

U.S. DEPARTMENT OF COMMERCE

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
(NOAA)

HYDROGRAPHIC SERVICES REVIEW PANEL

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PUBLIC MEETING

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TUESDAY  
AUGUST 27, 2019

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The Hydrographic Services Review Panel  
met at the Hotel Monteleone, 214 Royal Street,  
New Orleans, Louisiana, at 9:00 a.m., Ed Saade,  
Chair, presiding.

HSRP MEMBERS PRESENT:

EDWARD J. SAADE, HSRP Chair  
JULIE THOMAS, HSRP Vice Chair  
CAPTAIN ANUJ CHOPRA  
SEAN M. DUFFY, SR.  
KIM HALL  
DEANNE HARGRAVE  
EDWARD J. KELLY  
CAPTAIN ANN KINNER  
DR. DAVID MAUNE  
CAPTAIN ANNE MCINTYRE  
CAPTAIN (ret. USCG) ED PAGE  
GARY THOMPSON

**NON-VOTING HSRP MEMBERS:**

**JULIANA BLACKWELL, Director, National  
Geodetic Survey, NOS**

**RICH EDWING, Director, Center for Operational  
Oceanographic Products and Services, NOS**

**NOAA LEADERSHIP PRESENT:**

**REAR ADMIRAL TIM GALLAUDET, Ph.D. (ret. USN),  
Assistant Secretary of Commerce for Oceans  
and Atmosphere and Deputy NOAA Administrator**

**NICOLE LEBOEUF, Acting Assistant  
Administrator, NOS**

**REAR ADMIRAL SHEP SMITH, HSRP Designated Federal  
Official; Acting Deputy Assistant  
Administrator, National Ocean Service,  
National Oceanic and Atmospheric  
Administration; Director, Office of Coast  
Survey, NOS**

**CAPTAIN ELIZABETH KRETOVIC, Acting Director,  
Office of Coast Survey, NOS**

**NOAA STAFF PRESENT:**

**GLENN BOLEDOVICH, Policy Director, NOS PCAD**

**CAPTAIN RICK BRENNAN, Chief, Hydrographic  
Surveys Division, OCS, NOS**

**VIRGINIA DENTLER, Center for Operational  
Oceanographic Products and Services**

**JOHN G.W. KELLEY, PhD, Physical Scientist,  
Coastal Marine Modeling Branch, Coast  
Survey Development Laboratory, OCS**

**LYNNE MERSFELDER-LEWIS, HSRP Coordinator**

**TIM OSBORN, Navigation Manager, OCS, NOS**

**STEPHEN WHITE, Remote Sensing Division, NGS, NOS**

**CRAIG WINN, Portfolio Manager for HD**

**Mapping, Marine Chart Division, OCS, NOS**

**DARREN WRIGHT, National Marine Program**

**Leader, Marine, Tropical and Tsunami**

**Services Branch, National Weather Service**

**ALSO PRESENT:**

**PAUL AUCOIN, Executive Director, Port of South Louisiana**

**CAPTAIN MICHAEL BOPP, President, Crescent River Pilots Association**

**BRANDY D. CHRISTIAN, President and CEO of the Port of New Orleans; CEO, New Orleans Public Railroad Belt Corp.**

**CAPTAIN STEPHEN HATHORN, President, New Orleans Baton Rouge Steamship Pilots Association (NOBRA)**

**MATT LAGARDE, Assistant Vice President, Health, Safety, Security, and Environment, Ingram Barge Company**

**CAPTAIN KRISTI M. LUTTRELL, Commander, Sector New Orleans, 8th U.S. Coast Guard District**

**CAPTAIN MICHAEL MILLER, President, Associated Branch (Bar) Pilots**

**COLONEL STEPHEN MURPHY, Commander, New Orleans District, U.S. Army Corps of Engineers**

**LIEUTENANT GOVERNOR WILLIAM H. NUNGESSER, Louisiana**

**DR. JACKIE S. PETTWAY, Chief, Navigation Division, Coastal and Hydraulics Laboratory, U.S. Army Engineer and Research Development (ERDC), U.S. Army Corps of Engineers**

**MIKE STEENHOEK, Executive Director, Soy Transportation Coalition**

**CLAIRE TROKEY, Legislative Director, Congressman Steve Scalise R-Louisiana)**

**MARK WINGATE, PE, Deputy District Engineer for Programs and Project Management, Executive Office, New Orleans District, U.S. Army Corps of Engineers**

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1 P-R-O-C-E-E-D-I-N-G-S

2 9:01 a.m.

3 CHAIR SAADE: Okay. We're going to  
4 call this meeting to order for the HSRP here in  
5 beautiful New Orleans. My name's Ed Saade. I am  
6 the current chair of the HSRP and my co-chair is  
7 Julie Thomas over here. We're going to get  
8 everyone introduced at some point. It looks like  
9 a really good crowd of attendance from the  
10 stakeholders, so that's great to see.

11 So I'm Ed Saade, the HSRP chair. I'm  
12 happy to get to welcome you to New Orleans. The  
13 stakeholder turnout is excellent obviously and  
14 thanks for coming. I know some of the HSRP  
15 members have offices in the region.

16 We did a little show of hands this  
17 morning and virtually everybody on the HSRP  
18 that's not a government member has an office or a  
19 lot of staff here in Louisiana and in New  
20 Orleans. So it's real meaningful to all of us  
21 that we're here and the connections are really  
22 close.

1                   In fact, Rick Brennan and Admiral  
2                   Smith actually have a current contract running  
3                   right now on the survey backlog in the  
4                   Mississippi River we're going to hear about. So  
5                   there's a lot of activity going on. The next  
6                   three days we have an amazing lineup from local  
7                   and regional experts, so we are looking forward  
8                   to excellent sessions and discussions as our  
9                   output -- we'll have time to edit and get  
10                  consensus on three issue papers, as well as  
11                  comments from the HSRP to the Office of Coast  
12                  Survey on their draft strategic plan, and a  
13                  recommendation letter to the NOAA Administrator.

14                  Nearly all the materials are on the  
15                  HSRP New Orleans web page. So with that, I'm  
16                  going to hand over the discussion to Rear Admiral  
17                  Shep Smith. He's the Acting Deputy Assistant  
18                  Administrator, National Ocean Service, National  
19                  Oceanic and Atmospheric Administration. He's the  
20                  director in the Office of Coast Survey, NOS.

21                  RDML SMITH: Thanks, Ed. Thank you  
22                  for your continued leadership of this important

1 Panel. So I'm Shep Smith. I'm the Designated  
2 Federal Official of this Panel as well, and I'm  
3 looking forward to this meeting this week. A few  
4 housekeeping details. If you've not already  
5 signed up to make a comment or signed into the  
6 meeting, the sign-up sheets for both are coming  
7 around.

8 Emergency exits are all around the  
9 room. The preferred is out to the -- out into  
10 the hall and left to the parking garage.

11 Bathrooms are across the hall. So I'm coming to  
12 this meeting straight off of a week on the  
13 Mississippi River Commission, where I had the  
14 honor of seeing many of the participants here  
15 today in the context of the Mississippi River.

16 So for those of you, I do want to just  
17 say a few words about the sort of confluence of  
18 the river and the sea here in New Orleans,  
19 because it's a really unique -- this is a unique  
20 meeting in a unique place.

21 So the Mississippi River carries 41  
22 percent of the drains, 41 percent of the

1 continental United States, all in a huge system  
2 that all ends, goes right by here. There's a  
3 flood control and navigation project that started  
4 right after the 1927 flood. That flood knocked  
5 the U.S. GDP down by 25 percent in one year. So  
6 the stakes here are really high for the  
7 management of this river.

8 And at the same time since then and  
9 then, the economic growth and industry along this  
10 river are crucial to the economy of the United  
11 States and the region, and our place in the world  
12 through our trading relationships. So the stakes  
13 are even higher today than they were in 1927.

14 And all of the infrastructure  
15 necessary for both the seagoing portion and the  
16 land, the inland portion all come together in  
17 this stretch of river. So the participants here  
18 in this meeting sort of represent both halves of  
19 that. For the Panel, which is mostly a very  
20 coastal-oriented Panel, I'm thrilled to give them  
21 some insight through the course of this week into  
22 the river, and I think it's going to be a really



1 interesting meeting.

2 A lot of the same topics that we've  
3 been stressing with precision navigation and sea  
4 level rise, subsidence, all have some of the very  
5 thorniest and most important examples right here  
6 in this region, and we will be, you know, we'll  
7 be discussing those as well over the course of  
8 the week.

9 So we have a really great session this  
10 morning on precision navigation, this afternoon  
11 on stakeholder priorities, and I hope that as  
12 many of you can stay for those as possible. A  
13 couple of key points for navigation services  
14 including unmanned systems and subsidence, sea  
15 level rise, coastal resilience later in the week.

16 So before we get started, I'd like to  
17 acknowledge the following individuals who have  
18 made time to speak or attend the meeting.

19 Lieutenant Governor Billy Nungesser. Thank you  
20 sir for being here. From NOAA, Rear Admiral Tim  
21 Gallaudet and Nicole LeBoeuf. Captain Kristi  
22 Luttrell from the United States Coast Guard.

1 Colonel Stephen Murphy from the Army Corps.

2 Claire Trokey from Representative Scalise.

3 Thanks, Claire.

4 Brandy Christian, president of the  
5 Port of New Orleans. Claire -- I already got  
6 Claire on here twice. Are there any other  
7 congressional staff in attendance? All right.  
8 The stakeholder session will be led by HSRP  
9 member and well known New Orleanian Sean Duffy,  
10 I'm sure a stranger to no one here, and NOS  
11 Navigation Manager Tim Osborn. So as I say your  
12 name, raise your hand, Tim. There you go. Also  
13 probably not a stranger to many around here.

14 Mark Wingate, Matt LaGarde. I'll do  
15 this slowly. Matt I know is here. Jackie  
16 Pettway, Mike Steenhoek and Paul Aucoin. The  
17 unmanned systems session chaired by Neeraj Saraf.  
18 Neeraj? People raising their hand I can't catch.  
19 I can't catch them. Ed Saade, Deanne Hargrave  
20 and with speakers Michael Starek, Brian Connon,  
21 Thomas Chance and Lieutenant Damian Manda. This  
22 is a long list, so flip your hands up quickly.

1           The subsidence sea level rise session  
2           on Thursday will be led by HSRP Member Julie  
3           Thomas, with Audra Luscher from NOS and including  
4           Rick Leuttich, Windell Curole, Brian Lezina,  
5           Cliff Mungier and Renee Collini. Suzanne Van  
6           Cooten, in the back here, is the rock star from  
7           the Weather Service here in the region.

8           So I just have to brag on Suzanne a  
9           little bit, because the Army Corps, which  
10          operates the river on behalf of the Mississippi  
11          River Commission and the American public, rely on  
12          the forecast from the National Weather Service  
13          and from the Slidell Lower Mississippi River  
14          Forecast Center that Suzanne leads. So Suzanne,  
15          a big shout out for your great work over the  
16          course of this year.

17          The Greater Lafourche Port Commission,  
18          deputy director David Breaux, and I think that's  
19          it for the panelists. In addition, there are NOS  
20          and NOAA directors, staff and subject matter  
21          experts in the room who can reach out during --  
22          who you can reach out to during the meeting and

1 during the year to delve deeper into Navigation  
2 Services' mission.

3 I'd like to introduce some of them.  
4 Rich Edwing from CO-OPS, Tides and Currents, part  
5 of the National Ocean Service; Juliana Blackwell,  
6 Juliana, National Geodetic Survey. Unfortunately  
7 Larry Mayer and Andy Armstrong could not be here  
8 at this meeting from the University of New  
9 Hampshire, and our non-voting members of the  
10 HSRP.

11 Captain Liz Kretovic and Lynne  
12 Mersfelder-Lewis serve as alternate designated  
13 officers, and Lynne is the HSRP program manager.  
14 Both can help you with finding experts and  
15 answers. Liz Kretovic will serve as your DFO for  
16 Wednesday and Thursday, after I leave to attend  
17 my sister's wedding. So excellent turnout, and  
18 there's so many folks to acknowledge here, and I  
19 hope that you will all get to know each other  
20 through the course of the week.

21 Some additional subject matter experts  
22 from each of the main program offices that are

1 advised by this Panel. From NGS Galen Scott,  
2 Mike Aslaksen, Stephen White and Denis Riordan.  
3 From CO-OPS, Audra Luscher, Virginia Dentler and  
4 Grace Gray. From Coast Survey we have Rick  
5 Brennan, Chris Van Westendorp, Neeraj Saraf, Lucy  
6 Hick, Craig Winn and John Kelly.

7 The NOS Policy Office is here, Glen  
8 Boledovich, David Ermisch and Joanna Peth.  
9 Onsite, if you have any problems with the  
10 organization of the meeting, et cetera, Lynne  
11 Mersfelder-Lewis, Ginny Dentler, Amanda Phelps,  
12 Christine Burns and David Ermisch can help. And  
13 with that, almost having lost my voice with the  
14 introductions, I'll turn it back to the Chairman.

15 CHAIR SAADE: Thank you. So as the  
16 speaker and HSRP member bios are in your  
17 materials and posted publicly, we'll only do very  
18 short intros.

19 So I'd like the HSRP members to  
20 introduce themselves with your name,  
21 organization, expertise area, geographic area of  
22 expertise if you have one, and then also your

1 current home town. So if we could start with you  
2 Deanne and we'll go around this way.

3 MEMBER HARGRAVE: Good morning, I'm  
4 Deanne Hargrave. I'm a hydrographic surveyor  
5 with Shell Oil Company and we primarily do work  
6 in all the Americas. Currently we're focusing on  
7 wind farms on the East Coast, which is new for  
8 us. A lot of challenges there, and as well as  
9 continued operations for oil and gas in the Gulf  
10 of Mexico.

11 My current home town is Houston,  
12 Texas, so I'm very happy to be here in New  
13 Orleans. Thank you.

14 MEMBER RASSELLO: Okay. Sal Rassello,  
15 Nautical Director, Carnival Cruise Line Miami.  
16 I'm dealing with precise navigation and  
17 electronic navigation.

18 MEMBER KINNER: Thank you. Good  
19 morning, Ann Kinner. I am based in San Diego.  
20 I am chair of the San Diego Harbor Safety  
21 Committee. My expertise is primarily small  
22 craft. I am a chart agent. I've been selling

1 charts for over 20 years, and have a lot of on  
2 the water experience as well, again with small  
3 craft.

4 MEMBER PAGE: Morning. My name is Ed  
5 Page. I'm from the Marine Exchange of Alaska,  
6 executive director. I started that organization  
7 about 18 years ago. It's information. We have  
8 about 130 AIS sites and 50 weather stations, and  
9 provide information to mariners for a safe,  
10 efficient environment of sound maritime  
11 operations.

12 We are the AI System for the Coast  
13 Guard actually in Alaska. Prior to that, I've  
14 served 30 years in the Coast Guard, as -- for a  
15 variety of marine safety assignments and Captain  
16 of the Port of LA-Long Beach, chief of Marine  
17 Safety, Pacific Area and Alaska. I've got 30  
18 years up in Alaska, so I guess my expertise is  
19 running kayaks, rowing shells, sail boats, power  
20 boats, fishing, crabbing in Alaska. That's my  
21 expertise, so thank you.

22 MEMBER CHOPRA: Good morning, Anuj

1 Chopra. I lead the Americas Team for RightShip  
2 regarding marine assurance and operational risk.  
3 So we are blue water and brown water, and that's  
4 where the expertise is on navigation, cargo  
5 systems for merchant vessels. Thank you.

6 MEMBER MAUNE: Morning. My name is  
7 Dave Maune and I'm with Dewberry Engineers  
8 headquartered in Fairfax, Virginia. We do have a  
9 New Orleans office. I personally write books on  
10 digital elevation models from photogrammetry,  
11 lidar, IfSAR and sonar, and have written a lot of  
12 standards pertaining to those things, and I also  
13 manage production projects where we map with  
14 lidar and IfSAR to include my favorite project,  
15 IfSAR mapping of the whole state of Alaska, which  
16 we are completing this year.

17 MS. McINTYRE: Good morning, Anne  
18 McIntyre. I'm a maritime pilot with the Columbia  
19 River Pilots, and my area of expertise would be  
20 the navigation of commercial vessels in  
21 situations that require precision navigation  
22 subsets.



1                   MEMBER DUFFY: Good morning. I'm Sean  
2 Duffy, the local Panel member. I will tell you  
3 it was very hard to schedule that rain downpour  
4 yesterday. But we managed to pull it off, so  
5 you're welcomed here in the wettest year in our  
6 history, and you will hear about a lot of  
7 challenges based on that.

8                   The Big River Coalition represents  
9 deep draft navigation interests, represents  
10 pilots and ports and things that keep commerce  
11 moving on the river, and it's been a very  
12 challenging year. Welcome to New Orleans.

13                   MEMBER KELLY: Ed Kelly. I'm the  
14 executive director of the Maritime Association of  
15 the Port of New York and New Jersey, and first  
16 Sean I'd like to thank you for that deluge. I  
17 had a good chance to work on my back stroke. I'm  
18 a graduate of the Merchant Marine Academy. I'm a  
19 licensed Coast Guard officer that sailed  
20 internationally for quite a few years.

21                   My background is as a CEO-level in  
22 commercial shipping operations throughout North

1 America and in international trade. Currently in  
2 my position at the Maritime Association we  
3 concentrate on safety, navigation and operations  
4 in ports and local waterways. We are also, as Ed  
5 Page had mentioned, involved in the New York-New  
6 Jersey Marine Exchange.

7 MEMBER HALL: Hi, I'm Kim Hall. I am  
8 the Principal of Brizo Maritime Consulting, which  
9 is a woman-owned small business, specializing in  
10 maritime security and nautical operations. I  
11 just moved, so Sean you are not the only local  
12 member, from Alexandria, Virginia down here to  
13 beautiful Mandeville, Louisiana and have gotten  
14 used to the deluge, the daily deluge, and I'm  
15 looking forward to meeting some folks down here.  
16 Maybe I can help you out. Thanks.

17 MEMBER THOMPSON: Good morning. My  
18 name is Gary Thompson and I'm from Raleigh, North  
19 Carolina. I work for North Carolina Emergency  
20 Management, and which also houses the North  
21 Carolina Geodetic Survey. So I'm chief of the  
22 North Carolina Geodetic Survey and deputy risk

1 management chief, and my area of expertise is  
2 geodetic surveying and flood plain mapping.

3 VICE CHAIR THOMAS: Julie Thomas. I  
4 have been at Scripps Institution of Oceanography  
5 in San Diego, and I'm a former director of the  
6 Southern California Coastal Ocean Observing  
7 System, which is part of the IOOS Program, and  
8 also one of the principal investigators for our  
9 program at Scripps run out of there installing  
10 wave buoys. So that was the Coastal Data  
11 Information Program, CDIP. So my expertise would  
12 really be in ocean, instrumentation and  
13 observations.

14 CHAIR SAADE: So hello, I'm Ed Saade.  
15 I'm the president of Fugro USA. I'm based in  
16 Houston, but I'm also the group director for all  
17 that Fugro does here in the Americas, which makes  
18 my area of focus and expertise all of North  
19 America and all of South America.

20 We have a number of NOAA contracts for  
21 charting and data collection in both deep water  
22 and shallow water studies. We maintain offices

1 in Lake Charles and Lafayette and Baton Rouge,  
2 and we really like being here in Louisiana, and  
3 I'm looking forward to a really good meeting. So  
4 thanks everyone.

5 We don't have time to do audience  
6 introductions during these, but if whatever we  
7 can do during the breaks to get everyone to meet  
8 each other. I'd like to ask you to introduce  
9 yourselves to someone you don't know, and see  
10 where the conversation goes. So with that, a  
11 warm welcome to the NOS Acting Administrator  
12 Nicole LeBoeuf, who has remarks to share. Her  
13 full bio is in your materials, and Nicole, I'll  
14 hand it over to you.

15 MS. LEBOEUF: Thank you Ed, and thank  
16 you for inviting me to speak, help kick off this  
17 meeting this morning. It's great to be here,  
18 heat and deluge and all of it. I guess for me I  
19 feel like this is just part of the package.  
20 Being here in New Orleans along with the art and  
21 architecture and the food and the culture and  
22 everything else that makes Louisiana so special.

1                   I know probably, however, I'm  
2 accustomed to these fine attributes because I am  
3 a native of the Gulf Coast of Texas, just a  
4 stone's throw away from here. So not quite the  
5 same. I am a proud Texan. But Louisiana is in  
6 my blood. I wear my fleur-de-lis every day, and  
7 as you can tell by my surname we have been in  
8 this part of the world for some time. When I was  
9 a kid, we traveled back and forth to Louisiana  
10 about once a month to visit family in Morgan City  
11 and Jennings and Alexandria and all parts.

12                   I remember the tunnel. That was the  
13 funnest part of the -- I knew we were going to  
14 Louisiana when we hit that tunnel, and I was so  
15 excited. But I feel very lucky to be a  
16 transplanted Cajun. I was raised Cajun if you  
17 know what that means. We pretty much ate  
18 everything that didn't run or swim fast enough.

19                   So just ask about what I've eaten or  
20 cooked. But I'm very proud that my upbringing  
21 straddles both states, and if we have any time  
22 this week and you get me talking, you might hear

1 a little bit about my family's storied history  
2 here in Bayou Country, but I warn you. It is not  
3 for the faint of heart. Just look up my last  
4 name, and you'll know what I'm talking about.

5 Louisiana of course is more than about  
6 ancestors in the past. It is about our current  
7 conditions and our future and the future of our  
8 nation's economy. I don't have to tell this  
9 crowd how important Louisiana is to our economy.  
10 The ports and waterways here are incredibly  
11 impactful, not just the complexity of spanning  
12 multiple jurisdictions, but the complexity and  
13 the diversity of the activities here, whether  
14 it's tug and barge, containerized cargo or  
15 support for the energy industry.

16 In addition, Louisiana ports and  
17 waterways are absolutely essential to export of  
18 our agricultural products. So that gets in some  
19 of our northern state cousins. It also is a  
20 place for recreational boating, fishing,  
21 Sportsman's Paradise, commercial boating, all  
22 kinds of things. So Louisiana's waterways are

1       incredibly important and they are changing as  
2       things do in the coastal zone. It's because of  
3       all of these reasons that I have asked the HSRP  
4       to consider the application of our navigational  
5       and positional programs in association with  
6       coastal adaptation and coastal planning, and some  
7       of the changes that we're experiencing.

8                 We had a great panel on sea level rise  
9       at the last meeting in D.C., and we're going to  
10      talk about sea level rise, subsidence and coastal  
11      resilience later this week. I'm looking forward  
12      to that. NOS really recognizes the challenges of  
13      coastal communities and are committed to  
14      continuing to provide the data, services and  
15      products.

16                As the needs change, our products need  
17      to change. And so along those lines, we're here  
18      to hear from Louisianians, as well as other  
19      coastal communities, about what we can do to help  
20      their livelihoods and communities and cultures  
21      continue as these changes occur. That's what we  
22      think of when we talk about coastal resilience,

1 and we know that nobody can do that alone, not  
2 even Louisiana.

3 I've also encouraged the Panel to  
4 investigate and provide advice to us on  
5 innovations and technology that will help us stay  
6 current. You'll hear about some of NOS' programs  
7 this week on precision navigation, as well as the  
8 use of unmanned systems, and the modernization of  
9 the National Spatial Reference System.

10 I encourage everyone here on the Panel  
11 and in the audience to pay close attention to  
12 conversations associated with VDatum and the  
13 National Spatial Reference System because the  
14 impacts from that program are profound and will  
15 stretch into every one of our lives, and we all  
16 want to be ready for that.

17 Before I conclude, I'll give you all  
18 a couple of budget updates from inside the  
19 Beltway. If you haven't heard, Congress reached  
20 a budget deal. It got us part of the way there.  
21 It gave us some top level numbers for the next  
22 couple of fiscal years. That budget deal gave us



1 some opportunities, gave us some direction, but  
2 it doesn't provide programmatic level spending  
3 and so we're still waiting to hear back from  
4 Congress on that.

5 The Senate, I'm sorry, the House has  
6 weighed in. The Senate has not yet. So with the  
7 next fiscal year starting in not so long, it  
8 probably means September's going to be a little  
9 crazy, but we'll look forward to hearing what  
10 Congress has to say there.

11 In addition, you may have heard NOAA  
12 received FY '19 supplemental funds to help deal  
13 with damages caused by Hurricanes Florence,  
14 Michael, Typhoon Yutu, as well as the wildfires  
15 in the West. NOAA overall got \$145.7 million in  
16 sup funds. NOS received \$11 million for the  
17 marine debris program, as well as \$50 million for  
18 Title IX grants, also called the National Ocean  
19 and Coastal Resilience Fund.

20 Of particular interest to you all NOS  
21 received over \$31 million for mapping, charting  
22 and geodesy. All of that is publicly available

1 information. We are still working on the spend  
2 plan with Congress. That spend plan is still  
3 under review, but we hope to have it finalized  
4 soon.

5 With regard to other aspects of this  
6 meeting, we've got some great speakers as were  
7 introduced already. I want to welcome you all  
8 and in advance tell you how much we appreciate  
9 your participation in this meeting. Here in New  
10 Orleans, you'll get to hear from local  
11 stakeholders and constituents about their needs.

12 They're going to be participating in  
13 the panels throughout the week. So really  
14 looking forward to that. That's how we learn  
15 about the opportunities you're facing and the  
16 challenges you're facing, and the changes that we  
17 might need to enact and stay current with your  
18 needs. But in short, your input is why we're  
19 here, so be sure to give it, be vocal about it  
20 and thank you again, Ed. I want to thank Sean,  
21 our de facto host here in the great state of  
22 Louisiana. I'm looking forward to spending some

1 time with you all this week.

2 And at this time, I'd like to  
3 introduce Rear Admiral Tim Gallaudet. As you  
4 know, he is our Assistant Secretary of Commerce  
5 for Oceans and Atmosphere and the Deputy  
6 Administrator for NOAA. Since he's been here at  
7 NOAA, his deep appreciation and support for NOS'  
8 programs has been fantastic. I appreciate that  
9 very much, sir.

10 I think he's attended every HSRP since  
11 he arrived, yeah. So his support and his  
12 enthusiasm for what you all care about is going  
13 to be evident in his remarks. So I'm going to  
14 not introduce him any further and just say thank  
15 you for being here, sir.

16 RDML GALLAUDET: Thank you, Nicole.  
17 That was a very gracious introduction. No  
18 pressure, I guess. Well good morning everybody.  
19 It's great to be here and I'm a big fan of the  
20 HSRP as I am of the National Ocean Service.  
21 Being here on the Gulf Coast is like coming home  
22 for me. My Navy roots brought me here two

1 separate occasions.

2 I lived on the Mississippi coast at  
3 one time and then on the -- in Slidell, Louisiana  
4 another time and I just loved it. It was just a  
5 wonderful place, and look at this venue. I mean  
6 come on. This is probably one of the better ones  
7 we've had.

8 Interestingly, it's also the 14th year  
9 anniversary of Hurricane Katrina, which I lived  
10 through and helped rebuild through as well,  
11 losing my home but also seeing the community  
12 bounce back and supporting it when I was in the  
13 Navy, now afterwards at NOAA doing the same. So  
14 it's as I had breakfast with Lieutenant Governor  
15 Nungesser today, we talked about the resilience  
16 of the people here and their strength, and it's a  
17 wonderful thing to witness and to see.

18 So going through here, I'm pretty  
19 -- I'm very excited for the rest of the week by  
20 the way. I want to -- I'm really excited  
21 visiting you, Kristi today at the Coast Guard  
22 sector, as well as Brandy, going to the port

1 tomorrow. That's going to be a real treat for  
2 us, so I'm excited for that.

3 But I'll talk about a couple of things  
4 that NOAA is doing in the realm of hydrographic  
5 services, and the bottom line is this, that the  
6 American blue economy is booming and it's doing  
7 that because of the data and services that NOAA  
8 provides to ensure maritime commerce is safe and  
9 effective, and all the great activity and tourism  
10 and recreation and others that occur along our  
11 coasts and Great Lakes continue to thrive and  
12 advance.

13 So a few things that NOAA is doing  
14 that I'm really proud to report. First off, we  
15 are advancing our unmanned systems activities,  
16 and in fact the Office of Coast Survey is one of  
17 many offices that are doing this in a great way.  
18 Just recently the NOAA Ship Rainier automated one  
19 of their hydrographic survey vessels and did a  
20 pilot demonstration.

21 We also had a test out in the Gulf of  
22 Mexico for REMUS 600, and we collected some good

1 survey data there. Actually pardon me, that was  
2 actually the Atlantic. But we have a number of  
3 gliders right now deployed with the Navy, and  
4 they're all running a picket line for this  
5 Tropical Storm Dorian. So that's some really  
6 important activity there that affects navigation  
7 safety in a big way.

8 We're also advancing artificial  
9 intelligence for applications involving disaster  
10 response, also relevant in terms of navigation  
11 and hydrography. We're doing this with the  
12 Department of Defense's Joint Artificial  
13 Intelligence Center, automating response time  
14 lines and activities and plans using all the type  
15 of data that NOAA collects. That's a really  
16 awesome example that we're just starting to do,  
17 and the pilot project for that is just getting  
18 underway.

19 We also, as Nicole mentioned, are  
20 advancing the National Spatial Reference System,  
21 which I have some experience in supporting as I  
22 was the superintendent of the Naval Observatory

1 like my old ship mate, Captain Brian Connon. We  
2 understand how important that system is to tying  
3 our charts and navigation data.

4 We are also advancing our precision  
5 navigation capabilities and we're going to hear a  
6 bit about that, I believe, during the meeting  
7 this week. One of the things I'm very excited  
8 about, that is implementing the 2017 National  
9 Charting Plan. I actually went and visited our  
10 Marine Charting Division in Silver Spring,  
11 Maryland, just to sort of look under the hood,  
12 and the advances we're making in terms of really  
13 making a 21st century charting suite is really  
14 impressive.

15 Our Remote Sensing Division, led by  
16 Mike Aslaksen over there, I know I probably  
17 didn't get your name right Mike. But it's  
18 probably like Gallaudet; it's pretty tough to  
19 get. At any rate though, thank you for the work  
20 you do. His team surged right after Hurricane  
21 Barry in the Gulf, and we were able to provide  
22 aerial images to support disaster response. He's

1 ready to go again in case Dorian does anything  
2 that we have to worry about.

3 And then lastly, our PORTS system, the  
4 Physical Oceanographic Real Time System. This is  
5 a great, great capability. It's doubled in the  
6 last 10 years. We have 34 of our major ports  
7 covered, and we're just now going to complete  
8 with the Coast Guard being able to put out PORTS  
9 data via AIS in early 2020. That's really going  
10 to advance our capability and keep mariners safe,  
11 something I know we're all interested in.

12 So just to wrap up my very brief  
13 remarks, let me point kind of in the big picture  
14 to three main efforts if you will this year. The  
15 first off is I have the privilege of chairing the  
16 Coordinating Board for the Committee on the  
17 Marine Transportation System. Under that, I've  
18 laid out a set of priority goals, five of them  
19 and a main one, which is like a forward pass for  
20 NOAA, is advancing MTS data and technology.

21 And so with the chairmanship we're  
22 going to improve our navigation services with



1 this larger interagency authority. So I look  
2 forward to the HSRP's recommendations on how we  
3 can do that in detail. And then the second piece  
4 is I was recently quoted in an E&E article about  
5 pursuing a maritime moonshot, and what I was  
6 talking about there is our Ocean, Mapping,  
7 Exploration and Characterization Program, which  
8 is getting a lot of interest from the White  
9 House, and we are hoping to grow that program as  
10 we move forward. More to follow there, very  
11 exciting.

12 And then lastly, we are working with  
13 the White House to host an Ocean Science  
14 Partnership Summit in the fall in November. With  
15 that, we're bringing in more private sector  
16 interests and cooperation, and that's just really  
17 the way moving forward is that. We want to see  
18 -- we see a bigger role for the private sector in  
19 advancing our hydrographic services.

20 So I look forward to the Board's  
21 recommendations again on how we can really up our  
22 game in that area. So thank you all, and I hope

1 you have a great week.

2 CHAIR SAADE: Thank you, Admiral  
3 Gallaudet.

4 (Applause.)

5 CHAIR SAADE: Great, inspiring words  
6 as always, and we're looking forward to  
7 fulfilling all those challenges. I would like to  
8 have a warm welcome to Lieutenant Governor  
9 William Nungesser. Thank you for coming, sir.  
10 I'm going to turn it over to Sean to do the  
11 formal introductions.

12 MEMBER DUFFY: I think you just made  
13 Billy sweat, huh? So of course a Lieutenant  
14 Governor is an ambassador for our state. I've  
15 worked with him, next to him and had his support  
16 on a lot of important projects to the river.  
17 Going back to work after Hurricane Katrina,  
18 during Deepwater Horizon, and a lot of local  
19 people yesterday texted me because the fake Sean  
20 Duffy, the Congressman from Wisconsin, announced  
21 that he was not running for Congress.

22 I'm here to tell you, Lieutenant

1 Governor, I'm not running for Congress either.  
2 I'm also not writing any books. But if I do, I  
3 know you'll take care of a couple of them, right.  
4 With that, so Lieutenant Nungesser is very  
5 familiar with our coastal challenges. He's  
6 promoted the beneficial use of dredged material  
7 in the lower river. So Plaquemines, for those  
8 not aware, is really the front line for coastal  
9 land loss along the Mississippi River.

10 And every beneficial use project that  
11 we have proposed and worked on, and there is the  
12 navigation connection as the beneficial use helps  
13 to fortify the channel. That lower river is  
14 right there when storm surge comes in with  
15 hurricanes and storms. It washes away material.  
16 So we've really worked to kind of, you know,  
17 protect that with the beneficial use.

18 But other than that, I will tell you  
19 that Billy is a friend of our industry, of our  
20 state and does a great job, and I'm going to tell  
21 you you're in for a treat as he speaks. Please  
22 welcome our Lieutenant Governor Billy Nungesser.

1 (Applause.)

2 LT GOV NUNGESSER: Thank you, thank  
3 you. Thank you. Wow. I don't know if I can  
4 live up to that. Welcome to New Orleans,  
5 Louisiana. I'm here twofold. One is I'm very  
6 passionate about this industry, but my job as  
7 Lieutenant Governor is tourism. So in my short  
8 introduction, I'm going to try to cover both.

9 You know, as we approach the  
10 anniversary of Katrina this Thursday, my  
11 political career began because of that storm. I  
12 did not heed the warning of the National Weather  
13 Service that gives us such great information for  
14 storms, and I rode out Katrina 14 miles from the  
15 eye. Not a very smart thing to do, so I'm sorry.

16 Me and my wife had a riding center for  
17 special needs children, and I had 26 specially  
18 trained horses that I was not leaving behind, and  
19 could not find anywhere to evacuate them. So my  
20 home was built overlooking the Mississippi River,  
21 about six feet above the levee. We dug a lake in  
22 case it ever flooded, and we took the horses

1 there, rode out the storm, rescued 34 people by  
2 airboat the next day, hundreds of animals and  
3 never saw a politician.

4 So I decided to run for parish  
5 president. Five hurricanes and an oil spill  
6 later, frustrated, I decided to run for  
7 lieutenant governor. So it seems like every  
8 disaster has taken me a step closer to in the  
9 political world. But I truly, as everyone that's  
10 from Louisiana knows, I speak my mind in what I  
11 believe, and I'll tell you. After I won parish  
12 president, then I didn't know what I was going to  
13 do.

14 But an old timer, Earl Armstrong, took  
15 me out in the mouth of the river, and is there  
16 anyone from Louisiana knows who that is, and  
17 showed me a ridge at South Pass that was pumped  
18 before Hurricane Betsy. He said out of 2,000  
19 head of cattle, the only cattle that survived  
20 Katrina were on that ridge. I said take me in, I  
21 know what we need to do.

22 That ridge, with all that died and

1 everything it was still there. So with our  
2 partners at the Corps of Engineers in Vicksburg,  
3 we paid them to work with us to design a plan to  
4 lower storm surge to Plaquemines Parish. We  
5 designed a 1,000 foot ridge, eight foot down to  
6 the marsh with trees that we would build behind  
7 the levees in Plaquemines Parish.

8 The lady at the Corps said when we ran  
9 the models it lowered storm surge 8 to 1 over a  
10 mile to marsh grass. "This is scary good," to  
11 quote her. So we knew we had a plan, but to  
12 spend tax dollars to build that plan, we knew we  
13 had to show reduction in flood insurance and cost  
14 savings to the public.

15 So after two and a half years of  
16 working in Washington, Craig Fugate finally wrote  
17 a letter to Congress saying we will now recognize  
18 berms and things as flood protection, as long as  
19 they're certified. So we cracked open the  
20 champagne. We're going to build these ridges  
21 with three dollar sand out the river instead of  
22 \$50 clay behind the levees of Plaquemines Parish,

1 lower storm surge five feet and in some cases,  
2 those levees would increase the flood protection  
3 and 100 year protection by lowering that surge  
4 before it hits the levees.

5           Unfortunately, as I finished my second  
6 term in office, the Parish supported it with \$50  
7 million, and when I left office the berms never  
8 got started, so that's the bad side of politics.  
9 But the good news is in January I'll be back on  
10 the CPRA and hopefully implement some of those  
11 plans along all of coastal Louisiana, so we can  
12 see our coast saved in our lifetime. That's  
13 another whole day of talks about pumping sediment  
14 versus diversions.

15           But I want to also recognize the  
16 importance of dredging not only to the river but  
17 all the navigable waterways in Louisiana, and not  
18 having to do that on an emergency basis every  
19 year. We have to spend so much of our political  
20 capital to try to get money to do something that  
21 ought to be automatic in the budget every year.

22           Navigable waterways. They should be

1 maintained to that level. What it does to the  
2 Port of New Orleans when it silts in and the  
3 second pass down the river that has been silted  
4 in less than three feet that is unnavigable now.  
5 In the time of a problem on that main channel,  
6 that other pass should be dredged for national  
7 security, keep it open, and we've all got to work  
8 to do that.

9 I also want to give a shout out to the  
10 Port of New Orleans, because not only do they run  
11 so much cargo in such a vital part of Louisiana's  
12 economy, but on my tourism hat I still don't know  
13 how they get all those passengers on and off that  
14 ship every week safely. You know, cargo doesn't  
15 complain. People complain.

16 They do an incredible job in the  
17 tourism industry with those cruise ships, and  
18 wherever else in the world you hear about delays  
19 for fog, well our river pilots bring those cruise  
20 ships with all those people up the Mississippi  
21 River, and never get delayed for fog. They do it  
22 in incredible conditions, working with the Port



1 of New Orleans and all of the people on the  
2 river.

3 So the Mississippi River and the Port  
4 of New Orleans and the river pilots do an  
5 incredible job for the City and the State of  
6 Louisiana and twofold, in the tourism industry  
7 and of course in the industry. But I will, in my  
8 last two minutes, welcome you to New Orleans and  
9 tell you tourism is my job. We had a record-  
10 breaking year. We saw a 9 percent increase last  
11 year in tourism. Never since we've been tracking  
12 numbers have we ever seen that kind of increase.  
13 51.3 million people visited little old Louisiana  
14 to sample our food, our music and as I travel the  
15 world and ask people why do you send people to  
16 Louisiana, well it's the food, the music. But  
17 the most incredible thing I hear from people is  
18 Louisianans treat strangers like they're family.  
19 Where else in the world do you invite a stranger  
20 to your backyard to eat crawfish? And you  
21 usually leave with a friend for life when you  
22 visit Louisiana. So the reason those tourism

1 numbers are incredible is because of the way  
2 Louisianians treat people. And if you're not  
3 from here, I hope you'll experience that before  
4 you leave.

5 I'm going to close with a short video  
6 of our new brand, "Louisiana: Feed Your Soul."  
7 You can feed your soul with so many ways in  
8 Louisiana, so hopefully you'll get around our  
9 state and visit some of these sites. Thank you.

10 (Video plays.)

11 CHAIR SAADE: Thank you, Lieutenant  
12 Governor Nungesser. That was great. It was a  
13 really nice video too. Your team did a really  
14 good job. I'd like to continue now with a warm  
15 welcome to Captain Kristi Luttrell, Commander  
16 Sector New Orleans, 8th U.S. Coast Guard  
17 District, and thank you for keeping us safe  
18 offshore.

19 (Applause.)

20 CAPT LUTTRELL: Well Sean, you're not  
21 going to introduce me? I'm just kidding. I'm  
22 only kidding, sir. I know you so well. I'm

1 happy to be here, and that video officially made  
2 me hungry. I could eat crawfish any time, any  
3 day. On behalf of Rear Admiral Nadeau, John  
4 Nadeau who's our new 8th District Commander here  
5 in New Orleans, welcome, I am Kristi Luttrell,  
6 the sector commander here in New Orleans.

7 I'm one of seven of Admiral Nadeau's  
8 sectors. He has a very large district. He has  
9 almost all of the Mississippi River. District 9  
10 takes the very upper-most part of that river. So  
11 I'm happy to be here and tell you a little bit  
12 about what we do here in New Orleans, and how  
13 important this river is to our nation's economy.

14 I'm also in the minority. I think I  
15 might be the only one that has a PowerPoint, and  
16 I'm not sure who's going to be changing the  
17 slides for me. Right here, got it. Okay. I'm  
18 assuming the green means go. That one, okay.  
19 Very well. We're going to find out.

20 What I'll do today and in my short  
21 seven and a half minutes that remain, I'll let  
22 you know what a sector commander does in the

1 Coast Guard, how we in New Orleans manage the  
2 waterway with the help of a lot of people, and  
3 how we work with NOAA and what a great  
4 partnership we do have with NOAA.

5 I love this slide, and it might not be  
6 the first time people have seen it, but this why  
7 Coasties fight to be sector commanders. We get a  
8 lot of authority, and it is so much fun not only  
9 to be a commanding officer in the military, which  
10 a lot of things come with that including not so  
11 good things like holding people accountable in  
12 accordance with the Uniform Code of Military  
13 Justice. But sector commanders get to do these  
14 five authorities, and it is a blast. What this  
15 slide shows you is how our authorities in the  
16 Coast Guard mirror a local municipality's  
17 authorities.

18 I'm the Captain of the Port, and that  
19 might -- that is my biggest authority that I  
20 hold. That allows me to close the port, it  
21 allows me to open the port, it allows me to  
22 restrict traffic. I have a lot of authority with

1 the Captain of the Port, and you can consider a  
2 doctor, a maritime doctor. I'm here to keep that  
3 port safe and the waterway safe.

4 I'm also the Search and Rescue Mission  
5 coordinator, which a lot of you know the Coast  
6 Guard's bread and butter is search and rescue in  
7 the maritime region, and I have the authority to  
8 run search and rescue and suspend search and  
9 rescue cases when the time comes. I am the  
10 federal on-scene coordinator for pollution and  
11 hazmat spills like a fire chief would do in their  
12 city.

13 I'm the federal maritime security  
14 coordinator for this area. Liken that to a  
15 police chief, where I protect the port from  
16 security threats including terrorism, and lastly  
17 I'm the officer in charge of marine inspection in  
18 this port, which requires me to inspect not only  
19 deep draft foreign vessel traffic that arrives in  
20 New Orleans, but also domestic vessels including  
21 tugs, barges and the like to make sure  
22 everybody's safe to be operating in the port.

1           As a lot of you know and I certainly  
2           won't steal Colonel Murphy's thunder, because I  
3           am not as qualified to talk about high water as  
4           you are, sir. But we have come off the longest,  
5           the record number of days above flood stage here  
6           in New Orleans, and that brought with it a whole  
7           bunch of challenges.

8           Back in the winter, we had some pretty  
9           bad mishaps with tugs, and we lost a couple of  
10          tug boat captains. So we had to do -- we had to  
11          increase the restrictions on the river. With the  
12          help of industry, we came up with tow size  
13          restrictions and some horsepower restrictions on  
14          the tugs, just to ensure they could keep up with  
15          the current, which was running at about seven-  
16          eight knots at the time, and that is really tough  
17          to manage, especially in a river of this --  
18          sometimes it's really narrow in certain spots.  
19          Having a lot of horsepower allows you to compete  
20          with that current.

21                    What's already been mentioned is  
22           during high water, Southwest Pass silts in really

1 bad and that is the opening, that is the mouth of  
2 the Mississippi River. That's the main channel  
3 all of our deep draft traffic come up, and there  
4 was a lot of challenges with silting down there  
5 as well.

6 Low water. It's hard to believe I'll  
7 be talking about low water, but it does appear  
8 we're on our way to that after a record number of  
9 days above flood stage. We're about at six feet  
10 on the Carrollton gage right now, and right about  
11 five feet and lower, we're going to be talking  
12 about some low water restrictions.

13 I get asked every now and then what  
14 would you rather have, low water or high water?  
15 Well, I'd rather have neither. I'd rather have  
16 about eight foot on the Carrollton gage all the  
17 time. But since I can't, low water is less of a  
18 threat in my mind. When you have high water,  
19 you're worried about neighborhoods and water  
20 overtopping the levees and that is a bad day. At  
21 least low water, we can keep the water in the  
22 river.

1 I'm going to have to hurry up. I  
2 think I've only got three minutes left.  
3 Hurricanes are a major challenge for us. When do  
4 we close the port? When do we open the port?  
5 When do we enact our regulated navigation areas  
6 on east and west side of the Mississippi River?  
7 I'll show you here.

8 Next slide is going to be the  
9 regulated navigation area on the east side of the  
10 Mississippi River. It runs from the Seabrook  
11 Bridge down to the Inner Harbor Navigation Canal  
12 all the way out to the east closure complex.

13 That allows us, if we enact the RNA,  
14 to move all vessels out of there, to protect the  
15 levee system and neighborhoods that are on either  
16 side of that levee system from being breached.  
17 This is the west side of the regulated navigation  
18 area, so the west side of the Mississippi River.  
19 Roughly the Harvey Canal down to or over to  
20 Algiers and down to the west closure complex.

21 How do we do this? How do we get  
22 everybody on the same page when it comes to



1 opening and closing the port during hurricanes?  
2 We call port coordination team calls. You're  
3 going to have local industry there. You're going  
4 to have other government officials there. A lot  
5 of stakeholders are going to call in and help me,  
6 as the Captain of the Port, figure out when the  
7 opportune time is.

8 A lot of times you cannot wait until  
9 your hurricane plan tells you to do something.  
10 We've noticed in the past couple of years, we  
11 don't always have 96 hours before gale force  
12 winds are going to reach Southwest Pass. We have  
13 to make the call sooner, and these port  
14 coordination calls, of which NOAA is a member,  
15 are very critical to us when it comes to making  
16 those hard decisions.

17 It's also harder to open the port than  
18 it is to close it, so if I don't have to close  
19 the port, that's a wonderful hurricane. I'd  
20 rather have some restrictions in certain areas  
21 than closing the entire port. It's very  
22 challenging to open it back up.

1                   How do we communicate that? We  
2                   communicate these decisions, any decision through  
3                   the Marine Safety Information Broadcast, and I'll  
4                   show you what that looks like right here. This  
5                   is one I just recently released when Baton Rouge  
6                   was on 35 in the fall, and it just backs down on  
7                   some of those restrictions I had when we were at  
8                   highest, the highest water. This is how it gets  
9                   communicated to the industry.

10                   Working with NOAA. The Coast Guard,  
11                   as I said, has a wonderful partnership with NOAA.  
12                   When we have these port coordination team calls,  
13                   I rely very heavily on the weather forecasts that  
14                   are out of Slidell and the Lower Mississippi  
15                   Forecast Center for tides, currents, river  
16                   levels, winds. What is the forecast? We always  
17                   ask: what is the forecast? It goes into  
18                   informing our decision about when and how to  
19                   close the port and reopen it.

20                   The PORT System, as the Admiral has  
21                   already mentioned, is a wonderful partnership  
22                   between the Coast Guard and NOAA. I took the

1 moment to write the objective of the PORTS  
2 Program, to promote navigation safety, improve  
3 the efficiency of U.S. ports and harbors, and to  
4 ensure the protection of coastal marine  
5 resources. That sounds like the objective of a  
6 sector commander in the Coast Guard. I think  
7 that's going to be really fun learning more about  
8 how that data transmits through AIS.

9 I, in my area, I don't have any  
10 oceanographic research vessels, but the Pisces  
11 and the Gordon Gunner in the Gulf. It's not my  
12 zone; it would be Mobile Zone. I just thought I  
13 would list that as a Gulf partner with NOAA. We  
14 also have great scientific support coordinator  
15 here in New Orleans, specifically Brandy Todd. I  
16 work a lot with her on pollution trajectories,  
17 with my federal on scene coordinator cap on,  
18 where spills are going to be moving to in the  
19 maritime environment.

20 Lastly, the MC 20 Oil Spill Response  
21 case, which Brandy's been a wonderful partner in  
22 that oil spill as well. I am out of time. Thank

1 you all very much, and later if you have any  
2 questions for me I'd be happy to answer them.  
3 Thank you.

4 (Applause.)

5 CHAIR SAADE: Thank you, Captain  
6 Luttrell. Okay. Now we're going to be hearing  
7 from, I got lost here, Colonel Stephen Murphy  
8 from the US ACE, and take it away. Thanks.

9 COL MURPHY: So good morning. I'm  
10 Colonel Steve Murphy. I'm with the -- I'm the  
11 commander of the New Orleans District Army Corps  
12 of Engineers. I'd like to start off with a  
13 little humor. Admiral Smith, it's good to see  
14 you again. I just saw him last week on the  
15 Mississippi River Commission.

16 But why did God create economists? So  
17 that weather forecasters won't feel so bad.  
18 Tough crowd. But it is a real honor to be here  
19 with you this morning. I am presenting on behalf  
20 of Major General Toy, who is my boss. He is the  
21 regional commander for the Mississippi Valley  
22 Division, Army Corps of Engineers. If you didn't

1 know, the Army Corps of Engineers, our district  
2 boundaries, our division boundaries are based on  
3 watersheds, not political boundaries.

4 So for the Mississippi Valley  
5 Division, we cover from the head waters up in the  
6 northern United States all the way down here to  
7 the Mississippi. So our entire focus really is  
8 the Mississippi River and its tributaries. On  
9 behalf of General Toy, again who was called away  
10 for another meeting, I'd really just like to tell  
11 you about kind of what we do and just deliver a  
12 couple of key messages.

13 One of the key messages is just the  
14 absolute importance of partnership. One of the  
15 encouraging things for me is I've been in command  
16 just over six weeks. So this is my second  
17 district command. I had another command on one  
18 of the Mississippi's tributaries in the Nashville  
19 District.

20 But looking out and seeing familiar  
21 faces in just six weeks of command in this room,  
22 just really to me is evidence of the importance

1 of, you know, it takes a village to do what we  
2 do. The Corps of Engineers certainly cannot  
3 execute its two primary missions here, which is  
4 navigation on the Mississippi River and flood  
5 risk management.

6 One of the things that I've especially  
7 seen just in a short period of time, and probably  
8 four days in the command, after I assumed command  
9 Hurricane Barry hit. It was high adventure. I  
10 was down at GOHSEP and Baton Rouge with the  
11 Governor watching it, and I will tell you just  
12 one thing that struck me very quickly was the  
13 importance of the relationships, and I would say  
14 especially the folks in this room.

15 Like every meeting for that event  
16 started off with a National Weather Service  
17 update from the River Forecast Center, and then  
18 as I'll discuss in just a minute, how unique the  
19 weather has been. And I would tell you from the  
20 Corps of Engineers' perspective and I'm sure no  
21 different with NOAA is Mother Nature is not  
22 making this any easier.

1                   Earlier this month, as Captain  
2                   Luttrell mentioned, we just closed the longest  
3                   flood fight response effort in the District's  
4                   history at 292 days. And just figure 292 days,  
5                   it's nine months -- over nine months. Four and a  
6                   half of those months for my District were at 24/7  
7                   operations, and with 1,000 people who are doing  
8                   engineering jobs, geologists, all the different  
9                   things we do, that means one in four people was  
10                  doing above and beyond what they normally do to  
11                  help manage the river.

12                  But I've heard terms like historic,  
13                  unprecedented, the new normal for having a  
14                  hurricane come in while we still have and we're  
15                  still at flood stage on the river. And I know  
16                  Sean's mentioned this, others, 124 years, it's  
17                  the wettest year in 124 years of recorded weather  
18                  history, river at flood stages longer than ever.

19                  USACE, we operate at Bonnet Carre,  
20                  just in record frequencies and amounts this year.  
21                  We operated it twice this year, never happened  
22                  before. We've operated it two times, or twice

1 two years in a row. Just why that matters is  
2 we've operated it more in the last eight years  
3 since 2011 than in the previous 70 years from  
4 2011 before.

5 So just significant changes in weather  
6 that we're seeing that are forcing us from a  
7 flood risk management perspective to operate our  
8 spillways. And what that means is, to give you a  
9 little perspective, we're at New Orleans. That's  
10 10,470 Superdomes of water being pushed into Lake  
11 Pontchartrain, which is a lot of fresh water.  
12 That's one of the things that I would tell you,  
13 is that for the Corps of Engineers, especially  
14 down here on the river and certainly here in New  
15 Orleans, where we're receiving all this water,  
16 there is a lot of tension between competing  
17 interests.

18 You have flood risk management, which  
19 is our top priority. Mississippi River levee  
20 system, which for a nine and a half month flood  
21 fight has performed incredibly well. No  
22 crevasses, no overtoppings on the federal. It



1 performed incredibly well. Let me tell you, it's  
2 a 40 to 1 investment of your tax dollars -- a 40  
3 to 1 return on your tax dollars.

4 But we do this very closely. One of  
5 the things very closely in sync with NOAA and a  
6 lot of the folks in this room. And I know on a  
7 daily basis, we work with the National Weather  
8 Service. Like I said, that River Forecast  
9 Center, their Hurricane Forecast Center and  
10 NOAA's Hydrographic Services, but also a lot of  
11 our local partners.

12 On the navigation front, which  
13 definitely is a concern for this room, we've also  
14 seen a lot of challenges like we haven't seen  
15 before, just with nine and a half months of the  
16 high water.

17 The channels operated under  
18 restrictions for a quarter of the year, and the  
19 deputy governor talked about fog delays, fog  
20 delays. We've seen more fog delays to our  
21 dredging operations in Southwest Pass this year  
22 than we've seen in the last 30 years, so just a

1 lot of significant changes.

2 We've seen a record showing and just  
3 with the river the way it is, especially as it's  
4 dropped out so quickly in the last 30 days, the  
5 volume and buildup of material have just been an  
6 incredible challenge to keep up with. He talked  
7 about hey, we've got to get away from this  
8 emergency dredging, and that's something that the  
9 Corps, the Corps headquarters, in conjunction  
10 with General Toy's headquarters and my  
11 headquarters, looking at a regional contract,  
12 like how do we ensure that every year that this  
13 isn't an emergency, when we finally figure out  
14 hey, this is where the shoaling is in Southwest  
15 Pass.

16 But just for perspective, in an  
17 average year we dredge about 19 million cubic  
18 yards in a 30 mile reach on the Mississippi, and  
19 so far this year we've already doubled that, and  
20 we anticipate almost tripling that by the year's  
21 end. If cubic yards don't resonate with you, so  
22 about 70 million cubic yards by the end of the

1 year, I think \$800,000 a day probably would.

2 Right now we have three dredges  
3 working in Southwest Pass. We have another five  
4 working on the crossings, and for the first time  
5 in a long time I'm happy to report there are no  
6 draft restrictions. Now later this week, the  
7 good news is we'll be sending one of the dredges  
8 in Southwest Pass up to the Port of New Orleans.

9 So as Sean always says, and I would  
10 add really flood fighting to this, is waterway  
11 management is a team sport. So the Corps of  
12 Engineers is happy to be here with you. I  
13 personally look forward to hearing about best  
14 practices and lessons learned, especially as it  
15 applies to our surveying efforts and how we work  
16 with you.

17 So please when you get a chance during  
18 breaks, come up to me. I'd love to hear about  
19 any suggestions you might have or concerns you  
20 might have with how we do business. So thank you  
21 very much.

22 (Applause.)

1                   CHAIR SAADE: Thank you, Colonel  
2                   Murphy. The HSRP has been following USACE and  
3                   NOAA relationship and working together. So it's  
4                   a top interest of ours. So this is great timing  
5                   for us. Okay next I'd like to introduce Brandy  
6                   Christian, President and CEO of the Port of New  
7                   Orleans, CEO of the New Orleans Public Railway  
8                   Corp. So please proceed. Thanks.

9                   MS. CHRISTIAN: Thank you.

10                   (Applause.)

11                   MS. CHRISTIAN: Well good morning.  
12                   Welcome to New Orleans. You know, it's  
13                   interesting. I'm actually a West Coast  
14                   transplant myself to New Orleans. So came out to  
15                   New Orleans in 2014, and people often ask me why  
16                   in the world would you leave San Diego --  
17                   arguably the world's best climate?

18                   And first of all, I said well no  
19                   matter where I moved, it was going to be a  
20                   downgrade, because you can't get better climate  
21                   than in San Diego. So welcome to some of my San  
22                   Diego peers to New Orleans. But honestly from a

1 maritime and a port perspective, the opportunity  
2 to work on the Mississippi River is a complete  
3 dream, and I had watched and studied the Port of  
4 New Orleans and saw their trajectory from a  
5 business perspective and what a huge opportunity  
6 that is from a maritime perspective.

7 Now I can tell you, experiencing  
8 deluges like yesterday, probably get more rain in  
9 one day than California gets in a year. So it's  
10 definitely a difference. But I'll tell you I'll  
11 take it any day to operate on this river. It's a  
12 complete dream. But as Sean Duffy spoke to, as  
13 Captain Luttrell has talked about, it's an  
14 extremely complex and ever-dynamic river that we  
15 operate on. So I was just going to touch base  
16 today from a business perspective, give a little  
17 bit of background on what the Port of New Orleans  
18 does, and I know some of you are scheduled to  
19 actually physically see some of our facilities  
20 tomorrow at the Port of New Orleans. So I wanted  
21 to touch on the importance of what you do from a  
22 standpoint of both weather services and the tools

1 and navigation that keep us operating safely and  
2 help our pilots and captains to be able to  
3 navigate this tremendous waterway.

4 But also the importance of dredging  
5 that I'm sure you'll hear a number of panelists  
6 throughout your sessions talk about. But this  
7 industry certainly is evolving, as much as the  
8 river is evolving. So your work is becoming more  
9 and more important, and really one of our biggest  
10 dynamics and challenges we have in our industry  
11 from a port perspective is ships are getting  
12 bigger. They're not getting smaller. That's not  
13 going to happen.

14 And volumes are growing dramatically,  
15 and our customers in this just-in-time Amazon  
16 world is tremendous pressure on the supply chain.  
17 So for them time is money, and they expect their  
18 orders to come in, to be able to navigate safely,  
19 quickly up a waterway that is challenged at times  
20 with whether it be draft or it be weather  
21 circumstances, you name it. So what you all do  
22 is extremely important every day to that

1 commerce.

2           Some of the topics that you're going  
3 to be discussing -- precision navigation, better  
4 mapping, expanded use of air gap sensors on  
5 bridges -- is extremely important in what we do  
6 every day, and really is what's going to keep us  
7 competitive here on the Mississippi River.

8           Just go give a backdrop to the Port of  
9 New Orleans, we are just one port of many within  
10 Louisiana. But as you know as a nation, and  
11 arguably I'd say the Port of New Orleans is one  
12 of the most diverse ports by what we do in terms  
13 of the diversity of business. But if you take  
14 the five ports that are from Baton Rouge to the  
15 mouth of the river, and you take the amount of  
16 cargo that is moved just by those five ports and  
17 if we were say one entity, we would be the  
18 largest complex in the world -- bigger than any  
19 other port in China, you name it.

20           That is the complexity of what Captain  
21 Luttrell and her team, the Army Corps is managing  
22 in terms of the amount of economic development

1 that's moving on that waterway system.

2 Now for the Port of New Orleans,  
3 obviously cargo is kind of our bread and butter,  
4 what we do every day. About 50 percent of our  
5 business and our revenue is cargo. We are --  
6 about 50 percent of that cargo moves by  
7 container; 50 percent of that moves by what we  
8 call break bulk -- things that don't fit into  
9 containers.

10 Primarily on the container side, we  
11 are an export port. You see a lot of frozen  
12 poultry, but also chemicals, plastic resins, and  
13 you see those chemical plants up and down the  
14 river system, the petrochemical plants. They  
15 produce little plastic resins that get shipped  
16 off to Europe and Asia, and they come back as  
17 Barbie dolls and water waddles. Tremendous  
18 amounts of exports coming out of the river system  
19 in containers.

20 The other 50 percent is about 90  
21 percent break bulk, and that's big natural  
22 commodities like steel coils, rubber, lumber, all



1 coming into the river system. And about 90  
2 percent of that comes directly off of a ship,  
3 directly onto a barge, and moves up the entire  
4 Mississippi Waterway System. So again, more  
5 traffic on the Mississippi River getting into our  
6 Midwest markets.

7 And from a business perspective, we  
8 grew 12.3 percent in containers last year. We  
9 have doubled our volumes in the last 10 years.  
10 We went from relatively a new container port over  
11 10 years ago to about 650,000 TEUs or 20 foot  
12 containers.

13 We definitely see no signs of slowing  
14 down, to the point of now where we are actually  
15 looking and identifying a site for a second  
16 container terminal that will be before the  
17 Crescent Connection Bridge, which will make the  
18 Coast Guard very happy to not have to navigate  
19 that bridge with the larger and larger ships.

20 Right now, we can handle up to a  
21 10,000 TEU container ship with the air draft  
22 restriction that we have there. On occasion,

1 we're working 9,400 TEU ships. So as you can  
2 imagine, when we have high water, that becomes a  
3 real issue, and the importance of air gap  
4 sensors, et cetera, become very important.

5 Second line of business for the Port  
6 of New Orleans. We acquired the New Orleans  
7 public railroad two years ago. That's a short  
8 line that actually connects to six Class 1s here  
9 in the New Orleans Gateway. That puts us as a  
10 port in a very unique situation, that we are the  
11 only port in the United States that can actually  
12 deliver six Class 1s directly to our docks.

13 There's only four gateways in the  
14 country that actually have all these Class 1s  
15 converged. We took over that short line that  
16 connects those Class 1s directly to the City and  
17 region of New Orleans.

18 We have over 1,200 acres of industrial  
19 property, the map that Captain Luttrell showed,  
20 along the Industrial Canal. A lot of that  
21 property that they're protecting, a lot of that  
22 activity is where a lot of our real estate sits,

1 where we have companies that service the maritime  
2 industry, everything from trucking and packaging  
3 to warehousing of all those cargoes. That's  
4 where those facilities reside.

5 And lastly, as the Lieutenant Governor  
6 talked about, we are the sixth busiest cruise  
7 port in the United States. We just recently  
8 announced Royal Caribbean, a second year-round  
9 ship for us. That will put us at about 1.5  
10 million passengers a year. That will be 300  
11 cruise vessels coming up the river system per  
12 year.

13 Obviously, the safety, you could have  
14 over 4,000 people on these ships. So navigation  
15 and safety is extremely important, and  
16 particularly if you have any issues with fog or  
17 dredging situations. So as I talked about with  
18 the complexity and the opportunity of the  
19 business expansion that we have just at the Port  
20 of New Orleans in itself, continuing to invest in  
21 the maritime facilities in the dredging obviously  
22 has a huge economic return.

1           But obviously we have to have tools  
2           that make sure that navigation is safe, and  
3           unfortunately the tools that help mariners  
4           navigate haven't always been, haven't -- how  
5           would you say -- changed as significantly and  
6           progressed as quickly as maybe the natural  
7           environment has or the industry.

8           And so keeping up the pace with those  
9           technologies and tools and investing those into  
10          the river systems is extremely important, because  
11          what that translates to our customers typically  
12          is when you have navigation restrictions, it's  
13          decreased loadings of their ships and wait times,  
14          which is all a huge economic impact and loss to  
15          those industries.

16          But it also hurts us from a  
17          competitive standpoint that we not be seen as a  
18          waterway that can stay competitive. So we very  
19          much appreciate being only one of two precision  
20          navigation projects here in the U.S. That keeps  
21          us very alert to the changing water levels, low  
22          under keel clearance when we have draft issues,

1 air gap clearances as I talked about.

2 Really, the biggest challenges for  
3 water depth are the oil and gas tankers and the  
4 container ships. Those will be the vessels that  
5 are really pressing up against size. A good  
6 example is contractually at the Port of New  
7 Orleans, I am obligated to keep the container  
8 berth at 45 feet.

9 I'm one of I think only two ports in  
10 the United States that actually owns my own  
11 dredge and keeps that dredge out there every day,  
12 and yet with the challenges of the river, as  
13 mentioned by Army Corps, is we will actually be  
14 sending out another dredge just to continue to  
15 combat any of those challenges.

16 So it is a very dynamic situation that  
17 we operate in, and as mentioned this last year,  
18 we actually have a lot of challenges with fog.  
19 It was definitely a convergence this last year of  
20 different factors, and really we would not have  
21 been able to do that and be that dynamic in the  
22 environment without the partnerships we have

1 between the pilots, the Army Corps, Coast Guard,  
2 with NOAA and having that information available  
3 to us to help our pilots, help our captains to be  
4 able to navigate.

5 We absolutely support the idea and a  
6 push for more investment into those technologies,  
7 the navigation tools. The bank to bank surveys  
8 have been extremely valuable for the Port of New  
9 Orleans. More air gaps on bridges. I can tell  
10 you when we bought the railroad, we actually  
11 bought the Huey P. Long Bridge, which is the  
12 major bridge that goes over the river in  
13 Jefferson Parish.

14 I can tell you this last year how many  
15 times that bridge has been hit by barges, you  
16 name it. We are very fortunate that we haven't  
17 had something major, but it's a reality of the  
18 environment that we operate in. So we very much  
19 support to make those -- support making those  
20 continued investments.

21 And lastly, the importance of dredging  
22 of the river. We have been fortunate that there

1 has been increased funding, but the investment,  
2 the challenges are still there, and access to  
3 dredges is a continued challenge for the river.  
4 The state has really made it a priority to get to  
5 50-foot draft, committed to the three years  
6 funding, 24 million a year.

7           You know, what's important when you  
8 think about it from an economic perspective, you  
9 know, the typical staff that they use is that for  
10 every foot of draft, you are looking at about \$1  
11 million of impact per ship. So either a loss of  
12 a foot or a gain of a foot has that kind of  
13 impact.

14           Just from Hurricane Barry alone, just  
15 the Port of New Orleans, we lost six container  
16 ships. They basically had to skip the river out  
17 of any concern of having air draft restrictions  
18 or any restrictions at the mouth. So obviously  
19 getting to 50 foot is extremely important because  
20 it gives us wiggle room, so to speak, but also  
21 really keeps us competitive and the Midwest  
22 competitive.

1                   And if we could achieve 50 foot draft,  
2                   and particularly from a container perspective,  
3                   having a terminal that is prior to the bridge, we  
4                   will be the only Gulf port that actually has that  
5                   type of infrastructure and that kind of  
6                   flexibility in this ever-changing dynamic  
7                   waterways systems that we're dealing with. Not  
8                   just here; we're seeing challenges in other  
9                   waterways, as well as the Mississippi River.

10                   So again, the work that you all do  
11                   really helps us be more educated, and to be able  
12                   to predict and navigate the waterways safely. So  
13                   again thank you, and we look very forward to  
14                   having you out and actually see some of the  
15                   physical facilities that I talked about.

16                   Hopefully, this gives you some context to what  
17                   the business perspective looks like for the Port  
18                   of New Orleans.

19                   (Applause.)

20                   CHAIR SAADE: Thank you, Ms.  
21                   Christian. I too am a San Diego transplant, but  
22                   I only made it as far as Houston. I think you



1 got the better deal. That was excellent, and  
2 thank you for hosting our group on Wednesday.  
3 We're looking forward to it. Sean, would you  
4 take over introduction duties? Thanks.

5 MEMBER DUFFY: So I feel like Captain  
6 Luttrell, Colonel Murphy, President Christian. I  
7 owe you an introduction. Just let me know when I  
8 can do that, and I think it was just based on a  
9 matter of time. I'm very happy to introduce my  
10 friend Claire Trokey from Congressman Scalise's  
11 office. Captain Miller is in the back of the  
12 room. He's the president of the Bar Pilots and  
13 he's the chairman of the Big River Coalition.

14 One of the things that we often do is  
15 take members from the Corps, members of Congress,  
16 staffers, people interested in talking about  
17 Southwest Pass to ride a ship. We had met Claire  
18 really before she came down when she was first  
19 starting out, and I will tell you both Captain  
20 Miller and I were impressed from day one.

21 She did great on the Jacobs ladder,  
22 had a lot of background that prepared her for

1 that, and ever since have leaned on her for a lot  
2 of the things that make us successful. I was  
3 with Congressman Scalise and Claire yesterday.  
4 I'm a member of his maritime task force, and a  
5 lot of the success that we have and help that we  
6 get comes from that office.

7 All I can tell you is Claire  
8 is a star in that office. She works very hard to  
9 help us, and I have in more than one place talked  
10 about the importance of staffers. Claire is  
11 definitely one of our all-stars and I have called  
12 a super-staffer before. I will do it now and I'm  
13 very happy to introduce Ms. Claire Trokey. I'm  
14 sorry, but one thing that I have to say is, and I  
15 know Billie would get mad at me if I didn't  
16 notice it, but I'm impressed at the quality of  
17 ladies that we have at the head table today. You  
18 all do a lot for us and it shows how far we have  
19 come in this industry. So thank each of you.  
20 Ms. Trokey.

21 MS. TROKEY: Well, thank you Sean for  
22 that very generous introduction, and I will say

1 the day that I went out with you and Captain  
2 Miller, I learned that I did not have much upper  
3 body strength as I was doing the ship-to-ship  
4 connection. But appreciate that, and it was a  
5 great view to see of the river and, really, the  
6 gateway to the world.

7 Part of my job is to work with many  
8 folks that are in this room and many folks that  
9 are on this distinguished panel, whether that be  
10 at the federal government level, our partners in  
11 the federal government, our partners at the state  
12 with local governments, and as well with private  
13 industry, to understand (a), how we can keep the  
14 people and communities of Southeast Louisiana  
15 safe, but also to understand what the needs of  
16 the Mississippi River are.

17 The Mississippi River, as many of you  
18 know, is important to the economy of Louisiana,  
19 but from a national perspective it's important  
20 for the national economy and our trade capacity.  
21 We know that there's over 500 million tons of  
22 cargo that move on the Mississippi River that

1 contribute to our international trade.

2 That includes 60 percent of our  
3 nation's grain, 20 percent of our nation's coal.  
4 In the state of Louisiana, our maritime community  
5 means 70,000 jobs and more than \$18 billion into  
6 our state's economy. So the maritime industry,  
7 all the jobs that support that and what the work  
8 that the maritime industry does means a lot to  
9 our state and to our nation.

10 You know, one of the things that we  
11 work on in Congress, we look at annual  
12 appropriations and we look at what we're been  
13 doing on a biannual basis of our WRDA bills for  
14 authorizations. So a lot of that means  
15 communication. Like I said, once again with our  
16 partners within the federal government, within  
17 the state of Louisiana, within our local  
18 governments and private industry to understand  
19 kind of what the needs are.

20 Last year in our fiscal year 2019  
21 appropriations, we had a ten percent increase in  
22 the Harbor Maintenance Trust Fund funding

1 available, and we also increased the Corps'  
2 budget by \$172 million. We're still working  
3 through fiscal year '20 appropriations right now.  
4 It's going to be a busy September once we get  
5 back in session for Congress.

6 But in Louisiana, you know, I really  
7 want to highlight what many folks have said, that  
8 dredging on the Mississippi River enables us to  
9 move that cargo and keep our nation's economy  
10 going. But it also is really important for our  
11 coastal efforts in Louisiana, as well. It's a  
12 big priority and, you know, you've heard many of  
13 the estimates of a football field length of land  
14 per day.

15 So that is one of our top priorities,  
16 and it's a really unique situation where industry  
17 comes together with the government, whether at  
18 the federal or local level, to rebuild our coast.  
19 I won't say too much more, you know. Many of the  
20 folks on this Panel, you know, are the experts  
21 and we rely on them, you know, for input as we  
22 are making federal policy decisions and

1 appropriations decisions. So I appreciate the  
2 opportunity to be here with you guys today.

3 (Applause.)

4 CHAIR SAADE: Thank you Ms. Trokey.  
5 Shep, I'm going to turn it over to you.

6 RDML SMITH: Thanks Ed. Just a couple  
7 of observations. First of all, thank you to this  
8 fabulous panel for setting the stage for  
9 discussions this week, and I hope that some of  
10 you can stick around for some parts of the day  
11 today and the coming days to hear from our other  
12 experts.

13 A couple of -- a couple of notes that  
14 I think are worth stressing. I wanted to thank  
15 Admiral Gallaudet for raising the blue economy as  
16 a framework for all of this, and I think many of  
17 the speakers afterwards echoed some of the same  
18 sentiments, sometimes with the same words,  
19 sometimes not. But the resilience and growth of  
20 our shipping industry and the importance of our  
21 services to the shipping industry really cannot  
22 be overstated. Here it's combined with the

1 dredging, which is not unique to this port but is  
2 perhaps the biggest example in this port.

3 The second one was the -- I wanted to  
4 thank the Governor for noting cruise ships as an  
5 important part of the tourism industry. I'm not  
6 sure that we flagged that in blue economy as an  
7 important way that the American people experience  
8 the ocean and the services we provide to ships  
9 also apply to those cruise ships.

10 So I wanted to thank you for that, but  
11 also the smaller recreational vessels are -- the  
12 United States has about half the recreational  
13 vessels in the world, and quite a few --  
14 Louisiana is not the highest per capita, but it's  
15 right up there as a really big boating state.  
16 It's a huge part of the local culture and  
17 economy.

18 And lastly, just the integration of  
19 these tools and information to really be able to  
20 make the most of our built infrastructure.  
21 That's going to be the focus of our next panel  
22 with precision navigation after the break. So

1       thank you, thank you all and of course to our  
2       political partners in the panel, to thank you  
3       very much for the support of these programs and  
4       the recognition that we get in the halls of  
5       power. So thank you.

6                        (Applause.)

7               CHAIR SAADE: Okay. In the interest  
8       of time, we're going to go ahead and take our  
9       break right now. So I want to thank the panel  
10      members again. It was really great and a great  
11      way to start the whole Panel meeting. So you all  
12      back at 10:45. Thanks.

13                      (Whereupon, the above-entitled matter  
14      went off the record at 10:25 a.m. and resumed at  
15      10:43 a.m.)

16              CHAIR SAADE: Okay. We're going to  
17      continue. Two quick items. We missed something  
18      really important to announce earlier, and that  
19      was the East Bank River Ridge Little League World  
20      Series champions are right from this area.

21                      Applause.)

22              CHAIR SAADE: And also I want to



1 compliment everybody. The energy in the room  
2 during the break was fantastic, so let's keep  
3 that up, and Sean, I'll turn it over to you.

4 CAPT KRETOVIC: Hi. I'm not Sean.  
5 I'm Captain Liz Kretovic with the Office of Coast  
6 Survey. I'm the deputy hydrographer and the  
7 precision navigation program manager. Today, we  
8 have a really exciting panel with a mix of both  
9 NOAA experts and also experts of the river. Ms.  
10 Christian really teed us up nicely when she  
11 talked about ships getting bigger and investments  
12 that are being made in different infrastructures.

13 We're here to kind of represent the  
14 information infrastructure that's necessary for  
15 the safe navigation of these larger vessels. So  
16 we're going to hear from three different pilot  
17 association presidents, as well as Dr. John  
18 Kelley's going to dive into exactly what it is  
19 that we're doing at NOAA with precision  
20 navigation.

21 So just to give a quick overview, we  
22 call it precision navigation but really these

1 three gentlemen in the middle and others in the  
2 room, they're the precise navigators. As a  
3 matter of fact, Captain Bopp told me a couple of  
4 weeks ago that when he began his career in 1980,  
5 he was really worried about being a smooth  
6 operator, and now he said with this new  
7 technology, I have to really be a precise  
8 navigator.

9           Anyway, what we're doing at NOAA is we  
10 are integrating all of our different data streams  
11 that are important for navigation services into  
12 one place, to make them discoverable and  
13 interoperable with other equipment and tools that  
14 are developed through private industry. So these  
15 are things like portable pilot units, under keel  
16 clearance management systems, electronic chart  
17 display information systems, electronic chart  
18 readers, and other software.

19           So we're doing this because we see the  
20 need. We see technology as the future, and we  
21 want to get ahead of the times. Just as Ms.  
22 Christian said, she couldn't put it any better,

1 today is a very just-in-time supply chain with  
2 high demands, big ships, and we are really  
3 focused on trying to deliver a better information  
4 set to the mariner.

5 So I'm going to turn it over right now  
6 to Dr. John Kelley, who is our precision  
7 navigation dissemination manager, and he's going  
8 to go a little bit deeper into exactly what it is  
9 that we're doing at NOAA. Thank you.

10 DR. KELLEY: My name's John Kelley  
11 from the Office of Coast Survey. Thank you. All  
12 right, thank you. Yeah, I'm a meteorologist by  
13 training. So I'm kind of tempted to get up in  
14 front of the screen and point, but I'll try to  
15 sit at the desk this time.

16 I won't take Colonel Murphy's comments  
17 earlier about meteorologists versus economists  
18 too personally. So this morning I wanted to  
19 describe the NOAA Precision Navigation  
20 Dissemination System, and this is a critical part  
21 of NOAA's efforts to support precision  
22 navigation.

1           So Liz -- Captain mentioned, precision  
2 navigation is the ability of a vessel to safely  
3 and efficiently and operate in an environment  
4 when ships are close to the sea floor. We have  
5 bridges to worry about, narrow channels and other  
6 marine hazards. So to accomplish this, we need  
7 to provide the mariner with information from  
8 NOAA.

9           Most mariners, of course, rely on  
10 nautical charts. But increasingly and to support  
11 precision nav to operate in these really confined  
12 spaces, we need other information from NOAA such  
13 as real-time observations of oceanographic and  
14 weather information from the Weather Service or  
15 National Data Buoy Center, CO-OPS, or our  
16 regional IOOS associations.

17           So how do we try to make this  
18 information easily accessible and in data formats  
19 that the manufacturers of PPU's and ECS can easily  
20 integrate into their systems and make that data  
21 and information available to the mariner. So  
22 that's what we're trying to work on and I'll

1 describe here briefly today.

2           So to achieve this, we have two major  
3 initiatives. The first is developing and testing  
4 and implementing International Hydrographic  
5 Organization S-100 framework, which you might  
6 have heard about already, to allow for the  
7 consistent integration of NOAA data sets. NOAA  
8 is a really the lead organization in the world  
9 working with other countries to develop this  
10 standard and test it and then implement it.

11           NOAA personnel are on many different  
12 working groups working on these different  
13 standards, and it's quite an effort as you can  
14 imagine. It's an international effort. We have  
15 to go through the different countries and make  
16 sure it's applicable to their hydrographic  
17 offices' standards and also for their customer  
18 needs.

19           The second effort is to develop and  
20 test initially a prototype dissemination system  
21 to provide a single location for users to access  
22 the NOAA data sets, initially with a limited set

1 of S-100 products and also OGC compliant web  
2 mapping services. That diagram on the bottom  
3 just shows you the different types of S-100 data  
4 sets we're talking about in the coming years.

5 It will probably take many years and  
6 probably over a decade to really fully implement  
7 the different standards, and then actually put it  
8 into operations.

9 So what is really the outcome of doing  
10 this in NOAA? It is to make it again easier for  
11 ECS and PPU manufacturers and under keel  
12 clearance software companies to ingest, process,  
13 and display NOAA's marine navigational data  
14 information to enable precision nav at major U.S.  
15 seaports.

16 Recently, earlier this month in fact,  
17 we had a workshop, a NOAA workshop at the  
18 NOAA-UNH Joint Hydrographic Center with  
19 manufacturers of PPUs and ECS, to bring them in  
20 early on the design and development of this  
21 Precision Navigation Dissemination System, you  
22 know. Probably in the past NOAA did not do that,

1 to bring industry in at the early stages. So we  
2 wanted to make sure that was done this time.

3 So we got many, many good  
4 suggestions and recommendations from these  
5 manufacturers on how to proceed and what would  
6 make it easiest for them to ingest our data sets,  
7 and many of these have volunteered to be beta  
8 testers for us as we again design, develop, and  
9 test dissemination system.

10 So the two main deliverables in the  
11 next few years is again dissemination system, and  
12 again the goal is to provide one location for  
13 commercial and recreational mariners to obtain  
14 NOAA S-100 products suite. We try to do this in  
15 a commercial cloud environment for many reasons.  
16 One is of scalability, higher availability, and  
17 also the ease to develop, test, and implement new  
18 data sets from NOAA for our customers given the  
19 need and the ever-changing environment in terms  
20 of data sets and also technology.

21 On the diagram on the top there, the  
22 two initial data sets that we're focused on,

1 providing via the dissemination system are the  
2 S-111 surface currents from our NOS oceanographic  
3 forecast systems, as well as S-102, which is  
4 gridded bathymetry and a variety, again through a  
5 commercial cloud environment and through a  
6 metadata discovery exchange catalogue for --  
7 again, for the manufacturers to be able to  
8 discover when the data has sort of been updated  
9 and to ingest them and make them available on  
10 their units.

11 The second one is a new website called  
12 Marinenavigation.noaa.gov. Provide one site for  
13 commercial and recreational mariners to discover,  
14 find, learn about the extensive amount of  
15 information we have from NOAA. Again, as you  
16 probably all are aware in this room, it's  
17 difficult to find all different types of data  
18 sets, information that we provide for marine  
19 navigation.

20 So we're going to try to have one  
21 location that will provide information about  
22 that, as well as point to other agencies, like



1 the Weather Service or NOS or even our satellite  
2 service.

3 This is just an example I pulled  
4 showing the water current forecast guidance from  
5 the NOS Northern Gulf of Mexico Operational  
6 Forecast System, and this is making the  
7 information, the forecast available in tiles. On  
8 the right is a display of the vectors of the  
9 surface currents at probably a 24 hour forecast,  
10 and again, making the tiles available at a  
11 certain size, that makes it easier, easy for the  
12 manufacturers to pull, as well as to make them  
13 available on the pilot PPU's or ECS.

14 So again, this is what we're planning  
15 to do in the coming years, and this is our  
16 contact information if you'd like to ask us  
17 questions in the coming months and years. Just  
18 on the top there, just kind of an illustration of  
19 what we're trying to gear towards. We're trying  
20 to have a consistent format using the S-100  
21 standards that a user can be able to overlay  
22 different types of data sets.

1           Whether it's nautical charts, gridded  
2 bathymetry, water currents, water levels, and  
3 also weather overlays, which will be provided by  
4 NCEP, Weather Service NCEP, the Ocean Prediction  
5 Center, of marine weather hazards, marine weather  
6 warnings. So a marine customer will be able to  
7 have all this information from NOAA in a  
8 consistent format, and hopefully it will be  
9 easier for the manufacturers to access and  
10 display. So thank you very much.

11                           (Applause.)

12           MEMBER DUFFY: Good morning again. So  
13 I have the distinct pleasure here in the next  
14 couple of minutes of introducing three pilot  
15 presidents, and what's really tricky for me is  
16 that each of them is a member of my board. So  
17 please make sure you give them proper respect and  
18 let them know on the line that you do appreciate  
19 what I do.

20                           Colonel Murphy took one of my lines  
21 that I use a lot, that waterways management is a  
22 team sport, and it's a really big team, and that

1 we depend on each other to deliver in our own  
2 way. Each position has a little bit different  
3 role and are all very important. Captain  
4 Kretovic pointed out that Panel members, if you  
5 can hold questions for the panel after the last  
6 speaker, we'd appreciate that.

7 With that, I have what I will call a  
8 Shep story, who always likes for me to add a  
9 story to kind of frame things. So I know Captain  
10 Hathorn, who I'll introduce, is going to speak a  
11 little bit about air gap sensors. So in the  
12 great flood of 2011, I was over not too far from  
13 here on the river and there was a large container  
14 ship coming up.

15 My son in there was with me and I was  
16 showing him the power of the river, crazy high, a  
17 17 foot river, and here comes a container ship.  
18 Well, all these people are running by me and my  
19 son with their iPhones out taking pictures. Like  
20 a lot of them had a drink in another hand. It  
21 took me a minute to focus on that, but what they  
22 were doing was they totally saw the optical

1 illusion that that container ship was going to  
2 take out the Crescent City Connection, and they  
3 knew it was going to happen, and they all sat  
4 there and filmed it.

5 But one thing I will never forget is  
6 their response when it cleared the bridge was  
7 like "awww." So you have to remember that in  
8 that what we do, the public is not aware of. The  
9 count on us to do what we do and keep things  
10 safe. So you know, my son looked at me and I was  
11 like son, it's going to be okay. There's an air  
12 gap sensor. He's looking at me. I said pilots  
13 wouldn't bring it up. They know what it is.  
14 They are sure it's going to clear it.

15 And then went it went by, my son  
16 looked at me like dad, you knew what you were  
17 talking about. Well with that, I'd like to  
18 introduce Captain Steve Hathorn. So he's the  
19 president of NOBRA Pilots. For those that aren't  
20 local, the NOBRA pilots move ships from New  
21 Orleans to Baton Rouge. Each route has a lot of  
22 their own complexities.

1                   You have the experts in the room to  
2 talk about it, and with that I will turn it over  
3 to Captain Steve Hathorn, my board member. Thank  
4 you.

5                   CAPT HATHORN: Thank you, Sean. I'll  
6 tell you anybody that's been on the bridge of a  
7 ship going under a bridge, you know when you're  
8 looking at it, you swear you're going to hit it  
9 no matter how much room you have. But mariners  
10 out there know what I'm talking about. It gets  
11 kind of tight.

12                   Today I'm going to talk to y'all about  
13 air gap sensors and velocity meters that we have  
14 here in the river, the ones we have and ones we  
15 don't have. First of all, I was going to start  
16 off by just going a little background on the  
17 three groups like Sean was saying. There's three  
18 groups here that operate, the State Commission  
19 pilots that operate here on the Mississippi  
20 River.

21                   The Bar Pilots, Captain Miller,  
22 operate from the sea buoy up to Pilottown.

1 Captain Bopp with the Crescent Pilots, they  
2 operate from Pilottown up to New Orleans. If  
3 it's going above New Orleans, then my group NOBRA  
4 gets on them. We'll take it all the way to Baton  
5 Rouge.

6 Our route is, like all pilot routes,  
7 is different. Each one of them has its own  
8 challenges. Our route is particularly long.  
9 It's 140, approximately 145 miles. In that area,  
10 we service three main ports, the Port of New  
11 Orleans, which is the number seven port in the  
12 U.S.; the Port of South Louisiana, which is the  
13 largest port in the United States; and the Port  
14 of Baton Rouge, which is the number nine port in  
15 the United States.

16 Combined, we're talking about over 374  
17 million tons of cargo. So it's quite a lot of  
18 business out there, and at times as you can see  
19 from this slide, it gets quite congested on our  
20 end when you have ships and tows and everything  
21 else. At any given time on our route, you know,  
22 you're looking at scores of ships, thousands of

1 barges and hundreds of boats. So it is quite  
2 congested out there.

3 NOBRA will dispatch from time to --  
4 each year. Last year, we dispatched over 16,000  
5 of pilot turns. So like I said, we're quite  
6 busy. One of the unique things about our route  
7 here is we have 13 deep water crossings in the --  
8 between New Orleans to Baton Rouge. Those are  
9 shallower areas where you're crossing from one  
10 side of the river to the other.

11 The channel, they can average two to  
12 three miles long and only 500 feet wide. So when  
13 you're meeting traffic in these areas, two loaded  
14 ships, it's quite not much room for error. It's  
15 not much room up there when you divide it up.  
16 The other thing that we have is -- that I wanted  
17 to get into today to speak on is the bridges that  
18 we have in our area.

19 We have six bridges. We have the  
20 Crescent City Connection here in New Orleans;  
21 Huey P. Long Bridge, which is in Jefferson  
22 Parish; Luling Bridge; Grammercy Bridge up in the

1 Grammercy-Lutcher area; Sunshine Bridge in  
2 Convent-Donaldsonville area; and then the I-10  
3 bridge in Baton Rouge.

4 As a general rule, the Huey P. Long  
5 Bridge is the controlling bridge. It is the  
6 lowest. It's 153 feet minus the Carrollton gage.  
7 So it has approximately from high river, extreme  
8 high river to extreme low river possibly a 17  
9 foot range that we're talking about. Most of the  
10 time, it is going to be the lowest.

11 But just like recently we experienced  
12 high river for a long period of time, the Luling  
13 and the I-10 bridge will actually become lower  
14 than the Huey P. Long Bridge.

15 So it's challenging to at different  
16 times the river level, to gather this information  
17 and have it all correct, because various charts  
18 have -- believe me, we've looked at all of them  
19 and put out different information. Depends who's  
20 printing it, when, and so we do have some issues  
21 with that. You're talking about high steel  
22 versus low steel. It gets, it gets pretty



1 challenging.

2           One of the things that people ask me  
3 all the time is the changes I've seen in my 40  
4 years on the river. I would have to say in the  
5 last ten years we've seen with the PPU units,  
6 technology coming aboard the bridge because  
7 really a bulk carrier looks pretty much the same  
8 on the bridge as it probably did 40 years ago.

9           But you have technology now with the  
10 PPUs, AIS, and GPS. The other thing is the size  
11 of the ships. The ships have gotten taller,  
12 wider, carry more cargo, more draft. But the  
13 bridges haven't gotten any taller and the river  
14 hasn't gotten any wider. Hopefully we can get it  
15 deeper.

16           So we do have sensors on two bridges  
17 now. We have on the Crescent City Connection and  
18 the Huey P. Long Bridge that give us -- it's a  
19 laser and it gives us real-time data on the air  
20 gap. We would like to see sensors on all bridges  
21 quite frankly. The cost I understand is not that  
22 much. It's about the maintenance on the sensors,

1 about \$10,000 a year.

2 I've heard the number ten million  
3 would take care of every planned sensor, every  
4 site in the U.S. So overall, it doesn't look  
5 like it's a whole lot of money, and it would  
6 bring mariners, give them that information they  
7 need to guide the vessels safely. Back October  
8 12th, up at Convent, you had a tow boat with a  
9 crane barge. He hit the Sunshine Bridge, did a  
10 significant amount of damage to it.

11 It was millions of dollars, and then  
12 you had all chaos up there with the traffic.  
13 When you shut that bridge down for months, it all  
14 had to be redirected toward Baton Rouge, which is  
15 a nightmare for traffic anyway. So we think  
16 these sensors would be a good thing if we could  
17 get the funding to fund all of the precision  
18 navigation.

19 One other thing, I'm running out of  
20 time, but we also have two velocity meters that  
21 measure the current here, one in New Orleans and  
22 one in Baton Rouge. They are almost useless,

1 because they've been put in places next to the  
2 bank, but they don't get a true reading. We  
3 would like to see those also updated and put in  
4 areas where we can -- where they'll benefit  
5 people, because it's --

6 You know yourself, the current's going  
7 to be out in the middle of the river, it's not  
8 going to be next to the bank. And so thank y'all  
9 for having me.

10 (Applause.)

11 MEMBER DUFFY: Thank you, Steve. So  
12 I will not add that new nickname that Captain  
13 Kretovic gave you, but we can talk about that  
14 later. My good friend Captain Michael Bopp. So  
15 Captain Bopp is the president of the Crescent  
16 Pilots who move vessels from Pilottown to New  
17 Orleans, and Michael again is one of my board  
18 members. So please treat him well. But he's the  
19 perfect person to talk about the challenges and  
20 really looking at pushing the technology. So  
21 I'll look forward to hearing that. Michael, the  
22 floor is yours sir.

1                   CAPT BOPP: Thank you, Sean. I would  
2 like to really thank NOAA and the Advisory Board  
3 for having us, and involving the navigator as a  
4 spoke in the wheel. I want to elaborate on a  
5 couple of things that Brandy Christianson said  
6 about cruise ships, and the business that we're  
7 having in the Port of New Orleans right now.

8                   I think that the pilots have really  
9 facilitated and managed increasing the business.  
10 I know Captain Sal is here, and we've had many,  
11 many discussions. I don't think anybody is doing  
12 what we're doing in this port. You get on a  
13 cruise ship sometimes at Pilottown, and the Bar  
14 Pilots do the same thing. You never even see  
15 what color it was, you know, and you get off here  
16 at Julia Street.

17                   We do it in dense fog without seeing  
18 a thing, all technology, all radar, all PPU. I  
19 don't think any port in America is doing that,  
20 and as far as pilots are concerned, when you  
21 start talking about pilots and you start talking  
22 to lay people and you tell them you're a pilot,

1 the first thing they ask you is what airline do  
2 you fly for.

3 It's really a common thing. They  
4 always do that. So and they don't -- even people  
5 in New Orleans, they know the river is here but  
6 they don't really know the importance of what the  
7 river is. When I start to tell them that every  
8 thing you touch, 90 percent of the things you  
9 touch, whether it's your clothes, whether it's a  
10 computer, whether it's Tupperware, it doesn't  
11 come from Walmart. It comes on a ship first.

12 So it's very important and I think  
13 your forefathers very, very long ago decided that  
14 they wanted to make a strategic purchase of  
15 Louisiana, and the reason they made that purchase  
16 was that body of water, the Mississippi River and  
17 how globally important it is. So you know it's  
18 important and like I said, I thank y'all for  
19 having us.

20 Liz, it is my birthday today. I'm 61  
21 and I feel like I'm less of a smooth operator and  
22 hopefully a more precise navigator for sure. I

1 did go to a workshop, because I didn't know what  
2 the term reference to precision navigation. So  
3 at the University of New Hampshire two weeks ago,  
4 Liz and John's team had a workshop. There was a  
5 lot of scientists there, and we were the only two  
6 navigators.

7 Ryan Scully is in -- he's one of my  
8 pilots, and he has written, designed, and created  
9 a PPU and software that we use navigating called  
10 MRTIS. So almost everything they were talking  
11 about was for us, the end user, the navigator.  
12 So that's how important it is to us to have this,  
13 and so I thank y'all for having us.

14 I made some notes and the challenges  
15 of what pilots deal with. One of the main  
16 challenges is we want to get the most draft  
17 possible out of our deepwater channel. So under  
18 keel clearance, and under keel clearance is a  
19 quantitative measurement which represents the  
20 distance between the bottom of a vessel and the  
21 river bottom in a very restrictive body of water.  
22 The difficulty in accurately taking this

1 measurement could be based on many factors. But  
2 doing it in the very dynamic Mississippi River  
3 bottom complicates the accuracy of this  
4 measurement even more.

5           Within the Mississippi River Basin,  
6 our delta can cause many changes. During high  
7 water conditions, the amount of debris that flows  
8 throughout the entire water column dispenses  
9 spoil in some places where there could be a loss  
10 of three meters overnight. Therefore, updated  
11 daily surveys are an imperative piece of data a  
12 navigator must utilize in order to maximize the  
13 deepest draft during these specific conditions.

14           The method of these surveys the Corps  
15 of Engineers have utilized for many decades has  
16 always been a single beam survey method. After  
17 the Crescent Pilots doing a month-long test of  
18 utilizing a multibeam survey method during this  
19 last high river period, it became obviously  
20 apparent a more superior and accurate method  
21 going forward. The surveys eliminated huge areas  
22 that were just being interpolated by a computer

1 in a single beam method, to actually surveying  
2 every square five feet of the bottom with a  
3 multibeam.

4 For pilots, it was like all of a  
5 sudden looking at a CAT scan detail, when in the  
6 past we've been looking at an X-ray.  
7 Guaranteeing a minimum under keel clearance is  
8 literally impossible during some conditions we  
9 encounter, which must be understood by the ship's  
10 owners and managers. Both the pilot and the  
11 master must mitigate the risk of proceeding in  
12 these conditions and utilize every tool available  
13 to safely navigate the ship to its destination.  
14 Knowing on a daily basis exactly where these  
15 lumps are building is one of those necessary  
16 tools in order to maximize available draft.

17 That being said, our river bottom is  
18 what we term "a friendly bottom." It's made up  
19 of soft sand and mud, and many times a vessel's  
20 squat, speed, and river current velocity can  
21 affect the maneuvering characteristics  
22 differently based on a ship's individual



1 characteristics. The water pressure built up  
2 between the ship's hull and the river bottom can  
3 slow the ship down to a near stop, but with  
4 enough power, can still get through.

5           Ships being built today seem to be  
6 built for fuel efficiency, not the treacherous  
7 river conditions we endure, with enough engine  
8 power to push through the top layer of sand.  
9 They're on computer control and when there is a  
10 certain amount of pressure detected, the engine  
11 attempts to save itself and reduces power on its  
12 own. This actually becomes a hindrance in these  
13 conditions and really a safety issue.

14           The pilot has multiple challenges they  
15 are dealing with when piloting the Mississippi  
16 River. Their extensive experience from years of  
17 dealing with multiple ships in different river  
18 stages conditions a pilot to access the threat of  
19 each ship differently. This allows a pilot to  
20 apply different levels of standards of care to  
21 different vessels. This is the definition of  
22 precision navigation that we are trying to

1       achieve in our port.

2                   In order to succeed at this goal, the  
3       pilot must have a multitude of these tools at his  
4       disposal. Keep a full mandated channel by  
5       dredging is mandatory. Having very detailed  
6       multibeam survey technology overlaid on a PPU is  
7       an invaluable tool, allowing the navigator daily,  
8       up-to-date depth data, where they have a go and  
9       no-go zone on a PPU.

10                   Allowing a pilot to have these tools  
11       at his or her fingertips will help facilitate  
12       navigation with precision, which every ship that  
13       calls the Mississippi deserves. As pilots, we  
14       take our mission very serious, which consists of  
15       safely and effectively moving thousands of ships  
16       yearly to and from their destinations, while  
17       keeping one of the most globally important bodies  
18       of water flowing without incident.

19                   There are many stakeholders that are  
20       very dependent on us succeeding in our mission,  
21       and we intend to do everything in our power to  
22       maintain our safety record that is second to

1 none. Now I can tell you that we're on the heels  
2 right now of one of the most treacherous years  
3 I've seen in my 40 years.

4 I've seen higher river stages that the  
5 river has acted more tame than it has now, and  
6 we're on -- it's just been such a crazy year  
7 because we've had fog where multiple times fog  
8 set in, and usually fog will set in in this area  
9 in the south. It will come in at night when the  
10 humidity and water temperature is right, and then  
11 it will dissipate in the morning.

12 So everything stops, and then  
13 everything starts back up in the morning. Well,  
14 there were multiple times where it stayed for  
15 seven days. So at one point we had over 100  
16 ships outside trying to get in, and over 100  
17 ships inside trying to get out. So for us to  
18 manage that was very difficult, you know.

19 So I think that having NOAA getting  
20 involved in this precision navigation and giving  
21 us the right tools is going to be invaluable. So  
22 I thank y'all so much. Appreciate it.

1 (Applause.)

2 MEMBER DUFFY: Thank you, Captain  
3 Bopp. I get to wish you a happy birthday.

4 CAPT BOPP: Yeah.

5 MEMBER DUFFY: Thank you. Happy  
6 Birthday, sir.

7 CAPT BOPP: Thank you, Sean.

8 MEMBER DUFFY: All right. So I'm  
9 going to turn it over to Captain Michael Miller,  
10 who is the president of the Bar Pilots. He's  
11 also not only a board member but the chairman of  
12 my coalition. So we work together a lot.  
13 Sometimes we even talk alike, but I will turn it  
14 over to Captain Miller.

15 So the Bar Pilots bring vessels from  
16 the sea buoy to Pilottown, and Southwest Pass has  
17 been in the news and discussed a lot for the  
18 challenges this year related to high water,  
19 dredging, record amount of shoaling, some of the  
20 things you heard Colonel Murphy discuss. Captain  
21 Miller and Captain Bopp on that lower end have to  
22 deal with all those challenges. With that, I'll

1 turn it over to my chairman, Captain Michael  
2 Miller.

3 CAPT MILLER: Thank you Sean, and  
4 thank y'all for having us today. I appreciate  
5 it. A lot of familiar faces in the crowd; it's  
6 good to see everybody and I appreciate the time.  
7 I'm going to kind of focus on what I call a  
8 dynamic port system, a dynamic river, a dynamic  
9 channel and how that relates to precision  
10 navigation and how they go hand in hand.

11 And some of the things in my slides,  
12 I just have a few slides, you've already seen  
13 today. But I think it's worth repeating because  
14 of what we have here. Just on the dynamic types  
15 of ships we have. This is just a breakdown of  
16 the Bar Pilots. We handle every ship, every  
17 foreign ship that comes in and out of the river.  
18 This is the breakdown of the different types of  
19 ships.

20 As you can see, bulk carriers and  
21 tankers, so the dry and the wet cargo make up  
22 primarily most of our business. Container ships

1 are in there as well. But what we have seen is  
2 the size, and we've talked about this earlier,  
3 the size of the container ships now are common to  
4 be over 1,000 feet long, 140 feet wide, bulk  
5 carriers, post-Panamax and we're even seeing some  
6 Baby Capes, which are 1,100 to 1,200 feet long,  
7 150-160 feet wide, all wanting to load as max  
8 draft as they can.

9 This has been a challenging year. We  
10 had less than project dimensions, project transit  
11 drafts from January through August. So that's a  
12 record for us as well. Again, I'm not going to  
13 repeat too much here. Y'all know what these  
14 slides are. We've talked about the five ports.  
15 That's very dynamic. I don't think there's  
16 another river system in the world that has five  
17 ports that it serves.

18 Number one, number seven, eleven and  
19 thirteen are right here. Throw Lake Charles in  
20 there. It is the most -- the biggest port  
21 complex probably in the world, if not the western  
22 hemisphere, so far as tonnage and volume.

1                   This is one of my favorite slides.  
2                   This is the very end of Southwest Pass as it  
3                   exits into the Gulf of Mexico, which is again the  
4                   area of the Bar Pilots service. It's dynamic in  
5                   the sense that we deal with river conditions and  
6                   sea conditions all at the same time. So we  
7                   transit from a river condition to a sea condition  
8                   or from a sea condition to a river condition,  
9                   depending on if we're outbound or inbound.

10                   Off on the left-hand corner you could  
11                   see ships that are sitting in the Southwest Pass,  
12                   tankers waiting to enter the channel. This year  
13                   again has been record. We talked about this. I'm  
14                   not going to go into too much detail, but already  
15                   we've spent \$244 million; average a year is about  
16                   155, and we're only funded for 85 to 95 every  
17                   year. So we have to constantly go fight for  
18                   money and emergency dredging and call outs of the  
19                   Corps dredges.

20                   We have already dredged 67 million  
21                   cubic yards. 42 of that is from Venice, which is  
22                   about Mile 10 above Head of Passes to the Gulf,

1 which is about a 30 mile stretch. That is  
2 almost, almost two and a half times the five-year  
3 average. Thankfully though, a lot of that  
4 material is used for beneficial use, we're  
5 rebuilding the coast, which is not a well-known  
6 fact.

7 But we are trying to make that a  
8 well-known fact because the state has written off  
9 the delta, so far as saving it. Maybe it can't  
10 be saved, but we're going to try, at least to  
11 stabilize the banks in Southwest Pass so that we  
12 can deepen to 50 feet and keep the shoaling to a  
13 minimum.

14 This is just another slide. This is  
15 Head of Passes. This is kind of where the Bar  
16 Pilots, it is where the Bar Pilots and Crescent  
17 Pilots hand off. So we come out of Southwest  
18 Pass into the main part of the river and hand off  
19 to the Crescent Pilots. As you see in the bottom  
20 of the picture, that is a cutterhead dredge.  
21 That is an extremely tricky place for a  
22 cutterhead dredge to be because of the turn in



1 the Southwest Pass.

2 But it gives you a perspective of the  
3 traffic volumes and what we're dealing with  
4 almost all year this year. We've been dredging,  
5 I think, for eight months, nine months Sean? And  
6 we're not done. That's all my slides.

7 Now I will -- I'll go back to say  
8 Steve talked a little bit about what's changed in  
9 35. I've been around 35 years, not quite as long  
10 as Steve. But when I started, you know, having a  
11 gyro in front of the -- a gyro repeater in front  
12 of the quartermaster that made a clicking sound  
13 so you could tell how fast the ship was swinging  
14 in the fog was a big deal.

15 And then we got a rate of turn  
16 indicator. And then we got GPS, and then we got  
17 ECDIS, and then we got AIS. Then we got VTS, and  
18 now we have portable laptops and now we're  
19 talking about precision navigation and multibeam  
20 surveying that could be downloaded to the pilot  
21 while he's on the ship.

22 This is precision navigation as it's

1 changing in a very dynamic port system in a very  
2 dynamic river with a very dynamic bottom. You  
3 know, we're moving this year, again we only  
4 touched the ships one time. So we're moving  
5 12,000 vessels, between 11 and 12 thousand  
6 vessels in and out of Southwest Pass every year.

7 Combine that with five to seven  
8 dredges. It's a short area, but it's a very  
9 congested area, very tight area. They're dealing  
10 up river with the amount of traffic and the  
11 bridges and the air gap sensors and the current  
12 meters, so they can tell whether or not these  
13 ships are going to hold any anchorages. All this  
14 is very important, and it's a matter of how we're  
15 going to fund it.

16 For us as a pilot, when I look at  
17 this, that's not the ship's responsibility to  
18 fund. That should be coming from either Harbor  
19 Maintenance Tax Funds or from the federal  
20 government and it's not, as Steve said, it's not  
21 a big price tag. When the big picture, when you  
22 look at the whole U.S., if we can fund the PORTS

1 system for precision navigation, which gives the  
2 pilot, the mariner, anybody, whether it's a tow  
3 boat operator or a steamboat operator, whoever it  
4 may be, a pilot.

5 If it gives you real-time information  
6 to help you do your job safer, more efficiently  
7 and we can load these deeper ships, bigger ships  
8 through deeper cargoes, which will benefit the  
9 Port of New Orleans, the Port of Plaquemines, the  
10 Port of South Louisiana, the Port of Baton Rouge,  
11 wherever it may be, then we really need to look  
12 into investment, because it's an investment -- if  
13 the private companies are investing in the  
14 infrastructure, which is what they're doing by  
15 building bigger facilities, expanding their  
16 container crane capacity, expanding their grain  
17 docks to accommodate bigger ships and more cargo,  
18 then we need to do our part to provide the  
19 infrastructure for the mariner to make sure we  
20 can service those ports and that infrastructure,  
21 the physical infrastructure with precision  
22 navigation.

1 I'm using less than eight minutes, but  
2 that's all I got. Thank you.

3 (Applause.)

4 CAPT KRETOVIC: Thank you, Captains,  
5 for the unique perspective that each of you bring  
6 to this panel. Next, we're going to shift gears  
7 a little bit and we're going to hear from some of  
8 the innovative technologies that are happening at  
9 NOAA. The first speaker will be Darren Wright,  
10 who is the Marine Program Lead for the National  
11 Weather Service.

12 A lot of you in the room in the back  
13 may recognize Darren from his previous role with  
14 the PORTS program, and with that I'm going to  
15 turn it over to Darren.

16 MR. WRIGHT: Well thanks, Liz. You  
17 just took my first line. So yeah, again Darren  
18 Wright. I'm the National Marine Program Leader  
19 for the National Weather Service and yeah,  
20 looking around the room I see a lot of familiar  
21 faces, and most of you know me as the previous  
22 PORTS program manager.

1 I've got a slide here of the new guy.  
2 His name's Chris DiVeglio. Unfortunately, he  
3 couldn't make it here today, but he is the new  
4 PORTS manager and I encourage you to get to know  
5 him. I personally was on the panel that helped  
6 select him, and he's going to be a great fit for  
7 this position. I felt like I was sending a kid  
8 off to college, handing off the PORTS program to  
9 him. I'm a huge supporter of the PORTS program  
10 now and will always be.

11 This picture here was a precision  
12 navigation trip to Savannah, where we got to meet  
13 with the port, getting their requirements for  
14 precision navigation. This was a ship that was  
15 going down the river and it's literally, you  
16 know, 50 yards away. It was just amazing.

17 So I'm going to tell you a little bit  
18 about the Marine Program in the Weather Service.  
19 There's 11 programs in the Weather Service. You  
20 can see the list there. I'm responsible for all  
21 the marine and coastal products within the  
22 Weather Service. So anything that's

1 marine-related that happens I get a phone call.

2 El Faro was one of those.

3           So this is a plot of the U.S. with all  
4 of the Weather Forecast offices around the  
5 country. There's 122 Weather Forecast offices.  
6 The ones that are in red are Marine Weather  
7 Forecast Offices, and folks that I deal with on  
8 almost a daily basis. So the marine program is  
9 responsible. Let's see if I can use this  
10 pointer, for all the coastal zones right along  
11 the coast, the offshore areas, and the open ocean  
12 forecasts.

13           So OPC is the Ocean Prediction Center.  
14 They're in College Park, Maryland. They're  
15 responsible for the Northern Atlantic and  
16 Pacific. We've got National Hurricane Centers'  
17 Tropical Application Forecast Branch is  
18 responsible for the Southern Atlantic and then  
19 the Southeast Pacific, and then our Hawaii  
20 Forecast office is responsible for that area  
21 around Hawaii.

22           So now into the good stuff. So I

1 think this topic has been brought up at the HSRP  
2 several times. The Tampa Bay Marine Channel  
3 Forecast. This was a project that the National  
4 Weather Service and NOS worked together on,  
5 because the pilots were interested in getting,  
6 you know, all the information from NOAA in one  
7 location instead of having to go to three, four,  
8 five different websites.

9 So we partnered up and put together a  
10 product down in Tampa where you can click on any  
11 of those red dots, and you can get water levels,  
12 currents, visibility, waves. So we kind of  
13 combined everything together. The Weather  
14 Service actually developed a new product. We had  
15 visibility forecasts around the country, but  
16 Tampa office developed a probability of  
17 visibility product that will give you a  
18 probability of what your visibility is going to  
19 be within a nautical mile. That was kind of the  
20 parameter we got from the pilots that hey, we  
21 want to know what the probability, the visibility  
22 is going to be a nautical mile or less.

1           So that's what this product puts out,  
2           and this graph over here shows you what the  
3           visibility is going to be up the channel, and  
4           then the graphic is color-coded based on what the  
5           chances are. So this is showing you that pretty  
6           much there's a 50-50 chance that your visibility  
7           is going to be a nautical mile or less.

8           So this is something that, you know,  
9           the pilots and anybody else using the waterways  
10          really needs to pay attention to. So as the  
11          National Marine Program Leader in the Weather  
12          Service, you know, we only offer this in Tampa.  
13          The pilots down there love this. We've gotten  
14          great feedback from them.

15          So now it's my job to expand that  
16          across the nation. So we have a product called  
17          the National Blended Model. It's a model that  
18          has the capability of developing probability of  
19          different types of parameters, visibility being  
20          one of them. So I got my national modeling folks  
21          talking with the modelers who helped develop  
22          this, and within three minutes they were talking



1 model speak that was, you know, way over my head.

2 But it was great. They both got  
3 energized from the conversation, and now the  
4 National Blended Model folks are intending to  
5 incorporate this capability in their next  
6 version, which should be coming out next year.  
7 So once that is out, then we can expand this  
8 capability elsewhere.

9 And so this next product is a present  
10 for Captain Miller here. So I don't think the  
11 Weather Service has done a great job of talking  
12 about this product here on the right. It's a  
13 Nearshore Wave Prediction System. So we have the  
14 ability to doing a wave forecast out 144 hours  
15 from anywhere along the coast, and that URL right  
16 there will take you to a viewer of the United  
17 States. You can zoom into whatever area you  
18 want. You can get a wave forecast out six days,  
19 which is, which is really great.

20 Now I don't know how good a job we've  
21 been doing of advertising that, but the folks who  
22 developed that model actually took this to the

1 next level. When I first saw this, I immediately  
2 thought of my pilot, my pilot friends, is that  
3 you can get a wave forecast along a certain  
4 transect. So this transect here is -- actually,  
5 this is an old one. I need you to update this  
6 photo, but I actually got them to do one right at  
7 the mouth of the Mississippi, right outside the  
8 Southwest Pass.

9 But what this is if a forecast of that  
10 transect out to six days, 144 hours. So to say  
11 they have -- they're scheduled to meet a ship  
12 tomorrow at four o'clock, they can look at this  
13 forecast and find out what the wave conditions  
14 are going to be when they're boarding the vessel  
15 at that exact location where they're boarding the  
16 vessel. So this has kind of taken that wave  
17 forecast to another level.

18 This is showing what the significant  
19 wave height is. This isn't a great one. I had  
20 to find one that has a little bit more wave  
21 action going on. But between now and when I put  
22 this presentation together, there wasn't anything

1 exciting going on. But you've also got, you've  
2 got wind speed and then you've got peak wave  
3 direction. So this is a great product we're  
4 trying out. I'm going to send Captain Miller the  
5 URL for the Southwest Pass and get his pilots to  
6 pick it apart, which is exactly what we want.

7           And we've got a couple of changes.  
8 I'm running out of time. These are a couple of  
9 changes coming up in the Marine Program. We are  
10 reformatting our text products to a  
11 what-where-when, to try to be a little bit more  
12 concise. So folks can know exactly where to get  
13 the information they need in this what-where-when  
14 format. We're doing this across the Weather  
15 Service. It's the Marine's turn coming in  
16 December.

17           Likewise, you know, the Weather  
18 Service has been accused of having too many  
19 products. I know that's a shocker. But Marine  
20 is doing our part. We're actually going to be  
21 consolidated small craft advisories, all the  
22 different flavors of it, into a single small

1 craft advisory. Then in that what bullet on the  
2 previous slide I showed you is where it will be,  
3 you know, a little bit more descriptive of what  
4 flavor of small craft advisory it is.

5 And then finally mariners, if you have  
6 not been to the Weather Service or  
7 weather.gov/marine website, the one on the left  
8 is what it looks like right now. It's very old  
9 and antiquated, but it's got -- it's chock-full  
10 of great information. So I recommend you go  
11 check it out. Starting September 17th, it's  
12 going to look like the one on the right.

13 So we're developing a new website.  
14 It's the same information. We just kind of  
15 retooled it and reorganized it so it's a little  
16 bit easier to navigate. But that is it for me.

17 (Applause.)

18 CAPT KRETOVIC: Thank you, Darren.  
19 Many of you in the local area may know that we  
20 contracted with a company called David Evans and  
21 Associates to conduct a full coverage multibeam  
22 survey from null to null, bank to bank of the

1 Mississippi River, from Baton Rouge to the Heads  
2 of Passes. This has really been a monumental  
3 undertaking, and I don't believe that you're 100  
4 complete; is that right Jon? You have a little,  
5 just a little bit left, yeah.

6 MR. DASLER: About that.

7 CAPT KRETOVIC: But there's just a  
8 little bit left to do and with that, we also -- I  
9 guess in response to the survey, we now need to  
10 make a product. So in our Marine Chart Division  
11 program, we have here today to talk about HD  
12 mapping is Craig Winn, who is the portfolio  
13 manager for HD charts, high definition charts,  
14 and he's going to show you what a little bit of  
15 that preliminary data is going to potentially  
16 look like. So I'm going to turn it over to Craig  
17 Winn. Thank you.

18 MR. WINN: Hi, thanks Liz, Captain  
19 Kretovic. I just wanted to say thank you to the  
20 Committee for letting me present. So I'll start  
21 my presentation off with setting the stage a  
22 little. At the end of last year, I was in a

1 meeting with Admiral Smith, Captain Brennan and  
2 Captain Kretovic, and we were talking about this  
3 HD chart concept.

4 I remember very -- soliciting, you  
5 know, an unsolicited opinion I provided was that  
6 you need someone to make this their job every day  
7 until we can realize these new charts. Little  
8 did I know at that time I was volunteering to be  
9 that person. So shortly after everything settled  
10 out at the beginning of the year, I was moved  
11 into the HD charting portfolio.

12 So in the Marine Chart Division, this  
13 is new for us, you know. We have several drivers  
14 that we see as being things that are pushing us  
15 in this direction. One is -- and it's already  
16 been mentioned, but it's the use of deeper draft  
17 vessels that seems to be growing. For us  
18 internally, it's the realization of more advanced  
19 ENC, electronic navigation chart production  
20 systems.

21 We have the increased availability of  
22 high quality data, and lastly it's our perception

1 that there's a consumer desire for data rich  
2 products. So that led us to start investigating  
3 the concept of an HD chart. I have heard HD  
4 means one of two things: it's either high  
5 density or high definition, depending on who you  
6 talk to.

7 So I've tried to use the term HD  
8 whenever I'm referring to it. But really the  
9 root definition is that it's going to be more  
10 bathymetric data in your electronic navigational  
11 chart. That's what we're using as a definition.  
12 So just to go over a little bit about some of the  
13 specifications for these products is that we  
14 build -- ENC is using S-57, which is the IHO  
15 standard for electronic navigational charts. I  
16 know John Kelley referenced S-100, and we're  
17 certainly looking towards that in the future.

18 But for us, these ENCs are built to  
19 what we've always built our ENCs to, which is  
20 S-57. They'll be validated against IHO S-58,  
21 which is essentially a fancy way of saying that  
22 the IHO has developed a set of tests and

1 warnings that an ENC has to pass, to make sure it  
2 operates appropriately and in ECDIS. So we'll be  
3 -- it will conform to that as well.

4           They will be 1 to 5,000 in scale.  
5 They will be built to our rescheme. That's a  
6 separate topic that I think would be worthwhile  
7 to have at one of these forthcoming HSRP  
8 meetings. But we are in the process of  
9 rescheming our ENC suite, consolidating scales  
10 and make the scales more uniform. So these Band  
11 6 ENCs are being built with an eye to that  
12 project, and they will conform to that rescheme  
13 effort.

14           These will be an official NOAA chart  
15 product, meaning -- and I want to go back a  
16 little bit. What prompted this project too was  
17 the LA-Long Beach project out -- precision  
18 navigation project out that's being going on for  
19 a couple of years out there. Those are also  
20 built to S-57 as well, but the key difference is  
21 they're a subset of features and objects.  
22 They're S-57.



1                   Ours will be a fully-fledged ENC,  
2                   meaning that it will not only have the  
3                   bathymetric data, but it will also have those  
4                   Group 2 features such as aids to navigation, land  
5                   areas, everything that someone would need to use  
6                   it as a full-fledged ENC.

7                   So we are working with three main  
8                   initial test areas. Those are New York,  
9                   Mississippi River and the ports of Long Beach and  
10                  Los Angeles. In this initial phase, we focused  
11                  on the Mississippi River and the ports of LA and  
12                  Long Beach. We'll be bringing up New York right  
13                  behind these.

14                  I want to say that the data we're  
15                  using for Mississippi River is preliminary data.  
16                  We worked with our Hydrographic Surveys Division  
17                  to get some of the data from the ongoing survey,  
18                  and we brought that in. So what you see, the  
19                  visual you will see is based on that survey, but  
20                  we really can't build these Mississippi River  
21                  ENCs until that data is finalized and put through  
22                  the proper vetting process.

1           The Ports of Long Beach and LA we will  
2 start working on, and that is with data that's  
3 already been put through that process. So they  
4 will probably be the first ones that once  
5 approved will come online. So for the  
6 Mississippi River, this is just a subset of the  
7 ENC cells that we're looking to build, and I will  
8 show you one of these. We've built four of these  
9 already.

10           I want to stress that for us, as I  
11 said, this is new. So it's not only the concept  
12 is new; we're also using this as an opportunity  
13 to improve how we do our work, and one of those  
14 is to bring more automation into our process.  
15 You know, I've been doing this for about 20 years  
16 and we do stuff very similar to how we did it  
17 when I first started.

18           But with these, we've actually used  
19 existing tools to automate the process so that  
20 the compilation process is 100% automated. We  
21 then bring in a cartographic reviewer to review  
22 the work. It cuts down their time and we also

1 are using some automated processes when it comes  
2 to validation or testing process I mentioned,  
3 that allows him to focus on that. It cuts down  
4 the errors and warning significantly before it  
5 even gets to the reviewer, so that we can spin  
6 these up a lot faster.

7 Because our view is that we were  
8 initially building these with data we're getting,  
9 but that in time as data access improves, we'll  
10 hopefully be able to spin these up faster to meet  
11 consumer need. Oh thanks.

12 So here's a visual of what we're  
13 talking about, and just to give you some concept  
14 of where this is, that bridge is the Sunshine  
15 Bridge. It was kind of arbitrary of picking this  
16 area. I did feel that this would be a good  
17 example to start with, simply because I'm not  
18 saying that it's not dynamic here, but our view  
19 was that it's less dynamic than the mouth of the  
20 Mississippi which we're going to get to, but we  
21 feel that may bring in some challenges that we  
22 have to explore and address at that time.

1           So I'm going to close now. I do want  
2 to state that, you know, this is initial -- these  
3 are the -- it's at the initial phase of this  
4 project. So for us, it's about learning about  
5 these products because to our knowledge, there's  
6 none of them that are commercially or that are  
7 available in international hydrographic offices.  
8 We do know that a lot of hydrographic offices are  
9 working on them.

10           But I welcome any feedback. I'm going  
11 to be here all week, so if you're interested in  
12 this topic or if you want more information, or if  
13 you can give us some information on how to  
14 proceed, I would welcome that. So once again,  
15 thank you for your time.

16           (Applause.)

17           MEMBER DUFFY: Thank you. So Dr.  
18 Kelley, I'm going to come to explain one thing  
19 that I think you'll appreciate. So as we've  
20 looked at this higher river and this record year,  
21 and I've talked to people about increased  
22 precipitation, they always tell me oh well, they

1 get the weather wrong, blah blah blah.

2 But what I tell them is what they're  
3 telling you is it's going to rain more. They're  
4 not telling you it's raining more in your  
5 backyard or your neighbor's backyard, but that it  
6 is going to rain more. And that we live in this  
7 world where cups of coffee have to have hot  
8 labeled on them, so that the information is very  
9 important and we appreciate our meteorologists.

10 So I had a question and I'm  
11 going to start with my old friend Darren Wright.  
12 So I remember going to an opening ceremony in  
13 Mobile on a visibility sensor that a lot of  
14 people were calling a fog sensor. Now I see the  
15 discussion related to Tampa. Is the one in  
16 Mobile, and what I remembered most specifically  
17 was that at that time, it had about a 30 mile  
18 range. Have there been technology advancements?  
19 What's the -- can you explain the difference?

20 MR. WRIGHT: Yeah. So the difference  
21 is the visibility sensor in Mobile is part of the  
22 PORTS System. It's actually an observation. So

1 it's different than what you might think for a  
2 sensor, a visibility sensor because it's actually  
3 a point measurement. It's not actually looking  
4 out. So it's ideal to have several of these, and  
5 Mobile I believe has two now, and I think they're  
6 bucking for a third one.

7 What I was proposing is actually a fog  
8 forecast. So the Weather Service puts out a fog  
9 forecast. It will hopefully tell you what the  
10 fog is going to be, you know, down the road like  
11 tomorrow if they're visiting a ship.

12 MEMBER DUFFY: Okay thank you, and  
13 I'll say that I have a question for the pilots,  
14 but that I think that's very important, and  
15 Captain Bopp I believe touched on it, that we had  
16 this crazy period of fog in January and February,  
17 like 21 days of blackout fog where I mean  
18 typically, fog was like gone by nine, ten o'clock  
19 the next morning and that wasn't the case.

20 So dredging operations, vessel  
21 movements, everything was shut down. So as we  
22 look to incorporate more in technology, we have

1 the right users here to discuss those  
2 advancements. I have a question, and I'll be  
3 very quick. But this came through on my trusty  
4 Apple Watch. So I thought it was just telling me  
5 to breathe, and I seem to remember that.

6 But the question was related to a  
7 pilot perspective on a need for high resolution,  
8 large-scale maps of shoreside infrastructure. My  
9 understanding would probably be for Captain  
10 Miller in the Bar Pilots area that's maybe not so  
11 important as it is to the other two. But if you  
12 can, each of you chime in on that, I'd  
13 appreciate. Need for high resolution, large-scale  
14 maps of shoreside infrastructure. So docks,  
15 terminals, some of the obstructions along the  
16 way.

17 CAPT HATHORN: As far as the mapping,  
18 I don't think, you know, there's areas of the  
19 river, the whole river hasn't been redone in  
20 decades and we were just looking for fresh  
21 information. As far as docks, it could be quite  
22 valuable when we start looking at going to 50

1 feet draft. You're going to have areas where the  
2 docks are going to be -- have to do dredging to  
3 benefit any of that.

4 So we -- in fact, last week in Baton  
5 Rouge they had to kick a ship off because there  
6 wasn't enough water to get alongside the dock  
7 right now. So all those things will be quite  
8 valuable I feel.

9 CAPT BOPP: First, I want to comment  
10 on the fog probability. I think it's one of the  
11 greatest tools I've seen in a long, long time,  
12 and our PPU, Ryan Scully and MRTIS, we have and  
13 we have such a long river that to have that at  
14 your fingertips, because we don't want to  
15 prematurely anchor a ship due to restrictive  
16 visibility. So and you can almost set your watch  
17 to it, and it tells you the wind, the  
18 temperature, the humidity and when they collide,  
19 you know it's going to fog. We have like five  
20 different spots, stations that you can, you can  
21 see. So I love that tool.

22 As far as docks and high density maps,



1 I think for a navigator sometimes it can be too  
2 dense. But I think as long as you can clear it  
3 up. Like Steve said, when we go to 50 feet, you  
4 need to know where the bottom or alongside berths  
5 are, and even in the Port of New Orleans they  
6 have a problem because their face. You can't dig  
7 too deep, because I have problems right now.

8 We have container ships coming in  
9 today that are just touching the mud, and they've  
10 got to kind of bulldoze them in alongside the  
11 dock. So I think all of this technology is  
12 getting more and more at ease for the navigator  
13 to use.

14 MEMBER DUFFY: Thank you, Captains.  
15 Chairman Saade, I'll turn it over to you and the  
16 Panel.

17 CHAIR SAADE: Thanks Sean, and thanks  
18 everyone on the panel. So we're going to open it  
19 up to questions from the Panel. I'm going to  
20 start with Shep.

21 RDML SMITH: Thanks, Ed. I had a  
22 question for Captain Bopp, and that was you

1 mentioned that you bring in the cruise ships even  
2 in low visibility with extended protocols for  
3 navigation systems and you use different tools.

4 Can you describe a little bit what changes and  
5 protocols and technology you use in low  
6 visibility?

7 CAPT BOPP: We have been talking  
8 about this for a really, really long time and  
9 historically, we've always have done it. As a  
10 pilot, you get on a ship, on a foreign ship.  
11 You're the only American on the ship and when you  
12 have multiple plates in the air, you're looking  
13 at the radar, you're dealing with the  
14 quartermaster giving rudder commands. You're  
15 making sure you don't leave rudder on and you're  
16 watching a whole lot of things.

17 So when 9-1-1 happened, way back then  
18 the security was so tight that we were having to  
19 report to VTS, which is like an air traffic  
20 controller here, every hour because they were  
21 really concerned about, you know, the security  
22 threat. And at that point, I started realizing

1 me as a pilot on the bridges of the ship have a  
2 great, always the cruise ships have excellent  
3 equipment, excellent, very professional bridge  
4 crew.

5 I felt like there was too many things  
6 that I was trying to manage. So at that point,  
7 we're sort of talking to the cruise industry  
8 saying that we're going 90 miles in dense fog,  
9 and the pilot needs another asset, which was  
10 another pilot.

11 So now what we've done we've engaged  
12 a two pilot system, and we've improved on it  
13 along the way. We just had a seminar, Captain  
14 Sal was there, and we invited all the cruise  
15 industry to actually come in with the pilots that  
16 actually do it, and criticize in the spirit of  
17 improving. So what are we doing right, what are  
18 we doing wrong. And it's been very, very  
19 successful to date, so we're very proud of what  
20 we've done.

21 MEMBER DUFFY: Any other questions  
22 from the Panel? Ed.

1                   MEMBER KELLY: As always, Ed Kelly,  
2 New York. As always, I question the money.  
3 There's a lot of things that can be done. Who is  
4 the private partner in funding your PORTS  
5 program?

6                   CAPT MILLER: Yeah. Initially, the  
7 Port of New Orleans put up some money for air gap  
8 sensor, but right now the foreign flagships are  
9 paying for it, which I don't think is right.

10                  MEMBER KELLY: How are the foreign  
11 flagships paying for it?

12                  CAPT MILLER: Through a surcharge  
13 through our tariff.

14                  MEMBER KELLY: Oh, so you put it on  
15 your tariff?

16                  CAPT MILLER: Yeah.

17                  MEMBER KELLY: Okay.

18                  CAPT MILLER: And I think that is  
19 absolutely wrong. They're already paying a tax  
20 for channel maintenance, and I would consider  
21 this to be part of maintenance.

22                  MEMBER KELLY: Technically that's

1 probably illegal under the trade treaties, but  
2 you know, we won't go there right now. But what  
3 I'm saying is we're hearing that, and we hear  
4 this all over the place, that there is a need.  
5 There's new technology. It's very welcome, it  
6 works, we want it and the obstacle continues to  
7 be the funding.

8           So I was just wondering how you folks  
9 are dealing with that. I know Sean is and we  
10 have worked through several organizations to push  
11 for federal funding for this because it is  
12 integral to safety, the economy, et cetera, ship  
13 disaster and unnecessary ship disaster in a major  
14 channel in a major port has a crippling effect on  
15 the U.S. economy, so we're really concerned about  
16 that.

17           One other thing I might add with this  
18 is to what degree is there collaboration with  
19 other interested parties in the port, i.e. most  
20 notably the Corps of Engineers? The reason I'm  
21 asking that is because we up in New York, New  
22 Jersey completed a 50 foot channel, but we've got

1 very restricted channels.

2           As we've brought in the larger  
3 vessels, the 14 and 18 thousand TEU container  
4 ships primarily, we're running into issues that  
5 the pilots are really having a difficult physical  
6 time remaining in very narrow channels. When you  
7 take out now the 162 foot beams on these things,  
8 1,200 foot lengths, it's -- we have an 800 foot  
9 channel running through Kill Van Kull, but we've  
10 created no meet/no pass restrictions on that  
11 because by the time you take the beam of the ship  
12 and you add tug space on either side, and you  
13 know, any crabbing really just makes that beam  
14 requirement, you know, can be double or triple.

15           So are you running into operating  
16 restrictions on that type of thing because of the  
17 larger vessels? We're running into mandatory no  
18 meet/no pass scenarios right now.

19           CAPT MILLER: We haven't, on the Bar  
20 Channel and Southwest Pass, we haven't put  
21 anything mandatory in yet. Pilots regulate that  
22 themselves. They may wait on a ship outside, may

1 board it to see if we can wait an hour for a ship  
2 to cross out. They see two, like I said, say two  
3 Suezmax tankers that are deeply loaded or  
4 Post-Panamax or a cruise ship, whatever it may  
5 be.

6 Right now we're doing it ourselves,  
7 but as we saw this year with compression of work  
8 in a very short period of time, and seven dredges  
9 working and shoal conditions, it's -- and these  
10 bigger ships, what we saw this year was a lot of  
11 ships hitting, more ships than we've ever had  
12 touch bottom, which we don't like to talk too  
13 much about.

14 But we've seen it more because of  
15 displacement. Ships are bigger, they're wider,  
16 they're deeper, you know. They've got more depth  
17 to them. So it is a concern. It's something we  
18 look at. But we do a lot of modeling. As a  
19 matter of fact, we're modeling right now an LNG  
20 terminal. We don't have one yet, but they're  
21 coming. We've done two, I think two of them  
22 right?

1 MALE PARTICIPANT: Yeah.

2 CAPT MILLER: Two modelings. I know  
3 NOBRA does some in the docks up river. So you  
4 know, we look at it ahead of time.

5 MEMBER KELLY: Our concerns also  
6 include we've seen a big spike in engine failure  
7 as a result of the introduction of different  
8 fuels.

9 CAPT MILLER: Absolutely, absolutely.

10 MEMBER KELLY: And in these  
11 constricted areas, there is no room for error.  
12 Now when you had said the near shore, you know,  
13 high definition for piers and et cetera, we'd  
14 also be very interested in that because there's  
15 several sections in New York and New Jersey,  
16 particularly coming into some of the oil  
17 facilities up in Port Elizabeth, where we have --

18 If you ride the ships, it's  
19 terrifying. On some of these ships, as you're  
20 coming into the pier facilities, you cannot see  
21 water. All you can see is Bayonne or you can see  
22 Staten Island, you know, because the width of the



1 ships and how close some of that is. So if we  
2 would have really accurate high resolution on  
3 berths and land fixtures, you know, it would help  
4 to replace the reliance on buoys and things that  
5 right now a lot of the pilots can't even see  
6 anymore.

7 And what I'm -- and at the end of the  
8 day, I'm really looking for the double lines at  
9 the bottom. How do we pay for this? Because the  
10 price of not getting this stuff done is enormous  
11 right now.

12 CAPT BOPP: Well, you know, what  
13 you're talking about is displacement, and you  
14 think you're scared? We're scared too. No, I  
15 know exactly what you're talking about. But I've  
16 got to give it to New York. New York knows the  
17 economy, and New York raised the bridge for a  
18 billion dollars, because of the container trade.

19 So they need that container trade.  
20 It's what makes the world go round. So as far as  
21 the -- the beautiful part of our river, and the  
22 Southwest Pass is a very defined, very

1 restrictive waterway, after Southwest Pass, the  
2 rest of the river is fairly wide, where you can  
3 take a lot of displacement, because that's what  
4 the ships do.

5           It's displacing so much water, and he  
6 says that sometimes it's like being in a gutter.  
7 You shove the ship in a gutter and it ends up  
8 coming out the other end. But we have current.  
9 You have, you have wind and when you crab, you go  
10 sideways, and so you have to do it that way. But  
11 what I mentioned in my notes, that today, they're  
12 building ships that are -- can go to sea buoy to  
13 sea buoy fuel efficient.

14           So when they come into our river and  
15 they experience a little pressure in even turning  
16 with the rudder, the engine immediately on a  
17 computer starts reducing. When you're meeting a  
18 ship and you lose revolutions and you don't have  
19 any control, we're really scared about that. So  
20 --

21           MEMBER DUFFY: Ed, I wanted to touch  
22 real quickly on the first part of that question,

1 about the relationship with the Corps. As I  
2 speak for my board, I would say we have a great  
3 relationship with the Corps. We have a great  
4 relationship with the Coast Guard, Customs, NOAA,  
5 our government partners. A lot of times the  
6 problems that we have, it all comes back to the  
7 funding, and with the PORTS program, for instance  
8 there is a new air gap sensor that was approved,  
9 and at what appears at least to be a very minimal  
10 amount of operations and maintenance.

11 We're unable to find a partner at  
12 least so far, and as we work at it, and one of  
13 the things that's important with the bar pilots  
14 is that mechanism that the PORTS program, as  
15 Darren knows and Tim Osborn started here after  
16 Hurricane Katrina. So we identified the sensors  
17 and there was an agreement for I'll say the first  
18 six or seven years, that the Port of New Orleans  
19 put together with some partners.

20 As that started to fall apart because  
21 what you hear and I'm preaching to the choir, but  
22 there's a lot of people that use the PORTS

1 program. There's a lot of people that benefit  
2 from it, you know, in different places, and that  
3 it's all being funded. So the industry met with  
4 the pilots and went to the Pilot Fee Commission  
5 and worked to have that added as a way.

6 But one of the things that's key is  
7 that Baton Rouge I-10 bridge is over 200, right  
8 around 200 miles above Captain Miller's route.  
9 So there's a lot of challenges we see with  
10 funding and I'll stop. But the partnerships, we  
11 have great relationships with the Corps and our  
12 government partners.

13 MEMBER KELLY: Yeah, because one of  
14 the things, again bringing it back to our  
15 experience in New York and just, you know, best  
16 practice or whatever, when we finished our 50  
17 foot channel, it was well-designed on the biggest  
18 ship there ever would be, the Regina Maersk at  
19 about 9,500. So we no sooner got the 50 foot  
20 channel done when we started saying well, you  
21 know uh-oh, we've got 10,000 and we've got 14 and  
22 18 thousand TEU ships and we had to raise.

1           So we're now working with the Corps,  
2           which really ties in very closely, and we're  
3           really pleased that our NOAA navigation manager,  
4           Colleen Roche, is doing a great job. She was in  
5           all these meetings with us for simulations and  
6           also taking a look. So toward what needs to be  
7           done to fix the channels to accommodate the  
8           larger vessels and, you know, where it needs to  
9           be eased, bends need to be eased or, you know,  
10          depths need to be done or widened to allow  
11          turning or passing zones.

12                 So you know, we're very happy with  
13          what's working for us, and we see a good  
14          collaboration there and just point that out,  
15          perhaps just to make sure everybody's doing the  
16          same kind of thing, because it really paid off  
17          for us.

18                 CAPT MILLER: My comment here, we  
19          worked very closely with whatever government  
20          agencies there are, NOAA, the Corps, Coast Guard  
21          in dealing with these things, as the ships are  
22          getting wider and deeper. Again, billions of

1 dollars have been invested on the Mississippi  
2 River by private industry. The government, in my  
3 opinion, needs to do their share now.

4 I mean we talked the private partner.  
5 The private sector's already done their work, and  
6 what hasn't changed either is the infrastructure  
7 of our channel. It's the same channel. If we go  
8 deeper, it's still the same width. It's not  
9 going to be any wider. You can't make it any  
10 wider in the Southwest Pass. It's as wide as we  
11 can go. So we got it workable, we got -- well.

12 CHAIR SAADE: Sal.

13 MEMBER RASSELLO: Yes. A lot has been  
14 said about Precise Navigation and in our industry  
15 we are thinking to install visibility sensor,  
16 laser sensors to announce the safety of the  
17 navigation in close water. I think the high  
18 resolution of the pierside, you know, building  
19 and stuff like that is helping, but you still  
20 need some sensor to measure the distance from  
21 that building. It's not just on radar that there  
22 is a building there.

1                   You need to know how far the building  
2                   is and how fast you're approaching the building.  
3                   But anyway, I will take this opportunity to  
4                   invite everybody to give a round of applause to  
5                   the pilots associations of the Mississippi River.  
6                   I think you're doing a great job on these  
7                   important waterways, and we really, we really  
8                   appreciate what you do. Thank you very much.

9                   (Applause.)

10                  CHAIR SAADE: Thanks Sal. Any other  
11                  questions?

12                  Off mic comments.)

13                  CHAIR SAADE: Okay. I guess we're  
14                  going to finish up right on time, which is  
15                  notable by itself. So thanks everyone. It was  
16                  obviously very educational for us, and it was  
17                  really nice to have the follow-on about fog and  
18                  all the issues, because we talked a lot about  
19                  that the last time we all got together. So  
20                  appreciate it and one more round of applause  
21                  please.

22                  (Applause.)

1                   CHAIR SAADE:  So before we break,  
2                   Nicole LeBoeuf has an announcement to make, so if  
3                   we could keep everybody's attention for a little  
4                   bit.

5                   MS. LeBOEUF:  Thank you.  Just a very  
6                   quick point of order, to issue some  
7                   congratulations to folks here in the room and  
8                   some not in the room.  First, I'd like to  
9                   congratulate Chairman Ed Saade, Lindsay Gee,  
10                  Captain Ann McIntyre and Gary Thompson for their  
11                  reappointment to a second term on the HSRP.

12                  (Applause.)

13                  MS. LeBOEUF:  I would also like to  
14                  congratulate the two new HSRP members who will be  
15                  joining as members at the next meeting, Dr.  
16                  Qassim Abdullah and Dr. Nicole Elko.  I believe  
17                  Dr. Abdullah may be in the room.  Yes, welcome.

18                  (Applause.)

19                  MS. LeBOEUF:  All right, thank you  
20                  all.

21                  CHAIR SAADE:  Okay.  We're going to  
22                  break for an hour and a half.  We'll be back here



1 at 1:30. Thanks everyone.

2 (Whereupon, the above-entitled matter  
3 went off the record at 12:02 p.m. and resumed at  
4 1:32 p.m.)

5 CHAIR SAADE: We're going to go head  
6 and get started. I'm going to turn the  
7 stakeholder session over to Sean Duffy and Tim  
8 Osborn.

9 MR. BOLEDOVICH: I'll start off here  
10 with introductions of the first two speakers, and  
11 then Sean will introduce the others. But I'd  
12 like to just say that the panel here is very,  
13 very important, because it talks about the blue  
14 economy actually in terms of real numbers, real  
15 dollars and real people actually making this  
16 happen on the Mississippi River.

17 Dr. Jackie Pettway is the first that's  
18 going to be speaking here today, and she's the  
19 Chief of the Navigation Division for the U.S.  
20 Army Corps of Engineers Coastal and Hydraulics  
21 Laboratory, and or otherwise known as ERDC, the  
22 Engineering Research and Development Center.

1       What you don't know is she's a Mississippi State  
2       graduate, and she's going to be here this weekend  
3       as Mississippi State comes and invades New  
4       Orleans and plays in the Superdome against UL.  
5       If you don't know the experience, think cowbells  
6       and that says everything about Mississippi State.

7               Next to her is Captain Matt LaGarde,  
8       who spent 27 years of a career on the Mississippi  
9       River within the inland navigation towboat  
10      industry. He's been a captain for 24 years, and  
11      Matt and I became very, very good friends with  
12      his work now with Ingram Barge Lines, on his  
13      service within the U.S. Coast Guard's Towboat  
14      Safety Advisory Committee.

15             Matt was subcommittee chair dealing  
16      with the issue of electronic chart displays and  
17      their use on towboats and navigation for the  
18      inland waterways. He was a terrific advocate in  
19      advancing electronic navigation into the towboat  
20      and navigation industry, and he has a lot to  
21      share about that plus also the issues that the  
22      towboat industry faces in terms of bringing

1 product and cargo down the river in terms of the  
2 ports here. I'll turn it over to Sean for the  
3 other intros.

4 MEMBER DUFFY: Thank you, Tim. So I'd  
5 like to introduce Paul Aucoin. He's the  
6 president, deputy executive director of the Port  
7 of South Louisiana, so the largest tonnage port  
8 in the western hemisphere. Of great importance  
9 to me is that he's also a board member of the Big  
10 River Coalition. So we spend a lot of time  
11 together and work on dredging funding and river  
12 deepening. Paul's been there through a lot of  
13 the battles.

14 I'll segue over into my good friend  
15 Mike Steenhoek, who although he's not on my  
16 board, we work together a great deal. I'm not on  
17 his board either, but we know how to find each  
18 other and support each other. One of the things  
19 that I don't think many people know is the U.S.  
20 Soybean Board, with Mike's support, has  
21 contributed funding to deepen the river.

22 I won't take away any of his thunder,

1 but it's very important sort of a stakeholder  
2 engagement to help move us forward. And I'll  
3 finish up by my good friend Mr. Mark Wingate. So  
4 you know if you've heard me speak before I'd like  
5 to add a little humor. So Mark, you're my buddy  
6 you know.

7 But so in the spillway opening last  
8 year, Mark and I are going out on a little rail  
9 car, and you know I've never had a man in my mind  
10 when I get dressed for things. But this lady  
11 said, the lady says ooh, look at that guy he's  
12 got Corps supervisor shoes on. So every time I  
13 go to the Bonnet Carre Spillway now, I'm like no,  
14 I'm not wearing my dress shoes. I've got to get  
15 my work boots on, and I know he's got his  
16 supervisor's shoes on. So I hope you enjoyed  
17 that laugh with me, Mark. I think about you when  
18 I get dressed sometimes. Dr. Pettway.

19 Laughter.)

20 DR. PETTWAY: Okay. Good evening,  
21 good afternoon. Thank you for having me. I am  
22 with the Research and Development Center, which

1 supports the U.S. Army Corps of Engineers. But  
2 we also do joint work with other Department of  
3 Defense agencies, other federal agencies. We  
4 have a lot of partnerships with NOAA and Coast  
5 Guard and others, and I'll highlight a few of  
6 those during this presentation.

7 (Pause.)

8 DR. PETTWAY: Okay. So we listed a  
9 few of the ways that we use some of the data from  
10 NOAA and I apologize. I'm going to discuss it a  
11 little bit in more detail later so you don't have  
12 to try to read this. But hydrographic surveys  
13 utilizing the nautical charts, river forecast,  
14 using water levels, hurricane data. We use that  
15 for some of the models that we build, observed  
16 weather, fisheries and marine mammal information.

17 And so a lot of the things that we do  
18 is we develop tools that focus on navigation or  
19 flood and storm damage reduction, operation and  
20 maintenance, some design and emergency response  
21 type of tools. So one example of that, here you  
22 have one of our wave models. It's an ADCIRC

1 model. We're looking here at Sabine to  
2 Galveston, and we utilize the tide and current  
3 data to establish these models and to validate  
4 them to the data that's collected from NOAA.

5           Once those are validated to historical  
6 events, then we can move forward and look at  
7 predictive analysis of waves and water levels for  
8 future storms or looking at hurricane paths,  
9 things like that. We use this information to  
10 feed some of our decision support tools.

11           One such tool is our Coastal Hazards  
12 System, which is a web-based system that uses  
13 forecasting. It uses historical events. It will  
14 use synthetic storms and extreme events. So we  
15 run all of this information to get these waves  
16 and water levels, and we provide that through a  
17 web base. So if an event is coming through, if  
18 we haven't modeled that specific path of that  
19 storm, we can use probability and statistics to  
20 predict what it might do if it's a storm that's  
21 between something that we've already modeled.

22           We can use that information to provide

1 back waves, winds, water levels, ice responses,  
2 meteorological data, so the people that have to  
3 make the decisions of whether or not to close the  
4 sector gates for a storm surge or, you know, when  
5 to limit navigation, so they'll have some  
6 additional tools for making those decisions.

7 We have an entire group that does a  
8 lot of research using AIS data. Some of that is  
9 looking at developing the channel portfolio tool  
10 box. With that, we look at -- I heard discussion  
11 earlier. You have the approved navigation  
12 channel, but you have some preferred paths within  
13 that. So being able to look at those preferred  
14 paths and make some critical decisions.

15 If we have some shoaling in an area  
16 and we need to limit the depths for navigation,  
17 we can look at those tools and make decisions  
18 based on the highest trafficked areas and look at  
19 that impact to industry on that. Additional  
20 things that we can do with some of these tools,  
21 with AIS, we have a LOMA system that we're  
22 installing on a lot of the Corps of Engineers

1 logs, and we'll transmit NOAA data through that  
2 LOMA system to the industry as they're coming  
3 through the system.

4 An additional thing, there was a paper  
5 published, I believe it was 2018, a collaboration  
6 between Dr. Ned Mitchell and I believe it was  
7 Eric Wolfe with NOAA, and they were looking at  
8 utilizing that channel portfolio tool that Ned  
9 and his team developed, and using that to inform  
10 the PORT tool and the best locations to install  
11 those PORT tools. That publication was in the  
12 Journal of Ocean and Coastal Economics.

13 Other data that we use as we're  
14 looking at optimizing dredging, meeting the  
15 environmental windows and looking at with the  
16 fleets that's available, using scheduling around  
17 those environmental windows, using scheduling  
18 around availability, and looking at the overall  
19 operations research methods to determine more  
20 cost effective dredging strategies within the  
21 Corps of Engineers. We also work closely with  
22 the dredging industry on some of those as well.



1                   Recent work that we've done through  
2                   the Mississippi Valley Division was looking at  
3                   utilizing bathymetric data to monitor bedform  
4                   changes, and that becomes very relevant for us  
5                   because when we're developing these computer  
6                   models, we need to understand what the roughness  
7                   is in the -- of the bed and along the rivers.

8                   If we can do that looking at the  
9                   bathymetric data and infer what the bed roughness  
10                  is, then that improves the quality of our  
11                  numerical models in predicting the movement, the  
12                  velocities as well as the movement of debris and  
13                  sediment through the system.

14                  We are partners with several  
15                  organizations in the Joint Airborne Lidar  
16                  Bathymetry Technical Center of Expertise located  
17                  in Kiln, Mississippi. The director of that,  
18                  Jennifer Wozencraft, is actually a Coastal and  
19                  Hydraulics Laboratory employee. So through that  
20                  effort, USACE and NOAA collaborate on data  
21                  collection, processing and formats for final  
22                  products.

1                   We have a National Coastal Mapping  
2 Program data that NOAA has access to. We've done  
3 post-event surveys in the Great Lakes areas and  
4 along the coast. NOAA lidar data collection for  
5 charting uses some of this post-storm change  
6 analysis that we have, and some additional  
7 things. So when you're talking about the JALBTCX  
8 Center, some of the things that you can do when  
9 you're flying and getting that imagery is you  
10 know, of course, look at changes along the  
11 shoreline. But you can also pick up things as  
12 far as habitat and in some cases other  
13 environmental things like maybe some algal blooms  
14 or some other, some vegetation and looking at the  
15 progression of that and monitoring the impacts.

16                   We had an employee from the district  
17 who I believe previously worked with NOAA spend  
18 several months with us, and she was looking at  
19 the multi-spectral backscatter multifrequency  
20 bathymetry, and looking at how you can utilize  
21 that to do things like identify soft bottoms and  
22 hard bottoms, other objects that may be at the

1 bottom of the river or the water body, and  
2 transferring, translating that into decisions  
3 about navigation, you know, identifying those  
4 soft bottoms and increasing the level of  
5 confidence and navigability through those  
6 systems.

7           The information, the previous slide  
8 where it talked about looking at -- understanding  
9 the roughness of the bed, some of that work  
10 started when we were looking near Vicksburg,  
11 Mississippi, and we were doing bathymetric  
12 surveys. We looked at several swaths of that and  
13 we were able to develop some tools that could  
14 model the movement of the sediment.

15           So in some areas you get movement of  
16 sediment almost like waves moving along the bed  
17 of the river system. So we've developed some  
18 tools looking at that, utilizing that bathymetric  
19 data.

20           This is kind of just an overview. We  
21 have a ship simulator within the Coastal and  
22 Hydraulics Laboratory. Our ship simulator is

1 utilized for engineering and design. It's not a  
2 pilot training center. But what we do is as  
3 we're looking at changes to the navigation  
4 channel, we will invite the pilots from that area  
5 to come in and navigate through the system, and  
6 validate the current model and also give feedback  
7 on the proposed design.

8 Then the bottom slide, the bottom  
9 picture on that just talks about our regional  
10 sediment management. Again, some of the data  
11 that NOAA has, we can utilize that to look at the  
12 movement of that sediment through a regional  
13 system instead of just the localized movement.

14 Just a few examples of some of the  
15 things that we've done. We'll come in and use a  
16 lidar and multibeam scan, and when they dewater  
17 some of the locks and dams, we can use those to  
18 do comparisons from year to year or every couple  
19 of years, to see if we can determine any changes  
20 in those structures, as years have gone by with  
21 the use, maybe detecting some shifts in the gates  
22 or maybe some of the walls adjusted.

1           A couple of these are videos, but I  
2           don't know how to get it to play. So this --  
3           this is just an example of lidar in a multibeam  
4           survey and there's a fly-through where you can  
5           see how that data can be utilized to look at some  
6           of the structures and pick up a lot of the  
7           changes in the bed. My time is up.

8           So I'll just leave you with a few  
9           examples of where we think some future  
10          collaboration efforts are between the research  
11          and development center and NOAA.

12          MEMBER DUFFY: Thank you, Dr. Pettway.  
13          Mr. LaGarde, we'll get you queued up and we'll  
14          hold questions until after the panel. I think  
15          Tim covered that. Thank you.

16          MR. LAGARDE: How you doing? My  
17          name's Matt LaGarde, and I'm a captain on the  
18          Mississippi River, have been a number of years.  
19          I've been working shoreside for the last few. I  
20          started as a deckhand, kind of came up through  
21          the ranks. Most of my time has been inland, Ohio  
22          River, Illinois River, Mississippi. Even been up

1 some tributaries like the Yazoo in Arkansas and  
2 the Ouachita, and there's not many people you can  
3 find that have been up in those areas.

4 I'm going to talk a little bit about  
5 how our industry uses these tools, because I  
6 found that there was a little bit of a rub when  
7 we were working with the TSAC Subcommittee on  
8 trying to get electronic charts approved for use  
9 as navigation charts on the inland side of the  
10 house. There was some misunderstanding on where  
11 the way we use charts differed from the ECDIS  
12 users offshore.

13 One thing that we do do is we do  
14 operate in close quarters. There's places on the  
15 Intracoastal Canal where boats literally pass  
16 within feet of each other. On the Yazoo River, I  
17 remember the southbound traffic would have to  
18 stop and you always had to have the port side of  
19 the tow smooth and the northbound traffic would  
20 literally just slide up the side of your tow to  
21 get by it was so narrow.

22 So that's the type of, you know,

1 situations that we have. The channel conditions  
2 change constantly. So like after this extended  
3 high water, the water comes up at every year.  
4 When the water drops out in the summer, our bad  
5 spots move. We don't know where it's at.  
6 Somebody's got to go find it, and you always hope  
7 it's not going to be you that figures out which  
8 spot it's going to be.

9 It's usually going to be at Chico,  
10 it's going to be at Lake Providence. This year's  
11 it's Victoria seems to be our problem spot.  
12 We've got boats just stacked up and everyone is  
13 afraid to go up through there, especially anybody  
14 with a tank barge in tow because they don't want  
15 to be that guy.

16 Another thing that's different with  
17 barges, with the ECDIS systems offshore there was  
18 always you plot a set of wake points. You  
19 navigate from way point to wake point. If you  
20 got off a path, alarm buzzer goes off. Well, we  
21 don't work that way. I liken driving towboats  
22 down the Mississippi River to driving an 18

1 wheeler backwards down an icy road. These things  
2 just turn sideways and they slide until you get  
3 enough inertia to get them going in the other  
4 direction.

5 We often have to flank points on the  
6 Mississippi River. A lot of people think high  
7 water's bad. Sometimes high water's good,  
8 because it gives you more room to navigate. The  
9 only thing that doesn't get wider when the river  
10 comes up over the sand bars is the bridges.  
11 That's where we have our challenges.

12 Southbound, we have to get as close to  
13 the buoy line, as close to the sand bar as  
14 possible to be able to navigate or steer  
15 southbound around some of these bends on the  
16 Mississippi River. You just try not to slide out  
17 of the bend into the bank on the bottom side.  
18 The closer you get to the sand bar, you're  
19 better, which is opposite of where you operate  
20 offshore.

21 You try to stay as far away from the  
22 sand bar as possible. With us, it's like The



1 Price is Right, as close as you can without going  
2 over.

3 Upbound trips. You don't want to  
4 operate in the middle of the channel because  
5 you're going to be making two miles an hour. You  
6 want to try to get off towards the bar a little  
7 bit, off towards the dikes, try to maximize your  
8 time. You need to stay out of the eddies. If  
9 you get 80,000 tons of cargo into an eddy, you  
10 look over at the GPS and all of a sudden you're  
11 making seven miles an hour and you shouldn't be.

12 Well when it comes out of that rear  
13 eddy, everything is going down, so you have to  
14 moderate your speed. I remember the first time I  
15 got a GPS put on board a boat back in probably  
16 the late 90's-early 2000's, and I was so excited  
17 just to be able to tell if I was stopped in the  
18 fog, because the current's ripping by at five  
19 knots. You're trying to get to the bank, because  
20 we don't have anchorages and we don't carry  
21 anchorage. You have to find a parking spot.

22 So you try to get as close to the bank

1 as you can, figure out if you're stopped or not  
2 before you get to the bank, because if you get  
3 into the bank doing two or three miles an hour,  
4 it's not going to be pretty. Contrary to popular  
5 belief, all of the western rivers pretty much are  
6 pilotage waters. You know, the common sense  
7 would be you could give a guy a chart, tell him  
8 to go to Point A to Point B and he should be able  
9 to navigate from Point A to Point B.

10 We don't do that. Every guy that's  
11 loose on that Lower Mississippi River has had to  
12 master the craft of reading the river, to be able  
13 to look out there and tell where the water's  
14 breaking, what's the set off to buoy, you know,  
15 is there a hydraulic effect that I can only tell  
16 by looking at a log spinning in a circle up  
17 underneath the point.

18 That's -- during the daytime, that's,  
19 you know, optimal. At night time, it's hard to  
20 tell that stuff. You can flash that searchlight  
21 over there for a little bit and it will light up  
22 a little section of the river, but it's hard to

1 get a good grip on what's going on.

2 The tools we use in the wheelhouse.

3 So that's the other thing with the electronic  
4 charts. Now we've got all these lights in the  
5 wheelhouse and we depend on night vision to be  
6 able to see where we're going. So I remember  
7 running around the wheelhouse, sticking little  
8 pieces of tape over every light I could find, and  
9 then at two o'clock in the morning something goes  
10 beep, and you've got to figure out what that was,  
11 because there's a lot of electronics in the  
12 wheelhouse as you can see from the picture.

13 Traditional paper charts, the coastal  
14 charts. It's these big folding charts. The  
15 wheelhouses on these boats aren't that big.  
16 There's not a flat surface other than the settee  
17 back there that you can lay the chart out on.  
18 Weather forecast, river gages. It's all stuff  
19 that we reach out to, and right now that stuff's  
20 in multiple areas. We have to go to one site to  
21 get the river predictions, we have to go to one  
22 site to get the weather, we have to go to another

1 area to go get the tide, the tide tables.

2           Eventually, we want to see all that  
3 stuff kind of integrate itself into the  
4 electronic charts. Here's the benefits we have  
5 to the electronic charts. You never have the new  
6 guy now trying to figure out exactly where he's  
7 at, because the Mississippi River is not a scenic  
8 river. It's sand bars and trees, and after a  
9 while if you don't learn to tell the little  
10 knick-knack places to tell where you're at, there  
11 used to always be some new guy lost.

12           With the electronic AISs and the GPSs,  
13 now those guys know where they're at. They can  
14 tell you exactly where they're at. They can't  
15 lie to you about where they're at. So I'm coming  
16 up below Togo Point and there's a guy who says  
17 "I'm almost southbound, almost to The Steer," and  
18 I can look at the chart now and tell he's way  
19 away from The Steer.

20           I might be able to make the jump  
21 around the corner, depending on a known location  
22 where they've got guys at. The level of detail

1 is great. The one thing we do struggle with a  
2 little bit is our chart producers put out a  
3 chart, and a lot of times the names of points on  
4 the charts and the dots on the charts don't  
5 coincide with what the local mariners use.

6 So anybody that's operated in the  
7 Lower Mississippi River in the New Orleans area  
8 will hear somebody occasionally say they're  
9 southbound at Old Public Grain. If you don't  
10 know where that's at, you're going to be lost.  
11 We also use 26 mile point, 50 mile point, 100  
12 mile point and those don't necessarily always  
13 make their way to the charts.

14 Two minute predictions is another  
15 thing I love about the electronic chart systems  
16 that we use. It will tell me where it predicts  
17 I'm going to be in two minutes. Generally with  
18 boats, like I said, they slide. It's not in a  
19 straight line; it's somewhere off sideways  
20 somewhere. So you can tell if you're moving, if  
21 you have lateral movement. Closest point of  
22 approach, the same way. We're trying to figure

1 out meeting situations.

2 Most places on the Mississippi River,  
3 you can't meet in a bend. So it really becomes  
4 critical to figure out where you're going to be  
5 expected to meet this gentleman at. Here's what  
6 we've lost with the electronic charts. Now I had  
7 one of my boat guys, one of my captains send me a  
8 picture, just a snapshot of a paper chart.

9 Now we have these guys write on these  
10 things not for navigation use. But you can see  
11 the amount of scribbling that we throw up there,  
12 the name of the lead boat of this particular  
13 fleet, the fleet channels that the boats stand by  
14 on. So if we get in trouble, we know who to call  
15 and how to get hold of them quick. We'll also  
16 mark down eddies; we'll mark down points where we  
17 have to flank, call-in points for the locks which  
18 change, depending on the river and the lock  
19 master.

20 Future asks. This is the things we'd  
21 love to see integrated in charts. Integration of  
22 weather, river forecasts and lock info in a

1 single data source. So I know that there's a  
2 build up of lock queue at Smithland Lock. I  
3 don't know where the end of the lock queue is,  
4 unless I'm really paying attention to what's  
5 going on with everything.

6 The weather forecast, we still have to  
7 go look at. Empty barges are like a sail. If  
8 you've got four empty barges and you're out west  
9 of Corpus Christi, Texas, you're not going  
10 anywhere, you know. You really need to know, and  
11 I've had a dispatcher call me and say well the  
12 wind -- wait until the wind quits blowing. I  
13 said it's Texas; the wind doesn't quit blowing.

14 Real time bridge clearance data. As  
15 evidenced by some of the issues we've had in the  
16 last couple of years, I did serve on the  
17 subcommittee looking at overhead bridge collisions  
18 and it is tough to get a good idea of how tall a  
19 bridge actually is on a river where you could  
20 have 30 or 40 foot differences in height. It  
21 makes a big difference.

22 And then often you just get the center

1 span clearance. We're trying to look at some  
2 other stuff. 3D bottom contouring like they were  
3 demonstrating earlier on the Lower Mississippi  
4 River is unbelievably helpful. I had a 3D radar  
5 on one of the boats on a coastal boat, and it's  
6 fairly static on a canal. But just being able to  
7 see the bottom contour was unbelievable.

8           And that's pretty much all I have.  
9 The wish list. If anyone's ever played video  
10 game golf and they have the putting green and  
11 they have all the little arrows that tell you  
12 what the ball's going to do, I want to see that.  
13 Google glasses, just show me what's the current's  
14 doing, and detailed information about current  
15 characteristics.

16           The same thing as if anyone has ever  
17 seen the movie "Twister," where they drop the  
18 golf balls and you could see exactly what  
19 everything's doing. That's what we'd love to see  
20 in the future. That's our long term wish list,  
21 and I think that's all I have for today.

22           (Applause.)



1 MR. AUCOIN: Okay. My name is Paul  
2 Aucoin. I'm the executive director of the Port  
3 of South Louisiana. I appreciate this  
4 opportunity to be here this afternoon. I want to  
5 tell you a little bit about the Port of South  
6 Louisiana, and then we're going to talk about the  
7 river. I often, this is a new PowerPoint for me,  
8 so bear with me. I'm not that familiar with it;  
9 it's not the one I usually use.

10 I usually begin by saying the Port of  
11 South Louisiana is probably one of the most  
12 important ports you've never heard of and a lot  
13 of people probably have never heard of the Port  
14 of South Louisiana, but I'll be happy to share  
15 this information with you today.

16 We are the largest tonnage port in the  
17 western hemisphere. If you remember your  
18 geography, that means we are the largest tonnage  
19 port in the United States of America and we  
20 should be. Our jurisdiction is 54 miles of the  
21 Mississippi River. When you count both banks,  
22 that's 108 miles for us to develop. There are

1 presently 53 industries on that river right now,  
2 and we'll talk about some of those.

3 We're the largest grain exporter in  
4 the United States of America. Over 50 percent of  
5 the grain that leaves the United States leaves  
6 through the Port of South Louisiana. We  
7 accomplish that with our seven grain elevators  
8 that operate out of the port, that handled 104  
9 million short tons of grain in 2018.

10 We're the number two energy transfer  
11 port in the United States of America. We handle  
12 34 million short tons of crude oil. We have four  
13 refineries in the port and ten crude oil storage  
14 terminals. We also handle 59 million tons of  
15 petrochemicals. We're the top foreign trade zone  
16 in the United States. We are Foreign Trade Zone  
17 No. 124. The Trade Zone handled \$49.5 billion of  
18 cargo, and employs over 10,000 people.

19 We also handled 303 million short tons  
20 of cargo last year. That was accomplished  
21 through 4,402 vessels coming into the port, ships  
22 coming into the Port of South Louisiana, and

1 63,638 barges, mostly grain barges from the  
2 Midwest and our friend Mike is from here. Just  
3 recently we had a visit from 38 Iowa soybean  
4 farmers. They come down to see -- they want to  
5 see where their grain goes after it leaves their  
6 fields.

7 Also because of the Mississippi River,  
8 which I'm going to talk about later, that I  
9 consider this country's greatest natural  
10 resource, we have companies that still want to  
11 locate within the port district. As I sit here  
12 with you today, we have \$24.5 billion of new  
13 investment coming in. That's 17 new industries  
14 coming into the Port of South Louisiana. A lot  
15 of it is what they call foreign direct  
16 investment, FDI.

17 What's going on is we have the  
18 Mississippi River, again this country's greatest  
19 natural resource and it's important to the whole  
20 United States, not just Louisiana. But we have  
21 the Mississippi River. We have cheap and  
22 abundant natural gas. Natural gas last year was

1 selling -- two years ago was selling for 7.50 a  
2 cubic foot; now it's 3.50 a cubic foot.

3           So what we have is companies from  
4 foreign countries coming in and building their  
5 company here, and shipping the product back home.  
6 For example, a Russian fertilizer plant is going  
7 to be built here in the Port of South Louisiana.  
8 A Chinese methanol plant is going to be built  
9 here. When they make the methanol using our  
10 natural gas, they're going to ship it back to  
11 China.

12           The same thing with New Zealand. We  
13 have a New Zealand methanol company building a  
14 methanol plant right next to the Chinese one, and  
15 they're going to ship their methanol back to New  
16 Zealand. So all of that adds up into about \$83  
17 billion in trade annually; 30,000 jobs within the  
18 Port of South Louisiana; 1.8 billion in earnings;  
19 14 billion in revenue; and 72 million in state  
20 and local taxes.

21           I want to mention that the numbers I  
22 just recited to you were provided by Dr. Loren

1 Scott, an economics professor at LSU.

2 Now the river. As I said earlier, I  
3 think it's this country's greatest natural  
4 resource, and one person who would probably agree  
5 with me is an author by the name of Peter Zeihan,  
6 and he wrote a book, you might want to read it,  
7 it's called "The Accidental Superpower." But his  
8 opinion is that any great country that's a  
9 superpower today is because of the river system,  
10 and he gives credit to the Mississippi River is  
11 why the United States is a superpower today.

12 More than 30 states rely on the  
13 Mississippi River for export, 30 states. The  
14 Mississippi River Basin produces 92 percent of  
15 the -- turn this thing around -- 92 percent of  
16 the nation's agricultural exports, and 78 percent  
17 of the world's export of feed, grains and  
18 soybean. In the United States, 1.1 million jobs  
19 are supported by agricultural exports. Every  
20 additional one billion in exports creates 8,000  
21 jobs.

22 We're connected to 14,500 miles of

1 inland navigable waterways, and the Lower  
2 Mississippi River is home to four of the nation's  
3 top 50 ports that move more than 500 million  
4 tons. Over 21 billion in agriculture exports are  
5 shipped through Louisiana ports. Each foot of  
6 cargo, each foot of cargo, I'm talking now and  
7 there's a restriction at the mouth of the river;  
8 this is how important it is.

9 Remember I told you we had 4,400 ships  
10 come to the Port of South Louisiana. When you  
11 take Baton Rouge, Port of South Louisiana and New  
12 Orleans, St. Bernard and Plaquemines, those five  
13 Lower Mississippi ports, that is the largest port  
14 conglomeration in the United States, in the  
15 world. Not in the United States, in the world,  
16 those five ports together.

17 We had 4,400 ships. All total we had  
18 over 6,000 ships come into the river, and if  
19 those ships can't fully load up, if they can't  
20 load to 45-50 feet, then it's about a million  
21 dollars a foot that it's costing the shipper. So  
22 if you have a draft restriction saying you can

1 only be 42 feet into the water instead of 45,  
2 that's \$3 million.

3           What's going to happen? We're going  
4 to become unreliable and uncompetitive. When you  
5 lose that, it's hard to get it back, trust me.  
6 So we all have to go back home and talk to our  
7 Congressmen and our Senators, and tell them how  
8 important it is to address the mouth of the  
9 Mississippi River.

10                   That's what I want to talk  
11 about on this next slide. Oops, back. At any  
12 rate, okay. At any rate, our goal is to provide  
13 a 50 foot draft from the Gulf of Mexico upriver  
14 to Mile 256. The Port of South Louisiana is Mile  
15 114.9 to 168.5. The dredge material will be used  
16 to create an estimated 1,462 acres of new marsh  
17 habitat. We call that the beneficial use. So  
18 that's getting beneficial use out of all this  
19 silt that's being dredged up.

20           The Corps identified the benefit to  
21 cost ratio of the project at 7.2 to 1, calling  
22 the dredging of the mouth of the river one of

1 national and international significance. What  
2 about your transportation cost savings?  
3 Remember, if you have no depth restrictions, if  
4 every ship can load to 50 feet, then we're having  
5 a great cost savings in shipment because of the  
6 \$1 million a foot projection.

7 This also would increase flood  
8 protection of businesses, farms and homes, and it  
9 would provide navigation reliability and safety,  
10 and that will attract future investment. As I  
11 mentioned earlier, the alternative is we become  
12 less competitive and less reliable.

13 This is some of the projected benefits  
14 if we should dredge the mouth of the river to 50  
15 feet, and you can see in 2019-2020-2021 the  
16 increase in tonnage and therefore the increase in  
17 value. So that's your cost to benefit ratio, a  
18 very important cost to benefit ratio.

19 I'd like to talk now a little bit  
20 about this dredging of the mouth of the river. A  
21 lot of my friends think I'm daydreaming because I  
22 believe that eventually Congress is going to act.



1 I was called by the American Association of Port  
2 Authorities to go to their offices in Washington.  
3 Congress has said if we come up with a plan that  
4 all ports of the United States agree to, they  
5 would put it in the form of legislation for  
6 dredging.

7 We met, we came up with a plan that  
8 all the ports agreed to, and Congressman Peter  
9 DeFazio has authored a bill. What it calls for  
10 is dredging the mouth of the river to 50 feet  
11 every day, all day, and including all the  
12 sections of the United States as well. But  
13 that's the only part that I was really interested  
14 in was the mouth of the river.

15 We have a harbor maintenance tax which  
16 generates about \$1.8 billion a year. The tax is  
17 dedicated to dredging and it's not being used.  
18 There's \$9 billion sitting somewhere, if it's  
19 still there. But that \$9 billion would go a long  
20 way. The plan we came up with is called "Full  
21 Use, Full Maintenance." It means use all the  
22 money and maintain all the navigable waterways to

1 the authorized depth, and hopefully that bill  
2 will one day be enacted by the legislature to  
3 take care of dredging for the entire United  
4 States of America.

5 That concludes my remarks. I hope I  
6 wasn't too fast. If you have any questions,  
7 we'll take them later. Thank you very much.

8 (Applause.)

9 MR. STEENHOEK: Well good afternoon.  
10 It's good to be with you today. One of the key  
11 points I really want to emphasize and underscore  
12 is that what happens down here impacts what  
13 happens up there. One of the goals of this  
14 conference, this meeting is to really make sure  
15 that this agency is providing services, important  
16 services to stakeholders who are impacted by this  
17 critical link in the U.S.'s supply chain.

18 To effectively do that, you have to  
19 have a good idea of who the stakeholders actually  
20 are. One of the things that I've really worked  
21 hard to try to dispel among my colleagues and  
22 counterparts in the Midwest, and I'm from Iowa;

1 my office is in Iowa, is for this kind of notion  
2 that issues related to the Lower Mississippi  
3 River, well that's a New Orleans thing. That's a  
4 Louisiana thing.

5 And one of the things, you know,  
6 bottom line that if my work is successful is when  
7 these issues percolate, it's regarded as an Iowa  
8 thing, a Minnesota thing, an Ohio thing. I  
9 wanted just to share with you a few slides that  
10 just kind of underscore that point. I won't go  
11 through this in great detail but the -- what this  
12 slide conveys is the cost to a customer in China,  
13 back in the good old days when soybeans were  
14 exported to China.

15 (Laughter.)

16 MR. STEENHOEK: Of transporting a  
17 metric ton of soybeans from three origination  
18 points. One is Davenport, Iowa, which naturally  
19 is going to be, involve a short truck movement to  
20 the Mississippi River, and then it takes a  
21 journey via barge down to the Lower Mississippi  
22 River, loaded onto an ocean vessel, on to a

1 customer in China. That is the bar chart to the  
2 left.

3 As you can see, in the green part of  
4 it is the actual cost of producing that metric  
5 ton of soybeans, \$313.55. We'll skip the middle  
6 one because that's a rail movement from South  
7 Dakota to the Pacific Northwest. The one to the  
8 far right is Mato Grosso, Brazil. Brazil's the  
9 number two producing soybean country in the  
10 world. Mato Grosso state, which is kind of in  
11 the northwest part of the country, is the number  
12 one soybean-producing state in Brazil.

13 The cost to produce a metric ton of  
14 soybeans in that part of the world is \$293.43.  
15 So they have a lower cost of production than the  
16 United States. But as you can see, the total  
17 cost realized by the customer is lower for  
18 U.S.-produced soybeans. So really the moral of  
19 the story is the reason why we're so competitive  
20 on the international marketplace is not due to a  
21 lower cost of production, but it's due to a lower  
22 cost of transportation.

1           We're able to overcome that lower cost  
2 of production due to the fact that we've got a  
3 more efficient transportation system, and the  
4 inland waterway system is integral to that. This  
5 really, some of us, we know this theoretically,  
6 intuitively. But this really underscores that  
7 the fact that we are able to rely on these modes  
8 of transportation like barge that's so  
9 well-equipped, so well designed to transport high  
10 volume commodities long distances at an  
11 economical price point is really key to our  
12 success.

13           One 15 barge tow can carry between,  
14 you know, roughly 800 to 850 thousand bushels of  
15 soybeans. Compare that to one semi at 910  
16 bushels of soybeans. Brazil has to still rely  
17 disproportionately on moving soybeans via truck  
18 long distances to get to their export facilities.  
19 So that's really why we're so successful. We  
20 also use rail quite effectively as well. But  
21 really the fact that we've got this inland  
22 waterway system that penetrates into the most

1 productive farm ground on the planet is really so  
2 key to our current, our past, our current and our  
3 future viability.

4           Because the issue is so important,  
5 transportation to our industry, is the reason why  
6 we established the Soy Transportation Coalition.  
7 So we really are an organization comprised of 13  
8 state soybean associations located throughout the  
9 country, and you would think that farmers located  
10 in the interior part of the country like Iowa,  
11 like Minnesota, why would they be international  
12 entrepreneurs, even though they're located 900,  
13 1,000, 1,500 miles away from our coast?

14           Well the reason is because we've got  
15 this effective transportation system. This map  
16 highlights that we've got this effective system  
17 of the Ohio River, Mississippi, Illinois,  
18 Arkansas River, to a lesser extent the Missouri  
19 River, that provides this access to all these  
20 farmers located around the country. 60 percent  
21 of soybean exports leave from this critical area  
22 of the country; 59 percent of corn exports, by

1 far the number one launching point for both  
2 commodities.

3 You know, to dovetail with Paul's  
4 comments about deepening the Lower Mississippi  
5 River, this is a priority that is something that  
6 we are working very diligently on. I'm often  
7 asked if you had one infrastructure enhancement  
8 to the soybean supply chain, what would you --  
9 what would you elect?

10 I would say deepening the Lower  
11 Mississippi River, just because you've got all of  
12 these states that really filter soybeans down to  
13 this area of the country. This area of the  
14 country is also able to provide service to so  
15 many of our customers around the world. We're  
16 able to access our Asian customers, either via  
17 the Panama Canal or around the southern tip of  
18 Africa.

19 We have access to South America,  
20 Africa, Europe, all of these customers. Of all  
21 the things that are planted in the United States,  
22 soybeans are the number one agricultural export

1 from this country, and so really has an  
2 important, you know, engine to our U.S. economy.  
3 But related to the Lower Mississippi River  
4 deepening, we did some research that highlighted  
5 to what extent would farmers in the interior part  
6 of the country benefit from this, and we did some  
7 research and then highlighted that.

8 If you deepen, if you make this barge  
9 to ocean vessel journey more economical, that  
10 would not just benefit the shippers of that  
11 commodity, but it actually would benefit the  
12 farmers located in the interior part of the  
13 country, in the form of them receiving a higher  
14 price for the soybeans that they grow.

15 For the state of Illinois, for  
16 example, farmers would receive annually \$77  
17 million of additional value every year, \$461  
18 million annually for U.S. soybean farmers. So  
19 obviously a very important project to our  
20 viability, something we're working very  
21 diligently on.

22 And as Sean mentioned, the United



1 Soybean Board, which is a part of our  
2 organization, recently made the announcement to  
3 allocate \$2 million to help underwrite the cost  
4 of that project. During this time of a lot of  
5 market uncertainty, a lot of turmoil with the  
6 ability to plant a crop, the ability to market  
7 the crop, our customer, number one customer China  
8 historically, which historically would take one  
9 out of every three or four bushels of soybeans  
10 produced in the United States, has all of the  
11 sudden come to a dramatic stop.

12 We first established an office in  
13 China in 1982. We've worked diligently on this,  
14 for this customer for over three decades, and now  
15 of a sudden it's come to a dramatic stop. So  
16 there's a lot of turmoil confronting the industry  
17 right now, and the temptation could be for  
18 farmers to pull back and to be timid.

19 They're actually leaning forward and  
20 investing in their industry, so I think they need  
21 to be commended for that.

22 Just kind of a final couple of

1 thoughts about as you're kind of thinking about  
2 the services that National Oceanic and  
3 Atmospheric Administration provides. So much of  
4 the weather forecasting, you know, not only just  
5 with hurricane seasons but just more routinely,  
6 that's really critical and to those shippers down  
7 here but then also the interior part of the  
8 country, because what happens again down here can  
9 have an impact up there. It can certainly move  
10 markets.

11 I've worked a lot with federal, state  
12 and local government, and one of the things that  
13 I've observed over the years is that government  
14 does an exception job at accumulating  
15 information, not as good of a job at  
16 disseminating that information. So really one of  
17 the secrets is always trying to challenge  
18 yourself, to make sure that you're meeting the  
19 stakeholders, the customers where they're at.

20 I always have an exercise that I do  
21 with my board of directors every year, to  
22 determine whether or not I'm effectively

1 communicating with them, my bosses. I ask three  
2 questions. What is the information you need from  
3 me? I ask the "what" question. I ask when do  
4 you need that information from me, the "when"  
5 question, and I ask the "how" question, how do  
6 you need that information from me?

7 It's not just effective for me to just  
8 simply do a big data drop on them, kind of an  
9 information bomb on them and say you are  
10 effectively informed. You also have to ask those  
11 other questions, the when question and the how  
12 question. So that's something I'd just encourage  
13 you to continue to challenge yourself on and  
14 reach in your outreach, is to make sure you're  
15 doing a good job with the what, the when and the  
16 how. Thank you.

17 (Applause.)

18 MR. WINGATE: All right, good  
19 afternoon. My name is Mark Wingate. I'm the  
20 deputy district engineer for the Corps of  
21 Engineers out of New Orleans. I believe my boss  
22 was here earlier, Colonel Murphy. So you all

1 were treated to hear him. I will tell you Sean,  
2 I do have my supervisor shoes on today. I do not  
3 have my boots on, but I will never wear my  
4 supervisor's shoes again at Bonnet Carre.

5 And unfortunately I'll probably have  
6 to have them on next year anyway. So I was asked  
7 to come here today and be brief, and I guess  
8 speak a little bit to how we coordinate with NOAA  
9 and Hydrographic Services, and how we share  
10 information, so I will go ahead and jump into  
11 that.

12 All right, but before I do that, just  
13 a little bit about the New Orleans District. I  
14 took this job about four years ago. I took it  
15 because it's a small district. You can see it  
16 there in the red, and I knew it wouldn't be too  
17 challenging. Four years later, we've just  
18 entered a 292 day flood fight, had a hurricane  
19 during that particular time and maybe we'll be  
20 back in high water season here in just a couple  
21 of months.

22 But it is a very busy district. It is

1 part of the Mississippi Valley Division. That's  
2 what we have on the slide here all in gray from  
3 St. Paul, Minnesota down to New Orleans,  
4 Louisiana. Just a couple of quick stats about  
5 the New Orleans District. You can see up at the  
6 top many miles of navigable waterway, 2,800 miles  
7 in fact, and we've already spoken in this panel  
8 here about some significant interest in deepening  
9 the Mississippi River to 50 feet.

10 So that is certainly a priority  
11 project for us, and we're going to continue to  
12 work with DOTD and the Soy Transportation  
13 Coalition and all our partners, hopefully to make  
14 that happen when monies are made available. You  
15 can also see the Mississippi River and  
16 tributaries levee system is a big component of  
17 our flood fight type program in the New Orleans  
18 District, and you can see some of the other  
19 stats.

20 But I will tell you one of my personal  
21 favorites up there is the bottom one, and that is  
22 all the regulatory actions that we deal with.

1 That was a little facetious there; one of my  
2 personal favorites I will tell you it keeps us  
3 occupied. In fact, working closely with NOAA  
4 through NMFS is some of my favorite permit  
5 actions, and that's large-scale diversions on the  
6 Lower Mississippi River.

7 So stay tuned for that,  
8 because my boss will most likely be a  
9 decision-maker on one or both of those  
10 large-scale diversions. But in terms of our  
11 mutual mission areas I believe between NOAA,  
12 National Weather Service, the River Forecast  
13 Center, as well as Hydrographic Services, is in  
14 the form of navigation and obviously flood risk  
15 management.

16 I guess ultimately the question, after  
17 preparing for this particular session here, was  
18 how should we, how can we, what should we do to  
19 continue our relationship in terms of serving the  
20 nation with respect to both navigation and flood  
21 risk management?

22 Okay. So what I've got here

1 obviously, I want to dive into a little bit of  
2 detail in terms of the navigation and how we work  
3 jointly together. I will tell you when we  
4 submitted this slide, it was 16 August, and that  
5 was the picture at the particular time. All the  
6 stars on that particular graphic show where we  
7 had active dredges.

8 That is not where we sit here today at  
9 August the 27th. We have three dredges down at  
10 Southwest Pass and now we're really moving our  
11 assets up into The Crossings north of New  
12 Orleans, all the way to Baton Rouge. We have  
13 five dredges currently working. Today in The  
14 Crossings, we have a dredge that's headed to New  
15 Orleans harbor area by the end of this week, and  
16 then we have three dredges down in Southwest  
17 Pass.

18 And of course what this graphic shows  
19 is everywhere in yellow is where we have to focus  
20 our dredging on the Lower Mississippi River. But  
21 just as this slide shows, the conditions have  
22 changed in terms of the number of dredges. I am

1 happy to report that we have no draft  
2 restrictions on the Mississippi River at this  
3 particular time and we don't expect to have any.

4 I will tell you my folks tell me in  
5 The Crossings, we probably will go to one way  
6 traffic at some point in the year, but we're not  
7 there at this particular point. But as the slide  
8 shows and as the talking points are evidenced, we  
9 do dredge and work in a very dynamic environment  
10 to maintain that navigation.

11 We certainly need to relay the  
12 condition of that channel to the users, and  
13 what's going on and where those shoals are  
14 occurring and not occurring, and we do that in  
15 partnership with NOAA, National Weather Service,  
16 Hydrographic Services as well, and some  
17 specifics.

18 On a daily basis at the district here,  
19 we use NOAA's Marine Forecast information, the  
20 weather predictions to plan our surveys and that  
21 survey schedule. We use river stage prediction  
22 tools from NOAA National Weather Service on a



1 daily basis, to help us perform our channel  
2 maintenance requirements. NOAA National Weather  
3 Service participates in providing weather  
4 briefings to us before, during and after tropical  
5 events, so that we can prepare and restore to  
6 regain navigation.

7 In fact, immediately following  
8 Hurricane Barry, NOAA used some of their  
9 surveying assets on the -- on Bayou Lafourche in  
10 the Port Fourchon area, to help us understand the  
11 condition of that channel and get that  
12 information out. I have to admit I'm going to  
13 use some terms that I learned as I was preparing  
14 for this presentation.

15 But apparently we work together on  
16 something called S-57 charts. So now I'm walking  
17 around the district talking about S-57 charts. I  
18 don't know what an S-57 chart is, other than  
19 seeing some pictures. But I'll admit to that.  
20 So we work closely together with NOAA and  
21 Hydrographic Surveys by providing information to  
22 augment or to compliment the S-57 charts, and

1 that in turn is used by navigation. It's my  
2 appreciation that we're providing that  
3 information weekly to those users.

4 NOAA also has tidal stations set up at  
5 several waterways that help us if in fact some of  
6 our staff gages have gone down, or to augment  
7 that information. The last piece that I would  
8 conclude with is every ten years apparently NOAA  
9 is performing detailed surveys along the  
10 Mississippi River and putting that into  
11 hydrographic survey books.

12 We're also doing that on a ten year  
13 cycle. So we need to make sure that we are  
14 collaborating, and that we basically get it every  
15 five years. I don't know if we have a formal  
16 agreement in place, but that is something I think  
17 that we should consider as we move forward.

18 Okay, in terms of flood risk  
19 management, the graphic that you see here is I  
20 guess in layman's term we call it the plumbing  
21 diagram. I guess more officially it's the  
22 General Jadwin plan on how we operate the river,

1 really how the Mississippi River Commission  
2 operates the river.

3           The key point here are the three  
4 outlets. It's the floodways in addition to the  
5 Mississippi River. In the middle of the slide  
6 you see the first outlet at least in the New  
7 Orleans District. That's the Old River Control  
8 Complex, and then right south of that is the  
9 Morganza, and then south of that of course is the  
10 Bonnet Carre Spillway.

11           So this is critical to us passing  
12 Project Flood through the New Orleans area,  
13 through the Baton Rouge area, by not only using  
14 the river but also the outlets. So why is this  
15 important and where do we collaborate? Well,  
16 it's very important that we understand the  
17 forecast that's coming down the Mississippi River  
18 through the National Weather Service and through  
19 River Forecast Center, what's actually coming to  
20 the Old River Control Complex.

21           Based on that information daily, we  
22 then determine how many gates to open at Old

1 River, and then we determine how much flow will  
2 actually go down the Atchafalaya, and how much  
3 flow goes south through the Mississippi River.  
4 We in turn provide that information back to  
5 National Weather Service, as well as River  
6 Forecast Center, so they then can make the  
7 forecast for the river south of Old River Control  
8 Complex, and that's done on a daily basis.

9 Of course in doing that, we work  
10 closely with those entities in sharing our models  
11 and our data and our lessons learned and what do  
12 we see collectively. Of course we work closely  
13 with the Hurricane, National Hurricane Center,  
14 again as well as National Weather Service and  
15 River Forecast Center, just like we did during  
16 Barry and during high river for the last 292 days  
17 in terms of modeling, surge predictions, river  
18 elevations, et cetera.

19 And again, sharing those models and  
20 helping us develop inundation models as well, and  
21 providing that information to users.

22 I think in terms of moving forward and

1 some of those things that I think that we should  
2 continue, but it doesn't mean that those items  
3 can't be improved, one of the first ones is  
4 something that's referred to as an e-Hydro  
5 database. This apparently is a database and  
6 you'll see I'm not very familiar with the  
7 database, but something that the Corps produces  
8 at ten of our districts, ten of our coastal Corps  
9 of Engineers Districts called e-Hydro, where  
10 we're collecting soundings and channel  
11 conditions, et cetera, that describes the  
12 shoaling. That information is provided directly  
13 to NOAA, to help update the navigation charts.

14 The second item goes back to the S-57  
15 charts, where we are augmenting those charts with  
16 very similar information out of e-Hydro. That  
17 other information is provided weekly to industry  
18 and as I understand, we just produced the 325th  
19 weekly overlay chart as well. The third one  
20 again is the item of the hydro books, a large  
21 effort that we need to make sure we're synching  
22 it and that's occurring every five years as well.

1           So as I've mentioned a couple of times  
2 as I was preparing for this presentation, I have  
3 to admit I wasn't familiar with some of this  
4 information. The first time I really started  
5 talking about some of these details in the weeds.  
6 I asked myself, so why am I not? Maybe I've been  
7 sleeping at the wheel.

8           I'm sure our staffs are working this  
9 daily. But the one comment I would leave here is  
10 I think there's some things that maybe that  
11 certainly we in New Orleans District could do  
12 better at the leadership level, working closely  
13 with NOAA leadership to make sure that we're  
14 really moving forward together efficiently, and  
15 making sure that we are in alignment with what  
16 right really looks like.

17           So I will leave it at that, and  
18 certainly turn it back over to you Sean.

19           MEMBER DUFFY: Thank you, Mark. Thank  
20 you.

21           (Applause.)

22           MEMBER DUFFY: So Mark, you are

1       unaware, but you really touched on an item that  
2       although HSRP has talked about it a little bit,  
3       the communication and cooperation with the Corps  
4       and NOAA, I thought the Lieutenant Governor was  
5       going to steal my story to explain NOAA and he  
6       didn't, so I get to say it at the end of the day,  
7       or for me the end of the day.

8                But there's so many services under  
9       NOAA and a lot of times, so what I say is NOAA's  
10      kind of like a Swiss Army knife. Sometimes  
11      you've got to pull out a couple of different  
12      blades to find the tool you need, and that means  
13      are you talking NGS, National Ocean Service.  
14      There's so many areas under NOAA.

15               But that cooperation with the Corps  
16      and I'll reference into an article. Mr. Paul  
17      mentioned a very good book that I told him I had  
18      never seen it and next day I had it on my desk.  
19      I hate to tell him I still haven't had time to  
20      read it. But when the river comes really down, I  
21      will.

22               But Stratfor had an article called

1 "The Inevitable Empire," and George Friedman  
2 wrote it and it basically said that Americans are  
3 great because of where they are, not because of  
4 who they are. What I saw with this panel and as  
5 we talk about it is we're in a very historic  
6 period of our time, and what we do to incorporate  
7 technology, bring in the services that navigators  
8 need, pilots need, operators need and making it  
9 available is crucial to our future.

10 And as I say that, I'll come back to  
11 Mike Steenhoek and I will say that we have to  
12 remember what other countries are doing, and I  
13 know China is looking to dredge Argentine rivers,  
14 to help with access to soybeans there. So as we  
15 talk about the future, that interaction of our  
16 government partners and stakeholders is really  
17 key.

18 Mike, I know you know more about that  
19 project than I do, but it's rather distressing as  
20 we look to try to promote the Mississippi River  
21 and move forward. Tim?

22 MR. OSBORN: I wanted to bring up one



1 of the questions for Paul Aucoin in terms of his  
2 constituency. How much interactions or how much  
3 concern or awareness do you see internationally  
4 with the big ship lines in terms of issues like  
5 high river or restricted draft or timely arrivals  
6 and departures of their ships in terms of the  
7 ports?

8 MR. AUCOIN: It's very important.  
9 It's crucial. I mean we hear about it all the  
10 time, you know. I'll get a call from one of the  
11 grain elevators. My ship is loaded but it can't  
12 leave because of depth restrictions, and I've got  
13 a ship waiting to come in and it can't come in  
14 because a ship can't leave. So there's 12 hour  
15 delay.

16 For them a 12 hour delay is a lot of  
17 money. So it's an issue for everybody, and the  
18 rule of thumb is a million dollars a foot, and I  
19 think that's a fair value that they give to this  
20 problem that we have. What's shame on us if we  
21 don't dredge the mouth of the Mississippi River,  
22 I mean because the cost-benefit, it pays for

1       itself automatically. It's just, it's like a  
2       good investment that any one of us, you know,  
3       maybe everybody but Congress can figure it out.

4                But it's such a great cost-benefit.  
5       If you do this, we maintain our competitiveness  
6       and our reliability. We don't lose our customers  
7       to other countries where they can grow grain, and  
8       it's just so important. And not just for grain,  
9       but for petrochemicals and for crude oil.

10               You know, the United States is going  
11       to be a major exporter of crude oil, if we're not  
12       already. I know that's, you know, that's what  
13       they're telling us. I mean we have more oil now  
14       than we know what to do with, more natural gas.  
15       All you hear about is liquefied natural gas.

16               But without the Mississippi River and  
17       without dredging the mouth of the river, what  
18       happens to all of that? Who knows? Thank you.

19               MR. OSBORN: And Mr. Chairman, turn it  
20       over to the Panel.

21               CHAIR SAADE: Thanks Sean, and thanks  
22       everyone on the panel. Any questions from our

1 Panel?

2 RDML GALLAUDET: I just have -- first  
3 I want to thank you all for being here and your  
4 contributions today, and as a reminder, I'm  
5 Admiral Tim Gallaudet, the deputy NOAA  
6 Administrator, and I want to thank everyone who  
7 gave praise to the National Weather Service.  
8 Those people perform a great public service and  
9 they work long hours, on weekends and holidays.

10 I know Suzanne Van Cooten is here,  
11 representing the Lower Mississippi River Forecast  
12 Office, so thank you for your services.

13 Just a few things. Sean, you talked  
14 about this critical time for our country, and I  
15 believe we're taking the advantage and I know  
16 NOAA definitely is. We're doing it through some  
17 transformational technologies. Yesterday, I  
18 earlier this morning talked about AI artificial  
19 intelligence and unmanned systems.

20 Another interesting area we're  
21 advancing is our data dissemination using  
22 commercial cloud providers. This is part of the

1 Administrator, Dr. Jacobs' overall data strategy.  
2 He has a background both as a professor in a  
3 university and in the private sector, and he is  
4 looking to use NOAA data strategically.

5 The idea is this: Heretofore we've  
6 shared all our data openly and everybody had  
7 access to it and life was good. But the reality  
8 is we can work and negotiate with the private  
9 sector, like Google and Amazon, and they make our  
10 data available and we leverage their capability  
11 in terms of software development to provide cloud  
12 services.

13 So Matt, you talked about I want one  
14 common view. I want my hydro, my weather, my  
15 water all on one screen and it's all there and  
16 easy to get. We're going in that direction and  
17 we're funded to do it, and we're working with the  
18 private sector to do it fast, not at government  
19 speed.

20 The other thing I want to talk to you,  
21 Mr. Aucoin, is about you talked about how we need  
22 to advance our competitiveness, and that is the

1 theme of my chairmanship of the Coordinating  
2 Board for the Committee on the Maritime  
3 Transportation System. Our overarching theme is  
4 to advance U.S. maritime transportation systems'  
5 competitiveness, and I have a number of goals  
6 identified of the five, three relate to which you  
7 hope to achieve, and that is assessing the state  
8 of the Marine Transportation System, advancing  
9 the data and technology behind it, and then  
10 enhancing the MTS infrastructure, getting all our  
11 ports to 50 feet.

12 So again, this is not just a NOAA  
13 effort; it's an interagency effort and I have  
14 this really nice opportunity to lead the  
15 interagency this year. So I hear you loud and  
16 clear, and we're going to do everything we can to  
17 get there, and we'll work with the White House  
18 and the Hill to do it. Thank you.

19 MR. AUCOIN: It's a large task to take  
20 on, but a very important task.

21 RDML GALLAUDET: Yes sir, thank you.

22 CHAIR SAADE: Dave.

1                   MEMBER MAUNE: Question for Mike  
2           Steenhoek. You seem to infer that the Missouri  
3           River wasn't as significant as some of the other  
4           rivers for the soybean industry, and I thought  
5           that was -- I thought the Missouri led to prime  
6           soybean country. Can you explain what you meant  
7           when you said that?

8                   MR. STEENHOEK: Yeah. It's a river  
9           that's very under-utilized. You do have some  
10          degree of maritime transportation on it, but it's  
11          -- there's a scarcity, and then it's not just  
12          agriculture; it's also all different commodities.  
13          It has had some challenges with low water events,  
14          sand. It's hard to imagine that there was a time  
15          when the Missouri River was at low water. So I  
16          get to western Iowa and I get to see how high  
17          it's been this year. But they've had some  
18          challenges with the reliability of it.

19                   But my -- one of the things that I'm  
20          working on is to try to change that narrative,  
21          because one of the things that I do believe is  
22          that the reputation of the Missouri River is

1 worse than its actual potential. When you  
2 actually look at the data, it has been -- had  
3 suitable navigation conditions pretty  
4 consistently for the last easily decade.

5 And we're starting to see a rebound in  
6 some shipments. I toured the Port of Kansas  
7 City, oh it was in 2015 and then also last year,  
8 and in 2015 they handled a grand total 9,000 tons  
9 of freight at the Port of Kansas City, roughly  
10 six barges in the year 2015. The year 2018, they  
11 handled 450,000 tons of freight, so about 300  
12 barges.

13 So that narrative is starting to  
14 change. You know, but you know, there are some  
15 challenges, but there is very much this chicken  
16 versus the egg dynamic, where the -- in trying to  
17 get funding for it, you will petition Congress to  
18 invest in the Missouri River, and policymakers  
19 will say well why would we invest in the Missouri  
20 River until we see any substantial amount of  
21 traffic on the Missouri River.

22 The potential users of the Missouri

1 River will say well, we're not going to use the  
2 Missouri River until we see investment in the  
3 Missouri River. So you kind of have this chicken  
4 versus the egg dynamic. One of the good -- I  
5 mean one of the bad things about the Missouri  
6 River is that there are no locks and dams. One  
7 of the good things about the Missouri River is  
8 there's no locks and dams.

9 So the good news is that you can --  
10 you can make some modest enhancements and  
11 investments in the Missouri River and  
12 significantly impact its usefulness. So yeah,  
13 there has been very little, but I think there is  
14 some potential there. It's never going to rival  
15 the Mississippi.

16 You can't get the same kind of barge  
17 flotilla sizes, and again it's not as reliable,  
18 the fact that you don't have that lock and dam,  
19 systems of locks and dams, but I do think there's  
20 some potential. Look forward to seeing that  
21 traffic increase in the future.

22 RDML SMITH: I wanted to thank Mark



1 for all the comments on the Hydrographic Services  
2 coordination. I did want to just comment for the  
3 record, and we can talk about it some more  
4 afterwards, that we do have a handshake agreement  
5 only with Colonel Clancy about doing similar  
6 scope of work every -- each of us each every ten  
7 years, five years out of phase.

8 So we timed this one that is just  
9 finishing now to be five years after your last  
10 comprehensive and did work with the Army Corps  
11 stakeholders to ensure that the scope of work was  
12 going to be suitable for the modeling and  
13 navigation and everything else, you know, the  
14 Channel Stabilization folks and everything.

15 So I hope that, you know, so if you  
16 think that we should memorialize it more than  
17 that, we can certainly -- we can certainly take  
18 that up. But I think we're basically on the  
19 right track. And happy to hear all the other  
20 things you've got going on.

21 I do want to make sure that before you  
22 take off that you, that you meet Captain Brennan

1 and we can think about next steps in more detail  
2 as well. Thank you.

3 CHAIR SAADE: So I have a question for  
4 Sean and Mark and Captain Brennan and Admiral  
5 Smith. With the survey that's been going on on  
6 the NOAA charting over the last months, have we  
7 had any significant breakthroughs with turnaround  
8 time on the data coming off the vessel and being  
9 able to be used very quickly?

10 MEMBER DUFFY: So you may have heard  
11 me say before that I live in a minefield, and I  
12 feel like that's one of those questions where I  
13 heard a pin drop behind me. But what I will say  
14 is that to -- there has been a lot of good  
15 cooperation between NOAA and the contractors and  
16 the Corps, and I'll focus on one aspect.

17 So river datums, which everybody at  
18 the table you understand datums better than I do,  
19 and I try not to talk to them when I'm not at  
20 full capacity up here. So I'll be real limited,  
21 but we have a lot of datum challenges on the  
22 river. Some of the work identified that some of

1 the incorporations of datums, which are kind of  
2 historical, were off.

3 And as I always promote that  
4 cooperation between the government agencies, what  
5 we've seen is NOAA and the Corps in meetings  
6 talking about where they were off, watching  
7 adjustments being made. One website I use a lot  
8 is Rivergages, and then somebody would -- I mean  
9 in real-time, you know, looking at Bonnet Carre  
10 Spillway was open and so I was putting out river.  
11 The river stage was 16.7 feet.

12 Well in another location, that same  
13 datum said it was 15.4 feet, and it was related  
14 to the source. So it's one of the reasons I  
15 promote the partnerships and the thing that I'll  
16 always ask for is that when our big brothers are  
17 solving those problems, that someone from  
18 Navigation be involved and engaged, so that we  
19 can talk about the practice and the importance of  
20 the datum.

21 I'll refer back to some of the points  
22 Matt made about bridges and clearances, you know.

1       There's a lot of different information  
2       distributed on the heights of some of our  
3       bridges, you know. My vernacular for air gap  
4       sensor is it's an electronic tape measure, low  
5       steel to water level.

6                 And you know, that's why we see people  
7       promoting that, so that you don't have to  
8       incorporate differences in datums. As we move  
9       forward, of course where we are is we're  
10      subsiding. We're seeing impacts- of coastal land  
11      loss and tying this all in together is important.  
12      But I think it's a tribute to all the agencies  
13      involved, that quickly improvements were made.  
14      When the Rivergages problems was first addressed,  
15      I think it was with -- it was offline for a few  
16      days in certain areas.

17                But it came back very quickly, where  
18      improvements were made and as a navigation guy,  
19      being able to take that information and properly  
20      incorporate that into decision-making is a big  
21      deal, where I don't have to understand all the  
22      formulas and the Chinese language and symbols. I

1 just want to know what that distance is, and I  
2 think most mariners feel the same way.

3 So as you work to cooperate, there's  
4 been a lot of information and I know that the  
5 Corps and NOAA are looking at survey adjustments.  
6 I know the Corps has done a couple of different  
7 things in the lower river to show what is  
8 available and we continue to look at the  
9 technology advances to drive the future, and we  
10 expect you to help us figure that out. I hope  
11 that answered your question.

12 MR. LAGARDE: Mr. Chairman, to add to  
13 Sean's comments on the river datum, the river  
14 stage in and of itself isn't enough, because 12  
15 feet on a slow rise is not the same as 12 feet on  
16 a fast rise. It's not the same as 12 feet on a  
17 slow fall. It's just that gives us some bottom  
18 clearance status, lets me know what we've got to  
19 deal with there. But it's not telling me what  
20 the current's going to do or what I can expect.

21 CHAIR SAADE: Rick.

22 CAPT BRENNAN: Thanks, Ed. So I'm not

1 -- I guess I'd like a little bit more  
2 clarification on your question.

3 CHAIR SAADE: My question is actually  
4 if we've had any breakthroughs relative to the  
5 turnaround time, going all the way back to when  
6 Sean was trying to figure out ways can we get the  
7 data to the captain sooner, not so much the  
8 accuracy.

9 CAPT BRENNAN: So I think to answer  
10 that question, I think this is -- as was pointed  
11 out, this is probably the first time in 50 years  
12 that we've surveyed the river. So, you know, if  
13 you haven't mowed your lawn in 50 years you've  
14 got a lot of work ahead of you. So that's what  
15 we're finding right now is going and slogging  
16 through that, the number of features that, you  
17 know, that we have found, you know. The feature  
18 count on the river has been huge, so going in and  
19 doing that, getting accurate heights on those  
20 features while we've had a high water flow has  
21 been incredibly challenging. So we did pick the  
22 highest flow rate as we've heard all day today to

1 do that hydrographic survey. So that has been  
2 confounding the ability to deliver products,  
3 because we can't get back to areas to complete  
4 the amount of survey work that's needed for that.

5 The other thing I would say, just to  
6 add to the Corps' list of collaboration points  
7 would just be to make sure that we collaborate as  
8 we update river datum. So as a part of this,  
9 we've been shifting our chart datum to the low  
10 water reference plain on the Mississippi, because  
11 one of the things that we heard over and over and  
12 over again from our constituents on the river was  
13 that when they would come to a bridge or when  
14 they would look at a chart or anything, that  
15 there was --

16 You know, that they would see three  
17 different elevations and not know which one that  
18 they should use to calculate, you know, either  
19 water depth or bridge height or otherwise. So  
20 we've been harmonizing with the Corps of  
21 Engineers on that one datum, which I think should  
22 hopefully eliminate a lot of that uncertainty.

1           But what we -- the other point to that  
2           that's pretty interesting I think is that we  
3           share a boundary, a datum boundary at the head of  
4           the Mississippi. Right now, those datums don't  
5           correspond in a single line. So there's a step  
6           there where those datums come together. So I  
7           think right now we've kept that step in because  
8           it's good for both sides of the equation there.

9           There are shoreside infrastructure  
10          that is referenced to the low water reference  
11          point, and you can't just willy-nilly go and  
12          change that. So as that gets redefined, I  
13          believe that the Corps is going to be embarking  
14          on an effort to redefine that datum here coming  
15          up. I guess what we have said, at least we've  
16          got again a tentative agreement to do this, but  
17          that the low -- the mean low or low water datum  
18          and the low water reference plain datum that  
19          those, you know, that one be the boundary  
20          condition for the other, so that where they meet,  
21          they coincide as a model. And so I think that's  
22          the other thing that we've been -- we've spent a



1 significant amount of time ironing that wrinkle  
2 out as far as what do we deliver.

3 And so that has been a source of  
4 friction, I guess, for getting delivery of the  
5 surveys, and it certainly hasn't been that our  
6 contractor has not been working feverishly on  
7 that. They've been an excellent partner. I  
8 think Sean would attest to that and the other  
9 members.

10 But you know, at some point ironing  
11 that out between our two agencies, and coming up  
12 to an agreement as to what that is going to be  
13 is, you know, is not a -- is not a simple feed.  
14 So I think we've gotten there, and we expect to  
15 start seeing surveys roll in in the next two to  
16 three months at this point. So as far as survey  
17 status, that's where we sit with surveys.

18 MR. OSBORN: And to continue on with  
19 what Captain Brennan was briefing on, one of the  
20 ongoing efforts, however, has been call-outs and  
21 notifications from the surveying and the HSD  
22 project managers of wrecks and hazards as we're

1 finding them along the river. In fact, recently  
2 one of the big issues had been the presence and  
3 locations of exposed pipelines crossing the  
4 river.

5 And there's an entire listing of those  
6 exposed pipelines on the river bottom that have  
7 been provided by HSD to federal and state  
8 partners in terms of their locations, the  
9 description. Some of these are 20 feet in the  
10 water column above the water bottom. And this  
11 has been an acknowledgment and a recognition by  
12 HSD as to the importance of how important it is  
13 to actually not only report it, but also with  
14 Sean and his efforts with the state and other  
15 entities, in looking at channel deepening  
16 efforts.

17 You know, are these features, which of  
18 these features have depths and characteristics of  
19 exposure that needs to be targeted in terms of  
20 supporting moving on, in terms of going to a 50  
21 foot draft. So the ongoing interim reporting of  
22 some of these really urgent matters has really

1       been ongoing, and something that we're trying to  
2       make sure that everyone is getting as quickly as  
3       possible.

4                   RDML SMITH:   Before we go to the  
5       public comment, I just want to make one final  
6       comment on this issue, just to kind of clarify  
7       something that I think is still loose in the  
8       room, and that is making a distinction between  
9       the survey that NOAA commissioned all the way  
10      from Baton Rouge to the Head of Passes, and  
11      including all shoreside structures bank to bank,  
12      full coverage, is a pretty -- is a much broader  
13      scope of work than a multibeam survey of a  
14      section of a channel that you might do for a  
15      condition survey.

16                   So there has been a lot of discussion,  
17      which we've not discussed here.  But I know it's  
18      in the thick in the room, of about doing  
19      multibeam surveys in channels as an improvement  
20      to sparse single beam surveys, both to guide the  
21      dredging program and also for navigation  
22      directly.

1                   And there has been quite a bit of  
2 progress in turning around those limited scope  
3 surveys within the required one day. This is  
4 certainly a stretch, but in a lot of ways the  
5 multibeam sensors and processing systems have had  
6 a major improvement in the last five years or so  
7 that really makes this not unreasonable to expect  
8 any more. We're looking at ways of doing  
9 demonstration projects and that sort of thing  
10 with the Corps and the pilots in order to sort of  
11 test whether we're technologically ready to make  
12 this step.

13                   So I'm sorry to sneak in the last  
14 word, but I think we really are at the public  
15 comment time. So Mr. Chairman.

16                   CHAIR SAADE: Okay. So it's Public  
17 Comment time, whether online or in the group  
18 that's here sitting with us. So if anyone has  
19 anything or if anyone has signed up, please step  
20 forward and let's get it started.

21                   MEMBER DUFFY: Mr. Chairman, can we  
22 dismiss the panel first, or are we here for --

1 CHAIR SAADE: Hold on. It's up to  
2 you. You might get a few questions, or you can  
3 get dismissed. Your pleasure.

4 MEMBER DUFFY: We're here.

5 (Pause.)

6 CHAIR SAADE: Okay. We've got a big  
7 group out there, and you've been real talkative  
8 for every break, and now you're all silent.

9 Okay, go ahead.

10 MR. SCHOTT: Thank you. I'm Benjamin  
11 Schott. I'm the National Weather Service Office  
12 Meteorologist in Charge here at the New  
13 Orleans-Baton Rouge. I've kind of had a chance  
14 to talk to a few folks, and Mr. Wingate mentioned  
15 this earlier. And I just want to kind of throw  
16 this out there.

17 As we were going into the back end of  
18 this flood season and we realized hurricane  
19 season is right around the corner, ourselves, the  
20 folks at the Corps, the Hurricane Surge Unit. So  
21 there were all these different partners, and  
22 especially the folks over at the River Forecast

1 Center, which are in the same office that we're  
2 in, understand that we had a serious challenge  
3 should we have an early season, a tropical storm  
4 impact the area and the river at the level it was  
5 at.

6 So we started to make sure that we  
7 worked together, and months before Barry was even  
8 a thing, we were in a room a couple of times, a  
9 few times on the phone. We ended up having a  
10 final meeting where we all got together. We  
11 worked the issue, started to run some modeling so  
12 we'd have a full understanding of what the  
13 effects of a tropical storm at the river at a  
14 level which we had never seen at, with the  
15 possible impacts of surge and whatever else may  
16 be factored in there with rainfall and everything  
17 else.

18 So I just wanted to really highlight  
19 the collaboration that went on behind the scenes.  
20 Though it didn't end up being at the level that  
21 we had forecasted, and I'm sleeping a lot better  
22 because of it, it is something that, you know,

1 sometimes it just doesn't get put out into the  
2 light of day that this is what goes on behind the  
3 scenes with a lot of the NOAA partners and with  
4 the Corps.

5 So I just want to kind of highlight  
6 that, and then also for those who are our local  
7 partners here at the meeting, if there's anything  
8 we can do on the weather side, my staff and  
9 myself are always available to you any time to  
10 help you, whether it be through walk-through  
11 stuff that we issue, or to discuss constructive  
12 feedback for anything that you feel like may need  
13 to get some extra attention to.

14 So with that, I will end my comment  
15 and thank you.

16 CHAIR SAADE: Thank you. Anyone else?  
17 Anyone on the Web?

18 (No response.)

19 CHAIR SAADE: Please identify  
20 yourself, thanks.

21 CAPT BOPP: I'm Michael Bopp. I'm the  
22 President of Crescent Pilots, and I want to

1 elaborate on what you said about the multibeam,  
2 because the Crescent Pilots decided in July that  
3 multibeam is a possibility going forward. And I  
4 said it in my speech, and I'm going to stand by  
5 it, because we took the onus of doing it for the  
6 month of July. We did multibeam with C&D  
7 Solutions, and the Corps of Engineers told us  
8 that the single beam, we're the only people in  
9 the world that could turn around a survey in 24  
10 hours.

11 And so we proved it in the month of  
12 July, and we saw anomalies against the single  
13 beam of lumps that were building, that we were  
14 actually hitting with the ship but were not in  
15 the survey. So going forward, I would really  
16 like to see this technology to be available to  
17 the navigator. So that's really all I've got to  
18 say.

19 CHAIR SAADE: I have it right here in  
20 my notes that I said "he said multibeam." So  
21 we're in full agreement with you -- some of us  
22 are in full agreement with you.



1 (Pause.)

2 CHAIR SAADE: Please identify  
3 yourself.

4 MR. SCULLY: Ryan Scully, Crescent  
5 Pilots and mrtis.com. I just wanted to extend a  
6 little bit on what Michael said about the  
7 multibeam surveys. I think that we always think  
8 if we want to get to 50 feet, that we need the  
9 dredges in order to do so, and we do need the  
10 dredges in order to do so. But I think it's a  
11 two-part problem because when it comes to setting  
12 depth, the pilots are going to come up with a  
13 recommended depth that the ships are going to  
14 have to adhere to, but the pilots are going to  
15 set that depth using a margin of error when you  
16 look at the surveys.

17 So if you have a single beam survey  
18 with 600 foot gaps in between survey readings,  
19 and the pilots are going to have to subtract  
20 maybe a meter or three feet before setting that  
21 actual depth. So if you do dredge to 50 feet or  
22 47 feet, the survey isn't detailed enough to

1 actually set the depth to 47 feet. So you have  
2 to subtract a few feet to account for the error  
3 in the single beam.

4 So if you can do a two-part solution  
5 where you're dredging deeper and then you have  
6 more accurate surveys via multibeam, then you  
7 don't have that three foot margin of error, and  
8 you can gain three additional feet year-round  
9 just by having better surveys in order to set  
10 that depth policy. That's all I've got.

11 CHAIR SAADE: Thank you.

12 (Pause.)

13 CHAIR SAADE: Go, Jon.

14 MR. DASLER: Jon Dasler, David Evans  
15 and Associates. So Portland District Corps has  
16 now switched from running single beam surveys on  
17 the Columbia River to multibeam surveys, right,  
18 and it's going into e-Hydro. So it's not that it  
19 hasn't been done before, I mean the rapid  
20 turnaround. I mean we're now getting to systems  
21 where we can do more automated processing and try  
22 to turn things around. So by the time a tile is

1 completed, products can be generated. But I  
2 think it's also important to note that all  
3 multibeam surveys are not equal, right, and  
4 object detection, the work that we're doing with  
5 NOAA now, is a lot more intensive in terms of  
6 object detection surveys and picking least depths  
7 on structures, where probably more of those  
8 surveys you're looking at sediment transport.

9           So the NOAA mission, as many of you  
10 know, is really that object detection and what's  
11 a hazard to navigation, where the Corps of  
12 Engineers it's what do we need to dredge, right.  
13 So you're not worried about that ship mast or the  
14 single pile sticking up. So vast coverage, quick  
15 processing of data and it's pretty hard on a  
16 CATZOC level, right, in the Mississippi River  
17 when you have so much sediment transport change,  
18 right? So even with object detection surveys,  
19 they quickly get out of date because of sediment  
20 transport.

21           So there's really two needs to meet  
22 the requirement, and especially in the

1 Mississippi River, where there's pretty dynamic  
2 sediment waves. We've seen sediment waves moving  
3 a quarter meter an hour, and in some cases even  
4 more than that, and shoals moving and migrating  
5 pretty quickly. So I think it has to be that  
6 joint effort between NOAA and the Corps of  
7 Engineers for more repeat surveys to look at  
8 sediment transport, but also object detection.  
9 Thank you.

10 CHAIR SAADE: Thanks, John. And I'd  
11 add the Cook Inlet to that too as well, as things  
12 are moving real fast. I think that's --

13 MEMBER DUFFY: Chairman Saade?

14 CHAIR SAADE: Yes.

15 MEMBER DUFFY: Up front.

16 CHAIR SAADE: Sorry.

17 MEMBER DUFFY: Okay.

18 CHAIR SAADE: Voices from above.

19 MEMBER DUFFY: I'm sorry, and I'm  
20 going to come back to your original question, and  
21 so my first HSRP meeting in Miami, you will  
22 recall that right afterwards, I spoke to you and

1 said hey, how quick do you think you can make  
2 multibeam surveys of Venice to the Gulf Southwest  
3 Pass available? And the original answer was one  
4 I've heard in different places, that we can do  
5 that quicker.

6 The Corps answer had been about five  
7 days. So as you looked at it and had people  
8 contact me, we found out that that estimate  
9 really wasn't all that far off. And since that  
10 time, there have been a lot of efforts and  
11 discussions behind the scenes to move that along,  
12 and I feel like the Corps cooperation with NOAA  
13 and what's going on, as Mr. Dasler hit on, what  
14 happened in Portland, Oregon, was very similar.  
15 It was a process that took a lot of smoothing out  
16 before we got to a final product, and I believe  
17 that's exactly where we are now that we're very  
18 much engaged in working to make that available.  
19 And we're all hopeful that we'll have multibeam  
20 surveys in that area available in the next couple  
21 of years on a regular basis, if not sooner.

22 CHAIR SAADE: Thanks, Sean. That's a

1 good update. And I know it's been a long time  
2 running. Go ahead.

3 MEMBER CHOPRA: I thought it's  
4 important to bring out two factors which have  
5 come out, which may be very pertinent to  
6 navigation on the river. One is that the river  
7 is going down, and now we're looking at low water  
8 rather than at high water. So clearances are  
9 reducing, my apologies.

10 A second factor is that we found a lot  
11 of objects in the river which are uncharted,  
12 which really need to be put on a chart as a  
13 safety for navigation. Dredging is a little bit  
14 longer project. Safety of navigation in the  
15 channel is immediate.

16 So maybe we need to have at least  
17 those objects, and we offer aid to navigation or  
18 a navigation warning going out to the pilots and  
19 to the general maritime community, that those  
20 obstructions exist in the water, so that we can  
21 stop any further damage of those known hazards.

22 CHAIR SAADE: Thanks, Anuj. I guess

1 time to break?

2 (Off mic comment.)

3 CHAIR SAADE: Okay. Without -- I  
4 think we're going to call a close to the public  
5 questions. We have a 15 minute break coming.  
6 We're a couple of minutes into it. So we'll see  
7 you all back here about 3:15. Thank you.

8 (Whereupon, the above-entitled matter  
9 went off the record at 3:04 p.m. and resumed at  
10 3:21 p.m.)

11 CHAIR SAADE: Okay. We're going to  
12 get back into the swing of things here. Welcome  
13 back. The Nav Services portfolio spans three  
14 offices at NOS, and we'll hear from all their  
15 updates right now. So if you all three will go  
16 ahead and introduce yourselves? Everybody knows  
17 who you are anyway, so thanks a lot.

18 CAPT KRETOVIC: Good afternoon. I'm  
19 Captain Liz Kretovic, and I'm currently the  
20 acting director of the Office of Coast Survey.

21 MR. EDWING: Good afternoon. I'm  
22 Richard Edwing. I'm the director for the Center

1 for Operational Oceanographic Products and  
2 Services.

3 MS. BLACKWELL: Hi. I'm Juliana  
4 Blackwell. I'm the director of the National  
5 Geodetic Survey.

6 CAPT KRETOVIC: So I'm going to give  
7 a pretty broad overview of our five year  
8 strategic plan. I know that the Panel has had an  
9 opportunity to review it, but we're going to kind  
10 of go through it goal by goal. So as the volume,  
11 value and size of marine vessels in U.S. waters  
12 continues to grow, it's essential that Coast  
13 Survey resolves critical data gaps, and that we  
14 increase the accuracy and frequency of our  
15 surveys.

16 It's a pivotal time in ocean mapping,  
17 and while we continue our work to deliver real-  
18 time data and high resolution bathymetry for  
19 PORTS, and maintain nautical charts for the U.S.  
20 Marine Highway infrastructure, we are also  
21 working toward building a comprehensive and high  
22 resolution bathymetric data set of the unseen



1 America.

2 The continued strength of Coast  
3 Survey's valued partners, its highly skilled and  
4 dedicated workforce, and its ability to fully  
5 leverage technology is key to achieving the  
6 substantial modernization effort. Coast Survey  
7 leads a coalition of U.S. federal offices that  
8 provide hydrographic and meteorological services,  
9 working in close coordination to achieve shared  
10 mapping objectives.

11 Goal 1. Our commitment to delivering  
12 world class digital navigation services is  
13 essential to safety and economic success of the  
14 maritime community, particularly as the volume,  
15 value and size of commercial ships continues to  
16 grow. Successfully delivering these precision  
17 navigation services will require a redesign of  
18 the current chart suite, the development of new  
19 products, and more easily accessible  
20 dissemination systems.

21 Coast Survey aims to establish a  
22 national bathymetric source database to feed the

1 production of new high definition charts for  
2 priority ports and other multi-use requirements.  
3 An integrated cloud-based dissemination system  
4 will then enable users to access products and  
5 data in easily discoverable, interoperable and  
6 user friendly formats for use in navigation,  
7 research or commercial purposes.

8 We heard a lot this morning from our  
9 excellent panel on precision navigation, so I'm  
10 not going to dive into anything more than tell  
11 you that marinenavigation.noaa.gov is coming, and  
12 two weeks ago we hosted a workshop. You heard a  
13 little bit about this earlier today at UNH, where  
14 we had approximately 45 people.

15 Originally I thought we were going to  
16 have about 15, and when it came time for the  
17 actual workshop itself, I was turning people  
18 away, which is a good sign. We were made up  
19 mostly of, I would say it was a good mix, half  
20 federal government from NOAA and about half  
21 industry partners in the realm of portable pilot  
22 units, under keel clearance management systems

1 and other software developers. Also as you can  
2 see from the photos behind me, this is the new  
3 Office of Coast Survey presentation position.  
4 Both Rick and I are doing the same thing in those  
5 photos if you can't see it in the back.

6 Goal 2. Map the unseen America.

7 Mapping the unseen America, including the  
8 nation's sea floor, coasts, ports, harbors and  
9 approaches is essential to Coast Survey's ability  
10 to provide accurate and reliable charts and  
11 models to support safe and efficient marine  
12 navigation. This mapping is also critical to  
13 other missions across NOAA and the federal  
14 government. As a result, Coast Survey is deeply  
15 committed to working in close collaboration with  
16 its federal partners, to ensure that surveys are  
17 coordinated and conducted as efficiently as  
18 possible. This means sharing survey data, joint  
19 planning and the elimination of chart  
20 discrepancies or chart duplication, especially in  
21 under-served areas like the Great Lakes, the  
22 Arctic, the Pacific Islands and its territories.

1           As an organization with a deep history  
2           and expertise in surveying, Coast Survey is in a  
3           unique position to lead these efforts and  
4           maximize the value for both marine navigation and  
5           partner data needs.

6           Autonomous systems. With nearly two  
7           million square nautical miles in need of mapping  
8           in addition to the U.S. ports, harbors and  
9           fairways that require continual maintenance, it's  
10          clear Coast Survey cannot accomplish the task of  
11          mapping the full extent of U.S. waters using the  
12          same methods as we have over the last 200 years.

13          There will be an excellent panel  
14          discussion tomorrow on unmanned systems, so I'm  
15          going to leave it at that and move on.

16          Goal 3. Sustain a high performance of  
17          people and systems for mission success. At the  
18          core of Coast Survey's ability to deliver world  
19          class digital navigation services and mapping the  
20          unseen America are the dedicated, passionate and  
21          highly skilled men and women who give their all  
22          to Coast Survey and its mission every day.

1                   Coast Survey is committed to  
2                   establishing a model federal workplace, a  
3                   workplace that supports the training and  
4                   development of its employees, a culture of  
5                   diversity, inclusivity and flexibility and which  
6                   attracts and retains world renowned talent.

7                   Other mission underpinnings include the  
8                   development and sustainment of Coast Survey's IT  
9                   and fleet infrastructure, as well as the  
10                  integration of new technologies into operations  
11                  such as unmanned systems and other emerging  
12                  opportunities as they arise.

13                  As technology requirements change over  
14                  time, Coast Survey will continue to leverage new  
15                  and existing technology capabilities to meet  
16                  mission objectives.

17                  In pulling on that same thread,  
18                  capacity building and leadership, the summer was  
19                  a busy one for Coast Survey. In July, we held our  
20                  third annual Nautical Cartography Open House,  
21                  welcoming over 250 attendees from the U.S. and  
22                  abroad. Government agencies, industry and

1 academic partners and members of the public  
2 attended. The Open House featured posters,  
3 presentations, tours and exhibits centered around  
4 four themes: bathymetric databases, custom  
5 charting, innovative cartography and precision  
6 navigation.

7 Just prior to the Open House, NOAA  
8 held its fifth Chart Adequacy Workshop. The  
9 workshop trains professional cartographers from  
10 international offices on techniques for assessing  
11 nautical chart adequacy using publicly available  
12 information, such as satellite images and  
13 maritime automatic identification system, AIS  
14 data.

15 This is an important technique for  
16 hydrographic offices around the world,  
17 particularly for developing countries who may be  
18 resource-constrained. Also, the second class of  
19 NOAA's certification program in NOAA Cartography,  
20 Cat B, is in its final month of their program.  
21 This internationally-approved training program  
22 certifies NOAA nautical cartographers

1 academically, making NOAA an expert in the global  
2 cartographic community.

3 The announcement for next year's Cat  
4 B certification program will be announced in  
5 January 2020. And I know that you have already  
6 provided us a lot of comments on the strategic  
7 plan, which we greatly appreciate, and now I will  
8 turn it over to Rich Edwing from CO-OPS.

9 CHAIR SAADE: Just a second, Richard.  
10 Are there any questions? We'll go ahead and have  
11 questions for each one of these segments, if  
12 anybody has any. Go ahead.

13 VICE CHAIR THOMAS: Liz, you just said  
14 that the website, the marinenav or  
15 navigationmarine or whatever, marinenav.noaa --

16 CAPT KRETOVIC: Marinenavigation.noaa.

17 VICE CHAIR THOMAS: So you said it's  
18 coming. Is that like months, years? What do you  
19 think as far as a projection on that one?

20 CAPT KRETOVIC: I'm not exactly sure.  
21 We've had a little bit of trouble hiring a  
22 developer, and so once they come on board in

1 December, I would imagine that we'll see things  
2 kind of come to fruition a lot quicker.

3 VICE CHAIR THOMAS: Okay.

4 CAPT KRETOVIC: And so maybe in the  
5 next year I would say we'll start populating it.  
6 It's just we're a little personnel constrained  
7 with our resources at the moment.

8 VICE CHAIR THOMAS: All right. That's  
9 great to have a timeframe, because you know a lot  
10 of mariners do ask about this integration  
11 website, and I know that it's been mentioned  
12 before. And so they were asking.

13 CAPT KRETOVIC: Yeah. We were able to  
14 secure the domain name, and at this point we  
15 haven't done any of the public facing  
16 architecture of it yet.

17 VICE CHAIR THOMAS: Great, thank you.

18 CAPT KRETOVIC: Thank you.

19 CHAIR SAADE: Any other questions?

20 (No response.)

21 CHAIR SAADE: Okay Rich, you're up.

22 MR. EDWING: All right. Good



1       afternoon everyone. I thought it might be  
2       helpful for me to give an overview and status of  
3       the PORTS program. It was a robust topic of  
4       discussion at our last meeting in Washington. I  
5       knew it was likely to be a robust topic here  
6       again, and there's a number of new members on the  
7       Panel who I thought might benefit.

8                 So apologies to those of you who are  
9       very familiar with this, but I'm going to go  
10      through this pretty quickly. Kind of there's a  
11      lot of slides. I put it together as kind of a  
12      package for you to have.

13                So just to start off, my program  
14      operates two base funded observing systems, and  
15      that's the National Water Level Observation  
16      Network, 210 stations around the country for  
17      tidal datums, predictions, sea level trends,  
18      those sorts of things. It also provides real-  
19      time data. Most of those stations have  
20      meteorological centers co-located with them as  
21      well. And then we have a current observations  
22      program where we go around the country, a couple

1 of locations each year to take short-term current  
2 observations to update tidal current predictions.  
3 And then we have our public-private partnership  
4 PORTS program, where we work with the local  
5 maritime community who wants to add more water  
6 level stations or permanent current meters or  
7 more meteorological sensors, or things like  
8 visibility sensors, air gap sensors.

9 We've partnered with the Corps and  
10 with Scripps and IOOS to where we can offer the  
11 wave buoys through their program. Over the  
12 years, we're able to offer all of the different  
13 observations parameters that that community has  
14 identified to us that they need for safe and  
15 efficient navigation. It all got started back in  
16 1980 where there was a bad accident down in Tampa  
17 Bay. A ship struck one of the pilings or a pier.  
18 The Sunshine Skyway Bridge collapsed. I think  
19 about 38 lives were lost. But the findings were  
20 if there had been real-time kind of comprehensive  
21 oceanographic and meteorological data available,  
22 that may have been avoided. So NOAA got to work

1 on developing a program to deliver that.

2 And at the time when PORTS got  
3 started, those offerings were unique. It was the  
4 only place to get kind of real-time oceanographic  
5 information and integrated information, you know.  
6 Today that's no longer true. But we offer this  
7 information through a variety of products.  
8 Certainly over the Internet and on mobile devices  
9 as well, and we also offer it over cellular  
10 phones through a voice tree menu.

11 And when PORTS first got started, that  
12 was the main way of getting the data, because  
13 WiFi wasn't around, or you had to have a  
14 hard-wired PC to be able to get to that data, and  
15 people would download it and fax it out to their  
16 ships or call it out to their ships. But of  
17 course over time, people are using the Internet  
18 more and more as it's more accessible and  
19 reliance on the cellular phone portion is  
20 declining, although still needed in a lot of  
21 areas. The products themselves, you know, this  
22 is a picture, that top picture is an illustration

1 of the amalgamation of collages of different data  
2 types that we put together, which you can also  
3 look at them individually. You can look at text  
4 displays, kind of however you want to view it,  
5 whatever's most comfortable for you.

6 We also have a capability called  
7 MyPORTS, which is a capability for you to go in  
8 and kind of just pick which sensors you want if  
9 you only use a subset, and kind of save your own  
10 web page and be able to go back to that web page  
11 and just see those sensors update every six  
12 minutes.

13 So the Coast Guard captain this  
14 morning talked about the objective -- safe and  
15 efficient navigation and protecting marine  
16 coastal resources. So here's just a simple  
17 safety example of how PORTS data can be used, and  
18 this is -- the illustration in the upper right  
19 hand corner is super cranes coming into Baltimore  
20 up the Chesapeake Bay from China.

21 When they first started getting ready  
22 to ship these cranes over, they looked at tide

1 predictions to kind of pick a good time of the  
2 month to arrive in the Chesapeake Bay when the  
3 water, you know, the predicted tides are going to  
4 be low. And then when they got to the mouth of  
5 the Bay, they started looking at the real-time  
6 data and our forecast model data, and that  
7 illustration down on the left there was at the  
8 time they hit the mouth of the Chesapeake Bay,  
9 and that red line is the observed water levels,  
10 that blue line is the predicted water level. The  
11 kind of dashed black line is an outcast. But you  
12 can see water levels were elevated a bit from  
13 predictions, so that potentially was presenting a  
14 problem. That arrow a little bit over to the  
15 right, I guess I do have that. Is that, yeah?  
16 Oh that's right. I'm not going to -- all right.  
17 You see the arrow.

18 (Laughter.)

19 MR. EDWING: That's where they were  
20 projected to get to the bridge, and of course as  
21 they got closer and closer to the bridge, they  
22 could look at the air gap measurement there in

1 the lower right-hand corner, and then they did  
2 indeed make it under their bridge. One thing you  
3 may not know is when they bring these ships up,  
4 they actually kind of partially sink them. They  
5 put more ballast in to kind of lower than  
6 freeboard as much as possible.

7 So efficiency, you heard people talk  
8 about this this morning, you know. If you have  
9 more water than you thought you were going to  
10 have, you might be able to add more cargo onto  
11 your ship if it's sitting at the dock and get out  
12 of port. And a number of years ago we did some  
13 calculations, because you know, numbers are good,  
14 but people tend to visualize things.

15 So we, you know, with an inch of  
16 draft, you might be able to get, you know, almost  
17 100 new Chevy Volts. I don't know if they're  
18 even in production anymore, but on board your  
19 ship or John Deere tractors. We did coffee  
20 beans, we did all sorts of things. But it's just  
21 a way of kind of trying to communicate how much  
22 more cargo a vessel could carry if they had more

1 water.

2           Actually, and you probably can't read  
3 this, but this just came up from Port Fourchon,  
4 and this is I think when Barry was approaching,  
5 and they were kind of -- I think they were very  
6 astute and they were kind of promoting their  
7 PORTS system and saying hey, besides supporting  
8 commerce this is also going to help protect us  
9 during a storm by giving us real-time storm  
10 surge. And I'm sure they're kind of helping to,  
11 you know, promote the support behind them for the  
12 funding that they need to provide to support the  
13 PORTS. That's kind of your protecting coastal  
14 marine resources example.

15           So how does the program work? I'm  
16 going to start over on the right-hand side, is  
17 you know the partner has a need. They need more  
18 observations within their body of water or within  
19 their sea port. They kind of have the  
20 requirements, and then they also have to find the  
21 funding to procure the equipment, to install that  
22 equipment and to maintain that equipment moving

1 forward.

2           You know, our responsibility really  
3 starts up if kind of a simplistic way of looking  
4 at it is on kind of the data management side.  
5 When we get appropriated a certain amount of  
6 funds every year to manage the PORTS program.  
7 There's a lot that goes on underneath that  
8 program management bullet there, but you know,  
9 it's also bringing in the data, quality  
10 controlling it, disseminating it, creating  
11 products and services, you know, standards and  
12 doing technology infusion into those sorts of  
13 things.

14           Probably the single most important  
15 thing we do is we quality control that data on a  
16 24 by 7 basis. We have watch standards who are  
17 -- watch standards who are, you know, as you can  
18 see one right here, constantly watching all the  
19 data. We have a lot of automated software that  
20 kind of flags problems. They don't have to look  
21 at every little sensor that's sending data.

22           But the system flags the problems and



1 looks at the problems to see if they're real  
2 problems or just kind of, you know, an unusual  
3 situation I'll say. But if they think there's a  
4 problem, they turn dissemination of that sensor  
5 off, because we want to prevent accidents and not  
6 cause them with erroneous data.

7 And then if it's a problem, they send  
8 it on to other folks to try to figure out what's  
9 going on and get it repaired.

10 Another I think really important thing  
11 that we do is we're always looking for ways to  
12 improve the observing system through a test and  
13 evaluation program. On the left-hand side,  
14 there's an air gap sensor and that, you know, we  
15 developed that air gap sensor using existing  
16 technology. But back when air gap, you know,  
17 striking bridges was becoming more and more of an  
18 issue.

19 When we first developed that system,  
20 the sensor, the only sensor we found that could  
21 meet the requirements was a \$35,000 sensor  
22 manufactured in Norway. Today, we can use a

1       \$3,500 sensor for the same thing because American  
2       technology kind of caught up. So it really  
3       dramatically dropped the price of that, you know,  
4       that air gap sensor.

5                 That's the visibility sensor there in  
6       the middle that was talked about, and again  
7       people are always talking to us about visibility  
8       and they needed to know what's going on with fog  
9       all around the harbor. It is a point  
10      measurement, so it's got its limitations, but it  
11      does serve that purpose.

12                You can see those two kind of prongs,  
13      if you will, and it kind of measures right in  
14      between those two prongs, and we make projections  
15      of how clear it is for about five nautical miles  
16      around that visibility sensor.

17                Through the NOAA Small Business  
18      Innovation and Research Program, we actually have  
19      a grant out to a private company, a small  
20      business who's developing a new one of these,  
21      which is using a camera, and I think it takes a  
22      picture of an object off in the distance in clear

1 weather, and then as fog and other things move  
2 in, then they use infrared and other types of  
3 things to kind of see through that and make  
4 forecasts, or not forecasts, but assumptions  
5 about how much visibility you may have. So that  
6 holds a lot of promise, so we're excited about  
7 it. It's also much less a power hog and other  
8 things, easier to install. These particular  
9 sensors can be challenging to install.

10 And on the right-hand side is an iAtoN  
11 current meter. Again, you heard today this  
12 morning someone talk about well, well we really  
13 need to, you know, the current measurements out  
14 there right next to the channel. Well, many  
15 years ago we developed the capability to put  
16 current meters on -- yeah, current meters on  
17 Coast Guard buoys.

18 But at the time, they had to be  
19 collimated back to a shore station via line of  
20 sight radio, all sorts of communication issues.  
21 We never got the data reliability out of them we  
22 liked. But now we've kind of reworked the

1 system. It's all on the buoy. We use iridium  
2 satellite so we don't, you know, truly improved  
3 the reliability.

4 It's cheaper, we got rid of that shore  
5 station, and now we can put it further offshore  
6 because you don't have those line of sight, you  
7 know, requirements. That's what allowed us to do  
8 the Miami Port System. So it's important to  
9 always keep improving your systems.

10 Our PORTS partners. I'll steal, I'll  
11 use it for the third time. It's a team sport,  
12 you know. You could see it as a pretty diverse  
13 set of partners up here, and there's probably  
14 even somebody left off like bridge authorities.  
15 I don't see bridge authorities on there. In some  
16 cases, they're a PORTS partner. Sometimes in one  
17 area we have multiple partners for a single port.  
18 It's just depending on who's got the funding.

19 So where are we today? We've got 33  
20 capital ports, and it's important to understand  
21 the Capital PORT system can service more than one  
22 seaports, like the Lower Mississippi River

1 Capital PORTS services those five seaports to  
2 some degree, you know, along the river here. And  
3 those 76 seaports and there's lots of different  
4 ways of measuring what comes through a seaport.  
5 But by tonnage, we're actually servicing over 90  
6 percent of the tonnage on an annual basis. We're  
7 servicing over 90 percent of the value of cargo  
8 that comes through, and there's you know --- but  
9 that doesn't capture everything like, you know,  
10 we have a number -- the Navy's our partner in a  
11 couple of places. Well they don't really get  
12 captured by those sorts of things, but --

13 And this is a graphic I think -- well  
14 some of you have seen before. You know, we tried  
15 to come up with a graphic that shows where we're  
16 trying to go, right. How many, what, how much  
17 progress are we making at meeting the need, and  
18 there's really not a good end point defined. But  
19 we came up with 175 of the roughly 300 seaports  
20 there are in the U.S.

21 We looked at what would get us to 99.9  
22 percent of the tonnage. That was about, you

1 know, 125, 150 seaports, and then we added in  
2 Naval seaports, fishing seaports, other things  
3 that didn't get captured, and that got us to 175.  
4 We grouped those into 50 Capital PORTS, and these  
5 circles kind of show where those would be. The  
6 size of the circle represents how many seaports  
7 get covered. That kind of green aquamarine  
8 color, we think it's substantially complete,  
9 although I know for a fact we've been adding a  
10 few more sensors onto those. The blue is there's  
11 no PORTS capability there, and the yellow is we  
12 know the partners are still looking to build  
13 their PORTS. Often PORTS get started with just a  
14 sensor or two. People build confidence and start  
15 adding on to it. You can see the large yellow  
16 circle there, the Lower Mississippi River,  
17 because we know people want more air gaps and  
18 current meters and those sorts of things.

19 So much said. The system has doubled  
20 in the last 10 years, and that's true  
21 particularly in terms of just the number of  
22 PORTS. I can't even read this, but I think we

1 were around 15 about 10 years ago, and now we're  
2 up over 30. Another way to look at it is just  
3 number of sensors, because again not every PORTS  
4 is the same size or created equal. Maybe a  
5 better way to look is at the number of sensors.  
6 You can see we're up to 895 individual sensors  
7 being operated through this system.

8           What's been the drivers behind the  
9 growth? You know, here's some general statements  
10 I don't really need to read to you, and we  
11 probably need to add a couple more vessels onto  
12 the right of this graphic. It probably hasn't  
13 been updated in a while. But what we've really  
14 seen recently are the three major drivers in the  
15 last five to 10 years, and probably going back 10  
16 years or so, you know, the expansion of the  
17 PANAMAX Canal and everybody going to 50 feet and  
18 trying to look at that and get prepared for that  
19 was a big driver.

20           More recently, LNG has been a big  
21 driver. Some of our most recent PORTS have been  
22 established because they're looking to either

1 establish or expand their LNG capabilities. We  
2 know there is going to be a new PORTS in Coos  
3 Bay, Oregon, which if you look at it from a  
4 tonnage or value sort of statistic, it is way  
5 down that list of 175. But you're putting in a  
6 very large LNG facility there, and the Coast  
7 Guard hopefully said oh, if you want us to  
8 approve the permit, you need a PORTS system to go  
9 along with it to make sure it's safe.

10 And then the last thing is we've had  
11 the Navy as a partner in a few locations, and now  
12 all of the sudden there's a renewed interest in a  
13 number of other locations. Actually, our next  
14 new PORTS will be in Kings Bay, Georgia, so they  
15 can get the nuclear submarines and other vessels  
16 in and out of their facility there.

17 And then there's other facilities  
18 around the country, particularly out in the Puget  
19 Sound that are coming to us and talking to us,  
20 and we'll see if they move forward or not. But  
21 these are I'd say the big drivers over the last  
22 five to 10 years.



1                   So I have a few slides in economic  
2 studies. I think we were one of the first  
3 organizations to do an economic benefit study for  
4 oceanographic kind of information and its  
5 benefits. We started off in 2005 with a study in  
6 Tampa Bay, and then we followed up with some  
7 others in other locations. I think the Columbia  
8 River was the last one done in 2010. It was kind  
9 of a sampling. You know, you can see that the  
10 cumulative number there was \$50 million, but  
11 that's 2010 dollars, so certainly more today.  
12 But the other thing that came out of those  
13 studies which surprised us a little bit was the  
14 economist found he could document reductions in  
15 accidents, and of course an avoided accident  
16 helps contribute to the economic benefit.

17                   So maybe shouldn't have been such a  
18 surprise, but we didn't expect to see that. And  
19 so we then took the next step, and we said: what  
20 if we have a fully built out system? What if we  
21 had 50 Capital PORTS and everything that went  
22 with that? It was a NOAA economist named Eric

1 Wolfe, who worked with a guy named David  
2 MacFarlane, ex-director of Coast Survey and then  
3 he came over with us for a while, was the PORTS  
4 program manager.

5 But he kind of brought the  
6 kind of the real world knowledge to that study of  
7 how PORTS is used and we did. So the graphic on  
8 the right there is the 500 page report they did,  
9 analysis. And they used the Corps of Engineers  
10 channel portfolio tool and the U.S. Coast Guard  
11 accident database. And on the left-hand side was  
12 kind of a glossy publication we did that kind of  
13 at a high level communicated the results, because  
14 no one is going to read that 500 page report.

15 But here's just a couple of pages. So  
16 at that time, you know, if we had a national  
17 PORTS system, over \$300 million of annual value,  
18 again 2010 dollars. Again it found significant  
19 reductions in types of accidents, oil spills,  
20 those sorts of things. And then Eric Wolfe  
21 decided to even do more work and did another  
22 whole set of analyses that really drilled down

1 into some areas, and this is a paper he and -- he  
2 got published and peer reviewed, so it's got that  
3 kind of credibility.

4 I just pulled out a couple of  
5 graphics. So he looked at couple of locations,  
6 seven locations where new PORTS have been  
7 established. He knew what happened before the  
8 PORTS were there, and he had some good history of  
9 what happened after they were established.  
10 That's what economists like to do. It makes it  
11 easier for them to measure change when you  
12 introduce something new.

13 But you can see -- well, for those of  
14 you who don't know, an allision is a moving  
15 object striking a stationery object like a ship  
16 hitting a bridge. You know, a collision is two  
17 moving objects meeting together, and you know,  
18 groundings are groundings. So he kind of broke  
19 these things out and in these particular  
20 locations, you know, he showed these different  
21 weights, these reductions in these type of  
22 accidents.

1                   Here's another graphic, and he had  
2                   lots of these different types of graphics. But  
3                   this was looking at what happened at these  
4                   locations in terms of how many transits they can  
5                   make per type of accident being reduced or  
6                   increased. So you know, that solid line, he  
7                   looked at actually all the PORTS -- all of the  
8                   PORTS I think in the U.S.

9                   That upper line is those PORTS that  
10                  had -- those sea ports that had PORTS  
11                  established, and you can see back in 2008 they  
12                  were experiencing around 7,500 groundings -- I'm  
13                  sorry, a grounding every 7,500 transits, and  
14                  after the PORTS they were getting up to one  
15                  grounding every 22,000. And those locations that  
16                  didn't have PORTS were actually experiencing  
17                  increased groundings. So this is pretty powerful  
18                  information.

19                  I wanted to wrap up by talking a  
20                  little bit about the forecast models. They're  
21                  not technically a part of the programs, but  
22                  they're a great extension of the value of the

1 real-time information, because it's really  
2 important to know what's happening today. But if  
3 you also know if that's either going to continue  
4 into tomorrow or the day after tomorrow or change  
5 in the next couple of days, that's really  
6 important, you know, particularly for transit  
7 planning.

8           So again, you know, our traditional  
9 product was the predictions, you know, just  
10 astronomically driven. Pretty accurate on a  
11 regular day, an average day, but if weather moves  
12 in not so much, and you've got your real-time  
13 data. It tells you what's going on now at  
14 particular locations, and then you've got your  
15 forecast models, which can now project out a lot  
16 of these same parameters into the future.

17           This is an example of Chesapeake Bay.  
18 And we can put these pins in areas where there  
19 are no observations. You know, we work with the  
20 local maritime community. Where do you want, you  
21 know, these forecast information? And I'm going  
22 to go to -- and this is -- you kind of saw this

1 graph earlier. Here's what a typical, you know.  
2 If you click on one of those, if it has -- if  
3 it's at a place that does have a sensor, you can  
4 observe water level, which in case is laying on  
5 top of the nowCOAST information, which is a  
6 modeled observation pretty well.

7 If you see it's deviating from  
8 predictions a bit because there's probably some  
9 weather going on, and taking into account whether  
10 it's forecasting that above average water level  
11 or above prediction water levels could continue  
12 for the next few days. So that concludes the  
13 presentation. Are there any questions?

14 CHAIR SAADE: Any questions for Rich?  
15 Julie.

16 VICE CHAIR THOMAS: Rich, you  
17 mentioned the SBIR.

18 MR. EDWING: Yes.

19 VICE CHAIR THOMAS: And I'm just  
20 interested in that. I was involved a little bit  
21 in some of the submissions. But it seemed like  
22 there was this gap where -- and you mentioned,

1 you know, they would be taking pictures and then  
2 they could make some assessment, and then that  
3 becomes operational. But the question that I  
4 always have is okay, so once you ingest it, it  
5 becomes operational. Do you have the resources  
6 then to continue with quality control and  
7 oversight of that data?

8 MR. EDWING: Right, right. Sure.

9 VICE CHAIR THOMAS: I mean what is  
10 that full path that you have on those?

11 MR. EDWING: Well, and that's -- well,  
12 I guess at the start of the process, we kind of  
13 get to write the requirements for what we want  
14 out of this, you know.

15 VICE CHAIR THOMAS: Yeah, but the one  
16 that I saw had no quality control at the end of  
17 the project.

18 MR. EDWING: Right. Well, we don't --  
19 we don't take anything in, and that's part of our  
20 test and evaluation process. It just doesn't  
21 look at the technology, but it makes sure that  
22 data pipeline is in place, you know, kind of

1 behind it. And part of that data pipeline is  
2 being able to quality control, you know, that --  
3 understand and quality control that sensor.

4 VICE CHAIR THOMAS: So that's embedded  
5 in their -- in their package that they send to  
6 you?

7 MR. EDWING: Well, we at least specify  
8 to them there's certain information or it needs  
9 to work certain ways so that we know we can  
10 quality control it. There may be some things we  
11 have to develop after that to do that good  
12 quality control. But we make short kind of  
13 lines. You know, and that's why we just don't  
14 use any current meter or tide gage that's out  
15 there. We always test and evaluate those things  
16 to make sure we operate how they work, to make  
17 sure we understand the accuracy levels, to make  
18 sure that we can -- every sensor has its own  
19 idiosyncrasies, and we need to understand those  
20 so we can properly quality control it.

21 VICE CHAIR THOMAS: Okay. Thank you.

22 MEMBER DUFFY: Rich, I just want to



1 say the photo behind you really demonstrates the  
2 importance of the PORTS program to us. There's a  
3 vessel built right above the Huey P. Long Bridge.  
4 High river stage came in. There was a lot of  
5 movements and concern about getting that vessel  
6 out without clipping radar or having any  
7 scratches put on the vessel.

8 I remember working with Tim and going  
9 back with the pilot associations a lot, and when  
10 they were able to get through. But unfortunately  
11 with the PORTS program, I'm reminded of one of my  
12 first bosses told me something very important. A  
13 customer always wants more, and he is willing to  
14 pay less for it.

15 MR. EDWING: Your boss was a wise man.

16 CHAIR SAADE: Okay. Let's move on to  
17 Juliana. Thanks a lot, Rich.

18 MS. BLACKWELL: Good afternoon. For  
19 those of you who are not familiar with the  
20 National Geodetic Survey, I'm going to start off  
21 with a brief definition of geodesy. Geodesy is  
22 the study of the size and the shape of the earth,

1 including its gravity field, and how it changes  
2 over time. And so it's a very mathematical  
3 science. It has a long history and in the next  
4 15 minutes, I'm going to give you some very brief  
5 highlights of what we do in the National Geodetic  
6 Survey, primarily focused on the National Spatial  
7 Reference System. This was mentioned earlier  
8 this morning by Nicole LeBoeuf.

9           So the National Geodetic Survey is an  
10 office within NOAA's National Ocean Service, and  
11 we are responsible for defining, maintaining and  
12 providing access to the National Spatial  
13 Reference System, which is the consistent  
14 coordinate system that defines latitude,  
15 longitude, height, scale, orientation, gravity  
16 and shoreline throughout the United States and  
17 our territories.

18           It's also our responsibility to make  
19 sure that what we do here nationally fits into  
20 the global geodetic reference frames and connects  
21 internationally with our other partners in other  
22 countries, so that we have one consistent frame

1 that we're all working within.

2 The National Spatial Reference System  
3 also includes geodetic datums, which are used not  
4 only in the foundation for mapping, charting and  
5 geospatial data, but also have a role in the  
6 precision navigation products, which I'm going to  
7 highlight here very briefly.

8 So within the National Geodetic  
9 Survey, we have two primary programs that we're  
10 responsible for, and again on the geodetic side,  
11 which I'm going to talk about in a little bit,  
12 and the coastal mapping side, which was defining  
13 that national shoreline and having that shoreline  
14 available for the nautical charting product. But  
15 we've learned over time with the new technologies  
16 that defining the national shoreline and the  
17 byproducts of doing that are applicable for a  
18 number of -- a number of things, and the uses for  
19 that information just continue to multiply.

20 Within our Remote Sensing Division,  
21 where we provide the coastal mapping program and  
22 oversee that through Mike Aslaksen's leadership,

1 one of the primary things we do is for the  
2 nautical chart application, and without that  
3 information you wouldn't have a shoreline, you  
4 wouldn't have the land features that are required  
5 for the precision navigation component of how  
6 things relate to land and how they relate to the  
7 geodetic datums.

8           So we do this for all of the safety  
9 and navigation products, in the form of the  
10 foundation data and for -- that refer to  
11 reliable, consistent, accurate reference frames,  
12 because you can collect all sorts of data, and if  
13 you can't relate it to each other in an accurate  
14 way, that information is not valuable, and it can  
15 get you in trouble.

16           One thing about relating data is the  
17 importance of having and knowing what datum you  
18 have collected your data in, and being able to  
19 transform that data between geodetic water level,  
20 river datums, local datums, et cetera, and  
21 knowing that you're doing that and doing it with  
22 confidence, and knowing what your accuracies are

1 when you do make those relationships between the  
2 different types of datum.

3 One of the things you're going to hear  
4 about here in a few minutes is V-Datum, which is  
5 one of the primary products that our three  
6 offices coordinate on in providing the tool that  
7 allows that information between the geodetic, the  
8 water level and the title datums, water level  
9 datums, and making those all work together in the  
10 geographic locations that we're responsible for.

11 One of the things that you'll see here  
12 is the fact that from the imagery and the  
13 delineation of the river banks and how that gets  
14 applied from NGS to Coast Survey, and the fact  
15 that through our collections and the  
16 transformation of the data to the proper datums,  
17 is being able to update that information that's  
18 being used in precision navigation products.

19 And you'll see here what we currently  
20 collect in NGS meets the scale and the accuracy  
21 of the current precision navigation products, but  
22 we also know that things are going to be

1 evolving. And as requirements increase with the  
2 accuracy levels and the need for other shoreside  
3 infrastructure data, maybe that's one of those  
4 things that we can continue to build on and work  
5 towards providing for precision navigation  
6 products.

7 But as we know right now, I think the  
8 needs are being met but we are always looking at  
9 how we can improve the information that will feed  
10 into 3D or higher definition charts. I would say  
11 from the National Geodetic, from the geodetic  
12 perspective is also being able to look at  
13 improving 3D high definition of all  
14 transportation systems, which means taking those  
15 products that come in through the PORTS, and also  
16 how does that apply to railways and highway  
17 systems and airline systems, so that we can move  
18 those goods inland in any -- in all ways possible  
19 with the highest degree of accuracy and the use  
20 of autonomous vehicles in all transportation  
21 modes.

22 As Admiral Gallaudet mentioned earlier

1 this morning, one of NOAA's priorities is the  
2 unmanned systems, and being able to utilize  
3 unmanned systems in a variety of ways. Within  
4 the National Geodetic Survey, and again under the  
5 purview of the Remote Sensing Division, one of  
6 the things that we are doing is through our  
7 Testing and Training Center outside of  
8 Fredericksburg, Virginia, is enabling the ground  
9 work for additional sensor testing, platform  
10 evaluation and improved proficiency in utilizing  
11 small unmanned aircraft systems for the use of  
12 mapping.

13           And one of the other things that we've  
14 done is again, this is -- it's a big lift. It  
15 seems like it should be an easy thing, but  
16 realizing all the complexities of not only  
17 learning how to utilize these systems, but make  
18 sure that we're doing them in a safe way,  
19 including having our IT risks identified. One of  
20 the things that NGS has been really engaged in in  
21 the last couple of years is making sure that we  
22 meet all of the IT risk acceptance requirements

1 for NOAA, and being able to share our expertise  
2 and help train other offices for the applications  
3 of the small and unmanned aircraft systems.

4 Some of the examples here, and I know  
5 it's kind of small print, but working with Coast  
6 Survey, I think it was mentioned earlier today  
7 about utilization on the Thomas Jefferson of the  
8 unmanned system, and then being able to provide  
9 other opportunities for folks to learn how to  
10 utilize these systems for their mapping and  
11 surveying needs.

12 Very briefly, I want to touch on some  
13 of the other aspects on the coastal mapping  
14 program. In addition to our continual update of  
15 the shoreline, some of the areas that we are also  
16 focusing on with the use of the supplemental  
17 funds that are from FY '17, are covering the  
18 areas that were impacted by Hurricanes Harvey,  
19 Irma and Maria.

20 We've got a number of projects that  
21 are currently underway and are wrapping up here  
22 soon, and just in time for another supplemental



1 that was provided in FY '19. The spend plan is  
2 still not approved, but we know that we've got  
3 some work to be done here to support the marine  
4 mapping from the effects of Hurricane Florence  
5 and Hurricane Michael. So we'll be giving you  
6 updates on that work at the next meeting.

7 Earlier this summer, as we mentioned  
8 a couple of times, with Hurricane Barry that came  
9 ashore here in coastal Louisiana, we were able  
10 and requested to fly some of the areas locally  
11 here, in particular the intracoastal waterways  
12 and some of the other major waterways and ports  
13 along the coast.

14 It wasn't a significant event compared  
15 to some of the others that I mentioned on the  
16 previous slide, but there were impacts and we're  
17 able to use our mapping capabilities to quickly  
18 collect that data and provide those aerial images  
19 for emergency managers to be able to look at, and  
20 for FEMA to be able to utilize to determine the  
21 impacts in areas where they needed to provide  
22 additional resources.

1           I want to shift gears very quickly  
2 here into the geodetic side of the updates for  
3 NGS, and talk about some of the modernization of  
4 the National Spatial Reference System, some of  
5 the activities that have occurred since we met  
6 last in Washington, D.C. this spring.

7           I know some of you are not as involved  
8 on the geodetic side of things, but I just want  
9 to make sure that you understand that we are  
10 going -- we've been very methodical about the  
11 activities that we're doing in our strategic plan  
12 to get to 2022, which is the date that we have  
13 established for when we're going to update the  
14 National Geodetic datums.

15           At the end of 2022, we're expecting to  
16 replace NAVD-83 with four new terrestrial  
17 reference frames, one for each of the tectonic  
18 plates, and to update NAVD 88, which is our  
19 current vertical datum with a geopotential datum  
20 that will be based on our airborne gravity data  
21 that we've been collecting and modeling.

22           In doing that, we've got not only the

1 operational aspect of collecting data and  
2 improving our sensors, our geodetic sensors that  
3 we have throughout the country at Continuously  
4 Operating Reference Stations, but we've also got  
5 a number of publications that we are providing,  
6 that define in very technical detailed geodetic  
7 terms what we're doing and how we are planning  
8 the changes, and how we will be working in a  
9 modernized NSRS in the future.

10           So we were successful in getting the  
11 blueprint for working in the modernized NSRS out,  
12 and that's available on our website. We have a  
13 geospatial summit in May in Silver Spring,  
14 Maryland, where we talked to hundreds of our  
15 stakeholders and gave them updates on what we  
16 were doing and heard from some of our partners on  
17 some of the case studies that they are interested  
18 in, understanding that the changes that will be  
19 coming for them in their areas of business.

20           We've done some updates with our  
21 policy and procedures related to State Plane  
22 Coordinate Systems, which are most impactful to

1 the professional surveying community. In June,  
2 we were able to publish a status report on all  
3 the products and services that we've identified  
4 as part of the modernized NSRS.

5 So there's a number of things that are  
6 in great detail in that technical memorandum that  
7 was released, and we were able to update our  
8 research plan to better align with our research  
9 needs, not only to get us to 2022, because a lot  
10 of that is already underway, but looking at the  
11 research opportunities past 2022 and looking for  
12 partnerships on how we can accomplish a number of  
13 those activities.

14 On the operational side, as of last  
15 week, we've got about 77.5 percent of our  
16 airborne gravity collected for our portion of our  
17 Gravity Initiative. The picture that you see  
18 here, anything in green is data that's already  
19 been collected, complete and is available for  
20 others to utilize, mainly in a research aspect.  
21 The areas that you see in orange are those where  
22 collection is underway.

1           There are a few white blocks that we  
2 haven't started collection in as of yet, but we  
3 are planning on getting not only the landlocked  
4 areas but also the Pacific Island areas collected  
5 before our 2022 deadline, because that data will  
6 become the basis for our new vertical or  
7 geopotential datum that will be covering all of  
8 the tectonic plate areas that we're responsible  
9 for.

10           Also earlier this month, V-Datum 4.0  
11 was released. Again, it's a datum transformation  
12 tool. Stephen White is here, and he's going to  
13 be talking to us about that in a few minutes.

14           One of the things that we've been  
15 doing in the interim before we get to 2022 is  
16 working on an interim update to our GEOID model,  
17 which is helpful in providing the orthometric  
18 type heights above sea level that you will -- are  
19 able to obtain through GPS, but only through an  
20 updated model. This has been kind of a crowd  
21 sourcing initiative that's been ongoing for the  
22 past five years, and we're able to culminate that

1 with an update, our last, our newest and our last  
2 hybrid GEOID model, GEOID 18, which will be  
3 released here very soon.

4 The data that we're collecting for  
5 that will also help us in a lot of our  
6 transformation tools that we'll be providing for  
7 the 2022 update. We are also in the process of  
8 doing the final vetting on the updated  
9 coordinates and velocities for our Continuously  
10 Operating Reference Station Network.

11 Again, aligning those with what we  
12 know now, with the technology that's available  
13 now, and aligning those with the International  
14 Terrestrial Reference Frame. Those coordinates  
15 are sort of available right now but not fully  
16 integrated into all of our products and services,  
17 but will be soon.

18 Very brief update on our CORS network,  
19 I've talked about this a few times, and I know at  
20 our last meeting in D.C. it was one of the  
21 priorities of the group in the letter that was  
22 written to Dr. Jacobs about the support for the

1       CORS network. A brief update that. Since  
2       spring, we've been able to hire a CORS program  
3       manager. We had a goal of establishing eight  
4       foundation CORS this year, which were really CORS  
5       that we had, NGS owned, that we're able to  
6       upgrade.

7                 So far, we've only been able to  
8       establish five of the eight that we had set for  
9       our goal, and it looks like that's probably going  
10      to be it for this year. We had some down time  
11      earlier this year, as you all know, which put us  
12      a little bit behind. We're still working on  
13      interagency agreements so that we can adopt some  
14      of the stations that are owned by other federal  
15      partners and establish them as foundation CORS.  
16      So we're still working that. And we are trying to  
17      fill a number of vacancies in our CORS group.  
18      Currently, right now we've got eight that we have  
19      prioritized. So it takes a while to get new  
20      people into positions, and it's been kind of a  
21      slow go at that, but we're making progress.

22                 The one big takeaway that I will keep

1 saying every time I have the opportunity is, in  
2 preparing for 2022, one of the most important  
3 things that people can do is to manage the data  
4 that they have now, understand what the metadata  
5 is associated with the geospatial data and your  
6 projects, what reference frame it's referenced  
7 to, what epoch, what models were used in getting  
8 to that final product that was delivered, knowing  
9 what you use for project control, knowing when it  
10 was surveyed, and retaining the original data so  
11 it can be reprocessed at a later date.

12 Those are the most important things  
13 that we are talking to our partners about. And,  
14 if you're able to and you have the tools to go  
15 out and collect additional data, help us by  
16 supporting the transformation tool by collecting  
17 additional data using our guidance on our GPS on  
18 Benchmarks campaign on our website, and looking  
19 at our beta products and giving us feedback on  
20 things that you like or don't like or don't  
21 understand or don't work for you in the area that  
22 you are collecting data.



1           Back in the spring meeting, there was  
2           also some questions about managing the datum  
3           updates and when things were going to be rolled  
4           out. This slide is really just to put it all in  
5           one place when things are expected. From the  
6           geodetic side, the NSRS modernization, the new  
7           geodetic reference rooms and datums are expected  
8           in late 2022. From the CO-OPS side, the National  
9           Tidal Datum Epoch update is expected in late  
10          2023. And from the combined effort with NGS and  
11          CO-OPS in coordination with our Canadian  
12          colleagues, the International Great Lakes Datum  
13          is expected in late 2025.

14                 Last, but not least, if you're  
15                 interested in learning more about geodesy and  
16                 things that we have going on, there are a number  
17                 of things that you can reference on our website,  
18                 and I just have a bunch of them posted here in  
19                 case you're hungry for more. Thank you very  
20                 much.

21                         (Applause.)

22                         CHAIR SAADE: Any questions for

1       Juliana?   Okay.   Oh, go ahead.

2                   RDML SMITH:   Quick question.   I know  
3       the Tidal Datum Epoch for Louisiana is  
4       accelerated.   It might just be worth saying just  
5       a little bit more about that, because it actually  
6       did come up with our Army Corps colleagues this  
7       morning about keeping up with that epoch.

8                   MR. EDWING:   Yeah.   So, I think  
9       there's about half a dozen locations in the NWLON  
10      where we do these five year updates of the  
11      datums, and it's mainly driven by land motion.   I  
12      think there's four stations in Louisiana because  
13      of the subsidence, and two stations up in Alaska  
14      because of the uplift still going on because of  
15      the glacial retreat.

16                   You know, the datum that's -- we can't  
17      wait 20 years to update the datum to those  
18      stations for them to be useful to people.   So a  
19      number of years ago we went to this five year  
20      cycle.

21                   RDML SMITH:   Approximately how much of  
22      that is too much?   What is the five-year

1 difference? Is it --

2 MR. EDWING: Yeah, I know what you're  
3 asking. So, I don't know that number. You know,  
4 I can --

5 MR. OSBORN: For here? I mean, what  
6 was the adjustment?

7 MR. EDWING: Well, yeah, I think what  
8 he's saying is a certain rate that these stations  
9 have to exceed that triggers our decision to do  
10 this five-year update.

11 (Pause.)

12 RDML SMITH: I'll repeat that on the  
13 microphone for the audience. The answer was it  
14 was an adjustment of 3.3 inches in South  
15 Louisiana.

16 MS. BLACKWELL: Okay. Thank you very  
17 much. Now we are going to hear from Stephen  
18 White, who's an NGS employee. He is our VDatum  
19 program manager, so he coordinates the VDatum  
20 program and what's going to happen where. And  
21 this is a combined effort with Coast Survey,  
22 CO-OPS, and NGS, and has been an ongoing program.

1 It just keeps getting better and better. So,  
2 Stephen, why don't you give us an update?

3 MR. WHITE: Okay, thank you. I'm  
4 going to jump up, because I'm probably going to  
5 use the laser pointer a little bit here.

6 Okay, thank you. So, if you start  
7 thinking about you're, you know, creating a  
8 project or developing an application, you know,  
9 one of the things you're going to do is actually  
10 go out and start obtaining data. You might start  
11 obtaining lidar, it might be based on NAD 83.  
12 Some lidar might be based on ITRF. And we'd grab  
13 some GPS data that might be based on WGS 84.

14 You know we have holes in those data.  
15 So we grab some USGS data. It might be based on  
16 NAVD 88 based on GEOIOD96 if they're doing beach  
17 mapping projects. We have some FEMA lidar. It  
18 might be based on NAVD 88 based on GEOID12B.  
19 They we go to grab some Army Corps of Engineers  
20 data, NGVD-29.

21 And then, you know, we're looking for  
22 bathymetry. We also can see that it might be

1 mean lower level water, mean low water, mean high  
2 water. Once we start integrating all these data  
3 sets together, you can see, I mean, they could be  
4 30 meters apart. We start having waterfalls in  
5 our data and people are like, oh, this data's  
6 bad. It might just be actually the datum that  
7 the data is actually on.

8 So, with that, NGS, OCS, and CO-OPS  
9 have developed VDatum. And this is really for  
10 converting among many different vertical datums.  
11 And really we're trying to help, you know, map  
12 the land-water interface.

13 So there's three tiers of the VDatum  
14 program. It kind of starts out with the  
15 foundational data observations. This is can be  
16 geodetic and tidal. That then feeds the modeling  
17 efforts. This can be hydrodynamic or TSS, and  
18 the TSS is the topography of the sea surface.  
19 And with those grids or models we actually put an  
20 uncertainty estimate associated with the  
21 transformations. And then that feeds into the  
22 software development, outreach, training, and

1 coordination. And these three tiers make up  
2 VDatum.

3           So when you think about VDatum, we  
4 kind of support three categories of vertical  
5 datums. There's the 3D. Those are based on  
6 generally space-based systems, such as GPS or  
7 GNSS. We have orthometric. That's really based  
8 on a form of global mean sea level. And then we  
9 kind of move into the water levels. So then we  
10 go into local mean sea level, mean high water,  
11 mean lower level water.

12           This here, some people think this is  
13 a very complicated slide, but this is actually a  
14 very simplistic slide for VDatum. And you can  
15 kind of see where we have the 3D datums, the  
16 orthometric datums, and the tidal datums. And  
17 really what is in this red circle here is really  
18 what VDatum is responsible for, and kind of  
19 everything on the left side is really NGS and the  
20 international community.

21           And so you can find a lot more  
22 information on the VDatum website,

1 vdatum.noaa.gov. Currently, you can see here,  
2 the current coverage. We have coverage in  
3 continental U.S., the Great Lakes, Puerto Rico,  
4 U.S. Virgin Islands, and then just recently  
5 Southeast Alaska.

6 We do support four different  
7 interfaces right now. So we have the GUI, it's  
8 graphical user interface. This is what most  
9 people utilize. And this is really where you're  
10 going to be processing terabytes and terabytes of  
11 data. So when we process our lidar, we're  
12 putting it in blades, you know, we're spinning up  
13 multiple instances and really just trying to push  
14 the data through.

15 And so with that we also have a  
16 command line interface. And so you can  
17 programmatically cull VDatum without actually  
18 seeing the GUI. This is what we're doing with  
19 most of the lidar and multibeam. We have  
20 actually created a web or online application so  
21 you don't have to download the program. You can  
22 just go online. We have a map interface. And so

1 we've created layers here to try to help educate  
2 the users on some of the inner workings of  
3 VDatum, so you can kind of see what's valid,  
4 what's not valid, what's non-tidal, things such  
5 as that.

6           And then we've also actually created  
7 an API. And so people that are developing mobile  
8 applications, such as on your phone, you know,  
9 can ping our servers. And then it provides a  
10 response, and you really never know that VDatum  
11 was included.

12           And so Juliana kind had mentioned  
13 earlier version 4.0 that we released earlier this  
14 month, and with that was NADCON 5. And this  
15 starts to get into separating the various NAD 83  
16 realizations out. And you'll see we've kind of  
17 had to configure the software a little bit  
18 different, because when you select Alaska it's  
19 going to give you different datums than when you  
20 select continental U.S.

21           We have also added in ERDAS Imagine  
22 support. So this kind of just helps out with



1 kind of like the GIS users. So you kind of think  
2 of GeoTIFFs or Imagine formats. These are like  
3 the digital elevation models that most people  
4 use, and so you're not having to translate data.  
5 Then we have also -- it wasn't part of the former  
6 plan, but we've really tried to push including  
7 southeast Alaska, and I'll talk a little bit more  
8 about that.

9 And then also based on some of the  
10 Sandy supplemental, we were able to really  
11 enhance the New York/Long Island Sound model and  
12 really, you know, sort of expanding coverage into  
13 some of the estuaries back in New Jersey.

14 So, kind of just in summary about  
15 VDatum, what we're really trying to do is assure,  
16 you know, data is transformed correctly, really  
17 enabling multiple uses of data across  
18 applications, so that kind of integrated ocean  
19 and coastal mapping paradigm. Permitting merging  
20 of disparate data sets to that common reference  
21 set was really kind of that first slide I was  
22 kind of talking about. And then providing

1 transformation uncertainty estimates. This  
2 really helps, you know, allows people to make  
3 intelligent decisions and analyses.

4 So, kind of what of our next steps?  
5 Strategic priorities: really creating consistency  
6 between regional models and bringing our  
7 uncertainties down to less than ten centimeters,  
8 increasing coverage, and really working on this  
9 next generation topography of the sea surface.  
10 And this is really getting into where NGS is  
11 going, you know, utilizing the gravimetric  
12 geoids.

13 One of the key things here in red is  
14 GPS or GNSS and tidal benchmarks, looking at  
15 spatially varying uncertainty, and then as always  
16 software development, communication, and  
17 outreach.

18 So, we're kind of going to give you a  
19 synoptic view of some of these issues.

20 So, VDatum model consistency. So,  
21 initially, we were doing regional models and we  
22 kind of did it in a piecemeal fashion. And, you

1 know, over time we've tried to utilize a  
2 consistent methodology everywhere. You will  
3 notice the Chesapeake Bay, kind of Delaware Bay,  
4 Mid-Atlantic, this is where we have some null  
5 issues, where you cannot transform along the  
6 shoreline for valid transformations. And so this  
7 is an area we need to resolve.

8 Looking at kind of our uncertainties,  
9 you can see we have uncertainties. There are  
10 pretty high uncertainties in the Pacific  
11 Northwest, Louisiana. It's kind of difficult to  
12 see on this, but there are some issues back in  
13 the Texas estuaries where we have pretty high  
14 uncertainties as well. Puerto Rico, the Gulf of  
15 Maine.

16 And so then we're really, you know,  
17 also going to spatially varying uncertainty. And  
18 I'll kind of talk a little bit more about that.  
19 But, operationally, once we release the New York  
20 Bight/Long Island Sound region, we have those  
21 spatially varying uncertainty grids. We will be  
22 updating the entire west coast here soon. We did

1 do some exploratory analysis, because we were  
2 going to be moving into the Gulf of Mexico and  
3 this has really helped us out, especially with  
4 the Harvey supplementals, the Michael  
5 supplementals, and then you can also see where  
6 we're starting development in Puerto Rico.  
7 And, actually, we will have a spatially varying  
8 uncertainty in the Chesapeake Bay/Delaware Bay as  
9 we deal with the null issues.

10 And so you can kind of see where we  
11 don't have coverage, good portions of Alaska and  
12 then the Pacific Islands.

13 So, how do we plan on tackling some of  
14 these? So, really, it's obtaining some of the  
15 foundational data that's needed. So, water level  
16 data. We, you know, did about a seven-year  
17 campaign on the west coast. There were some  
18 permitting issues that kind of delayed it a  
19 little bit, but it took us about seven years to  
20 get the data we needed to update this model.

21 We didn't get everything we wanted,  
22 but, you know, we were able to fill major data

1 gaps. We were able to use funding to assist with  
2 the Great Lakes datum update, and then also some  
3 of the Sandy supplemental efforts that I talked  
4 about earlier.

5 One of the things is, really,  
6 supplemental efforts have really been huge help  
7 for VDatum. You can kind of see here we have  
8 Hurricane Harvey, Irma, and Maria, kind of  
9 preliminary estimates or preliminary analysis. We  
10 think this has really helped expedite these  
11 observations by approximately five to ten years  
12 and, in some instances, even more, depending on  
13 the sequencing.

14 And then we also have other  
15 supplementals that are supposed to be coming  
16 soon. These can really help out, especially in  
17 the Pamlico Sound where we really are trying to  
18 understand some of the non-tidal regions in  
19 there. And there's also quite a few data gaps as  
20 we kind of go from Morehead City into the South  
21 Carolina region, especially in the intracoastal  
22 space, based on that TSS. And then there's

1 definitely a lot of data that will help in the  
2 Panhandle, as well as the Big Bend of Florida.

3 And then kind of going to the other  
4 foundational data is the geodetics. And as NGS  
5 goes to the new datums, one of the ways you  
6 access this datum is through GNSS or GPS. So we  
7 really need to be able to get these observables  
8 on tidal benchmark so we can really understand  
9 the relationship or, you know, tie the geodetics  
10 to the tides. This is really a critical link for  
11 developing that topography of the sea surface.

12 One of the things is, as long as we  
13 get that data into OPUS Share as well, then we  
14 can go back, mine the data, reprocess it, and  
15 understand -- or, you know, reprocess it to any  
16 ellipsoid and then tie it into the water levels.  
17 And, you know, with the development of this and  
18 going to the gravimetric geoids, we really can  
19 start producing more physically meaningful  
20 fields.

21 You can see there's other countries.  
22 Whether it's United Kingdom, Canada, Australia,

1 you know, they're really starting to look at  
2 developing separation surfaces, going from  
3 ellipsoid to water levels. Sometimes they  
4 squish all these into one grid and we're trying  
5 to divide these out so you have more capability  
6 to do different transformations.

7 One of the things is you'll hear is  
8 like, oh, we've got lots of water level  
9 observations. But you know, that can kind of be  
10 a little misleading. So this is what we're  
11 really trying to show here in this slide. So  
12 every data point here can be used for the  
13 hydrodynamic modeling, but not every data point  
14 can be used for the topography of the sea  
15 surface.

16 That's really where we've got to have  
17 those links between the geodetics and the tides.  
18 So you can see here actually, especially in the  
19 middle Puget Sound up towards Canada and some of  
20 the entrances, we do not have those links. So if  
21 there are large variations, then we kind of miss  
22 that. So that is really important.

1           So really where we're going is really  
2           trying to do this next generation TSS. So we  
3           will have, you know, the GNSS observables to  
4           understand those links nearshore. But then we  
5           can also really start adding in satellite  
6           altimetry products. So we can get into the  
7           repeat passes, and then once they turn the  
8           missions into geodetics, you can start picking up  
9           points that are really closer to shore, that deal  
10          with some of the contamination associated with  
11          the altimetry.

12                 This is really what allowed us to, you  
13          know, go to southeast Alaska, is the gravity  
14          program that NGS has been flying, you know, is  
15          really feeding into a lot of these experimental  
16          geoids. Once we have this experimental geoid,  
17          you know, we can utilize it to go back, reprocess  
18          observables, make those links and then we're  
19          actually adding in, you know, that altimetry data  
20          to get really a more physically meaningful field  
21          than what we have now, due to kind of how the  
22          hybrid geoid breaks down offshore.



1           Other efforts. Right now we kind of  
2           have one uncertainty estimate for a regional  
3           model. This is kind of complicated. We have the  
4           uncertainties associated with the  
5           transformations, we have uncertainties associated  
6           with the establishment of the datums. But for  
7           Chesapeake, we might say -- we have a 12  
8           centimeter, 12 centimeter uncertainty. But we  
9           know that is not a 12 centimeter uncertainty  
10          everywhere.

11           So really what we're trying to do is  
12          get rid of the spatially varying uncertainty.  
13          This is kind of our Phase 2. So what we're  
14          trying to do is understand that very nature of  
15          uncertainties. This is really important, you  
16          know, when we're collecting multibeam or  
17          collecting lidar, so we understand the  
18          uncertainties as we move around the regions.

19           But kind of one of the other really  
20          key things about this is, you know, it helps us  
21          pinpoint where we do have high uncertainties.  
22          Once we know where that is, then we can really

1 target, you know, foundational data observations  
2 to bring those uncertainties down.

3 Future enhancements for the software.  
4 I mean we're always dealing with bug fixes,  
5 change requests. We're looking at implementing  
6 these, that SVU or spatially varying uncertainty.  
7 If you're ever playing around VDatum, there's  
8 lots of datum selections. You can -- it can be  
9 very confusing. So we're really trying to give  
10 directed assistance for datum selection, with  
11 kind of enhanced logic elevation, to really  
12 assist the user.

13 We've implemented ADCON5. If you're  
14 assuming VERTCON3, we'll be implementing it as  
15 well. We'll be implementing the new datums, the  
16 new tidal epoch. Then we're also looking at  
17 integrating some of the river gradient datums.  
18 But one of the things we kind of ask is that  
19 these are published and documented, so that we  
20 can really implement these correctly.

21 I'm going to just going over some of  
22 the HSRP recommendations. I mean you have more

1 funding and especially as we go into Alaska and  
2 the Pacific Islands. I mean things just become  
3 much more expensive, really extending coverage.  
4 And you know, processing is kind of near and dear  
5 to my heart, because if we don't have these  
6 coverage going inland, it really makes it tough  
7 for shoreline extraction.

8           Especially as shorelines move, we want  
9 to be able to, you know, be able to transform  
10 data. Again, incorporating river gradient  
11 datums. Again, just making sure it's published  
12 and documented well. And then we get into  
13 concerns over the National Tidal Datum Epoch and  
14 the release of the new geodetic datums. This is  
15 the thing. We just, you know, need to -- it will  
16 take us about two or three years really to  
17 produce these new models and get that data fed  
18 into the program.

19           And so then I've kind of talked about  
20 extending into Alaska. I'll cover this a little  
21 bit more, and then really dealing with the whole  
22 five-year modified epoch. Right now, we have an

1       uncertainty envelope, and once those datums kind  
2       of come out of that envelope, that's when we will  
3       look at updating those in VDatum.

4               Performing more robust GNSS at high  
5       tide gages. This is something we are definitely  
6       working on. We're definitely working with CO-OPS  
7       in their statement of works, and really being  
8       able to provide, you know, two observations, two  
9       benchmarks when they install it and then once  
10      they de-install it. This kind of really helps  
11      with stability issues and understanding that you  
12      have uncertainties associated with the  
13      observables.

14              And then, you know, there's the whole  
15      thing about referencing different epochs at  
16      different times. But with a lot of this, we did,  
17      especially in southeast Alaska, try to get those  
18      observables as close to the epoch as we could.  
19      But again, you know, a lot of time we're dealing  
20      with data start fields, so any data is good data  
21      for us sometimes.

22              And just to kind of give you a kind of

1 an overview of the production and maintenance  
2 schedule of VDatum, so right now I mean the Great  
3 Lakes, once the Great Lakes datum is updated we  
4 can implement that. Kind of east coast of  
5 Florida we've been doing several iterations  
6 lately. So we feel pretty good about that as  
7 well.

8           You know, the timing of this slide.  
9 These should have been included. So we did just  
10 finish New York, Long Island Sound, as well as  
11 Southeast Alaska. Going forward, we're really,  
12 you know, we've already started production of the  
13 new entire west coast model. We will be  
14 implementing the kind of Harvey area. So this is  
15 Texas, western Louisiana. We will be updating  
16 Puerto Rico/U.S. Virgin Islands, and it will also  
17 be updating the Chesapeake Bay/Delaware Bay, as  
18 we address some of those null issues.

19           Then currently we are starting a model  
20 run of the entire state of Alaska. We know this  
21 is probably not going to suffice for what we need  
22 for VDatum, but it at least gives us a notion of

1 where we can say we have problems, we need new  
2 bathymetry, we need new water level gages, we  
3 need new geodetic observations.

4 And then moving from there, based on  
5 the Michael and Florence supplementals, as well  
6 as base funding, we hopefully will finish out the  
7 Gulf Coast, move into North Carolina/South  
8 Carolina, finish that. Then move on to the Gulf  
9 of Maine, and from there try to tackle the  
10 Pacific Islands.

11 This is the current prioritization,  
12 but we know things change and we will have to  
13 change prioritization as needed. So I thank you.

14 (Applause.)

15 CHAIR SAADE: Okay. Any additional  
16 questions for anyone on the panel?

17 (No response.)

18 RDML SMITH: So it turns out we had  
19 technical difficulties and missed a question  
20 online that we discovered after the comment  
21 period closed. So we don't need to necessarily  
22 respond to it now, but did want to get it read

1 onto the record. So this comment is from Guy  
2 Noll. The comment reads "MARAD leadership is  
3 very interested in increasing the support for  
4 bulk shipping ports, particularly on the river  
5 ports, and increasing overall resiliency of the  
6 shipping system.

7 "What is being done to deconflict port  
8 and river navigation information to create a  
9 single authoritative source, particularly for  
10 smaller ports as a way to improve overall  
11 reliability?"

12 So I don't think Guy's on the line  
13 anymore, so it's probably not worth engaging in a  
14 discussion on it, but did want to get it into the  
15 record and I think it's an additional,  
16 additional food for thought for the integration  
17 of authoritative information. So thank you, Guy.

18 CHAIR SAADE: Last call for questions  
19 from the audience?

20 Jon.

21 MR. DASLER: Jon Dasler, David Evans  
22 and Associates. Actually, I've got a couple of

1 questions for the panel there. I guess Rich, you  
2 know recently you know, the Columbia River pilots  
3 have been pushing to integrate some USGS gages,  
4 and they're going to bring that in through their  
5 portable pilot units. But I know CO-OPS has been  
6 reluctant to bring in Corps of Engineers and USGS  
7 gages into the system.

8 But I know here on the Mississippi  
9 River here as well, it's sort of a problem. The  
10 gages for the Corps of Engineers, even though New  
11 Orleans District runs it, Rock Island District  
12 puts it on their site. So it's listed as station  
13 datum and the pilots see it as station datum, and  
14 then they've got to adjust to NAVD 88 and then do  
15 another addition to get to low water reference  
16 plane.

17 But it would be really helpful in the  
18 PORTS system to incorporate those, even if there  
19 was a disclaimer. So I don't know if there's  
20 been further discussion in starting to  
21 incorporate some additional gage data with  
22 disclaimers to bring into the PORTS system to



1 help the pilots to that end.

2 MR. EDWING: So yes, there's been  
3 discussions and we've actually been working more  
4 so with the USGS and with the Corps. But it just  
5 -- it proves to be very challenging, because what  
6 we find is each district does thing differently  
7 even in USGS kind of the water science centers  
8 that operate their gage networks. They all do  
9 things differently.

10 Some apply offsets at the gage level,  
11 some apply offsets back, you know, once the data  
12 gets into their system. You know, it's just not  
13 as simple as bringing that data in and displaying  
14 it. There's a whole host of other things that  
15 have to work as well.

16 We actually have been working USGS in  
17 the east coast, where they have supplemental  
18 funding from Sandy. We worked with them and they  
19 put stations into our hardware specifications.  
20 But then we ran into this issue where some of the  
21 Water Science Centers were doing things  
22 differently, and we can't afford to build a

1 different ingest mechanism for, you know, so many  
2 different types of stations.

3 So you're talking about a dream of  
4 mine, where somehow we can get all of these gages  
5 to some common level standard, where we can  
6 exchange interoperable data. But it's still more  
7 of a dream than a reality at this point.

8 MR. DASLER: And I guess a follow-up  
9 questions to Juliana and Stephen White. I know  
10 that a lot of the issues in Louisiana here are  
11 the geoid models and the datums, and having CORS  
12 stations on, co-located with tide stations I  
13 think would definitely be beneficial. If there's  
14 some pursuit to that, especially in areas where  
15 there's a lot of subsidence, or in Alaska where  
16 there's a lot of glacial rebound.

17 Having a direct tie to the geoid where  
18 you can bypass the geoid model, where you'd go  
19 directly to ellipsoid heights would be pretty  
20 beneficial. Then also relating to the GPS and  
21 benchmarks, I mean it would be great to have a  
22 program of GPS on tidal benchmarks, right. I

1 mean some of the issues we see in VDatum, which  
2 is a great program. It's been a great move  
3 forward, but orthometric heights, sometimes it's  
4 older data that's in there that's created some  
5 distortions in the models and some other issues  
6 there as well, and if there's --

7 I guess the question is, is their work  
8 I guess towards that end and then supplying the  
9 Corps' tidal stations and observations on tidal  
10 benchmarks?

11 CHAIR SAADE: Hey, I'm going to need  
12 to interrupt and cut it off there, because we're  
13 into the next session already. Sorry.

14 MS. BLACKWELL: Talk to you during  
15 break, Jon, because we have a lot of those things  
16 that are underway, and yeah. A lot of things are  
17 already being done. The last thing I will say is  
18 to increase the number of CORS and to have  
19 continuously operating GNSS stations associated  
20 with water level stations requires additional  
21 resources.

22 CHAIR SAADE: Okay, thanks to the

1 panel. I appreciate it, guys.

2 (Applause.)

3 CHAIR SAADE: So we're going to shift  
4 over to Julie taking the lead on the HRSP Working  
5 Group discussions and issue papers. All set?

6 VICE CHAIR THOMAS: Thanks, Ed. So I  
7 think we touched base about this this morning.  
8 We have four issue papers that we're discussing,  
9 and I think we're going to do the three tomorrow.  
10 You raised your hands. You are -- we'll say been  
11 assigned to a group. So we just want to make  
12 sure that we have the latest issue paper mailed  
13 out to everyone by tonight, so that you can  
14 actually read it for tomorrow afternoon, or I  
15 think it's actually right after lunch to discuss.

16 But today, we're going to -- so those  
17 are the three. Dave has taken his own  
18 initiative, great, to write an issue paper on  
19 mapping in the Arctic, and he's going to talk a  
20 little bit about why he thinks this is important.  
21 This paper, we know we're not going to finalize.

22 Well first of all, we have to decide

1 if we're going to do it, if we're going to  
2 address it and then second of all, if so we will  
3 talk about it more in Hawaii because he's still  
4 waiting for additional data, and he'll talk a  
5 little bit about that. So Dave.

6 MEMBER MAUNE: Thank you.

7 VICE CHAIR THOMAS: I think about 15  
8 minutes, Dave.

9 MEMBER MAUNE: Yes, 15 minutes is  
10 fine. All HSRP members are encouraged to find a  
11 topic that they hear when we go to these local  
12 sessions, to say here's something I'm interested  
13 in pursuing, to the point where you might be able  
14 to start working on issue papers. We'd like to  
15 get them approved by HSRP that we're going to  
16 pursue this topic, and that's what I'm proposing  
17 to do this afternoon.

18 This particular topic started last  
19 August in Juneau, where we had a series of  
20 discussions in which I talked to some guys and  
21 they said when NOAA talks about the blue economy  
22 and maritime commerce, they seem to be talking

1 about the big guys. What about us little guys,  
2 and you may remember that -- does this work?

3 You may remember seeing this slide  
4 here. It was given by Mark Smith from Vitus  
5 Energy, and he talked about the difficulties in  
6 bringing fuel ashore. He says he's part of the  
7 blue economy too, but this is a different type of  
8 maritime commerce than what NOAA normally deals  
9 with.

10 So he grabbed me aside and I've been  
11 talking to him ever since, and I also went to the  
12 last mapping and surveying conference and found  
13 that they are working on coastal strategies. It  
14 seems to me as though that we share a lot of  
15 common interests here. So first of all, there  
16 are hundreds of coastal villages that have no  
17 roads to the mainland, and a few of them have  
18 airstrips. Most of them don't.

19 Most do not have docks. Many of them  
20 have very large tidal ranges of maybe 25 feet  
21 between high and low tide. They don't have tide  
22 predictions. They don't know when their high and

1 low tide is. They need continuous topo-bathy  
2 data for over the shore logistics such as tug  
3 barges, as shown here bringing in fuel to this  
4 village.

5 So Vitus operates the sounding skiffs  
6 to supply villages with fuel. I asked what a  
7 sounding skiff is, and he sent me these pictures.  
8 The sounding skiff is a little boat on the side  
9 that uses consumer depth sounders and a sounding  
10 stick, literally a pole with markers on it when  
11 they get in shallow water, to see how deep is the  
12 water here.

13 Then they radio instructions to the  
14 Captain of the barge there on how he comes into  
15 dock. And Mr. Smith's telling me how these guys  
16 need continuous topo-bathy data up from the ocean  
17 up onto the land in order to operate much more  
18 efficiently. So let's see if I can get this.  
19 Oh. He also needs this for selected villages on  
20 rivers, also supplied by barges.

21 My friends in Alaska sent me this  
22 slide. It shows the major gaps in the inland

1 stations. They're in Alaska. There's one tiny  
2 one there in Texas, but the major gaps are up in  
3 Alaska. Nathan Wardware, who's -- Wardwell,  
4 who's here today, was telling me that the  
5 distance between NWLON stations in Texas is like  
6 100 miles, but in Alaska it's 1,300 miles.

7 So there are very large gaps in which  
8 these people do not have access to good  
9 information on when the high tides are going to  
10 be there or low tide. So that's one of the  
11 issues there, these major gaps.

12 And then I talked to Jon Dasler, who's  
13 here also today. I was glad to see both he and  
14 Nathan arrived, and Jon Dasler was telling me  
15 about how you could establish short term  
16 measurements on tide gages, observe data for 90  
17 days. You don't need the full expensive end line  
18 station to serve this need. But at 90 days of  
19 observations and then you're able to get the  
20 offsets to these villages from where you have end  
21 line stations, to see what their tidal situation  
22 is there.



1           Okay, and then in addition to getting  
2           the tide data, we need to have hydrographic  
3           surveys, but only out to four meter depths for  
4           these guys at low tide. Whether we use the  
5           unmanned surface vessels shown here, or a -- or  
6           this Saildrone, I wasn't sure of until last night  
7           I talked to Saildrone people and found out that  
8           this is not very suitable for nearshore  
9           bathymetry. It's better for the deeper waters.

10           So we're looking for hydrographic data  
11           collected during high tide, to get as much of the  
12           water as possible, and then we're going to need  
13           topo-bathy lidar collected during low tide. Here  
14           shows -- this picture on the left shows  
15           topo-bathy lidar being collected. If we collect  
16           that at low tide and collect the multibeam sonar  
17           at high tide, you'll have two data sets that are  
18           able to be merged to get a continuous topo-bathy  
19           surface.

20           The picture on the top right shows  
21           where topo-bathy data sometimes has voids when  
22           the water is too murky, and so it's nice to have

1 topo-bathy data collected when the tide is as low  
2 as possible, sonar collected when the tide is as  
3 high as possible, and then you merge it such as  
4 is done with that California coaster imager in  
5 the bottom right.

6 Finally, Alaska tidal datum  
7 priorities. The state of Alaska came up with  
8 priorities in which they have the highest  
9 priority, high priority, mid-priority, medium,  
10 low, extra low for over 150 villages, where they  
11 say they need to prioritize the collection of  
12 tidal data.

13 When I put together a draft issue  
14 paper, I first passed it by Rich Edwing, and I'm  
15 bothered. This microphone seems to be cutting  
16 out. Is it cutting out for you too? It's not  
17 cutting out for you? Okay. Rich gave me some  
18 comments and I sent it to other people for  
19 comments, and one of them was Jaci Overbeck in  
20 Alaska. She's with DNR and she's putting  
21 together some of the Alaska coastal map strategy.

22 I asked her to review a draft issue

1 paper, and she got back to me with it with the  
2 quotes here "This type may be too small for you  
3 to read." She said I'm glad you're always Alaska  
4 in your sights. I'm too busy this week to edit  
5 the paper. I do have some suggestions." She  
6 talked about the Alaska coastal strategy and how  
7 some things are changing.

8           There's a gal named Marta there who's  
9 responsible for the Alaska strategy. They've  
10 been working on prioritization and she tells me  
11 that some things are changing. She said some of  
12 the end line gaps in the map that she had  
13 provided me are out of date, and that since  
14 CO-OPS decided to reinstall at Port Moller, some  
15 of their priorities have changed.

16           So she asked for a month or two to get  
17 back to me, and but she agrees with the idea of  
18 getting continuous topo-bathy data for these  
19 villages. I would ultimately recommend that we  
20 chose a couple of these villages to try this  
21 process of putting in, of putting in these short  
22 term observations of 90 days, put in tidal

1 benchmarks, collecting bathy data and bathymetric  
2 data from sonar and topo-bathy data from lidar to  
3 see how well it works, what does it cost, and if  
4 it works well on a couple of pilots projects, see  
5 how we can develop funding partnerships.

6 We already have the Alaska Mapping  
7 Executive Committee, which has been very  
8 successful in coming up with funding  
9 partnerships. So we'd like to build upon the  
10 success of the Mapping Executive Committee, to  
11 see how we might come up with funding partners to  
12 fund this kind of solution through those other  
13 villages in Alaska, if we can get a couple of the  
14 pilot projects to show that it works cost  
15 effectively.

16 So really my goal here today is to  
17 brief you guys on what I have in mind. Oh, this  
18 was Jaci's first hyperlink in which she talked  
19 about the -- that's the link to the coastal  
20 strategy that they have, and this is a link to  
21 some of the water level observation programs that  
22 they have in Alaska.

1           So one of my objectives here today was  
2           to find out do you guys, the members of the HSRP,  
3           do you agree with me pursuing this topic as an  
4           issue paper? Would we be able to take a vote on  
5           that? Can those who are in favor of it raise  
6           your hand, think that we should pursue?

7                           (Show of hands.)

8           MEMBER MAUNE: Those opposed, think  
9           it's a waste of time?

10                           (Show of hands.)

11           MEMBER MAUNE: Okay.

12           MEMBER KELLY: I wouldn't be as strong  
13           as a waste of time, but I think the cost-benefit  
14           analysis, it might just be something to throw up  
15           to NOAA if they want to take a look at it. It  
16           would just seem, with the priority list and  
17           everything that we have, I don't know if this is  
18           far enough up the food chain that this is  
19           something we should chase. So just my comment  
20           though.

21           MEMBER MAUNE: No, that's fine. Okay,  
22           and I wanted to close with a story about lessons

1 Dave Maune learned about tides in Alaska, because  
2 I was -- last year when Ed took us on a whale  
3 watching cruise in Juneau, I was impressed by the  
4 fact that they had a wheelchair-accessible  
5 restroom on the boat.

6 My wife is handicapped in a  
7 wheelchair, and we have not had a vacation in ten  
8 years. When I came back and showed her pictures  
9 of the whales, she said "I'd like to see those  
10 whales." I said but you said you would never fly  
11 again, and she said well, if I can see those  
12 whales, I will fly again. So I booked a cruise  
13 to Alaska for my entire family of 11, my children  
14 and grandchildren and wife based on us being able  
15 to see whales in Juneau.

16 And the boat that we hired, it was not  
17 part of the Norwegian Bliss that we were booked  
18 with. I had a separate cruise and they emailed  
19 me back yes, we're prepared for your wife. We'll  
20 send a bus to pick you up with a wheelchair ramp  
21 and all that sort of thing.

22 So everything was fine until one week

1 before the cruise. They sent me an email saying  
2 they could not accommodate a person in a  
3 wheelchair. That was the whole purpose of our  
4 cruise in the first place. I was stewing for  
5 five days, trying to find an alternative. They  
6 gave me numbers of other people that might have  
7 cruises to accommodate us, but none of them had  
8 any vacancies.

9 I even talked to Ed Page and he had  
10 invited us to sit on the lawn of his house and  
11 see whales from his house. I was at the point of  
12 where I was about to take him up on that offer,  
13 and finally I went back to the original company.  
14 I said I need more information. How is it that  
15 you could tell me for nine months that you're  
16 ready for my wife, and the last minute you say  
17 you can't.

18 She said well the problem is that the  
19 ramp that leads down to the dock. If you look at  
20 this picture, you will see some concrete posts  
21 there that are about 25 feet high. They hold  
22 floating docks that go up and down that post, and

1 there is a roof over that ramp going down to that  
2 dock. When we were scheduled to return, that  
3 ramp was more than 45 degrees deep. They said we  
4 cannot handle a wheelchair getting back up that  
5 ramp that's steeper than 45 degrees.

6 But she said, then she said but if you  
7 can take the later one, you can arrive at 6:00  
8 p.m., you can go down a steep dock and when you  
9 get back, the water will be higher and it won't  
10 be so steep. So problem solved in just two  
11 minutes once she explained it to me.

12 This is upon our return. So right  
13 now, it's not as steep as it was when we got  
14 there. So it's less than 45 degrees now, but you  
15 can see it's still fairly steep there. But we  
16 had our cruise and my whole family got to go, and  
17 we got to see those whales. You can see some of  
18 the whales here on the right, and I want to thank  
19 Ed Page because he made my family very happy by  
20 setting us up with this. Thank you all. That's  
21 my briefing.

22 (Applause.)



1                   MEMBER MAUNE: I delayed the issue  
2 paper, but I think I just got your permission to  
3 proceed, and I'll try to have something for you  
4 by the time we get to Hawaii. Thank you.

5                   MEMBER PAGE: If I can add one thing  
6 here Mr. Chair.

7                   CHAIR SAADE: That's okay.

8                   MEMBER PAGE: All right. First of  
9 all, I arranged for those whales to be out there  
10 for you, so you're welcome on that one. I think  
11 Ed Kelly brought up a point though. I mean we do  
12 have the Wild West in Alaska, and certainly I  
13 would be -- if anyone's going to be a champion of  
14 doing things in Alaska, it would be myself.

15                   I think that we've got to find out  
16 we're going to have to prioritize or vet whatever  
17 ideas, because there's so many little communities  
18 that get one shipment a year, about 20,000  
19 gallons, that's it or maybe 40,000 gallons.  
20 Right now, some of those tanks are falling up the  
21 river and then eroding. They're moving villages.  
22                   It's a very dynamic situation. So

1 there's a tremendous cost involved, but there's  
2 so many areas that we have a lot of tankers going  
3 along coastal, offshore and then they bring these  
4 barges into like Bethel and other places, which  
5 are our pretty regular customers and higher risk  
6 and higher cost and greater ability to amortize  
7 the costs of doing good things.

8 So I think the idea of kind of  
9 inventorying and see what technologies are  
10 available, a less costly technology, I think the  
11 idea of 90 days or three month sensors makes a  
12 lot more sense than trying to maintain them all  
13 year long.

14 Even the Coast Guard didn't put aids  
15 to navigation. They said it's too expensive.  
16 You guys figure it out on your own. We're not  
17 putting aids to navigation in the rivers so --

18 MEMBER MAUNE: And I think that's why  
19 Alaska wants to prioritize it. What are the  
20 areas that are the highest priority for them  
21 getting something like this? It's not just for  
22 supplying these villages. They are doing studies

1 on coastal erosion for some of these villages, to  
2 see where they need to go.

3 I think it's also going to help Mike  
4 Aslaksen in his shoreline mapping effort, because  
5 he needs tidal data to do the official shoreline  
6 for Alaska. So --

7 MEMBER PAGE: And my point is that,  
8 you know, the Coast Guard didn't build the AIS  
9 system for Alaska. We ended up doing it  
10 ourselves, because it wasn't worth it. It's too  
11 expensive. The Coast Guard doesn't have a Rescue  
12 21 system in Alaska, northern Alaska because it's  
13 too expensive, they didn't do it.

14 A whole bunch of things that -- they  
15 don't put aids to navigation up there. So the  
16 point is the cost is so high and the return so  
17 low, which is what Ed pointed out. That's one of  
18 the challenges we have of building like that.  
19 It's real easy. I understand the investment that  
20 goes into New Orleans. When you look at the  
21 importance that has to the nation or the world,  
22 it's no question they get millions and millions

1 of dollars to keep this port complex going.

2 So we have a harder time with  
3 amortizing costs. So there's a need, there's no  
4 question and I think it's worth exploring. I  
5 still don't know how we're going to get on it  
6 because the cost and the return dynamics. It's  
7 the Wild West. Only crazy people live in Alaska.  
8 Case closed.

9 VICE CHAIR THOMAS: All right, thank  
10 you Ed or Dave and Ed.

11 MEMBER PAGE: And Ed.

12 MEMBER HALL: I do have just a quick  
13 question. When it comes to what we have on our  
14 list and we've kind of agonized over it as we've  
15 looked to prioritize, what does that actually  
16 mean? Are we going to accept what the  
17 prioritization is? I don't want to say -- the  
18 reason I raised my hand is not because I thought  
19 that it was a waste of time. I don't want that  
20 assumption at all.

21 The reason I raised my hand is I  
22 thought there were issues that were bigger, and

1 for the group at this time, for prioritization  
2 because the problem we have, and I know that Dave  
3 writes a darn good issue paper and especially  
4 since he understands BLUF, although I won't be  
5 able to write them for him anymore.

6 But it's still a lot of work for the  
7 committee, and so I think that when you propose  
8 it, you have to think about it in terms of the  
9 other things that we have talked that we want to  
10 do something about. Whether it's an issue paper  
11 or learn more about, there's a lot of time for a  
12 lot of other things.

13 So I just, I want to caution running  
14 ramshod, because it requires everybody to look at  
15 it and comment on it, and I know that Dave gets  
16 frustrated when people don't comment. So if you  
17 guys really want to take it on, take it on. If  
18 not, then let's be honest with Dave and ourselves  
19 about what, where our priorities are, because  
20 again there's not an unlimited supply of time to  
21 do HSRP work for a lot of us have, you know,  
22 regular day jobs.

1           So I just wanted to put that out  
2           there. That was the reason the prioritization  
3           matrix is there. If we want to reprioritize so  
4           that everybody's on the same page, that's  
5           certainly a wonderful idea at this meeting. We  
6           haven't done that in a while and I know that we  
7           need to update what we've got.

8           I think before we vote that it's a yea  
9           or nay going forward, I think we have to  
10          understand what is the expectation of the whole  
11          group on where we're going.

12          VICE CHAIR THOMAS: Thanks, Kim.  
13          Yeah, good comments. As far as the  
14          prioritization, I think my feeling is is that  
15          every meeting we look at it in our discussion,  
16          and we haven't really brought it up and looked at  
17          it again and talked about it. As far as Dave's  
18          paper, you know as far as I understand, I have no  
19          problem with him going ahead, getting the data  
20          from Jaci, looking at these tidal stations or  
21          what needs to be done in Alaska.

22          I think it is pertinent. I think when

1 we were in Alaska we heard, you know, we had a  
2 whole panel on that and we heard about it, and it  
3 was pretty critical for a lot of things. Whether  
4 or not there's a cost-benefit there, maybe not.  
5 But Dave has done -- my feeling. Okay, my  
6 feeling is is he has already done so much on this  
7 and put so much time into it, that we can --

8 We're going to look at it again in  
9 Hawaii and see what, you know, see what we want  
10 to do with it then. I think that our vote was to  
11 have him go ahead and get Jaci's data, and to go  
12 ahead and put it in there, and then we're going  
13 to, like Ed says, kind of look at it and kind of  
14 assess and see if we really can come up with a  
15 couple of areas of Hawaii where there is a  
16 cost-benefit for it as an example. Anne?

17 MEMBER McINTYRE: Yeah. I guess I  
18 just would like to say that it doesn't  
19 necessarily have to be like a cost-benefit  
20 analysis that comes out on the good side of  
21 things in order to take a look at something.

22 VICE CHAIR THOMAS: To make --

1                   MEMBER McINTYRE: And it may just be  
2                   that the recommendation is that either these  
3                   small communities are important and we need to  
4                   keep them in our mind, and that might be the end  
5                   of it --

6                   VICE CHAIR THOMAS: And that was kind  
7                   of more I thought it was just going to be this  
8                   statement to look at this is, you know, we've  
9                   seen that this, there are lives up there. They  
10                  are getting their fuel through difficult methods,  
11                  and we'd like to just keep it in people's  
12                  consciousness.

13                  MEMBER McINTYRE: Exactly, yeah.

14                  VICE CHAIR THOMAS: Ed.

15                  MEMBER PAGE: I guess my only question  
16                  is at this session, we're only looking at three  
17                  papers, right?

18                  VICE CHAIR THOMAS: Right.

19                  MEMBER PAGE: Okay, and we don't have  
20                  any in the future in mind. So in reality we have  
21                  nothing to look at as far as an issue. So we're  
22                  not competing with anything at the moment, we're



1 looking at it, exploring whether we want to  
2 pursue it. If there's situation prioritization,  
3 you need a couple of things to prioritize.  
4 Again, we don't have anything to prioritize  
5 against right now.

6 We're just going to vet, determine if  
7 this is worth pursuing. So I don't see anything  
8 drawing from any other workload, because we have  
9 no other workload, no other papers we're looking  
10 at after these three that we're doing today. If  
11 there are others, can you look at your  
12 prioritization.

13 We'll also determine whether this is  
14 even -- this dog will hunt, whether it has some,  
15 you know, we think it's going to get some mileage  
16 out and it's worth pursuing. So I'm not too  
17 worried about looking at it. No one's saying  
18 we're going to jump ahead. We're going to look  
19 at it and give it some consideration I think at  
20 this point.

21 MEMBER MAUNE: I would say that we  
22 have the priority, HSRP priorities matrix, and

1 the last time we looked at these priorities,  
2 Priority No. 1 was dealing with autonomous vessel  
3 surveying. Priority 2 was identifying quantified  
4 benefits of NOAA's Hydrographic Services for  
5 which the 3D Nation Study is part of it.

6 Priority No. 3 was relative sea level rise and  
7 subsidence, for which we have an issue paper.

8 VICE CHAIR THOMAS: There's a lot of  
9 overlap.

10 MEMBER MAUNE: Priority No. 4 was  
11 private-public partnerships, and I don't know  
12 that we're doing anything to pursue that one.  
13 But number four was tied with enhanced  
14 navigational assistance, do we need to have a  
15 follow-on to the PORTS. Then we had a bunch of  
16 other topics that got two or less votes from the  
17 members.

18 These were all ones that got four to  
19 eight votes, and the others were two or less. So  
20 they're sort of low on the priority list. Now we  
21 can add to these as people come up with new  
22 topics.

1           You may come up with new topics this  
2 week after what you see here in New Orleans, and  
3 if you see a topic, particularly if you would  
4 like to pursue it by writing an issue paper on  
5 it, I think we can add it to this priorities  
6 matrix. Now whether or not we want to revote on  
7 these priorities again --

8           VICE CHAIR THOMAS: I think that every  
9 meeting we bring them up, discuss them. Maybe  
10 the last day is the time to do that, take an  
11 hour. I mean what I see is that tomorrow let's  
12 try to go through these issue papers, get them in  
13 pretty good shape, and then the last discussion  
14 we'll have on Thursday to review the priority  
15 list and really kind of set our interests that we  
16 might talk about over in Hawaii and at --

17           MEMBER KELLY: I see these issue  
18 papers as kind of a precious and a limited  
19 commodity. I'm even concerned if maybe putting  
20 three of them might be to dilute the value of  
21 them. I think they have to be well crafted and  
22 done, we do have an outstanding list of

1 priorities which we ought to review.

2 And maybe what Dave is saying, maybe  
3 we'll take a look and the group will say that's  
4 important. Maybe we'll say it belongs here. But  
5 I'm just afraid that anybody can come to the  
6 meeting, throw something on the wall and  
7 everybody goes ooh cool, let's do it and we run  
8 off in that direction.

9 So I think we have to be a little more  
10 concentrated. We don't have a lot of time that  
11 we can really sit and discuss these things, and I  
12 think we, you know, I'd rather see the effort and  
13 time being put into reevaluating the priorities  
14 list, to kind of decide what we do next. Because  
15 we have three of them pretty much almost ready to  
16 go two, at least two of which we'll probably be  
17 able to launch. But you know, I'm just concerned  
18 about how we pick up new topics.

19 VICE CHAIR THOMAS: Okay. Anybody  
20 else? Anne.

21 MEMBER McINTYRE: Just this is just a  
22 question, and I don't know if it's something that

1 we would want to consider doing. But you know,  
2 we write the issue papers. We get the response  
3 back from the issue papers, but we don't really  
4 track kind of what the outcomes is like of our  
5 recommendations, and whether or not some type of  
6 system like that might make sense in order to  
7 judge our effectiveness.

8 VICE CHAIR THOMAS: So Anne, you  
9 missed the last meeting, and on the  
10 prioritization list there are ones that do say  
11 tracking. They are ones that there has been an  
12 issue or had been recommended in the  
13 Administrator's letter. So we tried to put them  
14 in place last time a little bit and we are going  
15 to talk about that on Thursday.

16 No, I think it's a really good point,  
17 like how do we track and kind of have some type  
18 of metrics going forward. Not really metrics  
19 but, you know, progress on an issue. So I think  
20 that it is worth looking at this prioritization  
21 list, because there are some on there that say  
22 "tracking" or "track," and that's exactly what

1 that was supposed to address. I think we could  
2 flesh it out more. Any other comments? Ann.

3 MEMBER KINNER: More a question.  
4 We've got a draft of the strategic plan as well.  
5 Where does that fit in our discussions?

6 VICE CHAIR THOMAS: It will come up.  
7 We have some time to address that too. Lynn, Ed?

8 CHAIR SAADE: I don't have anything  
9 else right now.

10 VICE CHAIR THOMAS: Okay. I mean --

11 CHAIR SAADE: So we can continue on  
12 with the discussion about the papers, or we can  
13 move right into the recap of today. If you're  
14 ready for the recap, let's do that, okay? So  
15 I'll volunteer to start. So just I'll just throw  
16 out there. I thought it was a really good day.  
17 I thought the energy -- as I expressed before, I  
18 thought the energy in the room, particularly with  
19 the guests that we had both that were presenting  
20 and both that were observing, was really, really  
21 great.

22 Sean, thanks a lot. You worked hard

1 today and it was obvious that you had a lot of  
2 preparation, and that it came through that it was  
3 all extremely well thought out. The panel  
4 members were really informative, educational.  
5 All of it was really good. Okay.

6 So and I'll just throw out a couple of  
7 the quotes real quick, that as I was mentioning,  
8 one of the captains was really singing the  
9 praises of multibeam echosounders, which I think  
10 is great. I think they're a fantastic tool.

11 The whole comment about we want to get  
12 the most draft possible I felt was a really  
13 powerful statement, and your story about  
14 everybody waiting around to watch the air gap get  
15 punctured and have a hit and being extremely  
16 disappointed that they didn't see any action.  
17 That's all incredibly meaningful.

18 One of the other captains was talking  
19 about the very dynamic way that the precision nav  
20 is changing for the better, and so rapidly. I  
21 thought that was really powerful and really  
22 meaningful to NOAA in particular, because that's

1 the folks that are driving all of those changes.

2 There's some other things, but I'll  
3 leave it there and let everybody else jump in.

4 Anne.

5 MEMBER McINTYRE: I thought it was  
6 great that you brought the National Weather  
7 Service in and that we're integrating that  
8 together, particularly the river level  
9 forecasting and all that stuff. It's really good  
10 to see that together. Then I just wanted to make  
11 a general comment, because Admiral Smith I know  
12 you're not going to be here for the rest of the  
13 meeting.

14 Now that I've had an opportunity to be  
15 on the Panel for a while, I've been very  
16 impressed with how in your leadership you're  
17 integrating the suggestions that are coming  
18 through this committee. I see the relationships  
19 developing with the Army Corps of Engineers. I  
20 see the focus on the PORTS systems and everything  
21 like that, and I just wanted to say thank you.

22 (Applause.)



1 RDML SMITH: As you all know, this is  
2 all Lynne.

3 CHAIR SAADE: Kim.

4 MEMBER HALL: So I learned a lot more  
5 about soybean transportation than I ever thought  
6 I would, and that's not -- I'm not mad about  
7 that. It's kind of interesting, and I actually  
8 looked at some of their press releases and  
9 information to kind of understand the problem.

10 I think the key and I think that this  
11 is where having the meeting down here is really  
12 important. It's not just about hurricanes. It's  
13 about everything else, and efficiency,  
14 efficiency, efficiency. So all the things that  
15 NOAA does, Weather Service and Ocean Service,  
16 lead to efficient, maximizing efficiencies down  
17 here.

18 I think that we got a smattering of  
19 that today, and I think it's clear that NOAA  
20 products and services are necessary, especially  
21 for such an important viaduct through our  
22 country, of getting goods and products out and

1 in. So I just -- I know I've become accustomed  
2 to my Amazon Prime, although I am shocked by  
3 being here in the Port of Southern Louisiana, and  
4 I don't get one day shipping or next day.

5 I've got to wait two to three days.  
6 I don't like that, now that I'm down here. But I  
7 just, I think that yeah, it all comes from  
8 Georgia and Alabama. You've got to fight Mobile  
9 a little bit I think. But yes, certainly the  
10 infrastructure investment and then the products  
11 and services that come from NOAA, that was really  
12 key today. Thanks.

13 MEMBER KINNER: This comes out of the  
14 Houston meeting with the National Harbor Safety  
15 Committee summit, because I heard the same words  
16 today, resiliency and relationships, and I'm  
17 hearing about Army Corps and NOAA and how they're  
18 beginning to integrate or maybe getting more  
19 recognition for the integration that they're  
20 doing.

21 I asked Galen earlier about private  
22 companies who might also be integrated into this

1 providing data, and the key things I pulled out  
2 of Houston, I wrote these down because they  
3 really struck me, because they're relevant  
4 certainly here in Louisiana, and this is part of  
5 what I heard today.

6 Resiliency and relationships, who do  
7 you call at three o'clock in the morning, what's  
8 his first name? Have you trained and exercised  
9 together and how does he take his coffee?  
10 Because that's the kind of integration of  
11 resources you have to have, so that when the  
12 thing happens, whatever it is, it's not a matter  
13 of oh my God, now what do I do? It's a matter of  
14 okay, start here, call this guy, get that done.

15 It's great to see that, and I'd love  
16 to hear more private enterprise integration into  
17 this whole thing. The government can do a lot of  
18 it but it can't do all of it, and frankly  
19 sometimes it shouldn't be doing it. There should  
20 be more private sector interaction. I'm thinking  
21 of that, particularly in terms of the Space  
22 Program and what we see going on right now.

1           So it would be neat to see more of  
2           that kind of outreach. I don't know how to do  
3           it, but to -- more outreach to private sources  
4           for information, for resources, for tools. I  
5           have a friend in San Diego that I just realized  
6           is working with Scripps, a company called Ocean  
7           Air, yeah.

8           They do basically autonomous, whatever  
9           you want to call them. They're surface and  
10          they're underwater. They just fold the wing and  
11          go down. Didn't know they were already  
12          integrated, and it's that kind of thing. There  
13          are other companies out there. You talked about  
14          Saildrone. Getting those companies to in some  
15          way input what they're learning about the  
16          resources would go a long way I think toward  
17          expanding what the government agencies can do.  
18          I've certainly seen it going up to space.

19                 CHAIR SAADE: Thanks, Ann. Ed.

20                 MEMBER KELLY: I learned a little bit  
21                 more, quite a bit more about the uniquely  
22                 challenging physicality that's here in this river

1 system, you know, and the -- I was always aware  
2 of it, but that coupled with the big economic  
3 impact really means that we need to target some  
4 efforts to solve these types of problems. This  
5 is a good place as a test bed, any improvements  
6 that can be made here that can then be file/copy  
7 extended elsewhere is a benefit.

8 You know you can learn a lot from  
9 trying to do it in a tough environment, and to  
10 echo what Ann had said our partnerships. I  
11 think, you know, I know we've got several  
12 sessions still to come to talk about partnerships  
13 and integration with other units. But you know,  
14 better, faster, cheaper, you know.

15 There's a lot to be said for that and  
16 I think, you know, I'd like to see how we can  
17 make some more discussion on already-established  
18 partners, people like through the IOOS networks  
19 and things like this, and how we can better  
20 maximize some of their efforts and give them  
21 direction.

22 MEMBER DUFFY: So Admiral Smith, I

1 know you love my stories. I'm going to leave you  
2 with one, since you'll miss us tomorrow. But  
3 Hurricane Barry's coming and the river's just  
4 below 17 feet, and projections were for it to go  
5 20 feet. I had a meeting of my children, and I  
6 told them if we're going to 20 feet, they're all  
7 evacuating.

8           They looked at me and said are you  
9 serious? I said oh yes, I'm dead serious. You  
10 will evacuate. So that's partly because I've  
11 seen sand boils up and down the levee system and  
12 I know where their stresses are, and that it was  
13 a huge concern. Now the next morning, I woke up  
14 very early, had a pot of coffee and looked at  
15 river forecasting and some other, Dr. Van  
16 Cooten's efforts and I pulled out my Swiss Army  
17 knife and went through all the information.

18           When they woke up for breakfast, they  
19 all -- are we evacuating? I said no, it's not  
20 going to 20 feet. They all went to the websites  
21 I showed them. They said it says it's going to  
22 20 feet still. I said wait for the ten o'clock

1 update. The ten o'clock update came out and it  
2 showed 19 feet. They all looked at me like wow.

3 A few hours later, the next update, it  
4 came down to 17 feet, and I think we ended up  
5 like 16.7. But you know, as we look at being in  
6 the area, you know, first day in New Orleans in a  
7 while, the stresses and the risks that we deal  
8 with are huge. Sometimes we get lucky, sometimes  
9 we're good, sometimes we take a lot of  
10 information.

11 But the system is being challenged in  
12 a lot of ways, and it really does -- I mean there  
13 are things that scare me. High river and  
14 hurricanes, never happened before. So a lot of  
15 the challenges and you'll hear from more people  
16 and people from Louisiana will talk passionately  
17 about what they do for a living and, you know,  
18 we're so tied to that river that it's very  
19 important.

20 But we did not evacuate. I was right,  
21 and it was good to be able to show the kids I  
22 knew what I was talking about.

1 CHAIR SAADE: Gary.

2 MEMBER THOMPSON: So yes. You brought  
3 up during your presentation about the importance  
4 of datums, and I think it was very evident today.  
5 So it makes it, and Juliana talked about the  
6 transition to 2022. Datums are -- we all need to  
7 be aware that they're very important, and  
8 especially when you have these localized datums,  
9 that we need to know that information to prevent  
10 an accident.

11 And then I liked Rich's idea of coming  
12 up with a, kind of a RINEX for tidal datum data,  
13 so that we would share data with you more  
14 efficiently.

15 MEMBER PAGE: I think one thing I got  
16 out of my HSRP experience, this is my third  
17 meeting now I guess, is this blue economy, which  
18 Admiral Gallaudet brought up. But I'm really  
19 more and more aware, especially in New Orleans,  
20 these phenomenal stories I'm hearing about the  
21 impact on such a large region.

22 And but also I mean you hear all the



1 agencies involved and the private industry, I do  
2 think there's incredible public-private  
3 partnerships already underway. I'm really  
4 impressed how NOAA fits into that, the National  
5 Weather Service and NOAA itself, and that  
6 agencies are really not stovepiping. I'm hearing  
7 the discussion you had with the Corps of  
8 Engineers with staggering with surveys.

9 I mean this is -- this is good  
10 government, you know, where we kind of let's  
11 divide and conquer or whatever, working together  
12 and complimenting, getting more out of our --  
13 value out of our surveys and what have you. So I  
14 keep on being more and more impressed with NOAA's  
15 role in this.

16 At the end of the day, it's a lot of  
17 information brokering, and I oftentimes think of  
18 real-time and then I realize a lot of forecasting  
19 of river heights so far out is key, so I get a  
20 better appreciation of that.

21 So but I leave -- every time I go to  
22 a meeting, I get more impressed with NOAA and the

1 service you provide and how integral you are to  
2 supporting and facilitating this blue economy  
3 that's so valuable to our nation.

4 So kudos to all of NOAA's staff and if  
5 I have any negative comments to say is that every  
6 time I come to a meeting, I feel like I'm a  
7 little dumber each time, because I realize I  
8 didn't know all this stuff beforehand so -- I  
9 should have, but I'm still learning. I'm a kid,  
10 just a kid.

11 CHAIR SAADE: Deanne.

12 MEMBER HARGRAVE: So I really liked  
13 your comment, and in fact that was very similar  
14 to what I was going to say. Just seeing the  
15 clear evidence of partnership between government  
16 agencies, as well as government and private  
17 partnerships. There's a lot of that going on,  
18 and I sit here representing private industry,  
19 working for Shell, where we have obviously a  
20 global footprint, a lot of needs.

21 And for the most part we fulfill those  
22 needs internally by mapping the sea floor where

1 we need that information when we need it. I sit  
2 here thinking about well how can we give some of  
3 that back and use, because there's so much  
4 duplication in what we do and wouldn't it be  
5 great if we could share some of that.

6 But of course that comes with a lot of  
7 challenges. So it's something that I sit here  
8 and think about a lot as we're having these  
9 different conversations. But today I was blown  
10 away by learning more about the Mississippi River  
11 and the importance that it has to the U.S.  
12 economy, the world economy. It's quite massive  
13 and quite impressive.

14 CHAIR SAADE: Julie.

15 VICE CHAIR THOMAS: I noted just a few  
16 things thinking about the letter to the  
17 Administrator. These are just ideas that I kind  
18 of jotted down. One this idea -- so these are  
19 things that we might include in the letter. You  
20 can take, add, whatever. This idea of a team  
21 sport. Several people have talked about the  
22 partnerships and how they're only getting

1 stronger, not only the federal partnerships but  
2 public-private partnership.

3 And several people have mentioned  
4 VDatum, expanding these CORS stations, the robust  
5 GNSS and tidal datums. Gallaudet made the two  
6 comments. He's assessing the state of marine  
7 transportation and advancing technology, and  
8 continuing efforts for integration of products.

9 I think that those two ideas have  
10 really come out a lot today as we've listened to  
11 the panels. I thought that was an interesting  
12 statement, very obvious, about the multibeam  
13 surveys and I'm sure that there's a long history,  
14 and this came from Captain Bopp, the needs for  
15 surveying the sediment and then also the object  
16 detection.

17 Because in my mind, I kind of have  
18 these overlapping a lot, but I realize now that  
19 there are these distinctions, and I think the  
20 challenges of multibeam and not all multibeam are  
21 equivalent. But I'm not sure that's something  
22 that wouldn't be good to bring up. And then

1 obviously in our last letter to the  
2 Administrator, we talked about fog sensors, the  
3 visibility sensors and that still seems an issue.  
4 So maybe we should mention this continuing issue  
5 of visibility. Okay, that's it.

6 CHAIR SAADE: Good. Anyone else?  
7 I'll just add, I know it's only the first day,  
8 but I think we continue to provide great  
9 evidence for the importance of moving this  
10 meeting around the country, and a tremendous  
11 amount of turnout from the local, from the locals  
12 wherever we are.

13 Folks really do take this opportunity  
14 seriously, to be able to give feedback to NOAA,  
15 to you all. It's obvious the seriousness with  
16 which they take it and the importance that they  
17 put upon it, and the really excellent information  
18 that we're getting back.

19 So keep moving us around. I was just  
20 thinking about I was in New York a couple of  
21 weeks ago and talking to some people that were  
22 sharing a shuttle bus with me, who are getting

1 ready to board an airplane to fly direct from New  
2 York City to Hawaii, coach, and realizing it was  
3 an eight hour flight with no food, which was a  
4 stunner.

5 But then I mean how many countries in  
6 the world can you fly for eight hours and nine  
7 hours and still be in the same country. There  
8 can't be very many of them. So it's a big  
9 footprint. I think NOAA's to be congratulated  
10 that we can have a meeting in Juneau and then all  
11 the way down here to the Gulf Coast and  
12 everything in between, and really adapt to what  
13 the new, to the new concerns are and what the new  
14 focus is. So thanks.

15 MEMBER CHOPRA: Can I say something?  
16 Just one comment. I'm sorry I was missing for  
17 about an hour on a conference call. But there  
18 was one comment made that there were three ports  
19 which were planned for the multibeam surveys. It  
20 was New York, it was LA/LB and it was the  
21 Mississippi River. These are three where it's  
22 been going on and planned at this time by NOAA.

1 I was going to say maybe you want to  
2 look at three more ports especially in Texas, the  
3 Houston/Galveston waterway, Corpus Christi and  
4 Port Arthur. These ports are under massive  
5 expansion, and already last month's figures came  
6 out at 3.22 million barrels per day export going  
7 out from those ports, and that's expected to go  
8 up very significantly in that 20 percent plus  
9 range on an annual basis, because 21 target is  
10 6.1 million barrels.

11 And then chemicals is an addition. So  
12 of course these three ports are important what  
13 have been identified. But maybe you want to look  
14 at more resources or better managed. These are  
15 the three ports which require attention, and they  
16 have exactly the same problems like we identified  
17 in the ship channel, where we are scraping the  
18 bottom and trying to load the ships more, and  
19 every foot has a huge impact on the economic  
20 aspect of it. Thank you.

21 RDML SMITH: Yeah. So well thank you  
22 all for participating, a great meeting. I think

1 this met my expectations of getting some  
2 awareness of the river as a unique and the ports  
3 of Louisiana as a really unique complex. I think  
4 the one thing that I wanted to add that really  
5 struck me again today was that, and this really  
6 comes out of the soybean presentation, was that  
7 the issues of efficiency in our ports is a  
8 national competitiveness issue, that this is --  
9 this is, you know, this is -- this is really  
10 important overall to our economy.

11 So the difference between American  
12 soybeans being, you know, competitive on the  
13 world market or not is not just a couple of  
14 inches on, you know, of draft. The impact is so  
15 much bigger than that, and Anuj's example of, you  
16 know, in the ports of Texas, where we can --  
17 where we can produce and bring to the port more  
18 oil than we can get out of the port.

19 And that is, you know, that is  
20 essentially a limitation on the efficiency of the  
21 ports. So anything we can do. If we can do five  
22 percent efficiency gains somehow through our



1 services in dredging and the sort of navigation  
2 services side of things, that's a huge impact to  
3 not only those particular shipments but to  
4 American competitiveness overall.

5 So anyway, thank you all. I'm sorry  
6 I'm not going to be here for the rest of the  
7 meeting. There's a whole bunch of great stuff  
8 planned, and in particular I'm sad to be missing  
9 the hospitality of our host, Mr. Duffy. But  
10 we'll have to catch that another time.

11 VICE CHAIR THOMAS: We'll eat double  
12 for you, okay.

13 RDML SMITH: Good, thank you.

14 CHAIR SAADE: Okay, Lynne. So we need  
15 to hand it over to the next event?

16 MS. MERSFELDER-LEWIS: Yeah, hurry up.

17 CHAIR SAADE: Okay. So let me gavel  
18 this closed. Okay. We're all done for the day,  
19 but don't go anywhere.

20 (Whereupon, the above-entitled matter  
21 went off the record at 5:30 p.m.)  
22

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This is to certify that the foregoing transcript

In the matter of: Hydrographic Services Review Panel

Before: NOAA

Date: 08-27-19

Place: New Orleans, LA

was duly recorded and accurately transcribed under  
my direction; further, that said transcript is a  
true and accurate record of the proceedings.

*Neal R Gross*

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Court Reporter

**NEAL R. GROSS**

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