

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
SEPTEMBER 17, 2014

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The Hydrographic Services Review
Panel met in the Courtyard Marriott Grand
Cypress Room, 125 Calhoun Street,
Charleston, South Carolina, at 8:00 a.m.,
Scott Perkins, Chair, presiding.

MEMBERS PRESENT

SCOTT R. PERKINS, HSRP Chair
WILLIAM HANSON, Vice Chair
ANDY ARMSTRONG*
RDML KENNETH BARBOR
JULIANA BLACKWELL*
RICHARD EDWING*
RDML EVELYN FIELDS
ED J. KELLY
DR. FRANK KUDRNA
DR. DAVID A. JAY
DR. GARY JEFFRESS
CAROL LOCKHART
JOYCE E. MILLER
SUSAN SHINGLEDECKER
MATTHEW WELLSLAGER
* Non-voting members

ALSO PRESENT

REAR ADMIRAL GERD F. GLANG, HSRP Designated
Federal Official

CLARK ALEXANDER, Jr., Ph.D., Professor,
Skidaway Institute of Oceanography

MICHAEL ASLAKSEN, Chief, Remote Sensing
Division, National Geodetic Survey,
NOAA

PAUL BRADLEY, Policy Advisor, National Ocean
Service, NOAA

CAPTAIN (sel) RICK BRENNAN, Chief, Coast
Survey Development Laboratory, NOAA

RUSSELL CALLENDER, Ph.D., Deputy Assistant
Administrator, National Ocean
Service, NOAA

MARGARET DAVIDSON, NOAA Senior Advisor for
Coastal Inundation and Resilience

CAPTAIN JOHN CAMERON, Executive Director,
Charleston Branch Pilots Association

LARRY DORMINY, Senior Editor, Salty
Southeast Cruisers' Net

NICOLE ELKO, Ph.D., Coastal Geologist,
Executive Committee on the American
Shore & Beach Preservation (ASBPA)

TIFFANY HOUSE, Project Analyst, Remote
Sensing Division, National Geodetic
Survey, NOAA

RACHEL MEDLEY, Chief, Customer Affairs
Branch, OCS, NOAA

LYNNE MERSFELDER-LEWIS, HSRP Coordinator

BYRON MILLER, Vice President, Marketing and
Sales Support, South Carolina Ports
Authority (SCPA)

PATRICK MOORE, Environmental Stewardship
Manager, South Carolina Ports
Authority (SCPA)

BRAD PICKEL, Executive Director, Atlantic
Intracoastal Waterway Association

CAPTAIN (USCG ret) RUSS PROCTOR, Chief,
Navigation Services Division, OCS,
NOAA

NICHOLAS "MIKI" SCHMIDT, Chief, Coastal
Geospatial Services Division, NOAA
Coastal Services Center
KYLE WARD, Southeast Navigation Manager,
NOAA
DAVID WARREN, PE/PMP, Project Manager, Civil
Works, US Army Corps of Engineers
KATHY WATSON, HSRP Coordinator
BRIAN WILLIAMS, Chief of Programs, US Army
Corps of Engineers
PHIL WOLF, Chief, Spatial Data Branch, US
Army Corps of Engineers
DARREN WRIGHT, Maritime Services Program
Manager, Center for the Operational
Oceanographic Products and Services
(CO-OPS)

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

(8:07 a.m.)

CHAIR PERKINS: Good morning.

Welcome to Day 2 of the Hydrographic Services Review Panel Meeting here in Charleston. As a brief recap of yesterday, we had excellent keynote presentation opening lead-in remarks from Dr. Callender, fruitful afternoon amidst the rain. We had a nice tour of the Wando, you know, dock site port facility. And we were able to have a nice visit to the port pilot house.

Yes, they're not on. Are they on?

Test. Great.

So with that, we have a very packed agenda today. We have a series of what I'll call rapid fire brief presentations followed by questions and answers. And then we have a period for deliberations for the panel later this afternoon.

So without any further ado, I would like to introduce Mr. Byron Miller who

1 is going to be filling in for Ms. Barbara
2 Melvin from the South Carolina Ports
3 Authority.

4 MR. MILLER: Good morning.

5 CHAIR PERKINS: Good morning.

6 Welcome.

7 MR. MILLER: So rapid fire, right?

8 I've got the hint, rapid fire. We had RCO Jim
9 Newsome speak yesterday. So ditto. I'm done.

10 CHAIR PERKINS: And that's rapid
11 fire by government terms.

12 MR. MILLER: Got you. Well once
13 again, thank you for the invitation. And do
14 the slides advance? That's all right. If I
15 give this presentation, it will go very fast.
16 So let me think about what Brian talked about.

17 CHAIR PERKINS: Mr. Miller?

18 MR. MILLER: Okay?

19 CHAIR PERKINS: They do have the
20 mic at the podium live for you.

21 MR. MILLER: Okay.

22 (Off microphone comments)

1 MR. MILLER: So how many of you
2 here went out to the Wando yesterday? All of
3 you, almost all of you? How many of you was
4 that your first time at our Wando terminal?
5 Very good, excellent. Well, glad to have had
6 you.

7 We're doing a lot of work, I
8 mentioned over on the side over there, eagerly
9 typing on his little iPad is Jim Van Ness,
10 heads up our engineering and construction
11 efforts and chief money spender these days for
12 the port. Got a lot of improvements ongoing
13 at the Wando and our facilities, and
14 appreciate him being here.

15 So what I thought I would do is
16 just, and some of these are duplicates of
17 yesterday with what Jim said. So I won't go
18 too far into this, but what I would highlight
19 on this chart really is the bottom numbers.
20 One in ten jobs in our state are port-related,
21 and the huge economic impact of our port
22 facilities.

1 At the same time, while we are
2 State Ports Authority, as most port
3 authorities have some local jurisdiction that
4 they're accountable to, the impact of the Port
5 of Charleston, and all the facilities here,
6 not just our facilities but the private
7 facilities, the government facilities, extend
8 well beyond our state.

9 Frankly, only about a third, or
10 less than a third of the cargo that we handle
11 originates from or is destined for South
12 Carolina. Most of it is from outside of the
13 state.

14 This is a national artery. It is
15 vital for our national economy, both exports
16 and imports. We actually handle periodically
17 more exports than imports through the Port of
18 Charleston. And it's a vital resource for our
19 country.

20 You were around yesterday in the
21 harbor over at the Wando terminal. We have
22 five marine terminals that we operate here in

1 the Port of Charleston. These are our general
2 use facilities, public marine terminals.

3 There are also several private
4 facilities over which we have no jurisdiction,
5 so they're handling a lot of bulk commodities,
6 petroleum products, chemicals now again in
7 greater quantities. And so all of that makes
8 up really what is the Port of Charleston.
9 It's not just those public marine terminals
10 that we have.

11 And really, the markets that we
12 serve fall into those three categories. Most
13 of what, you know, our focus and effort is on
14 is on the container trade. That is the
15 merchandise traffic, that's the highest dollar
16 value amount of our cargo that we handle here
17 in the Port of Charleston. And it's been the
18 fastest growing.

19 On the break bulk side, you might
20 have, if you drove around Charleston you might
21 have seen at our Columbus Street terminal
22 we're handling BMWs for export, made in South

1 Carolina, made in the United States. We'll
2 export probably close to 200,000 United
3 States- made BMWs this year.

4 Every morning, a train arrives
5 here in the Port of Charleston with over 700
6 new BMWs for sale around the world. It's a
7 phenomenal growth of this manufacturing that's
8 occurring increasingly in the United States
9 and in South Carolina.

10 And they're all really important
11 to the future of the port. The cruise
12 business is a moderate, you know, small sector
13 but also important to our earnings profile.
14 But the container business has been the focus
15 of our investment and growth.

16 And we have been a very rapidly
17 growing port. We've grown about 16 percent
18 from 2011 to 2013, and year-to-date, calendar
19 year-to-date we're 11 percent over the same
20 period last year.

21 We have a board meeting today,
22 we'll report our August numbers. We're

1 growing at more than double the pace of U.S.
2 trade growth right now. So that's positive,
3 and a lot of that is, I think, related to some
4 of the market share gains that we've earned,
5 but also the southeast. This is a very
6 attractive place for manufacturing and
7 distribution, and we're taking advantage of
8 that.

9 All right. So Jim I'm sure talked
10 to you at some length yesterday about the size
11 of ships. This is the biggest issue in global
12 shipping today --- is the size of vessels that
13 are serving world trade.

14 In 1966, the Port of Charleston
15 handled its first container ship, and that
16 ship held 600 boxes on it. There are now
17 ships on the world's oceans that hold over
18 18,000 twenty foot equivalent units.

19 There's talk of a ship of up to
20 20,000 TEU being constructed. So the size of
21 these vessels has increased dramatically over
22 that 50, 60 year period. But most

1 importantly, the pace of that growth has
2 increased over the past three to four years.

3 So today if you look, and this is
4 a lot of numbers and probably more of an eye
5 chart for some of you toward the back, but if
6 you look at the bottom line, so by the end of
7 2016, all of the vessels in that category of
8 5,100 TEU and larger is 59 percent of the
9 world's container capacity.

10 So, well over half of the world's
11 shipping capacity, total global shipping
12 capacity will be in ships too big for the
13 Panama Canal currently. Once the Panama Canal
14 expansion is completed some time in 2015, '16,
15 whenever they get that done, knowing the
16 Bayonne Bridge is raised, you're going to see
17 these vessels in increasing numbers coming to
18 the U.S. East Coast.

19 At the same time, those vessels
20 that are just smaller than the existing Panama
21 Canal locks are only 21 percent of the total
22 capacity.

1 And really, to give you one
2 economic metric for why this is happening,
3 Mediterranean Shipping Company, they're the
4 second largest shipping company in the world
5 based out of Geneva, Switzerland, huge port
6 city in Geneva, Switzerland. They're based in
7 Geneva for a number of reasons, Italian
8 company, but they have a major office here in
9 Charleston.

10 And the head of their vessel
11 deployment group is based here in Charleston,
12 a British guy. And his numbers were this, and
13 average vessel burns about, on average, around
14 200 to 220 tons of bunker fuel a day while
15 it's sailing, these big container ships.

16 The cost of bunker fuel is about
17 \$600 to \$700 a ton. So every ship in the
18 world's fleet that's out there on the oceans
19 is burning over \$125,000 worth of fuel every
20 day.

21 Now, when you move to these larger
22 vessels, greater than 5,100 TEU, the fuel

1 savings for each one of those ships in that
2 category is about 30 to 40 percent per unit.
3 So you can see why they're building bigger
4 ships. They're able to save 40 to \$50,000 a
5 day for every vessel they have in their fleet.

6 MSC has about 500 ships, so the
7 economics are just quite compelling. They
8 have to scrap all these older vessels, smaller
9 ships, and they have to use larger, more
10 modern vessels to be able to compete.

11 And they're not waiting on the
12 Panama Canal. Here you'll see a selection of
13 various images of ships that are too big for
14 the Panama Canal coming into the Port of
15 Charleston today.

16 We have an average of seven post-
17 Panamax ships a week, I think, Captain
18 Cameron? These vessels are not waiting on the
19 Panama Canal. They're coming today, and they
20 will come in increasing frequency with the
21 canal expansion.

22 And I'm not sure mathematically

1 how this is possible, but you'll see here an
2 image of a ship at 14.5 meters, so roughly 47,
3 48 feet sailing in the Port of Charleston.
4 Our project depth here is 45 feet. So
5 obviously this is tidally constrained, it's
6 moving around those windows. But we are
7 handling and seeing these ships with
8 increasing frequency today.

9 And of course, we're investing for
10 the future. I mentioned the capital
11 expenditures that we're doing here in the Port
12 of Charleston along with the State of South
13 Carolina, we're putting about \$2 billion into
14 our facilities. And of course, a large part
15 of that is going to be our next harbor
16 deepening project.

17 The new terminal construction on
18 the former Navy base is advancing. We're
19 anticipating Phase 1 of that to be complete in
20 2019, adding about 50 percent capacity to our
21 container handling abilities here in the Port
22 of Charleston.

1 So really, it's a tremendous
2 investment, and it's one that is hinged on
3 what you see here, which are three post-
4 Panamax ships. And we appreciate all that you
5 can do to help us make this a successful
6 project both today and into the future.

7 Is that short enough for you?

8 CHAIR PERKINS: It's perfect.

9 Thank you sir.

10 MR. MILLER: Very good. Thank
11 you. I'll welcome questions, I guess, at the
12 end, is that correct?

13 CHAIR PERKINS: Yes, we'll save the
14 questions for the end collectively, please.

15 MR. MILLER: Excellent. Great,
16 thank you.

17 CHAIR PERKINS: Great. Our next
18 speaker is Mr. Brian Williams, Chief of
19 Programs for the U.S. Army Corps of Engineers
20 Charleston District.

21 MR. WILLIAMS: All right, well
22 good morning, and thank you for the invitation

1 to be here this morning. I know our
2 commander, Colonel Litz, talked yesterday and
3 got quite a few questions. And some of the
4 other presentations, also touched on harbor
5 deepening.

6 I'm going to try and avoid most of
7 the topics that were discussed yesterday,
8 maybe just some slight overlap, and run
9 through this pretty briefly. But I'll be
10 available for questions, and will try and be
11 here as much as I can today.

12 Charleston Harbor has undergone
13 quite a few deepenings in its history,
14 starting at around 12 feet of depth back in
15 the 1700's, and progressing to our current
16 authorized channels, which are 45 feet
17 interior and 47 feet in the entrance channel.

18 Most folks probably here are aware
19 of the layout of Charleston Harbor. I really
20 put this up just because of these two numbers.

21 It's kind of a misconception
22 amongst a lot of the general public when we

1 talk about federal channel in a harbor is that
2 well, gosh that must be the whole area. And
3 so what we did, early on, was try and figure
4 out exactly how much of the area of Charleston
5 Harbor is touched by the federal channel.

6 And it's not pictured on here, but
7 we do have a federal channel up the Ashley
8 River. So that's where the 17 percent number
9 comes from. So that's, really, only 17
10 percent of the total bank-to-bank area within
11 the footprint of the federal project is
12 actually channel.

13 And if you take the Ashley River
14 out, it's only 11 percent. So that's, for
15 those that are uninitiated with Charleston, a
16 pretty powerful set of numbers.

17 So why are we doing the study and
18 what are our constraints? Well, the federal
19 objective for water and land related resources
20 are to identify the national economic
21 development plan and make sure that plan is
22 consistent with protecting the nation's

1 natural resources.

2 So why are we doing a study? If
3 there's a need for deeper harbor, then there
4 must be some problems with the current one.
5 Currently, we have light loading of vessels,
6 or they are waiting to take advantage of
7 favorable tide conditions.

8 We have restrictive channel widths
9 that prohibit two way traffic in some areas.
10 And some of the turning basins are currently
11 too small to handle the vessels that will be
12 calling Charleston in the future. And so with
13 problems come opportunities.

14 So one of the opportunities that
15 we have is by making modifications --- we can
16 bring in the projected future cargo into
17 Charleston on a fewer number of vessels. And
18 that has cost savings, but it also has
19 environmental considerations with it in
20 reducing the number of vessels transiting the
21 harbor.

22 And the other main thing to touch

1 on here is improving navigational safety by
2 reducing congestion. So we do expect in the
3 future we will have more vessels without
4 Charleston Harbor if we do nothing. If we
5 have a project, we will reduce the number of
6 vessels that would call in the future.

7 So the number of vessels are going
8 to go up, but they will go up by less if we
9 deepen. And that may be clear, it may be
10 counterintuitive. But Jim had a better
11 graphic on big ship evolution and Byron did,
12 too so I'll kind of bypass this one.

13 So we had some preliminary
14 alternatives. We studied a range of depths
15 all the way from 46 feet to 52 feet in one
16 foot increments. And we quickly realized that
17 we could reduce that number. And this was
18 part of the Civil Works Transformation, doing
19 things faster, smart planning, trying to
20 reduce duration and cost.

21 So what we did was as quickly as
22 we could, we got down to three different

1 alternatives for the Wando Welch Terminal and
2 what will be the new Navy Base Terminal. And
3 those are 48, 50, and 52 feet of depth. And
4 for the North Charleston Terminal, 47 feet and
5 48 feet.

6 So what we're currently doing
7 right now, and folks are hard at work back at
8 the District today and will be for the next
9 few weeks is polishing the draft report which
10 will ultimately give our draft recommendation
11 on the future of Charleston Harbor. That
12 literally will be coming out within weeks. I
13 would love to give you some more information
14 now, but that would be premature.

15 We're not doing this alone. We
16 have a host of stakeholders, non-federal
17 agencies, federal agencies that we've been
18 working with. One of the things we did at the
19 very beginning was to bring in all of those
20 agencies and what we call an interagency
21 coordination team.

22 And we have met with them

1 countless times, both in person, on the phone,
2 and by communicating by email to basically
3 share, get their ideas, get some feedback on
4 our process, our individual pieces of the
5 study.

6 And we think that's been hugely
7 beneficial and would like to say thank you,
8 especially to the pilots, but also to NOAA and
9 all the other agencies that have participated
10 in this because it has been a value added for
11 us.

12 Civil Works Transformation,
13 basically we had to change. That's the bottom
14 line. Things were taking too long and costing
15 too much. So we had to figure out how to do
16 it, and the result is smart planning and some
17 of the initiatives to focus on a risk-based
18 decision making process and reducing some of
19 the things that inherently have been a part of
20 these types of studies in the past.

21 Which has got us to this time
22 line, and as I mentioned, we're kind of right

1 here, right now. Weeks away from release of
2 a draft report and a draft environmental
3 impact statement.

4 That will go out for simultaneous
5 headquarters USACE policy review, our agency
6 technical review which is an internal
7 technical review of our document, independent
8 external peer review which was, I believe,
9 part of Florida 2007, and also public review,
10 and the agencies will also have a chance to
11 look at it at that time, as well.

12 So all of that is going to kick
13 off as soon as we get this released, so we may
14 have a week to catch our breath, and then
15 we'll have a public meeting and solicit input.
16 So of course, looking for input during that
17 meeting, but also by email, mail, and several
18 different other options.

19 I'll breeze through this, but
20 because this is a technically oriented group
21 here, some of the technical things that we
22 did, we had the USGS collect quite a bit of

1 information on salinity, currents, water
2 levels for us at prescribed locations.

3 And we used those to put into the
4 EPA's Environmental Fluid Dynamics Code model.
5 That's kind of a mouthful, but basically that
6 gave us projections of currents, salinity,
7 devolved oxygen and other parameters with
8 which we could evaluate our project
9 alternatives.

10 We also had the Joint Airborne
11 LiDAR Bathymetry Technical Center of
12 Expertise. That's a mouthful too, but we've
13 got a handy acronym for it. It's called
14 JALBTCX, that's better.

15 But they helped us out in doing
16 some LiDAR surveys and some light reflectivity
17 surveys on the plant communities within the
18 area, which really helped us to get some
19 really fine resolution on the types of
20 vegetation that make up the wetlands, which is
21 a very key piece of this study.

22 And then, to give some kudos here

1 to another one of our partners, Coastal
2 Carolina University, they have quite a bit of
3 expertise and capability. And they helped us
4 with some magnetometer and sidescan sonar
5 surveys.

6 This is not something that we
7 captured here, but this is kind of an example
8 of a historic vessel called the Patapsco that
9 is in the Charleston area.

10 And then South Carolina DNR helped
11 us as well with some sediment composition
12 stuff and ANAMAR Consulting did the bulk of
13 our sediment chemistry analyses with
14 bioaccumulation evaluations, basically to make
15 sure the stuff that we will be dredging is not
16 harmful to the environment.

17 Breezing through this, we like to
18 focus on the three E's: engineering,
19 environmental, and economics. Engineering,
20 can we build it, is it feasible and, you know,
21 what is the cost?

22 And environmental, basically

1 taking comments we received during our public
2 scoping on what are the concerns out there;
3 bringing together the agencies to figure out
4 what are the agencies' concerns, and then
5 really focusing in on the important parts of
6 those for our study --- water quality,
7 salinity, wetlands, all those being major
8 focus areas.

9 And then finally, economics is
10 basically quantifying the benefits versus the
11 cost. And what we're doing to capture
12 benefits is the reduction in transportation
13 inefficiencies.

14 So getting those, primarily
15 containers in this case because those are the
16 big drivers, getting those containers from
17 their origin to their destination, their
18 destination being here in Charleston, what
19 kind of savings can we realize through
20 reducing their inefficiencies in that path?

21 So finally, just to recap what's
22 next, we're going to have that draft report in

1 a couple of weeks. We will incorporate,
2 review, compile all the comments we receive,
3 make any adjustments that are necessary. We
4 will go to a final report next spring.

5 And then by September 2015, we
6 will have a completed Chief's report, which is
7 the report from the Chief of Engineers for the
8 Corps that basically says that this is our
9 recommendation for the future of Charleston
10 Harbor.

11 And then the Colonel discussed
12 preconstruction engineering design and
13 construction yesterday, so I won't cover that
14 unless there are questions. That's it. I
15 could talk for 12 hours about this, but
16 hopefully I stayed somewhere within my 15
17 minutes.

18 CHAIR PERKINS: Very good. All
19 right. Our next speaker is Mr. Justin Wolf,
20 Cartographic Technician from the U.S. Army
21 Corps of Engineers, Charleston District.

22 Did I just --- I just did that

1 wrong here, just said Justin Wolf, so I mixed
2 first name and last name. My apology. Justin
3 West.

4 MR. WEST: Good morning,
5 everybody. Unfortunately, Phil couldn't be
6 here this morning. So I am Justin West. I'm
7 the Cartographic Technician at the Corps of
8 Engineers, and I was asked to come here today
9 and give you guys just a little local overview
10 of the software that we've been using to
11 create some of the channel condition reports
12 and products called eHydro.

13 I don't know how many people are
14 familiar with the eHydro software package.
15 It's a headquarters level initiative to create
16 a repeatable and standardized process for
17 creating chart products, channel condition
18 reports, and several analysis products that we
19 use internally to help us with quantifying
20 some of the material that's on the bottom of
21 the channels.

22 One of the reasons that this

1 software was created was a lot of time was
2 being spent manually sifting through a lot of
3 this data. So we would receive the surveys
4 from the survey teams, we would process it in-
5 house.

6 And then we would have an
7 engineering technician or a cartographer
8 manually going through a lot of these
9 soundings, picking them out visually as far as
10 the shallowest point, and then plotting them
11 on a chart and entering them into a report.

12 What the software does is because
13 everything is automated, it reduces the
14 possibility of human error. Once you look at
15 a chart long enough, all the numbers start to
16 look the same. If you've been doing it for
17 four hours, every number looks the same. So
18 you got to get a process in there that's going
19 to pull the information out that you want and
20 leave the information that you don't.

21 It also reduces production times.
22 Again, you know, you had one person that would

1 sit there for a couple hours and just look at
2 lines on a chart. And now that this is all
3 automated, it reduces that time from hours
4 into sometimes minutes, 20 minutes, 30 minutes
5 compared to, you know, half a day.

6 Another thing is the software
7 allows us to reconfigure all of the parameters
8 on the fly if we need to. So if a channel
9 depth changes, all we have to do is go into
10 the back end of the software to make the
11 change, re-run the report, everything comes
12 out exactly like it did with the shallower
13 depth.

14 eHydro produces several products.
15 Some of these are for distribution, like our
16 charts that we have as well as the channel
17 condition reports. And the channel condition
18 reports, if you're not familiar with it, it's
19 Excel-based background, so everything is kind
20 of in fields. And I'll have an example of
21 that here in just a minute.

22 And then planning analysis, we

1 have channel availability reports, and what
2 this does is it generates a value for each
3 channel based on historical data that you've
4 run through the process.

5 So what you can do is you can look
6 at historic shoaling rates, you can look at
7 what the depths were at the same time last
8 year when they did the survey for your
9 annuals, at the same time when they did their
10 quarters.

11 You can also do channel
12 availability by quarter, and what that does is
13 that's going to spit out a percentage of
14 availability. So for the time period that
15 you're given, it will say that 100 percent of
16 the channel was available for 60 percent of
17 the time during the survey.

18 And then there's the channel
19 condition index. This is a mathematical
20 equation, and it basically is just an estimate
21 by the software as to the amount of material
22 that's actually in the channel.

1 These are not hard numbers. It's
2 basically the computer saying this is what
3 it's supposed to be as the maintained depth,
4 this is what the survey's saying, this is what
5 I think is in between. So these are to help
6 our planners with kind of getting a
7 determination of what to expect once they
8 actually get down there.

9 The channel condition report, it's
10 a standardized form, it's a 4020 or a 4021.
11 Each sounding is identified by the software
12 and automatically populated within the chart.
13 Again, this is to reduce the human error of
14 somebody manually rolling through and saying
15 okay, well that's the shallowest point.

16 The base data, as far as the
17 seeding within the software, can be changed.
18 Again, if your depths change, if your widths
19 change, all of that can be modified on the fly
20 inside the software back end.

21 And then this is one of the
22 primary products that we distribute to our

1 customers such as NOAA. We posted it on our
2 public website, so if anybody needs to see
3 these and say hey, you know, what's the
4 shallowest point within this reach, they can
5 do it.

6 Unfortunately, we are limited on
7 the CCRs because it is not a geographic
8 product. All it says is it says that there is
9 the shallow point of this depth somewhere
10 within this quarter of this reach. So you
11 know, mariners really need to be advised that
12 this is not the end-all be-all. This is a,
13 you know, be aware for this.

14 Our chart products, all of our
15 chart products are standardized on the eHydro
16 output level. So what we tried to do when we
17 designed our chart was we wanted every chart
18 to look the same, the same symbology, the same
19 output so that everybody, no matter if you're
20 looking at Charleston Harbor, if you're
21 looking at the Ashley River, if you're looking
22 at Shipyard River, if you're looking at Shem

1 Creek, all the symbology and everything is
2 going to be the same so that you can at least
3 take a look and know exactly what you're
4 looking at.

5 Right here we just have an example
6 of Anchorage Basin. As you can see, this was
7 a combination of the multibeam surveys, as
8 well as the single beam surveys after the
9 dredge. So the red is going to be indicative
10 of that is under 30 feet, and then it goes up
11 to a white where that's actually above project
12 depth.

13 Our chart products, again, they
14 depict the channel geometries as well as the
15 soundings within those channels. The
16 templates are created by project area, so each
17 project area actually has an individualized
18 template which is going to have all of the
19 correct marginality and all of the correct
20 projection information, as well as the date of
21 the soundings.

22 And again, all of those templates

1 are customizable. So any time that our
2 project changes or our geometries change,
3 those can be modified as it happens.

4 And anybody that doesn't have
5 ArcGIS or any type of mapping system, these
6 could be output in both an ArcGIS format or a
7 PDF format. And with those PDFs, we can
8 actually add the geographic information, as
9 well as the layer information onto those PDFs.

10 With some of the larger channels
11 in some of the larger sounding surveys, that
12 becomes difficult because it actually inflates
13 the size of the PDFs to the point where
14 they're a little unmanageable.

15 eHydro, because it is a
16 headquarters solution to one of the common
17 problems of just time management within the
18 groups, it is moving towards an enterprise
19 solution for data delivery.

20 And what that means is, at the
21 local level, we are providing all of our
22 survey data through eHydro up to headquarters.

1 What they're doing is they're actually
2 creating a data warehouse of all of the eHydro
3 data and merging it all together into one
4 giant data warehouse so that it can be queried
5 out as needed and then distributed to the
6 customers.

7 What that's doing is it's keeping
8 it so that we don't have to maintain 1,000
9 copies of every survey on ten different
10 systems across the Corps. So it's reducing
11 the resources that are needed at the local
12 level by allowing us to process it and send it
13 up. And then if the customer needs it, they
14 can request it from us, or they can request it
15 from headquarters.

16 Right now, the enterprise delivery
17 method is still in testing. They are having
18 some issues with it. It's not getting 100
19 percent of the data that it needs.

20 It is something that they're
21 working on, and we have a really good group of
22 developers that we -- I mean, these guys, I

1 can call them up, they're in Portland, which
2 makes the time zone a little different, but I
3 can call them up and tell them that I'm having
4 a problem. They can usually give me an answer
5 within a couple of hours, if not, you know, by
6 the end of the day.

7 Any change requests that we have,
8 any additional functionality that we request,
9 these guys are really receptive as to, you
10 know, addressing those issues or making the
11 changes that we request.

12 Questions, I guess we're saving
13 until the end?

14 CHAIR PERKINS: Yes, please.

15 MR. WEST: So I'll be here
16 probably until a little bit after lunch if
17 anybody has anything specific. Thank you.

18 CHAIR PERKINS: Great. All right,
19 our next speaker is Captain John Cameron who
20 we met briefly yesterday afternoon from the
21 Charleston Branch Pilots Association. Good to
22 see you again, Sir.

1 CAPT CAMERON: Thank you for
2 having me. I hope ---- out of anything you
3 might take away from me, I hope you learn that
4 this is truly a public/private partnership
5 around this port. Everybody that you've met
6 in Charleston, we spend a lot of time
7 together.

8 For example, this panel this
9 morning, we know each other so well that all
10 of my colleagues on the panel knew that if
11 they left ten minutes on the table, I would
12 have no trouble putting us back on schedule.
13 And we didn't plan that.

14 Anyway, yes, thank you for coming
15 by yesterday. And I'll jump right in and I'll
16 talk about the navigational challenges,
17 especially focused on post-Panamax vessels,
18 and there's a variety of them. And I won't
19 spend a lot of time on the ones you've already
20 heard about.

21 (Off microphone discussion)

22 CAPT CAMERON: Okay, so you've

1 seen this graphic over and over and over, but
2 when you run around, you hear people talking
3 about depth all the time. We like to point
4 out that the largest dimensional changes occur
5 in the Panama Canal from the old locks and
6 new locks is the width.

7 Ships are getting 55 percent
8 wider. And that is, of course, driving the
9 market for vessels. It's not that every ship
10 is going to go through the Panama Canal, it's
11 that every ship can. And therefore, the
12 resale value for large ships is -- you know,
13 is completely different than it was a
14 generation ago as far as shipping is
15 concerned.

16 And then the second project, which
17 really has exactly the same effect as the
18 Panama Canal, is the Bayonne Bridge. Once
19 ships can trade on the East Coast, and they
20 have to go to New York to make it worthwhile,
21 they will trade on the East Coast.

22 Charleston is already in a

1 position to handle 13,000 TEU ships, and we're
2 handling the ships smaller than that right now
3 because they're already on the ocean. Twenty
4 eight percent of the container ships that came
5 to Charleston last year were post-Panamax.

6 As soon as the Bayonne Bridge is
7 raised, we'll be seeing the 13,000 TEU ships
8 here. The reason we need to dredge is we can
9 only handle one or two of these a day on high
10 tide, and we're going to be able to need to
11 handle them all day long.

12 So to get into some of those
13 details on the width -- a ship takes up a lot
14 more space in the channel than its width at
15 the dock. A post-Panamax ship, the path it
16 sweeps through the waterway is three and a
17 half times the width of a Panamax ship.

18 You know, instead of 105 feet,
19 which is the beam of a Panamax ship, it's
20 sweeping 350, 375 feet as it moves through the
21 channel. So the channels have to be much
22 wider to accommodate two way traffic.

1 Back in 2004, in the dredging
2 project that Brian mentioned, we paid for the
3 width, and we have all the width that we need.
4 You'll see a lot of channel projects around
5 the country that are focused on depth and not
6 focused on width. And traffic flow through
7 those channels will be a challenge.

8 It's really two different
9 channels. There's a channel inside the
10 harbor, there's a channel outside the harbor.
11 They do two different things. Inside the
12 harbor, ships are moving slower, there's no
13 waves, and the currents are hitting the ship
14 head on or right on the stern, so the current
15 is intending to push a ship out of the
16 channel.

17 Offshore, you've got currents that
18 are lateral, you've got ocean waves, and you
19 actually need more speed so that you can
20 manage that crab angle that I showed you a
21 couple of slides back.

22 So you need to be able to go

1 faster, and you need deeper water. As a ship
2 goes through a channel, it squats, the water
3 underneath it literally sucks it to the
4 bottom, and you get to a point where the ship
5 just won't go any faster, and it becomes a
6 downward spiral where you can't go fast enough
7 to maintain control.

8 So you need more depth for all of
9 those reasons. A post-Panamax ship 160 feet
10 wide, if it heels two degrees, that adds a
11 meter to its draft on that low side. A
12 meter's a lot, you know, when you're trying to
13 get by on 10 or 20 percent of under-keel
14 clearance according to your draft.

15 The Army Corps Design Manual talks
16 about channels in the harbor allowing for 10
17 percent of the draft of the vessel as under-
18 keel clearance, underneath the vessel, and 20
19 percent offshore.

20 We haven't been able to afford to
21 build a channel to meet those standards since
22 I don't know when, Brian. The Corps, the last

1 couple of generations of channels have made
2 those offshore channels two feet deeper in the
3 ocean than in the harbor.

4 Two feet isn't enough anymore, but
5 we've got ourselves into this mindset that,
6 you know, we're going to spend enough money to
7 make it two feet deeper. We're going to have
8 to reevaluate that here with one of these
9 upcoming generations of increased shipping.

10 You've seen references to what
11 this all means, a foot here and a foot there.
12 Well, it all adds up. On a 13,000 TEU ship,
13 if you can sink that ship into the water
14 another foot, the cargo value that will do
15 that is \$15 million. So \$15 million for every
16 available foot of draft.

17 The day after we dredge five feet,
18 the first ship that comes in will be carrying
19 \$75 million more imports on the way in,
20 another \$75 million on the way out for a \$350
21 million project. You heard Jim mention
22 yesterday that the Corps has a very

1 conservative guideline for how they account
2 for the value of a project.

3 So there's several other features
4 to channels. Right now, the difference
5 between the Port of Charleston handling a
6 13,000 TEU ship and a 15,000 TEU ship is only
7 the turning basins. Turning basins are a cul
8 de sac at the end of a channel where the ship
9 can turn around and go back out.

10 Ships are longer than channels are
11 wide, so they can't turn around wherever they
12 like. And you wouldn't normally think that,
13 but all the shipping lines that trade here
14 that have large vessels have called us and
15 asked us what's the largest vessel we can
16 handle, and that's the reason. We can't turn
17 around a bigger ship than a 13,000 TEU until
18 Brian finishes his project.

19 When you improve a harbor, the
20 ships get bigger, you do need to take some of
21 the corners off at the junction to the
22 channels. Flare the entrances to channels and

1 things so you have room to turn a larger
2 vessel.

3 And then the ranges, no matter how
4 much electronic navigation you have and all
5 the technology, there's nothing like a range
6 which is two points, two towers lined up with
7 the channel, one in front, one in back, front
8 one lower and the back one higher. When
9 you're on that range, you're on the channel.
10 No doubt about it.

11 These larger ships, as you're
12 swinging from one leg of the channel to the
13 other, you need to know when to stop your
14 swing. The problem we're having is it's
15 typical for a range light to flash every two
16 and a half seconds. That's two long for a big
17 ship. If you've got to wait two and a half
18 seconds until your next reference point,
19 that's too long.

20 We've asked the Coast Guard to go
21 out and shorten the interval, the flashing
22 interval on the ranges here because with that

1 much ship in front of you, two and a half
2 seconds is too long to see if you're there
3 yet.

4 Charting is also an issue. As you
5 dig deeper, you have to dig farther out into
6 the ocean. And prior to Kyle finishing a
7 project, this was a scenario where you would
8 get to the end of the channel while you were
9 at the edge of the chart, and you either went
10 onto this chart or this chart and immediately
11 upon getting to the end of the channel.

12 And we couldn't do any plotting of
13 the area where the ships congregate to the end
14 of the channel. So Kyle reconfigured this.
15 This doesn't look like a big change maybe in
16 the back of the room, but now there's seven
17 miles there.

18 So after you get out of the
19 channel, you've got seven miles of chart to
20 work with before you're in your ocean transit
21 on the next chart. That was a seven year
22 project to get that done, and that's fine. We

1 knew it would take a while, we wanted it to be
2 done before the next deepening extended the
3 channel further.

4 And I can't thank Kyle enough for
5 getting that done. I can't imagine how hard
6 it was to do.

7 Port systems, very important.
8 This is last night. The red line is the
9 actual depth in Charleston and the blue line
10 is the predicted depth. If we didn't have a
11 port system, we would have thought the water
12 was nine inches deeper than it actually was
13 last night.

14 So when you're working with four
15 feet under-keel clearance, nine inches is a
16 lot. It's much more important on the bridge.
17 Last night, at the same time that I pulled
18 that -- last night is probably about six and
19 a half hours ago, actually.

20 The clearance on the Don Holt
21 Bridge was 160.7 feet. If you didn't know
22 that the tide was nine inches higher than

1 predicted, then you would have thought you'd
2 have about 161.5 feet of clearance there. And
3 our clearance under bridges is two feet. So
4 the bigger the ships, the more important those
5 sensors are.

6 What we don't know is the
7 salinity. And the salinity of the water makes
8 a big difference as well. You'll hear all the
9 time, you know, the Panama Canal can handle 50
10 feet of draft, and that's true.

11 But the Panama Canal is a fresh
12 water body. Gatun Lake, that 10,000 TEU ship
13 in Gatun Lake drawing 50 feet, when you put it
14 out into the ocean, it's going to draw 47.5.
15 When you go up a typical river port in the
16 Southeast, that ship is going to sink another
17 foot. It would be about 48.5 feet.

18 Charleston Harbor is a salt water
19 body, so salt water drafts apply here. So the
20 same ship in our harbor that floats at 47.5
21 feet will float at 48.5 feet in another
22 harbor. But those salinities change, you

1 know, with weather events and so forth, and we
2 don't always know exactly what that salinity
3 is.

4 So the rest of the time, I want to
5 talk about a regulatory issue. And this is
6 actually our biggest challenge for
7 navigational safety in the Port of Charleston.

8 Back in 2008, the NMFS portion of
9 NOAA, and I hear all the time that's the other
10 NOAA. And I was in an agency that had -- you
11 know, when I was in the Coast Guard there was
12 the other Coast Guard all the time, too.

13 But with all good intentions to
14 protect right whales, NMFS promulgated
15 regulations to slow vessels to ten knots for
16 periods of time in the Atlantic Ocean along
17 the coast for up to six months at a time. And
18 it had to do with the migratory patterns as
19 they had studied.

20 When I was captain of the port
21 here in Charleston, I wrote a letter to my
22 chain of command saying that, that's great

1 except in the entrance channel. Ten knots is
2 just too slow to manage that crab angle to
3 keep directional control and to keep control
4 of your vessel.

5 So NOAA has -- or NMFS I should
6 say, put a deviation clause in the
7 regulations. So the regulation reads, a ship
8 shall go no faster than ten knots from
9 November 1st to April 30th within 20 miles of
10 the coast of South Carolina unless they are
11 severely restricted by hydrographic,
12 oceanographic or atmospheric conditions.

13 So I'll go into the details of why
14 that's problematic. But, first of all, when
15 you're in the ocean -- when you're in that
16 ocean entrance channel, the current is hitting
17 you from the side and that's when you're
18 having those largest crab angles.

19 To stay in the channel, you have
20 to maintain a certain amount of speed so you
21 can manage those crab angles. It's kind of
22 like if you're riding your bicycle with a

1 friend and you want to hand them a piece of
2 gum, if you're going too slow, you're going to
3 crash into each other.

4 You put a little speed on, and
5 everything is stable. Everything is
6 predictable. If you go too slow with a ship
7 trying to stay in a confined channel,
8 eventually you'll lose control. And it
9 happened with the Bahama Spirit in 2004. But
10 I'll get to that in a second.

11 The Army Corps has since studied
12 this issue that we brought up back in 2006.
13 Last year, they did a study of the Charleston
14 Channel in typical weather conditions, and
15 they found that when you slow a ship down from
16 15 knots to 10 knots, and 15 is even slower
17 than we typically go in the entrance channel,
18 the space that you have available on either
19 side of the ship in the channel is 50 percent
20 less. You have a 50 percent smaller margin of
21 safety at 10 knots than you do at 15 knots.

22 Then in February, the Corps did

1 another study about navigational precision.
2 If you're trying to hit a target, speed is
3 your ally up to a certain point. What is the
4 effect of degrading speed on your navigational
5 precision?

6 And they found that every five
7 knots in the range from 20 down to 10 costs
8 you 20 percent in your navigational precision.
9 So hitting that target, dropping speed from 20
10 to 10 knots, getting the ship through that
11 door, you're going to have 40 percent more
12 error in that evolution.

13 So here's the scenario. For six
14 months of the year, we can go as fast as we
15 need to, to maintain control of the vessels,
16 we can pass vessels, and everything's fine.
17 But for the other six months of the year,
18 we're trying to meet vessels and pass them
19 while we're going slower. And the effect is
20 that we're working too close to the margins.

21 At ten knots, those crab angles
22 just become debilitating. So that deviation

1 clause -- that deviation clause, we apply it
2 on every voyage, but it's applied after a long
3 argument with the master.

4 For six months of the year, when a
5 pilot climbs up onto the bridge of a ship, the
6 master invariably says, my company told me
7 don't go over ten knots no matter what. We'll
8 have to send our logs in, we'll have to
9 document everything, we're not -- you know, I
10 can't do it.

11 And we're telling them then we
12 can't take your ship in because we can't move
13 your ship safely at ten knots. So you end up
14 on this compromise. The objectives of the
15 master and the objectives of the pilot are
16 bifurcated when normally you would want them
17 focused on exactly the same thing, what's the
18 safest way to navigate the vessel.

19 So when it goes wrong, it can go
20 very wrong, of course. And we've had ships
21 where the master was pulling back the
22 throttles without telling the pilot.

1 We've been going along in the
2 channel after we reached some compromised
3 speed of 14 knots or whatever and the Coast
4 Guard will get on the radio and say, you're in
5 the right whale speed zone and you're
6 exceeding ten knots and you need to slow down.

7 And now when you want everybody on
8 the bridge focused on navigating the ship, now
9 you're having that argument again when you're
10 already in the channel.

11 So going back to that time where
12 we tried to go ten knots in the channel and it
13 didn't work was 2004. And it was the day
14 after a tropical storm had gone through, and
15 there were winds in the 20 to 30 range, which
16 isn't all that unusual off of Charleston.

17 But the ship had mechanical
18 issues, we shouldn't have taken it. Again,
19 this was back in 2004 and, you know, we hadn't
20 really studied this issue to the point we have
21 now. But anyway, the more the currents were
22 affecting the vessel, the pilot tried to put

1 on more speed and more rudder.

2 He didn't have more speed to work
3 with because the engines just weren't up to
4 it. So the increased drag of the rudder
5 slowed the ship down, and it became a downward
6 spiral. And when I say that it stalled, it
7 stalled like an airplane stalls when it's
8 trying to climb too quickly.

9 It couldn't overcome the drag of
10 its rudder that it needed to turn into the
11 current, and they lost control and they went
12 up against the bank of the channel. And the
13 port was closed for the rest of the day.

14 Fortunately, it was a self-
15 unloading vessel carrying granite pellets, and
16 we were able to jettison 5,000 tons of cargo
17 on the next high tide, and we pulled it off
18 with five tugs and you never heard about it in
19 the news.

20 When we bring that up to the NMFS
21 folks that we have a case study on what can go
22 wrong, they say well, that was a bad day.

1 That was the day the margin of safety went
2 negative.

3 Pilots are charged with keeping
4 the margin of safety as positive as possible
5 all day long. We don't ever want to be
6 anywhere near a neutral margin of safety, and
7 certainly not a negative margin of safety.

8 So this year, NOAA has accepted a
9 petition from American Pilots Association to
10 exempt only the dredged channels from the
11 right whale speed rule. So why now? You
12 know, we brought this up in 2006, but you've
13 seen several graphics on the size of ships.

14 And ships are 30 to 50 percent
15 larger now than they were when this rule was
16 promulgated. It's a real problem now. Now
17 this is -- I mentioned to some of you last
18 night, the last time I put this slide up.

19 What this is is these are right
20 whale sightings in northern New England from
21 2002 to 2011. So roughly half of this period
22 before they promulgated the regulation, and

1 half of this period after they promulgated the
2 regulation.

3 These are locations where right
4 whales were sighted. Every one of these
5 little diamonds might be one whale, it might
6 be 12 whales, it might be some -- you know,
7 some number of whales, but a sighting happened
8 at that place at a point in time.

9 Those are by aerial overflights or
10 by vessel reports. In that period of time,
11 there were 16,010 sightings over those ten
12 years. These are just the 3,989 of them that
13 are outside of the protected areas where these
14 speed limits apply.

15 This is the boundary of the speed
16 limits up in New England, and it's cut up into
17 three sections. This one's in effect for four
18 and a half months of the year, this one's in
19 effect for two months of the year, this one's
20 in effect for four months of the year.

21 So when you see sightings in here
22 -- what's noted on here is this is a sighting

1 that happened in a month when this speed zone
2 isn't in effect. So this two month box here,
3 this is the route that the ships take in and
4 out of Boston. Here's the separation zone.

5 They moved the separation zone, as
6 a matter of fact, to facilitate this program.
7 This zone's in effect for two months of the
8 year. Over a ten year period, 40 percent of
9 the right whales that were spotted in this box
10 were spotted in months other than those two
11 months.

12 So when they designed this speed
13 management area to protect right whales, they
14 only targeted 60 percent of the risk. Out of
15 this whole area, 3,989 sightings are not
16 protected by current regulations. They're
17 either outside of the geographic boundaries of
18 the box or they are in a month or a year where
19 those boxes aren't applicable.

20 So 25 percent of the sightings
21 over a ten year period are not protected by
22 the right whale speed rule. So the point is

1 if NMFS is willing to accept that level of
2 risk tolerance to the species in northern New
3 England, why do we over regulate 6.7 square
4 miles of channels throughout the eastern
5 seaboard where there really is a good reason
6 to maintain safe speed and navigate vessels
7 safely?

8 So these are the nine channels
9 where there is a speed management area, and
10 you can see the boundaries of them. Some of
11 them are a 20 mile line off the coast, and
12 some of them are just a bubble around the
13 port.

14 But that's the square miles of
15 each of those channels. The two channels in
16 New York, you add up the area between the
17 dotted lines on the chart where it's dredged
18 and it's 9/10 of a square mile.

19 So there's 6.7 square miles of
20 regulated channels on the East Coast where
21 it's dangerous to go 10 knots. The right
22 whale speed rule covers 17,600 square miles of

1 ocean. And it's only targeting 75 percent of
2 the known risk in northern New England.

3 So it just doesn't make sense to
4 so rigorously regulate those channel areas and
5 introduce an environmental risk from a
6 shipping accident when your targeted
7 protection of the species is a completely
8 different parameter elsewhere along the coast.

9 And we now -- the Army Corps,
10 having studied that your navigational
11 precision drops. The Army Corps has studied
12 that your dimensional margin of safety drops
13 significantly at ten knots.

14 NMFS has never studied whether
15 those nine ports with those ten channels can
16 handle slow speeds. They've also never
17 studied why the Port of Boston and the Port of
18 Canaveral, whose entrance channels are not in
19 a speed management area, they haven't studied
20 why those channels can't be regulated and run
21 ships at ten knots.

22 There's been no navigational study

1 by NMFS at all on the impact of this rule in
2 confined channel.

3 The petition, we understand, is
4 going to be denied by NOAA. Office of
5 Management and Budget, or OIRA, has gotten
6 involved because it's a safety issue. If
7 there's a shipping accident and there's oil on
8 the beach and it's because the ships were
9 following the rules, obviously that's a
10 problem for the administration.

11 The Army Corps has backed us with
12 the concern and done the studies, and NMFS is
13 holding the line. So this is a significant
14 problem that affects very few -- you know,
15 very few ports, looking at it nationally. And
16 I appreciate the opportunity to talk about
17 this with you.

18 Unfortunately, this afternoon, I
19 can't be here for the break out sessions
20 because I'm getting on a plane to go to
21 Baltimore to a NOAA focus group of our right
22 whale reporting up at MITAG this afternoon.

1 So for me, it's all NOAA all day, and that's
2 fine to me.

3 So anyway, thank you. Thank you
4 for listening.

5 CHAIR PERKINS: Thank you, Mr.
6 Cameron. I want to ask a question. Have you
7 done a presentation like this to the Coast
8 Guard's NAVSAC FACA?

9 CAPT CAMERON: I have not. I
10 would be delighted to be invited to NAVSAC.
11 I would be delighted to be on NAVSAC, frankly.
12 But I have not.

13 And the Coast Guard -- I was
14 pleased when I was Captain of the port that my
15 letter to my Admiral did make it to NOAA, and
16 NOAA has told me that that's why the deviation
17 clause is in the regulation. It's just not
18 effective.

19 Since then, the Coast Guard has
20 not wanted to have much involvement in that
21 issue. They provide NOAA with AIS data from
22 ships so that NOAA can electronically enforce

1 the regulation. But that's been all we've
2 gotten out of the Coast Guard last year.

3 CHAIR PERKINS: Yes. It sounds
4 like a topic that would be perfectly suited
5 for presentation to the NAVSAC FACA.

6 CAPT CAMERON: I'll be there if
7 you can arrange that, sir.

8 CHAIR PERKINS: You know, I've
9 only attended one of their meetings, the
10 Admiral and I had the opportunity to attend
11 together last year, but I will take that
12 action item to try and determine when their
13 next meeting is and try to facilitate that.

14 CAPT CAMERON: Thank you, sir.

15 CHAIR PERKINS: Great. Justin,
16 the eHydro tool?

17 MR. WEST: Yes, sir.

18 CHAIR PERKINS: So is that
19 intellectual property? Is that licensed
20 software? Is that Army Corps developed
21 software?

22 MR. WEST: It is Army Corps

1 developed as far as the licensing. I don't
2 have an answer for you, I would have to get in
3 contact with the developers and see exactly
4 how they are working that piece.

5 CHAIR PERKINS: I'm just curious,
6 you know, whether other agencies or whether
7 the public can utilize that tool.

8 MR. WEST: I could get back with
9 you on that. Again, I would have to get with
10 the developers and see exactly how their
11 playing that piece. I know they're still
12 working on some further development within the
13 software itself, so that may be in the future
14 plans.

15 CHAIR PERKINS: Okay. And the
16 software development's taking place in
17 Portland District, is that correct?

18 MR. WEST: The major development
19 is taking place in Portland with the
20 cooperation of some of the other districts.
21 Charleston was one of the major testing
22 facilities for the software.

1 CHAIR PERKINS: You mentioned that
2 the CCRs, the Channel Condition Reports, that
3 they're ---- you're not distributing that data
4 spatially?

5 MR. WEST: The Channel Condition
6 Report itself does not contain spatial data.
7 All it is is just a report indicating the
8 depths --

9 CHAIR PERKINS: Why is that? I
10 mean, you've got the spatial data in your
11 hands, it's in your data set. I'm just
12 wondering why isn't that a fully spatially
13 enabled -- you know, data set that's being
14 distributed?

15 MR. WEST: The CCRs are designed
16 to be used in conjunction with the
17 standardized chart that we would produce that
18 would actually show the soundings.
19 Unfortunately, because the CCR reports are
20 standardized forms throughout the Corps --

21 CHAIR PERKINS: So that's a Corps
22 of Engineers chart that you're referring to?

1 MR. WEST: Yes, sir.

2 CHAIR PERKINS: Can you export an
3 XML so it can be used with Google Earth or,
4 you know, with a public domain viewer?

5 MR. WEST: As far as the spatial
6 data that's being output by eHydro?

7 CHAIR PERKINS: Yes. You know,
8 that nice colored chart, the SAC. You had
9 your depth code colored slide and it said SAC
10 was the acronym. Is that available as an XML
11 or for something that people can use without
12 having to buy licensed software to view it?

13 MR. WEST: That is an option to be
14 output with the eHydro software. It is not
15 something that we have explored sufficiently
16 yet. Charleston is prepared to start putting
17 out the KMLs to be used with Google Earth.

18 CHAIR PERKINS: Okay, great,
19 great. And I filibustered, so I apologize.

20 MR. WEST: That's all right, sir.

21 MR. WARD: Actually, I had a
22 follow-on question to that. That eHydro is

1 built on the Esri platform, is that right, in
2 your developing that product, or am I
3 misunderstanding?

4 MR. WEST: eHydro is actually
5 developed using Python script.

6 MR. WARD: Okay.

7 MR. WEST: Which is integral the
8 Esri GIS platform. It does require either a
9 CAD input through like, Microstation or
10 something like that, or also a geo-database
11 that is created in the Esri GIS format.

12 MR. WARD: And also, the CCR is a
13 product that is on the nautical chart, as
14 well. So Channel Condition Report shows up.

15 CHAIR PERKINS: I don't want to --
16 I really do want to filibuster this, but we
17 could schedule it -- I could come back to
18 Charleston and meet with you guys separately,
19 too. So are there other questions before I
20 run the gauntlet? Yes, Frank?

21 MEMBER KUDRNA: Regarding the
22 deepening of the channel by the Corps of

1 Engineers, and I recognize based on
2 yesterday's presentation any federal
3 construction funding would require an award
4 authorization for that. But what would the
5 cost sharing be under the current rules of the
6 Corps for federal participation?

7 MR. WILLIAMS: Right. So we've
8 had some adjustments in the Water Resources
9 Reform Development Act of 2014 with regards to
10 how we cost share as depth changes. And so it
11 would be premature for me to answer you with
12 utmost certainty on that one until we get some
13 implementation guidance from our higher
14 headquarters.

15 It used to be that anything below
16 45 feet, there was a different cost share.
17 And that mostly had to do with our operation
18 and maintenance of the harbor in which the
19 federal government paid for 100 percent of the
20 operation and maintenance for a project 45
21 feet or less. And anything greater than that,
22 the non-federal sponsor had to kick in some

1 amount.

2 That's now changed to 50 feet with
3 the latest WRRDA, but we don't have
4 implementation guidance on down to our level
5 on exactly how you slice that pie. So more to
6 come. We'll get back to you as soon as we've
7 got some --

8 CHAIR PERKINS: Joyce?

9 CAPT CAMERON: Byron, how much did
10 the State set aside?

11 MR. MILLER: The State of South
12 Carolina, in recognizing that as a nation we
13 are somewhat constrained these days, did not
14 wish to have a lot of doubt surrounding our
15 portion of the share, whatever that share may
16 indeed end up being.

17 So the State of South Carolina
18 went ahead and set aside \$300 million toward
19 the project. It's not the State of South
20 Carolina's intention to cover the federal
21 share, but perhaps to cover in advance, seek
22 reimbursement.

1 I know there's lots of details to
2 be worked out surrounding all of those
3 opportunities. But at least, the State share,
4 we would hope, has been fully covered in
5 advance, which you know, frankly is kind of
6 unusual.

7 We had, as a State, about a \$550
8 million budget surplus in 2011, and they set
9 aside \$300 million of that toward our next
10 project. So I guess the question is answered
11 about the local share. The question about
12 what that share will be is, I think, not.

13 MR. WILLIAMS: Right. We should -
14 --- in the draft report that comes out, there
15 should be, you know, clarifying language on
16 how to share.

17 CAPT CAMERON: I think it's
18 interesting to note, though, that 95 percent
19 of the maritime commerce in and out of this
20 country occurs through 15 ports in 12 states.
21 So 12 states are paying 50 or 60 percent of
22 the cost of deepening to serve all 48, and the

1 other 48 share the other 50 percent.

2 CHAIR PERKINS: Okay. Joyce?

3 MEMBER MILLER: It's clear there's
4 Governmental support. I come from a state,
5 Hawaii, where there's a huge environmental
6 lobby. And I know your public comment period
7 is coming up.

8 What are the primary environmental
9 concerns, and do you anticipate there will be
10 strong pushback from any sector of the public,
11 and that's to anyone who --

12 CHAIR PERKINS: Do you want to
13 handle that one first?

14 MR. WILLIAMS: Yes. So we had a
15 public scoping period that was part of our
16 process, part of the National Environmental
17 Protection Act process for coordination. And
18 we solicited comment.

19 We received somewhere around the
20 order of 100 comments from public and other
21 interests. And a lot of those focused on
22 salinity intrusion into the harbor, and

1 whether or not that would have any effect on
2 groundwater.

3 Lot of comments concerning
4 erosional areas within the harbor, so
5 shoreline erosion both for the, you know --
6 basically contiguous land bodies but also for
7 the small islands within the harbor. We have
8 Crab Bank, which was originally constructed by
9 the Corps of Engineers using dredge disposal
10 back in the '70s. That has experienced some
11 erosion over the past two decades.

12 And so that was a concern along
13 with Shutes Folly Island, which houses the
14 historical fort, Castle Pinckney is currently
15 located on, and then also Fort Sumner, which
16 is, you know, historical resource within the
17 harbor.

18 So I would say, you know, probably
19 the main comments we received during that
20 public scoping were centered on those types of
21 concerns. And our draft report will address,
22 you know, those concerns and the steps we took

1 to investigate them.

2 As for any potential -- how did
3 you say it, opposition, you know, that's
4 really yet to be seen. It would be really
5 kind of premature for me to make any guesses
6 on that one. But you know, just following the
7 kind of undercurrent within the press and kind
8 of general feelings around Charleston, I don't
9 get a strong feeling that there's strong
10 opposition to this project.

11 MR. MILLER: And the only other
12 thing I would add, which is more general than
13 technical because I have no technical skills
14 in my body, as it comes to environmental or
15 others. You know, if you look historically
16 and sort of within the context of other
17 projects' order of magnitude, Charleston on
18 one of the early slides that Brian referenced,
19 because 11 percent of the waterway is the
20 channel, that number is reversed in a lot of
21 other port environments.

22 River ports that are very narrow,

1 that number would probably be 60, 70, 80
2 percent would be within the channel. So
3 generally, order of magnitude, deepening
4 projects here in Charleston are -- I won't say
5 it's an easy pull because that's discounting
6 environmental impacts. These things have to
7 be evaluated.

8 But in the general scope, it's not
9 as significant as many other deepening
10 projects. Our last deepening project was
11 completed in 2004. Is that right? And I'm
12 not aware of any significant environmental
13 concerns that arose with that evaluation.

14 Conditions change. This project
15 is different from that project. It has to be
16 evaluated fully and fairly, but in the order
17 of magnitude of other projects within both
18 this region and nationally, I would say it's
19 not simple, but it's a much narrower field of
20 potential impacts.

21 It doesn't reflect on opposition,
22 it reflects on real impacts.

1 CHAIR PERKINS: All right. We are
2 perfectly on schedule, so I compliment our
3 panelists for, you know, using their time
4 well. If we can, to stay on schedule -- you
5 know, we're right at 9:16. Oh, we have 15
6 more. Okay, I'm sorry. So Gary. Be advised,
7 we have 15 minutes.

8 MEMBER JEFFRESS: I had the same
9 question Joyce had.

10 CHAIR PERKINS: Okay. Susan?

11 MEMBER SHINGLEDECKER: I'll pass
12 to Rick.

13 CHAIR PERKINS: Yes, Captain?

14 CAPT BRENNAN: So for Captain
15 Cameron, I was curious. You mentioned
16 salinity as being an issue for bringing ships
17 in. I'm curious what would be a valuable way
18 to the pilots, or any mariner coming in and
19 out, to display salinity for you in some
20 format so that that was useful to you.

21 I mean, if you had a direct
22 salinity value, does that have any meaning to

1 the general mariner, or is it a unitized value
2 as far as your Plimsoll marks, or what would
3 be helpful there?

4 CAPT CAMERON: Well, it would be
5 very helpful in the upper harbor. We have a
6 bridge up just below our North Charleston
7 terminal, it's 155 feet. And that terminal is
8 probably never going to handle ships larger
9 than 8,000 TEU. There's a few of those ships
10 going up there. But we're really literally
11 squeezing them under that bridge and we're
12 timing them with the tide.

13 The last time I rode a ship up
14 through that bridge, we knew it was going to
15 be very tight. The crew took a radar unit off
16 of the mast to get them another nine inches to
17 squeeze under.

18 And the ship had come from
19 overseas, so they had estimated their fuel
20 burn and they had estimated their draft. I
21 calculated that we should have cleared that
22 bridge by two feet, nine inches. And I was on

1 the mast when we went under the bridge, and we
2 were about two feet, two inches.

3 And I was pretty upset with myself
4 that I had miscalculated by that much, because
5 that's just too much of an error. So as we
6 got to the dock, I went down on the dock and
7 read the draft readings, and the ship was
8 floating seven inches higher than they
9 reported.

10 So I don't know whether that was
11 due to salinity or due to inaccurate program
12 that calculated their fuel burn on the way
13 over, but a few inches matters. I don't know
14 what the status of the technology is to
15 measure and provide that, but that's one point
16 where it would be very useful.

17 In the lower harbor, we're pretty
18 much ocean salinity all the time. So it's
19 just where you get into the farther reaches of
20 the harbor where you're trying to wring out
21 every bit of capability the waterway can give
22 you.

1 VICE-CHAIR HANSON: Captain
2 Cameron, we ask this question in every panel
3 on every port. Who pays for ports in
4 Charleston?

5 CAPT CAMERON: Byron paid for the
6 bridge sensor, and ---- well, the not the
7 marketing department, I suppose, but the Port
8 Authority paid for the bridge sensor, and I
9 think it was a \$60,000 purchase.

10 And we really will need another
11 one on the Ravenel Bridge, another bridge
12 sensor. We understand the maintenance runs
13 around 25 percent of the purchase cost per
14 year.

15 For the Ports Authority it was,
16 you know, either get the ships there or not
17 and that's what it took. So you know, that's
18 how it fell to them.

19 The tide gauge that we have in the
20 port had been here forever and I guess was
21 absorbed in, and I don't know that any of
22 those costs are being pushed to the port

1 community. Is that true, Kyle? Darren? Oh
2 yes, Darren's here. Sorry.

3 MR. WRIGHT: It's one of our NWLON
4 gauges which NOAA funds. However, there's a
5 I think a \$5K emergency maintenance fee that
6 the port is paying. So if it were to go down,
7 we can get somebody there, you know, a
8 contractor there a lot faster.

9 CAPT CAMERON: Yes.

10 (Simultaneous speaking)

11 CAPT CAMERON: The Port Authority
12 is also paid to have laser surveys done at the
13 bridges. You know, you read the chart and the
14 chart says that the bridge is 186 feet high,
15 that's right at the edges of the channel.
16 It's the worst case.

17 The Coast Guard requires you to
18 plot or chart the worst case. Well, the
19 bridge has camber, it has a maintenance
20 scaffolding car on it, that's all built into
21 that 186 feet.

22 So our bridge is really about 200

1 feet over the channel, but we don't know
2 exactly how much. And the Ports Authority has
3 talked about doing a laser survey of that so
4 that we know exactly. We haven't been
5 challenged on that bridge yet, so you know, it
6 hasn't come to the forefront.

7 VICE-CHAIR HANSON: Okay. And
8 also, I was interested in the salinity
9 discussion, as well. That sounds like it will
10 be the next marketing ploy. Maybe Byron,
11 start using that -- my port is saltier than
12 yours.

13 CAPT CAMERON: I do that all the
14 time.

15 VICE-CHAIR HANSON: But just for
16 Brian, does salinity factor into the Corps'
17 modeling as well, in terms of drafts and
18 economic benefits?

19 MR. WILLIAMS: Yes, that is way
20 above my technical knowledge. As you may or
21 may not know, we use a standard modeling suite
22 called HarborSym. It was developed by the

1 Corps by a third party contractor with heavy
2 influence from the Corps.

3 I can ask our economists who
4 generally, you know, run that model and know
5 its ins and outs. But that's above my
6 knowledge.

7 VICE-CHAIR HANSON: Well, it's
8 also a physical issue too because we're seeing
9 some ports around the country with salt water
10 intrusion, and actually building salt water
11 barriers as part of the channel design.

12 MR. WILLIAMS: Right. Now our
13 hydrodynamic modeling that I talked about oh
14 so briefly using the environmental fluid
15 dynamics code, that does take into account
16 salinity.

17 So we did have a validated,
18 calibrated model for existing conditions. We
19 did project out into the future for without
20 project condition, and then compared that to
21 our different alternatives.

22 So salinity and its potential

1 changes, and therefore impacts on the natural
2 environment, definitely are taken into account
3 in the study. As for salinities effects on
4 drafts and air draft, you know, that's
5 something I can get back to you on.

6 VICE-CHAIR HANSON: And then one
7 final one. I, like you, could ask questions
8 for probably 12 hours. Mr. Newsome said
9 yesterday that he expected mitigation, for the
10 project to be on the order of five percent.

11 And I noticed throughout the whole
12 discussion that the competitive discussion
13 between Charleston and the port to the south,
14 River Port in terms of --

15 MR. MILLER: Fresh water port,
16 fresh water port.

17 VICE-CHAIR HANSON: -- Savannah,
18 it's also a river port. And their mitigation,
19 of course, was 60 percent of their total cost,
20 a \$700 million dredging project, and actually
21 \$400 million of it is mitigation.

22 So five percent seemed really kind

1 of optimistic at this point. Are you far
2 enough along to say that, or is that -- have
3 any mitigation plans in order yet, or is that
4 still under discussion?

5 MR. WILLIAMS: Right. We do have
6 a draft mitigation plan that will be part of
7 the Draft Report and Draft Environmental
8 Impact Statement that is released in a couple
9 of weeks.

10 You know, so we've got, there's
11 elements in that draft mitigation plan. But
12 you know, I would say that the details we can
13 share with you in a couple of weeks when that
14 draft report comes out. I will never
15 contradict Jim.

16 MALE PARTICIPANT: Neither will I.

17 CHAIR PERKINS: Mr. Cameron, the
18 Admiral has been able to do a little research
19 while we've been here, and has information on
20 the NAVSAC next FACA meeting for us.

21 RDML GLANG: Yes. So the U.S.
22 Coast Guard's Navigation Safety Advisory

1 Committee, I asked last month when their last
2 meeting is. And it will be in San Francisco
3 in the first week of December. And the
4 designated federal official is Captain Scott
5 Smith, and Mike Sollosi is an organizer on
6 that. I can get you their emails, and we can
7 get you connected on that.

8 CAPT CAMERON: Thank you, sir.

9 CHAIR PERKINS: Yes, Gary?

10 MEMBER JEFFRESS: Just on the
11 salinity measurements, my institute's been
12 measuring salinity in Neuces Bay in Texas
13 since 1991.

14 For the City of Corpus Christi,
15 which regulates fresh water inflow into that
16 bay, and that data is used for that. Our
17 sensors are not that expensive, I guess about
18 \$5,000. But they have to be calibrated in the
19 summer about every two weeks, and in the
20 winter about every four weeks. It's pretty
21 labor intensive.

22 CHAIR PERKINS: Rich, is salinity

1 something that COOPS provides for the --

2 (Simultaneous speaking)

3 CHAIR PERKINS: It is?

4 MEMBER EDWING: -- as Gary said,
5 it is a maintenance intensive sensor. But we
6 do offer it through the PORTS system. And
7 actually I had a -- along those lines had a
8 follow up question for Captain Cameron.

9 So are there other environmental
10 parameters in the Charleston Harbor area that
11 might be helpful to navigation? You've
12 mentioned the salinity. I was wondering if
13 currents were at issue down here?

14 CAPT CAMERON: Currents are
15 strong, but they ---- I don't know the history
16 of this project, but there was a diversion
17 project that merged two rivers a few miles
18 inland. I think it was completed in the '80s,
19 is that right?

20 And that had a great benefit to us
21 on mitigating the currents through a bend just
22 above the Ravenel Bridge. We do have an issue

1 there where the Wando River -- there are
2 channels basically a Y. The Wando River and
3 the Cooper River meet just above the bridge.

4 And as you're going one way or the
5 other, you'll have half the ship in one river
6 and the other half in the other. And you
7 know, the pilots have figured out how to deal
8 with that, but when you drive over the bridge,
9 you can see that tide line, and it could be on
10 -- anywhere on the river on any given day.

11 So you know, I've had freight
12 pilots explain that navigating a ship is kind
13 of like the dime-a-dance hall, you got to
14 figure out how your partner responds as
15 quickly as possible.

16 And before they get to that point,
17 they have some idea of how that ship's going
18 to handle and how much power they're going to
19 need to get through those bends.

20 So you know, if there was some way
21 to predict that, it's very dynamic. You know,
22 currents change minute by minute, and

1 especially when you have two currents meeting
2 each other. If the technology could do it, it
3 would certainly be beneficial.

4 You know, the pilots, they know
5 where the ship is. The big problem is
6 figuring out how to get it to where they want
7 it to be, you know, two minutes from now. And
8 that kind of information would be fantastic
9 for that if it were available.

10 The wind driven effect on tide
11 here is also kind of a wild card. That draft
12 I showed you about the tide gauge last night,
13 that seven inches was due to the weather
14 patterns, and you know, all the water has to
15 flow in and out between the jetties here. So
16 you get, the wind can literally hold the
17 harbor, or hold the water in the channel in
18 certain conditions.

19 So you know, you don't know what
20 that effect is going to be in advance, of
21 course. If there was some way to predict the
22 wind effect on tide, that would be helpful, as

1 well.

2 CHAIR PERKINS: Andy, did you have
3 a question?

4 MEMBER ARMSTRONG: Yes, Captain,
5 not to be too defensive about that other part
6 of NOAA.

7 CAPT CAMERON: That's fine.

8 MEMBER ARMSTRONG: Up in
9 Massachusetts, our center is working with
10 others there on a whale alert software
11 package. I don't know if you're familiar with
12 that.

13 CAPT CAMERON: I think that's the
14 focus group I'm going to in Baltimore today.
15 It's about --

16 MEMBER ARMSTRONG: So the idea of
17 being, you know -- if whales aren't around,
18 then the speed restrictions might be relieved.
19 And so that involves a hydrophone on a buoy
20 and a transmission ashore, and then back
21 through the AIS system that essentially clears
22 the radius of it. I wonder if you've

1 considered that?

2 CAPT CAMERON: We would certainly
3 like for that to be considered. Those 16,000
4 sightings over ten years, 1,600 a year off in
5 New England, in the 40 mile band from the
6 shore out to deep ocean off of Charleston on
7 average 30 whales a year are sighted.

8 So NOAA did an extensive
9 overflight program here that was funded by the
10 Port Authority. It was the largest source of
11 non-federal money that supported the right
12 whale overflight program, \$1 million from the
13 Port Authority over five years.

14 And what NOAA learned from that
15 period of study is that it's not worth
16 conducting overflights here. The overflights
17 have been cancelled here. So we're not even
18 looking for the whales off our coast.

19 Of the 22, I believe it is now,
20 documented right whale strikes attributed to
21 -- or right whale fatalities attributed to
22 ship strikes since 1970, none of them occurred

1 in South Carolina.

2 So we have achieved the objective
3 of the regulation since the species was begun
4 to be studied. And the density of whales here
5 doesn't seem to indicate that our channel is
6 a real threatened area for them.

7 MEMBER ARMSTRONG: So perhaps, I
8 guess what I'm suggesting is an alert system
9 would give you clearance almost all the time
10 to proceed at full speed.

11 CAPT CAMERON: If there was such
12 clearance. If there was such a system. But
13 when I speak to NMFS groups, you know, and I
14 put that slide up where the sightings, a woman
15 from the wildlife ---- I'm sorry, the humane
16 society got up and said, don't listen to him,
17 he's not a scientist, he has no business
18 reporting biological information.

19 You know, and I've also heard
20 comments about it could happen. If it could
21 happen, then it should be regulated.

22 CHAIR PERKINS: All right, we're

1 right at 9:30. So I'm learning how to manage
2 the time. Thank you very much. We would
3 really like to invite you and encourage you to
4 participate in the break out sessions if you
5 can.

6 If you need the Admiral to call
7 the Colonel, you know, he would be glad to do
8 that to try to facilitate that. But thank you
9 so much for your contribution to the meeting
10 this morning.

11 All right, we'll do a quick change
12 of the presentation table and try to get back
13 on track here in two minutes.

14 (Whereupon, the above-entitled
15 matter went off the record at 9:31 a.m. and
16 resumed at 9:41 a.m.)

17 CHAIR PERKINS: All right, next on
18 the agenda we have our panel on the Atlantic
19 Intracoastal Waterway and Recreational Boating
20 speaker's panel. So I'm going to, for the
21 sake of time, I'm going to introduce all four
22 speakers right now, just so that we can flow

1 maybe a little smoother.

2 So first up will be Mr. David
3 Warren. He's project manager with the Civil
4 Works Branch, U.S. Army Corps followed by Mr
5 Brad Pickel with Atlantic Intracoastal
6 Waterway Association.

7 Mr. Larry Dorminy, Senior Editor
8 with the Salty Southeast Cruisers' Net. And
9 then we'll conclude the panel with Dr. Clark
10 Alexander of the Skidaway Institute of
11 Oceanography. And reading is fundamental,
12 right?

13 Thank you very much, welcome, and
14 we look forward to your presentations.

15 MR. WARREN: Since we began, I'll
16 go ahead and go a different way. I can answer
17 a couple of those questions you asked last
18 time. We do have salinity gauges on the
19 Cooper River because we're managing the salt
20 water/fresh water interface at a water
21 treatment unit area.

22 So what can happen is if we get an

1 alarm, then we work with our partner, Santee
2 Cooper, to vary the amount of flow into the
3 Cooper River to manage that wedge. So we do
4 manage with salinity gauges that way. So
5 that's just a little bit more information for
6 you.

7 You always want to have a hook
8 when you talk to a group, and I thank you for
9 allowing me to do this. I've got three.
10 First, you don't realize it because John
11 Cameron's not from around here, but the
12 Atlantic Ocean forms at the confluence at the
13 Ashley and the Cooper River. Let's get that
14 straight, sir.

15 If you're from around here, you
16 know that. That's cast in stone. Secondly,
17 you know, we're glad the magenta line is
18 disappearing from the AIWW charts, that's a
19 good thing.

20 I'm trying to figure out my
21 presentations, who's ordering me. I have 34
22 years civil service. Anybody got more than me

1 right now? Am I going to win? Good, good.
2 I'm not the oldest guy, because what you're
3 going to see is Justin represents the new
4 guys. I think I kind of represent the
5 somewhat progressed old guys.

6 I don't know the technology. As a
7 project manager, I spent a lot of money on it
8 with these young guys in GIS, LiDAR and all
9 that kind of thing. So it's good we have them
10 around. But it's good they got the old folks
11 like us that kind of remember the way things
12 used to be done.

13 So I'm the project management
14 basically for anything salt water in the State
15 of South Carolina. So I have Charleston
16 Harbor, Georgetown, and the AIWW.

17 From the perspective of the state,
18 I have the two losers, the Port of Georgetown
19 which gets zero funding and the AIWW.
20 Charleston Harbor, we do a fantastic job every
21 year. We pretty much keep this harbor 100
22 percent of depth all the time.

1 Sometimes we have to skimp on the
2 entrance channel, but I think we do one of the
3 best jobs on the east coast of keeping vessels
4 moving.

5 One thing I'd like to talk about,
6 inter-agencies, is we work hand in hand with
7 the pilots. They are totally integrated into
8 our design team. So when we make a decision
9 on what we do, the pilots are constantly
10 consulted.

11 So on the AIWW, same thing with
12 the dredging community, and the towing
13 community. These guys are constantly giving me
14 input. And Brian over there from the Coast
15 Guard, I got a nice letter from the Coast
16 Guard a few weeks ago telling me that the
17 Anvil will not be able to do its mission
18 because we're not going to have enough water
19 for it to get down the waterway. So we know.
20 So here we go.

21 In South Carolina, we have 235
22 miles of the ditch, as northerners like to

1 refer to it. We have 210 miles we're
2 responsible for. We have three regions.

3 Basically from South
4 Carolina/North Carolina border about a third
5 of the way through the state, another third to
6 Charleston, and then the bottom third to Port
7 Royal. Actually, the Savannah district has
8 some of the AIWW that's actually in our state.

9 So okay, this is where I'm talking
10 about the old guy. I like these old graphics,
11 okay? They take about two kilobytes in a
12 slide. They're not like eHydro where it melts
13 most people's computers or their GIS system.

14 Yesterday when I was trying to do
15 something with the Wilmington real estate
16 guys, it was crashing his brand new Dell
17 computer, it just was refreshed. So mine
18 work. Okay, they're not pretty, but they
19 work.

20 It just kind of shows you the
21 upper reach from North Carolina. We have
22 several inlets along the way, Little River,

1 Murrells Inlet. They're all Corps maintained,
2 jettied harbors. So that kind of represents
3 separate part. You all know the drill, it's
4 12 feet, 90 feet wide.

5 This represents in the Charleston
6 area. This is where we really have the major
7 problems in the AIWW for us. The big joke was
8 when they did a survey the other day just
9 because we needed some adjustments to some of
10 the equipment, they came back and said David,
11 we have negative numbers on the AIWW.

12 I said okay, what does that mean
13 because, you know, low tide we've got sand
14 bars across the channel now. So anyway, we've
15 got some big problems. And we know that we're
16 tide restricting our clients in the towing
17 industry and the dredging industry, and now
18 the Coast Guard which is one of my clients.

19 So Brian and I are missing the
20 kick off meeting to dredge their pier this
21 morning. They might be done by now, but we
22 know we've got a big problem here.

1 Down towards Port Royal in the
2 lower part of the state, there's just not that
3 much commercial traffic that we deal with from
4 that standpoint coming in and out. But there
5 are still some restrictions down there.

6 We're fortunate that the one
7 restriction we have in the lower part is mud,
8 so they just power through it. It's not sand,
9 so we don't get too much grief about that.

10 Okay, I took out -- I usually have
11 about 13 slides in this presentation. And
12 Brad and I, you know Brad represents what I'm
13 going to call the lobbying group. It's kind
14 of when we give a presentation together, we
15 have to get together to make sure we don't
16 cover the same thing.

17 So I took about three of my slides
18 out. This showed you the funding levels from
19 about 2000, which kind of peaked during the
20 ARRA era. We got a big chunk of money then,
21 and were successful doing a lot of work in the
22 waterway. But basically, it's a stepchild in

1 the funding arena.

2 '14 had zero and '15, woo hoo, I
3 got \$500,000. What do you do with \$500,000?
4 Last time I had \$500,000, it was three years
5 ago, I was able to build one rock sill, 255
6 feet long standing underneath the nationwide
7 permits. So you can't do much with a half a
8 million bucks.

9 So I've got a plan for my
10 navigation branch on what they're going to do.
11 And we're going to try to prepare shovel ready
12 projects in case all of a sudden the state of
13 South Carolina comes up with some money.

14 That's what we're really working
15 with local governments and the state trying to
16 do contributed funds agreement because they
17 understand as long as the tonnage is as low as
18 it is which is the measuring stick for the
19 waterway, we're not going to get any money.
20 So I'm thinking, we're hoping these states and
21 local governments step up to try and help us
22 with that.

1 Problem areas, McClellanville,
2 South Carolina which is probably the last
3 major fishing village in South Carolina.
4 These guys, they can get out but there's
5 trouble getting in. And pretty much every
6 time we have a vessel transiting the waterway
7 that doesn't know the water there, they run
8 into problems.

9 And I, by the way, I'm the guy who
10 gets the phone calls. My number's out there,
11 so you know, it's there. Sullivan's Island,
12 that's where we have the negative numbers
13 right now.

14 We've had at least two severe
15 injuries of recreational boaters in that area
16 of hitting sand bars at mid tides. There is
17 a way around it, but obviously if you go from
18 daymark to daymark in that area, you're not
19 going to find a deep water.

20 This Ashepoo-Coosaw cutoff, about
21 a quarter of the waterway in South Carolina
22 was dredged from scratch. The rest of it's

1 fairly natural. This is one of these tiny
2 cuts which is basically cut through the marsh
3 in the '40s, and it's a tough one.

4 And it's mainly because we're
5 having problems with the bank erosion, and
6 it's just the bank just keeps on sloughing off
7 in the channel. We've been exploring with
8 South Carolina DNR setting up some long no-
9 wake zones, but we're getting some pushback
10 from them and we kind of gave up on that,
11 trying to do it that way.

12 But you know, that's the story.
13 South Carolina's in tough shape. I think
14 we're an important part of the industry and
15 we're probably impacting them because we
16 haven't had any federal funds, at least didn't
17 get federal funds in over ten years.

18 If we got the money, our district
19 is ready to go. We can do the designs, we can
20 award the contracts and we can get it done.
21 We have the disposal areas to handle it. So
22 all we need's money.

1 And it's just like I was telling
2 Mr. Hansen is that I now have a standard
3 letter that I send to Senator Scott and
4 Senator Graham and Congressman Rice and all
5 those guys because about every two weeks,
6 there will be a letter through the CW chain at
7 headquarters down to the lowest guy in the
8 food chain answering these letters, and it's
9 the same one every time.

10 And you kind of wonder, okay guys,
11 you're the guys with the money. I'm the guy
12 down here. But you know, anyway, we work good
13 with our local Congressmen. They understand
14 our problems and, you know, they do the best
15 they can within the framework they have to
16 operate.

17 That's all I've got. Brad, I'll
18 let you come on up, taking questions at the
19 end.

20 CHAIR PERKINS: Great. Yes, we'll
21 hold questions until the end.

22 MR. WARREN: Sure.

1 CHAIR PERKINS: Great, thank you,
2 Mr. Warren.

3 MR. PICKEL: I'm going to step in
4 here and do my presentation.

5 CHAIR PERKINS: Make yourself at
6 home.

7 MALE PARTICIPANT: He must be one
8 of the young guys.

9 (Off microphone comments)

10 VICE-CHAIR HANSON: Hey, Dave, is
11 --

12 MALE PARTICIPANT: We're going to
13 do this the old fashioned way. I'm just going
14 to stand on ---

15 VICE-CHAIR HANSON: Hey, Dave?
16 Dave?

17 MR. WARREN: Yes, Bill?

18 VICE-CHAIR HANSON: Has Brad
19 confessed to being the author of those letters
20 you get from Senator Scott?

21 MR. WARREN: Thanks, Brad. I
22 appreciate that.

1 CHAIR PERKINS: If you can give a
2 quick answer, what's your budget need? I
3 mean, what's your annual budget needed to
4 solve that problem on that chart 11.5.18?

5 MR. WARREN: Well, we request \$14
6 million a year on capability. And what we'd
7 have to use that 14 is to get us back there.
8 And in a perfect world, if I had 5 to 6 a
9 year, just to keep up, that would be the
10 perfect world for me.

11 CHAIR PERKINS: Thank you.

12 MR. PICKEL: Thank you all. My
13 name is Brad Pickel, I'm the Executive
14 Director of the Atlantic Intracoastal Waterway
15 Association. I do want to thank you all for
16 having us.

17 Just to let you know, real
18 quickly, who we are. As David pointed out, we
19 are definitely not the lobbying arm of the
20 Corps of Engineers, but we do advocate on
21 their behalf, and on behalf of all of the
22 users of the waterway to try to get federal

1 funding to maintain what we consider to be a
2 vital marine highway, the backbone to all
3 these great ports that we continue to hear
4 that are being expanded.

5 You know, we have the philosophy
6 of build the port and they will come, but yet
7 it's being lost in the fact that we don't have
8 the connector between those ports. Even
9 though we have about 1,100 mile highway, if
10 you count down to the Keys, it's right at
11 1,200 miles, that connects all the areas that
12 run pretty much in the areas that we focus on
13 are from the Norfolk, the actual authorized
14 projects from Norfolk all the way down through
15 Miami to the Keys.

16 As David pointed out, in most
17 areas it is authorized to be 12 feet deep and
18 90 feet wide. However, I want to take a few
19 minutes this morning to highlight, not just in
20 South Carolina, but a lot of the other
21 critical shoaling areas along the Intracoastal
22 Waterway and some of the facts that relate to

1 those, and then I'm very happy to answer any
2 questions that you guys have.

3 First off, though, is I always
4 like to start with the users of the waterway.
5 It often gets considered as just a
6 recreational highway, and it is. The majority
7 of our users are recreational. And as David
8 points out, the Corps allocates their dollars
9 based on commercial tonnage, completely
10 understand that.

11 However, we do have others. I do
12 start off, though, with our commercial
13 shippers. We do have commercial shippers up
14 and down the waterway that deliver a variety
15 of products, everything from feed and seed to
16 different chemicals to equipment that can't
17 even be shipped by rail or truck.

18 A lot of people don't realize
19 that, but there's some pieces of equipment
20 that are either too heavy to be shipped by
21 truck or too big, or there aren't enough rail
22 capability, there's not enough rail heads

1 nearby to ship some of the products that need
2 to be moved along the waterway.

3 So it's not always just about
4 tonnage and weight. It also has to do with the
5 ability to get materials from where they are
6 to where they're needed. We saw that, a lot
7 of people don't realize that early on the
8 Boeing fuselages here in North Charleston --
9 that can't come by truck. Some of those are
10 way too big. So they had to come by the
11 waterway.

12 And one of our members, we're a
13 membership organization, one of our commercial
14 shippers, Stevens Towing, has been in
15 business for 100 years out of Yonges Island.
16 And I know David hears from Bos pretty
17 regularly. They'll be the first one to tell
18 you that there's a lot of tricky issues.

19 And since Mr. Hanson's on the
20 panel, I had to throw in also that dredging
21 companies utilize the waterway not only to
22 maintain it for us, but to move their

1 equipment up and down.

2 Some of our other members are
3 dredgers, and they have to move their
4 equipment as they're doing projects, not just
5 along the waterway but in other areas they can
6 ship their equipment by the waterway because
7 it usually is safe passage, but not always.

8 As David mentioned, now we have
9 areas that commercial fishing fleets. The
10 town of McClellanville is a very good example
11 of one with Jeremy Creek that ties right into
12 the AIWW. They can't really get out that well
13 anymore. I just got another call just the
14 other day, and we're working closely with
15 them.

16 I'm happy to point out that
17 Charleston County council decided just in the
18 past few months, voted to approve submitting
19 up to \$500,000 over the next two years for
20 waterway maintenance. Will that \$500,000 go
21 very far? Well, as David pointed out, it
22 doesn't go that far. But \$500,00 plus

1 \$500,000 plus if we can get \$1 million here
2 and \$1 million there, then we could actually
3 do some work along the waterway.

4 But it's not just for the
5 commercials. As I mentioned, we definitely
6 have recreational boaters, current estimates.
7 We don't have great estimates, somewhere on
8 the order of about 12,000 snowbirds coming
9 down, spending roughly \$300 on an average day
10 using the waterway, which leads to a lot of
11 economic support for small communities. We've
12 got a number of small communities along the
13 waterway.

14 And then the last one which is
15 becoming even larger, I hate to say I'm happy
16 to hear that the Coast Guard is having
17 problems, but that actually is good news for
18 my efforts because it is a strategic corridor
19 for national defense.

20 A lot of people don't realize it,
21 but the F-35B, the plane that has slightly
22 large cost overruns, but's being flown by the

1 Marines. We're based out of Beaufort, South
2 Carolina, that's where I live. The training
3 for that is being done at Beaufort Air
4 Station.

5 All of their jet fuel comes by the
6 waterway, comes from Jacksonville up through
7 the waterway. That's the only way they're
8 getting it right now. So it's for training
9 missions, it's also for the Coast Guard, but
10 it's for a variety of different groups that
11 use the waterway for national defense.

12 And even ATF uses it in Georgia
13 for training missions. There's a lot of use
14 of the waterway that it's becoming more and
15 more important for national security.

16 Real quick, I did want to point
17 out one state from an economic impact.
18 Florida has done the best study most recent,
19 or the most recent best study. And they
20 looked at the current economic impact of the
21 waterway to their state.

22 As you could see, and I won't read

1 the numbers except for the two that I think
2 are the big ones, is first off, the overall
3 economic impact as it is, approximately \$11.86
4 billion. This is in 2011.

5 But I think the 66,000 jobs is
6 really what we're talking about here, it's
7 over 66,000 jobs. But if they would actually
8 be able to maintain it at the authorized
9 widths and depths, what would they be looking
10 at? They did that scenario and they came up
11 with \$13 billion. That's another \$1.5
12 billion. That's huge numbers.

13 But once again, you're talking
14 another 8,000 jobs, which is really what we're
15 trying to talk about here is economic
16 resilience. I think that's a point that's
17 lost on the discussion. We think about it as
18 a recreational use. We don't talk about
19 economic resilience of an area.

20 And if you start losing these
21 jobs, you're going to have big impacts. Dave
22 had mentioned that verbally on sand bars in

1 the channel. I have to give credit to Troup
2 Nightingale. This picture's actually taken in
3 Georgia.

4 And I know Clark is very familiar
5 with these areas. I think this was Jekyll
6 Creek. But we have a number of those areas.

7 So real quick, what do we do? As
8 I said, we pursue additional funding for the
9 marine highway, and we're also looking at a
10 maintenance needs assessment. And that's
11 where I think you all can help, and I hope you
12 all can help because Kyle Ward has been very
13 helpful so far.

14 But as Dave had mentioned, we
15 usually have, we could put years and years of
16 showing no money. But there is a little bit
17 of money coming to the waterway. I need to
18 stress little bit.

19 The one big difference that
20 changed between 2014 and the 2015 budget is
21 now every state's getting a little bit of
22 money. The President's budget in '14 was

1 right at \$5.3 million.

2 With the work plan, plus up, which
3 is the way that Congress does earmarking now
4 that doesn't exist, they were able to add
5 another 54 percent or just under \$3 million to
6 the entire waterway stretch.

7 But this year we're happy because
8 the 2015 President's budget is coming in
9 almost double what we started '14 with. We
10 hope we can actually see some more material
11 being moved out of the channel. And once
12 again, we would love to see that number get
13 plussed up, and we'll be working diligently to
14 do that.

15 And that's the reason why projects
16 like David mentioned about having shovel ready
17 design projects ready to go, we can go and
18 advocate on behalf of the waterway to get
19 money to then go do those projects because
20 it's easier to say hey, they got projects
21 ready to go in South Carolina.

22 When we do that, though, we have

1 to know what's needed. And we actually worked
2 also with water resources reform and
3 development act, got a section included,
4 Section 2008 where now, the Congress is
5 requiring the Corps districts for the Corps of
6 Engineers to submit to them on an annual basis
7 the operation and maintenance needs of the
8 waterway.

9 Even though David knows what his
10 capability is and what Charleston District
11 needs to do in Charleston District, that
12 information doesn't always get transmitted up
13 through the four levels of command, through
14 Office of Management and Budget to Congress.

15 So this will not only help
16 Congress have a better understanding, but this
17 will be a huge tool that now we can go to the
18 states with and say hey states, if you wanted
19 to maintain the three areas that David pointed
20 out, this is how you can do it.

21 And so that's what we're using as
22 a tool to get with our state and local

1 governments, is to try to get that
2 information. We're also, when that extra money
3 comes back to the Corps, it actually comes
4 back not just for commercial usage, it comes
5 for low use in shallow draft harbors and
6 different waterways.

7 So they have different metrics
8 that they then assign to how they allocate
9 those dollars. And so we're working to try to
10 supply additional information that will make
11 the Intracoastal Waterway stand up stronger.

12 Finally is a big issue that we've
13 been working on is with the governor of the
14 South Atlantic Alliance, and actually, I
15 didn't know she was going to be here, but
16 Kristine Cherry is with the Governor of South
17 Atlantic Alliance is here.

18 And we worked with them as part of
19 their working waterfronts technical team. The
20 Governor of South Atlantic Alliance, and I
21 won't want to shortchange them, in trying to
22 describe what they are, but it's alliance of

1 four states, North Carolina, South Carolina,
2 Georgia, and Florida working together to
3 identify regional issues that they can work
4 together on.

5 We, at the Working Waterfronts
6 technical team believe that the Intracoastal
7 Waterway is one of them. And they supported
8 us in producing a report to identify the
9 critical shoaling areas of the Atlantic
10 Intracoastal Waterway.

11 We got this information showing
12 where those areas are from the Corps of
13 Engineers first, from those CCR reports and
14 through communications, through our next
15 speaker, Larry Dorminy with the Salty
16 Southeast Cruisers' Net.

17 We've had a partnership with them
18 for a number of years, really close for the
19 last couple of years, so from the recreational
20 user's side. We also work with the Coast
21 Guard, our shippers, dredgers, and others to
22 try to find out where are the trouble areas?

1 And David talked about South
2 Carolina so I won't hit those. But just
3 running quickly, you can see we've got
4 approximately, what is it, seven in North
5 Carolina. The dates on those are some of the
6 dredging periods.

7 You'll see North Carolina does
8 dredge a good bit. 2013 and '14 they also
9 have a state funding source to offset the
10 federal cost. So it's probably the reason why
11 they're dredging a little bit more.

12 South Carolina, I have one more
13 than David only because I break out Jeremy
14 Creek. Jeremy Creek is part of the AIWW, but
15 it's a little bit more inland. It really is
16 kind of the McClellanville portion. But as
17 you can see, there hasn't been a lot of work
18 done in the last few years.

19 Georgia's running into a similar
20 situation. They haven't had a lot of dredging
21 in their areas. They also have environmental
22 challenges in that there's not a lot of places

1 to put the dredge material once it's taken out
2 of the channel. But you'll see there's a
3 number of areas in Georgia that we've
4 identified and gone back to our partners to
5 look at.

6 And then also in Florida. Once
7 again, Florida has a state funding source to
8 help augment the federal budget, and they're
9 doing dredging a good bit. But they also have
10 areas that have to be maintained.

11 And the reason why we named these
12 critically shoaling areas is because they're
13 not ephemeral in that they don't just pop up
14 every once in a while. Yes, we get areas
15 every once in a while. We know these are
16 going to be areas that have to be maintained.

17 So how can you help? These are
18 the three main areas that our organization
19 thinks that we could have some synergy in
20 working with you. First off is to try to
21 increase the resolution in those critical
22 shoaling areas. We know where they are. We

1 have a lot of people that can tell you, you
2 know, these are the trouble areas.

3 We've got 1,100, 1,200 miles,
4 however you want to count the waterway. But
5 these are the areas that until we can get the
6 money to dredge and maintain the waterway, you
7 can help us with this, especially starting
8 with an area like Georgia that's not getting
9 money, an area like South Carolina that's
10 extremely limited. If you've got to ask us
11 where to focus that money and get that
12 resolution, please start there.

13 Second is, and the magenta line
14 definitely came across our bow, and we like it
15 to be maintained as a reference line. But
16 identified as such, we do have those users
17 that like to try to follow the line exactly
18 and they get stuck and spend a few hours on a
19 sand bar. But we do like that.

20 And then also, and I don't want to
21 go too far down this road because Larry may
22 touch on it, but identify opportunities for

1 crowd sourcing. We know your sources are
2 limited, we know this is something you're
3 working on. We just want to let you know that
4 we do support it.

5 I know that the ARGUS system is
6 used by Salty Southeast Cruisers' Net. So
7 these are the three main areas where we think
8 that you all could definitely work closely
9 with us, trying to move through that quickly.

10 Just showing some users on a
11 waterway. I have a new one now that I need to
12 include of a ship being pushed down near
13 Jupiter, Florida. They say that you don't
14 ship down in the Florida Intracoastal
15 Waterway, but they actually had a shipper in
16 Jupiter, Florida we got a picture of.

17 With that, thank you. And I will
18 be charging for my audiovisual skills. No,
19 I'm just kidding. But we do have individual
20 boater memberships for \$25.

21 CHAIR PERKINS: Is Larry ready?
22 Okay.

1 MR. DORMINY: Is this on? Very
2 good.

3 CHAIR PERKINS: You might move it
4 just a little closer.

5 MR. DORMINY: Oh, dear. How's
6 that? I'm Larry Dorminy. I'm Senior Editor
7 for Salty Southeast Cruisers' Net. And before
8 I begin, I would like to take the opportunity
9 on behalf of all the staff at Cruisers' Net
10 for the hundreds of expressions of sympathy
11 that we received following the death of
12 Claiborne Young in June of this year.

13 I'm also happy to announce that
14 Cruisers' Net has now been successfully, after
15 much wrangling, successfully purchased by the
16 team of five members who were running the
17 Cruisers' Net with Claiborne. So as of Monday
18 of this week, Cruisers' Net is now official
19 and back up online.

20 We mentioned a lot of the issues.
21 When I first read my topic issue, I had to
22 laugh because there are many of us who think

1 that the Intracoastal is a navigational issue.

2 We have on our website, we have 18
3 areas that we have designated as problem
4 stretches where shoaling is continually and
5 annually, perennially reported.

6 We are crowd sourced. We use
7 reports as they come in, we will put up
8 shoaling reported. And then when we get a
9 confirmation of that from someone that we know
10 or from a local marina or from the Coast
11 Guard, then we put it up as confirmed, and we
12 will put, at that point we will put a
13 navigation alert.

14 I'm sorry that doesn't have the
15 whole screen here. But one of the areas I'd
16 like for us to look at, and it was mentioned
17 earlier, that's already up.

18 (Off microphone comment)

19 MR. DORMINY: Oh, okay. That's a
20 little better. To look at the Ashepoo cutoff.
21 This is an area, and as you can see, we have
22 received so many reports that we post, then,

1 a navigation alert, and I'm sorry that's not
2 showing there either. Let me try this.

3 So the issue becomes here, there
4 is an alternate route that avoids this. And
5 what we would like for NOAA to consider, and
6 that they're thinking about, is how do we, or
7 should they mark and present an alternate
8 route to recreational boaters?

9 Are all of you familiar with
10 Umbrella Cut south of St. Andrew Sound?

11 Umbrella Cut, as you come south of
12 Jekyll Island, the St. Andrew Sound, depending
13 upon the wind and the tide, can really, really
14 get rough. And as you leave, if you follow
15 the Magenta Line, then you end up being rather
16 exposed quite out in the Atlantic at that
17 point.

18 So Umbrella Cut, as you can see,
19 this again is the tip of Jekyll Island and
20 here is the Magenta Line that takes you quite
21 ways out into the ocean. So the question is
22 how to avoid that. And it's through this

1 Umbrella Cut.

2 The Army Corps, as I understand
3 are the ones who did this, have marked this
4 with a dotted line going down, and it connects
5 all the way down. It goes up through the
6 Little Satilla River, comes down and crosses
7 and comes back through Floyd's Creek, and
8 connects back.

9 And the question is should we be
10 doing something like that at Ashepoo Cut. It
11 has been recommended and by documents from
12 boaters, experienced boaters who will turn and
13 leave the waterway either here at 515, Mile
14 515 and come down to the Combahee sand bar and
15 turn and then go back northwest to rejoin.

16 Also, it's possible to leave the
17 waterway just south of Fenwick Cut and come
18 down that way. And the question is, and we
19 would like for NOAA to consider is, should
20 that area also be marked with a dotted line?

21 There are spaces, if we go back to
22 St. Andrew Sound, there are areas here that

1 could be marked as alternates. For instance,
2 here again depending upon what the weather
3 conditions are doing, the Magenta Line, as a
4 dotted line, could leave also at this point
5 and come across this area.

6 Can all of you see that dotted
7 line? Yes, you see that. But those are two
8 of the areas, and there surely are other areas
9 where alternate routes might be possible. And
10 the question is should NOAA be involved with
11 doing that?

12 I don't know how my time is. All
13 of you know that we have a lot of tools now
14 available to us. We look at this, we can add
15 ARGUS to the chart. We simply do that. And
16 you can see, all of you have seen ARGUS,
17 right? You know it gives you, when you plug
18 into it, for instance a red spot here. It
19 will give you the lat/long for it and it will
20 give you the depth at that point.

21 Obviously these are much more
22 legible when you scroll into them. Don't lose

1 them like that. So that was really the point
2 of my presentation was to --- have you
3 consider whether or not those areas, whether
4 alternate routes should be offered when
5 they're available.

6 CHAIR PERKINS: Great. Larry,
7 that's compelling presentation. And the
8 breakout sessions that we have scheduled for
9 this afternoon are exactly the forum to, not
10 to say to get into the grassroots, but that's
11 the type of discussion we hope to have.

12 MR. DORMINY: Right.

13 CHAIR PERKINS: The specificity
14 like this, like you've presented in these
15 breakout sessions. So thank you.

16 MR. DORMINY: Just a note about
17 Salty Southeast Cruisers' Net. This is not
18 designed for the professional boater. This is
19 designed for the absolute novice.

20 Some of our members have said gee,
21 why do you put up there important or crucial
22 or caution? Well, it's because it's so easy

1 today to go down and purchase a boat with
2 thousands of dollars worth of equipment on it
3 and simply start following the Magenta Line
4 without having any knowledge of currents or
5 how to read the markers that are placed there.

6 And all of you know that almost
7 every intersection is constantly shifting. We
8 will have an area dredged, and within four
9 weeks we'll have cautions saying shoalings
10 appearing at that spot again.

11 So we try to aim at the novice
12 recreational boater. And if you think there
13 are not a lot of those, you haven't been out
14 there for a while. And as Brad had, there are
15 lots of photos of the boats who just went
16 their way and not thought about what they were
17 doing.

18 When I first did the Intracoastal
19 Waterway, it was with a paper chart and a
20 compass and a depth finder. And you had no
21 help like we have now. But you had to learn
22 about how to read the marks, how to look at

1 the flow of the water, you know, to try to
2 read where the currents were.

3 And I still remind myself as I
4 cruise some of the back alleys around
5 Charleston here in my 15 foot center console
6 that the deep water's on the outside of the
7 bend.

8 But anyway, it's wonderful the
9 issue. I didn't get to show you we have
10 surveys on Cruisers' Net that you can go to.
11 The Army Corps surveys are available, and they
12 look very much like ARGUS. They have the same
13 kind of notation in terms of depth color-wise,
14 depth-wise.

15 CHAIR PERKINS: Thank you, sir.

16 DR. ALEXANDER: I guess while she
17 gets my presentation up, I'll just come right
18 out and say it. I'm from that area with that
19 fresh water river port.

20 What we've heard here today is a
21 lot of talk about Charleston and South
22 Carolina issues. And with my discussion here,

1 we're going to move down into Georgia,
2 although we will start at the Georgia/South
3 Carolina border. So that's okay.

4 And what I'd like to do today is
5 tell you a little bit about work that I've
6 been doing over the last, well, maybe six or
7 seven years, work in the Intracoastal
8 Waterway, in the near-shore waters to mostly
9 do mapping.

10 I'm a coastal geologist by
11 training. I've been on the Georgia coast for
12 the last 25 years, and as I say, in the last
13 seven or eight years, I've been doing a lot
14 more mapping and management-related mapping
15 kinds of work.

16 So what I'm going to tell you
17 about today are a few issues. Do I need to
18 speak into this?

19 CHAIR PERKINS: If you would,
20 please. We do have an audio, you know,
21 webinar piece going concurrently, so that
22 would help. Thank you.

1 DR. ALEXANDER: And I have a
2 control here. So what I'm going to be talking
3 to you about today are a couple of mapping
4 projects that I've been doing. I'll also tell
5 you a little bit about some work that I've
6 done a few years ago looking at physical
7 processes and its impacts on the Intracoastal
8 Waterway as well.

9 So the thing that has propelled me
10 into doing a lot more detailed surveying kind
11 of work, stuff that is much more pertinent to
12 the goals of this group I think here today is
13 that two and a half years ago, the Skidaway
14 Institute of Oceanography purchased an
15 interferometric sidescan sonar system which
16 allows up to map bathymetry in shallow coastal
17 waters.

18 We bought an interferometric
19 system as opposed to a multibeam system
20 because you get an effective swath of maybe 10
21 to 12 times water depth with the
22 interferometric system as opposed to three to

1 five times water depth with a multibeam
2 system.

3 The system consists of the
4 multibeam system. The interferometric system
5 is deployed off of an arm off of this 28 foot
6 Parker. It has a dual antenna navigation
7 system for heading and for navigation, and all
8 the data is processed in HYPACK, which should
9 be near and dear to everybody's heart who's a
10 surveyor here in the room.

11 And we have a sound velocity probe
12 that we use to get water column velocity. So
13 we've been using this system to map regions in
14 Georgia. As I said, we've only had it for two
15 and a half years. But as you can see, in this
16 figure here which shows Georgia from the
17 Savannah River at the north to the Florida
18 border down to the south.

19 The areas that we've mapped so
20 far, we've mapped the five Georgia rivers in
21 a reconnaissance mode. And then we've spent
22 a lot of time up in Wassaw Sound up there in

1 the northeast of the map. And that's where
2 we've been spending most of our time.

3 As many of you know, a lot of the
4 bathymetry for estuaries in the southeast is
5 quite old. The NOAA high resolution
6 bathymetry on the NGDC website is basically a
7 result of 1933 lead line soundings. And so,
8 you know, things might have changed a little
9 bit since that time.

10 And in fact, we didn't even have
11 one of those sorts of data sets for Wassaw
12 Sound. I just wanted to show the river
13 surveys that we've done as part of a project
14 where we're trying to understand the
15 bathymetry a little bit better in Georgia
16 rivers, we have done reconnaissance surveys.

17 This is a typical data swath. One
18 pass up the river, one pass back, and we've
19 done that on all five of the Georgia rivers
20 now, the St. Mary's, the Satilla, the Altamaha
21 and the Ogeechee. And we're using Corps of
22 Engineer's data, of course, for the Savannah

1 River because they've mapped that river at a
2 much greater density. And so we have the
3 whole river in that case.

4 These bathymetric data are being
5 used in updating some ecological modeling, the
6 SLAM model for those of you that are familiar
7 with that. And so this sort of data is
8 something we've collected.

9 But we've been spending most of
10 our time in Wassaw Sound. As we were funded
11 through our Coastal Zone Management program to
12 develop a new bathymetric model for Wassaw
13 Sound because 1) there wasn't a high
14 resolution data set available even from 1933
15 data, and because these sorts of data are
16 important for both recreational boating,
17 Wassaw Sound, as you can see, has some very
18 shallow areas and very large bars on its
19 flanks, which cause problems for people all
20 the time, and we also wanted to be able to
21 provide better bathymetry for storm inundation
22 modeling and those sorts of efforts.

1 With our --- we use the
2 interferometric system for the bulk of the
3 survey here. In areas that were too shallow,
4 we either used a terrestrial laser scanner, a
5 LiDAR instrument on the bottom here, at low
6 negative tides so that we could get a lot of
7 the very shallow areas, or we used a single
8 beam echo sounder hooked to an RTK GPS system
9 to do some of the flanks of the system.

10 And this is the sum of that
11 survey. This project is just coming in to an
12 end now, and we're going to be reporting that
13 data and providing it to NOAA if the levels of
14 accuracy and documentation are up to their
15 standards.

16 We certainly have been able to see
17 both fine scale features, here's one of these
18 deep holes that you get near confluences of
19 channels, and there's also some very large
20 features associated with confluence of
21 channels.

22 You can see these little green

1 dots on this map down here. These are
2 pinnacles that are 20 feet tall in a much
3 deeper channel that's between 45 and 60 feet
4 deep. So there's a lot of detail, a lot of
5 features on the bottom that we didn't know
6 about in a lot of the waterways in Georgia.

7 We've also been collecting
8 sediment sampling and trying to work on
9 developing methods for developing a textural
10 map. I know that NOAA is interested in
11 characterizing what the bottom is like.

12 We're trying to take the data that
13 we get from our discreet sampling and use
14 sidescan sonar imagery that is collected by
15 the system as well, and use the intensity
16 backscatter patterns to create grain size maps
17 can be used to provide a more widespread
18 knowledge of what the bottom is like.

19 And we're working with our DNR,
20 our fisheries division in Georgia to put this
21 data in formats that can be helpful to them to
22 better interpret their kinds of surveys that

1 they do annually in the sounds.

2 The next up for us, we've been
3 funded through our CZM program to move down
4 the coast to the next sound down, the Ossabaw
5 Sound. And so that will be the next sound
6 that we start working in.

7 The Wassaw project was projected
8 to be a one year project. We thought we'd go
9 out, we'd map that thing, and we'd be done.
10 It ended up taking us two years because there
11 is a lot of issues associated with pitch and
12 roll of smaller vessels when you're trying to
13 survey, and that's something that I would like
14 to talk about in the breakout groups in terms
15 of perhaps sharing expertise or equipment that
16 will give us better capacity.

17 For Ossabaw Sound, we've already
18 proposed that as a two year project because we
19 know there's a large part of the year when we
20 just can't operate given the motion reference
21 unit that we have with the system.

22 As I've mentioned, we've done some

1 surveying in the rivers. This is the St.
2 Mary's River on the Florida/Georgia border.
3 The hotter colors are shallow areas -- the
4 purple colors are deeper areas.

5 And so these are the kinds of data
6 that we're producing from the rivers. And
7 we've been working already with Kyle here in
8 the navigation branch to start looking and
9 comparing older data with this newer data that
10 we're collecting.

11 There was a request from, I guess,
12 City of St. Mary's for NOAA to go out and
13 survey the river. And since we had just done
14 it, you know, here's an opportunity where we
15 can share data that's collected with updated
16 systems, and we can share it with NOAA and let
17 them better leverage and use their resources
18 in other areas as long as they can document
19 that the data that we're producing is up to
20 the standards that are acceptable.

21 So these are the kinds of
22 collaborative mapping efforts that I would

1 hope that we would be able to expand on in the
2 future.

3 There are other kinds of mapping
4 that we've been doing around in Georgia.
5 Skidaway Institute, my institute is located
6 here on Skidaway Island. City of Savannah is
7 up in the southwest here, and there's a small
8 marsh here that we've been working on as part
9 of a pilot area working with DOE. Why we're
10 doing that, I can talk to people about.

11 But we've mapped that area using
12 our -- that's interesting. Can you do
13 something about that? I don't think I'm going
14 to try to explain this figure, let's just move
15 on.

16 Yes, so this is much more in my
17 wheelhouse. So we've mapped this salt marsh
18 at very high resolution to develop a DEM that
19 can be used with circulation models to start
20 studying the flow of water and nutrients and
21 contaminants throughout marshes to develop
22 better models.

1 But we've mapped with various
2 different methods using our interferometric
3 system for the deeper channels. We have very
4 small boats with RTKs and high resolution echo
5 sounders in the smaller channels, and then
6 used pedestrian surveys for the upper part,
7 and then used LiDAR on the upland to get that
8 interface.

9 So there are these kinds of
10 mapping efforts that can go on, and which can
11 characterize banks and the channel edges along
12 the Intracoastal if that sort of work was of
13 interest.

14 A few years ago now, I think this
15 was in 2011 that we did this work, we actually
16 went out and mapped erosion rates of the
17 Intracoastal Waterway and documented, and the
18 Intracoastal is shown there in purple through
19 Georgia.

20 The two areas that are the worst
21 in Georgia, in case anybody cares, Hells Gate
22 up here, and right behind Jekyll Island right

1 there, those are the two areas that really
2 need to be dredged every year if you want to
3 enhance recreational boating.

4 But we've been looking at the
5 Intracoastal Waterway from trying to develop
6 data that's useful for managers. So we went
7 out and mapped historic shore lines and
8 calculated erosion rates and accretion rates
9 on the Intracoastal Waterway.

10 This figure on the right is
11 showing a high resolution classification of
12 the undercoastal waterway. We have
13 georeferenced video imagery of the
14 Intracoastal Waterway throughout Georgia, and
15 we're extending this work into the rivers this
16 year.

17 But we've mapped in detail the
18 character of the Intracoastal Waterway,
19 whether it's marsh, whether it's armored,
20 whether it's oyster beds so that managers can
21 have a better idea. And of course, this will
22 be very useful for recovery if we were to ever

1 experience a large storm.

2 We also were interested in, well
3 that's interesting, everywhere there's not a
4 blue dot along that shoreline is supposed to
5 be red. It's always interesting how these
6 things change, yes.

7 So basically we've mapped out the
8 erosion and accretion patterns in the
9 Intracoastal waterway. Where you see blue
10 dots here along that black line, which is the
11 Intracoastal Waterway, those are areas that
12 are accreting, or growing.

13 Everywhere else, where there's a
14 black dot along there it should be red, but
15 where those are red, that shows that the
16 channel is eroding. And these data are very
17 consistent throughout the Georgia Intracoastal
18 Waterway.

19 And what that's telling us is that
20 both sides of the Intracoastal Waterway are
21 eroding. So first, that tells us that these
22 systems, as opposed to our meandering tidal

1 creeks, are not functioning like normal tidal
2 creeks.

3 So that makes you want to ask the
4 question why is the Intracoastal Waterway
5 eroding on both sides? So obviously, you
6 know, the big factor is boating activity on
7 the Intracoastal Waterway.

8 We know from the Corps of
9 Engineers, here's the data for the Savannah
10 district on the top, that tonnage and number
11 of vessels using Intracoastal Waterway has
12 been going down over the last ten years. I
13 don't have data beyond 2010 right now.

14 But recreational boating, it has
15 been going up. There's two numbers at 2008 in
16 there because Georgia changed how they do
17 their boating registration. But certainly,
18 recreational boating has been increasing over
19 time. There's a lot of heavy usage, and we
20 find higher erosion rates in areas that have
21 higher populations along the coast of Georgia.

22 So it's pretty clear that

1 recreational boating is a major impact on the
2 Intracoastal Waterway. So if you're looking
3 at loss of marsh from a management standpoint,
4 that is something that you need to consider.

5 And where that yellow dot is on
6 that figure, there is a marina. And we looked
7 at erosion and accretion patterns above the
8 marina and below the marina, and this is the
9 direction that everybody goes to get out once
10 they put their boat in the water.

11 You can see those are all black,
12 so those dots should all be red. So
13 basically, the channel below the marina, the
14 direction everybody goes when they put their
15 boat on the water is dominantly eroding.

16 The channel above the marina where
17 nobody goes is accreting on one side, eroding
18 on the other side like a normal tidal channel
19 system should be. So there is evidence as
20 well that recreational boating is a
21 significant impact on salt marsh systems in
22 the southeast.

1 And then I just wanted to mention
2 that there is an online portal, the Georgia
3 Coastal Hazards Portal which holds erosion
4 rate data for all the major barrier islands in
5 Georgia. Again, the black dots should be red.

6 All that data is available. The
7 Georgia Coastal Hazards Portal, anybody can go
8 in it. You can look at erosion rates at
9 specific sites. You can look at general
10 patterns such as here, and there's a lot of
11 other information in there, as well about
12 coastal hazards in Georgia.

13 And lastly, I wanted to mention
14 that the governor of the South Atlantic
15 Alliance, which we've heard mentioned here
16 already, has been developing tools to help
17 regionally assess coastal vulnerability to
18 storms right now.

19 But the tool that was developed
20 over the last few years, the last two years
21 with NOAA funding, is something that can be
22 put together and used to assess coastal

1 hazards and vulnerability from other factors
2 as well, if there was an interest from a group
3 such as this for specific hazards to be
4 integrated and looked at.

5 So basically what it did, we had
6 four pilot sites in each of the study areas,
7 one pilot site from North Carolina, South
8 Carolina, one in Georgia, and well, two split
9 in Florida.

10 And what we did was develop a tool
11 that combines inundation, shore line change
12 vulnerability, and social vulnerability from
13 the University of South Carolina Social
14 Vulnerability Index data into a single
15 composite map so that you can look at your
16 relative vulnerability to coastal hazards.

17 And what those hazards are are
18 easily changeable using the tool that we have.
19 So I just wanted to let this group be aware of
20 that and know that this is something that NOAA
21 has put significant funding over the last two
22 years into.

1 All right, thank you very much. I
2 hope I didn't overdo my time.

3 CHAIR PERKINS: Thank you. Our
4 apology on the projector, Dr. Clark. We're
5 going to get it swapped out here on the next
6 break. Apparently, we've wore this one out.

7 MR. MILLER: I'm Chief Michael
8 Miller from Coast Guard Station Charleston.
9 I just wanted to point out a couple of
10 examples from the previous slides. Talking
11 about shoaling, and this is just from my
12 experience. I'm a boat driver, okay.

13 And I heard the examples of, you
14 know, obviously commercial and recreational
15 traffic going through specifically Sullivan's
16 Island up to McClellanville. And I just
17 wanted to point out something that's pretty
18 important as a response standpoint.

19 I can speak from experience from a
20 response standpoint where I should never have
21 to worry about what's underneath my boat when
22 I'm responding for a search and rescue, ever.

1 Especially in the Intracoastal Waterway.

2 And I could give an example
3 specifically responding to a search and rescue
4 case where we had to stop. I had to stop.
5 Now fortunately, I had another boat that was
6 coming from outside the jetties coming in from
7 the ocean side, and I was specifically going
8 up the Intracoastal Waterway.

9 But I actually had to stop in the
10 middle of the day, in the middle of a search
11 and rescue case because I didn't have enough
12 water. And that's just something I wanted to
13 point out just to give you an example of.

14 CHAIR PERKINS: Great, thank you.
15 We've got 15 minutes for questions, and Susan,
16 we'll let you go first.

17 MEMBER SHINGLEDECKER: I'm Susan
18 Shingledecker with Boat U.S., and I just want
19 to thank you all for being here. Sometimes I
20 feel like the recreational boater in the
21 crowd, so it's nice to have a whole panel with
22 that perspective.

1 Brad, I really appreciated your
2 pointing out all the users of the waterway.
3 I think sometimes people, especially who don't
4 live on the ICW, think that romantic notion of
5 cruising down the ICW for the first time.

6 But this is a really active,
7 working waterway. And as the gentleman from
8 the Coast Guard pointed out, from a safety
9 perspective, the maintenance both on the Army
10 Corps side and on NOAA's side as far as
11 charting, is really vital.

12 And when it isn't maintained, as
13 we pointed out in the discussions with
14 maintaining the magenta line, waterway users
15 from a safety perspective, either they'll run
16 aground, or they'll be forced outside of the
17 waterway into the open ocean where, as Larry
18 mentioned, these novice boaters, they're
19 probably better off not going.

20 And so it is a really, really
21 vital element. And while there is this
22 romanticized version of the ICW, it really is

1 a working waterfront that's vital to maintain.

2 I had a couple questions for
3 Larry. And you mentioned the ARGUS system,
4 and I actually think this panel hasn't heard
5 that much about the system in use.

6 We've discussed crowd sourcing
7 kind of generally, but I would be curious if
8 you could tell us a little bit about how many
9 units your community has out, how long you
10 guys have been using them, and what kind of
11 the response has been to that data?

12 MR. DORMINY: I wish I had John
13 Hersey here from Survice.com who does develop
14 the ARGUS program. ARGUS is crowd sourced,
15 and it is applied, the equipment for the use
16 is put on private boats so that as vessels
17 pass through a certain area, they will
18 transmit that information back to Survice.com,
19 and then Survice.com provides it to whomever
20 would like to have it. And we're contracted
21 with them.

22 I cannot answer you specific

1 questions about how many vessels are involved
2 or how many units are there. It's interesting
3 because just yesterday in thinking about what
4 I wanted to say today, I asked John Hersey if
5 he had an ARGUS printout of Umbrella Cut,
6 which is used a lot and discussed a lot on our
7 website, and he said he didn't know that any
8 of the vessels had gone that way. But I'll
9 bet you next week, we will get it.

10 MR. WARD: John Hersey is actually
11 on line.

12 MR. DORMINY: I'm sorry?

13 MR. WARD: John Hersey is actually
14 on line.

15 MR. DORMINY: Oh, he is?

16 MR. WARD: Yes.

17 MR. DORMINY: Hi, John.

18 CHAIR PERKINS: Yes, can we patch
19 Mr. Hersey in for an answer?

20 MALE PARTICIPANT: This might not
21 work.

22 (Off microphone comment)

1 FEMALE PARTICIPANT: Could
2 somebody speak into the mic and tell me if I'm
3 muted?

4 CHAIR PERKINS: Testing. Yes, no
5 this is live.

6 (Off microphone comment)

7 CHAIR PERKINS: John? John,
8 you're unmuted. Can you hear us? John
9 Hersey?

10 MR. HERSEY: Yes, can you hear me?

11 CHAIR PERKINS: Thank you. Yes,
12 we can.

13 MR. HERSEY: Okay.

14 CHAIR PERKINS: So the question
15 was can you tell us --

16 (Simultaneous speaking)

17 MR. HERSEY: -- the question was
18 about how many units do we have on the active
19 units. And right now we have about ten units.
20 And these are just recreational boaters that
21 are, you know, going from the north from the
22 south to make the trip in one direction, then

1 they make the trip in the other direction.

2 So pretty much a two transit per
3 boat per year in addition to some that kind of
4 just do some local transits, as well.

5 CHAIR PERKINS: Great, thank you.

6 MS. MERSFELDER-LEWIS: Are there
7 any other comments you want to make, John?

8 CHAIR PERKINS: Okay, great. All
9 right, well we'll continue the questioning.

10 MR. HERSEY: You know, the only
11 comment, like, I think Brad and Larry both
12 suggested is that I think that the crowd
13 sourcing of the bathymetry data would be a
14 good way to address the magenta line issue.
15 So I presume in the breakout session this
16 afternoon, some of this can be dispelled.

17 CHAIR PERKINS: Okay, very good.
18 Thank you. Brad, I have to ask the question,
19 and I don't want it to seem like I'm trying to
20 defer everything to other FACAs, but there is
21 a FACA specifically for the marine
22 transportation system. There's an MTS FACA.

1 The question of the lack of funding, you know,
2 for the dredging on M95 on the designated
3 marine transportation highway, have you had an
4 opportunity to put this question in front of
5 the MTS FACA?

6 MR. PICKEL: I've talked to
7 individuals at MARAD and different
8 organizations, and definitely working hand-in-
9 hand with the Corps. But no, sir, I have not
10 had that opportunity.

11 As the gentleman said earlier, I
12 would love to, you know, because we do see
13 it's vital highway that mirrors I-95, and we
14 don't have enough capacity to move all of the
15 trucks we have, today on I-95, I tried to get
16 up here. But yes, we would love to do it.

17 CHAIR PERKINS: Yes. Well maybe
18 we can help facilitate, you know, with that.
19 We've been asked to try and find other FACAs
20 that have common interest in work for, you
21 know, those points of common interest and
22 cooperation. So we'll try to do what we can

1 to help you with that. Yes, Joyce?

2 MEMBER MILLER: I just, I'm not up
3 to date on the magenta line. And I have
4 personally gone down the ICW, so I know what
5 it is. What is the current status on charts
6 and so forth? I'm not 100 percent up to date.

7 RDML GLANG: Gerd Glang from Coast
8 Survey. So about a year ago we put out a
9 federal register notice asking for input from
10 users of the AIWW on their views and the
11 usefulness of the magenta line.

12 As you know, the magenta line, we
13 started putting on our charts back in 1912.
14 And it really hadn't been updated or
15 maintained in 70 years, so it was not useful.

16 And the other thing is how boaters
17 use the magenta line has really changed,
18 especially in this age of modern electronics.
19 So what was meant to be sort of broad
20 directional guidance, follow this line
21 generally for where the Intracoastal Waterway
22 goes, was being used literally as a navigation

1 track line. And so that was leading to some
2 unfortunate situations.

3 So we made a decision to remove
4 the magenta line, lacking any information to
5 improve it. And we certainly didn't have the
6 resources, nor do we now have the resources to
7 go resurvey the way it was done in the 1930's.

8 But we went through a public
9 process, we heard from boaters. And so we as
10 a policy decision decided we would restore the
11 magenta line where we had data to support it
12 and to maintain it.

13 And that's a considerable effort,
14 and we rely on our navigation managers in the
15 regions, like Kyle, to provide that first hand
16 information. And I don't know if you want to
17 talk about it some more, Kyle. But there are
18 places where we have put the magenta line back
19 based on corroborating information on where we
20 can show it correctly. Kyle, do you want to?

21 MR. WARD: Yes. And I wanted to
22 highlight too that the Army Corps of Engineers

1 as a caretaker does throughout this region
2 survey the ICW once a year. And we have taken
3 that data into the marine chart division and
4 updated the nautical chart to the extent we
5 are able to at the scale of our product.

6 And most of the charts along the
7 Intracoastal Waterway are at a 1/40,000 scale
8 which limits our ability to put a lot of
9 detail in there. But a lot of, you know,
10 those surveys from the Army Corps do get
11 submitted to NOAA for the update of that line,
12 and they were used. And as they're being put
13 back on, it's largely their data that we're
14 using to put that in the right spot.

15 CHAIR PERKINS: Are you accepting
16 data from any other sources, Kyle, besides the
17 Army Corps like we've heard about here in this
18 panel session?

19 MR. WARD: We are looking into and
20 we have access to data such as ARGUS. There's
21 also another, a group out there called
22 ActiveCaptain where we're looking at those

1 reports.

2 And when we're seeing significant
3 and really hot topics or hot issue areas that
4 we could make a change on the chart, we are
5 engaging those groups and putting information
6 on the chart to at least have the chart
7 reflect what those reports --

8 You know, you could put a report
9 at shoaling from anybody calling up the Coast
10 Guard or our office at any time. So we are
11 looking at those crowd-sourced sources for
12 that type of information. But whole scale
13 application of the chart, no.

14 CAPT BRENNAN: Well, that's not
15 exactly true. I mean, we have taken them on
16 a case by case basis. So we did take some
17 interferometric data from USGS up in Woods
18 Hole for Cape Cod Bay.

19 And we processed all of Joyce's
20 surveys for the Hawaiian islands through to
21 the chart. And so, you know, as we find them
22 and when we can overlap that with need, we do

1 do that.

2 RDML GLANG: Yes, we're talking
3 about the magenta line, in taking --

4 CAPT BRENNAN: Yes, particularly
5 not there on the magenta line. But I'm saying
6 --

7 RDML GLANG: I think that's what
8 Scott's question was, using outside source
9 data for the purpose of rescheming the magenta
10 line. I think that's the context that Kyle
11 was answering.

12 CAPT BRENNAN: Certainly.

13 CHAIR PERKINS: Yes, Ken?

14 MEMBER BARBOR: Do you have an
15 estimate on how much of the magenta line
16 you've returned? You know, you said you've
17 put it on where you have data available.

18 RDML GLANG: I can get you an
19 update by tomorrow. But I think our plan was
20 it would take us about three years to scheme
21 it all, if I recall correctly. And we made
22 the decision back in January, February to

1 rescheme it.

2 CHAIR PERKINS: Yes, go ahead,
3 Frank.

4 MEMBER KUDRNA: Question is for
5 Dr. Alexander and for NOAA. You had mentioned
6 that for use of your surveys by NOAA, it would
7 have to meet NOAA's data standards. Do your
8 surveys meet NOAA's standards, and have they
9 been used in any revisions by NOAA?

10 DR. ALEXANDER: They do meet the
11 surveying standards that I understand NOAA
12 uses. And we're right now in the process, at
13 least the way I understand it. We've
14 submitted some data, that St. Mary's River
15 data for evaluation just so that there can be
16 a level of comfort that it's been looked at
17 and it passes that kind of standard.

18 MR. WARD: Yes. For the specific
19 case of that St. Mary's data, the data that
20 had been collected, even without review by
21 NOAA, was provided to the requester because at
22 the point, we really didn't have any

1 information except for a 1930's survey from
2 NOAA.

3 So the information actually, there
4 were about four track lines from the Army
5 Corps of Engineers from the previous four
6 years, and then with the interferometric data
7 lining up really nicely with that, with the
8 Army Corps of Engineers data that we were able
9 to provide that product as stated, you know,
10 that it came from those sources just as a
11 graphic to the requester.

12 And at this point, because there's
13 no actual navigation on that river, all of
14 this is for proposed action, that that met
15 their needs for the moment. We are planning
16 to follow up with a survey from our navigation
17 response team, but that hasn't taken place
18 yet.

19 But as we collect data as well, I
20 think that will be the impetus for reviewing
21 the data that we have received from Dr.
22 Alexander.

1 MEMBER KUDRNA: I would just add,
2 I think this is an important issue because in
3 many of these waterways, these are recreation
4 only and they're not going to meet the high
5 level of commercial priority of a Panamax
6 deepening type system that would go to the top
7 of NOAA's priority. So this could be a very
8 effective tool, not only in this case but
9 others, to provide input data to NOAA.

10 DR. ALEXANDER: And that was
11 really always our goal was with any surveying
12 that we do, we do it to the survey quality
13 standards because we want it to be more
14 broadly useful and not just for this study.

15 CHAIR PERKINS: Okay, great. You
16 know, we're going to have to compress our
17 upcoming break a little bit to get back on
18 schedule. Mr. Warren, the LiDAR surveys that
19 you mentioned coming up for the confined
20 disposal areas, are those topobathymetric
21 LiDAR surveys?

22 MR. WARREN: They're topo. We'll

1 do a fly over next year with that \$500K, start
2 at the state line and run our way down. And
3 then we have a new mobile LiDAR system that we
4 can either use it, we actually use it on an
5 ATV or we can mount it on our boat.

6 And it's good enough quality where
7 I can run the boat down the waterway, and we
8 get about a 95 percent good picture of how the
9 dikes are behaving, the amount of material
10 inside.

11 So you know, like with Kyle, I
12 mean, Kyle and my guys, they work together
13 like this every week. And whatever data we
14 have, we use it, like, for example I just
15 finished Folly Beach renourishment project.
16 And to set my baseline survey, the way you
17 normally do that is you have your contractor's
18 final slices down the beach.

19 In this case, because when I'm
20 dealing with the mayor and his assistants,
21 nobody understands that. So I had my guys do
22 the run of the beach in LiDAR. And so every

1 same sectioning that we used for the beach
2 renourishment.

3 And I got them to put the house
4 numbers on it, too. So now I can sit down
5 with the public and say yes, it's seven and a
6 half feet high, the storm protection berm at
7 your property.

8 So you know, it's become my tool
9 with the public to one, convince them we
10 actually did the work because nobody believes
11 you when they get out there and look at it.

12 And I think, like, in dealing with
13 Bill's crews, you know, we're using the
14 multibeam exclusively for everything we do
15 with the commercial guys now. So it's just to
16 the point where, you know, they'll ride our
17 vessels, we'll ride their vessels to make sure
18 when we're having discrepancies to work things
19 out.

20 So I think we pretty much got
21 Charleston Harbor covered from top to bottom.
22 There's not too many unknowns for us there.

1 CHAIR PERKINS: Okay, great.

2 Well, we're going to have a short five minute
3 recess and try to reconvene on time at 1100.

4 So thank you very much.

5 (Whereupon, the above-entitled
6 matter went off the record at 10:55 a.m. and
7 resumed at 11:03 a.m.)

8 CHAIR PERKINS: Okay, before we
9 start the next session, for the Panel Members
10 I do have a reminder that Tiffany would
11 appreciate if you would be, attempted to
12 getting your time and attendance reports
13 filled out and turned in so that she will be
14 able to process your payroll and expenses and
15 take care of, you know, that matter. So
16 please don't leave that until the last minute.

17 All right, thank you. Our next
18 session is going to be on Geospatial Modeling
19 and Coastal Resilience and the speaker panel
20 begins with doctor --

21 MEMBER WELLSLAGER: Doctor, wow.

22 CHAIR PERKINS: - with Mr. Matt

1 Wellslager. Former chair of the HSRP and the
2 director of the South Carolina Geodetic
3 Survey. So, Matt, the floor is yours.

4 MEMBER WELLSLAGER: Thank you,
5 Scott. Well I take great pride in being able
6 to lead off this group with the geospatial
7 modeling and coastal resilience and having a
8 chance to come back the Charleston to do it as
9 well.

10 It's kind of a swan song that's,
11 it's been a good one. Now that it's not
12 raining let's hope it stays that way.

13 But I would like to address with
14 the Panel what is, what I would consider to be
15 one of the more important parts of coastal
16 resilience and that's going to be a
17 preparation, a study, of the first line of
18 defense for coastal natural disasters. And
19 that would be the beach, the barrier islands
20 and the primary dune line.

21 I would also like to thank Jessica
22 Boynton, whose is here in the audience, for

1 helping me present, or prepare the slide
2 presentation that we'll be using today in this
3 presentation.

4 So this whole endeavor began in
5 1988. And in doing such, monuments were
6 created so that studies could be done to
7 determine where sediment was moving, whether
8 it be on the primary dune line or in the
9 water, and it was mandated, 400 monuments were
10 select or created between '87 and '88.

11 Well Hurricane Hugo came through
12 and did a few things, and we were tasked with
13 my office coming through and doing the
14 reconnaissance from Waties Island, which is at
15 the Northern end of South Carolina, the North
16 Carolina-South Carolina border, down to
17 Daufuskie Island to see what was destroyed and
18 what was still in place.

19 And that information was given to
20 the National Geodetic Survey who then came in
21 and did a survey, using GPS at the time, to
22 re-monument all of these monuments. And North

1 Carolina then followed through with post
2 Hurricane Hugo disaster relief fund and ran at
3 least third order, but usually first order
4 levels, to establish strong accurate
5 morphometric heights on the monuments.

6 Jessica is tasked with undertaking
7 this project now and bringing it all into a
8 database and using it in a current format with
9 ArcInfo and has asked my office to go and
10 verify, what is on the beach, what needs to be
11 replaced, what needs to be destroyed, and put
12 the database in a format that NGS will use and
13 make available to the user in the National
14 Spatial Reference System.

15 And the step ahead to the future,
16 the Office of Coastal Resource Management will
17 monitor these monuments and make applications
18 available to the public to use for future
19 endeavors.

20 All right, so what we've got are
21 now about 560 monuments. In the developed
22 areas, here, this spacing originally was about

1 a 1,000 feet. In some of the barrier islands
2 and less developed areas, the spacing was
3 extended out to 2,000 feet.

4 But historical data existed from
5 the '87, '88 and latter surveys. So when we
6 went through and reestablished the monuments,
7 great care was taken to try to replace the old
8 control with new existing control in the same
9 location so that the data that we had would
10 still be usable for future surveys.

11 Technology has changed since '88,
12 '87 and '88. The first type of survey was
13 done within the littoral zone and it really
14 only went from the primary mark out to low
15 tide, as indicated here.

16 And you could see in that littoral
17 zone where some sediment transfer had taken
18 place. And levels were run from a transit out
19 to, well this is actually a little bit later,
20 but someone with a level rod as they migrated
21 out into or away from the actual site.

22 Jump ahead now to post Hurricane

1 Hugo when NGS came in, and they use this new
2 technology called GPS, you know, it's like
3 wow, that was then wasn't it, okay. But GPS
4 positioned the monuments and they stepped
5 ahead and decided now is a chance to really
6 see where the change is taking place.

7 So OCRM contracted with Coastal
8 Carolina and wanted to take it to the next
9 level and started doing surveys out into the
10 water and migrated into a bathymetric system
11 using a buggy. And, you know, necessity is
12 the mother of invention.

13 It's funny what we can determine
14 to use or to contrive in times of desire and
15 drastic need.

16 We've got a prism up here but this
17 is what was taken off and, you know, I'm not
18 sure how plumb it was while it was in the
19 water, but it served a purpose and they were
20 able to do surveys with it. And here you can
21 see a rigid frame skiff taking the buggy out
22 through the surf zone as measurements were

1 being recorded from the monuments.

2 Did they pass the Coast Guard
3 driving safety classes before doing this?
4 Maybe, not sure, but I don't think these are
5 recreational users, Susan, not really. It is.

6 So now jump ahead to today. We're
7 using GNSS global navigation satellite system
8 receivers with the Real Time Network that we
9 have in South Carolina for the land base
10 surveys. And then that transfers to vessels
11 using HYPACK and the profiles are taking
12 place.

13 The profiles are surveyed
14 following significant storms to see where we
15 have areas of erosion and where we have areas
16 of deposition.

17 But for every kind of survey that
18 you have you need to have a point of
19 beginning. And the point of beginning for
20 these are the 560 marks.

21 They all look very similar to what
22 we have here. You have a four number

1 designation. The new points have an E
2 designation on the bottom.

3 Post Hugo, some of these may
4 actually have an A or an, I'm sorry, a B or a
5 C on them, and we'll talk about that in a
6 minute. But besides what OCRM was using these
7 for, the surveying community had a use for
8 them.

9 Land surveyors could transfer
10 elevations because we had elevations assigned
11 to these to first floor certificates.
12 Planning areas within the coastal counties
13 would have boundary surveys or platted surveys
14 tied to State Plane coordinates that were
15 transferred from these.

16 So we're talking spatial data. We
17 had accurate elevations, accurate coordinates.
18 And these were made available either through
19 OCRM speech jurisdiction web application or
20 tools provided to us from NGS, like DSWorld to
21 get the coordinates.

22 So here's the project. We

1 received 560 monuments, well actually
2 coordinates for 560 monuments, and we, in
3 ArcInfo, laid it out onto a map, decided that
4 for project management it would be best if we
5 broke this into three projects, the Myrtle
6 Beach area, Charleston area down to Edisto
7 Island, starting in probably Dewees and then
8 the severe low country going from Hunting
9 Island, Harbor Island, Hilton Head and
10 Daufuskie.

11 My field crew had coordinates
12 loaded into the data collectors and we went
13 and recovered or did reconnaissance for all
14 these sites. We would go the coordinates and
15 if the site was there we would occupy it, not
16 once but twice for ten minutes, with a
17 separation of either 21 or 27 hours.

18 If they weren't there we would
19 mark that, that would be a place where we
20 would have to contact with OCRM and see if in
21 fact this would be a new location or if we
22 would just discard them and move forward.

1 So our first job was going to be
2 the Myrtle Beach area. All right, for this
3 project to really take off and work we used
4 the Real Time Network in South Carolina. This
5 is another part of what my office manages and
6 does.

7 It is our own PORTS system, if you
8 will. We do not get state funding for it so
9 we have to charge the user community an annual
10 fee of \$600. But by having that fee we are
11 able to pay for maintenance, hardware, servers
12 and software support.

13 So I mean it's become a beneficial
14 tool for us to use with this as long as you
15 have a digital connection to the internet. I
16 have real time corrections that can be applied
17 to receivers.

18 And you can pin point your
19 location, under good conditions, to within a
20 tenth of a foot. Let's just say two
21 centimeters horizontally and about five
22 centimeters vertically.

1 So this is what we used to
2 facilitate this project. We also have 13 CORS
3 sites in this state.

4 Unfortunately one of those sites,
5 at the College of Charleston, had to be
6 decommissioned the first part of this month.
7 The building that it was in is being renovated
8 and it had to be removed from the 4th Floor.
9 It was at the Physical Science Building at the
10 corner of George Street and Coming Street.

11 But we have another site, S-C-H-A,
12 which is at the Port Authorities
13 Administration Building. So we've got, you
14 know, Charleston area covered with CORS and
15 then they're interspaced at about a 70 meter
16 space in, commerce spacing, I'm sorry,
17 throughout South Carolina.

18 Those that are not CORS sites are
19 height modernization. So they are in the
20 national database and will be readjusted when
21 readjustments occur.

22 And using the 2011 epoch

1 coordinates, broadcast corrections are sent to
2 the users in that format as well.

3 So back in around 2010, 2011, NGS,
4 with the help of Bill Henning and Dave Doyle
5 and some others of us that weren't part of
6 NGS, had a collaborative effort to put
7 together a GPS derived heights webinar. And
8 in doing so put together specifics that were
9 the, this is how to make it work type of
10 thing, if you want to do real-time kinematic
11 work and you want to be out in the field and
12 get accurate data, this is the menu to follow.

13 And this project is challenging
14 because we're having to worry about multipath,
15 we're having to worry about, in places, tall
16 tree canopy and tall buildings. But for the
17 most part we're able to do just about
18 everything else.

19 Dilution of precision or PDOP,
20 which if you've worked with GPS you probably
21 heard the terminology, has been reduced
22 significantly if for no other reason than the

1 fact that we're tracking two constellations
2 now. We have the GPS constellation, which has
3 a heavier weighting in the solution when it's
4 determined, but we're also using the GLONASS
5 constellation which is provided by the
6 Russians.

7 So this is what we used for our
8 check sheet when we're out doing work. And in
9 the same webinar we have these kind of
10 accuracies that we should expect to get.

11 In the survey part of what we're
12 doing with the Real Time Network and the ten
13 minute observations with the two occupations
14 for redundancy, horizontally this is what
15 we're looking to try to find as agreement and
16 vertically this is what our guidelines are to
17 try to find as agreement. So that's what we
18 have.

19 Now with the specifications in
20 place, here's the project. Now take in mind
21 it's been 25 years give or take for some of
22 these sites. This is using a tool called

1 DSWorld that you can download from the
2 National Geodetic Survey that uses the
3 National Spatial Reference System or the
4 National Database of Passive Monumentation and
5 overlays that information onto Google Earth.

6 Well, you know, my guys weren't
7 interested in swimming so they didn't go out
8 and try to find these points out in the water.
9 But you have one that was set originally as
10 5,900 and then a second one which is 5,900 B.
11 So these were two points that were probably on
12 dry ground back in the mid to late '90's.
13 Well 2014 that's not the case.

14 There are other sites here that we
15 recovered and again, you got the B site and
16 the original site. So one of these, if it
17 were to be used, the second one would need to
18 be destroyed. We would give that information
19 to OCRM and they would tell us which to use
20 and which to remove.

21 Now here's another situation that
22 we had and it was very beneficial because for

1 this work to actually have any merit, when the
2 beach profiling was done, the profiles went
3 offshore at kind of a perpendicular, but what
4 we needed to do was, if a site was destroyed,
5 we had to either find a new location either
6 beachward or landward of where we could put a
7 new monument.

8 And my guys would go out and
9 survey the area. This was the closest
10 location that we could find that would meet
11 the needs. It was on the backward Azimuth of
12 the forward that was provided to us.

13 We would try to get to within
14 roughly a couple tenths of a foot or better on
15 that Azimuth, create a coordinate here and
16 send to Jessica, on the OCRM, that for
17 verification. If we get a thumbs up, that's
18 going to be a new monument. If we didn't,
19 then we would have to find another location.

20 So we had some exchange back and
21 forth on what we would be doing for new
22 monuments.

1 So not every place that we went to
2 was easy to get to. Some were not, some were.
3 And the monuments were where they should be.

4 And this is a good GPS location.
5 You get a little bit of a deception here.
6 Yes, you had some blockage with trees, but for
7 the most part it was in a good place.

8 But often times when you mention
9 the term Myrtle Beach to somebody they either
10 think of one or two, well three things. T-
11 shirts, golf or condominiums.

12 Well welcome to our other
13 nightmare. You know, we think back to that
14 checklist, you said multipath, yes, we've got
15 multipath here.

16 These are 20, 30 story
17 condominiums. Blocked horizons, yes, we've
18 got that problem too.

19 This site was destroyed, this site
20 was no longer there because of construction or
21 something happening. So, you know, we're
22 tasked with trying to find a new site so that

1 we can use this historical data here. And the
2 best possible position would have been, and
3 is, within the parking lot in the median.

4 If we went landward you've got an
5 inlet that's not going to work, in this area
6 is tidally influenced so we really couldn't do
7 anything there.

8 But this brought about another
9 challenge that we're having to contend with
10 and that was within the observations. And
11 we'll talk about that in just a second.

12 But, you know, truth be told these
13 were conditions in the Myrtle Beach area that
14 we had to deal with. As we move south, this
15 isn't going to be as much of a problem, this
16 will probably be more of what we're looking
17 at. But it was a challenge, we needed to make
18 it work.

19 And the final output for the
20 Myrtle Beach area, you can see here, these are
21 all newly set marks for this part of the
22 project. All of these were dual, if not three

1 occupations, with the Real Time Network.

2 But here's the problem that we
3 encountered, we had two observations. You do
4 the Pythagorean Theorem, A-squared, you know,
5 the differences in A's, the difference in B's,
6 add them together, take the square root of it
7 and we had a value.

8 Well that value had to be within
9 six hundredths or thirteen hundredths, six
10 hundredths are coordinate horizontal, thirteen
11 hundredths for elevations. And there were
12 times when the two observations did not agree,
13 here. So we ended up having to do a third
14 observation.

15 And with what I've been able to
16 see in the data that we have in South
17 Carolina, I mean the Myrtle Beach area, the
18 third set of observations, that third
19 observation either agreed with the first
20 observation or the second observation close
21 enough to provide us the accuracy and the
22 coordinates that we had and the elevations

1 that we needed. So that was finished.

2 For the Grand Strand area, this is
3 what we now have for a project. We have a 172
4 monuments that we have occupied, at least
5 twice if not three times, we have 73 new
6 monuments that were done with the Real Time
7 Network and doing two, possible three, ten
8 minute observations.

9 Now without the Real Time Network,
10 and this is, this was done in about five
11 months, maybe. Without having the Real Time
12 Network we would have had to do this with
13 static observations and real time kinematic
14 observations, it could have easily take a
15 year. Maybe a year and a half.

16 So using technology that we have,
17 the Real Time Network that we have, we were
18 able to knock this out in very short order.

19 For the second part of this we
20 have 22 of the new e-stations that we're
21 occupying with height modernization. These
22 will be used to check the ten minute

1 observations as well when we have that.

2 And this was just finished this
3 week. So we have the height modernization
4 project to complete. That will be adjusted
5 and sent to NGS for placement into the
6 National Spatial Reference System.

7 So from this, now, we're moving
8 down into the Charleston area. But again,
9 this is all done for beach fund surveys. This
10 is all done to help regulate where, I mean
11 where houses can be built, where sediment
12 transfer is taking place, what is going on
13 with the dynamic situations of the beach, the
14 littoral zone and offshore slightly, your near
15 shore surveys.

16 Time, okay, I will be quiet.
17 Monuments, this is a duplicate slide, I
18 thought I had deleted it.

19 The data in the past had been in
20 the State of Beaches Report. That allows the
21 effects to be seen on what nearshore
22 alterations, including some erosion devices,

1 actually do.

2 What the future is going to be is
3 a application that's being created by OCRM.
4 It will look like this, the data will be made
5 available from the South Carolina DHEC OCRM
6 web page.

7 If you have questions about any
8 part of this, Jessica Boynton, who is here in
9 the audience, Bill Eiser and Dan Burger also
10 work with OCRM, they can provide information
11 to you. If you want to bring it over to the
12 Real Time Network or the survey side of
13 things, I or my GIS manager would be more than
14 happy to help you with that, and I'm done. So
15 thank you.

16 CHAIR PERKINS: All right, our
17 next speaker is Dr. Nicole Elko with the
18 American Shore and Beach Preservation
19 Association.

20 DR. ELKO: Thank you. Thank you
21 for having me here today, I'm honored to be
22 here presenting to you.

1 I am actually a local consultant,
2 I have a business called Elko Coastal
3 Consulting out of Charleston, South Carolina.
4 And I'm also, I serve several roles with the
5 American Shore and Beach Preservation
6 Association, I'm their secretary, one of the
7 officers and I also am chair of the Science
8 and Technology Committee.

9 So today I'm going to talk to you
10 a little bit about the American Shore and
11 Beach Preservation Association, a little bit
12 about National Advocacy and our role in
13 community resilience. And I might be able to
14 get us back on time too.

15 All right, so the American Shore
16 and Beach Preservation Association was founded
17 in New Jersey in 1926. New Jersey was the
18 first shoreline to be developed in the
19 country, therefore it was the first shoreline
20 to experience erosion issues and the first to
21 have federal reports written about it.

22 ASBPA has published the journal,

1 Shore & Beach, since 1933. Our first issues
2 were essentially proceedings from the early
3 meetings of the organization and they revealed
4 that ASBPA, the Corps and NRC, the National
5 Research Council, were close allies.

6 The guys you see standing here are
7 both politicians and academics. And that's
8 still very important to us today. We have
9 community representation as well as technical
10 expertise.

11 ASBPA also helped to found the
12 CERB, the Coastal Engineer and Research Board,
13 who, as you may know, is the Army Corps of
14 Engineers Advisory Panel on research topics.

15 So, oh, and here they are, this is
16 the original Beach Erosion Board, the CERB.
17 By contrast to the stodgy guys on the previous
18 slide, these guys sort of look like the
19 coastal mob, right?

20 So who is ASBPA? Well we
21 represent more than a thousand members around
22 the U.S. and the globe, oops. And as you can

1 see our tag line is Advocating for Healthy
2 Coast Lines.

3 Our members are communities. And
4 the technical experts trying to help those
5 communities deal with beach erosion issues.
6 So these are communities that want to be more
7 resilient.

8 We've been closely tied to the
9 Corps for decades, as you saw, but our
10 partnership with NOAA is not as strong.
11 However, I see that changing.

12 We've been interacting more with
13 Miki, and Margaret speaks to us from time to
14 time. Our President Harry Simmons is on the
15 National Sea Grant Advisory Board, and Brad
16 Pickel is also one of our officers.

17 We hold a couple conferences each
18 year. Our technical conference will be this
19 year in Virginia Beach, the week of October
20 13th. We also hold a policy and advocacy
21 meeting in Washington each year.

22 We support a number of chapters

1 around the country. So we really are a
2 national organization, not just an East Coast
3 organization as some people think.

4 We also support a number of
5 student chapters. I think we're trying to get
6 one at Texas A&M because we believe in
7 representing the next generation of coastal
8 managers.

9 So along those lines, there are
10 other similar beach advocacy groups around the
11 nation, in Florida, in North Carolina. FSBPA,
12 NC Byways, and we're all active in those as
13 well.

14 I'm proud to announce that during
15 a meeting held in this room last month,
16 elected officials and technical experts from
17 South Carolina's beach communities agreed to
18 have a similar advocacy group for this state.
19 In fact we're having our inaugural board
20 meeting this Friday to elect officers and
21 establish the organization.

22 So as I said, ASBPA has a really

1 strong technical side of our organization. We
2 advocate for research funding and I feel that
3 in order to do that we need to know what the
4 research questions are. So we're taking a
5 more active role in trying to organize the
6 nearshore research community.

7 Earlier this year I helped
8 organize this meeting, the past and future of
9 nearshore processes research, which was held
10 in Kitty Hawk. And this was a really nerdy
11 technical meeting organized by the nearshore
12 research community to discuss the direction of
13 their research over the next decade.

14 It was organized on the premise
15 that societal needs could be identified as
16 specific data gaps that were needed to improve
17 coastal resilience. So we're in the process
18 of publishing our findings, but this is sort
19 of a quick preview.

20 There were three major findings of
21 the direction that our research needs to go.
22 This is more of the extreme events direction.

1 We also had a research goal along
2 the lines of, long term coastal processes
3 focused on future changes in sea level rise.

4 So we identified that we've made
5 great progress. Our predictive skill is very
6 good at doing things like wave transformation
7 models.

8 We're much better at understanding
9 currents. We're great at observation. NOAA
10 is great at observation.

11 But we're not as good ---- as
12 Hurricane Sandy reminded us, at predicting
13 flooding, shoreline change and breaching.
14 We're not great at post-storm recovery either,
15 which is pretty interesting.

16 So we really need measurements, we
17 need low cost ways to measure things during
18 extreme events like slosh isolations, overwash
19 and overland flow, sediment transport, rapid
20 barometric change. We don't have the ability
21 to measure those things during extreme events
22 right now. Particularly low cost ways to do

1 so.

2 So the outcomes of this meeting
3 are generating a lot of interest. I presented
4 to the CERB last week in San Francisco on
5 them. And the white paper, which will be
6 published in Shore & Beach, will identify the
7 needed tide, current and water level
8 observations that NOAA can be of great help
9 with.

10 Okay, onto the topic of my
11 presentation today, which is Resilient Coastal
12 Systems and Community Planning. This was a
13 white paper published by the ASBPA in our
14 journey, Shore & Beach, earlier this year.

15 By the way, if you don't get Shore
16 & Beach, if you don't get a paper copy
17 delivered to you, you're not a member of
18 ASBPA, so if you would like to become one,
19 this our website, and you can also find this
20 white paper on that website.

21 So if you used to know ASBPA, or
22 you think you did, I think you'll be

1 pleasantly surprised by what you find in this
2 white paper.

3 We get into resilience. First we
4 define it, we adopt the national academy's
5 definition from their 2012 study, which states
6 that resilience to extreme events can be
7 categorized into four phases. The prepare and
8 planning phase, absorbing the disturbance,
9 recovering right from it and then adapting.

10 Julie Rosati, with the Army Corps
11 of Engineers ERDC, Engineering, Research and
12 Development Center, took that definition and
13 created this schematic out of it, which I
14 think is quite useful.

15 So you can see that we're
16 preparing for the disturbance, which happens,
17 then we resist or withstand it. And we lose
18 some level of functionality after which we can
19 recover and then begin to adapt and evolve
20 coming back to that 100 percent functionality
21 before the next disturbance, to which we
22 hopefully lose less functionality and recover

1 quicker, therefore becoming more resilient.

2 In this paper we break resilience
3 down into three categories, engineering,
4 ecosystem and community resilience. And I
5 just wanted to show you this slide which are
6 recommendations for engineering resilience.

7 We provide recommendations to
8 communities on each of those three categories,
9 because as I said, if you knew ASBPA before
10 you might be surprised that our
11 recommendations for engineering resilience do
12 not say beach nourishment, beach nourishment,
13 beach nourishment, right? We actually say
14 things like, replicate nature, right, we say
15 recognize risks, we advocate for providing
16 multiple levels of protection.

17 So if you have a community that
18 was fronted with sea walls you want to restore
19 a beach in front of that and then you want to
20 build a dune and populate that dune with
21 native species, providing multiple
22 redundancies and protection.

1 Moving a bit beyond our white
2 paper, the Corps is developing some
3 interesting concepts. And they've done this
4 since we've published the white paper, and
5 they're getting a quantifying resilience,
6 which is really where we need to go.

7 Julie presented this matrix to the
8 CERB last week and it, among other things,
9 it's helping us to identify partners to
10 improve community resilience. So in other
11 words, what agencies can be helpful in
12 achieving -- improving the capacity of these
13 parameters on the left side as we move through
14 those four phases of resilience?

15 And you can see that NOAA is
16 included here in the data analysis capacity
17 under preparations. So basically they're
18 saying, you're useful to coastal communities
19 here as they're preparing for disasters.

20 I think an interesting exercise or
21 question to present to you would be, you know,
22 where do you think NOAA's expertise might be

1 utilized along this spectrum? I would think
2 that certainly your tools -- your planning
3 tools would help communities to adapt and
4 evolve.

5 All right, I'll just kind of skip
6 over this one. This is something that was
7 published by ASBPA, we do a beach news service
8 press release bimonthly that goes out to small
9 community newspapers, and essentially what I
10 was going to get at here was that the country
11 realized that dunes are very helpful in
12 coastal resilience as a result of Hurricane
13 Sandy.

14 This is one of the dunes that
15 absorbed the waves during Hurricane Sandy in
16 Avalon, and sure they may have been engineered
17 dunes, but as soon as you plant them and walk
18 away, they begin functioning as natural
19 systems. So we recognized that understanding
20 and restoring natural ecosystems is key to
21 community resilience.

22 Just another example of a federal

1 protection project, actually at Ocean City,
2 New Jersey, that doesn't include dunes, but
3 the community planted the dunes. This is the
4 picture after Sandy, the dunes are gone but
5 the boardwalk is still there. So the dunes
6 are much easier to rebuild than the upland
7 infrastructure.

8 So in terms of my suggestions for
9 future needs, our observing capability is
10 excellent. What we need now are better
11 observations, especially during extreme events
12 for nearshore processes, and we need to
13 utilize our existing data sets to answer some
14 of these fundamental research questions.

15 So our need here would be that,
16 you know, we have excellent data sets, now we
17 just have to put that data to work with some
18 research funding in order to improve the
19 models that we're putting out to our
20 communities for them to use to improve their
21 resilience.

22 So in summary, ASBPA's members are

1 coastal communities who want to become more
2 resilient. We also had strong technical ties
3 to the nearshore research community.

4 So, you know, NOAA and ASBPA
5 clearly have a natural partnership to identify
6 how are member communities use NOAA's datas
7 and products and we can provide suggestions
8 and recommendations for improvement. Thank
9 you.

10 MR. MOORE: All right, good
11 morning everyone. Good to see everybody
12 again, thank you all for having me here today.

13 For those of you who were not on
14 the tour yesterday, my name is Patrick Moore
15 and I'm the environmental manager for the
16 South Carolina Ports Authority. I know the
17 topic on the agenda is coastal resilience in
18 South Carolina, but because that would be a 12
19 hour presentation, I'm going to primarily
20 focus on how we address and approach storm
21 preparation and flood preparation and then
22 talk a little -- since I covered some of that

1 on the tour yesterday, I also want to talk
2 about some ongoing issues in South Carolina,
3 coastal management issues and resilience
4 issues that I think you all might find
5 interesting.

6 To start off, we kind of have a
7 three-legged stool that we think of when we
8 are dealing with these issues. The first is
9 are hurricane and flood plan. This is our
10 planning document.

11 And the next is the emergency
12 action plan. And this is our plan for the 48
13 to 72 hours where we assume that we're just
14 going to be on our own after a major storm
15 event.

16 And then there's the continuity of
17 operations plan for the Port of Charleston.
18 And the goal of that is to get business back
19 on track and things functioning properly.

20 I'm going to talk about each one
21 of the terminals individually, but before I do
22 that I want to fly around the harbor here. So

1 this is Union Pier, the southernmost terminal.

2 That's cruise ships.

3 North of that is Columbus Street,
4 it's our railroad terminal. If you jump
5 across -- if you jump across to the Wando,
6 where you were yesterday, it's our biggest and
7 most efficient container terminal.

8 Jumping back over to the Cooper,
9 that's the new Navy Base terminal. And then
10 Veterans is above that in yellow, and then
11 under the Don Holt Bridge, passed the air gap
12 sensor, you've got North Charleston. The
13 Northern most facility on the Cooper.

14 My point here is that each of
15 these facilities are very different. They
16 move different commodities, they operate
17 differently.

18 They were designed for different
19 purposes and may or may not now being used for
20 the purposes for which they were designed. So
21 the emergency plans address each terminal
22 individually.

1 An example of that is, so an empty
2 container might fly at 45 miles an hour
3 sustained wind. A BMW does not fly at 45
4 miles an hour sustained wind. So you can move
5 BMWs -- you know, not ideally, longer at
6 higher winds than you can containers.

7 And that's just one real world
8 example of how the plans differ by terminal.
9 And I'm going to move through the terminals
10 pretty quick.

11 Veterans terminal, this is our
12 bulk terminal. We lease it, it's our one
13 terminal that we don't own.

14 In the event of a major storm, all
15 of the ships would be moved away. The
16 equipment we could move inside would be moved
17 inside and we'd batten down the hatches on the
18 warehouses.

19 This particular facility is old
20 Navy Base property. It has all sorts of
21 flooding issues, and buried medical waste and
22 all sorts of things that somebody is going to

1 have to deal with.

2 It is, the docks are 12 feet above
3 mean low water. And as sea levels rise, as
4 you look out 50 to 100 years, the easiest
5 solution would just not be to lease this
6 terminal anymore because we don't own it, we
7 don't have to think on that sort of time
8 horizon.

9 This is Columbus Street terminal.
10 At any given moment there are three to 7,000
11 BMW SUVs on this terminal. Every BMW SUV in
12 the world is made in Greer, South Carolina and
13 delivered to Columbus Street via train.

14 We also have some container
15 handling cranes here and I'll talk about how
16 we lock those down in just a few minutes after
17 we talk about Wando.

18 To sustain the weight of all these
19 BMWs we had to go in and do a bunch of work
20 across the terminal. And while we were doing
21 that we raised it a foot. It was 12 feet
22 above mean low water and now it's above 13

1 feet mean low water.

2 And that's kind of how we look at
3 these things, is if you're already doing work
4 on existing terminal, and you can do it and
5 afford it, go ahead and raise it. And if
6 you're designing a brand new terminal, like
7 the Navy Base terminal, you have the
8 opportunity to look farther into the future
9 and consider issues that may have not been
10 considered when the other terminals were
11 built.

12 This is Union Pier terminal. The
13 new cruise terminal is going to be right here.
14 This is the existing one.

15 So when a cruise debarks, we have
16 the cars of all the cruise passengers on the
17 terminal, and so if a storm pops up and
18 they're on a seven day cruise to the Bahamas,
19 they might not be able to get back and get
20 into their cars and get off of the terminal in
21 time. So we park the cars, as many as we can,
22 inside of the warehouses. And if a storm

1 comes up, that gives some protection to the
2 passengers' automobiles.

3 And this terminal is also used to
4 offer safe harbor to any passing cruise ships
5 should there be storms off shore.

6 This is the North Charleston
7 terminal. Yes?

8 MEMBER BARBOR: Height of those?

9 MR. MOORE: Oh, 12 feet. Twelve
10 feet, thank you. This is the North Charleston
11 terminal also 12 feet from mean low water.
12 The most significant thing about this terminal
13 is this is where our purpose built IT center
14 is, and I'll show you some pictures of that in
15 just a moment.

16 And this is where we all were
17 yesterday, the Wando Welch terminal. And we
18 talked a lot about what we do and how we do it
19 there.

20 This is the Navy Base terminal.
21 It's the only permitted green field container
22 site anywhere on the East Coast or the Gulf

1 Coast.

2 I've got my head engineer in the
3 room, Jim, so if I misspeak definitely speak
4 up. It's going to be about 280 acres, you're
5 looking at three 13,000 TEU ships at dock.
6 And it is going to be significantly higher
7 than the rest of the terminals.

8 And just to show Wando. Wando is
9 16 feet compared to 12 of the others and 13 at
10 Columbus Street. So this will be out most
11 resilient facility when it's constructed.

12 Not much to look at, but still
13 very impressive.

14 CHAIR PERKINS: Looks like a
15 container box.

16 MR. MOORE: It does, it does.
17 There's a theme here. So it's windowless, it
18 is, you know, higher than the rest of the
19 terminal, it's got redundant air conditioning,
20 it's got redundant power and an elevated fuel
21 source for the generator. That's the inside
22 of it.

1 And this is significant because
2 often times we're dealing not with purpose
3 built buildings. It's a building that was
4 built along time ago that you're trying to use
5 for something else.

6 And this represents a significant
7 investment and a significant amount of forward
8 thinking on the part of the authority that
9 maybe hasn't always been there.

10 So a storm is coming, you can't
11 move all the containers out, you can't move
12 all the container handling equipment out, so
13 what do we do? We anchor it. You've got --
14 you find the heaviest 40 foot box you can and
15 you lock your container moving equipment to
16 it. And then you take the trucks of the RTG,
17 the rubber tired gantry crane, and you turn
18 them at a 90 degree angle so that it's pushing
19 against itself and it won't roll one way or
20 the other.

21 These are the hurricane tie-downs
22 for the ship-to-shore cranes that we all saw

1 yesterday. There are three levels of locking
2 down a ship-to-shore crane and this is the
3 most -- the strongest. It gets you through a
4 Category 3 hurricane. Category 4 you're
5 rolling the dice.

6 And hazardous materials, you want
7 the ones you have off your terminal and you
8 don't want any more coming in, if you know a
9 storm is coming. And so we reduce the gate
10 time that products are allowed into the yard
11 prior to the approaching storm.

12 The ones you can't get off the
13 terminal you elevate and get out of a flood
14 permanent area. And you barricade and
15 segregate what you do have on your terminal in
16 a way that protects it from flying objects
17 should they -- should that occur.

18 So is this an academic exercise,
19 does it really matter? It absolutely matters.

20 In 2012, some guys went to lunch
21 and did not follow the procedures and lock
22 down the ship-to-shore crane adequately. A

1 microburst storm popped up and blew one of the
2 cranes down the dock at Wando and hit the
3 other three cranes to the tune of \$7 million.
4 The technical term for this in the maritime
5 industry is a really bad day.

6 And here you can see --

7 PARTICIPANT: Without a couple
8 words.

9 MR. MOORE: Yes. Here you can see
10 the three that were hit and the one that was
11 blown down -- down the dock. Some photos of
12 the damage, that's not supposed to happen.

13 Hurricane Hugo. So the \$7
14 million, avoidable. Hugo, not avoidable.

15 Category 4 hurricane that made
16 landfall just North of here, I was 10 years
17 old, I slept in a bathtub, I was a hundred
18 miles inland and all the trees still got blown
19 over around my house. It changed the face of
20 the area comprehensively and permanently.

21 You can see these warehouses
22 functional to useless after the storm. That

1 crane standing, this one is not. This is
2 called the southern end of Columbus Street,
3 the South Carolina Aquarium is now there.
4 Obviously Columbus Street was a container
5 terminal at the time.

6 Steve Conner, whose is our Senior
7 VP for Risks and Claims, who I am standing in
8 for today, told me that he went out there and
9 the crane landed on this guy's really, really
10 nice boat. And obviously he was very upset
11 about that and he asked Steve, you know,
12 what's the port going to do to fix my boat?
13 Steve said, well we'll take the crane off of
14 it. The guy wasn't very happy with that
15 answer.

16 And so like I said, I'm standing
17 in for Steve, and if it's not already
18 painfully obvious, I am the least technical
19 person in the room. My background is in
20 environmental law.

21 But Steve knows this stuff inside
22 and out and if there's any questions that I

1 can't answer or if you'd like copies of the
2 plan or more intricate details, I'm happy to
3 get those for you, just let me know.

4 This is -- I'm going to move onto
5 some coastal management issues in South
6 Carolina and I'm going to go quick because I
7 know we're short on time.

8 This is the High Battery, it's one
9 of the most visited tourist's spots in town,
10 it is South Carolina's first coastal
11 resilience measure. It was built in the early
12 1800s to protect the houses behind it from the
13 ocean.

14 The windfall urban recreation
15 benefits of rising season change in climate
16 did not immediately occur to me. But these
17 guys are way ahead of me.

18 This is the actually slave market,
19 the Old Slave Market on Market Street that
20 people -- that's another one of the biggest
21 tourist attractions in town. And they are
22 kayaking through the middle of it.

1 This is Kevin Spacey up here on
2 the left, he sent this out on his Twitter feed
3 standing on Wentworth Street. This is a bad
4 day for that Mercedes owner.

5 And I like these guys on the
6 mattresses, they drew the short straw on the
7 beer run. Looks like they're having fun
8 though.

9 So what are we going to do about
10 it, what is the City of Charleston going to do
11 about it? This is the Market Street Drainage
12 Improvement Project. Multimillion, multi-
13 phase, multi-year attempt to address the
14 flooding problems in downtown Charleston.

15 This is a ten foot in diameter
16 tunnel 160 feet below the ground. Because the
17 first 150 feet is loose, not very stable
18 material.

19 And I should have mentioned this
20 when I was talking about the terminals, but
21 not only are the sea levels rising but my
22 terminals are sinking. So it's kind of

1 getting us on both ends.

2 So you have these drop shafts that
3 come from the street, and then the water is
4 pumped to a pump ---- or flows to a pump
5 station and is pumped to the Cooper River
6 upstream.

7 This is great when it just rains.
8 But if you get a high tide and a bunch of rain
9 and you're pumping the water upstream, you
10 just get it again, over and over again. So
11 it's a needed project for sure but it is
12 definitely not a long term solution to the
13 problem.

14 In South Carolina when your
15 property is threatened by the ocean you have
16 to get an emergency order from the state. Sea
17 walls are illegal. New sea walls are illegal
18 and if you have an existing sea wall, if it's
19 50 percent or more destroyed you can't repair
20 it.

21 Just running through some of
22 these. This is DeBordieu Colony, it's in

1 Georgetown County. It's one of the most high-
2 end resorts in South Carolina.

3 When, 40 years ago when they were
4 building it the developer thought it would be
5 a good idea to put some fill on the active
6 beach to get that on the ocean feel, and now
7 they definitely have the feel for better or
8 for worse.

9 This is a picture at low tide, you
10 can see that the water comes over the wall at
11 high tide. They can't repair it, it's beyond
12 50 percent destroyed.

13 They went for a legislative change
14 to change the law and were not successful and
15 at the last minute they were able to get a
16 proviso in. In South Carolina you can change
17 the law with a budget proviso for one year.

18 So they do have one year, probably
19 nine months now, to fix their wall. And my
20 point here is, everybody is always on the same
21 page when you're at 90,000 feet when you're
22 talking about retreat and resilience, but when

1 it comes down to individual properties it
2 politically becomes a very different
3 situation.

4 Another picture of the wall. And
5 my other point with this is that this is the
6 only situation I can think of, the re-
7 nourishment, fixing the wall, would cost about
8 \$15 to \$20 million and that would -- you'd be
9 okay for ten years. So this is one of the
10 only situations where relocating the houses
11 might be the most financially feasible thing
12 to do when you look long-term.

13 This is a wave dissipation device.
14 A fellow on the Isle of Palms invented this.
15 And the idea is the water gets through but the
16 energy of the wave is dissipated.

17 It's removable for turtles or
18 public access when you're not worried about
19 high tides or storms.

20 And then right next to this is
21 another set of folks who are in trouble. They
22 started with little sandbags.

1 This has been controversial for
2 years, the waves tore up those and spread them
3 all over the coast and all sorts of issues
4 with that. So the solution, bigger sandbags.
5 And they work, sort of.

6 And the last time, this is from
7 probably three days ago in the newspaper --
8 the last time the DHEC inspector went out
9 there, he noticed there was some wood
10 underneath one of the walls. And it turns out
11 that two years ago they had surreptitiously
12 installed an illegal sea wall and then covered
13 it up with the giant bags of sand.

14 So the lawyer for Wild Dunes was
15 clearly not present when this inspection was
16 taking place because whoever was escorting the
17 regulator promptly admitted that they had
18 installed it two years ago, or a little more
19 than two years ago.

20 A \$1,000 a day fine, these folks
21 are probably looking down the barrel of a
22 seven figure fine, six weeks before they go in

1 to get their emergency permit renewed.

2 So try not to blatantly break the
3 law six weeks before you need permission to
4 continue taking care of your building.

5 Briefly this is a slide of the
6 Town of Bluffton's transfer development rights
7 program. And the idea here is to take the
8 density out of the head waters of the May
9 river and put it into downtown Bluffton.

10 Now they're doing this for water
11 quality concerns, and also marsh migration --
12 habitat migration concerns.

13 In a place like South Carolina
14 this is positively visionary. You don't see
15 this sort of land -- using land use to address
16 these issues. And the Town of Bluffton is
17 doing it.

18 So if you're born and raised in
19 South Carolina, you're born with a fundamental
20 distrust of the government. And if you aren't
21 born with it, they will beat it into you.

22 And so the private sector plays a

1 huge role in anything good that happens. And
2 resilience and coastal protection is no
3 different.

4 What you're looking at here, just
5 for reference, Charleston, Beaufort, Myrtle
6 Beach, Columbia is up here. The red
7 represents developed area and the green
8 represents permanently protected land.

9 And I'll go ahead and say that the
10 red does not change over time here, what we're
11 focusing on is the green. Almost all of this
12 is federal or state land. National Forest,
13 National Parks, State Parks.

14 All right, in 1985 conservationist
15 agencies got together and all got on board
16 with a vision -- oh, time, okay. Watch, there
17 we go.

18 The idea is to surround the urban
19 areas with permanently protected land,
20 thriving urban corps, working rural
21 landscapes, and this is what you'll eventually
22 have. You protect your coastal marshes, you

1 protect your critical wetland habitat.

2 And I think when, a hundred years
3 from now when people look back on our efforts,
4 this will probably be the most significant and
5 noted portion of our efforts.

6 And I've got a couple more things
7 but I don't want to -- I want to stay on
8 schedule. So thank you all very much for your
9 time and attention.

10 CHAIR PERKINS: Great. Last
11 speaker on the Panel is Mr. Miki Schmidt with
12 the Coastal Service Center.

13 MR. SCHMIDT: I guess I could have
14 started with that picture. Thank you
15 everybody for inviting me to share some
16 resources and visualization tools that our
17 office has been working on for awhile in
18 support of the coastal resource management
19 community.

20 There are many challenges that
21 local and state organizations face when trying
22 to adapt and protect from floods and become

1 more resilient as, you know, all the
2 discussions have been this morning.

3 We were established 20 years ago
4 to support those local communities around the
5 country in helping them address those issues
6 and become more resilient.

7 So I'm going to use my 15 minutes
8 to do a quick drive by on the Digital Coast,
9 an overview for that, and then step you
10 through some tools that are available to
11 visualize the data and hopefully help
12 communities prepare and plan and become more
13 adaptive.

14 How many folks in here are
15 familiar with the Digital Coast? All right,
16 I see you, now I appreciate that. How many
17 would be users of the Digital Coast resources?
18 All right, that's where we want to see more
19 and more folks.

20 You know, it's one thing to be
21 familiar, what we really want to see are more
22 and more folks using the resource. And we

1 have a good track record of more and more
2 folks using the resource, we just want to
3 continue to see more of those hands go up as
4 we develop this for the community.

5 We surveyed, we interacted with
6 the community over the years and identified
7 barriers that they had in addressing their
8 coastal issues. And these are barriers that
9 kept coming up time and again that we framed
10 the format of the Digital Coast to support.

11 For example, coastal data
12 availability. Back in the day people couldn't
13 get to the data. Now they have too much data
14 to worry about.

15 And so we were addressing the
16 issue of providing access and the integration
17 of those data with each other. That was a
18 big, big barrier in the past and continues to
19 be.

20 It's one thing to have one set of
21 data but how's it relate to others? So we
22 really focus on addressing those barriers.

1 Then a lot of frustration across
2 the user community on the -- what's perceived
3 as a federal government, a state government
4 not being coordinated. And so we worked very
5 hard in establishing those partnerships
6 working across agencies to address this
7 barrier through the efforts that we have with
8 the Digital Coast.

9 There are a lot of technical
10 tools, very technical tools for users out
11 there. But community -- if you want to get to
12 the management community, you need to have
13 those non-technical web-based tools.

14 Those kinds of things that allow a
15 broader constituency to take advantage of all
16 the data and technology that is out there. So
17 we wanted to address that barrier.

18 And then once you have all the
19 data and the tools, well so what? All right,
20 if you don't know how to use them you need to
21 provide the capacity building component of
22 training folks how to use those resources.

1 And then how to build the awareness of how
2 this technology and all the data we're
3 providing is making a difference in the
4 coastal community.

5 So these were the barriers that
6 were identified. And then we came up with a
7 framework working with a broad constituent
8 group, bringing the policy makers together
9 with the technologists.

10 A lot of times those techies will
11 sit in the room and think of a great idea, a
12 great tool, but if you don't have the
13 management or the policymaker in the room with
14 you to identify the requirements, it's not
15 going to be used, ultimately, to help enhance
16 communities' resilience.

17 So we brought the communities
18 together through various associations and
19 formed the partnership that we now have an
20 outcome where we believe that the Digital
21 Coast has evolved into a truly constituent-
22 driven enabling platform that is being used.

1 And we used the terminology,
2 enabling platform, because it's not just a
3 data portal. And I hope you see that with
4 some of the resources I'm going to
5 demonstrate.

6 All right, so there's not enough
7 time to go through everything, but the tag
8 line here for the Digital Coast is more than
9 just data. Data is very important and
10 provides the baseline and the framework for
11 everything, I think as all of you know.

12 The key is taking it from the data
13 in and out to that decision and the outcome in
14 the end. And so with a lot of resources, many
15 data sources are accessible through the
16 Digital Coast, a lot of NOAA data, but also
17 other federal agencies data are accessible.

18 I'm going to focus on some of the
19 tools and basically just give you a taste.
20 There are a lot of sweet things in the
21 toolbox, so I'm going to give you a little
22 sampling and if you want to really dive in and

1 taste one of these boogers, I'll be happy to
2 show you in detail some of the tools I'm going
3 to drive by.

4 All right, so if you go on the
5 Digital Coast, you go to the tools page, this
6 is the standard splash page for any tool that
7 we have on the website. And there's a title,
8 obviously this is the Sea Level Rise and
9 Coastal Flooding Impacts, probably one of the
10 most popular tools available. It's taken us
11 -- we've been developing this for three years,
12 it's out there, it's gotten a lot of
13 attention.

14 Which is the pointer, red? Okay.
15 The standard format here is, the people can
16 come in and get a quick overview of a tool,
17 they can understand how it's been applied
18 through this interaction button, get technical
19 support and -- or just download and launch the
20 viewer.

21 We give a brief explanation what
22 the features are, but then also link on the

1 right side -- link to other resources on the
2 platform that enable a user to understand the
3 data that went into it, training that's
4 available and use cases and so forth.

5 So Sea Level Rise Viewer, if you
6 haven't seen it, this is zoomed in to the
7 Peninsula here in Charleston. There are
8 various tabs in the upper left hand corner,
9 sea level rise, confidence, marsh migration as
10 impacted by sea level rise, the confidence of
11 the mapping, integration of social
12 vulnerability index data, that was mentioned
13 earlier by Dr. Alexander, and a flood
14 frequency tab which helps visualize the trends
15 in tide -- from tide gauges, from CO-OPS and
16 for particular geographies.

17 So they're displayed, you can zoom
18 in, typical zoom in features or you can use
19 the drop down menu on the right to select by
20 state or territory.

21 We also incorporated visualization
22 tools for local landmarks, like here in

1 Charleston, the customs house. So when one
2 moves through the scenarios of visualizing
3 potential sea level rise, they also see a
4 local landmark and what that potential rise
5 may look like.

6 So it bring the -- this tool is
7 being used to start the conversation with
8 local communities. Understanding and gaining
9 an appreciation of their potential risk.

10 And so we incorporate various
11 technologies and various data sets to try to
12 simplify that awareness building. So all the
13 way out to six feet, for example, in the
14 Charleston Peninsula.

15 This is just, again, it's based on
16 the -- these are visualizations of the IPCC
17 projections of potential sea level rise by the
18 year 2100. So all the details and methodology
19 and mapping is all inherent within the tool
20 and the user can read all that information for
21 background.

22 Now, so it took us three years to

1 do this. The Sea Level Rise Viewer, we heard
2 from our partners in the great lakes, what
3 about us? Okay, we don't have sea level rise.

4 So we just last week released this
5 Lake Level Viewer. URL is csc.noaa.gov/llv,
6 for the Lake Level Viewer.

7 You know, lake levels fluctuate up
8 and down. All right, so it's not the sea
9 level rise aspect.

10 So we worked with many partners in
11 the Great Lakes to incorporate the same
12 functionality -- similar functionality as in
13 the Sea Level Rise Viewer. And it's hard to
14 see, I know, in this room, but this is lakes
15 -- all five lakes.

16 They have different gauges,
17 different lake levels. So selecting on Lake
18 Michigan going to Green Bay, you can get a
19 feel for this new tool and it has -- it looks
20 different but it has a lot of the same
21 capability that the Sea Level Rise Viewer has.

22 So in the upper left corner, this

1 is Lake Level Change tab, it will step you
2 through. We also have a Mapping Confidence
3 tab.

4 And then we bring in the
5 socioeconomic data that you can overlay on
6 that. And then of course, those people that
7 just want the data, can download it.

8 And on the left-hand side are real
9 time lake levels being served from GLERL.
10 They're brought in.

11 And then the legend has the
12 historical high and the historical low. And
13 user can go in and, again, visualize the
14 coastal flooding at various levels, two and
15 five feet, but also we have topography data.

16 So we've also brought in the
17 factor of, or the ability to visualize water
18 depth in the same manner, but then also lake
19 level drop. And this is what the community
20 and the Great Lakes really wanted to do, is to
21 be able to visualize that because of the
22 potential impact.

1 And we also brought in the
2 visualization capability of CanVIZ again,
3 putting local landmarks into the tool. So
4 again, a visualization tool to enable
5 communities to better plan and become adapted.

6 This is a map just showing you
7 where the data gaps exist in red. So a huge
8 need for more data in the region. But all the
9 green areas have been visualized and mapped.

10 All right, another very popular
11 tool within the community are our Coastal
12 County Snapshots. We worked very closely with
13 the National Association of Counties to get
14 their feedback on what their county
15 commissioners -- how would they use geospatial
16 data and tools?

17 Well they don't need even that
18 visualization that we -- I just showed you,
19 they want a PDF. So we created three
20 snapshots so far, Flood Exposure, Wetlands
21 Benefit and Ocean and Great Lakes j]Jobs.

22 One on Flood Exposure snapshot,

1 you'll see it's just what the name says, a
2 quick snapshot, a PDF. A county official
3 really is interested, okay, what is my
4 exposure from my constituency standpoint? So
5 these are data that show the percent of his
6 population, of a commissioner's, who live
7 inside the FEMA flood zone.

8 Or vulnerable populations like
9 folks aged over 65 or in poverty. So this is
10 what a county commissioner's level of data
11 that they would be interested in.

12 We also bring in critical
13 facilities data, as well land covered data.
14 So it's a integration of various data sets in
15 a simple format to convey the issue of flood
16 exposure to the local community. Lots of data
17 behind it, lots of databases behind it, but a
18 simple format of visualizing the flood
19 exposure.

20 And we also bring in a lot of
21 other economic data from our Economics:
22 National Ocean Watch project. Which really

1 focuses on the ocean economy.

2 Many of you probably are very
3 familiar as well, but we have the six sectors
4 within ocean economy and all of that mapped
5 and people -- county commissioners can compare
6 their county or parish to their state and to
7 the nation.

8 Last tool I want to quickly step
9 through is a Port Resilience Planning tool.
10 We developed this tool as a prototype a couple
11 years ago. It hasn't taken off yet and it
12 hasn't been resourced, but I think it's
13 relevant to the issue at hand of resilience in
14 our port communities.

15 And what -- this was done in the
16 coordination with the Port of Tampa and we are
17 trying to provide the type of information that
18 helps visualize and plan for resilience. We
19 work very closely with develop -- with the
20 community to develop checklists of resilience
21 factors. And then we looked 26 ports around
22 the country and mapped those risk factors.

1 So we have three tabs, Marine
2 Transportation is one of them. And it starts
3 with a statement here, to be resilient port
4 communities should have the infrastructure and
5 resources needed to sustain safe, secure and
6 economically viable marine transportation
7 operations. No duh, right, to you guys.

8 But the -- you know, what
9 questions does a port need to ask to become
10 resilient to marine transportation. All
11 right, these are common questions that all of
12 you are probably are very familiar with and
13 have been dealing with for years.

14 When you start bringing the
15 resilience part of the community aspects, this
16 was -- these were less familiar, this was less
17 familiar territory for the groups we were
18 working with. You know, what about natural
19 resources.

20 Does the port and surrounding
21 community collaboratively address marine
22 transportation system impacts on the health,

1 function and sustainability of critical
2 natural resources. This is less evident
3 across the community.

4 And then also from a hazards
5 perspective. You know, to be resilient port
6 communities should be able to keep marine
7 transportation moving, businesses open and
8 people working despite the impacts from
9 hazardous events. And then looking at an
10 index that maps hazard risk, community
11 vulnerabilities and disaster response aspects.

12 So we created this, a list of
13 potential risk -- hazard vulnerabilities. We
14 looked at 26 ports, did some quick
15 statistically analysis as the prototype began.

16 So for example, what's the most
17 the frequent disaster here in Charleston?
18 Well a hurricane or severe storm. How many
19 presidential disaster declarations have
20 occurred, what's the probability of low water
21 level events, it's high.

22 In addition, looking at the

1 demographics of the geography. What's the
2 population change over a period of time, the
3 vulnerable populations again, how much land is
4 lost to development. Because those factors --
5 those are factors in really understanding the
6 local community's resilience around the port.

7 And then the last part of this
8 prototype, was to integrate all the mapping
9 behind it and display that as well. So for
10 example here, we only did Tampa as a case
11 study.

12 This is the sea level rise over
13 the Port of Tampa and then bringing in land
14 cover change for that geography. So all the
15 areas that popped up in red are natural areas
16 converted to development, and if you have more
17 development you become less resilient and down
18 the pike. So that was the concept behind
19 that.

20 All right, quick drive by, which
21 is get the message that Digital Coast meant to
22 facilitate use in application. Whether you

1 come in from a person who just wants the data,
2 you can come in and get various data sets, you
3 can download them and map them and your staff
4 can create great maps.

5 Or you can come in from the other
6 end of understanding how others have used
7 these resources to address their coastal
8 management issue and learn what resources were
9 used. And so we see this as a continuum that
10 goes both ways from the data in, out to the
11 outcome, and back.

12 And that's the platform we've
13 worked very hard with our partnership group.
14 We're working very closely with American
15 Planning Association, the National Association
16 of Counties, the Association for State Flood
17 Plain Managers, the Urban Land Institute, the
18 Coastal States Organization and down the list.

19 These organizations represent
20 hundreds -- over a 100,000 members around the
21 coastal landscape to provide input into what
22 resources should be provided.

1 I know you guys have access to the
2 presentation so I listed a bunch of URLs if
3 you want to share them. I didn't hit all
4 these tools but this is a list of resilience
5 related resources that you can get access to.

6 And here's -- there are many ways
7 to get in touch with us. For those that
8 actually still like to talk on the phone
9 there's my phone number. It's right to my
10 desk, so if you have any questions I'd be
11 happy to ask ---- or answer them. Thank you
12 very much.

13 CHAIR PERKINS: Very informative
14 panel, thank you. And when is Coastal Geo
15 Tools?

16 MR. SCHMIDT: Our partners at
17 Association State Flood Plain managers is
18 hosting Geo Tools and it's March 30th through
19 April 2nd right here in Charleston.

20 CHAIR PERKINS: Okay, great. If
21 you haven't attended that's an outstanding
22 conference, a good exchange of information.

1 So earmark that and put it on your calendars
2 if you can, so. Yes, Gary?

3 MEMBER JEFFRESS: Miki, is FEMA
4 involved in that?

5 MR. SCHMIDT: We are part -- we
6 partner with FEMA in many ways.

7 MEMBER JEFFRESS: Okay.

8 MR. SCHMIDT: But whether it's
9 data -- we use their data in many of the
10 tools, the flood zone mapping tools. A lot of
11 their data. Now we also have coordination
12 issues that we work through as well.

13 CHAIR PERKINS: I know that we're
14 looking at lunch in our future. Yes, Mike?

15 MEMBER EDWING: Miki, you
16 mentioned you had some data gaps up in the
17 Great Lakes still, what kind of data gaps are
18 they though?

19 MR. SCHMIDT: Yes, I breezed over
20 that. That's topobathy data.

21 MEMBER EDWING: Topobathy data.

22 MR. SCHMIDT: Yes. Where all

1 those redlines were on that map --

2 MEMBER EDWING: Right.

3 MR. SCHMIDT: -- where we don't
4 have the shallow bathy --

5 MEMBER EDWING: Got you.

6 MR. SCHMIDT: -- to help model
7 what lake drops would look like.

8 MEMBER EDWING: Great, thank you.

9 MR. SCHMIDT: And a lot of those
10 gaps are in the ports as well.

11 MR. ASLAKSEN: Kind of a two part
12 question, Mr. Chairman. One, Miki, if you
13 could, you know the background of most the
14 folks here and what the purpose of the Panel
15 is, but maybe explaining some of the data
16 that's provided by this activity and how
17 that's worked into Digital Coast because I
18 don't think people are aware of that.

19 MR. SCHMIDT: Oh, okay.

20 MR. ASLAKSEN: Second part would
21 be like to Nicole and to Patrick, of Corps
22 data sets you might see gaps in that this

1 Panel -- knowing that we're kind of mainly
2 focused on mapping chart and geodesy-type
3 activities, observations, you know, what you
4 see as gaps and maybe that NOAA can provide
5 and maybe target more for influencing how you
6 guys do your work. Start with Miki though.

7 MR. SCHMIDT: Sure, I appreciate
8 that, Mike. Many contributors to the tools
9 and the resources available in the Digital
10 Coast.

11 We, from Mike's shop, all his
12 remote sensing data, orthophotography -- we,
13 are accessible via the Digital Coast. FEMA
14 data, Corps of Engineers data are all
15 accessible.

16 We use, as I mentioned in the Sea
17 Level Rise Viewer, we use the CO-OPS tide data
18 to portray flood frequency.

19 So many assets across the agency
20 are incorporated. We're not duplicating the
21 distribution of a lot of NOAA resources and
22 other agency resources, but we are pointing to

1 make sure that the user community can come in
2 and get access.

3 For example, all of this imagery
4 data -- we don't do that, that's, you know,
5 out at NGDC. You know, they archive and
6 distribute those data.

7 But we just provide the link to
8 make sure that the user community can get
9 another entry point into getting to those
10 data. It's not the only one.

11 The data that we do house are
12 focused on LiDAR. So all of NOAA's LiDAR data
13 is housed within our servers. The
14 orthophotography, that NGS collects. As well
15 as imagery and land cover data.

16 Those are only data sets that we
17 generate and ---- as NOAA, and serve up. The
18 rest we provide -- are provided through map
19 services and web services to gain access to
20 those data. It's just an entry point into
21 that.

22 MR. ASLAKSEN: Okay, thank you.

1 DR. ELKO: All right, in terms of
2 our coastal communities use of the data, as I
3 suggested on my future needs slide, we think
4 that you all did a great job collecting data
5 and would really like to see is more
6 application of the data sets.

7 You know, we've been collecting
8 LiDAR data for decades now in this country and
9 there's not a lot of great applications --
10 well there's lots of great applications, but
11 there could be so many more fantastic
12 applications for it. Especially in terms of
13 coastal resilience, you know.

14 If you look back at the early
15 1960s in our coastal communities, most of them
16 didn't have beaches. The developed
17 communities, especially in Florida, New York
18 and New Jersey, those early developed
19 communities just had sea walls.

20 So it would be very interesting to
21 create a time series, similar to the one that
22 Steve showed here, of the land use overtime

1 around Charleston. Well what is the -- what
2 did coastal communities look like and can we
3 take our original maps and then blend that
4 with LiDAR data we've collected over the last
5 several decades to show how much our
6 resilience has changed or, you know, we think
7 improved because of a lot of restoration
8 projects around the country.

9 CHAIR PERKINS: Okay, great.

10 MR. MOORE: I'll just echo what
11 Nicole said, we think you all are doing a
12 great job on the data collection side and I'm
13 not aware of any specific port-related gaps
14 that I can let you all know about.

15 CHAIR PERKINS: Dr. Elko, you had
16 mentioned in your remarks needing better
17 observations during extreme events, can you
18 add a little more color to that? What type of
19 observations would be most useful and what do
20 you see NOAA's role in potentially providing
21 that?

22 DR. ELKO: Right, that would, you

1 know -- we're looking at some interagency
2 collaboration there.

3 We think back on experiments that
4 were done over the past several decades,
5 particularly at the Army Corps of Engineers
6 Research Facility at Duck, North Carolina.
7 They did the Super Duck and the Sandy Duck
8 experiments that provided our community with
9 a lot of information about coastal change.

10 And, you know, now we're
11 envisioning, not necessarily storm chasing,
12 but perhaps identifying those areas along the
13 nations coast that we know are frequently
14 overwashed or inundated.

15 Highway 12 in Rodanthe in the
16 Outer Banks gets washed over all the time, so
17 it's an ideal area for us to initiate an
18 interagency collaboration to instrument it and
19 measure water levels and tides and more
20 specific current measurements and sediment
21 transport measurements in a collaborative way
22 to give us some more data about extreme events

1 and coastal processes during events.

2 CHAIR PERKINS: Yes, Frank?

3 MEMBER KUDRNA: Miki, regarding
4 Great Lakes, your example in Lake Michigan,
5 some of those storms in Lake Michigan create
6 elevation differences from one side of the
7 lake to another, several feet.

8 Does your tool recognize that from
9 elevations and provide information for
10 planners concerning flood impacts?

11 MR. SCHMIDT: What it does is
12 visualize what a rise in lake level would look
13 like. So if it's known what the rise in that
14 water would be, it visualizes where that water
15 would go at a certain height at a certain lake
16 level.

17 The current lake level feed from
18 GLERL, is where that scale bar on that left --
19 whenever you log in, that realtime lake level
20 is what it's visualizing off of.

21 So it incorporates it, but as far
22 as projecting, you know, overall inland, you

1 know, infrastructure impacts or so forth, from
2 a surge event, it doesn't do that, but it
3 helps the community at least visualize what a
4 high water event would look like as far as
5 what geography it would cover.

6 So it doesn't go -- there's not a
7 detailed modeling component in there, other
8 than the adding the water level and the how
9 that would lay over the topography. Does that
10 make sense?

11 MEMBER KUDRNA: Yes.

12 CHAIR PERKINS: Great. All right,
13 any other questions, any public questions?
14 Yes, Lynne?

15 MS. MERSFELDER-LEWIS: For Patrick.
16 Do you have a lot more paving going on and a
17 lot more hurting of the coast going on in your
18 new facilities, how are you alleviating the
19 damage?

20 MR. MOORE: So the new facility,
21 we had to fill in 60 acres, or we will be
22 filling in 60 acres. Right now we've just

1 built the wall.

2 We had a comprehensive mitigation
3 package and several components to that is a
4 community portion and then there's the wetland
5 portion. We've protected over a thousand
6 acres of wetlands in the watershed.

7 We, there was several -- and this
8 isn't just water but we had to install a
9 continuous air monitor, \$4.08 million in
10 community mitigation to address environmental
11 justice issues.

12 We were the first project in the
13 country to include community mitigation in our
14 record of decision. So it had several facets
15 to it, does that answer your question? Was it
16 the wet lands portion you're asking about?

17 MS. MERSFELDER-LEWIS: It was the
18 whole big picture of that issue.

19 MR. MOORE: Right, right. Yes,
20 and I don't think there's any good really long
21 term solutions right now, honestly.

22 CHAIR PERKINS: Okay, great. Well

1 we're almost right on schedule. We do have a
2 lunch time speaker scheduled, you know,
3 Margaret Davidson, NOAA Senior Advisor for
4 Coastal Inundation and Resilience is scheduled
5 to start speaking at 12:30, so that will
6 require a fairly rapid procession, you know,
7 through the lunch line to get back in here and
8 be in place so we don't have to hold Margaret
9 up because of our inability to maintain
10 schedule. So please do all you can to support
11 that.

12 Thank you, Panelists, I hope you
13 can join us for the breakout sessions this
14 afternoon.

15 (Whereupon, the above-entitled
16 matter went off the record at 12:18 p.m. and
17 resumed at 12:45 p.m.)

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(12:45 p.m.)

CHAIR PERKINS: All right, if I can have your attention please, we'd like to proceed with our luncheon speaker, so give us just a second to turn the projector back on. Great. All right.

MS. DAVIDSON: So for those of you who are still eating I apologize for disrupting your digestion, blame it on your Chair.

Okay, and they won't care. So I'm Margaret Davidson and for those of you who don't know me well, I used to be involved with the coastal part of NOAA, well I guess I'm actually still involved with the coastal part of NOAA, but I actually hadn't seen Miki Schmidt in months.

I used to work there at that joint, but I was always messing around in, as everyone sitting over there would tell you, I was always messing around in the business of

1 my colleagues who work on PORTS issues inside
2 of NOAA. And I look at Frank Kudrna and he
3 knows I've been messing around with PORTS
4 issues almost as old as he is.

5 And there's Bill Hanson who bumped
6 me off with the CERBs, so the Great Lakes guys
7 know that I'm PORTS booster. And anybody
8 who's ever been a NOAA knows that I'm a big
9 booster for coastal mapping and charting and
10 kinematic GPS and all those kind of things.

11 And so let me tell you a little
12 story about me first. I got this new job, I'm
13 no longer in charge of people or money, I'm
14 kind of like a Quaker and on my best days I'm
15 kind of like Rasputin. But it's really very
16 great.

17 And not being in charge of people
18 or money or things is wonderful. I can't
19 begin to tell you how many IT and security
20 briefings I'm missing. It's delightful. And
21 the amount of garbage you have to keep track
22 of decline significantly.

1 This is actually a brand new
2 position and it's a little more complex than
3 it looks. That's what I'm like.

4 First of all, you know, those of
5 you who don't me, I'm professional veneer. My
6 background is in law and economics and any
7 expertise is only by osmosis.

8 But since I am professionally
9 trained as a lawyer, to sound as though I know
10 what I'm talking about even when I don't, do
11 worry, I'm certified. And licensed.

12 And my position inside of NOAA is
13 actually unique in that it's actually, I'm
14 supported by two different parts of NOAA. So
15 I'm supported by the part of NOAA you know
16 best, the ocean service at the headquarters
17 level, but I'm also partly supported by
18 something called the climate program office
19 over in the office of research.

20 And that's because I have no
21 expertise so I work on all geographic and
22 timescale's. Okay, so it gives you lots of

1 degrees of freedom.

2 And here's a true confession.

3 When I first came to NOAA, almost 20 years
4 ago, one of my very first meetings I was
5 sitting listening to a bunch of very intense
6 people talk about data and I asked the crowd
7 if I was the only one in the room that knew
8 what metadata was and there was such a chorus
9 of yes back to me and I was kind of humbled.
10 And as I say I became a geospatial and
11 metadata advocate.

12 And as Andy Armstrong will attest,
13 I also immediately started poking my nose into
14 shallow bathy issues. So I think in fact I
15 feel as though I had something to do with
16 coast survey map once used multiple times
17 sometime back when Eveline had a real job
18 working for NOAA.

19 So I feel like you're all friends
20 even if you don't know me. But I'm also a
21 failure somewhat after 20 years because why we
22 do at least have a plan, the integrated ocean

1 and coastal mapping plan, we don't actually
2 have a national coastal mapping program. And
3 I will come back to that.

4 Of course there are at least three
5 or four agencies who will tell you that they
6 have a national coastal mapping program, and
7 they do have the elements of a national
8 coastal mapping program, but we the country,
9 that has so much money and so many people on
10 the coast, don't have a national coastal
11 mapping program and it's actually an
12 embarrassment, to me.

13 So briefly, because Gerd had said
14 he wanted me to say something about climate so
15 I will. Climate, I'm not going to talk too
16 much about this because Miki actually talked
17 a little bit about it. What I do want to tell
18 you that I'm personally proud of, is that I
19 had a big role in the first ever coast chapter
20 of the National Climate Assessment.

21 And more than that I actually had
22 ports people on my team. Not capital ports,

1 small pea ports.

2 And there's actually a whole
3 section in there about Maritime Commerce.
4 Duh.

5 Anyway, so for those of you who
6 are not as familiar with the National Climate
7 Assessment it is online. I refer to it as
8 IPCC-light, the Intergovernmental Panel on
9 Climate Change.

10 For those of you who are, think
11 that climates like the tooth fairy are
12 religion and you don't believe in it, that's
13 your privilege. But let me also say to you
14 two things as my observation.

15 When I first became a lawyer the
16 joke was, one lawyer in town starves and two
17 do a great business. And lawyers make the
18 business off of distinguishing each case from
19 each and every other case.

20 Well frankly that's how most PHDs
21 make their money too. Is showing how their
22 stuff is different than everybody else's

1 stuff. I mean after all we always need more
2 research and how are you going to have it if
3 you don't have this.

4 So I think it's highly remarkable
5 that 97 percent of the scientists who are
6 actually trained in climate, as opposed to
7 something like marketing, because there are
8 some PHDs trained in marketing who are climate
9 experts, like I'm a climate expert. But 97
10 percent of climate scientists, people trained
11 as climate scientists around the world,
12 actually agree on something. That's
13 phenomenal.

14 And let me say, when you get 7,000
15 people to agree on anything, you know what it
16 is, it's the lowest common denominator. And
17 oh by the way, let me tell you how this
18 process works.

19 So when we do IPCC at the
20 international level or we do the national
21 climate assessment at the U.S. level, we only
22 look at stuff that's been published in peer

1 literature.

2 Now if you got a PHD and your
3 graduate students are going out and collecting
4 whatever for you and coming back and doing the
5 analysis of the lab and then writing up the
6 paper and it goes through iterations and
7 submissions to a journal, the time between
8 stuffs collected in the field and it's
9 actually in the journey, could be anywhere
10 from five to ten years. And that's the stuff
11 we're looking at.

12 So it's five to ten years old when
13 we're looking at it and we take three to four
14 years to get it done and to a consensus
15 document. So by the time you're reading the
16 National Climate Assessment or you're reading
17 the IPCC, it's at least a decade ago. It's
18 based on data that we knew about stuff a
19 decade ago.

20 So first let me say, anything I
21 say today after this point probably is not
22 anything that Kathy Sullivan, Russell

1 Callender, or actually anyone but the White
2 House, would necessarily agree with, but this
3 is all crap. And the best part about it is on
4 the web so we can be more dynamic, but
5 anything you think you know about it, it's
6 actually quite dated. And that sea level rise
7 stuff is actually real. And let me say for
8 the folks from the West Coast, you know, 15
9 years ago there were only a few geeks who even
10 knew what ocean acidification was.

11 And yes it does reduce the
12 incidences of toxics that scrapping in
13 boatyard and shipyards, because barnacles
14 can't form, but it has other profound
15 environmental consequences.

16 And frankly I'm much more
17 concerned about ocean acidification. After 35
18 years of being focused on flooding and sea
19 level rise, I'm far more concerned about ocean
20 acidification. But since I don't live on the
21 West Coast, it won't be in my actuarial
22 lifetime.

1 Okay, so climate change effects
2 everyone. And in fact we need everyone to put
3 their shoulder to the wheel.

4 The stuff that Miki was talking
5 about, frankly is cool and jazzy, but it
6 couldn't have been done with the right data.
7 Preferably more better shallow bathy, come
8 back to that one, kinematic GPS, vegetative
9 change, you name it, all these people over
10 here who do incredibly geeky things, it
11 wouldn't be possible to put this stuff out on
12 the web, onto mobile apps if we weren't doing
13 it.

14 And one of the great things that's
15 occurred in my time in NOAA is that, I think
16 at least within the ocean service, there's a
17 great deal more communication and
18 complementarity then there was 15 years ago.
19 And of course that's like light years in the
20 government.

21 So we've made great progress. But
22 unfortunately changing environmental weather

1 and climate conditions mean we need to do more
2 stuff.

3 Now one more thing about the
4 climate thing. This redline is changes in
5 seismological events, volcanos, landslides,
6 earthquakes, over the last 40 years.

7 The green stuff is meteorological
8 events, storms, storm surge, that kind of
9 stuff. Oh, it's on a growth curve.

10 Blue stuff is flood. Think of
11 flash floods for instance. And the yellow
12 stuff is stuff we can actually attribute to
13 climate, which is hard.

14 As I like to say to the graduate
15 students, that weather and climate stuff, it's
16 a growth business. Hot, cold, wet, dry,
17 whatever, more frequent, more severe and, is
18 costing us more money which puts pressure on
19 the budget in other ways. There's not a
20 single one of us inside the government who
21 aren't feeling like we're that rock we're
22 trying to squeeze blood out of.

1 Disasters are on the rise. It
2 occurs principally, though not solely in
3 coastal areas. And if you don't think you're
4 not concerned about drought then let me remind
5 you that there's this really perverse cycle
6 between drought, flash flood, landslides and
7 flooding downstream.

8 So my colleagues who are in the
9 ports in Maritime Community, in Florida, in
10 California, know exactly what I'm talking
11 about.

12 And that's the reason why it was
13 so important that the CERB work on getting the
14 Corps to have new sea level rise guidance,
15 which was a very painful experience.

16 And I was just writing Heidi this
17 morning, Bob, about, I mean Bill, how glad I
18 was that finally a decade later we had gotten
19 that report out. Because that was something
20 that started when I was on the CERB. Bill
21 replaced me on the CERB. They actually wanted
22 somebody who knew something about the

1 business.

2 But we still got sea level rise
3 guidance out of the Corps. And not the stuff
4 that they wanted to do originally which was,
5 well let's just say, it wasn't based on
6 better, more current data.

7 Anyway, so why should we be
8 concerned about this? Because first of all we
9 all represent very expensive infrastructure.
10 Much of which is aging, much of which is in
11 vulnerable areas.

12 This is the reason also why the
13 big boys, as I like to say, the reassurance
14 community, the really large casualty loss
15 insurers, the Urban Land Institute, the big
16 developers, they're all on the weather climate
17 train. And I think it's really important that
18 we, in the Maritime Community, figure out how
19 we get from more better data to actual
20 information, which is what we kind of been
21 working really hard on over the last 15 years,
22 to maybe knowledge and, dare I dream, wisdom.

1 But we made a lot of progress over
2 the last 15, 20 years. As I said, in a -- not
3 just inside of NOAA but we do have the
4 integrated ocean coastal mapping, whatever it
5 is, and a real plan. And maybe in another
6 decade we'll have real money.

7 We actually have the Joint Hydro
8 Centers so we've significantly improved our
9 mapping capabilities. Particularly in the
10 next decade.

11 We actually now have several
12 mapping centers, thank you congress. And the
13 world of census is changing, the world of data
14 analytics is changing.

15 I'm actually going to a meeting at
16 the end of this month on big data and climate.
17 I'm the only public sector person going to be
18 a in room with three dozen CEOs from around
19 the world on a panel hosted by some guy name
20 Gore.

21 I had to go out and buy the Big
22 Data for Dummies Book. There is one, I highly

1 recommend it to you.

2 It's changing our lives. In the
3 Maritime Community it's going to change our
4 lives in things we didn't think we were
5 concerned about.

6 Like the social economic
7 vulnerability in the surrounding communities.
8 I got to say, first of all, I was glad to hear
9 my colleague from the Ports Authority talk
10 about how in South Carolina they just beat the
11 crap out of us until we don't care about the
12 government.

13 So as a crap -- my most favorite
14 word of the federal crap is efficacy.
15 Efficacy is that thing that hits the sweet
16 spot between efficiency and effectiveness.

17 And when I think about what we
18 need to do in Maritime Commerce we need to be
19 more efficient. So let me be very specific.

20 We can do things, but as I alluded
21 to, we have a lot of infrastructure, we have
22 a lot of challenges. Storm surge or even for

1 the southeast, tsunami warnings.

2 Well I can go on about tsunami
3 warnings but for the people in the
4 Jacksonville, anybody here from Jacksonville?
5 Who cares about Jacksonville? Miami, care
6 about that? Okay.

7 Well let me just say tsunami
8 warning charts are based on the shallow data
9 that was pulled off of the NOAA nautical
10 charts which wasn't some extrapolated data
11 when it was put on there 40 or 50 years ago.
12 And I do believe when you extrapolate
13 extrapolated data that makes it crap.

14 But I will tell you that 386 years
15 ago a tsunami caused by slump on the Puerto
16 Rican side, overran, over washed south Florida
17 in about 90 seconds.

18 Now Miami-Dade is not a very big
19 port in the scheme of things, it's just an
20 important port. So we need to understand
21 that. We need to better understand shallow
22 bathy so we can do a better job on both the

1 ocean basin coast as well as the lake basin
2 coast.

3 And I am going to leave my
4 thorough career not yet seeing a shallow bathy
5 mapping program. We do it now after
6 incidences so that Mother Nature kicks the
7 crap out of us or we dump a bunch of oil in
8 someplace we shouldn't, we actually get some
9 shallow bathy done unsigned in navigation
10 channels. That's good. It's juicy stuff.
11 It will help us with community resilience.

12 One of my favorite colleagues over
13 the last decade has been the U.S. Chamber of
14 Commerce. Why you say.

15 Well besides the fact that they
16 run our communities, as everyone at Maritime
17 Commerce knows, on the Gulf Coast they
18 discovered that if they had continuity in
19 business it really didn't do them much good if
20 there was nobody around to buy their goods or
21 services.

22 And the one thing that's happened

1 in that community over the last decade is, the
2 chambers like us Feds, they have to sing for
3 their supper too. And I watched three dozen
4 corporate foundations, ranging from Coca-Cola
5 to Home Depot to Office Depot go from nothing
6 to funding either community or disaster
7 resilient portfolios.

8 So there are a lot of private
9 foundations in this space. Rockefeller has
10 just joined with HUD to put up the first \$100
11 million of a billion dollar tranche for a
12 rebuild by design. So we're going to live in
13 stupid places let's figure out how we can at
14 least go smarter and not cost so much money
15 the next time around.

16 Because it is going to happen.
17 And since we're on the post it's not a matter
18 of when it's just a matter of where. This
19 year, next year. And that aging
20 infrastructure that is at risk. And economy
21 deal with it.

22 So it's a function of where and

1 how we build, how we design the
2 infrastructure, the inner mobile system, the
3 water management system. It's also how do we
4 take advantage of the natural defenses that
5 Mother Nature provides us if we haven't
6 already harmed it or mitigated it away.

7 These are the key messages from
8 the coastal part of the National Climate
9 Assessment. I think you know each and every
10 one of them, but of course the ones that are
11 most of interest to you are coastal lifelines
12 at risk and economic disruption.

13 Oh, oh, what is that? Oh, that's
14 a map of truck loads from PORTS. In fact one
15 of my most favorite slides, I'm hoping is on
16 the next one, no, it's not.

17 And for those of you who don't
18 know that, that's the road Highway 1 in south
19 Louisiana where they don't care about climate
20 but they totally get that flood and rising
21 water level issue in south Louisiana. Even we
22 can't say climate. Even if we can't say

1 climate, sorry, Lynne.

2 Let me back up. It's not on here
3 but let me tell you about my favorite slide.
4 One of my favorite slides to show at audiences
5 that don't know anything about a coast is a
6 map of the truck flows out of New Orleans.
7 Why do I show it? Because it's everywhere,
8 all over the country, if you've ever seen this
9 slide.

10 And not only that, and by the way,
11 I got my friends at DOT to make this for us
12 for the National Climate Assessment. But it
13 looks, if you squint your eyes, it looks
14 almost like a USGS hydrology map, that's kind
15 of cool, but it also shows people in Nebraska
16 and Iowa that we are a coastal nation.

17 Be you on an outward facing coast,
18 be you on the Great Lakes or be you on the
19 Great Inland Coast, there are these ports on
20 the Great Inland Coast, you know, we have a
21 lot of issues in common.

22 So let me talk some trash now,

1 like I haven't. So we are just almost two
2 years out from a changing administration at
3 the national level.

4 And the one thing I do know is, no
5 matter who wins, it's going to be a new set of
6 25-year-olds in the White House and at OMB and
7 on the Hill who think they know everything and
8 they're looking for the newest low hanging
9 fruit to be all that about. And I think we
10 should be ready for those 25-year-olds.

11 And I think what we need is a true
12 national coastal mapping program that's
13 actually resourced. And includes a lot of the
14 elements that we want.

15 I believe, Joyce, that you say you
16 do something with corals.

17 MEMBER MILLER: Yes.

18 MS. DAVIDSON: Right. So you're
19 big on shallow bathy mapping too.

20 MEMBER MILLER: Yes.

21 MS. DAVIDSON: Right. So, you
22 know, what I've discovered with my Army Corps

1 friends is that over in the Philippines they
2 would actually love for us to come and do some
3 shallow bathy mapping in the Philippines. And
4 they have some USAID money to do that.

5 And what a sad thing that maybe
6 the south of the Philippines is going to get
7 a comprehensive shallow bathy mapping set
8 before the south of the U.S. Just saying
9 those shallow low lying shelves, everything
10 about that shelf not only has to do with how
11 we move congress along but it also has to do
12 with how flooded our facilities are going to
13 be.

14 So I think that thinking ahead
15 this FACA is a great group to be thinking
16 about, how do we take stuff that the Corps
17 does for which we are all very grateful, even
18 if it's outrageously priced, how do we take
19 the stuff that FEMA is doing, and they
20 themselves are trying to figure out how they
21 actually come into the GIS decision support
22 tools, seriously, how do we take the stuff

1 that our geeky colleagues at USGS do and our
2 colleagues, you're geeky too, at NOAA and how
3 do we actually have a real coastal program?

4 We are almost 50 percent of the
5 population, we are almost 60 percent of GDP on
6 the coast and we're everything that everybody
7 cares about. Even if they don't live here
8 they want to get here, they want to vacation
9 here or they want to eat our seafood, or they
10 want to wear the goods and services that come
11 through our ports.

12 So if we're really about Maritime
13 Commerce, then we actually have to be about a
14 true coastal intelligence program. And my
15 colleagues at NOAA would like for it to be
16 about them, and of course it is about them,
17 but it's not just about them. It's not just
18 about us. You know that.

19 Some of you do a great job of
20 playing the agencies off against each other or
21 getting the best you could squeeze out of each
22 of us.

1 But I submit there is a bigger
2 view and there's a more comprehensive
3 strategy. And if we start it now, talking
4 about that transition strategy, and we
5 actually had it kind of framed up in two
6 slightly different ways, depending upon how
7 things roll, people like you or whoever
8 succeed you, are just the kinds of people that
9 we need to be pimping in it in the new White
10 House and with the new people in the House of
11 Representatives.

12 And we might actually get this
13 done. Because no matter who the new people
14 are in the White House and on the Hill, I
15 think we got to have a big infrastructure
16 bank. And you all have seen this, push
17 through this.

18 You know, DOT's actually doing
19 pretty good on this angle. HUD final gets
20 this angle.

21 But I think that we could also be
22 a small part of that party. The Maritime

1 Community.

2 Yes, we got some lip service for
3 Blue Highways, that's nice. But if we're
4 really going to do this intermodal hookup
5 thing, then we need a comprehensive strategy.

6 And I think you guys working with
7 other like-minded groups, and don't rely on
8 the interagency community for marine
9 transportation systems because, well that is
10 a lot of process with some outcome. But you
11 have the potential to be just a wee bit of
12 process with some actual outcomes.

13 Anyway, that's not what Gerd asked
14 for, he wanted me to be more respectful and
15 more polite. Of course you did, he wears a
16 uniform. But Eveline could have told him that
17 wasn't going to happen.

18 So I think I should stop there,
19 haven't I about used up my time? Questions,
20 refutations?

21 And anyone that feels that I acted
22 prejudicially towards you, I apologize, I've

1 actually been off the road about six weeks and
2 you're like one of my reentry points, so I was
3 feeling a little giddy here.

4 CHAIR PERKINS: Got no questions.
5 This is too good of an opportunity though.

6 MR. ASLAKSEN: I have something,
7 ma'am, just to give you highlights, there is
8 actually now an national crystal mapping
9 strategy.

10 MS. DAVIDSON: Yes, yes, I do know
11 this.

12 MR. ASLAKSEN: Okay, ma'am, just
13 making sure.

14 MS. DAVIDSON: I do know this.

15 MR. ASLAKSEN: We've worked pretty
16 hard at that and it is, it's been a well-
17 documented effort of USGS, NOAA and Corps.

18 MS. DAVIDSON: And let me say on
19 this resilience flavor, so, why Mike's been an
20 IOCM process weenie. One of the things that
21 happened when I took this new job was Russell
22 decided I needed to be tortured so I do NOAA

1 budget process crap.

2 And I am delighted to say though
3 that one thing that has resulted from this is
4 I've been involved with a coastal resilience
5 thing, any of you have ever seen me, I've been
6 revolved with coastal resilience since the Art
7 of War was written. But we now have, in the
8 Department of Commerce Strategic Plan, two
9 important elements of NOAA.

10 One's called environmental
11 intelligence, and of course in the ocean
12 service we rip it down to be coastal
13 intelligence because we are the most
14 intelligent part of NOAA. But the other part
15 is this community resilience stuff which is
16 really our stick. Your stick, my stick, all
17 of our stick.

18 But we've actually got both of
19 these things in the Department of Commerce
20 Strategic Plan. And more importantly, we've
21 got it cross threaded with NIST, the
22 engineering geeks who are trying to figure out

1 how new construction could actually be more
2 resilient.

3 They're the guys who prove that
4 old joke that the extraverts are the ones that
5 look at your shoes instead of theirs.

6 But more importantly our
7 colleagues at the economic development
8 authority who have a \$100 million to give away
9 to things like infrastructure for ports and
10 other such political acts of kindness.

11 So we're cross threaded inside the
12 commerce plan, which is also a lot of process
13 with very little reward, but that's a useful
14 place to be documented going into this
15 transition too. So there's that out there.

16 I mean the road to hell, as well
17 as progress in D.C., is paved with a lot of
18 reports and claims and strategies. If you
19 don't have them you're toast. So you got to
20 have them. You got to have the road littered
21 with them.

22 But that's only just your hunting

1 license. You actually then got to go out and
2 bag yourself something. Or build.

3 VICE-CHAIR HANSON: Margaret, you
4 are missed on the CERB by the way. Not nearly
5 as exciting.

6 Question for you, because you
7 bring up the advocacy piece and how do we --

8 MS. DAVIDSON: No, no.

9 VICE-CHAIR HANSON: -- advocate --

10 MS. DAVIDSON: No, no, I think you
11 can just educate and inform.

12 VICE-CHAIR HANSON: Sorry about
13 sore with advocacy, but that's okay.

14 MS. DAVIDSON: I don't think I
15 used that word.

16 VICE-CHAIR HANSON: You did not.

17 MS. DAVIDSON: Well I did say the
18 word pimp. That might be mentioned --

19 VICE-CHAIR HANSON: That has many
20 definitions for sure. So how do we get
21 Secretary Pritzker or her successor to
22 consider coastal issues to be a priority --

1 MS. DAVIDSON: Well great news
2 about Secretary, a.k.a Hyatt Hotel Heiress
3 Pritzker, is she actually does get the coastal
4 economy thing and our administrator, and I'll
5 be respectfully for a moment, Kathy Sullivan,
6 and Secretary Pritzker have actually formed a
7 warm one around community resilience as a
8 matter of fact.

9 So I think there's a rare and
10 unique opportunity. In fact they're having a
11 meeting later this week and the one thing that
12 I was, on a quick turn around this morning
13 was, they wanted to know the exact nature and
14 extent of our conversations with NIST and ADA.
15 I sent you a note on this, Russell, last
16 night. The exact nature.

17 Because we're talking about a
18 commerce wide performance metric on community
19 resilience. Which would be a first ever.

20 Usually people in commerce, well
21 my joke about commerce is that a lot of people
22 come into the secretary's office thinking that

1 they're going to be hanging out with guys in
2 custom suits and Italian loafers and going on
3 trade missions. Then there's agency called
4 NOAA that's full of 12,000 geeks that clogs up
5 their fax machine and, it's a pain in the ass.

6 So, and it's usually a real
7 problem for us in the budget process. This is
8 a unique opportunity with Pritzker. And I
9 think there's a unique opportunity working
10 both the current administration but also
11 taking the longer view, which politicals never
12 do, for over a four to five year educational
13 effort.

14 Because that's what it's going to
15 take, you know. The window of opportunity is
16 in two and a half years from now. With a year
17 and a half after that. That's the window of
18 education that you have.

19 VICE-CHAIR HANSON: Okay. There's
20 a follow-up, because Secretary Donovan, when
21 he was with HUD.

22 MS. DAVIDSON: Yes, and he's now

1 in charge of OMB.

2 VICE-CHAIR HANSON: Exactly.

3 MS. DAVIDSON: The place that
4 divides up all the money.

5 VICE-CHAIR HANSON: Exactly, so --

6 MS. DAVIDSON: Yes.

7 VICE-CHAIR HANSON: -- is that
8 going to be a, we usually --

9 MS. DAVIDSON: Well it's a great
10 thing for NOAA because usually it's not. I
11 mean most people think NOAAs over there with
12 all those other environmental agencies, like
13 EPA and Interior in the same part of OMB.

14 We're not. We're in the
15 economical development part of OMB. Now,
16 which is fine for commerce, hadn't worked out
17 so well for NOAA.

18 But the 800 pound gorilla in our
19 part of OMB is this little group called HUD.
20 And let me say that if Administrator Lubchenco
21 had known that, when I was still the director
22 of the Coastal Services Center, that I had

1 placed an embed over at HUD early in this
2 administration, to drag him kicking and
3 screaming into the geospatial era, she would
4 have asked me, what in the world was I doing
5 that for. Because the first time she saw me
6 at the chamber she asked me, what in the hell
7 was I doing there.

8 Well I always thought if you were
9 in the Department of Congress maybe you ought
10 to know the Chamber of Commerce people, duh.
11 But that's just me.

12 But if HUD is the 800 pound
13 gorilla in OMB, I'm like thinking to myself,
14 well HUD owns a lot of real estate and a lot
15 of that's coastal. And after the real estate
16 crashed they even came to own south Florida
17 practically.

18 So wouldn't it be a good thing to
19 be on good terms with HUD? Well right after
20 Sandy that turned out to be a really great
21 thing. And there was this science work group,
22 first ever after a disaster, for the Sandy

1 Task Force.

2 Some of that stuff Miki showed
3 you, we worked with our colleagues inside
4 NOAA, the Corps and USGS and rolled out
5 flooding and sea level rise tools in the Sandy
6 effected area. But more importantly, not only
7 is that still a big deal at HUD, but Donovan
8 is now at OMB and I think that's a great
9 window of opportunity.

10 And you can go there and you can
11 educate Mr. Donovan, the head of OMB, about
12 these issues. And I think he'll get it.

13 Oh, that's right, he's from New
14 Jersey. There's some little port, New York,
15 New Jersey, that he's very familiar with. He
16 actually came out of the transportation
17 community.

18 So I think there are many
19 educational opportunities that we're
20 squandering by not raising our sights high
21 enough.

22 And, you know, I'm going to die in

1 the next decade. I sure would like to see
2 some shallow bathy happen. Do this for me.

3 CAPT BRENNAN: I'm going to try.
4 Tell us where?

5 MS. DAVIDSON: Shallow bathy or my
6 death?

7 (Laughter.)

8 MS. DAVIDSON: Well if Alaska were
9 to come back to the coastal management program
10 I'd say we should even do some in Alaska. But
11 that's all right, they don't need any of us,
12 right Scott?

13 CHAIR PERKINS: Yes. Margaret,
14 you've had the opportunity to observe and be
15 aware of many FACAs.

16 MS. DAVIDSON: Yes.

17 CHAIR PERKINS: And if you were
18 going to give a report card --

19 MS. DAVIDSON: Yes.

20 CHAIR PERKINS: -- on FACAs in
21 general, you know, their usefulness to
22 congress and to administrations and on this

1 one? And I don't think I have to say, speak
2 freely.

3 MS. DAVIDSON: Well I will just
4 say I have seen more effective FACAs at DOT
5 and one at DOI that I am familiar with. How's
6 that?

7 You know, you're job should be to
8 kick our ass, but our job should also be to
9 push you harder to kick our ass. And together
10 we should be advancing marine commerce in the
11 largest sense of that.

12 And I don't just mean for people
13 who drive ships. Although I know that's what
14 most of you guys care about and you are
15 important, you really are.

16 But there's a whole much more to
17 it, you know. I mean if you want to talk
18 about Pacific Island or Caribbean Islands,
19 yes, the place we dock ships is important but
20 so is the whole ecosystem.

21 You know, we're all connected to
22 each other no matter what at the end of the

1 day. And we have found out that buck heads
2 aren't all that and why we may disagree on
3 what a real living shoreline is.

4 My friends from the Corps think
5 it's concrete you put grass on top of, I think
6 of something that's a little more dynamic, but
7 you know, that's a semantical difference.

8 I'm delighted to say my colleagues
9 at the Corps actually have a budget initiative
10 on what we call natural infrastructure. It's
11 only taken us a decade to get that there, but
12 you know, there are some real opportunities.

13 I think my challenge to you is to
14 be more. I mean I know you get paid the big
15 bucks to come and eat this really great food,
16 but I think you could be more and I think the
17 opportunity transition, in times of change and
18 transition, is always the greatest
19 opportunity.

20 That's why that old Chinese symbol
21 is like crisis and opportunity. It's the
22 whole thing, it's the same thing.

1 So if you want more out of us,
2 frankly you got to kick our ass. Some of it's
3 resources, some of it is that we're
4 comfortable doing our stick in maybe just a
5 new improved version.

6 It's hard to leap frog inside the
7 federal government. You're not rewarded for
8 being innovative. Let me tell you, I know
9 about that.

10 You're not always rewarded for
11 being imaginative. It's not the first thing
12 that gets you the right kinds of performance
13 appraisals.

14 Now I will actually say, I'm very
15 fortunate Russell likes me a lot, but I've
16 known him since he was 25 years old almost.

17 Yes, Frank? And Frank will tell
18 you this is not behavior on my part either.

19 MEMBER KUDRNA: We want you to be
20 candid.

21 MS. DAVIDSON: Yes, sir.

22 MEMBER KUDRNA: We've been

1 discussing in the FACA how we move forward and
2 one of those topics is, educate and inform.

3 MS. DAVIDSON: Yes.

4 MEMBER KUDRNA: And I guess from
5 your message you're clearly indicating that's
6 a principle role you see FACAs doing?

7 MS. DAVIDSON: Well I think first
8 and foremost, the role as envisioned by
9 congress, remember I'm a layer, of a federal
10 advisory committee is to make sure that we're
11 executing our mission with alacrity and
12 integrity.

13 Then I think we have to look at
14 the efficacy. But I think you can help us be
15 all that we could be. Not just what we are.
16 Yes, sir?

17 Advisory? I mean I look at the
18 National Science Foundation. Oh, now you want
19 a FACA that kicks ass, the National Science
20 Foundation FACA, now it actually does kicks
21 ass.

22 And that's why when the rest of us

1 are sucking wind in the budget process, NSF,
2 even when its curve slows down, they think
3 they're having a bad year, they only got a
4 five percent increase. That's a bad year for
5 them.

6 And I guarantee you every one of
7 those pointy headed people on their FACA are
8 out educating and informing their elected
9 officials at home and elsewhere.

10 CHAIR PERKINS: All right, thank
11 you.

12 MS. DAVIDSON: Sure. It's, I'm
13 glad you're here. You know, Charleston is
14 where the Ashley and Cooper River meet to form
15 the Atlantic Ocean. So it's appropriate that
16 you'd be talking about these important issues
17 here. Thank you for having me today.

18 CHAIR PERKINS: Excellent. Next
19 on our agenda is our breakout sessions. So
20 the Port and Harbor Expansion breakout session
21 will be in the Ashley Room.

22 The Atlantic Intracoastal Waterway

1 and Recreation, thing that needs dredging
2 desperately, breakout session will be in the
3 Magnolia Room.

4 And the Geospatial Modeling and
5 Coastal Resilience will be in the Cooper Room.
6 So breakout sessions will go from now until
7 2:30 and then we'll reconvene back in here for
8 a report out from each of the breakout groups.

9 MEMBER MILLER: Scott, where are
10 these rooms?

11 CHAIR PERKINS: Somewhere here on
12 the property. Yes, we're at the end of the
13 hall, so they got to be the other direction.

14 (Whereupon, the above-entitled
15 matter went off the record at 1:21 p.m. and
16 resumed at 3:02 p.m.)

17 CHAIR PERKINS: We'll try to get
18 reconvened here and begin with the report outs
19 from the breakout sessions, and then after the
20 report out of the breakout sessions we'll have
21 a presentation from Dr. Jeffress.

22 So with that before we start the

1 formal, I don't know if all of our non-panel
2 participants from the breakout sessions are
3 here but wanted to ask them, you know, to
4 speak freely about were the breakout sessions
5 beneficial.

6 Did they find the time, you know,
7 useful and beneficial, but I'm not seeing a
8 lot of them in the room. But if we can get
9 that feedback or that input that would be
10 beneficial.

11 All right, moving right along
12 then.

13 MS. WATSON: Scott?

14 CHAIR PERKINS: Yes?

15 MS. WATSON: I think some of your
16 panel members had a couple comments regarding
17 that process.

18 MEMBER SHINGLEDECKER: I guess I
19 said something to Kathy. I appreciated in
20 past breakout sessions panel members had been
21 asked to be the facilitators and the scribes,
22 and I found this time having NOAA staff play

1 that role I think allowed the panel members to
2 engage more actively as participants. So I
3 appreciated that support.

4 CHAIR PERKINS: Great. Thank you
5 for that feedback. You know, Bill and I
6 decided to spend 20 minutes each in each of
7 the three breakout sessions and rotate
8 through, so I just want to extend my sincere
9 thanks to both our facilitators for each
10 session and for the scribes.

11 You know, it looked like it was
12 working. Each of the three that I visited
13 looked like they were actively engaged in, you
14 know, working towards that goal of giving us
15 the feedback and the input that will help us
16 formulate, you know, an input for our
17 recommendations. So from my observation it
18 looked like it worked. Bill's not here so I'm
19 going to say I'm sure he agrees.

20 So do we want to do the report
21 outs in the same order they're listed on the
22 agenda beginning with Port & Harbor Expansion?

1 Or would you like to go in the opposite order?

2 CAPT BRENNAN: I'd be happy to go.

3 Do we have the, we'd sent in our notes. Were
4 we going to display those? Or do we have the
5 ability to display those?

6 CHAIR PERKINS: Lynne, are you
7 prepared to display the info? Because we can
8 take them out of order if you need time.

9 (Off the record comments)

10 MS. WATSON: Well, Scott, while
11 Lynne is getting that ready, I would like for
12 the panel to recognize our nav manager here
13 who was a key essential role in bringing the
14 guests in for these speaker panels otherwise.

15 CHAIR PERKINS: Thank you, Kathy,
16 yes. And Kyle hit a home run.

17 (Off microphone comments)

18 CAPT BRENNAN: So we spent the
19 first 30 minutes of our breakout session just
20 kind of talking roundly about products, what
21 some of the capabilities were for some of the
22 products and then what that meant for the port

1 expansion. You know, because as we discussed,
2 clearly NOAA doesn't have a role in making the
3 port deeper or doesn't have a role in making
4 the channels wider and it doesn't have a role
5 in expanding the port facilities.

6 But what we do have a role in is
7 how we can provide data about that in a
8 meaningful fashion that allows decisions to be
9 made in a timely fashion. So after we
10 identified that we talked about that. We
11 talked about how we might possibly be able to
12 do that.

13 So there was some questions that
14 we wanted to have answers, and first I'll try
15 and run through those and then kind of come
16 back around to some of the notes that Rachel
17 captured as far as some of the value added
18 things. But the first question was what does
19 NOAA need to get right in order to meet the
20 needs for this port expansion?

21 And the first one was make sure
22 that the new approaches once they're surveyed

1 that they get chartered as quickly as
2 possible. That the most recent surveys get
3 onto the chart as quickly as possible, and in
4 that regard we're particularly talking, I
5 think, about the Corps surveys. So once we
6 get a Corps survey in, getting that from the
7 Corps through eHydro onto our chart products
8 as fast as possible.

9 And then the channel frameworks as
10 they are modified, particularly we were
11 talking about if they widen the channel they
12 would have to then adjust the channel
13 framework, that that channel framework also
14 get reflected on the chart as quickly as
15 possible.

16 So basically, you know, just that
17 we get the as-built conditions represented in
18 the chart products as quickly as possible is
19 the big one.

20 Are any additional port sensors
21 needed to meet the needs of these larger
22 vessels? One topic that did come up was just

1 about the additional air gap sensors which go
2 off zorbee, we got it scheduled in, I guess,
3 July 2015.

4 The other question was Thomas
5 Jefferson is scheduled to be surveying in the
6 approaches to Charleston in 2015, and is there
7 anything that they needed to address in the
8 ports.

9 And so the word that we got back
10 from the constituents, the Charleston
11 constituents that were in the meeting, was
12 that they were happy with working with Kyle,
13 that Kyle knew everything and that we didn't
14 have to do anything. So I'm paraphrasing but
15 that's basically what it was.

16 So I think the one issue was,
17 specifically, was just about the unexploded
18 ordnance that were in the Navy anchorage which
19 I don't think that the TJ has any capability
20 to deal with, but that's the only thing that
21 they were, I think, seeking our help on in
22 that regard which is not necessarily related

1 to the TJ's work.

2 There was a question about the new
3 chart and was that meeting the needs, and from
4 what we gleaned I think from the presentations
5 in here and in this group as well was that yes
6 that the chart was meeting the needs and it
7 had enough expansion capability that even if
8 the port decides to expand the approach
9 channel that there's plenty of excess room
10 offshore of the existing location now on the
11 chart to successfully represent that.

12 Will greater positional accuracy
13 be needed in the future? And so the pilot
14 that we had in there I think said that it
15 scared the shit out of him when he had to dock
16 the ship. I'm quoting. Sorry. That it, you
17 know, when he had to dock the ship in the fog.

18 And so we translated that and that
19 said yes that he would like some additional
20 capabilities, some higher accuracy information
21 about the pier facilities when they go to
22 dock.

1 If anybody that was in there read
2 that differently, like I said I may be
3 paraphrasing a little bit too much on that.
4 But we said, you know, ultimately a Band 6 ENC
5 harbor scale chart.

6 We just, you know, one of the
7 things that we did discuss is one of our
8 speakers today mentioned about salinity
9 probes. And so I've got some work to do when
10 I go back to the office to see, you know, are
11 we making use of those? Do we have access to
12 those salinity probes?

13 And so is there some way that we
14 can make meaningful use of that in a
15 navigation product to help the pilots decide
16 where that salt wedge begins and ends so that
17 they know where when they cross it they're
18 going to gain draft.

19 So, and then the final question
20 was is NOAA taking the Army Corps data and
21 using it in the best way? And this
22 highlighted a problem or an area, I guess, of

1 growth for us that when we talk with all the
2 pilots, most pilots don't understand the full
3 capabilities of an ENC or an ENC's that fully
4 flushed out.

5 And when we started to, I think,
6 you know, explain what the capabilities were
7 for an ENC that was fully populated, the
8 pilots were like, well, of course, that would
9 be like gravy. We would love to see that.

10 And so one of the things that was
11 discussed was having a demonstration project
12 where we actually took high resolution data
13 from the Corps and put it into the ENC and
14 provided some different display options for
15 the pilots so that they can begin to make use
16 of that. And so as, for example, to color map
17 the bathymetry so they could see where the
18 deep areas were and where the high spots might
19 be.

20 And, Andy, you can tell Larry that
21 one of the things that he says, wouldn't it be
22 great if you were like in the seagull view

1 where you're flying back behind the ship? So
2 a pilot actually said that and Larry Mayer
3 would love that too.

4 So value added things that got
5 discussed was what we talked about, the
6 salinity probe data that the Corps of
7 Engineers has.

8 And apparently they populate them
9 not only for their own use but I guess they
10 buy them for the USGS so that they've got a
11 whole network of these at least within
12 Charleston to manage the outflow from the dam,
13 from, I guess, tail race. So that was
14 interesting at least for this port here.

15 There was some discussion about
16 dropping the channel condition report or the
17 channel tabs and just providing that data, you
18 know, actually geographically on the chart.
19 The push for S102 formats to be available so
20 that you can better ingest, you know, overlays
21 into the data.

22 So that was an item that was

1 discussed. It's good to have John Dasler in
2 your meeting when you're going because he
3 brings all those to the table for you.

4 Talked about Band 6. One of the
5 things that was requested from the POS was
6 whether or not we were reaching out to app
7 developers, because that was one of the things
8 that we found out yesterday was that they were
9 actually using a tablet app for their portable
10 pilot unit there.

11 And so we did discuss that and we
12 have a vendor day at the Annapolis Boat Show.
13 So we're already on that.

14 Expanding our web services and the
15 types of data that NOAA makes available in
16 more usable formats. Overlays for the Corps
17 data. Having the ability to show soundings in
18 the federally maintained channels in areas
19 where there is depths deeper than the project
20 depth was one item that was discussed.

21 Because the pilots said that they'd like to
22 know where there was, you know, they want to

1 know how much depth they have and where that
2 is. So that was one that was discussed.

3 And then the potential for, you
4 know, that went along with these higher
5 resolution Band 6 charts was the need to put
6 a higher resolution shoreline on that.

7 So that's the distilled version of
8 what we discussed in our breakout. Any
9 questions? Any clarification on my shorthand?
10 All right.

11 MEMBER KUDRNA: Let me ask you a
12 question. If we were looking to bring some
13 recommendations to the administrator, what
14 couple of these could elevate to something
15 that, if any, that would raise the depth
16 level?

17 CAPT BRENNAN: I'm filtering. So
18 I'm trying to think about, make sure I'm
19 giving you --

20 MEMBER KUDRNA: Don't answer it
21 now, but we'll need to do it before we get to
22 conclusion if you'd prefer.

1 CAPT BRENNAN: I would prefer to
2 give you what I got out of this as opposed to
3 my opinion, so giving me a minute is probably
4 a good thing.

5 MEMBER MILLER: Could you possibly
6 group some of them into a larger --

7 CAPT BRENNAN: I think clearly
8 there's some opportunity to group these. I
9 think, you know, I mean the one thing that's
10 clear and I think that's exciting from our end
11 is the eHydro, and I think, you know, being
12 able to make use of that tool that the Corps
13 has created to streamline ingesting data into
14 our pipeline, and that's huge.

15 I mean because the Corps data is
16 the biggest source of data that we get, you
17 know, in mapping and charting. So being able
18 to get that through and in a format that's
19 consistent is absolutely critical.

20 So that's a huge thing right there
21 for us to be able to provide products quickly.
22 So I mean that's ripe for the picking in my

1 mind. And so Phil and I had some discussions
2 on that. So yes, grouping is good.

3 CHAIR PERKINS: Great. Thank you,
4 Captain. And the spokesperson for the
5 Atlantic Intracoastal Waterway and Recreation
6 desperately in need of dredging breakout
7 session is?

8 MEMBER BARBOR: After having sat
9 next to Ed for a day and a half, I have to say
10 our number one recommendation was federally
11 fund ports. I was actually amazed that, you
12 know, ports did not come up in the
13 Intracoastal Waterways. But I had to say
14 that.

15 Actually we tailed in very closely
16 when you, what I got out of your presentation,
17 Rick, and our discussions. And our
18 discussions were very active and occupied the
19 whole time on, you know, what can we do to
20 solve this huge issue of a very important
21 artery being clogged and make it a useful, you
22 know, artery again.

1 And like I say, and encapsulated
2 very closely was the number one thing we felt
3 of importance was the ENC first production
4 line be adopted, implemented as quickly as
5 possible.

6 That was a recommendation from the
7 New York breakout panels and we felt it needed
8 to be reiterated here for the very same
9 reasons you highlighted too. Because when you
10 have that ENC production then you can relate
11 to eHydro and ingest that information and get
12 it onto a navigation surface as quickly as
13 possible. And so from that standpoint we felt
14 that to be a priority issue.

15 And going hand in glove with that
16 is the liaisioning with Army Corps to ensure
17 that that hand off to eHydro, one, you know,
18 we wish eHydro to be standardized and
19 implemented as quickly as possible, but
20 that's not our bailiwick that's Army Corps'.

21 But that the Office of Coast
22 Survey or the administrator or whatever level

1 we wish to take this liaises with the Army
2 Corp to ensure that eHydro is implemented as
3 quickly and in a manner that will provide for
4 as seamless an integration into the ENC as
5 possible.

6 And with those two things we start
7 picking up again the same sorts of things that
8 you brought up, Rick, is that by and large the
9 depiction of the Intracoastal on NOAA charts
10 is a 1:40000 if not smaller, and you don't get
11 many numbers, you know, 1:40000 in a 90 foot
12 channel.

13 And therefore it's going to have
14 to be compiled at a much higher band and then
15 the ENC is going to be the preferred method of
16 depiction so you can, you know, zoom into the
17 appropriately scaled product, but it has to be
18 appropriately compiled too.

19 And so from that standpoint we
20 don't know what the workload impact on the
21 chart division would be and that's probably
22 something worth getting a report back on is

1 that, you know, have we just asked for a far
2 heavier workload being implemented on the
3 chart division?

4 Okay, so there was clearly some,
5 not misunderstandings but just lack of clarity
6 on the status of the magenta line and what is
7 the way forward, so we would request an update
8 at a webinar or the next available opportunity
9 to get an update on the magenta line.

10 And of course we couldn't, we
11 started off with crowdsourcing. We had John
12 Hersey on the call-in in our group, and
13 clearly there are other avenues of data and
14 Service Argos is one.

15 But we felt that, you know, we do
16 have indeed a trusted partner in the Army
17 Corps that performs a survey of the
18 Intracoastal at least once a year and has
19 those data available.

20 And those are the sorts of data
21 that we should be implementing into the chart
22 pro forma, and then we have to continue to

1 investigate how crowdsourcing can best be used
2 to provide the appropriate products for the
3 navigator.

4 Is that all we have or were you
5 typing this out as I was saying it? Okay, I
6 think we've given it, I think that's what we
7 got. So federally fund ports, right?

8 MEMBER KELLY: So until I read it.

9 CAPT PROCTOR: Mr. Chairman?

10 CHAIR PERKINS: Yes, questions for
11 Ken or for --

12 CAPT PROCTOR: No, sir. But if I
13 may, first I want to thank Admiral Barbor for
14 stepping in and briefing out. As my first
15 rodeo with this committee and that workgroup,
16 it became quickly evident to me that, you
17 know, much of that discussion was a
18 continuation of a lot of great dialogue from
19 previous sessions. So it was very
20 enlightening to me personally, so I appreciate
21 the lively exchange that the members shared.

22 But I also want to state my

1 appreciation for, we had three of the four
2 presenters from this morning's session hold
3 over this afternoon to participate as well.

4 So although Mr. Dorminy could not
5 stay after lunch, we did have Mr. Warren from
6 the Corps, Mr. Pickel, as well as Dr.
7 Alexander, so it's very appreciative that they
8 stuck around and contributed to the discussion
9 as well.

10 CHAIR PERKINS: Great. Thank you
11 for that input.

12 MEMBER MILLER: I'd like to add
13 that we discussed a lot of problems that
14 really weren't NOAA problems and it's a bit
15 frustrating. I mean, you know, obviously
16 dredging is what's needed but, you know, what
17 can NOAA do about that was the difficult
18 problem.

19 CHAIR PERKINS: All right, any
20 other questions for the Intracoastal group?
21 All right, that leaves us with the Geospatial
22 Modeling and Coastal Resilience.

1 MR. ASLAKSEN: So we kind of did
2 something different. A shocker to you all I'm
3 sure. We had some suggested topics within
4 that that we had to kind of cover, but being
5 resiliency is much broader we got off topic
6 and really had, I believe, some real priority
7 talks from there.

8 Foundation data, that's a lot of
9 what we provide here but that was very evident
10 that that's an important data set, and more
11 importantly, poor resiliency and assessment of
12 resiliency is the more frequent collection of
13 those data.

14 In some cases taking about imagery
15 and LiDAR and probably hydrography as well on
16 a yearly basis and really emphasizing that the
17 importance of having this data collected pre-
18 event to really do assessments as far as
19 damage assessment and then having post event
20 collects to really then look at, you know,
21 then assess resiliency.

22 So having these foundation data

1 sets from a more frequent basis and event
2 driven was a priority to the group.

3 Education at all levels, we had
4 some really good direct experiences from Dr.
5 Jeffress and after Hurricane Ike in Texas in
6 which he and the university tried to pull
7 together all the local decision makers and
8 they didn't show up, and versus we had some
9 local sea grant doing some climate impact
10 assessment studies here and education of the
11 local in which they had a lot of interest on.

12 And so the recommendations coming
13 out is that we need education at all levels,
14 but a real strength at the local level. Folks
15 really want to know how does it affect the,
16 what's going to happen and how do we live more
17 resilient. The examples I heard were like,
18 for instance, roadway elevations and when are
19 they going to flood and those type of, and
20 tying things like coastal flooding and water
21 quality was another important issue we brought
22 up here in South Carolina, as well as

1 modeling.

2 Resiliency. The whole local
3 product, what is the plan for the U.S.? Is
4 there a consolidated plan? There doesn't
5 really appear to be one.

6 You know, and there, really, from
7 the discussion needs to be a collective plan
8 involving government, NGOs and industry, as
9 well as looking at and prioritizing R&D
10 efforts to assess resiliency. What works what
11 doesn't work and then help develop policies
12 from that.

13 In addition, there really needs to
14 be metrics of resiliency. How can you measure
15 that? And in conjunction with those metrics
16 of what is sustainability and how do you
17 define that?

18 Tools and developing tools. A lot
19 of, I believe, what we heard from experience
20 at the local and large levels like tools like
21 the Digital Coast are important.

22 But as important is that, you

1 know, which I wasn't aware of that an example,
2 New Jersey and what is now called the New
3 Jersey Flood Mapper is that, you know, CSC was
4 able to transition that tool that you saw from
5 Miki's presentation to the state of New
6 Jersey, and they were able to develop a tool
7 at the local level in the applications at that
8 level.

9 And so as a federal developer to
10 develop something from a regional level, it
11 should be able to be transitioned easily to
12 the local level so that they can refine it and
13 really understand what's happening in their
14 backyards.

15 And in addition it was pointed out
16 though that, you know, there's things like my
17 coast app Storm Reporter which looks at
18 beachfront damage and into the King Tide
19 Reporter which looks at capturing and
20 collecting photos of super high tides.

21 And then finally, data and tools
22 that capture the entire effects and how to

1 design community resilience not just at the
2 individual entities or interests but broadly.

3 I think we've heard a lot of what
4 folks are doing with their direct interest
5 areas whether that's a port or the pilots'
6 operation center that we saw yesterday or
7 people's homes, but we don't look at the
8 connecting infrastructure and the supporting
9 elements that pull that together. So a more
10 broader look at resiliency and what that means
11 across the board.

12 And that's, everybody
13 participated. We had a lot of folks. Anybody
14 want to add anything or reinforce anything?

15 Okay, thank you.

16 CHAIR PERKINS: Thank you, Mike.

17 Well, we have a break coming up.

18 I would like to take this opportunity just to
19 ask if there is anyone who would like to make
20 public comments at this time.

21 So I'm going to take that out of
22 order just so that I don't hold someone

1 hostage from the public that wanted to make an
2 official comment for the record. Don't want
3 to make you stay here until 4:45. The sun's
4 actually shining and it's not raining outside.

5 DR. ALEXANDER: I'll make a
6 comment.

7 CHAIR PERKINS: Okay, great. If
8 you'll go to the mic and identify yourself
9 just for the record please.

10 DR. ALEXANDER: My name is Clark
11 Alexander. I'm from Skidaway Institute of
12 Oceanography.

13 And there was very wide ranging
14 discussions in a number of these breakout
15 groups, but one issue that I wanted to bring
16 up that really wasn't covered in any of these
17 is that NOAA collects a lot of hydrographic
18 data. They collect a lot of multibeam data,
19 but it all doesn't get collected in a quality
20 form that can be put into hydrographic data
21 sets and made available to the public and
22 researchers like myself.

1 I just wanted to encourage NOAA
2 that if they're going to collect hydrographic
3 data with their multibeam systems that are
4 already on their ships that they should have
5 someone to collect it in a way that it's able
6 to be processed and able to be used and
7 delivered to the public in a usable form.

8 Examples. There was a resurvey of
9 Gray's Reef done off of the Nancy Foster and
10 so they spent a significant amount of time
11 resurveying the reef and we were very excited
12 about being able to do a, 2001 we did an
13 initial survey of Gray's Reef, and I think it
14 was 2009 or '10, something like that they did
15 a resurvey.

16 But there wasn't anyone of NOAA's
17 staff assigned to watch that data coming in.
18 So there were some problems with the data, and
19 in the end there was some sort of a tilt that
20 wasn't able to be removed from the data set.
21 So we weren't able to use the data to do the
22 kinds of science that we would have liked to

1 have done.

2 So I would just encourage that
3 there be NOAA people assigned to really
4 collect this data and do it in a way that
5 makes it usable.

6 And I'm all for collecting data
7 and letting it go to educational activities.
8 I think that's very important for building the
9 next generation of survey people.

10 But at the same time, I mean they
11 can use the data for their educational
12 activities but it can also be used by a much
13 broader community. And given the cost of
14 vessels and what it costs to collect that
15 data, it doesn't make any sense to waste any
16 of it, in my opinion. Thank you.

17 CHAIR PERKINS: All right. Thank
18 you, Dr. Clark, for bringing that to our
19 attention. All input and feedback is
20 appreciated and valuable.

21 Yes, Ken?

22 MEMBER BARBOR: Let me ask Andy.

1 Yes, isn't there a multibeam group or
2 something out of UNH that, I know they do it
3 for NSF and it might address some of those
4 concerns.

5 MEMBER ARMSTRONG: Yes, there is a
6 multibeam advisory committee that operates
7 under a grant from the National Science
8 Foundation to support the UNOLS of multibeam
9 capable ships.

10 We've had discussions about the
11 possibility of extending that to the non-
12 hydrographic NOAA vessels, but we've not sort
13 of ever reached a conclusion on how to do
14 that.

15 But I think those, in fact NOAA
16 co-survey has one of their hydrographers
17 conducting a study now on multibeam management
18 procedures. And so I think there at least is
19 some effort going on in that regard now.

20 Admiral, did you --

21 DR. CALLENDER: I'm just trying to
22 figure out how to be diplomatic and not throw

1 the other part of the NOAA organization under
2 the bus on this.

3 So Dr. Alexander's point is spot
4 on. There was an issue with the multibeam
5 sonar that was actually a flaw in the way the
6 system came from the vendor, if I recall.

7 And so the other challenge is that
8 we often don't have enough hydrographers to
9 farm out to support other vessels. When we
10 work with the non-hydrographic vessels we do
11 have a process we put them through, a
12 readiness review to assess at the beginning of
13 the field season, are their systems
14 configured, have they done their patch test,
15 all those kinds of technical things.

16 And then when we do have
17 hydrographers available to work with them
18 during the field season of course then they're
19 all well versed in the standards. So that's
20 the challenge when we have ships where we
21 don't have enough expertise, and that's
22 something we work all the time to try and

1 overcome.

2 So yes, you're absolutely right.

3 It's a darn shame. And certainly the IOCM
4 program has made tremendous progress in the
5 last couple of years trying to educate the
6 other parts of NOAA that their data has value
7 and they need to collect it to a known
8 standard.

9 CHAIR PERKINS: Yes.

10 MEMBER MILLER: I would say that
11 out in Hawaii we have a multibeam ship that a
12 group I was associated with ran for several
13 years. But then there was no more money for
14 that and that system essentially has not been
15 run since 2008 for any significant surveys.

16 And it's a waste of money and it's
17 a shame, but there just aren't the personnel
18 to do it and with no funding for it, you know,
19 you just can't send anybody out. They could
20 have been collecting very valuable data since
21 2008 and they haven't.

22 CAPT BRENNAN: This is Rick

1 Brennan. One thing I would like to say is at
2 least for all the, to make clear is that all
3 the NOAA hydrographic surveys that are done
4 are made available. They are found on NGDC.

5 And particularly the Nancy Foster,
6 typically her data we get once a year in a
7 once a year chunk, at least the stuff that is
8 not acquired by the Biogeo group within NOAA.

9 We get a download of all their
10 hydrographic data that comes to our
11 hydrographic branches. It's reviewed for
12 quality and everything else, and if we can
13 update the nautical chart with it we'll do
14 that. And if we can't, either way that data
15 will also go to NGDC to be made publicly
16 available.

17 So if that data was not made
18 publicly available then my guess was that
19 there was something critically flawed in the
20 data that just, you know, that we felt it was
21 just not valuable or shouldn't be made public.
22 So I can't address what happened on that

1 particular cruise but certainly we can find
2 out about it.

3 DR. ALEXANDER: Can I make one
4 more comment?

5 CHAIR PERKINS: Absolutely.

6 DR. ALEXANDER: This is Clark
7 Alexander again. And in no way was I
8 impugning NOAA hydrographic services. And
9 really this is my own ignorance that when I
10 think about NOAA I think about one big
11 monolithic entity.

12 And I have to remember that there
13 is a group that does the high quality
14 hydrographic work and there are other groups
15 that collect multibeam data that don't have
16 the same quality standards for collecting that
17 data. And I think it was that group that more
18 of my comments were directed towards. So
19 please don't take it as an indictment of
20 anything that you're doing here.

21 DR. CALLENDER: No, I look at it
22 as a challenge, Dr. Alexander, and something

1 that we have to keep working at improving.

2 DR. ALEXANDER: Thank you.

3 CHAIR PERKINS: Great. Any other
4 public comments at this time? Do we need a
5 break or do we -- okay. I'm getting that look
6 that -- okay. So we have a break on the
7 schedule and then we reconvene and work on
8 consensus in developing our recommendations.

9 (Whereupon, the above-entitled
10 matter went off the record at 3:36 p.m. and
11 resumed at 3:58 p.m.)

12 CHAIR PERKINS: All right, if we
13 can get reconvened. Thank you. Gary, the
14 floor is yours.

15 MEMBER JEFFRESS: I appreciate
16 this opportunity to get to share with you a
17 little bit about what I do and thank you,
18 Scott, for putting me on the program and also
19 thank you, Kathy, for putting me on the
20 program and also the great food you're
21 organizing for us.

22 I'm going to talk to you a little

1 bit about the importance of accurate tidal
2 datums which is one of the products that CO-
3 OPS produce for the nation and also how that
4 integrates with the National Spatial Reference
5 System which Juliana is responsible for and
6 how it all comes together with coastal
7 flooding and also the role of the surveying
8 profession in this mix.

9 Firstly I just want to, we run a
10 Tide Gauge Network for Texas in cooperation
11 with CO-OPS. And if we go to our website,
12 this is the front page of our Texas Coastal
13 Ocean Observation Network and it's an active
14 map.

15 If you hover over any of the blue
16 stations which are TCOON stations, it does
17 show you the latest set of observations from
18 each station.

19 And the primary water level
20 elevation's on a graph at the bottom there but
21 you need to slide it over a little bit to see
22 the whole thing.

1 The red stations are shown there,
2 the NWLON stations which we help NOAA maintain
3 through a contract.

4 And all our stations are
5 constructed and managed and maintained and
6 operated to NOAA's standards, and because
7 we've been doing that since about 1988, CO-OPS
8 has accepted the fact that they are to their
9 standard and they help publish the data so
10 it's published through NOAA's website as well
11 as our own.

12 But the primary reason why I got
13 started, because of our surveying role in
14 determining littoral boundaries, the legal
15 littoral boundary between the privately owned
16 uplands and the state submerged lands.

17 And Texas, the state of Texas
18 extracts a lot of royalties from oil and gas
19 from their submerged lands and they're quite
20 often in court over where that boundary is.

21 And so the data has to be first-
22 class international standards and that's why

1 we follow CO-OPS' rigorous science behind the
2 measurement of water level. So if we move
3 back to my PowerPoint please.

4 We're also involved with height
5 modernization, which is another program
6 through the National Geodetic Survey, and I
7 should also add that we do also support a
8 State Geodetic Advisor from our campus.

9 The Conrad Blucher Institute,
10 which I'm the director of on our campus, is an
11 endowed institute.

12 Conrad Blucher was a county
13 surveyor in Nueces County where Corpus Christi
14 is the county seat and he was the last of
15 three generations of county surveyors going
16 back to 1848 and he didn't have any children
17 so he left his estate to the university to
18 foster surveying education and that's how come
19 I'm here and we have this program.

20 Anyway, so we've been involved
21 with height modernization since it almost
22 began back in the early 2000s and we've

1 created within the Blucher Institute a Texas
2 Spatial Reference Center under the height
3 modernization banner.

4 And we've been doing several
5 projects. Some of the recent ones, 2012/2013,
6 was a project funded by the U.S. Army Corps of
7 Engineers to link all their traditional and
8 historic water level benchmarks which were
9 associated with their old Tide Gauge Network
10 which was a series of staves bolted onto
11 bulkheads up and down the intercoastal
12 waterway.

13 And their old historic tide gauges
14 connect those in a vertical sense to our
15 modern tide gauges as well as to the National
16 Spatial Reference System.

17 And we did that using height
18 modernization techniques with network GPS and
19 so we connected all our tide gauges and also
20 the NWLON tide gauges through a series of GPS
21 campaigns using up to, like, 10 or 12 GPS
22 receivers continuously and following height

1 mod standards. And the result of all this was
2 all the information was blue booked and is
3 part of the National Spatial Reference System.

4 So we're tied in a vertical sense,
5 and also horizontal sense by the way, accurate
6 observations from our tide gauges so we, and
7 link that to the National Spatial Reference
8 System in a vertical sense, so that's good.

9 Anybody who wants to do a survey
10 now along the coast of Texas can tie into NGVD
11 88 quite precisely and also relate that to
12 mean sea level if they need to do that.

13 At the same time, we're using some
14 height mod money to expand a number of tide
15 gauges in Texas that have CORS stations on
16 them, Continuously Operating Reference
17 Stations, using GPS.

18 Before we started this exercise,
19 we had four in the yellow, four stations
20 already in place.

21 We also have in Texas in place
22 right now two of these Sentinel of the Coast

1 tide gauges which were designed by CO-OPS
2 after Hurricane Katrina. They're capable of
3 withstanding Category 3 or 4 hurricanes.

4 We have two of those in Texas and
5 they are up in Sabine Pass which is on the
6 Louisiana border and also Galveston and that
7 was funded by the Corps of Engineers following
8 Hurricane Ike which I'll mention again a
9 little later.

10 And also under height mod we put
11 in five CORS on tide gauges and that's the,
12 which color is that, the white ones. And they
13 have gone in just recently. So we're going to
14 have a total of 13 tide gauges in Texas of a
15 total of about 36 tide gauges which have CORS
16 on them.

17 Also one of the reasons for doing
18 this is that the Corps of Engineers is
19 interested in using machine control using this
20 GPS to control dredging as well in Texas, but
21 that's in the future.

22 So when does this all come

1 together as coastal flooding? And the way we
2 look at it in Texas, the way that I look at
3 coastal flooding, it happens over short-term
4 events.

5 And this is an example of one
6 which is Hurricane Sandy which we saw the
7 remnants of last time when we met in New York
8 City.

9 But it's a challenge to all these
10 folks who live along the coast and enjoy the
11 coastal environment. When the coast comes up
12 and bites them, they need to be prepared for
13 that and that's what resilience is all about.
14 So that's the short-term effect of sea level
15 rise.

16 But we also have this long-term
17 effect of sea level rise which, again, the
18 tide gauges measure pretty well in a local
19 sense.

20 And this is the longest tide gauge
21 record for Texas. It's at Galveston. And
22 since 1909 roughly when the gauge went in and

1 up to 2013, we've seen a fairly constant,
2 steady rise in the sea level at a rate of
3 about 6.39 millimeters per year which is a
4 total of about two and a half feet, pretty
5 substantial. And so that's the long-term sea
6 level rise we need to be dealing with.

7 But where does all this hit the
8 road? For those of us that live along the
9 coast, we want to insure against these events
10 and so you all know that FEMA is responsible
11 for the Flood Insurance Program, both the
12 river systems in the United States and also
13 along the coast.

14 So it's their responsibility to
15 come up with the assessment of risk of living
16 along the coast in terms of elevation relative
17 to sea level and figure out what are the risks
18 and what should be the cost of insuring
19 yourself against a flood event along the
20 coast.

21 And so they've taken it upon
22 themselves to update their actuarial situation

1 which they, after the last series of
2 hurricanes, decided that the income that they
3 derive from flood insurance policies is not
4 going to cover major events like Hurricane Ike
5 or Hurricane Andrew or Hurricane Katrina.

6 And so they've had a fairly
7 rigorous campaign of redoing a lot of the
8 flood insurance rate maps and that's a
9 responsibility for FEMA and turns out they
10 also have a FACA which controls that and it's
11 called the Technical Mapping Advisory
12 Committee and Juliana has just been made a
13 member of that, right?

14 MEMBER WELLSLAGER: Our
15 condolences.

16 MEMBER JEFFRESS: Okay, and so
17 FEMA's been doing this for some time, ever
18 since their program was started. No, I can't
19 recall when that was but -- Sorry?

20 MALE PARTICIPANT: Sorry.

21 MEMBER JEFFRESS: And so this, for
22 example, what one looks like. This is the

1 flood insurance rate map for the campus that
2 I work at, Texas A&M University-Corpus
3 Christi, and this is the latest existing map
4 which all surveyors and flood insurance rates
5 are dictated by.

6 Of course the date of this map was
7 1985 but back in 1970 the university changed
8 its name from the University of Corpus Christi
9 to back then Texas A&I University-Corpus
10 Christi so the map's a little bit out of date
11 even for 1985.

12 But what it shows you on this map
13 using contours is zones where you can build
14 and what elevation you need to be above in
15 order to get flood insurance.

16 And so on our island, Zone C, it's
17 okay to build directly on the ground there.
18 Zone B is you need a one-foot height above the
19 surface to, your floor level needs to be one
20 foot above the surface to get insurance. In
21 Zone A15 you need to be 11 feet above mean sea
22 level and Zone 18 you have to be 13 feet above

1 mean sea level.

2 And the elevation we're referring
3 to here is called the coastal base flood
4 elevations apply only to landward of 0.0 NAVD
5 88.

6 So that's the datum which
7 surveyors have to adhere to for establishing
8 elevation relative to these contours which
9 determines how much elevation you need to get
10 flood insurance.

11 So this is the whole point of
12 these flood insurance rate maps, is to dictate
13 what elevation you need to be at before you
14 can get flood insurance and what locations.

15 And it's up to the surveyor on the
16 ground to establish elevations for floor
17 levels, particularly in coastal flood areas,
18 to prove to FEMA that your property has a
19 floor level above a certain elevation which is
20 dictated by the map, the flood insurance rate
21 map.

22 And we do that in the surveying

1 profession traditionally using terrestrial
2 leveling or more often these days we directly
3 use GPS and tie that into a CORS station or
4 some other known benchmark with a GPS base
5 station.

6 So surveyors are paid to produce
7 these what's called elevation certificates,
8 which becomes a legal document because the
9 surveyor signs and seals this document.

10 This is the form that's filled out
11 to indicate what the floor level, the finished
12 floor level is on a building that relates mean
13 sea level or NGVD 88 or some other source.

14 In actual fact there are three
15 datums which they accept, NGVD 29, NAVD 88 or
16 other. All right, the "other" could be mean
17 sea level datum from a NWLON station or a
18 TCOON station for that matter.

19 And so this is the actual form
20 which is available on the web for surveyors to
21 download to fill out all this information to
22 prove to FEMA that you can get the floor level

1 flood insurance rate map.

2 But if you're below these
3 elevations, then the premiums, the cost of the
4 insurance will go up substantially and it's
5 actually been in the news fairly recently,
6 over the last couple of years, that FEMA is
7 adjusting their rates to take into account the
8 actual risk of living in these coastal areas.

9 And the flood insurance rates are
10 actually being prepared to skyrocket and if
11 you know just recently Congress and the
12 president decided to delay the introduction of
13 these new rates till after the next election.

14 So it's going to be hard hitting
15 to a lot of coastal residents that they find
16 out they're going to be in flood zones and
17 their rates are going to go up.

18 But I have an example here of a
19 property that I came across on Galveston Bay
20 that is critical in terms of where this
21 property is located relative to the actual
22 existing flood insurance rate and a revised

1 map which was done in 2012.

2 This house, that's a actual
3 photograph of the house at sunset, is in a
4 place called League City. It's on a little
5 estuary off of Galveston Bay and it's in a
6 gated community.

7 And it's on the market, this is
8 about six months ago, for over a million
9 dollars, and this is one of thousands of homes
10 in this same area. It was brand new. It was
11 constructed in 2011 but was still on the
12 market six months ago.

13 This is the entrance, the street
14 view entrance to the property which is gated
15 and this is the Google map which shows, the X
16 shows the location of the property right on
17 that point in that estuary and this is the
18 satellite image of the same area.

19 Now, I want you to keep in mind
20 the geography which is depicted on the Google
21 map and the satellite imagery. Keep that in
22 mind.

1 This is what the flood insurance
2 rate map looks like. Do you recognize the
3 topography? The main feature is that big,
4 long canal there. If I go back, that big long
5 canal there. That'll pick that up in the FEMA
6 map, the flood insurance rate map.

7 But the rest of the topography
8 does not look like what they've mapped here,
9 but this is the existing map, the current map,
10 and it was produced in September 1999.

11 And if you look at the rough
12 location where I kind of eyeballed it on this
13 map, the elevation floor level should be 12
14 feet and if it's above 12 feet then they can
15 get flood insurance at the nominal rate.

16 But anyway, since 1999 we had,
17 Hurricane Ike came through in 2008, and as a
18 result of Hurricane Ike, FEMA decided they'd
19 better remap the flood insurance maps based on
20 what they saw, the elevations of the flood
21 waters.

22 And so they did remap it in 2012

1 but this is part of the preliminary mapping
2 that is in place for this increase in the
3 rates, right?

4 And if you try to establish where
5 this house is on the same map, and you notice
6 the topography didn't improve much from 1999,
7 was it, to 2012, it still doesn't represent
8 what is actually on the ground.

9 So it doesn't give you a lot of
10 confidence as a cartographer or a surveyor or
11 a mapper that the information is very accurate
12 when you see such gross errors in the
13 topography.

14 But you'll notice that the
15 elevation has now moved up to 15 feet to fit
16 in more with what actually happened with
17 Hurricane Ike.

18 So now I'll show you the survey of
19 the property. This is the as-built survey by
20 a surveyor. It's a pretty good survey
21 actually, and it shows the floor level. The
22 finished floor elevation is 13.86 feet, and

1 that's it blown up.

2 So this elevation I know, I'll
3 show you the datum which the surveyor uses to
4 establish that elevation, it's NAVD 88 value
5 and so it complies right now if you're using
6 the September 1999 flood insurance rate map.
7 It's only 1.86 feet above the contour which is
8 the cutoff for the insurance.

9 But if you use the updated map
10 which is already out there but it's still
11 preliminary, it's not been fully accepted by
12 FEMA as to going into effect but it is out
13 there, the elevation is now 15 feet so it
14 doesn't comply with the new map.

15 And so there's another quirk into
16 this little formula is the fact that mean sea
17 level -- We have a tide gauge at Morgan's
18 Point which is not far from the site of this.
19 Mean sea level on the datums for the tide
20 gauge is different from 0 NAVD 88.

21 So if you want to relate, mean sea
22 level is actually 0.61 feet above 0 NAVD 88.

1 So you need to take that into the equation too
2 and so you need to subtract 0.61 feet from the
3 finished floor level and it gets even more
4 critical.

5 And this is where the surveyor
6 extracted his elevation. He obviously used a
7 GPS because he quotes the geoid model, and he
8 can't spell by the way, and shows you, he used
9 an NGS benchmark and he did a base station
10 transfer to the job site using GPS.

11 But you can call up right now and
12 get under the old map, get flood insurance for
13 \$457. After this second map gets accepted,
14 that's going to skyrocket into the thousands
15 of dollars.

16 But this whole exercise is to show
17 you how critical elevations are along the
18 coast, how critical it is to measure the tidal
19 datums accurately and how critical it is for
20 surveyors and the liability that's attached to
21 it to establish these floor levels relative to
22 the flood insurance rate maps. That's all I

1 have.

2 CHAIR PERKINS: Thank you, Gary.

3 (Off microphone discussion)

4 MEMBER JEFFRESS: No, but they are
5 published I think online but they're
6 astronomical for these areas.

7 MALE PARTICIPANT: Yes, I'm sure
8 they are.

9 MEMBER KUDRNA: And if this house
10 sold, they require it for a mortgage from any
11 bank that has federal funds within them.

12 MEMBER JEFFRESS: Well, actually I
13 tried to look it up just before I came and I
14 couldn't find it so I assume it has been sold.

15 MEMBER BARBOR: The issue is
16 whether it's grandfathered or not and that's
17 -- I live in a V21 zone so that's, you know,
18 breaking waves at 21 feet. I'm 25 feet in the
19 air so I'm insurable but it could be
20 astronomical if they do it.

21 CHAIR PERKINS: All right, I'll do
22 one more early call for any public comments.

1 Okay, great.

2 Well, what's on the agenda in
3 front of us is, you know, discussion and
4 deliberations. I've done my part. I read the
5 agenda.

6 Maybe taking a moment to discuss
7 prior recommendations or lingering
8 recommendations. You know, it came up in one
9 of the breakout sessions that, in the report
10 out from the New York breakout session, about
11 putting ENC first and that has come back up.
12 And in the process of handing out those
13 summary sheets, Susan, I've lost mine.

14 MEMBER SHINGLEDECKER: I lost mine
15 too.

16 (Laughter)

17 CHAIR PERKINS: Well, then you're
18 off the hook. Great, I was just wondering
19 what the NOAA response to the recommendation
20 of putting ENC first was.

21 DR. CALLENDER: You'll get it
22 tomorrow.

1 MEMBER MILLER: This was from New
2 York.

3 CHAIR PERKINS: From New York.

4 MEMBER MILLER: Yes.

5 (Off microphone discussion)

6 MEMBER BARBOR: So the
7 recommendation was accelerate the transition
8 to a database-driven workflow for ENC's for
9 modern and efficient method of chart
10 production.

11 And the response was NOAA is
12 accelerating its transition toward a modern
13 and efficient ENC production process. NOAA
14 will continue to implement database production
15 changes.

16 The transition will require
17 retraining of the workforce, major upgrades in
18 internal databases and technology improvements
19 for chart production systems. Did that give
20 us a warm fuzzy?

21 DR. CALLENDER: So, I mean,
22 there's a lot more to it but the term ENC

1 first didn't exist until after February so the
2 term ENC first is the term we're using to
3 drive that change in our organization and in
4 our culture and I can get into that in however
5 much gory detail you want but --

6 MEMBER BARBOR: Yes, the issue is,
7 I mean, and it was brought up in February, I
8 mean, that's the term we use and the
9 recommendation was meant to stir some sense of
10 accelerated action and I don't know whether
11 that response captured that accelerated action
12 or not or, you know.

13 CHAIR PERKINS: And, you know, the
14 bullet point below that, "Coordinate with the
15 Army Corps of Engineers to develop an
16 efficient mechanism for delivering channel
17 depth," and we've learned more about the
18 eHydro or learned a lot about eHydro in the
19 last 24 hours. So those sound like good
20 places to start our discussion.

21 MEMBER MILLER: Well, and there's
22 a response to that too.

1 CHAIR PERKINS: So I guess the
2 deliberative part, are we as a panel happy
3 with what we've seen and the progress of, you
4 know, the implementation in launching eHydro
5 or do we need to reinforce that
6 recommendation?

7 MEMBER BARBOR: I mean I guess,
8 yes, I'd probably throw it back at the admiral
9 and say, you know, are you resourced
10 sufficiently to execute a greatest possible
11 speed of that implementation? I mean, you
12 can't, yes, you can't do things overnight. It
13 doesn't work that way.

14 DR. CALLENDER: That's a softball.

15 (Laughter)

16 MEMBER BARBOR: I mean, yes, but
17 that's, you know, what I see the purpose is.
18 We can do, you know, a couple things.

19 One, we can listen to you and hear
20 what your biggest sob stories are and try to
21 go to the administrator and say we need to
22 correct those sob stories and maybe this is

1 one of them, you know.

2 You know, you didn't, you know,
3 necessarily bring this forward as a sob story
4 but, I mean, that is what our purpose is. If
5 there are resources needed to execute a
6 program that from our deliberations, you know,
7 is sorely needed, then, you know, we should be
8 requesting that resources be made available to
9 the best capability.

10 DR. CALLENDER: So in us going to
11 ENC first, there are things that we recognize
12 we have to do and get done before other things
13 and so we are reprioritizing work internally
14 in order to get this done.

15 So one example are the new charts,
16 producing new charts to meet customer requests
17 which, by the way, we're more actively
18 managing now than anybody can seem to recall.

19 So we're not going to be able to
20 produce new charts at some, probably at more
21 than one and a half new charts per year
22 because we're trying to focus on getting the

1 database started so, you know, it's just that
2 simple.

3 You know, we've got an envelope, a
4 budget envelope that we're working within and
5 we're just reprioritizing things in order to
6 make that ENC first a reality.

7 But there's more to it than just
8 resources. There's also retraining the
9 workforce. We did some functional
10 reorganizations, I was going to get into this
11 tomorrow, and did some realignments internally
12 and there's a culture change that's happening
13 with our workforce and they're actually pretty
14 excited about it.

15 MEMBER BARBOR: You know, I guess
16 if two groups in this session, you know, came
17 up with the, independently came up with this
18 idea or this recommendation, previous meeting
19 in New York had this recommendation, either
20 one, we need to reinforce it to try to spur
21 some action or we need to take it off the list
22 because if we've done all we can then that's

1 all we can do. I mean, yes, we probably ought
2 to, you know, spend time harping about
3 something else but --

4 MEMBER MILLER: We could reinforce
5 by saying, you know, two previous
6 recommendations were again, you know, shown to
7 be very important in a different user
8 community or something. I mean, you can say
9 that.

10 I don't know if it does any good
11 or not but, you know, it was two different
12 discussions here reinforcing the need to do
13 this quickly or as quickly as possible.

14 CAPT BRENNAN: This is Rick
15 Brennan. If I could just draw one
16 distinction. I mean, so there is the, you
17 know, there is the actual database of chart
18 data and then there's all the data that's
19 coming into the chart so, you know, because
20 what's on the chart is, you know, grows stale
21 very quickly and every day we've got gigabytes
22 of data that are coming in from our in-house

1 data sources as well as external partner
2 agencies, et cetera.

3 So, you know, a lot of times it's
4 that data that takes the longest because you
5 have to transform it, load it and do a lot of
6 that stuff.

7 So that's certainly why internally
8 the eHydro, you know, the fact that it can
9 come in digitally is such a huge move forward
10 to us.

11 So that, you know, I think there's
12 certainly something that, I mean, that's an
13 area or that's a intersection it didn't sound
14 like it was enunciated in that previous
15 recommendation. That is an area that I think,
16 you know, provides, you know, real benefit and
17 value to us, yes, so.

18 MEMBER MILLER: Another, I don't
19 know, well, another thing we heard in the
20 session was that all Army Corps is required to
21 give you in eHydro is the deepwater port data.

22 And from the discussion on the

1 IAWW, or whatever it's called, it's clear that
2 the Army Corps has a lot more data than that
3 and the shallow-water data is probably, I
4 don't know, just as important as that
5 deepwater data.

6 So part of the recommendation
7 might be to make sure that eHydro incorporates
8 all the Army Corps data versus just a small
9 portion of it and I don't know if that's too
10 --

11 DR. CALLENDER: I think you
12 misunderstood, Joyce. I think he said that
13 initially they would only have the large,
14 deep-draft ports loaded in. I think their
15 plan is to eventually load all of it, isn't
16 it?

17 MEMBER SHINGLEDECKER: It seemed
18 to be district by --

19 MEMBER KUDRNA: I got the
20 impression it was up to the district.

21 MEMBER SHINGLEDECKER: District by
22 district. My question, I guess, was since the

1 scope of this panel doesn't, we don't really
2 have, I guess, influence over the Army Corps,
3 is there any recommendation that we can make
4 that could help facilitate the coordination?
5 Is an MOU or an MOA necessary to help
6 facilitate the communication between the two?

7 Is there anything that we could
8 recommend while not having purview over the
9 Army Corps that might enhance cooperation,
10 coordination and speedy delivery?

11 MALE PARTICIPANT: Good point.

12 VICE-CHAIR HANSON: Certainly. We
13 might be able to help with that if we could
14 find out which districts are causing trouble
15 here --

16 DR. CALLENDER: So, all right, I
17 got an update on this. We have one person who
18 works full-time interacting with the Army
19 Corps at the headquarters level and they are
20 essentially part of the team in Army Corps'
21 development and implementation of eHydro and
22 from our perspective, from the NOAA

1 perspective, eHydro's kind of split into three
2 major components.

3 The first are the channel
4 frameworks, so this is the digital data that
5 describes the actual limits of the projects
6 and it's those channel frameworks that we show
7 on our charts so getting those right is really
8 important.

9 And at this point, 14 of the 23
10 districts, so we're a little bit more than
11 halfway here, have provided those channel
12 frameworks.

13 And so we're giving them feedback
14 to make sure that we understand that correctly
15 because there may still be some issues with
16 the data and that the alignments appear
17 correctly on our chart so there's some back
18 and forth there.

19 The second piece is the survey
20 data output, and at this point my
21 understanding is there are five districts that
22 are starting to use eHydro at the district

1 level to produce some survey products.

2 And as that data becomes
3 available, we're working with it, grabbing it
4 and evaluating it so there's, you know,
5 there's some learning that we're doing as
6 well.

7 There's metadata that gets built
8 out by them. We want to make sure we
9 understand that and that the formats are
10 workable for us, and so we're providing
11 feedback to the Army Corps on that.

12 And then the third component is
13 access to the data and I think this one
14 there's still some question about what the
15 best method of access to the eHydro data will
16 be, whether they provide it as a web service
17 or whether they push the data directly to
18 NOAA, so there's still some discussion on how
19 to put that back and how to best put that in
20 place.

21 So, you know, this is an ongoing
22 process. Army Corps is working it out and

1 we're right there alongside them plugged in.

2 MEMBER MILLER: Does this in any
3 way relate to the MOUs or MOAs between
4 agencies and what we were talking about, the
5 partnership issues, the funding issues, et
6 cetera? Is there any connection with that?

7 DR. CALLENDER: I mean, there
8 could be. So generally speaking, we have
9 agreements with other agencies when it comes
10 to sharing data where it's clear that the one
11 agency has some responsibility to us and we
12 have some responsibility to them, and I'm
13 thinking specifically of NGA. We have a whole
14 series of agreements now.

15 We've talked with Army Corps about
16 putting an agreement in place. I think if we
17 wanted to develop one specifically on eHydro,
18 it's probably too soon.

19 You know, we mentioned yesterday
20 our broad umbrella agreement between NOS and
21 Army Corps, that that has expired. I think
22 that, you know, periodically we revisit that

1 to see if now is the right time to put a new
2 agreement in place.

3 I don't think eHydro in particular
4 is an issue where transfer of funds would
5 matter. So I'm not sure we're ready. I don't
6 think we're ready yet for a specific agreement
7 on eHydro since there's so much of this still
8 in development.

9 Once it's up and running, I think
10 having an agreement is worth putting in place
11 because it describes who has what
12 responsibility.

13 MEMBER MILLER: But don't you have
14 to have that larger umbrella agreement in
15 place before you can do a --

16 DR. CALLENDER: We don't have to
17 but it certainly would be helpful.

18 MEMBER MILLER: Well, that's what
19 I was wondering, is having a broader agreement
20 certainly facilitates getting the individual
21 agreements, in my experience, in place.

22 MS. MEDLEY: So, Joyce, just one

1 thing. The Army Corps is federally mandated
2 to provide us with these specific datasets.
3 The issue we've had for years is that because
4 each district works completely autonomously of
5 the other one, there was no consistency in how
6 we were getting the data.

7 So the Army Corps was aware of
8 this and they created the eHydro system
9 essentially to be able to standardize the
10 process by which they deliver the required
11 data to NOAA as they are federally mandated to
12 do so and then also within their whole
13 organization give that transparency for them
14 as well so they know exactly what the
15 districts are providing.

16 So I think the MOUs and the MOAs
17 is a good idea but for this specific issue
18 it's already part of the federal mandate so it
19 wouldn't necessarily apply.

20 CHAIR PERKINS: So what does the
21 umbrella agreement, I mean, what has not
22 happened since it's expired? What peril is

1 there with having that agreement expired or
2 what driver is there to get it renewed?

3 DR. BRADLEY: The reality of the
4 umbrella agreement expiring is that it doesn't
5 really mean anything because the umbrella
6 agreement itself is more of a representation
7 of the collaboration that we would like to do
8 with the Army Corps.

9 My understanding from the people
10 in my office that do the agreements, having
11 talked to them about this, is that even though
12 we had that umbrella agreement in place any
13 time we wanted to set up individual projects
14 with Army Corps on specific work it still
15 required a separate agreement.

16 So that umbrella agreement, you
17 know, did nothing to actually serve as, you
18 know, well, we can do this work because we
19 have that umbrella agreement in place and,
20 well, now it's expired so we can't do this
21 work because in reality we needed to write
22 individual agreements either way.

1 MEMBER MILLER: But if you wanted
2 the smaller piece and the umbrella agreement
3 weren't in place, would that make a
4 difference?

5 DR. BRADLEY: I'm no expert but I
6 don't think so.

7 MALE PARTICIPANT: No, it doesn't.

8 MEMBER BLACKWELL: No, it doesn't.

9 MALE PARTICIPANT: Just write a
10 new agreement for the smaller piece.

11 MEMBER BLACKWELL: It's just start
12 all over again. You waste a lot of time doing
13 an umbrella agreement. It has no meat to it.
14 It's so broad in nature that you can't get
15 anything specific through just having a broad,
16 I mean, so it's just --

17 MEMBER MILLER: So you don't need
18 the umbrella?

19 MEMBER BLACKWELL: You do not need
20 the umbrella.

21 DR. BRADLEY: The umbrella is
22 really a chance for leadership and politicals

1 to get together and kind of agree on some
2 general sense of collaboration, to say, you
3 know, we both think resilience is important.
4 Let's, you know, plan to work on resiliency.
5 But it has no real meat to the bones. It's
6 just more of a figure piece of, it's, you
7 know, a promise ring of sorts.

8 MEMBER BLACKWELL: Right. And if
9 I could just add, another thing about the
10 agreements is they're only good for five
11 years.

12 We used to have a bunch of open-
13 ended agreements that people couldn't even
14 keep track of. Every agreement has got a
15 five-year life span. Then you have to renew
16 it.

17 If you're doing a bunch of
18 separate agreements, it's just easier to have
19 a project or a focused arrangement because
20 people change, people lose track of what the
21 commitments were.

22 And so if you can be targeted and

1 specific in what you want to do together, I
2 think that should be the focus in any of the
3 recommendations that come from this group or
4 from other stakeholders.

5 I think that we can certainly find
6 a way to get an agreement through if there is
7 a need to have an agreement to spell out who's
8 responsible for what, what the benefits are,
9 if there's exchange of funds, so I don't think
10 that we need to worry too much about
11 agreements.

12 I think we need to focus on what
13 is it that we want to do? What are the
14 recommendations? What, you know, we can
15 figure out the administrative things that have
16 to happen, and as inefficient as it is to get
17 it through our bureaucracy to get it done, it
18 can happen.

19 But I think we need to focus on
20 what it is that we need as a group, as a panel
21 to, you know, what are the big-picture things
22 that we want to get done and not worry as much

1 about the administrative MOAs, MOU and I'll
2 stop there.

3 CHAIR PERKINS: That's a good
4 comment. What is it that we want to get done?
5 You know, maybe we need to have that macro-
6 level discussion for, you know, a little bit
7 and try to move forward from that because we
8 have been engaged in micro-level
9 recommendations, you know, for quite a while.

10 DR. BRADLEY: Yes and I think, I
11 guess if I could speak to that, Scott, and to
12 echo the point Juliana made, this gets back to
13 Russell's presentation in the last slide
14 where, you know, he urged the panel to think
15 about the partnerships, think less about the
16 administrative actions needed to, you know,
17 fulfill those actions.

18 So this is a chance to think about
19 how can we partner better with Army Corps,
20 things that we're not doing yet, and don't
21 worry so much about how we're actually going
22 to do that, you know, to the extent that it's

1 actually feasible.

2 MEMBER MILLER: Well, but I was
3 talking to Russell last night and he
4 specifically, I mean, he indicated that,
5 particularly, and I've got this in front of
6 me, and the two questions, what opportunities
7 might exist for new business models, e.g.
8 PORTS, and are there opportunities for new
9 partnerships?

10 And part of the discussion that we
11 had yesterday was from experience of many of
12 us it's very, very difficult to get money into
13 NOAA even if there are possibilities.

14 And so that's the reason I was
15 thinking of the MOUs and MOAs, was, I mean,
16 you know, yes, there's opportunities for
17 partnerships all the time but if people just
18 throw up their hands after six months of
19 trying to get an agreement into place and say
20 it's not worth my time, then how can you do
21 your partnerships?

22 How can you -- You know, PORTS is

1 a great example. You know, how can you get
2 the money to NOAA that's needed to maintain
3 and develop PORTS systems?

4 So, I mean, that's the reason I
5 was asking about MOUs and MOAs, is, you know,
6 it is an administrative task but in order to
7 do the boots on the ground thing with PORTS
8 you've got to have something in place that
9 money can flow into NOAA or it's not going to
10 happen, so.

11 MEMBER SHINGLEDECKER: What I was
12 seeing in regard to these questions were where
13 are the gaps in NOAA's products and services?
14 And I see that in a lot of the shallow water.
15 I see it in the charting of the AIWW. I have
16 to get used to saying that too.

17 And we have been pushing on that
18 crowdsource catchphrase and, I mean, and
19 frankly I was really encouraged to hear the
20 quality of data that the Army Corps has and
21 that NOAA is working with the Army Corps to
22 get it in there.

1 I guess my question would be, is
2 what kind of recommendation can we make to
3 help make it happen faster? Because I do see,
4 one of the big gaps is there just isn't the
5 resources to survey everywhere we'd like to,
6 so how can we get that other data that's out
7 there in somewhere to fill that gap?

8 MEMBER KUDRNA: Scott, may I add
9 to that, and this is not a criticism of NOAA
10 or the NOAA staff because I think you're doing
11 efficiencies as much as practical with the
12 resources available.

13 But I go back to the top ten
14 report or critical ten issue report that
15 talked about the 100-year backlog of charting
16 at a level of funding that's never been
17 achieved since that report was issued.

18 So clearly if you do the easy
19 math, the backlog is significantly greater
20 than that and now with new sources of data
21 entering your information stream there's more
22 work and that seems, to me, to be a critical

1 point.

2 I know as staffers of NOAA you
3 live with the budget you get and you do as
4 efficiently as you can with it, but I think
5 it's a real issue that that high point
6 recommended in that report, that there was a
7 100-year backlog based on a level of funding
8 that's never been achieved, has slid further
9 because of lack of funding. And I think
10 that's a point that's worth carrying forward.

11 CHAIR PERKINS: Yes, I mean,
12 that's a complex equation to compute the
13 remaining backlog and the necessary funding
14 level needed.

15 The efficiencies in conducting
16 surveys have improved. I mean, you're getting
17 more kilometers surveyed per dollar than when
18 that report was written. Is that a true
19 statement?

20 DR. CALLENDER: Yes.

21 CHAIR PERKINS: Do we need data
22 metrics? Do we need to know what the current

1 backlog is and what the current cost per
2 kilometer is to, you know, or do we make a
3 blanket statement, beg for more money?

4 MEMBER KUDRNA: Well, I guess if
5 we're talking to sort of communicating the
6 need, there's a need. There's a need for more
7 resources here.

8 And that point contained in the
9 report hit home with me, that it's a
10 significant need. And I, you know, I'm not
11 sure that after a period of time from the
12 first report that's clearly understood to
13 maybe the administrator or the secretary of
14 commerce or the Congress.

15 CHAIR PERKINS: Other comments?

16 MEMBER SHINGLEDECKER: One thing
17 that stuck out at me at the end of our last,
18 at the end of our breakout session, we were
19 talking about thinking about capital
20 infrastructure improvements and how, I think
21 someone said that's the job of Congress. And
22 it took me back to the who is our target

1 audience, the administration or the Congress?

2 They were making, I don't remember
3 who was speaking, if someone else in the room
4 can remind me, the person was making the case
5 that it's the Congress's job to fund the
6 infrastructure.

7 And so it just got me back
8 thinking about our recommendations and our
9 audience. I mean, it seems like
10 recommendation letters go to the
11 administrator. If we want to reach Congress,
12 we probably have to have a product.

13 CHAIR PERKINS: Paul, help me out
14 if I screw this up, but our role is to advise
15 the administrator and the administrator takes
16 that information and that helps in their
17 support or it helps them get support in the
18 president's budget for the programs and items
19 that then go to Congress to get funded.

20 So we make an advice to the
21 administrator, the administrator uses that,
22 you know, to get more out of the president's

1 budget and then they defend it at OMB and then
2 it goes to the Hill.

3 DR. BRADLEY: Yes so, I mean, at a
4 basic level that's true, yes.

5 CHAIR PERKINS: Yes. So we need
6 to hit it at both ends, right? Our messaging,
7 if we're really successful, will be both
8 supportive to the administrator and will be
9 substantial enough in nature that it defends
10 itself on the Hill, right? I mean, is that
11 impossible to do? It sounds like we feel like
12 the most wanted list hit that mark.

13 DR. BRADLEY: You know, the
14 interesting thing about the budget process
15 between the executive and legislative branches
16 is if -- It's a double-edged sword.

17 If you ask Congress what they
18 think about the president's budget, they say
19 it's meaningless. It's dead on arrival. But
20 if you ask them, well, why don't you put money
21 in there for PORTS, they say, well, the
22 president hasn't requested the funding yet so,

1 you know, why are we going to, we're not going
2 to put it in there until the president
3 requests it.

4 So I guess you have to pick which
5 one of those approaches you're going to, you
6 know, put more faith into. Either way
7 Congress, you know, what they don't know can
8 hurt us.

9 (Simultaneous speaking)

10 MEMBER KUDRNA: I wouldn't
11 completely agree with you. Clearly we provide
12 recommendations to the administrator from it
13 but in the other FACAs I've been involved in
14 we've developed work products from working
15 groups and that work product could be
16 something like the ten most wanted list to
17 talk about needs.

18 Those things then, after being
19 adopted by an independent FACA, are public
20 record documents that, you know, that are
21 shared that express those needs.

22 Now, it's in the hands of the

1 administrator to take the action through a
2 NOAA commerce president's budget chain of
3 command.

4 But in terms of, as Margaret
5 described, education and information, that's
6 a routine item to be provided by federal
7 advisory committees and I think it's
8 legitimate turf.

9 And it has been in the science
10 advisory board, it has been in the Sea Grant
11 federal advisory committee in the past,
12 products that are conveyed up but also made
13 public.

14 CHAIR PERKINS: This is supposed
15 to be a bit more multifaceted dialogue here.

16 MEMBER MILLER: Actually, Scott,
17 should we perhaps look at what, and see if
18 there are issues that we have addressed among
19 those issues? I don't know if that's --

20 CHAIR PERKINS: Well yes, or we
21 can have a conversation about, you know, the
22 bullet points that have been put in front of

1 us. You know, are we at a point where we can
2 advise on where the science is going?

3 MEMBER BARBOR: I mean, I think
4 you could extemporaneously, you know, start a
5 discussion on each one of those bullets.

6 Now, whether they end up in the
7 realm of recommendations, you know, clearly --
8 Where's science going? It's, you know,
9 autonomous vehicles is where science is going.

10 Is NOAA, you know, Office of Coast
11 Survey embracing autonomous vehicles? I doubt
12 it. You know, that's not a hydrographer's
13 mindset because of a number of things. Other
14 areas probably are and is that, you know,
15 whatever the cutting-edge, you know,
16 technology.

17 Again, the business model I think,
18 I don't know if somebody's got a good
19 discussion there. I think that really sounds
20 like you could come up with some good meat in
21 that if you have it, but I'm not a business
22 major so I don't know anything about business

1 models, so.

2 MEMBER MILLER: Well, in terms of
3 what we've discussed here, cutting-edge
4 technology, about the only technology thing
5 we've discussed is the eHydro and the ENC
6 production, I mean, really in the scope of
7 this panel I would say.

8 MALE PARTICIPANT: Topobathy
9 LiDAR.

10 MR. ASLAKSEN: And I agree. I
11 think that's, you know, and these are areas
12 that, yes, I think Office of Coast Survey has,
13 reluctantly isn't, I'll say cautiously, maybe
14 overly cautiously, you know, investigated.

15 MEMBER BARBOR: I think the
16 technology is improving much faster now than
17 it ever has. It was very cautious previous
18 because the density data wasn't there to
19 support application to the chart. Now we're
20 seeing that so we have invested heavily and
21 I'm looking at us fly right now in Key West
22 so, I mean, it's happening.

1 MR. ASLAKSEN: But, I mean, I
2 think those are the sorts of things, you know,
3 and I'm sure we could have made a more
4 forceful recommendation to move more quickly
5 into that, you know, in earlier boards. Maybe
6 that's something worthwhile.

7 But, again, I struggle with the
8 sort of thing that, you know, what do we want
9 to tell the administrator that gets your job
10 done better, more efficiently, you know.

11 CHAIR PERKINS: Sure, go ahead.

12 MEMBER KELLY: I, in fact, do have
13 an MBA, not that I'm that good at business
14 models, but from what I'm hearing with 100-
15 year or more backup in surveying capability
16 and the idea that we need to get data into the
17 system to make that work, we're talking about
18 cutting-edge technology.

19 I think we need to look at overall
20 -- Really the bottom line I'm looking at is
21 partnerships. Who has data? There's an awful
22 lot of people and organizations that have data

1 that may or may not be at the quality that we
2 need it to be but there's an awful lot of data
3 out there.

4 Certainly eHydro is a
5 technological advance that is going to allow
6 us with technology. We have more capability
7 to bring in data, manipulate that data and
8 make use of it.

9 I think we should be taking a
10 better look at crowdsourcing. It's out there.
11 What quality is it? I don't know. Some
12 people might do it better than other people
13 but it's a way to have other people provide us
14 or NOAA with data that we can then manipulate
15 to improve our products.

16 Are we ever realistically
17 expecting to get a budget to, you know,
18 backfill the 100-plus years of surveys that
19 need to be done? Absolutely not.

20 But if we can get shallow-water
21 data through eHydro, the technology and the
22 computing capability is allowing us to accept

1 other people's data and manipulate that at a
2 faster, cheaper rate.

3 There's more standardization and I
4 think, you know, even devices themselves, the
5 price continues to go down, whether it's
6 sensors or technological capabilities.

7 And I think the key thing we have
8 to look at here is for partnerships to find
9 ways so that we can get the products that we
10 need without needing to specifically expend
11 NOAA resources to get them or at least have a
12 very lower resource just in the obtaining and
13 refining of data that's out there, whether
14 that's from academic organizations, eHydro,
15 other governmental agencies or if it's
16 crowdsourcing.

17 Perhaps we can help to steer that
18 into a beast that will be productive for us
19 because, you know, when we say crowdsourcing
20 I kind of see a snicker and it's a bunch of
21 clowns on boats someplace and the data's not
22 that good.

1 But the whole idea in
2 crowdsourcing that I understand is that, you
3 know, if 80 percent of it is good, then it has
4 value so, you know, there's going to be a
5 couple of bozos out there that are going to
6 have bad data or something.

7 But I think the key to this is
8 partnerships. How can we create partnerships
9 so at a very low cost, high efficiency we can
10 get the resources we need from other people
11 who have already invested money?

12 It's making maximum use of
13 existing resources that are out there right
14 then, to find them and finding ways to bring
15 them in and make them useful for us.

16 So that's a little bit of what I'm
17 hearing. If we don't have more money, let's
18 try to find ways to pick other people's
19 pockets.

20 You know, somebody spent money and
21 developed some of this. I mean, all the stuff
22 you put up there, you know, each time we hear

1 these presentations I keep seeing new groups
2 and people that have data that seems to be
3 pretty sound to me, again, not a scientist.

4 And how aggressively can we,
5 should we reach out to grab that stuff and
6 make it ours so that we don't have to go out
7 and do it ourselves? There seems to be a
8 wealth of fairly accurate data that's out
9 there.

10 CHAIR PERKINS: So two years ago
11 our report out said investigate the
12 possibility of developing a suite of tools
13 that could be used to collect bathymetric data
14 and meteorological data with the aim of
15 creating trusted partnerships for
16 crowdsourcing.

17 New partnerships, crowdsourcing, a
18 succinct recommendation. Do we need to re-
19 message that? Can we improve the messaging of
20 that and can we --

21 MEMBER KELLY: Well, perhaps we
22 need to drill down on it a little bit. That's

1 a very high-level thing.

2 Maybe we need in continuing
3 discussions to hear from the NOAA folks, you
4 know, what assets or possibility for partners
5 are out there?

6 Can we at least identify who's out
7 there, who's doing what, what format is it in
8 and is it valuable to us and, you know, start
9 making a list of potential partners to then
10 see what progress we are or are not making,
11 whether it's a trial period or we just say,
12 you know, this stuff is really not what we
13 want, it's not valuable to us or that it is
14 valuable and we should find a pathway to make
15 a partnering agreement?

16 CHAIR PERKINS: Great. In
17 response --

18 MEMBER KELLY: I think we might,
19 you know, to be productive, you know --

20 CHAIR PERKINS: And the response -
21 -

22 MEMBER KELLY: Kumbaya, you know?

1 You know, it's easy to say peace, love,
2 understanding and the hard part is that you
3 get down into the details where, you know,
4 it's not as easy to do.

5 And I think we need perhaps to be
6 more productive to start keeping detailed
7 targets, like for our next meeting we would
8 like to have feedback for what types of
9 products, who are the partners that might be
10 able to provide that, is it possible to do, is
11 there a potential cost factor so that we could
12 move on that track, but that's a concrete
13 result not just a kumbaya statement.

14 CHAIR PERKINS: Yes, yes. And the
15 administrator's response, the OCS seeks to
16 build similar routes for receiving bathymetric
17 data to what is seen for weather data from
18 external sources like the voluntary ship
19 observing program.

20 Due to the concerns that the data
21 applied to nautical charts be accurate and
22 authoritative, NOAA will proceed carefully to

1 establish trusted partnerships with the U.S.
2 Coast Guard for track line sounding data.

3 So Army Corps, we have a trusted
4 partnership with. Have we met that mark? Is
5 the Army Corps --

6 DR. CALLENDER: So we have a long-
7 standing relationship with the Army Corps. We
8 get their data. It's going to our charts.
9 We're not getting maybe all of it in all the
10 areas but we're working on that. Think
11 identifying the new, the availability of their
12 survey data in the intercoastal waterway is an
13 example.

14 What was the other one on that
15 response? Oh, so we have the relationship
16 with the Coast Guard on their track line data.
17 We are exploring the use of Healy swath
18 bathymetry for instance. That's a recent
19 effort, evaluating the quality of that to see
20 if we can apply that to our charts in the
21 Western U.S., Arctic west of Alaska.

22 We are funding the crowdsource

1 bathymetric database in collaboration with the
2 IHO so this'll be a new database run by the
3 National Geophysical Data Center. They're the
4 ones who administer the database for the
5 GEBCO. Help me with the acronym, Rick.

6 CAPT BRENNAN: Is it GEBCO?

7 DR. CALLENDER: General
8 Bathymetric Chart of the Oceans. So IHO,
9 together with the International Ocean
10 Commission, they have a standing group that
11 looks at bathymetric data from all the oceans,
12 primarily focused on the bathymetry or the
13 deepwater but underneath that's funding a
14 database that will be tailored to receive data
15 from the crowd, from open sources.

16 And we happen to think building a
17 bucket first where that data can go and have
18 metadata and be attributed is a good first
19 step. So we're doing that. That's with the
20 international community.

21 Under the IHO, they're looking at
22 setting up a trusted system model with the

1 Professional Yachting Association.

2 And then there's going to be
3 several efforts to develop kind of a cookbook
4 so that there are many different kinds of
5 crowds or interested groups collecting data
6 and the cookbook would be a broad way to set
7 standards and provide guidance to these
8 several different kinds of users on what's
9 important in collecting their data.

10 So, you know, we're making some
11 progress here but especially when you're
12 working with the international community these
13 things could take a year or two. Hopefully by
14 next year they'll be actually demoing that
15 database. What else we looking at, Rick?

16 CAPT BRENNAN: At least internally
17 the Coast Survey Development Lab has developed
18 a program where we're able to get bathymetry
19 from the ME70 which is a fishery sonar. That
20 was in work that we did in conjunction with
21 UNH.

22 So at least internally the fishery

1 ships should, you know, their swath bathymetry
2 systems that were focused on water column data
3 should now be able to produce bathymetric data
4 so that's getting rolled out to all the new
5 FSBs that we got. So at least internally
6 we're getting that.

7 The LA/Long Beach project that
8 we're working on, Long Beach I believe has
9 their own survey vessel and so moving forward
10 with that project we're working with them to
11 be able to bring their data in as a port
12 authority and get it onto the chart and
13 updated because they're surveying much more
14 frequently than we're able to survey.

15 So as far as a, you know,
16 public/private partnership with them, I think
17 that's an exciting area where we can keep
18 those charts, particularly in those areas
19 where there's low under-keel clearance, keep
20 those as up to date as possible by working
21 with them to develop their data to meet our
22 standards.

1 And so we've sent folks out there,
2 our own hydrographers to sail on their boats
3 with them so I think that's another area that
4 you know, shows some benefit.

5 MEMBER BARBOR: Along that same
6 line, Rick, is we had a brief from Clark here.
7 Here's a guy that, I think, grasped the issues
8 of accuracy and standards and the like but
9 he's got financial issues and he doesn't have
10 a sufficiently sophisticated IMU. Well,
11 partners, got any laying around that would
12 make his data survey capable?

13 CHAIR PERKINS: Can we take the
14 IMU off of that multibeam system that hasn't
15 been used since 2008 and send it to them?

16 MEMBER MILLER: Yes, I mean, it
17 was paid for by the coral program, you know.
18 Well, it was actually paid for by Senator
19 Inouye.

20 But, I mean, we have been loaned,
21 well, we've got an older system that is not
22 out of date but it was the workhorse for

1 years.

2 And as the NOAA ships have stopped
3 using those, mostly the small boats, the
4 system out in Hawaii now has three transducers
5 instead of just one in case we land on a coral
6 head, and so that partnership has been going
7 on for a long time.

8 You know, a lot of it is, you
9 know, we worked with NOAA for a long time. We
10 were part of NOAA in that system and, you
11 know, inside NOAA that's not hard to do.

12 Whether that's possible to do -- I
13 mean, I know for instance this year I've been
14 told that the hydroships don't really have
15 full schedules at all, and that means there's
16 hydroships and lots of launches that are, you
17 know, are they laid up? Are they being used,
18 you know?

19 Could you create a partnership
20 with the guy that spoke, that you could give
21 him a hand and, by the way, send a
22 hydrographer out to make sure he's doing the

1 right thing? But I know that interferometric
2 systems aren't looked upon that well but ---

3 MALE PARTICIPANT: Cutting-edge
4 technologies.

5 MEMBER MILLER: So I don't know.
6 You know, there has been a lot of partnerships
7 and a lot of crowdsourcing data. Certainly
8 the data I've supplied over the past ten years
9 has been looked at as crowdsource and, you
10 know, I'm a trusted source, as is Ken's
11 program, as is many programs.

12 But, you know, do we need more of
13 that I guess is the question. Would that
14 clear the backlog or would help to clear the
15 backlog?

16 VICE-CHAIR HANSON: Well, not only
17 that, I think you'd help some of the shallow
18 issues as well.

19 There's a lot of ports because
20 they're doing their own projects these days.
21 It's not all Corps of Engineers funded.
22 There's a lot of consulting engineers. A lot

1 of projects like that are doing work.

2 There's a lot of coastal
3 restoration projects, particularly in the
4 Gulf, being undertaken by non-federal groups
5 and state level and even universities. It's
6 another source.

7 Whether or not it's quality,
8 that's a different discussion but just to kind
9 of follow up on Ken's point about other
10 sources.

11 CAPT BRENNAN: The IOCM, I think
12 the original vision for the IOCM was it just
13 wasn't us within NOAA making sure that we were
14 coordinating our own work. I think the
15 ultimate end state was that it was the entire
16 ocean-mapping community writ large that was
17 organizing their work.

18 And so in that regard, you know, I
19 think we would welcome people like Clark who
20 are acquiring data to be a part of that
21 because we would certainly like to know about
22 that.

1 And, you know, same with, like
2 when the state of California decided to
3 undertake their mapping initiative and there's
4 been a number of them around that we'll hear
5 about.

6 The State of Florida acquired, you
7 know, large chunks of LiDAR data that we were
8 able to tag on to and get that data and we
9 brought that in and applied that to the chart.

10 So I think that there's a number
11 of cases like that where we know about them
12 but, again, it's understanding that they're
13 there.

14 And so that is the -- I think it's
15 that coordination effort and the mechanisms
16 for that coordination that we continually work
17 towards. But, you know, it's like herding
18 cats at some level, right, so --

19 RDML GLANG: There's another
20 partnership that's worth mentioning. It may
21 sound really small but it's not costing us
22 anything and we're actually getting a lot of

1 benefit out of it and that's we've signed an
2 agreement with Jeff Siegel and his company
3 called ActiveCaptain.

4 And ActiveCaptain is essentially a
5 social media mechanism for the yachting
6 community, the boating community to share
7 information.

8 And that information is classified
9 in different ways. It ranges from -- here's
10 a good restaurant or you can get fuel here but
11 it also includes information about navigation
12 hazards.

13 So boaters can report through
14 their personal devices, cell phones, tablets
15 and so on where they had problems on the
16 chart.

17 And we engaged with Jeff back in
18 the winter on this and we've been regularly
19 using that as another kind of crowdsourced
20 information to help inform us where we have
21 problems with our charts.

22 So there's a range of information

1 that we can get from the crowd. Obviously,
2 you know, we can only manage so many
3 relationships at a time and once they get spun
4 up and the processes are in place to absorb
5 that then we can go move on and look at other
6 sources, but I did want to mention the
7 ActiveCaptain one.

8 CAPT BRENNAN: Admiral, I think
9 the other part to that that I think that we've
10 been talking about internally is being able to
11 put that ActiveCaptain and interface that with
12 our relationship with the U.S. Power Squadron
13 because a lot of times, at least in the past,
14 the U.S. Power Squadron, they got points for
15 going out and finding benchmarks, which was
16 great.

17 But what would be more meaningful
18 is if they could go out, you know, in some of
19 these areas where there's --- you can look at
20 these ActiveCaptain responses in a heat map,
21 so to speak, and you can see where there's a
22 large density of them.

1 And so if we can start to direct
2 our Power Squadron partners to go to those
3 particular areas and get us some definitive
4 measurement at that -- those are places that
5 we wouldn't normally be able to go.

6 So, you know, at least for us
7 putting those two together, you know, we
8 haven't had those meetings yet to try and make
9 those connections but that's the intent, is
10 that we put those two together because they're
11 complete freebies for us.

12 RDML GLANG: Could we make more
13 progress and go faster if I had more people
14 focused on this? Yes. But I still got
15 regular business, regular surveys coming in,
16 regular charting work to be done so there's a
17 balancing act here.

18 MEMBER KELLY: Understood, but
19 again, our role is to make these
20 recommendations that may result in resources
21 back to you if it's deemed valued so otherwise
22 we're just at status quo and trying to do the

1 best we can, so --

2 RDML GLANG: Can I ask for more
3 money, Paul?

4 DR. BRADLEY: Can you ask or can -
5 - There's a budget process.

6 RDML GLANG: Yes well, you know,
7 we struggle because IOCM, we take out a hide,
8 and it's largely a relationship-building
9 activity and an awareness activity although
10 there is a tool we're building, that we've
11 been building.

12 We're taking advantage of it. It
13 was actually developed at UC California or UC
14 Santa Barbara that we're leveraging a
15 SeaSketch tool so, but otherwise, IOCM is not
16 funded.

17 It's not like we've got a large
18 staff that can go out and scrape the world for
19 existing datasets. So I think we're slowly
20 making progress on this but --

21 MEMBER ARMSTRONG: Yes. I'm
22 sorry. I wasn't trying to interrupt.

1 RDML GLANG: Was that an amen?

2 (Laughter)

3 MEMBER ARMSTRONG: Well, I think
4 the biggest problem with other sources of
5 data, crowdsourced, other agencies, is
6 handling it on the end when we get it.

7 Every kind of data is a little bit
8 different and we have to find a new way to
9 handle it, both on input and in funneling it
10 to our products.

11 And so I think that's one of our
12 big challenges, is managing that data and
13 using it to the best degree we can and I don't
14 think we've completely figured out how to do
15 all of that yet.

16 And I think that's --- my personal
17 opinion is that's where we need to spend most
18 of our time on crowdsourcing, is figuring out
19 how to handle it more than figuring out where
20 to get it.

21 MEMBER KELLY: I would just think
22 it would be more efficient and cost effective

1 to spend effort figuring out how to use or
2 incorporate that data than to try to create it
3 yourself.

4 And, as I say, there will be
5 obviously those cases where it's just not
6 worth the effort or would not be and throw it
7 out.

8 But I think there's value when
9 continued and not to be critical, I think
10 you're doing some great stuff, but how to keep
11 moving in additional steps, I think the key
12 can be in partnerships.

13 There seem to be a lot of people
14 out there that seem to be doing things and,
15 you know, not going to get 1,000 new partners
16 in a week or two, but I think that's a goal
17 over a period of time, to try to find ways to
18 incorporate existing datasets into the
19 product, the NOAA products.

20 CHAIR PERKINS: You know, Matt and
21 Gary, you guys are the experts in this and
22 Juliana, but on the geodetic surveying side it

1 wasn't that long ago that this thing, OPUS,
2 didn't exist, right?

3 And surveyors were out there
4 struggling, you know, to collect and process
5 reliable and authoritative data. It was a
6 mess, all kinds of bad project work being
7 done, cost of resurveys, additional design
8 costs for the A&E community, right?

9 And then this magic called OPUS
10 came along. Yes, and several iterations
11 later, right, there isn't, I don't think
12 there's a professional surveyor in practice
13 now that doesn't use OPUS in some manner.

14 And we don't spend our time going
15 to the NGS website and trying to download data
16 sheets and going out and recovering existing
17 monuments, right? There's a parametric or a
18 paradigm shift in how that technology, that
19 enabling technology, you know, was used.

20 So we have people at the table,
21 right, and that's an NGS and a CO-OPS, right,
22 solution that's made that work so well for the

1 surveying community so how do we repeat that
2 success with wet side data?

3 MEMBER MILLER: Could eHydro
4 somehow be used to -- You're talking about
5 bringing in Army Corps data that hopefully
6 will be in the same format, but might that be
7 a way that, you know, is that, I have no idea.
8 I've never really looked at it. But is that
9 a possibility, that you look at eHydro for
10 ingesting crowdsource data in some way?

11 MS. MEDLEY: So eHydro isn't
12 really functional yet but also I don't think
13 that it's for public consumption. I literally
14 think it's a medium between Army Corps and --

15 CHAIR PERKINS: Yes, but OPUS
16 wasn't originally either. There's an
17 evolution that took place there.

18 MEMBER JEFFRESS: OPUS is not a
19 crowdsourcing tool. It's just a tool for
20 surveyors to get differential corrections for
21 their job site related to a CORS station,
22 right, for their GPS. CORS does not absorb

1 the data. It actually, well, it does absorb
2 their data, but it spits it straight back to
3 them with a result.

4 CHAIR PERKINS: Yes, takes their
5 local observation and does the hard part.

6 MEMBER BLACKWELL: So at a high
7 level, we used a processing software that we
8 developed for geodetic purposes to position
9 the CORS network and we said let us develop a
10 way for surveyors to instead of going through
11 a whole bunch of hassle to get their data
12 submitted to us, if all they care about is a
13 coordinate on a station, let them make use of
14 our software through this online positioning
15 user service.

16 And so we developed the software
17 where they could upload data that we used our
18 internal processing to spit back out through
19 an email position elevation for them.

20 That evolved into, well, what if
21 they want to share that information, which is
22 kind of where the crowdsourcing, whatever,

1 comes along.

2 And we developed a separate
3 database that allows people to share that
4 information along with the metadata about
5 their station so that other people can benefit
6 from that work that was done and that people
7 can check on those stations and see if things
8 are the same, if they're moving or if they
9 want to use that station.

10 And that's all hands off, mostly
11 hands off from NGS. We do a little QA/QC but
12 it's minimal.

13 But we don't think of that as
14 authoritative. That data that's shared in
15 that separate database is not authoritative
16 because it hasn't met our stringent
17 requirements so we're still trying to find how
18 to bridge those two things together, okay.

19 And I'm going to talk tomorrow
20 briefly about this next evolution of OPUS
21 through our CORS processing which is called
22 OPUS-Projects which allows, again, the user

1 community to make use of our software in a
2 much more rigorous way and provide an entire
3 project unto us that's a lot more hands off
4 for them but then can actually contribute to
5 improving NSRS but making it minimally, you
6 know, minimal work on their part to do it with
7 software that we find is authoritative
8 software because we developed it and we've,
9 you know, we've run it through its tests.

10 And so I think what we need to
11 look at is if you're going to ask people to
12 share their data that our federal role is to
13 make sure that however they're submitting it
14 we provide, you know, the background checks or
15 processing or, you know, they have to jump
16 through certain hoops.

17 But it has to be easy on them to
18 do that so that when that data comes in then
19 we can use it in the proper way. Just getting
20 data in by any way, shape or form is not
21 helpful, but we need to be able to develop the
22 process or that business model that allows the

1 different types of data to come in that will
2 meet our needs, that we can then, you know,
3 use to support our mission and share back out
4 with the user community.

5 So each set of observations is a
6 little bit different in what it has to go
7 through, but I think there is an opportunity
8 for those types of things to happen.

9 We just need to focus on what the
10 federal role is in trying to make that process
11 efficient, effective, whatever the right word
12 is, efficacy, whatever Margaret's word was but
13 there are opportunities there.

14 CHAIR PERKINS: OPUS H2O. I mean,
15 I love it. I love the sounds of it.

16 CAPT BRENNAN: I believe that, at
17 least talking with Sue McLean at NGDC, I mean,
18 they are developing, right, Admiral, a portal
19 to bring in crowdsourced data so --

20 MALE PARTICIPANT: Some specific.

21 CAPT BRENNAN: -- some specific
22 crowdsource data. At least that will start to

1 open the door and allow us to, you know, to
2 see it and get some experience with it.

3 The one thing that, you know, to
4 speak to Andy's comments that have been the
5 thing that's leveled the playing field, at
6 least from the hydrographic survey standard,
7 has been uncertainty.

8 And so when we started to apply
9 uncertainty to our data and we started to
10 calculate uncertainty to our data, that was
11 the thing that we could then assess the
12 quality of the data with.

13 And that's been the thing, that's
14 what allowed us to bring Joyce's data in
15 because there was a uncertainty that was
16 attributed to that and when that's there, it
17 provides you a level of confidence that's
18 there.

19 And I would say certainly with
20 this crowdsource data if you get enough of it,
21 you know, we should be able to begin to look
22 at standard deviations and that sort of thing

1 and look what the spread of it is and make
2 some assessment.

3 But, you know, in that case it
4 would be on an area-by-area and case-by-case
5 basis. I don't know that we'll have large
6 swaths of sea floor that we'll be able to
7 accept from swath bathymetry but it certainly
8 would, you know, highlight areas that need
9 some attention and I think that's our hope, is
10 that we can look at that and use it as an
11 alerting tool, but ---

12 CHAIR PERKINS: So we did receive
13 a public comment which means that this session
14 is still public which I had kind of forgotten.

15 (Laughter)

16 CHAIR PERKINS: But Mr. Hersey
17 submitted, how to handle, use and incorporate
18 crowdsource data into product workflows
19 absolutely needs to be done but needs to be
20 funded.

21 And I think he's hit the nail on
22 the head so thank you, Mr. Hersey, if you're

1 still listening.

2 So we need an enabling technology
3 to make all this H2O work and I'm going to
4 copyright that or something, because --

5 MR. ASLAKSEN: And policy, you
6 know. Policy is always part of all this.

7 CHAIR PERKINS: So what would a
8 recommendation from this panel look like that
9 would help facilitate that?

10 DR. BRADLEY: Specific to OPUS H2O
11 or --

12 FEMALE PARTICIPANT: I'm not sure
13 that's --

14 MALE PARTICIPANT: Third party
15 data.

16 FEMALE PARTICIPANT: It's third
17 party data ingested.

18 MALE PARTICIPANT: I'm glad to
19 hear you say --

20 MALE PARTICIPANT: Yes, I don't
21 think OPUS H2O --

22 (Simultaneous speaking)

1 CHAIR PERKINS: But it's an
2 enabling, I mean, digitally coached, right,
3 and Mr. Schmidt described it as it went from
4 a website in a data warehouse and evolved into
5 an enabling platform, right?

6 So if we can create the portal,
7 the enabling platform, the OPUS H2O that that
8 data can go into and couple that with a
9 virtual chart tool like an eHydro, you know,
10 what the user, what the public wants out of
11 this agency is access to the data and the
12 tools to make the data intelligible for their
13 need and their geography.

14 RDML GLANG: So are you talking
15 about bathymetric data?

16 CHAIR PERKINS: Yes.

17 RDML GLANG: So we're building
18 that. That's that crowdsource bathy database.
19 That's being built and it'll have a front end
20 where the layperson can come and upload their
21 data, provide a minimum amount of metadata and
22 then that data will be freely available to the

1 public.

2 And that database, because we're
3 building it under the construct of the IHO,
4 will be available to anyone in the world and
5 it will be able to take up data from anywhere
6 in the world so --

7 CHAIR PERKINS: So how do you
8 process it like you do the GPS data and have
9 confidence in it?

10 RDML GLANG: So I think the notion
11 here with the way this crowdsource Bathy
12 DataBASE would work is that any boater or
13 mariner has the ability -- They all have an
14 echosounder of some sorts. They're all
15 running with GPS.

16 There are either build-your-own or
17 off-the-shelf solutions available for
18 connecting all that data together and logging
19 a georeferenced depth measurement.

20 And you have to be able to tell
21 something about it, the offsets, so that
22 dataset would be uploaded by the user to the

1 database and when you pull it down, you would
2 essentially have a depth measurement with a
3 time stamp and a position on it.

4 The processing is sort of the next
5 step, and I think that's what Rick was talking
6 about and certainly we've seen that in the
7 service engineering model that they briefed us
8 on in the past.

9 In their model they work with the
10 value-added provider, CARIS, to do that
11 analyses but there's a whole range of
12 analyses.

13 The trick is to get enough data in
14 one place so you can start doing some
15 statistics and make a determination of how
16 good or how bad is this data or how good or
17 how bad is my data compared to what I've
18 received from an outside user?

19 So I think the Bathy DataBase is
20 the way to start that but you got to get
21 enough data in one place to start building
22 these analyses.

1 There really isn't a need to do
2 any processing to produce a depth solution I
3 guess, provided the data is caveated with we
4 didn't apply tides and we didn't apply sound
5 speed or we did apply sound speed and we did
6 provide tide so it's sort of left up to the
7 user prerogative.

8 The cookbook will hopefully help
9 narrow this down a little bit so you can have,
10 you know, a broad set of standards but it's a
11 little bit different than what's going on in
12 the positioning world where you're really
13 uploading raw or receiver GPS observables and
14 then marrying those observables with what is
15 provided from NGS for their CORS system. It's
16 a little bit different.

17 CAPT BRENNAN: And where you could
18 apply process though since there isn't going
19 to be tides is, you know, where we are able to
20 use our model data and be able to go back and
21 look at the time of acquisition, assuming all
22 that's correct, and at least do some sort of

1 a model data reduction on it.

2 That's the only thing that I think
3 you could possibly do once you've uploaded
4 that data to it because otherwise there's too
5 many other parameters that you're not going to
6 --- I mean, that's the only one that I can
7 think of that you could apply post-processing
8 and used, you know, hindcasted model data in
9 some form to make a correction based on a
10 location of where that's at.

11 But even that, I mean, I'm just
12 thinking the Intracoastal Waterway. I don't
13 know that we have even zone descriptions for
14 the Intracoastal but, you know, we could
15 probably come up with something I guess
16 depending on where it's at.

17 MEMBER MILLER: Well, it also
18 depends greatly on how deep it is. I mean,
19 the data I submitted, most of it, the nearest
20 tide gauge was 500 miles away and that's
21 really useful, but --

22 CAPT BRENNAN: But your range of

1 tide was a foot.

2 MEMBER MILLER: And we were
3 generally in water greater than ten meters
4 deep, so.

5 RDML GLANG: Can I make an
6 observation here? We're way in the weeds
7 here, and as much as this appeals to our inner
8 geek, and as much as I appreciate you all
9 working with us to come up with solutions,
10 that's really not the purpose of the panel.
11 You know, certainly I helped drag you down
12 into the weeds so I apologize for that.

13 But we started out with looking at
14 your past recommendations and you asked a few
15 leading questions which we felt compelled to
16 answer, that, yes, we think we are working on
17 things that will broadly address the
18 recommendations of the panel.

19 So my question to the panel is
20 just based on this conversation, do you feel
21 satisfied that we're addressing that
22 recommendation and should we maybe move on?

1 Does this recommendation rise to
2 the level that you still feel you need to
3 bring it again to the attention of the
4 administrator or should we move on to
5 something else that we heard here?

6 I'm not sure what it is you want
7 to hear from me so, you know, I'm happy to
8 fill the air. It's not my role.

9 MEMBER SHINGLEDECKER: I guess I
10 would say that it seems, when I hear things
11 that are encouraging and make me say, okay,
12 that's good to know.

13 But a lot of it is news and new to
14 us and so we're not, we don't necessarily know
15 the progress that has been made because we're
16 not living it every day, so we're unaware of
17 some of those developments.

18 It seems when we suggest broad,
19 big-picture possible recommendations, the
20 response is we're working on it, it's going to
21 take time or we need more money and we know we
22 can't really ask for more money. And then

1 when we make specific recommendations, yes,
2 those are too specific.

3 And I guess -- and then it seems
4 that I think people are being a little bit
5 politically correct when we say what do you
6 need to help overcome your obstacles?

7 I think there may be some answers
8 to those questions that people may be afraid
9 to say out loud. So Margaret Davidson's saying
10 we should kick you in the ass, to quote her.

11 (Laughter)

12 MEMBER SHINGLEDECKER: And I think
13 we're having a hard time doing that. But at
14 the same time I think we want to support you
15 and help you overcome obstacles that you have,
16 but if we don't know what they are, we can't
17 make the recommendation to help you overcome
18 them. So I don't know how to reconcile that.
19 That's just being totally blunt.

20 MEMBER KUDRNA: How would this be,
21 at our next meeting, give us a game plan
22 first.

1 MALE PARTICIPANT: Tomorrow?

2 (Laughter)

3 MEMBER KUDRNA: Well, I mean, I
4 think it's going to take you a little time.
5 The next time, the next formal meeting we
6 have, give us a game plan for a strategy to
7 move forward with this issue of crowdsourcing
8 and added data.

9 I liked your idea of engaging the
10 Power Squadron after you have some hits.
11 Let's talk about how that might work, about
12 bringing some other players into the process
13 and moving forward. You know, that might be
14 a useful thing to bring forward and have a
15 continuing dialogue.

16 CAPT BRENNAN: I'd like to address
17 Admiral Barbor's comment.

18 RDML GLANG: Well, wait. Do you
19 want to agree with Frank first?

20 CAPT BRENNAN: I do agree with
21 him, yes, sir.

22 (Laughter)

1 RDML GLANG: Give him an amen.

2 CAPT BRENNAN: Amen, sir. Did you
3 have an additional comment, sir?

4 RDML GLANG: It's the panelists
5 time, Rick. I just --

6 CAPT BRENNAN: Well, I mean, I'm
7 addressing Susan's comment and I guess so one
8 of the, trying to tie the two together.

9 The issue is about our pursuit of
10 AUVs. We are pursuing AUVs. We hope to do a
11 trial for our 600 REMUS this month. But as
12 the Navy has, you know, said, there's the 6 or
13 7 Ds, you know, the dirty, deep, denied, et
14 cetera, and a lot of the places that we're
15 working aren't in that.

16 But for autonomous vehicles, I
17 think we've been playing in the AUV arena for
18 ten years now and I think we just keep beating
19 our head against the wall, realizing that we
20 may be in the wrong environment for that tool.

21 But there is another autonomous
22 tool which is the surface vehicle that we are

1 looking to move into and certainly, you know,
2 that's an area that we have interest in and
3 that we hope to make headway into both from,
4 you know, larger and smaller surface vehicles
5 because of all -- they bring at it.

6 You know, there's certain benefits
7 that they have over something that's
8 submerged, particularly the fact that they can
9 position themselves with a traditional
10 positioning system that can aspirate air and
11 many other things, so ---

12 MEMBER MILLER: I'd be interested
13 in hearing a little more about that maybe
14 tomorrow but -- if there are avenues that
15 you're interested in that we could, you know,
16 the question is -- where's the science going
17 and what cutting-edge technology should you
18 explore?

19 CAPT BRENNAN: I mean, to be
20 blunt, a lot of the areas that we have are
21 blue tint areas, right, I mean, the shallow-
22 water bathymetry, right?

1 And so do we want to send, you
2 know, three people in a 30-foot launch into
3 that area, let alone a ship, to go try and
4 gather that data? No.

5 But you might have a one meter
6 long autonomous vehicle that you wouldn't mind
7 sending in, and if it hit the rock, oh well.
8 You know, you drag it off and you change the
9 prop or the whatever on it and then you send
10 it back out again.

11 And they certainly end up being
12 cheaper because you don't have all the
13 machining necessary for that you have in an
14 autonomous underwater vehicle, which has to
15 have much higher tolerances.

16 There's also -- one of the things
17 that we've been looking at as a force
18 multiplier is having ones where it would
19 shadow a surface vessel that we already have
20 working.

21 So, for instance, if we have a
22 launch that has a moving vessel profile on it,

1 that vessel can run long straight lines and
2 you can have another autonomous vehicle that
3 can keep foot with it and acquire data that
4 would take two launches to acquire and you can
5 string as many off of them as you want and run
6 those simultaneously. So that's an area that
7 we would like to get into.

8 We don't have any of those assets
9 but I know one of the things we've talked with
10 Andy about is maybe we can get one of those at
11 the summer hydro class next summer at UNH and
12 maybe at least begin to check that technology
13 out and see if our theories about it hold true
14 or not, so --

15 MR. ASLAKSEN: An alternative to
16 things that float or sink, we're doing a lot
17 of stuff with sensing technologies including
18 satellite-derived bathymetry.

19 We funded a demonstration this
20 year with DigitalGlobe in two different
21 places. One is in the Massachusetts area, to
22 look at and really looking at it from a

1 reconnaissance and where we should go do
2 hydrographic survey there and in Alaska in
3 addition to the, you know, the topographic
4 LiDAR CLICKs that we're doing.

5 So there's no silver bullet, but I
6 think we're using a mix of technologies as
7 they come widely available in approaching the
8 harbor.

9 MEMBER MILLER: One comment I'd
10 like to make is when I first joined the panel,
11 often the entire first day was spent learning
12 about what NOAA was doing and we thought that,
13 I believe, was a little long.

14 But in some ways, particularly
15 with, say, the Nav Manager and so forth, I'd
16 find it useful to get, say, a broad overview
17 from NOAA of what's going on first, and then
18 go into the stakeholder section.

19 I just --- particularly in areas
20 where your Nav Manager is sort of your bridge,
21 if you will, it would be useful for me to know
22 what the Nav Manager, you know, what the Nav

1 Manager sees sort of in the broad scale, as
2 well as just brief updates like you're giving
3 tomorrow on what each of the groups is doing,
4 but not a whole day of it.

5 CHAIR PERKINS: Yes, and Joyce,
6 thank you for bringing that up. The planning
7 committee and with Kathy's help we had
8 intended to have a few informational webinars
9 --- go to meetings in advance of the panel
10 getting together.

11 And, the thought was can we
12 accomplish that in advance of actually
13 convening? Can we get the updates from the
14 tri-service offices in a form, you know, that
15 satisfies that need so we don't have to take
16 time away from these meetings.

17 MEMBER MILLER: However, I think
18 it's useful for the stakeholders too to hear,
19 okay, NOAA's already doing this. We're
20 already doing that. We're looking into this.
21 We're getting that.

22 You know, that gives the

1 stakeholders some baseline to know what this
2 panel is about and what NOAA's about.

3 CHAIR PERKINS: Yes, I don't
4 disagree with that but we have a difficult
5 time keeping the stakeholders captive through
6 these meetings. Yes but thank you, Jason.
7 Glad to see you're still here.

8 (Laughter)

9 CHAIR PERKINS: Yes. But yes, we
10 did shuffle the cards. The format of the
11 meeting is in a different order than before
12 and so that's good feedback.

13 If this structure isn't working,
14 then that's why we have a planning committee
15 and we can work collectively to put the
16 meeting format in the best possible structure
17 going forward.

18 Margaret's remarks over lunch, I
19 think she challenged us with two things in
20 more shallow-water bathymetry, right?

21 How do we feel about that? Do we
22 want to craft that into a recommendation? Can

1 we miss that? She was passionate about it and
2 I respect that.

3 In a national mapping strategy,
4 right, is a recommendation from this panel
5 appropriate, that it's time to move forward
6 with defining a national coastal intelligence
7 mapping strategy or a national mapping
8 strategy that contributes to greater coastal
9 intelligence?

10 MEMBER JEFFRESS: Scott, with
11 regard to the shallow-water bathymetry, I
12 think that's where the AUVs come in, the
13 surface ones.

14 For lack of hardware to teach
15 hydrographic surveying in our program, we
16 don't have a boat with all the gear on it, our
17 exercise in actually collecting data is that
18 we go out and buy from Toys "R" Us model
19 radio-controlled boats, small echosounders you
20 can possibly buy from West Marine and a GPS
21 receiver and we get the students to put all
22 that together and they go map my pool.

1 (Laughter)

2 MEMBER JEFFRESS: And it works.

3 It works.

4 (Simultaneous speaking)

5 CHAIR PERKINS: You know, the
6 small autonomous surface vehicles being used
7 for pipeline crossing, between bridge piers
8 and you don't have to launch a vessel with
9 people in it.

10 MEMBER JEFFRESS: Right, and it's
11 cheap.

12 CHAIR PERKINS: Yes and then the
13 other end of that pendulum swing is the
14 program that the remote sensing division is
15 standing up and using with the Sandy
16 Supplemental with the topobathymetric LiDAR
17 from an airborne platform so maybe, you know,
18 and it probably needs to include all of those
19 tools in the toolbox.

20 MEMBER JEFFRESS: So is NOAA
21 looking at developing these autonomous systems
22 for hydro yourselves or are you working with

1 a company, or is anybody investing in this
2 technology?

3 MEMBER ARMSTRONG: I couldn't
4 hear.

5 RDML GLANG: So he's asking if
6 NOAA's looking at developing or working with
7 a company on small autonomous surface vessels.
8 I think we are looking at what's on the market
9 commercially, certainly for the purposes that
10 Rick just described.

11 But go back to the other question,
12 which is really where I think the panel should
13 be going, is should the panel make a
14 recommendation to the administrator that we
15 look at supporting shallow-water bathymetry
16 requirements?

17 You don't have to tell us how to
18 solve it though. There's a range of tools
19 that we could probably figure out how to use.
20 I think the topo-bathy LiDAR, they've made
21 significant progress in that new technology.

22 There are still places, though,

1 where unfortunately the bathy LiDAR won't
2 quite get us what we need so we still need
3 something that's on the surface of the water
4 --

5 MEMBER JEFFRESS: Texas.

6 RDML GLANG: Still going to need -
7 - So remote sensing may not be the right, or
8 at least LiDAR may not be the right tool.

9 But if we have --- if the panel's
10 recommendation to NOAA were tell us what
11 you're doing about the shallow-water
12 bathymetry problem, or something to that
13 effect, we would probably undertake a bit of
14 a study to understand how big the problem is
15 and whose requirements they are.

16 And then we could start making an
17 assessment of finding partners who may already
18 be working there, if your students happen to
19 be running their Toys "R" Us boats in an area.

20 There are other partners. We just
21 heard from Dr. Alexander. So I think that's
22 pointing us in a direction that is probably

1 pretty productive I think.

2 MEMBER KUDRNA: And the standard
3 of accuracy may not be the same as the
4 standard of accuracy for a commercial port for
5 some of this information.

6 RDML GLANG: Well, that's right.
7 What Margaret said was, she used the term
8 shallow-water bathymetry. She did not say
9 this is for charting.

10 You know, so you're exactly right,
11 Frank. The quality or the standard of the
12 data, what's the requirement? What is that
13 data for? Is it for modeling? Is it for
14 coastal zone processes or, you know, whatever?

15 MEMBER MILLER: However, the
16 priority, looking at the --- the 100-year
17 backlog in just the priorities to map, I mean,
18 we heard this in New Orleans. The recreational
19 boaters are in areas that are not surveyed
20 channels.

21 How does NOAA --- does
22 hydrographic services or should hydrographic

1 services -- up to this point the priorities
2 are always the navigable channels.

3 MEMBER BARBOR: And I think --- we
4 started this conversation off with the ten
5 most wanted and a 100-year backlog that has
6 been underfunded. And so now we want to throw
7 a whole new thing when ---

8 So I think it has to be caveated,
9 somehow, and then we've just deleted
10 everything. You know, it's a big wish list
11 and, you know, I --

12 MEMBER ARMSTRONG: Well, and maybe
13 the panel can do some thinking about what the
14 relative priorities are.

15 MR. ASLAKSEN: The good thing
16 about the shallow water is that we share that
17 responsibility with many other agencies and we
18 try to coordinate those activities, so that is
19 a force multiplier there.

20 But this National Coastal Mapping
21 Strategy is something to be looking at and
22 understanding that but it's the areas where

1 some of the technology, the LiDAR technology,
2 doesn't work is where we need to focus, so
3 what technologies do we bring to bear there?
4 That's the, or, how do we do that? How do we
5 do the stuff in the shallow, murky water where
6 you need that data?

7 MEMBER WELLSLAGER: But the
8 recommendation is to go towards that. It's
9 not how to do it. The question on how to do
10 it is something to throw out and let the
11 research determine.

12 MEMBER JEFFRESS: If it parallels
13 the development of --- autonomous airborne
14 systems, it's going to rapidly become very
15 accurate and very cheap.

16 MR. ASLAKSEN: There's unlimited
17 restrictions that I'm aware of that there are
18 on the airborne ---

19 MEMBER JEFFRESS: That's the FAA's
20 problem. But the rest of the world, Australia
21 included, they're using unmanned systems all
22 the time for aerial mapping and it's really

1 cost effective and it's amazingly accurate.

2 MR. ASLAKSEN: I agree. We have a
3 very structured approach to UAS technology --
4 and the proof of process and oversight.

5 MEMBER JEFFRESS: But I think the
6 hydro could follow the same model.

7 MR. ASLAKSEN: I think there's a
8 little more flexibility there.

9 MEMBER JEFFRESS: Yes.

10 MR. ASLAKSEN: From my limited
11 understanding, I think there's more
12 flexibility there.

13 MEMBER JEFFRESS: And it'll boil
14 down to the software. The electronics to make
15 it work is fairly simple and it'll boil down
16 to the software to keep track of the collision
17 avoidance with other vessels, getting too
18 close to the rocks or the surf and getting to
19 come back and download the data.

20 So it's all going to be software
21 driven and that's what we're seeing with the
22 UAS systems too. The ones with the best

1 software get the best results.

2 MR. ASLAKSEN: Sometimes you just
3 want them to come home.

4 CHAIR PERKINS: Well, a good
5 conversation with no results. It's 5:45.

6 MEMBER JEFFRESS: What we should
7 encourage now, to explore autonomous systems
8 for not only shallow water, but all depths of
9 water bathymetry.

10 CHAIR PERKINS: Would that be part
11 of a national mapping strategy?

12 MEMBER JEFFRESS: It should be,
13 yes. It's a way to gather more data, more
14 accurate data with less cost.

15 CHAIR PERKINS: Yes, and less risk
16 of life and --

17 MEMBER JEFFRESS: Right. Yes,
18 yes.

19 (Off microphone discussion)

20 CHAIR PERKINS: Yes, Jason.

21 MR. CREECH: Is public comment
22 period still open because if so --

1 CHAIR PERKINS: I am willing to
2 interject a public comment period any time.

3 (Off microphone discussion)

4 MS. WATSON: Please speak in the
5 microphone.

6 MR. CREECH: Jason Creech with
7 David Evans and Associates.

8 MALE PARTICIPANT: Microphone.

9 MR. CREECH: Jon Dasler's not here
10 so I'll try. So I guess just a few
11 suggestions.

12 1) I would explore ways to
13 facilitate data transfer from industry
14 partners like myself. We frequently perform
15 surveys for private clients. The data goes
16 nowhere. A lot of times that is based on our
17 client's request but I think trying to find a
18 way to facilitate that data transfer would be
19 beneficial.

20 2) I just wonder is there --

21 CHAIR PERKINS: One second, Jason.
22 Lynne, are you, are we recording? Who's

1 capturing Jason's comments?

2 MS. HOUSE: Yes I'm, oh, you mean
3 writing it down? I'm writing it down.

4 CHAIR PERKINS: I don't want to
5 lose --

6 MS. WATSON: It's being recorded
7 by the court reporter.

8 CHAIR PERKINS: Okay, got it.
9 Thank you. Just want to make sure we don't
10 lose them.

11 MR. CREECH: So, I guess survey
12 backlog is enormous so there are really no
13 other large surveys going on in the U.S. other
14 than NOAA really that are hitting on survey
15 backlog. Small surveys aren't going to do
16 this.

17 So how can we get at really
18 getting some data? And I think two recent
19 projects were California and Oregon where
20 there was a cost share. The states funded
21 some of the surveys.

22 And I was just wondering is there

1 a future for that, for cost share where the
2 states and federal government survey the
3 territorial seas to NOAA standards and update
4 the entire state's charts?

5 And then also wind energy on the
6 East Coast is really big right now and over
7 the next ten years it's going to be even
8 bigger.

9 So BOEM is either contracting
10 surveys for offshore sand resources, or
11 through other lease blocks and, again, these
12 are going to be the biggest surveys on the
13 East Coast in the next decade and how to take
14 advantage of that and get ahead of it to make
15 sure that these surveys meet NOAA spec and get
16 on the charts.

17 And then finally, I was just
18 wondering, I think there should be an
19 initiative to address chart clutter.

20 There are many position
21 doubtful/position approximate reported
22 features on the charts -- reported in 1973,

1 and I think it does a disservice to NOAA and
2 the mariner for those to still be on the
3 chart, and that's it.

4 CHAIR PERKINS: Great. Thank you
5 for your input. I don't think we give you a
6 response directly, right, but I hope that we
7 have a response for you before the next
8 meeting.

9 RDML GLANG: Thank you, Jason.
10 Some really good suggestions.

11 MR. CREECH: Thank you.

12 RDML GLANG: The chart clutter one
13 in particular, if I can just -- on it for a
14 moment. We actually are looking at how to use
15 that as a mechanism for evaluating our charts
16 so use it as a measure of, what are we calling
17 it, health, chart health I think.

18 We've been talking with Canada
19 about ways to sort of standardize this. We
20 use the word health but we could talk some
21 more about it offline.

22 MR. CREECH: Sure.

1 CHAIR PERKINS: Admiral, you know,
2 unless there's an objection from you, I think
3 we're at a reasonable point of adjournment
4 after a full day of activity. Any objections
5 to concluding today's session?

6 MALE PARTICIPANT: Second it.

7 CHAIR PERKINS: Thank you. All
8 right.

9 RDML GLANG: Motion carries.

10 CHAIR PERKINS: Motion carries.

11 (Whereupon, the above-entitled
12 matter went off the record at 5:51 p.m.)

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C E R T I F I C A T E

This is to certify that the foregoing transcript

In the matter of: Hydrographic Services Review Panel

Before: NOAA

Date: 09-17-14

Place: Charleston, SC

was duly recorded and accurately transcribed under my direction; further, that said transcript is a true and accurate record of the proceedings.

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Court Reporter

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