

Written Submission for the Pre-Budget Consultations in Advance of the 2021 Federal Budget

**By: The Canadian Integrated Shaftline
System Consortium**

August 7, 2020



- **Recommendation 1:** That the government recognize the imperative of supporting a strong domestic defence industry for the purposes of national security, re-supply, and overall economic interest, by developing a defence industrial policy that permits a national security exemption to better help protect Canadian-made products and ensure the highest consideration for Canadian procurement projects.

The Consortium

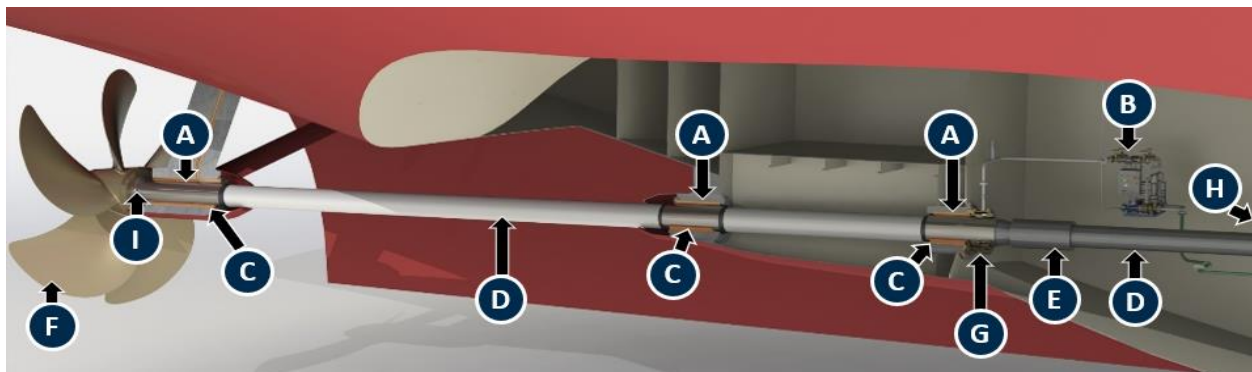
Thordon Bearings Inc., Dominis Engineering Ltd. and Patriot Forge Co., three world-class, family-owned and operated high-performance manufacturing businesses in Ontario, joined forces as a consortium in early 2020 in order to provide fully integrated and complete propeller shaftline systems – a product named the “Canadian Integrated Shaftline System” (“CISS”).

While all three companies have a long track record of supplying their own individual and specialized components to Canadian, American and global navies and coast guards’ propeller system, as a integrated consortium they are now able to offer a *complete* shaftline package with a focus on supplying in-progress and future vessels included as part of the Government of Canada’s National Shipbuilding Strategy.

This entirely made-in-Canada, innovative and environmentally sound solution will achieve the basic underlying tenets of the NSS – rebuilding Canada’s marine industry and creating sustainable domestic jobs, while ensuring our sovereignty and protecting our interests at home and abroad.

The Canadian Integrated Shaftline System

The Canadian Integrated Shaftline System will include all of the necessary components needed for both large and small navy and coast guard vessels' main propeller shaftlines (below). This includes the propeller itself (Dominis Engineering Ltd.), the propeller shaft and couplings (Patriot Forge Co.), and the shaft bearings, coatings and bulkhead seals that provide efficient and environmentally sustainable operations of the shaftline (Thordon Bearings Inc.).



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| A. Thordon non-metallic bearings fitted to housing/carries | E. Patriot Forge shaft couplings (forged and machined) |
| B. Thordon Water Quality Package to provide constant and clean water flow to the bearings to extend bearing wear life and control the environment | F. Dominis fixed pitch superior performance propeller |
| C. Thordon supplied(Inconel® or similar) liner material (the running surface for bearings) | G. Thordon SeaThigor mechanical face forward seal with integral Safe Return to Port capability |
| D. Patriot Forge supplied propeller shaft | H. Thordon Safe-Return-To-Port Intermediate Bearing |
| | I. Thordon Shaft Bearing Condition Monitoring System |

At Issue – The Need to Support World-Class, Innovative, Made-in-Canada Solutions in Canadian Defence Procurement

The consortium that has formed together to create the Canadian Integrated Shaftline System has done so as a large result of necessity and a common problem amongst all of them individually when it comes to Canadian defence procurement – the incredible difficulty of supplying Canadian parts for Canadian projects.

Of course, this is counterintuitive to not only policies such as the National Shipbuilding Strategy that encourages sustaining Canadian jobs and Canadian content, but also to what the Government of Canada, the ultimate end customer of these vessels being developed under the NSS, should want in terms of having the ability to have world-class Canadian products on its ships.

And, in the case of the consortium, these truly are *world-class* products.

Thordon Bearing's propeller shaft bearings are on over 850 vessels across 40 navies and coast guards worldwide. Their bearings have a proven wear life of the life of the vessel, and their proprietary non-metallic polymer materials eliminate oil and grease usage, meaning zero risk of oil pollution in the ocean.

For its part, **Dominis Engineering is the *only* "sovereign" propeller manufacturing facility in Canada.** Their state of the art technology eliminates robotic grinding of propeller surfaces and hand finishing of leading edges from the manufacturing process. They are also currently involved in a study for Transport Canada, with the help of Memorial University and DRDC, to look closer at how to solve underwater noise concerns – a large concern for underwater marine mammal protection.

Finally, **Patriot Forge is the largest custom open-die and rolled ring forging company in Canada and a leader in the global market.** They serve industries not only in defence, but also to critical infrastructure such as power generation, oil and gas, aerospace and infrastructure. Patriot has extensive experience in supplying the defence industry, but mostly within the United States.

The last point ultimately brings this back to the issue at hand. While each of the three companies have, and continue to have, individual success in supplying to navies and coast guards around the world, little of that supply has been to Canada. Much of this is a result of the Government of Canada choosing to rebuild Canada's defence capabilities, largely with commercial and military off-the-shelf solutions from foreign original equipment manufacturers ("OEMs"). In turn, these foreign OEMs have few residual industry components and are not forced in any real way to consider domestic solutions.

The government often points to its formalized and complex offset policy (Industrial and Technological Benefits, or ITBs) as solution to this problem, which requires that these OEMs make commitments to invest 100 per cent of the contract value back into R&D and intellectual property transfer within Canadian industry. While this encourages an emphasis in helping to grow *export* markets for companies such as those who have developed CISS, it still does very little to help protect or at least obligate them to consider domestic solutions for Canada's sovereign and major procurement projects. As a result, low-cost, foreign solutions are prioritized over innovative domestic solutions.

With the development of CISS, a complete propeller package, the consortium is hoping it will be harder to be overlooked. There are, however, ways by which the Government of Canada could ensure this remains the case and provides the content for the ensuing recommendation.

Protecting Our Domestic Defence Industry

Recommendation 1: That the government recognize the imperative of supporting a strong domestic defence industry for the purposes of national security, re-supply, and overall economic interest, by developing a defence industrial policy that permits a national security exemption to better help protect Canadian-made products and ensure the highest consideration for Canadian procurement projects.

For a number of years now, many within the domestic defence industry in Canada have called upon the Government of Canada to develop a defence industrial policy that recognizes the strategic importance of a strong sector for the purposes of national security, re-supply, and the overall economic interest of the country.

The impact of COVID-19 on Canada's economic has been far-reaching. It has clearly put the global supply chain under serious duress, and has forced the country to consider sovereign industrial capabilities, such as the domestic efforts made around supplying personal and protective equipment, or PPE. This re-examination of domestic capabilities should also apply to defence procurement. The opportunity exists in reimagining Canada's defence industrial policies to reflect those of other countries in the international marketplace, including our close allies, who ensure some form of protection for their industrial base.

At the heart of a defence industrial policy would be the notion that the Government of Canada believes that domestic capabilities are essential to its national security and economic interests. Meaning procurement decisions should not simply be based on cost or, far worse, relying on foreign OEM's existing supply chain users, but on the value of the product itself and, when possible provided the products are world-class, the ability to buy domestic.

Understandably when it comes to procurement decisions, governments are often hesitant to look at anything new – off the shelf options at low cost are deemed to be what will suffice. Yet, on the other side of the equation, the risk of using some of these solutions in terms of cost value, environmental responsibility and, perhaps most critical, the ability to quickly re-supply damaged parts, are often ignored.

For instance, in terms of cost value, while Thordon's bearings tend to have a higher price point than their competitors around the world, their bearings will last *the life of the ship*. Whereas their competitors' bearings will have to be replaced every five years. A simple cost benefit analysis demonstrates paying a bit more would go a lot farther. In terms of environmental responsibility, Dominis' propellers help decrease underwater noise – critical for the safety of marine mammals. And finally, if a Canadian navy or coast guard vessel runs into any issues out on the water and their propeller shaftline is damaged, turning back to a domestic source to help re-supply the vessel is bound to have more efficient timelines attached to it.

Finally, as a last point, but one important not to overlook, the Government of Canada should also be incentivised to want to use domestic industry solutions given that, in many cases, it has supported them financially with R&D funding. It seems highly perplexing that the government help develop these companies and their innovative solutions, only for their products to be sold almost exclusively internationally. In the case of the consortium members who have developed CISS, all three have in some form or another received financial assistance from the federal government to undertake new product development and innovative R&D projects within the last five years.

Conclusion

Canada lags behind its allies in not having some form of protection for its defence industrial base. Having a defence industrial policy that prioritizes Canadian-made products and its domestic capabilities would go a long way to ensuring that consideration for innovative, world-class, and made-in-Canada products, such as the Canadian Integrated Shaftline System, be considered for Canadian procurement projects.

All Canadians should want domestic, high-calibre products like CISS on Canada's ships. A defence industrial policy only levels the playing field for Canadian firms, and ensures the strength of our industrial base and our nation's sovereign ability to respond to crisis.