THE BROOKINGS INSTITUTION
FALK AUDITORIUM

SECURING MARITIME COMMERCE:
THE U.S. STRATEGIC OUTLOOK

Washington, D.C.
Monday, March 25, 2019

PARTICIPANTS:

Keynote Remarks:

VICE ADMIRAL DANIEL B. ABEL
Vice Commandant
U.S. Coast Guard

Panelists:

BRUCE JONES, Moderator
Vice President and Director, Foreign Policy
The Brookings Institution

VICE ADMIRAL DANIEL B. ABEL
Vice Commandant
U.S. Coast Guard

JENNIFER CARPENTER
Executive Vice President
American Waterways Operators

THE HONORABLE JOHN GARAMENDI (D-CA)
Member, Subcommittee on the Coast Guard and
Maritime Transportation
115th Congress

LIEUTENANT GENERAL TODD SEMONITE
Commanding General
U.S. Army Corps of Engineers

* * * * *

P R O C E E D I N G S

MR. JONES: Good afternoon. Thank you all for being here. My name is Bruce Jones. I'm the vice president for Foreign Policy. Thank you for joining us in today's conversation, examining the United States' maritime transportation system and its critical role in our nation's prosperity and security. And I have to day, I am delighted to host today's event.

Before I go any farther, I want to call out our colleague, Mike Lachowicz, our federal executive fellow, who is here with us at Brookings and has been both the brains and the engine of this event. So thank you, Mike, for everything you've done to make this happen.

One of the reasons I was -- well, Mike just snuck in the back door, so he missed that, but that's all right. (Laughter) One of the reasons I was happy to host this conversation is it gives me a chance to talk about an issue that I think is really important for us to spend more time than we do talking about it. It's really sort of glaringly absent from our national conversation, even from our sort of national sense of who we are as a nation. How important is maritime commerce to the world in which we live? If you use an iPhone or a Samsung or you shop at Walmart or Whole Foods or you buy a car or you eat fish, you use the global maritime commerce system. Almost everything that we do is integrated into global commerce.

This is a big change in the United States, and I don't think it's well understood. If you go back to the 1960s or the 1970s roughly 10 percent of American GDP was dependent on global trade. That's been transformed. It's now about 30 percent of American GDP that's dependent on global trade, 1 in 3 American jobs depends on global trade. Now, when we say global trade, or I'll use that bugbear of a word, globalization, I think people's images, financial services, computer technologies, aircrafts, flowing back and forth across the world. And that's true and all that's important. But 90 percent of global trade moves by sea. The real image of modern globalization is a container ship entering the

Port of Los Angeles or New York or Seattle. That is globalization, that is global maritime commerce, and it's what sustains our economy in the present day.

And that's where the Coast Guard comes in. I think there's a good understanding in the national imagination and in the expert community about the role that the Navy plays in projecting power internationally. I think there's much less understanding of how vital global commerce is and the role that both the Navy and the Coast Guard play in guaranteeing the flow of commerce, both in terms of entering port, but as it also flows across the world's oceans and seas.

So we're going to have an expert panel, a superb panel today to discuss these issues, looking at the way these issues are evolving in trade and technology and the workforce that's required to undergird them. I hope we'll have a chance to get into some of the issues that are changing pretty rapidly in front of us, like the changing Arctic, which is a huge new commercial venue, and the international context in which all of this is happening.

But to kick us off, I'm delighted to welcome to Brookings Vice Admiral Dan Abel of the U.S. Coast Guard. He serves as the Coast Guard's Deputy Commandant for Operations, and is responsible for operational strategy, policy, guidance, and resources that address our national priorities. And he is exceedingly well placed to address today's themes, having served as the Director of Operations at U.S. Southern Command and as Commandant of the 17th Coast Guard District in Juno, Alaska, from where we manage the Arctic. And Mike managed to sneak into the talking points, you also have a distinguished aviation career. I notice that you slipped that in as well. (Laughter)

We're delighted to have you here today, and please let me welcome you to the stage to give some opening remarks. (Applause)

ADMIRAL ABEL: Good afternoon. So I'm going to start with a pretty patriotic picture, and I'm sure it stirs your inner Lee Greenwood and you just want to sing. But what is missing in this picture? What's wrong? Anybody? (Audience responds) There's no boats. This is an eerie picture. On any given day in New York there's 1,400 vessel

movements that are tracked by the vessel traffic system going to 150 federally regulated shore side facilities, bringing in $136 million of economic impact.

So how did we just happen to get a picture of Cutter Spencer sitting in New York harbor with nothing out there? This was on the heels of Super Storm Sandy. She moved in for deterrence and reassurance for the American public, because the Coast Guard shore side facilities were disseminated. And with buoys missing, vessels blown ashore, facilities flooded, unpowered, or inaccessible, contained toppled over like a bad Jenga game, afloat or sunk, and vessels purely unaccounted for and potentially sunk. The captain of the Port did what you expected, he closed the Port of New York and New Jersey. And with selected nav aids back on station, and with NOAA doing a side scan sonar of the bottom, it was reopened 48 hours later with certain restrictions. And all restrictions were lifted about a week later.

But in that short time there was significant impact, particularly to the energy sector -- fuel that arrives there, fuel that is stored there, additive chemicals that are shipped there, mixed there, intermodal terminals that move it via rail, pipe, or truck. And the City of New York was forced to ration fuel. The City of New York was forced to ration fuel. And all of New England was about five days away from going very cold and very dark in the middle of November of 2012. Even Starbucks could not get their supplies in Manhattan. (Laughter) I know you're shocked.

But ironically a very resilient supply chain was in the t-shirt vendors that were already selling I survived Super Storm Sandy. It's all about resiliency in your supply chain.

And this event underscores to me, as a new District Commander, three things. First, just how in time the just in time system is. It doesn't take much of interruption to throw things off. And second, how vitally dependent these supply chains are to the maritime. And, finally, how very fragile they are to any particular upset.

Now, New York is a maritime city, just as the United States is a maritime

nation. Our maritime transportation system, as you mentioned, is a lifeblood of our economy and the source of national power. And it's the most environmentally sound way of moving things around our nation. One barge -- and generally you don't see a single barge, they're rafted two or twenty or twenty-five -- one barge can avoid 58 emissions from 58 semi-tractor trailers, and it can replace 15 jumbo rail cars on the railroad. And one Great Lakes bulk carrier can replace seven one hundred car trains moving commodities around our nation.

So today I want to just talk briefly about the challenges we all will face in the future and how the Coast Guard is preparing today to meet those challenges. The demands on our maritime transportation system are unprecedented and growing. With diversification of domestic energy production, export markets, and demands on Arctic waters mean we need to move more people and more things by the water. In fact, General McDew, the previous commander of U.S. Transportation Command, who is responsible for mobilizing our forces and moving them and their equipment around the world to meet national demands, made it clear that the United States is a super power because it has the ability to project power anywhere, anytime.

So our maritime transportation system is vital to national security. And this system is a gift to our nation and included deep water ports, sheltered harbors, unfettered access to the two largest oceans in the world, 25,000 miles of inland waters, 41 states are served by the maritime system, 95,000 miles of coastline, 50,000 aids to navigation that serve 360 ports with thousands of vessels that move every single day. And it sustains $4.6 trillion of annual economic activity and employs 23 million Americans. The ships are getting bigger, cranes are getting taller, and new manufacturing processes are changing everything, and everything is enabled by high tech.

The Coast Guard stands ready to meet these challenges because our national prosperity has always been closely linked to the maritime. It goes back to our service's history. That's why in 1915 the congress consolidated various federal maritime authorities under the Coast Guard to bring together those authorities and capabilities to

meet the requirements and to govern the maritime.

In October our Coast Guard Commandant issued the Maritime Commerce Strategic Outlook, and there're copies in the back that I commend for you to take. I'll hit on the three main lines of effort. The first is facilitating lawful trade on secure waterways. The second, modernizing aids to navigation and mariner information systems. And, finally, transforming our Coast Guard capacity, workforce capacity, and partnerships.

So that first line of effort, lawful trade on secure waterways, it understands that managing risk, system resiliency, and acting strategically with transparency across all stakeholders. Last Thursday I had a chance to fly over downtown Houston and look at the facility that had just been extinguished. Talk about managing risk in a very complex downtown area and maritime area.

Second line of effort is modernizing aids to navigation, and particularly mariner information systems. It's important that the Coast Guard help manage complexity on our waterways and our ports. And we have to optimize maritime planning to harmonize various uses of the waterway. And we must streamline and update how we communicate to the marine. Imagine as you get ready to do an international trip, you put in your waypoints, instantly your electronic display brings up all the federal information you need for that transit, all the international that you need for that transit, and maybe even has a ways function that tells you if you go this route it will be a little less congested, a little faster, and you'll get the tube socks and the container a little faster to Target or Walmart.

One recent example of modernization came on the heels of the last two years of hurricanes. As the ports were decimated, it would have been a long time to get the buoys reset. With key buoys on line we populated hundreds of virtual buoys on the electronic navigation systems of our larger ships. To those merchant mariners, the buoys were there as they looked at their display. This allowed the ports to open faster, it allowed necessary relief supplies to move in quicker, and allowed a key milestone for return to normalcy for those ports. And our Commandant understands that our ability to be ready,

relevant, and responsive starts with a Coast Guard mission for our total workforce.

That's why the third line of effort talks about our people and our partnerships. We know that an adaptive Coast Guard workforce needs the latest tools, technology, training and education, to keep up with a rapidly changing workforce and rapidly changing hardware in the maritime. And we know we have to leverage the total team, the regulated industry, third-parties, non-government organizations as well. And the greatest strength the Coast Guard can do is to build partnerships. Partnerships with the Corps of Engineers, American waterways operators, and our supporters in congress. We need to make sure we're the honest brokers across all those stakeholders.

So that's it for the Coast Guard's Maritime Commerce Strategic Outlook in a nutshell. It describes for you what we see as key enablers for success. There's a lot more detail, and I recommend you grab a copy on the way out. But it makes it clear that the Coast Guard understands and recognizes the incredible value of this maritime transportation system. What it does for our nation requires us to constantly focus on upping our game to keep pace with industry. And how we can help facilitate trade, facilitate travel with safety and security and environmental stewardship.

But the Commandant's outlook also serves another purpose, it helps tell our story and it helps tell the mariner's story. To audiences that do not understand the importance of what mariners do in this maritime transportation system, it's the key to our national success.

I thank you and I look forward to your questions. (Applause)

MR. JONES: Thank you so much. So let me now ask the rest of the panel to join us on stage and we'll introduce the rest of the panel members.

We're delighted to be joined by Congressman Garamendi, who is the representative of California's third district, which is Sacramento, for those of you who have a map. Congressman Garamendi joined the House of Representative in 2009 after a long and distinguished career in California politics and also served in the Obama Administration in the

Department of the Interior. Right now he serves on the Armed Services Committee where he chairs the Readiness Subcommittee as well as the transportation and Infrastructure Committees. And you can see, between those three, he plays a critical role in the governance of our maritime transportation system.

Lieutenant General Todd Semonite assumed his position as the Chief of Engineers in the Commander General of the U.S. Army Corps of Engineers in 2016. And in that role plays a critical role in advising the Secretary of the Army, and other principle officers, on matters related to engineering, infrastructure, and the management of our National Resources Science System.

He has also played a critical role before this current assignment in developing the Army Talent Management System. And so I think he's very well placed to comment on some of the workforce issues that undergird the Maritime Commerce Strategic Outlook. He also oversees 32,000 civilian personnel that is the Army Corps of Engineers.

Jennifer Carpenter serves as Executive Vice President and Chief Operating Officer of the American Waterways Operators, a national trade association representing the inland and coastal tugboat, towboat, and barge industry. I talked about global commerce, very, very big boats get stuff from almost at point A to almost at point B, but to actually get from point A to point B, you need tugboats, towboats, and barges. And Miss Carpenter has served in a number of key roles in the AWO over the last three decades and has been a member of the congressionally authorized Towing Safety Advisory Committee.

Congressman, let me please start with you, and welcome to Brookings. But let me ask you to add your thoughts to the Commandant's opening presentation.

MR. GARAMENDI: First of all, it's a great privilege to be here. This Brookings institution is always a place to find good policy recommendations, some of which I agree with most of the time. (Laughter) But in any case, it really is a pleasure. And for all of you that are here, thank you for attending what is a very, very important but often overlooked part of America's economy as well as its wellbeing.

Admiral, thank you. You not only make very, very good points along the way, but you make a very good presentation. And so I was pleased to hear that.

Bottom line on all of this is that, yes, the maritime industry is absolutely critical. The international trade, all that you said, is accurate and correct. It is growing and probably double over the next 10-20 years. And the United States is about to lose its position if it doesn't get its act together.

We'll be able to welcome those foreign ships to our ports, our mariners will not be on those ships, the ships will not be made in America, and we're going to be in situation which the world's greatest maritime nation, even greater than the United Kingdom, or Britain as it was known at the time, will recede. Bottom line, Jones Act is absolutely critical. Lose the Jones Act and this industry is dead in America. So we have to maintain the Jones Act. Much of the commerce that you'll be hearing about is dependent upon it.

What remains of the American shipyards, mostly small shipyards, a few large ones, are producing ships for the Jones Act but not for the international trade.

Secondly, with regard to security, Admiral, you talked about all of these aids to navigation, you talked about being able to rebuild in the New York harbor. Absolutely would not happen if GPS were not available. In the 1990s the U.S. government determined the single point of failure for the American economy writ large, including the military, is GPS. Over the years GPS is ubiquitous. These lights, this cell phone, all of your aids to navigation will not operate without GPS and GPS is vulnerable. I won't tell you where, but you could probably go out and buy a little interrupter and shut GPS down for several blocks around here for a few hundred bucks. And I'll guarantee you that GPS is where anybody that wants to disrupt our society will go.

Admiral, you didn't mention E-Loran, but you used to run the Loran system. It is high time for this nation to put in a backup system known as the E-Loran. Cheap in any way.

Finally, we need to rebuild our shipbuilding, we need to rebuild our

international. We can do it with the export of natural gas and oil. We have legislation in to accomplish that. If we were to do that, we would see perhaps 50 ships being built in America with mariners on them providing the kind of sealift capacity that, again, you talked about when you talked about General McDew. All possible, we just need to kick ourselves into gear and get onto it.

And with that, I'll look forward to other questions.

Thank you.

MR. JONES: Thank you very much. I'm a little tempted to say you've argued for making American shipping great again, but we'll come to that (laughter).

General Semonite, let me turn to you and ask you for your opening thoughts.

GENERAL SEMONITE: Listen, I want to thank for the invitation today and a real distinguished panel. We're awful glad to be here.

I just want to give you a couple of one minute, real fast on the Corps. And a lot of these different tasks we have in missions all actually intersect. One of the things I think we look most important to do is to be able to take care of our American soldiers. We have about 90,000 engineers that are in the Army. It's critical that they have the barracks they need and the motor pools. And the congress has done a great job of giving us the tools. We do about $9 billion of construction to be able to take care of the Army and its facilities, but lately we've been asked to do a lot more for the Air Force, the Marines, and the Navy, to be able to make sure we're taking care of that military construction.

And we also do an awful lot of work with the Coast Guard. And, Dan, we aren't going to talk about it today, but this support we do with FEMA out on the battlefield, out in the middle of the storms, it's a lot of times the Coast Guard and the Corps of Engineers that are first on the ground with FEMA, and we're really excited about the partnership we have them. We're doing more and more with the IAS. A good example, we're doing about $9 billion today on the VA system to be able to help build hospitals for our

veterans. So a lot of different missions we have and I'm kind of the guy that wears about two or three of those different hats.

The one that really connects the most here is our civil works program. And I want to apply congress, we normally get about $5 billion in our civil works account, normally congress comes in and gives us a couple of billion above and beyond that because people like the congressman understand the value of the infrastructure and are investing with money to be able to make that happen. Even things like a Water Resources Development Act. You talk about bipartisan, when it just passed 100 senators signed for it, and all except one representative signed for it. So when the nation has tough issues and knows that they've got to be able to spend money, the fact that everybody is all in when it comes to be able to invest in an infrastructure is important. So a lot of things in the Corps.

The other big thing is that this year where the congress gave us $17billion extra to repair some of these facilities after the big storms and that supplemental is critical to get these things up and running.

I just want to hit you on a couple of the big facts, because we're going to talk here about maintenance of some of these waterways, but when you think about what the Corps does, we talked about 2.3 billion tons of cargo that come into the United States, about 70 percent of that comes through a Corps of Engineer facility of some sort, about 70 percent of the oil comes through Corps of Engineer harbors, and then when you come to the inland navigation, about 60 percent of our grain goes up and down these inland harbor ways, 22 percent of petroleum, and an awful lot of coal that's used for electricity.

We've got about 249 lock chambers. So again, we're talking about getting those container ships, Dan, into the harbors, but then as those continue to be able to transcend up throughout the rest of the United States, you've got to be able to take care of that with all the different inland waterways we've got -- 13,000 miles of deep draft channels, 12,000 miles of inland and waterway. So I only mention that to let you know that the expanse of what America has invested in has been dramatic. And right now the Corps has

about a quarter of a trillion dollars of concrete in the ground to maintain that infrastructure. The problem with that is that 50 percent of that quarter of a trillion is over 50 years old. So as much as congress has given us investment, we're continuing to do heroic things out there with bale and twine to try to make sure that those locks and dams continue to operate.

Even today is a great example, not just on the Mississippi, but massive amount of flooding on the Missouri. If you were to fly over some of those flooded areas, you will actually see barges going up and down that river still because we're able to be resilient and figure out how can you -- with very, very little risk -- continue to be able to keep the rivers operating so we don't have massive challenges.

Just a quick minute on the partnership with the Coast Guard -- and we love the Coast Guard. We work very closely at three different levels. As much as guys like Dan and I and the Admiral work nationally here, we have different regions, and the Corps of Engineers they have different districts out there, so those different flag offices work very closely. And if you go down into the trenches and down where the real work is done on the ground, those sector chiefs, they're hand in hand with our district engineers. And that's what I think is nice, that everybody is talking, everybody is very, very aware. And a lot of times, before we ever know we've got a problem here in DC, there's an unbelievable partnership down on the ground working. And obviously is with the local port directors and the rest, but it's working very closely.

Dan, we started building light houses for you guys I think back in 1852. We enjoy working with you. And it goes back to what can we do together to figure out where are there challenges, how can we continue to be able to hit those, how do we align critical dredging needs. So clearly the Coast Guard might give us a heads up on shoaling ahead of the time we might think might be predictive. We're doing an awful lot with the data management, aids to navigation, and we look very closely to continue to build on this partnership.

I've got actually Patricia right here. I've taken one of my senior GS

employees and she is permanently in the Coast Guard headquarters to make sure there is no daylight between the two.

Let me hit real quickly on just two of the big lines of effort that Dan talked about. And the first one is this trade and travel. We've had several memorandums of how we work side by side. We do an awful lot with rule making when it comes things like invasive species management, critical maritime infrastructure on the Transportation and Security Act, Oil Pollution Act. There should be no daylight between the Coast Guard and the Corps of Engineers and the other waterways' forms that are out there, and we do get an awful lot out of those other groups that inform us.

When you think about our waterways, they're the most complicated waterways in the world and if you put all of the other waterways together they still aren't as complex as what we have in America. And we've invested very, very heavily, but we've got emerging technologies -- the Congressman talked about the importance of GIS. We've got to continue to build on that. We've got to be ahead and anticipate where the problem is going to come from. And Dan talked a little bit about a just in time. Even if everything goes perfect, you're just able to be able to make things happen, the maintenance and the rest. But then throw Mother Nature into the middle of this, or you have a terrorist act, or something else happens, and, boy, it really could end up bringing America to its knees. So we've got to anticipate and lean forward.

A couple of things we're doing -- I'll just hit you on a highlight -- Olmsted Lock and Dam. Been a long, long time getting it done, but this is a lock and dam that goes across the Mississippi River. You've got to be able to have steps in a river to be able to barge up and down, but only about 20 percent of the time do you have to actually have the pool. So the other 80 percent of the time we have gigantic great big concrete panels -- we just finished this a couple of months ago -- they all fold down in the river. All the ships go right over them. And then when all the sudden we need to build a pool, we go out there and we've got a laser GIS on the end of crane that goes down and it finds those concrete panels,

we pop it all up, about 1,000 feet wide, the entire river then builds that pool. So we were able to figure out how to do that at a much cheaper rate.

Think about harbor deepenings. We just finished 15 harbor deepenings, so almost all along the East Coast. We're working our way through Savannah right now, through Charleston, great support from congress. We've got more work to do in Mobile, Houston, and we've got a lot of work to do on the West Coast. But the challenge we're having is how do you put that dredged material at a place where we're able to meet the national law, but also some of the states' laws have very, very aggressive placement rules on where that can go. So how do we predict -- and when you talk about anticipating, we can't think two and three years out, I ask my guys to think fifty years out, a hundred years out. How are you going to make sure you can dredge Baltimore harbor or New York harbor 100 years out? And you need to think about some of these other big ones -- St. Lawrence Seaway, massive amount of contract going through those. Just the Mississippi River alone, 11,000 vessels that go up and down this thing, 50 million tons, 60 percent of the grain. And even right now, with all of the flooding, what's called Southwest Pass in New Orleans, that thing is getting silted in. So we've had to then find dredges to be able to move in there and anticipate, even in the middle of the flood, how do you dredge that material so you can continue to make sure it keeps working.

The only other thing, Dan, on the line of effort number two, is that we are working very closely with them on aids to navigation and we want to be able to make sure we can predict what do we know that we can inform the Coast Guard on and the other way around, what do they know so that we can make sure that we're leveraging what we do in our R&D sectors -- we have seven gigantic laboratories -- to be able to make sure -- we don't need everybody in the federal government doing everything, just the capability the Corps has got and we can leverage that into the Coast Guard or the rest of industry and share that technology, we want to do that.

The last thing I will tell you, and it goes back to the third point of effort -- and

I think Dan used the word transform -- a lot of people in the Army are using the word reform. I don't like the word reform, okay. But we have got to change the Corps of Engineers. We have been around 243 years and I think reform is a negative word, and here's why. I grew up in a little town in Vermont and five miles down the road there was a reform school. (Laughter) They didn't send the best kids to the reform school.

So I want to run a world class organization, but we can't settle on our laurels. Every single day we've got to figure out how do we streamline, how do we delegate, how do we do things faster. So you talk about the permitting system, how do you get a project through, how can we make sure that the people with the right degree of capacity down at the lower level can make those decisions. And I go back -- and I might upset the Congressman -- but I say, I don't think the best decisions are done in Washington, DC, they're done at the local level, where local people have the authority and the capability to be able to make those decisions.

So we're revolutionizing the Corps of Engineers. We've got about 160 initiatives, some of these are policies, and I haven't met a congressman yet that hasn't said, hey, General, tell me what I can do to help you and then we can leverage some of these things to change the laws, change some of the administration policies, to be able to make sure we're a better Corps of Engineers.

So I'll stop right there, but we're excited to be available today and we are aggressive in changing the Corps of Engineers.

MR. JONES: Thank you very much for that. I appreciate it. We're going to come back to a couple of those themes as well.

Jennifer, let me welcome you.

MS. CARPENTER: Well, thanks so much. Really appreciate the opportunity to be here. I think that this panel is really appropriate because the domestic maritime industry, the Coast Guard, the Corps of Engineers, and the congress really all have to work together in order to achieve this vision that is behind the Coast Guard's Maritime

Commerce Strategic Outlook, a marine transportation system in the United States that is safe, that is secure, that is environmentally sustainable, and that is economically vibrant. So we've all got roles to play.

From the perspective of the domestic maritime industry, which supports about $155 billion worth of economic activity, which provide family jobs for more than 650,000 Americans, we see really 4 pillars that enable us to do what we do for our customers and for the country. The Jones Act, which Congressman Garamendi led off with, is absolutely critical. It is not only the basis for every dollar that our companies invest in American built vessels and every job that they provide to American men and women, but it is all about maritime border security. The Jones Act has been providing for maritime border security before border security was at the top of the news every day. The Coast Guard could not do what it does without the Jones Act. You heard Admiral Abel talk about lawful trade and travel on secure waterways. We're talking about the Jones Act, and I look forward to elaborating on that.

Second, nationally consistent laws and regulations, vessels operating in interstate commerce. That's what the maritime industry is all about. We have got to have uniform, consistent laws and regulations. A vessel could be operating in the waters of more than a dozen states in the course of the single voyage, and so the certainty, the predictability which enables businesses to plan, to make investments, which enables mariners, who are the lynchpins of all of this, to understand what it is they have to do, no matter which side of an imaginary line in the water they are on. Absolutely essential.

Third pillar, waterways infrastructure, which General Semonite teed up brilliantly. The waterways of the United States are really a god given legacy that we've got and it is critically important that we not mess it up by allowing them to fall into disarray. A well-maintained reliable waterways infrastructure, whether we're talking about dredging of coastal ports and channels, or making sure that those 238 locks, 50 percent of which have exceeded their design life, as the General said, are in ship shape is critically important.

Fourth pillar, safety. Safety is our industry's franchise to operate. It's something that the congress clearly expects of us, holds us accountable for, passes laws to make sure that we uphold. The Coast Guard, maritime safety is one of its critical missions, and we look forward to working with congress, to working with the Coast Guard to really building and incentivizing a culture of safety throughout the industry. We can do that by making sure that we have the right regulatory floor and by making sure that companies are really incentivized to adopt really a culture of safety and not regulatory compliance. So looking forward to talking about that a little more as well.

Again, really appreciate the opportunity to be here and to working with the congress, with the Coast Guard, with the Corps, to achieve the vision behind the Maritime Commerce Strategic Outlook.

Thanks so much.

MR. JONES: Thank you very much. And thank you all very much for those opening remarks.

What I want to do is pull out a few key themes that I think run -- either run across some more -- I want to sort of pull out things from your opening remarks and the Congressman's and get others to respond to them. And as I made notes myself, it's three Cs, it's cyber, climate, and China. I'm going to use China as kind of code for a larger question about the future of American shipping and trade.

So let's start with cyber. I read the Maritime Commerce Strategic Outlook closely and there's a lot of emphasis in that document about the technology, about the need to use advanced technologies to improve the efficiency of the system, to get proper integration of data, et cetera. But there's also a theme about the vulnerabilities of that system to cyber.

And I just wanted you to speak a little bit about that tension, and then others might want to come in on the kind of question of the vulnerability of our systems to cyber-attacks.

ADMIRAL ABEL: You know, it's interesting. Shore side facilities have to have a security plan, vessels have to have a security plan. And as we added the cyber element, both shore side and vessels are like what do you expect from us. Well, if something is not going well you've got to tell us. And how do you plan to recover from it. Just like all other sectors of society, we've become digitally dependent -- I mean digitally addicted. And all it takes is wondering what's in that container when you have 12,000 showing up on the vessel, and you have significantly bogged down that port.

As it stands now, we do get reports from shippers and ships that say I've had a cyber breach and I'm inbound to your port. We quickly work with that, our intel center can tell us how many fellow ships from that particular shipping line are due into U.S. ports, we work with the company about what vulnerability is there. We recently we had one that anchored out, we had a cyber boarding team that went out, worked with the vessel, confirmed all the cyber effects were isolated to that vessel, they made sure that the handling of the vessel and the control systems of the vessel were not at risk, they got a green light, and the captain of port let them come in.

So just like any other potential breach of security, cyber is the same way. If you have a breach of security you call the Coast Guard, we'll work with the company, we'll work with the operators, to make sure that we work around that. We manage the risk and we come in.

But you're right, cyber is a great enabler, but cyber is also a great vulnerability.

MR. JONES: Congressman, are you confident that congress has adequate oversight of this, that it understands the nature of the risk and is doing what it can do to protect us on this risk?

MR. GARAMENDI: Aware but not adequately engaged and not adequately addressing the problem. The problems are very severe. If we were on a ship in the Black Sea near Sochi the navigation equipment on that ship would tell the captain that he is right

smack in the middle of the Sochi airport. GPS can be spoofed. And clearly it is being spoofed in the Black Sea around Moscow, particularly around the Kremlin, as well as St. Petersburg. We should assume that spoofing could occur in the United States and ships that are totally dependent, as they are today, on GPS will find spoofing is a problem. So that's just one of many, many examples of cybersecurity.

There is also you mentioned General McDew in your opening comments, Admiral, he has concerns. He was responsible for the total logistics of the entire Department of Defense. Well, we have questions about whether the Department of Defense is up to speed on cyber. Leaving that aside for a moment, the entire network that he's responsible for, for delivering everything to the ports and to the ships, is wide open. Every shipment is in the private domain and readily available and anybody who wants to know where anything is going. So there's a very, very large question about that.

It goes on and on. I'll let the General speak about whether his dams are cyber secure or not. Questions have been raised about one dam, a small dam, but not the 200 or so on the Missouri system.

So those issues are out there. We know that this is a major vulnerability across every part of our current and modern society. Are we up to speed? No. Are we dealing with it? We're moving -- inadequately in my estimation.

GENERAL SEMONITE: So I've always learned that there's an old adage, priorities are those things that get resourced, and that if this is a national security issue, it's got to be resourced adequately. If you flat line the budget and your stuff is getting older -- so it's every more expensive to be able to maintain it -- and now you add on top of that an additional requirement to be able to have that level of security, that shows just how much stress there is in that financial system.

One might say why does the Corps of Engineers have anything to do with our nation's waterways. Because they are a national security asset. And so right now we are under DoD authority on all of our stuff. And if you were to say what kind of systems do I

have on a lock and dam, they're very similar to something you'd have inside a Fort Bragg facility where we have the 82nd Airborne. So I'm not going to go into that level of detail here, but right now it goes back to the compliance, it goes back to the inspections. We were just meeting last week with the senior general in charge of the Army's cyber command to be able to make sure we aren't interdicted.

It even gets worse because we're trying to cut down manpower, just because I'm under resource constraints, so I have some facilities that actually are remotely controlled. Now, we'll have local police in the area, but I might be changing a gate, you know, 300 miles away through that computer system because we have that technology, but you've got to make sure that we are absolutely protected against that so we don't have an interdiction. But you've got to resource it and it's getting to be harder and harder because, as the Congressman said, the enemy is thinking, and they're going to be a step ahead of us if we aren't watching every single day.

MR. JONES: And, Jennifer, I mean you represent an industry that has some very large companies, but also some very small companies that are part of this system. Are they able to keep up with this? What are the challenges in the industry for dealing with cyber?

MS. CARPENTER: Yeah, absolutely. So the maritime industry is all about risk management. And cyber is a risk that has to be managed and it has to be managed really no matter what part of the system you are operating in and no matter the size of your company. Any company is vulnerable to a cyber incident, whether that is extortion, whether that is a security incident. And so it's extremely important that all companies be looking at this.

AWO has had a partnership with the Coast Guard for more than 25 years to improve safety, environmental stewardship, and then about 20 years ago we added security to the mix. The most recent project that we worked on together was a set of cyber risk management best practices for the tugboat, towboat, and barge industry, because there are

common principles of risk management that apply to all companies regardless of size, and then companies can adapt those to their geography, to their operating area. We see this as an important role that we can provide, kind of translating some of these common principles of cyber risk management into towing, into tugboat speak, which is important.

MR. JONES: Okay. I want to turn to a slightly different topic, although there will be points of relationship, which is about China and the role of China in global trade, global commercial trade, and sea-based trade, and it has a bearing on ports and port infrastructure.

If you go back to 1995, even 2000, Port of Los Angeles, Port of New York were in the kind of top 10 ports in the world. A couple of European ports in there, a couple of Asian ports. Fast forward to the present day, Shanghai, Hong Kong, Guangzhou, and you go on and on, and there is no American port in the top 10. Shanghai itself is 10 times larger than the largest American port and it's only one of 3 Chinese ports. It's just kind of a snapshot into the scale at which China is operating global commercial trade.

Now, so a number of you talked about the Jones Act, a number of you talked about shipbuilding, the shipping industry, et cetera. Are we actually competitive in this space or have we lost this space to Asian commercial operators?

MR. GARAMENDI: I'll take a run at it and Jennifer and -- go at it. We are losing. Have we lost? We'll very quickly lose if we don't change our policies. China and Japan and Korea and Russia's policies are very straightforward. They have determined that their maritime industry is critically important and they're perfectly willing to heavily subsidize that industry. I don't have the documents in front of me, but it's billions and billions of dollars of annual subsidies from the Chinese government to their maritime industry. Not only the shore side, that is the facilities themselves on shore, but the infrastructure to get to the shore and then the ships themselves. All of those are heavily, heavily subsidized and we do nothing.

But we have an opportunity. Right now there are trade negotiations going

on between the United States and China and the way things are headed we will probably offer China more of our natural gas and oil in exchange for something. We don't know what the something is, but I can tell you it's something I would like to have, and that is that that oil and natural gas be on American built ships with American mariners, which is precisely what China, India, Korea, and now Russia is doing. There is no natural gas going out of the Northeast Passage, that is the Arctic Ocean, from Russia unless it's on a Russian flagged ship. And I think that's also going to be a Russian built ship.

So the other countries around the world are using their position to build their maritime industry and they've been very, very successful at it. We've ignored it. We have what we call the Energizing the American Shipbuilding Act, which requires a small percentage of that oil and natural gas be on American built ships with American mariners.

Not a bad idea if you're interested in our national security. We do know that the U.S. Navy is going to have serious problems supplying its fleets around the world for lack of surge capacity. And so here's one way to add to that capacity.

We have to follow the leaders in this case, and the leaders are using their national treasury to enhance their maritime industry. We need to do the same. And a lot of it has to do with the ships and the mariners, a lot of it has to do with the ports and the dredging and the like.

MS. CARPENTER: And I'll just add to that, so 100 percent of the cargo that is moved in the domestic maritime commerce of the United States is moved on American built American crewed American built vessels and that is because of the Jones Act. The Jones Act provides the basis for the maritime industry and infrastructure that we have. This is a vibrant and economically vital industry. There is vigorous competition among companies in the domestic maritime industry. And one of the fun things about representing that industry is sometimes you see them going head to head at the same time as we're trying to work together. They can compete vigorously against each other, they can compete vigorously against the railroads. I'm not sure it's fair to put them up against the government

of China, Congressman. So that is why it is so important that we keep the Jones Act in place. It provides for vital domestic maritime commerce. In addition to that, it provides a level of economic and homeland security that is absolutely critical. We know that this vital domestic cargo is being moved by Americans. We know that those locks and dams that the General mentioned, which are economically and security critical infrastructure, are not vulnerable to unvetted, uncredentialled, foreign seafarers in vessels flying foreign flags, which are essentially little sovereign nations floating up the waterways of the United States.

The security threats of the vectors for security incidents that would be opened up if we were to do away with the Jones Act, it's just almost unthinkable to me. I was listening to a reading a transcript of the Commandant's State of the Coast Guard last week, and he's talking about the resource constraints on the Coast Guard. And I'm trying to think how much more difficult Admiral Schultz' job would be, and consequently your job would be, Admiral, if the Jones Act weren't there.

ADMIRAL ABEL: Just a couple of thoughts. Congressman, since you mentioned the Arctic, Russia has a whole different view of that transportation off their north coat. They view it as you would a turnpike authority. They're going to charge you a toll, they're going to have the wreckers -- they're called ice breakers -- and they're going to make sure the weigh stations that you come and get gas and get food, are all supported by them. We do not view the Arctic waters the same way, but they view it as a turnpike authority and they're going to make money.

As far as competing with other countries and the cost of shipping, the one thing that we're trying to do within the Coast Guard is to make sure it's as level a playing field as we can for standards. There's no reason that a U.S. vessel should have appreciably different standards for safety, security, environmental stewardship than all other international vessels. So that's why we work with IMO, to make sure that everyone must live to the same standards.

And we're proud of the fact that a few years ago the National Academy did a

maritime study and said that the delta that you pay to the U.S. flag for standards is pretty much negligible compared with other countries, because we've successfully made international standards just that, international.

Now, certainly the cost to crew, the cost to shipyard, the P&I is more expensive for U.S. flagged vessels. One way that the nation is looking out for our security is the maritime security program where the nation pays a stipend to U.S. flagged vessels. And there's about 80 of those that are registered. It's about $5 million a year that they pay a U.S. flagged vessel because of the known increased cost to operate a U.S. vessel, and it keeps them U.S. flagged and keeps them available for the TRANSCOM commander to use that vessel if it must be priced in the service for national security.

MR. JONES: You started your presentation with Super Storm Sandy, and it struck me as a very good place to start. But I want to ask all of you about climate change and what it means for this system. Under almost every piece of predictive analytics that we have on this we're looking at sea level rise, we're looking at more powerful storms, we're looking at surges, we're looking at more flooding, et cetera.

Are we as a system, are we as a nation, prepared for what's going to hit us?

GENERAL SEMONITE: Well, I think to keep it within the theme of what we're talking about, I don't worry quite as much about maritime navigation with this as I do about life safety. And I could talk for a long time, but there are definitely challenges out there when it comes to rising water and the threat.

So just last week alone I was in New York harbor looking at five projects we're doing for the Mayor and for the State of New York on anywhere from what's called coastal storm risk reduction, how do we bring these beaches, how do reshape those beach lines, so the berms now. People that used to live there maybe could see the ocean, right now you've got a massive structure that has withheld very well. Our designs are doing a lot better job of protecting people on there. And where do you do what's called green and gray, how much of it is concrete? And we're seeing massive results by building wetlands and the

ability to have some of the greener capability brought back in to protect these people.

These are the people that work in the ports. You talk about -- I'll take a different approach. Clearly the ports have got to figure out how to make sure that they're safe so they don't end up having a lot of damage, but when you go back in the New York harbor after Sandy, it was just getting people back to work. We were down in the Rockaways last week where just entire neighborhoods were completely wiped back out. So how does America make sure that we're working with those states to protect those people? Some areas we're asking to buy them back out. If they've lived there and FEMA has bought that house three times, there's merit to go back in and say you're living in a flood zone, you're living in a coastal area, it's time to move back out. And I was in a neighborhood last where basically the town and the city have bought out about 100 houses and now we're going to put that back into wetlands and nature preserves and move those people somewhere safer.

We're seeing the same thing on the inland system. Not so much with water rise, but clearly with Mother Nature and the storms we're seeing. With all the extra rain, when it comes to levees, when it comes to berms, how do you make sure your building these so they're more resilient to be able to handle that?

So, again, I think on the water side and on the maritime piece, the ports have to figure out how to stay ahead of that, but from our directed task, we've got to worry about that life safety of all of those that are in that same protected area. And I'm sure the others will maybe hit more on the maritime piece.

MR. GARAMENDI: I did a hearing last week titled "Is the United States Military Ready for Climate Change". The answer is no, they're not. Offutt Air Force Base Strategic Air Command, half of it is underwater. Now, I guess the waters are receding a little bit on your Missouri system, General. Camp Lejeune, $3-4 billion of damage from torrential rains, Tyndall Air Force Base in Tampa, basically wiped out by a hurricane. We can go on and on here, and the fact of the matter is sea levels are rising, the storms are more intense.

We haven't talked about tornadoes in the Midwest and the East Coast, and now sometimes in California.

So all of these issues are before the United States military, and frankly not prepared to deal with it. I'm the Chairman of the Readiness Committee, and the bottom line of this, we're responsible for all military construction. I've got 1,000 facilities around the world, I've got over 550,000 structures, some of which are now inundated, and the bottom line is we're not going to do anything unless it's built with climate change in mind. It's going to be resilient for climate change or it's not going to get authorized going forward. It is a reality of the world in which we now have.

There are so many other things that need to be dealt with. Thank you for mentioning the Arctic. I guess I didn't. Let me go in a little further. The United States has no legal position 12 miles off our coast. We assert authority. The United Nation's Law of the Sea, we are the only nation that has anything to do with maritime that is not a party to it. And so when we go to the South China Sea we can claim rite of passage only by our military strength, not by the law. And so this is something that absolutely has to be done, particularly for the Arctic. And we've failed to do it for more than 30 years now, and so, you know, put aside the United Nations part of it, and look at the fact of the matter that this is a major challenge for our nation. Only because we're strong and only because we're assertive do we have right by might, not by law here. And so this is something I want to draw all of our attention to.

We can go on and on, but climate change is very, very real. Sea level is rising. General, you have enormous challenges everywhere. Sea walls are going to be built, airports are going to be underwater, commercial as well as military. This is simply the world in which we live, all of which requires us to reduce our greenhouse gas emissions. And I want the military to go green.

MS. CARPENTER: Just a couple of quick points on that. So the General talked about safety of life -- top priority for our industry. We work very well with the Corps of

Engineers and with the Coast Guard to plan for extreme weather, whether that is high water on the inland waterways system, whether that is hurricanes offshore, and to make sure that we have operational plans in place that can be calibrated, that can be adjusted, as situations develop, that communication is excellent. We couldn't do it working only with the Coast Guard, we couldn't do it working only with the Corps.

And then Congressman Garamendi's point about we've got to go green, I would just come back to something Admiral Abel said in his opening remarks, which is that maritime transportation is the most environmentally sustainable form of transportation. It produces fewer greenhouse gases than any other mode of transportation. So we've got to deal with the effects of climate change, but we can also be part of the solution to not exacerbate the situation and hopefully turning things in the other direction.

MR. GARAMENDI: Jennifer, let me just quickly interrupt. You missed another thing that your industry is doing, and that is you're going to green fuels.

MS. CARPENTER: Absolutely.

MR. GARAMENDI: LNG.

ADMIRAL ABEL: Just to underscore what Todd had to say as far as the shore side. So the rest of the story on Hurricane Sandy is for 48 hours the port was closed. That Abel guy was the target for every elected official. (Laughter) I got to know your contemporary Schumer -- Senator Schumer and Mayor Bloomberg -- open the port, open the port, open the port. There's millions of gallons of fuel sitting in the port on barges. So when it was safe to do so, I talked with the captain of the port and we opened. Every single gallon of that fuel left the Port of New York because there was no shore side facility that could accept the fuel. And if you own that fuel, you're not going to sit around and wait for a fence to be fixed, gas stations to be repaired, and roads to be dewatered. It just shows a good water to the pier only gets you half the solution. You have to have these communities to respond as well.

As far as the Arctic goes, and we'll go to the far extreme of climate change,

that is going to be a game changer. If you can get from Asia to Europe across the top and save a week, time is money. When you're looking at 13 percent of the undiscovered oil, 30 percent of undiscovered natural gas, and a trillion dollars worth of precious metals, it's just a matter of time that that's going to be developed as well.

So we need to be prepared. It's very rare that our nation ever gets a chance to do a clean sheet of paper on a waterway. Why would we want to go to 1700s technology? I appreciate you building lighthouses for us, but why would we put buoys and lighthouses when we've got a clean sheet of paper for the Arctic. Let's do something 21st century. Virtual buoys, moving map displays. As you get close to going through the Bering -- the Bering is the distance from DC to Baltimore, very shallow, very constrained. A flashing display comes up and says Alaskan native hunting activities are in play right now, please call this number and de-conflict as you go by. Those are the types of things we should be doing. So climate change gives us an opportunity.

Finally, as far as the higher frequency of national level events. It used to be the Coast Guard could expect a Sandy or a Katrina maybe once every four or five years. It seems every single year we're confronted by this. And you mention the fact that it takes a team to reopen that port and a maritime transportation system recovery unit, or a MTSRU, is just that. It's the team that says what needs to be opened first, what has the most impact to our nation. And candidly, for Hurricane Sandy, we found the big 12. There were 12 refineries or holding facilities that have the biggest impact on returning that part of the world to energy movement. And we put a Coastie at every one of those and made sure those were the ones we tracked and those were the ones that came back up as fast as possible.

So it's all about prioritizing, because you don't just flip a switch and turn a port on. It takes weeks to get the port back running.

MR. JONES: I'm going to turn to the audience in a moment but while they get their questions ready let me just ask you one last question, which is about the workforce for the Coast Guard.

It's been hit by sequestration, been hit by the shutdown, new technologies, changing environment. I mean there a host of systems here that are in play in terms of having a workforce capable of doing the things that you've been outlining and discussing for the Coast Guard. Is this, you know, one of a number of things you have to deal with, a huge challenge, is it the challenge? Where does this rank in your schema?

ADMIRAL ABEL: Well, it's a huge challenge. And just to keep up with the status quo would be a challenge. You know, LNG is a fuel, complexity of the vessels -- you know, all those things we need to equip our marine inspectors to be ready to do.

I just read a study that said in the next six years -- so by 2025 we can expect a doubling of maritime activity. You add onto that subchapter M, if you're not a practitioner of the maritime, that's towboats and tugboats that have now come under -- that's a 50 percent increase in vessels that now come under the Coast Guard certification process. We do not get a lot more marine inspectors to do that, so we need to keep up with that as well.

So number one is training to keep up with the capacity. Also training and assessing new marine inspectors to keep up with the complexity of the vessels as they come. Imagine being a marine inspector. In the old days you go down, you look at a boiler and say I've got a problem with my boiler. That ship that was anchored offshore with a cyber problem, that's a marine inspector that's going to go out there and he's going to scratch his head and go, gee, I wasn't trained at my school on what to do with a cyber problem. Now, the good news was we had some cyber warriors within the Coast Guard that were able to go out there.

So is it the biggest challenge for the Coast Guard, I would say as far as industry goes, it's probably the biggest challenge we have because of subchapter M, complexity of the vessel, the rising number vessels, and then, finally, just the size of the vessels. I mean it's one thing to say you have more vessels, when you go to pre-Panamax to post Panamax with 12,000-15,000 TEUs on board, I mean that is an amazing piece of

gear that needs to come in.

MR. JONES: General, do you want to comment?

GENERAL SEMONITE: Yeah. So let me take a different approach. So I wouldn't call it the biggest challenge, I'd call it people being the number one capability and enabler. Without a doubt, the Corps of Engineers, we've got a lot boats, we've got a lot of hardware, we've got a lot of infrastructure, but human capital is by far my number one priority, to make sure we get the best and the brightest.

A lot of the federal agencies get a large percentage of their workforce that is retirement eligible. And if you weren't out there being able to bring in the best and the brightest -- and we don't normally talk age, but I'm telling you, if you don't have a couple of -- some rooms with 24 year old kids in there just cranking high speed technology systems, then you aren't going to be able to keep up.

So we've invested very, very heavily. Sometimes the rules don't allow to do some things. We had a direct hire authority where it took 144 days to hire a civilian. You've got a 24-year-old kid going to graduate high school and say, hey, I'm going to get back to you in 144 days, they're walking okay. So now I have direct hire authority, I can hire somebody in 15 days. And about two months ago we went to the Black Engineer of the Year Awards and we hired 150 on the floor that day, just like one of the big aviation companies would be hiring, because people are that important. And if you hire the right people, they'll get you where you need to be. They'll be the ones that have the initiative and the incentive and the innovation to get there, but I'm afraid we're losing our bubble and a lot of the agencies are not bringing the best and the brightest in.

MR. GARAMENDI: We ought to talk about the maritime industry. Presently, just to man the people, mariners, we're short about 2,800 mariners for the existing ships. And the current mariners are aging out. So we've got a problem there also.

One of the things that's being done is to look at the military. As people leave the military, giving them an opportunity to become mariners. So that's another project

that's underway. But this is a problem across the entire scope, which brings us to the education system, and that's another discussion that the Brookings Institute has done a lot of work on.

MS. CARPENTER: Bruce, I can't not say something if somebody mention subchapter M. (Laughter) So towing vessel inspection regulations, which as the Admiral said, nearly doubled the number of vessels subject to inspection, but this actually comes back to a point I made at the beginning, which is the role that the domestic maritime industry can play in achieving this vision of the Maritime Commerce Strategic Outlook.

So the answer to how is the Coast Guard going to inspect 50 percent more vessels is not just give them more inspectors, it's how do we work smarter. And subchapter M provides -- although you do need more inspectors -- not saying you don't -- but subchapter M provides a great model for a more innovative way of regulating, which is in part to leverage Coast Guard approved third-parties. This does not mean outsource responsibility to companies themselves or abdicate the Coast Guard's role, but it means creating systems which allow the Coast Guard to rely on third-parties to do things under the agency's oversight and then that enables the Coast Guard to target its own resources in risk-based ways.

So if I've got a company that's got a safety management system in place which is undergoing not only internal audits but external audits of its management system by a Coast Guard approved third-parties and external audits of its vessels by Coast Guard approved third-parties, then maybe the Coast Guard doesn't need to have boots on deck nearly as often as it does for a company that doesn't have those things in place.

So it becomes a way not only to drive superior safety outcomes, but also to make better use of scarce Coast Guard resources. It's not going to solve your workforce challenge, but it will help it.

ADMIRAL ABEL: You know, there's no way we're going to keep up with 5,700 vessels. So we've taken a look at how we do third-party oversight and we've actually

stood up an office, if that's what the focus on. And inspecting a vessel that's already been inspected and inspecting an inspector is different than doing a clean inspection. It's a different skill set. So actually this month we just did a safety stand down for all of our marine inspectors and we got back to how do you inspect an inspector, how do you make sure a third-party is doing what they should be doing. No surprise El Faro was a wakeup call for many people as far as the Coast Guard scheme for oversight of third-party oversight. And we're certainly going to up our game when it comes to that.

Getting into the Congressman's comment about how many licensed merchant mariners are out there. For the last five years we've held about 200,000 licensed merchant mariners. I've seen studies anywhere from 1,800-2,800 is the shortage if we had a sustained military continuance and what we'd be short. But it is our large maritime fleet, we're talking the ones 1,000 gross ton and more, that are privately flagged -- not the MARAD fleet and all that -- 1990 they were 200. We're down to about 78. So what we don't know as we license mariners is how many of those are actively in the business practicing their skills and are ready to jump on a ship at the calling of their nation. I suspect not as many as we think.

A neighbor of mine up in Massachusetts, proud grad of Mass Maritime Academy, got his ticket upon graduation, went into nuclear industry. He never went on a ship again. We would count him as one of our 200,000 licensed mariners. He's not a mariner. (Laughter)

MR. GARAMENDI: I want to pick up a couple of pieces here that have not yet been put out that are really important. Funding. Funding for all these programs is always the question. The General has mentioned that there are funding sources available. The harbor maintenance fee provides substantial -- well, that is all the funding for the dredging for the various harbors, however, only about maybe half of that is actually available for harbors. It's ripped off, used for every other thing in the federal treasury or the federal -- the other is the inland waterways fees. The inland waterway folks -- and, Jennifer, you led

this -- has offered, and in fact taxes itself, for the maintenance of the General's locks and dams and the rest. Again, only less than half -- I think it's less than half of that money is actually used for the General's purposes. The rest of it goes for every other thing in the federal government. And so there's an ongoing issue here about the full utilization of these. We've passed some laws that would require that this money be used specifically for the purposes, inland waterways or for harbor maintenance, and every year that law is waived in the various appropriation bills as the appropriators see fit to spend the money on something else.

So I just want to really point out here that the industry itself has been more than willing to tax itself for these purposes.

MR. JONES: great. I want to open it up to the audience. We have a little time for some questions and discussion. So please raise your hand if you'd like to ask a question or make a comment. Please identify yourself and direct a question to one of the panel members. So we'll take two or three and hopefully have a couple of rounds.

So we'll start up front and work our way to the back. This gentleman and lady right here.

MS. PARLOW: Thank you. My name is Anita Parlow. I worked on the Harvard-MIT Arctic Fisheries Project. I was Fulbright in Iceland and recently finished a -- or a year ago finished a project at Wilson Center on the polar code in the Bering. And right now I'm working as an advisor to Nome.

Your presentations are remarkable, breathtaking actually and honest as I've ever heard a panel ever. So much appreciation.

The breadth and scope and depth of what you're all discussing and describing and dealing with puts the Arctic back in the backer door than I even thought it was. And when you mentioned China and the commercial development that's going on in China, which is breathtaking. They have two ice capable container ships, Russia 41 more or less ice breakers and ice capable ships. And at some point I suppose we'll recognize

internal waters of Canada and Russia.

But it any event, seems like quite a lot of commerce is in the offing. And we have no, as you've expressed, no deep-water port north of Dutch Harbor, and a Coast Guard who has to operate up there with one and a half ice breakers. So I kind of wonder, forgive my cheekiness -- I kind of wonder how you all view the dynamics as they go on. How the U.S. can project power or in fact act in a manner appropriate? Is it okay that the U.S. not be the biggest elephant in the room, that we're just sort of going along as we do? We get a lot of boats under the water and birds up in the sky. And just how do you view this dynamic and where does the money come from? There's been lots of talk, as you all do better than I surely, for a decade about it, et cetera.

Thank you.

MR. JONES: We'll take two or three questions and then we'll come back to the panel. Is that all right?

QUESTIONER: Hi, Eli Robbins. I've just been kind of shocked to hear the General's support for the Jones Act here and I haven't heard any of the criticisms on it, the biggest being the U.S. shipbuilding and the policies of actually transporting between U.S. states. So an example is rancher fly cows from Hawaii to the mainland because it's cheaper to fly a cow than ship it. And these regulations have really affected our domestic trade to a significant extent. And I was hoping that you guys could comment on how we could refocus this Act to allow foreign built ships to be used by domestic operators and how that and trading internationally to Hawaii directly would help our economy.

MR. JONES: There was one more in the back or the middle there. Yeah.

MR. ELLIS: I may have gotten us out of turn now. Bill Ellis, I'm from George Mason University.

I had a question about the maritime contributions to carbon emissions. What I'm curious about is the current rate of emissions that are created by moving manufacturing from North America to other continents. So in other words, if you made steel

here, you're using raw materials here, you're using energy here. But then when we outsource manufacturing to another continent, then you're getting raw materials maybe going from Australia or to Asia, you're getting energy from maybe the Middle East. So we get quite a bit of maritime -- and then of course you've got finished products going here, recyclables going back. So you're getting a whole bunch of maritime commerce that's created by our having outsourced manufacturing.

So I wonder if anybody noticed or cares or how significant it might be, if anyone studied it.

MR. JONES: All right. Let's take those ones and please just -- why don't we start with you. Comment on whichever ones you choose to and the rest will pick up the rest.

ADMIRAL ABEL: So Anita -- I think it was Anita -- I'll start with you. The residents of Nome, Kotzebue, Barrow, they are American citizens and they deserve to have a Coast Guard as much as the members of Miami, Fort Lauderdale, or LA. So to say does the Coast Guard choose to operate in the Arctic, it's because those are American citizens and that's what we do, we're the U.S. Coast Guard.

I heard you know, what -- resources gets done. We're happy to say that in the FY '19 budget the Coast Guard got $650 million, which considering normally our investment budget runs $1.8 billion, $650 million is a significant portion. Marry that with the 300 that we got the prior year, and we have enough to start our first polar security cutter. We've renamed it from a polar ice breaker to a polar security cutter, because that is what it is. It's going to be a national level asset, which meets a number of different national objectives up there.

Right now the Coast Guard's stance is being adaptive and seasonal. We're not ready to commit just yet on where the center of gravity is going to be as the ice recedes, but we want to be there, so that way -- the year that Shell did the drilling, most of our presence was afloat out where the rigs were. And then the next year where Crystal Serenity

came through we may have moved a little closer to be responsive to that.

You mentioned polar code. Hugely valuable. It's the first time IMO is recognized. You need special training, vessels, equipment, to operate in those brutal conditions up there.

So the Coast Guard is getting after it. There needs to be a presence there. The polar security cutter that was purchased, we need six of them total, three will be large ice breakers and we need one of them right now. And so that's where we're going there.

Bill, I think the other question you mentioned was about sulfur fuel and emissions. 2020 is when the high sulfur fuel is no longer allowable internationally. So the whole work is going to be shifting to lower emission fuels. I would also say that as we mentioned, LNG and some of the transitions, there's some large U.S. flagged vessels that have asked for some permissions as they get into the LNG transition, that they want to transition themselves to cleaner fuel, i.e., LNG. And also the fact -- it was interesting, I had a chance -- the raising of the Bayonne Bridge, I was involved in the permitting of that when I was up in Boston and had the Port of New York and New Jersey. Larger ships that are newer that bring containers in larger batches actually reduce the emission because smaller older ships would have brought in 1,200 containers, now a newer ship that burns LNG brings 1,200 in in one batch. So there are ways of viewing the emissions and whether it's going to get worse or better. So there are different ways of viewing that, so.

MS. CARPENTER: I'd love to address the Jones Act question and I'd like to do it in a couple of ways. So first looking at the shipbuilding piece, you asked the question why shouldn't we allow foreign built ships. And I want to take that back to really our theme here, securing maritime commerce. A big reason not to allow foreign built ships is because Admiral Abel will have no place to build his cutters if we get rid of those shipyards and they're not building Jones Act vessels anymore. This American domestic maritime base, which is so important to the U.S. military and to American security, would really be decimated if we were to say we don't care. We talked about the threat that China is, we

talked about the subsidies that foreign countries have made in their shipbuilding industries because they recognize that it is part of their critical infrastructure, we're going to cede this part of the playing field to them too. I think that would be a terrible mistake from a security standpoint.

With respect to the commercial aspects, you asked why can't foreign flagged ships come from international destinations to Hawaii. They can. The Jones Act is no bar to that, no bar to a foreign ship going to Puerto Rico. But cows, who are not flying on 747s, they're actually moving in cowtainers, which the Hawaii Cattle Producers worked with the maritime industry to come up with a cost effective to move a fairly small number of cattle behind Hawaii and the U.S. mainland. It didn't make sense to build a big livestock carrier because there aren't that many. So they came up with specially designed containers that allowed these calves to be moved to the U.S. where they got fattened up to become burgers. It was an example of what really can and should happen throughout the industry. The shippers have needs -- and when I say shipper I mean customers of the maritime industry -- the domestic maritime industry exists to meet those needs and, you know, where there is cargo that need to be moved, there are innovators in the maritime industry who want to move that cargo.

MR. GARAMENDI: Jennifer, thank you for the Jones Act. I'll just add to it, we can become a consumer nation for a while, but if we don't make things here we will not be a consumer nation in the future. And so to give up the entire array of opportunities for jobs, for manufacturing, for protecting our national security simply to try to do something that's a little cheaper, not good public policy.

So I'll just add to that that we are now becoming a major exporter of a critical national asset, it's called oil and natural gas. If we marry that national security imperative to another one, that is our military and to our shipbuilding, and just take a small percentage of that fuel that is exported and put it on American built ships, we'll build 50 ships over the next 10-15 years. We'll put the mariners on and we'll guarantee that the Navy and

the Coast Guard will have a place where their ships of the future will be able to be built, and at the same time the mariners that go with it.

So there's a strategy here, it's called the Energizing the American Shipbuilding Act. Senator Wicker is the author on the Senate side, I'm the author on this side.

Now, with regard to the Arctic, very quickly, the United States does not have a comprehensive Arctic policy. We got bits and pieces of it, but we absolutely have to develop an Arctic policy. The subcommittee of the T&I committee, Transportation and Infrastructure Committee, held hearings last year and out of that we will be developing an Arctic policy, much of with the Admiral talked about, some of which the General has already talked about.

It has been a six-year fight to develop the funding and the authority for the first polar security cutter going out to contract this spring. It's a good move. Finally got it done. If we took one-fifth of one percent of the Department of Defense's annual budget and applied that over the next four years we would have the six polar security cutters that this nation absolutely must have if we are to have any role at all in the Arctic. And we do have a role in the Arctic.

The reset of the story is that we've neglected. The U.S. Navy came out with its Arctic policy last week; it basically is that they have absolutely no ships at all that are capable with any ice at all. You heard from the discussion a moment ago about what Russia and China are doing. They think ahead, we do not. We must or we're going to be in serious jeopardy in our national security insofar as the Arctic is concerned.

With emissions, that's already been discussed, I'll let that go.

Thank you.

MR. SEMONITE: Anita, I'll just hit -- there's only part of the questions that really hit my la.ne, and that goes back up to the port up in the north. We have been asked by one of the senators to be able to look at Nome, so we're doing a study right now. It goes

back to the economic development. And I think what we've really got to do is be able to make sure -- sometimes if you always justify our construction based on what's called the benefit cost ratio and the businesses are not there, then you can never get the infrastructure there. So I do think sometimes you've got to build it and they will come, and I think that we'll continue to see how this works. But wherever the Corps can step up and be able to build on what congress has asked us to do, we think there's a lot of potential for some of these capabilities.

MR. JONES: Okay. We're getting close to the end of the time. We're going to do the lightning. We'll take two or three very quick questions, we'll come back to the panel for brief remarks, and we'll let the Congressman get back to the Hill where he has an important engagement.

So the gentleman in the back, in the middle, one at the front. Very quick, please.

MR. GRABOW: Hi, Colin Grabow from the Cato Institute. I'd just want to make a few comments. Regarding cows being place on airplanes, that is a thing that does happen. At the Cato Institute we released a video a couple of weeks ago showing cows being loaded on 747s by Pacific Air Cargo.

As far as cowtainers, this is the second-best solution. You don't find that in any other country. I think it's notable that the Hawaiian Cattleman's Association was big opponent of the Jones Act back in the 1990s. It's a big donor of the Jones Act Reform Coalition. We also heard talk about a lot of competition within the Jones Act trade. Hawaii of course is served by two carriers, Pasha and Matson. That's not a lot of competition. You find that throughout the Jones Act trade. Alaska has TOTE and Matson. Two carriers have more than 80 percent of the container capacity for the Puerto Rico trade. Guam has one carrier, Matson, that serves it.

Congressman Garamendi, you said that American built ships are -- or foreign built ships are a little bit cheaper. In fact, according to the Congressional Research

Service in 2017 they said they can be up to eight times more expensive than American built ships. You made a comment about wanting LNG to be exported on U.S. built ships.

MR. GARAMENDI: And, sir, that study did not take into account the subsidy that China is putting into those ships.

MR. GRABOW: True, but --

MR. GARAMENDI: So you add that in and it is not eight times.

MR. GRABOW: And the Jones Act in fact is a big subsidy by itself.

MR. GARAMENDI: No, sir, that's not true.

MR. GRABOW: Yes, it is. And in any case, you mentioned LNG carriers, the GAO in 2015 said that to build an LNG carrier in the United States would cost up to $675 million. *The Wall Street Journal* a couple of weeks ago said to build them in South Korea is $175 million. So this is basically up to $500 million tax per ship. Isn't this just a giant tax you're proposing and wouldn't that hurt our energy exports?

MR. JONES: I'm going to try to take a couple more, so please, keep them brief.

In the middle.

QUESTIONER: Patricia Shukare. I wanted to ask you and come back to the cyber point, how are big data and Internet of Things changing the maritime cybersecurity landscape? And how is the industry in the U.S. Coast Guard adapting to this development?

MR. JONES: Back to the panel for final comment and brief answers. Let's leave you the last words and we'll start with the General and work this way across.

GENERAL SEMONITE: I think I'm good. I'm going to defer to the rest. (Laughter)

MR. JONES: Clever move. Congressman?

MR. GARAMENDI: I would love to debate the Cato Institute on this issue. If you want to, we'll go into it in detail. Figure the subsidies that the other nations are putting into their maritime industry when you calculate the differential in cost. I would highly

recommend that in any analysis.

With regard to if we want to abandon America as a maritime nation, follow the lead of what we just heard. I cannot imagine that the cow issue is the burning issue of how we're going to judge whether we're going to have a maritime industry or not. You talk about a straw man, this is a straw cow at best. (Laughter)

MS. CARPENTER: They eat a lot of grass, you know.

MR. GARAMENDI: Listen, I'm in the cattle business. I've been in the cattle business all of my life. And this is not the debate. If it comes down to a debate about cows on plane or cows on ships, somebody is really missing the problem here. The American maritime industry is absolutely critical for our American national defense. The shipbuilding industry is equally critical for jobs, let alone the Coast Guard and the military. Give it all up -- we could do that. We could abandon the ability of America to make things. Fine. That's not where I'm going, that's not where America should be going. And so the Jones Act figures in as one of the ways in which we can maintain a critical element of our national security and jobs in America. It was said earlier by Jennifer, if you want Chinese ships up and down the Mississippi and the Missouri system, abandon the Jones Act. If you want Chinese ships taking the -- or any other country -- taking our goods through the American waterways, abandon the Jones Act. It will happen. And now we've got a major security problem -- major security problem.

So I'll put that out there.

Big data, yeah, big data is going to be on a server in China. Now isn't that a wonderful thing?

What was the final question over here?

MR. JONES: That was the big data question

MR. GARAMENDI: That was the big data? Okay.

MS. CARPENTER: That was so well said, not a lot to add. I would just say coming back to something I said at the very beginning, all of us have roles in achieving this

vision of the Maritime Commerce Strategic Outlook, which is safe, secure, environmentally sustainable, economically vibrant transportation. That's what we're here to do. The Jones Act is a key part of that. It has been the national interest of the United States that we have all four of those things. We can't give up one of them. We've got to have safety, we've got to have security, we've got to have environmental sustainability, and we've got to have the economic vibrancy.

MR. JONES: Commandant, any response to this and any final thoughts.

ADMIRAL ABEL: well, good, thanks. Well, first of all, as far as cyber, I mean the maritime industry, like every other industry, you know, cyber has become the spinal cord which enables it to happen. And so the fact that now our marine inspectors go on board and they say show me your cyber protection plan, along with show me your life jackets and show me how you're going to do firefighting, we're recognizing the fact that that's a vulnerability that needs to be inspected. And the fact that we're getting reports from industry that we've had a cyber breach indicates that the industry is taking it seriously.

It's also the opportunity. I talked about the fact that 21st century aids to navigation system, we will never get away from day boards and buoys. You still need some sort of fixed system out there that allows you to navigate in case all doesn't go well, like the Congressman said. But we should be looking towards a 21st century scheme with enhanced maritime security information. It's one of the initiatives we're doing, which pushes all that information to the mariner.

And, finally, it should also be the marine inspector shows up with an iPad. They now get on board your vessel with 50 pounds of regulations in their backpack so they can reference it. I can't believe we don't have an E-Reader. We finally have issued them an iPad and they want to be able to do all their inspections online, feed off of satellite or a cell tower, they get done, they go home at the evening, and they don't have to go back to the office, and we can look at more output for them doing shore side as well as vessel inspection.

So cyber is going to pervade everything we do. It's an opportunity, it's a vulnerability, but I think we can harness it to the value of the nation.

Finally, like I said, $4.6 trillion, 23 million jobs, we are a maritime dependent. It's time to wake up and realize that we're dependent on the maritime.

Thank you.

MR. JONES: Thanks for your service. Thank you all for being here today. Congressman, thank you for participating. And thank you to all of your for being here. Thank you. (Applause)

* * * * *

CERTIFICATE OF NOTARY PUBLIC

I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

Carleton J. Anderson, III

(Signature and Seal on File)

Notary Public in and for the Commonwealth of Virginia

Commission No. 351998

Expires: November 30, 2020