



Naval Association of Canada Speaker's Evening 4 December 2023

Transcript of Interview with Commander RCN, Vice-Admiral Angus Topshee

Tim Addison, NAC Ottawa

Welcome everyone, the Naval Association of Canada Speaker's Evening, for the fourth of December, 2023, our last event of the year. My name is Tim Addison. I'm the Vice President and Director Naval Affairs of the Association and will be your host tonight. So, as I mentioned, (before we started the recording) our guest speaker tonight is Vice-Admiral Angus Topshee, the Commander of the Royal Canadian Navy.

Before I go any further, though, I want to recognize our Naval Association Naval Affairs Program sponsors. Many of them have been with us for many years helping support the Naval Association and helping us put on a Naval Affairs program.

Last weekend I was in Calgary. We did a workshop, a Naval affairs workshop, which looked at Leadmark, the current version of the RCN's strategy, and what we think, as an association, would be the areas where it could use some update or some improvement, and certainly, I think (inclusion of) some of the themes that we're going to discuss tonight with Admiral Topshee. (Now), we will open with some questions prepared by the Naval Association.



VAdm Angus Topshee

Again, I do apologize for the fact that I'm doing this from the back of a car. But, yeah, like I said, I don't control my own schedule. So, when the Minister decides to conduct an event, I attend and so as a result, I am now in the process of going home, hopefully in another 13 to 15 minutes, and then we'll take a brief pause while I reposition to somewhere with some actual lighting that doesn't look like an interrogation chamber. As for everything else, I think Tim's idea of a fireside chat is a great one.

You know, I could begin by simply saying, trying, to give you a quick snapshot of what's going on in the Navy, but the last time I tried that, it wound up as a five minute, 37 second viral video. So, I think Tim, if it's good with you, we can just move straight on into the questions. And I'm sure that, given this audience, everything, that anyone wants to know, will eventually come up in the questions, and I look forward to engaging.

Tim Addison, NAC Ottawa

Excellent, Admiral...and it's interesting that you and I spoke about two Thursdays ago, not even a fortnight, and certainly, a lot of things have changed since then. So, I want to talk to you for a few seconds about the video that you mentioned.

(In it) you commented that, there are some very serious challenges right now facing the RCN which could actually result in the RCN failing to meet its force, posture and readiness commitments in 2024 and beyond. In response, the Defense Minister, Bill Blair has said that he's committed to pushing for an increased investment in the Canadian Armed Forces, and certainly the Chief of Defense staff has made some similar comments to yours...and I think perhaps people are starting to pay attention, but please tell me, do you think the leadership of the department understands the severity of the situation?

VAdm Angus Topshee

Yeah, I do. I just came from an event which was a farewell to Minister Anand recognizing her time, as Minister of National Defense and Minister Blair was in attendance, as well. I have a good relationship with both ministers. I feel as though they listen. They understand the challenges. They know they are both strong advocates for the department and the challenges with all governments. There is no end of competing requirements, and if you look at all of the challenges facing Canada right now, defense is one of many things that we need to figure out how to invest in. And so, I don't envy our political leadership, trying to make some really tough choices

in a dynamic environment where, you know, there are lots of investments that are required at home and in the Defence Department.

Tim Addison, NAC Ottawa

Do you think this is a statement that you could have made...and, you know, some of the statements that you made and in the video, do you think those are statements that you could have made at any time in the past five years, if you were CRCN then, or is this a new level of concern that you've made?

VAdm Angus Topshee

The best analogy I would offer is to something like climate change. Now, there were those who were very active warning that, hey, look, this thing is coming, you know, the personnel numbers are on a steady path downwards and the Halifax class is not getting any younger.

You know the MCD vessels have done fantastic things, but again, they're just as old. The Victoria class submarines have always had challenges since their introduction. That program has delivered on the one thing that we're supposed to do, which is, to continue our ability to generate submariners, and it is doing that.

And so, I would argue that, you know, this is something that a lot of people can reasonably say, oh, we predicted this. But unfortunately, like climate change, the impetus to actually do something about it tends to wait until you hit pretty much the crisis point, because we all want to imagine that the things that we're putting in place to turn it around and to make it better will work and will take effect. And some of them have been effective.

For us, it has been downward to the point where, right now for us to continue to meet our commitments, but I do want to emphasize...as I say on the video is, you know, it's a challenge. Right now, we are meeting (our commitments), and, next year, I intend to meet those and the year after. But, no, I would not be honest, if I did not say that, there's a chance, if things don't break right for us, that we may not be able to deliver the capabilities that they (the Government) can (expect).

Tim Addison, NAC Ottawa

So, I asked you about the level of concern. Looking at the Navy's major projects, JSS, AOPV, certainly the surface combatant, and then potentially the Canadian Patrol submarine project. What are some of the major milestones in 2024-25 and do you have any concerns about meeting those milestones?

VAdm Angus Topshee

I'm actually really rather optimistic about the picture, in terms of the major projects we're working on right now. So, first and foremost, AOPS has been a success. I think I first went on record at a Naval Board, probably 5 or 6 years ago, saying, "Hey, I can write the stories about the AOPS right now. It's going to be [late]. It's failing to deliver this (capability). It's a disaster here. It's not doing this [requirement]. It's not doing that." Because every new capability we deliver has initial teething problems, and we don't talk about all of the things that's delivering, instead we talk about the things it's not [delivering] and the problems it (the project) has.

So we went through that with AOPS and that does not mean to diminish the significant challenges that we have to work through, but let's understand that Irving built a shipyard and then built brand new ships. And in the course of that, we got a few issues wrong.

So, we delivered (ships with) a potable water system that had lead in it. And we had to sort through, exactly how did that come about? What processes, and what engineering do we need to refine and make sure that we have rectified that problem and, and assure it doesn't happen in the future? And so, we're there now (with a) delivered centralized special water cooling system (for the Diesel generators), that unfortunately delivered erosion to the engine in a perfect world.

No, that would not happen, obviously (in a perfect world), but, unfortunately, that was just the reality of a number of issues from how it (AOPV) was designed, how it was built, how it's been operated, and all the rest.

And so, we had some challenges. But we worked through those, and now we've got a system that that works as designed (and) as intended. We had some water ingress from a couple of different places. It's true. We've now resolved those issues around the hawsepipe and everything else. You know, it's not very good thing on a ship when water is where water is not supposed to be, and it doesn't leave the places where you want it to go away quickly. But a lot of those issues in fact, all of those issues were issues around being comfortable and familiar with ship design.

And some of them are the unforeseen consequences. It all looks good in the computer model, and (then) it doesn't work out properly in [real life]. As we went through that process, took it to sea, figured out, OK, this is what's not working well and fixed those things.

What we haven't talked about is all the ways that the ship has outperformed, expectations. It breaks more ice than we expected. It goes farther, for longer range, than we expected. The wisdom of those people who delivered the connectors that it

has onboard, the various different ship's boats, including a landing craft, and other things that connected to the communities in the Arctic in a way that's better than what we expected, and it's a pleasure to operate.

The crew loves it from the point of view of habitability, cabin, standard, everything else. It's the first (class of) ship we've built with a purpose-built gym, which is a fantastic thing. It's got Wi-Fi onboard, and one of the little-known things about it is we built it with a single cafeteria, so there are still the standard three messes, you know, master sailor and below, chief petty officers and the wardroom. But the entire crew eats out of one cafeteria. And that idea of breaking bread together has been really beneficial from the point of view of morale. It brings people together, it creates interactions. It creates this sort of unexpected creativity that you wouldn't get if we all sort of continued to retreat to our own messes to eat.

And so that's been the tremendous successes of the narrative. (I'm) very impressed with how it's operated. We went through the north-west Passage in 2021. The first time we've done that as a Navy since 1954. So, AOPS, I would argue, is a success. More importantly, it didn't just build us a ship, it built us a shipyard at Irving Halifax. We're now seeing the timelines for them to build AOPS are continuing to come down. In fact, they are coming down to the point where it might actually cause a concern, because they might deliver the eighth and final (vessel) for the Coast Guard before we're ready to build a Canadian Surface Combatant. And we want to make sure that we maintain that workforce throughout. So right now we're, we're looking at that (issue).

We're trying to figure out is there going to be a production gap there, and what would we do about that if we can. And in my perfect world we would pull the Canadian surface combatants closer to the start...we'd pull it (the program timeline) left and start a little bit earlier. We just have to know, from a design maturity point of view, (if it would be possible) to be able to do stuff like that.

So AOPS is a success. And in terms of milestones for 2024, that's the delivery of Frederick Rolette, number five and then right after that, in 2025, the delivery of Robert Hampton Gray, the sixth and final AOPS for the Navy. They (Irving Shipyard) have already cut steel and laid the keel for the two AOPS for the Coast Guard. So that program is doing great.

Meanwhile, we've got the joint support ship out on the West Coast, so the future HMCS PROTECTEUR is fully assembled there, you know, doing all of the, you know, installing all the pipes, pulling all the cables, to make sure that that ship is fitted out and ready to go.

The Fleet Commander on the West Coast has had a chance to go onboard, and he has already figured out that this will be his flagship, the moment it's delivered, because

the operations room, it's really well fit for purpose, for running the ship, but it comes with a command suite, and a planning room and a configuration that is really well suited to embarking a joint task force staff, or a fleet command staff to run task group operations.

The ship will be launched next year. It'll be delivered to the Navy in 2025, We're looking at some fairly firm dates, and one of the nice things that we're looking at with that ship is we're gonna go back to our traditions, which is that the launch ceremony and the naming ceremony will happen together. So, commissioning will follow once we're ready for that, once we've accepted the ship. But the launch and naming should happen together, which will be a great moment to the Navy (when) we formally name that ship as HMCS PROTECTEUR, and the good news is...the future HMCS PRESERVER, is coming even faster than the first one.

Again, we're seeing the benefit of the National Shipbuilding Strategy, where we haven't just built a joint support ship. We've built a shipyard. They (Seaspan) had some teething problems, like we did with the AOPS. There were largely in the offshore fishery and support fisheries science vessels. (These were) the original three ships delivered on the National Shipping Strategy. (Yes,) They had some issues around welding, quality control. We took all of those lessons learned from the Coast Guard. We're not seeing the same problems with JSS (Hull #) one.

We are seeing that that ship could have been built faster if we had a mature design at the beginning of construction. But we're benefiting from all those lessons as we deliver JSS (Hull #) Two. The Coast Guard is benefiting, as they deliver the offshore oceanographic and science vessel in between the two JSS. So, again, that program, a Success. Delivery of JSS1 in 2025 and JSS2 in 2027. So, what am I looking forward to in 2024? the launching and naming of the future HMCS PROTECTEUR.

On the Canadian Surface Combatant project, next year is going to be a big year. We are looking for a Treasury Board Submission that should bring us into implementation contracting for the first batch of three ships. So that's when it really becomes real.

We're going to start the Production Test module. I've just been down in Australia to the shipyard in Adelaide, which is building their version of the Type 26, (known as) the Hunter Class. And I've seen the value of a production test module, where they've built an entire section of their future Hunter Class to prove all of their production line to make sure that when they're looking to cut steel, the steel is there; it's formed correctly and all of the pieces that go into that, all of the design work, (etc.) is delivered to the people building that ship. They need to make sure that it goes as quickly as it possibly can and it's a really impressive looking ship as it comes together. So next year, contracting TB submission into implementation, the first batch of three into delivery and cutting steel on the production test module, looking ahead to 2025. That's when

we'll go to full rate production. So, we'll actually start to build the components of that ship that will be part of CSC number one.

The other big thing we're looking forward to in (20)24, because we're going stop calling it the Canadian Surface Combatant; we're looking forward to getting it a class name. As I've said before, it will be a destroyer. It needs to have a name so that we can start to really take pride in the future of that class.

(For Example), you know, so we know what it is the Glasgow class in the UK, we know what it is the Hunter class in Australia. Next year, we're looking forward to rebranding [the CSC] that is Canada's future, (and) building the destroyer that the Canadian Navy truly needs.

(An)other thing, looking ahead to 2024, that we're looking for, some clarity on the Canadian Patrol Submarine Project. A memorandum to the Cabinet, to Government, providing them with options that they can look at to decide what is it (we) need in terms of a submarine capability going forward to replace the Victoria class.

And finally, to deliver on the promise that we made in 1999 when we delivered the Upholders, as the Victoria class, to say, "Hey, look, we're buying this to tide us over until we can deliver the submarine that Canada really needs." (I'm) looking forward to a lot of movement on that front next year, as we define what exactly will that look like.

So, I think 2024 is going to be a big year. The other thing I'll note is, as you might have seen in the video, something I didn't really have the time to go into. But we're looking at a pretty comprehensive review of all of our human resources. So, (as) I said, the Navy has been in a steady decline in terms of the number of people (that) are getting their training; the effective strength over the last 10 years. We need to change things around. There are some things in our establishment that have always made it unsustainable going forward.

We know that with the Canadian Surface Combatant, we're going to be delivering the AEGIS combat system with a co-operative engagement capability (and) missiles that reach into, you know, into the edge of space, and radars that can see all sorts of way [beyond the horizon]. It's gotta be enabled well beyond what we have today, with the Halifax class.

All of that means that we need to reshape our occupations today. What a Naval Electronic Warfare Sensor Operator) NESOP does on the Halifax class is not what the future sailor is going to do in the Surface Combatants. So, we need to take a look at all of those tasks and redefine all of our occupations to make sure that they're fit for purpose for that (new) ship. So, by next summer we're going to have released a problem definition paper that will spell out exactly what we're trying to solve with that

class of ship...and by September of 2025 we will be making the decisions on how we will shape all of those occupations. So occupation analysis, going forward, to making changes to all of the Navy's Combat Occupations, Naval Warfare officer, and also (the) Combat Systems Engineering Officer (occupation). So, a lot of work to be done over the next two years.

Tim Addison, NAC Ottawa

Well, (Admiral) you've covered the waterfront there. Certainly, on the project side of the house. You've also leaned a little bit into the HR side of the house and what needs to be done in terms of massaging occupational specifications, et cetera, to make sure it's all going to fit going forward, when things like new surface combatant are delivered. Are there any other comments you'd like to make on the current personnel readiness situation and how things are going, perhaps with the (Naval Experience Program) NEP?

VAdm Angus Topshee

Yeah, absolutely. So NEP has been a success, from our point of view. So, it's not about the number of people who enroll, through that program. The last time I got the stats was 98, I'm hoping they'd been a few more since then. That's people who've actually joined the Royal Canadian Navy as generic sailors undertaking various stages of basic training, and Naval experience training, program to be ready to be qualified as general duty sailors aboard any one of our ships. That's great...and we're hoping to get somewhere in the neighborhood of 200 to 250 of them this year. That's my stretch goal.

Somewhere closer to 150, we'll see where we actually land by the end, but the point of that program is not about the recruits it brings in. It's about how it reshapes the Navy and proves that our culture is where it needs to be. So, in terms of the impact, it's already had, all 24 of our Naval Reserve Divisions are now invested in recruiting for the regular force. Because they can recruit for any service we've built bridges to the Canadian Forces Recruiting Group, so that they can, you know, work closely together to bring people, and across all of the different occupational paths and entry plans into the Royal Canadian Navy.

We've seen an increase in the number of people who walk into a recruiting centre, who (have) expressed an interest in the Navy. Historically, that's been 6%. We need 20% of people who want to join the Navy. When they walk into a recruiting center, we've only ever got to about six or 7%. Right now, we're back, we're up to 20% where we need to be, (but) we need to get beyond that, but it's a really positive side to see we've tripled that. Plus, through the NEP program, we're seeing three times as many people as normal, who are joining, who are visible minorities and Indigenous

Canadians, so increasing the diversity of the Navy, and also more importantly proving that we're tapping into a group of people who were not already interested in joining the Navy.

And the key for us solving our personnel problems is not continuing to hit the people that we already know might be interested in the Navy. [Our goal] with advertising is to reach people who have never heard of the Royal Canadian Navy before in hopes that they might join. So, NEP has had all of those effects, in terms of the external audience.

Internally, there's a recognition that we can't prioritize any sailors over our own sailors who are already committed to us for the long term for three years, and beyond. So, we have a large number of people, nearly 1500 people on the basic training list. Every one of those sailors is vitally important to us, and so part of the NEP value proposition has been to treat each individual sailor undergoing training as a valuable resource in their own right. NEP has given us the opportunity to create the structure to do so. That same process is being applied to all of the cells in the basic training list right now.

And we're seeing benefits with from that, in terms of the attention that we're paying to the training system, that we're paying (attention to) two different aspects of what we're doing. (First) our focus on, on the job performance requirement, the performance overall, how fast we move through OJT tours. And (second) we've got a whole thing now around how we make sure that every time we put a ship to sea, we're maximizing the number of force generation bunks on that ship, treating them like what the submarine fleet has done for a long time.

Every time a Victoria class goes to sea, it's got 48 core crew bunks, but it sails with 59. Those 11 training bunks are vitally important to the generation of submariners. For us, now, with the Halifax class, even on operations, we know the core crew is 167. We sail with 60 people in force generation bunks dedicated to building the fleet of tomorrow. And on top of that, all of the other things, like the Air Detachment, the embarked intelligence team, the boarding team, and all the rest of (the personnel) that that ship needs.

But we've created the capacity to make sure that we're generating sailors, even when we're deployed on operations abroad; we've always done that in our history. But now we're prioritizing exactly how we're using that (approach) to make sure we make best use of every one of those days...and so with that I beg your indulgence for, for a brief break while I move from the car into the house.

Tim Addison, NAC Ottawa

Admiral, I've got 2 or 3 more general questions to pose, and then we'll open the floor to those (online) who have already submitted a couple of questions.

I see there's, there are some (questions) actually coming in pretty thick and fast now. We'll try and cover as many as we can. If they relate to something that the Admiral has already covered or discussed, we might skip over your question and move to something else. We've got 104 people online this evening, which is very good! Great to have you all join us.

VAdm Angus Topshee

Onto your next question.

Tim Addison, NAC Ottawa

I hate to belabor the video, but it did open up a number of issues that we've been thinking about. And, you know, we've (all) got some sense, what's going on down on the waterfront from time to time...and one of the concerns raised is the situation regarding the current Halifax class, in terms of their serviceability. Can you elaborate on the efforts to ensure that these ships are capable and will be operational for another 15 years?

VAdm Angus Topshee

Yeah. So, it's not like our Navy is new to operating ships that have operated beyond their design life and that's a simple reality. We've done this before. We did it with the 280's, you know, I took command of an air defense destroyer that had its keel had been laid before I'd been born. It worked great. That didn't mean that we didn't have to invest a lot in its maintenance and, take care of it, and make sure, in particular, that our technicians were really well trained, familiar with it and enabled to do the work that they needed to do. It's going to be a challenge.

The Halifax class...now, it was designed to last 25 to 30 years. I mean that all of the systems on board that ship that were never designed to be replaced are now at the point where they need to be replaced. So (for example) things like a rudder post. It's a massively heavy, complicated piece of machinery that has to be forged. There is a company down in the US that can do that work. So, we're working through exactly how we do that.

(Another example) all of the connectors in the seawater circulation system; the fire main and a whole host of other fittings across the ship (that) were never designed to

be replaced. We're now working through all of those -- a lot of steel work that we didn't know (would be required). We never intended to replace the steel in a ship at any sort of comprehensive fashion. We're replacing what we need to do. A big part of this is making sure that we're doing effective surveys, or we're working with Lloyd's Registry, so their surveyors are looking at the ship (and) validating the work that we're doing.

And one of the things that I've been explicit with our sailors about, and I want to re-iterate here, we will not sail a ship that is not safe to sail. Ships develop cracking [that affects the] length of their life. We monitor the strength of the decks very carefully, and we watch or the weights, the loads, the draft marks of the ships to make sure that we're not over stressing the hull.

There's probably going to be a point where we start to put some sea state restrictions onto those ships. But the reality is that no one willingly drives a ship and into Sea State 8 or Sea State 9, which is the theoretical maximum of the frigate. So, if we restrict that down to a Sea State 7 or 6 (that is what we will do), as those are not the places where we want to be operating anyway. And in extremis, we can always go to those places if we need to, because we understand the margins of safety that exist there. It's just going to be...if we can, we're going to avoid putting any more stress on those ships than we have to. (It will be) exactly the same way that we managed the tankers (AORs) towards the end of their life. The same way you managed the 280s, the same way we managed the destroyers before, all of those. So we've been to this place before (and) we are familiar with how to operate.

We're going to continue to make sure the ships are safe. And, more importantly, the big positive at all this is, for most of my career, we had more money than we could actually spend on maintenance. And so, the challenge was always that we would, you know, invest as much as we could in maintaining the Halifax class. And we were hitting the executable demand most years. We're now at the point where we've outgrown the executable demand. The amount of work that we could do on the Halifax class now exceeds the amount of money that we have on a routine basis. Positive and negative...in the sense that it's positive because we've managed to reshape the workforce and create the capacity to do all the work that's necessary. Now, we need the funds to be able to do that.

In the past, we were limited by capacity. Now, we're limited by money and that's a problem we can actually solve. So, we can [and we will] find ways to re-allocate funds towards the Halifax class, to make sure that they get the maintenance that they require.

Tim Addison, NAC Ottawa

All right...thanks for that. We know that they're the biggest line item in the budget when it comes to O&M...and certainly there's going to have to be more money, put their way I think over the next few years. So, I'm glad that you're confident that this is all going to come together and hopefully the new Minister has hoisted this in as well. I want to move on now to something a little bit more "Pointy End" in terms of the threat out there.

As I mentioned earlier, we did the workshop in Calgary last Saturday. We spent a lot of time talking about threats, and what we need to include in Leadmark in terms of an update to the threats. We've now got a couple of ships, plus, I should say frigates, plus ASTERIX over in the Asia Pacific. What's the plan for Asia Pacific deployments in 2024 and beyond?

VAdm Angus Topshee

So, the government was clear in the Indo-Pacific strategy that their intention is for us to increase our presence in the Pacific Region go to achieve as close to a sort of persistent presence that we can. That's three frigates a year. We're not going to try and get to the place where we were with NATO for so many years, where it's continuous (presence) and we were so perfect [In terms of participation]. And we didn't even bring the ships home for Christmas when every other Navy tied up their ships and sent their crews home for Christmas. We are closely watching the situation while they're patrolling. We're not gonna get to the point where we know we must...we are going to allow ourselves gaps [in the presence] where they make sense. Our goal is to make sure that we've got three frigates a year into the Indo-Pacific region and find a way to balance that against the overall demand, you know, to try and (determine) where we can reduce operations to a sustainable level within the CAF. I would argue we're there.

The trade space is not so much what we do, in terms of operational deployments, it's all of the additional sort of ancillary tasks. You know, I took a destroyer down to South America, right. Now that's, you know, (what) we're focusing on are the regions that matter most to Canada for frigates' (presence)...that's the Indo-Pacific, (and) that's NATO, under OP REASSURANCE. You're probably not going to see them a lot of other places, but now we've delivered the Arctic and Offshore patrol ships, so if we need to send a ship down to South America, AOPS is a perfect vessel for that (task).

MCDVs, still very capable vessels, have taken on a tremendous amount of the burden off (the rest of) the fleet. You know, in fact, we've now had two very successful deployments of two MCDVs each, as part of the NATO Standing Maritime Group for Mine Countermeasures. We've proven that those ships can deliver on that mission,

and they're going to continue to do so, they're still doing so...so, what you're going to see is the focus of the frigate Fleet; on the places where our frigates (are) the only answer to that problem...the Indo-Pacific and some aspects of OP REASSURANCE for NATO. (For) the rest of it, we're going to manage our fleet to make sure we meet all of Canada's commitments.

Tim Addison, NAC Ottawa

Thanks for that. I'm going to switch it up a little bit and ask a question that's actually posed in the chat, and it relates to MCDVs, given that you just mentioned them. Please tell us what you're envisioning as the capabilities of an (Offshore Patrol Vessel) OPV, the potential replacement for the MCDV. Do you have any thoughts on that?

Angus Topshee

I have lots of thoughts on that. It would be great to have something, some form of high-end Corvette...they can take some of the burden off of the Halifax class and the future Canadian Surface Combatants all the way down to know what do we really need...and if the mission is just understanding what's happening on and under the waters and more of a constabulary role, then we can replace them (major warships) with something that's a lot like what they are right now, (the MCDV) which is a relatively simple ship, not heavily armed.

And so, the Force Development Team and our Director of Naval Strategy is doing an awful lot of work right now looking at options around the world and trying to figure out, what is it, what are the missions that we need this ship to be able to do...what makes the most sense given the context of a fleet of 15 Canadian Surface combatants and 2 JSS, 6 AOPVs and some number of Canadian Patrol submarines. What's the gap that we need to fill in all of that? Maybe it is some sort of light amphibious ship to be perfectly honest, right? Like, what the (US) Marine Corps is looking to build...something that's a simpler ship in many respects to operate, not designed to operate in the cover or something else.

Maybe it is, like I said, a high-end Corvette or a frigate of some sort that really can be an adjunct in battle to the Canadian Surface Combatant. We're not sure. We really want to make sure we take the time to try to find that requirement as best we can. And maybe the answer is not a single platform. Maybe the answer is a couple of different things. Recognizing that, you know, the more different classes, you add, the more complex your training system, (and) your maintenance system becomes. But, if all of those ships have the same basic sort of bridge navigation system, bridge setup...the same sort of prime movers in the sense of, you know, generators to produce power, very similar, you know, solutions, in terms of how we manage the marine systems...then that burden may not be as great as it seems.

And so, I think I would say, I am interested in the discussion and excited to see things like the gathering that happened in Calgary, because that's exactly the type of thought process that we need in all this...and I do not exclude the idea of what I think is best described as optionally crewed systems, so vessels that can be crewed and might default to being crewed, but could be operated in an autonomous manner if that's what makes sense to do.

The other thing that we know that the future of the Navy is likely to evolve... 24 vertical launch cells is not enough on the Surface Combatant to do everything that we need that ship to do in future warfare. But the solution may not be adding more cells to that ship. The solution might be creating ships, you know, small ships that are effectively built around the idea of a 24, 36, or 48 cell, vertical launch system. They don't have all the sophisticated combat system to, you know, to fire those missiles, but they can respond to the orders from the Canadian Surface Combatant or another combatant to, to engage when required.

And so, there's a variety of different things that we're exploring...what makes the most sense as we look to the future. We know that for one, it's going to be a mix of platforms. When you add in things that are in the air, on the surface and under the water in terms of autonomous and remotely piloted vessels, what crewed platforms for the future, I would argue right now, that is an open question. We're just beginning the work of trying to figure out what that looks like, OK.

Tim Addison, NAC Ottawa

Getting back to the discussions we had about the threat...you know, there's a few scenarios out there in the Asia Pacific. There's Taiwan. There are the folks in North Korea that don't like the folks in South Korea. There's also a lot of activity around some of the reefs and some of the islands that exist out there...and certainly, around the Philippines, I read this morning that there are reports that more than 135 Chinese vessels were swarming the Whitsun Reef off the coast of the Philippines in the South China Sea, and Philippine Coast Guard has deployed two of its vessels and are monitoring the situation. This is an example of some of the outbreaks of hostilities, in my mind anyway, that could require a specific show of force to deter aggression in the area...and is it something that we currently can handle today?

And to stretch it out a little further...if it was to happen in the next five years...some people are predicting that China will invade Taiwan within the next five years. Where do you see the Canadian Navy being employed in one of these scenarios?

VAdm Angus Topshee

So I would argue that you've asked two distinct questions there. You know, what are my thoughts on what's happening in the South China Sea around, you know, maritime claims in areas like Whitsun (Reefs) right?

Looking at the Second Thomas (Shoal) Chain, for example, Scarborough Reef, and other places, there we've got a very simple position. We believe in the rules based international order, there are procedures and bodies to adjudicate these claims. And that is the process that should be followed.

And when a finding is made that ...a reef or a piece of territory belongs to one country as opposed to another or delineates maritime jurisdictions, then all countries should agree to that because that is the process the United Nations and countries have set in place to resolve those claims.

So, we stand behind that process, you know, and we know that they're not all nations necessarily adhere closely to that. And we're very, we're monitoring closely all of the developments to that end, in the South China Sea and in other waters around the world. In terms of what's the relevance of the Royal Canadian Navy going forward, in particular, in any sort of potential conflict with Taiwan, or another country? I think we've gotta be realistic about what our capabilities are.

These days, we decommissioned our Air Defense Destroyers, so we're not in the air defense business right now. The Halifax class is designed to protect itself from an air attack. Can it assist in the defense of another ship? Absolutely! In extremis, if the situation is perfectly configured, it can come to the assistance of another ship. But that's a very difficult situation, because it was designed to defend itself, not to defend others. So, it's an extremely difficult task for us to take on.

What was it designed to do at its core was to be an anti-submarine warfare frigate. You look back at the history of that. That's what it was. We called it a general-purpose frigate as we know came out of the Cold War, because we realized anti-submarine warfare wasn't the focus at that point, and it had, because of the way we designed it, a tremendous amount of residual capability across other areas of warfare. And at the time, compared to the old sort of air defense platforms we had, it was pretty capable and it has remained pretty capable from a self-defense point of view, so our value added now and into the future is anti-submarine warfare. We have always been good at that. This is our history, the ships were designed to do it. They still have a lot of the acoustic quieting designed around that. We still have some of the most advanced acoustic systems in the world on board that ship. We've paired it with the Cyclone helicopter, which is a very capable helicopter, from an ASW point of view.

And the Block IV Aurora, which arguably from a mission systems point of view, is one of the most capable anti-submarine warfare platforms in the world. You know, the reason for the Canadian Multi Mission Aircraft Acquisition of the P-8, which is really exciting development for the Canadian Armed Forces, is simply that, that (Aurora) aircraft, was bought and delivered in the 1980's. And, you know, as capable as the mission systems might be, it's not very much use if the wings fall off the aircraft. So, it had to be replaced, and it had to be replaced with something that can defend itself, which is what the P-8 is capable of doing.

And I'm really excited, by the fact, that's going to come already as early as 2026, because that means that we're going to continue to deliver on that value proposition to the Royal Canadian Navy; we're world leaders in anti-submarine Warfare.

Now, are we going to do that in Taiwan scenario, inside the first Island chain? No, but I don't know that there'll be any surface ships inside the first island chain in that scenario, and so let's be realistic about the threat environment, and what we have to offer. We are an outstanding Navy in terms of providing value added from an anti-submarine warfare point of view. We do it better than any other Navy in the world, in my opinion.

Tim Addison, NAC Ottawa

Admiral, couldn't agree with you more on that one. I'm going to switch it up now, Admiral, and ask you a couple of questions from the chat...and the first one is from my good friend Admiral retired Luke Cassivi...he asks, what are your top four concerns with the Canadian Patrol submarine?

Angus Topshee

So, what are my top four concerns with nickname Patrol Submarine Projects? So, I guess the first question is...we have been challenged in buying submarines in the past because a lot of Canadians don't understand the value proposition of submarines. So, my number one concern is making sure that we can communicate to Canadians the value proposition to submarines, which is they are the only platform in the world that offer that combination of stealth, persistence, and lethality. The ability to go somewhere undetected, the ability to remain in that environment and truly understands what's happening. And the ability to take action against whatever is in that environment, in a manner that ensures real and effective deterrence and options for government in the future. So, I think the first challenge is making sure Canadians understand the value of submarines and the way that they are probably the best guarantor of safety in Canadian waters against any the actions of any potential adversary.

I would argue that the threat there is not necessarily well understood. It's not just sort of the conventional things we might think of as ships...and Landing Craft, and all the rest, I don't foresee an amphibious invasion of Canada. But, I foresee adversaries that may want to come and do things that are against our interests in our waters bit with the resources, living, or nonliving of our exclusive economic zones, or, more likely, and more, dangerously, perhaps, the things that are on the seabed. The cables that deliver Internet and communications upon which we depend today, pipelines that run across a lot of the different ocean floors around the world. This is vulnerable seabed infrastructure. The submarine is the best guarantor, though, if, if push comes to shove for an environment where lethal force is necessary, a submarine delivers that.

And so, that's the first thing I think, just trying to convey that argument. The second challenge is making sure that we make this about the right submarine for Canada...and we've done a pretty good job of trying to define those requirements. The core requirements...so, all submarines will deliver some combination of that stealth persistence lethality, as I mentioned. But, we need our submarines to make sure that they can do that at range.

The most difficult task we foresee for our submarine in terms of the its endurance and range requirement is to sail from Esquimalt Harbor up, you know, through the Aleutians, the Bering Strait and into the Beaufort Sea Patrol there for 21 days undetected, and then return home undetected. The reason it needs to be able to do that entire transit undetected is one of the core features of a submarine is the ambiguity, it may or may not be there, but an adversary has to assume all the time It's there. If it knows, when it you know that it's where it's transiting and where it's going, whatever it leaves harbor, then you lose that ambiguity so, the submarines (need) that stealth throughout that entire deployment. It's one of those critical features. That's a 7000 nautical mile return journey and a trip and an endurance of about 60 days at sea, submerged throughout.

That's a big ask for a lot of diesel electric submarines. But fortunately, that also happens to coincide with the ability to go anywhere across the Atlantic and into the Mediterranean, and return home undetected to Halifax, or to cross the Pacific (to) conduct operations, you know, in the East China Sea, South China Sea and then return to a safe harbor in one of our allied ports, whether that's Guam, you know, Japan, Korea, Singapore, or some other place.

We can do that distance and operate at a distance or even down to Australia. And so, that requirement, I think, defines what we need out of a submarine, you know, what, you know, what specific type of submarine that we need to purchase, that has to be something that delivers that range. So, making sure number two, that we do, we deliver the submarine that we require.

The third biggest challenge I see with submarines is that there's timeliness (in the delivery). You know, the Victoria class is going to start to deliver in 2034, so we need to be focused on a submarine that is in service now, are in service in the near future, and the biggest challenge we face is defining what is that in service date. That will drive what submarines are in the competition and what submarines are out of the competition.

The fourth and final thing is I think is...I can say, you know, here's a list of submarines that meet the requirements for the Navy. The fourth challenge is to make sure we deliver a submarine that's the right submarine for Canada. And that is not necessarily about the capability resident in that submarine. It's about the best value proposition for Canada in terms of what country do we want to partner with.

There are a number of different submarine manufacturers...and each of them offers advantages in terms of the relationships we can build, the industry links we can build, the manufacturing base that we can tap into. So, there's a host of different things there that might allow us to create something, that's, like, the AUSUKUS Partnership is for Australia. With the US and the UK, where it unlocks the ability to do other things that are not about the submarines. That might be one of the options that we want to pursue with the submarine. There's all sorts of great potential partners for that type of high level defense co-operation, high-level industrial co-operation, and the development of trade and expertise. So that fourth question really comes down to, what do we think is going to be the best answer for Canada, not for the Royal Canadian Navy, but for Canada writ large, in a submarine procurement.

Tim Addison, NAC Ottawa

Admiral, that was excellent coming up at short notice with four good responses to Luke's question. I want to ask something now that is a little bit more focused on the surface combatant. Bruce Belliveau asks, with CSC, will it be 15 identical ships, or will we see improvements throughout the build of CSC? So that, presumably there will be iterations and perhaps different mission fits? I think that's what Bruce is getting at.

Angus Topshee

So, the capability (we) would deliver, and CSC number one is going to be less than the capability we deliver...(with) CSC number 15. We're deliberately going to build the first batch of three, just to make sure we gain the efficiencies, and the certainty of building three, because just the length of time it takes to build them. You know, by the time we deliver number one, we've got to have already started building number (two and) three and we're well advanced. Beyond that, we are exploring what makes the most sense from the point of view of batches and flights. So batches, more ships of the same

type, same general, sort of capability. (Whereas) flight (is) where we see an improvement in capability.

And you really see that in the (USN) Arleigh Burkes. Also, the Americans had a Flight one which didn't have a hangar, just had a flight deck and a whole host of other things. They're now on Flight three...you see the size of that ship has increased fairly significantly. The Flight three Arleigh Burke...around 11,000 tons you know, effectively a cruiser...and so will we see that same degree of improvement? Probably not because, you know, I lost track of how many Arleigh Burkes the Americans have built at this point, but across the 15 Canadian surface combatants I'd say it's a safe bet to say we're probably going to wind up with two flights to them.

One of the questions right now is, how quickly can we build the first sort of critical mass of them...Because we recognize the surface combatant, sorry, the Halifax Class, is getting old. And the key thing for us is not the delivery of the first Canadian Surface Combatant. It's really the delivery of 4 or 5 and 6 because that's the point at which we can start to...we can retire the Halifax class. As soon as we've got enough Canadian Surface Combatants to cover off the forward deployers that we have annually with the Halifax class, then we can retire that class almost completely at that point. You know, and it'll just be a matter on timing to figure out how quickly it goes. The sooner that date comes, the better it is for all of us, because we recognize the challenge of keeping the Halifax class going. And the cheaper option at that point is to operate the brand-new ship.

Tim Addison, NAC Ottawa

All right, I think we get the picture. I'm going to ask another question focused on CSC. It has been rumored that the AEGIS system power requirement will be 50% of the power generation of the current configuration of, basically, the Type 26. Is there a plan to add or upgrade the existing gensets, if that is the case? In other words, (does) the AEGIS system require more power than is currently designed into the ship?

Angus Topshee

Yeah, so I don't know the details of how much power the AEGIS system requires. A lot of what drives (that question), that is actually more (related to) the radar, the SPY 7 radar, that's on it. That's also, you know, because the higher that radar is in the mast, the more effective it is. But of course, weight high, you know, creates additional challenges from a stability point of view. Last time I checked, it (the CSC design) was under the weight and power requirements of the Australian version.

So there's the phased array radar...is it different from what the Brits are delivering in their version of the Type 26, the Glasgow class? Yes, because theirs doesn't have to do

the same things ours does. (You) know they have an amphibious ship. They haven't previous ships [like we have]. They have aircraft carriers that are the command and control platforms for their task groups. They have a series of air warfare destroyers in the Defender Class, The...blanked on their name right now...the Type 45 Destroyers.

And, likewise, the Australians, they have the Hobart Class Air Warfare destroyers. They have the Adelaide, and the Canberra there, to, you know, amphibious ships, and, frankly, small aircraft carriers. Therefore any of your requirements are different. Ours has to be an air defense destroyer. It has to be a command and control platform, and it has to be a general purpose combatant. So because of all of that, yes, the power requirements are going to be significant on that ship. How they compare exactly to the Type 26, I'm not exactly sure. Right now, our weight is trending a bit higher than the Type 26, not as much as the Hunter class (and) we still are, you know, finalizing the design phase. So, where exactly we land for weight is an interesting thing.

One of the things I learned in Australia is that they're looking at weight savings of about 100 tons. Just based on the build style, so how they do their welding, how efficient they are in aligning everything...and so they've seen some efficiencies where they think they can save about 100 tons of weight just from how they build the ship. So all of this is one of those things, where, yep, we're going to probably find that when we deliver it, it uses a tremendous amount of power. A tremendous amount of energy in a variety of different ways. That will be, because of how we do design.

It'll be more than adequate when the ship is first delivered and it'd be really interesting to see how it evolves down the road as, I think, back to the Halifax class...I remember the size of the radar rooms and all of the cabinets and systems that were designed to support the SPS 49 (radar) in its day. Then when we went to the smart Three-D Radar, suddenly we didn't need radar room number two anymore (and) we were able to expand the operations room. Why? Because the nature of how we provided the power and support to that radar in the, in the control systems, a lot of the systems were smaller, but in other areas, (these days) they're more complicated...they demand different requirements. So, we know that there will be an evolution. We are building it with a power and weight margin. Heating and cooling merging as well. A lot of those things, you know, where exactly we land will decide on exactly where some of the design trade-offs, as we get to detailed design, really land.

Tim Addison, NAC Ottawa

I know..it will be interesting, to see where it goes. I know you've got a few questions, probably in your back pocket for your next road trip, but that might be one that you want to add.

Angus Topshee

Yeah, so I'm off later this week, actually to visit the Lockheed facility in Morristown, New Jersey to get a better sense of what is it we're delivering in terms of a combat system, in terms of the radars and all the rest of that. Because I'm very mindful of the fact that the ourselves, Spain, and Japan, all working to deliver the SPY 7 on board ships. But no Navy has yet delivered the SPY 7 as a shipboard radar solution, but we're gonna work together to make sure that we share the experiences, that, we have, the lessons that we learned along the way...probably create a user group that will be effective in making sure that we manage that project as efficiently as possible, and that we all benefit from, from what each of us learn.

Tim Addison, NAC Ottawa

Ok, so you mentioned "Task Group" a couple of minutes ago in one phase of one of your answers and I just want to come back to that for a minute. We do have a question on task groups...from Barry Walker...he says, Admiral, the concept of the Canadian Task group has been, if not the key element of naval operations, in all editions of Lead Mark. Is the RCN still capable of independent task group operations? And I think he's obviously talking in, in the near term, the next 10 years or so.

Angus Topshee

So, it depends on how strictly you define that...and so as a purely organic task group right now, Asterix is not a combatant. So it is a very capable replenishment ship, but it's got some limitations, it's comms suite, is the bare bones for secure comms; it doesn't provide true situational awareness. It doesn't have the same sort of combat system a combatant would have. It's [fitted with] a single propeller, so a single point of failure. On those fronts, it's a former container ship that was 25 years old when it was converted. So from a damage control point of view, it doesn't offer the same sort of robust resilience that you would get in worship. (That) doesn't mean it can't do the job, but we wouldn't employ it in a task group in a full threat environment. So right now, the straight answer is, No. We can deploy the Halifax class as a traditional task group. We have modified the Halifax class to be able to take on the command and control functions adequately, and not as well as the 280 used to. But well enough, for our purposes today.

So, could we do it? Yes, we can. We would be looking probably to have a different concept than organic replenishment...probably, depending upon allies, depending on reach, back to something like Asterix, you know...and that's not uncommon in other Navies. So the UK uses the royal fleet auxiliaries for replenishment. The US has the USNS, (that's) their auxiliary fleet. In a few years time...so we take delivery of Protector in 2025. Once we've got it to IOC (Interim Operational Capability) in 2026 or 2027,

depending on how ...trials and everything else goes...that will be when we can say, yep, we've got the capability organically to deploy a task group.

You know, with a number of Halifax class frigates centered around an organic replenishment (ship) which is also likely given the capabilities in the JSS, it is likely to be the command and control platform. But, of course, that will be the decision of the fleet commander of the day and will depend a lot on what's the mission of that task group as it goes forward. And so, until we deliver the Canadian Surface Combatant, we are going to be dependent upon allies for air defense.

And so, if you think back to what was the Canadian task group at the time we wrote Lead mark...you know, there was, there was a command and control and air defense platform in the 280. That was the centerpiece of that task group...supported by organic replenishment, and then enabled by 2 or 3 Halifax class. So, we still have the Halifax Class (and) we're solving the replenishment thing. But it's going to be until we deliver the CSC, that we have that air defense capability and a proper command and control (capability). I think it's gonna be really interesting to see where we land on that once we see what (the) Canadian surface combatant, what it looks like...and also the, you know, just the space and flexibility that I think we're going to find in JSS, going forward.

Tim Addison, NAC Ottawa

(We) are certainly encouraged to hear what the JSS is going to have in terms of command and control (capability), that that's very encouraging. For getting a task group back in place, the new JSS sounds like, it's, it's going to definitely contribute. There are a couple other questions...but I want to make sure that you've, you know, you asked us (the Association) a couple months ago to see what we could do to organize an audience for you, particularly among the people that have been in your chair before, and some of them are still on board, (tonight) I believe. A couple of others may have left, but I want to give you the opportunity to basically just close the loop with them if there's anything that you had intended to say. And then I'll then, time permitting, I'll go back to a couple more questions.

Angus Topshee

No, I don't think I've got any specific or unique messages, other than to say that I certainly appreciate the challenge that they all faced as they sat in this role. It is interesting to see all of the different competing demands that we face on every day. And, the biggest message I would pass on is that I'm really grateful for the outstanding work that all of my predecessors did to make sure that the Navy continue to be relevant and responsive to Canada's needs. You know, we've made some tough decisions in our history, and we're in a good place as a result of it. You know, could

could things be better? Things can always be better. But I am grateful for the decisions we've made, because the number one thing we've never lost sight of is the quality of our sailors. And our training system has been focused upon delivering outstanding Canadian sailors, and the capabilities that Canada needs in a Navy. So, I guess that's what I'd have to say to them.

Tim Addison, NAC Ottawa

Here's a bit of a philosophical question then...what are the chances...and this is from a good friend Ivo Krupka. He says, what are the chances of significantly rethinking the current configuration of the Navy in the next five years or so, particularly in the light of lessons being learned in various combat zones and the likelihood of changing foreign and defense policy? And tighter budgets, for example, new submarines, fewer CSC, tighter division of labor with the Coast Guard in the North, and possibly a modified division of labor with our allies. Kind of thinking a little bit outside the box there in terms of relationships. Good question, Ivo.

Angus Topshee

Yeah, no, it's an interesting question to decide, you know, because the Australians right now are taking a hard look at fleet mix and trying to figure out what's the right answer going forward. There's a lot of speculation that they will see a reduction in the number of Hunter class ships that they deliver. Right now, they're planning nine. And the question is, you know, sort of, do they need that quite the, you know, for them, (the) Hunter class are very much an ASW focused platform. For us, it's [the CSC] is going to be ASW capable, but it's (also) gotta be a general-purpose destroyer, command and control platform, and everything else because our force structure is different. I do wonder what the future Navy [force structure]...like I said before, I see a lot of remotely operated, potentially autonomous, AI enabled vessels and platforms that will operate above the water on the water and under the water.

I don't think in five years time, we're going to see a lot of change. Even with the delivery of Dreadnought in 1906, you know, (which) caused a transformation of Navies. But if you think about how long that evolution took, it was still 20 years before the aircraft carrier really came about, in any significant way. [Dreadnought was] 30 years before the aircraft carrier...and you know, 35 years before the aircraft carrier, (it) was truly a difference maker.

So, I think evolution of Navies tends to take place over longer time horizons than five years. But if we're not focused on thinking, what will that future be like, then, I think we've got a problem. What war at sea will look like, is really interesting. So, I think that a lot of people in the audience will probably be very familiar with the type of things that sailors and officers today are contemplating, and that (they) might have to confront...and that [threat in the Asia-Pacific] is very much a front of mind concern

these days. And, you know, that's been in place since the end of the Cold War. We've operated in an environment where we've had information dominance where we've had air superiority, air supremacy really, where we've never really had to worry so you might as well have every system up all the time, because, you know, we were bigger and better than anything out there.

That's not the case anymore. There's a lot of threats that if they find you, they will kill you. And so, how do we make sure that we can hide? And often, and here's the real challenge for navies. How do you hide in plain sight? And that's by doing a lot of things that involve spoofing that involve flooding the battlespace with things that could be targets. So, you know smokescreens...probably not something we would do but certainly if you're in an IR EO environment, so infrared or electro optical, it's interesting that a smokescreen might actually in certain circumstances, provide some real value decoys of all sizes.

And so one of the advantages of what I talked about before: potentially that optionally [larger missile] magazine. The you know, that ship that's really just a 24 cell VLS and the things to enable it to move around. Also, they become targets in that battle space that the adversary has to consider because they've got offensive power and defensive power, and therefore, you know targets that have to be hit by them, So that complicates all of that. So I think, when I think in terms of fleet mix, I still see a need for (greater missile carrying capability) platforms.

I'm still quite confident that the Canadian Surface Combatant is the right answer for Canada. What is a round that, for us, is an open question. What navies look like in 20 years, is going to be interesting. But I still think, you know, there's going to be a place for aircraft carriers...there's going to be a place for submarines...there's going to be a place for destroyers, as the core building blocks (to support) the fleet's amphibious ships. You know, because, at the end of the day, wars are won and lost on land. It's nice that you enable things at sea, but it's the possession of the ground at the end of the day. So amphibious ships, aircraft carriers, destroyers, and submarines, I still think will all have a place. All of those platforms will still have a place and (in) naval warfare, what's the best mix of those, what's the right answer for Canada...Those are separate questions that we continue to look at every day. So I think it's exactly the type of philosophical thought that we should be doing. And we are, through the Director of Naval Strategy, and enabled by some outstanding independent thoughts from groups like the one you mentioned earlier tonight, in Calgary, just a week ago.

Tim Addison, NAC Ottawa

Well, thanks for that. We're certainly looking forward to the first draft that we can provide to you as our thoughts, as developed in Calgary, on what should be considered for Lead Mark. There's another question here that comes out, and you sort of alluded to some of the more modern threats. Someone asks...Brett Johnson asks, do

hypersonic missiles concern you for future ops where we might send frigates or destroyers?

Angus Topshee

Yes, they can certainly for present operations do, because they exist right now, not to the full operational capability, but the threat is out there. So we're very focused on integrated air and missile defense. We're very conscious of the fact that the Halifax Class, again there are some threats that, you know, well actually, I can deal with most threats that we look at out there, but as those threats evolve, and the potential for its defenses to be overwhelmed by an adversary that tries to saturate, is absolutely the case. Which is why the future, I say is you know, the co-operative engagement capability. It's such an important thing because it allows us to, to really make sure that we're operating in the threat environment where things are going to come at hypersonic speed and from all directions. And with a goal of saturating defenses, the ability for all of us to work together from a network sensor point of view, and for the right, a (shooter) in the right place, to be the thing that responds. And so, by that, I mean, you know, what missile is in best position to achieve the intercept, and to what extent can we do these things, non-kinetically. So, there's a lot of thought that's going into exactly...how do we do all of that?

And then more difficult to really add to the challenge of that is, how do we do that in a denied or degraded, comms environment. That is something that we are working right now to, not to just talk about, but to get to see and to test and to exercise and to practice in different environments. But am I concerned about the threat of hypersonic missiles? Absolutely. It's one of many threats that are out there that are quite troubling, and we need to make sure that we are ready to counter those threats, to either make them miss, or to be able to get a hard kill.

Tim Addison, NAC Ottawa

There's another comment...I think it's, it's a question that springs from some earlier discussion about what the Australians are doing...and about your perceived need for more vertical missile launch tubes. Is the announcement in Australia of converting the mission bay into additional vertical missile launch tubes, (could that be) part of the Canadian redesign of the Surface combatant?

Angus Topshee

Sorry, I may have missed it. I didn't think the Australians actually had announced a decision to change, to give up the mission bay in favor of more tubes. I think that's a proposal from BAE to address some of the concerns around, because the Australians have recently done some research where they, they feel as though there's a certain

missiles per ton requirement that you want to try and achieve. We're not. I'm not as convinced...it's simple, you could reduce everything to such a simple metric. I think it's a more complex force design question about how you make sure that you have sufficient capacity kinetic and non kinetic, to be able to defend a force. My bottom line is, 24 VLS is probably the bare minimum for a surface combatant in this day and age.

As in all things, you know, is it adequate? Sure, if you need real combat power in a task group, you aggregate those together so that you can have a mix of strike options, long range air defense options, short range air defense options...and I'll also emphasize that the Canadian surface combatant, It's not just the 24 missiles in the 24 VLS tubes. There's also 24 ...shorter range, air defense options there. So, in fact, there's a fair number of missiles on that ship, and so we're comfortable that we can make do with all of that. But as things evolve, we will evolve, right? There are systems on board the Halifax class today that we had didn't have in mind when that class was first developed. We sent...you know, we managed to bolt Harpoon onto (one of) the ships that deployed in the response to the invasion of Kuwait in 1990.

And if you look at, I would argue, look at the ships [in the past]. You know, and Fraser and Saint Laurent sailed from Esquimalt to go around to Halifax at the beginning of World War II. I don't think anyone had, in mind the number of air, anti-air systems, that they would have onboard. But, within just a few months of arriving in theater and recognizing that... aircraft seem to be a real problem...how many things can we put on board this thing that can shoot back at aircraft? And so, we really do see a transformation in all surface ships in terms of anti-air defense in World War II. So, I expect and anticipate the same things...and we got to make sure that we've got the mindset that's all about, what do we need to get the mission done. How do we get that onto the ship in a manner that will deliver the results we require?

Tim Addison, NAC Ottawa

Ok, now we're going to change it up and ask a question that it's, sort of...an issue that has been around and the question, I'm just scrolling back up because it was one of the first questions asked by Phil Dana...Phil says, along with the force readiness and recapitalization of the fleet, related to perhaps some of your comments in, quote, the video, is morale and the level of frustration the Naval force is experiencing. Could you comment on your understanding of current force morale, and what is needed to turn the corner, and look towards improving morale in general?

Angus Topshee

So, I mean, I think, what's the old saying I was taught when I joined the Navy...when sailors (are) not complaining, that's when you should be really concerned. You know, because we like to gripe and complain about things that are difficult, things that we know wish were different. I think the most important thing from the point of view is

that people are given the ability to change their circumstance to the extent that they can. They're given as much control over their situation as possible. And so, by that, I mean, I want to put the tools to solve a lot of these problems in the hands of the sailors who were experiencing the worst aspects of some of the challenges for seeing today. So how do I make sure, first and foremost, technicians who just want to be able to keep the ships going, keep the weapon systems going? How do I make sure that they've got the parts, the training, and the sort of support that they need to be able to deliver the ship that they think we need, and that we do need? Right?

So, a lot of that's about making sure that the parts bins are as full as we can possibly make them recognize and supply change challenges, and all of the rest of it. So for me, it's about enabling those solutions. It's also about some difficult conversations around the fact of, know, in the old days, it's one thing if junior sailors are complaining about stuff...that you had petty officers, you had no lieutenants to, sort of sort them out and say, hey, no, no, here's what's going on, (in other words) provide the context. We're not as good at communicating as we used to be, I think, because we've got so many different ways we can communicate. We've become less effective at using any one of them to really get the message across. And so a lot of times, people don't have the full picture. And so how do I make sure that what really matters gets down to the people who really need to know it? So they can answer the questions of their sailors, who are seeing things, and saying, hey, that doesn't seem right. What are we doing about that?

Well, the odds are there isn't actually a plan for that. Something that is delivering, But they may not know about it. Their leadership may not know about it. So, part of this is about getting the word out to say, you know, here's what's going on in the Navy. Here are all the things that we're doing to make positive change and here's how we're making a tangible for sailors. Again, we have the habit of historically, of sort of announcing big things, then (when) they eventually deliver, but by the time they deliver, all we remember is the big announcement, and then nothing really seems to change for quite awhile.

So, I've been sort of more (thinking)...let's not worry about the big announcements. What are the small things we can do now to make a difference in the lives of each and every sailor? How do I make this whole idea of pushing power to the edge and empowering? How does how does that become real and tangible for people? And so we're doing things to sort of reinforce the commanding officer is the most powerful actor in our system. If you go through and you read, you know, Kings Regulations, and orders, you read the DODs. You read, the National Defense Act, know, the most cited agent, in all of those is the commanding officer. We've done a whole bunch of small things to take power away from, from those individuals, we need to push that back down and give them real authority, so they can make real decisions and have real influence over their people.

And I would argue, all you need to do is go on board a ship in operations. There was a

fantastic article...CNN recently, about their 11 days on board the Ottawa. That is a ship with outstanding morale. All of our players tend to have outstanding morale. Because sailors who were off doing the business, you really are enjoying the experience and serving with a purpose. You know, it's when it's harder for them to see the connection to that purpose. When they're in refit their experience, the heartache, I've tried to maintain an old ship...and they don't have a clear understanding of what we're doing to try and make that easier for them when they're trying to fix a ship. And they don't have the parts. Those are the things that affect morale, those are the things that we're working to directly tackle. Make sure that, yeah, we're, we're addressing the maintenance. We're making sure that the ships are capable and can remain fit for purpose. So, I am concerned, but confident that we will navigate through the current situation, and that, as always, the one thing that I would also say anytime, you know, every ship's captain that has ever said, oh, my god, this crew is done. They're too tired (and) they're beaten down. They can't do it.

(But) all you need is a mayday call to come across that radio...and every one of those sailors will turn to. And so how do we make sure that they see that sense of purpose that unites us, that clear mission in front of them, that tasks they have to do? And how do we make those real and meaningful every day? And how do we make sure that we don't send them off to do things that aren't important (and) that we eliminate as much of the bullshit as possible. And that the things that they are doing are the things that matter, and that they understand why they're doing them at that moment in time. So, like I said, and I have tremendous confidence in our people and our leadership, and we just need to make sure that we're getting those messages of what's going on down to them.

Tim Addison, NAC Ottawa

I certainly agree with you when you mention the...you know, the ship on operations is a happy ship...provided they know where they're going, and when they're coming home. All the, the part in between is, is usually the most (challenging)...(but) you know, that the people are totally engaged. I've just got one more question and it's kind of...I liked the question, because it reflects the fact that we in the Naval Association are doing our best, doing what we can, to support the Navy. And this one is specific towards that...I'll read it to you. How can the Naval Association best support adequate funding for the RCN and especially, for the acquisition of an adequate submarine fleet? And I would go one further to say, if there's anything else, Admiral, that you think that we can help with, please let me know. Please let us know.

Angus Topshee

And so the answer is...I don't know exactly what you can do, but I know what I need, which is, I need more people connecting Canadians to their Navy and telling the story

of why we need a Navy. And that's a difficult message to tell, because most Canadians feel very secure and safe in Canada, they don't see the threats and the challenges that might be coming to our ocean approaches into our waters, over the harm that can result in that. So, telling the story of our past... the fact that World War II came to our shores in the Battle of the Saint Lawrence. The fact that, you know, we, we had the [Turbot War], or when there were real challenges to our ability to maintain our fish stocks.

We see in (the requirement for) subsurface fleet infrastructure, figuring out a way to make that all real and tangible for people so that they we understand the consequences of supply chain disruptions in maritime sea routes. That's all stuff that we've talked about for years...and none of us have ever come up with a good answer as to how to do that. We need to continue to tell that story, we need to not shy away from the fact that submarines are about, you know, they're really effectively the ultimate difference maker and naval operations, they bring a level of lethality, that changes the calculation for any potential adversary, and in a dangerous world, you really want to make sure that you've got that backing you...in case you need it, but its a difficult message to convey.

And I'm told particularly challenging for, for, for women and mothers as a demographic that just does not see that need. And so, figuring out how to communicate to that group to really explain what happens if you've got a bully confronting you that you have to answer no to, and you can't call for help. So, I haven't figured out the narrative around all of that. And the biggest thing, we need more people. We need more great Canadians to join our organization, not the ones who already know about us, the ones who have not yet been exposed to the Navy, so we're always looking for advice on how we can connect to different audiences within Canada...how we can get more Canadians in.

And if I was gonna ask you to advocate for any changes within our own processes, it is really to allow us to be able to do service specific things, to make recruiting service specific, because I really feel as though every time we show someone running through the woods with a gun, that's not appealing to the person I need to join the Navy. Every time we show a person in a plane, that's not a feeling necessarily, that is the person we need to join the Army.

I think there's value to doing things to recognize the intrinsic differences between the services, all within an integrated Canadian Armed Forces. So, I'm not saying we want to undo unification. I'm not [saying that]. I think unification, it was a, no...it was absolutely a more efficient path forward...but there are differences between the Army, the Navy, and the Air Force. We attract different people. We should find different ways to make sure we connect with those audiences, and show different examples to those, so that we're all maximizing the people that we can bring in, how we can better do that.

I welcome the opportunity to hear more about that. So yeah, we're open for any good idea that gets our story out there. It gets more Canadians into the into the military and better tells the picture of why Canada needs a strong navy and, I thank you, because, I know so, many of you are already doing that work and, it is making a difference. We see that in the numbers that we're getting in terms of the 20% of people who are walking into recruiting centers and saying they're interested in the Navy, we're seeing that in fact, that right now, the discussion around submarines in Canada is not whether or not Canada should have submarines...but what type and how many?

Those are positive things that are all part of that steady drumbeat of, support from things like the Naval Association of Canada. So, I'm proud to be a member of the organization. I did recently pay my dues to make sure I'm up to date...and thank you, all of you...do to tell the story. And thanks Tim for, for hosting this event. I'm afraid I do have to head off pretty soon, but I've really enjoyed the...the questions and the engagement tonight.

Tim Addison, NAC Ottawa

Admiral, the timing is perfect. I promised, perhaps just before you joined (online), that we would try to have this wrapped up by 2030 and guess what, it's 2030. So well done on you for answering a significant number of questions and giving us your heartfelt thoughts on where the Navy is and where it needs to go...and where some of these big programs are and where they need to go. You've done a great job of covering the waterfront for everybody tonight, and I want to personally thank you for that.

I'll just put one more, quick plug for the Mentorship Program...that's starting to move along quickly as I had hoped, and we'll do what we can to make sure that it happens. And hopefully, some of those of us in the ranks of the Naval Association can contribute as mentors. I think that pretty much wraps it up...but in any event, tonight, it's been a real pleasure, Sir, and I appreciate your time tonight, as do all of us who logged in. So, thanks again.

Angus Topshee

Thanks very much, and have a great evening, everyone.