its package of work was a part of the NSS non-combat package, neither the CCG itself, the senior leadership of the Department of Fisheries and Oceans (DFO) nor DFO ministerial staff are viewed to have been significant participants in launching the strategy, and the Minister of Fisheries and Oceans' staff were subsequently not heavily involved in much of the future discussion. Fundamentally, the CCG with its fleet built to commercial standards had a different experience with the Canadian marine industry with a more distributed footprint of engaging in commercial work with multiple shipyards across Canada. Only a few of its ships, primarily the larger icebreakers, were restricted to a few specific shipyards for work. Further, at the time NSS was being put forward, the CCG only had government approval and funding for five ships out of its identified fleet replacement needs of 31 vessels. At the senior ranks of public service, officials from DND, Industry Canada and Public Works and Government Services Canada engaged in the cross-departmental effort to get the NSS underway.

Stakeholder Views of the Strategy

For Canada's shipyards, the strategy was extremely timely as the shipbuilding industry was in significant trouble and the wider marine sector was also facing difficulty. Both of the shipyards that would subsequently be awarded the two packages of work were on the verge of closing down their operations. From their perspective, a commitment on the part of the government of Canada was required for them to put in the investment to spend money on capital improvements, as without assurances of a long 'runway' for them to recoup their investment, it was just not possible for them to justify needed improvements to their facilities. Similarly, the prospect of multiple decades of work, rather than years on a one-off project, was viewed as key to attracting international shipbuilding expertise in a competitive international environment.

And, both of the winning NSPS shipyards had past experience with the government of Canada that gave them reason to be sceptical about new Canadian shipbuilding plans. The Irving family that owned the Halifax, NS, based yard had previously owned Saint John Shipbuilding, in Saint John, NB, which had produced most of the *Halifax*-class frigates but had to close the shipyard and turn the facility into a wallboard plant after subsequent work failed to materialize when the frigate program was completed. The shipyard in North Vancouver that was part of the Washington Marine Group when NSS was launched had been announced as the builder of the Polar 8 icebreaker by the Brian Mulroney government in the late 1980s, only to see that project cancelled.

Pre-NSS Decision Shaping and Making

Buying in Canada

As part of their early efforts within DND, the Materiel Group and RCN staff analysis conducted in 2008 left them convinced that the key issue that would decide the relative price of building Canada's combatant ships, by far the most expensive part of the fleet, was when they were built, and not where. Namely, it was assessed that a prime determinant of their cost would be whether they were built on an efficiently producing production line, or not. If a Canadian ship could be built somewhere after the sixth ship of the same type to come off the same production line, the class as a whole would be built efficiently. If not, they would not. Beyond the question of when the ships would be built, the internal analysis showed that there were too many other variables to account for in comparing the costs of building in Canada or elsewhere, and that the estimated cost variance of building in Canada could range between -5% and +20%.

As the NSS concept was developed, Canada's Buy in Canada shipbuilding policy was assumed to remain extant. The policy specifying that Canadian ships be built in Canadian shipyards, formalized in 1965, and last refreshed in 2001, was judged by officials to remain in effect, given comments by government MPs in the House of Commons. An official confirmation that the policy would apply was sought and received from the government in any event to confirm that belief.

In the winter of 2009, the idea of selecting a small number of shipyards to pre-qualify as sources of supply was discussed with Canadian shipyards. Other commercial arrangements including directed procurements to specific yards, a shipyard alliance model, and the government buying a Canadian shipyard and operating it as a government-owned contractor-operated facility had been discussed at various lengths, but ultimately rejected. There was discussion about the right number of yards to select, as the initial DND analysis had indicated there would be sufficient work for only one yard in terms of person hours of labour required. A Materiel Group position paper had forecasted that the strategy would provide 2.5 million person years of labour per year worth of work, equating to 1,200-1,500 shipyard workers a year, for 30 years, along with dips in the employment of certain trades as production activity shifted over time. As a result of several considerations, including how a single yard would be kept accountable, and concern about it not having any competitive pressure, along with the political difficulty of only awarding the work to one regionally based shipyard, two yards was the decision approved by government. There was also an explicit decision to split off the other two components of NSS, for small ship construction, that the winning big build yards would be ineligible to win, and a separate stream of work for maintenance and refit that would be awarded through normal procurement practices, without restrictions. This was done with a view to alleviating political sensitivity about the impact of concentrating shipyard work into two regions, and the negative reaction from the losing yards and regions, which had caused some consternation.

In 2009 the Canadian Association of Defence and Security Industries issued a Marine Industry Report supporting the underpinnings of the strategy, and also emphasizing the interrelationship between Canada's shipyards and the wider marine industry. That summer, through industry engagement forums, the concept of two packages of work, for combat and non-combat vessels, was discussed. Notably, the briefings on the potential non-combat package itemized all identified CCG fleet renewal demand, not just projects that had received policy approval and funding. As a result, the number of ships presented in the two packages was roughly equivalent in terms of the number of ships to be built (while differing considerably in terms of their value because of the much higher costs of CSC). Notably, the same briefings identified projected drops in the person years of work in some years for both of the work packages at different times. Based on this expectation, there was an understanding by at least some in government that, in addition to the NSS work for the government, the shipyards would also pursue commercial work to ensure their order books were kept full.

There was also an understanding at the outset that the NSS that government departments would be receptive to 'load-levelling' their fleet replacement requirements. In essence this assumed that departments would be receptive to receiving ships when they could be produced through the strategy, rather than when they were ideally needed. Project schedules were therefore not driven solely by capability requirements, but by pacing the work out over time to smooth workflow and provide continuity of production to maintain the respective shipyards' production capacity over time.

NSPS Bid

The procurement strategy for NSPS involved a solicitation of interest and qualifications, which qualified five shipyards based on their capability and demonstrated capacity to build. Then the shortlisted yards were assessed via First Marine International, an international marine consultancy, prior to the release of the Request for Proposal. This assessment of the yards was a key component of the bid evaluation. So too was the corresponding identification of a target state for productivity that the yards needed to meet if they won the competition.

A feature of the procurement, unique at the time, was both the significant degree of industry engagement as well as transparency surrounding the procurement. There were multiple engagements with industry which occurred earlier in this process than Canada had traditionally done on other major procurements, and the input from industry helped shape significant portions of the RFP, such as the weightings of the different aspects of the evaluation. The process used for doing so in the creation of the NSPS competition was universally considered to be fair. However, perspectives are mixed on how successful it was, with some suggesting, for instance, that it deserved an A+ as an initiative, but only a C- on the delivery in the words of one interviewee.

In terms of transparency, this stemmed from the lack of political involvement in the procurement, discussed at greater length below. This meant that political sign off was not needed for public communications, and the team working on the procurement defaulted to making a large volume of information public. This state of affairs changed notably after the selection of the winning shipyards, as the volume of disclosed information decreased significantly.

The evaluation criteria for the NSS Request for Proposals scoring were as follows: current state of yard - 36%; plans for shipyard improvement to meet target state - 24%; cost to Canada of shipyard upgrades - 20%; financial capacity of the shipyard - 6%; sources of funding for improvements - 4%; Value Proposition proposal - 10%. The most significant component of the evaluation was the aforementioned FMI assessment of the shipyards, and by agreement with the yards, each yard's assessment was shared with the other shortlisted competitors. Interestingly, although the process expressly asked shipyards to itemize the costs for improvements that would be passed along to Canada (and devoted a fifth of the evaluated points to comparing their plans for doing so), multiple interviewees mistakenly believed that bidders had been *required* to bid no costs to the Canadian government. Some interviewees from industry pointed out that given that a fifth of the evaluated points were tied to this issue, each yard would effectively have had to bid no cost to the government of Canada if they wanted a realistic chance of winning. A final novel feature of the competition was the concept of a Value Proposition that required bidders to commit to invest 0.5% of all contract value back into the marine sector, in areas like human resources and technology development. This commitment applied over and above the existing economic offset arrangements of major projects within the NSS. The concept would subsequently be applied in adapted form to Canada's wider suite of economic

offset policies, and particularly to CSC.

After prequalifying for the competition, Seaway Marine advised Canada that it would not participate, and Kiewit Offshore Services withdrew from the NSS solicitation process on 7 April 2011. At one point, a request was made by one of the bidders, Davie, which was in financial difficulty throughout the solicitation, to have a requirement that bidders needed to be financially solvent at the time of bid submission removed from the RFP. The request was reviewed by successive layers of the governance structure, and the bidder was allowed to make a presentation to the Deputy Minister's governance committee, where the request was rejected. At the same time, there were multiple requests for bid extensions. Unique for procurements at the time, the extension decisions were made by Deputy Ministers, rather than taken at a lower level, as was previous standard practice.

At the end of the solicitation period, two bids were received for the combat package, from Vancouver Shipyards (VSY) and Irving Shipbuilding (ISI), while three were received for the non-combat package, from the same two that bid on the combat package plus Davie shipyard. According to the rules of the procurement, once ISI was selected as the winner of the combat package, its bid was removed from consideration for the non-combat package. The remaining two bids were then evaluated, and the one from Vancouver Shipyards scored higher, and won.

From the outset, it was recognized in industry that the non-combat package would be very different than the combat package, given the significantly lower dollar values involved (even with the budget of the CSC project estimated at less than half of what it is today) and a much more difficult package of work to build. Whereas the combat package had a run of six AOPS and then 15 CSC, the non-combat package of work included three OFSVs, one OOSV, two Joint Support Ships and one Polar icebreaker. The lack of other shipbuilding work, however, left even this much less appealing package of interest to industry. From the winning Vancouver Shipyards' point of view at the time, it believed it was winning, and making infrastructure investments to deliver the full CCG fleet renewal, not just the seven ships itemized in the initial Umbrella Agreement for the non-combat package.

February 2012 - Signing of Umbrella Agreements

Once the NSS competition was completed, the next major activity involved signing Umbrella Agreements with the winning shipyards, to outline some of the parameters defining the NSS project and the relationship between Canada and the shipyards. Doing this took longer than expected as the government had not expected companies to submit bids that included no cost to Canada. As the government had expected that the cost of shipyard upgrades would be passed along to Canada, no backstop provision, which was created to provide a mechanism for compensating the shipyards in the event that they modernized their shipyards and subsequently did not receive expected work, had been anticipated. Negotiating this took additional time, beyond some of the other aspects of the Umbrella Agreement, such as working out step-in rights for the Crown to take over control of the shipyards if it proved necessary. The NSS required significant shipyard upgrades that cost hundreds of millions of dollars for each yard, yet the Umbrella Agreement did not actually provide a contractual commitment for any actual work. It was deemed an unreasonable proposition to ask yards to engage in upgrades without some form of insurance against a change in the government plans, and therefore an agreement was worked out to compensate the firms for their investments in the event that Canada did not actually award them contracts for the work intended.

In broad terms, the Umbrella Agreements were intended to codify a strategic partnership between the yards and the Crown and included an annex with expected package of work. At the time, there was an expectation that the packages of work would be increased over time. Notably, the agreements also indicated that the Crown reserved the right to designate a prime contractor for the respective projects other than the shipyards, which created a dynamic whereby many stakeholders assumed that Canada's default position was that the shipyard would be the prime contractor.

Subsequent to the signing of the Umbrella Agreements, VSY asked the government about a resequencing of the planned package of work to have the OFSV, with its three ships built first, rather than the OOSV. The reverse had been the previous schedule, and the impacts from an efficiency point of view were deemed to be extremely problematic by the shipyard. Given the short time to build a single ship, the white-collar engineering and design team would have been diverted to working on OFSV quite quickly after launching on OOSV. At

Construction of future HMCS Max Bernays (Photo: ISI)

the same time, given the complexity of the OFSV, particularly in terms of the density of the systems in it, with its multitude of science labs and collection mechanisms, and the small size of the ship, in the views of some it was the second most difficult ship to build after the CSC. Another consideration at the time, was that the JSS project was still in the midst of determining whether it would pursue a military-off-the-shelf design, or a clean sheet design. The latter possibility was a serious concern for the management team at the time.

Expectation Mismanagement

One of the widely recognized problems with the NSS from its outset was mismanaging expectations. Interviewees who had been involved in the shipbuilding file in a political capacity, were unanimous in lamenting how much slower shipbuilding had actually progressed relative to the expectations set when the strategy was approved. Some had been led to believe early on by senior bureaucrats that some of the ships in the NSPS program would be completed ahead of the 2015 election. Others expected that ships would be under construction within a year of the strategy's announcement. Political stakeholders' perspectives ranged from a belief that officials had simply not understood the difficulty of what they were proposing, to some believing they were deliberately mislead.

Bureaucrats involved in the early days of the NSS contend that the early documentation produced was clear about costs and schedule risk, but the formal documents put forward to government were not as explicit as they should have been about the risks around costs, schedule and uncertainty. There is a strong view amongst some officials that had briefings to government exposed greater levels of possible risk the strategy would not have been approved initially.

A different version of the expectation mismanagement is that the NSS was more of a concept than an actual strategy, or a plan. The difficulty moving the effort forward was in part due to the amount of effort that it took to get the initial concept approved, and the relative speed with which it moved forward, which resulted in limited effort going into an implementation plan. There was also a sense amongst some officials too that the complexity of the execution was significantly underestimated.

For the major projects, while both the AOPS and JSS were relatively mature projects when the NSS was launched (at least compared to the others in the work package), work on those two projects effectively "stopped dead" in June 2009 the first time that DND went to government for approval of the NSS, and work on those projects did not fully resume until the Umbrella Agreement signing in February of 2012. CSC was not very far advanced at the time that NSS was launched, largely because of the discrepancy between the budget allocated in CFDS of $26.2 billion and the commitment to build 15 ships, when internal analysis had shown that Canadian budgeting practices meant that sum would build roughly 10 ships. Regarding the CCG, the government-wide expectation at the start of NSPS was that the CCG projects were further advanced than they were later assessed to be. There had been an expectation on the part of industry that by the time the upgrades at VSY were complete the CCG would have finalized the designs for OFSV to the point that industry believed that they were buildable. This assumption, from VSY's point of view, did not bear out. Rather than start before the design was finished, it was decided to complete it first, which delayed the start of construction.

Another aspect of the expectation management was the time it took for the shipyards to modernize, which was extensive. The winning yards sought input from international expertise as they worked to modernize their infrastructure to meet their FMI assessment target state and implement the proposals they submitted as part of their bid. Notably, for the East Coast package of work, there was an additional complication that the facility required to meet target state to build CSC required a level of capability that was not required to build the AOPS. Construction on the AOPS could have started earlier had ISI not decided to do the full set of modernizations needed for both projects prior to starting work on the first. Had it not, the yard would have needed to go through a period of shut down with associated workforce interruptions to finish the recapitalization effort between projects. At VSY, it too needed significant time to set up new infrastructure and processes. Modernization aside, the inability to set accurate expectations with respect to schedules became a shared activity between both the government and the shipyards over time. At VSY, in particular, multiple integrated project schedules were generated that proved inaccurate.

For the non-combat package, there was also a recognition by some that its composition would be problematic. The choppy program of work, with runs of three, one, two and one ship of four different, newly designed ships, with two different government clients with differing levels of experience running capital programs, was always going to be difficult to get up and running. There was an expectation on the part of industry that the follow-on work that had been part of the initial discussions for NSS, of additional CCG ships beyond those in the original work package, would help smooth out any productivity challenges in the long term, even though these were not part of the initial package of work.

Yet there was a sense that the CCG was fairly prescriptive with its requirements and was not nearly as mature an organization when it came to determining and articulating requirements and translating those into a design as it would have needed to have been to have delivered successfully on the original schedules. There is also a retrospective recognition that in the early years of NSS, the management team from VSY was not as directly engaged with decision-makers in Ottawa as might have been helpful, as they focused on renovating their shipyard and sourcing the workforce. At the same time, it took several years for the government to have enough people co-located with the shipyard in North Vancouver, essentially up until the point that construction started on OFSV. And the composition of the non-combat package with its four different classes and two clients placed a high level of simultaneous demand on the VSY white-collar workforce for engineering and design, at the same time that the yard was building up that capability.

By 2013, political staff had focused on stopping the schedule slippage on the first projects and getting construction underway by 2015, given the federal election that year. Officials noted significant differences in managing the schedules and budgets on the two first of class projects, AOPS on the East Coast and the OFSV on the West Coast, where in addition to the regular issues associated with a first-of-class vessel, they also had to contend with schedules based on assumptions about the shipyards' productivity, rather than actual data, as those facilities were still getting up and running.

Finally, it should be noted that another factor contributing to expectation mismanagement was the pressing nature of the capability requirements that drove the original, overly ambitious schedules. At the time of its launch, a strategy for fleet replacement was already late to need given the advanced age of the CCG and RCN fleets. But, despite the requirement for fast recapitalization, the initial schedule and expectations

did not seem tempered by much realism. It is difficult to understand, for example why it could have been thought possible for one of the newly constructed and staffed NSS shipyards to build a ship designed by a foreign shipyard faster than it had been built originally. And yet a schedule was produced to do just that for the JSS.

Human Capital and Capacity

A missing factor in the strategy from the outset was a corresponding human resources (HR) strategy for both industry and the government of Canada. The last major shipbuilding projects had been completed a generation prior to the start of NSS and little residual knowledge remained in government and not much more existed in industry. On the government side, there were some efforts to do personnel exchanges and send officials for formal training, but these were relatively isolated and not widespread efforts. At VSY, at the outset of NSS its workforce was quite small, both in white-collar and blue-collar occupations. Given the cost of living in the Vancouver area, it was recognized that addressing the issue would be difficult, particularly given the robust state of the oil and gas industry at the time of the NSS's launch. The shipyard also experienced a rash of retirements amongst its tradespeople who, once NSS was awarded, gained confidence that their pensions would be solvent in retirement, leading to the withdrawal of many senior personnel from the workforce in the first five years. On the blue-collar side, as time progressed, the ramp up in VSY's project activity happened to coincide almost exactly with the downturn in the oil and gas industry, which mitigated some of these workforce problems. On the white-collar side, VSY started with virtually no capacity. As the Victoria Shipyard, the portion of the then Washington Marine Group that had federal contract experience, was still in midst of the Halifax Class Modernization/Frigate Life Extension (HCM/FELEX) project, the company did not want to steal from its own workforce by reallocating, and few workers were interested in moving to North Vancouver. It therefore had to source virtually its entire complement of white-collar workforce on the international market.

At ISI, the concerns expressed around this issue were significantly less pronounced. However, the shipyard did experience a much earlier process of importing a new, experienced senior management team from abroad. In 2013 the company hired Vice-Admiral (Ret'd) Kevin McCoy, former commander of US Navy's Naval Sea Systems Command as president. McCoy's hire is viewed by many key government stakeholders as having been a critical positive benefit to the entire NSS, and combat package especially.

Human capacity issues have also been acute for the government of Canada, both in terms of the quantity of available staff and their lack of experience in new shipbuilding projects. In the early years after the strategy's announcement, there were a number of other force development and capital program priorities with which the RCN and DND were dealing. The HCM/FELEX project was critical to the immediate and medium-term future of the RCN and was accorded staffing priority at the same time that the shipbuilding strategy was moving forward. Around the same time, the Victoria Class In-Service Support contract (VISC) was also moving forward, requiring significant time and attention, especially after some very public bumps along the way. As a consequence, the new NSS projects competed for resourcing and attention with these two. Overlying these concerns, the RCN writ large has been under-staffed by at least 1,000 positions for the duration of the NSS. As a result, the RCN teams working on the NSS projects are significantly smaller than those that worked on the CPF program.

The HR challenges have been even more pronounced with the CCG, which had an order of magnitude fewer staff working on projects than DND prior to NSS, despite the CCG operating more ships and a more diverse fleet. For the CCG, its last major projects for the 1100 and 1200 series vessels were delivered in the 1980s, so the organization's major project delivery experience was even more distant. For the CCG especially, the lack of staff is in part attributable to the absence of a sustained, funded capital program. While DND has experienced serious HR problems with major projects in recent decades, even in the mid-1990s at the height of federal government spending reductions, DND always retained some (albeit much curtailed) funding for new major capital projects and therefore retained a level of project management expertise. Since 2008, DND has had a dedicated source of capital investment funding. The CCG had lacked a steady source of funds for capital investment or an approved and funded fleet renewal plan until 2019. Absent either of those mechanisms that could eventually translate into shipbuilding investment, CCG could not justify retaining meaningful levels of staff needed to do CCG fleet renewal work, including force development teams to develop requirements, ship designers, cost estimators, project managers and other critical positions. All of these capacities had to be built after

the launch of NSS.

One of the ways that Canada has worked to mitigate these HR issues has been through an extensive use of third-party experts to provide advice and take on specialized work that could not be done with sufficient credibility in the government. This included contracting with an independent shipbuilding advisor, retired Royal Navy Rear-Admiral Steve Brunton. This has created a dynamic where the government has effectively been relying on commoditized third-party support, essentially importing the advice as a product. From the perspective of some industry stakeholders, the value of this approach is limited as the government lacks sufficient ability to properly assess it and reflect on how to best put it to use.

Governance Arrangements

Numerous aspects of the governance for NSS have been unique, starting with the arrangements constructed to run the competition to select the shipyards. These were set up to be explicitly apolitical, without ministerial involvement, and run by the civil service reporting to Deputy Ministers, on the direction of the Prime Minister. There are multiple explanations for the origins of these unique arrangements, including the politically troubled legacy of the previous Progressive Conservative Party's experience with the CF18 maintenance program, and the regional political tensions it created. There was also the fact that Minister of National Defence Peter MacKay was a Member of Parliament from Nova Scotia and the province's regional Minister, and Irving Shipbuilding is located in Halifax. For some, the bureaucratic process was viewed as a way of insulating Mackay from an appearance of any political involvement. More broadly, given the regional disposition of the shortlisted shipyards, in five different provinces, there was significant concern that the outcome of the shipyard selection, no matter how it went, would be politically disastrous. There was also a view expressed by some political staff that the shipbuilding secretariat model was also suggested in part because of low confidence in, and frustration with, the way the procurement system was functioning at that point in time.

At the outset of the NSS, the expectation was that the governance framework would go away once the procurement process that selected the shipyards was completed but it has endured. In early days of the NSS, the view from stakeholders with line departments was that the central agencies participating in the interdepartmental governance frameworks were extremely supportive, reaching out and asking how they could help. Over time, however, the views about the utility of central agency involvement changed. As officials turned over in jobs, and Ministers and political staff did the same, the churn meant significant effort was continuously devoted to briefings about the first principles of the NSS to people without background in what was being briefed.

Managing NSS as a Project, Instead of a Program of Work

One aspect of the NSS governance strategy that has not lived up to initial expectations was the original intent of managing the multiple NSS projects as a program of work, allowing departments the flexibility to make adjustments between projects when it came to funding, staffing, access to governance and government approvals. The experience of client departments, though, is that while the NSS projects are often discussed as a program, they are then micro-managed as projects. As an example, the individual projects are briefed to the Treasury Board (TBS) on a project basis, including different branches of TBS for the RCN and CCG projects, even though they all have interdependencies. There have been efforts to provide combined project briefings to central agencies, but this has not been done consistently. A manifestation of this dynamic is that because each project is being managed and procured individually, it has been difficult to achieve any systems or component commonality across different classes of ships or execute bulk orders for common systems or equipment that could produce significant financial savings. For the most part, systems are instead being competed uniquely for each project, with some exceptions, such as the RCN's command management system a version of which will be fielded on each of its new classes of ships. At the other end of the spectrum, VSY had to source some aspect of the OFSV for only the first ship, with options for the second and third, again precluding any level of economies of scale. The perception from industry stakeholders is wider competitions for systems, components and supplies could have been conducted across multiple ships, with due consideration for domestic economic benefits, or any other factors, to achieve better economies of scale. The default to competition for each project is perceived as originating from Public Services and Procurement Canada's

(PSPC) standard procurement approaches. A further contributor was also a desire to move forward as quickly as possible on the first projects, such as OFSV, and the immaturity of the other projects at the time meant that any decisions taken to increase commonality would have delayed construction on OFSV. An active effort by the CCG is underway, though, to have commonality of systems or components introduced into its supplier base in the future.

These limitations have occurred despite the existence of a dedicated secretariat for the NSS, housed within PSPC and led by the department. The size of the secretariat ebbed and flowed over time, ranging from one to two dozen staff, comprised largely of PSPC officials, with some co-located personnel from the RCN and CCG at various points in time. That staff handled much of the 'care and feeding' of the NSS governance structure, including reporting, and governance meetings, NSS communications, monitoring progress towards shipyard target state, the Umbrella Agreements, NSS-wide risks, and some of the contracts supporting NSS.

The NSS secretariat existed as a standalone entity until 2019, when the secretariat's function was combined with that of the Defence Procurement Strategy (DPS) secretariat. Following the creation of the latter in 2014, this created a dual structure with one governance arrangement for the NSS projects and the wider governance put in place for all defence procurement projects. There were some key differences between the two structures. While the DPS structure has a standing Deputy Minister level of governance, the NSS stream has twice annual meetings at that level that include shipyard ownership. Additionally, the shipbuilding governance structure also features an executive governance committee that includes representatives from shipyard management as well as the central agencies. There are actually two executive governance committees, one for each shipyard, initially both led by what is today the Assistant Deputy Minister for Defence and Marine Procurement at PSPC. After 2017, the leadership of the East Coast executive governance committee moved to the Assistant Deputy Minister Materiel for the East Coast package, while the West Coast equivalent was assumed by the Canadian Coast Guard's Deputy Commissioner of Strategy and Shipbuilding. There is furthermore a dedicated Deputy Minister level governance committee for shipbuilding. In these forums the shipyards have pushed for the government to move faster, and for the government to take a program view of individual decisions.

PSPC/PWGSC has consistently been the lead organization within government on the shipbuilding files. This originated in the appointment of Rona Ambrose as Minister PWGSC in 2010 with a mandate letter designating her as the lead Minister of procurement. This continued on with PWGSC officials leading the process for NSS shipyard selection and sourcing and continuing on afterwards with their chairing of meetings. Through 2019, they continue to play a unique leadership role on files, particularly in managing the production gaps, and sequencing issues between projects, as well as deconflicting between DND and CCG projects. Part of this is the natural result of PSPC acting as contracts manager, as well as, in the view of some PSPC officials, a lack of clear alternative as to who else would perform the function.

For the latter part of the Harper government, after the launch of the Defence Procurement Strategy, a Working Group of Ministers was established that met to discuss shipbuilding files, including with representatives of the shipyards. Some senior political staff felt that meeting with the shipyard representatives was at times the only way to get a real sense of the reasonableness of timelines and address problems. The working group was judged to have been important in advancing the NSS projects to the point where construction could start in 2015, and there is a view that the strategy would have benefited from its creation earlier.

Political staff in the Trudeau government were of the view that the introduction of the Defence Procurement Committee of Cabinet was another welcome addition to the shipbuilding governance structure. That committee, while it existed, allowed more holistic discussions of the individual procurements, as well as cross-cutting issues affecting the entire NSS, such as labour concerns. By providing additional time, the committee allowed officials to brief Ministers for both information and decisions, and by some estimates the committee devoted roughly half its time to shipbuilding issues. This apportionment of roughly half of all time devoted to NSS files was also reflected by stakeholders from the Defence Procurement Strategy Secretariat, and from involved political staff. For both political staff and senior officials, the NSS projects were some of the heaviest consumers of procurement time both because of the number of projects and the number of decision points within each project.

While noting the benefits of frequent engagements with Ministers and their staff, officials were of the view that the volume of activity associated with NSS files created a degree of issue fatigue on the part of Cabinet,

particularly given the number of files that have had to come forward as a result of budget and schedule changes. There was also the feeling on the part of officials that at times the governance structure, including the Defence Procurement Cabinet Committee created a 'feed the beast' dynamic of continual reporting, such that at times it was felt more effort was being devoted to reporting on work, than the work itself.

For a consequential period of time towards the end of the Harper government several stakeholders noted a degree of complexity and confusion added to the NSS as the respective roles of different government officials became blurred. Delineating military from departmental advice and then conveying that to the government became problematic. In a number of instances, political staff believed they were receiving conflicting advice about how to proceed on NSS work, which reduced overall trust in the strategy and its projects. From a defence perspective, the need to work with the Department of Fisheries and Oceans and CCG on NSS overall, and the JSS project in particular, added additional complexity that was not as prevalent on the combat package of work. The JSS project became overlaid with regional political dynamics and the view from several stakeholders at Defence was that the CCG was not an effective advocate of its own projects to government, that its work was less mature than that of the navy, and that the complexity and level of difficulty inherent in the non-combat work package was never properly understood within the bureaucracy.

Political staff observed, at several points in time, that they were continually dragging the bureaucracy forward towards milestones. By the end of the Harper era, many staffers had come to view all of the schedule milestones with great suspicion given how many of them had come and gone. This was particularly true regarding those for the JSS. For all of the complexity and difficulty of the files, many of those staff consistently cited the work done by the bureaucracy and military on the shipbuilding files as amongst the highest quality relative to other procurement files.

Multiple stakeholders that worked in ministerial offices believe that interactions between political staff and officials were at times notably more difficult on shipbuilding than other procurement files. This stemmed from staffers' perceptions that some officials had, in their view, become 'wedded to status quo support for the NSPS.' This dynamic was exacerbated by the Harper government's periodic desire to acquire an amphibious ship. This started with the United Kingdom's Royal Fleet Auxiliary ship *Largs Bay*, in which the government had interest, but DND advice suggested should not be acquired. The political perception that arose from that effort was that parts of the defence bureaucracy were working against the government's political agenda, for fear of jeopardizing the NSS.

Inter-Departmental Relations

One of the complicating factors with NSS is its interdepartmental nature and the need for extensive engagement between DND and PSPC. For several of the key early years of the strategy, the relationship between both the departments and ministerial staffs was strained, particularly during the time Rona Ambrose was the Minister of then-PWGSC and Peter Mackay was Minister of National Defence. During this period there was a sentiment that PSPC was reasserting itself departmentally after DND had assumed a more prominent role in the procurement process during the war in Afghanistan. The departmental tension was also complicated by the appointment of an Associate Minister of National Defence, a position that had not been filled for some time. The position, staffed by three Ministers (one twice), did not have a well-defined role in the procurement process, given overlap with the responsibilities of other Ministers, and its ministerial office too had tensions with other Ministers' offices. The Associate MND position largely dealt with day-to-day work on procurements, but the MND was still required to sign off on all Treasury Board submissions and Memorandum to Cabinet, which required coordination between the offices.

At multiple instances over the life of NSS, Ministers came to understand that they were being briefed differently by their respective officials and were having to rationalize the competing briefings. This led, on more than one occasion, to the Ministers of both PSPC/PWGSC and DND being briefed at the same time by officials. This started first in 2013, originally driven by problems with the Maritime Helicopter Project (MHP) file. This initiative was also driven in part by a desire to have Cabinet briefings structured around proposed ways forward on major files, rather than what was described by some as officials arguing with one another in meetings with Cabinet Ministers. Stakeholders from National Defence were fairly consistent in their perception that neither ministerial staff nor officials from ISED or DFO were major players in the strategy. Although involved originally at the senior levels in

setting the NSS in motion, the strong perception was that Industry Canada (IC) was particularly consumed with the auto sector's difficulties around the 2010 timeframe and therefore not as actively involved in what was partially an industrial strategy as it might otherwise have been. With the original strategy, IC was not viewed as being full throated in its advocacy for the strategy, as shipbuilding is not a departmental priority in the same way as autos or aerospace. The perception is largely that, aside from the 0.5% Value Proposition commitments that the two winning shipyards made as part of their bids, and the continued policy commitment to Buy in Canada, despite its intent the NSS effectively lacks any industrial strategy. Any further economic spinoff is relegated to the economic offsets that accompany each of the individual projects.

Building in Canada and Domestic Economic Benefits

While the decision to build ships in Canada was fundamental to the launch and continuation of the NSS, opposition to the idea of building ships domestically has always endured to some degree. At both the political and bureaucratic levels opposition to the idea of a domestic build is implicitly tied to an assumption that building domestically will lead to increased costs. Although no changes have ever been adopted to this policy, disagreements over building in Canada have made evolving the strategy or changing it difficult, as proposed changes to NSS have resulted in a relitigating of the domestic build policy.

Government-Shipyard Relations

Aside from relationships within government, the relationships between the shipyards and the government of Canada have also been highly consequential. The consensus view is that ISI has consistently maintained a better relationship with the government than VSY. The reasons for this are multifaceted. Located in Halifax, only two hours by air away from Ottawa and adjacent to one of the largest DND installations, CFB Halifax, ISI has benefited from geographic proximity to its government stakeholders which has facilitated easily arranged, ongoing interactions. And ISI's work on the HCM/FELEX project occurred from the same facility in Halifax, so the longstanding interaction with the Crown was from the same entity. Further, although both original NSS shipyards are privately held, the ISI owner is personally highly engaged in the shipyard's work and with the government. Shortly after winning the combat package, ISI went through a significant management restructuring, which in the words of top management saw them go around the world to attract top-tier shipbuilding talent to Halifax.

In contrast, the separation between Ottawa and Vancouver has proven problematic, as has VSY's lack of familiarity working with the Crown. The significantly longer flight times to Vancouver are an impediment to well-functioning relations, especially since VSY did not establish a full-time government relations presence in Ottawa until 2018. This limited interaction between VSY and the government, which was exacerbated by the Crown's difficulty co-locating government project staff near the shipyard, in part due to the high cost of living in the Vancouver area. Further, prior to NSS, Victoria Shipyards was the part of the Washington Marine Group that had maintained a long and productive relationship with Canada through the HCM/FELEX program and work on the *Victoria*-class submarines, in which VSY was not involved as it had been involved in commercial work alone. But given that their operation centred around government-owned land and a graving dock, there were concerns on the company's part about investing corporate funds into infrastructure it would not fully own, as well as a belief that had it put forward a bid using the public infrastructure, other shipyards would claim it had an unfair advantage. As a result, the Washington Marine Group bid was submitted from VSY (although the FMI benchmarking assessment of Washington Marine Group includes Victoria Shipyards too). While the NSS bid was supported from Victoria Shipyards, their level of ongoing support to VSY was relatively limited, and less than many of the government stakeholders had anticipated it would be. In the summer of 2018 VSY went through a significant changeover in its management team which is noted by multiple government officials as having coincided with a significant improvement in the relationship between the yard and the Crown.

Several aspects of the actual program mechanics of the NSS projects have also been problematic, particularly with VSY. The splitting of the projects into multiple contractual phases, each requiring separate contracts and commensurate, time-consuming, government approvals, led to dynamics in which the shipyards felt as though they were managing contracts rather than ship projects or their program of work. Similarly, the contract structures, their terms and conditions, and the

differences between them in terms of the management of intellectual property and other key issues varied significantly from project to project, also increasing the burden on management. Similarly, from the shipyards' perspective, ship designs have on multiple occasions been turned over to the shipyards before they were actually in a state ready to build, due to pressure to move the projects forward. For VSY especially, a lack of certainty about the full non-combat program, beyond the ships included in the non-combat work package, for a long time precluded it from taking any additional steps to increase yard efficiency, given an uncertain return on the investment.

Between both shipyards and the Crown, there have been periodic expectations that the shipyards would look for work outside of the NSS to help smooth out production gaps. The expectation at the time of bidding and early in the project was that the NSS would not be a guarantee of continuous shipyard activity and workforce employment. There was an expectation that the NSS would provide the yards with an anchor tenant, but that commercial work would still be required to maintain the blue-collar workforce during ebbs and flows in production. That expectation was perhaps more explicitly held by VSY from the outset and informed its initial infrastructure investments. However, the demands on the VSY management team of working on the NSS projects, in the way they were required to, limited the feasibility of pursuing outside work from the shipyard's perspective until longer production runs with more repetition and lower demand on white-collar workforces fell into place. Over time, there has been an evolution to view continuous workforce employment as a tenet of NSS, as the shipyards and Crown have worked to address 'capability gaps' with their workforces.

Affordability

One of the overriding concerns that affected each of the NSS projects from the launch of the strategy was insufficient funding. As noted, one of the precipitating factors that lead to the strategy's creation was the failure of the JSS project largely because of a widely misaligned project budget. Each of the RCN's project budgets pre-dated the launch of the NSS and the CCG's project budgets were similarly set prior to the strategy's launch. For the RCN, the most significant concern was the budget for CSC, both because that was the focus of its fleet renewal priorities and because of the magnitude of the required funding. The announced budget of $26.2 billion was met with immediate concern and scepticism. The inclusion of a replacement of the frigates and destroyers was agreed upon early in the evolution of the CFDS. But the inclusion of a specific fleet size of 15 and not 'up to 15' came as a surprise to officials, as it was not well known inside DND until late in the process what the overall budget envelope would be for CFDS and how much money would be available for CSC. The recommendation of officials had been to commit to up to 15 ships, given the budget uncertainty. Some close to the file believed that the day the document was published, the CSC budget would have possibly paid for the construction of the ships alone, but provided only about half of the funding needed to deliver the project, with all of its required project offices, contingencies of various types and many other ancillary costs. In the years after CFDS was published, some political staff developed the view that DND itself had lowballed the CSC budget, to then realize it was insufficient by 2009 or 2010.

The funding shortfalls limited progress on CSC in its early years, as it was clear within government that the RCN would not be able to procure ships with a level of capability commensurate with the RCN's roles and activities. The other impact of the budget shortfall, on CSC especially, was that staff who could otherwise be working on the substance of the project, writing requirements documents and technical specifications, for instance, spent significant time instead writing briefing material about the impact of the affordability issues.

In a similar vein, funding inadequacy, highlighted in a report by the Parliamentary Budget Officer, also led to a significant evolution of the JSS project. The project was stripped of much of its substantive joint capability, such as the original sea-lift specifications, and the project was revised from one acquiring two ships with an option for a third, to just two ships. On the East Coast, a similar dynamic played out with the AOPS project. It was downgraded from a project designed to build six to eight ships, to one building six, with the final contract being signed for a guarantee of five, with incentives for the shipyard to deliver a sixth. In the end, a sixth ship was added back into the project, but only in conjunction with a slowdown of the production schedule to help bridge a looming production gap between that project and CSC, as well as an increase to the project budget to cover both issues. In parallel, the AOPS project had to work through a number of significant design tradeoffs in its early years to stay within the budget envelope.

The funding constraints on the NSS projects were exacerbated by the fact that the NSS was launched at the same time as the federal government entered into a deficit reduction period. This was further exacerbated for DND because it also had its cyclical Strategic Review, a standing efficiency exercise, occur just prior to the Deficit Reduction Action Plan. With this exercise occurring, in the views of officials, a conversation about additional funding for the shipbuilding programs was simply a non-starter. After 2012 these financial pressures were combined with the Defence Renewal efficiency finding exercise in DND. This came on the heels of a perception that the DND/CAF had done little to act on the recommendations of the Report on Transformation, a 2010-2011 effort to find internal efficiencies even prior to the budget reduction measures that hit thereafter. In the early years of Defence Renewal, it was widely, and repeatedly communicated within Defence that the DND/CAF's reputation as a fiscal steward rode on the success of the initiative. Despite years of work, Defence Renewal was quietly wrapped up having fallen well short of financial savings targets that had been publicly communicated at its launch. The net result of this confluence of events was that throughout the key early years of NSS, despite known and significant financial shortfalls, DND was not in a position to obtain additional funds for its projects due to fiscal limitations and the perception that the department was not a sound steward of its own resources. The Defence Policy Review undertaken by the Trudeau government and the subsequent *Strong, Secure, Engaged* defence policy and its associated funding largely fixed DND's funding concerns. The budget for CSC was more than doubled to between $56-60 billion, and the budget for JSS was also increased, although the amount has not been made public.

The CCG faced similar, albeit lower profile, affordability issues. Its projects all suffered from similar dynamics related to assigning project budgets very early, and then having them fall victim to the impacts of inflation. The designs for the OFSVs went through a number of iterations because of a lack of funding which drove significant requirement changes from the ships the CCG had originally envisioned. Even more so than DND, the CCG projects had less familiarity with the changed approach to costing within the government. The move to more rigorous full life-cycle costing in the government of Canada had started in the 2000s. By 2010, DND had several complex major Crown projects move through that new system, whereas CCG had not, creating additional difficulties for the Coast Guard in managing its projects within the government procurement system.

JSS

In the aftermath of the 2008 JSS failure the project underwent a major evolution. Significant effort went into revising the ship requirements to fit the budget, with most of the significant 'joint' capability originally envisioned for the project having been removed by 2010. The project also overlapped, and was complicated by, periodic efforts by the Harper government to explore the acquisition of a sea-lift, joint or amphibious vessel (depending on the ship in question, and personal perspectives). The first of these initiatives started when the UK put RFA *Largs Bay* up for sale in 2010 as part of its Strategic Defence and Security Review and culminated in an exploration of the acquisition of the French *Mistral*-class ships built for Russia, but not delivered due to sanctions in 2015. These periodic discussions, and the associated significant staff effort involved in exploring the possible acquisitions, resulted in what some stakeholders described as an enormous diversion of energy away from the NSS projects, and JSS particularly. In several of their views, the effort resulted in providing multiple responses to the same questions that had been asked and answered about an amphibious or joint capability by the Standing Contingency Task Force conducted while General Rick Hillier was the Chief of Defence Staff. Progress on the JSS was delayed by the inability to lock down its requirements while the 'big honking ship' discussion persisted.

JSS Sequencing Decision(s) and Early Block Builds

A key event during the 2012-2013 timeframe was the resequencing of the JSS and Polar icebreaker projects. Three options were considered: building both JSS and then the Polar icebreaker; building the Polar icebreaker and then the two JSS; and building one JSS, then the Polar icebreaker and then the second JSS. The latter option was quickly dismissed by both Canada and the shipyard (only to resurface at a later date). The decision to have the JSS built before the Polar icebreaker pitted the RCN and CCG against each other at first, with each arguing about their relative

Polar Icebreaker concept art (Public Services and Procurement Canada)

comparative capability requirements. As both organizations were in dire need of the respective ships, neither had a more compelling case than the other. At the end of the day, the relative maturity of the JSS project led to it being sequenced first.

A subsequent major decision was made to move forward with the construction of early blocks of the JSS in 2018, to mitigate a production gap that had emerged between classes of ships at VSY. By advancing the work on dozens of the early blocks of the JSS, those in the middle of the ship and the least sensitive to design changes, construction of the JSS could be advanced, even without government approval of the implementation phase of the project, a build contract and prior to the design being finalized. This would allow the blue-collar VSY workforce to continue working as the other design work was finalized, rather than risk them face layoffs as the design was finalized and government approvals were secured.

A second resequencing decision, to adopt the JSS – OOSV – JSS sequence which had previously been considered and rejected, was taken for similar reasons. The design maturity of the as-yet unfinished JSS was still higher than that of the OOSV, as the JSS had been initiated using an existing ship design (subsequently modified with over 100 changes). This resequencing was intended to allow blue-collar work to start on the JSS, while white-collar effort was focused on OOSV. It was intended to lower design risk on OOSV before construction started, and theoretically building the OOSV before the second JSS would allow all the experience and lessons gained building the first ship to be applied to the second. It also allowed work to start earlier on the JSS. Officials speaking about this change could not point to an example of another set of ships that had been constructed in this manner to support the value of this approach. There is a perception on the part of some stakeholders that in retrospect, the JSS should have been the first class of ship built by VSY. While the JSS will be much larger than either the OFSV or OOSV, its larger size requires significantly more work hours to build the ship providing significant opportunity to improve production efficiency, plus a more favourable ratio of design and engineering work to construction. Additionally, the ship was the only one in the non-combat package to be based on an existing design, which could have enabled it to be built earlier.

AOPS

The AOPS had emerged from a Conservative Party of Canada campaign pledge to build 'armed naval icebreakers.' The RCN's view was that MND Gordon O'Connor had expressed an intent to deliver greater naval presence and activity in the Arctic, and the RCN had to convert that into an actual ship of some sort once the RCN convinced the government that an armed icebreaker was not a sound path forward. The RCN was also of the view that Canada could not afford a dedicated class that could only be useful during four months of the year when the Arctic was navigable, and that icebreaking was a CCG competency, and not a naval one. At the time Vice-Admiral Dean McFadden was viewed as a particular champion of the need to have greater RCN engagement in the North, having spent time as the commander of Canada Command. However, given that an Arctic vessel had not previously been on the navy's force development agenda, turning the campaign commitment into a buildable design required a substantial commitment of work that had not been previously underway. The concept of combining both Arctic and offshore patrol functions into a single ship originated outside of naval force development lines and occurred quite quickly. In addition to providing a capability that could be used more than just four months of the year, there was a view that what became the AOPS could replace some of the offshore patrol function of the Maritime Coastal Defence Vessel (MCDV) fleet, but as importantly, replace some of the training and force generation capacity that class provided to the navy. The dual offshore patrol and Arctic functions were difficult to reconcile though as they involved two opposed tasks – moving through the open ocean at speed and moving through ice slowly. Amongst the tradeoffs that had to be accommodated was a reduction in the desired speed to match a hull designed to provide protection for the required thickness of ice. Prior to the announcement of CFDS and the NSS of a funded and policy-approved fleet renewal for the RCN's surface combatants, there was also an initial tension between the AOPS and the prospect of further fleet renewal. There was though, a desire to take advantage of a government-approved program to try and acquire some of the combat capabilities desired in a frigate replacement.

Another consideration that held up the project was the fate of the Nanisivik refuelling facility, which was originally included in the project's budget when approved by government. The significant infrastructure project was originally in tension with the AOPS project budget, especially given uncertainty over the number of ships that could be built for the allocated money. There was an ongoing concern in the navy to keep the AOPS project affordable in order to preserve fiscal room for the frigate and destroyer replacement project (prior to the two projects being combined into CSC), and not have the AOPS become the de facto (in fiscal, but not capability terms) replacement for the frigates. The decision was taken deliberately to keep the ship a non-combatant with only a gun that could be used for law enforcement against merchant ships, but not against a warship.

One of the defining aspects of that project after its initial approval was a multiple stage definition approval. This split the definition phase of the project into a number of work packages, each of which required a separate approval from the Treasury Board to proceed. The understanding is that this was done as a way of allowing the project to move forward into Definition with only indicative, rather than substantive, project costing. The multiple approvals for specific Definition tasks were a way for the government to manage the financial risk of the project, prior to it having significant financial fidelity, while still allowing it to move forward. Even once that level of additional financial fidelity was achieved, however, the multi-stage approvals remained. They subsequently became viewed as an impediment to implementing the project, as each Treasury Board approval required nine months of staff work.

CSC Procurement

Of all the projects covered by NSS, replacing the frigates and destroyers was the clear priority. Within the RCN it was understood that the CSC would be the most difficult and complex project the navy had ever undertaken. As the shipbuilding strategy moved forward, the RCN was attuned to the difficulties other projects had faced, and in particular the type of first principle 'why does Canada need a fighter?' question that the Next Generation Fighter Project had experienced. Naval leadership felt that the *Leadmark* maritime strategy paper and its successor helped the RCN with such conversations, but there were still active discussions with government in 2009 and 2010 to understand the type of capability the RCN needed, before arriving at a rough agreement about the capability envelope that would be required. The view from some politically involved stakeholders was that in the early years of the Harper government, there was

significant effort to push the RCN to move away from purchasing two different types of ships, to purchasing one single hull form, potentially with different variants. The political direction was largely driven by concerns around the cost of building two different variants and a perception that a single hill could reduce costs.

When CFDS was published in 2008 specifying that 15 ships would be purchased, and for $26.2 billion it was clear there was no way to square the circle. One of the ways explored for trying to bridge that quantity-quality divide was some exploratory discussion with the UK about partnering in some way on its Type 26 project. Given the respective naval visions at the time for the project, the option was not deemed viable, and after the news of the initial discussions became public, the idea was shot down politically. Another option considered for dealing with this dynamic, particularly as the SR and DRAP budget-cutting exercises impacted defence starting in 2010, was splitting the project into at least two tranches, with an initial one to focus on replacing the rapidly ageing destroyers and their command and control and enhanced air defence capability, with a follow-on frigate replacement. The notion of buying two different ship types, possibly with a common hull, had actually been included in the NSPS RFP. This idea was ultimately mooted when analysis demonstrated that the air defence requirements needed for self-defence required the type of extended range that had traditionally been provided by an Area Air Defence destroyer.

A defining feature of the procurement, from the navy's perspective was extensive industry engagement. The perspective that industry engagement was a smart approach had existed within the navy for years and stemmed from the *Halifax*-class program, and the approach by the project's naval leadership at the time which had recognized that progress required a collaborative approach with industry partners. A part of this attitude was an openness to receiving and acting upon ideas and suggestions from outside of government (where warranted). This attitude meant the navy was open to different ways of doing business, and inherently willing to challenge the status quo approaches within government. The openness to different approaches was not universally shared.

A major issue that navy had to decide upon with CSC was balancing between quantity and quality, setting the level of capability that went into each ship and also discussing the size of the fleet. With the publication of CFDS that discussion became particularly problematic given the aforementioned affordability issues. Beyond this, the RCN's approach (supported by advice from industry) was to start from the premise that it was replacing the basic capability set in the existing fleet of destroyers and frigates and updating it for the modern threat environment. Over time as the work on the requirement for each ship matured, the conversation advanced on the fleet size. The internal modelling the RCN had done, reinforced with work from third-party advisors, showed that 15 ships was the minimum fleet size required to support the envisioned operational requirements. Although there were supporting arguments that the RCN at times thought it could have advanced to argue for a larger fleet, it was comfortable with 15, given that was the size of fleet it was used to operating. Another, non-trivial factor, was that a fleet of 15 would be easier to justify to stakeholders across the government, which had a strong bias towards maintaining the status quo.

The navy's industry engagements left it with the impression that industry largely felt that the requirements that the RCN had set for CSC had struck the right balance between the level of needed capability and technological feasibility. As one interviewee put it, they were "demanding, but achievable." Developing that requirement was a long and exhaustive process for the RCN over multiple years. The SOR for the project went through multiple iterations, and in the RCN's view had been extensively shared with stakeholders across government and outside experts, resulting in numerous substantive revisions, which the organization attempted to record to document how it evolved over time. This culminated in an extensive brief to the Independent Review Panel for Defence Acquisitions, of 50 hours, and requiring weeks of preparation in an effort to ensure the requirement was as thoroughly validated as possible.

That process was in effect continued over the summer of 2015 when the RCN undertook a significant reconciliation of the requirements for CSC which led to a number of shifts in the project. This included a change to the idea that two variants of the ship would be required to provide the extended range anti-air defence and command and control function the destroyers had previously provided the RCN. The effort demonstrated that emerging missile threats, and evolving radar, combat system and missile technology meant that the same basic air defence functions could be provided in one common design instead of two ship classes. The navy's modelling showed that to deal with modern threats, a ship's self-protection requires engaging incoming missiles further from the ship than had been the case in the past (necessitating a larger

missile launcher and missile) and largely removed the previous distinction between self-defence and extended missile defence of a task group. The command and control function was easier to fold into one ship design, requiring only enhanced communications equipment and the space to accommodate and equip a task group commander's staff. From the RCN's point of view, moving to a common design will provide a number of efficiencies in terms of supply chains, support, training and also operational scheduling.

Changes to the CSC Procurement Strategy

Over time, the CSC procurement strategy underwent a period of significant evolution. The approach first envisioned would have involved the selection of two design teams from a pool of qualified bidders that would be funded to mature their proposals, with Canada then choosing its preferred supplier from between the two. Concerns were raised about the practicalities of that approach, however, in particular with how Canada would manage a relationship with two bid teams in a litigious environment in which a final selection would require a higher degree of subjective judgment than the type of evaluated proposals more commonly used for Canadian procurements. Such concerns led to a reconsideration of the approach, and a switch to a Most Competitive approach. This would have involved separate competitions for a Combat Systems Integrator and Warship Designer, drawing from a list of pre-qualified firms based on their past experience. The results of this pre-qualification, which identified 12 firms, were released in the fall of 2015.

Concern that competing the ship design and combat system separately could mean some bids having complex combat systems separated from the ship they were designed to work with, and undoing all of the integration work that had already been undertaken, precipitated another significant evolution in the procurement strategy. There were also concerns about potentially "forcing marriages" of firms that, if selected separately, might be averse to working with each other for various reasons. There was also concern about how ISI would be able to work with two respective teams to refine a proposal and do so in a way that would be both fair and perceived to be so.

The RCN's requirement reconciliation effort over the summer of 2015 also showed that its requirements could be met by enough existing ship designs that the procurement strategy could switch to selecting a single technical ship reference point (TSRP) or an existing ship design with its inherent combat system while still holding a competition. The assumption in doing this was that enough existing ships and designs from NATO countries as well as Australia and New Zealand (known as NATO+2) were all sufficiently capable that, with some modification, they could meet Canadian needs. The same firms that had previously qualified under the Most Competitive strategy were allowed to remain qualified under the new strategy, and a requalification was conducted, but resulted in no additional firms being added to the list.

Two changes to the RCN's capability requirements were significant in allowing existing ship designs to meet specifications. The first was deciding only to have one embarked helicopter which, following on from the *Iroquois*-class destroyers, was a significant change. The second was to reduce the number of crew the ship had to accommodate. One issue that received significant coverage was whether the CSC procurement had ever required that a 'ship in the water' be a requirement. Several Canadian officials stressed that at no point had this ever been required, but some recognized that the issue, and the required maturity of designs, was not well communicated to potential bidders. Subsequently, there was significant debate about whether the BAE Type 26 design had been "allowed in" to the competition following the change in procurement strategy in 2016. Prior to the change, however, BAE had been one of the shortlisted firms, and thus eligible for the competition. Following the 2016 procurement strategy change, the language evolved as to what degree of maturity was needed in a design for it to be eligible. According to officials, this occurred to accommodate differing international terminologies, but the language had always allowed for ship designs that were not yet 'in the water,' but which had passed critical design review. When the change in strategy was announced, however, the language used by Ministers referenced existing off-the-shelf designs, creating further confusion.

For political staff, the change in the CSC procurement strategy was motivated by the interrelated goals of saving time, by reducing schedule, and therefore reducing costs. By moving to the selection of an existing design, rather than starting with a 'clean sheet,' it was hoped that as much as two years of time could be saved in the schedule. At the time the change in the procurement strategy was made in 2016, prior to the CSC budget being more than doubled as part of the Defence Policy Review, the increased buying power of

two years in predicted schedule savings was considerable for a project with known budget shortfalls. Whether the anticipated reduction to the schedule was realized remains an open question.

CSC Request for Proposals

According to multiple interviewees, the CSC Request for Proposals was one of the most complicated issued by the government of Canada. This was in part the result of the very atypical arrangement Canada established by having first identified that Irving Shipbuilding would be the project's prime contractor, in addition to being the yard that built the ships. When the NSPS had been initially put forward to government, for the large ship construction projects other than CSC, the shipyards that won the respective combat and non-combat packages were identified as the prime contractors. In the case of CSC, the Crown reserved the right to select a prime contractor other than the shipyard. Accounts vary significantly as to whether the government's reserved right to select someone other than Irving Shipbuilding as prime meant that the yard was, or was not, always the default choice to be the prime contractor. There was some discussion about selecting the Combat Systems Integrator (CSI) as the prime contractor, given an expectation prior to the 2016 change to the procurement strategy that the CSI would have to engage in extensive integration discussions as the ship's systems were integrated with the warship. Some officials had believed that this would be the arrangement for the project. There was a preference on the part of some though, that the shipyard be the prime contractor during the build phase of the project. Had a CSI been the prime during the design phase, this would have introduced increased risk as the project transitioned into the build phase, and the role of prime contractor was passed between firms.

Government officials took the issue to Cabinet, and the decision was made to make ISI prime for the duration of the project. One of the key considerations in doing so was that by identifying ISI as the prime contractor early in the process, ISI could start undertaking work that would expedite the project, and not only add capacity to the overall project in doing so but move more nimbly and quickly than Canada could, in part because it was recognized that the shipyard was capable of making project decisions faster than the government. As an example, ISI assisted in the requirement reconciliation effort over the summer of 2015. Having ISI designated as the prime prior to tendering the procurement allowed it to help Canada develop it, and therefore have a fundamental understanding of what the government wanted out of the procurement. This is anticipated to pay dividends throughout the project, including helping transition from the winning design to a faster build program. A tangible example of the benefit the arrangement has provided for some stakeholders is the fact that ISI was able to sign a contract with Lockheed Martin Canada the same day that ISI signed its agreement with the government of Canada.

Having ISI act as the prime contractor did, however, introduce some problems for the procurement, especially when it came to having bidders transfer intellectual property (IP) and transferring government-held classified data. Obtaining intellectual property on major Canadian defence procurements has been a complicated issue, as Canada has (in the opinion of many industry stakeholders) increasingly sought to obtain all intellectual property for big purchases, and the Canadian requirements for intellectual property on CSC were extensive. For several suppliers there was a significant concern about transferring to ISI this IP as part of a bid, prior to being selected as a winner.[1] The shipyard itself, or some of its suppliers and advisors, were seen as potential competitors to some of the potential suppliers to CSC. Many of these firms expressed that if chosen they would be comfortable transferring their sensitive data to the government but were simply not prepared to transfer their most sensitive corporate information to a commercial entity, and certainly not prior to being selected. Similarly, having ISI as prime added a complication to the arrangements for transferring sensitive government information. It is standard on warship procurements that highly classified information held by national governments that would be needed to evaluate bids, such as technical missile performance or a ship's electromagnetic signature, be transferred to the country pursuing a combatant ship project; it is not normal to transfer such data to commercial entities. This was an especially pertinent consideration given that there was a significant amount of global shipbuilding activity occurring during that timeframe, in the United States and Australia, in particular, raising concerns for major Combat Systems Integrators about the security of their key assets. Some industry stakeholders expressed that Canada simply did not appear to understand the full implications of its decision to appoint ISI prime and then give it the role it subsequently did.

The project therefore had to evolve to facilitate a mechanism to transfer the required information to the government of Canada, despite the RFP being issued by Irving Shipbuilding, as governments generally have formal transfer mechanisms for sharing such data that do not permit it to go to non-government entities. Working through these problems added significant time to the procurement. It also took time to work out the precise division of labour between Irving and Canada in issuing the RFP and assigning responsibilities for different portions of it. In the view of some industry stakeholders, the exact division of labour was not always clear and appeared to shift substantively over time between the first industry engagement and the issuance of the final RFP. Many industry stakeholders did note, however, that the RFP demonstrated a significant degree of innovation, from its inclusion of cure periods to a conditions precedent phase, and asking for intellectual property later on in the bid than normal for Canada, all in an effort to maximize the chances of a successful procurement. Industry stakeholders also noted that the degree of change on the RFP was very significant, and unprecedented for a procurement of that type. In addition to the volume of change, the lack of advance notice about changes was difficult to react to, and changes were made without any context for what had changed or why changes had been made, and this resulted in difficulties on bidders' parts responding to the changes, given legalistic and unclear meanings.

The direction of the procurement was thought to be sound but there were some issues around technical aspects of the execution, including the use of the online portal, uncertainty about the government's intent, as well as the process for responding to questions. In the words of one bidder, government responses were perceived to be so heavily lawyered that they were opaque and in instances incomprehensible. As more than one industry stakeholder noted, the lack of clarity likely resulted in bidders not understanding what Canada was really asking for in some respects.

Amongst the reasons that CSC was unique was the framework for economic offsets that it contained. In 2014, the Harper government had issued the Defence Procurement Strategy. In addition to making changes to the defence procurement governance structure, the strategy also made a major shift to Canada's economic offset regime, shifting it from the Industrial Regional Benefits regime, which required bidders to submit non-evaluated proposals for investing the value of their contract into the Canadian economy, to an evaluated Value Proposition (VP) that was part of the bid evaluation alongside technical requirements and cost in addition to guaranteeing an investment in the Canadian economy equal to the value of the contract. By the time the CSC RFP was issued, Innovation, Science and Economic Development Canada (ISED) (formerly Industry Canada) had moved forward with roughly 10 other projects that contained value propositions, but given the scale of the CSC, the other projects had been orders of magnitude smaller in terms of project value. Within a week of the announcement of the DPS, ISED had started engagements with industry about the Value Proposition for CSC. The strategy was oriented around making commitments for Canadian content on a list of major equipment but structured in a way that recognized that for some equipment there was little or no Canadian content possible. The RFP instead incentivized the transfer of work to Canadian firms, and gave extra points for working with Canadian companies as well as extra points for transferring intellectual property for in-service support to Canadian suppliers. Notably, the Value Proposition also emphasized research and development and export potential. These two components together effectively meant that 5% of the competition's points of the first review of the CSC bid incentivized the use of developmental, rather than fully mature technology.

A complicating factor in issuing the procurement was ISI's role as prime. This meant that bidders were submitting VP proposals for both a design contract as well as the build phase of the project. In each case, the contract from Canada is with ISI, with the winning bidder a sub-contractor.

This approach to economic offsets was a departure from the one used on the Canadian Patrol Frigate project in which the government specified a number of specific economic outcomes that were required in the ships. For government stakeholders, this approach was not pursued for two reasons. First, when Canada had done so for the CPF program, it was in an era when military technology still clearly led commercial technology developments, and therefore specifying certain systems was more justifiable than in the current day. Second, and more importantly, there was some concern that following such an approach for CSC would have effectively directed industry to form teams. In the view of government stakeholders, this would have placed Canada in a de facto role of prime contractor, as Canada would be a matchmaker between suppliers and the prime contractor. By not specifying any particular type of desired equipment or systems, and instead having a heavily weighted Value Proposition in the RFP, they believed that Canada would obtain the capability they

actually wanted at the end of the day. The sense was that with a highly weighted VP the best Canadian content would end up in the winning bid in any event. Some industry stakeholders observed that this assumption belied the realities of the defence industry, where firms' relationships are often mercurial, and corporate capacity is limited, even for a large pursuit like CSC. In their perspective, the assumption that the best Canadian content would make its way into all the bids was simplistic, and, in their view, Canada could have made the specifications it wanted, as it had done with the CPF program.

On the whole, industry was of the view that the final CSC RFP was very objective. Although a prescriptive process, it was requirement-centric, without a system of rewarding past relationships, or pedigree. It set a high bar in terms of the expected performance and for the degree of rigour expected of bidders to demonstrate that the requirements were met, an unusually high bar for an unfunded RFP process in the view of more than one. Some bidders did question, though, whether the Crown and ISI fully understood the implications of what they were asking bidders to do in terms of proposing changes to the original ship design upon which the bid needed to be based, in order to meet Canada's technical requirements. While the RFP had a mechanism to capture and penalize proposed changes to the baseline design, as a way of capturing the potential risk of making these changes, the mechanism for doing so was viewed as too simplistic to accurately capture the complexity and risk involved in what was being proposed.

Conclusion

Since the last interview for this project was completed in August 2019 a number of consequential changes have been made to the NSS. All three of the Offshore Fisheries and Science Vessels have been delivered to the Canadian Coast Guard, the first in June of 2019 and the last in October 2020, making it the first large vessel project of the NSS to be completed. And in June 2020 VSY was awarded a contract for full production of the two Joint Support Ships (with the Offshore Oceanographic Science Vessel built in between them). On the East Coast, the first AOPS was delivered to the Royal Canadian Navy in July 2020, and as of February 2021 construction on the fourth ship was underway. In October 2018 the government of Canada identified that Lockheed Martin Canada was the preferred bidder from the CSC competition, and in February 2019 indicated that the company had passed the conditions precedent stage and was formally the winner. At that point, the Crown stated that Canada and ISI would work to customize the bid design to meet Canadian requirements and incorporate Canadian systems and equipment through a process intended to take three to four years, with construction starting in the early 2020s.[2] The process of design customization appears to have largely concluded by November 2020, given a series of publications by the RCN itemizing the ship's specification.[3] In media interviews in February 2021, DND officials revealed that delivery of the first ship was now anticipated in the early 2030s.[4]

In May 2019 the government announced that Seaspan would build up to 16 new multi-purpose vessels for the Canadian Coast Guard and that ISI would construct two AOPS for the Coast Guard, which will be adapted for its purposes, at a total budgeted cost of $15.7 billion. In August 2019, just prior to the Canadian federal election, the government announced that it was issuing an Invitation to Qualify inviting Canadian shipyards to qualify to become a third NSS shipyard for large vessel construction for the construction of icebreakers, specifically. As announced, the process would see a third-party assessment of the qualified shipyards interested in responding to the RFP, financial due diligence, and then the signing of an Umbrella Agreement with the winner. In December 2019, Davie was announced to be the pre-qualified shipyard. As of February 2021, no further detail has been released on the third shipyard. Also in 2019, the Polar icebreaker was removed from Seaspan's package of work. In February 2020 a Request for Information was issued to any interested Canadian shipyard inquiring about their capacity and capability to build the vessel.[5]

The developments since the summer of 2019 represent both clear, if significantly delayed, progress on the large construction portion of the NSS as well as a fundamental change to the strategy's original premise. With one project complete (OFSV), a first ship delivered for a second project (AOPS), two more having signed build contracts (JSS and OOSV), and CSC making meaningful progress towards construction, the NSS is actually now delivering ships. With the announcement of the multi-role vessels to be built at Seaspan and program icebreakers to be built by Davie, the large construction portion of the NSS now encompasses all of the shipbuilding work that was anticipated when it was launched. And yet, the government's decision to add a third shipyard for large ship construction undermines a foundational objective

of the shipbuilding strategy of creating strategic partnerships with the shipyards that won the NSS competition. While the program icebreakers were not itemized in the non-combat package, and it was made clear that winning the competition did not guarantee the winning shipyard project contracts, the expectation set by the NSS competition was that the winners would become strategic sources of supply with the combat package supplying warships (after completing the AOPS) and the non-combat package providing ships for the CCG. Adding a third yard to construct program icebreakers and removing the Polar icebreaker from Seaspan's package of work, whatever benefits it brings in terms of additional capacity, represents a significant departure from the premise that the Vancouver shipyard was the government's strategic source of supply. The move also introduces greater uncertainty into Canada's plans for identified shipbuilding work that is not yet contracted. Longer term, it introduces greater uncertainty over the fate of federal shipbuilding once currently identified work is completed, likely hastening the arrival of the boom-and-bust shipbuilding dynamics that influenced the creation of the NSS in the first place.

The large number of stakeholders across government and industry involved in the strategy, and the high level of complexity and risk embedded in shipbuilding, meant that effectively implementing the NSS was always going to be difficult. The miscalibration of expectations at the outset about how quickly the strategy could start delivering ships exacerbated that difficulty, as have other problems related to insufficient human and financial capital since the start. Another issue now apparent as this article was completed in February 2021 is that few, if any, of the key players involved in creating and launching the strategy in the late 2000s are still involved in it today, and many other participants in crucial parts of it since have similarly come and gone. As turnover has occurred in both industry and government the corporate memory of NSS and why and how key decisions were taken has eroded with time. This report is an attempt to help capture some of that collective corporate knowledge and record it for posterity.

(Photo: Future HMCS Margaret Brooke (Photo: ISI)

Notes

[1] The issue of government-mandated Intellectual Property requirements had also been problematic for the projects at VSY. The view of many in industry was that the government of Canada had defaulted to asking for far too much IP in procurements by default, and flowing those requirements too far down the supply chain. This led to a working group with industry to address that issue.

[2] Public Service and Procurement Canada, "News about the National Shipbuilding Strategy, https://www.tpsgc-pwgsc.gc.ca/app-acq/amd-dp/mer-sea/sncn-nss/nouvelles-news-eng.html.

[3] Royal Canadian Navy, "Canadian Surface Combatant," November 2020, http://www.navy-marine.forces.gc.ca/assets/NAVY_Internet/docs/en/fleet/rcn_csc_factsheet-8x11_web.pdf

[4] Lee Berthiaume, "National Defence Grappling with New Delay in $60B Warship Project," 2 February 2021, https://www.ctvnews.ca/politics/national-defence-grappling-with-new-delay-in-60b-warship-project-1.5291839.

[5] Public Service and Procurement Canada, "News about the National Shipbuilding Strategy, https://www.tpsgc-pwgsc.gc.ca/app-acq/amd-dp/mer-sea/sncn-nss/nouvelles-news-eng.html.

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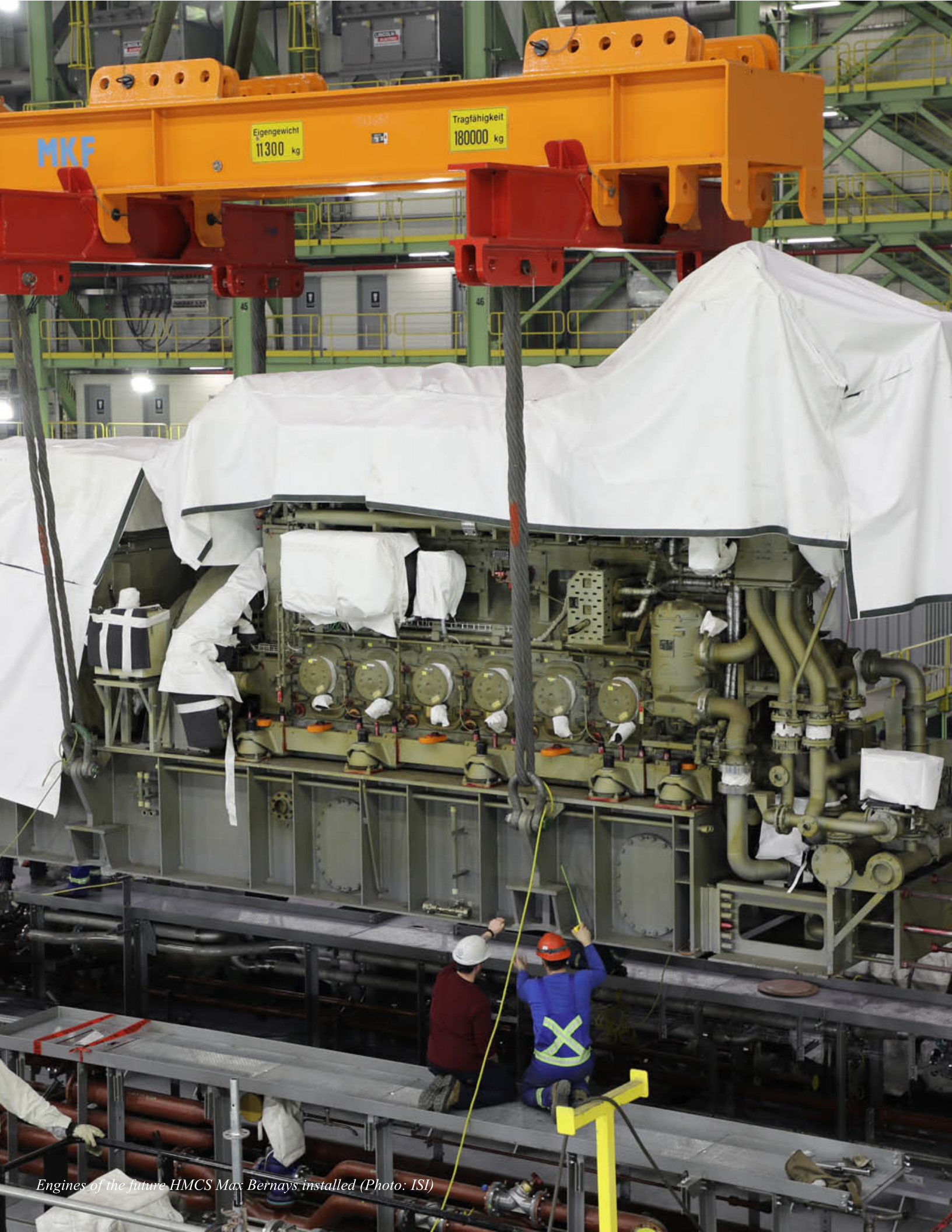

Engines of the future HMCS Max Bernays installed (Photo: ISI)