

## 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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WEDNESDAY  
APRIL 4, 2018

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The Hydrographic Services Review Panel  
met at the Atton Brickell Hotel, 1500 SW 1st Ave,  
Miami, Florida, at 8:30 a.m., Joyce Miller,  
Chair, presiding.

## MEMBERS PRESENT

JOYCE E. MILLER, HSRP Chair  
EDWARD J. SAADE, HSRP Vice Chair  
DR. LARRY ATKINSON  
SEAN M. DUFFY, SR.  
LINDSAY GEE  
KIM HALL  
EDWARD J. KELLY  
CAROL LOCKHART  
DR. DAVID MAUNE  
CAPTAIN ANNE MCINTYRE  
CAPTAIN (ret. USCG) ED PAGE  
CAPTAIN SALVATORE RASSELLO

JULIE THOMAS

GARY THOMPSON

## NON-VOTING MEMBERS

ANDY ARMSTRONG, Co-Director, NOAA/University  
of New Hampshire Joint Hydrographic  
Center

JULIANA BLACKWELL, Director, National  
Geodetic Survey, NOS

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

DR. LARRY MAYER, Co-Director, NOAA/ University of  
New Hampshire Joint Hydrographic Center

## STAFF PRESENT

REAR ADMIRAL SHEP SMITH, HSRP Designated  
Federal Official; Director, Office of  
Coast Survey

DR. W. RUSSELL CALLENDER, Assistant  
Administrator, NOS

MIKE ASLAKSEN, Chief, Remote Sensing  
Division, NGS, NOS

GLENN BOLEDOVICH, Policy Director, NOS PCAD

CAPTAIN RICK BRENNAN, Chief, Hydrographic  
Surveys Division

VIRGINIA DENTLER, NOS

REAR ADMIRAL NANCY HANN, NOAA OMAO\*

CAPT ELIZABETH KRETOVIC, Deputy Hydrographer, OCS

RACHEL MEDLEY, Chief, Customer Affairs Branch

LYNNE MERSFELDER-LEWIS, HSRP Coordinator

JIM RICE, NOS PCAD

DENIS RIORDAN, NGS

KYLE WARD, OCS

**ALSO PRESENT**

**CAPTAIN LADONN ALLEN, Prevention Chief,  
Marine Transportation System Recovery  
Unit, U.S. Coast Guard, District 7**

**JENNIFER BLANCO, Office of Congressman Mario  
Diaz-Balart (FL - 25th District)**

**BRIAN BRODEHL, Chief, Surveying and Mapping  
Branch, Jacksonville District, U.S.  
Army Corps of Engineers**

**STEVE DETWILER, FPEM, Emergency Management  
Planner (Recovery and Public-Private  
Partnership), Miami-Dade Fire Rescue  
Department, Florida**

**CAPT SAM STEPHENSON, J.D., President,  
Florida Harbor Pilots Association**

**TERRY THORNTON, Senior Vice President, Port**

**Operations, Guest Care and**

**International Carnival, Carnival**

**Cruise Lines**

**CHRISTOPHER VAUGHAN, Geospatial Information  
Officer, Federal Emergency Management Agency**

**\*participating by telephone**

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

2 (1:40 p.m.)

3 CHAIR MILLER: Good morning. I'm  
4 Joyce Miller, Chair of the Hydrographic Services  
5 Review Panel. I both call to order, and welcome  
6 all to the Panel's spring meeting. It's great to  
7 be here in Miami, Florida.

8 Yesterday we had the pleasure of  
9 attending the dedication of the new PORTS system  
10 at your impressive Port Miami facility. As the  
11 members, we will be doing a member introduction a  
12 bit later. And we'll be commenting on that  
13 meeting.

14 My thanks to the Panel Members, and  
15 especially the NOAA staff for putting together a  
16 robust program. Our program includes  
17 presentations by our federal partners and NOAA  
18 leadership, and presentations from spokesperson  
19 representing local and regional organizations.

20 We are very pleased that Congressional  
21 staffer from the Honorable Diaz-Balart, Jennifer  
22 Blanco, is here. And we welcome you. Would you

1 please stand.

2 With us are three new members who were  
3 sworn in yesterday by Russell Callender. The new  
4 members are Ed Page, yes, stand or hold up your  
5 hand, Julie Thomas, and Sean Duffy.

6 We, let's see, we will do our best to  
7 stay on schedule, yet recognize all who wish to  
8 speak. There will be formal times allotted for  
9 the public comments each day. Generally, that's  
10 just before the lunch hour.

11 We look forward to making the most of  
12 our time together, as we have much to discuss and  
13 do over the next two days.

14 The goals, and outcomes, and  
15 deliverables for this meeting are the following.  
16 We have two issue papers that we've been working  
17 on. One is updated, and one is a new paper.

18 The updated one is about the NOAA  
19 Hydrographic Survey Fleet: A Critical National  
20 Asset. And the second one is Marine and  
21 Geospatial Data Infrastructure is Vital to the  
22 U.S. Economy.

1           A second priority is to discuss a  
2           proposal from the NOAA Science Advisory Board for  
3           a joint product, with reference to technology for  
4           improvement to the national economy.

5           And we also are discussing a possible  
6           white paper on hydrographic licensure, and a  
7           letter we received from the National Society of  
8           Professional Surveyors to develop a  
9           recommendation letter for the NOAA Administrator.

10          And we will also, as is our general  
11          practice, after each meeting, within a month we  
12          provide a letter to the Administrator, who in  
13          this case will be Acting Administrator Tim  
14          Gallaudet. With that, we include a synopsis of  
15          the meeting, and any new products we have, such  
16          as the white papers.

17          And lastly we will provide, we will  
18          discuss and provide suggestions for our next  
19          meeting, which is scheduled for Juneau, Alaska.

20          I'd like to introduce Rear Admiral  
21          Shep Smith, our Designated Federal Officer, and  
22          Director of NOAA's Office of Coast Survey.

1 During his 24 year NOAA career he has advanced  
2 the state of art of hydrography and cartography,  
3 and commanded several NOAA vessels.

4 Admiral Smith's full biography is in  
5 your meeting materials. And for the sake of time  
6 we include all our speaker bios in the meeting  
7 materials, so that we can just have a brief  
8 introduction, and not go into detail.

9 Admiral Smith, it is an honor to have  
10 you with us. Can you please share any opening  
11 remarks, and provide meeting details and  
12 logistics? Thank you.

13 RDML SMITH: Thank you, Joyce. A  
14 couple of logistical details. Emergency exits  
15 are basically any of these four, out through the  
16 lobby. The restrooms, many of you probably have  
17 found them already, are also off the lobby.

18 There are designated public comment  
19 periods. I really hope that we have some  
20 audience, remote and in person comments during  
21 that period. And we'll be sure to leave some  
22 time for that, so that it's not rushed.



1           There's also, there are also email.  
2           And there's a chat function on the webinar, if  
3           you're more comfortable using that.

4           The HSRP Members, of course, this is  
5           your meeting. And you should feel free and  
6           encouraged to interrupt and ask question at any  
7           time.

8           We're honored with the robust group of  
9           experts that we have assembled here for our panel  
10          today. And have a similar panel tomorrow. I'll  
11          wait until we, until the panel is ready to  
12          introduce them.

13          But I do want to recognize some of the  
14          subject matter experts that we brought with us  
15          from NOAA, for those of you that don't know them.

16          We have, we will introduce the, my co-  
17          directors from National Geodetic Survey, and CO-  
18          OPS. And we'll be hearing from them this  
19          morning.

20          But in addition, from NGS, Mike  
21          Aslaksen, the Chief of the Remote Sensing  
22          Division is here. Mike. Denis Riordan, the

1 Florida Geodetic Advisor is here. From CO-OPS,  
2 Chris Paternostro, who was here, the speaker at  
3 the PORTS dedication yesterday, and is in charge  
4 of that program.

5 And Courtney Berry is here. There's  
6 Courtney, also from CO-OPS. From Coast Survey we  
7 have Captain Liz Kretovic, Captain Rick Brennan,  
8 Captain Jim Crocker. So this is, sorry, I should  
9 be giving positions as we go.

10 Kyle Ward, who's our local navigation  
11 manager. Rachel Medley, who oversees the  
12 navigation manager program more generally. Lynne  
13 Mersfelder-Lewis, who is the main staff point of  
14 contact, and leader for getting this group  
15 together twice a year. Thank you, Lynne.

16 Nikki Nobisi, sorry, who also has just  
17 joined Coast Survey, and will be in, providing  
18 help for this as well. From NOS we have Jim  
19 Rice, Keeley Belva, there's Keeley, Glenn  
20 Boledovich, and Rachel Keylon. Rachel's over  
21 here.

22 So, I encourage you to, as I will, to

1 lean on the subject matter experts in the room  
2 when we get to something technical.

3 I also, but before we do the HSRP  
4 Members we've not introduced our VIP here in the  
5 room, my boss, Dr. Russell Callender, who is the  
6 Director of the National Ocean Service, and has  
7 lots of other titles besides that. But that's  
8 the simplest version. Welcome, Dr. Callender.  
9 Madame Chairman.

10 CHAIR MILLER: Yes. Okay. We're  
11 going to have the HSRP Members and others around  
12 the table introduce themselves. And for the sake  
13 of time they're going to provide comments on the  
14 meeting we held yesterday.

15 And so, I will provide sort of a high  
16 level overview of what we heard yesterday at the  
17 Port of Miami. For those who weren't there, we  
18 met with a group of local experts from the Coast  
19 Guard, the pilots, the Miami River, very  
20 impressive presentations. And so, I'll try to  
21 just briefly summarize what we heard yesterday.

22 Port Miami is the number one cruise

1 ship hub in the country. It has over a million  
2 TEUs. For those who don't know, TEUs is the  
3 twenty equivalent units, which means the number  
4 of 20 foot containers that are brought in.

5 Over a million TEUs per year in  
6 shipping. The port can now accommodate ships  
7 that carry 14,000 TEUs. The controlling depth is  
8 51 feet. The channel has been deepened and  
9 widened. A tunnel was built. And rail access  
10 was increased. And this was all completed in  
11 2016, 2017.

12 The main thing I heard was growth.  
13 The Port of Miami is growing, has grown, and will  
14 continue to grow by leaps and bounds. There are  
15 extensive plans for expansion, especially on the  
16 cruise ship side.

17 Container growth is limited by  
18 available land. There are plans to go forward to  
19 again widen and deepen the channel into the  
20 harbor.

21 The main threat in the area is  
22 tropical weather. Port closures and openings are

1 critical for the cruise ship industry,  
2 particularly because they have to coordinate with  
3 airlines, hotels, food suppliers, and so forth.

4 The cruise ship industry, and other  
5 marine concerns want to be included in planning  
6 activities, or at least get information as  
7 quickly as possible, in order to make decisions.  
8 Better communication is needed during  
9 emergencies.

10 Getting ports opened after the storms  
11 is a very high priority. The area needs  
12 immediate access to survey capabilities after  
13 storms. And we heard some possible solutions.  
14 Of course, there is the Navigation Response Teams  
15 from NOAA. There was a suggestion to outfit  
16 pilot boats with the sensors necessary. But  
17 there are other possibilities locally.

18 Our PORTS installation of three  
19 current meters on the buoys was needed because  
20 the Gulf Stream flows past the mouth of a harbor  
21 at up to six knots. The outermost currents are  
22 affected by the Gulf Stream. And the currents at

1 the two inner buoys are affected by tides. We  
2 had requests for current meters both three miles  
3 further out, and in the harbor itself.

4 They could, the pilots could, and the  
5 cruise industry could also use some more weather  
6 sensors in particular spots, particularly where  
7 they come out of the lee of a high rise.

8 The depth and width of the ships  
9 entering the harbor are critical. And they are  
10 increasing. This is something we have heard  
11 throughout the entire country. The squat of  
12 ships is increased as speed increases. And ships  
13 entering up to six knots, due to the Gulf Stream.

14 Another thing we heard about, which  
15 was quite new to me, was about the Miami River,  
16 which is five and a half miles long. And in  
17 looking at the charts there wasn't a sounding on  
18 that chart. So, they need better charts.

19 It's a very mixed use, with marinas,  
20 boat yards, tugs, residences, condos, and  
21 restaurants. Growth is anticipated. For  
22 instance, there's a planned mega-yacht marina.

1                   Bridges are very important in Miami  
2 River. Something that very much struck me was,  
3 no power, no bridge openings, which if anybody's  
4 traveled the ICW, that's major. And there's  
5 also, and rafted boats are a big concern in the  
6 Miami River, leading to sinkings during storms.

7                   There are limited safe harbors for  
8 small boats. Recreational boats also are a major  
9 factor in Miami. Diving, fishing, sailing, and  
10 the snow birds, all make for a very busy  
11 recreational boating scene.

12                   Some mega-yacht growth is anticipated  
13 here in Miami. The ICW runs through Miami. And  
14 we had a request for more, quicker access to  
15 surveys on the ICW.

16                   Okay. That's the synopsis of the  
17 meeting. And I will now ask our Panel Members to  
18 introduce themselves briefly. And then add to  
19 these comments, or mention whatever struck them  
20 most forcefully about the meeting. Ed, would you  
21 begin?

22                   MEMBER SAADE: Good morning. My

1 name's Ed Saade. I'm the President of Fugro USA.  
2 So, the one thing that stuck me yesterday was  
3 when the Admiral was addressing us the Acting  
4 Administrative Lead of NOAA.

5 He got into details about the fact  
6 that the U.S. should be the leader in terms of  
7 mapping, particularly in the deep ocean parts of  
8 our own extended continental shelves. But  
9 generally supporting the idea of mapping in deep  
10 water globally. And I think that's a really, I  
11 support that idea completely. And I'd like to  
12 see us discuss that a little bit more in detail.  
13 Thanks.

14 MS. BLACKWELL: Good morning. I'm  
15 Juliana Blackwell, the Director of the National  
16 Geodetic Survey. And the one comment I had from  
17 yesterday's panel was, the last speaker that was  
18 presenting on the private sector use, and  
19 collection and integration of multibeam data for  
20 recreational boaters and diving purposes.

21 It was interesting to hear about the  
22 way that the company is looking and utilizing



1 data that's been previously collected, and adding  
2 to it, and developing new products based on it.  
3 I know there are a number of questions related to  
4 the accuracy, and just the scientific aspects of  
5 it.

6 But the concept of being able to take  
7 data that's publicly available, and develop new  
8 applications for it by the private sector I  
9 thought was really a great thing to hear about.

10 And it was one of the areas that, and  
11 that produce specifically was one that I was not  
12 aware of. So, that was a nice takeaway from  
13 yesterday's panel. Thank you.

14 CAPT ARMSTRONG: Good morning. I'm  
15 Andrew Armstrong. I'm the NOAA Co-Director of  
16 the NOAA-University of New Hampshire Joint  
17 Hydrographic Center. I'm a non-voting member on  
18 the panel.

19 I think yesterday I was particularly  
20 impressed by the energy that's apparent in the  
21 South Florida navigation community. And the real  
22 wide range of navigational activities that are

1 going on here, all the way from the container  
2 ships and the cruise ships, to the mega-yachts  
3 and the smaller charter and local passenger  
4 vessel activities. So, I think it's quite a busy  
5 place. And I think NOAA's services are an  
6 important factor in everything that happens here.

7 DR. MAYER: Thank you. I'm Larry  
8 Mayer. I'm the UNH Co-Director of the UNH Joint  
9 Hydrographic Center, and also a non-voting member  
10 here.

11 I guess I was struck immediately by  
12 the enthusiasm of our new Acting Administrator.  
13 And I think what's so important is his, both  
14 experience and recognition of the importance of  
15 hydrographic services. So, I think we're going  
16 to be well served here. This community will be  
17 well served with this Acting Administrator at  
18 least.

19 It was also clear, I agree with Andy,  
20 that the dynamic nature of this port. And I  
21 think they recognize the relevance of NOAA  
22 hydrographic information. But as always, that

1 can be enhanced. And I think we'll have  
2 discussions about that.

3 I think as Joyce pointed out to me,  
4 the part that was most interesting was the real  
5 critical need for response after something like a  
6 storm. And making sure that the port is clear.  
7 And I think again this will be issues of  
8 discussion that we'll have.

9 MEMBER HALL: Hi. I'm Kim Hall. I'm  
10 the principal and founder of Brizo Maritime  
11 Consulting, which is a woman-owned small business  
12 that focuses on nautical operations and maritime  
13 security.

14 I just wanted to clarify. I think  
15 Joyce did a great job of giving us a good summary  
16 of what happened. But I think sometimes we get a  
17 little bit of what we heard and what we need to  
18 make sure we recognize as well.

19 So, while better communication is  
20 certainly always a good thing, I think that there  
21 needs to be some reasonable perspective on what  
22 happens after a storm.

1                   And I think the Coast Guard Captain  
2                   that gave us a presentation on how the Captain of  
3                   the Port operates, I think it's a very reasonable  
4                   timeframe actually. And I think we need to  
5                   recognize that as a panel, that yes, the industry  
6                   is always going to push for more and better.

7                   But sometimes we need to realize that  
8                   there is, you know, those safety and security  
9                   things that are going to kind of outweigh the  
10                  facilitation of trade and tourism. But there's a  
11                  balance that needs to be struck.

12                  But I think that Miami is kind of the  
13                  test bed for a lot of, especially what the Coast  
14                  Guard does, and the cooperation between local,  
15                  state and federal bodies. So, I think we need to  
16                  kind of applaud Miami for having a very good  
17                  system, lots of SOPs.

18                  And hey, you can always improve your  
19                  processes. But it's not a complete black hole  
20                  here. So, that's my comment for yesterday.

21                  MEMBER DUFFY: Good morning. I'm Sean  
22                  Duffy, Executive Director of the Big River

1 Coalition and Louisiana Maritime Association.  
2 So, I represent navigation on the Mississippi  
3 River.

4 So, I heard a lot of similar issues  
5 yesterday. We too benefit from a strong  
6 relationship with our Government partners.  
7 Participate heavily in Port Coordination Teams.

8 I've been on enough of those  
9 conference calls that my son wakes up in the  
10 middle of the night imitating me quite often.  
11 So, we have our share of issues and things to  
12 recover from as well.

13 So, through those efforts, two of the  
14 things that I did notice. We are too very  
15 interested in acquiring new port sensors. The  
16 program's been one I was looking to be involved  
17 on a subcommittee that decided where we started  
18 with our first round after Katrina.

19 We of course have more requests, and  
20 want more sensors, and bells and whistles, and  
21 proper placement. I've been working closely with  
22 Chris recently on working on some of the ones we

1 have.

2 And then, the other thing that I  
3 thought was very similar was, our pilots do like  
4 to look at some of the survey assets behind their  
5 pilot boats.

6 Because of the length of the  
7 Mississippi River ship channel, over 250 miles, a  
8 lot of the assets go further up river than the  
9 pilot boats may during a storm event, and are  
10 usually the first ones able to get down. Of  
11 course they coordinate very closely with the  
12 Coast Guard.

13 So, in working through that, that is  
14 one of the requests that the bar pilots have  
15 looked at. And with that, I'm happy to be here,  
16 and look forward to serving this panel. Thank  
17 you.

18 MEMBER THOMPSON: Good morning. The  
19 name is Gary Thompson. I'm the Chief of the  
20 North Carolina Geodetic Survey, and also serve as  
21 the Deputy Risk Management Chief for North  
22 Carolina Emergency Management.

1                   Unfortunately I wasn't able to attend  
2                   the meeting yesterday. We were having a  
3                   statewide hurricane exercise in North Carolina.  
4                   Sounds like I missed a good meeting. But glad to  
5                   be here today.

6                   MEMBER LOCKHART: Hi. I'm Carol  
7                   Lockhart. I run a woman-owned small business  
8                   called Geomatics Data Solutions. My expertise is  
9                   in lidar surveying and multibeam surveying. And  
10                  I'm a hydrographer.

11                  I think there was one sentence that  
12                  stood out to me yesterday. And it was actually  
13                  when they were talking about the Intracoastal  
14                  Waterway. And one of the captains there talked  
15                  about running aground in the channel.

16                  I think it highlights things that have  
17                  come up in these meetings a lot, which is, who's  
18                  responsible for the channel? Who's responsible  
19                  for making the charts for that channel?

20                  And these intergovernment agency  
21                  issues we always seem to run into when we talk  
22                  about these things. But I think that was

1 actually what stood out for me yesterday more  
2 than anything else, was that one sentence.

3 MEMBER THOMAS: I'm on. Okay. Julie  
4 Thomas from Scripps. And let's see, I come from  
5 a really observational background. And I think,  
6 well, it was just really fascinating to see the  
7 current meters. And I know how much they're  
8 used, are needed.

9 And I'm happy to follow through on a  
10 HF radar request to see if that would serve. I  
11 don't know if you want me to contact Deborah.  
12 But that's SECOORA. So, I can certainly do that.

13 And it is interesting about the app.  
14 Because the last speaker, because coming from the  
15 IOOS background we're always dealing with this,  
16 as far as citizen science, or apps that are  
17 created for surfing, or whatever.

18 Like, how do you really provide that  
19 quality control to the user, to let them know the  
20 level of standard that that data are actually,  
21 how they were collected, and what level of data  
22 are they getting.



1           So, it was just interesting. Because  
2           it highlighted the need for those apps, but yet  
3           the issue of always letting the user know the  
4           level of standardization. Thanks.

5           MEMBER KELLY: Good morning. My name  
6           is Ed Kelly. I'm the Executive Director of the  
7           Maritime Association of the Port of New York and  
8           New Jersey. We're a trade association and a  
9           marine exchange representing the various  
10          commercial maritime industry people in the port.

11          My comments about yesterday's meeting.  
12          I was also quite enthused about the comments, the  
13          positivity, and the experience level of the  
14          Acting Administrator. That bodes well for  
15          integration and forward movement.

16          I also noted here in Miami it's  
17          primarily a people port, as opposed to a cargo  
18          port. And people are a lot less patient than  
19          cargo. We can take cargo ships and put them out,  
20          let them sit someplace for two days, three days.  
21          They don't complain. They don't need to be fed.  
22          They don't write letters home, et cetera.

1                   But this port is particularly pressed  
2 with an urgency issue because of the number of  
3 people, and the ripple effect, and the pile on  
4 into hotels, airport reservations, flights,  
5 parking, the need to cycle customers, the  
6 provisions, a lot of which are perishable, and  
7 have ramifications throughout.

8                   That being said, what I did hear is,  
9 there is a lot of cooperation. But my sense was  
10 there's not enough. And I think there needs to  
11 be some better planning, as far as contingency  
12 work, to streamline this very critical timeline  
13 to get things done, with the most critical piece  
14 being surveying the channels themselves to open  
15 the port.

16                   And it seems there was still not a  
17 good resolution to that. And I think NOAA can  
18 have a good part in playing with that and/or  
19 integrating with local contractors or some  
20 suitable connection, to improve that timeline. I  
21 think that's very critical.

22                   And as, you know, Carol mentioned this

1 is not the first meeting we have heard problems  
2 regarding particularly recreational boaters, the  
3 Intracoastal Waterway, and the question of going  
4 aground in the channel, and the overlapping  
5 responsibilities and/or lack thereof on some of  
6 the intergovernmental agencies to resolve that  
7 issue.

8 We're hearing that consistently and  
9 repeatedly. And I think it's time we need to  
10 find better ways to address that.

11 MEMBER RASSELLO: Hi. Good morning.  
12 My name is Sal. I'm a nautical director for  
13 Carnival Cruise Line. And I'm a active cruise  
14 ship captain.

15 I'd like to make a small correction on  
16 the introduction you made, Joyce, regarding the  
17 speed. Once the pilot boarded the ship in Miami  
18 they need speed to face the current on the first  
19 leg of the channel. Once they are inside the  
20 breakwater they need to reduce speed, to reduce  
21 the squat.

22 Because actually the channel it gets

1 narrow. And also the depth is less than outside  
2 in the channel. So, it's six knots is inside,  
3 from inside the breakwater, passing the docking  
4 ships on the various terminal along the channel.

5           Nowadays there are ships with  
6 azimuthal propulsion, called Azipod. Those ship  
7 are able to manage better the speed in the  
8 channel. They manage better the squat.

9           Using the crabbing techniques with  
10 Azipod thrusters they can reduce the speed, thus  
11 reducing the squat. So, that's not, the squat  
12 inside, that's not applied to all the ships.

13           Regarding the post-major storm  
14 recovery, I would like to say some also. I'd  
15 like to emphasize that the cruise ship has a  
16 unique human safety factor.

17           We have thousands of people onboard  
18 not able to return to their home. Our provisions  
19 maybe last a few more days. So, everything's  
20 getting critical onboard once we don't know when  
21 the port is going to reopen.

22           So, we would like to be more involved

1 in the upfront planning on all anticipated needs.  
2 Collaborative effort between Government and the  
3 private sector I think is critical to have a good  
4 result, a good plan, post-hurricane, post-major  
5 storm.

6 This does not apply just to Miami, but  
7 also to all the major port. As Carnival Cruise  
8 Line covers 12 U.S. ports, our business is based  
9 on the U.S. port operation. If they open, we can  
10 operate. If they close, obviously we cannot.

11 Better data, I think we made a good  
12 step forward placing the PORTS in the channel for  
13 measuring the data. And additional current data  
14 inside the port will be useful for the piloting  
15 inside the channel.

16 Crowd sourcing, obviously we say that  
17 the, it would be good to have a good survey post-  
18 hurricane. And the faster the better, to recover  
19 for the cruise line, for the people onboard, also  
20 for the community.

21 In conclusion, in this era of climate  
22 changes we need to better cooperate and

1 communicate within the stakeholders. I think  
2 that is good, is cost effective. And I'm sure we  
3 got good results. Thank you.

4 MEMBER PAGE: I'm Ed Page. I'm the  
5 Executive Director of the Marine Exchange of  
6 Alaska, out of Juneau. And I was thinking the  
7 other day, as far as when I look at the port, and  
8 I look where I just came from the other day.

9 I flew all the way from Juneau, which  
10 is like 3,500 miles, in a plane, in the middle  
11 seat. It's pretty painful.

12 But it made me think about in one year  
13 the containers coming in this port would go from  
14 Miami all the way to my house in Juneau. That's  
15 really 3,500 miles of containers. You do the one  
16 million TEUs, and do the math issue, it's 3,500  
17 miles of containers, even a little bit more than  
18 that.

19 So, when you talk about, and then you  
20 look at a Google Earth and try to get a visual  
21 feel of where we were yesterday, and how small  
22 the port is, and how impactful it is. You know,

1 the number of cruise ship passengers, all the,  
2 how that affects their economy.

3 And then the larger and larger ships.  
4 One of the new ships at 14,000 TEU, and put it in  
5 perspective. That's 50 miles of containers on  
6 one ship if you put them on a dock end for end.

7 And so, and I think back to the role,  
8 and it makes me mindful of the role, and I'm just  
9 new to HSRP. But not new to NOAA. My maritime  
10 career started 50 years ago. And I used to do BT  
11 casts and XBT casts with the Coast Guard cutters  
12 to help NOAA.

13 And NOAA used to sit on the weather  
14 stations with us back in the North Atlantic and  
15 the Pacific. And NOAA used to come out with  
16 these really nice books, the tide books, and  
17 current books. And we depended on it. It's not  
18 good enough anymore.

19 And so, the tolerances are less. The  
20 ships are bigger and bigger. Industry's moving  
21 very, very fast on technology and advancements.  
22 And the harbors aren't getting much bigger.

1 That's the same size unfortunately for the most  
2 part.

3 And so, I certainly appreciate now the  
4 new tools and the advances in technology, you  
5 know, that NOAA has responsibility to some  
6 degree, is to ensure that our ports are indeed  
7 the operational, recognized, and the tremendous  
8 impact it has on our economy and our quality of  
9 life and welfare.

10 So, to me it's, I see more than ever  
11 beforehand the vital role of NOAA in facilitating  
12 maritime trade. Because they'll be to our  
13 country.

14 And so, it's encouraging to see the  
15 efforts, the much more progressive efforts that  
16 PORTS, as well some real time system that I  
17 watched the other day is a far advancement to the  
18 tide and current tables that you would have in a  
19 book, which just, you know, were guessed as to  
20 what it's going to be like, as opposed to what it  
21 really is today.

22 It's really critical in looking at the



1 size of ships and maneuver in these tight  
2 quarters. And it doesn't take much. One ship  
3 can block the channel. And there's a tremendous  
4 ripple effect, and impact on economy and  
5 businesses, and what have you.

6 So, NOAA's role gets even greater and  
7 greater, more important. And it's encouraging to  
8 see the technology and application. But I think  
9 there's more and more we can do on that end to  
10 improve that.

11 So, I'm very encouraged by being  
12 onboard. It's really an eye opener just to kind  
13 of see Miami, and work with people around the  
14 country. And kind of see the different channels  
15 we have in maritime shipping.

16 And for Alaska, we're just, got a new  
17 maritime frontier with the Arctic opening up.  
18 So, we have some new challenges. And we're not  
19 going to do it the old way, as far as lighthouses  
20 and buoys. We're going to use that new  
21 technology. So, I'm glad that NOAA's involved in  
22 the technological advances in enhancing maritime

1 safety and navigation. Done.

2 MEMBER MCINTYRE: Be a hard act to  
3 follow there. A lot of information in a short  
4 period of time. I'm Anne McIntyre. I'm a  
5 maritime pilot with the Columbia River Pilots.

6 We serve five ports on the Columbia  
7 River, within the states of Oregon and  
8 Washington. We are heavy users of the NOAA PORTS  
9 system. And the products really help us keep  
10 cargo moving.

11 I had two takeaways yesterday. The  
12 first one was from Admiral Gallaudet. I'm not  
13 sure if my pronunciation is correct there. And  
14 it's as it relates to public/private  
15 partnerships.

16 I have the impression with the new  
17 administration that the whole way that the  
18 public/private partnerships work, and the way  
19 projects are funded is going to change.

20 And I think that that's something that  
21 this committee should be looking at, as far as  
22 making some recommendations as to how that might

1 work.

2 My other takeaway was from the  
3 presentations that were given by Captain Simpson  
4 and Mr. Bailey. And I do think that it seems  
5 that the small commercial operators, recreational  
6 boaters, that we need to provide more outreach,  
7 and get a better understanding of what they're  
8 needs are, as far as products are. They seem to  
9 feel unheard.

10 And in every port we go to there's  
11 always a big emphasis on the major commercial  
12 operators, and the major port. And I think there  
13 is a whole group of stakeholders that we need to  
14 have more focus on.

15 MEMBER GEE: Good morning. Lindsay  
16 Gee from the, I'm the Mapping and Science  
17 Coordinator within the last month at the Ocean  
18 Exploration Trust. And we operate the  
19 Exploration Vessel Nautilus that is exploring on  
20 the West Coast of the U.S. again this year.

21 My takeaways from yesterday, I think  
22 is all of us that are related to the marine

1 environment, it's just again to see the  
2 susceptibility of a major port to the  
3 environment.

4 And so, the benefits of having that  
5 real time observations of the current meters  
6 there was such a big impact to them that, you  
7 know, the three current meters was obviously a  
8 substantial impact to draw those people to open  
9 that system. But also then to the storms.

10 And so, how does that, you know, and  
11 the way that the services of NOAA. I think it's  
12 not just the standalone current meter or tide  
13 gauge, and those sort of things, or the  
14 standalone charting. And it's the integrational  
15 of all of that to provide the service. And I  
16 think that's a key area.

17 We talked about communications. But  
18 I think it's also in the integration of the,  
19 using technology to integrate that data for the  
20 captains and the ports, and those around. And I  
21 think there's still work to be done there that  
22 would allow them to better operate in the port,

1 and have access to all that information.

2 So, as we transition from the, as Ed's  
3 saying, from the tide tables to the, and the  
4 things that were in printed copy, we always seem  
5 to be lagging a little bit behind the technology  
6 I think in that.

7 And the integration with the major  
8 portable pilot units, and serving all that data,  
9 and integrating it together is still a challenge  
10 that I think -- And our services still have to,  
11 what's the role in that?

12 And I've used that there's a, and it's  
13 related to what we're talking about I think with  
14 the information technology infrastructure. That  
15 that's the key to how do you put that in place,  
16 so that that can be used by the rest of, all the  
17 variety of operators. Thank you.

18 MEMBER ATKINSON: My name's Larry  
19 Atkinson. I'm from Old Dominion University.  
20 Since I've studied the Gulf Stream for like 50  
21 years, which is a major ocean current, I was  
22 really interested to see. And this is a case

1 where a major ocean current actually affects the  
2 approaches to a harbor. Pretty neat.

3 It reminded me of works we did many  
4 years ago on the Kuroshio as it goes past Tokyo.  
5 And how they manage the traffic in that area,  
6 which is pretty intense.

7 Julie mentioned the HF radar. I  
8 operate a HF radar system funded by NOAA through  
9 IOOS, in the mouth of the bay. And it seems an  
10 obvious thing they can try out down here. Be  
11 glad to help out, coordinate that.

12 MEMBER MAUNE: Good morning. My name  
13 is Dave Maune. I'm from Dewberry Engineers. I  
14 am a geodesist and an area remote sensing guy who  
15 normally maps things. And that data are used for  
16 years, and we don't change it very often.

17 I was impressed yesterday by the  
18 Physical Oceanographic Real Time System, the  
19 PORTS. I've looked at that acronym several  
20 times. And I never really focused on the real  
21 time aspect of it, and the impact that that has  
22 on the port.

1 I mean, that chart was, that  
2 information was being updated every couple of  
3 minutes. And that really impressed me on the  
4 impact that would have on safety of navigation.

5 I was impressed by Admiral Gallaudet.  
6 I think it's great that we somebody with a sharp  
7 mind like his at the top there. And the one  
8 other thing was the identification of submerged  
9 obstructions after hurricanes. That seems like  
10 it's a problem we ought to be able to solve, to  
11 identify that, those obstructions more quickly.  
12 Thank you.

13 MR. EDWING: Good morning. I'm  
14 Richard Edwing. I'm the Director of the Center  
15 for Operational Oceanographic Products and  
16 Services.

17 And the first thing I have to say is,  
18 Ed, the tide tables are not guesses. They're  
19 astronomically driven predictions. And yes, on a  
20 weather day they're not, they may be not that  
21 accurate. But they're not guesses, okay. So,  
22 let the record reflect that. Okay.

1           So, but I have two big takeaways from  
2 yesterday. And like a lot of the other people  
3 around the table I was just very impressed by the  
4 diversity of this port.

5           Every port is different. It's like  
6 snowflakes. There's no two ports that are  
7 exactly the same. They all have their own  
8 challenges and, you know, commerce.

9           Certainly I've been impressed with  
10 Miami, with the dominance of the cruise ship  
11 industry, and the people being moved. Also a  
12 substantial container ship traffic, you know, and  
13 down through the mega-yachts, and down to the  
14 recreational traffic. So, a very diverse  
15 seaport.

16           And of course, I also listened to  
17 Captain Nitkin. It's not unusual, when you  
18 establish a port system it's just a kernel for a  
19 larger system. Because people start using the  
20 sensors and get, you know, used to using real  
21 time data, and build confidence in it.

22           And certainly, some of the additional



1 sensors they've asked for, it's really just a  
2 resource, you know, thing. They just need to  
3 come up with the funding to establish some of  
4 those.

5 The ones well offshore are a little  
6 bit more of a challenge. We could certainly work  
7 with IOOS, with the HFR. We have integrated HFR  
8 data into some of our ports displacement of the  
9 areas, Chesapeake Bay and New York, New Jersey.

10 So, I think that could help out here.  
11 Certainly may be much more cost effective to  
12 putting more buoys out there, and that sort of  
13 thing. So, yes, yes. And we will do that. So,  
14 and that really concludes my remarks. Thank you.

15 DR. CALLENDER: This is awesome. I  
16 get to go last. And I'm probably the least  
17 technically adept of anybody in the room about  
18 hydrography. But I'm going to actually hit a  
19 point that nobody hit.

20 So, one of the things that struck me  
21 that hasn't been talked about today was the move  
22 to LNG. And having to deal with the safety

1 issues. Moving people at the same time you're  
2 repealing ships. And so, I think that was kind  
3 of an interesting piece.

4 Another piece that was talked about  
5 several times here, really the enthusiasm, the  
6 expertise, and the energy of the community that  
7 we heard yesterday, and the panel.

8 Yet, there was still an overall sense  
9 of we need to do, they, we collectively, need to  
10 do better in terms of communication across the  
11 board. Even though there already really tightly  
12 connected.

13 And finally, I think that the two Eds  
14 here, with comments about people management and  
15 data. So, if I think about the number of people  
16 coming into the port, and the cruise ship  
17 industry, it's almost eight times the population  
18 of the city where I live, Washington, DC, every  
19 year coming in. There are 5.3 million people.  
20 It's pretty amazing. Thank you.

21 RDML SMITH: Madam Chairman, do I get  
22 to comment too?

1 CHAIR MILLER: I believe so.

2 RDML SMITH: I, most of what I would  
3 have said has been said already. But I did want  
4 to flag just a couple of things. One is that,  
5 back to the tide table thing. The tide tables  
6 are not, the tide book is not good enough  
7 anymore.

8 Well, the tide book was not a real  
9 time system. It was for predictions, right. So,  
10 we're putting in real time systems. The  
11 predictions half is still necessary.

12 And that's where the hydrodynamic  
13 models that have been under development at NOAA,  
14 and are now, just now this year available through  
15 navigation systems, and will be available later  
16 this year in an internationally standardized  
17 format, are so critical.

18 Because we now have, the decision  
19 point is not when you get to the channel. You  
20 decide to go an hour before that. And so, what  
21 is the current going to be when you're there? Or  
22 when you're deciding to load what are the water

1 levels going to be?

2           And those, so that looking ahead a few  
3 days out is really important. And that's, it's  
4 weather driven, et cetera. So, it includes, so  
5 it's better than the old tide tables, both  
6 because it takes into account the observations.  
7 And then the very latest ones can integrate even  
8 HF radar and other things to improve the model.

9           So, I do want to flag that. Because  
10 I hear about that less than I would expect, given  
11 how important I think it is to the future of  
12 navigation.

13           So, I'm going to put that on my mental  
14 list of things to return to in later meetings as  
15 well. And I think we have some exciting  
16 developments.

17           The second thing I wanted to flag was,  
18 I think maybe Anne mentioned it first, was these  
19 middle size ports. You know, we do tend, fewer  
20 and fewer ports can be the biggest ones.

21           And the ports are fighting like mad to  
22 stay on the list of the biggest ports, right, the

1 ones that can take the biggest ships. Leaving  
2 behind many, many ports that would have been  
3 considered important big ports 50 years ago.

4 These are still important ports.  
5 They're still important to their region. They're  
6 still important to the U.S. economy. And I think  
7 as a public set of services we need to have a  
8 strategy on supporting the unique needs of those  
9 ports, as well as the mega-ports. So, I wanted  
10 to thank you for flagging that.

11 And the last, I just wanted to also  
12 recognize the really critical role of the new  
13 PORTS system. I think it's easy when you get  
14 into bureaucracyland to look at, oh, we've got,  
15 you know, 782 observation points around the  
16 country.

17 Well, to this port, you know, every  
18 single one of those is important. And once they  
19 become a critical part of the navigation system  
20 we need to maintain them with that level of  
21 service that is responsive to how important they  
22 are to the local community. So, with that I will

1 pass the mic to our Chair.

2 CHAIR MILLER: These things are hard  
3 to see. I believe Dr. Callender will now address  
4 the group.

5 DR. CALLENDER: Thanks, Joyce. It's  
6 my pleasure to join the Hydrographic Services  
7 Review Panel, here in a windowless room in  
8 beautiful Miami.

9 I really have appreciated hearing the  
10 comments around the table. And, you know, seeing  
11 first hand the commitment and the energy of this  
12 panel. I think it's an exciting time for the  
13 panel.

14 I think it's an exciting time for the  
15 programs that you're advising. With the new  
16 technologies coming onboard there's a lot of  
17 opportunities to address some of the emerging  
18 challenges.

19 The agenda here in next couple of days  
20 is pretty robust. And I'm really looking forward  
21 to engaging with you, to learning what you're up  
22 to, and receiving your insights and

1 recommendations.

2           So, some of the topics around post  
3 event response, thank you. Coastal community  
4 risk reduction and resilience aren't only timely.  
5 But they're certainly relevant here in South  
6 Florida. Don't get excited. I've only got two  
7 slides. And I'm not going to hit them yet.

8           So, I do want to congratulate the HSRP  
9 newest members, Sean Duffy, Julie Thomas, and  
10 Captain Ed Page. And welcome back Ed Kelly and  
11 Sal Rassello for a second term.

12           And, Sal, thank you on behalf of  
13 Admiral Gallaudet, Neil Jacobs, and myself, for  
14 arranging the tour of the Carnival Cruise Lines  
15 Operations Center on Monday. That was fabulous.

16           Acting NOAA Administrator, Admiral  
17 Gallaudet really enjoyed the engagement with you  
18 yesterday. And wanted me to convey his regrets  
19 for not being here today. If I think my life is  
20 crazily scheduled, his is even worse than that.

21           He definitely has appreciated the  
22 brief time that he spent with you, and is really

1 looking forward to engaging with the panel, and  
2 capitalizing, if you will, on your time, your  
3 talents, and your advice.

4 And I think for him, being able to see  
5 the enthusiasm of the community for the PORTS  
6 system, to get out there and see that one ship  
7 coming in, crabbing as it came into the channel  
8 yesterday, he really saw the value. And being a  
9 mariner I think he totally got it.

10 Clearly, this new PORTS system in  
11 Miami is a great example of what we've been  
12 calling informational infrastructure that's  
13 critical for safe and efficient maritime  
14 navigation.

15 And we saw definitely from the panel  
16 yesterday, you know, the amount and types of  
17 ships that come in here, and the challenges that  
18 they're dealing with here in this port, dealing  
19 with the larger and larger vessels that are post-  
20 PANAMAX. But having this new tool, the PORTS  
21 system, I think is going to enable their  
22 decisions across the board.



1           So we, and Joyce said a great summary.  
2           That was a good summary around the room. And it  
3           was really impressive to hear the challenges they  
4           have here.

5           But this is an opportunity for this  
6           kind of panel to really put your ideas out there,  
7           your cutting edge thinking, your innovations to  
8           help improve and advance our navigation programs  
9           collectively, and help us to aid the community in  
10          delivering federal products and services for the  
11          future.

12          I'm sorry I wasn't able to join you at  
13          Portsmouth last September. I heard that was a  
14          very good meeting. You made a lot of good  
15          progress on your issue papers, especially the  
16          timely updates to the paper on the NOAA  
17          Hydrographic Services Fleet.

18          The NOAA Fleet, as you know, has  
19          already shrunk from 19 to 16 ships. And over the  
20          next ten years another eight ships are due to be  
21          retired. This includes two of our hydrographic  
22          survey vessels, the Fairweather and the Rainier,

1 which turned 50 this year. That's 100  
2 collectively. I don't think that's a good number  
3 to have.

4 The Ocean Service is supporting the  
5 NOAA Fleet Recapitalization Plan. And we're  
6 encouraged that Congress is appropriating funding  
7 to acquire new ships. And I'll talk about that  
8 briefly when I talk about the budget.

9 I really look forward to your  
10 recommendations on the NOAA fleet, and the other  
11 topics on your agenda. And I'm really looking  
12 forward to hearing from our interagency partners,  
13 and the local experts, which we heard some from  
14 yesterday.

15 There's going to be some good  
16 summaries I think from the Office Directors from  
17 Coast Survey, from CO-OPS, and the National  
18 Geodetic Survey. Admiral Smith will be providing  
19 a presentation.

20 One of the things he'll be talking  
21 about is the role of the International Convention  
22 for the Safety of Life at Sea, or SOLAS, and

1 intersection in their hydrography mission, gaps  
2 in our charting that could inform the new Seabed  
3 2030 initiative, and what it would take to  
4 actually map the entire U.S. EEZ. And we're  
5 having those conversations internal to NOAA right  
6 now.

7 Rich Edwing, the Director of CO-OPS is  
8 going to talk to you about the program's efforts  
9 to fully leverage the Global Navigation Satellite  
10 System, or GNSS, for vertical control of tide  
11 stations.

12 Juliana Blackwell, the Director of the  
13 National Geodetic Survey, will provide an update  
14 on their network of foundational GNSS reference  
15 stations, which serve as a backbone to the  
16 National Spatial Reference System, which as you  
17 know underpins the national, is the national  
18 framework for all geospatial application.

19 So, I was going to talk a little bit  
20 about the administration transition, the new  
21 political team in NOAA. You got that summary  
22 yesterday from Admiral Gallaudet.

1                   A couple of pieces to note.  
2           Hopefully, you got an opportunity to engage with  
3           Neil Jacobs as well. So, he and Admiral  
4           Gallaudet are really the sort of co-leads.  
5           They're both Assistant Secretaries coming in.  
6           However, Admiral Gallaudet is the Acting  
7           Administrator right now.

8                   Kevin Wheeler, who was there  
9           yesterday, is our policy lead. And he will be  
10          someone to engage with as well. There's, one of  
11          the other political appointees, more at the  
12          junior level, that's going to be focusing on the,  
13          if you will, the wet side, or the maritime side  
14          of NOAA. And that's Brandon Elsner. He was a  
15          staffer from Senator Wicker's office. And is  
16          helping to advise Admiral Gallaudet right now.

17                   So, a lot of what I've been trying to  
18          do, literally since the fall, and now as our  
19          political team has come onboard, is to build a  
20          relationship, and build a trust with that team.

21                   There's typically a dynamic of an us  
22          versus them mentality when you get a new

1 political team onboard. And I've been doing  
2 everything I can to not make it an us versus them  
3 thing, but an us kind of conversation. And  
4 they've been extremely receptive, and very  
5 supportive.

6 I think you got a sense from hearing  
7 the brief remarks from Admiral Gallaudet  
8 yesterday, and at the dinner we had with the  
9 leadership group on Monday night, that he is  
10 extremely engaged. He is extremely excited about  
11 the work of this panel.

12 The purview of this panel is extremely  
13 supportive of our navigational mission writ  
14 large. We've had a lot of engagements with the  
15 Admiral. He's one of those rare senior  
16 administrators where you don't just give him a  
17 one page brief or a PowerPoint.

18 We sent him 20 pages of briefing  
19 materials two days ahead of time. He reads it  
20 all. And then the briefing's all about  
21 questions. So, he's got a large assimilative  
22 capacity. And really a desire to support these

1 programs.

2 One of the areas that he has been  
3 supportive of is the concept of precision  
4 navigation. This isn't just about the  
5 navigation, the coast survey side.

6 But it's the integration, Lindsay, as  
7 you talked about, of what we have in terms of the  
8 CO-OPS data, the NGS data, and frankly, some of  
9 the IOOS information.

10 And so, I think an area for this panel  
11 to help engage the Admiral is going to be along  
12 the precision navigation. You know, and part of  
13 what I've been trying to do in the precision  
14 navigation, if you will, as one vehicle, is to  
15 give the new political team some wins.

16 They're looking for some early wins as  
17 they come into the administration. And I think  
18 this is going to be a good win for them. They're  
19 looking for return on investments of the federal  
20 investments.

21 They're looking for connections to the  
22 private sector. And they're, frankly, looking

1 for successes in the next couple of years. So, I  
2 think the precision navigation idea, and the  
3 kinds of things that we talk about, you talk  
4 about in this panel are going to be very  
5 influential in the thinking of NOAA, and in terms  
6 of their priorities.

7 I'm going to switch to budget now.  
8 And lately it's been bad news. But it's not bad  
9 news this time. So, that's fabulous. That's one  
10 good point.

11 As you know, in February Congress and  
12 the White House reached a two year budget deal.  
13 As part of that deal there was an agreement on  
14 hurricane supplemental funding.

15 For NOAA some of the supplemental  
16 funding included funds for repairing facilities,  
17 some of our observational sensors in CO-OPS and  
18 the IOOS program, and other kinds of  
19 infrastructure.

20 It also provided \$40 million for our  
21 mapping, charting, and geodesy programs, to  
22 conduct surveys and update products for the areas

1 impacted by last year's storms, including those  
2 storms in Florida.

3 Many of the activities in the  
4 supplemental -- I'm not ready to do that yet, but  
5 thank you. Many of the activities that are in  
6 the supplemental are under review at the  
7 administration.

8 We have to submit a spend plan to  
9 Congress. There's, you know, we in the  
10 Government don't move fast. And we're not moving  
11 super-fast on this. Although I think we need to.

12 You know, the \$40 million that we  
13 have, in terms of the mapping, charting, and  
14 geodesy mission, a majority of those funds will  
15 be used to support contract surveys.

16 And I would like to thank any of you  
17 in the room that may have supported that, the  
18 supplemental request, and the dialogue to help  
19 receive those funds. Now I can go to the budget  
20 slide.

21 So, on March 22 Congress and the  
22 administration reached an agreement on FY'18



1 funding. So, this is the funding for the Ocean  
2 Service, all of the Ocean Service since 2010.

3 If you take a look at the trend from  
4 roughly, the numbers are kind of hard to see at  
5 the bottom, 2013 to 2018, the trend has been in  
6 the right direction.

7 The President's request for '18 was  
8 \$376 million. The '18 appropriation given to us  
9 by Congress is \$185 million above our request. I  
10 like to see that kind of trend.

11 FY'19 you see the bar drops a lot.  
12 The FY, Fiscal Year '19 request for the Ocean  
13 Service is going to be very consistent with the  
14 Fiscal Year '18 request.

15 One thing that I will say that's very  
16 clear I think from this chart, is that we do have  
17 strong Congressional support for our missions.  
18 And they've been incredibly receptive to what we  
19 do.

20 We actually had, I was wanting to be  
21 there yesterday. But my Deputy ended up briefing  
22 the Senate Appropriations staff on the FY'19

1 request. And it was a very quick conversation.

2           So, I don't think they were super  
3 interested in hearing, frankly, the  
4 administration request. They're much more  
5 interested in looking at the programs. And  
6 hopefully continuing in '19 what we saw in Fiscal  
7 Year '18.

8           So, here's a little bit more detail.  
9 These are the major budget lines. This isn't all  
10 of the detail for the Ocean Service. The areas  
11 you're most interested in is in the top blue bar,  
12 Navigation, Observations, and Positioning line.

13           The FY'18 funding increased our  
14 funding from, if you will, '17, enacted 206, to  
15 the '18 enacted in the middle column of 219.  
16 It's about a \$13 million dollar increase.

17           There's some increases to the contract  
18 surveys line, increases for regional partners in  
19 the IOOS program. You see they got a \$5 million  
20 dollar increase. And there's also some funding  
21 for regional geospatial modeling grants that are  
22 in there.

1           And Glenn, in the lunch session today,  
2           is going to walk through a bit more detail about  
3           this budget. And I don't want to steal any more  
4           of his thunder really on that.

5           A couple of other points just for the  
6           larger NOS budget is, there was in the  
7           President's request in '18 a request to terminate  
8           major grant programs, such as our Coastal Zone  
9           Management Program, or National Estuarine  
10          Research Reserves Program, and Our Extramural  
11          Research Program. And Congress did not accept  
12          that proposal from the administration. And  
13          provided those funds in Fiscal Year '18.

14          There's also, where the heck is it?  
15          In the Coastal Zone Management Grants line there,  
16          you don't see the detail here. But there was an  
17          increase from \$15 million to \$30 million for  
18          resilience related activities.

19          This is part of the Oceans and Coastal  
20          Security Act. And we're working with the  
21          National Fish and Wildlife Foundation, National  
22          Marine Fisheries Service, and us to sort out how

1 we're going to administer those funds this year.  
2 I've been spending a lot of time on the phone  
3 already this week on that.

4 What's not in this budget that would  
5 be of interest to you is in the Fleet Operations  
6 budget. There is some support, some significant  
7 support for the NOAA fleet.

8 There's slightly over \$20 million  
9 dollars to address deferred maintenance, which is  
10 I think fantastic, which, one of the challenges  
11 as you know that we've had is keeping the hydro  
12 ships, 50 years plus, on line and running. So,  
13 having \$20 million for maintenance is going to  
14 help.

15 There's also \$75 million for fleet  
16 recapitalization, to continue the support we  
17 received in '17. So, I'm very encouraged by the  
18 budget that we received from Congress in '18.  
19 Now in the short period of time that we have we  
20 need to execute that, which I think we're  
21 prepared to do.

22 So, I'm going to move off of budget

1 now. So, you heard from, a couple of the  
2 priorities, major priorities for NOAA, from  
3 Admiral Gallaudet yesterday.

4 One was essentially implement the  
5 Weather Act, which is not, you know, deeply part  
6 of this purview of you all. But there is some  
7 support for some of the storm surge modeling work  
8 that we do.

9 The second part of the budget really  
10 is what the Admiral is talking about, the blue  
11 economy. And this is a concept that's not a NOAA  
12 concept. It's been used globally for a number of  
13 years.

14 The definition that I like is coming  
15 from the World Bank, which talks about the blue  
16 economy is a sustainable use of ocean resources  
17 for economic growth, improved livelihoods and  
18 jobs, and ocean ecosystem health.

19 And I think that this focus on the  
20 blue economy really aligns well with the  
21 administration's emphasis on jobs and the  
22 economy. We've been working to advise the

1 Admiral, the leadership at my level, and set some  
2 priorities within this blue economy.

3 He talked about those briefly  
4 yesterday. One was enhancing maritime commerce.  
5 So, that's huge, frankly, that that's in there.  
6 I think it's kind of no brainer, in terms of  
7 supporting jobs and the economy in this country.

8 Secondly is a focus on fisheries and  
9 aquaculture. Third is a focus on recreation and  
10 tourism, which would also include support for the  
11 recreational boating community. And finally,  
12 there's interest and support for some of the deep  
13 ocean mapping, and support for Seabed 2030.

14 What's missing in that, in my view,  
15 and what I've been hearing loud and clear from  
16 constituents, is a focus on enhancing  
17 preparedness and risk reduction.

18 I've been pushing that. I've got  
19 agreement with, from the career team in NOAA to  
20 add that to the blue economy priority. But we  
21 haven't really moved that up to the political  
22 level yet.

1           So, if you think about those four  
2 areas, five areas potentially, the hydrographic  
3 services across the board are incredibly well  
4 positioned. And you've heard that enthusiasm  
5 from Admiral Gallaudet, and the support.

6           So, I think there's going to be a  
7 great opportunity for the HSRP to help us  
8 identify and quantify the value and benefit of  
9 what we do in terms of hydrographic services.  
10 And really explore opportunities for innovative  
11 partnerships.

12           So, other areas that I've been doing  
13 on, in terms of outreach, beyond reach after the  
14 NOAA team. I've been interacting with Congress a  
15 fair bit. In November I testified before  
16 Congress on the Hydrographic Services Improvement  
17 Act re-authorization, and the Working Waterfronts  
18 legislation.

19           I will say that Representative Don  
20 Young pushed me pretty hard on increasing support  
21 for contract surveys, particularly up on the  
22 great state of Alaska.

1 I did try to be very respectful. But  
2 let Mr. Young know that we'll spend every penny  
3 that's appropriated to do those contract surveys.  
4 I think that message was received.

5 And on a more serious note, Admiral  
6 Smith was able to follow-up, and continue that  
7 relationship building in a one on one  
8 conversation with Mr. Young. So, I was certainly  
9 encouraged by that outreach and that interest.

10 Also, this past year several of the  
11 office directors here, and I, presented to the  
12 bipartisan House Ports Caucus, for an all  
13 interested Congressional staff brief. It was a  
14 standing room only crowd. And our briefing I  
15 think was incredibly well received.

16 Representative Lowenthal, from  
17 California, who you met at our meeting in Long  
18 Beach, stopped by and reaffirmed his support and  
19 commitment to the NOAA effort, and to our  
20 Navigation Services Program.

21 I also led an all interested staff  
22 brief on the NOS response to this year's major



1 storm event. And I'll be touching on that  
2 briefly in the next panel.

3 So, I really want to thank you for the  
4 advice and suggestions you have given us. And  
5 thank you in advance for the continued work you  
6 are going to do.

7 I think we've had really good success  
8 so far with this current team elevating the  
9 message that these hydrographic services are of  
10 immense value to the nation.

11 I can't think of any better example  
12 than having the Secretary of Commerce in some  
13 recent testimony actually talk about precision  
14 navigation, calling it transformational  
15 infrastructure. And he actually gave a lengthy,  
16 and I will say mostly accurate description of  
17 what precision navigation was.

18 And I've been working to try to build  
19 those connections, and get things up at that  
20 level. And I've never been able to it until now.  
21 And I think that just shows the value and that  
22 support from the NOAA leadership team that we've

1       been able to get.

2                   It also shows, frankly, the great  
3       information that I've been getting from Coast  
4       Survey, from CO-OPS, and NGS, that I've been able  
5       to feed up into the NOAA senior team.

6                   So, in conclusion just a couple of  
7       last points. As we all know, larger ships are  
8       navigating already constrained ports. There's an  
9       increasing threat of coastal storms and  
10      disasters, and impacts from that.

11                  Clearly there's a need for  
12      foundational, authoritative, and accurate  
13      hydrographic and positioning data and services.  
14      And that need is increasing.

15                  Technology and innovation are  
16      fundamental to providing the next generation of  
17      services. You heard from Admiral Gallaudet his  
18      deep interest in looking at technological  
19      solutions to challenges, particular autonomous  
20      systems.

21                  Clearly partnerships with the private  
22      sector and academia will also be clear to our

1 successes. And frankly, there's a need for  
2 greater collaboration across all sectors, not  
3 just the federal sector or the private sector,  
4 but essentially all sectors.

5 NOAA's going to do what it can to  
6 provide the foundational data and validated  
7 datastreams to help the country navigate safely  
8 and efficiently. But we're looking for new  
9 opportunities where all partners can play to  
10 their strengths.

11 And so, I do appreciate the  
12 opportunity to speak to you today. I appreciate  
13 the opportunity to be here at this meeting, to  
14 learn.

15 Again, the more I can learn and better  
16 understand what you do and the challenges that we  
17 collectively have, the more I can hopefully be  
18 useful to you as I engage with the administration  
19 and Congress. So, thank you, Joyce.

20 CHAIR MILLER: Yes. I believe next  
21 Rear Admiral Smith will -- Oh, I'm sorry. Rich  
22 Edwing will address the group on, I'm not sure

1 what you -- Sorry. I don't have that. Rich.

2 MR. EDWING: Okay, yes. So, I was  
3 asked just to talk a little bit about PORTS, just  
4 given, you know, the event yesterday. And I  
5 thought what might be helpful was just for me to  
6 give a brief overview, status update of the  
7 program since it began with --

8 It's been a while since I've done  
9 that. We've got some new members. And so, I  
10 think, as folks are aware, the PORTS program  
11 started in 1991. The first one was in Tampa Bay.  
12 I think Mark Luther is in there. Yes. Mark's a  
13 plank owner of the original system.

14 And, you know, we're now in our 27th  
15 year of the program. And it's been continuing to  
16 grow over that time. It really grew pretty  
17 slowly at first, kind of slowly but steadily.  
18 But it's just, the last five to eight years it's  
19 just really, really taken off.

20 I'm not sure why. I can't really  
21 ascribe that to anything in particular. But  
22 we've, the system's been just really expanding.

1 And not just in adding new PORTS systems, but  
2 it's these, you know, the existing systems  
3 themselves continuing ahead with centers as well.

4 We're up to number 31 with the  
5 dedication of, you know, Miami yesterday.  
6 Thirty-two and 33 are around the corner. Port  
7 Everglades is about ready to come online. The  
8 same thing with Corpus Christie in Texas.

9 And Corpus Christie was one of the,  
10 was the last top ten seaport by some measures in  
11 the U.S. to have a PORTS system. And a small one  
12 up in Toledo, Ohio are all in the works. So,  
13 that will get us up to 34.

14 And there's more in the wings. With  
15 interest, not yet signed agreements, we've got  
16 Kings Bay in Georgia, with the U.S. Navy at the  
17 sub base there. Wilmington, North Carolina has  
18 been expressing a lot of interest.

19 There's a new LNG facility being  
20 built, or being proposed to be built in Coos Bay,  
21 Oregon. And the Coast Guard has hopefully made a  
22 requirement on PORTS as part of the permitting

1 process.

2 So, there's a lot of, you know,  
3 there's more in the wings. And there's centers  
4 being added as we go on here. So, at this point  
5 we've reached a point where we're really covering  
6 most of the tonnage that pass through U.S.  
7 seaports.

8 Over 85 percent, over 90 percent of  
9 the value. We've not been able to find any one  
10 statistic that really captures all of the vessels  
11 and cargo types, and people passing through  
12 seaports. So, we use different measures.

13 But, you know, and the system has  
14 really evolved to the point now where we offer  
15 every observation parameter that the community  
16 has identified to us as being important, as being  
17 a critical parameter.

18 The last few that have been added were  
19 visibility. We did a lot of testing with the FAA  
20 and the Coast Guard to come up with a visibility  
21 center that actually worked in the marine  
22 environment.

1           The air gap sensor, which I know  
2           you've heard a lot about, that was an emerging  
3           issue that we developed the technology for. And  
4           we worked with IOOS and the CDIP, the Coastal  
5           Data Information Program for wave buoys to  
6           provide waves. And so, really they, where  
7           there's CDIP buoys in existence we've integrated  
8           those into PORTS.

9           And there's been a few instances where  
10          the partner have funded additional CDIP buoys to  
11          become part of PORTS. So, we can provide that  
12          entire suite of parameters over, you know, over  
13          this time.

14          So, and of course, we're still  
15          continuing to improve and infuse new technology  
16          into the system. The eAtoNs that you saw  
17          yesterday were a significant advancement in how  
18          we can put current meters on buoys, you know,  
19          significantly reduced costs, and extended their  
20          range. It's going to improve the reliability of  
21          that data. So, we're always looking at ways to  
22          do things better there.

1                   You know, we've done a number of  
2                   economic benefit studies of this system. We  
3                   started off with a number of individual studies.  
4                   And then, as I think Admiral Gallaudet mentioned  
5                   this yesterday, Eric Wolfe is the analyst, chief  
6                   economist has done some studies, looked at what  
7                   the benefits of what a national system would be.

8                   And more lately he's been drilling  
9                   down and looking at more detailed information on  
10                  safety benefits. And he's even come up with a  
11                  way now to kind of give us a bit of a strategic  
12                  approach, identifying seaports that don't have  
13                  capital ports, that could most benefit from PORTS  
14                  by accident reduction. So, we're starting to use  
15                  that information.

16                  And the other way I think PORTS has  
17                  evolved over that time is, when we first started  
18                  the program, the only way it really worked was we  
19                  would require the partners who had to fund, the  
20                  partners always have had to fund the  
21                  establishment and maintenance of the system, the  
22                  local observing systems.



1                   We originally just always required  
2                   them to pass those funds to us, and we would  
3                   manage everything, and provide that oversight.  
4                   And that's because it was a -- real time data was  
5                   a new thing.

6                   We were a little concerned about if  
7                   something went wrong what, you know, liabilities  
8                   and other things were with that. But over time  
9                   we've developed some other kind of models, and  
10                  working with people, that allowed us to continue  
11                  to work with people.

12                  Because there are some partners that  
13                  have the expertise. And they want to put the  
14                  systems in themselves. And they want to maintain  
15                  them. And that's fine.

16                  And we still enter into agreements  
17                  with them. We just call them data share  
18                  agreements. They agree to, you know, do the  
19                  systems to our standards, and maintain them to  
20                  our standards. And that's fine.

21                  There's also been more recently, a lot  
22                  of partners are getting grants to establish their

1 systems. And those are federal grants coming  
2 from other parts of the Government. And it's  
3 against Federal Appropriations laws for those  
4 funds to be passed to me.

5 So, even if they wanted us to totally  
6 manage things for them, I can't do it. Because I  
7 cannot accept those funds. So, more and more  
8 we're hooking those people up directly with our  
9 contractors.

10 So, we've got a nice stable of IDIQ  
11 contractors who have, you know, been putting this  
12 systems for us, and maintaining for them. And we  
13 just put them directly with the contractors, and  
14 let them get the systems established. And then,  
15 you know, we still have the agreement with them  
16 to make sure standards are followed.

17 And at some point they have to come up  
18 with their own funding for the maintenance.

19 Sometimes they'll pass that to us, and we'll do  
20 that for them. Sometimes they'll just continue  
21 doing it themselves.

22 So, and then there's some systems that

1 we call hybrids, where it's a little bit of a  
2 combination of both. Some partners have some  
3 level of expertise in like the certain parts of  
4 it, don't have the expertise to do other parts.  
5 So, they may, you know, pass us some funds to do  
6 some level of the work, where they do some.

7 So, the program has really evolved and  
8 changed over those 27 years. We've tried to be  
9 as flexible as we can in, you know, finding new  
10 ways to work with people to keep this all going.  
11 And, you know, here we are today I think with a  
12 pretty successful program.

13 And really, the program that you can  
14 say is, you can never say it's complete. But  
15 we're covering most of that tonnage and value  
16 today. So, that's a good thing.

17 And I think our, just our biggest  
18 challenge is, it's been such a successful program  
19 that we've been pressed to have the capacity to  
20 handle all this.

21 So, we've not been out there promoting  
22 this program in the -- In fact, it seems the less

1 we promote it the quicker it grows. I'm not sure  
2 why. So, that's something we're dealing with.  
3 And I'm hoping, you know, we would, as Russell  
4 said, a lot of support from the administration.

5 So, I'm looking, kind of a bridging  
6 strategy is, how can I kind of hang in there, and  
7 continue to try to support this as best we can,  
8 until hopefully maybe some new resources are on,  
9 you know, may be available to continue the  
10 program. So, thank you.

11 CHAIR MILLER: Thank you, Rich. We  
12 will have questions for all three speakers after  
13 Admiral Smith finishes his presentation on SOLAS.

14 RDML SMITH: Thank you, Joyce. I'm  
15 going to do a little bit of welcome to Miami, and  
16 preview of a few of the topics that are ahead of  
17 us well, that I'm going to sneak into this  
18 presentation. So, next slide please. Or do I  
19 have the slides?

20 So, I'm only going to, I'm going to  
21 cover the first two bits there, the Miami and the  
22 SOLAS. And then come back to program updates

1 this afternoon. So, oh, oh, was that supposed to  
2 do that?

3 Hurricane response. At the last HSRP  
4 we were in the middle of Hurricane Irma. And  
5 Captain Rassello was unfortunately not able to  
6 join us for that reason. But his presence was  
7 felt in the room during the storm.

8 But I did want to recap a little bit  
9 of the hurricane, the latter half of the  
10 hurricane season, as we experienced it from NOAA.  
11 And will then go into the panel later.

12 So, Irma made landfall in Key West.  
13 And then swept up the Florida peninsula. We had  
14 response from NRT 5, which is homeported in  
15 Connecticut. And I guess I want to say, for all  
16 of these storms, and all of the ports we  
17 responded to, again, they're all, you know, each  
18 port is a little bit different.

19 In general we always coordinate with  
20 the Army Corps of Engineers for survey response.  
21 Every port is, we don't really know. Sometimes  
22 we don't know ahead of time how much of the Army

1 Corps resource was taken out by the storm, or  
2 what their types of equipment will be. And what  
3 kind of a response they'll be willing to, able to  
4 give.

5 So, I did want to flag that as a  
6 challenge in preparation. So, we usually have a  
7 contingency to support the local port, including  
8 the Army Corps. But we often have to adapt that  
9 after the storm, when we see which ports were  
10 actually impacted.

11 So, that was one lesson I wanted to  
12 flag. The other is, and I wanted to come back to  
13 something that Dr. Maune pointed out. And that  
14 is about object detection.

15 Clearly we do this as part of our  
16 surveys every day, both with high resolution  
17 multibeam and with sidescan when that's the most  
18 appropriate.

19 There has really not been a great deal  
20 of consistency from the Captains of the Port  
21 during different storms about what type of survey  
22 is required. And I think part of this is just,

1 there's a list of, there's a checklist to go  
2 down.

3 You get to, get a survey done, you  
4 know, you ask somebody to do a survey. They say  
5 they're doing a survey, and they come back. But  
6 that level of detail about exactly what is  
7 necessary is not really baked deeply into that  
8 system.

9 So, we're working on that. We're  
10 putting together under Captain Crocker's  
11 leadership a little bit of a quick description of  
12 different types of surveys, and why you might  
13 want to do one instead of another.

14 And really what our experience has  
15 been in the last few storms is that we find  
16 submerged debris, dangerous submerged debris when  
17 there was overland flooding. And generally not  
18 when there's not been overland flooding.

19 And so, between the overland flooding  
20 and the number of missing boats, we can sort of  
21 get a, working with the Captain of the Port, get  
22 an idea of whether an object detection survey is

1 necessary.

2 I'm going to tell just one sea story  
3 on that. And that is a port, which I will not, I  
4 won't rat out the name of the port. The Captain  
5 of the Port and response team, you know, got this  
6 survey going. And they asked the surveyor, why  
7 are you going so slow? Because they were out  
8 there, you know.

9 The Army Corps, when they go do a  
10 survey, go zip, zip, zip, zip, zip. Every couple  
11 of hundred feet you do a cross section. And off  
12 we go, we get a survey back.

13 Now, you're out there doing, you know,  
14 these really tight lines. And they were doing an  
15 object detection survey. And so they turned  
16 around and said, no, don't do that. Do it the  
17 quick way.

18 Well, you know, that's a risk, that's  
19 a risk management challenge. So, anyway, this is  
20 an issue that we have an ongoing conversation  
21 with all the Army Corps districts, and with the  
22 Captains of the Port.



1                   But it's going to take a while.  
2           Because there are a lot of Captains of the Port,  
3           and a lot of Army Corps districts to work through  
4           this type of awareness.

5                   A couple more, so that was one thing  
6           I wanted to flag. The other, in the pictures on  
7           the screen, the upper right there is our MIST, is  
8           our MIST kit. It was a little bit disparaged  
9           yesterday I thought. But this is a really great  
10          way to get equipment and expertise on site  
11          quickly.

12                   Because you don't have to drag a boat,  
13          with its fuel and other problems. And oftentimes  
14          there are plenty of boats. That's not the  
15          problem. So, we can, you know, we can get these  
16          installed pretty quickly.

17                   And this is, we have, coming into next  
18          year we're going to have a second MIST kit  
19          available. So, we'll be able to do two at once,  
20          or a multibeam, or a sidescan.

21                   The second was, again, back to Dr.  
22          Maune's comment. In the lower left there is a

1 big pile of containers that were swept off a pier  
2 in Puerto Rico. Those were picked up by one of  
3 the Thomas Jefferson surveys in, as they were  
4 clearing those ports.

5 And there was a, you know, a single  
6 beam survey both out, both there and in Key West.  
7 Neither one picked up the large number of  
8 obstructions that were in the channel. So,  
9 we're, those object detection surveys are  
10 important.

11 And the last was, just a big shout out  
12 to my former ship, the Thomas Jefferson. They  
13 left, you know, when it was clear that Puerto  
14 Rico was going to be in trouble, and all the  
15 ports of Puerto Rico were going to be affected.  
16 And it was pretty clear there wasn't going to be  
17 any response assets available on the island.

18 They left from Florida at, just after  
19 the storm passed Puerto Rico, and went south of  
20 the Bahamas as the storm went north, and were  
21 able to, you know, work, you know, sort of do-si-  
22 do around the storm to get to the, to Puerto Rico

1 as quickly as possible.

2 And they went, you know, port to port  
3 to port, opening ports, all the way around the  
4 island and the Virgin Islands. All right. So, I  
5 look forward to our discussion on emergency  
6 response later on this morning.

7 The Miami Boat Show. So, one of the  
8 things that's special about Miami, we talked  
9 about cruise ships a lot. Emergency response was  
10 really critical.

11 One of the other things that's special  
12 is there's a huge recreational boating community  
13 here. Florida and Texas are the biggest  
14 recreational boating states. And the Miami Boat  
15 Show is really a highlight of the year for  
16 reaching recreational boaters. And we typically  
17 have a big booth there, and get a lot of insight.

18 But a couple of the takeaways from  
19 this year. Many of the users that stopped by the  
20 booth were boating in vessels 30 to 60 foot  
21 length, and using electronic chart plotters as  
22 their primary means of navigation, with a book

1 under the, with a chart kit book under the  
2 cushion as they're, usually outdated, as their  
3 backup. But what they were focused on was  
4 electronic navigation.

5 We heard, as we always do in Miami,  
6 when are you guys going to fix the charts of the  
7 Bahamas? They're terrible. You know, there's a,  
8 you know, we need larger scale coverage. And  
9 they're never updated. And they're not  
10 available.

11 After a little bit of a deep breath,  
12 and we observe that the Bahamas are not our  
13 country. But we have started to, you know,  
14 because this is so consistently heard we have  
15 opened a conversation with the United Kingdom  
16 Hydrographic Office and BoatUS to try to figure  
17 out if there is anything that we can, with our  
18 expertise and resources, can do.

19 Because this is a place where, these  
20 are American boaters. They're American money,  
21 and American economy that is affected by the  
22 limitations on cruising to the Bahamas.

1           The power users of our products were  
2           increasingly this year buying electronic charting  
3           systems, chart plotters or PC based systems that  
4           have the ability to update charts either  
5           automatically or frequently.

6           In previous years the maps came with  
7           a box. And that was sort of it until you bought  
8           a new box. And that's really, that has changed  
9           fundamentally in the last few years and, such  
10          that some of the mobile apps and wifi enabled  
11          chart plotter systems can update their charts on  
12          a weekly basis, which frankly is faster than most  
13          of our commercial users do, which is usually more  
14          like a monthly basis.

15          So, that's pretty exciting that that  
16          part of the community has gotten that concerned  
17          about, and responsive to latency issues.

18          And lastly, we did start to show the  
19          models, the hydrodynamic models to, there,  
20          through Rosepoint, and at our booth. And got a  
21          couple of other navigation systems providers very  
22          excited about the possibilities for those models

1 integrated into their systems.

2 So, I expect that we will see by next  
3 show, we'll see quite a bit of adoption of those  
4 in the recreational market. I changed it on my  
5 screen, it doesn't change on yours.

6 This is just one, another local  
7 example. This is just a simple chart update.  
8 But in a lot of ways this is the, this is an  
9 example of a new, higher performance normal for  
10 us.

11 So, what you see is just this first,  
12 the slip expansion. They extended it. And, you  
13 know, if you use the old chart the vessels would  
14 plot on the pier.

15 In the old days, like four years ago,  
16 we would have had to, you know, have a big  
17 shoreline project. We would have applied it a  
18 new edition of the chart.

19 We would have had to wait for the new  
20 edition to be published, and then distributed,  
21 before that could actually reach the public. And  
22 this was very frustrating to everyone involved.

1           Our new system, we can take a small  
2 piece of data, or a subset of a larger shoreline  
3 project. We say, this is an important change.  
4 We can apply it to the ENC, get it validated, and  
5 out the door on Thursday.

6           And it's just fundamentally changed  
7 the update cycle for high frequency changes like  
8 these types of things. This is, wouldn't really  
9 be possible to do through a Notice to Mariners.  
10 It's not what the notice system is for.

11           So, the new normal, you know, in the  
12 background, has become just much higher  
13 performance for our, the update cycle on our  
14 charts.

15           All right. The last thing I want to  
16 talk about is SOLAS. So --

17           (Off microphone comment)

18           RDML SMITH: Sorry. So, when we talk  
19 about the sort of authorities that underlie what  
20 we do for navigation services in NOAA, we often  
21 refer to the Coastal Geodetic Survey Act, and the  
22 Hydrographic Services Improvement Act.

1           Those are, you know, Congressional  
2 authorizations in law. And they are necessary.  
3 But this is, this both precedes those particular  
4 laws, and in a sense is a more fundamental  
5 requirement on the nation.

6           So, the International Convention on  
7 Safety of Life at Sea was first signed after the  
8 sinking of the Titanic. And so, it's been 100  
9 years. And has been updated successively since.

10           Under, it covers a wide variety of,  
11 you know, construction, you know, equipment,  
12 operation, increasingly training requirements on  
13 shipping.

14           But it also puts requirements on  
15 signatory nations to provide navigation services.  
16 And it obligates these signatories to provide  
17 these services. It's a little bit more  
18 fundamental than the authorization to do so.

19           In particular, Regulation 9 covers  
20 hydrographic services. This was last updated,  
21 you read this in 1974 language. Because that was  
22 the last time it was wholesale updated. But it



1 requires that hydrographic surveying is conducted  
2 adequate to the requirements of safe navigation.

3 Now, you know, I read that as our  
4 surveys should be done to those standards, not  
5 just by NOAA, but that we have to provide that  
6 for the nation.

7 And so, when we look at how we're  
8 coordinating with the Army Corps, for instance,  
9 for survey requirements in Channels,  
10 fundamentally, if we don't have surveys that are  
11 adequate for safe navigation in the channels, we  
12 are not upholding our obligation under this  
13 treaty. And so, this is the, you know, this is  
14 sort of a fundamental point of departure for  
15 those discussions.

16 The second thing I wanted to highlight  
17 here was that there's an obligation for our  
18 products to be uniform, in order to be  
19 internationally compatible.

20 Now, we hear about this a lot from the  
21 cruise ship industry, an big shipping. Because  
22 they, you know, one voyage will go through a

1 number of different nations. Hydrographic  
2 services, their systems need to be compatible.  
3 Their training needs to be compatible, et cetera.

4 And specifically in that there's a  
5 footnote. It's not written in any -- that  
6 specifically calls out the standards developed by  
7 the IHO.

8 So, when we talk about, you know,  
9 developing navigation services for ports, for  
10 instance, and we have a way of distributing the  
11 tide and current information, that we should be  
12 aligning those with international standards for  
13 those formats and dissemination services, so that  
14 they're compatible not only with ships, but with  
15 systems that operate worldwide.

16 And then lastly, there's a, the last  
17 one I wanted to highlight was under Number 4  
18 here. That the services are made available on a  
19 worldwide scale in a timely, reliably, and  
20 unambiguously as possible. So, that's really  
21 about worldwide dissemination.

22 And there are systems in place. And

1 I won't get into a lot of IHO and rank business  
2 here. But there are distribution systems in  
3 place for ENCs right now. And it's really only  
4 ENCs that are distributed through these worldwide  
5 networks.

6 But as we develop new services that  
7 use the new IHO formats, and are, perhaps are  
8 more dynamic in nature, we need to be looking for  
9 how we're going to fulfil those worldwide  
10 dissemination obligations with those services as  
11 well, so that we don't have, you know, every  
12 nation have its own little way of doing it. Or  
13 worse, have every port within the U.S. have their  
14 own little way of doing it, which would be  
15 quickly very unmanageable.

16 So, that's all I wanted to cover as  
17 background for today's discussion. I'll turn it  
18 back to our Chair.

19 CHAIR MILLER: Thank you, Admiral  
20 Smith. Are there questions? We're a bit short  
21 on time. We're into our break time already. And  
22 we have a large panel. But I would encourage, if

1 there are questions for particularly Dr.  
2 Callender or Ed, or Rich, that they be asked.

3 Yes. He's another Ed. So, yes. Are  
4 there any questions for -- He's the fourth Ed.  
5 Are there any questions for Dr. Callender or  
6 Rich?

7 MEMBER THOMAS: I love it that during  
8 the briefing on the Hill Lowenthal came up and  
9 acknowledged that. Because this last summer we  
10 actually took Lowenthal out on the pilot boat at  
11 Long Beach. And he saw one of the transfers of  
12 the pilots.

13 He was so impressed. He, we actually,  
14 he drove the boat. I mean, we put him right out,  
15 not when they were transferring. But up to that  
16 point. And I have this great picture of him at  
17 the helm.

18 But, you know, I, who was it, Liz. I  
19 was talking to her about what Congressional  
20 people like. And we found that just exposing  
21 them to what goes on offshore is great. So, I'm  
22 pleased that he actually acknowledged you, and he

1 came up.

2 DR. CALLENDER: Yes. So, one of the  
3 values of this panel is inviting Congressional  
4 staff, inviting Members. Having them get excited  
5 and engaged on these issues is fantastic.

6 And since Representative Lowenthal  
7 came out to the HSRP in Long Beach he's been a  
8 fan of the program. And so, you know, he's  
9 helping to spread the gospel, if you will, for  
10 the value of this panel.

11 CHAIR MILLER: Any other questions or  
12 comments? Okay. It's 11 after. Can I ask that  
13 we take, try to be back by 20 after. Take a ten  
14 minute break. And then we'll get going on the  
15 panel.

16 (Whereupon, the above-entitled matter  
17 went off the record at 10:13 a.m. and resumed at  
18 10:27 a.m.)

19 CHAIR MILLER: Mike Aslaksen will be  
20 leading this panel, and briefly introducing our  
21 speakers. Thank you.

22 MR. ASLAKSEN: Well, good morning.

1 Again, Mike Aslaksen. I'm with the National  
2 Geographical Survey, from the Chief Remote  
3 Sensing Division. And I'm excited to be here on  
4 the panel, centering on Navigation Services  
5 Support and Federal Emergency Response, lessons  
6 learned, and future directions.

7 Again, we have a great panel here of  
8 our federal, state, local, and private interests.  
9 And going to give their perspectives on the  
10 efforts they provided, as well as the efforts  
11 that NOAA provided.

12 In a minute I'm going to ask Dr.  
13 Callender to do an introduction of the NOS  
14 response to the storms of 2017. But in my  
15 preparation for the panel I came across the  
16 keynote of Ed Rappaport, who's the Acting  
17 Director of the National Hurricane Center, at the  
18 National Hurricane Conference last week.

19 And just some beyond interesting  
20 statistics about this storm season. There were  
21 three Category 4 U.S. landfalls in a period of 26  
22 days, Harvey, Irma, and Maria. For context, the

1 previous three occurred over a period of 56  
2 years.

3 In terms of accumulated cyclone energy  
4 it was the most active season in 167 years. Five  
5 Category 5 landfalls occurred, Irma in Barbuda,  
6 St. Maarten, British Virgin Islands, in Cuba, and  
7 Maria in Dominica.

8 Harvey set the U.S. tropical rainfall  
9 record of 60.58 inches in Texas. For likely the  
10 first time forecasters issued three concurrent  
11 hurricane warnings for Katia, Irma, and Jose.  
12 U.S. damages reached \$265 billion, surpassing the  
13 old record of \$211 billion in 2005.

14 And in closing, you know, if you had,  
15 he said, if there's a single event that puts the  
16 season in perspective, the Island of Barbuda  
17 became uninhabited for the first time in 300  
18 years, after they suffered through Irma and in  
19 anticipation of the fear of Jose. Pretty  
20 challenging there to understand with those sudden  
21 impacts.

22 So, at this time I'd like to introduce

1 Dr. Callender, who is the Assistant Administrator  
2 for Ocean Services. And he's going to go do an  
3 overview of the NOS response to the storms.

4 DR. CALLENDER: Thanks, Mike. I was  
5 originally going to give a very brief, high level  
6 overview. And then Mike talked me into reprising  
7 the presentation that I gave on Capitol Hill,  
8 summarizing the NOS response to the hurricane  
9 seasons. And hopefully there will be a slide  
10 that will come up.

11 Okay. Thank you. So, this is  
12 Hurricane Irma making landfall. And you may or  
13 may not be able to actually see Florida  
14 underneath that storm. This is on September 10,  
15 2017.

16 I'm going to really talk about the  
17 Ocean Service response to this. And you'll see  
18 the date of the presentation that I gave on  
19 Capitol Hill.

20 But our role doesn't just focus on  
21 response. It actually starts with preparedness,  
22 with planning, and relationship building that



1 continues all the way through recovery as well.

2 So, prior to the hurricane landfall,  
3 at the request of FEMA, NOAA was embedded early  
4 on in the FEMA National Response Coordination  
5 Center, to provide those connections between FEMA  
6 and the NOAA response operation.

7 As the storms approached our  
8 navigation, our regional Nav Managers, such as  
9 Kyle Ward, who's in the back here, were also  
10 embedded at U.S. Coast Guard incident command  
11 centers to coordinate post storm surveys.

12 We also embedded scientific support  
13 coordinators to assist with hazardous material  
14 response efforts. These scientific support  
15 coordinators in our Office of Response and  
16 Restoration provides the scientific support to  
17 the Coast Guard for any oil or chemical releases  
18 in the coastal zone.

19 Before the landfall of Harvey, Irma,  
20 and Maria, the Ocean Service was requested by  
21 FEMA, through mission assignments, to provide  
22 emergency response imagery for damage assessment

1 and response priorities.

2 This imagery is usually the first look  
3 at the scale of the damage and support search and  
4 rescue, impact assessment, and resource  
5 allocation decisions.

6 The top left corner shows Lieutenant  
7 Commander Chris Skapin briefing Secretary Ross,  
8 who came to the FEMA National Response  
9 Coordination Center. The bottom left is the Gulf  
10 of Mexico Disaster Response Center, which is a  
11 regional hub for disaster preparedness and  
12 response.

13 Some of the other things we did was  
14 work in advance. This is an image from the  
15 Florida Marine Debris Emergency Response Guide,  
16 which helped the State of Florida plan for marine  
17 debris challenges that they would be facing  
18 potentially after a major storm event.

19 In the days leading up to the  
20 hurricanes, Rich Edwing's team at COOPS monitors  
21 and disseminates observations on water levels,  
22 currents, and weather information.

1           The product is called Quicklook and  
2           it's initiated when the National Weather Service  
3           issues a tropical storm or hurricane warning.  
4           And it provides a synopsis of near real time  
5           oceanographic and meteorological observations  
6           along the path of the storm every six hours.

7           Having these kind of reliable real  
8           time observations enables the Weather Service to  
9           validate or adjust their forecasts. And knowing  
10          the actual conditions is essential for emergency  
11          responders making critical decisions on  
12          evacuation routes, rescue operations, and safety  
13          of life and property decisions.

14          On the bottom right you see an image  
15          from the Coastal Floor Exposure Mapper. This  
16          shows the eastern coast of Puerto Rico. But this  
17          is the kind of visualization tool that we  
18          provide, that enables coastal managers to assess  
19          coastal hazard risks and vulnerabilities.

20          Immediately following the hurricanes  
21          our navigation response teams jumped into gear to  
22          provide emergency response, excuse me, emergency

1 hydrographic services for impacted port areas.

2           These navigation response teams, as  
3 many of you know, are mobile teams that can  
4 deploy anywhere in the country to conduct initial  
5 rapid hydrographic surveys, using small vessels  
6 and side scan sonar. Because they're mobile what  
7 we do is, we pre-position these assets in advance  
8 of storms.

9           We're not the ones that are making the  
10 decisions on reopening the port. That decision  
11 goes to the Coast Guard. But our job is to  
12 provide them data, so that they can make informed  
13 decisions to quickly and safely open ports.

14           So, an example here in Miami, on -- at  
15 2:30 in the morning on September 11th, the  
16 Navigation Response Team got onto the first  
17 flight coming into Miami. This was on a C-130.  
18 By 2:00 p.m. the following day they began  
19 surveying, using a Miami-Dade police boat. You  
20 can see the team there on the left side of the  
21 picture.

22           This NRT, this Navigation Response

1 Team, worked all night and the next day to  
2 validate the survey. Then gave the data to the  
3 Coast Guard and the North Channel opened at 6:30  
4 p.m. on September 12th, and the South Channel  
5 opened Wednesday morning on September 13th.

6 All together our Navigation Response  
7 Teams throughout these storms opened up 26 ports  
8 in the region, from Texas, Florida, Puerto Rico,  
9 and the VI.

10 Just for a point of comparison, the  
11 loss of trade for these ports, and this is a very  
12 conservative number, was about \$500 million a  
13 day. So, essentially the Navigation Response  
14 Teams have recouped the entire budget of the  
15 National Ocean Service in one day. So, that's  
16 the kind of return on investments that Admiral  
17 Gallaudet was talking to us about yesterday.

18 So, let me show very briefly Puerto  
19 Rico and the USVI for a moment. And really, what  
20 I want to do is to use this to really, as a point  
21 to demonstrate the value of the NOAA fleet.

22 Admiral Smith mentioned this briefly

1 earlier this morning, but we sent NOAA ship  
2 Thomas Jefferson down the coast of Florida to  
3 Port Everglades, and then towards Puerto Rico,  
4 arriving on September 28th.

5 That team spent three weeks in Puerto  
6 Rico and the VI. They surveyed 14 areas and 19  
7 individual port facilities, as well as conducting  
8 emergency repair to tide and weather stations.  
9 They opened ports, and allowed the delivery of  
10 supplies for the ongoing humanitarian response in  
11 this region.

12 This really I think points out the  
13 value of the NOAA fleet, being able to go down  
14 into a region which didn't have infrastructure,  
15 surveying over a dozen ports. They had the right  
16 expertise. They had the right equipment. They  
17 had a right endurance for a three week  
18 deployment.

19 As soon as weather permits after these  
20 storm events we begin aerial survey missions to  
21 assess damages to the areas impacted by the  
22 hurricane. The data that we collected were

1 rapidly processed, and provided to emergency  
2 responders, often within hours of collection.

3 They facilitate search and rescue,  
4 enable expedited rental assistance, allow  
5 property owners to look at their property. And  
6 in many cases it's the first look at what may be  
7 damaged by a storm event.

8 To give you an idea of the scale of  
9 those operations, in over a month of operations  
10 our survey team, primarily on the King Air  
11 platform, flew about 40,000 miles. To put that  
12 in perspective, it's equivalent to flying cross  
13 country and back 17 times, in over a month of  
14 operations.

15 The amount of data that we collected,  
16 more than 65,000 images, covering the same area  
17 essentially as the State of Maryland. So, this  
18 image is near Lynchburg, Texas, which is east of  
19 Houston, following Hurricane Harvey. Oops.  
20 Supposed to change, but it didn't. That's okay.  
21 I'll change it back.

22 This was, one of the kinds of

1 challenges that we had, we got questions about  
2 tug and barge, barges that were piled up post  
3 storm. And they wanted to look at our emergency  
4 response images to figure out how to untangle  
5 this big collection of tug and barges. You can't  
6 really see it that well in this picture. But  
7 that was one of the reasons this picture was  
8 taken.

9 This is an image from Big Pine Key,  
10 Florida, following Hurricane Irma. And you can  
11 see the devastation there as well.

12 The rapid aerial imagery is connected  
13 -- that's connected by the National Geographic  
14 Survey is also critical for emergency responders.  
15 They use the imagery to immediately identify  
16 coastal areas, sensitive habitats, and navigation  
17 routes that may be adversely impacted from debris  
18 or damaged recreational vessels.

19 Once we were able to help identify  
20 what vessels and debris that were a pollution  
21 threat we then worked with the Coast Guard on  
22 which targets should be prioritized for removal.



1 As I mentioned briefly earlier, our scientific  
2 support coordinators support the Coast Guard in  
3 hazardous material response efforts.

4 We tracked all total over 3,500  
5 potential pollution targets in Florida, Puerto  
6 Rico, and the VI. And the map up at the top  
7 shows concentrations of debris and vessels in  
8 that area. Not going to go. My slide refuses to  
9 change here. And there's a great slide coming up  
10 too.

11 So, you got to get out of that on the  
12 right for me to make this work. Beautiful.

13 PARTICIPANT: There it is.

14 DR. CALLENDER: Awesome. I thought  
15 this was an image that you would really  
16 appreciate seeing. This is a screenshot of AIS  
17 data, Automatic Identification System data, that  
18 was taken as ships are getting out of the way for  
19 Irma on September 9th.

20 This is pretty amazing, I think, to  
21 see that collection of ships that are skedaddling  
22 out of the way. Is that the right navigation

1 term?

2 So, we did learn some key lessons  
3 learned from our response. And I'll touch  
4 briefly on that. But I'm frankly more interested  
5 in hearing your perspective.

6 One of the things that we did learn is  
7 that, although we have lots of trained responders  
8 in the Ocean Service and in NOAA, we need a  
9 deeper bench. We need a deeper bench of trained  
10 responders.

11 One of our goals was to plan for two  
12 major events at the same time. We got three. We  
13 were able to do it, but it really pushed our  
14 capabilities.

15 We also saw in many cases that we were  
16 very close to having single points of failure  
17 that created unnecessary risks. King Air was one  
18 major platform that we used. You know, there  
19 was, we didn't have spares for cables. So, if  
20 we're looking at collecting imagery and we lose a  
21 cable, we're done.

22 So, you know, some of those single

1 points of failure I think were really critical  
2 for operations. What we found also, that what  
3 works in the Continental U.S. may not work in  
4 islands.

5 When you lose infrastructure, when you  
6 don't have power, when you don't have roads, you  
7 know, getting teams onboard, and being able to  
8 drive through roads that don't -- aren't open, is  
9 kind of tough.

10 So, we really learned a lot about the  
11 value, again, of having the NOAA fleet that could  
12 come, and actually be a hotel as well as a  
13 platform to do the work.

14 And clearly the value of preparedness  
15 and planning enabled us to respond more quickly.  
16 And I think what we learned is, we need to be  
17 constantly evolving in our planning and our  
18 response. And learn from things that we screwed  
19 up. Learn from areas where we had challenges,  
20 and really be a continuing -- continuously  
21 learning organization, so that response is going  
22 to be even more effective the next time.

1                   And with that, that was kind of the  
2 whirlwind tour of our response, and part of our  
3 role, just to give you an idea of the  
4 capabilities that we brought to bear. Mike, it's  
5 up to you.

6                   MR. ASLAKSEN: All right. Any  
7 questions for Dr. Callender from the panel?  
8 Okay. All right. I'd like to welcome Captain  
9 LaDonn Allen. Captain Allen is currently  
10 assigned to the U.S. Coast Guard 7th District in  
11 Miami, Florida, as the Prevention Chief, where  
12 she leads and promotes consistency in prevention  
13 field operations for 21 shipping ports, 34  
14 Caribbean nations, and the world's three largest  
15 cruise ports, for seven Captains of Ports and  
16 officers in charge of marine inspection. Thank  
17 you, Captain Allen.

18                   CAPT ALLEN: Good morning. Good  
19 morning, HSRP Federal Advisory Committee,  
20 Honorable Representatives, Commissioners,  
21 Admiral, Administrators, Doctors, ladies and  
22 gentlemen. I think I covered everyone in the

1 room.

2 First of all, before I begin my  
3 presentation, listening to all the comments of  
4 the Committee, I'd like to say that we work, the  
5 Coast Guard, side by side, NOAA, and the Army  
6 Corps, 24/7 for these events. And this, in fact,  
7 I have to admit that I talked to Kyle Ward more  
8 than I did my husband for two months. Yes.

9 So, for two months, limited resources,  
10 equipment, and personnel to conduct these  
11 responses. And in my opinion, opening up these  
12 ports in record time, considering the  
13 circumstances, including not only port surveys,  
14 search and rescue, hazardous material response,  
15 considering the wind, the sea state, and the  
16 safety of the responding personnel.

17 So, I just wanted to mention that  
18 before I begin. We'll start with my first slide.  
19 You can click on it. There you go. Thank you.

20 Okay. Coast Guard District 7  
21 exercised a mock hurricane hitting every single  
22 deep water port within our area of responsibility

1 in the spring of 2017. We never even realized  
2 how true that would become.

3 Hurricane Irma made landfall on 6  
4 September 2017. Every deep water shipping port  
5 closed within the District 7 Area of  
6 Responsibility, which includes Florida, Georgia,  
7 South Carolina, Puerto Rico, the Virgin Islands  
8 and surrounding islands, as well as several  
9 Caribbean nation ports.

10 As you can see, the natural path of  
11 Irma dictated the closures and the openings of  
12 the ports. The majority of the ports were opened  
13 in three to five days. While DoD, I'm sorry.  
14 Arrival of Coast Guard, NOAA, and Army Corps, and  
15 DoD resources also determined port openings.

16 While DoD was able to scan a military  
17 outlet port, pier, in Key West, with the  
18 devastation, the rest of the port awaited NOAA  
19 and Army Corps side scan sonar, due to a sunken  
20 vessel, and 18 other targets to be salvaged and  
21 evacuated in the turning basin, which caused the  
22 port opening to be delayed by two weeks. So, for

1 these significant delays, there was a reason for  
2 that.

3 The Coast Guard Sector Key West,  
4 Miami, St. Pete, and D7 all continuity of  
5 operations, which we call COOPed to other  
6 location, because our actually facilities were in  
7 the path of the hurricane.

8 So, we did COOP. And we ran  
9 operations while deployed, in addition to the  
10 response as well. So, communications definitely  
11 was a challenge for these hurricanes.

12 Okay. The Maritime Transportation  
13 System Recovery Unit, or which I'll from now on  
14 refer to as the MTSRU, and resources for  
15 Hurricane Irma consisted of the Coast Guard,  
16 NOAA, Army Corps, Navy, State, and local and  
17 industry resources.

18 Prior to the hurricane, resources were  
19 staged throughout the district, as you can see on  
20 the slide. In order to prevent damage to  
21 resources, pre-determined shelter, evacuation  
22 areas were essential for our resources. Two

1 times a day we had phone conferences. And  
2 numerous MTSRU conversations were had with all  
3 the resource unit leaders.

4 With the natural northern path of the  
5 hurricane, passage of the high winds and seas  
6 determined when resources were able to start port  
7 recovery, as well as staging areas for resources.  
8 The majority of the ports, like I said, were  
9 reopened in three to five days for Irma.

10 This is a port and facilities  
11 commodity slide for fuel. This is just one of  
12 the venues that we use to determine port  
13 priorities, when the path of the storm is not  
14 that particular item driving the port priorities.  
15 And this is just for fuel consumption for the  
16 State of Florida.

17 In addition to that we look at port  
18 and facility commodities. We look at  
19 humanitarian aid. We look at product supply,  
20 which drove our port prioritization, among other  
21 factors. Like I said, search and rescue,  
22 hazardous material, surveys. So, all of these



1 were in consideration.

2 This slide is of our vessel queue for  
3 Hurricane Irma. And a vessel queue is basically  
4 those vessels waiting to get into port. As you  
5 can see this is -- I chose specific slides on  
6 certain days, just so you can see the impact, and  
7 what we had coming in basically.

8 So, this vessel queue is a traffic  
9 system which we developed at the Coast Guard in  
10 order, with the Captain of the Ports, and the  
11 Port Advisory Committees.

12 So, not only do we have Coast Guard  
13 input into this, we have the ports' input. We  
14 have industry's input. And we have all of those  
15 port partners to establish this. We get that  
16 advice from the Captain of the Ports after they  
17 meet with their Port Advisory Committees in order  
18 to determine this vessel traffic system scheme.

19 All right. This slide depicts our  
20 port statuses. We look at our ports as either  
21 open, restricted, closed, and port conditions,  
22 which are either normal, Whisky, X-ray, Yankee,

1 or Zulu, for major ports and waterways. We also  
2 look at those military and economically strategic  
3 ports as well.

4 This depicts 11 September slide. As  
5 you can see, what we report out on for each port  
6 is essential for determining where our survey  
7 teams are going.

8 Okay. I'm going to move on to  
9 Hurricane Maria now. While still providing  
10 support from the disastrous effects of Hurricane  
11 Irma, Hurricane Maria followed shortly  
12 thereafter.

13 And on 19 September all ports in  
14 Puerto Rico and USVI were closed, followed by  
15 many other Florida ports. On 20 September vessel  
16 arrival activity shifted completely to our  
17 District Office in Sector Miami, where we  
18 screened over 500 vessels on behalf of Sector San  
19 Juan during two weeks.

20 The reason for this, they lost  
21 complete communications on the island. So, that  
22 was a huge factor. In fact, for two days we were

1 using a fax machine to get information from them,  
2 and send them information. So yes,  
3 communications was definitely a challenge for  
4 this.

5 Openings depended a lot on the pilot  
6 -- port pilots, commercial vessels, industry  
7 partners, to scan the channel prior to NOAA and  
8 Army Corps' arrival.

9 While ports were being opened  
10 restrictions remained due to power outages,  
11 inoperable facilities, including damage to  
12 infrastructure.

13 By 4 October all ports in Puerto Rico  
14 and the USVI were open. Several ports still had  
15 draft and daytime restrictions due to lack of  
16 power, and official survey completion, and/or  
17 salvage by NOAA and Army Corps.

18 So, initially these ports were open  
19 with restrictions, using other resources. And  
20 then followed by Army Corps and NOAA as soon as  
21 they got there.

22 Okay. This depicts our District port

1 prioritizations initially for Puerto Rico and  
2 USVI. This was our initial assessment, based on  
3 what information we had about their ports for  
4 commodities, and other information, fuel status,  
5 and the list that I previously spoke to you  
6 about.

7 But subsequently, when we gained  
8 communications with Puerto Rico, Sector Puerto  
9 Rico, and they met with their port partners,  
10 those did change somewhat. But we did have a  
11 good plan for port prioritization.

12 Port statuses, as you know from the  
13 last slide, were open, restricted, or closed. As  
14 soon as ports were open marine safety information  
15 bulletins were put out by the Captain of the Port  
16 on a website that we have called Homeport.

17 So, as soon as those ports were open  
18 industry had, all they had to do was go to  
19 Homeport to access that MSIB port information.  
20 And that is not a secure site. That's open to  
21 the public.

22 Here's our vessel queue for Puerto

1 Rico and Virgin Islands. As you can see it's  
2 quite lengthy, and continues on as well. Again,  
3 fuel, humanitarian aid, and victim evacuation  
4 were prioritized.

5 This is the Maria MTSRU force laydown.  
6 As you can see, most of our assets were located  
7 within Florida, Georgia area. So, having to  
8 travel down to Puerto Rico was definitely a  
9 challenge for all of our teams.

10 So, teams from NOAA and the Army Corps  
11 flew in from all over the country to meet Coast  
12 Guard air assets, to fly them to Guantanamo Bay,  
13 Cuba, to ride the Coast Guard cutter to Puerto  
14 Rico.

15 And let me tell you this, this was in  
16 high seas. I think Kyle Ward can attest to that,  
17 and the fun that they had. Roads were  
18 impassible, fuel was low or nonexistent. And the  
19 water route was the only option initially.

20 For Hurricane Maria MTSRU report  
21 survey resources and Aids to Navigation resources  
22 were extremely challenging. Teams from NOAA and

1 Army Corps flew in, as I said, and then port  
2 priorities were determined by the district and  
3 the local Captain of the Port for the respective  
4 AOR. They were determined by necessity, impact  
5 to port opening, versus survey resources  
6 available at the given time.

7 For Irma, Miami Port Everglades  
8 contained 40 percent fuel resource for the State  
9 of Florida, which was considered a high priority.  
10 All ports, with the exception of Key West, had  
11 survey resources readily available.

12 San Juan was first priority for Maria.  
13 Due to the infrastructure constraints and  
14 delivery of resources to other ports, they were  
15 surveyed in order of survey asset accessibility.

16 For Irma survey assets the NOAA MIST  
17 relied on Coast Guard transportation of the port  
18 resources available for surveying, because they  
19 don't come with a boat to house the survey  
20 equipment. But we managed to coordinate and work  
21 that out, so they were able to be used  
22 significantly.

1                   Now, I do have, with the time  
2                   constraint, a lot more detail with regard to our  
3                   resources. Where they surveyed, and the dates,  
4                   if anyone is interested in that afterwards.

5                   I do want to mention for Maria that no  
6                   federal or state resources were available on the  
7                   island for surveying, other than the local port  
8                   pilots.

9                   Army Corps did have a contracting  
10                  team. But they were not able to get underway.  
11                  They were on the land side and they were not able  
12                  to get underway immediately.

13                  This slide depicts AtoN resources  
14                  involved. The Coast Guard Cutter Elm sailed from  
15                  North Carolina to Port Everglades, Miami, and Key  
16                  West to correct Irma discrepancies.

17                  Then went to PR, Puerto Rico and USVI  
18                  following Maria, followed by the Cypress D9,  
19                  which is another district for D7 Aids to  
20                  Navigation Teams. The Coast Guard Dive Locker,  
21                  and the Joshua Appleby, and Maria Bray, in  
22                  addition to the Vise, and the Hudson, and the

1 Hammer.

2 Okay. In addition to the AtoN impact  
3 of reports, we also had to establish and  
4 implement a temporary regulated navigation area,  
5 as well as safety zones for Key West and Puerto  
6 Rico.

7 This was necessary due to many things,  
8 including looting and law enforcement. So, for  
9 the security side of the house, as well as  
10 navigation, we had to have people operate at slow  
11 speed, and prohibit vessels from entering,  
12 anchoring, loitering, and moving within the  
13 safety zone around law enforcement, for salvage  
14 teams, and for wreckages.

15 And finally, I'm going to move on to  
16 lessons learned. And this will be my last slide.  
17 Our daily interaction with NOAA and the Army  
18 Corps was priceless, absolutely priceless.

19 Having both in the MTSRU was  
20 invaluable. The only thing that would have been  
21 more valuable would have been to have a rep from  
22 each agency physically in the MTSRU, since we did



1 confer so often. Fully integrate -- we were both  
2 fully integrated at every single level, in the  
3 field, at the District. We were integrated  
4 everywhere.

5 No FEMA and DoD vessel advance notice  
6 of arrivals were received, or very few were  
7 received by the Coast Guard. They didn't provide  
8 this, which caused difficulty for berthing  
9 spaces, vessel queues, and exams for first time  
10 callers to the U.S.

11 We actually had to work with our  
12 Activities Europe team to do inspections over  
13 there, and where other ships were located, in  
14 order for them to come to the U.S. for  
15 humanitarian reasons.

16 Some FEMA and DoD contracted vessels  
17 had not been to the U.S., did not have a valid  
18 certificate of inspection for their intended  
19 voyage and cargo, or passengers. And  
20 expectations were for these vessels to transit a  
21 closed port, which was not authorized.

22 For Maria, berthing spaces in ports

1 extremely limited. Passenger vessels for Maria  
2 had special authorization to moor as temporary  
3 berthing vessels.

4 FEMA and DoD vessels did not  
5 prearrange berthing spaces, which caused a little  
6 difficulty for us as well. They continuously  
7 selected ports that were not capable of receiving  
8 the size of vessel, nor were they operable.

9 Sewage emissions in ports, we did  
10 require for vessels to report those to EPA, or  
11 PREPA, for authorization. So, that was an issue.  
12 New to zone vessels, like I said, there were no  
13 security plans, no certificate of financial  
14 responsibility, didn't meet safety or security  
15 standards. And we did what we could with the  
16 limited inspectors we had within Puerto Rico.

17 We created new policy letters. Our  
18 headquarters declared the event a national  
19 maritime special event to authorize berthing  
20 vessels. We waived these vessels. And then we  
21 also waived some offshore supply vessels as  
22 well, for humanitarian aid.

1           eAtoN was used. It was successful in  
2 the States, but we did not have adequate  
3 reception for Puerto Rico and USVI.

4           Political inquiries. This was a full  
5 time job, as I think everyone else knows. For  
6 the MTSRU especially. They were extremely busy.  
7 We were extremely busy considering the Jones Act  
8 waivers, vessel waivers, and requests to waiver  
9 double hull standards, firefighting, lifesaving,  
10 reduced crew, and reduced crew for international  
11 voyage, which were all denied by the Coast Guard.  
12 And of course, Congressional and Presidential  
13 visits were continuous.

14           Port prioritization. With input from  
15 our incident commanders and Captain of the Ports,  
16 the Port Current Steering Committees, the Port  
17 Survey Teams, the States, we were able to  
18 determine the most critical factors that required  
19 resources immediately.

20           Opening of the ports, AtoN, eAtoN was  
21 used. And of course, like I said, not available  
22 in Puerto Rico. Channel surveys, due to multiple

1 ports being closed with damage and channel  
2 impediments, not enough survey teams and sonar  
3 equipment, hence port prioritization.

4 We found out that the size and hull of  
5 the survey vessels do matter. Coast Guard, NOAA  
6 and Army Corps boats required to evade the  
7 hurricane. They were not big enough to transit  
8 when the wind and sea state was beyond six foot,  
9 except for the -- one of the NOAA ships. They  
10 were required, they also required a certain type  
11 of hull for side scan sonar equipment.

12 Storage and location of survey vessels  
13 and buoy tenders, and contract -- We found that  
14 contractor response is uncertain. Staging areas  
15 for equipment and team should be predetermined by  
16 Coast Guard, NOAA, Army Corps, for each  
17 hurricane. Not where they're currently staged.

18 Flooded facilities. Although ports  
19 were open, some facilities could not receive  
20 vessels due to flooding, lack of power, damaged  
21 equipment and piers.

22 Fuel supply. Critically -- critical

1 commodity that required constant status update to  
2 the highest levels of Government. Inaccurate  
3 news, or fake news. Ports were not receiving  
4 fuel. They were. Port Everglades and Puerto  
5 Rico were receiving fuel and vessels.

6 Real news was that there was a backup  
7 of fuel supplied due to lack of power, flooding,  
8 damage, lack of trucks and drivers to deliver  
9 this fuel.

10 And finally, the use of NOAA assets  
11 and resources. NOAA has access to eAtoN for LNMs  
12 with the Coast Guard. This was invaluable.  
13 Bridge vertical clearance updates, chart notes,  
14 changes in mean tidal range and current  
15 direction, we used significantly.

16 We used LNMs to ensure our AtoN  
17 discrepancies or any significant federal waterway  
18 changes were depicted and annotated. We used  
19 NOAA's weather, tide, and current predictions  
20 significantly by our operational planners, and  
21 planner service wide.

22 We used aerial data for our port

1 assessments. We used the NOAA Scientific Support  
2 Coordinator for hazardous material and oil  
3 response. And we also have a active MOA we know  
4 of for service in offshore NOAA buoys.

5 Additionally, in response to both  
6 hurricanes we tremendously valued the use of the  
7 MIST, the NRTs, and the NOAA ship Thomas  
8 Jefferson. The NRTs were self-reliant because  
9 they came with a survey boat asset, and the MIST  
10 was more easily transferrable across districts.

11 It was relatively easy using Coast  
12 Guard and other port partner boats to carry the  
13 survey equipment. Both resources were helpful in  
14 different ways. And we could not have completed  
15 the fast and efficient survey of ports without  
16 them.

17 For Maria the Thomas Jefferson  
18 provided channel surveys, operated in high seas,  
19 and with product. They provided a product faster  
20 to open the ports faster. Especially for the  
21 islands, the Thomas Jefferson was fully self-  
22 sufficient for fuel, food, lodging, connectivity,

1 and comms. And it came with survey boats.

2 MR. ASLAKSEN: Wrap it up, Captain,  
3 please.

4 CAPT ALLEN: Okay. Our D7 waterways  
5 team has worked with companies with great success  
6 in installing smart weather stations on some of  
7 our buoys in AtoN. We would recommend that these  
8 weather stations provide real time weather and  
9 sea info that's accessible to mariners on the  
10 internet.

11 We recommend, if NOAA as our federal  
12 partner, worked with the Coast Guard to install  
13 similar instruments on the entrance buoys to all  
14 of our major ports, this would be a huge  
15 advantage to pilot associations and deep draft  
16 captains.

17 Also possible to integrate weather  
18 information into some of our aids that already  
19 have AIS transponders installed for on scene  
20 weather. And AIS and our layers in GIS  
21 electronic charts.

22 And finally, recommend we further

1 strengthen our partnership in service to port  
2 partners by developing an annual plan using NOAA,  
3 Army Corps, and the Coast Guard, and other  
4 Government agencies with small boats.

5 We also recommend having NOAA and Army  
6 Corps personnel physically located with the MTSRU  
7 and response, which we're currently working on.  
8 And the MVP for these hurricanes goes to Kyle  
9 Ward of NOAA.

10 MR. ASLAKSEN: Shocker. Well, I'll  
11 ask we hold questions in the interest of time.  
12 And we'll move on to Captain Sam Stephenson.  
13 Captain Stephenson is a U.S. Coast Guard Master  
14 Mariner of any gross tugs, and an active harbor  
15 pilot with Port Everglades, Florida here, and  
16 current President of the Florida Harbor Pilots.  
17 Captain Stephenson.

18 CAPT STEPHENSON: Hey, good morning.  
19 First, I'd like to thank everyone for inviting me  
20 here. Okay. What I'm going to talk about is the  
21 pilot's role in general, and also what we did  
22 during the hurricane, after the hurricane, and



1 where we're going from here.

2 Most people, when you talk about  
3 pilots, they think that our job is just to drive  
4 the ship in and out of the port. In Florida  
5 that's not our job. Our job is to protect the  
6 state's interest. That's the economy, and also  
7 the environment.

8 Some of the pilot's duties when we're  
9 onboard the ship is first to make sure the  
10 equipment's working properly. We have the  
11 weather conditions are correct for coming in the  
12 port. We have the proper tugs, helm commands.  
13 And we give commands to the tugs. And again, our  
14 main goal is to protect the state's interest. We  
15 will not allow ships to come in or depart which  
16 are not safe.

17 Some of the discretions we have, along  
18 with the Coast Guard, is to keep the ships from  
19 sailing and arriving. In Florida the Coast Guard  
20 and the pilots are the two groups which can keep  
21 the ship from sailing or arriving, depending on  
22 safety issues. If one of the engines is not

1 working, we will not sail the ship without Coast  
2 Guard approval.

3 Also, we determine the number of tugs  
4 in Florida. That's solely based on safety. A  
5 lot of the times the companies do not want tugs  
6 because it's expensive. And we will not sail the  
7 ship unless we have the number of tugs required  
8 to have the ship safely transit the channel.

9 We also have draft restrictions. I  
10 think you all, through the pilots Miami yesterday  
11 learned about that, with the squat, how much  
12 underkeel clearance we need on the ships to  
13 arrive and depart. Okay.

14 And the bottom line is, safety is  
15 number one for us. And we are immune from the  
16 economic pressures from the different companies.  
17 Okay.

18 Now, when most people look at this,  
19 they see a ship in a channel. That right there  
20 is a \$40 billion dollar channel. You're looking  
21 at Port Miami. It's a rock sided channel. Our  
22 job is to make sure the ships come and go safely

1 in that channel, so there's no disruption to  
2 commerce, or the environment.

3 Now, what's that risk? Number one is  
4 the economy, the environment, and jobs. Port  
5 Miami economy, like I said, it's a \$40 billion  
6 dollar economy, that channel. The environment,  
7 we have a huge tourism industry in Florida. And  
8 also, there's thousands and thousands of jobs at  
9 stake every time a ship transits the channel.

10 Okay.

11 Now, one of the issues we have in  
12 Florida is that the channels are single point  
13 failures. Compared to the rest of the nation the  
14 channels are very narrow. They're 450 feet to  
15 500 feet wide. What would happen if the surveys  
16 were not correct, or if we had a mechanical issue  
17 on the ship, loss of propulsion? The channel's  
18 blocked.

19 You think three days is a lot for the  
20 ports to be closed in a hurricane. Imagine what  
21 it's going to be like if the channel's blocked.  
22 It could be months to years to remove the wrecks.

1           In addition to piloting I also work  
2 for Resolve Marine Group. That's the third  
3 largest salvage company in the world. And to  
4 remove a large ship, a cargo ship, container  
5 ship, passenger ship, it's taking up to three  
6 years to remove from the channel.

7           With these larger ships the margin of  
8 error is exponentially smaller than in the past.  
9 I don't know if you saw the ships in Miami. But  
10 these ships are getting huge, that we're bringing  
11 in these narrow channels.

12           Okay. Some of the other duties, and  
13 here's where we're going to get into the -- what  
14 we're doing for the hurricane recovery is, we're  
15 the first line of defense for terrorism. We work  
16 very closely with the Coast Guard for port  
17 safety.

18           We work with the Army Corps of  
19 Engineers on dredging projects, before Port Miami  
20 was dredged. Port Everglades is being dredged.  
21 We are doing the simulations with the Army Corps  
22 of Engineers to make sure that we have enough

1 water for bringing the ships in.

2 One of the lessons learned from Port  
3 Miami, which is being applied to Port Everglades  
4 for the dredging project is that we need more  
5 water for squat.

6 The South Florida ports are unique  
7 because of the Gulf Stream current, which goes  
8 by. And we can have, like I said earlier, six  
9 knots of current. The faster the ship goes, the  
10 deeper in the water it sits.

11 And in order to get through these  
12 currents we have to go fast. And that's the  
13 squat. So, if we're going 14 knots the ship may  
14 be another meter deeper than if we're doing six  
15 knots. So, we have to have that extra depth  
16 underwater.

17 Also, we work very closely with the  
18 local and state police for port protection. If  
19 there's an oil incident on a ship, we report that  
20 incident. And also, we're updating the  
21 Government publications, Coast Pilots. Last year  
22 too, the Florida ports, we've been updating each

1 port in the system. Okay.

2 Now we're getting to the hurricanes.  
3 Some of the things which started -- this happened  
4 during Hurricane Matthew. I met with the  
5 Emergency Operations Center in Florida, in  
6 Tallahassee.

7 They asked during the next hurricane  
8 if the pilots would start doing updates on the  
9 port status, so they could have more real time  
10 information. And I said, sure, that's no problem  
11 at all.

12 Once Hurricane Matthew hit, each day,  
13 twice a day, I was doing updates on the port  
14 status. How many ships were in port, when the  
15 port opened, were the aids to navigation in  
16 place? Was there shoaling in the channel?  
17 Whatever it may be, they wanted to know.

18 We did that for close to four or five  
19 days during Hurricane Matthew. After that I  
20 heard nothing at all. So, I didn't think it was  
21 too valuable to them. So, when Hurricane Irma  
22 hit I did not plan on doing it.

1           The day before the storm I received a  
2 call from the Emergency Management office, asking  
3 where the updates were. I said, you want the  
4 updates? And they said, yes, starting  
5 immediately. So, I said okay.

6           So, we started doing the updates, when  
7 the ports were closing. One of the issues was in  
8 Tampa. They wanted to keep the oil tankers in  
9 port as long as possible, to keep the oil  
10 flowing, to get the cars out of Florida.

11           I received a call, I think it was 17  
12 -- 5 o'clock in the afternoon, from the Attorney  
13 General of the state saying, we've been told the  
14 Florida pilots, or the Tampa pilots will no  
15 longer move the ships. And they need to keep the  
16 ships moving.

17           I said, wait, time out. You have  
18 something wrong there, I guarantee you. I called  
19 the Tampa pilots. What happened was, they were  
20 shutting down the port, because of the  
21 approaching hurricane. The Captain of the Port  
22 shut it down.

1           What we worked out was, through the  
2 Captain of the Port, that we would put a pilot on  
3 the ship, and keep the pilot on the ship to sail  
4 the tankers until the last minute possible and  
5 the pilot thinks it would be too rough, would go  
6 to the next port and get off in Texas, wherever  
7 it may be, and fly home from there.

8           So, the updates started. I was doing  
9 two updates a day for close to nine days on the  
10 ports. I did one in the morning, and one  
11 afternoon. I would call up the ports, find out  
12 what was going on, how many tankers were in port,  
13 when the cargo started moving. And it worked out  
14 quite well.

15           First it was being used by the Office  
16 of Emergency Management for Florida. Then it was  
17 being used by the state reps. It was used by  
18 FEMA, the Maritime Administration. I received  
19 calls from the Coast Guard too, when they had  
20 questions.

21           I don't know if you all are aware, but  
22 for Key West they sent down one of the U.S.



1 training ships, the Empire State, to act as a  
2 disaster relief ship.

3 When the ship was going down to Key  
4 West, at that point we did not know if the ship  
5 had any, or excuse me, if Key West had any buoys  
6 in the channel, or what the situation was.

7 I received a call from the U.S.  
8 Maritime Administration. Previously to being a  
9 pilot I was a captain on a U.S. training ship and  
10 also U.S. Naval ship. Asking if we could help  
11 out getting the ship into the port. I said, what  
12 do you need? They said, one is, there's no,  
13 we're worried about the buoy issue.

14 At that point there were reports there  
15 were no buoys in Key West. I called the Key West  
16 pilots, and at that point they were not in Key  
17 West yet. I said, what can we do about that?  
18 They said, we're going to go home. We'll get our  
19 fenders from our boats, whatever's left, and  
20 we'll make a makeshift channel.

21 This has been done before where  
22 they'll take small boat fenders, make a channel

1 once the survey work is done to get the ship in  
2 as soon as possible.

3 I called the Maritime Administration.  
4 I said, here's -- Plan A is we will have the  
5 pilots make a makeshift channel. Or if you want  
6 to divert the ship to Port Everglades, I'll buy  
7 some large regatta fenders from West Marine. We  
8 can put them on the training ship, and the pilots  
9 can put them in place for the ship to come in.

10 The ship was diverted to Port  
11 Everglades. So, I picked up the regatta fenders  
12 in order to make a makeshift channel. At the end  
13 it was not required, because the channels were  
14 there. But they had just been moved out of  
15 place. Okay.

16 This is an example of one of the  
17 updates, which was being sent out for each port  
18 during the hurricane. That was right after the  
19 hurricane status was unknown. Only info is the  
20 pilot's house did not flood. That's the only  
21 information we had. That was the pilot's  
22 personal house. He found out through Google.

1                   After the hurricane I met with the  
2                   Governor. And he made it very clear he was not  
3                   happy at the speed the Florida ports were opened.  
4                   He asked what could be done to expedite opening  
5                   the ports. And we talked about some different  
6                   scenarios.

7                   One thing I suggested was, I said, in  
8                   the port we have these pilot boats. They're all-  
9                   weather boats. What I mean by that is, they can  
10                  go out in any weather. Twenty foot seas, it's  
11                  not an issue.

12                  I said, one of the issues had been the  
13                  survey boats. They could not go out in rough  
14                  weather. I said, why don't you put the MIST  
15                  equipment on the pilot boats? That's a  
16                  possibility. And he said, I like that idea.

17                  Two days later I received a call from  
18                  Colonel Jason Kirk, U.S. Army Corps of Engineers,  
19                  Jacksonville, to discuss this. The Governor  
20                  called the colonel and said, please talk to  
21                  pilots about putting the equipment on the pilot  
22                  boats to open up the ports sooner.

1           We've had a few discussions on that.  
2           And from there I met with Kyle Ward, Tim Osborne.  
3           And we've been discussing some of the  
4           possibilities of using the pilot boats to put the  
5           equipment on, the MIST equipment on the pilot  
6           boats for future hurricanes.

7           About two months ago I met with the  
8           Office of Emergency Management in Florida. And  
9           they asked that in the future, if we have pilots  
10          up in the Emergency Operations Center,  
11          Tallahassee for hurricanes. And I said, yes, we  
12          are going to do that. We'll have several pilots  
13          up there to help out in opening the ports.

14          Before putting the MIST equipment on  
15          the pilot boats, the question is, why would you  
16          use pilot boats? One, they're an all-weather  
17          boat. They can go out in literally any sea  
18          condition. It's not going to affect the pilot  
19          boat.

20          Two, the pilot boats are generally  
21          kept in the water during a hurricane. We do not  
22          take the boats out of the water. If they are out

1 of the water the boats are usually kept in the  
2 sling where they're hauled out. So they're the  
3 first boats back in the water. Okay.

4 Also, the boats are large. In general  
5 they're about 40 to 60 feet long. And they can  
6 accommodate the equipment for, the MIST  
7 equipment. And it's no problem at all.

8 One thing I've talked about with the  
9 operations, Emergency Operations Center is that  
10 we're happy to use the pilot boats as a platform.  
11 That's it.

12 We do not want to maintain the  
13 equipment. And we don't want to be the  
14 technician working the equipment. Just use the  
15 pilot boat as a platform. That's where it will  
16 end, if that's what's going to happen. We're  
17 more than happy to use the pilot boats for that.  
18 Okay.

19 Some of the other things we're working  
20 on is the FEMA Incident Command Courses in the  
21 different associations. We have pilots getting  
22 certified as incident, taking the FEMA Incident

1 Command Courses.

2 Another thing we're working on right  
3 now is, with the Emergency Management Center  
4 Florida, is contingency plans for a blocked  
5 channel, something no one really wants to talk  
6 about. But these channels are narrow. They're  
7 450 to 500 feet long.

8 The main concern is fuel. What would  
9 happen if one of these channels were blocked for  
10 a considerable amount of time? How would fuel  
11 flow into the state? Recently in the last month  
12 we've been working with the Florida Emergency  
13 Management Center on some contingency plans for  
14 this.

15 One of the other issues is, if you  
16 take Port Everglades here on a busy weekend with  
17 the cruise ships, what would happen if a channel  
18 were blocked by either a cargo ship, passenger  
19 ship, or a tanker? It could have devastating  
20 consequences for the cruise industry.

21 Okay. Just something real briefly.  
22 One of the other issues we're working on right

1 now is radiation and nuclear detection for  
2 pilots. I think we're the first in the country  
3 to be working on this. It's better to find out  
4 if there's a threat five miles offshore, than  
5 when it's in the port.

6 We have some equipment from DARPA, the  
7 Defense Advanced Research Planning Agency, we're  
8 testing right now. It's state of the art. We're  
9 doing nuclear and radiological detection on the  
10 ships. Okay. All right. Are there any  
11 questions?

12 MEMBER RASSELLO: Hi. This is Captain  
13 Rassello. I have a question for you. So, who  
14 will be the point of contact for private sector  
15 to find out about the condition of the ports,  
16 since Coast Guard is busy in dealing with the  
17 issues. Will it be the pilots?

18 CAPT STEPHENSON: The condition, we  
19 were doing that solely, it started at the state  
20 level. That was it. And it was, the reports I  
21 was doing were sent from the state to other  
22 government agencies.

1                   MEMBER RASSELLO: So, if we are, need  
2 to know what would be the opening, when will be  
3 the opening, who do we contact?

4                   CAPT STEPHENSON: I did not say when,  
5 it's completely factual the information we're  
6 putting in the reports. The port opened at 1600,  
7 and the next report will say, Port Miami opened  
8 1600. We did no forecasting, or anything like  
9 that.

10                  MEMBER RASSELLO: So, we don't have a  
11 forecast? We just --

12                  CAPT STEPHENSON: Correct. We were,  
13 the information I put in the reports was factual.  
14 We have X number of tankers at the berths. We  
15 have three tankers offshore. That sort of  
16 information.

17                  MEMBER RASSELLO: No. I'm just  
18 wondering, not just for the case of Miami, but  
19 in, is there protocol where the private sector  
20 can find out when, you know? Because our ship  
21 are not outside the -- they're not outside the  
22 port. Our ships are sheltered somewhere --



1                   CAPT STEPHENSON: Correct.

2                   MEMBER RASSELLO: -- 400, 500 miles  
3 away. So --

4                   CAPT STEPHENSON: Correct.

5                   MEMBER RASSELLO: How we plan a timely  
6 arrival? And also, with other ships that we  
7 don't --

8                   CAPT STEPHENSON: Yes. Well, one of  
9 the issues --

10                  MEMBER RASSELLO: -- project at the  
11 port.

12                  CAPT STEPHENSON: Yes. One of the  
13 issues is, one, the soundings have to be done.  
14 If there's obstructions in the channel that --  
15 obstructions have to be cleared. The aids to  
16 navigation have to be up and working. So,  
17 there's a lot more issues.

18                  It's easy to say, we're going to open  
19 the port at 1500. But if we still have a vessel  
20 in the middle of the channel that sunk, it's not  
21 going to open at 1500.

22                  MEMBER RASSELLO: Okay. Thank you.

1           MEMBER PAGE: Doesn't Homeport address  
2 that, Captain? Doesn't Homeport give the answers  
3 that your Captains are looking for?

4           CAPT ALLEN: Yes. That's correct. As  
5 soon as the ports are open an MSIB goes out. And  
6 it is directly on Homeport, as soon as the ports  
7 are open.

8           PARTICIPANT: And that's a website?

9           CAPT ALLEN: That is a website open to  
10 the public.

11          MR. ASLAKSEN: Okay. Thank you. If  
12 there's follow-up questions, please see the  
13 panelist afterwards. Next I'd like to introduce  
14 Mr. Chris Vaughan, a personal friend, and a great  
15 user of NOAA information.

16                 He's actually the FEMA Geospatial  
17 Information Officer. He coordinates a lot of  
18 geospatial technologies across multiple response  
19 and recovery programs. Welcome, Chris.

20          MR. VAUGHAN: Thanks, Mike. I'm going  
21 to stand up. I feel like we're back at dinner  
22 last night. It was a great time. Thanks for

1 having me here. We're going to go through this  
2 slide deck pretty quick.

3 Like Mike said, I'm the Geospatial  
4 Information Officer. So, my primary use of the  
5 NOAA information is from an aerial imagery  
6 perspective. And so, I'll get into how we use  
7 that information in a little bit.

8 We've all kind of talked about it, but  
9 I wanted to give you guys a little bit more  
10 context about what we were really facing. I  
11 apologize that this is so small.

12 Will this be made public? Okay. So, if  
13 you're interested all these details are out there  
14 on these slide decks. But just real quick, a lot  
15 on this slide, you know, first time two Atlantic  
16 Category 4 hurricanes hit, both Harvey and Irma,  
17 that made landfall in the Continental U.S.

18 There's a whole litany of, you know,  
19 this was bad, right. Catastrophic, crisis,  
20 Armageddon, all happened at once. The top slide  
21 up here is actually a picture of where our  
22 resources and our commodities were shipped,

1 right.

2 And so, the very first thing obviously  
3 was Hurricane Harvey. We shipped over 4,000  
4 shipments. And those are things like tarps, and  
5 water bottles, and shelters, and infant and  
6 toddler kits.

7 And then we had to shift focus and  
8 move to Irma, right. And that was a little more,  
9 5,000 shipments. But when it hit Puerto Rico,  
10 that doubled our shipments of both, you know,  
11 Harvey and Irma, right. So, 10,000 shipments to  
12 Puerto Rico.

13 I recall, you know, going through all  
14 those operations. And I recall going over to our  
15 resource and logistics guys. And they started  
16 talking about an air bridge and a sea bridge.

17 And I didn't really understand what  
18 that was. It's not my line of work. But they  
19 had this side infinity, you know, side figure  
20 eight going on. And I asked, what is that?  
21 Well, that was their air bridge and their sea  
22 bridge, right.

1           As soon as the resources would land  
2 they'd take back off, switch out pilots and  
3 crews, and they'd fly back to Florida, and land  
4 back in Puerto Rico. It was just continuous.

5           And then they averted that from an air  
6 bridge perspective, and they started going with  
7 ships. And we just had barges, after barges,  
8 after barges, you know, moving these commodities  
9 into Puerto Rico.

10           So, it was truly an amazing operation.  
11 I thank everybody in the room that was involved  
12 in that to open those ports and the airports as  
13 well.

14           From a dollar perspective, right, we  
15 generally, you know, talk in terms of incident.  
16 Well, you know, 2005 was the last real big one,  
17 if you think about Katrina, Wilma, and Rita.  
18 That's where I broke my, you know, emergency  
19 management experience came from Katrina.

20           I was on the ground for Katrina. That  
21 was a \$209 billion dollar series of events.  
22 Sandy alone was \$71 billion in 2012. These three

1 incidents, Harvey, Irma, and Maria was \$265  
2 billion dollars, right.

3 What that means in terms of  
4 inspections, how many people were applying. A  
5 lot of people apply, but the people that actually  
6 get an inspection is a smaller subset of that.  
7 But still, the numbers are staggering.

8 For Katrina it was, you know, close to  
9 1.4 million inspections were issued. For Harvey,  
10 Irma, and Maria you're looking at roughly what,  
11 you know, somewhere around, help me with the math  
12 here, 2.4. No more drinking at the pool bar last  
13 night. I can't do the math that quick.

14 MR. VAUGHAN: All right. So FEMA by  
15 the numbers, right? Significant incidents  
16 somewhere in the neighborhood of 85 percent of  
17 our organization was deployed, over 21,000 folks  
18 were put out into the field. Sixteen and a half  
19 billion dollars from the disaster relief fund was  
20 obligated, so an incredible amount of money  
21 coming out of the coffers from the U.S.  
22 Government.

1                   A little hard to read this slide.  
2           Once again, I apologize but, you know, things ---  
3           staggering numbers like, you know, five million  
4           flood insurance policies kicked in. Just  
5           staggering numbers. This is just an example of  
6           kind of the life cycle of how we typically look  
7           at an incident.

8                   You have preparedness, the pre-stage  
9           of an incident, and then your short, your initial  
10          response, your short-term recovery, intermediate  
11          recovery, long-term recovery. And that's how we  
12          move in our cycles, how we deploy our forces, how  
13          we handle, you know, individual systems, or  
14          public assistance, or how we, you know, organize  
15          ourselves.

16                   Geospatial Analysis, what we do is in  
17          support of each one of those things. We help  
18          with grants, you know, using Mike's aerial  
19          imagery, NOAA's aerial imagery to expedite those  
20          grants, to expedite debris, where the debris is  
21          located, things like that.

22                   But the point what I was trying to

1 make here is, you know, as soon as Harvey hit we  
2 went through our normal flow, and we got about, I  
3 don't know, two weeks into it then boom, Irma  
4 hits and we had to start the whole cycle over  
5 again. But don't forget we're still dealing with  
6 Harvey. And then all of a sudden Maria hits and  
7 we're still dealing with Irma and Harvey. And so  
8 it was very much a pivot and a shift, pivot,  
9 shift, pivot, shift, and, oh by the way,  
10 thousands and thousands of homes were burnt in  
11 California in October.

12 So it wasn't that we were completely  
13 done with the hurricane response, but we also had  
14 to deal with the other side of the country with  
15 thousands of homes dealing with significant  
16 wildfires.

17 A little bit about who we are and what  
18 we do is damage assessments. From my specific  
19 team's perspective we conduct damage assessments  
20 from a geospatial perspective. I believe very  
21 passionately about this, you know, having that  
22 number, you know, for Hurricane Harvey alone we



1 were able to come up with about 155,000 house by  
2 house damage assessments within the first two  
3 days following landfall.

4 Having that number drives so many  
5 operations, you know, having that number helps us  
6 understand how many resources are needed. And so  
7 we use a cacophony of information, stream gage  
8 information both forecast and observe. We  
9 intersect that with remote sensing data, whether  
10 that's satellite or aerial from NOAA, and then we  
11 apply that in various modeling methodologies to  
12 identify impact to structures, to the residential  
13 structures impacted.

14 We use it all. Wind speed, that was  
15 a big one for us especially in Puerto Rico. As  
16 one of our earlier panelists, or I believe one of  
17 the panel members here talked about the lack of  
18 power, or communications. And that was very  
19 significant especially in Puerto Rico. Our  
20 traditional methodologies of reading this  
21 information in real time was not there because  
22 the power was out.

1                   And so we had to default to other  
2 capabilities. Principally we used imagery, and I  
3 can't stress this point, I believe that Dr.  
4 Callender, sorry, Dr. Callender spoke very  
5 specifically about this, it's a limited resource.  
6 In Harvey and Irma, and I'm going to make the  
7 point here about the limited resource in Maria,  
8 in Harvey and Irma we were able to use, you know,  
9 principally things like stream gage information  
10 to come up with those damage assessments.

11                   All of that was off the table  
12 especially when it comes to Maria. We had to  
13 default to aerial imagery. Two days in Harvey we  
14 were able to come up with those numbers. About  
15 the same time for Irma. When it came to Maria it  
16 took us about three weeks, right? We had to fly  
17 the entire island, and then we had to do these  
18 house by house damage assessments. Buy the way,  
19 Puerto Rico has about 1.4 million structures on  
20 it, and we had to look at each individual  
21 structure to assess the damage.

22                   So you can imagine, you know, we're

1 giving these numbers to the President. This is  
2 how many folks are impacted in Hurricane Harvey  
3 within two days. Well by time Maria came and we  
4 had to default to imagery and a slower capability  
5 folks were right beside apoplectic, you know, how  
6 long is it going to take you to tell me how big  
7 and bad this incident is?

8 Well, it was just valuable, this data  
9 that you provide is just so valuable for us to do  
10 that. And, by the way, -- doing these damage  
11 assessments by the way, geospatially, I would,  
12 you know, I would argue is the fastest out there,  
13 right, being able to canvas the entire island  
14 very quickly. And it's just critical to have  
15 your information to do that.

16 So just real quick, you know, one  
17 slide here for NOAA specifically, right? And I  
18 told Mike, I said, I'm sorry, I've only got one  
19 slide in here about NOAA, but I flew unhappy, but  
20 all the way down to Miami to give a 15 minute  
21 presentation for this one slide. So, you know,  
22 I'm really trying to drive this home, right, you

1 know, this capability that NOAA provides is so  
2 valuable to us to perform these damage  
3 assessments.

4           You know, we did issue a FEMA mission  
5 assignment. I heard a lot about mission  
6 assignments last night at dinner. I heard some  
7 this morning. I am happy to entertain any of  
8 those questions. I'm sure you'll have plenty of  
9 them. But we do have a good relationship worked  
10 out with Mike's team, specifically for cutting a  
11 mission assignment for the imagery, because it  
12 meets a very specific purpose. And our  
13 leadership is very attuned and accustomed to the  
14 purpose of why that is.

15           So I'm happy to talk about other  
16 mission assignments that are a little outside of  
17 my scope, but I'm happy to explain the process.  
18 The NOAA LNO, Dr. Callender also talked about  
19 that, is very successful. You guys did help us  
20 with the port and airport status. The imagery  
21 and your assessments were critical there.  
22 Hospital status, I'll get into that a little bit

1 later.

2 Road networks was such a critical  
3 crisis, you know, we had to know where the roads  
4 were open or closed. Yes, we were able to ship  
5 large resources to Puerto Rico, but if you  
6 couldn't get it to the community that needed it  
7 it was all for naught, right? So it was very  
8 critical for us to use the imagery to figure out  
9 which roads were open and closed.

10 Two real quick comments about this,  
11 you know, just to commend the NOAA team,  
12 especially in Key West, you know. I remember  
13 nobody could see past Key West. I don't know if  
14 you guys really remember watching the news,  
15 right, but, you know, they were saying it was  
16 just completely obliterated, right? And it was -  
17 -- there was a moment, I remember it very  
18 distinctly, when there was a large network that  
19 got up there and said it was just completely  
20 wiped off the face of the earth.

21 But the issue was we had actually seen  
22 Mike's imagery, and it wasn't jiving with what

1 they were saying, that large network, right? I'm  
2 not saying fake news, I'm just saying --- I guess  
3 I did say fake news. I'm so sorry --- yes, fake  
4 imagery. So what had happened was they --- see  
5 what had happened was they got stopped, you know,  
6 we weren't letting anybody in beyond a certain  
7 point, and what they could see, you know, colored  
8 their perspective.

9 Well, the imagery that NOAA was  
10 providing gave us that blanketed coverage, and we  
11 were able to see, yes, there is extreme  
12 devastation, but it's not like a nuke went off.  
13 You got a nuke detector, right? I was looking at  
14 that thing, it's pretty cool. Not only that ---  
15 so it gave us really good perspective on this  
16 bottom side. Mike actually --- his team actually  
17 came in and helped us upload additional imagery.  
18 So it's beyond just the imagery, taking the  
19 imagery, it's providing the services out there,  
20 getting that imagery out to the community, just  
21 fantastic partnership that we have with the team.

22 You know, surging of our manpower,

1 these are some of the lessons learned. We're  
2 doing as part of our overall FEMA continuous  
3 improvement program. We actually launched a  
4 crowd sourcing application in the middle of  
5 Hurricane Irma. We had over 5,000 volunteers  
6 looking at this imagery, and helping us comb  
7 through this amount of imagery, fantastic.

8           Once again crowdsourcing was a huge  
9 aspect here, helping us determine the impact to  
10 roads and hospitals. That was a major discussion  
11 point of where's the hospitals that are impacted?  
12 Who's open? How do we appropriate our resources  
13 for that? How do we get the resources in there  
14 from a road network status and crowdsourcing was  
15 a major player.

16           I put this slide up. This is our ---  
17 kind of our love me wall, I guess, you know. So  
18 I put this up to say we're able to use geospatial  
19 technologies very quickly, very rapidly, but most  
20 importantly very accurately. Last night we had a  
21 very quick discussion about Louisiana and the  
22 floods in 2016. We were able to come up with

1 those flood extents within the first five days  
2 following that significant event.

3 Ninety-two percent of all claims that  
4 came into FEMA fell within those flood extents,  
5 whereas the traditional method of going out and  
6 doing house-by-house assessment, boots on the  
7 ground, took about 70 days. So five days versus  
8 70 days. Having that knowledge early on in the  
9 incident helps to really categorize how we  
10 respond appropriately.

11 So you could --- I'm just going to  
12 beat that home one more time. Having that  
13 imagery to allow us to do what we did in Maria, I  
14 do think really drove significant operations.  
15 Having that knowledge early cut down on the  
16 chaos, right? You can get more of that.

17 Just a few more slides. The data that  
18 you're providing supported so many of our  
19 critical sectors. In fact, in Maria the way that  
20 they ended up breaking it out is by sector, and  
21 the interdependencies on one sector and how it  
22 played into another sector, right? So it's very



1 complex.

2           There's a huge analytic cell down in  
3 Puerto Rico right now, and data is driving  
4 operations, right? Data to drive how the power  
5 is getting restored, you know, working with the  
6 various teams to get the things back on line, how  
7 the information is being collected, right? This  
8 is just an example from our Urban Search and  
9 Rescue Teams.

10           The availability of smart phones, --  
11 this is not a smart phone, but it's what I'm  
12 going to use as my prop. So smart phones,  
13 getting that from the Urban Search and Rescue  
14 Teams in real time really helped us understand  
15 context in, you know, within moments or in days.

16           Data analysis and integration, I can  
17 honestly say no major decision was not made  
18 without significant data and a deep dive from  
19 analytic perspective, right? When we shut down  
20 food distribution it was based on all those  
21 critical sectors, a whole bunch of folks coming  
22 to agreement, obviously working with the states,

1 and the locals, and the counties, the municipals  
2 to make sure that we've done our due diligence.  
3 That when we start to ramp down operations it's  
4 done very thoughtfully and thoroughly, because  
5 we, you know, the federal government can't be  
6 there forever in the sense that we --- we have to  
7 rely and get the economy back up and running  
8 again. So there's a tremendous amount of data,  
9 analytics, that went in, especially when you  
10 start talking about feeding missions and housing  
11 missions.

12 So I believe -- yes, this is my very  
13 last slide. You know, we use the imagery to help  
14 us identify, you know, not only a canvas of where  
15 the baseline is, where our resources should go,  
16 and making sure that we're appropriately staffed  
17 and resourced, and our posture is aligned, but it  
18 also helps our program.

19 So with that, my time is up, and I'm  
20 grateful to be here. Thank you for the  
21 opportunity. Thanks Mike.

22 MR. ASLAKSEN: Do we have a quick

1 question for Chris?

2 (No audible response.)

3 MR. ASLAKSEN: All right. Thank you,  
4 sir.

5 Next, Mr. Terry Thornton. He's  
6 currently the senior vice president, Ford  
7 Operations, Guest Care for Carnival  
8 International. He represents the Florida  
9 Caribbean Cruise Association as the Chairman of  
10 the Marketing Committee. Welcome, sir.

11 MR. THORNTON: Thank you. Good morning  
12 everybody. Great to be here with you. I know  
13 we've been talking a lot about how disruptive  
14 this hurricane season was. I've had the great  
15 privilege of working the cruise industry for 40  
16 years, and I can honestly tell you we've never  
17 seen anything like we went through this year in  
18 the 40 years I've been in the business, so it was  
19 pretty disruptive.

20 For those of you that don't know much  
21 about Carnival Cruise Line, which is the company  
22 I work for, we had ships home ported in every

1 area that got hit with a major storm. Starting  
2 with Harvey, three ships in Galveston. Everybody  
3 forgot a little about Nate. Nate got into New  
4 Orleans, and in the Mobile area. We have ships  
5 in both places. We have ships home ported in  
6 every Florida port, and including South Carolina,  
7 moving a little bit north.

8 So you can imagine we had the --- we  
9 had 25 ships in our fleet. Seventeen of our  
10 ships were impacted by these storms, so --- and  
11 some all at the same time.

12 MEMBER RASSELLO: Nineteen.

13 MR. THORNTON: Nineteen. Okay, count  
14 Ms. Sullivan.

15 (Laughter.)

16 MR. THORNTON: So when I say impacted,  
17 we have to think about it in two ways from our  
18 business. One is where the ships home port. So  
19 where they come and people get on and get off the  
20 ships, but we also have to deal with what we call  
21 ports to call where the ships visit on the  
22 itineraries themselves. And this obviously had

1 impacted both, because we have a lot of  
2 deployment that goes into the Caribbean region,  
3 and a lot of the Caribbean destinations were  
4 impacted.

5           You know, I --- you know, sometimes I  
6 think the cruise industry gets a bad rap, and I'd  
7 like to say first and foremost, there is nothing  
8 more important in our business than safety.

9 Every decision we make is based on the safety of  
10 our guests, our crew, our ships, and there's  
11 nothing more important than that. So if it's  
12 ever said that we run our business based on  
13 financial implication to this, it's not true.  
14 Number one decision on everything we make is  
15 based on safety.

16           Now, it's really important to do these  
17 things right for obviously the safety reasons. I  
18 can't say that financial implications don't come  
19 into it, because it's not only financial  
20 implications for what it means for our business,  
21 but our business has so much flow through  
22 financial implications to the communities that we

1 go to, to the places we visit, and it's very far  
2 reaching in terms of financial implications that  
3 our business brings to other than ourselves.

4           So when you think about a hurricane  
5 coming, we drill for this all the time. And so  
6 the first things -- I kind of went through the  
7 considerations that we go through as a cruise  
8 line, so very early on we're starting --- when we  
9 see something brewing we're already starting to  
10 look at our marine assessment, maritime  
11 assessments, what that might be in terms of  
12 impact to home port, what that might mean in  
13 terms of ports of call, and worse case scenarios  
14 based on that.

15           So what happens then when we get  
16 scenarios? Before changing itineraries, for  
17 example, we've got to go out to all of the other  
18 ports we want to go to. Are they available? Can  
19 we do this? Can the ship make the speed and  
20 itinerary to do this. So there's lots of  
21 maritime considerations that we start well in  
22 advance.

1           It also depends on whether, like I  
2           said, whether it's a home port or a port of call.  
3           And then our critical factors when we got into a  
4           really delicate situation, what are they, fuel,  
5           provisions, and fresh water. Those are the  
6           things that we have to worry most about in terms  
7           of taking care of the guests and making sure that  
8           we have a safe operation. So we're planning that  
9           well in advance, because sometimes those  
10          decisions have to be made ahead of time in order  
11          to ensure that we don't have any foul ups in that  
12          area.

13                 So we have two --- when we're taking  
14          itinerary decisions, we have two guiding  
15          principles that we go with, and it's come with a  
16          lot of experience. Our first principal is make  
17          the decision as late as you can. And why do we  
18          do that? In case things change. You guys have  
19          all seen so many things change with hurricanes  
20          that making the decision at the very last minute  
21          is the most appropriate way to run the business,  
22          because that way we have the best information,

1 and we know exactly, more or less, what's going  
2 to happen, the timing and can do the best thing  
3 for our guests.

4           What we also did from a guest  
5 perspective, we have to think about our guests,  
6 and what we try to do is minimize as much as  
7 possible any changes we've made to whatever they  
8 bought. So whether they have to change  
9 itineraries, we take this very seriously. Of  
10 course if we have to bring a ship back to a  
11 different home port than they left from, very  
12 serious, but we try to minimize any of the  
13 itinerary implications as best we can given the  
14 situation.

15           So we talked about --- I've heard a  
16 lot of people talk about communication and  
17 coordination. There are so many things that come  
18 into play that we've talked about here, but we  
19 obviously have a very close working relationship  
20 with the Coast Guard in this situation, the local  
21 pilots associations, all of our vendors and  
22 suppliers, because you think about the ship being



1 provisioned in a different place. Well now all  
2 of our vendors and suppliers have to be in  
3 coordination with what we're doing.

4 Even the local --- you think about the  
5 communications, it happens internally within the  
6 neighborhoods and the communities. We had a bad  
7 situation that was just because we didn't have  
8 the right communication. We had a ship coming  
9 back into Port Everglades. We were giving guests  
10 the option of having ship --- some people get off  
11 one day, some people getting off the next day.  
12 Some people got off the first day, went to the  
13 Fort Lauderdale Airport, and all of a sudden the  
14 airport authority said why did Carnival Cruise  
15 Lines dump all of these people and put them in  
16 the airport where there's no flights.

17 Well that's not what happened. We  
18 communicated that the guests had the option. We  
19 told them to check the airlines to see if their  
20 flights were operating, and they elected to go to  
21 the airport. Now that is something that we could  
22 have worked better with the airport officials,

1 and had that as a different outcome, but it's the  
2 communication and the coordination of that is  
3 very, very complex.

4           When we think about our guests who  
5 obviously are airline partners, they're very  
6 important. Are they flying, are the airports  
7 open, what flights are they operating. It became  
8 particularly challenging in San Juan.

9           And you think about the communication  
10 and internally to us, we have lots of guest  
11 communication going on. So you think about a  
12 ship that's out at sea when the storm comes, we  
13 are communicating with the people on the ship of  
14 what's happening, what's going on, what changes  
15 might be made, what they can expect. Obviously  
16 the ships are always operating in a safe distance  
17 from the storm. So they're never put in harm's  
18 way in any way in the navigation, and we  
19 communicate that because lots of people don't  
20 understand, you know, that -- how we do this, and  
21 what they can expect. And so communication with  
22 them is very, very important.

1                   Then there's a whole other group of  
2 people which is --- they're getting ready to get  
3 on the next cruise. And so okay what's going to  
4 happen to my cruise? Are you going to operate  
5 it? Is it going to be on time? Is it going to  
6 be the same itinerary? What if I can't get to  
7 the ship because my airline's cancelled my  
8 flight? All of these things come into play for  
9 the people that are trying to get on the ship.  
10 So there's a lot of communication going on.

11                   How do we do that? The best tool we  
12 have is our website, [carnival.com](http://carnival.com), so we're  
13 constantly providing updates to both the people  
14 trying to get on the ship, as well as people that  
15 --- or what's going on on the ships that are out  
16 at sea, because we have friends, relatives,  
17 people that want to know. I know they're out on  
18 the cruise, but I want to know what's happenings  
19 and are they safe. And so we use [carnival.com](http://carnival.com) to  
20 provide a lot of information about that.

21                   Something far out, we can also --- for  
22 the guests that are coming onto the ships, or

1 scheduled to come on the ships, we use email, and  
2 get a communication out to them in email. As we  
3 get a little closer to what we're really going to  
4 do, we ask them to sign up for text updates so  
5 that we can get immediate communication on text  
6 out to them on a much more short notice than  
7 email. Sometime people will not see the email,  
8 or what --- if they know that they're expecting a  
9 text, then they're watching a text, and we have  
10 great success communicating with them that way.  
11 So those are the big important things we do from  
12 guest communication and coordination standpoint.

13           You know, where --- I know you -- a  
14 lot of you talked about where would the industry,  
15 I think, like to see things improve. And so  
16 obviously we've talked a lot about reopening  
17 ports. We'd like to be a partner in that as best  
18 we can. What we think is important in reopening  
19 ports, and we've talked about it sometimes here,  
20 is a much more organized process in preplanning  
21 as we get closer to a storm approaching because  
22 we would like to kind of be part of the processes

1 to understand the decisions and the  
2 prioritizations that have been happening because  
3 that will drive our planning, and if we can be  
4 part of the process -- and we know things change,  
5 we're not --- we're completely understanding that  
6 here is what it is now, here's what it might move  
7 to, here's what it finally is. We're --- but  
8 we'd like to be a part of that as the  
9 prioritization stuff happens, because it'll drive  
10 our plans.

11 And we could be helpful, because we  
12 won't have ships in the wrong position that would  
13 disrupt the prioritization, or disrupt the plans  
14 in any way. So we can be a helpful partner if we  
15 can be that --- in a preplanning stage as we look  
16 at that. Obviously this one was unprecedented in  
17 terms of the reports that were impacted and so  
18 forth, so --- but the best we can be a partner,  
19 we'd like to be a partner and be a part of the  
20 process as we go along.

21 Now, we've had --- by the way we've  
22 talked a lot about the Florida reports, just on a

1 related matter, and it is --- and, again, I think  
2 we're a little misunderstood as an industry on  
3 this one. We'd like to see a more organized  
4 process from all the stakeholders that would  
5 allow us to safely navigate into port under  
6 reduced visibility, fog situations and those kind  
7 of things.

8 Now, again, safety is number one.  
9 There is nothing higher priority than safety, but  
10 are there things we can work together to have  
11 better information, to have better systems,  
12 better technology in place that will allow us to  
13 navigate under reduced visibility in good weather  
14 conditions. We're not talking about coming in  
15 under reduced visibility in very bad weather  
16 conditions. We're talking about good weather  
17 conditions, reduced visibility, or the things we  
18 can do working together that will allow us to  
19 safely bring ships in that environment.

20 The --- one thing in terms of this  
21 communication I'd like to have a better protocol  
22 for the local municipalities of how we are

1 communicating what's going to happen because,  
2 again, I told you this story about Port  
3 Everglades. We'd like to be out ahead that so  
4 that we have --- we're not trying to find out who  
5 to talk to when we're in the heat of the moment  
6 of the storm. We'd like to have local  
7 municipalities involved and be able to understand  
8 what we're doing so that they have the correct  
9 information and we just don't get this  
10 misperception out in the market of what's  
11 happening.

12 I'd actually --- this is --- I know  
13 all --- the resources are very limited for all of  
14 us. Believe it or not there are for Carnival  
15 Cruise Lines too, so I don't want you to take it  
16 that it's just your entities that have resource  
17 constraints, we have them too. But I'd like to -  
18 -- I'd really like to simulate these exercises at  
19 least once a year. I'd like to go through a full  
20 simulation of these exercises with all of the  
21 stakeholders involved.

22 I know it's a big time commitment. I

1 know it's a very draining thing on limited  
2 resources, but I think it'll help us iron out the  
3 kinks that we might find in the system ahead of  
4 the time, and head off a problem that could  
5 happen, or make something a way better experience  
6 than it would be otherwise. So I know that  
7 that's something that I think we would benefit  
8 from internally in Carnival Cruise Lines. We  
9 drill for this all the time. So we don't start  
10 August 1st or June 1st, or whatever it is. We  
11 drill for this consistently, all the time, so  
12 that we have the process down and ready to go.

13 For those of you that don't know, I  
14 just touched quickly on FEMA. We have a great  
15 relationship within FEMA. We participated in  
16 Katrina by sending three of our ships to New  
17 Orleans for the relief efforts in New Orleans.  
18 We are very proud to be able to participate in  
19 that. We also had --- in this event we had one  
20 of our ships spend four months in Saint Croix  
21 housing relief workers, and I can tell you  
22 working with FEMA was just a great operation.



1 They were doing amazing things, as we talked  
2 about here, in Saint Croix under very difficult  
3 situations.

4 And in working with FEMA there's two  
5 things I would like to ask that be considered.  
6 For people that don't do this very often, like  
7 us, contracting with Government entities, I'd  
8 like to have a contracting process put in place  
9 before we need it so that we can talk about  
10 financials, we can talk about the process, what  
11 needs to happen. We're not talking  
12 circumnavigating our fees and --- I'm not talking  
13 about going against bids or anything like that.  
14 Have the process simplified upfront so when we're  
15 dealing with this, and FEMA needs assistance in  
16 something like what we can provide, let's have  
17 that administrative stuff behind us so that all  
18 we have to deal with is taking care of the  
19 situation. And if we have an asset available  
20 getting it there as quickly as possible to help  
21 in the relief efforts, that's the most important  
22 thing.

1           So that would really be helpful  
2 because, like I said, we don't contract with the  
3 government very often, and it's a little bit  
4 harrowing to get your footing as you work your  
5 way through it, until you finally understand  
6 what's going on.

7           The other thing is from FEMA's  
8 standpoint -- I know we talked about all the  
9 critical decisions they're making all the time.  
10 Again, we would love them to ask us if we could  
11 help in other ways. So chartering ships for  
12 housing is one thing. We have ships moving  
13 throughout the areas that are affected by the  
14 storms. We have some capability for  
15 transportation and supplies, and things that we  
16 could help with.

17           So if we could be in part of that  
18 process, we could be a partner again to FEMA in a  
19 broader sense than we are today other than just  
20 chartering ships. So it's --- I think we can do  
21 much better together if we're thinking about it.  
22 Again, while things are a little bit calmer and

1 what --- how could we best integrate into the  
2 process.

3 From NOAA's standpoint, they played a  
4 unbelievable big effort in getting the Port of  
5 Saint Croix open, which was --- obviously there  
6 was a ship before ours in Saint Croix that  
7 allowed --- they allowed the ship to get in there  
8 and provide the housing, because I can tell you  
9 it would have been a very, very difficult  
10 accommodation situation in Saint Croix for all  
11 the relief workers had it not been for the ships.  
12 I don't know what would have happened. It could  
13 have been very, very bad.

14 It's --- you know, I've been through  
15 Andrew. I've been through some major storms my  
16 personal tours and stuff. When I flew to Saint  
17 Croix, when the ship arrived I had never seen  
18 such devastation. It was --- it was just totally  
19 devastation, and so we're very excited that the  
20 Carnival Fascination could have been part of that  
21 relief effort.

22 But --- so the services that NOAA

1 provides in opening the ports I think is  
2 critical. I can hear from the --- what I've  
3 heard today, obviously the resources are limited.  
4 So I think we ought to think about ways that we  
5 can improve on the resources. I know money is  
6 tight, money is tight everywhere, to allow us to  
7 be even faster to help, either in getting the --  
8 kind of commerce going, whether it be cruise  
9 ships, or cargo or whatever it might be, or just  
10 helping on the relief efforts. Get these ports  
11 open, in a safe way, nobody wants to take any  
12 kind of unsafe actions with ships.

13           But is there a way that we could help  
14 NOAA come in faster, and do things faster,  
15 working with the Coast Guard and the other  
16 stakeholders, to even improve on the process.  
17 I'm not saying that -- we didn't do a horrible  
18 job this time. I just always think that there's  
19 room for improvement, and there's so much at  
20 stake. There's so much at stake in terms of  
21 commerce, money, people, relief, all kinds of  
22 things that it's worth the investment in thinking

1 about how we could do it better.

2 MR. ASLAKSEN: Thank you, sir. You  
3 have a quick question for Terry?

4 (No audible response.)

5 MR. ASLAKSEN: Okay. Let's keep moving  
6 forward here. Next we have Mr. Steve Detwiler,  
7 he's a whole community recovery planner with  
8 Miami-Dade County for the Office of Emergency  
9 Management, and he's responsible for the EOC  
10 Infrastructure Branch, the Public-Private  
11 Partnership Program, and the Recovery Program.  
12 Welcome Steve.

13 MR. DETWILER: Thank you. What I  
14 wanted to do is just kind of give a quick  
15 overview in terms of how the local government  
16 interacts with the Port Miami and also Coast  
17 Guard, U.S. Army Corps of Engineers, and also  
18 NOAA.

19 So my presentation will kind of deal  
20 with --- here goes. My presentation will deal  
21 with more like an overview of our port, which I  
22 know you toured yesterday, so you probably have a

1 pretty good idea of what goes into that. I'll  
2 kind of give you an overview of the emergency  
3 operation center that I work at, the drawbridge  
4 operations guide, which is one of our principal  
5 plans that we use with dealing with the port, and  
6 some of the lessons learned we had for Hurricane  
7 Irma, and then finally a little bit about a  
8 resiliency program for Miami-Dade, which I know  
9 you'll probably hear about later on from Jim  
10 Murley, our chief resiliency officer.

11 So a little bit of overview for the  
12 Port Miami --- oops, I keep doing that. Port  
13 Miami is actually part of the county. It's a  
14 county government agency, so the port director  
15 answers to the county mayor. Annually the port  
16 contributes about \$41 billion dollars to the  
17 economy. We --- the port also employs about  
18 324,000 people for most of south Florida.

19 It's also known as the cruise capitol  
20 of the world. We're very proud of that. 5.3  
21 million people annually come into the port for  
22 getting on cruises, and also receives about one

1 million tons of cargo annually. It's a one ---  
2 number one container port in the state of  
3 Florida.

4 To give you an overview for Miami Dade  
5 County, I work out of the office of emergency  
6 Management, so the emergency operation center is  
7 more or less our command and control facility for  
8 the entire county. It's a 22,000 square foot  
9 facility at fire rescue headquarters. It  
10 responds to anything from a hurricane to a  
11 terrorism event, to everything in between. We  
12 have three levels of activation. For Irma we  
13 were at level one for about --- almost two weeks.  
14 Level two is a partial activation where we have a  
15 lesser degree of an incident and we just need  
16 certain agencies there, and level three is what  
17 we're at right now. So we're just monitoring and  
18 seeing if anything's happening that we need to be  
19 worrying about.

20 EOC has about 200 network computers,  
21 we have redundant communication, several  
22 conference rooms. I can tell you for Irma we

1 were running out of space. We were busy. And  
2 Irma for us was a small storm. It wasn't as bad  
3 as it could have been thankfully.

4 To give you an overview of the EOC, so  
5 we have a number of different positions. We have  
6 our EOC incident commander, which is our county  
7 mayor. We have --- we of course incorporate  
8 incident command system into our operation, so  
9 I'm the infrastructure branch director. Right  
10 now we're also in recovery, so Irma is not done  
11 for me. I'm still going to be doing Irma  
12 probably for the next year or so. I'm also the  
13 recovery coordinator for the recovery operation  
14 center.

15 To answer one of the questions earlier  
16 in terms of private sector coordination, when we  
17 get into an operation we have our own ESF 18 that  
18 coordinates with the entire industry in terms of  
19 our private sector, in terms of our port, in  
20 terms of Miami River, which I'll talk about in a  
21 little bit. So we have that going on an also  
22 Carnival Cruise Line is a member of our ESF 18



1 partners.

2           So we're shipping --- we're sending  
3 out information to them on a regular basis, so we  
4 get into a disaster we have somebody at the desk  
5 from 7:00 a.m. to 7:00 p.m. daily, and they're  
6 sending out information, usually a couple times a  
7 day to make sure all of our private sector  
8 partners are informed, so that there's no hiccups  
9 or that they know what's going on --- what the  
10 county is going to be doing.

11           So Port Miami is one of our major,  
12 like I said, it's one of our major economic  
13 players. So it has a very critical part to play  
14 in the EOC. It has a seat in the EOC as well as  
15 Miami International Airport. Port director  
16 services on the mayor's executive policy group.  
17 So they're making the advice --- or they're  
18 giving advice to the mayor in terms of what the  
19 conditions of the county will be doing, what  
20 we'll be doing during disaster.

21           For me, of course, I said I'm the  
22 infrastructure branch director for Irma. Port

1 Miami is part of that branch. The infrastructure  
2 branch, we have a --- think of us as more or less  
3 --- we're the back up to make sure that the first  
4 responders can do their jobs. So worrying about  
5 whether or not power is coming back online,  
6 whether or not the water and waste water plants  
7 are operational, opening up roadways, clearing  
8 debris. So we're worrying about utility and  
9 infrastructure support needs for an activation.

10 For the EOC we activate for an  
11 exercise at least a couple of times a year. We  
12 have at least two exercises that are planned.  
13 That includes the Turkey Point Nuclear Power  
14 Plant exercise, and also the statewide hurricane  
15 exercise. And then we also do an exercise every  
16 year with our ESF 18 partners.

17 Talking a little bit about the  
18 Drawbridge Operations Plan. This is mainly our  
19 major issue in terms of when we deal with the  
20 Port. As some of you guys know, we have a lot of  
21 bridges in Miami Dade County. Miami River  
22 especially we have huge amount of bridges, and

1 most of them are drawbridges. That kind of ---  
2 we needed to have a plan to be able to facilitate  
3 opening and closing those drawbridges and locking  
4 them down because it directly impacts  
5 evacuations.

6 So we developed the Drawbridge  
7 Operations Plan a number of years ago. It's done  
8 in concert with the Corps of Engineer --- or I'm  
9 sorry, the U.S. Coast Guard. So we work very  
10 closely with the captain of the port from Miami.  
11 We also work with the Department of  
12 Transportation for the state. We work with Miami  
13 River Marine Group, which is mainly our tugs  
14 within Miami River. And also Port Miami and  
15 Miami Tunnel.

16 So in terms of what's going on, we  
17 have different phases when we activate the  
18 drawbridge operations plan. So it's kind of hard  
19 to see, and I apologize for that. Basically  
20 we're 72 hours out. We're starting to notify all  
21 the partners to say we have a storm coming in.  
22 We're going to start thinking about locking the

1 bridges down, start making your preparations.  
2 Forty-eight hours out we're notifying the bridge  
3 owners and the U.S. Coast Guard. Of course all  
4 of this is happening when we're working with the  
5 port.

6 So we're basing our operations on not  
7 only the severe weather awareness calls that the  
8 Coast Guard is conducting. We're also adapting  
9 our operations according to when the captain of  
10 the port is going to issue marine safety weather  
11 advisory --- or marine safety information  
12 bulletins.

13 So we have three different operational  
14 statuses for the drawbridge. There's modified  
15 operations where we're facilitating evacuations,  
16 we're keeping the bridges open. We're opening  
17 and closing them to also allow marine traffic out  
18 of the Miami River. That's one of the biggest  
19 things is getting the traffic out of there so we  
20 don't have boats that sink and then we have to go  
21 clear them out afterwards.

22 And then close operation where we're

1 locking the bridges down. So we already got all  
2 the boats out. Then locked operations is the  
3 bridges are locked, the crews are going back to  
4 their safe areas, and we're waiting for the storm  
5 to pass, the opening back up.

6 So I mentioned before, and the captain  
7 mentioned in terms of the marine --- we're --- of  
8 course depending on the captain and the port, so  
9 we're working very closely with them. So when  
10 they're on their SWA calls, we're also on those  
11 as well. And we're adapting our operations in  
12 terms of when the captain of the port issues, you  
13 know, port condition whiskey when they do X-ray  
14 and also, of course, Zulu, as well.

15 So we work very closely with the Coast  
16 Guard. We're at least talking to them at least  
17 once a day and the Coast Guard actually has a  
18 seat in the OC as well, so we work with them  
19 very, very closely.

20 So this kind of gives you an overview  
21 when I was saying about the Miami River. So  
22 you'll see up on the, you know, the number of

1 bridges right in the middle cutting diagonally  
2 across the county, that's the Miami River. So we  
3 closed that --- we had to get all the traffic,  
4 the boat traffic out, and we also had to get all  
5 the evacuations done. That --- a lot of that  
6 area is storm surge zones B and C. So that's  
7 when we have a hurricane coming in that's usually  
8 one of the areas that we were evacuating.

9 And then we also have the inner  
10 coastal water waves, those are the bridges that  
11 we worry about as well. So we close those  
12 usually in a --- trying to remember now, from a  
13 west to east perspective to make sure we get all  
14 the boats out in time. Like I said, for  
15 Hurricane Irma it was relatively good for us, I  
16 mean, it wasn't as bad as it could have been.

17 We were on the SWA calls prior to the  
18 storm on a daily basis. And then after the storm  
19 we had a state-wide port call with not only Port  
20 Miami, Port Tampa --- or Tampa's Port, Port  
21 Everglades. And they were giving us updates in  
22 terms of what they're going on, and also we're

1 providing updates in terms of what emergency  
2 management is doing. So we were aware of what,  
3 you know, of course Port Everglades for us is  
4 very critical in terms of fuel, so that's  
5 something we paid very close attention to.

6 Port Miami just going to give  
7 perspective. Port Miami went to Port Condition  
8 Zulu on Friday, September 8th, and we were  
9 completely reopened by September 13th. So  
10 probably about two days after the storm passed we  
11 were open partially. So that's a huge amount of  
12 work, and that could have only happened because  
13 we had a very seamless transition, seamless team  
14 between the captain of the port, U.S. Coast  
15 Guard, Miami District, NOAA, and also the Corps  
16 of Engineers. So they were working very  
17 seamlessly. They understood the necessity of  
18 opening the port as quickly as we could.

19 And then resiliency strategy, I know  
20 Jim Murley will kind of talk a little bit about  
21 this, but this is more of a project between the  
22 Miami-Dade County government, City of Miami and

1 City of Miami Beach. We're collectively known as  
2 Resilient 305. It's led --- county mayor is also  
3 a member of the City Leader Advisory Committee,  
4 which is part of the 100 cities initiative.

5 Right now Resilient 305 is starting  
6 our second tier a project, so after we're done  
7 with the second phase we'll be issuing the  
8 overall resiliency strategy. Emergency  
9 management is part of that effort. We're  
10 actually working with them in terms of post-  
11 disaster recovery issues in terms of long-term  
12 recovery because that flows very easily into what  
13 we do.

14 So they --- one of the things they  
15 identified for Resilient 305 is basically top  
16 shocks, and also top stressors. And basically  
17 stressors are disasters that have impacted us  
18 that kind of push the program and also our  
19 resources to the absolute limit. And then shocks  
20 are in terms of big disasters that have happened  
21 that have a regular --- I'm sorry. The stressors  
22 are like our infrastructure, and then our shocks



1 are our disasters. I always get those confused,  
2 sorry.

3 With that, is there any questions? I  
4 know I went through that pretty quick.

5 (No audible response.)

6 MR. ASLAKSEN: Panelists?

7 (No audible response.)

8 MR. ASLAKSEN: Okay. We'll Move  
9 forward here. Next, the Army Corps of Engineers  
10 here. We got Mr. Brian Brodehl as the chief,  
11 Surveying and Mapping Branch in the Army Corps in  
12 the Jacksonville District, correct?

13 MR. BRODEHL: Yes.

14 MR. ASLAKSEN: Yes, and so you've had  
15 some good job here. You got nine survey vessels,  
16 as well as a myriad of unmanned survey equipment  
17 and land survey instrument devices. That sounds  
18 like a great job.

19 MR. BRODEHL: It is, and I love it.  
20 Thanks, Mike. I see I'm last here before lunch,  
21 so I'll keep this brief, I assure you. I don't  
22 have a pretty PowerPoint presentation, so you

1 just get my pretty face. I'm sorry about that.

2 A quick background on what the Corps  
3 of Engineers does, I mean, I'm only in the survey  
4 side of the house. So I'm only going to talk  
5 about surveys, and my perspectives on those. I'm  
6 not going to talk about the myriad of other  
7 things that the Corps of Engineer does for  
8 emergency operations and response for these  
9 storms, because that just is a big broad hairy  
10 beast.

11 So what we do here is --- in a regular  
12 basis day-to-day operations we do federal  
13 navigation surveys, or federal harbors, the  
14 authorized harbors and only those, that's the  
15 extent of our mission. So we'll do the condition  
16 surveys of the harbors, and then we'll do the  
17 dredging contract support surveys. So that's our  
18 main mission. We do other things, like, we'll do  
19 wreck removals, a search and debris removals for  
20 the Coast Guard in support of them and maybe the  
21 Navy.

22 We get into other things, like, maybe

1 we'll do environmental protection, coastal storm  
2 damage monitoring, flood risk management,  
3 national security through the Navy and the  
4 Marines. So we do a lot of different things with  
5 our survey boats, and that's really what I  
6 handle.

7 Now, as far as, you know, working with  
8 NOAA, on a normal basis our primary mission is to  
9 get NOAA survey data so they can use in their  
10 charting operations. So that's something we do  
11 throughout the year, and we have a special  
12 program the Corps Engineers has set up called  
13 eHydro where we push all our data, and NOAA will  
14 take that and use it for their business  
15 practices.

16 And then we also do the storm planning  
17 with NOAA, and I call it --- we even get involved  
18 with the --- it's a road show that Kyle will  
19 attest to, and we participate in that. We'll go  
20 around and talk to the Coast Guard various  
21 operations, and various districts, and let them  
22 know that what are our capabilities, the extent

1 of those, and what we can do to support, and what  
2 changes, what new equipment, and stuff like that.  
3 So just to keep our relationship with the Coast  
4 Guard and the discussions going off season.

5 And so then we get in more into the  
6 storm situation. So under normal conditions we  
7 have, you know, a hand full of boats and  
8 equipment. And for 95 percent of the time that's  
9 great. We can do all of our harbors and ports  
10 and everything else without issue, we can handle  
11 it.

12 Now, when you start getting into post-  
13 storm response that's a completely other issue  
14 and I sort of look at it like, you know, when you  
15 got a big storm like Irma, you're putting out a  
16 house fire with buckets of water. We only have  
17 so many resources, and that's what we have so we  
18 kind of bring that to bear to support the storm  
19 response. Well, that's why it's --- it's most  
20 important that we get our other partners, such as  
21 NOAA and, you know, other districts like maybe  
22 Mobile or Savannah, whomever we can get to bring

1 to the table to help us get these ports open.  
2 Everybody's got their missions and their  
3 workload, but we do what we can because we are  
4 stretched so thin.

5 And frankly, from my perspective,  
6 running the survey operations, I don't really  
7 care, you know, who gets there first, you know,  
8 we're not territorial in our operations. If NOAA  
9 can get to a channel first and get it surveyed,  
10 great, you know, we'll go do another one. So it  
11 spreads out the resources and, frankly, under  
12 Irma we could not have been successful without  
13 NOAA's support in there. And then the support of  
14 some --- we used AE Contractor, we used Mobile  
15 District, and even, I think, in Tampa we used the  
16 pilot --- the port had surveyors. They  
17 participated in clearing that channel, because,  
18 you know, those are --- yes, Tampa Harbor is  
19 huge.

20 So right off the bat we probably had  
21 20 surveys requests that came in to my office to  
22 get done immediately. Some of those came from

1 the Coast Guard, and some of those came from our  
2 navigation program manager. Hey, get all these  
3 done, right. So 20 surveys is about probably 75  
4 percent of what we would do in an entire year,  
5 over the course of a year, right?

6 So we're told to do all those  
7 immediately, so you can see it's putting out a  
8 fire. But the reality is in post-storm, as I see  
9 it, we are really --- we're there to support the  
10 captain of the port who are trying to open these  
11 channels, and so commerce can flow and the cruise  
12 ships and all that can get in.

13 So there's a lot of --- we had a lot  
14 of help from our internal command staff. But we  
15 really try to be responsive to the Coast Guard's  
16 needs, and, you know, so if. You know, if captain  
17 Allen over here is happy then basically I'm happy  
18 and we're happy. So we try to keep her  
19 satisfied. And that really goes to the  
20 improvements we've seen over the last few years,  
21 last couple of events of the communication that  
22 we've had between all of our offices. And we

1 kind of started out with Marie a little bit. We  
2 had --- it was sort of a learning exercise,  
3 because it's been, you know, 10 years or so since  
4 we had ---

5 (Cell phone ringing.)

6 MR. BRODEHL: You want me to sing? I  
7 can sing too, but --- All right. Well, anyway,  
8 everything else but what the captain wants is  
9 kind of just noise out there, so we cater to what  
10 they have. And we actually have --- I have an  
11 employee that works for me who is 100 percent  
12 resigned to support Coast Guard operations, and  
13 to work with NOAA, and coordinate the operations  
14 during the year, and then especially during the  
15 storm response. So that is her --- her sole job  
16 is to be on those calls, answer questions, make  
17 sure that we understand what everybody wants, the  
18 priorities and requirements are fully understood  
19 and communicated.

20 So, now, I'm not going to really talk  
21 about --- specifically about Maria. I think  
22 Captain Allen covered that pretty well. I really

1 feel for NOAA, because they had a much larger  
2 mission in the islands than we did. We only have  
3 four authorized projects in Puerto Rico and one  
4 in Saint Croix, so much smaller role, but NOAA  
5 really did a standout job there, and they did a  
6 lot of work. We were --- we did go down on the  
7 Coast Guard vessel too, and so that was a bit of  
8 a challenge, and it just got worse from there.  
9 Once on island. The conditions were terrible,  
10 there was no fuel, accommodations sparse, and the  
11 one thing we bought afterward, we bought a bunch  
12 of chainsaws, and we now are going to train our  
13 surveyors to be able to cut trees. So that is a  
14 lesson learned. So I now have a lot of chainsaws  
15 on my inventory list.

16 Now, you know, that's just general.  
17 I want to get into some good, and some bad, or  
18 what went well. And as was stated before, the  
19 communication was excellent between all the  
20 parties, all the phone calls. They were staffed,  
21 they were --- everybody I think was more or less  
22 on the same page. I don't know that it could



1 have been a lot better, so very pleased all  
2 around with that.

3 The working relationships with the  
4 Coast Guard --- because what we're doing now ---  
5 when we show up with a boat we are grabbing a  
6 Coast Guard somebody, whoever's available. And  
7 they are riding our survey boats. And I don't  
8 know, they may be doing with NOAA boats too, but  
9 --- so they're on our boats, and we're trying to  
10 clear the channels immediately.

11 You know, gone are the days where we  
12 collect a bunch of data, send it back to the  
13 office in Jacksonville, they do their mapping  
14 thing, we send it back out, you know, days are  
15 going by, right? So we get the Coast Guard folks  
16 on the boat, we make an assessment right there,  
17 then they can call the captain for --- say it  
18 looks good to me, you know, bring them in , open  
19 it, whatever you got to do.

20 So that's --- that was a sea change  
21 going, you know, starting last year. And the  
22 coordination with NOAA, which, you know, we do

1 pre-storm, but you still have to continue to do  
2 it during storm and after storm about who's got  
3 what assets, what capabilities and where they  
4 are. And that's going to dictate who's going to  
5 go where, and who's going to accomplish what ---  
6 what mission. And that went really well, I mean,  
7 I don't know. I just am very, very happy with  
8 the way it went.

9           And this is probably the most  
10 important I think. What I notice is the  
11 dedication of our workforce, to work at all hours  
12 of the day or night, to go wherever they're  
13 asked, whenever, was just an amazing amount of  
14 self-sacrifice demonstrated to support Florida,  
15 and Puerto Rico, and the Virgin Islands. I mean,  
16 it's just truly, truly amazing and impressive,  
17 and I'm very proud of my people who went above  
18 and beyond to help out and to support, you know,  
19 our partners and stakeholders.

20           And the willingness of other agencies  
21 and organizations to get involved, I mean, I  
22 called up Mobile District, they got a boat down

1 there. We were able to get an AE contractor  
2 there. NOAA was --- like in Tampa, NOAA was in -  
3 -- we had probably five different survey  
4 organizations in Tampa Harbor at one time, I  
5 mean, doing work. It's so huge. It's nothing we  
6 could do all by our self. It normally takes us a  
7 year to survey Tampa Harbor. So the willingness  
8 of everybody to help out was fantastic, you know,  
9 all the work got done, nobody got hurt, no  
10 injuries, that was a big plus to my point. We  
11 were, you know, we had some situations where  
12 there is a potential for that, but it never  
13 happened, so we're going to look at that and  
14 review that to see where we can improve the risk  
15 down the road.

16 And, you know, there is a silver  
17 lining out of all this. You do these disaster  
18 responses and they do happen, but there's a lot  
19 of money that tends to come to the table after  
20 these things. So we are going to probably get  
21 some new equipment and some boats that will  
22 better help us support storm response after the

1 fact and going forward. So that's --- that's,  
2 like I said, that's a little bit of a silver  
3 lining that comes out of it, but.

4 Now, that --- those are some of the  
5 good things. Some of the things that were not so  
6 well we did take some unnecessary risks with some  
7 of our people and equipment, and maybe that's our  
8 communication issue, or not, but we really want -  
9 -- safety of our people is paramount. We don't  
10 want to put them in harm's way. And if our  
11 equipment gets damaged, our boats get damaged we  
12 can't do anything. So that stuff has to be taken  
13 care of upfront.

14 There may have been some unrealistic  
15 expectations out there floating around, or ---  
16 and maybe some less than stellar decision making  
17 from the leaders, but, you know, we work with  
18 that, and we try to educate and train in what our  
19 capabilities are. So that's just a constant  
20 discussion we need to have. And it seemed like  
21 maybe there were --- you know, in our  
22 organization there's a lot of cook --- head cooks

1 in the kitchen and trying to, you know, convince  
2 them that that doesn't work well. We need a very  
3 need a very few number of leaders making the call  
4 out there.

5 And then there were many, many, as I  
6 noticed sort of off script decisions going, you  
7 know, and that absorbs a lot of our energy and  
8 time, and maybe there's not as much little, or  
9 maybe no gain from those on the fly decisions.  
10 And I realize that they're going to happen,  
11 they're necessary in emergency situation, but I  
12 think if we can --- if we can come up with a  
13 plan, and more or less stick to the plan, I think  
14 we'll be better off.

15 You never know where the storm is  
16 going to track at the end, so you can't plan for  
17 every scenario. But if you have a good basic  
18 plan, and you stick to it I think you'll be okay.  
19 But, again, some of the leaders like to get off  
20 script and, you know, it kind of throws us for a  
21 whirlwind. We're not sure what to do next,  
22 because we're off script.

1           And another lesson is that the lodging  
2           and fuel is not available in something like Irma.  
3           Our --- all of our expectations are maybe that a  
4           storm crosses the state going east to west so  
5           there's a smaller impact. You get an entire  
6           peninsular impact like this, you know, there were  
7           no hotels, our guys were sleeping out of trucks.  
8           It's just the way it was. And the fuel was  
9           scarce, and kudos to Port Everglades. We were  
10          out of fuel at one point and, you know, they  
11          showed up and said here, here's some fuel. We  
12          filled up our trucks, and we were able to  
13          continue our mission. So, you know, Port  
14          Everglades is a great, great help there, so.

15                 Finally, you know, the --- we are what  
16          we are. We have a base set of personnel, and  
17          equipment, and boats. So that's our capability,  
18          so we're going to have to continue to rely upon  
19          others for these storm events. And everybody's  
20          willingness to participate or help get the  
21          mission done.

22                         Regardless of who does it I think

1 that's a real --- that was good and I think we  
2 can even improve upon that. I don't know why I  
3 had it under the what to do better. But I think  
4 there's maybe a little room for improvement  
5 there, but all in all this past season went very  
6 well, and I hope we don't have to go through it  
7 again anytime soon, but I think if we do we're  
8 going to be very well prepared after going  
9 through last year. We just want to make sure we  
10 don't forget the lessons we learned.

11 So After Action Reports are key in our  
12 district, so, you know, it's a big topic. We're  
13 going through those constantly getting ready for  
14 the next hurricane season. So I think the Corps  
15 and our group, my group specifically, will be  
16 ready for the next storm or storms as they come  
17 in. So that's all I have. Thank you.

18 MR. ASLAKSEN: Thank you, Brian. Any  
19 questions from the panel?

20 (No audible response.)

21 MR. ASLAKSEN: Since this will probably  
22 be my last time being moderator, I'm going to ask

1 one last thing, especially at lunch. You know,  
2 I've heard some things, opening the port quicker,  
3 portable systems, imagery being important,  
4 partnering, blue skies planning. And, again,  
5 this is an advisory panel. These folks are going  
6 to make recommendations up to the administrator.  
7 Maybe just one by one I would hand you the mic,  
8 and if you had either official or unofficially  
9 things that you think that know to do better,  
10 and/or look to the future. Please provide that  
11 comment for the panel to take in consideration as  
12 they go forward and see how we all can do this  
13 better in the future.

14 And as well as we have private sector  
15 partners here that should be a part of this  
16 discussion.

17 MEMBER SAADE: Can everybody give their  
18 opinion if things are back to normal now? The  
19 combination of Harvey, Irma and Maria happening  
20 back to back to back, would that make it  
21 impossible? And relative to Captain Allen, I  
22 want to applaud you for the action that the Coast



1 Guard took to suspend some of the rules and  
2 regulations. And then just how does that apply  
3 to something like the Cajun Navy, which is kind  
4 of a hybrid of all of that? Thanks.

5 CHAIR MILLER: Can I ask that we be  
6 very brief, because we are now 25 minutes and we  
7 have to have a public comment period. So we're  
8 very short on time.

9 CAPT ALLEN: The Cajun Navy was a whole  
10 new endeavor, which we supported actually. They  
11 helped us out quite a lot. With regard to  
12 assets, definitely NOAA missed, more NRTs are  
13 needed, all-encompassing ships, because we're  
14 going to have to do humanitarian aid I'm sure in  
15 our future, and you'll be called upon for that.  
16 I can't --- as well as Army Corps Teams  
17 resources. It's just essential. I also think,  
18 and I wrote down here that I am going to invite  
19 NOAA and Army Corps so we will start a plan,  
20 hopefully, in the very near future prior to this  
21 hurricane season to coordinate things even better  
22 than we did.

1                   CAPT STEPHENSON: From our perspective,  
2 for the pilot's perspective, in Florida the ports  
3 are back to normal. Thing I would say is we do  
4 have the pilot boats in the port, and we're more  
5 than happy to have them used as vessels of  
6 opportunity by any of the government agencies.

7                   MR. VAUGHAN: To address Mike's  
8 question, you know, I just want to hammer home  
9 the point of a single point of failure. We've  
10 talked about that whether it be the buoys or the  
11 sensors, but from the imagery perspective because  
12 of what it provides, you know, just please,  
13 please don't forget that we can't lose that kind  
14 of a capability that resource, and more than the  
15 plane, it's the services and the delivery of the  
16 imagery and the team. Are we back to normal? I  
17 don't know, you know, we're actually doing a  
18 hurricane exercise. I guess let me just take a  
19 moment here to speak to that FEMA routinely does  
20 large exercises.

21                   Our next one is a category three  
22 hitting the East Coast. National level exercise

1 2018. So we'd encourage you to either reach out  
2 to me, and I'll make that conduit, but we're  
3 going to do it again in about a month, so.

4 CAPT STEPHENSON: Well from what I'm  
5 hearing, the resources relative to NOAA, the  
6 Army, are critical, so it's something to think  
7 about. I was kind of interested to hear whether  
8 there was a way to involve the private sector  
9 more in this with specialized training and  
10 capability to help the Army Corps and the other  
11 entities beef up in times where the resources are  
12 really tight. Now that would have to be  
13 sanctioned by the authorities, proper training,  
14 but involve them early and see if you can involve  
15 the private sector to help augment when things  
16 are really, really tight in resources.

17 From our business, our business is  
18 back to normal. The only lingering issue we have  
19 is perception people have about some of the  
20 islands. It's not reality. I can tell you that  
21 our --- we measure guest satisfaction very  
22 closely of how people like their destinations.

1 Our scores of satisfaction now are higher than  
2 they were before the storms, but people's  
3 perception are, yes, do I really want to go down  
4 to those areas of the Caribbean Islands. That's  
5 the only thing so we're working hard on that.

6 MR. DETWILER: In terms of back to  
7 normal for Miami Dade Emergency Management, we're  
8 pretty much back to normal. We're still dealing  
9 with Irma issues in terms of reimbursement, and  
10 overall long-term recovery. And, of course,  
11 Maria we also have a lot of evacuees that came  
12 from Puerto Rico and the Virgin Islands up here  
13 to Florida, and they are even in the process of  
14 getting assistance here, or going back home at  
15 some point.

16 I like the idea in terms of maybe  
17 doing an exercise that gets more into this detail  
18 about opening and closing a port. Like I said,  
19 for Irma we got lucky. We got the ports  
20 reopened. We had a very good team down here, but  
21 there's always that worse-case scenario, and I'd  
22 really like to see how that played out in terms

1 of how we all work together during a disaster,  
2 both at the state and also the federal level, and  
3 the local level.

4 I can just say NOAA, from our  
5 perspective, did really well. We were very  
6 pleased with the federal response. We saw for  
7 Hurricane Irma everything from FEMA on down.  
8 Obviously we weren't a top priority. We weren't  
9 as hard hit as the Keys were, or some of our West  
10 Coast --- or Gulf Coast partners, and also Puerto  
11 Rico and Virgin Islands, but for our perspective  
12 we are very pleased with the response.

13 MR. BRODEHL: I'm just really grateful  
14 for the support NOAA gave us with their NRT and  
15 their MIST on the islands and in Florida,  
16 supporting some of the federal projects that we  
17 just couldn't get to, I mean, people like to say  
18 that they're our responsibility because they're  
19 federal authorized channels, but there is a limit  
20 to what we can do and provide. So it's good to  
21 have NOAA there. If they just keep developing  
22 that and maintaining that system --- those

1 systems that would be good for us, and I think  
2 for the Coast Guard as well, so --- And, you  
3 know, we're still supporting post-Maria work down  
4 in Puerto Rico. We're surveying some damns down  
5 there with a number of hydrographic survey  
6 requirements. And then, you know, back in the  
7 states we were normal, you know, within three,  
8 four weeks after Irma went through, because it's  
9 really hard and fast and then we're sort of done.

10 So, --- and then the Corps of  
11 Engineers has a number of missions with power and  
12 debris still going on in Puerto Rico, so that's  
13 pretty much about it.

14 MR. ASLAKSEN: Well, thank you, and I  
15 think there ought to be a round of applause for  
16 this long, long panel, so thank you.

17 (Applause.)

18 MR. ASLAKSEN: Joyce, we'll turn it  
19 back over to you.

20 CHAIR MILLER: Okay. Thank you all.  
21 We really appreciate all the expertise, and I  
22 wish we had more time for questions, but we must

1 move on. It's now time to allow questions and  
2 public comment from our audience here today. If  
3 there are any questions there's a --- Nikki has a  
4 microphone. Are there any questions from the  
5 audience?

6 (No audible response.)

7 CHAIR MILLER: I understand we have no  
8 questions from the webinar at this point.

9 (No audible response.)

10 CHAIR MILLER: No. Okay, the HSRP will  
11 adjourn and go into the lunchroom. This is a  
12 working lunch for us, and we will return at 1:30  
13 and --- for the afternoon session. Thank you.

14 (Whereupon, the above-entitled matter  
15 went off the record at 12:33 p.m. and  
16 resumed at 1:50 p.m.)

17 CHAIR MILLER: Good afternoon. Our  
18 speakers for this afternoon are our leaders from  
19 the National Ocean Service. And in the schedule  
20 it says that Richard is going to go first, but in  
21 fact Juliana is going to go first.

22 So I will -- Juliana Blackwell is the

1 Director of the National Geodetic Survey. She is  
2 responsible for financial, administrative and  
3 programmatic performance of the lead federal  
4 agency for positioning activities in the nation.

5 She serves as chair of the Federal  
6 Geodetic Control Subcommittee of the Federal  
7 Geographic Data Committee, exercising government-  
8 wide leadership in the development and  
9 improvement of geodetic surveying specifications,  
10 methods, instrumentation and data transfers.

11 Juliana?

12 MS. BLACKWELL: Thank you, Joyce. Can  
13 you all hear me? Okay. Fantastic.

14 All right. Well, for this meeting's  
15 presentation on NGS activities, what I'd like to  
16 do is focus on one project that we have currently  
17 underway as part of our modernization effort.

18 And so today's talk is going to be on  
19 our foundation reference stations or our plan to  
20 develop this foundation reference station  
21 network.

22 What I'm going to go through in the



1 next 10, 15 minutes is just an overview of our  
2 CORS network, which many of you have heard me  
3 mention before, continuously operating reference  
4 stations, and the plan to modernize that to  
5 something that is a more federally owned, managed  
6 network that supports and connects us better to  
7 the international reference system.

8 And I'm going to try not to go into  
9 too much technical detail, but I would like you  
10 to at least understand the spacing of the  
11 stations that we have and what are plans are for  
12 the future and ask for your support and comments  
13 on what we at NGS are planning to do with our  
14 other federal partners.

15 So I usually mention our 10 year  
16 strategic plan. I want to just point out that  
17 what I'm talking about today is part of our  
18 current plan. It will also be part of our  
19 revised plan that we have underway this year  
20 that's going to get us to 2023 in this whole  
21 modernization effort.

22 For those of you who are new to the

1 panel or are not as familiar with the National  
2 Spatial Reference System, you will have plenty of  
3 opportunities to hear me talk more about this.  
4 And I would be happy to point you to some  
5 informational material that will help you  
6 understand the basic concepts of the NSRS and  
7 what that provides.

8           But just for the record, the NGS  
9 mission is to define and maintain and provide  
10 access to the National Spatial Reference System  
11 in order to meet our nation's economic, social  
12 and environmental needs.

13           What the National Spatial Reference  
14 System is, and, you know, when you think about it  
15 in your mind, it's a national coordinate system  
16 that we maintain working with our partners to  
17 make sure that we have foundational survey  
18 information, latitude and longitude, elevation,  
19 gravity information that people can use as  
20 starting points for all of their surveying,  
21 mapping, geospatial needs.

22           And so we are it for the nation as far

1 as providing those accurate starting points and  
2 keeping that information fresh and available to  
3 the public.

4 So today's talk is focusing on Goal 2  
5 of our 10 year plan, which is to modernize and  
6 improve the National Spatial Reference System.  
7 In particular one of the projects under Goal 2 of  
8 the plan is to replace the North American Datum  
9 of 1983.

10 So I know many of you understand  
11 datums from the last presentation I gave about,  
12 you know, how high things are and what you're  
13 referencing to.

14 This is more on the horizontal side of  
15 replacing the existing datum for the nation,  
16 which is, again, NAD 83, which if you consider  
17 the date when it was developed, it was pre-GPS.  
18 So when we developed NAD 83, it was before we  
19 were using GPS for positioning, for surveying, et  
20 cetera.

21 So we know that we did a great job  
22 with it with the technology that we had at the

1 time. But we also know that it's got, you know,  
2 we know a lot more about the earth now than we  
3 did before.

4 So we're taking a fresh look at  
5 updating the North American Datum of 1983 and  
6 we're going to be calling it reference frames.  
7 And I'm going to get into that in a little bit.

8 But the bottom line is here on the  
9 screen, you see the passive control, the marks in  
10 the ground, how we did things historically prior  
11 to GPS. We still use marks in the ground.  
12 They're still important. But the advent of what  
13 we're doing for the modernization effort is  
14 really going to be focused on our continuously  
15 operating reference station's CORS.

16 This is going to be the new foundation  
17 of the 2022 reference frames that we're  
18 developing. Now the CORS network, and I'm going  
19 to go really fast through this, but the CORS  
20 network is a partnership. Okay?

21 There are about 2,000 stations that  
22 are currently in the NOAA managed, NGS managed

1 network of CORS. You see them all here on the  
2 map? There are over 200 organizations who own  
3 these stations, other federal and state  
4 government. There's academic institutions.  
5 There's private sector.

6 NGS receives data from all of these  
7 stations on a daily, hourly basis and manages  
8 that data, computes it, checks it, provides  
9 statistics on it and makes that data available  
10 back to the public for them to be able to use for  
11 their surveying or scientific endeavors.

12 These CORS stations are really being  
13 used now as the primary, the best of the best  
14 stations as far as the NSRS goes. But if you  
15 look at it in a little bit more detail you can  
16 see on the screen here the actual stations that  
17 are owned by NGS are really very few. Okay?

18 So that's just a highlight. And  
19 there's a few little clumps here and there, but  
20 those are the stations that are NGS owned and are  
21 operating right now.

22 And as you can see, there's not really

1 a good dispersion of those. And a lot of those  
2 stations were installed to certain criteria but  
3 are not necessarily what we would call the  
4 geodetic gold star type of station that we would  
5 like to have for our framework.

6 So what we are planning on doing by  
7 2022 is, again, modernizing the National Spatial  
8 Reference System and using CORS to become more of  
9 a foundational component to the NSRS.

10 Our gold stars are our starting points  
11 for positioning versus using the benchmarks as  
12 the underlying thing to create the datums and to  
13 be able to position from. The marks are not  
14 going away, but what we're going to be relying on  
15 in the future are the CORS themselves.

16 I also want to point out that part of  
17 our role is not only to develop this for the  
18 nation, but to make those connections to the  
19 international system. And that's what the second  
20 bullet is talking about.

21 The International Earth Rotation and  
22 Reference Systems Service, or IERS, and the

1 International Terrestrial Reference System will  
2 continue to be the worldwide standard for our  
3 reference.

4 So everything is relative, right? So  
5 we are positioning ourselves as a nation relative  
6 to this international system. And we want to be  
7 able to have stations that are at the highest  
8 level and can contribute to that international  
9 system as well as serve our nation.

10 So we're going to continue to support  
11 the ITRF. We do that now. We are very engaged  
12 with ITRF activities through the International  
13 GNSS service and the reference sites that are  
14 available.

15 And I know that's a lot, but I just  
16 want to make sure that you understand that we are  
17 trying to make sure that we are world class, and  
18 we are the best at doing what we do. And we have  
19 the stations to support that for the NSRS.

20 So this is just a quick picture of  
21 those stations which are the International GNSS  
22 Service Network. So if you look there and you

1 see what I just highlighted, those stations that  
2 are NGS owned that are part of the international  
3 network.

4 And, again, the point that I'm trying  
5 to make is we really do not have enough or, you  
6 know, we don't have enough, we don't have the  
7 right spacing to make this framework viable.

8 So the plan is to continue to work  
9 together on the four different plates that we  
10 support. Because we think about the North  
11 American datum, but we really are serving  
12 stakeholders on four different tectonic plates.

13 And so when we do this for 2022, we're  
14 going to make sure that we look at each of those  
15 plates and develop a reference frame for all of  
16 them, independently, that can be used by not just  
17 us in the United States, but others who are  
18 interested and are part of Pacific plate or the  
19 Mariana plate or the Caribbean plate.

20 So we're doing this. We're doing this  
21 with a lot of international partners, too.  
22 Whether or not they adopt it, it's up to them.



1 But when we do it, we want to do it right, and we  
2 want to make sure that we have the best  
3 information available.

4 There will be four different  
5 terrestrial reference frames that will be  
6 developed. I'm not going to go into a lot of  
7 detail on that. I just wanted to give you the  
8 big picture view of the areas that we're covering  
9 with the modernization of the NSRS and talk about  
10 the foundation CORS that we are also looking to  
11 establish in all of these areas.

12 So in order to get to this foundation  
13 CORS network which currently exists a little bit,  
14 we need to put a lot of effort into building  
15 these stations or improving the sites that are  
16 already available to us.

17 The first thing that we want to do is  
18 make sure that we can co-locate these  
19 foundations, these new foundation CORS sites, in  
20 areas where there's already existing  
21 infrastructure with other geodetic techniques,  
22 space-based techniques, VLBI, SLR, DORIS.

1           If you don't know what those mean, do  
2 not worry about them. I'm not going to go into  
3 in detail right now. But from a geodetic  
4 perspective, those are the other ways that we can  
5 do measurements. And we want to be able to put  
6 our foundation CORS, if possible, where those  
7 other observations are actually taking place.

8           So I'm not going to go into too much  
9 detail about the bottom of this slide here, but I  
10 want to show you where these other space-based  
11 technologies, techniques are already happening.

12           These are primarily NASA owned sites  
13 which have these DORIS, SLR and VLBI observations  
14 that are occurring now. So what we are doing is  
15 we are looking at this as these are places that  
16 we know that we want to establish foundation CORS  
17 sites that NGS either owns or works with other  
18 federal agencies, through interagency agreements,  
19 to ensure that these are long lasting, high  
20 quality stations that would have GNSS equipment  
21 at them that would be part of the new foundation  
22 CORS for the future, for the modernization

1 effort.

2 So the same sites are here in yellow.  
3 In addition to where those existing space-based  
4 technologies already exist, we know that we need  
5 to add some other stations to the mix in order to  
6 get full coverage out of 800 kilometers facing  
7 across the United States and our territories.

8 We also know that we need a minimum of  
9 three foundation CORS for each of the plates that  
10 we are creating reference frames for. So, again,  
11 this is just a very high level snapshot of what  
12 we're trying to do, the stations that we're  
13 trying to build. And I just wanted to show you  
14 visually where we're looking at the sites.

15 I wouldn't worry too much about the  
16 different colors, but you can see where the  
17 coverage is planned. You can also see in the  
18 oval there is the Caribbean plate.

19 And right now, we are still looking at  
20 identifying some other stations because we need  
21 at least three in order to do what we need to do  
22 geodetically to make sure that we have an

1 accurate reference frame for the Caribbean plate,  
2 which basically that means we're going to be  
3 looking at other countries and other nation  
4 islands to be able to get additional sites for  
5 the Caribbean plate.

6           So how are we going to do this?  
7 What's the plan? Well, first of all, the good  
8 news is when we looked at all those sites that  
9 are available, the NGS owned sites, the partner  
10 CORS sites, the other space-based techniques, the  
11 DORIS, VLBI, SLR sites, what we found is that if  
12 we break this into three different phases, using  
13 Phase 1, there are 28 existing CORS that we can  
14 convert and adopt into our foundation CORS  
15 network.

16           Some of those are NGS owned. Most of  
17 them are not. But the good news is there's  
18 already 28 stations that are out there and that  
19 we could very easily create into foundation CORS  
20 network stations.

21           We could also upgrade about seven of  
22 our existing CORS to meet the requirements to be

1 GNSS. And what that means is -- GNSS is just GPS  
2 and other satellite systems that are put up by  
3 other countries. So Phase 2 would be upgrading  
4 seven of the existing CORS to GNSS to meet  
5 foundation CORS requirement.

6 And lastly, and probably the most  
7 onerous of it, would be to construct  
8 approximately eight new sites in order to fill  
9 out the rest of the network. So it's manageable,  
10 but it is something that we need to get started  
11 on right away in order to be able to meet our  
12 2022 requirements for the modernization effort.

13 I'm just going to throw this in here.  
14 I think this is my last slide. The socioeconomic  
15 benefits of having a CORS network and having one  
16 that NGS has more ownership and control of is  
17 something that is critical for the NSRS of the  
18 future.

19 The economical scoping study that we  
20 had done values the CORS at a net present value  
21 of \$18-1/2 billion at a 15 percent growth rate.

22 I'm not an economist, but we had

1 socioeconomic studies done on this several years  
2 ago. And we're going to have another scoping  
3 study done here soon so that we can update these  
4 numbers. But we are seeing continued growth in  
5 the CORS network, the partner network, at 22  
6 percent annually since 2003.

7 We know that there's a lot -- that the  
8 CORS stations are being used to support a number  
9 of NOAA products and services. We've got a list  
10 of 35 different NOAA products and services  
11 currently. And that we have two mission goals  
12 and six mission service areas that the CORS  
13 supports.

14 So it's a critical component. We're  
15 not proposing that we do anything to eliminate  
16 any of the partnering CORS. So the 2000 stations  
17 are still going to be supported, but out of that  
18 we want to have a foundation subset that is going  
19 to be the highest caliber CORS that is possible  
20 for the NSRS. And with that, my time is up.

21 CHAIR MILLER: I think we've got time.  
22 Are there any questions for Juliana? Gary.

1                   MEMBER THOMPSON: Juliana is going to  
2 get tired of hearing me asking this question, but  
3 any flexibility in the 70 kilometer rule or is  
4 still?

5                   MS. BLACKWELL: Right now nothing has  
6 changed with the 70 kilometer rule. So we put  
7 some guidelines out there. And I guess we would  
8 say that they are not really guidelines any more.  
9 They are sort of requirements.

10                   If you want to add new stations, we're  
11 really looking at -- to add to partner CORS  
12 networks, those areas that are currently  
13 underserved, the areas that are outside 70  
14 kilometers of an existing site.

15                   I know some states have a lot more and  
16 would add to it, if they could. But we're really  
17 trying to manage the existing network with the  
18 resources we have and not bring in more within  
19 the 70 kilometer spacing.

20                   MEMBER THOMPSON: So I understand  
21 about the new ones. What my concern and many  
22 other states is is the ones that are existing and

1 we have to move them to 50 feet away. And then  
2 that becomes a new CORS and you all won't accept  
3 it so because it's within 70 kilometers.

4 MS. BLACKWELL: Gary, I would say at  
5 this point, until we can get a better handle on  
6 managing the existing network that we're probably  
7 not going to make any major changes in our  
8 requirements right now.

9 But we are working to get a new CORS  
10 program manager and get a whole refresh of the  
11 CORS program itself. And so I will certainly  
12 take that into consideration when we do a refresh  
13 of how we are managing the partner network.

14 CHAIR MILLER: Other questions? I  
15 guess -- okay, please.

16 MR. RICE: Growth rates that you have  
17 on the second to last line, were those the annual  
18 growth rates?

19 MS. BLACKWELL: I'm sorry. I probably  
20 did say annual, didn't I?

21 MR. RICE: Well, I didn't see it up on  
22 the slide. I'm just curious if it was --



1 MS. BLACKWELL: I think, well, we  
2 continue to get new stations in every year and I  
3 would say, I guess, 22 percent growth since 2003  
4 --

5 MR. RICE: I'm just going to restate  
6 my question.

7 MS. BLACKWELL: CORS products and  
8 services and associated usage have grown at a 22  
9 percent rate since 2000. So it's not just the  
10 CORS network.

11 A lot of people use the CORS data for  
12 processing other projects or submitting data  
13 through our online positioning user service. And  
14 so that continues to grow and it's some of the  
15 metrics that we report up to NOS as to, you know,  
16 how many people are using the CORS network for  
17 positioning, for control for their projects and  
18 processing of their GPS data.

19 So the CORS network itself continues  
20 to take in new stations. Some stations get  
21 decommissioned because they're not supported by  
22 their hosting organization. So there is change

1 over time. But for the most part when people  
2 establish a CORS station, they continue to keep  
3 it maintained and have it in service for decades  
4 if not forever if possible.

5 I don't know if that answers your  
6 question, but I can follow-up with some details  
7 with your later, Jim.

8 MR. RICE: Sure. One quick follow-up.  
9 At Phase 3, which you said was going to be the  
10 most onerous section of your project for  
11 upgrading to the foundation CORS network. You  
12 said there were going to be eight new stations.

13 MS. BLACKWELL: Yes.

14 MR. RICE: Are those eight new  
15 stations going to be solely constructed by NGS or  
16 are those also going to be --

17 MS. BLACKWELL: Yes. Right now it  
18 looks like those will be eight stations that we  
19 would construct with our funds.

20 CHAIR MILLER: Other question? Okay.  
21 Our next speaker is going to be Rich Edwing,  
22 Director of NOAA's Center for Operational

1 Oceanographic Products and Services, better known  
2 as CO-OPS.

3 Rich has held many positions of  
4 increasing responsibility within NOAA. He  
5 oversees the 24/7 operation of providing physical  
6 oceanographic information to mariners and other  
7 users.

8 He also serves as an advisor to the  
9 American Association of Port Authorities, Harbors  
10 and Navigation Committee. Rich?

11 MR. EDWING: Thank you, Joyce. So let  
12 me just go to my next slide. So I think you're  
13 all familiar with the National Water Level  
14 Observation Network, a little over 200 stations.  
15 About a quarter of them are -- I'm sorry. A  
16 quarter of them are up in the Great Lakes and the  
17 rest are in the tidal coastal shores of the U.S.

18 You see a typical Great Lakes station  
19 up there in the right hand corner. A typical  
20 tide station in the lower right. On the left,  
21 there's tidal datums established by the coastal  
22 stations. And there's the IGLD datums

1 established up in the Great Lakes.

2 And those are the reference datums  
3 that you would use to communicate water levels.  
4 And those datums have to be updated every so  
5 often.

6 Of course, the NWLON, you know,  
7 supports many applications. There's real time  
8 marine transportation, storm surge, tsunami, all  
9 those sorts of things. But really, it's most  
10 fundamental purpose is to establish that  
11 reference system for the U.S. in terms of the  
12 tidal datums and IGLD.

13 And to accomplish that, I would say  
14 the NWLON is a bit more of a challenging  
15 observing system, perhaps, than some because it's  
16 really two sets of observations.

17 We, of course, continuously monitor  
18 the water levels with water level sensors. But  
19 then we have to periodically do geodetic  
20 observations to document the stability of the  
21 station itself. Because if sensors get changed  
22 down and stations get moved and other things go

1 on, you want to have a continuous data series  
2 over those long-term data series that we use for  
3 sea level trends and updating these datums and so  
4 forth.

5 And we have worked very closely with  
6 NGS over the years. We follow their standards  
7 for doing these things. And thank you, NGS, for  
8 all the help you provided over the years. I'll  
9 say that several times throughout this  
10 presentation.

11 So my next couple of slides are going  
12 to be about how we've been traditionally doing  
13 this. It's kind of at three levels, kind of at  
14 the station level, kind of connecting to a  
15 national reference system level and then kind of  
16 a land motion level. And then I'll talk about  
17 how we're trying to modernize using GNSS  
18 techniques as we go along so.

19 So again, right now, we need to have  
20 geodetic control. We use geodetic control at the  
21 station level to first of all make sure our  
22 sensor is not moving. And if it is, we can

1       compensate for that as long as we know how it's  
2       moving.

3               And then also we use it to transfer  
4       the information collected by the water level  
5       sensor to the local benchmark network that's set  
6       at every NWLON station. And that's how the users  
7       access the information, the tidal datums, at the  
8       station.

9               And then we also -- and, again, that's  
10       what's used to ensure these continuous data  
11       series. And then we also connect these stations  
12       where we can to the National Spatial Reference  
13       System. So that allows you to compare datums and  
14       stations against each other.

15              When we're collecting water level data  
16       and we're publishing a datum, whether it's in the  
17       Great Lakes or along the coasts, it's a local  
18       datum. The two comparisons, you have to, you  
19       know, connect into a common framework. And then  
20       we're also looking to understand what's going to  
21       with land motion at a station.

22              An NWLON station determines local sea

1 level rise, which integrates land motion. It  
2 integrates global sea level, you know, change and  
3 it integrates other oceanographic dynamics. But  
4 to kind of derive that global sea level  
5 measurement, we have to, you know, understand  
6 what's going on with the land.

7 So just a simple graphic, which really  
8 illustrates kind of how we do things at a  
9 station. So just we use, you know, line of sight  
10 leveling to connect it to tide gauge.

11 We survey directly to the sensor zero  
12 and then we transfer those elevations to a series  
13 of benchmarks on the land, again, ten benchmarks.

14 This shows that, you know, there's  
15 just one set up between benchmarks. But, you  
16 know, that's just for simplification. Often  
17 there's many setups between benchmarks.

18 But we do cite all of our benchmarks  
19 within a mile of the station. And we have 10  
20 benchmarks because if a gauge gets destroyed,  
21 that's how we recover the tidal datums.

22 And since we invest so much in an

1       NWLON station, we want to make sure we don't --  
2       if we lose a number of benchmarks the same time  
3       as we lose a station, we could lose everything.  
4       So the benchmarks preserve the tidal datums.

5               I'm not going to go through the rest  
6       of the slide, or the graphic I should say.

7               And so, again, we're users of NGS  
8       standards, and we follow their 2nd Order, Class 1  
9       standards for our long-term NWLON stations.

10              And we follow 3rd Order for short-term  
11       and that prescribes certain types of  
12       instrumentation and methodologies for doing line  
13       of sight surveying. We use electronic, you know,  
14       digital bar code equipment to make those  
15       measurements.

16              You know, we do these stability checks  
17       every time we go to an NWLON station on an annual  
18       basis.

19              For shorter term stations, we do it  
20       when we put them in and when we take out to  
21       demonstrate stability, document stability, over  
22       those short-term measurements.



1           And then the other instances after,  
2           you know, a storm event we usually go around and  
3           we survey the sensors because sometimes the piers  
4           or structures may have moved during those extreme  
5           events. So that's at the station level.

6           To connect to the National Spatial  
7           Reference System, we used to have to survey to  
8           the old 1st Order NGS benchmark networks, which  
9           they no longer maintain. And that was kind of  
10          hit or miss because one of these networks kind of  
11          had to pass within five miles of our stations.

12          And it was still a lot of work and  
13          effort to do that surveying over 5 miles, and we  
14          could only do that very infrequently. So a lot  
15          of NWLON stations were not connected to the NSRS  
16          at that time.

17          But today we do that through GPS.  
18          Each station, one of their marks is designated as  
19          a GPS mark as well. So we do do observations at  
20          roughly 20 stations where we know there's a sea  
21          level change. But really where we're see extreme  
22          sea level changes, it's really because the land

1 motion is either subsiding or rebound.

2 And so we do it annually at about 20  
3 stations and then every five years at other  
4 stations. And, again, we collect that  
5 information at IGLD and submit it to NGS for  
6 processing, archiving, and we can, you know, look  
7 at things over time by looking at that data.

8 And then at the land motion level,  
9 about 27 of my stations are GLOSS stations.  
10 GLOSS is an international oceanic graphic  
11 commission organization. Our organization under  
12 the IOC that brings together all of the nations  
13 that are operating tide gauges for the  
14 determination of a global sea level.

15 So 27 of my stations are designated as  
16 GLOSS stations. And there was a requirement put  
17 in place a number of years ago to co-locate, I'll  
18 say GPS, along with the water level stations so  
19 that you could understand, you know, land motion  
20 and be able to get the global sea level rise out  
21 of the data series. And we've been working with  
22 NGS collaboratively to do that by co-locating

1       CORS at some of these stations.

2               So on the left you see an example of  
3       Crescent City. On the right it's just an example  
4       from one of our Great Lakes stations, not for  
5       global sea level rise, but for coastal motion  
6       studies up there.

7               But there's been some problems with  
8       this approach and not so much from a technology  
9       perspective, but really because it is co-  
10      location, I think, from a -- it doesn't really  
11      fit the NGS model for where they want to put  
12      CORS. So part of our effort is to find a better  
13      way forward.

14              So that's how we've done things  
15      traditionally at those three levels. And back in  
16      2016, I asked my folks to start looking at how  
17      can we leverage what's been going on with, you  
18      know, GPS and really now GNSS to modernize how we  
19      do things.

20              And it's really, again, so here's the  
21      three levels. How can we continuously monitor  
22      the stability of that sensor and also maybe, you

1 know, do things differently with surveying to the  
2 benchmarks? How can we make sure almost every  
3 benchmark is, you know, connect to the NSRS, the  
4 ellipsoid? And how can we do things better to  
5 determine land motion at our stations?

6 And right now, while it's not part of  
7 our plan, I just have one slide on this at the  
8 end, is the GPS sensor. They're showing a lot of  
9 promise as an actual water level sensor. So  
10 we're starting to look into that, and we haven't  
11 quite built that into the plan, but that will  
12 probably get added in here pretty soon.

13 So I've got a couple of series of  
14 slides, a series of pretty simple offsite  
15 cartoons. I've got really engineers, but they're  
16 pretty poor graphic artists. I need to get them  
17 a couple more different colored magic markers, I  
18 think, you know. But I think it will suffice.  
19 They were very embarrassed to bring these to you  
20 so I had to give them a hard time here.

21 So at the sensor level, really what  
22 we're trying to do is almost integrate, you know,

1 that -- and that little c just stands for  
2 continuous when you see it in front of some of  
3 these other terms -- is integrate that GNSS  
4 sensor with our water level sensor because  
5 ideally we'd be getting daily updates. Is that  
6 sensor stable or not?

7 And sometimes there's issues with that  
8 because there's line of sight. There's blockage  
9 of GPS so the next best thing is to get it as  
10 close to that sensor as we can on the pier or the  
11 platform it's sitting on.

12 And that's probably fine because, you  
13 know, we mount these things pretty stoutly to the  
14 structure. So it's really the structure moving  
15 is more of a concern not so much our sensor.

16 And, again, ideally we can use that to  
17 continuously monitor the sensor stability. And  
18 if there is a CORS or some other, you know,  
19 continuously operating GPS scenario, we can also  
20 use that to refine our measurements.

21 And so the next one is how can we, you  
22 know, employ GNSS to better maintain our

1 benchmark network? And is there kind of a number  
2 of different ways to do this? There's static  
3 observations or continuous observations.

4           There may be ways of using those and  
5 maybe we can use some of this for just our far  
6 off benchmarks that are more, you know, labor  
7 intensive to get to than maybe some of our closer  
8 ones. We'll see. But it may allow us to reduce  
9 that benchmark network or reduce leveling  
10 frequencies.

11           So we're looking to see how we can,  
12 you know, modify our procedures to take advantage  
13 of, you know, GNSS. And it's also going to allow  
14 us, again, to better connect to the ellipsoid and  
15 geoid and all those other oids that are out  
16 there.

17           And then finally, for the land motion,  
18 and again, the GLOSS requirement is to get it  
19 right there at the station, but we want to do  
20 that at all of our stations. And that's where we  
21 really do need, you know, we need to have  
22 something built on the structure and on land as

1 well because sometimes up here or some other  
2 structure can be settling at a different rate  
3 than the land. We need to do some things there  
4 as well so.

5 So where are we? So, again, I asked  
6 folks back in late 2016 to start planning this.  
7 So we've actually made a lot of progress to date.

8 So in terms of planning, we formed a  
9 number of working groups across the organization  
10 because this affects a lot of my divisions. When  
11 we brought in folks from NGS -- we've had a  
12 number of detailees from NGS who have helped us.  
13 So, again, much thanks to NGS.

14 We had a workshop where we brought a  
15 lot of people in to kind of help us refine our  
16 strategy and when we've published that strategy,  
17 that's now going to guide us going forward.

18 But in parallel with that, we've also  
19 been, you know, working with some of the  
20 hardware. We've got some GPS units. You know,  
21 we're using them, understanding the hardware and  
22 how they work. We're also, you know, looking at

1 the data side.

2 How do we bring the data in? How do  
3 we log it? You know, it's because any observing  
4 system is just not the hardware on the front end.  
5 It's bringing that data all the way through the  
6 pipeline.

7 And we've established two long-term  
8 test platforms, one at our fill facility in  
9 Chesapeake and the other one up in Silver Spring,  
10 up on the roof of our building.

11 And we've also been doing a little bit  
12 of field work. Actually, we have a nice  
13 collaboration with ODU. This really wasn't a  
14 part of this strategy, but it really plays into  
15 it well. It kind of got started a little before  
16 us.

17 Is it Hans Plag? Am I pronouncing his  
18 name right, Larry? Yes, a researcher from ODU  
19 came to us, and he wanted to establish GPS at  
20 four of our stations for research he was doing.

21 And we were glad to work with him  
22 because that would allow us to kind of do some



1 design work to, you know, mount that GPS right  
2 with the water level sensor. So we've done that.  
3 So we've had some progress there.

4 Moving forward, we're going to take  
5 that strategic plan and turn it into an  
6 implementation plan. We'll continue working with  
7 the hardware and looking at other kind of  
8 mounting designs and continue working with the  
9 data processing capabilities.

10 And we're going to be putting forward  
11 these on sensor systems out at different  
12 locations there. And two of them will take care  
13 of GLOSS requirements and two of them will go to  
14 other stations. I won't read the names, but  
15 there they are.

16 FY19 and beyond, we're going to then  
17 start looking at the lessons we've been learning  
18 and start, you know, trying to implement some of  
19 those for sensor stability.

20 We'll also be looking to see what we  
21 can start using on the benchmark side of the  
22 station, looking at techniques for coming in and

1 doing very short-term kind of surveys, maybe  
2 after a storm or something like that.

3           You know, I think one challenge we  
4 have, which I haven't had a chance to speak with  
5 NGS about, is that we're hoping to leverage their  
6 databases. But their database is just like CORS  
7 data, and we may not have CORS quality data. So  
8 we'll have to work through that, I think. And  
9 then looking at different options for processing  
10 to get to some of those land motion studies as  
11 well.

12           And then I mentioned in the beginning,  
13 I've just become aware of some recent work. It  
14 comes through an NGS sponsored webinar. A very  
15 interesting paper called The Accidental Tide  
16 Gauge. Yes, yes.

17           And I know A00S is going some work,  
18 the Alaska Regional Association is doing some  
19 work up in the Arctic using this technology. It  
20 really can't get us to where we want to be right  
21 now for NWLON measurements, but maybe in areas  
22 where there's a real lack of data or applications

1 that maybe it can be used for right now. So very  
2 interesting.

3 So we're going to start looking at  
4 that as maybe a next generation water level gauge  
5 and we can overcome some of the limitations that  
6 are there now.

7 So just in summary, you know, we've  
8 made this a priority for us because we see  
9 there's a lot of potential for efficiencies  
10 there, and it's really just time for us to  
11 monetize this part of our observing system.

12 You know, we've got a cross-office  
13 working group in place that's been guiding us.  
14 They developed a strategy and they're going to  
15 develop the implementation plan.

16 Again, this is my final thank you.  
17 Juliana, we've just gotten excellent support from  
18 NGS, you know, in terms of detailees and just in  
19 all sorts of other ways.

20 But, we're also looking to leverage  
21 many other folks as well, academia, the regional  
22 associations. There's a lot of people interested

1 in, you know, how to better leverage GNSS and  
2 these sorts of things. So looking forward to  
3 working with them. And that's it. Thank you.

4 CHAIR MILLER: Thank you, Rich. Are  
5 there questions? Larry.

6 MEMBER ATKINSON: Yes. First a  
7 comment. Yes. This worked out really. We  
8 bought three or four of them. I don't know if  
9 they're all bobbed and deployed or not, but.

10 MR. EDWIN: No. They're all in.

11 MEMBER ATKINSON: Yes, so, I mean, I  
12 took a geodesy course like 40 years ago. I never  
13 thought I'd ever use it. But now, you know,  
14 finding out just being -- yes. No, I took marine  
15 geology before plate tectonics was accepted so.  
16 That was interesting. It makes it really hard.

17 But, you know, now it turns out that  
18 because subsidence is half of our sea level rise,  
19 just our neighborhood on Hampton Roads, this all  
20 of a sudden becomes really important. And now  
21 all of the cities are wondering, you know, what  
22 the subsidence rates are around every pumping

1 station and tailwater outfall.

2 And so I was wondering, InSAR is  
3 coming along, and there's going to be reflectors  
4 at each of the CORS stations or -- I'm not sure.  
5 It seems like InSAR requires a good location at a  
6 CORS station or a GPS.

7 MS. BLACKWELL: Having InSAR  
8 reflectors is not something that's currently in  
9 the plan at this time.

10 MEMBER ATKINSON: I know in our area  
11 they're starting to reinject treated wastewater.  
12 And they're putting reflectors at each of the  
13 sites where that's being done. So that's  
14 probably going to tie into all of this not only  
15 in our area, but all along the coast line where  
16 this subsidence is part of the sea level rise  
17 equation.

18 So this stuff is really valuable. I  
19 mean, I remember years ago when there was, you  
20 know, let's privatize all the NWLON stations. I  
21 said that's probably not a good idea. And it  
22 just shows how important this is and the fact

1 that we've got a tide gauge that's been there  
2 since 1927.

3 And the other just anecdotal stuff.  
4 I know when we started looking at sea level rise  
5 rates, we called you or somebody that we hoped  
6 the structure the tide gauge is on is not  
7 sinking. So this all -- yes, yes. So it's good  
8 work.

9 CHAIR MILLER: Did you have a comment?

10 MEMBER THOMAS: So are all of the  
11 gauges, are they at one second sampling now? Are  
12 they at one second sampling on the tide gauges?  
13 Remember that came up as an issue with the  
14 tsunami monitoring, and they couldn't use the  
15 Scripps Pier 1 because it was averaging at six  
16 minutes. And then I think you went --

17 MR. EDWING: Yes. So all the water  
18 level stations, the sensor sample is at one  
19 second. But for our purposes, we were averaging  
20 over six minutes.

21 But after the Indian Ocean tsunamis,  
22 we were able to convert all the tide stations to

1 break it up into one minute averages and send  
2 those back.

3 And we provide a separate kind of  
4 higher resolution view of the water level data to  
5 the tsunami watering centers when, you know, it's  
6 there all the time. They just create it when  
7 event is happening.

8 But then also at the stations  
9 themselves, they're collecting 15 second data and  
10 just logging it and kind of overwriting at the  
11 station. And that's needed -- we get that after  
12 an event because that's used for the research to  
13 improve the models, which is too much data to  
14 bring back too often. So, okay.

15 CHAIR MILLER: Are there any other  
16 questions? Oh, Gary.

17 MEMBER THOMPSON: So we talked about  
18 we were going to install a gauge on CORS dome  
19 NC12. So has NGS developed a procedure of  
20 transferring the elevation from the arc to the  
21 gauge? Our arc is 16 foot above the ground. You  
22 know, it's all one tower. So is there a

1 procedure that, you know, you all recommend?

2 MS. BLACKWELL: We don't have anything  
3 new.

4 MEMBER THOMPSON: Then we'll talk  
5 offline because we did a test with Corbin and  
6 came up with a procedure, but it never got  
7 published. So maybe we can revive that.

8 MS. BLACKWELL: Yes. We should talk  
9 about that offline.

10 MEMBER THOMPSON: That's fine.

11 CHAIR MILLER: The next speaker is  
12 Admiral Smith. I introduced him this morning a  
13 our designated federal official for the HSRP and  
14 the Director of the Office of Coast Survey.  
15 Shep.

16 RDML SMITH: Thank you, Joyce. So I  
17 -- do I have the buttons? Oh, that button. I'll  
18 skip ahead to where I dropped off this morning.

19 So I wanted to follow-up on the  
20 National Charting Plan. As you all recall, we  
21 published this for draft last winter. It was out  
22 for public review through most of last year.



1           We got 280 comments total with the 13  
2 most insightful comments from the HSRP. And so  
3 thank you. And we published the final plan in  
4 November of 2017.

5           So the implementation plan is now  
6 under development. In particular, the main focus  
7 of that is on coming up with the end state chart  
8 scheme. So, again, re-envisioning what scale  
9 charts we need where.

10           And I think that you need to think no  
11 further than the Miami River example from  
12 yesterday if any of you were following along on  
13 your phones to see what kind of charts we had  
14 there. They were not good. They were adequate  
15 for paper era, but not in the digital era.

16           And so we heard great justification  
17 for why, and we just needed to take that type of  
18 detailed place by place type thinking with some  
19 basic general rules as well nationwide and to go  
20 to a fixed set of binary step scales for all of  
21 our charts.

22           So once we get the end state, then

1 we'll talk about how to prioritize getting from  
2 where we are to where we have identified we need  
3 to be.

4 In addition, we're prototyping some  
5 additional tools to serve the residual paper  
6 requirement. As you recall, the National  
7 Charting Plan is about digital charts. It's not  
8 about paper charts.

9 But we recognize that there are some  
10 residual paper requirements and will be for some  
11 time. And there are significant raster chart  
12 requirements that don't seem to be going away  
13 very fast either.

14 So we want to continue to serve those  
15 needs as we shift our main production system. So  
16 there are two developments along those lines.

17 One is with the database now fully  
18 populated, we have an opportunity to make raster  
19 charts directly from the database instead of  
20 making paper charts and then essentially making  
21 master charts out of the paper charts so skipping  
22 a step.

1           So in our raster title service, which  
2 we introduced about four years ago, we now have  
3 begun populating parts of that tile service  
4 directly from the database.

5           It looks like a NOAA chart. I wish I  
6 had an example up here. But it never was a NOAA  
7 chart. It doesn't have a number. It cannot be  
8 updated by Notice to Mariners. And it's going to  
9 force us toward the future of continuously  
10 updated digital charting. It is tied to the ENC  
11 in the area.

12           And the second, which was just  
13 launched less than an hour ago, is the NOAA  
14 Custom Chart Tool, which is now available on our  
15 website where you can design your own chart.

16           You know, you choose the area that you  
17 would like to have covered. You choose the scale  
18 that you want to be portrayed. There's a couple  
19 of different changes you can make to a portrayal.  
20 You can choose where the blue tint is. You can  
21 choose the units of your soundings.

22           And then you hit go and it makes you

1 a PDF, a geoPDF of that chart, which, if you want  
2 to print it out, you can do that. At this point,  
3 they're not for navigation.

4 Again, it was launched an hour ago.  
5 So we still have some glitches to work out. But  
6 we also probably need to put some constraints on  
7 the options that you could choose and still  
8 consider it to be appropriate for paper use for  
9 navigation.

10 So that's very exciting. I encourage  
11 you to look at our website for that.

12 We anticipate building a lot of new  
13 charts with this after we get this plan built  
14 out. In support of that, we've started to  
15 collect all of the bathy that we already have  
16 validated from our previous hydrographic surveys  
17 going back decades or centuries and pulling it  
18 all together in one place where it is accessible.  
19 And that project is the bathymetric --

20 CAPT. BRENNAN: National Bathymetric  
21 Source.

22 RDML SMITH: National Bathymetric

1 Source database. And so we expect that to be  
2 built out over the next couple of years, and it  
3 will really form the foundation of the re-  
4 scheming for the bathy part of our re-scheming.

5 So the sequence of building the new  
6 charts will be driven by customer demand, by  
7 source availability, major source availability  
8 and really, it's probably going to be region by  
9 region.

10 We, for instance, in this hurricane  
11 supplemental that we got after the hurricanes  
12 this year, we identified a portion of that to re-  
13 scheme the charts before we put all the new  
14 source on. It really doesn't make sense to apply  
15 all this new source to old charts and then have  
16 to redo it again.

17 So when we have a big slug of new  
18 source like that, we'll build the new charts  
19 first then populate them. And so we'll be going  
20 through in that sort of order. Under precision  
21 navigation, we'll probably be doing the same for  
22 charts in major ports.

1                   And we do have an international  
2 component to collaboration on this. And we've  
3 already started working with Canada on re-  
4 scheming in the Great lakes.

5                   So that's enough on National Charting  
6 Plan.

7                   External source data, this has  
8 continued to be a priority. We talked about the  
9 policy changes at the last meeting using the best  
10 available data for the charts.

11                   We're continuing to bring more data --  
12 we'll find more data as we are more open and the  
13 word gets out that we're excited about  
14 incorporating this type of data onto our charts.

15                   Last year we set a goal of 30 percent  
16 of our surveys that we incorporate are from  
17 surveys that we didn't pay for. Now, they are  
18 often very good. Joyce gave a great testimonial  
19 to some of her own work, which I would concur,  
20 yesterday and which we've incorporated quite a  
21 bit of.

22                   And so there's lots of different

1 types, lots of different areas. And this is a  
2 big priority, and we're getting a lot of  
3 improvements to our charts based on it.

4 Unmanned systems -- whoop. Too many  
5 buttons. Unmanned systems, I think we're going to  
6 have a little bit of a conservation at the  
7 technology working group session tomorrow is it,  
8 Lindsay? Tomorrow. So I will save some of what  
9 we're doing for that.

10 But we do have a project underway  
11 right now to convert two of our existing survey  
12 launches to optionally manned. So we basically  
13 put an unmanned system's brain into an existing  
14 launch that already has survey systems installed  
15 on it.

16 Well-integrated, it already has launch  
17 and recovery systems, already has engineers that  
18 know how to fix the diesels on it, and we can  
19 advance the sort of state of the art of unmanned  
20 systems in accelerated fashion using our existing  
21 platforms.

22 Our partners at the University of

1 Southern Mississippi just bought an ASV that  
2 they'll be using as part of their unmanned  
3 systems training course that they run every  
4 spring. And the folks at UNH are continuing to  
5 advance the state of the art with the system that  
6 they have.

7 Our contractors every year are using  
8 unmanned systems more and more as appropriate, as  
9 part of the contracts that they have with us.  
10 And that's helping to move the industry forward  
11 as well.

12 Two sources of uncertainty for Coast  
13 Survey's unmanned hydrographic systems program.  
14 One is that there is a bill introduced in  
15 Congress called CENOTE, C-E-N--O-T-E, which does  
16 change the governance structure for how unmanned  
17 systems are done in NOAA and could be a disruptor  
18 for the progress that we're making in the  
19 hydrographic program.

20 And then the second is just NOAA's  
21 internal organization for unmanned systems that  
22 may or may not be related to the CENOTE. Going



1 forward, precision navigation, I don't think I  
2 need to talk about this very much. It's come up  
3 an awful lot already. So I'm going to skip over  
4 that.

5 One topic that's come up several times  
6 over the last few meetings is partnership with  
7 the Army Corps particularly for surveying and  
8 charting in channels.

9 We have traditionally gotten condition  
10 surveys in channels from the Army Corps and  
11 through quite a bit of effort with our  
12 cartographers have taken those surveys and  
13 analyzed them and turned them into these channel  
14 tabulations, which is a very old fashioned way of  
15 disseminating that information and very expensive  
16 for us to produce.

17 So under the National Charting Plan,  
18 we announced that we'd be going away from these,  
19 and we are now starting to do so. And so this is  
20 an effort not to stop publishing the condition  
21 surveys, but to shift our efforts to doing it in  
22 a more effective way through the ENC's and through

1 overlays and a few other things that we're  
2 working on.

3 But right now, you know, on a bad day  
4 the cartographers will tell me we spend 30  
5 percent of our time doing these right now with  
6 almost no value. And so we're just going to  
7 stop, and we'll see what happens.

8 This is also a major source of Notice  
9 to Mariners. Every one of these tables goes out  
10 in Notice to Mariners. And it's cut out by, you  
11 know, Third Mates all over the fleet, cut out and  
12 pasted onto the charts.

13 It's a huge amount of human effort.  
14 And then the pilots come in and they say, no,  
15 that's not right. We're going to do it this way  
16 instead.

17 And so anyway, going forward -- oh,  
18 no, you guys don't have the most recent one. The  
19 most recent one with the change in it didn't make  
20 it apparently. Anyway, I had the before and the  
21 after, but now I just had the before.

22 So the after, basically, takes that

1 whole table, puts just the project depth on  
2 there, and says that there's -- there's a note on  
3 there that says the actual depth in the channel  
4 is variable, and, you know, if you want to know  
5 the current conditions, use your ENC or talk to  
6 the pilots or get it from the Army Corps.

7 So basically, we're, you know, slowly  
8 reducing the level of service associated with the  
9 paper charts. And this will coincide with the  
10 requirement starting in July for all SOLAS class  
11 vessels to have ECDIS and use ENCs.

12 Ocean mapping, we previewed this a  
13 little bit yesterday. There is a one pager. I  
14 think there's one on the table, but there is one  
15 definitely in your digital materials that's got  
16 our one pager.

17 It talks about the sort of three  
18 directions that we're going for for mapping, and  
19 that's precision navigation, dealing with  
20 discrepancies, things like position-approximate  
21 wrecks, shoal reported, discolored water,  
22 glaciers receding, approximate shoreline, all of

1 it depending on where you are, what the nastiest  
2 thing is in your area.

3 But often those individual things turn  
4 into a -- you know, you start to unravel them and  
5 discover that there's something larger happening  
6 there.

7 Seabed 2030, there is a little article  
8 that was published in Hydro International that we  
9 put together sort of pitching this. This is a  
10 worldwide effort with a goal to get the big ocean  
11 mapped by 2030.

12 As part of this effort, I won't go  
13 into the international structure of how this is  
14 put together, but as part of our effort to  
15 understand what we need to do internally to the  
16 U.S. waters, we did a gap analysis. That was  
17 done by NCI and Coast Survey and the University  
18 of New Hampshire to look at what data we have.

19 And we did a very simple but highly  
20 replicable study where we looked at all the  
21 soundings. We binned them all into 100 meter  
22 bins and just saw which bins had soundings in

1       them. And we used every sounding, whether it was  
2       good or not, that was in the archive back to  
3       1960.

4                   Before electronic navigation, we  
5       weren't sure enough about the quality of the  
6       navigation to even be able to say that the  
7       sounding that was observed fell there. I don't  
8       think most people would argue be that 57 years --  
9       that we're being too picky here with that  
10      criteria.

11                   The answer in the end was that 41  
12      percent of these 100 meter bins in U.S. waters  
13      had one sounding or more in them. So the  
14      implication is not that we're 41 percent done  
15      because clearly we can't skip from bin to bin to  
16      bin.

17                   If you look at the multi-beam or the  
18      sort of continuous coverage, it's more like 30  
19      percent, although we're really nailing down that  
20      number a little better.

21                   So those are the numbers that we want  
22      to be consistent about going forward as the areas

1 that are fully mapped that we don't need to  
2 repeat and the areas where we have anything. And  
3 we'll take those numbers forward to sort of  
4 monitor our progress.

5 We've already gotten really good use  
6 out of this coverage map because, you know, I'll  
7 bring it around, and I'll show it to somebody.  
8 And they'll say, well, your coverage map is no  
9 good; it doesn't have my data in it.

10 And we'll say, yeah, that's right.  
11 Your data is not in here because it's not in the  
12 National Archive. It's still sitting in the  
13 shoebox underneath your desk.

14 And so once we get it out and get  
15 everything available, we'll probably accumulate  
16 another 5 percent or so from emptying all the  
17 shoeboxes of data. And then we go forward from  
18 there and start to get a more comprehensive map.

19 That is my last slide, and my time is  
20 up, Madam Chairman.

21 CHAIR MILLER: Thank you, Shep. Are  
22 there questions for the admiral? Anne?

1                   MEMBER MCINTYRE: Just a quick  
2 comment. I wanted to thank you for the SOLAS  
3 slide from this morning because I think it's a  
4 very good example of the complexities in meeting  
5 industry's requests to gather data from all  
6 different kind of agencies and reconcile it.

7                   That's something that I can take back  
8 to my stakeholders as a very clear example of  
9 what makes that task difficult and time  
10 consuming.

11                  RDML SMITH: Can I comment on that  
12 actually? And that's sort of basic of SOLAS  
13 requirements. If you look at what is expected of  
14 nations to provide for navigation services, one  
15 could look at what services are being provided  
16 around the world and evaluate different nations'  
17 navigation services against the sort of  
18 hydrographic risk, the navigation risk.

19                  It turns out IALA has done this. This  
20 is the International Association of Lighthouse  
21 Authorities. And they do sort of consulting work  
22 on this sort of thing. And they did a study

1 basically for the insurance companies, for the,  
2 you know, Lloyd's of London, the big risk people,  
3 evaluating navigation services around the world  
4 versus risk.

5 And while the U.S. did well, China is  
6 the best in the world at providing the navigation  
7 services. Ours are not the best in the world  
8 although I'm very proud of what we do.

9 And so I think there are some -- we  
10 have the sort of checklist of what they were  
11 looking at. And I think there's some interesting  
12 -- it's not really for public distribution or  
13 else I would have given you a copy. But it's  
14 illustrative of the types of things that I think  
15 can help to guide a national program on how to  
16 provide better services. And many of the things  
17 in our precision navigation initiatives are in  
18 response to that sort of thing. So thank you.

19 MEMBER SAADE: So earlier today you  
20 were talking about requests for better data in  
21 the Caribbean, the Bahamas in particular. So  
22 you're probably aware of this, but I just wanted



1 to emphasize that with that UK Hydrographic  
2 Office contract that ourselves and a couple other  
3 contractors are on, so far the British Virgin  
4 Islands, Guyana, Jamaica, Grenada, St. Vincent,  
5 the Grenadines, Anguilla, Cayman Islands, and  
6 Belize have all been mapped.

7 And they have told us specifically  
8 they encourage people to come to them and say,  
9 hey, we need some mapping. And they get the funds  
10 together and they go through the Commonwealth  
11 Network and they get it mapped.

12 So with your connections you may be  
13 able to accelerate that.

14 RDML SMITH: I just want to make a  
15 little distinction between surveyed and mapped,  
16 right? And if by mapped, we mean charted so that  
17 the charts for NGA, for instance, paid for a  
18 great deal of bathymetric lidar throughout the  
19 Bahamas for DoD.

20 But because UKHO is the charting  
21 authority, I am not allowed by law to make charts  
22 in the Bahamas as the law is currently written.

1 While all of that data is available, it has not -  
2 - the UKHO has not seen a requirement based on  
3 their usual customer of deep draft traffic to  
4 make larger scale charts in the smaller islands  
5 of the Bahamas so --

6 MEMBER SAADE: So some of the problem  
7 is the fact that the people, U.S. citizens, come  
8 to you and talk about this, but they're not going  
9 to the proper charting agency to get the charts?  
10 They're expecting it to be on a NOAA chart? Is  
11 that part of the dilemma?

12 RDML SMITH: Well, I don't think  
13 they're expecting that after we point out that  
14 it's not the United States. But, in fact, you  
15 know, the business drivers for the UK  
16 Hydrographic Office are pretty different than  
17 many hydrographic offices around the world. And  
18 so I'll tell you the rest over a beer.

19 MEMBER SAADE: All right. I'm just --  
20 I've seen it work. The people make a request and  
21 IHO standard hydrographic numbers come out of it.  
22 Now, whether it gets on the chart or not, I don't

1 know.

2 CHAIR MILLER: I sailed in the Bahamas  
3 for over two years, and we used chart booklets  
4 that were commercially done. I mean, a lot of  
5 mapping has -- not charting, but mapping, has  
6 been done by the sailors themselves.

7 MEMBER SAADE: The point is this is a  
8 new system that got implemented about three years  
9 ago. So I understand there's a lot of problems  
10 in the past, but this new policy seems to be  
11 working, and it is really new.

12 CAPT ARMSTRONG: I just wanted you,  
13 admiral, to elaborate a little bit on where the  
14 savings is in removing the information from the  
15 tabulation if you go through that process for the  
16 ENC as opposed to putting it on the paper.

17 So you have to analyze the surveys for  
18 the ENC, and you are showing it there. And so  
19 where does the savings come?

20 RDML SMITH: There's a certain amount  
21 of overhead just in doing the Notice to Mariners  
22 of putting those tables together, making them

1 look pretty, getting them published through the  
2 Coast Guard system as opposed to, you know, a  
3 fairly automatable system of, even if we don't  
4 improve the cartography, even if we just have a  
5 dredged area, just to get real carto-geeky here,  
6 a dredged area with a couple of attributes, those  
7 attributes can be automatically extracted from an  
8 XYZ dataset.

9 But really what we hope to do is to  
10 make the product better by having more detail  
11 contours, say, to be able to show where the  
12 shoals are. Not just that there's a shoal in  
13 this big box, but to actually show there's just a  
14 little slumping in this section of the channel or  
15 to have some sort of overlay at least in some  
16 channels that we can co-produce with the Army  
17 Corps.

18 That's one option. And without  
19 getting into the broad array of channel condition  
20 survey types, we don't want to always do that  
21 because we don't want to supersede a really high  
22 quality survey with a more recent poor quality

1 survey, but in general, more detail exposed  
2 through the ENC system.

3 Now that may be -- what we did in Long  
4 Beach, for instance, which is, you know, more or  
5 less a Band 6 ENC, just a next scale larger,  
6 which is really only suitable for use within the  
7 channel. But it works through the ENC  
8 distribution system.

9 CHAIR MILLER: Lindsay.

10 MEMBER GEE: Yes, thanks, Shep. Just  
11 a question regarding the discrepancies in the  
12 charts. We noted from the charting plan it's,  
13 like, what's the plan for addressing those now?  
14 Is that just done in regular contract or your  
15 surveys? Or are there specific areas where you  
16 are planning to do that maybe with sort of the  
17 autonomous systems? Just interested to know how  
18 you're going to address that.

19 RDML SMITH: So I don't think -- I'm  
20 not thinking that we would sort of do all of that  
21 sort of thing by contract and this other thing by  
22 in-house, that it would be the sum of these

1 things are the survey requirement for the program  
2 and that we would parcel them out through the  
3 various mechanisms we have to get surveys done,  
4 including outside source data.

5 So the first step should be to look on  
6 the shelf and see whether we already have  
7 something that's at NCEI or something that could  
8 address it.

9 But the NRTs, when they're not doing  
10 hurricane work, are really well suited to this  
11 type of small job where they can go out, deal --  
12 you know, go to a certain place, go out and deal  
13 with 20 or 30 problematic charted features and  
14 then go home for a couple weeks and get it on the  
15 chart and go back out and do it again.

16 We have started to look at how we'll  
17 do that also through contract and through the  
18 ship work. But, you know, depending on what kind  
19 of an operation it is, little stuff can be  
20 inefficient for a big operation that works well  
21 24/7 and keeps going.

22 MEMBER SAADE: Sorry. Yes, I guess

1 that's what I was referring to of, like, the  
2 small stuff that you see that are normally near  
3 ports or where people are operating. It's how  
4 you can send.

5           You'll -- I always keep saying this,  
6 but it is that little guy that's the contractor  
7 that isn't doing contract work for you now that's  
8 around as sort of like an NRT, I guess, is  
9 something that could supplement that, I think, or  
10 even you've known. And there is now we're  
11 actually seeing some of those private contractors  
12 that actually just have autonomous systems.

13           So we see that around the world now  
14 that that's the model that the smaller companies  
15 are doing. And it's a two man show with just  
16 autonomous systems. So maybe that's something  
17 for the future.

18           CHAIR MILLER: Anyone else with  
19 questions in the audience or panel? Well, this  
20 is indeed unusual. We're running 15 minutes  
21 ahead of schedule. Yay.

22           We've got two options. We could take

1 the break now and come back at 3:15. After the  
2 break, we have a discussion period.

3 Rick Brennan will give us a partial  
4 update on fleet issues, and then the newly  
5 appointed admiral for OMAO, and I'm sorry, I  
6 don't -- Nancy Hann will be addressing us by  
7 telephone. And we don't know exactly when that  
8 is.

9 So we will conduct -- okay, she's  
10 going to be addressing us at 4:00. So we will  
11 conduct business for the planning and engagement  
12 group kind of a bit sporadically, but I think we  
13 can get it done, Dave.

14 Yes, before and after, I think. Lynne  
15 just said she wasn't sure the break was set up.  
16 But we can all scatter to the bathroom and so  
17 forth or whatever.

18 (Whereupon, the above-entitled matter  
19 went off the record at 3:02 p.m. and resumed at  
20 3:27 p.m.)

21 CHAIR MILLER: Well, Kim is part of  
22 the group that's discussing, and she just walked



1 out, so.

2 Okay, Dave.

3 MEMBER MAUNE: Do you want to say  
4 anything before I start? Okay. The Planning and  
5 Engagement Group, a couple of years ago we  
6 decided that we would start publishing  
7 identifying issues for the panel to consider and  
8 to identify what the challenges were, the pros  
9 and cons, and to come up with recommendations to  
10 the NOAA Administrator.

11 We also found that these issue papers  
12 have other advantages for helping advise the  
13 National Ocean Service on things we consider  
14 important.

15 And so we have published a paper that  
16 is called the Introduction to NOAA's Hydrographic  
17 Services Review Panel that has the 11 issue  
18 papers summarized in it, and all these 11 issue  
19 papers are generally available.

20 This afternoon we're going to be  
21 discussing the revision to one of those 11 issue  
22 papers and one new issue paper. And so I would

1 like to call up on the screen the issue paper on  
2 The NOAA Hydrographic Survey Fleet: A Critical  
3 National Asset.

4 And we'd like to go through that and  
5 read it and let people comment on it. We're  
6 going to be taking a minute or so to read. And  
7 then I'm going to ask people to scroll down.

8 If you come to something you disagree  
9 with, raise your hand and let us know. But right  
10 now, it's up there on the screen, and we have the  
11 first couple of paragraphs there. And I hope you  
12 can read it. This is an update to an old paper.

13 CHAIR MILLER: This is an update.  
14 There are a couple of known issues that I just  
15 didn't update. And there's one sentence that  
16 we're going to have to recraft in it for sure.

17 But, yes, it was an update. The  
18 problem, well, not a problem, we had written this  
19 a couple years ago. It was one of our very first  
20 papers. And there was some very time specific  
21 things about the budget in it. And we felt that  
22 it just needed an update to be more current with

1 present financial issues.

2 MEMBER MAUNE: And Virginia is  
3 prepared to update this thing on the screen as we  
4 sit here and watch it so. Oh, you're not? We're  
5 not going to do that? Okay.

6 CHAIR MILLER: And Lynne just said  
7 that there are copies on the handout table. And  
8 I believe there's copies in our folder.

9 MEMBER MAUNE: Yes. So the visitors  
10 can pull it off the table on the left. Okay.  
11 Start reading and let us know if you have any  
12 issues.

13 Okay. Scroll down another paragraph,  
14 please. And, Joyce, if you had any comments you  
15 wanted to make, please do as we get to that  
16 paragraph.

17 CHAIR MILLER: Yeah. I think it's at  
18 the beginning of the second page.

19 MEMBER MAUNE: Okay. Scroll down.  
20 There we are at the beginning of the second page.  
21 Is it the highlighted areas there that you wanted  
22 to talk about?

1                   CHAIR MILLER: Yes. And Rick Brennan  
2 provided a comment. And my understanding is that  
3 in their new analysis of survey needs, they're no  
4 longer using the 10,000 square nautical miles.  
5 Is that correct, Rick?

6                   CAPT BRENNAN: We would like to move  
7 away from that, yes.

8                   CHAIR MILLER: And so I think we need  
9 to state something similar to that, but I didn't  
10 have a good solution to it. Okay.

11                   So, Rick, can you tell us what the  
12 more current thinking is in terms of survey  
13 backlog or what might be appropriate to indicate  
14 that, you know, there are a lot of survey needs  
15 that haven't been met?

16                   CAPT BRENNAN: So we're currently  
17 working on the Hydro Health Model that I believe  
18 at one point or another has been briefed here.  
19 We can certainly plan a rebrief for the new  
20 members if we need to.

21                   But ultimately, that's the risk-based  
22 model that's based on AIS traffic, age of

1 surveys, passage of hurricanes, et cetera, that  
2 would define that. And I think ultimately what  
3 we would like to be able to show is that, you  
4 know, is those areas which would be much more  
5 adaptive than how the, you know, the previous  
6 method was, which was, you know, just basic  
7 polygons, which we worked at chipping away at.

8 And I think that ultimately, you know,  
9 that what we had was where that 10,000 came from,  
10 and we were just discussing this, was that, you  
11 know, originally there was 50,000 square nautical  
12 miles of critical area that we hoped to, you  
13 know, resurvey every five years.

14 So that boils down to a 10,000 square  
15 nautical mile annual refresh rate is what we, you  
16 know, was the math that we used to come up with  
17 that because we felt like that was a reasonable  
18 resurvey rate to do.

19 But I think that what we're seeing now  
20 is that our survey requests and the demands based  
21 on traffic and everything else are much more  
22 dynamic than that. And so that's why we've

1 developed this model and are pushing that  
2 forward.

3 We're not there, I think, as the  
4 admiral alluded to. We've had some personnel  
5 changes that have stymied that a little bit  
6 because we would have liked to have been able to  
7 brief you more definitively on that, so.

8 MEMBER MAUNE: Well, I think we're  
9 looking for one or two sentences that describe  
10 the magnitude of the problem here we're trying to  
11 address. And I wonder if you could give us that  
12 one or two sentence part to insert here in place  
13 of what's there now.

14 CAPT BRENNAN: I'd be happy to do  
15 that.

16 MEMBER MAUNE: Thank you. Could you  
17 do it by tomorrow when we finalize this? We'd  
18 like to vote on it tomorrow at the latest.

19 CAPT BRENNAN: I'll get right on that.

20 MEMBER MAUNE: Thank you, sir. See,  
21 you make me feel like an admiral or something.  
22 I'm giving orders. Sir, is that okay if I ask

1 you to do that? Sir, yes, sir, okay. All right.  
2 What about those dollar numbers there, 155?

3 CHAIR MILLER: I did receive a  
4 definitive from -- and I believe it is 105  
5 million that has -- or 104 million that was  
6 appropriated between 2016 and 2017. I'm fairly  
7 certain that that was in an email. So we need to  
8 change that to, I believe, 104 million.

9 MEMBER MAUNE: Okay.

10 CHAIR MILLER: And 2022 is correct.  
11 Those were just facts I was having checked. And  
12 they were, so.

13 MEMBER MAUNE: Okay. Well, if Rick  
14 gives us the new sentence or two tomorrow, we can  
15 vote on it tomorrow that we accept the change.  
16 Is that okay with everybody?

17 CHAIR MILLER: Yeah. That's fine.  
18 Let's look at the recommendations and the changes  
19 we made there.

20 MEMBER MAUNE: Okay. Scroll down,  
21 please.

22 MEMBER KELLY: Rick, just a quick

1 question. Is that 500 for the Arctic still  
2 accurate or not? Just go back up.

3 RDML SMITH: Let me jump in. Because  
4 the way I introduced the new way that we're  
5 talking about mapping requirements, I never said  
6 the words square nautical miles. And I've never  
7 said that since I've been in this chair because I  
8 don't think it's the right way of thinking about  
9 societal value delivered from this program.

10 I think the three things we did talk  
11 about, which is underkeel clearance and ports  
12 having good data where it matters the most,  
13 having discrepancies resolved in a timely way.

14 We have a shoal reported 1897 on our  
15 charts. Are we about to get to that, right?  
16 There's no performance measure that we've ever  
17 had that says you should deal with the problems  
18 on your charts, right? It's all this square  
19 nautical miles, which has nothing to do with  
20 dealing with problems, right?

21 And then there's the last one, which  
22 is that we only have a little bit of information



1 on 41 percent of U.S. waters. With 100 percent,  
2 we would be supporting not only navigation needs,  
3 but all these other societal needs, too, whether  
4 it's seabed mining, offshore energy development,  
5 fisheries habitat, et cetera, et cetera.

6 So those are the three areas that we  
7 need to be focusing on, you know, for our ocean  
8 mapping. So can we say that in a sentence and a  
9 half, I doubt it because it's not one  
10 requirement. It's really kind of three separable  
11 requirements, each of which imply a different  
12 type of performance measure. But we will give  
13 ourselves the challenge of fixing it overnight.

14 MEMBER KELLY: Admiral, I think that  
15 the whole purpose of this --

16 MEMBER MAUNE: That includes the  
17 sentence there with the 500 square nautical miles  
18 following the one in yellow there.

19 MEMBER KELLY: Yeah, this paper is  
20 really designed as a high level recommendation  
21 recognizing that there is a backlog and a  
22 problem. There are things that need to be done,

1 and we need to have the fleet to do it.

2 So you tell us what's the best way to  
3 frame that. You know, instead of saying -- it's  
4 the same issue, really. It's just how it's  
5 stated. So if you can help us with that, it  
6 would be appreciated. You hear that, Rick?

7 MEMBER MAUNE: Thank you very much,  
8 Rick.

9 MEMBER HALL: Dave, if you could  
10 provide that to me so that we have some  
11 continuity of where this is actually going to be  
12 put in. I didn't want to have her have to type  
13 in the middle of this because it's always --  
14 sucks to be the person who can't type fast enough  
15 for the rest of us who are reading. So I wanted  
16 to do that.

17 So I'm keeping the copy that is now  
18 going to be the future copy. So, Rick, I will  
19 talk to you after class, and we'll figure this  
20 out. Thanks.

21 MEMBER MAUNE: Okay. And then we  
22 wanted to roll down through the recommendations

1       there at the bottom with the four -- with the  
2       three bullets. Let people read that.

3                   CHAIR MILLER: As an explanation,  
4       particularly to the new people, what we had said  
5       previously was that we recommended that part of  
6       the funding from the two years that were funded,  
7       the initial \$80 million and then another -- I  
8       don't know the exact figure -- that part of that  
9       be used to start to replace the hydro fleet  
10      rather than right now, the first ship out of the  
11      locks is a multipurpose ship.

12                   And that's partly because they could  
13      take the design for the Sally Ride and the Neil  
14      Armstrong and modify it for general purpose  
15      needs. But they couldn't modify that for a hydro  
16      ship. That's what we've learned in the past.

17                   So our recommendation was at that time  
18      was to use part of that money for the hydro  
19      fleet. That's no longer accurate. And so these  
20      three things are what -- it's primarily the first  
21      one that changed, that basically instead of  
22      perhaps building a new ship, there's other

1 options on the table in terms of possibly  
2 acquiring a ship, possibly leasing a ship.

3 And they put out a request for  
4 information for that several months ago of the  
5 types of vessels that might be available to at  
6 least replace one of the two Arctic vessels, the  
7 Fairweather or the Rainier.

8 So instead of saying use that money to  
9 build a ship, we're saying look broader, think  
10 out of the box and look at all opportunities.  
11 That's essentially what we're saying.

12 MEMBER MAUNE: Did anybody have any  
13 comments on those recommendations as cited there  
14 in the three bullets? Oh, yes, okay. Andy?

15 CAPT ARMSTRONG: Maybe I'm jumping  
16 ahead here, but a little earlier the admiral at  
17 the beginning of the meeting gave us the brief on  
18 the SOLAS treaty. And so I guess I would suggest  
19 that we might consider including the SOLAS treaty  
20 in the sort of footnote authority mandates for  
21 doing our hydrographic surveying.

22 MEMBER MAUNE: Can you give me the

1 Footnote Number 2 to add to this?

2 CAPT ARMSTRONG: Yes, sir.

3 MEMBER MAUNE: You will note that  
4 that's sort of the role that I take here in  
5 saying, okay, you have a suggestion, give it to  
6 me in writing.

7 Yes? They say that's what colonels  
8 do. We're nagers and taskers. Okay. Any other  
9 comment? Thank you, Andy.

10 MEMBER HALL: Just that last bullet  
11 point, and Sean and I both noticed it, it says to  
12 develop whole government approach. Is that a  
13 whole of government? Is that an integrated  
14 government approach? What is whole government?  
15 That's not clear to either of us.

16 MEMBER MAUNE: What did you say,  
17 Joyce? An integrated government approach?

18 CHAIR MILLER: Yeah. Instead of whole  
19 government in that it's not very clear. That's  
20 fine.

21 MEMBER MAUNE: An integrated  
22 government.

1 CHAIR MILLER: Yeah.

2 MEMBER MAUNE: Okay. Anything else?

3 MEMBER MCINTYRE: Just looking at that  
4 last bullet point now that you point it out, it  
5 might just be better to say to develop an  
6 integrated approach and leave government out  
7 because you put agencies, academic organizations,  
8 interest, private and commercial. So I would say  
9 to develop an integrated approach to the  
10 challenge of aging oceanographic fleets and  
11 remove the word problem.

12 MEMBER MAUNE: I think everybody likes  
13 that. Thank you, Anne. Anybody else? Okay,  
14 seeing nothing else, we'll hold this off tomorrow  
15 to get two new comments in from those who got  
16 volunteered by me to submit input.

17 Then we have time, I think, to move on  
18 to the next paper, which is on Marine and  
19 Geospatial Data Infrastructure. Can you call  
20 that up on the screen, please?

21 Now this is one that has bounced  
22 around for a number of months. And we've had a

1 number of monthly meetings to discuss this thing.

2 We've incorporated most of the  
3 recommendations submitted by a number of people,  
4 members of this panel. But let's scroll through  
5 these paragraphs and see if there's any last  
6 minute changes.

7 Can you scroll down a little bit  
8 further and read that whole paragraph if  
9 possible? I guess it's too big of a paragraph.  
10 Okay. It's as wide as it can go. No. Yes. We  
11 need to go to the width of the page.

12 And people have copies so you can be  
13 reading your hard copies and not even look at  
14 what's on the screen. Yes. So you should be  
15 looking at your hard copy.

16 Okay. Let's go down to the bottom  
17 line upfront. We didn't exactly put it totally  
18 upfront because we thought it would be better to  
19 define infrastructure and different types of  
20 infrastructure upfront and put the bottom line  
21 upfront, not quite upfront. But still in bold on  
22 the first page.

1           CHAIR MILLER:  Actually, Dave, on the  
2 first paragraph, Lindsay suggested we hadn't made  
3 the statement of how different the marine  
4 infrastructure was from the land based  
5 infrastructure.

6           And so the sentence that starts unlike  
7 land based, at one point I had had that  
8 highlighted.  I think I italicized or something  
9 just so it was a bit stronger statement.  Is it  
10 italicized?

11          MEMBER HALL:  It is still italicized.  
12 Maybe not put there, but on my copy it is.

13          CHAIR MILLER:  Okay.

14          MEMBER MAUNE:  Okay.  Do you want to  
15 scroll down?  That's the bottom line there in  
16 bold.

17                 I can't hear you.

18          MEMBER HALL:  Technically not a bottom  
19 line upfront.  The bottom line is the last line  
20 for what we're actually recommending, which is no  
21 administration should highlight and emphasize the  
22 value of NOS because there's a lot going on in



1 that paragraph.

2 And I'm not sure how much we can say  
3 about what happens. And I know I was not  
4 involved, and I apologize. I'm not looking to  
5 change a lot. But having that whole thing  
6 highlighted, I think we lose emphasis on what we,  
7 as HSRP, can really ask NOAA to do.

8 MEMBER MAUNE: So you're saying the  
9 sentence that starts NOAA administration should  
10 highlight and emphasize. That should be the only  
11 part that's highlighted?

12 MEMBER HALL: I guess my question  
13 maybe is to Glenn is how much do we influence the  
14 president's infrastructure proposal? How much  
15 does NOAA -- what is the best way to inform NOAA  
16 on this?

17 I know that the group did a great job  
18 working on it. But I'm a little confused as to  
19 where HSRP's line actually is in the sand here.  
20 Every other time I've tried to do something like  
21 this it's gotten poo-pooed because it's outside  
22 our lane in the road.

1           So I just wanted to make sure that we  
2           seem a little -- that we've gone out and there's  
3           only one mention of what NOAA can do. So, again,  
4           I'm happy to be told differently.

5           I just wanted to put the question out  
6           there. I'm not looking to rewrite a paper. I'm  
7           not volunteering, Dave. I'm just putting the  
8           point out there. Thanks.

9           MEMBER MAUNE: Okay.

10          CHAIR MILLER: Perhaps we should just  
11          unhighlight the rest of it and highlight only  
12          that last.

13          MEMBER MAUNE: We can do that.

14          MR. EDWING: And I'll defer to Glenn  
15          on this. Maybe he's about to say the same thing,  
16          but given the language Glenn showed us this  
17          morning about how this has been characterized as  
18          a transformative technology, perhaps we want to  
19          work some of those words in here because it's  
20          already been recognized as such. I think now  
21          it's trying to reinforce that.

22          MR. BOLEDOVICH: I think that's

1 exactly correct. I would get that quoted  
2 language that I provided this morning. And I  
3 would say the panel was pleased to learn that the  
4 Secretary recently testified and used NOAA's  
5 navigation services as an example of an  
6 investment for the infrastructure initiative.

7 The panel fully supports this in that  
8 kind of a statement. Because you already have  
9 the Secretary of Commerce saying this is  
10 something that fits into the infrastructure  
11 initiative. Use that and offer your full support  
12 for that.

13 MEMBER MAUNE: What's going off?  
14 Okay. Glenn, could you stay afterwards to work  
15 with me on this? For maybe five minutes?

16 MR. BOLEDOVICH: After school, yes.  
17 Or I can run up to my computer and email you  
18 something.

19 MEMBER MAUNE: That's fine, too.  
20 That's fine. Yes, sir.

21 MR. BOLEDOVICH: Sir, yes, sir.  
22 That's right.

1 MEMBER MAUNE: Okay.

2 CHAIR MILLER: Sal had a comment. No,  
3 okay.

4 MEMBER MAUNE: Yes, Julie.

5 MEMBER THOMAS: It's also a place to  
6 add, let's see, levels that will accelerate MGDI  
7 improvement and importance to the blue economy.  
8 Because I don't think you really have the blue  
9 economy in here. And it seemed like a place to  
10 put it in here.

11 MEMBER MAUNE: Is that in the sentence  
12 that says NOAA administration should? Is that  
13 the sentence you're talking about?

14 MEMBER THOMAS: I know. Just the very  
15 end, at the very end. Will accelerate MGDI  
16 improvement and importance to the blue economy or  
17 something like that. It just seems like blue  
18 economy should be in there. Yes, yes.

19 MEMBER MAUNE: Okay. Thank you. All  
20 right.

21 CHAIR MILLER: So perhaps what you and  
22 Glenn work on, we should look at the president's

1 infrastructure plan. And kind of, if not, yeah,  
2 modify that to reflect the most current language  
3 we've got, whatever it is.

4 MEMBER MAUNE: Okay. Can we scroll  
5 down to the background?

6 CHAIR MILLER: Oh, actually, there's  
7 one word I'd take out there. Data products  
8 aren't acquired. Data are acquired. At the  
9 right --

10 MEMBER MAUNE: I'm trying to see where  
11 that's at.

12 CHAIR MILLER: Second to the last  
13 sentence. Take out the products.

14 MEMBER MAUNE: So data from physical  
15 surveys?

16 CHAIR MILLER: Yeah.

17 MEMBER MAUNE: Okay. Done. Okay.  
18 Scroll down, please.

19 CHAIR MILLER: No, that says data  
20 products obtained from NOAA assets. They are  
21 products. My point on that last sentence was  
22 that it says data products are acquired. It's

1 the data that are acquired, not the data  
2 products.

3 MEMBER MAUNE: I wonder if I'm looking  
4 at the wrong place.

5 CHAIR MILLER: Last two lines. Right  
6 there.

7 MEMBER MAUNE: Last two, okay.

8 CHAIR MILLER: Okay. You've got the  
9 one I changed. This is a bit earlier. Yeah,  
10 okay. Got it.

11 MEMBER MAUNE: Okay. Okay. Last  
12 paragraph on the first page. Thirty-one  
13 locations, what should it say?

14 MR. EDWING: It should be over 85  
15 percent, not 80 percent, over 85 percent.

16 MEMBER MAUNE: Okay. Is everything  
17 else okay?

18 MEMBER THOMAS: I have one more quick  
19 question there if it's okay. That price which  
20 equates to 2 million per foot. So I know that's  
21 footnoted and I didn't look at the reference  
22 there, but it really depends on the price of oil.

1 And so --

2 MEMBER MAUNE: Would you like a  
3 squiggle before it to show an approximate?

4 CHAIR MILLER: Yes, I would squiggle  
5 it.

6 MEMBER THOMAS: I mean, I'd just hate  
7 to put it. Maybe in the reference it says that,  
8 but I just don't know.

9 CHAIR MILLER: I took that right out  
10 of an NOS publication.

11 MEMBER MAUNE: Without the squiggle.

12 MEMBER THOMAS: It's what? Yeah. But  
13 then we should say on November, you know --  
14 squiggle is fine.

15 MEMBER MAUNE: Okay. Can we go to the  
16 second page that starts with nautical charts?  
17 We're on the second page now. What did you say  
18 about the second to the last line, Joyce?

19 Okay, scroll down, please.

20 MS. BLACKWELL: This is Juliana. I  
21 have one edit for Footnote Number 6. Kim, I  
22 think I just sent it to you. The citation, as

1 listed, at least on the paper copy, is for an NGS  
2 -- it's the wrong citation.

3 We should be citing the actual study  
4 itself rather than a paper written by somebody in  
5 NGS referring to the study. So I just sent Kim  
6 the actual -- it was in one of my --

7 MEMBER MAUNE: Okay. You've sent the  
8 correct citation again?

9 MS. BLACKWELL: Yes, yes.

10 CHAIR MILLER: It may be that you  
11 already have that. I'm not sure since you've got  
12 the most updated copy, but, yeah, okay.

13 MEMBER MAUNE: Okay. Can we scroll  
14 down? Okay. Then scroll down to the  
15 recommendations, please.

16 CHAIR MILLER: Now I should note that  
17 after the last phone call, we got a few comments  
18 in, some -- mostly minor. But we did we have  
19 suggestions to kind of sharpen our  
20 recommendations and thank you very much, Dave,  
21 for taking on that. I was to the point where I  
22 couldn't look at it anymore and make changes. So



1 Dave took care of those.

2 MEMBER MAUNE: You did a great job of  
3 putting it together in the first place, Joyce.  
4 Okay. Any other feedback?

5 MEMBER THOMAS: I have one more quick  
6 one.

7 MEMBER MAUNE: Okay.

8 MEMBER THOMAS: The last bullet, I  
9 think we want to say federal agencies and  
10 industry. I mean, when I do economic studies,  
11 I'm always contacting the industry themselves to  
12 ask how much a barrel is or, you know, that  
13 they're bringing in or whatever.

14 MEMBER MAUNE: I have no problem with  
15 that change. Work with other federal agencies  
16 and industry. Okay. Anything else? All right.

17 CHAIR MILLER: I have to say I really  
18 thank everyone who contributed. Ed made some  
19 major improvements to it. And I think it's a  
20 timely paper, especially if we can kind of fold  
21 in some of the words that we've heard in the last  
22 couple days, blue economy and so forth so.

1                   MEMBER MAUNE: Kim, have you made all  
2 the changes already to the paper, or are we  
3 getting input from anybody on this one? On the  
4 previous one you did.

5                   Did you have -- okay. All right.  
6 Then we can vote on both of them tomorrow  
7 hopefully. Okay.

8                   MEMBER THOMAS: How come it says for  
9 NOS and NOAA in internal? It's the second  
10 bullet. Is NOS part of NOAA?

11                   MEMBER MAUNE: Yes. NOS is part of  
12 NOAA. Well, I assume that that was written to  
13 pertain to people in NOS other than NOAA, but I'm  
14 not sure.

15                   NOS provides services that support the  
16 MG -- we could do without NOAA, is that your  
17 point?

18                   MEMBER THOMAS: Yeah. Or, yeah, if  
19 it's broader than NOS, then it should just be  
20 NOAA. Yeah.

21                   MEMBER MAUNE: Okay. All right. We  
22 can do that. Second the motion, okay. Okay.

1 All right. Any other comment? Yes, Shep.

2 CHAIR MILLER: Dave, you have to say  
3 -- do yours read --

4 MEMBER MAUNE: Okay.

5 CHAIR MILLER: And just one comment on  
6 final and final, final and final, final and -- it  
7 truly gets totally confusing, especially when  
8 you've just had -- we had a meeting and almost  
9 everybody on the phone said, hey, this looks good  
10 to me. And then I get --

11 MEMBER MAUNE: Yes. It happens all  
12 the time.

13 CHAIR MILLER: It happens all the  
14 time.

15 MEMBER MAUNE: Unfortunately.

16 CHAIR MILLER: You know, when we ask  
17 for input, I would really encourage people to  
18 provide the input before the telephone  
19 conversation.

20 And if we make changes during the  
21 telephone conversation, great. And I think it's  
22 because people don't really have a chance to look

1 at it thoroughly before the telephone  
2 conversation.

3 So at any rate, I have the same --  
4 what is in my folder is the same as what's on the  
5 screen.

6 CAPT KRETOVIC: I just wanted to ask  
7 a quick question of the panel. Would Google Docs  
8 help you all --

9 MEMBER MAUNE: No, usually not.

10 (Chorus of no.)

11 CAPT KRETOVIC: No. Okay. All right.  
12 Never mind. Thank you.

13 MEMBER MAUNE: Yes, Shep.

14 RDML SMITH: The acronym MGDI is that  
15 a term of art elsewhere? Because there's a one  
16 that's very similar to that called MSDI, which  
17 stands for Marine Spatial Data Infrastructure,  
18 which is the term of art preferred at least in  
19 sort of IHO/UN type circles. So --

20 MEMBER MAUNE: We have been debating  
21 this. This is a new acronym.

22 RDML SMITH: This is the new version?

1                   MEMBER MAUNE: This is a new acronym  
2 that we created to be specifically marine and  
3 geospatial data infrastructure, which is not  
4 necessarily marine. There is geospatial data  
5 infrastructure in addition to marine. So that's  
6 why we came up with this one.

7                   CHAIR MILLER: And Julie had pointed  
8 out that at one time in the government, marine  
9 spatial planning was kind of a no-no. It sort of  
10 was like other phrases that were not looked upon  
11 kindly.

12                   And so we decided we would go  
13 somewhere else and what we came up that was  
14 agreeable to everyone. I think it's much more  
15 descriptive to say marine and geospatial because  
16 that broadens it to Juliana's bailiwick.

17                   MEMBER MAUNE: That's the rationale,  
18 sir.

19                   CAPT BRENNAN: The Canadians came up  
20 with the term hyperspatial so --

21                   MEMBER MAUNE: You might disagree, but  
22 that was the rationale.

1                   CAPT BRENNAN: You can go there if you  
2 wanted to.

3                   CHAIR MILLER: I believe we've -- do  
4 we have our --

5                   MEMBER MAUNE: 4 o'clock speaker.

6                   CHAIR MILLER: Our 4 o'clock speaker?

7                   MEMBER MAUNE: Our plan was to stop at  
8 4:00 so we could have our speaker. Sir, I  
9 apologize if I seem a little bossy up here. It's  
10 just part of my nature. Oh, you weren't? I'm  
11 known back home as the nagger. I'm the chief  
12 nagger in my company.

13                   CHAIR MILLER: Don't leave though,  
14 please.

15                   (Whereupon, the above-entitled matter  
16 went off the record at 4:03 p.m. and resumed at  
17 4:11 p.m.)

18                   RDML SMITH: I'd like to introduce Rear  
19 Admiral Nancy Hann, who is the new Deputy  
20 Director of the Office of Marine Aviation  
21 Operations and the, Nancy, you're going to have  
22 to fix my title exactly here, but you're the

1 Director of Operations for the fleet and the  
2 aircraft.

3 She has agreed to brief us on the  
4 update to NOAA's fleet plan and the discussions  
5 that have been happening in Washington on the  
6 fleet. So Admiral Hann was selected as a Rear  
7 Admiral about, I think she's been in her current  
8 role about two months, replacing Admiral Anita  
9 Lopez, who retired in January.

10 Nancy's background is in aircraft  
11 operations. She was the CO of the Aircraft  
12 Operations Center in Florida and has a wide  
13 variety of experience through NOAA.

14 So Nancy, just to give you a flavor of  
15 who you're talking to, we've got a room with a U-  
16 shaped table with about 20 people around it and  
17 then about another 20 in seats in the back, and  
18 we are webcasting this and it is a public  
19 meeting. So I want to make sure you know who  
20 you're talking to. So with that I'll turn it over  
21 to you, Admiral Hann.

22 RDML HANN: Thank you for that

1 introduction and thank you for the opportunity to  
2 speak. I'll keep this pretty informal. I'll talk  
3 for about 15 minutes and then open it up for  
4 questions. Can you hear me okay? Is it coming  
5 through okay?

6 RDML SMITH: Loud and clear.

7 RDML HANN: Okay. I'll start with a  
8 little bit of background. Most of you have  
9 probably heard this but just to make sure we're  
10 all at the same starting point.

11 In October of 2016 NOAA released  
12 publicly, which means we're allowed to share it  
13 with the Hill, with Congress, with public  
14 industry the NOAA fleet recapitalization plan.  
15 That was a plan that went 2016 through 2028, and  
16 that time frame was chosen because that's the  
17 time frame during which half of our ships, so  
18 half the 15 ships are set to be decommissioned.  
19 Many will already be beyond the end of their  
20 service life, many already are, so it's not the  
21 end of the service life but it's the date at  
22 which based on the information we had at that



1 time, we planned to take them out of service.

2 NOAA traditionally has built ships, so  
3 we had funding based on earmarks when those were  
4 a thing, or disaster supplemental, and about half  
5 of our ships, about eight of the ships were  
6 inherited from other services or hand-me-downs.  
7 We don't have a complete fleet that's  
8 specifically designed and built for us, which has  
9 been a somewhat limiting factor.

10 The NOAA fleet plan really took a hard  
11 look at our requirements from all across NOAA.  
12 Those prioritized requirements in those specific  
13 mission and activity areas for the long term,  
14 through 2028 but beyond that, what do we need to  
15 continue that level of support. The plan is  
16 available. If anybody hasn't read it and is  
17 interested in reading it, if you google it you'll  
18 find that it's on OMAO's website.

19 That plan started in OMAO but it was  
20 a cross-line effort from across NOAA so every  
21 line office had a member or more than one member  
22 that was on what we called the Tiger Team.' The

1 Tiger Team came together and did that level of  
2 analysis in writing that produced the fleet plan.

3 Also kind of parallel to that which I  
4 think is important is prior to that. In January  
5 of 2016 we started an independent review team.  
6 That was a team of I think 12 individuals from  
7 across industry, academia, government, Coast  
8 Guard, Navy, NSF, really a who's who in  
9 shipbuilding, ship operations, ship technology.  
10 We brought them together as an independent review  
11 team so they had tasks from us but their opinion  
12 and analysis was completely their own with no  
13 control from NOAA to look at our fleet.

14 Look at our fleet of what do we need,  
15 how are we operating it, what's it long-term  
16 sustainability look like, and they're the ones  
17 that said well, first and foremost you need a  
18 long-term fleet plan, and from that  
19 recommendation the Tiger Team I mentioned was  
20 formed. The fleet plan was written.

21 That fleet plan went through review at  
22 the NOAA level, so every AA or system

1 administrator which is the head of a NOAA line  
2 office signed it. The administrator at the time,  
3 Dr. Sullivan, signed it. It then went through  
4 Department of Commerce and got clearance, went  
5 through the Office of Management and Budget for  
6 clearance, and then went to the Hill and became  
7 public for everybody. So that's kind of the base  
8 of all that.

9 We are very clear in saying this plan  
10 is based on the best information we have at the  
11 time. We're putting a stake in the sand because  
12 information will constantly be changing and we  
13 know that. There will be updates to the fleet  
14 plan as necessary. We didn't define specific  
15 times to do updates because it's really going to  
16 depend on how dynamic and frequent that  
17 information is changing.

18 One major body of knowledge we knew  
19 was underway at the time was end of service life  
20 assessments on all the ships. Those were done by  
21 ABS, American Bureau of Shipping. We're doing  
22 those on almost all the ships. We're not doing

1       them on a few of the newer ships. But that's  
2       really a stem to stern top to bottom assessment  
3       of infrastructure, material condition, mechanical  
4       assessment and figuring out what does the life of  
5       that ship and those four independent components  
6       look like?

7                       We get that assessment from ABS, we  
8       perform additional analysis in-house with our  
9       engineering team, and that's the phase we're in  
10      right now. We have some of the reports and are  
11      doing in-house analysis. Ultimately we will take  
12      that and our detailed maintenance planning and  
13      that will inform an updated chart and there will  
14      be some movement on the end-of-service-life dates  
15      that are in the fleet plan. But it's a very  
16      involved, analytical, heavy process, so those  
17      dates have not been released and it will probably  
18      be a while until they will be but that will be  
19      the next update to the fleet plan that we  
20      foresee.

21                      Also on par with the fleet plans we  
22      needed a stable funding profile, so ramping up an

1 acquisition shop to build based on money here and  
2 there and then diffusing it does not give you  
3 economy to scale, it doesn't give you expertise,  
4 it doesn't give you a holistic fleet. So it's  
5 better than nothing is what we have, but we  
6 worked very hard across NOAA to get a stable  
7 funding profile with that fleet plan.

8 The first chunk was an FY fiscal year  
9 '16. We had 75 million and that's repeated in  
10 fiscal year '17 and just came out in the fiscal  
11 year '18 omnibus. We're on the third year of 75  
12 million dollar funding, and our intent is to keep  
13 working to have that level of funding continue  
14 every year.

15 We are working with the Navy to  
16 develop the first vessel. The first vessel is an  
17 AGOR derivative and the AGOR is the new Armstrong  
18 or the Sally Ride that you don't have.

19 That AGOR will be a derivative of that  
20 vessel. We're doing an assisted acquisition, so  
21 we're leveraging the Navy Acquisition Office to  
22 help with that design, using our in-house

1 platform acquisition division which, with this  
2 stable funding profile, has given us the  
3 opportunity to grow that shop, that platform  
4 acquisition division, in house and really have  
5 those economies of scale those lessons learned  
6 those holistic fleet advantages.

7 We are also, we put out an RFI request  
8 for information to query industry and see what's  
9 out there in terms of other capabilities, being  
10 responsive to the environment we're in right now.  
11 The price of oil has changed, it's a different  
12 market now than it was five years ago for ships,  
13 especially new ships that might be coming off-  
14 line and being laid up or set aside when they're  
15 only a year or two old.

16 So we are constantly looking at the  
17 industry and environment and being receptive to  
18 all our options, and again if those things were  
19 to change they would show up in an update to the  
20 fleet plan and then once it's publicly released  
21 that's where that information would be again.

22 I also mentioned maintenance, so in

1 the FY18 omnibus, we had an increase of about 23  
2 million dollars in maintenance funding, so while  
3 it's nice to build new ships and have a sustained  
4 level of funding to build the ships, it's equally  
5 important that we sustain the ships we have and  
6 keep them technologically relevant and  
7 operational and have a proactive maintenance  
8 plan.

9 So that increase in 23 million dollars  
10 in funding in the '18 omnibus really helped move  
11 our maintenance plan forward, can help implement  
12 the plans we have in the long-term maintenance  
13 plan, look for opportunities for standardization,  
14 technology integration, and that is part of the  
15 analysis that will go into those end-of-service-  
16 life dates, using the data from the end-of-  
17 service-life assessments and seeing where  
18 investments need to be made, looking at the money  
19 we have to invest in maintenance and then looking  
20 at the options for those ships holistically as a  
21 fleet.

22 One thing Admiral Smith and I have

1 talked about is we're very aware of the  
2 programmatic needs which is driven by the NOAA-  
3 prioritized requirement, and so we're very  
4 cognizant of the need to maintain continuity in  
5 that ship support for programs as we go through  
6 all these moving pieces.

7 Admiral Smith, is there anything else  
8 you think would be helpful for me to address  
9 specifically?

10 RDML SMITH: Thank you, I think that  
11 was very helpful but this group is also looking  
12 at the NGS and COOPS and so maybe you could  
13 comment on the aircraft. We already discussed  
14 earlier today how we're one serial cable away  
15 from not having the King Air, for instance, for  
16 hurricane response.

17 RDML HANN: Sure. This year, as I've  
18 also said, I was the commanding officer for the  
19 aircraft operations center for this hurricane  
20 season, so it was very apparent first-hand that  
21 we have an important role to play for the nation.

22 Those products and services that we



1 deliver, not just for the forecast but I think  
2 for the emergency response really got some  
3 attention this year that maybe it hadn't before  
4 and what the level of that data, the importance  
5 of it for emergency manager planning for, you  
6 know, where do you direct your limited assets  
7 first for the general public that's been  
8 evacuated from their home and they just want to  
9 see if they have a home, or a business owner that  
10 want to see.

11           The value of that data was incredible,  
12 but again we had one King Air to do that work and  
13 likewise, we had one G4 which is the only high  
14 altitude jet to inform those forecasts.

15           For a little context there, the  
16 Weather Bill came out, so the Weather Bill  
17 mandated us to have backup redundancy capability  
18 for the hurricane hunters, so for the P3, those  
19 are the lower altitude, they fly in the storms.  
20 We have two of those.

21           Alternately, they've been in  
22 maintenance getting new wings, doing a major

1 overhaul but when we get the second one back  
2 later this year we'll have two, so that meets the  
3 Weather Bill requirements.

4 The G4, we only have one, and it's an  
5 older plane. It's tracking as expected on the  
6 Conklin and de Decker industry performance  
7 standards, but it's about 70 percent reliability  
8 right now and no matter how much money we pour in  
9 it, that's going to be where its performance is  
10 at.

11 So in the midst of the hurricane  
12 season this year there was a lot of attention,  
13 both media and congressional as you probably saw,  
14 around getting redundancy for the King Air  
15 emergency response and for the G4 storm  
16 forecasting, so that showed up in the FY18  
17 omnibus. There's 133 million dollars. 12 million  
18 of that is to get a King Air.

19 That King Air will replace our current  
20 Turbo Commander, which is very old and needs to  
21 be retired, so it will be performing primarily  
22 the Turbo Commander mission, which is the snow

1 survey or the water resource management but we  
2 are also working through the requirements process  
3 to see what level of capability we can have in it  
4 for emergency response, and certainly make it  
5 available as needed.

6 121 million of that is for a G4 replacement  
7 to do that hurricane work as well as other off-  
8 season work. So we are working, we are leaning  
9 forward pretty far on the requirements for those  
10 aircraft. If you're watching public documents you  
11 would have seen that come out, like an RFI for  
12 both of those aircraft again to do that industry  
13 research ahead of time. In the event we did get  
14 funding, we knew we needed to move very, very  
15 quickly to get those aircraft online as quickly  
16 as we can.

17 So we kind of picked up on the work  
18 we'd already done on those acquisitions and are  
19 moving forward very quickly by working to bring  
20 another King Air on line and then a G4  
21 replacement, which we don't know exactly what  
22 that platform will be yet. Does that help with

1 that question?

2 RDML SMITH: Yes. Thank you, Admiral.  
3 As I appear to have the chair temporarily here,  
4 Joyce, I hope you don't mind, I'll ask for any  
5 questions for Admiral Hann. Joyce?

6 CHAIR MILLER: Admiral, this is Joyce  
7 Miller. I'm chair of HSRP. Can you for us, we're  
8 actually revising a paper we wrote a couple of  
9 years ago about hydrographic fleet replacement,  
10 so could you update us on the status of both the  
11 Rainier and the Fairweather for Alaska work?

12 RDML HANN: Yeah, so they both had end-  
13 of-service-life assessments. There's still a  
14 level of analysis being done on both of them, but  
15 we're definitely very aware that they just passed  
16 their, you know, we just celebrated their 50th  
17 birthday, so they do need attention and we're  
18 looking at that.

19 We're looking at it from the  
20 perspective of charting and surveying and  
21 everything, all the activities that are within  
22 that mission, but it is definitely, as Admiral

1 Smith and I have talked about, it is definitely  
2 on the front of our minds that those are older  
3 ships and while the Fairweather had some time  
4 laid up and in fresh water, so it benefitted from  
5 that, the Rainier did not.

6 So I can't give you an exact date that  
7 they'll be coming off line or an exact date or  
8 type of replacement that's allowed, but they are  
9 definitely at the front of our mind.

10 CHAIR MILLER: And are there any  
11 actions to replace them currently, or what's the  
12 status on that?

13 RDML HANN: If you look at the fleet  
14 plan, those two types of ships or missions are  
15 categorized as a Class B. We define the ships in  
16 the fleet plan as four types. Class A, newer  
17 Class A or Alpha, Class B, Class C and Class D.  
18 So those two fit into the Class B ships, and on  
19 those and C currently we're doing requirements  
20 analysis and some of the preliminary acquisition  
21 work that has to be done.

22 CHAIR MILLER: Other questions?

1 RDML SMITH: Admiral Hann, thank you  
2 very much for calling in. I did want to flag that  
3 our, the next meeting for the HSRP is in Juneau  
4 in August, and we will be sure to invite somebody  
5 from OMAO to join us, either remotely or in  
6 person, for that meeting as well. I really  
7 appreciate you taking the time to call us and  
8 update us on the fleet plan, and look forward to  
9 seeing you soon.

10 RDML HANN: Thank you for the  
11 opportunity, and I agree, I think it's a good  
12 thing to keep these updates at your meeting, so  
13 we're all sharing the same information. Thank  
14 you.

15 CHAIR MILLER: Rick, you have a short  
16 update on --- okay.

17 CAPT BRENNAN: Okay, so there's been a  
18 lot of discussion about precision navigation, so  
19 I'm going to at least give a brief update on  
20 that. This is the slide that I think we've used  
21 in a number of the previous ones to just get at  
22 what we're talking about when we talk about

1 precision navigation. This may or may not be all  
2 of them. I think the thing that lays underneath  
3 this is obviously the National Spatial Network  
4 that controls the geodetics of all of this, so  
5 it's sort of like eggs, they're baked into the  
6 cookies in this, so you have to assume that  
7 that's there.

8 But on the website for orientation  
9 purposes, you can see that it has basically all  
10 the forecasts, so that would be our various model  
11 inputs, and on the right it's the actual  
12 observations and as the Admiral pointed out  
13 today, really I think if you're sailing a ship in  
14 you need both of those.

15 If you take, for instance, while in  
16 the Columbia or if you take the Chesapeake, those  
17 transits are frequently, may be multiple tide  
18 cycles depending on what coast you're on, and so  
19 the conditions that you experience at the mouth  
20 of that estuary or body of water may be  
21 completely different than what you experience by  
22 the time that you get to your destination. So

1 knowing what that's going to look like before you  
2 get there and before you embark on that is  
3 critical.

4 Conceptually, I'd like to paint the  
5 idea of what we think that this looks like, so  
6 what I am proposing and for anybody that's dealt  
7 with mil spec computer equipment, this is a giant  
8 data cable.

9 I'd like you to imagine this, if you  
10 would, as what we'd like to be able to do is  
11 bring a big giant data cable to be able to plug  
12 into the back of a ECDIS system, we'll be able to  
13 plug into, and I use 'plug' loosely, to provide  
14 that data to a portable pilot unit, to be able to  
15 provide that data to the computer at the  
16 logistics desk inside of some port operations  
17 facility, but basically all the data that we  
18 talked about on that wheel before, we would be  
19 providing that digitally in a computer to  
20 computer readable format that the user doesn't  
21 have to think about.

22 So when you talk about, when you pull



1 your iPhone out and you pull up the Google Earth  
2 app, you don't ask it for a map, you don't have  
3 to put in what chart number you want to see, you  
4 don't have to pull up what operational forecast  
5 model you want to be using, you don't have to  
6 pull up what tide gauge you want to see the data  
7 from. You just go and open it and it just  
8 presents it for you based on the spatial extents  
9 of the area you've zoomed into.

10 So ultimately that's the sort of  
11 smarts that we would like to build into this  
12 system so that it's available to everybody, it's  
13 open source and it's formatting its data  
14 structure so that it's there and it feeds all of  
15 those services.

16 So you've ripped the end off of that  
17 data plug. What you would get is each one of  
18 those data leads may have a, or cable leads,  
19 would have a different format. It may be water  
20 levels and I, just for the sake of simplicity I  
21 didn't put the observed in forecast variants of  
22 that but you can imagine that each one would

1 carry a different data stream from that and it  
2 would be delivered to that point.

3 Again, I apologize if this is too  
4 electrical engineering techy for you, but that's  
5 the way I think about it, of how we want to be  
6 able to deliver that.

7 So anyway, just to give you a brief on  
8 where we stand with Long Beach. We've got a, some  
9 of you may have seen this, some of you may not,  
10 but I think it's an interesting video that talks  
11 about the most recent ship that was brought in,  
12 and just so everyone is aware, Tesoro was, I  
13 believe, bought and it's now actually Andeavor so  
14 I know in the past we talked about Tesoro and the  
15 partnership with Tesoro. I don't think Tesoro as  
16 a company exists any longer.

17 Did they change the name? Okay. I'll  
18 say what she just said. They just changed their  
19 name, they didn't want to be known for oil, so  
20 Tesoro's new name is now Andeavor. In this case,  
21 the video talks about the Andeavor ship TAQAH, so  
22 if you want to go ahead and roll that video.

1 (Video plays.)

2 It's interesting that the prime  
3 takeaway that they gave was that it was less  
4 fuel, or less, fewer ships and less pollution,  
5 which is obviously one of the big issues that  
6 they have in Long Beach and in Southern  
7 California, is their concern about pollution.  
8 They actually monitor the ships speeds, because I  
9 think that they don't want engines idling and  
10 putting exhaust fumes into the air so speed of  
11 getting in and reducing number of ships is an  
12 issue for them.

13 So I think it's not always great news  
14 with regard to the underkeel clearance system  
15 that they introduced, so this is one instance,  
16 this is what the port of Long Beach gets from  
17 their underkeel clearance system and it's a,  
18 basically it's a recommendation based on a ship's  
19 arrival time whether or not it can go or not go.  
20 You can see the red line, I think you can see the  
21 red line, it's on the left hand side of that blue  
22 graph at the top, is the scheduled arrival of a

1 ship that they had proposed for that particular  
2 time and if you see the white areas are areas  
3 where it is not available to go. In this case, I  
4 believe that it's combined and it may be tide  
5 window and it may be waves.

6 But in this case I think you can see  
7 there's that large bar, that bar that stretches  
8 across the entire graph of white at the four  
9 kilometer mark, and these are all basically  
10 kilometers from the sea buoy into the pier, the  
11 now Andeavor pier, but at that one point, at the  
12 four kilometer mark, the ship changes course  
13 there. In this particular case, what they found  
14 was that it was the response to the particular  
15 wave train that was being sensed at that  
16 particular point and the response frequency of  
17 the vessel itself on that particular course.

18 So while it was fine under those wave  
19 conditions on the previous legs, as soon as it  
20 turns you can imagine if the waves on that leg  
21 were broadside, for instance, it may have had a  
22 different role characteristic or motion

1 characteristic that would have caused its dynamic  
2 draft to change in a way that violated its draft  
3 restrictions there, and hence the whole transit  
4 was marked as a no go. That's why that route is  
5 shown in red right now. It got a no go and they  
6 had to reschedule it. I think they tried a couple  
7 of versions and found that there was a time when  
8 they could delay and get that ship in.

9           That's the kind of computational  
10 ability that this system has, and as I think some  
11 of you noticed, they were also referring to it in  
12 intensive feet, which is interesting, so I think  
13 they were able to bring this in at 68.7 feet of  
14 draft on that. I think we were excited. We just  
15 rounded it up to 69 which is to date the deepest  
16 draft that they have brought in at this point.

17           Coming up as far as precision nav  
18 goes, and certainly from coast surveys  
19 perspective, we're currently working on New York.  
20 We've had, over the past two summers we've had  
21 survey operations on the Hudson River all the way  
22 up to Albany using NRTs and Bay Hydros, and we

1 also have other surveys within the port of New  
2 York.

3 This is also the area where we are  
4 starting the national charting plans, rescheming  
5 of charts. That's also where we are rolling out  
6 National Bathymetric Source Database, so that's  
7 currently being built in the same area. We hope  
8 to have new charts with higher resolution and  
9 depth areas and soundings as a part of that.

10 We're also going to be starting survey  
11 operations in the Mississippi this summer, so  
12 we're very excited about that. We'll be working  
13 with the NOBRA pilots and the Bar pilots for  
14 that. Houston and Savannah have also expressed  
15 interest in that, so those are based on the size  
16 of the ports or the ports that we're currently  
17 developing plans on going to next and what those  
18 particular ports are going to need.

19 I think as we've discussed, each port  
20 is different so while waves dominated in Long  
21 Beach, they're not a dominant factor in the  
22 Mississippi, they're not a dominant factor in

1 Houston/Galveston and when you look at New York,  
2 for instance, air draft is a growing issue there  
3 so much that they're raising bridges.

4 MEMBER KELLY: Done.

5 CAPT BRENNAN: To date, I think that  
6 I'll just talk about what progress we've had. As  
7 I think the Admiral discussed, there are budget  
8 initiatives underway so we're anxiously waiting  
9 to see if those pan out.

10 We're currently developing a project  
11 manager position within coast survey to be able  
12 to manage this on a more robust and active  
13 schedule. It's currently been a collateral duty  
14 of mine and I think we're seeing as the project  
15 grows it's going to need more full time  
16 attention.

17 We're working on costing and benefit  
18 models now for each of these ports to understand,  
19 working with our navigation managers, to  
20 understand what those requirements for each port  
21 are. Is it a current meter, is it an air gap  
22 sensor, is it a high-resolution chart overlays or

1       ENCs, and what is that going to cost for the  
2       initial build out, what is it going to be to  
3       maintain that, and what does that cost cycle look  
4       like? We're working that currently.

5               I think, again, to just repeat what  
6       Admiral Gallaudet said, we're excited because it  
7       seems to be gaining, the concept of precision  
8       navigation is gaining broader visibility. To hear  
9       Secretary Ross mentioned this in his briefing was  
10      certainly exciting and panic-inducing for all of  
11      us on the ground who for the longest time have  
12      been toiling in obscurity on that, so that was  
13      great news.

14              And then finally, the lab in  
15      conjunction with COOPS has been working with  
16      Rosepoint to work on which is a portable pilot  
17      unit manufacturer software developer. They may  
18      not be doing portable pilots anymore, I'm not  
19      sure. I think that had been a big part of their  
20      business. I think now they're just focusing on  
21      more to the electronic chart systems. They've  
22      been a partner that's been willing to lean



1 forward with us on this technology, so they've  
2 been working on ingesting our operational  
3 forecast models into their software and working  
4 with us, because frequently that's the issue that  
5 we have.

6 We have these, like, a net CDF for  
7 anybody who knows what that is, it's a fairly  
8 wonky scientific data format that scientists use  
9 but it's not a great tool to bring data in for  
10 display and visualization on the fly in a real  
11 time navigation system. What we've been doing is  
12 iterating with these manufacturers to see okay,  
13 how does this work, how does that work, does  
14 this, you know, can you bring that in?

15 And that's frequently been the  
16 challenge because as we push forward, a lot of  
17 this data is much denser than we currently use  
18 and so when you start talking about gridded  
19 bathymetry, you start talking about gridded model  
20 fields that have multiple ensembles inside of  
21 that package, it becomes more difficult to  
22 transmit, more weighty to load into memory, and

1 so figuring out what works on the fly so suddenly  
2 your portable pilot unit doesn't cease to operate  
3 and freeze as you're navigating in because the  
4 data that's trying to load is as critical. That's  
5 a project that we currently have going.

6 I believe that is it. My time was up  
7 from the minute I started, so I was just winging  
8 it. I'll take any questions if there's any.

9 Lindsay?

10 MEMBER GEE: Just regarding, maybe it  
11 was intentional or not, you had your plug but it  
12 actually wasn't connected and plugged in. It  
13 seems like with all the others, like the  
14 underkeel clearance and the actors and  
15 potentially the vessel traffic radar and you want  
16 to send that out as well, providing that to the  
17 end user is not necessarily going to be a  
18 portable pilot unit, it's going to be something  
19 in between that's going to integrate that. I  
20 think that's what we see in overseas ports,  
21 right?

22 CAPT BRENNAN: Absolutely.

1                   MEMBER GEE: And so are you working  
2 with anybody in that regard that might be a local  
3 integrator that, as you said it would be  
4 different in each port but are there any  
5 industrial partners that you've kind of  
6 identified for that role?

7                   CAPT BRENNAN: We don't, and we've  
8 talked about a number of ways of doing that, so  
9 there's SBIRs, there's CRADAs, so I think we're  
10 in early stages. Again, we have no funding to do  
11 this. At this point we've just been talking about  
12 how would we be ready to go if we were to get  
13 that, and what can we be doing under existing  
14 funding to continue to push the idea and the  
15 concept forward. I think that's the vision,  
16 right?

17                   And like I said, we're talking about  
18 a hard wire. It certainly wouldn't be a hard  
19 wire. I think what we would like to see is  
20 something wireless, right, because I think that's  
21 the thing that's clear. All commercial vessels  
22 right now, or 98 percent of commercial vessels

1 have some sort of internet access on board at  
2 every minute of their transit from berth to  
3 berth, and so the restrictions that we've had in  
4 the past of getting data to the vessel are going  
5 away so I think thinking about this in a wireless  
6 semination protocol is the way that we would like  
7 to go which is why we were looking for that  
8 computer to computer interaction so that you're  
9 not having to go in and say, oh, I want file or  
10 chart 12345, I'm going to download that.

11 I think we want to move away from that  
12 sort of transactional interaction between the  
13 customer and our products. We want to just have  
14 the stream there, so having all that stuff ready  
15 and served up and available to be delivered in an  
16 easily-consumable format is, I think, nirvana for  
17 what we're trying to achieve.

18 MEMBER GEE: Right. That might be, I  
19 think, that eventual nirvana, but in the interim,  
20 in that transition, to sort of have that  
21 successful next pilot or next demonstration. As  
22 you say, the Rosepoint working on the ingestion

1 of net CDF. It's kind of like every data  
2 structure you've got there is not simple and  
3 easily displayed, so it's that interim work that  
4 makes it easily displayable and pushes it out  
5 there into the eventual users.

6 And the people making the portable  
7 pilot units aren't necessarily the one that's  
8 going to do that work, I think. So I just see  
9 from what I've seen overseas I think there's  
10 something in the middle that helps deliver that  
11 to the end users.

12 RDML SMITH: May I jump in here? For  
13 example, on the Mississippi River there are four  
14 pilot groups on the Mississippi, Sean can jump in  
15 here and add some flavor, but they, anticipating  
16 that we're going in this direction, they already  
17 standardized for the four pilot associations, on  
18 Trelleborg and have started to get that built out  
19 and get the their pilots and user operations  
20 aligned with that technology.

21 I think what's tricky about this is  
22 that this is the customer's partner and not our

1 partner. This is what's hard about public/private  
2 partnerships, right, is we have to look like the  
3 handsome guy in the corner that everybody wants  
4 to have a dance with and attract them, but we  
5 can't, we're not, we can't do the initiating here  
6 because it needs to be that partnership.

7 So we can't choose, we can't pick the  
8 sort of commercial winners. It really needs to be  
9 the customers and in the end the ports and the  
10 pilots and the other decision-makers need to  
11 choose their systems people that they want to  
12 work with.

13 What is important for us, though, is  
14 that we do that in a standard way. We don't want  
15 to have some half-baked thing that we do in Long  
16 Beach and a different half-baked thing that we do  
17 in the Mississippi that is ultimately  
18 incompatible with what needs to happen in New  
19 York. Whatever comes out of that plug should be  
20 what comes out of that plug, and has a geographic  
21 context but it's the same stuff.

22 And in fact, it should be the same

1 stuff that comes out of the plug in Rotterdam and  
2 in Singapore. This is what we're working toward,  
3 you know, each of those things does have an  
4 international standard in development and we're  
5 working both with the manufacturers and our  
6 counterparts around the world to get those in  
7 place as soon as we can.

8 CAPT BRENNAN: If I can jump in, that's  
9 one thing, that's the exciting part about these  
10 relationships with Trelleborg, with Rosepoint and  
11 just in the realm of the portable pilot units, is  
12 they're completely unconstrained. When you start  
13 talking about an ECDIS system it has to be type  
14 approved, it has to be IHO compliant, you have to  
15 have all of that.

16 When we're talking about the portable  
17 pilot units, we can try all sorts of things. So  
18 if we lean forward here in the U.S. and we try  
19 those, try and fail and try and fail and come up  
20 with something that really works in the portable  
21 pilot units, we can push that forward through our  
22 IHO channels to the IHO and lead the development

1 of those standards, which is really where we want  
2 to be. We want to lead those standards. We want  
3 to start it here in the US.

4 And the places that are doing this in  
5 Europe, it's not typically the HOs. It's usually  
6 the port. So when we look at Rotterdam and we  
7 look at all these other ones, it's the ports that  
8 are doing that. They control the surveys, they  
9 control the chart production, they control all  
10 that. It's different than here in the US.

11 MEMBER GEE: Sorry, I totally agree. I  
12 was just trying to say that I wouldn't like the  
13 panel to think that this is something that just  
14 happens. I think it does need the ports to be  
15 actively engaged in like, how do we solve this  
16 problem? You're going to provide, and it comes  
17 back to this digital infrastructure again, the  
18 goal should be this is an essential bit of  
19 infrastructure but the rest of it? Over to the  
20 ports, not you. Over to the ports to utilize that  
21 properly to their benefit. I agree, totally.

22 MEMBER DUFFY: I'd just like to follow



1 up, since we are talking about the Mississippi  
2 River. There's also other components too. Right  
3 now we have draft restrictions on the river.  
4 We've had a high river, we've had some issues  
5 with getting dredges to respond, so the economics  
6 of the ability to include more data sets, air gap  
7 sensors are a huge deal but it's very hard to  
8 quantify.

9           Sometimes we have a draft restriction  
10 and we have vessels that go elsewhere, and you  
11 never really have a way to capture that. I've  
12 been asked that question a lot over the last 15  
13 years and I have no better answer now than I did  
14 15 years ago. We know what we know.

15           We have one vessel in port right now  
16 that loaded to 47 feet, which was the draft at  
17 the time it was loading, and 44 came up so it's  
18 trapped in the river. I'll be careful what I say  
19 because it's being recorded, but that agent calls  
20 me a couple of times every day, asks me how I'm  
21 doing, when's the draft going back to normal,  
22 when can he get out of Dodge?

1           So looking at those kind of, trying to  
2           help provide data that we don't have. As you  
3           mentioned, we do have the four pilot groups of  
4           three state pilots and the federal pilots, and  
5           each area in many ways is a little bit different  
6           with different challenges, but trying to capture,  
7           increase air gap sensors, that's one thing we  
8           definitely would look at for a multitude of  
9           reasons.

10           I know that we have a good working  
11           relationship, Captain Brannon's been down, we  
12           work closely and would be happy to help with kind  
13           of deferring to the pilots on some of that  
14           related to the PPU's and how they look to capture  
15           that.

16           But the advantages to the navigation  
17           industry and being able to have more information,  
18           looking at having draft restrictions right now, I  
19           get the call every day, when are we going down?  
20           We have multiple dredges working now but it takes  
21           a while to recover the channel. And of course  
22           it's the most dynamic shoaling in the country and

1 it changes very quickly at times. Lots of  
2 specific challenges to the river system.

3 CHAIR MILLER: Other questions or  
4 comments for Rick? Okay, Dave --- Actually we had  
5 the public comment period this morning and we  
6 will have one tomorrow at about the same time. Is  
7 that not correct, Lynne?

8 MS. MERSFELDER-LEWIS: Yes.

9 MEMBER MAUNE: Okay, then, fine, we can  
10 continue with the Planning and Engagement Group  
11 section, and I'm going to turn this over to Kim  
12 because last year we were talking about are we  
13 running out of ideas on issue papers and what  
14 should we address next? And Kim came up with the  
15 idea of trying to identify other topics and to  
16 prioritize them. We call this our HSRP Matrix. We  
17 don't? What are you calling it

18 MEMBER HALL: It's a prioritization  
19 matrix, and it's not really a matrix because  
20 that's not how it ended up getting built, so it's  
21 just really our topic prioritization list.

22 MEMBER MAUNE: Okay. Go ahead.

1                   MEMBER HALL: I am going to say one  
2                   thing before I start. I'm a little frustrated  
3                   because I know that there's been some different  
4                   takes on how we did this. Like I said in our  
5                   meeting this morning, I think it was actually  
6                   very successful for a first try at getting folks  
7                   to answer, and I've made it as painless as I  
8                   possibly could.

9                   I know there's two different surveys  
10                  via Survey Monkey. It was all based on the fact  
11                  that I wasn't going to pay for the higher level  
12                  one to get us where you could do it all in one.  
13                  So we're using free software and there are  
14                  limitations to that, as people know I'm sure, in  
15                  the hydrographic world as well.

16                 So when we did it we briefed it out to  
17                 the group several times in our Planning Engagement  
18                 Working Group. I think where we are now and what  
19                 we need to do is what we expect happens with that  
20                 list because I do believe that some of those  
21                 priorities are on there, there is some expectation  
22                 that there would be coverage at the meeting here,

1 and I think we have some things to do to grow from  
2 it.

3 I think we should continue to do it  
4 that way. I think it provides an opportunity.  
5 Obviously I think we should have a good discussion  
6 on topics that people are interested in, and I  
7 will update the survey and send it out fairly  
8 quickly after the meeting with the newer topics,  
9 or see where we stand.

10 But I think it's really an important  
11 thing to do kind of behind the scenes to allow  
12 people to, number one, think about it and number  
13 two, not all of us are as vocal as others so it  
14 provides yet another venue for maybe the more  
15 quiet folks to still be able to be squeaky wheel  
16 in some way.

17 So I really, I was asked maybe to try  
18 to change it, I'm open to change but I think we  
19 need to give it at least one more round. I'm happy  
20 to chat about that if it did or didn't work for  
21 you. And then I would just ask that folks, when we  
22 do it, please participate.

1           It doesn't take much time, it's super  
2 helpful, hopefully it makes the meetings, how we  
3 approach the issues papers if we have an issue  
4 paper, and that kind of work is excessively  
5 helpful I think to get our panel viewpoint on what  
6 we'd like to do without one person perhaps being  
7 the tail that wags the dog.

8           So that's where we are now. I'm happy  
9 to talk about the topics that were the top five  
10 for the folks that weren't around for those. I  
11 know they keep getting put into every email that  
12 Lynne sends out as a list of what we've got, and  
13 kind of the thinking behind how I organize what we  
14 could do next whether it's a new presentation, and  
15 we'll talk about the hydrographer's surveyor  
16 issue.

17           I know that a lot of us need more  
18 information before we are anywhere in the realm of  
19 being able to write a paper, and so there was some  
20 kind of catalyst here to direct us that so that  
21 we're not writing five papers at the same time but  
22 that we're advancing ourselves so that we're

1 prepared if we believe we need to.

2 So again, happy to take on any feedback  
3 on how that went but would ask you folks just give  
4 me a change on the second go, and also it really  
5 depends on your participation if it's successful  
6 or not. I can certainly make it more painful but  
7 I don't think we want that.

8 CHAIR MILLER: Just one comment. It's  
9 not just the issue papers, it's what we might  
10 discuss at the next meeting, what we might have a  
11 webinar about, I just wanted to emphasize that.  
12 It's kind of, where is the panel going and in what  
13 form?

14 MEMBER HALL: And obviously we're going  
15 to have some requests and direction from NOAA, or  
16 not even direction, we do things in tandem, but  
17 this way when there are things that we want to  
18 talk about we do it in an organized fashion and  
19 it's not just somebody decided to write a paper  
20 and the next thing you know we're all either  
21 rewriting or editing, and trying to take away some  
22 of that frustration that was occurring for some of

1 us, not all of us.

2 I think it's a helpful tool in giving  
3 NOAA some feedback, giving our own chair and vice  
4 chair some feedback as a committee. It's our  
5 voice, so use it.

6 MEMBER MCINTYRE: I thought it worked  
7 pretty well and that we should give it another  
8 try. I just, just a couple of observations is that  
9 I think as a panel we need to stay focused on what  
10 our mission and what our priorities are. It's easy  
11 when we go to a lot of different areas we hear  
12 interesting topics that we all may have an opinion  
13 or we note at the meetings that something should  
14 be done, but they really maybe are not within the  
15 purview of what the HSRP does.

16 For example, we've noticed a lot of  
17 communication issues in the hurricane preparation  
18 for them coming and the recovery, but in my mind  
19 a lot of the issues that we were presented with  
20 today are very important but perhaps not relevant  
21 to the work that the HSRP does.

22 I think the other thing related to the



1 prioritization list is that we make sure it  
2 remains a living document. I think after hearing  
3 Admiral Gallaudet's vision for where we're going,  
4 I see the prioritization of what we need to look  
5 at as being very different and shifting. Those are  
6 my comments. I think that even maybe we go back  
7 and reprioritize what we have on the list perhaps  
8 we should be looking at new topics to include in  
9 reaction to the change in administration.

10 MEMBER MAUNE: Yes, and the Admiral  
11 talked about autonomous systems as something he  
12 thought we should address and that is something  
13 that could be handled by the technology people or  
14 by the Planning and Engagement, or both. I don't  
15 know how people feel about that as a topic for us  
16 to pursue. Anybody care to comment on that one?

17 RDML SMITH: I guess I just would, I  
18 wanted to observe that you all did review the  
19 Hydrographic-specific Unmanned Systems Strategy  
20 this past year. While NOAA has broader unmanned  
21 maritime systems requirements, it's probably  
22 beyond the remit of this panel to advise on

1 unmanned systems beyond hydrography, and you  
2 already did that.

3 MEMBER HALL: That's what I was going to  
4 ask, actually, with regard to that. Knowing that  
5 just because we hear something, doesn't mean we do  
6 something. But when it comes to that, I would love  
7 more feedback and that's the exact feedback I was  
8 hoping we would get. It's something we need to  
9 definitely keep on our radar but if it's either  
10 any of the three directors, if it is the folks  
11 from his offices, Glenn and Jim, can tell us hey,  
12 what can HSRP help the Admiral with?

13 I'm not sure the Admiral always knows  
14 what we're up to, either. He's got his priorities,  
15 he's got his talking points and loved hearing what  
16 he had to say yesterday but we've got to be able  
17 to take it and understand how that actually plays  
18 out.

19 So if there's somewhere where there can  
20 be direct, when you hear him say something about  
21 hydrographic-related, vessels or systems or  
22 whatever, that we can be of help with, I think

1 that almost takes it outside of this  
2 prioritization list and it's something that you  
3 and the three directors ask us, or Russell asked  
4 us to look at.

5 I think there's kind of two things  
6 going here, right? NOAA can ask us and let us know  
7 that there are issues that we should probably be  
8 paying attention to, and we can also decide based  
9 on our own background and current work, something  
10 that we think NOAA needs to hear more about from  
11 us and we'd like to learn more about. There's two  
12 tracks here and I just don't want to ignore  
13 either.

14 MEMBER GEE: Could I just come at that  
15 again, regarding the autonomous. Strange that the  
16 Admiral would raise that as something that he  
17 obviously pushing on. I would ask the question of  
18 Shep is like, is there anything more we can do as  
19 the HSRP directly related to the hydrographic use  
20 of autonomous systems that we haven't done  
21 already? Is there more that we can do on that  
22 previous paper and your strategy? That would be

1       how I would interpret it and what we potentially  
2       could do.

3                   RDML SMITH: Perhaps being responsive to  
4       the fact that you heard what he said, reflecting  
5       that back in the letter that you will send him and  
6       perhaps calling his attention to the work that you  
7       and we have already done, which I don't think he  
8       was aware of when he said that. That might be the  
9       simplest first step, and you could offer, leave  
10      the door open for him to, he might very well  
11      respond to you himself, right, that's a different  
12      administrator than we've ever had.

13                   Usually when you all write to him, the  
14      response comes starting from our offices and then  
15      gets staffed up through. You very well could hear  
16      back from him. So you should probably write your  
17      letter thinking that that's what's going to  
18      happen.

19                   DR. CALLENDER: I think that's right.  
20      He's sent out 124 requests to NOS programs in 92  
21      days, so he's got a, seriously, 94 days now, he's  
22      got a pretty high bandwidth and I suspect he will

1 respond back. I think Jeff is right. He'll go in  
2 back in pointing out, here's the thinking you've  
3 already done. I think it would help him maybe  
4 stimulate some ideas.

5           The challenge he's got, I believe, is  
6 that he is trying to sort how to wrangle all of  
7 the agency because there's some research  
8 activities, there's fisheries activities going on,  
9 how does he come together with the NOAA- wide  
10 strategy and certainly, emphasizing the  
11 hydrographic piece of that strategy, I think would  
12 be valued.

13           CHAIR MILLER: Another thing we might  
14 consider given the, what we've heard about  
15 precision navigation, we have a strong paper on  
16 that, but maybe somebody should look at it with  
17 new eyes and say okay, here's what we heard, you  
18 know, can we strengthen that paper potentially?

19           (Laughter.)

20           I wasn't offering anybody, I just meant  
21 that in that there's been new developments, it's  
22 sort of like the fleet paper, you know, maybe

1 there's something else and ---

2 MEMBER MCINTYRE: My thought would be  
3 maybe we need to hear a bit more about his vision  
4 at the next meeting. I think that there's  
5 something there with this blue economy and  
6 public/private partnerships and precision  
7 navigation, what it's all going to look like, but  
8 I don't feel like we're at a point as a panel  
9 where we know enough about it to really put  
10 something together. So I like your idea of  
11 revising that, but I think we need to learn more.

12 MEMBER GEE: And again, is this  
13 something we could comment in the letter, to say  
14 how we were pleased to see his support of the  
15 precise navigation and the previous work we've  
16 done and we support that and sit ready to provide  
17 further advice if that's appropriate.

18 DR. CALLENDER: So I think that's  
19 completely fair game. I personally felt like, from  
20 what I've heard him talk about the blue economy,  
21 you got the blue economy light version yesterday.  
22 He didn't have a ton of time. I think asking for

1 additional clarification and trying to pull more  
2 of that vision out for him would be useful.

3 Just for context, there's a white paper  
4 that's being developed in the agency that I have  
5 some hopes for, I'm going to give it 50/50 at this  
6 point, but it may, when it comes out, give you  
7 some additional commentary. But I think asking for  
8 more about that vision, pull that thread, I think  
9 it would be useful.

10 RDML SMITH: I think that's an excellent  
11 suggestion. We're always grappling to identify  
12 what we think we need to work on, what issues we  
13 need to address, what's important to NOAA, and one  
14 of the topics that came up in our prioritization  
15 may be of no interest to you whatsoever, when we  
16 get to this licensure of hydrographic surveyors,  
17 for example.

18 It may be that you feel, what the heck  
19 does HSRP have to do with that? You may be  
20 addressing this, is this of any interest to you at  
21 all? It's a very controversial topic and it came  
22 out on top when we prioritized things, but what

1 was it, six people responded and four out of six  
2 thought that was in important topic and so it came  
3 out on top because the next one had three out of  
4 six, I think. I don't know now NOAA feels about,  
5 is that an issue to you at all, sir, on whether or  
6 not hydrographers are licensed to do the  
7 hydrographic surveys.

8 RDML SMITH: It is of course of keen  
9 interest to everyone within the hydrographic  
10 community. However, it is not within our span of  
11 control in any meaningful way. So if you all  
12 recommend to NOAA that NOAA do something about  
13 licensure, NOAA's not doing something about  
14 licensure and will not have any authority over it.

15 We may, individually or in some way as  
16 part of a larger community of practice, have some  
17 role in implementing a national strategy, but it's  
18 certainly outside of our span of control. So I  
19 don't know that it would be particularly impactful  
20 for the HSRP to recommend to NOAA something  
21 specific on that since it's not our problem.

22 MEMBER MAUNE: Okay. But I was thinking



1 along the lines of NOAA establishing or helping to  
2 establish exam questions if there is an NCEES  
3 process for having a national test, something  
4 along that line. Captain Brennan has been tracking  
5 this issue in much more detail than I have.

6 MEMBER HALL: I just have one question.  
7 Are we going to address the letter? Should we wait  
8 until we have the next, there's plenty of time in  
9 the next Planning Engagement, can we wait until  
10 tomorrow, can we table this for today? The issue  
11 of licensure is, I mean, that's a whole  
12 conversation, or do we want to kill it tonight?

13 MEMBER MAUNE: I'm not sure we're going  
14 to kill it now, but I do think I'd like to hear  
15 what Captain Brennan has to say.

16 MEMBER HALL: Okay. Because I think we  
17 have, what, a couple hours tomorrow that we can --  
18 -

19 MEMBER MAUNE: Yes, we're going to be  
20 reviewing the two issue papers tomorrow and we'll  
21 have time to continue our discussion tomorrow, but  
22 I think we can continue on and we still have some

1 time available this afternoon, so I think tomorrow  
2 can be a continuation of what we do now.

3 MEMBER HALL: Okay. So we're done with  
4 prioritization? Is that what I'm hearing?

5 (Simultaneous speaking.)

6 MEMBER MAUNE: That was topic number one  
7 on the prioritization list, so I don't think we're  
8 through with prioritization yet. I was just  
9 looking at what was number one on that list.

10 MEMBER HALL: Okay. I think it's  
11 actually separate to do a deep dive at this point.  
12 I think we were just talking about the process, so  
13 I just want to make sure that the committee is  
14 keen on me continuing to try the survey  
15 methodology that I used, which was not very robust  
16 but it worked.

17 MEMBER MAUNE: Yes, we want you to  
18 continue that.

19 MEMBER HALL: Okay, and then my only  
20 other thing which might be out of order but I am  
21 going to have to regretfully resign as the co-  
22 chair. I don't think I'm the right fit but I did

1 find a replacement, I have an exit strategy, and  
2 so Julie Thomas is learning, which she just got  
3 herself into.

4 I'm not entirely sure we need two co-  
5 chairs. I'm still happy to take on the  
6 prioritization list work, I think that's something  
7 that I'm happy to do. The co-chair thing is kind  
8 of a different animal than I'd expected it to be.  
9 I think having one point of contact as the chair  
10 of a working group is helpful, and you can always,  
11 if you can't make it to the call, you know,  
12 deputize somebody for the day to do a call.

13 So I am not comfortable continuing on  
14 as a co-chair. Happy to do the prioritization  
15 matrix and want to thank the panel for voting me  
16 in in the fall and apologize, I am failing greatly  
17 in only having lasted six months. I don't think  
18 it's even six months. I don't exactly know when I  
19 took over, I don't exactly know if I actually had,  
20 but officially no more. Thanks.

21 MEMBER MAUNE: But are you going to  
22 finish those two issue papers that you're working

1 on tonight?

2 MEMBER HALL: I'm not writing anything.  
3 I've got inputs and I will do the editing as  
4 required. One is already in your inbox, ready to  
5 go for tomorrow and just waiting for Captain  
6 Brennan and his very insightful inputs for the  
7 paper, and it will be ready to go when we're in  
8 there. I don't think it has anything to do with me  
9 being co-chair, though. I think that's just me  
10 trying to be helpful.

11 MEMBER MAUNE: Okay. Thank you. All  
12 right. We were at the point where I was asking  
13 Captain Brenner to give me some input that Shep  
14 had recommended on that subject. Are you ready to  
15 talk about that or would you rather avoid the  
16 subject?

17 RDML SMITH: I'm a little bit confused,  
18 because there was a process question I thought we  
19 were on prioritization and the way ahead, and I'm  
20 not sure I, okay, so we got concurrence on that  
21 and now we're going to the actual topics? Okay. I  
22 just want to make sure that everybody's on the

1 same page on where we are.

2 MEMBER MAUNE: Well, if you are confused  
3 you have every right to be so, sir.

4 RDML SMITH: Maybe I'm not the only one  
5 in the room.

6 MEMBER MAUNE: You aren't the only one  
7 confused.

8 RDML SMITH: Okay. With that  
9 clarification, then ---

10 MEMBER MAUNE: Well, because that topic  
11 turned out number one on the prioritization list  
12 and we had, well, I thought it was four of six,  
13 now it's three of six.

14 MEMBER HALL: Look at it, and that's  
15 where the confusion came on. I didn't actually  
16 ever put how many people I said, those were just  
17 the five that tied, there were actually three that  
18 tied for our first issue based on votes, based on  
19 how people did it. So that's certification of  
20 hydrographic surveyors, disaster response, and  
21 managing big data. And the only reason why  
22 certification of hydrographic surveyors is top it

1 alphabetical order. Nothing more.

2 So there's obviously an issue that four  
3 of six and three of six was the way forward, those  
4 who wanted more information before we even tried  
5 to do an issue paper. So as we were working on  
6 this in the Planning and Engagement working group,  
7 we realized perhaps you have an informational  
8 meeting before you write a paper, instead of  
9 writing the paper and having an informational  
10 meeting.

11 MEMBER MAUNE: Well, we did have a  
12 webinar on this subject a month or two ago also,  
13 and we had some speakers on that subject. I know  
14 that Andy Armstrong had some strong feelings about  
15 it, and I was just puzzled is this something the  
16 HSRP should even pursue, and from your perspective  
17 it sounded as though there wasn't much you were  
18 going to do about it.

19 The only thing I was thinking of was  
20 might NOAA be interested in contributing or  
21 reviewing exam questions should NCEES come up with  
22 some standardized hydro test that could be used by

1 the various states. That's where I was coming from  
2 on that particular question. And you look like  
3 you're confused by my question.

4 RDML SMITH: No, I don't think so. I'm  
5 just trying to catch Rick's eye here, whether he  
6 wants to engage or not. You can't tell. He's got  
7 a poker face going back there.

8 CAPT BRENNAN: Sorry, I heard hornets  
9 buzzing around and I was just trying to stay out  
10 of the nest. If I'm ordered into it I'll go, so  
11 yes, I think a couple of points on this. I think  
12 at least with regard to our conversation with our  
13 hydrographic survey contractors who have been at  
14 the center of this licensure argument, I think the  
15 thing that all of them have said that they're very  
16 interested in is a national license. Because to  
17 maintain licenses across individual states is  
18 really onerous.

19 I think the other thing that was very  
20 clear as well is that the hydrographic community  
21 itself is too small to sustain any sort of  
22 licensure requirements with regard to NCEES on our

1 own. However, there are the aerial lidar  
2 communities, there's the mobile scanning  
3 communities, there's the photogrammatrist  
4 community, there's the GIS community, and the  
5 thinking was that if we were to, as a geospatial  
6 community, a much broader geospatial community,  
7 that within that you could then begin to imagine  
8 that you would have enough critical mass to  
9 support a national licensure.

10 Where it could potentially become an  
11 interest for NOAA or a responsibility for NOAA is  
12 the thing that had come back from NCEES was that  
13 there would need to be some federal agency would  
14 need to be the central clearing house for managing  
15 and overseeing such a national licensure program.

16 Sounds great, it sounds like a major  
17 issue and a thorny issue from regards to how we  
18 are currently staffed, and certainly NOAA has  
19 nowhere near the infrastructure to manage this at  
20 any level so it would, I think if that was  
21 something that ended up developing, that would  
22 need to be part of that discussion and that's way



1 above my pay grade.

2 I think that those are the points that  
3 have been discussed when we did go talk to NCEES,  
4 who Gary's a board member of, by the way, and so  
5 that's just to add a little context to where the  
6 Venn diagram that includes NOAA on that, where  
7 there is overlap.

8 MEMBER MAUNE: Okay, thank you. And Andy  
9 was telling me about some exams already being  
10 prepared. Didn't see Gary. Gary?

11 RDML SMITH: So we did have, one of the  
12 obstacles I guess to a national license is  
13 currently many states already license hydrographic  
14 surveyors, so to have a national license you would  
15 have to do away with those state licenses which  
16 would be an issue. That's one obstacle. So Captain  
17 Brennan came to the NCEES back in August. Does  
18 everybody know what NCEES is?

19 NCEES stands for National Council of  
20 Examiners for Engineering and Surveying, and all  
21 50 states have licensing boards for engineering  
22 and surveying and other things too, but NCEES and

1 all those licensing boards are members of NCEES  
2 and NCEES develops model rules, model laws and  
3 exams for engineering and surveying.

4 So after their presentation at the  
5 council meeting, a motion was made to develop a  
6 task force to study the surveyors' exams and I'm  
7 on that task force. So one of the options that  
8 we're looking at which we'll vote on in August is  
9 to develop a math and science exam which would  
10 cover photographic survey and photogrammetry, all  
11 the different ones that were mentioned.

12 We'll know more after August if the  
13 council, all 74 license boards, votes to move  
14 forward with that. And if they do go with that  
15 option, then the states would have, wouldn't do  
16 away, you'd still have to go state by state, but  
17 then there would be an exam that was more fitting,  
18 I guess, to hydrographic surveyors. So there is  
19 some action going on, we'll know more after the  
20 August meeting.

21 MEMBER GEE: The NCEES, how does that  
22 relate, we got a letter actually we got to respond

1 to anyway from the National Society of  
2 Professional Surveyors. Is the National Society of  
3 Professional Surveyors, are they the ones that are  
4 connected to FIG, the national board? Because if  
5 they are, they're the, one of the things that a  
6 lot of us, people who work in the industry, you  
7 know, work internationally, so they would want  
8 apart from being licensed in the States, they  
9 would want to make sure that they have  
10 international transfer.

11 So the response back to the  
12 professional societies is okay, well, shouldn't  
13 they be facilitating that part of it with the  
14 NCEES to make sure that that is kind of covered?  
15 Because there's already, you know, the exams and  
16 the accreditation internationally for both courses  
17 and structures that are in place. So how does that  
18 kind of pull together?

19 CAPT BRENNAN: I think that that  
20 completely ignores the issue. I think that the  
21 issue we have right now is not an international  
22 issue. It's a U.S. issue, and the fact of the

1 matter is right now is that, with all deference to  
2 my land surveying friends in here, they are  
3 sweeping the hydrographic profession right now by  
4 requiring every hydrographic surveyor to basically  
5 be a registered land surveyor.

6 And the rub on that is that the only  
7 way you can get, in most cases with the exception  
8 of North Carolina, and that is one of the beacons  
9 for us right now as a possible wedge for us to  
10 start to gain some licensure capabilities, is that  
11 they require boundary survey experience and so you  
12 could have years, as Dave Maune points out, you  
13 could have 30 years of survey experience but if  
14 you don't have so many years of boundary  
15 experience you're completely written out of the  
16 ability to get a land surveying license in many of  
17 the states right now.

18 Basically, it barricades hydrographic  
19 surveyors from being able to conduct business in  
20 any way or they have to co-opt a willing land  
21 surveyor to sign off on their survey work. I think  
22 it has nothing to do with the international

1 requirements because basically the states don't  
2 give a hoot about the international requirements.  
3 They care about their own particular state  
4 requirements.

5 RDML SMITH: So, I don't think we're  
6 going to solve this problem here, but I want to  
7 get the question back on the table of what the  
8 role of the HSRP is in advising NOAA because  
9 that's --- Not what NOAA should be doing with  
10 North Carolina or what North Carolina should do  
11 about the rest of the country, but what the HSRP  
12 should do with respect to licensing and their  
13 advisory roles at NOAA.

14 I don't want to be the one to suggest  
15 an answer to that, but I just want to try to  
16 direct the conversation in that direction.

17 CHAIR MILLER: My thought, we had  
18 discussed this issue but when the NSPS memo came  
19 to us it became more of an issue because I don't  
20 even know that we have to respond to it but we  
21 probably should.

22 But my thought was that many of us just

1 don't know much about the subject, and yes there  
2 was a seminar, or webinar, but that was a little  
3 tiny piece of it from what I saw. We had talked at  
4 one point about having a panel on it and, you  
5 know, and maybe that's the thing to do just as a  
6 learning thing. Not just a webinar but if possible  
7 for the next meeting or the following meeting we  
8 could have a webinar or something.

9           What we, whether we recommend something  
10 to NOAA or we decide not to recommend something to  
11 NOAA, when you're working from ignorance where do  
12 you go? And some people here know about it but  
13 nine-tenths of us don't, I would say. Kim?

14           MEMBER HALL: I honestly think that it's  
15 an interesting topic, I mean we've all been  
16 interested in it, highly controversial so it's fun  
17 to learn about. I would hate to lose an  
18 opportunity to learn about one of the things that  
19 really is in our purview and I think we've found  
20 out from talking about it amongst ourselves from  
21 what the Admiral just said, that perhaps this  
22 isn't in our purview, we've got to figure out how

1 to answer the letter in some way but to designate  
2 a panel in Juneau or following that, I think we've  
3 made a mountain out of a molehill.

4 We have to be really careful because  
5 there are other subjects that really are in our  
6 wheelhouse. I think it's okay that we can put that  
7 number 1A and come to find out that it really  
8 isn't something we deal with. So I understand,  
9 Joyce, what you're saying but I think there's kind  
10 of the devil's advocacy side of that going, if we  
11 dedicate too much time to this and it really isn't  
12 something that we're supposed to be designating  
13 time to, there is definitely a possibility of  
14 information fatigue for information for  
15 information's sake and I'd hate to do that.

16 CHAIR MILLER: However if, as was  
17 suggested, that FUGRO would lose any ability to do  
18 hydro surveys because they don't have land  
19 surveyors or any of --- Carol?

20 MEMBER HALL: You learned that the  
21 federal government doesn't require those, right,  
22 when you guys do your contracts, so I, what I'd

1 like to do is ask NOAA, can you come back to us  
2 and tell us, give you some time to think about it  
3 amongst yourselves, and let us know if this  
4 happens, how it affects NOAA's ability to get the  
5 work done? Not Ed Saade's FUGRO's ability to get  
6 work done, NOAA and Ed doing work for NOAA.

7 I care very much for everybody being  
8 able to do their work, but I, exactly what Anne  
9 said earlier is staying inside our lane. We've got  
10 a pretty broad lane. We've got some really great  
11 things we want to work on. I think it's going to  
12 be tough if we do too much of a detour on this.

13 I'm happy to be told differently but  
14 again I think we need more information from NOAA  
15 with their perspective on this is how it could  
16 affect us or not. We don't need to tell NOAA that  
17 it will, necessarily. I think if it does, then we  
18 start to think about it a little bit more deeply.

19 MEMBER SAADE: Okay, so here's why I  
20 think it's a big deal. When we go collect data for  
21 NOAA, it's in shallow water so by definition it's  
22 within the State's three-mile limit which it means



1           it's hypocrisy to me to say that this is not  
2           something that's important, because we're  
3           collecting data to the standards that NOAA  
4           dictates. It directly relates to the state, and  
5           then the state all of a sudden to say no, you have  
6           to collect it under these rules now. Somebody has  
7           to be in charge, and I believe NOAA has to be in  
8           charge of hydrographic surveying in the United  
9           States. Full stop.

10           MEMBER HALL: Or is that HSRP's ---

11           MEMBER SAADE: I'd be glad to have it be  
12           HSRP's rule to say that, as an advisor.

13           MEMBER HALL: I'm just not, I have not  
14           been convinced that, I'm convinced the very  
15           important issue, and everybody else here, I'm not  
16           convinced it's a subject for the panel and our  
17           FACA dictates and authorities to actually jump  
18           into. And I'm concerned about that.

19           MEMBER MAUNE: Gary?

20           MEMBER THOMPSON: Let me calm down a  
21           minute.

22           (Laugh   ter.)

1                   So you're telling me that we hire  
2 professional land surveying firms to do  
3 hydrographic surveyors in the river ravines of  
4 North Carolina for a flood map. You're telling me  
5 that NOAA should be in charge of that?

6                   MEMBER THOMPSON: Yes. I think  
7 hydrographic-quality data should have a single  
8 standard and a single oversight.

9                   MEMBER SAADE: Even if the state's is  
10 higher than yours? Than NOAA's?

11                  MEMBER THOMPSON: That's not the point.  
12 We have a hydrographic-quality data that goes on  
13 a navigation chart that is a standard. You can do  
14 a more accurate, you can definitely do some more  
15 accurately mapping. I mean, no matter what any  
16 surveyor does there's always a higher standard of  
17 some sort if you want to spend the money and do  
18 that type of activity.

19                  MEMBER GEE: I think it comes down to,  
20 what I'm listing here is if this is important to  
21 support NOAA's role for navigation surveys, that's  
22 one issue, but supporting other things in the

1 state of North, South Carolina, it doesn't matter.  
2 And so I think that's where we draw the line is  
3 like, okay, I agree, how much, it really comes  
4 back to NOAA if you can think about okay, is this  
5 something we should address to support NOAA in the  
6 role of the sole last, or the primary role of  
7 where, define this committee to do. It needs to be  
8 something that's within our purview. Otherwise, we  
9 have plenty more to do, I think, and it would be  
10 time better spent.

11 CHAIR MILLER: We're, can we table this  
12 and continue it later tomorrow? We do need to talk  
13 about prioritization and get new ideas on the  
14 table and figure out what our order of importance  
15 is. We can have conversation over drinks, there's  
16 obviously differences of opinion and to some  
17 extent lack of information.

18 So we are at 5:30 and I would suggest  
19 we continue the Planning and Engagement working  
20 group in the time slots tomorrow. But let's put  
21 this off until we've talked about maybe overall  
22 priorities and then see where this shakes out.

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That acceptable?

MEMBER MAUNE: Yes.

CHAIR MILLER: I think that's it. Shep,  
do you want to offer any closing remarks?

RDML SMITH: Well, that is a lot to  
think about today and not the least of which the  
last topic. It has been a long day and I want to  
thank you all for staying engaged right to the  
bitter end, and look forward to working with the  
issues again tomorrow. So thank you all.

(Whereupon the above-entitled matter  
went off the record at 5:33 p.m.)

<b>A</b>	
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Before: US DOC/NOAA

Date: 04-04-18

Place: Miami, FL

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