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# Canada's National Shipbuilding Strategy: 2021 annual report

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## Minister's message

I am pleased to present the 2021 annual report on Canada's National Shipbuilding Strategy (NSS).

In 2010, the Government of Canada launched the NSS, making a commitment to renew the fleets of the Royal Canadian Navy (RCN) and Canadian Coast Guard (CCG), while rebuilding the marine sector and creating economic opportunities for Canadians.

More than a decade later, we have seen 5 large ships and numerous small vessels delivered to the RCN and the CCG, as well as the completion of dozens of repair, refit and maintenance projects at shipyards across Canada.

The NSS has succeeded in stimulating the Canadian economy. NSS contracts awarded between 2012 and 2021 are estimated to contribute close to \$21.26 billion (\$1.93 billion annually) to the gross domestic product (GDP), and create or maintain 18,239 jobs annually, through the marine industry and its Canadian suppliers, as well as consumer spending by associated employees, between 2012 and 2022.

Despite these successes, the NSS continues to be met with challenges.

As the Auditor General acknowledged in her 2021 report, shipbuilding is highly complex and challenging work. Delivery of ships has been slower and more costly than originally anticipated, and new supply chain and workforce challenges have emerged over the past few years due to the global pandemic.

The Government of Canada remains firmly committed to the NSS, and continues to work closely with shipbuilding partners to address these challenges and draw upon lessons learned moving forward.

This past year, construction began on the CCG's offshore oceanographic science vessel. Initial work to prepare for comprehensive construction engineering began on the future polar icebreaker and design work continued for the multi-purpose vessel project at the Vancouver Shipyards. The CCG also took delivery of 2 new search and rescue lifeboats.

The RCN welcomed delivery of their second Arctic and offshore patrol ship, while the third vessel was launched into the water and the cut steel milestone for the fifth vessel was achieved. Construction continued on the Navy's first joint support ship, and design work on the future Canadian surface combatants progressed.

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In 2021, several repair, refit and maintenance contracts were awarded on behalf of the CCG and the RCN, and these have generated significant economic benefits to communities all over Canada.

Finally, we continued our progress towards selecting a third shipyard under the NSS to build 6 program icebreakers and 1 polar icebreaker for the CCG. This is a complex, multi-step qualification process anticipated to be completed in 2022.

Looking ahead to 2022, the Government of Canada will continue to work collaboratively with shipyards and suppliers to address ongoing challenges and ensure the NSS is meeting its objectives.

**The Honourable Filomena Tassi, Minister of Public Services and Procurement**

## **Year in review**

In 2021, shipyards continued to face workforce and supply chain challenges resulting from the COVID-19 pandemic. Despite this, progress was made on large and small ship construction projects, as well as ship repair, refit and maintenance projects under the National Shipbuilding Strategy (NSS).

The Government of Canada also made progress towards selecting a third shipyard as a strategic partner under the NSS, to help deliver on the renewal of the Canadian Coast Guard (CCG)'s fleet.

### **Large ship construction**

NSS large ship construction contracts awarded between 2012 and 2021 are estimated to contribute close to \$10.63 billion (\$967.1 million annually) to the gross domestic product (GDP), and create or maintain 9,110 jobs annually, through the marine industry and its Canadian suppliers, as well as consumer spending by associated employees, between 2012 and 2022.

### **Projects at Irving Shipbuilding**

At Irving's Halifax Shipyards, design work continued on the Royal Canadian Navy (RCN)'s future Canadian surface combatants (CSCs)—the largest and most complex shipbuilding initiative in Canada since World War II.

In September 2021, a contract was awarded to PCL Construction, of Dartmouth, Nova Scotia, to begin consultation and design work on the future land-based test facility. This infrastructure will be critical in testing CSC combat systems and will ensure the new ships are sea-ready once delivered.

In July 2021, Irving delivered the second Arctic and offshore patrol ship (AOPS), the future Her Majesty's Canadian Ship (HMCS) Margaret Brooke, to the RCN. This was followed by the launch of the third AOPS, the future HMCS Max Bernays, in October 2021. Construction continued on the fourth and fifth AOPS. In addition, extensive design work was done on the seventh and eighth AOPS for the CCG.

In December 2021, the first AOPS, HMCS Harry DeWolf finished a 4-month circumnavigation of North America, completing its first deployment. HMCS Harry DeWolf travelled from Halifax through the Northwest Passage to Vancouver. It returned home to Halifax via the Panama Canal. During the deployment, the AOPS participated in operations in the Arctic, Eastern Pacific, and Caribbean Sea.

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## Projects at Seaspan Vancouver Shipyards

At Seaspan Vancouver Shipyards, construction of the RCN's first joint support ship, the future HMCS Protecteur continued. This project, similar to all NSS projects, extends beyond the shipyard, with several Canadian companies contributing to the effort.

Important milestones were also reached in the CCG's offshore oceanographic science vessel project. In January 2021, the Government of Canada awarded the build contract to Seaspan, which enabled the yard to transition from the design phase to full construction. Construction of the vessel began in March 2021.

Design work also continued on the CCG's future multi-purpose vessels. Seaspan will build up to 16 of these vessels, with construction to begin following completion of the joint support ships, the offshore oceanographic science vessel and the polar icebreaker.

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### Feature Stories

[Navamar](#): Shipbuilding and ship repair company in Montréal, Quebec, working on the sea-to-shore connectors for the joint support ships.

[Ideal Welders](#): Metal fabrication company in Delta, British Columbia, working on the bulbous bow for the second joint support ship to be constructed at Seaspan Shipyard.

## Polar icebreakers for the Canadian Coast Guard

In May 2021, the Government of Canada announced its plan to build 2 polar icebreakers for the CCG at 2 Canadian shipyards.

1 polar icebreaker will be built at Seaspan Vancouver Shipyards and the other will be built at Chantier Davie in Lévis, Quebec, pending its successful completion of the process to become a third strategic partner for large ship construction under the NSS.

This procurement approach will help to ensure timely delivery of these much-needed vessels to the CCG, while supporting opportunities for small and medium-sized businesses across Canada.

In support of the polar icebreaker program, in July 2021, the Government of Canada awarded a contract to Seaspan to complete a design check and begin preparation for comprehensive construction engineering.



## **Small ship construction**

NSS small ship construction contracts awarded between 2012 and 2021 are estimated to contribute close to \$339.4 million (\$30.9 million annually) to the GDP, and create or maintain 296 jobs annually, through the marine industry and its Canadian suppliers, as well as consumer spending by associated employees, between 2012 and 2022.

The CCG took delivery of their ninth and tenth search and rescue lifeboats. These vessels were built at Chantier Naval Forillon, in Gaspé, Quebec, and Hike Metal Products Ltd., in Wheatley, Ontario. Each shipyard is building 10 vessels for the Coast Guard.

In addition, the naval large tug project is well underway at Groupe Ocean in l'Isle aux Coudres, Quebec. The shipyard is building 4 new naval large tugs for the Royal Canadian Navy (RCN). These vessels will replace the RCN's 5 civilian crewed glen-class and 2 fire-class rescue boats.

In December 2021, the RCN announced the names of the future Canadian Forces Auxiliary Vessel tugs:

- Haro
- Barkerville
- Canso
- Stella Maris

These tugs will provide important support to enable warship movements and provide fire protection for the RCN's Pacific and Atlantic fleets.

## **Refit, repair, and maintenance projects**

NSS repair, refit and maintenance contracts awarded between 2012 and 2021 are estimated to contribute close to \$10.09 billion (\$917.4 million annually) to the GDP, and create or maintain 8,663 jobs annually, through the marine industry and its Canadian suppliers, as well as consumer spending by associated employees, between 2012 and 2022.

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### **Early 2021**

In January 2021, the Government of Canada awarded a [\\$16.5 million contract](#) to Zodiac Hurricane Technologies Inc. from Delta, British Columbia, for inspection, repair and overhaul work on the Canadian Armed Forces' inflatable rubber boats and rigid hull inflatable boats. The essential maintenance and support services provided by this contract, which will be completed on an as-required basis, will ensure the Canadian Armed Forces' fleet of inflatable boats remains capable of meeting current and future operational demands.

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On February 17, 2021, the Government of Canada awarded a contract to Allied Shipbuilders Limited, from North Vancouver, British Columbia, for reconfiguration work on Canadian Coast Guard Ship (CCGS) Sir Wilfred Grenfell. This contract will help create or sustain 140 jobs at the company. Work continued throughout the year and is expected to be completed in 2022.

In March 2021, the Government of Canada also awarded a [\\$20.7 million contract](#) to St. John's Dockyard Limited (Newdock), for vessel life extension work on 2 ships: the CCGS Cape Roger and the CCGS Cygnus. Work under this contract began shortly after the contract award, and will continue into 2022.

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#### Feature story

[Newdock](#): Shipyard in St. John's, Newfoundland working on vessel life extension of Canadian Coast Guard Ships Cape Roger and Cygnus.

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#### Summer and fall 2021

In July 2021, the Government of Canada awarded a \$2.2 million contract to Canadian Maritime Engineering for inspection, survey, and general refit of the CCGS Samuel Risley.

In August 2021, the Government of Canada awarded a [\\$55 million contract](#) to General Electric Canada Aviation Marine, for in-service support on the RCN's Halifax-class LM2500 gas turbines. This contract will ensure the ongoing maintenance of the gas turbines until the arrival of the Canadian surface combatants.

In September 2021, a \$12 million vessel life extension contract for the icebreaker CCGS Amundsen was awarded to Heddle Shipyards. The work will be completed at their Port Weller Dry Docks, in St. Catharines, Ontario.

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#### Feature story

[Heddle Shipyards](#): Shipyard in St. Catharines, Ontario working on vessel life extension of a Canadian Coast Guard icebreaker.

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#### Winter 2021

In December 2021, the Government of Canada announced [4 contracts totalling \\$77 million](#) for vessel life extension services for the fleet of 36 motorized lifeboats for the CCG. The contracts were awarded to:

- Hike Metal Products Ltd., Wheatley, Ontario
- Industries Ocean Inc., Saint-Bernard-sur-Mer, Quebec
- ABCO Industries Inc., Lunenburg, Nova Scotia
- Ocean Pacific Marine Store and Boatyard, Campbell River, British Columbia

Also in December 2021, the Government of Canada announced the [award of 7 contracts](#) for refit and vessel life extension on CCG ships. These contracts, valued at a total of over \$28 million, awarded to shipyards on the east and west coasts, as well as in the Great Lakes and Quebec regions, provided for maintenance and life extension work on 7 CCGSs:

- Amundsen
- Sir Wilfred Laurier
- John P. Tully
- Des Groseilliers
- Leim
- Ann Harvey
- Sir John Franklin

This refit work helps ensure that the ships remain in good working order and are in compliance with Canadian maritime regulations.

In addition, work continued in support of the Victoria class submarine in-service support contract (VISSC). The HMCS Corner Brook's undocking was completed on June 13, 2021. This undocking marked the return of Corner Brook to Vancouver Island waters for the first time in almost a decade. It is also the first in a series of milestones required for returning the submarine to operational service. For Canada's fleet of 4 submarines, VISSC provides:

- program management
- maintenance
- engineering
- integrated logistics
- records support

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VISSC has directly supported the Canadian marine industry, with maintenance work on the submarines being largely performed by domestic companies.

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#### Feature story

[Ocean Pacific Marine Store and Boatyard](#): Boatyard in Campbell River, BC performing vessel life extension work on some of the Canadian Coast Guard's motorized lifeboats.

### **Selection of a third National Shipbuilding Strategy shipyard**

The Government of Canada continued work in 2021 to add a third Canadian shipyard under the NSS. Additional shipbuilding capacity is required in Canada to renew the RCN and CCG fleets, while supporting economic opportunities for the Canadian marine sector.

The third shipyard will build up to 6 new program icebreakers and a polar icebreaker for the CCG, increasing Canada's capacity to deliver new vessels in a timely manner.

The competitive [process to select a third National Shipbuilding Strategy shipyard](#) is similar to the 1 used to select Seaspan and Irving in 2011. In response to an invitation to qualify issued in 2019, Chantier Davie was the only prequalified supplier to proceed to the request for proposal stage.

In July 2021, Chantier Davie submitted their response to a request for proposal. As of December 31, 2021, the evaluation team was continuing to assess Chantier Davie's proposal, with the final results expected in 2022.

### **Other marine procurement projects**

In 2021, Chantier Davie continued its work to refine the individual designs for 2 new Transport Canada ferries, 1 for each of the Îles de-la-Madeleine, Quebec, to Souris, Prince Edward Island (PEI), route and the Wood Islands, PEI, to Caribou, Nova Scotia, route. The design work on the 2 vessels is ongoing and the delivery of the first vessel is anticipated in 2027.

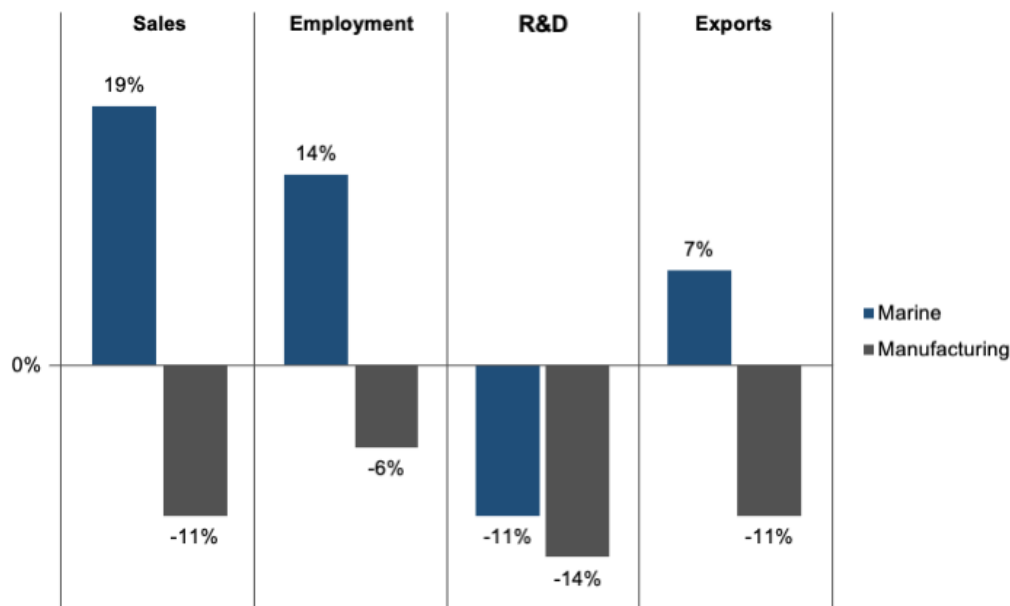
While work on this project continues, the Government of Canada has acquired an interim replacement vessel for the Îles de-la-Madeleine to Souris route. The Motor Vessel (MV) Villa de Teror, renamed the MV Madeleine II, entered into service on June 1, 2021. It will serve as an interim solution until the new MV Jean Lapierre is delivered.

# Economic benefits for Canadians

The National Shipbuilding Strategy (NSS) continues to revitalize Canada’s marine sector, creating jobs, and generating socio-economic benefits and prosperity in communities across the country.

Canada’s marine industry outperformed the broader manufacturing sector between 2018 and 2020. Between 2014 and 2020, Canada’s marine industry recorded 57% growth in sales and 46% growth in employment. This growth is not limited solely to the NSS shipyards contracts awarded by the Government of Canada. 90% of the Canadian marine industry’s firms are small- and medium-sized businesses (SMBs), capturing close to 40% of the industry’s employment and sales.

## Performance of key variables, the Canadian marine industry vs. the broader manufacturing sector, percentage change: 2018 to 2020 <sup>1</sup>



<sup>1</sup> Changes in monetary values are in current dollars/not adjusted for inflation; and R&D spending relates to R&D performed internally by marine industry businesses. See annex for associated data tables.

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**Table 2: Change in civil vs. defence marine sales: 2018 to 2020**

|                                  |     |
|----------------------------------|-----|
| <b>Defence marine</b>            | 41% |
| <b>Civil marine <sup>2</sup></b> | -5% |

Source: Statistics Canada's "Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey" (2018, 2020), 2020 survey released in 2022; Statistics Canada export data accessed through "Trade Data Online"; and Statistics Canada's online tables: 27-10-0333-01, 14-10-0202-01, and 16-10-0047-01

### **Shipbuilding employment**

This increased employment in the sector has created high-quality manufacturing jobs, with the average salary in Canadian shipyards being 30% higher than the manufacturing average. Additionally, the Canadian marine industry overall is innovative and supports skilled workers, with a 2.5-times-higher share of employment in science, technology, engineering and mathematics fields (such as engineers, scientists and researchers) than total manufacturing.

In 2021 alone, the Government of Canada awarded approximately \$2.86 billion in new contracts to Canadian companies under the NSS, including approximately \$106 million that went to SMBs with fewer than 250 full-time employees. All contracts awarded in 2021 are estimated to contribute more than \$1.987 billion annually to Canada's Gross Domestic Product (GDP) and will result in approximately 9,284 jobs annually during the period covering 2021 to 2022. <sup>3</sup>

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<sup>2</sup> Civil activities can range from those relating to marine sciences/ocean technologies, to goods and services for public sector clients and vessels like coast guard ships, as well as commercial ships for private sector operators, and related systems, etc.

<sup>3</sup> The GDP and job impacts are based on 2021 NSS contract awarded values of contracts with extended project periods weighted and adjusted to reflect the economic impact period of 2021 to 2022.

The NSS continues to offer opportunities in the marine sector to groups that are underrepresented in the shipbuilding industry. Partnerships are being forged with the 2 large vessel shipyards, federal departments, academic institutions, research organizations and other joint ventures to increase the participation of under-represented groups in the sector.

### **Industrial and technological benefits policy and National Shipbuilding Strategy value proposition**

Shipyards are meeting and exceeding their commitments required under the industrial and technological benefits (ITB) policy, formerly the industrial and regional benefits (IRB) policy, as well as the National Shipbuilding Strategy value proposition (NSS VP).

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#### Industrial and technological benefits policy

Canada's ITB policy is playing an important role in leveraging Canada's defence and security spending to generate economic benefits for the country. Under this policy, shipyards and their major suppliers are undertaking business activities in Canada equal to the value of their contracts. In addition, the policy creates and requires companies to focus on targeted priority areas:

- work in Canada directly related to the procurement under the strategy
- opportunities for Canadian suppliers
- innovation through research and development activities in Canada
- skills development
- new export opportunities

While the ITB policy strives to maximize benefits to Canadian industry, 1 of the core principles of this policy is that business transactions are market driven. As such, the shipyards that are awarded contracts under the NSS are responsible for the sourcing and selection of materials for their respective shipbuilding contracts. Through these policies, hundreds of Canadian businesses are securing work through contracts with the selected NSS large-vessel shipyards, and, in turn, are investing in innovation and securing exports.

Irving Shipbuilding Inc. (ISI) has an obligation of over \$4.5 billion for the Arctic and offshore patrol ship (AOPS) project and modernization and support services to the Halifax-class frigates, of which close to \$3.4 billion has been completed to date. On the Canadian surface combatant definition contract, ISI has an ITB obligation of \$278 million thus far, of which \$217 million has been identified as ITB activities underway. Its major subcontractor Lockheed Martin Canada has identified ITB activities of \$209 million underway as part of its ITB obligation of \$251 million.

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On the West Coast, Seaspan's Vancouver shipyards (VSY) are making progress on its obligations, including in relation to the offshore fisheries science vessels, the offshore oceanographic science vessel, and the joint support ships. To date, VSY has completed over \$1.4 billion in ITBs/IRBs, with approximately \$928 million in activities currently underway as part of its total obligation of just over \$4.8 billion across these 3 projects. Additionally, VSY has an ITB/IRB obligation of close to \$1.3 billion on modernizations and support services to the Halifax-class frigates, of which close to \$633 million has been completed to date.

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### National Shipbuilding Strategy value proposition

The NSS VP is designed to benefit the greater Canadian marine industry and help ensure its long-term sustainability. Under the NSS VP, shipyards are required to invest an amount equal to 0.5% of the value of the large-vessel NSS contracts they are awarded in the Canadian marine industry to support human resources development, technology investment, and industrial development.

Both shipyards have made investments in all 3 priority areas, and have placed particular focus on skills development and advancing the participation of under-represented groups in Canada's marine industry. Investments have supported collaborative approaches to applied innovation in the ocean technology sector, the acquisition of equipment to complement marine-specific education programs, and post-secondary curriculum development to ensure qualified personnel are being trained for the industry.

As of December 31, 2021, NSS shipyards had accrued over \$31.2 million in NSS VP obligations. The value of approved investments at the end of 2021, including completed investment activities and approved future activities, exceeded \$36.9 million.

### **Workers of tomorrow**

As the NSS continues to revitalize Canada's shipbuilding industry, both partner shipyards under the strategy, Irving Shipbuilding and Seaspan's Vancouver Shipyards, are actively supporting the next generation of shipbuilders to work on the projects that will be part of Canada's efforts to renew its federal fleets of combat and non-combat vessels.

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### Irving support for apprentices

Irving Shipbuilding Inc. (ISI) supports a variety of learning opportunities and professional designations for their team members. The shipyard offers specific support to their apprentices, including wages, mentors, and a dedicated apprenticeship team to support those joining the industry.



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## Irving Red Seal Trade program

In 2021, ISI welcomed 458 new employees, and saw a record 48 graduates receive Red Seal Trades certification. Red Seal certifications are a nationally recognized endorsement that a tradesperson is qualified to do their job, and has demonstrated the knowledge required for the national standard in that specific trade.

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## Seaspan training programs

Seaspan's Vancouver Shipyards provide a wide range of learning and skills development opportunities to develop the next generation of shipbuilders. In 2021, the shipyard welcomed approximately 400 new employees, including both professionals and highly-skilled tradespeople. Its comprehensive apprenticeship program supported more than 80 apprentices in 2021 and saw 11 apprentices graduate with their Red Seal certification. In 2022, the shipyard anticipates doubling the number of Red Seal graduates, while continuing to increase the total number of apprentices in the program.

Seaspan also established a new training facility, the Welding Centre of Excellence, which includes 24 welding booths for training new welders and conducting recertifications, as well as a metallurgy lab and analysis room for developing new welding technologies and processes.

Through 2021, Seaspan continued to invest in education, learning, research, and skills development initiatives to bring a broad range of new talent into the industry and the trades. For example, the shipyard announced a 3-year, [\\$1.35 million investment](#) in the Aboriginal Community Career Employment Services Society (ACCESS).

The company also announced a [collaboration with BC Tech](#) to support the Digital Lift Internship Program, which aims to help Indigenous people, women, rural youth, and mid-career transitioning workers gain real-world experience across multiple sectors, including the marine industry.

## Challenges

The National Shipbuilding Strategy (NSS) continues to face considerable challenges in meeting its core objective of renewing federal fleets in a timely and affordable manner.

Since the first build contracts were awarded in 2014, 5 large ships and numerous small vessels had been delivered as of December 31, 2021. However, these milestones were met more slowly and at higher costs than originally anticipated.

Shipbuilding is a highly complex process, and during the early years of the strategy, expertise both at the shipyards and within government was still developing. As Canada was attempting

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to move beyond the shipbuilding boom and bust cycle observed before the NSS was introduced, entirely new classes of ships were being built by new workforces in upgraded shipyards, resulting in significant learning curves for both Canada and shipyards.

This has led to ongoing challenges with respect to planning, management and oversight.

## **Schedules**

A number of factors have impacted the timing and execution of projects.

Original delivery schedules were established more than a decade ago, based on projections and guided by limited recent experience in the planning of shipbuilding projects.

It is now recognized that there are risks associated with first of class builds and short production runs in “green” shipyards that needed to be taken into account when setting initial schedules.

As the NSS has evolved, both the shipyards and Canada have gained the experience required to set more realistic schedules, although projects continue to face delays.

## **Budgets**

Original budgets were set without a standardized approach. Preliminary budgets were based on immature cost estimates, and did not fully consider refinements in build requirements and plans, inflation costs, changes in exchange rates, or labour rates and material costs, which have risen significantly over the last decade.

Pressures on supply chains and the marine sector workforce have been exacerbated over the past 2 years due to the global pandemic. This is anticipated to have further impacts on project budgets in the future.

## **Human resources**

The Government of Canada has been tracking risks associated with human resources capacity internal to the Government of Canada and at the shipyards for several years. Through the additional analysis of these risks, human resources capacity in the marine industry has been identified as a key risk to the success of the NSS.

The marine industry is facing a number of challenges with respect to human resources capacity, including:

- attracting and retaining workforce
- skills development and capabilities of future workforces

- developing a national-level dialogue on regional differences

## **COVID-19**

The COVID-19 pandemic is an unprecedented situation, forcing all sectors, including the marine industry, to adapt rapidly.

Shipyards have reported some direct delays to projects as a result of the pandemic's impact on their workforce. Yard shutdowns have occurred, and shipbuilding processes have been disrupted due to absenteeism and adherence to health and safety regulations.

Apart from these direct impacts, the marine industry as a whole is facing significant challenges stemming from COVID-19. Factors such as inflation, commodity pricing and supply chain challenges have impacted the cost and availability of materials, posing further risks to project budgets and schedules.

Canada is working actively with the shipyards to properly assess the impacts of the pandemic and identify solutions.

## **Addressing challenges**

To address these challenges, significant enhancements have been made to strategy management over the years. These enhancements include:

- a governance structure to provide oversight and to support the execution of the strategy
- engagement of senior shipbuilding advisors to provide key advice to decision makers
- engagement of third party experts to support specific areas of the strategy including cost estimation and shipyard capability assessment
- increased capacity in support of project management; the development of a Performance Monitoring Framework to monitor progress towards National Shipbuilding Strategy (NSS) objectives
- efforts to streamline defence procurement and standardize contract terms and conditions

## **Risk management**

Public Services and Procurement Canada (PSPC), the Department of National Defence and the Canadian Coast Guard are working together to improve risk management tools to ensure that a comprehensive collection of risk-related information, including mitigation strategies, is available to support decision-making going forward.

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PSPC is also increasing the number of dedicated individuals engaged in risk management efforts to actively identify risks and develop mitigation strategies, expanding engagement with shipyards on risk, and increasing transparency through more detailed reporting to NSS governance committees.

### **Shipyard performance**

The Government of Canada is actively engaged with NSS shipyards to address issues related to overall performance.

These efforts continue to focus on improved delivery and accuracy of schedules, more disciplined reporting of progress towards targets, and monitoring and reporting on performance improvement at shipyards.

Existing tools and processes, such as the integrated project schedules produced by the shipyards, and budget and schedule oversight tools, such as earned-value management, to measure performance and progress, are being enhanced to support better oversight by governance committees at all levels.

### **COVID-19**

With regard to pandemic-related delays, the Government of Canada has an open dialogue with the shipyards on their response to COVID-19, and has engaged third party expertise to examine COVID-related expenses.

The goal is to leverage lessons learned and identify future mitigation strategies that could be implemented while continuing to ensure the health and safety of the workforce.

### **Infrastructure requirements**

To address the complexity of NSS, in particular as it relates to the level of available infrastructure for all shipbuilding and marine/naval sustainment activities in the short and long term, the Government of Canada has launched a Maritime Infrastructure Strategy. The strategy includes industry outreach and execution of independent studies.

### **Human resources**

The Government of Canada is actively engaged in developing an NSS Human Resources (HR) Strategy that aims to mitigate risks associated with labour shortages by ensuring that the marine industry and the Government of Canada have access to the skills and labour required to support NSS projects.

Progress to date includes establishing a forum for industry stakeholders and federal partners to share information about HR opportunities and launching a series of presentations to facilitate information sharing to and from program officials in the federal government.

Furthermore, the NSS HR Strategy Secretariat is coordinating the implementation of action plans built around the following pillars:

**data and information:**

increase access to labour market information necessary for the design and targeting of recruitment initiatives, and workforce planning

**promotion and awareness:**

focus on the development of a consistent approach to attracting workers, with targeted measures specifically geared towards under-represented groups

**workforce development and retention:**

encourage leadership and generate the skills and capabilities of future workforces

**community building:**

foster a sense of community across stakeholders from the Government of Canada and the marine industry at large to promote the sharing of information, best practices and lessons learned

## **Auditor General of Canada report on the National Shipbuilding Strategy**

In February 2021, the Auditor General of Canada tabled a report on the National Shipbuilding Strategy. The report found that the federal fleet renewal has experienced many delays in design and construction and that while key decisions improved the prospects of timely fleet renewal, there is little room for further delay.

[At a glance: Report 2—National Shipbuilding Strategy \(Office of the Auditor General of Canada\)](#)

Given the importance of the strategy, the Government of Canada welcomes the Auditor General of Canada's report and accepts all of the recommendations. As the Auditor General acknowledges, shipbuilding is complex and challenging work, and Canada continues to seek opportunities to improve the Strategy.

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## Statement: Government of Canada responds to Auditor General's report on National Shipbuilding Strategy

As the Auditor General also acknowledges, the Government of Canada has made several key improvements to place the Strategy on a more viable path, and while progress has been made, the Strategy is a decades-long initiative and ongoing enhancements will be required.

### **Year ahead**

Looking ahead to 2022, the Government of Canada will continue to work with its partners and shipyards to improve the timely renewal of the federal fleet.

Although this report lays out a series of measures being taken to seek to mitigate ongoing challenges, the Government of Canada recognizes the risks inherent to an initiative of this size, scope and scale, and there will continue to be pressures on schedules and costs.

Our efforts this year will focus on improved accuracy of schedules and ship delivery, reporting of progress towards targets and monitoring shipyard performance. This will include assessing the full impacts of COVID-19 on projects, including continued supply chain delays, and recalibrating project schedules and budgets as required.

In terms of projected milestones for the coming year, there are a number on the horizon.

The process to select a third shipyard as a strategic partner under the National Shipbuilding Strategy (NSS) will continue, with the intent of having an agreement in place in 2022.

As for upcoming milestones at the shipyards, steel cutting for the Royal Canadian Navy (RCN)'s second joint support ship is planned for 2022 at Seaspan's Vancouver Shipyards. Irving Shipbuilding is also expected to cut steel on the sixth Arctic and offshore patrol ship for the RCN.

The Canadian Coast Guard (CCG) anticipate taking delivery of their 11th through 14th search and rescue lifeboats, which would bring them past the halfway mark in that project. RCN is also expected to take delivery of the first 2 of 4 large naval tugs.

In addition, Chantier Davie is expected to finish conversion work on the Canadian Coast Guard Ship Vincent Massey, the Coast Guard's third medium icebreaker. This vessel will carry out icebreaking duties in Atlantic Canada, the St. Lawrence River, and Arctic regions, and will backfill for other icebreakers while they undergo vessel life extension work.

The acceptance and purchase of a light icebreaker for the CCG will occur in early 2022. This vessel, following conversion, will also serve as an important interim measure by providing

backfill capacity as vessels are taken out of service for vessel life extension and refit work. Throughout 2022 and beyond, the NSS will continue to stimulate the Canadian economy, in addition to supporting jobs from coast to coast to coast.

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## Appendix: Feature stories

### Navamar

At Navamar, a shipbuilding and ship repair company from Montréal, Quebec, work continued throughout 2021 on sea-to-shore connectors in support of the new joint support ships (JSS) for the Royal Canadian Navy.

A sea-to-shore connector is a small vessel that allows personnel, equipment, and goods to move on and off the JSS when unable to dock alongside a conventional wharf or quay.

We spoke with Grigor Grigorov, a project director at Navamar, about work being done on these modular connectors, which will enable the JSS to operate in ports where the infrastructure may be unavailable.

This is a major and important project at Navamar. As a company of around 70 people, it dedicates about 20 workers to the production of the sea-to-shore connectors. The manufacturing of the first connector began in late December 2020, with the majority of the work taking place in 2021.

Navamar has built modular vessels with similar propulsion units in the past, and with this experience, saw an opportunity to be a part of the JSS project. They are now applying this knowledge to the sea-to-shore connectors. The design for the connectors themselves, however, is completely new.

Navamar worked with an engineering subcontractor, Concept Naval, from Quebec City, to develop the design in accordance with the scope of work requirements. Some of these requirements are the modular nature of the connectors, each with the weight specification of less than 6,000 kilograms.

In September 2021, the connector underwent a successful factory acceptance test and, in October, underwent successful sea acceptance trials. Sea trials are a testing phase where the connectors are operated under working conditions.

The final sea trials, where the connector will be sporting a fresh paint job in Royal Canadian Navy (RCN) colours, is expected to happen in the spring of 2022. The initial sea acceptance trials, done in the Port of Montréal, were completed without the paint.

Through contracts in support of the JSS, including the 4 sea-to-shore connectors, years of work will be carried out at companies like Navamar. The second sea-to-shore connector is currently in production, and all 4 are expected to be completed by the end of 2023. This means steady work for a large portion of Navamar's workforce.



“As with all services, you have ups and downs, peaks and valleys,” Grigor said. “By having construction for long term, this is giving stability to the company so we can keep a good volume of workers.”

Projects like the sea-to-shore connectors also reach farther than Navamar’s Montréal facility. These projects also benefit the company’s subcontractors. For example, in addition to working with Concept Naval from Quebec City, the painting for the sea-to-shore connector is currently being done by a local Montréal painting company.

1 of the main goals of the National Shipbuilding Strategy is to stimulate the marine industry in Canada. By awarding contracts for shipbuilding work to companies across the country, workers are able to find jobs locally, instead of having to move as they may have in the past.

“I see this as a big advantage,” Grigor added. “Projects like this are helping Navamar to grow, and growing Navamar is growing the marine industry in Montréal.”

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## **Ideal Welders**

At Ideal Welders, which is situated on the Fraser River in Delta, British Columbia, roughly 180 employees work on a variety of projects, including those in support of the Royal Canadian Navy's joint support ship (JSS).

Ideal Welders has been fabricating pressure and power piping for over 50 years. After delivering the first bulbous bow in 2020, Ideal Welders commenced early work on the bulbous bow for the second JSS in 2021. The purpose of the bulbous bow is to increase efficiency as the ship moves through the water. It does so by dispersing water around the hull in a more even distribution, reducing surface friction and drag.

1 of the goals of the National Shipbuilding Strategy (NSS) is to revitalize the marine industry in Canada. Through the work carried out by companies like Ideal Welders for Seaspan's Vancouver Shipyards, 1 of Canada's 2 strategic shipyard partners under the NSS, this goal is being realized.

We spoke with Josh Taylor, a project manager at the company, about their work under the Strategy and how the company ventured into the marine world with Seaspan.

"We have a team here that works directly on Seaspan's account," Josh said. "And we're coming to work every day because the NSS exists." The NSS program has helped contribute to an engaging and stable work environment at Ideal. At any given time, 10 to 20% of their workforce is actively working on NSS-related projects.

Ideal Welders was brought into the shipbuilding world through Seaspan in 2014 with the offshore fisheries science vessels program.

"We were fortunate to be tasked with learning the particular demands and nuances of the marine industry at an early stage of the NSS as a strategic supplier to Seaspan," Josh said.

As a result, Ideal Welders has evolved with Seaspan and through that introduced new procedures, templates, and workflows to enhance efficiencies and produce demanding deliverables. It was also through Seaspan that Ideal Welders became involved in the bulbous bow construction.

"That was a really neat program here," Josh said.

Ideal had to adopt a different build strategy than they were used to. The build started inverted, before being flipped, craned through their roughly 500-foot fabrication bay, and placed into a cradle. Once it was placed in the cradle, they built the rest of the bow from there.

By the time Ideal Welders was done, the roughly 190,000-pound bow was tall enough to be in line with the ceiling rafters within the fabrication bay. It was in the cradle that the bulbous bow was transported to Seaspan. The actual fabrication drew on activities that Ideal Welders carries out every single day. They fabricate, weld, perform non-destructive testing, and apply surface treatment coatings.

“The NSS and our relationship with Seaspan has definitely been an asset during COVID,” Josh said. “We were able to keep people working because of the NSS.”

The bulbous bow for the second joint support ship is expected to be completed by the end of 2022. The coming together of projects like the bulbous bow, where the progress the team makes is visible, is part of the reason Josh enjoys what he does.

“The thing that excites me the most about coming to work every day is there is a tangible aspect to what we do, where you can actually see it and feel it,” Josh said. “You get to see it come together over a long period of time, and there’s that inherent pride that’s associated.”



The JSS 1 bulbous bow outside the fabrication bay at Ideal Welders.



Bulbous bow preparing for departure from Ideal Welders.



Bulbous bow in the cradle at Ideal Welders.

## Newdock

In March 2021, Public Services and Procurement Canada (PSPC) awarded a contract on behalf of the Canadian Coast Guard (CCG) to St. John's Dockyard (Newdock), in St. John's, Newfoundland for the [vessel life extension work on Canadian Coast Guard Ship Cape Roger and Cygnus](#), ships that perform offshore patrol in support of fisheries surveillance, and are also available for search and rescue and environmental response operations on the east coast.

The contract helps create or sustain up to 40 jobs.

Work on these vessels includes:

- regulatory inspections
- installation of a new crane on each of the 2 vessels
- hull blasting and coating
- electrical replacement and refurbishments
- overhauling various components
- replacement of:
  - piping
  - hull plating
  - deck steel

Canadian Coast Guard Ship (CCGS) Cape Roger arrived at Newdock in May 2021, and at the beginning of the refit, a main engine overhaul was completed. The biggest item remaining is work on the piping in the engine room.

We spoke to Jeff Ivany, Project Manager overseeing the vessel life extension work for CCGS Cape Roger and CCGS Cygnus.

For the dockyard, this is the first vessel life extension contract where 2 vessels are coming in back-to-back. The work itself is nothing Newdock hasn't seen before, but that doesn't mean there aren't some surprises along the way. For CCGS Cape Roger, an extensive amount of steelwork was required and, since the vessel itself is smaller, the work areas and room for pipe fitting were tighter.

"When you open up an old boat you don't know what you'll get," Jeff said.

Adaptability and the ability to problem solve are critical skills in the shipbuilding world. These are the things that Jeff enjoys about the industry. "It's not a monotonous job, there's different challenges every day. It's fast paced, and time goes really quick."

Jeff also touched on the cyclical nature of work at shipyards. There are ups and downs with resources and workers. Contracts like the vessel life extension work on CCGS Cape Roger and CCGS Cygnus allow Newdock to keep a consistent workforce.

"These longer refits allow us to keep more steady personnel," Jeff said. "Overall, it's a positive for the yard."

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Moreover, contracts like this help to build departments. At Newdock, the work on CCGS Roger and CCGS Cygnus has enabled the piping department, which usually runs at around 10 workers, to hire additional personnel, putting the department at over 20 workers for this contract.

There is some local subcontracting required for this project. For example, Jenkins Power, a local sheet metal supplier, does work on the window and door frames. In addition, the St. John's community benefits from this type of contract. The projects all require supplies and consumables, from welding rods to gloves, that they purchase from local suppliers.

"There's an economic benefit for local suppliers and local subcontractors," Jeff added.

For the next steps, the CCGS Cape Roger will be undocked in preparation for the vessel being made ready to accept its crew. CCGS Cygnus will follow shortly after, expected to arrive in the spring of 2022, and the team at Newdock will continue this important work to finish up the contract.

In 2021 alone, Newdock worked on a total of 57 projects in the yard. While not all were National Shipbuilding Strategy (NSS) related, the projects for the CCG were a big part of that.

## **Heddle Shipyards**

In September 2021, a vessel life extension contract for the Canadian Coast Guard (CCG) icebreaker, Canadian Coast Guard Ship (CCGS) Amundsen, was awarded to Heddle Shipyards. The work will be completed at their Port Weller Dry Docks, in St. Catharines, Ontario.

The project will help support over 100 jobs, in addition to supporting businesses in the surrounding Niagara, Ontario region.

We spoke to Ted Kirkpatrick, Director of Business Development and Government Relations at Heddle Shipyards, about the work being done on CCGS Amundsen.

For the life extension of the vessel, some of the work includes a full new paint job, work on the retractable thrusters, replacement of the propeller shafts, and a substantive refit of the vessel's galley, the kitchen facility onboard the ship. Work continues to progress well at the shipyard, and the project is currently on schedule.

What makes this project different from other refits is the amount of work being done over a longer period of time. Typically, some of the work would be done in intervals when a ship comes into a yard every few years. For CCGS Amundsen, a significant amount of work is being done all at once over the course of 8 months, with work expected to wrap up in summer 2022.

As the National Shipbuilding Strategy (NSS) aims to revitalize the shipbuilding industry in Canada, 1 of the goals is to work to eliminate the cyclical nature of the industry. Vessel life extension (VLE) projects help reduce this because of the consistent employment they bring to shipyards, while also allowing companies like Heddle to invest in their people and in their facilities.

Challenges with this reality are still present across Canada, but contracts like the VLE for CCGS Amundsen are an important element in eliminating the boom-and-bust cycle of the ship repair and construction industry in Canada.

"Projects like this are one of the keys to being able to sustain our operations and our workforce," said Ted. "Being able to get these contracts is what keeps the yard not just going, but able to grow, and able to grow our workforce and become a more efficient service provider for the [Canadian] Coast Guard and our commercial clients."

The economic benefits of a project like the work being done on CCGS Amundsen also extends into the local community. Workers in the region have steady employment throughout the work period. In addition, Heddle subcontracts some of the work being done for the vessel.

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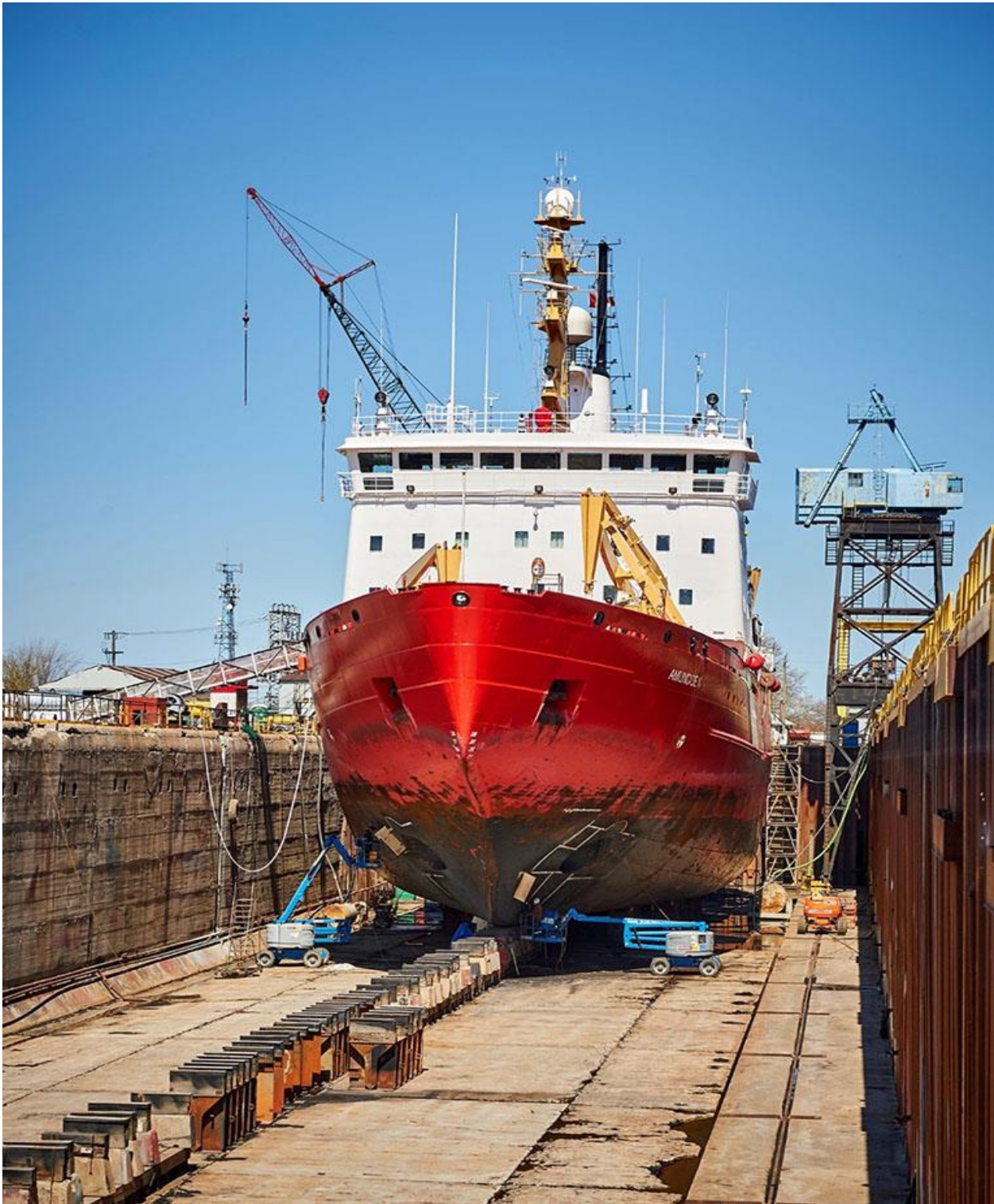
“There’s lots of surrounding businesses that will benefit from this contract,” Ted said. “Vessel life extension projects are a critical part of sustaining and growing the maritime supply chain in Ontario.”

Heddle has been able to bring workers in from other areas in the province to work at the shipyard, which is beneficial for the city of St. Catharines.

Work will continue on CCGS Amundsen in 2022. Both main propeller shafts have been removed and will soon be replaced, and the retractable thruster has also been removed to be rebuilt.

“These vessel life extension projects will be hugely important for the growth of not just us,” Ted added, “but for the shipbuilding and repair capacity in Ontario and in Canada.”





CCGS Amundsen in dry dock.

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## **Ocean Pacific Marine Store and Boatyard**

At Ocean Pacific Marine Store and Boatyard, vessel life extension work on some of the Canadian Coast Guard (CCG)'s motorized lifeboats is starting. The company of about 50 employees has their own supply and stock store, as well as a boatyard. This means they often have the material required to undertake projects on hand and in stock.

We spoke with Bruce Kempling, President, and Laura Kempling, Human Resources Manager. Bruce and his wife, Linda, started the business in 1985 and, more than 3 decades later, the company has received a contract to extend the life of 13 of the 36 motorized lifeboats.

"For a small business like us to produce a bid like this one is a big deal," Laura said, recalling long nights spent preparing the bid. "It's a passionate thing we are putting a lot of effort into."

To complete life extension work on the motorized boats, Ocean Pacific Marine developed specific infrastructure. They are modifying the building the vessel will go into by creating more shop and material handling space. This means that when the vessels are housed, the employees will have more efficient access to them. This modified space will also be used for other work once the motorized lifeboat life extension work is complete.

A project like this, bringing steady, year-round employment, is important to a small community like Campbell River.

The company has hired additional employees to dedicate a specific team to the project, while ensuring the rest of their business continues to operate smoothly. Specific to the lifeboat extension work, 5 employees were added. In total, 15 full-time and part-time employees will be working on the project, which is expected to take a little over 6 years to complete depending on the condition of the vessels.

The contract reaches beyond Ocean Pacific Marine as well, they will be subcontracting for specialized fabrication work, sandblasting, fire protection equipment certification, painting, and non-destructive testing. All of these subcontractors are local.

"There's quite a big spinoff in a community this size," said Bruce. "We appreciate the work and the business, and so does the town. For the employees, the community, and the subcontractors, this is a feeling of accomplishment."

In early December 2021, representatives from the CCG and Public Services and Procurement Canada (PSPC) visited the boatyard for a kickoff meeting. Ocean Pacific Marine was able to give them a tour of the facilities while introducing the project.

A contract like this one is different from others where the work is done over a period of a couple of months. Ocean Pacific Marine will be working on this for many years, with long-term, ongoing relationships. A contract of this length means steady work for a long period of time.

The first boat arrived at Ocean Pacific Marine in December 2021, and the work is underway.

“We’re working together closely as a tight-knit family to make this happen for our family business,” Laura added. “And we succeeded.”



Canadian Coast Guard Ship Cape Sutil on a lift with a group of workers standing in front





CA group of workers standing in front of the Ocean Pacific Marine Store