

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
MARCH 16, 2016

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The Hydrographic Services Review Panel met in the Sam Houston Ballroom, Tremont House Hotel, 2300 Ships Mechanic Row, Galveston, Texas, at 8:00 a.m., Scott Perkins, Chair, presiding.

MEMBERS PRESENT

SCOTT R. PERKINS, HSRP Chair
WILLIAM HANSON, HSRP Vice Chair
DR. LARRY ATKINSON
DR. LAWSON W. BRIGHAM
LINDSAY GEE
KIM HALL
EDWARD J. KELLY
CAROL LOCKHART
DR. DAVID MAUNE
CAPTAIN ANNE MCINTYRE
JOYCE E. MILLER
CAPTAIN SALVATORE RASSELLO
EDWARD J. SAADE
SUSAN SHINGLEDECKER
GARY THOMPSON

NON-VOTING MEMBERS

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

JULIANA BLACKWELL, Director, NOAA/NGS

RICH EDWING, Director, CO-OPS, NOAA

STAFF PRESENT

REAR ADMIRAL GERD F. GLANG, HSRP Designated
Federal Official

MIKE ASLAKSEN, NOAA/NGS

GLENN BOLEDOVICH, NOAA/NOS

ALAN BUNN, NOAA Regional Navigation Manager

CAPTAIN RICK BRENNAN, NOAA

GINA DAVENPORT, NOAA/NOS

CHRISTA JOHNSTON, NOAA/NOS

GARY MAGNUSON, NOAA/OCS

LAURA REAR MCLAUGHLIN, NOAA/CO-OPS

RACHEL MEDLEY, NOAA Customer Affairs Branch

LYNNE MERSELDER-LEWIS, HSRP Coordinator

JOHN NYBERG, NOAA/OCS

RUSS PROCTOR, Chief, Navigation Services

Division, NOAA/OCS

DR. NEIL WESTON, Acting Chief, Coast Survey

Development Lab

ALSO PRESENT

DR. GARY JEFFRESS, Panel Moderator;

Professor of Geographic Information
Science, Director of Conrad Blucher
Institute for Surveying and Science,
Texas A&M University - Corpus Christi

STEPHEN BLASKEY, Licensed Land Surveyor, High
Tide Land Surveying

CHRISTOPHER C. FRABOTTA, Deputy Chief,

Operations Division; Chief, Navigation
Branch, US Army Corps of Engineers
Galveston District

CHRISTOPHER MCHUGH, Survey Technician,

TerraSond Limited

RAY NEWBY, Coastal Geologist, Texas General

Lands Office

DR. PHILIPPE TISSOT, Associate Director,

Conrad Blucher Institute for Surveying
and Science, Texas A&M University -
Corpus Christi

C-O-N-T-E-N-T-S

Public Meeting Convenes	4
Mr. Scott Perkins, HSRP Chair	
Rear Admiral Gerd F. Glang, HSRP	
Designated Federal Official	
Overview and Discussion of Day One	4
Discussion	7
Planning and Engagement Working Group	
by Ms. Joyce Miller38
by Dr. Dave Maune49
Other Topics72
Regional Vulnerability and Coastal91
Resilience - Dr. Gary Jeffress, Moderator	
Mr. Stephen Blaskey98
Mr. Ray Newby	107
Mr. Christopher C. Frabotta.	129
Dr. Phillippe Tissot	156
Mr. Christopher McHugh	177
Public Comment Period	211
HSRP Public Meeting Reconvenes	215
Discussion	215
HSRP Working Group Reports	216
Adjourn	

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

2 (8:14 a.m.)

3 CHAIR PERKINS: Good morning. Welcome
4 to Day 2 of the spring 2016 meeting of the
5 Hydrographic Services Review Panel. I'd like to
6 begin this morning with a short recap of
7 yesterday's activities.

8 We received a warm welcome from the
9 City of Galveston, and from Jed Webb,
10 representing Congressman Weber. We were once
11 again fortunate to have the senior leadership of
12 the Coast Guard and the U.S. Army Corps of
13 Engineers provide thought-provoking comments, and
14 participate during our full day of activities.

15 We heard about the impressive
16 accomplishments of the Remote Sensing Division,
17 capturing baseline pre-El Nino oblique imagery of
18 the entire western coast from Mexico to Canada in
19 only three days, using a King Air aircraft
20 equipped with a commercial off the shelf sensor
21 package. Over 3,100 images, and over 13
22 terabytes of data that will be essential for

1 baseline analysis of the post-storm impacts to
2 the western coast of the U.S.

3 One of the takeaways from yesterday
4 from Dr. Callender, with this being an election
5 year the Panel needs to keep our thoughts focused
6 on how the HSRP's priority admission messages,
7 what we should be crafting in those messages for
8 the incoming NOAA Administrator, and for the
9 transition team that will soon be introduced
10 after the election results.

11 We need to be thinking about what are
12 the tools and the services, you know, that we're
13 going to need for the future of navigation. You
14 know, what's navigation going to look like in the
15 next ten years, and the next 20 years. And
16 trying to keep that longer range of vision in our
17 comments and in our thoughts as we make our
18 recommendations.

19 Once again we heard compelling
20 firsthand comments on the importance of the PORTS
21 system, you know, to the pilots and to the
22 mariners, and to the recreational boaters. And

1 again, we heard compelling testimony about the
2 challenges of funding those systems. So, in the
3 entire time I've served on this panel, now over
4 six years, that is a reoccurring, you know,
5 comment that we have heard all across the
6 country, from Alaska now to the Gulf, from Hawaii
7 to Long Beach, everywhere we go. So that is
8 something that it feels like we have not made
9 sufficient progress on, in my opinion.

10 We concluded yesterday with a nice
11 tour of the Galveston Harbor. Extend our thanks
12 to the Houston Pilots, you know, for that. And
13 special thanks to HSRP member emeritus, Captain
14 Sherri Hickman for the hospitality, and for
15 making that happen.

16 One thing that I missed in my comments
17 yesterday. We did have three outgoing HSRP Panel
18 members. So Admiral Evelyn Fields, Admiral Ken
19 Barbor, and Dr. Frank Kudrna all rolled off of
20 the Panel, without a chance for us to formally
21 thank them. So, Admiral Glang has put pen in
22 hand, and has prepared a -- you know, an official

1 and appropriate, you know, exiting thank you
2 letter for them. And would just like it to
3 reflect, you know, in the record of today's
4 minutes that we're acknowledging their dedicated
5 service, and commitments and contributions to the
6 HSRP, and thank them for their time that they
7 served and wish them the best, you know, going
8 forward.

9 So, with that, next on our agenda --
10 I don't think we need to do another safety
11 logistics briefing. The bathrooms and the exit
12 doors are in the same place as yesterday. So we
13 have an opportunity now for comment and
14 discussion.

15 There was a comment yesterday that we
16 -- some of the panel members felt we were a
17 little short on time for question and answer for
18 the Tri-Service Directors. So we have an
19 opportunity in the agenda now where we can use a
20 little bit of time to continue that Q&A on the
21 three programs, CO-OPS, NGS, and OCS. And then
22 we'll have reports, you know, from our working

1 groups.

2 MEMBER LOCKHART: Carol Lockhart. So
3 yes, I just had some comments from yesterday
4 after the NOAA folks' talks. Joyce asked a
5 question about the -- why the data matters for
6 nautical charting.

7 And I basically wanted to let her know
8 that a lot of what we do now, we collect
9 everything on the ellipsoid. All of the LIDAR
10 systems that are out there nowadays collect on
11 the ellipsoid. And a lot of our multi-beam and
12 acoustic collects -- I'm sure you know this
13 anyway -- are collected on the ellipsoid.

14 So the datum change will affect how we
15 do things in the, you know, VDatum and everything
16 else needs to be updated, which Rich mentioned
17 yesterday, but because we do everything on the
18 ellipsoid, and obviously the X and Y is changing
19 as well, then those things will affect how we do
20 things.

21 And then I had a question for Juliana.
22 The -- all the LIDAR data you're collecting as

1 part of your coastal mapping program, is that
2 going to Office of Coast Survey to be put on
3 charts?

4 I know there are some technical issues
5 with how that can happen. And I'm wondering if
6 the data's going to them, and how you're dealing
7 with those issues?

8 MS. BLACKWELL: This is Juliana
9 Blackwell. All the data that we have is
10 available to everyone, including Coast Survey. I
11 know that there are some experimental, well not
12 experimental. These are in process right now to
13 determine how to best utilize the LIDAR data for
14 the charting purposes.

15 And I believe that was -- it falls
16 under perhaps the auspices of IOCM. And I don't
17 know if -- I think Ashley was supposed to -- is
18 she here today? Is she going to be here today?

19 And so, there are opportunities that
20 I think that are in progress right now and how
21 they're actually utilizing it, I'm not sure I'm
22 the best person to answer that. Mike Aslaksen,

1 who is here, is there anything else I should add
2 to that? Or ask for IOCM input?

3 (Off microphone comment.)

4 MS. MERSFELDER-LEWIS: Can you repeat
5 that?

6 MR. ASLAKSEN: Sorry. Sorry about
7 that. So, much of the issue is getting the data,
8 which has been basically built around terrestrial
9 technology and formats, getting it into
10 hydrographic and charting formats. And that's
11 been the real challenge.

12 The softwares that, in which the Coast
13 Survey and other charting agencies take data in,
14 do not readily adjust bathymetric LIDAR data.
15 And it's really a technology transition issue in
16 a good way, in that we're really getting a lot of
17 data we never saw before that we can apply to the
18 chart.

19 But as my comrades here sit -- we go
20 back and forth back here behind the scenes here
21 talking about that very same issue yesterday and
22 today of how do we get this very high resolution

1 data to the chart, which is really some of the
2 places where our data needs to be updated.

3 So yes, it's a constant thing we're
4 working. And really a recommendation out of the
5 Panel could be helpful in the case of, you know,
6 how do we get this data to the chart faster?
7 Pushing on a lot of commercial interests is, I
8 think is where the recommendation needs to go.
9 Thank you.

10 MEMBER LOCKHART: So, one more
11 question which isn't a follow-up. So you can
12 release the mic. A question about the oblique
13 imagery that's being captured. Is that -- you
14 mentioned it's georeferenced. Is it -- can you
15 also measure things off of it? Or is it just a
16 georeferenced image?

17 MR. ASLAKSEN: Yes. The imagery is
18 georeferenced and it is GIS-ready. So you do a
19 bulk down on that data, bring it into a GIS
20 software, whatever software you're using. And
21 you can measure from it.

22 Some of the recommendations that we're

1 getting back from the on need to collect are
2 higher frame rates, in order to get more overlap
3 between the images, to do structure from motion
4 analysis. This is coming from the USGS and a lot
5 of coastal managers, as far as using that to
6 create elevation looks at pre and post.

7 And the other recommendation we're
8 getting is more oblique. Right now we're at
9 about a 45 degree. They want more, which means
10 cutting holes in airplanes. And that's a
11 different discussion. But anyway, yes, it is
12 georeferenced.

13 MEMBER GEE: Just to follow on from
14 the LIDAR a bit, and then just generally on other
15 data. It's maybe more for Gerd I think.

16 And so, it's, you should say it's the
17 technology to try and get the formats into the
18 suitable hydrographic format. But it's also
19 partly assessing the data, right, of the
20 suitability. And that applies to a lot of other
21 non-data that's being -- you know, not surveyed
22 to the hydrographic standards.

1 I mean, we know there's a lot of data.
2 I think that was on previous meetings about how
3 we're, you know, not getting as quickly as it
4 possibly could be onto the charts. So isn't that
5 partly technology, partly then the suitable
6 assessment to say that it's, it can be used in
7 some way? Sorry. Yes. Okay. Lindsay Gee.

8 (Off microphone comment.)

9 MEMBER GEE: Okay. Sorry.

10 (Off microphone comment.)

11 CAPT. BRENNAN: This is Rick Brennan.

12 So, I think that we can. I guess Mike and I
13 disagree a little bit on this. We were having a
14 debate, to be polite about it, last night.

15 I mean, the hydrographic branches
16 right now do take LIDAR. We've been doing LIDAR
17 for many years. And we have the ability to bring
18 that data form in, and process that through.

19 It's just, I think right now when you
20 start looking at the sheer bulk of what's coming
21 in. When we talk about, you know, the entire
22 U.S. coastline once a year. And that's in

1 addition to what we've already got.

2 I mean, we -- just in the commissioned
3 surveys that we're processing right now, you
4 know, between our contractors and our in house,
5 you know, we already are running a backlog. So
6 if you suddenly then add that in, you know,
7 thousands of square miles, I think it's just the
8 challenge is going to be -- is that we're going
9 to probably quadruple our -- you know, what that
10 backlog of survey data is.

11 And then it, you know -- so, but that
12 said, I think that the issue should be is that we
13 give all of those surveys an H number, and put
14 them into the queue. And have those in a system,
15 and just start marching through them in as
16 expeditious a fashion as we can and I think that
17 way that they get in, and they ultimately have
18 some way to make it into the charts. So, that's
19 my personal opinion.

20 CHAIR PERKINS: Captain, can you say
21 a few words on what that means, to give it an H
22 number?

1 CAPT. BRENNAN: Sorry, yes. So, an H
2 number is basically the -- is a registration
3 number that we give all hydrographic surveys.
4 So, any survey that's on its way to the chart
5 gets assigned a -- we call them an H number but
6 there may be other designations, depending on the
7 quality of the survey.

8 But ultimately it's a registry number,
9 so that we can track that through the process.
10 And that's what it -- it maintains that all the
11 way through to NCEI, when it gets databased
12 there.

13 MEMBER GEE: Lindsay Gee, follow on
14 question. So there's a move, I guess, to see
15 that the traditional hydrographic surveying has
16 been for, you know, deepwater ship main
17 navigation. But there's now a move into the
18 coastal resilience with the shallow water.

19 Having available, even knowing that
20 that bathymetry is available, and it's suitable,
21 and possibly for use for modeling, I'm not -- now
22 we're talking about runoff and storm surge, and

1 those sort of things.

2 How much effect does the quality of
3 that shallow bathymetry have on the models that
4 might be used for the surge modeling? And does
5 that make a difference? And is it worthwhile
6 trying to get that into at least -- maybe it's
7 not going onto the charts right away, but into
8 some form of database that's more usable, as
9 opposed to different surveys in different places.

10 RADM GLANG: Gerd Glang, Coast Survey.
11 So, Lindsay, your question about the quality, or
12 the resolution of data to support coastal
13 modeling? Which one do you want?

14 MEMBER GEE: I think it's saying if
15 it's not -- it's in a queue for the hydrographic
16 survey, that's fine. But to make it available
17 more. And having then better bathymetry that's
18 in that shallow water, does that make the
19 modeling of the storm surge better?

20 RADM GLANG: Okay. So all
21 hydrographic survey data that comes into our
22 hydro branches is archived immediately after it

1 clears through the sort of initial quality
2 review. That sort of checks, do we have all the
3 pieces? Does the data makes sense?

4 It all immediately goes to NCEI for
5 archiving. And that's a public archive. So, all
6 the data that we collect is made publicly
7 available.

8 It's from NCEI that NOAA, that in
9 particular I'm thinking of their digital
10 elevation models they built to support tsunami
11 mapping, for instance. So they're reaching into
12 the archive, using our data, other data that's
13 archived, to build those bathymetric DEMs, to
14 support inundation modeling.

15 My understanding about what their
16 requirement is for resolution, or accuracy for
17 modeling, is it's much coarser than what we make
18 available. In fact, for a lot of modeling
19 they'll take whatever they can get.

20 So, it would be interesting to know,
21 you know, it would be a bit of an academic
22 exercise to do a sensitivity analysis, and to see

1 exactly where it makes a difference.

2 I think as nested grid models are --
3 become more and more sort of the tool of choice
4 to get down to the level of detail you need for
5 understanding how a particular small basin, or a
6 port or harbor might be inundated, then accuracy
7 probably will start to play a part.

8 But right now it's, you know, the
9 resolutions they're building these models at
10 doesn't -- the requirement doesn't come close to
11 what we need for nautical charting. Let me put
12 it --- are you going to straighten me out?

13 MR. ASLAKSEN: No sir, just to support
14 you, of course. Just to add into that though.
15 The -- some of the clarifications. So, in, under
16 the supplemental, which we collected topo-bathy
17 LIDAR for Sandy.

18 One of the big uses of those data was
19 to support coastal inundation modeling. So the
20 data -- one of the data formats we delivered,
21 which is available on Digital Coasts.

22 So the good thing to understand is all

1 the topo-bathy LIDAR, both from us and the Army
2 Corps, and well, as many people we can get to is
3 available on Digital Coasts. One of the
4 deliverables are DEM, D-E-M. And the one meter
5 DEM, depending on the sensor, or the
6 specification, is available there.

7 What we are seeing is that the
8 modeling community's incredulous about the data
9 and how high resolution it is. So, but we
10 deliver one meter DEM format, they're actually,
11 you know, reformatting that, or to a two meter
12 DEM, because they can't handle the volume, is
13 what we're seeing.

14 But there's a lot of increased
15 interest in that. And, you know, like Jesse
16 Feyen from Office of Coast Survey would be a good
17 contact on this. But they definitely want the
18 data. And it is being used.

19 But one of the things it does feed, as
20 the Admiral said, is NCEI, and going to the
21 tsunami group. And as this data goes in. In
22 almost near real-time though, OCM, Office of

1 Coastal Management, is taking that data from
2 their sea level rise viewer.

3 So if you go to the OCM site, Digital
4 Coasts sea level rise viewer, they're using the
5 data from Sandy, JALBTCX, and other folks to
6 actually increase the accuracy of that inundation
7 viewer, if you want to see that real time.

8 CHAIR PERKINS: Yes. I have a
9 question, Mr. Aslaksen. So the topographic bathy
10 LIDAR data collected under Hurricane Sandy
11 Supplemental, does any of that get assigned an H
12 number, and go into the chart process? Or is it
13 only going into the Digital Coasts?

14 MR. ASLAKSEN: No. That's what Rick
15 has been speaking about, about us getting that
16 data to, and in fact, is at the hydro branches
17 now. So actually, I think one of the first
18 datasets was Barnegat Bay, I think, which was
19 mentioned yesterday.

20 But yes, everything that's gone to
21 Digital Coasts is in queue to be applied to the
22 nautical chart.

1 MR. ARMSTRONG: So, Scott, were you
2 referring to topo or topo-bathy?

3 CHAIR PERKINS: Topo-bathy.

4 MR. ARMSTRONG: Okay. Sorry.

5 MEMBER LOCKHART: We actually did a
6 hydro survey under Sandy funding, using topo-
7 bathy as well for Barnegat Bay and it was
8 specifically assigned an H number. It was a
9 hydrographic survey.

10 CHAIR PERKINS: Thank you for
11 clarifying.

12 MEMBER SHINGLEDECKER: Susan
13 Shingledecker. My question's much more general.
14 So if others had -- want to continue on that
15 thread, I don't want to interrupt.

16 A question I asked in Long Beach, and
17 I don't know if you want some time to think about
18 it. But I found helpful of the three office
19 directors is, what right now are your greatest
20 challenges? What are the things that keep you up
21 at night?

22 And if you're able to share those with

1 us, how can we help you, you know, brainstorm
2 ways to move the needle or, you know, start to
3 overcome some of those challenges?

4 CHAIR PERKINS: Very good question.
5 We'll give you a minute to think about that.
6 Rich, I have maybe a simpler question. And then
7 we'll go to Susan's.

8 You mentioned yesterday doing current
9 surveys, you know, here in the Gulf Coast area.
10 I emailed some colleagues last evening about
11 that. And the question that came back to me, are
12 those acoustic Doppler profiling? Or are those
13 tethered or buoyed devices? If you can just a
14 little bit more about how those are --

15 MR. EDWING: Sure.

16 CHAIR PERKINS: -- conducted.

17 MR. EDWING: Sure. So, Rich Edwing
18 with CO-OPS. Yes, they are acoustic, you know,
19 Doppler profilers, getting entire water column.
20 The deployment methodology depends on the region.

21 I mean, we use bottom mounts.
22 Sometimes we use, you know, sub buoys. It really

1 just depends on what deploy method best suits the
2 region we're taking those measurements in.

3 CHAIR PERKINS: Are those collected
4 then using the NRTs, or NOAA assets? Or do you
5 reach back to the -- to your contractors, you
6 know, to collect that data through the
7 hydrographic survey contracts?

8 MR. EDWING: We have used contracts in
9 the past. But as budgets have shrunk we've
10 fallen back, and we're doing fewer surveys today
11 than we were a few years ago. And now we're
12 pretty much doing them with in house assets.

13 But we often partner with -- sometimes
14 we do use vessels of opportunity. Sometimes it's
15 Sanctuaries. Sometimes the NRTs have helped.
16 Sometimes the local university that's interested
17 in, you know, partnering with us. So, there's a
18 variety of ways we kind of get the platform
19 support in the areas.

20 CHAIR PERKINS: Thank you, sir.

21 MEMBER LOCKHART: A question for the
22 Admiral. You mentioned yesterday you're having

1 workforce issues with the NRTs. And I'm
2 wondering if you can expand on that a little bit,
3 maybe let us know how many of the NRTs are
4 affected by those workforce issues, for example.

5 RADM GLANG: So, we did -- Gerd Glang,
6 Coast Survey. So, the Navigation Response Teams,
7 we have six teams. And a couple of years ago now
8 we -- I think last year -- I can't remember the
9 exact timing.

10 We received approval to change the
11 staffing profile for those teams, where we went
12 from two to three. And we elevated, or changed
13 the classification of one of the positions, the
14 team lead position. So it's a professional
15 series, not a technical series.

16 So that process took much longer than
17 we'd expected. In the meanwhile we've held off
18 on retiring -- on filling -- hiring some of the
19 vacancies that happened over time.

20 So that, and the sort of general
21 difficulty in getting workforce packages through
22 the hiring system, we're keeping about four teams

1 operational now.

2 If we needed to, we could certainly
3 augment some of the other teams. But all the
4 vacancy packages are ready to go here for the
5 coming year. We're just -- you know, it's just
6 process now.

7 MEMBER LOCKHART: Thank you.

8 CHAIR PERKINS: Mr. Edwing, what's
9 keeping you up at night?

10 MR. EDWING: Well, actually slept
11 pretty good last night. But what worries me
12 during the day is our ability to keep expanding
13 the PORTS program. You know, there's no such
14 thing as a perpetual motion machine.

15 And you can see from my presentation
16 yesterday, the system keeps on expanding. And
17 there's lots of work that goes on with the
18 existing system. And the workforce is being very
19 stressed right now by the ability to keep up with
20 that.

21 And so, we've been working hard over
22 the last couple of years to, you know, find

1 efficiencies. You know, things are now starting
2 -- one methodology is to keep pushing things to
3 the right.

4 In other words, somebody comes and
5 asks for new PORTS, we say, well okay, you might
6 have to wait a year or two now before we can even
7 -- we can get to it. We've redirected some
8 internal funds, you know, but I can only do so
9 much of that. So, obviously people really value
10 the program. I need to keep supporting it. And
11 what's keeping me up at night, or during the day
12 is, how can I keep doing that, providing that
13 service?

14 DR. CALLENDER: So, I know you asked
15 the office director what keeps them up at night.
16 But I'll dive in anyway, because I'm playing on
17 the same team.

18 So for me one of the fundamental
19 issues around the Nav Services portfolio writ
20 large is the inability right now to recapitalize
21 the fleet that we've got. We've got fleets --
22 ships that are very, very old. Rainier,

1 Fairweather are roughly, what, 48 years old.

2 There's challenges of being able to
3 keep those ships running. You know, it seems
4 like there's issues with some of the engineering
5 support for those ships. And so, we end up
6 losing a lot of days at sea, frankly because
7 we've got old ships, and they're really difficult
8 to keep running.

9 And it's a huge ticket item. And it's
10 very, very political, as you might guess, in
11 terms of making a case for those big ticket
12 items. So, for me that's something pretty
13 fundamental to what we do. And I'm not sure we
14 have a solid pathway forward for recapitalization
15 of the hydro ships.

16 MEMBER SAADE: So, this is Ed Saade.
17 This probably is directed at Mike. But it seems
18 like as Mike's office is getting more prolific
19 with hydrographic LIDAR, bathymetric LIDAR,
20 whatever we want to call it, from a logical point
21 of view it seems like now there's a tremendous
22 amount of overlap with the system in the Army

1 Corps of Engineers side of the house.

2 And as we're talking about synergies,
3 and trying to find the ways to stretch the
4 dollars out, is there a way to focus all that
5 energy and expertise in an office like Mike's, as
6 opposed to spreading the dollars across all these
7 different agencies? Or is that something that's
8 against the rules to talk about?

9 CHAIR PERKINS: No, I don't think
10 there's anything against the rules there, Mr.
11 Saade. And it does -- I think your comment is
12 correct, that there does appear to be some
13 parallel capabilities between perhaps what's
14 going on with the JALBTCX program, and what's
15 going on in the Remote Sensing Division program,
16 and other agencies as well. So I think that is a
17 topic that is valid and worthy of deliberation.
18 Juliana.

19 MS. BLACKWELL: This is Juliana
20 Blackwell. Ed, we do a lot of coordination with
21 the groups that you're referencing, Army Corps,
22 USGS, from the executive level, all the way down

1 to the technical working group level, of
2 coordinating, you know, what our assets are, how
3 we're utilizing them, where we're doing our
4 projects.

5 We have online tools that enable folks
6 to graphically display when they're working in
7 certain areas, and what their collections are
8 for. And the Sandy Supplemental work was a
9 fantastic opportunity to showcase how well we can
10 do that if we all work together to do so.

11 And I think that, you know, through
12 IOCM and through those technical working groups
13 that are cross agency -- across department, I
14 think we do have the ability to do it right, and
15 to have the capability exist in different
16 agencies because we all have slightly different
17 missions.

18 And when things come together in
19 certain geographical locations, we can continue
20 to work in the same field, but do things so that
21 they're efficiently done. And I think a lot of
22 that helps us with just cross-fertilization of

1 how we do things, and why we do things certain
2 ways, and to apply best practices.

3 So I don't think it -- you know, with
4 the Remote Sensing Division being a part of the
5 National Geodetic Survey, I would not advocate
6 for trying to pull all of this information into
7 one office and one agency. I think that having
8 those different groups involved in the topo-bathy
9 is an important thing.

10 And I think that, you know,
11 recommendations on how we can do that better are
12 certainly welcome. Maybe we can have some more
13 in depth presentations on how we do things, and
14 how we coordinate with other offices. But, you
15 know, I think that we are showing that we can do
16 a great job of doing that coordination.

17 And maybe one of the things is, who
18 else should we coordinate with? And are there
19 tools and other opportunities to showcase that in
20 particular geographic areas? So that's my
21 thoughts on that. Thank you.

22 MEMBER SAADE: Again, this is Ed

1 again. I can answer that a little bit, just from
2 experiences off of California, where it was the
3 fact that our company collected data for all
4 these different agencies.

5 And we went proactive with a FEMA
6 contractor to let her know that the data existed.
7 And they had no idea that the data existed. So
8 there's agencies outside of the folks in this
9 room that -- and maybe that problem's fixed.
10 This goes back about three or four years.

11 But I would say that from a practical
12 standpoint, with dollars getting thinner, and
13 people trying to find ways to be more cost
14 effective, that maybe it should be looked at in
15 terms of inefficiency, to do it out of one, maybe
16 two agencies, rather than three or four, which it
17 seems like is going on right now.

18 RADM GLANG: Gerd Glang, Coast Survey.
19 So Ashley Chappell is our program coordinator for
20 Integrated Ocean and Coastal Mapping. She'll be
21 here tonight.

22 I would invite her to give an update

1 on what IOCM has been doing, including they've
2 spent quite a bit of time developing a National
3 Coastal Mapping Strategy, which gets directly at,
4 I think what you're concerned about, interagency
5 coordination. She'll be here tomorrow. So I
6 would invite her to give us an update. Juliana.

7 MS. BLACKWELL: Juliana Blackwell.

8 One other, just follow-up, since you mentioned
9 FEMA. I'm currently serving on the Technical
10 Mapping Advisory Council, which is advising the
11 Administrator of FEMA on ways to improve their
12 mapping program.

13 And so, from an operational, to an
14 insurance industry focus, to just the entire
15 scope of the national flood mapping program, it's
16 an opportunity to highlight things about the
17 coordination, even at the data collection level.

18 So, I will keep that in mind as we
19 continue to meet on a monthly basis under TMAC,
20 to have -- to see if there are opportunities to
21 continue to include that coordination effort, so
22 that FEMA hears that as well.

1 The points about what we do with the
2 national -- the coastal mapping strategy, things
3 like that, were part of the discussion last year
4 in 2015, during TMAC.

5 But continuing to highlight the data
6 deliverables, the data availability, everything
7 that goes into making, you know, floodplain --
8 flood mapping products, I think is certainly
9 another opportunity to highlight the need for
10 that coordination, not just amongst the Army
11 Corps or USGS and NOAA, but certainly FEMA and
12 other agencies. So I will keep that in mind,
13 your comments that you made here at HSRP.

14 Thanks, Ed.

15 VICE CHAIR HANSON: Thanks, Ed, for
16 bringing that topic up. It's something we
17 probably need to talk about at every meeting,
18 something we've talked about in the past as well.
19 And one of the things that is -- a couple of
20 observations from the conversation is, you'll
21 hear a lot about lack of funding.

22 And so, we've kind of addressed that

1 in the infrastructure side of things by trying to
2 encourage our folks, our clients, folks we do
3 work for, to be shovel-ready, not sitting on
4 their hands waiting for the money to come, and
5 then decide which projects you're going to do.

6 We've also approached that on the
7 research side with the academics as well. So, be
8 research ready. Have these projects in your back
9 pocket, ready to go, so when the money comes.
10 You never know if it's going to come from a
11 federal source, state source, or even a private
12 source.

13 So rather than sitting and waiting for
14 the bag of cash to come out, and then figure out
15 which one of them that you might want to do, you
16 know, be a little more proactive on that.

17 And so the challenge to NOAA is going
18 to be survey-ready. In other words, have that
19 long list of needs and projects in your back
20 pocket, ready to go, so when the money comes.

21 Sandy provided an excellent
22 opportunity for a lot of coastal interest to show

1 what they could do. And a lot of agencies had
2 shovel-ready projects that started work the week
3 after Sandy. A lot of researchers had projects.

4 I'm thinking about BOEM had a lot of
5 issue related to offshore sand sources at our
6 business, that they hadn't had funded for years.
7 But these, when the money came they were ready to
8 rock and roll. And they were out there within a
9 few weeks looking for sand sources.

10 So the same thing with NOAA and NOS is
11 just having that long list needs in your back
12 pocket ready to roll. Not waiting for somebody
13 to ask you what your needs are, but being a
14 little more proactive on that.

15 And certainly having a collaborative
16 message that you've already made it as efficient
17 as possible. You've eliminated all the, as many
18 inefficiencies as you can, except the funding,
19 certainly helps sell the overall picture to
20 everyone. And it helps -- it prioritizes
21 projects internally as well, as to what we think
22 is important.

1 So whether you get a couple of bucks,
2 or you get everything you've ever asked for,
3 being prepared for that is a big, big part of the
4 conversation. So thanks for bringing it up.

5 MEMBER LOCKHART: Yes. Carol
6 Lockhart. I just want to expand on what the
7 Admiral mentioned about the work Ashley
8 Chappell's doing.

9 I think there has been a complete sea
10 change in how these agencies coordinate. I think
11 ten years ago, I think Ed's concerns were very
12 valid. And there's certainly room for
13 improvement with including other agencies.

14 But, for example, last year at the
15 JALBTCX workshop a whole afternoon -- actually
16 ran a session there for a whole afternoon where
17 NOAA were present. It was at an Army Corps
18 workshop. The USGS were calling in on the phone.
19 And other members of the public calling in on the
20 phone.

21 And they had a live session with
22 SeaSketch for the whole afternoon, focusing on

1 different regions. And everyone was putting up
2 where they had projects they wanted to work on,
3 and seeing where those overlaps were between
4 different stakeholders.

5 And it's something that we would -- we
6 would never have seen that ten years ago. So I
7 think everything's actually moving in the right
8 direction. And I think some recognition has to
9 be given to that.

10 CHAIR PERKINS: Great. Thank you for
11 sharing that. The JALBTCX workshop is something
12 that maybe not everybody on the Panel is familiar
13 with. So perhaps maybe Ashley can brief us on
14 that event as well. Joyce, you had a comment?

15 MEMBER MILLER: Yes, just briefly.
16 Joyce Miller. My impression -- and Ashley has
17 talked several times at these meetings -- is that
18 that really has been successful, what Mike does,
19 and out of Juliana's shop, and on the shoreline
20 mapping, and the topo-bathy LIDAR.

21 My experience tells me it hasn't moved
22 as quickly on the in-water survey side of it.

1 That the, you know, there is better coordination.
2 But not to the level of what you're talking about
3 with the JALBTCX stuff. So that's just my
4 experience.

5 CHAIR PERKINS: All right. I don't
6 want -- this is good question and answer, and
7 very fruitful. But I don't want to use all the
8 time without having the reports from our working
9 groups, because that is a scheduled agenda item
10 here. So, Joyce and Dave, are you prepared to do
11 your working group report outs?

12 MEMBER MAUNE: Yes. Joyce is first.

13 MEMBER MILLER: Yes. At the last
14 meeting we decided to focus our energies on these
15 one page papers; these technical papers. And at
16 that point -- let me back up for the new Panel
17 members and the public.

18 The legislative and policy working
19 group, in the past there has been some confusion.
20 And I think the new members saw this in some of
21 the newest instructions about -- because we have
22 a legislative group, about, you know, whether --

1 what exactly our role was, you know, talking to
2 Congress or not.

3 And over time, through legal
4 briefings, and so forth, it's been made very
5 clear that the legislative group should monitor
6 what's happening in the legislation. But its
7 role is not to actively go to Congress, or
8 anything.

9 And so, Glenn has really served that
10 purpose -- before him, Paul Bradley, and now
11 Glenn. And I guess there's a new Paul. And I
12 just lost her card -- Christa. Yes, she's back
13 there. And they keep us very well updated on
14 what's going in Congress.

15 I mean, the other thing that happened
16 is, there were three members on the -- there were
17 actually four members on the legislative
18 committee, myself, Admiral Fields, Admiral
19 Barbor, and Gary Jeffress.

20 (Laughter.)

21 MEMBER MILLER: So the group is now
22 me. And Dave and I had pretty much decided,

1 especially since his group, which is labeled the
2 -- let's see, Planning and Engagement Committee,
3 we both had to some extent, in the intent of the
4 group was engagement.

5 And we decided that in this time
6 period the legislative group would work with
7 Dave. And the other thing was, Frank was co-
8 chair of that group. And Frank is no longer on
9 the panel. So, our panel memberships have
10 shifted a lot.

11 Just for information purposes, in the
12 past the legislative and policy group, we worked
13 on the charter, which is updated every three
14 years. And Glenn, when are we due for another
15 update? Is it a year and a half from now?

16 MR. BOLEDOVICH: Joyce, I'd have to
17 check, but I think that's about right because we
18 just reapproved it. It was for three years. And
19 it was a little bit late. But we had to take a
20 peek at that.

21 MEMBER MILLER: So that's still on our
22 to do list when it comes due again. And the

1 other thing we did was the standard operating
2 procedures and we all viewed that. This was at
3 Scott's request. We all viewed that as a work in
4 progress, and that we would update it as things
5 happened.

6 And one thing I wondered, from the
7 discussions yesterday, is whether we should
8 update some of the discussions we were having
9 about the chair position, and how long it should
10 last, and how the, you know, how the sequencing
11 should go, the succession. And that might be
12 something we want to add to the standard
13 operating procedures, just to give the -- and I
14 highly suggest you look through that because we
15 didn't have a clear understanding of who did what
16 to who, and who was responsible for what.

17 For instance, the program notes that
18 the court reporter takes. It wasn't clear
19 whether we were responsible for the summary or
20 not, or what. So we developed these working
21 procedures.

22 And also, to give people who are in

1 charge of these various documents timeframes.
2 This is what's expected of the panel members. If
3 you're going to respond, do it in this timeframe,
4 or tell us you're not going to respond.

5 So that's kind of what the legislative
6 and policy working group has been working on.
7 Plus, I, with -- sort of with the help of Admiral
8 Glang, worked on this, the NOAA Hydrographic
9 Survey Fleet: A Critical National Asset.

10 And I think Dave, he's been more in
11 charge of it. I think we should probably, before
12 we go into any of the papers, we should talk
13 about the structure and, you know, where we stand
14 on things before we actually work on the papers.

15 MEMBER MAUNE: I'll be doing that.

16 MEMBER MILLER: Yes. So, that's
17 pretty much all I've got to say right now. I
18 mean, the legislative and policy working group is
19 not -- it's dormant right now. We thought that
20 it was much more important to get a series of
21 these one page papers ready for publication.

22 And some of these I think are possibly

1 -- particularly this one given Dr. Callender's
2 comments, this one is extremely time critical.

3 So, I'd like to see -- my goal is to
4 have this agreed upon, finalized, and then go to
5 NOAA for final making it prettier and, you know,
6 final consideration. Dave.

7 CHAIR PERKINS: Dave, before you
8 begin, let me ask Dr. Callender, or Glenn, or the
9 Admiral a question about the timing of that
10 position paper on fleet recap.

11 I just, you know, looking for advice,
12 are we best served by wrapping that up and
13 putting it front of Dr. Sullivan in the current
14 administration? Or should we hold it back, and
15 be prepared, you know, to deliver it promptly
16 after the change in administration?

17 I just -- you know, we don't want to
18 be premature on it. So, looking for any comments
19 or advice.

20 DR. CALLENDER: I'd suggest both. I'd
21 try to get something in front of Dr. Sullivan
22 fairly quickly, if there's any possible way to do

1 that. Because the conversations are happening on
2 the Hill right now with the FY17 budget
3 discussions. And so, this is very much in her
4 mind.

5 It's also, you know, because it is
6 going to be a long-term challenge to be able to
7 come up with an appropriation that would support
8 some of the fleet recapitalization. I think it
9 also needs to be tailored to a transition
10 document.

11 So you can't just do one or the other.
12 I think you got to -- we have to continue to push
13 and bang on this. I don't know, Gerd, if you
14 have other thoughts on this.

15 RADM GLANG: Gerd Glang. No, I think
16 you're absolutely right, Dr. Callender. I think
17 this is a story that right now needs to be heard,
18 because of what's going on with the budget. And
19 I think it would be very useful for the
20 transition as well.

21 MEMBER BRIGHAM: Yes, I agree. We
22 should note in our letter -- have a paragraph

1 about this topic, and then refer to the appendix,
2 as we did with the Arctic report. Write it up a
3 little bit as an urgent issue, and then refer to
4 our paper that we append to the letter.

5 VICE CHAIR HANSON: Is it common in
6 NOAA for the Administrator to leave immediately
7 upon a new election? Or is it sometimes they
8 carry over? Or is that just a -- it depends?

9 DR. CALLENDER: So historically, you
10 know, the 19 January for sure they are gone. It
11 wouldn't surprise me if it's a little bit before
12 that. But again, there's no, we don't have any
13 notice of that.

14 So what's typical is probably
15 realistically the end of the calendar year. Now
16 all that said, she hasn't said specifically when
17 she is going to leave. But usually are pretty
18 closed on that kind of comment. So, the
19 transition team probably won't come onboard until
20 sometime mid-January.

21 They could be, as I said yesterday,
22 working with the outed Administrator for another

1 three or four months. So it's hard to say
2 exactly. I'm just looking at sort of the past
3 transitions, and what the timing has been.

4 VICE CHAIR HANSON: Okay. And then
5 that includes Admiral Brown as well?

6 DR. CALLENDER: Yes. My understanding
7 is he wants to stay as long as he can. But
8 again, that clock does time out with the new
9 administration.

10 MEMBER ATKINSON: Larry Atkinson. If
11 this is so time critical, why do we have to wait
12 to append it to a letter? Can't we do something
13 faster?

14 CHAIR PERKINS: Well, the letter will
15 begin before we leave here. Our standard
16 operating procedures say that we'll wrap that
17 letter up in a five week timeframe. So the draft
18 will be prepared in two weeks. It gets two weeks
19 for review. And then it goes into NOAA.

20 So, in some terms that is probably as
21 rapidly as we could finish this paper, and get it
22 forward. So I think the timing is -- your

1 point's well made. We don't have to wait for it,
2 but we're not finished with it yet either.

3 DR. CALLENDER: It would be really
4 great if there could be something earlier than
5 that. A conversation with Dr. Sullivan, or
6 Admiral -- Vice Admiral Brown would be helpful if
7 it's very, very soon, if it's going to have any
8 influence on the FY17 discussion.

9 It doesn't have to -- you may not have
10 to wait. What I'm saying is to have a formal,
11 full on letter. But some kind of briefer
12 communication, expressing the opinions of the
13 Panel, I think would be helpful. I know that
14 might be hard to do.

15 CHAIR PERKINS: Well, it looks like
16 we've got a pretty darn good start that was put
17 in front of us here with the draft, you know.
18 So, I'll accept that charge to try and get it
19 done in -- ahead of our recommendation letters.

20 DR. CALLENDER: And I'm certainly
21 happy to help facilitate a conversation if that's
22 what we need to do.

1 CHAIR PERKINS: Thanks, Glenn.
2 Lawson.

3 MEMBER BRIGHAM: That might be a
4 opportunity for you and Bill to talk to Vice
5 Admiral Brown on this one directly, as he opened
6 the door to do that a bit.

7 It's a sense perhaps of the HSRP that
8 this is a huge critical issue for the nation.
9 And we get it. And the paper's coming up the
10 chain maybe in the next couple of weeks.

11 CHAIR PERKINS: Yes. I'll reach out
12 to his scheduler, and see what our earliest
13 opportunity for Bill and I get back in front of
14 him and deliver it. I know what my homework
15 assignment is. Dave, are you ready?

16 MEMBER MAUNE: Yes. Dave Maune here.
17 Frank Kudrna and I were co-chairs of the planning
18 and engagement working group last year when we
19 talked about the need to have issue papers.

20 This is the part of this HSRP meeting
21 in which we roll up our sleeves, and figure out
22 ways how we can give advice to the NOAA

1 Administrator.

2 And we decided we would try to
3 approach various issues that we thought the NOAA
4 Administrator should be interested in, and give
5 recommendations in a certain format.

6 So we've struggled a little bit with
7 what format the issue papers should be. But we
8 are looking for one page documents, printed front
9 and rear.

10 So it's really two pages, but in a
11 single sheet of paper, that would address various
12 topics that we thought would be important to the
13 NOAA Administrator, which is particularly true
14 with an incoming administration next year.

15 I gave each of you on the panel the
16 top part of this slide that's on the screen here,
17 in which it laid out the issue paper titles.
18 Those were originally in prioritized manner, in
19 which the various members voted on what they
20 thought was most important.

21 And so, from top to bottom it started
22 off with a bunch of mapping topics. And then it

1 went down to technology, and then the fleet, and
2 Hampton Road and levels and tides sort of thing.

3 Over the months we were working on
4 what format these issue papers should have. And
5 we decided that it should include an explanation
6 of the issues and the status, what challenges we
7 face with these issues, what are the current
8 ongoing activities involving that issue, and most
9 importantly, what's the federal action that is
10 recommended for the NOAA Administrator.

11 We also decided that we should add in
12 what partners are part of this exercise, where
13 the partners could work together to help
14 hopefully solve the problems.

15 We have received some of the issue
16 papers. Some of them are just about ready to go.
17 And some of them have not been put on paper yet.
18 So what I did was I -- on the chart I gave each
19 of you I put X marks where there is a section
20 with that heading. And you'll see a number of --
21 a lot of blank spaces. And then in at least
22 three cases there's been no draft turned in to me

1 yet to review. But in all cases the identified
2 leader -- lead author is going to be called upon
3 this afternoon for a 20 minute session.

4 We have most of the afternoon to work
5 out these issue papers as best we can. And I've
6 assigned 20 minute time slots to everybody in the
7 sequence. But if you can see it on the board,
8 and if you can't I'll read it to you.

9 I'm going to start off with Joyce
10 Miller being first, from 1:15 p.m. to 1:35 p.m.
11 Then Lawson Brigham from 1:35 p.m. to 1:55 p.m.
12 Then Larry Atkinson from 1:55 p.m. to 2:15 p.m.
13 Then Ed Kelly from 2:15 p.m. to 2:35 p.m. And
14 Sal Rassello between 2:35 p.m. to 2:55 p.m.

15 Then I planned a break. I hope the
16 break's okay with you guys back there in the
17 planning group. I didn't coordinate this with
18 anybody. It seemed to me like we'd need a
19 biological break, if nothing else.

20 3:10 p.m. to 3:30 p.m., Susan
21 Shingledecker here is going to be up. After that
22 Bill Hanson, after that Scott Perkins. And then

1 we have Anne McIntyre and Gary Thompson, who are
2 brand new members to the team.

3 And they sort of chimed in and
4 contributed something when they saw what the team
5 theme topics were. And they're sort of -- there
6 was some similarity between theirs.

7 And so I put a time slot there for the
8 two of them, made it slightly longer. But to see
9 if there's a way we can consolidate those papers
10 into addressing these issues.

11 Does anybody have any -- any of the
12 speakers have any problem with the 20 minute time
13 slots that I've allocated to you? During that 20
14 minutes I'm hoping you to explain your paper.

15 And we had discussed whether we should
16 break up into small working groups or not. But
17 we decided at our last -- at our meeting last
18 month that we wanted the entire panel to comment
19 on every one of these.

20 And so, this was the best way we could
21 see for having everybody get the opportunity to
22 comment on each paper to see, can we make them

1 compelling, concise? Will they have good
2 recommendations for the NOAA Administrator?

3 Because without that, what's the use
4 of having the paper if there's no recommended
5 changes? And so, we've got to have recommended
6 federal actions on all of these things.

7 And then, do they need to be
8 consistent, and have the identical format? Or is
9 there room for flexibility, that they might have
10 a different look and feel? We were hoping that
11 they had the same look and feel. But we shall
12 see.

13 Now, whereas it's intended for the
14 NOAA Administrator, I suppose the NOAA
15 Administrator can decide how he or she would plan
16 to use these papers, just for her own use, or his
17 use, or how to share with other people.

18 I don't know that that's our decision
19 to make. Because we are providing advice to the
20 NOAA Administrator. So I assume that it is the
21 Administrator's decision what to do with these
22 fact sheets. Does anybody have any questions of

1 me on, or comments?

2 MEMBER ATKINSON: Yes. Atkinson. If
3 we've got 20 minutes, do you want us to do ten
4 presentation and ten comments?

5 MEMBER MAUNE: That would be about
6 right.

7 MEMBER ATKINSON: Yes, okay.

8 MEMBER MAUNE: Yes. If each person
9 took about half the time explaining their paper,
10 and then the other half for us to comment on the
11 paper. Yes, Lawson.

12 MEMBER BRIGHAM: On the Arctic paper,
13 this is Lawson Brigham. On the Arctic paper we
14 just need consensus on some technical points. I
15 mean, it's pretty mature. But there's still, we
16 need consensus on, for all of the members on some
17 particular points. And what do we want to say?

18 Like, one question is related to
19 Admiral Glang, and how much of the United States
20 maritime Arctic is actually charted to modern
21 standards? Can we get an estimate for that? So,
22 we're not technically incorrect for -- Anyway

1 there are some points.

2 The other things is, my sense is still
3 that these topics are slightly fluid. In one
4 respect Captain Rassello and I, and Captain
5 McIntyre have this precision navigation that
6 relates not only to cruise ships, but to mega
7 container ships.

8 MEMBER MAUNE: Yes.

9 MEMBER BRIGHAM: And so, we may want
10 to meld the topics somehow. I don't know how
11 that's going to go.

12 MEMBER MAUNE: That's possible. So if
13 we can fit it on one page.

14 MEMBER BRIGHAM: Well, it will, front
15 and back, yes.

16 MEMBER MAUNE: That was one of the --

17 MEMBER BRIGHAM: Well, that might be
18 a little tricky.

19 MEMBER MAUNE: Yes.

20 CHAIR PERKINS: Kim.

21 MEMBER HALL: I just want to note that
22 I saw on our agenda that there's time tomorrow

1 morning too. So I don't if these 20 minute, the
2 amount that we all like to speak and talk to
3 these issues is maybe, Dave's schedule is a
4 little too quick.

5 And it looks like there's time
6 tomorrow morning to establish some of these,
7 including Captain Rassello's paper, the Arctic
8 paper, and then the resilience Hampton Roads
9 project. So it looks like maybe we don't have to
10 squeeze it all in this afternoon. There's some
11 room. I just wanted to mention that.

12 MEMBER MAUNE: Dave Maune again. I
13 pointed out that the checkbox does not have
14 Joyce's paper with a checkbox and partners.
15 Well, when she looked at the shift today she
16 revised her paper. And I had, the one we have
17 before us this morning now has partners on it.
18 Yes.

19 MEMBER BRIGHAM: Lawson Brigham again.
20 The papers go up to the Administrator, attached
21 to our letter in some format. And then they go
22 on the website to be transparent with this

1 information. True?

2 So, these issue papers for the NOAA
3 Administrator are going to be used by staffers
4 and others on the Hill if we just direct them to
5 the website.

6 MEMBER MAUNE: I would assume so, yes.

7 MEMBER BRIGHAM: So it's not an
8 internal document. It's actually, well, it's
9 internal in part. But then it becomes external
10 when we put them on the website.

11 So I just wonder how the format -- I
12 guess it's all clear and smooth. But I didn't
13 know if there were any challenges in this
14 process. I don't know of any, Admiral. But --

15 CHAIR PERKINS: I like the, I like
16 what Dave has done here. So first of all, thank
17 you, Dr. Maune, for the effort, and your
18 leadership that you've put to get us to this
19 point.

20 Having them have a consistent look and
21 feel seems both beneficial and logical, you know.
22 The length may be the thing that changes. Some

1 of the issues are perhaps more complex than
2 others.

3 Taking Dr. Callender's comments into
4 account, about the importance and the timeliness
5 of fleet recapitalization in that issue paper,
6 and the fact that I have not put forward a draft
7 on technology, in political fashion I would like
8 to yield my 20 minutes of time that's scheduled
9 for the technology issue paper, and suggest that
10 we use that additional time, and put that effort
11 to the fleet recap paper. It's me dodging a
12 bullet for a good purpose. So I hope you'll
13 consent to that.

14 MEMBER MAUNE: I'm fine with that.

15 MEMBER MILLER: One comment. Dave and
16 I worked on the template. And Admiral Glang came
17 in with a sample paper that was in this format,
18 that we thought was quite good.

19 One thing I noticed, I did review most
20 of the papers that are in existence. And
21 something the authors should think about is, we
22 are advising the NOAA Administrator about things

1 that NOAA could, should, might do.

2 And especially in the areas of ports,
3 and large ships, and so forth, there is so much
4 overlap between what Army Corps is supposed to
5 do, and NOAA's supposed to do.

6 And that I think we need to be clear
7 about what NOAA can do. Because there's a lot of
8 things that Army Corps is involved in that NOAA
9 can't tell them what they should do. And so we
10 just need to think a little bit about, in our
11 recommendations to the Administrator, what is
12 appropriate to suggest that NOAA do.

13 I noticed that some of the
14 recommendations were extremely broad, and not
15 really NOAA focused. They were more the Federal
16 Government should do this.

17 I don't know if anybody would agree
18 with that. But that was my comment, in terms of
19 a general sort of look and feel, and message.
20 That we need to be very cognizant of what our
21 role is.

22 MEMBER MAUNE: I agree.

1 CHAIR PERKINS: Anyone else?

2 MEMBER SAADE: Yes. This is Ed Saade.

3 I'd ask that we at least spend five minutes on
4 technology, so those of us coming to the table
5 can understand what the theme is. Is it
6 technology recommendations for NOAA for the
7 future? Is it technology transfer, that sort of
8 thing?

9 CHAIR PERKINS: Ms. Saade, I wish I
10 had a clear and succinct answer for you. And I
11 don't. So, it was a topic that came out of the
12 meeting on Long Beach. Lindsay Gee and I had
13 done an email exchange on it.

14 I've got a list of about eight bullet
15 points. So it is not clearly formulated. It's
16 needs a lot of tender loving and care. And I
17 think it might be a topic that I would be glad to
18 hand off to someone with expertise --

19 MEMBER SAADE: I'll volunteer.

20 CHAIR PERKINS: -- and passion. Thank
21 you, sir.

22 MEMBER SAADE: Okay. Which means I

1 get five minutes then?

2 CHAIR PERKINS: Absolutely.

3 MEMBER SAADE: Okay.

4 CHAIR PERKINS: Yes. Any objections?

5 MEMBER MAUNE: I have no objections.

6 And we were talking about the fact that NOAA has
7 such a huge backlog of hydrographic surveys. Is
8 there some way that technology can be used to
9 come up with alternate ways of getting a lot of
10 these large areas mapped, that we can't do with
11 the current mode of operation. So, anything that
12 can help us map more areas, better, faster,
13 quicker, cheaper, whatever, is fair game.

14 CHAIR PERKINS: Yes, Anne.

15 MEMBER MCINTYRE: Anne McIntyre. I'm
16 glad to hear that there's still maybe some
17 flexibility in the topics of the issue papers.
18 Again, having really no previous exposure to the
19 work product and what the issues are.

20 What I'm seeing with, the practical
21 issues I see with the tide and level really is
22 related to the PORTS system, which is related to

1 the, let's say the extreme navigation, the ENCs
2 for the ships.

3 And really those products are used
4 commercially in concert. And would maybe be
5 better addressed like that, as opposed to tides
6 and levels, as far as how they impact coastal
7 areas during storms, and that type of thing.

8 So I think that there's some
9 opportunity to combine the work that Lawson and
10 Sal have been doing, with the issues that I saw
11 with the tides and levels. And then maybe the
12 tides and levels can be broken out into -- That's
13 not my area of expertise. But just something
14 along Gary's line of work.

15 CHAIR PERKINS: Lawson.

16 MEMBER BRIGHAM: Lawson Brigham. Yes,
17 it's, we're, from what I heard from Anne and
18 others, I mean, it's almost a working group and a
19 task force to come up with -- And maybe we should
20 have one on technology.

21 I'm a little, well, I'm not confused.
22 But I understand we want to get an issue paper,

1 two pages. But to get to that requires a fairly
2 extensive effort among a bunch of us, over a
3 series of meetings on the phone, teleconferences
4 like we did with the Arctic.

5 So, in a way it's almost a working
6 group effort to produce some sort of a report
7 that we can synthesize to get to a, I mean, I
8 know we want to synthesize. But I don't know if
9 it's too many topics. But to me, some of the
10 topics require a lot more work. And maybe we
11 wouldn't send up in this letter all of the issue
12 papers.

13 MEMBER ATKINSON: Well, we're only
14 going to have a few issue papers finished by the
15 end of this meeting. And a lot of them will be
16 waiting until the September meeting. We hope to
17 have as many as possible done in time for the new
18 administration.

19 CHAIR PERKINS: Yes. Identifying them
20 in the recommendation letter I think might --

21 MEMBER ATKINSON: If we can.

22 CHAIR PERKINS: -- you know, introduce

1 them, that these are the issues that HSRP is
2 going to be addressing in making, you know,
3 preparing issue papers on. And then putting
4 forward with this letter the ones that we
5 actually have ready, I think is perhaps a good
6 strategy. Mr. Kelly.

7 MEMBER KELLY: Yes. Ed Kelly. Dave
8 did a great job in getting us started with all of
9 this. And some of these are relatively rough
10 drafts of what will have to actually come out.
11 And distillation is really what I see as the
12 biggest factor.

13 Anne just mentioned, you know, tides
14 and currents. And that's part of the ports and
15 harbors piece. It obviously affects large
16 vessels, cruise ships. So we have to, you know,
17 really get together on some of these.

18 And I think by giving us 20 minutes or
19 so, we'll be able to throw things into, maybe
20 into the right piles. And maybe reassign some of
21 these topics so that they fit better under these
22 umbrellas.

1 And I don't think, like we say,
2 they'll probably not all be ready. But we should
3 reference that these are key topics that were
4 identified and are being worked on, and will
5 follow as recommendations. We'll get whatever we
6 can with this one.

7 But do we have to wait for a formal
8 recommendation letter? Or can our recommendation
9 letter from this meeting set the stage that these
10 are being worked on, and will be provided in
11 short order, so that we don't have to wait until
12 September, and then start working again?

13 We might be able to identify and
14 target quite a few of these, and put them in in
15 succession, you know, over the next several
16 months.

17 CHAIR PERKINS: Yes, correct. We do
18 not have to wait until our next meeting to
19 communicate to the Administrator. So we can
20 communicate upward at any frequency, and at any
21 temporal occurrence that --

22 MEMBER ATKINSON: Yes. That we've

1 identified these as key issues, and are in the
2 process of summarizing and providing
3 recommendation, you know, subsets, in essence,
4 that would follow our recommendation letter from
5 this meeting.

6 CHAIR PERKINS: Yes, Joyce.

7 MEMBER MILLER: And I would encourage
8 new members in particular. There's single names
9 on all of these. I don't think there should be
10 single names on all of these. So, if you're
11 interested in a topic, jump in feet first is my -

12 -

13 CHAIR PERKINS: Yes.

14 MEMBER GEE: Lindsay Gee. I'm not
15 jumping in directly, Joyce. But I would, just
16 regarding the technology paper. As Scott said we
17 just had a couple of emails on that.

18 But it seems like technology is across
19 a number of these papers anyway. So it's
20 probably going to get more than five minutes.
21 But the ones that are in the existing issue
22 papers are quite specific I think, and not too

1 future.

2 But then maybe a general technology
3 paper is more about that, you know, five, ten
4 years, solving the issues down the road a little
5 bit further. And I guess that's what we could
6 discuss is the --

7 When we discuss the technology papers,
8 like, well, that's kind of broad. So, where do
9 we really want to take it is probably the first
10 step of how far down the road in the future that
11 might be.

12 CHAIR PERKINS: I'm really excited to
13 see what Mr. Saade --

14 MEMBER GEE: Yes.

15 CHAIR PERKINS: -- has in mind. Dr.
16 Atkinson.

17 MEMBER ATKINSON: Yes. Larry
18 Atkinson. Just the mechanics of doing this.
19 What about if we, this afternoon we give our
20 presentations, we have a discussion, and then,
21 I'm looking at my own. I go back and make some
22 changes.

1 And then we've got time, we could make
2 time tomorrow morning or afternoon to go back. I
3 could get up, and others can say, okay, I've made
4 these changes. And get some kind of, some of
5 them maybe we can get a consensus, that yes,
6 that's okay. It's accepted if you do those
7 changes, you know, type thing.

8 So we can leave here with -- I don't
9 want to have to face this again in six months, or
10 whatever. Let's find a way to finish some of
11 these. We should be able to.

12 MEMBER KELLY: Ed Kelly. I agree. I
13 think we have to get a product as a result of
14 this. And one of the things as we go through
15 this a little later on, is to more sharply define
16 exactly what these will look like.

17 One of my biggest challenges was
18 getting ten pages of ideas onto one and three
19 quarters of a piece of paper. So, you know, it's
20 going to be tough to do that. And that's why
21 maybe segregation of some of the topics and cross
22 referencing might help to abbreviate the length

1 of these things.

2 Because I think any one of these
3 things could be a thesis, as opposed to, you
4 know, just a couple of bullet points saying
5 here's the situation, here's the problem, here's
6 the solution. It's kind of tough to boil it down
7 to that.

8 MEMBER LOCKHART: I guess I have more
9 of a procedural question. And that is, you know,
10 we are recommending, we're going to send this
11 attached to a recommendation letter to the NOAA
12 Administrator. And that is our function, to make
13 recommendations to the NOAA Administrator.

14 But within that letter, are we able to
15 also suggest that the Administrator share this
16 with other individuals within the Government,
17 different agencies, things like that?

18 Since we are listing partners as one
19 of the items on these issue papers, it seems that
20 would be a prudent thing to do if we have the
21 ability to do that.

22 DR. CALLENDER: So, Dr. Sullivan has

1 told her leadership team that what she wants to
2 do is basically send or leave a letter, if you
3 will, for the next NOAA Administrator of where
4 Dr. Sullivan sees NOAA, where we are now, where
5 are the challenges, where we're going. So I
6 think she would find this information welcome for
7 that.

8 That said, it's always a little
9 awkward to send a letter to the current
10 Administrator saying, this is, we're all excited
11 for the next one. And so, here is, that's for
12 them.

13 So be real careful how you phrase it.
14 You know, phrase it for her of, this may be
15 useful to you in that letter to the new
16 Administrator. And for to not remind her that
17 she's leaving and we'll have a new one come
18 onboard.

19 CHAIR PERKINS: Yes, Kim.

20 MEMBER HALL: Hi. Kim Hall. I just
21 had a couple of questions as the new folks on
22 the, read both of the papers. And we've had a

1 couple of chats.

2 There's a chicken or the egg situation
3 we've got, where we'll give everybody 20 minutes
4 to discuss the papers. But from my perspective,
5 having read them, there's some places, like Ed
6 just said, where, for example, I'll use an
7 example, the cruise industry paper.

8 The issues that are actually brought
9 in that are not specific to the cruise industry
10 or mega-ships. Precise navigation is a demand
11 that we see from every corner. We heard it all
12 day yesterday, more ports, more funding, those
13 kind of things.

14 And so, how do we want to establish,
15 like give the folks ten minutes to give a quick
16 briefing of what they're doing, and then discuss
17 maybe how we recategorize these papers.

18 Because again, the cruise industry one
19 is a little bit too specific. And sorry, Sal, I
20 know I work for the cruise industry. But it
21 really is a larger issue. And we can anecdotally
22 point to cruise industry and mega-ships.

1 But it should, I don't think that it
2 should be a paper that is just about the cruise
3 industry, or just about mega-ships, or both. So
4 I just wanted to ask, kind of as a new person,
5 kind of point of procedure there, chicken or the
6 egg situation. Thanks.

7 CHAIR PERKINS: Yes. You make a good
8 point. The issue definitely isn't isolated to
9 the cruise industry or the mega-ships. But that
10 gives us a context.

11 That gives us a, you know, the arrival
12 of the Ben Franklin over the Christmas holidays,
13 the largest ship ever to pass underneath the
14 Golden Gate Bridge, right.

15 So I think what we're trying to do
16 there was capture that in a currency, you know,
17 put it in the right temporal context, so that can
18 resonate perhaps differently than the same
19 message about the importance of precise
20 navigation.

21 You know, if we title it precise
22 navigation it sounds like something that we've

1 talked about a lot. If we put it in the context
2 of something happened that has never happened
3 before, the arrival of a mega-ship with less than
4 five feet of clearance underneath the Golden Gate
5 Bridge, we might be able to attract a little more
6 attention in a very noisy environment.

7 So that was the reasoning to put it in
8 that context. But your point is valid. I can't
9 believe I'm going to say this. We're a little
10 ahead of schedule. Lawson.

11 MEMBER BRIGHAM: I'd like to get us
12 back on schedule. Why not just talk for a few,
13 we have a few minutes. Why don't we just go do
14 the working group on the Arctic?

15 And then, I mean, there's not much to
16 say. And finish that one. I mean, we were
17 scheduled tomorrow. But, on the Arctic working
18 group there's not a lot to say really.

19 CHAIR PERKINS: I'm agreeable.

20 MEMBER BRIGHAM: Yes. It's Lawson
21 Brigham. For the new members, and to remind the
22 long term members, we had a working group the

1 last four years on the Arctic. And we would
2 periodically, at ever meeting, brief out some
3 issues in the Arctic, and have presentations.

4 But I think the important thing that
5 happened in L.A. was Dr. Callender and the
6 Admiral provided us some questions to answer.
7 And that was very helpful to focus what is NOAA
8 actually interested in, and the specific
9 navigation services questions.

10 And so we took that. The working
11 group, it's, look around the table here. It's
12 Larry and Andy Armstrong, and Sal, and Gary in
13 the back, and now Anne. So we have five or six
14 people. And we met in teleconferences, I think
15 seven or eight times, Lynn, during the
16 summertime, with Ashley Chappell also helping us.

17 So Andy and Ashley are, of course,
18 NOAA representatives to help us with technical
19 issues. But they're not, I mean, they wouldn't
20 steer the discussion, but help us in handling the
21 discussion.

22 So we spent the summer, and then we,

1 to answer. And your packet is, in fact, the
2 report we put together. And it was, we reached
3 consensus on that report in the September
4 meeting. And then appended it to our letter to
5 the Administrator.

6 We didn't expect, and it didn't happen
7 that the Administrator would answer our
8 recommendations to the questions that you gave
9 us. It was just to highlight, I think, to her
10 the range of issues.

11 But in the letter to the Administrator
12 we did say, strongly suggest that the NOAA
13 Administrator take action on the President's
14 words about charting and hydrography.

15 In other words, either a press release
16 or some external acknowledgment of the
17 President's words about, putting the emphasis on,
18 you know, ice breakers, but navigation services,
19 and charting and hydrography he actually said.

20 So we sent that up. We're not quite
21 sure that that actually happened. But
22 nonetheless, we answered these questions. There

1 are some technical points to be further discussed
2 to improve the issue paper, or gain consensus on
3 it.

4 But the question I think at hand is,
5 is that process helpful and useful to the NOAA
6 senior staff? We answered your questions. We
7 sent it up. We had a rich discussion, I think,
8 presentation and discussion at the last HSRP
9 meeting. And so, is that process helpful to
10 tease out some of the issues? I think that's the
11 question at hand.

12 It was a fair amount of work. We had
13 pretty good chemistry, and good consistency in
14 answering the questions back up. I personally
15 think it's a reasonable model for the working
16 groups to handle a particular issue.

17 So I just kind of throw it back out,
18 Scott, to you and maybe Bill, whether you think
19 this process, and to the senior NOAA leadership,
20 whether this process is helpful, just to start
21 the dialogue.

22 DR. CALLENDER: Well, I'll go first.

1 And I'd like to, absolutely like to hear Rich,
2 and Gary, and Juliana's thoughts on this. I
3 thought it was actually extremely useful from my
4 perspective.

5 Because, you know, by us putting out
6 some questions that I know in some cases were
7 probably pretty hard questions, it really was
8 able to help engage and focus the panel into some
9 larger strategic issues that we'd love to have,
10 you know, your opinions and thoughts on.

11 So I thought, quite frankly, it was
12 incredibly useful. I know it was hard. It's
13 also going to be hard for us then to take those
14 thoughts coming from the panel, and sort out,
15 okay, how do we take those recommendations and
16 try to put them into practice.

17 But certainly, I thought it was a
18 pretty good way to target the conversation. Let
19 me ask Rich or Jarrod if they have some thoughts
20 too.

21 MEMBER BRIGHAM: Yes. It's Lawson
22 Brigham again. Again, this goes on the website.

1 So the staffers from Senator Murkowski's staff
2 asked me about Arctic, or whatever, I referred
3 them to the website. And I referred them to the
4 report.

5 And I further referred him to the line
6 item budget item for the Arctic. I said, that's
7 an issue the Senator can deal with. It's been
8 vetted through, you know, our committee, up to
9 the Administrator. It's highlighted. We believe
10 that it's, if we're ever going to make any
11 headway on hydrography we need to have some
12 attention on Arctic.

13 So, that was just one example. But I
14 said, read all of the issues. It is a report by
15 us to the Administrator. But it was fueled by
16 the questions of NOAA. So it's a joint effort.

17 You know, I made it clear to them that
18 I thought it was a joint collaborative effort of
19 the NOAA experts, plus citizen input, to come up
20 with some ideas. And again, I did focus it,
21 because that's what our group was, that we should
22 take a look at a line item budget if we're never

1 going to get any enhancement for Arctic
2 hydrography.

3 MR. EDWING: I think it's been very
4 useful, in really two levels. One is, I think
5 it's been a great way to help coalesce the
6 collective wisdom of the panel around certain key
7 strategics. Well, some of these are tactical. I
8 think they range from tactical to strategic
9 issues.

10 But it's a great way to have, just
11 help highlight these issues, and kind of coalesce
12 down to a few. A large amount of things the
13 panel can look at. And we to kind of narrow it
14 down.

15 But then it also provides a toolkit
16 for the panel. And probably this gets down to
17 more the individual panels. That if you use
18 them, take out there and help, you know, educate
19 and promote the activities of the NOAA navigation
20 services to the public, and Congress, and others.

21 MEMBER MILLER: Lawson mentioned the
22 questions that Dr. Callender posed, which have

1 been answered in pieces by the various working
2 groups. And it had been of discussion several
3 times.

4 And I, because I had been taking notes
5 in a lot of the meetings, including the coastal
6 intelligence meeting, I put together a draft,
7 which is in the package I believe, Lynne.

8 And I just noticed there's no specific
9 timeframe to discuss that. And I wondered if we
10 wanted to carve out some time to just see.
11 Because I put together sort of bits and pieces
12 from various things. And in some cases I
13 included things that were my own opinion for
14 discussion.

15 It certainly is not a finalized
16 report. It needs the consensus of the panel.
17 So, do we want to carve out some time to go over
18 that?

19 CHAIR PERKINS: I don't have any
20 objection. But, you know, I do want to make we
21 use as much time as possible on the fleet recap
22 piece, you know, to try and bring that further

1 along in the process.

2 That broad question that Lawson put
3 forward, you know, were the results of the Arctic
4 working group beneficial? And did this help?

5 You know, I just, my observation,
6 right, is that this body, the HSRP, has gone from
7 taking 120 days or more to draft a one page
8 recommendation letter, you know, to where now we
9 are producing meaningful, you know, tactical and
10 strategic detailed information, you know.

11 So I think we've made a tremendous
12 step forward in the time that I've been on the
13 panel, of how we operate, and what we're
14 delivering in terms of outcomes.

15 So from my perspective, I think it's
16 outstanding. And I think that that's the
17 benchmark that each of these topics should try to
18 match.

19 MEMBER BRIGHAM: Lawson Brigham again.
20 Maybe just to sum up on the Arctic. We still
21 have the working group. I'm sure we'll meet in
22 teleconferences in the months ahead.

1 I think we should remain a working
2 group on Arctic. People see that Shell has
3 departed, and ConocoPhillips, and Statoil. So
4 nothing's happening in the American Arctic. But
5 a lot is happening in the whole of the Arctic,
6 and in the U.S. Maritime Arctic.

7 And I think we need to have this
8 working group to keep the pressure on internally
9 in NOAA. The hydrography and charting is number
10 one for Arctic issues, beyond oil spills,
11 ecosystems, base map, whatever the other issue
12 is.

13 For the Arctic the baseline for
14 interests, national interests, are what the HSRP
15 is about. So we should keep the Arctic working
16 group active. Maybe tease out some other
17 questions in the months ahead.

18 But I'm interested in keeping Arctic
19 hydrography. And I think the team for the
20 internal dynamics of how NOAA responds to the
21 Arctic, as well as the external. So I think
22 we'll just continue to work.

1 CHAIR PERKINS: I think that's fine.
2 And until we're directed from the Administrator,
3 or from the DFO, or some other, you know, avenue,
4 that there's no longer a need for that working
5 group, I think you're absolutely right, Lawson.
6 Keep it in place, and keep the focus, don't let
7 the focus, keep the optics on it.

8 MEMBER BRIGHAM: And keep the linkages
9 going for, between this and the new survey ships
10 in the acquisition process. Keep that.

11 CHAIR PERKINS: Right. The benefit of
12 what you've done, and how legislators can use
13 that as a reference document, you know, is
14 timeless, you know. And so, keeping it current,
15 and not letting it expire seems very logical and
16 prudent.

17 VICE CHAIR HANSON: I've got to
18 challenge Lawson a little bit here as well.
19 Because certainly the urgency without the
20 exploration, it changes the dynamic of the
21 discussion. And so, we're going to have to
22 figure out who, besides Dr. Brigham and NOAA, is

1 pushing for this, the Arctic.

2 There's, we've got to be much clearer.
3 You may want to go back and take another look at
4 what we've written up, and see who the other
5 stakeholders are that really care about this.

6 MEMBER SAADE: So, that's, the quick
7 answer is, now there's cable route surveys going
8 through there. There's lots of other activity
9 that continues to go on. The Navy's running
10 around. Everybody needs it. It's not just about
11 oil exploration. There's a tremendous amount of
12 other activity going on.

13 And it's, I'm with Lawson. It's crazy
14 that we had all this momentum from the President
15 going up there, and then wind up with not any
16 additional funding, not any additional support.

17 VICE CHAIR HANSON: So, there are
18 answers. We just need to articulate them, and
19 get those partners involved in what we're trying
20 to do there.

21 MR. ARMSTRONG: I would just note that
22 out of the recent President/Prime Minister

1 meeting, when Prime Minister Trudeau came to the
2 White House, was issued a statement which
3 includes a statement on low impact shipping
4 corridors that says, we'll work together to
5 establish consistent policies for ships operating
6 in the region, et cetera.

7 Vessel traffic patterns, countries
8 will work together, share assessments of
9 navigation data quality, and capacities for
10 supporting safe and low impact shipping.

11 And so the, clearly the White House
12 still has Arctic shipping on mind. And
13 specifically some issues with navigation data
14 quality.

15 I think that will give us an
16 opportunity to focus our efforts with a slightly
17 different emphasis than before perhaps. But
18 nonetheless, with some specificity.

19 CHAIR PERKINS: All right. Admiral.

20 RADM GLANG: Gerd Glang, Coast Survey.

21 So, can I respond to Lawson's initial question
22 about whether this was useful or not?

1 CHAIR PERKINS: Please. Please so.

2 RADM GLANG: So, I think that the
3 document was very useful. I think the working
4 group provided some practical and actionable
5 recommendations that we can follow-up on, and see
6 if they bear fruit for us.

7 On some of the more analytical
8 questions, I appreciate the working group's
9 thinking. It certainly validates our thinking.
10 And I would look to the working group to continue
11 to help facilitate our thinking. Are we thinking
12 about this in the right way?

13 The prioritization, and the amount of
14 work we can do in the Arctic in a given year is
15 very much driven by resources and capacities. We
16 asked the question about how NOAA might think
17 differently about this region. So we're looking
18 for out of the box ideas.

19 One thing that I believe we made the
20 panel aware of, I know, Lawson, you're aware of,
21 is we have planned an Arctic nautical charting
22 workshop to take place in Anchorage. Actually,

1 it's next Tuesday.

2 It's sort of the first time we've
3 tried this. I'm not sure how well, how much
4 representation we'll get from stakeholders up in
5 the Arctic.

6 We would certainly appreciate any last
7 minute facilitation of additional participants in
8 that. But we think that conversation with
9 stakeholders may be a way to start getting at
10 understanding some of these other sectors.

11 I know there was a recommendation from
12 the tug and barge, the near-coastal operators.
13 They have a completely different view of what our
14 priorities should be up there, versus say the
15 Coast Guard. So I think in general it was very
16 useful. And I appreciate the hard work. And I
17 do look forward to the working group continuing.

18 CHAIR PERKINS: We are two minutes
19 ahead of schedule. I know, that's amazing.
20 Let's go ahead and break. And then we'll meet
21 back in place. And let's get out panel
22 discussions started right on time at 10 o'clock,

1 please.

2 (Whereupon, the above-entitled matter
3 went off the record at 9:43 a.m. and resumed at
4 10:03 a.m.)

5 CHAIR PERKINS: All right, thank you.
6 We'll officially reconvene. And I would like to
7 pass it over to Gary Magnuson so he can introduce
8 our Panel and take it from here.

9 MR. MAGNUSON: Thank you, Scott.
10 We're going to go ahead with the process, like we
11 did yesterday, on the first panel session.

12 The moderator will introduce each
13 speaker, they will give their presentations. You
14 will have the option, during the presentations,
15 to fill out cards, written questions, for the
16 panelists. Scott has a few of those.

17 Just indicate, write down your
18 question and which panelist the question is
19 directed to.

20 Then at the end of the last
21 presentation, those written questions will be
22 read by the moderator and directed to the

1 appropriate panelists. And then following that,
2 we will have questions from the floor.

3 So we hope it works well, gives you
4 the flexibility of a good give and take. And
5 also, as been suggested, that the panelists could
6 also ask each other questions. So hopefully
7 we'll have plenty of time for all this to happen.

8 Again, it's meant to share information
9 and we'll all learn from what is presented.

10 Panel 2, Regional Vulnerability,
11 Resilience and Recovery. What an appropriate
12 topic for this area of the country.

13 As we heard from Councilmen Brown and
14 Jed Webb yesterday and others, how important this
15 region is. Particularly to the petrochemical
16 industry and the nation's energy.

17 But is also particularly vulnerable to
18 extreme weather events. And there's many places
19 downtown to remind us of the Great Storm, as they
20 talk about it.

21 So again, the Panel topic, Regional
22 Vulnerability, Resilience and Recovery.

1 Particularly NOAAs role in helping areas recover
2 from these events.

3 The Moderator for this wonderful Panel
4 is Dr. Gary Jeffress. He's not a stranger to
5 many of you since he served two terms on this
6 panel. But for introductory purposes, he is
7 officially Professor of Geographic Information
8 Science at Texas A&M University and Director of
9 the Conrad Blucher Institute of Surveying and
10 Science.

11 So please, without further ado, Gary,
12 please.

13 DR. JEFFRESS: Thank you, Gary. Good
14 morning. First of all, I'd like to thank Admiral
15 Glang for inviting me back to the Panel to chair
16 this session. Or moderate this session.

17 And personally want to wish you a
18 good, a happy and healthy and long retirement.
19 And I very much enjoyed all the meetings that you
20 organized over the eight years that I was on the
21 panel. It was a lot of fun.

22 Anyway, onto the topic today of

1 Regional Vulnerability, Resilience and Recovery.
2 And the importance of coastal planning and
3 physical oceanographic data.

4 And we've gathered here today five
5 experts who on a day-to-day basis, use a lot of
6 NOAAs physical oceanographic data and nautical
7 charts and realtime data and information provided
8 by NOAA. And use it in a scientific environment.

9 And we have five speakers. A land
10 surveyor, a coastal geologist, a coastal modeler,
11 with a PhD in physics, and one of the Corps of
12 Engineers navigation branch managers at the
13 Galveston District. And also a hydrographic
14 surveyor on the panel.

15 And so I'll get straight into that.
16 But I just want to give you a little bit of the
17 background of why we're here.

18 And this is what it looked like after
19 the storm in Galveston of 1990. It completely
20 wiped out the entire city. And also 6,000 lives,
21 roughly. Still the largest death toll from any
22 natural disaster in United States history.

1 And you've might have noticed, since
2 coming to Houston, when you landed in Houston and
3 motored to Galveston, the typography of the coast
4 of Texas is a little vertically challenged. And
5 that's actually getting a little worse as time
6 goes by.

7 But this is what the Galveston storm,
8 and there's been many since 1990, storms that
9 have hit the Texas Coast. And it's pretty much
10 been, the landscape of the Coast of Texas has
11 been pretty much carved up by hurricanes. And
12 the typography reflects, the coastal plain
13 reflects the series of hurricanes, which have
14 shaped the coast and the plain at the Coast of
15 Texas.

16 One of the issues that we're going to
17 talk about today, especially Steve Blaskey as a
18 land surveyor, is the importance of knowing where
19 the ocean stops and the land starts. And in
20 surveying, in the surveying world, we call that
21 the littoral boundary. The legal littoral
22 boundary.

1 And this slide here depicts a court
2 case which started the Texas Coastal Ocean
3 Observation Network. It is a ranch called the
4 Kennedy Ranch, which is down in Kennedy County.

5 A huge property. Slightly smaller
6 than the King Ranch, which is the biggest ranch
7 in the United States. The King Ranch is just to
8 the West of the Kennedy Ranch.

9 And back in 1988, the owners of the
10 southern portion of the Kennedy Ranch, which is
11 what's depicted in here, belonged to what's
12 called the Kennedy Memorial Foundation.

13 The two children, from the Kennedy
14 family, inherited the ranch. The northern part
15 was inherited by the son. And the daughter,
16 whose name was Sarita, inherited the southern
17 part.

18 Sarita never married, but actually was
19 known to have married into the Catholic Church.
20 And she left her estate to the Catholic Church.
21 And they setup this Kennedy Memorial Foundation
22 to manage the property.

1 And back in 1988 they decided the
2 boundary of their property was not as depicted on
3 nautical charts. Which is this area here.

4 But up to the channel of the
5 intracoastal canal. As their deed described it,
6 the eastern boundary of the ranch to be the shore
7 of the Laguna Madre.

8 And so they went to battle with the
9 Texas General Land Office over the title to this
10 30,000 acres of mudflats. And of course the
11 mudflats, in and of themselves, is not worth a
12 lot. But there is oil and gas underneath it.

13 And now fighting over a \$40 million
14 value of that oil and gas royalties. And that's
15 how we became involved in the tide gage network.

16 So that's a pretty important part of
17 the history of Texas and also how we define,
18 legally, the coast.

19 And this is the other thing that, from
20 NOAA's tide gage record here in Galveston, is the
21 sea level trend that we're faced with along the
22 Texas Coast, at various levels of subsidence.

1 This record shows a 6.34 millimeters
2 per year increase in sea level at the tide gage.
3 Now that's not all sea level rise. We believe,
4 and we haven't actually measured this yet, that
5 half of this is due to subsidence, not sea level
6 rise. So this is a combination of both sea level
7 rise and subsidence.

8 We've since installed GPS receivers on
9 a lot of the tide gages here in Texas, and around
10 the Gulf, to directly measure the subsidence
11 rate. So these are the two principles, to give
12 you a background, into what our speakers is going
13 to talk to you today.

14 And our first speaker is Steve
15 Blaskey. He's a land surveyor in Texas. And he
16 operates a practice here in Galveston. He's also
17 one of the graduates from our undergraduate
18 program in geographic information science.

19 He graduated in 2004 and came to work
20 at the practice that he now owns. That practice
21 records go back to 1934.

22 And one of the things that Steve did,

1 when he first came to this practice, was talk to
2 his boss, whom he since bought the practice from,
3 to digitize all his surveyor records. All the
4 maps and plans.

5 Digitize them and organized all that
6 data into a GIS. And it was actually an open
7 source GIS.

8 And he hired high school kids, over
9 the summer, to scan all these documents and put
10 them in a GIS and organize all the valuable
11 research data that they use and put in the
12 records, since 1947.

13 And he finished that project in early
14 2008. Correct?

15 MR. BLASKEY: Yes.

16 DR. JEFFRESS: Just before Hurricane
17 Ike came through here and they ended up with four
18 feet of water in their office and it destroyed
19 all the paper records. But it was all in the
20 computer, which didn't get affected by the storm,
21 and their office was back up and running within a
22 week.

1 So Steve is one of our star graduates
2 who we brag about. It's all yours, Steve.

3 MR. BLASKEY: Thank you. And actually
4 we finished scanning the last document two and a
5 half weeks before Ike made landfall. Shoved it
6 in, got it all uploaded and shipped the hard
7 drives away and it was lucky. Really lucky.

8 But anyways, you'll have to -- okay,
9 I need an assist from the back there. Thank you.
10 Nope.

11 DR. JEFFRESS: The next slide
12 presentation.

13 MR. BLASKEY: The next presentation.
14 Well anyways, while they're doing that, my name
15 is Steven Blaskey. Like he said, I'm a
16 registered professional land surveyor here in
17 Texas.

18 I'm also a licensed state land
19 surveyor, which is an additional certification
20 that allows a surveyor to locate the littoral
21 boundary. The legal extent of private property
22 in Texas. And actually file those records with

1 the Texas General Land Office.

2 And today I'm going to talk to you
3 about how we use the tidal datum data on an
4 everyday basis in Galveston. And there's four
5 major ways.

6 The first we've talked about is
7 determining the extent of private ownership in
8 Texas. Secondly, we assist developers and land
9 owners in determine dredging and channel depth
10 for private developments or boat channels or any
11 kind of access for private recreational vehicles.

12 We don't really get into the big stuff
13 like Mr. McHugh does, but smaller scale. Wetland
14 mitigation and determining accurate elevations
15 for structures within a flood zone.

16 To set the forefront on the extent of
17 private ownership, there was a court case style,
18 *Luttet v. State*, in which the Texas Supreme Court
19 determined that the extent of private ownership,
20 in the State of Texas, goes to either the mean
21 high water line or the mean higher-high water
22 line, as determined by the date of the original

1 survey.

2 So if the survey was performed, you
3 know, the original survey from the sovereign,
4 whether it's the King of Spain, the President of
5 Mexico, the Republic of Texas, if that date of
6 survey was prior to January 20th, 1840, we use
7 the mean higher-high water for the determination
8 of between public and private land.

9 If it's after that date, which is the
10 date that Texas, the Republic of Texas decided to
11 subscribed to British common law, we use the mean
12 high water line. Which in this area is a very,
13 very small difference.

14 In fact, in Galveston, on the beach,
15 we just did one where we went across that
16 interface from mean higher-high to mean high
17 water, and the difference was only three-tenths
18 of a foot in elevation.

19 So on the ground, we're talking less
20 than a foot of space. But to be right, you have
21 to be right.

22 There's some practical applications as

1 to where that boundary falls. The first of which
2 is the main purpose of *Luttes v. State* was to set
3 forth the structure on conducting coastal
4 boundary surveys.

5 A coastal boundary survey marks the
6 location of the littoral boundary, prior to any
7 erosion response activity. And an erosion
8 response activity is defined as shoreline
9 armoring, sediment management, re-vegetation,
10 creating dunes. And there's one more, and it's
11 escaping me, but that's okay. Well, it's not
12 there. Oh, and wetland restriction. Thank you.

13 The second reason to determine the
14 extent of private ownership is for any kind of
15 dune creation or mitigation. And especially in
16 the City of Galveston.

17 The City of Galveston has what they
18 call an erosion response plan that says, any kind
19 of dune creation or mitigation or any kind of
20 creation of any structures has to happen a
21 certain number of feet away from mean high water,
22 in some cases, or mean low-water in certain

1 cases.

2 And the third reason to determine this
3 extend is to assist in projects that are
4 stabilizing shorelines. To stop erosion or slow
5 erosion or combat erosion.

6 The next major reason we use tidal
7 datums, as a surveyor, is to assist in
8 determining dredge and channel depth for, like I
9 talked about earlier, private boat channels for
10 recreational fishing vehicles or for people that
11 have boat houses and want to pull their boat up
12 to their backyard and helping them established
13 how deep the channel needs to be dredged to get
14 their boat in at most times.

15 There was a development that we worked
16 on in Texas City where the developer wanted to
17 guaranteed perspective buyers that accepting
18 cases of extreme, extreme low tide, they would be
19 able to bring a sailboat with a six-foot keel up
20 to their house. So there was some economic value
21 on being able to determine where the water was
22 going to be in most cases and actually help them

1 project that forward, in time. You know, with
2 the subsidence and the sea level rise.

3 Doing these and tying these projects
4 to a tidal datum, gives us the ability to project
5 how often these projects will be to be revisited
6 or re-dredged. At many points in the future.

7 So it helps them guestimate cost. It
8 helps these individual homeowners' associations
9 budget for how much money they're going to need
10 to spend on dredging in the next decade.

11 We also use tidal datums when we're
12 helping in wetland mitigation. Because the tide,
13 the value, the elevation of the tide, at mean
14 high water or mean low water, has a very, very
15 tight correlation with what types of vegetation
16 will go where.

17 So in these kind of projects, we work
18 hand and hand, with the biologist, to determine
19 where to plant vegetation, what vegetation to
20 plant and how to protect the vegetation going
21 forward.

22 And finally, the major reason we use

1 this is to help plan where to put structures and
2 how high to place the structures within a flood
3 zone. It doesn't make much sense to put a low
4 structure in an area that's going to be overtaken
5 by tide, in the case of a storm or in the case of
6 just normal weather events.

7 So planning where to place structures
8 and how far from the littoral boundary or from
9 the edge of where the damage would be greatest,
10 helps future planning. That's me.

11 DR. JEFFRESS: Well that was quick.

12 MR. BLASKEY: I know.

13 DR. JEFFRESS: Can I just, you only
14 took about seven minutes of that presentation.
15 Can I just ask a question?

16 And maybe you can discuss what we call
17 in Texas, the Texas Open Beaches Act and the
18 easement that goes with that, and the problems
19 with the severance case.

20 MR. BLASKEY: Sure. Sure. Originally
21 the State of Texas had a statute, it was the Open
22 Beaches Act, and it provided for a rolling

1 easement that went from mean low water to the
2 line of vegetation along the beach.

3 And it was reserved for all public
4 use. Later that was codified into the state
5 constitution, which gave it more strength.

6 And then, what was it, 2012 a lady
7 named Carol Severance sued the Land Office on the
8 validity of the Open Beaches Act. Which she
9 ended up winning, but it was a very constrained
10 ruling stating that the state only had right to
11 have an easement where an easement could be
12 perfected. By either prescription or through
13 time and use and memorial.

14 So with the shoreline eroding, the
15 prescriptive easement can never be established
16 because it was never in the same place as the
17 beach was moving. So it's thrown this whole
18 little island into a bit of fuss as the status of
19 the open beach has been brought into serious
20 question.

21 And that's, you were more involved in
22 that than I was, weren't you?

1 MR. NEWBY: Somewhat, yes.

2 MR. BLASKEY: Yes.

3 MR. NEWBY: But it was specific to
4 Galveston Island.

5 MR. BLASKEY: And it was just
6 specifically the West end of Galveston Island.
7 Everything from about 57th Street in Galveston
8 West to the San Luis Toll Bridge is where this
9 ruling kind of took place.

10 But the logic they used to get there
11 was very open-ended. Meaning an attorney could
12 apply that same logic anywhere in Texas. It just
13 hasn't been done yet.

14 DR. JEFFRESS: The actual court case
15 was tried in the federal court in New Orleans.
16 The Severance case. Which is really unusual.

17 And how the Texas Supreme Court got
18 involved was the judge of the federal court case
19 in New Orleans asked the supreme court, does the
20 easement move if there's an avulsive change, due
21 to a hurricane in this case? And the court said,
22 no, it doesn't.

1 So how do you have a beach easement
2 that's not on the beach? Is the question.

3 Anyway. With that, we'll move on to
4 our next speaker, who is Mr. Ray Newby, who's a
5 coastal geologist. And he works for the Texas
6 General Land Office.

7 And is heavily involved in
8 communications between the General Land Office
9 and the U.S. Army Corps of Engineers in coastal
10 matters here in Texas. Particularly related to
11 coastal studies and beneficial use of dredged
12 material.

13 He's been before the -- he's
14 positioned at the General Land Office. He worked
15 as a hydrogeologist with the Texas Natural
16 Resources Commission.

17 And before that he was in private
18 practice consulting on assessment and remediation
19 of contaminated soil and groundwater. So, Ray,
20 please.

21 MR. NEWBY: All right, I think I've
22 got a hot mic now. Thank you, Gary, I appreciate

1 the introduction there. And I'd like to
2 appreciate Gary Magnuson for the invitations --

3 Okay, is this better? Okay. Well,
4 thank you very much. I appreciate the
5 opportunity to present here.

6 First off, before I get into the
7 discussion, I'd like to give you a little
8 background on the Land Office, which you've
9 already heard a little bit of.

10 The Texas General Office, which is
11 chaired by statewide elected official, the land
12 commissioner, who is currently Mr. George P.
13 Bush.

14 The Land Office is the oldest state
15 agency. A matter of fact, it predates the State
16 of Texas. It was actually setup after the war
17 for independence from Mexico.

18 How we're involved with coastal issues
19 is that we are the, essentially the state land
20 manager, for both uplands as well as state-owned
21 submerged lands.

22 Which include all tidally-influenced

1 lands as well as Gulf of Mexico lands offshore to
2 three marine leagues. Which is about ten miles
3 offshore.

4 We're also the lead agency. We're the
5 administrative agency for the federally
6 recognized coastal management program. We're
7 also involved with beach and dune protection, as
8 what was previously alluded to, as far as
9 oversight of the Texas Open Beaches Act and the
10 Texas Dune Protection Act.

11 We also administer the state funded
12 Coastal Erosion Program. We're also responsible
13 for Coastal Oil Spill Response.

14 And then since about, I believe 2011,
15 we've been the lead agency for Disaster Recovery
16 administering federal HUD funds for Hurricane Ike
17 and Dolly recovery. As well as some of the other
18 disasters that the state has experienced.

19 And as Gary and Steven alluded too
20 also, we get sued frequently. But Texas has
21 almost 400 miles of Gulf shoreline. More than
22 3,300 miles of bay shoreline.

1 And of the 18 coastal counties, out of
2 254 counties, those 18 counties represent about
3 26 percent of the state's population. Okay.

4 And some of these next slides I'll go
5 through fairly quickly, because they were covered
6 yesterday.

7 As you're well aware of by now, the
8 Texas coast is a working coast. We've got
9 several of the top ten ports in the nation. I
10 believe yesterday we had the most vessel
11 movements in the country.

12 Also, this slide right here represents
13 the oil and gas pipeline network of the nation.
14 In which the Texas and Louisiana Coast are
15 basically the cardio center of the oil and gas
16 industry, of Texas.

17 Also mentioned yesterday, I believe
18 Galveston is the fourth largest cruise port in
19 the U.S. We also have quite a bit of visitation
20 up and down the coast, from South Padre up to
21 this area. And also ecotourism is beginning to
22 be quite a big industry on the Texas Coast.

1 Also, commercial and recreational
2 fisheries are a significant part of our state
3 economy. For those of you that are staying down
4 at the Harbor House, if you get a chance to go to
5 Pier 21, talk a walk over to Katy's Seafood at
6 Pier 21 and look at some of the bounties being
7 hauled in from the Gulf.

8 And these fisheries are very
9 important. But they depend mainly on the coastal
10 ecosystem we've had. Predominately the wetlands.

11 Ninety-five percent of the commercial
12 and recreational fishery species originate from
13 these wetlands. Those are the nurseries for
14 those fishery species.

15 And those wetlands, and this is
16 somewhat of a data value, but roughly \$6 billion
17 was the rough estimate on the fisheries value of
18 Galveston Bay wetlands. It doesn't include the
19 additional value, ecosystem functional values,
20 that you get from water quality purification as
21 well as flood water retention.

22 But these ecosystems are in stress.

1 And through some of our planning efforts, we've
2 identified what some of the top issues of concern
3 on the coast are. And here's a sampling of some
4 of the more significant ones.

5 You see wetland and habitat loss is
6 one of the more significant issues. And let me
7 just say that these are not mutually exclusive
8 issues.

9 But you have, as was mentioned, gulf
10 beach erosion is fairly widespread. How that
11 affects our tourism and local economy is pretty
12 significant.

13 Flooding and storm surge. And I'll
14 get into that a little more in the next few
15 slides, is pretty significant.

16 But getting into some of the coastal
17 engineering concerns that we deal with on a daily
18 basis, working the Texas Coastal zone, is that
19 fundamentally we have a limited knowledge of
20 coastal processes.

21 Coastal engineering and the supporting
22 science behind it is still a relatively new

1 burgeoning science. It wasn't until after World
2 War II we actually started doing more
3 investigation into the coastal zone to try to
4 understand the processes that affect the coast.

5 Sediment transport and sediment
6 budgets is one of the big aspects on that. Is
7 trying to identify where your sediment is eroding
8 from. Where is it accreting and how is it
9 getting there between the two.

10 Inlet and beach dynamics is another
11 big issue that we deal with in trying to
12 understand coastal processes. As well as those
13 processes that affect the estuarine environment.
14 Particularly salinity and hydrodynamics.

15 There's been a significant growth in
16 the use of numerical models to look at these
17 processes. From circulation to morphological
18 change. But there needs to be more as far as
19 groundtruthing to validate these models.

20 You've probably heard the adage that
21 all models are wrong, but some models are useful.
22 And that definitely applies here in the coastal

1 zone.

2 Let me just give you an example of
3 some of the issues we're concerned with here.

4 This is San Luis Pass.

5 Okay, here's San Luis Pass, this is
6 Galveston Island. And approximately 20 miles
7 from our current location, this is the Southern
8 boundary of Galveston Island, this is San Luis
9 Pass.

10 Most tidal inlets, in natural
11 functioning, are an equilibrium in that the
12 sediment in this case, which mainly transports
13 from the northeast to the southwest, will come
14 in. You'll have some retention in the pass, with
15 the tidal flow, sediment will continue down the
16 coast.

17 However, this pass, from our
18 investigations that we've done for about the past
19 two decades or so, has shown indications that
20 it's out of equilibrium. In that a lot of the
21 sediment that's booking down the coast goes into
22 what we call the flood tidal delta, which is this

1 deposit inlet, but is not getting transported
2 back out. For whatever reasons, we're seeing
3 this flood tidal delta grow at a pretty
4 significant rate.

5 We think it a lot of it has to do with
6 hydrodynamic changes that have been conducted
7 with the creation of some of the channels, such
8 as the Intracoastal Waterway that extends here.
9 And then also the fact that West Bay is connected
10 to the Houston Ship Channel. Which has been
11 widely modified over the modern period.

12 And so we're looking at this as a
13 potential sand source to nourish Follets Island
14 down here. But we're trying to have a better
15 understanding of the processes, so that if we do
16 go after sand in this flood tidal delta, we just
17 want to make sure that we do no harm to affect
18 the ecosystems around it.

19 So this is an example of some of the
20 challenges we deal with in our, to try to address
21 coastal erosion and the processes that affect it.

22 Some other concerns that we have is,

1 if you're doing coastal restoration, we need to
2 have sediment. Either sand for beach nourishment
3 and dune restoration or other types of sediment
4 that are more conducive for wetland restoration.

5 Texas, in general, is a sand starved
6 coast. We're not blessed with the sheets of sand
7 off the shore of Florida. We mainly have a mud
8 dominated sea floor, out in the Gulf of Mexico.

9 And so we do quite a bit of sand
10 source investigations with some of our local
11 professional service providers, engineering firms
12 as well as academic institutions like A&M Corpus
13 and A&M Galveston and UT.

14 We're also trying to develop sediment
15 inventories so that we have a pretty good
16 clearing house of where these conducive
17 sediments, where the most conducive sediments for
18 restoration lie.

19 Another issue we're diving into is
20 regional settlement management. Which is a term
21 that the Corps of Engineers has been utilizing
22 for about the past decade. And Chris will

1 probably touch in on this a little bit in that
2 beneficiary use of dredge material is a big part
3 of this.

4 With regional settlement management,
5 you want to have a better ideal in what your
6 natural processes are and how our sediment
7 management activities are affecting those.

8 Here's an example of a recent
9 development that we have. About three or four
10 years ago we put together what we call the TxSed
11 Coastal Sediments Geodatabase.

12 We found that there was a lot of
13 geotechnical and geophysical information that was
14 out there, but it was spread in separate
15 locations. And using file cabinets and not
16 really useful.

17 The Corps of Engineers we found had a
18 bunch of what we call analog files, which are
19 paper reports. And we basically pulled a bunch
20 of those in-house, scanned them, digitized the
21 sediment information.

22 We also reached out to the academic

1 institutions to get their sediment information.
2 And had put this into the central clearinghouse
3 that's available on the web.

4 Moving on, I guess some of the
5 additional engineering concerns that we have
6 really come down to the growing concern about
7 climate change and relative sea level rise.

8 I don't have to explain to the folks
9 here in the room that there's a lot of
10 variability as far as the predicted future sea
11 level rise. And that has significant
12 implications on coastal restoration and coastal
13 protection.

14 Mainly if you're talking impact on
15 storm surges. If you have a one-foot rise in sea
16 level, that does not equate into a one-foot rise
17 in storm surge.

18 Your storm surge is actually going to
19 be exponentially higher for every incremental
20 increase in sea level rise. And trying to figure
21 out what your future target sea level is going to
22 be has significant implications.

1 For instance, if you're going to raise
2 a hurricane protection levee, you know, raising
3 it three feet versus one-foot has got significant
4 economic cost. You also have other real estate
5 considerations as well as environment impacts
6 that you have to consider, when you're talking
7 about these large structures.

8 And I mentioned previously, about the
9 growth and numerical modeling, there's been a lot
10 of effort to try to look at the future landscape.

11 What's going to happen if you have a
12 one-foot rise in sea level versus a three foot
13 rise in sea level?

14 Unfortunately, most of the models that
15 are out there, or most of the tools out there,
16 are inundation models, what we call bathtub
17 models, where you're just taking existing
18 topography and flooding that.

19 But with that, that's kind of a
20 simplistic view of it. Which is a good tool to
21 begin with, just to give a public an ideal of
22 what to anticipate.

1 But with the coastal processes, storm
2 surges and so forth, you're going to have
3 significant changes with the shape of the coast,
4 that's not just going to be related to
5 inundation.

6 And so there have been a few models,
7 such as SLAMM, which is Sea Level Affecting
8 Marshes Model, which tries to emulate how marsh
9 habitats are going to migrate with future sea
10 level rise.

11 You know, some areas of marshes are
12 basically going to get squeezed out where you
13 have existing development where those marshes do
14 not have room to migrate. That's a fairly
15 simplistic model, but it gives us a better idea
16 of where we're going.

17 NOAA has developed a better tool
18 called EESLR, which is, I think, Ecological
19 Effects on Sea Level Rise. Which helps us get a
20 better picture of those morphological changes.

21 But also, as we're looking at coastal
22 restoration and coastal protection, we're trying

1 to get a better idea on what the effects are
2 going to be on critical infrastructure. Your
3 transportation network as well your hospitals and
4 schools and other types of infrastructure.

5 We're also trying to get a better
6 handle on what it's going to do to our natural
7 systems. I'd like to mention wetlands, but also
8 we're concerned about some of our bay-head deltas
9 as well as the fate of our Barrier Islands.

10 Gary already showed you this slide
11 here. This is Pier 21, which is a few blocks
12 from us here, where we had over two feet of
13 relative sea level rise.

14 Gary correctly pointed out that we
15 think about half of this is the footprint of
16 increase of subsidence that we saw in the
17 Houston, Galveston region, from about the 1940's
18 throughout the 1970's.

19 Subsidence has decreased
20 significantly, but at the predictions, as far as
21 the sea level rise hold true, this could very
22 well be a predictor of our future. Because that

1 accelerated sea level rise would probably
2 overtake the footprint of subsidence.

3 And because the sea level rise, as
4 well as other factors, such as lack of sufficient
5 sediment, we have some of the highest erosion
6 rates in the nation. Roughly four feet on
7 average is a coast wide value. But we do have
8 some portions of the coast that are eroding in
9 excess of 30. And in some cases, 40 feet per
10 year.

11 But as far as some of the challenges
12 we face, in addition to the engineering concerns
13 I just mentioned, of course I think you hear it
14 from everybody that the funding is kind of
15 fundamental. There never seems to be enough.

16 And then when funding does come
17 through, there doesn't seem, at least from our
18 perspective, to be enough planning to be able to
19 accurately prioritize where to best spend those
20 funding sources.

21 Other challenges we face. Increased
22 coastal development. I think one of the speakers

1 yesterday mentioned the three mega-trends we're
2 seeing as far as the population explosion.

3 The significant growth of the oil and
4 gas industry we've seen in recent years. As well
5 as the navigation demands that are increasing
6 with the Panama Canal expansion.

7 But one of the things we're facing on
8 the coast is that we're seeing many new residents
9 still flocking to coastal areas. A lot of these
10 folks are unfamiliar with coastal issues.

11 They've never experienced a hurricane.
12 They don't know why you really need to evacuate
13 if you are going to be in low lying areas.

14 For instance, on the west side of
15 Galveston Bay, we've got some very dense
16 residential communities. It's your classic
17 suburbia, but a lot of these folks don't realize
18 that the extreme risks they're in, if and when
19 the next hurricane approaches.

20 And this population explosion is
21 putting an increased pressure on natural
22 resources, as well as on our critical

1 infrastructure. And we're seeing this manifested
2 in impacts on water quality and water quantity.
3 As well as effects on our local natural
4 ecosystems.

5 And in general, we kind of have a lack
6 of public, as well as political, awareness of
7 coastal issues. Texas could very well be a
8 microcosm with the U.S. in the fact that the
9 coastal areas compete with the landlocked areas
10 for resources and funding.

11 We've been asking ourselves the past
12 several years, is Texas a coastal state, are we
13 just a state with a coast?

14 The 18 coastal counties that I alluded
15 to, mapped earlier, that's 18 versus 236 inland
16 counties. And so it's hard to get resources to
17 address coastal issues. And additionally, it's
18 hard to get adequate resources to do adequate
19 coastal planning.

20 With that being said, we have
21 attempted to dive into comprehensive coastal
22 planning. This was a little brochure report we

1 put out about four years ago called "Shoring Up
2 our Future."

3 And we reached out. We held
4 stakeholder meetings up and down the coast with
5 elected officials and other stakeholders.

6 We had regional technical advisory
7 committees to help identify the issues of
8 concern, that was on a previous slide that I
9 showed you, and was used as a tool to help better
10 educate the legislature, and the public, on the
11 needs of the coastal areas.

12 Now looking forward, things are
13 starting to look much more promising. Back in
14 November, Texas General Land Office signed a
15 feasibility cost sharing agreement with the Army
16 Corps of Engineers for a \$20 million study to
17 look at comprehensive planning for the Texas
18 Coast, within the context of coastal storm risk
19 management and ecosystem restoration.

20 Some of you may have heard about the
21 concept called the Ike Dike. Which is a Dutch-
22 style coastal spine that has been proposed to

1 protect the Galveston Bay region. That's what we
2 call the coastal barrier alternative.

3 There are also some inland
4 alternatives as a counter to the Ike Dike. And
5 so the coastal Texas study is diving headlong
6 into this.

7 I'm sure we'll be making quite a bit
8 press over the next couple years as we proceed
9 with this study. But hopefully it will end up
10 with comprehensive coastal storm risks management
11 for the Galveston Bay region and other vulnerable
12 parts of the Texas Coast.

13 As was mentioned yesterday, Hurricane
14 Ike was a significant storm. It could have been
15 a whole lot worse had that storm hit further down
16 coast and inundated the industrial areas of the
17 Houston, Galveston area.

18 I like to tell folks that the Texas
19 City Dikes and the Port Arthur Dikes came within
20 about two, one to two feet from getting
21 overtopped during Hurricane Ike.

22 And to put that into perspective, we

1 basically came within about a foot of a national
2 depression. Because Hurricane Ike hit three days
3 before Lehmann Brothers went bankrupt.

4 And so in the economic free fall we
5 were in, we came really close to losing a
6 significant fuel production capability, that
7 would have put us further down into that
8 financial free fall.

9 Trying, a more optimistic aspect. We
10 do see significant funding coming in from the
11 Deepwater Horizon oil spill settlement and
12 RESTORE Act funding.

13 It was unfortunate that it took a
14 tragedy to get us to this point, but it is a
15 generational opportunity that we have to try to
16 better assess and better approach the issues of
17 concern on the Texas Coast.

18 Additional funding looks to be coming
19 in through what we call GOMESA, which is the Gulf
20 of Mexico Energy Security Act.

21 Where royalties coming in from federal
22 Outer Continental Shelf, oil and gas production,

1 will be shared with the producing states to help
2 mitigate some of the impacts that we see from New
3 Orleans gas industry.

4 Additionally, I showed you our TxSed
5 Geodatabase that we have. We are also developing
6 other geospatial based decision supports tools to
7 better help planning so we minimize conflicts
8 between resources. And better plan the future
9 for the Texas Coast.

10 With that, I guess we'll do questions
11 later, but I appreciate your time. Thank you.

12 DR. JEFFRESS: Thank you, Ray. Moving
13 right along, our next speaker is a representative
14 from the Galveston District Corps of Engineers.
15 He's Mr. Christopher Frabotta.

16 He is the Deputy Chief of the
17 Operations Division and he's Chief of the
18 Navigation Branch at the Galveston District.

19 Chris is a graduate from the
20 University of Florida with a bachelor's of
21 science degree in environmental engineering. And
22 he graduated there in 1998.

1 And he went into the Army and served
2 as a cavalry scout. And was on active duty from
3 1988 until 1990.

4 He then joined the Army Reserves for
5 five years. And went to work at the Corps of
6 Engineers in 2001 to 2011, in the Wilmington
7 District, up on the east coast.

8 He was involved in a lot of
9 construction management in that position.
10 Working in New York as maintenance dredging
11 contracts. Developed disposal island levee
12 improvements. Has done some rehabilitation of
13 navigation and water control structures.

14 And in 2011 he moved to Galveston and
15 took up his current position. And I know he's a
16 friend of TCOON because he's done a lot of work
17 in helping us to get TCOON to the shape it is.

18 So, Chris, tell us about what you do
19 with the navigation structure, et cetera.

20 MR. FRABOTTA: Thank you. Well first
21 I'd like to say it's an honor to speak in front
22 of the Panel today.

1 I have been either contracted to or
2 full-time with the Corps for about 17 years now.
3 Five years with the Galveston District as the
4 Deputy Chief Operations. And kind of dual-hatted
5 as the Chief of Navigation here.

6 So I didn't think my commute could get
7 too much shorter. I'm about 2.3 miles from our
8 office down the street, until you all had to
9 schedule the review panel and I live basically
10 across the street. So I got to walk to work
11 today. So that was great.

12 Today I'm going to go over a few
13 things. I'm going to give you a quick overview
14 of the Corps of Engineers, kind of from a
15 national standpoint, and drill down into the
16 district. Go over our missions.

17 We talk about some of the port stats,
18 but I'll go through that real quickly. Some
19 funding and what we do with the funding. What do
20 we actually do with the Corps of Engineers, with
21 our navigation funding.

22 And then following kind of the theme

1 from Colonel Pannell, the Galveston District
2 Commander yesterday, following his theme on how
3 we execute through partnerships. I'm going to
4 give about six examples of some partnerships and
5 folks around the room that have really helped the
6 Corps and the Galveston District undertake our
7 mission.

8 So real quick on this. This is a map
9 of the U.S. and it shows the different divisions.
10 So kind of similar to the Coast Guards Districts,
11 our division boundaries have several districts
12 under them.

13 So we have nine divisions. North
14 Atlantic, South Atlantic, Great Lakes region,
15 Mississippi Valley, Southwestern, Northwestern,
16 South Pacific and the Pacific Ocean Division.

17 And we are located in Southwestern
18 Division. And you can see the Galveston District
19 there. Basically along the Texas Coast.

20 There are 16 coastal districts that
21 have coastal navigation projects. What I would
22 tell you is the Corps of Engineers is a big

1 organization. We have many business lines, we
2 have navigations. Probably our biggest,
3 definitely with respect to funding, it is.

4 We have flood risk management, hydro
5 power. Kind of a subsidiary of hydro power as
6 recreation as we build these dams and create
7 these lakes.

8 We have recreation programs,
9 environmental stewardship and regulatory. Where
10 we regulate structures put into waters of the
11 U.S. or filling of coastal wetlands. Or Section
12 404 wetlands.

13 So here in the Galveston District
14 though, we have essentially three of those
15 missions. We have navigation, flood risk
16 management and regulatory.

17 So we have about 300 employees here in
18 the Galveston District. You can see our
19 boundaries run from the Louisiana Border down to
20 Mexican Border and about 100 to 150 miles inland.
21 It encompasses the entire Texas Coast.

22 Those 300 employees, we have offices

1 staggered along the Texas Coast. And
2 hydrographic assets staggered along the Texas
3 Coast.

4 Our main office headquarters is here
5 in Galveston, right on the end, east end of
6 Galveston Island. And we have offices in our
7 Port Arthur in Bay City, and Corpus Christi and
8 then Port Isabel.

9 Ray Newby talked about the 18 coastal
10 counties. We cover all of those.

11 And then our ports and our waterways
12 make up about 600 million tons of cargo a year.
13 So to put that in national perspective, 2.5
14 billion tons of cargo are shipped per year.
15 Which puts us at about 21.5 percent of all the
16 nations tonnage comes in and out of the Texas
17 ports.

18 And of course Brian Hill discussed
19 yesterday, with MARAD, that we load and unload
20 troops and equipment. And there's three ports
21 deemed congressionally authorized as strategic
22 ports within the Galveston District, being Port

1 Arthur, Beaumont and Corpus Christi.

2 And then finally, the maintenance
3 dredging. We dredge about 20 million cubic yards
4 a year. So our navigation mission is essentially
5 short and sweet and to the point. It provides
6 safe, reliable, efficient, environment
7 sustainable waterborne transportation systems for
8 the movement of commerce, security and
9 recreation.

10 I will tell you that over the past ten
11 years there's been a focus by congress and the
12 president's office of management and budget to do
13 some performance based budgeting and put more
14 funding towards the channels with high commerce
15 or high tonnage. And I'll show you a slide on
16 that in a second.

17 I'm not going to go over it in detail,
18 but I will show you that our other mission
19 statement, for flood risk management, Ray covered
20 it well with Coastal Texas Study.

21 But we look for, at improving
22 resiliency through construction of structures.

1 Whether they're levees, sea walls, flood walls,
2 to reduce the risk of loss of life, long-term
3 economic damages in public and private sector.

4 And you can see one out here. The
5 Corps of Engineers built the Galveston sea wall
6 after the 1900 storm.

7 And I'm going to show you a couple
8 slides on some existing hurricane flood
9 protection systems, that have saved billions of
10 dollars' worth of infrastructure during Rita and
11 Hurricane Ike.

12 So Texas Coast, our navigation
13 program. You heard it before, there's six deep
14 drafted jetty inlets that the Corps of Engineers
15 is responsible for monitoring and maintaining.

16 Those navigation complexes are in the
17 yellow font, from north to south. Sabine-Neches
18 Waterway, Houston Galveston Texas City, Freeport,
19 Matagorda, Corpus Christi and then Brownsville,
20 or Brazos Island Harper is its federally
21 authorized name.

22 All of those deep draft ports are

1 interconnected by the Gulf Intracoastal Waterway.
2 The Gulf Intracoastal Waterway actually starts at
3 Apalachicola Bay, Florida and goes for 1,109
4 miles to Port Isabelle, Texas.

5 In Galveston District we're
6 responsible for 379 of those 1,109 miles. And
7 then several tributary channels that you can see
8 in the blue.

9 So with that, here's the depths of
10 those deep draft navigation networks. You can
11 see Sabine is authorized to 40 feet. And we're
12 maintaining it to 40.

13 And you can see the others with those
14 numbers. Forty-five for Houston Texas City
15 Galveston, 45 for Freeport, 36 for Matagorda, et
16 cetera.

17 The number below, in the circle, is
18 what we're either authorized to dredge it to, but
19 haven't received the funding for or in a study to
20 deepen it. So there's a lot of new work and
21 capital work that we have either planned or
22 scheduled and are just waiting on federal

1 appropriations.

2 So the next slide I won't go into this
3 in depth, but I'll show you these are the top
4 ten, excuse me, the ten deep draft, and one
5 shallow draft port, in the State of Texas.
6 They're relative rankings with respect to
7 national commercial tonnage. Houston's at two,
8 Beaumont's at four.

9 And what I will tell is that 21.5
10 percent of all the tonnage, domestic and foreign,
11 is going through Texas ports. And really even
12 more shocking, I guess, is right out here,
13 through the Houston Galveston Inlet, 12.5 percent
14 of the nation's tonnage goes in and out of this
15 inlet right here.

16 Also, we have the Gulf Intracoastal
17 Waterway, which is ranked separately. It's
18 ranked as an inland waterway.

19 And this slide kind of shows its
20 relative tonnage based on the other major inland
21 waterways in the country. With the Mississippi
22 River ranking first, the Ohio River second and

1 the Gulf Intracoastal Waterway third. With about
2 126 million tons in 2014.

3 And then Captain Penoyer mentioned
4 during his presentation yesterday that, yes, a
5 lot of oil comes in here. And we have a lot of
6 refining capability here.

7 But those by-products of the refining
8 process are feed stocks to our manufacturing
9 facilities. Whether it's Dow Chemical or BASF.

10 And if you look here you can see,
11 almost 75 percent of the products that are
12 traveling along the Gulf Intracoastal Waterway
13 are petroleum, petroleum products, chemicals
14 related projects or other crude materials used
15 for feed stocks. Just up and down the Gulf
16 Intracoastal Waterway we're seeing, in our higher
17 areas, 75 plus trips per day.

18 So Corps of Engineers, Galveston
19 District funding. We get funding to do a lot of
20 different thing, studies, deepening's,
21 widening's.

22 I'm focusing on O&M here. The

1 operations and maintenance of the channels I
2 showed you a few minutes ago.

3 And the ten-year funding history. A
4 lot of folks are kind of complaining about
5 funding for good reason.

6 But the Galveston District, we're
7 seeing an uptick in our funding. From back in
8 '07, our O&M budget for navigation projects was
9 around \$83 million. And then 2016 we got our
10 final allocation a couple weeks ago and we're at
11 a \$155 million.

12 So I'll tell you in a few minutes what
13 we're doing with that funding.

14 So a \$155 million in 2016. What
15 activities are we undertaking? We're doing
16 maintenance dredging and associated activities.

17 Associated activities are sampling of
18 sediments, coordination with agencies, et cetera.
19 We're building placement areas, we're building
20 beneficial use sites.

21 Of course we're performing our
22 hydrographic surveys. Tells us where we need to

1 dredge. And then finally, when we do dredge, how
2 much to pay our contractors.

3 We're repairing coastal structures.
4 We have six deep draft jetty complex that we
5 maintain. So on occasion we need to place
6 additional stones on those structures.

7 We're reporting the channel
8 conditions. I'll show you that as well.

9 We're removing hazards to navigation
10 and then we're coordinating with other state and
11 federal agencies including GLO and NOAA, U.S.
12 Coast Guard, MARAD, et cetera.

13 So the different partnerships that we
14 have, this is, in some cases, regular business
15 and/or initiatives that we're undertaking. But
16 we're undertaking them with, in partnership, with
17 other state and federal agencies.

18 First, our new work and our
19 maintenance dredging. I mentioned a few minutes
20 ago we dredged 20 million plus cubic yards a year
21 in the Galveston District.

22 Some of our partners, every navigation

1 project that we have has a non-federal sponsor.
2 So the Galveston Entrance Channel, the non-
3 federal sponsor is represented by the Port of
4 Galveston. They need to do things financially on
5 their end. Like provide lands and easements and
6 rights of way for disposal, et cetera.

7 Some other partners that we have are
8 dredging contractors. We spend \$90 million a
9 year, last year, on maintenance dredging. And
10 our contractors, large and small businesses, have
11 responded and done a great job on that.

12 So Texas Coastal Ocean Observation
13 Network, '88 through present. Here are our
14 sponsors. Whether they're cost sharing,
15 technical or managers of the network.

16 And really, I put U.S. Army Corps of
17 Engineers up top. And that may be the case, with
18 respect to dollars invested into the network.

19 But you can easily flip this list over
20 and the Texas A&M University, Corpus Christi and
21 Conrad Blucher, on the ends, represented on the
22 ends of this table today, have really provided

1 the continuity of the network over the past 25 or
2 so years. Through turnover and federal
3 government offices, they've really, really kept
4 the system running and kept the data flowing. So
5 big thanks to CBI for that.

6 So what is TCOON? You've heard some
7 folks talk about it. The map I have up here, the
8 green flags are active stations. And the red
9 ones are historic stations. So there have been
10 stations there before. Either on a temporary
11 basis or permanent and been destroyed and we've
12 relocated them.

13 The Galveston District has used CBI
14 and the TCOON network to get to our conversion to
15 mean lower-low water, to get us lined up with
16 NOAA and the Coast Guard.

17 We're in the middle of that
18 conversation right now. And within the next few
19 months to a year from now, we'll have the entire
20 district converted from our legacy dredging datum
21 of mean low tide to the internationally
22 recognized datum of mean lower-low water.

1 So this is what the structures look
2 like. You heard about Sentinels of the Coast.
3 That's on the left of your screen.

4 It's a 48 inch diameter model pile.
5 Next down to about 36 inches and comes, in
6 diameter, it comes about 30, I think two or 34
7 feet out of the water.

8 There's two of them installed and
9 operating right now. And another four that my
10 office has financed to be instrumented from NOAA.
11 And we're going to get those online by the end of
12 this fiscal year, so by September 30th.

13 The other common data collection
14 platform is on the right. It's a four post
15 system. We're using those as well.

16 I can tell you, after Hurricane Ike
17 these were missing. So we're really, you want to
18 talk about some examples of resiliency, we're
19 installing six of these Sentinels of the Coast
20 and we're really hoping that that's going to help
21 us out during some storm surge events.

22 The third and final type of data

1 collection platform, we use structures of
2 opportunity. So existing piers or other
3 structures.

4 Gulf Coast Joint Hurricane Response
5 Protocol. Of course everybody knows when Ike hit
6 we were down and our navigation systems were
7 closed.

8 And it's the responsibility of the
9 Coast Guard and the Corps to restore operations.
10 And we tapped into our partners and our resources
11 to do that.

12 Here's some photos here of Boliver
13 Island. You can see one house standing. And
14 then the road that you came in on, the Causeway,
15 what that looked like after Hurricane Ike.

16 So back in the early 2000's, the Gulf
17 Coast Joint Hurricane Response Protocol was
18 drafted by the executive director of GICA. The
19 Gulf Intracoastal Canal Association.

20 And he pulled, he, Raymond Butler,
21 pulled all the federal state agencies that had a
22 stake in restoring navigation together. And we

1 actually signed up to this protocol.

2 So NOAA is a signatory of it, the
3 Corps of Engineers is. Of course the Coast Guard
4 is. The pilots, different pilot's organizations
5 are, et cetera.

6 And it's broken into two working
7 groups. A port coordination team, that you heard
8 some folks talking about yesterday, and a
9 navigation restoration team.

10 So the port coordination teams are
11 chaired by the Coast Guard, in the case of Port
12 Arthur and Houston the VTS directors, and the
13 other navigation complex is by the waterways
14 chiefs and different Coast Guard entities.

15 And the navigation restoration teams
16 are chaired by Corps of Engineers
17 representatives. So there's one person that
18 leads that team in the Mobile District, one
19 person that leads that team in the New Orleans
20 District and I lead the team here in along the
21 Texas Coast for the Galveston District. And
22 here's all our partners.

1 NOAA plays a huge part in the
2 navigation restoration as the National Weather
3 Service goes first on our conference calls to
4 tell us where the storm is at, where it's going
5 to hit. And then once it does hit, how the winds
6 and the surges so we can get in there and recover
7 from the storm afterwards.

8 So if we know the storm is going to
9 hit in Houston Galveston area, those staggered
10 resources along the Texas Coast will trailer them
11 and relocate them here in advance of the storm.
12 We'll layout assignments for these service
13 vessels, station to station or buoy to buoy, and
14 we'll get everybody lined up to do the quickest
15 recovery as we can.

16 Next partnership is USACE eHydro
17 webpage. And then how that is poised to feed the
18 NOAA's online charts into the future.

19 So about two years ago the Galveston
20 District kind of leaned forward a little bit ---
21 let me back up. Five years ago the Corps of
22 Engineers developed hydrographic survey software

1 called eHydro. And they put it out to the
2 districts and said, we are going to make this
3 mandatory in the future, please start utilizing
4 it.

5 So about two years ago, Galveston
6 District leaned forward and we came up with a
7 public website. And we're presenting all of our
8 channel data onto this district website,
9 Galveston District website.

10 Now NOAA, they've got a big footprint.
11 Six million square miles of waters they need to
12 chart. Ours is very refined and small. We're
13 doing hydrographic surveys within the federal
14 channels that I outlined a moment ago.

15 So I'll walk you real quickly through
16 the eHydro website at the Galveston District. If
17 you look at here, if you click on hydrographic,
18 channel hydrographic surveys, it will give you a
19 list from North to South. This matches the
20 navigation systems Sabine down to Brazos Island
21 Harbor and then the Gulf Intracoastal Waterway.

22 And let's, for example, if I click on

1 Houston Galveston Texas City link, it brings you
2 to the entrance channel that comes in to the Port
3 of Galveston.

4 And for example, if I click on Number
5 14, which is the Boliver Roads to Exxon dock, I
6 have the choice of either clicking on the survey
7 maps or the X, Y, Z data. So for today's example
8 I'll click on the survey maps and it will pull up
9 this PDF file.

10 So the PDF file has got a lot of
11 information on it. It's got a vicinity map on
12 the top right showing where you are in the coast,
13 where you're at on the project.

14 It gives the channel boundaries or the
15 toes of the channel. It gives the A-to-Ns or the
16 Aids to Navigation, the latest aerial imagery, a
17 scale, a north arrow, a legend, a contour of
18 colors, what those contours stand for.

19 And if you zoom in, these lines are
20 the actual survey vessel lines that you can zoom
21 in and see what the depth of that channel is.

22 We update these surveys at a minimum

1 of once per year. And we do that annual survey
2 between March and June, ahead of hurricane
3 season.

4 But at -- these channels have
5 different shoaling rates. So there's several
6 channels that have a high shoaling rate; we'll
7 survey as often as every four months.

8 So as this data is updated, it's put
9 on this website and you can see here, Galveston
10 Entrance Channel or right in front of our office,
11 we surveyed back in January. So the data is 60
12 days old.

13 The next example of the Corps working
14 on a coastal resiliency with our partners is our
15 beneficial use of dredge material. Land
16 Commissioner George P. Bush visited the Galveston
17 District last week and we really put this graphic
18 together for him, but I used it today.

19 You can see every triangle there we've
20 done beneficial use. Yesterday there was the
21 question, how many acres of marshes were created
22 when doing the Houston deepening project about

1 ten years ago. And the answer to that question
2 is, about 3,400 acres of marsh were created. So
3 that's one dot on this, that's one dot right
4 there.

5 All the rest of them is beneficial use
6 of dredging material. That 20 million cubic
7 yards of material that we dredge every year, we
8 place onto shorelines, we place onto beaches, we
9 create marshes, bird habitat, aquatic habitat, et
10 cetera.

11 One really great example I'll give you
12 is the first time that we dredged out of the
13 Galveston Entrance Channel and placed sand onto
14 the beach was last year. And Great Lakes dredged
15 and docked it with the Terrapin Island and a
16 booster pump.

17 So here you can see the Galveston
18 Entrance Channel coming up into Galveston. Of
19 course this is Texas City and then the Houston
20 ship channel up here.

21 We dredged this entrance channel up to
22 about right here, about every 16 to 18 months.

1 And I'll zoom into that box.

2 This area highlighted in red is an
3 area, just due to hydrodynamics, is where the
4 sand falls out. The other areas we usually get
5 siltier, muddy material.

6 And we dredged this area and we have
7 been historically placing it into our EPA-
8 regulated ODMDS or offshore dredge material
9 disposal site.

10 So we pay to get the dredge here, the
11 Corps of Engineers. We pay to get, to dredge the
12 material up and we pay to sail it over to here.

13 And in this case, the Texas General
14 Land Office and the Galveston Island Park Board
15 cost shared into the incremental cost on moving
16 the material from the ODMDS to the beach.

17 And just, here's a photo here of the
18 operation. And every grain of sand that you see
19 in that picture, left and to the right on the
20 bottom, was placed during this dredging event.
21 About 600,000 cubic yards per mile, plus or minus
22 a beach about 300 feet wide.

1 If you're driving out of Galveston and
2 you go out to 61st Street, everything west of
3 61st Street, all that material has been placed
4 there. Before we got there, there was rocks out
5 there. All the way up to the sea wall.

6 And then the final partnership is our
7 hurricane flood protection systems. Ray Newby
8 did a good job going over our study that we have
9 going on, but an example, or some examples of our
10 built projects are, and I'll go back to this
11 navigation map just as a graphic to show you the
12 location of these areas.

13 Port Arthur, Texas City, and Freeport
14 all have constructed hurricane flood protection
15 levee systems. And these pictures here are the
16 inside and the outside of these flood protection
17 systems after Ike.

18 So you can see the debris line. This
19 is about ten days after Ike hit. You can see the
20 debris line in some areas came within a foot of
21 the top of the levee.

22 So after you leave the Galveston

1 Island and you're driving over the Causeway and
2 you see all those refineries to your right, at
3 Teas City, this hurricane flood protection system
4 essentially saved billions of dollars' worth of
5 infrastructure after Hurricane Ike. And the same
6 could be said for the facilities at Port Arthur
7 and Freeport.

8 So with that, you know, there's 16
9 coastal districts in the Corps of Engineers and I
10 feel privileged to be able to be the chief
11 navigation here.

12 Both myself and my staff, and really
13 the folks around the building, the 300 employees,
14 when they go home at night, they feel like
15 they're contributing to something. You know,
16 clearly the economic drivers are there.

17 And when we do our maintenance
18 dredging, it actually has an impact. It allows
19 commerce to flow freely. Thank you.

20 DR. JEFFRESS: Thank you, Chris. Our
21 next speaker is my colleague, Dr. Philippe
22 Tissot. He is the associate director of the

1 Conrad Blucher Institute for Surveying and
2 Science at Texas A&M at Corpus Christi.

3 And for us he manages a hydrodynamics
4 lab. And he also has a title of Associate
5 Research Professor. Having the word research in
6 your title like that means he's not teaching
7 anymore.

8 And Philippe comes to us from
9 Switzerland where he got a degree in Engineering
10 Physics from the Swiss Federal Institute of
11 Technology in Lausanne.

12 And following that he, and his wife,
13 moved to Texas to College Station, where he
14 pursued a PhD in nuclear physics. But we don't
15 use that school much around the Blucher
16 Institute.

17 But one of the things he did learn was
18 modeling. And he's now, calls himself a coastal
19 modeler. And he's done a lot of work looking at
20 tide gage records and physical coastal processes.
21 And he's going to talk about that.

22 And he does a lot of work in research.

1 He involves a lot of our students in research.
2 One of the things that they've done, just
3 recently, is developed an app for an iPhone and
4 for Android phones, which is called Weather on
5 Wheels.

6 Which goes and gets weather
7 forecasting from the National Weather Service,
8 overlays it on a navigation route and it predicts
9 the weather as you're going from Point A to Point
10 B in the United States. So if you want to plan a
11 trip from like here to Dallas, it will tell you
12 what the weather is going to be like as you go
13 along the trip. And updates it if you refresh it
14 as you go.

15 And I believe he's got over 10,000
16 users of that app right now. And it's steadily
17 growing.

18 And that was a project, particularly
19 supervised by Philippe, but actually carried out
20 by the students. And undergrad students at that.

21 He's well published with 29 peer
22 reviewed articles and over 170 proceedings at

1 conferences. He was a professor of physics on
2 our campus for 12 years, but he just recently
3 gave it up to be a research scientist.

4 So we're lucky to have Philippe on our
5 stuff who is our in-house coastal processes
6 modeler. Philippe, tell us about it.

7 DR. TISSOT: So thank you for the
8 introduction. Also, thank you for -- the Panel,
9 for inviting me for the opportunity to give this
10 talk.

11 And thanks also for the great
12 partnership with NOAA over many, many years. And
13 the Corps of Engineer with Chris here, with
14 TCOON, and the Texas General Land Office. And
15 also local surveyors. It really makes work a lot
16 more fun when you do it together.

17 So I'm going to talk from the research
18 side. And the two messages that kind of
19 hopefully are going to come out of this talk are
20 the spatial variability.

21 When we think about relative sea level
22 rise, you know, nation frequency, storm surge,

1 which will be the title of my, the focus of my
2 talk, I'd like to communicate how much spatial
3 variability there is.

4 And the corollary of that is that you
5 will need to measure. Measurements are very,
6 very important. So that's going to be the focus.
7 And so -- thanks, I'm talking.

8 Measurements, let's talk right here.
9 A few minutes walking distance, the La Pier 21
10 Station. Which is really the gold standard. The
11 NOAA NWLON station. The gold standard for water
12 levels in the Gulf of Mexico.

13 I'm going to show a couple of charts
14 there. The one at the bottom, you've seen it
15 several times already. The 6.3 millimeters per
16 year relative sea level rise. That's fantastic
17 information. Very long-term.

18 And I've also plotted a comparison, on
19 the top right, of the water levels measures over
20 the past ten days, up until this morning, and
21 compared with the tidal predictions.

22 And for a couple of messages there.

1 One is that along the coastal, the Texas Coastal,
2 the Texas Coast, the wind, the atmospheric
3 forcing's are very important.

4 The tidal range is microtidal, so we
5 have a small tidal range. We have a large
6 influence from wind and atmospheric forcing.

7 And if you want a prediction of the
8 water levels, the tidal prediction is not a good
9 one. It doesn't meet National Ocean Service
10 standard anywhere along the coast. There's still
11 a lot of useful information there, but it's
12 something to keep in mind.

13 And I've put that chart also to
14 introduce -- there should be -- there's something
15 that doesn't work.

16 So the difference between the black
17 line and the blue line, well I'm going to call
18 that the surge. The definition would be the
19 surge. And so a small surge over the past week.

20 And that surge will, so it's basically
21 depending on that atmospheric forcing. As
22 opposed to the tides that are strictly based on

1 the gravitational forcing. And I'll talk about
2 surge a little more in a while.

3 So focus of my talk. The importance
4 of measurements. And also the mean relative sea
5 level rise, storm surge.

6 And I'm going to look at inundation
7 from two points of view. The small surges, or so
8 called nuisance flooding, and also the larger
9 surges.

10 And I'm going to share the methods
11 that we've been using to quantify how much is
12 inundation going to increase with relative sea
13 level rise along the Texas Coast and the Gulf of
14 Mexico.

15 And I'll finish by talking about the
16 need for probably better information for coastal
17 managers and for beach managers. Talk about the
18 difference between tidal datum and inundation
19 frequency for those tidal datums and how to
20 possibly do a better job communicating it. CO-
21 OPs is having some excellent research in that
22 field as well.

1 So when I talk about sea level rise,
2 I like to put the big picture first. And over
3 the past --

4 So we've had a large sea level after
5 the last glaciation. And really during the, for
6 our civilization, we've had remarkable stable sea
7 level rise. We benefitted from that. Much
8 easier to maintain the coast when you're in a
9 stable environment like this.

10 If we look at the past 130 years or
11 so, then we have a sea level rise that is, if you
12 look at global sea level rise, static sea level
13 rise, we have 1.7 millimeters per year, over the
14 past century, based on tide gage record.

15 If we look at the more recent record,
16 based on the satellite altimetry, we have 3.3
17 millimeters per year. And if we go back to the
18 Pier 21 long-term trend, we have 6.3 millimeters
19 per year.

20 So that emphasis which one is
21 important. It's obviously the 6.3 millimeters
22 per year, if you're managing coastal resilience

1 around Galveston.

2 So that difference between 6.3 and
3 1.7, vertical and motion, possibly also changes
4 in ocean current, so it's quite -- and that will
5 be variable. Show the spatial variability of
6 that subsidence.

7 So we if look at -- so relative sea
8 level rise, the local portion, relative sea level
9 rise is what is important.

10 If we look at the Gulf of Mexico, then
11 we have some of the largest vertical and motion.
12 We have some of the largest relative sea level
13 rise. Up to one centimeter per year in Louisiana
14 and higher at some locations. And when you go to
15 Florida or when you go to the Coast of Texas,
16 then you go as low as 2.2 millimeters per year.

17 And why is it important? As several
18 of the speakers before said, there's a tremendous
19 concentration for navigation in our economy.

20 I counted. I recently went to the
21 website and we have, actually ten of the last 13
22 or ten of the top 15 U.S. ports are right here.

1 From the U.S. Transportation Department of
2 Statistics of 2016. So it is important.

3 I have split the surges and inundation
4 into two categories. One is the big ones,
5 Hurricane Ike here. You've seen some pictures.

6 On the far right you have a picture of
7 the former installations of Pier 21, which also
8 suffered during Ike.

9 And at the bottom, those are smaller
10 flooding. Or so called nuisance flooding.
11 There's a picture of Washington, D.C.,
12 Charleston, and on the bottom right, Corpus
13 Christi.

14 They are not deadly, but they lead to
15 insurance claims and they need to be managed
16 here. They're quite important for that.

17 So a question we've asked is, how much
18 more inundation are we going to sustain for the
19 big ones, the small ones, and how can we quantify
20 the differences between the two?

21 I wanted -- this is an older
22 presentation and there's a few things that I

1 wanted to share. For Hurricane Ike, if you look
2 at the Pier 21 data set, you would see that the
3 surge was captured. The peak of the surge was
4 captured. Which is great.

5 But you would also see that the
6 instrument broke. The top right picture shows
7 the problem, the acoustic instrument broke.

8 Fortunately, we have, NOAA has backup
9 measurements at each one of those stations. And
10 the backup measurements, the pressure sensor,
11 held on through.

12 So a recommendation is, yes, keep all
13 those backup water levels. And probably keep two
14 different technologies when you're measuring
15 water levels.

16 Such that, because if you have the
17 same technology, there's a good chance that if
18 one breaks, the other one may as well. So that
19 is a user's thought on that issue.

20 So we're interested in flooding
21 related to different size of surges. And one of
22 the motivation was in Corpus Christi in 2008.

1 We had two flooding events that would
2 be part of the nuisance flooding. They were
3 related to Hurricane Ike and Hurricane Dolly.
4 Both hurricane that landed quite far away from
5 Corpus Christi.

6 And on the picture on the right, we
7 see the flooding, but you don't see any storms,
8 you don't see dark skies, you don't see waves.
9 Very sort of a quiet flooding event. And those
10 type of events are going to increase with
11 relative sea level rise.

12 So we developed a methodology a few
13 years back to try to quantify that. And the
14 questions we're after are, what is going to be
15 the influence of relative sea level rise on
16 flooding, surge range, coastal geology and the
17 hurricane climatology? How do you put all that
18 together to try to predict model, how inundation
19 frequency will change?

20 To capture that, I'm going to show the
21 example of Pier 21. We start with the water
22 levels since 1908. So that's fantastic

1 obviously.

2 We remove the sea level trend, we
3 remove the tides and we end up with a surge time
4 series. And we can make the assumption that the
5 surge times series itself is not going to change
6 that much with relative sea level rise. The
7 atmospheric portion of the water levels.

8 That surge time series can be modeled
9 as a probability density function. On the bottom
10 left, different ways to do it. We use a GEV
11 function. And so we get statistical distribution
12 for surge.

13 If we integrate that statistical
14 distribution, we can estimate, compute, the
15 chances of getting flooded. And that's the next
16 slide on the top left.

17 The dark line gives you the chances of
18 exceeding a certain level on every, for different
19 water levels.

20 We can make the switch from surge to
21 water level because the water levels have the
22 tides on top of it, but the tide is sometimes

1 positive, sometimes negatives. So on average we
2 can switch from surge to water levels.

3 And then we can add the relative sea
4 water rise. And we can get another probability
5 function. Another community distribution
6 function that tells us what is going to be the
7 chance of getting dated for certain vertical
8 level at the end of the century. So that's the
9 dotted line on the top left over there.

10 Once we have those two we can create
11 a ratio. And that's the big graph in the middle
12 of the slide.

13 The dark line tells you what, how much
14 your inundation frequency will increase as you
15 move to the end of the century. The dark line is
16 for linear rise. So continuing the 6.3
17 millimeters for Pleasure Pier, all the way to the
18 century.

19 And the dashed line as with an
20 acceleration. I'll talk to that a little more.

21 And one of the take-home messages
22 there is that when you look at that ratio, it's

1 estimated to be about six times for water levels
2 around one meter and a lot less around two times
3 for Hurricane Ike type.

4 So when you think about nuisance
5 flooding, they're not devastating, but in
6 proportional, they're going to increase a lot
7 more. That's because of the probability
8 distribution function. They're going to increase
9 a lot more than the large flooding.

10 So we are talking about spatial
11 variability. We looked around the Gulf of Mexico
12 and there is large differences in relative sea
13 level rise. When you go from about 2.2
14 millimeters in Key West to one centimeters in
15 Grande Isle Louisiana. How is that going to
16 affect those rations?

17 So we plug in the different relative
18 sea level rise for the location. And also a big
19 difference is going to be the surge range. I'll
20 go back there.

21 And if you look at the distance from
22 the Continental shelf. In Galveston we have a

1 long distance that allows the surge to build and
2 gives us those very large surges.

3 So if we compare locations, we have,
4 it's the graph on the bottom left. In the middle
5 portion we have the two locations in Galveston
6 that have large surge ranges, as opposed to Key
7 West that has a very narrow surge range. So that
8 will play a role in the result.

9 So we plug in the surge range, the
10 vertical and motion to the statistics, and we get
11 to this graph. That shows the, so on the top
12 left we have Galveston, Pier 21.

13 We have the six-time increase in
14 inundation frequency for about 1.1 meter. And
15 you have also dash line below and above, that's
16 the confidence interval.

17 With that method, we can recreate
18 alternate history of surges. We can assume that
19 all surges are created with equal chances and we
20 can resample and give alternate search history.
21 And that allows us to check out variability. And
22 yes, so we have multipliers between five and ten.

1 If we pick an accelerating sea level
2 rise, then the results will obviously change.

3 And the results are in this slide. And the
4 multipliers are as expected, quite larger.

5 And in the previous slide, in the
6 linear sea level rise case, Grande Isle in
7 Louisiana was the place where there's going to be
8 the larger increase.

9 When you step to an accelerated sea
10 level rise, it was a bit of a surprise when we
11 first computed it. Key West becomes the place
12 where we have the largest increase in inundation
13 frequency.

14 And the reason for that is that there
15 is, the surge range is very small at Key West.
16 So if you put two feet of sea level rise to an
17 area that has about the max of the surge range is
18 less than three feet, then you step into a type
19 of water level that the area has never seen. And
20 so that's why that inundation frequency is so
21 high.

22 Now it's not nothing to be too

1 dramatic because you don't need a very tall sea
2 wall because the surge range is not very large.
3 Yet Key West is going to get into, places like
4 Key West will be in a situation that they've
5 never seen before. And that will take some
6 planning.

7 So that's the spatial variability of
8 the impact of relative sea level rise on
9 inundation. And you've got, so those are the two
10 final paragraph for this part of my talk.

11 On the left, the red curve is for the
12 Grande Isle, which will be the most affected on a
13 continuous, on a linear sea level rise. And on
14 the right side it will be Key West. Because of
15 that surge range.

16 So some methods to compare what may
17 happen.

18 The second part of my talk, though
19 shorter, is if you go to the local level, I'd
20 like to share.

21 We're trying to help the management,
22 beach management and coastal management. And

1 we're using data from Bob Hall Pier. It's the
2 only instrumented Pier on the Texas open coast.

3 And we're hoping to add more
4 instrumentation and open for suggestions on that.
5 We've given suggestions.

6 And then we have, so we're fortunate
7 we have an NWLON station there. And we have also
8 installed current profilers and wave gauges.

9 And the part I'm going to emphasize is
10 that if you have a wave gauge located right next
11 to an NWLON water level, the NWLON station does
12 not just measure water level, it also measures
13 water level variability. You have the standard
14 deviation.

15 And you can make, you can put the
16 model together that compares that standard
17 deviations with the significant wave height. You
18 can create a lower model, which you see here.

19 And once you have a model between the
20 significant wave height and the standard water
21 level deviation, then you can go back in time and
22 create a wave history. And that's what we did.

1 And so we suddenly have a 13 years
2 wave history. Now the quality of it is not tip-
3 top yet. There's more QA/QC and statistics to
4 do. But we were able to identify the past
5 hurricane with reasonable wave height.

6 And so now we have a water level
7 history and a wave height history. What we can
8 do with that is put them together. And that's a
9 good estimate of wave run-up.

10 So we can go back and have an estimate
11 of how high the water went on the beach for 13
12 years. And with that we can then compare with
13 the tidal datums and figure out how often are the
14 tidal datums inundated. And that's going to be
15 the topic of the next three slides.

16 The tidal datums that are most used
17 and have been talked about. The highest
18 astronomical tide, mean higher-high water, mean
19 sea level.

20 And as you imagine, with the
21 atmospheric, the wave run-up, those are going to
22 be inundated quite a bit of time.

1 There's some type of discussion that
2 high astronomical tide, for a beach manager, as
3 well. If I'm above the highest astronomical
4 tide, it's going to be dry most of the time. And
5 that's a misconception that I think we should
6 communicate.

7 So the result is that, for the highest
8 astronomical tide, and these are estimates, but I
9 think they'll be pretty close once we clean up
10 the wave history. About half of the time, the
11 highest astronomical tide is in the water. And
12 that's on the ocean side. On the bay sides, the
13 results would be different. Because you have
14 different atmospheric forcing.

15 And so we think that we need a better
16 type of statistics to help the beach manager.
17 And we think that a flooding frequency datum,
18 something that tells you, well, if you want to be
19 99 percent of the time dry, this is that vertical
20 height.

21 And in cases like Bob Hall Pier, you
22 can compute that and you can communicate it.

1 Well, communicating it, so that's great. But to
2 communicate it you also want to do it in a fairly
3 visual fashion. Something that's easier for the
4 beach manager to look at.

5 So in Ball Hall Pier we have a
6 benchmark. And so from the benchmark, we can
7 look at where, on a pier pile, those datum
8 corresponds to. And a later presentation is a
9 lot more clear there.

10 But the blue lines are the highest
11 astronomical tide and the mean high high water.
12 And the red lines are the five percent and ten
13 percent inundation frequency line. And so that
14 should give a very visual way for the beach
15 manager to see where.

16 And the picture was taken in January,
17 where you have the lowest water level, low tide.
18 So we didn't get too wet when we took that
19 picture. We still got pretty wet actually. Poor
20 students were the most wet.

21 (Laughter.)

22 DR. TISSOT: Last slide before I

1 conclude. It's also about spatial variability.
2 And if you take the TCOON data, we have about 23
3 years for several stations and you compute the
4 sea level rise, the relative sea level rise on a
5 relatively small area. That's the Texas Coastal
6 Bend. And we followed the National Ocean Service
7 methods to do that, of course.

8 And you can see a lot of
9 variabilities. South of College Station you have
10 2.5 millimeters. And we go Rockport, 7.2
11 millimeters. You'll notice that it's a little
12 higher than on the NOAA page and that's because
13 we take only the last 23 years instead of
14 starting in 1948 like you have in your official
15 page.

16 So it's quite a bit of variability and
17 I think it needs to be measured. I think it
18 calls for high density observations. There's
19 going to be, as Chris and Ray talked about,
20 there's going to be billions of dollars invested
21 to protect our coast. And we need the right data
22 and we need it to be consistent.

1 So I hope I've convinced you of the --
2 it's like preaching to the choir here -- but the
3 importance of those local measurements, that the
4 variability is, every time we look, the spatial
5 variability is larger than we thought. And we
6 scratch our heads a little bit to try to explain
7 it. Perhaps it's sea level, you have subsidence,
8 you have river bed fluid extraction.

9 Also other conclusions, the tidal land
10 dunes are not good indicator of an inundation
11 frequency. And we need better ways, I think, and
12 maybe there will be feedback from the room,
13 there's better ways to help the beach manager and
14 planner for coastal areas.

15 The questions are going to be for
16 later, right?

17 (Applause.)

18 DR. JEFFRESS: Our final speaker today
19 is Chris McHugh, who is a hydrographic surveyor.
20 He works with TerraSond Limited in their office
21 in Corpus Christi.

22 And he's recently taken on the

1 challenge of being our adjunct professor in
2 hydrographic science on our campuses and actually
3 teaching this semester about 20 students the art
4 and science behind hydrographic surveying.

5 Chris is a graduate in the master's
6 program from Southern Mississippi State
7 University at Stennis. And prior to that he has
8 a bachelor's of science degree in marine science.
9 And so he's been a coastal guy ever since he's
10 come out of high school.

11 And I know he's also a sailor. He
12 just bought a new sailboat to play with down in
13 Corpus Christi. And he's very knowledgeable on
14 all things hydrographic. So, Chris, tell us what
15 you do.

16 MR. MCHUGH: Well, thanks, Gary. I
17 just want to say what an honor and how humbling
18 it is to be in a room with all of you. Not just
19 to be invited for the talk but just to be here.

20 There's been a lot of talk about what
21 data products are coming out with, technologies
22 that are new and each agency is coming out with.

1 But not really much of who the people that are
2 out there collecting this data. Because the
3 technology doesn't mean anything unless you have
4 people that know what they're doing with it, and
5 knowing how to QC it and making sure that it's
6 right.

7 So that's basically what I'm going to
8 talk about here. So forgive me for reading from
9 my slide for a second, but the IHO defines
10 hydrography as the branch of applied sciences
11 which deals with the measurement and description
12 of the physical features of oceans, seas and
13 coastal areas, lakes, rivers, and their
14 prediction of their change over time, for the
15 purpose of safety of navigation and support of
16 all other marine activities, including economic
17 development, security and defense, research and
18 environmental protection.

19 But this is a meaningless statement.
20 It's meaningless without the hydrographers that
21 do the work. They really bring these words off
22 the page into a practice science.

1 In the beginning, hydrography
2 consisted of brave men setting out for years and
3 years at a time for their governments to map and
4 explore the new world, using astronomical
5 observations for positioning, a lead weight tied
6 to a rope for soundings. Captain Cook is one of
7 the most famous. Captain Bligh as well.

8 My company, TerraSond, we're very big
9 in Alaska. We've done surveys up there for NOAA,
10 one of their contractors. And we have surveys
11 that match Captain Cook's original surveys to
12 within half a foot. That's half a foot, you
13 know, in X, Y, Z position. That's unbelievable.
14 Hopefully, we weren't wrong, but --

15 (Laughter.)

16 MR. MCHUGH: And to think that they
17 had such a great understanding of how their
18 measurements were taken, they had to compute
19 these things by hand. And they understood and
20 had -- just meticulous with all their
21 measurements.

22 And it really gave them the want and

1 the need to make sure everything was right.
2 Because they were doing this for a purpose and
3 they're proud about it and they were making sure
4 their measurements were correct. And it shows
5 that, you know, within half a foot. And it's
6 amazing.

7 And now we have radio waves bouncing
8 around space and on the earth that are giving us
9 the realtime positions almost anywhere in the
10 world. Then we take sound waves and propagate
11 them through the water column and have them
12 reflect back to us.

13 And we're measuring not just
14 bathymetry, but properties of the water column.
15 We can measure gas seeps, we can get information,
16 intensity data about bottom characteristics. We
17 can penetrate through subsurface and get
18 different layers of the earth.

19 It's amazing what we can do. And then
20 we can take all those things and make 3D models
21 that are georeferenced. And every little point
22 in that georeferenced model, like this picture of

1 the downed submarine in the bottom right. I
2 mean, it's amazing. It's like an artist couldn't
3 paint a better picture. And we did that using
4 sound. Remote sensing.

5 And I feel like we lose sight of that,
6 and we lose sight of the technology, in how cool
7 and what we're actually doing with it. And we
8 take it for granted. And I think the underlying
9 problem with that is people don't appreciate it
10 as much and they don't want to understand the
11 whole science behind it.

12 And then they lose some of the QA and
13 QC things because they just see numbers on a
14 page. Oh, we just collected data. And it's
15 like, yeah, but your data is a foot off because
16 you have a draft in the wrong spot or you didn't
17 enter your draft. So you have to really
18 understand what's going on.

19 And I believe, how do we start with
20 this? I believe it comes down to the governing
21 body. Back in the 1500s, the governments of
22 England had a problem. They couldn't position

1 themselves on a line of longitude to the accuracy
2 that they could the line the latitude. So they
3 put out to the geniuses of the world at that
4 time, some of the people that invented a lot of
5 math that we use today, to come up with
6 solutions.

7 And two solutions came out of that.
8 You had the H4 to keep time at Greenwich Mean
9 Time and then keep ship time. And then you had
10 lunar tide tables. They still required a lot of
11 calculations and a lot of measurements.
12 Sometimes a few hours in a day and sometimes a
13 couple days to get accurate measurements.

14 We've come a long way since then. And
15 NOAA has some of the most stringent hydrographic
16 specifications in the world. And it's great.
17 And I think we're doing very good from the
18 government level down. But now we have to focus
19 on the people that are doing the work. Our
20 students and our hydrographers, you know, they're
21 our future. And where are they getting their
22 education? Are they understanding what they're

1 doing exactly and making sure that their quality
2 is good? And what effects did that have for our
3 data sets and our coastal regions?

4 And so these are the challenges, I
5 think, that we need to face. And I feel like if
6 we can overcome all these challenges we'll be
7 sitting pretty good.

8 We live in a dynamic world.
9 Obviously, we've talked about this before. Our
10 coastline is huge. And I heard once that it
11 would take about 200 years to map the whole coast
12 and get it up-to-date. But that doesn't make any
13 sense. It would actually be a lot longer than
14 that. Because our coastline is constantly
15 changing. It's dynamic. Plates are moving, land
16 is subsiding. You have isostasy, you've sediment
17 flow, hurricanes and storms come through.

18 Which we know -- I know Mr. Newby can
19 attest to this -- the more we try and control it,
20 which is great, and hurricane sea walls and
21 groins and levees, it changes the environment.
22 And then we have changes farther downstream that

1 are affected. So the more that we do, the more
2 the environment changed somewhere else. And it's
3 a battle that is going to be constant fight.
4 It's never going to change. We're not going to
5 stop it. We can only try and control it, to a
6 point. And also measure it and understand what
7 are changes are doing, and the best way to
8 implement changes, for what we want.

9 And I think people don't realize this,
10 I've noticed this especially in class in working
11 with students, they don't know the limitations of
12 our charts. And so I did an experiment.

13 I basically have 17 students in the
14 class. And I told them to go to NOAA, go to the
15 online chart viewer and open and download a PDF
16 of any chart in the U.S. and then tell me how old
17 the hydrographic data is from. They all told me
18 2013 to 2015, of the publication date of the
19 chart.

20 And then so I pointed out in class,
21 and I directed them to the source, and said,
22 okay, this diagram here shows where the original

1 data sets are from that are on the chart. A lot
2 of these are checked and stuff. And then we're
3 looking at the dates. And I had them basically
4 write down all the dates from their charts.

5 And you can see a lot of them were
6 during wartime efforts when sonar was invented
7 and we started using single-beam sonars. Only a
8 few were since the last six years. There were a
9 lot in the 1800s that are still on there.

10 These are in areas that obviously are
11 not commercialized, they're not used very much.
12 But I think we have a responsibility, as
13 scientists and hydrographers, to the public, as
14 well as just commercial shipping lanes, to update
15 charts for regular boaters that are going out.

16 And as a sailor, I know the hazards.
17 I never trust my charts. They're just there for
18 guidelines. And I know all too well that,
19 between tides, charts are great, I love them.
20 But my point is that recreational boaters are not
21 going in places where it matters. They're going
22 in places right around shorelines and little

1 marsh inlets and stuff like that. Where it's
2 such dynamic change and there's such sediment
3 flux and influx that it's almost impossible to
4 keep the charts up-to-date. We don't have the
5 manpower to do it. And we have different
6 technologies that we're trying to work with, like
7 LIDAR and satellite based imaging.

8 But I think we need to get the funding
9 in place and try and get these charts up-to-date
10 as much as possible. And maybe internet-based
11 things. But that's a different talk.

12 Recently, a good friend of mine, Dr.
13 Ian Church, who is one of John Hughes Clark's
14 grad students, he said to me that hydrographic
15 scientists of the future need to have a holistic
16 view of hydrography, beyond numbers on the chart.
17 We need to understand the science of our
18 environment to understand the limitations of the
19 work we are doing within it.

20 And it's true. And there's not too
21 many hydrographic formally trained degree
22 programs in the U.S. There's only three that are

1 recognized by IHO, as of 2011.

2 There was the one that I graduated
3 from, the University of Southern Mississippi.
4 It's a Joint Naval Program. It's a one-year or a
5 two-year program. The one-year program is an
6 accelerated program, mainly for the Navy. NOAA
7 sends their guys there, the Navy does, fleet
8 survey team, NAVOCEANO, foreign navies as well.
9 As well as three IHO candidates every year. So
10 we have a big international collection there. We
11 get hands on training, very in-depth theory.

12 Viewing the IHO's webpage, they just
13 updated their Category A. Basically their
14 certification for the degree program, what the
15 degree program needs to meet. Differential
16 equations, linear algebra, in-depth tide theory,
17 underwater acoustics, geodesy, in-depth GNSS, how
18 it works.

19 I mean, Dr. David Wells is there. If
20 anybody knows him, I feel like he's invented GPS,
21 he's been around so long. And worked on it
22 actually when it was first coming into existence.

1 And great resources there. And we also have the
2 Navy that supplies all the sonars and the
3 technologies that's there that they're using.

4 And the University of New Hampshire is
5 the same way. They partner with NOAA. They also
6 have UNB up there to kind of partnership with.
7 That's an ocean engineering degree so it's not as
8 focused in hydrography and charting. But it is
9 still a great program. I have a friend in grad
10 school up there right now.

11 And then there's the Florida Institute
12 of Technology, which isn't recognized as a
13 Category A or a Category B. It's just recognized
14 by the IHO as a school that has a lot of teachers
15 and classes that are hydrographer-based and it's
16 a good learning environment for that.

17 There's other colleges, like Cape Fear
18 Community College in Wilmington. That's like a
19 marine technology degree so they'll do a very
20 applied, hands-on, okay, here's your sonar, this
21 is how they work. But there's really little to
22 no theory in there.

1 But we need more university programs
2 like this around the world that are IHO
3 recognized to get our workforce out there. I
4 mean, we've talked about the NRT team problems,
5 having staffing issues. And just staffing issues
6 in general around private companies.

7 And there's just not enough people out
8 there that are formally trained and want to be in
9 that formally trained industry. The problem is
10 you have people that get hired on as private
11 industry or government and they went to school
12 for marine science.

13 Or they really want to be a dolphin
14 trainer, but obviously that job everybody wants.
15 So they got a job, just to get a job nowadays.
16 And they're doing hydrography and they realize,
17 oh, this really isn't for me. And then we have
18 retention issues.

19 But when you're more formally trained
20 in something you want to stick with it because
21 you already know what you're there for. You
22 already know what you've signed up for.

1 And so I've called around a lot of
2 private industry companies, because now I'm in
3 the private industry, and I was wondering where
4 their employees are from. So I called up some of
5 the people I know at the bigger corporations, and
6 less than 25 percent of their employees have any
7 formal training. They have scientific background
8 engineering. But there's a lot of on-job, in-job
9 training and investment. And then they leave.
10 Because they realize it's not what they want to
11 do.

12 Like I said, we need more degree
13 programs that meet IHO specs. More hands-on
14 technology. Learning environment. Theory is very
15 much needed, but we also need the hands-on
16 equipment and the technology to use sonars.
17 Working with TCOON, at Texas A&M, has been great
18 and the students love it as well.

19 Getting hydrographic softwares
20 available to students and focused internships and
21 opportunities through relationships between
22 private companies, as well government entities.

1 There is also -- there's no
2 professional licensure for hydrographers right
3 now. There's just certifications. ACSM,
4 obviously IHO.

5 And then so you kind of wonder, where
6 is the incentive to be diligent and have an
7 integrity in your company, and with your surveys,
8 if you're not held to any kind of standard? Your
9 certifications basically just say that, okay,
10 you're qualified, you know what you're doing.
11 But if you do it wrong, you can't get that
12 certification taken away.

13 Land surveys, our POS's obviously have
14 this. And I think hydrographers, no offense,
15 might be a little biased, have more moving parts
16 with them than some land surveying stuff.

17 DR. JEFFRESS: Excuse me, Chris, we
18 better wrap up this session. We're running out
19 of time. So if you don't mind, we'll stop you
20 there. And we've got a few minutes left for
21 questions.

22 So, Gary, do you have some written

1 questions that you might want to pass to us?

2 Steve?

3 MR. BLASKEY: The first question is,
4 the source of Open Source GIS that I'm using for
5 my records project, I'm using the quantum GIS
6 platform. It was just readily available and it's
7 free. We've also used, we've experimented with
8 Manifold GIS, and obviously the ESRI suite.

9 The next question says, how will the
10 replacement of NAD 83 and NAVD 88 impact the work
11 that you do?

12 As long as there's a straight
13 conversion to it, it really won't. We're just
14 giving answers in the datum that's being provided
15 to us. So I don't know that that would be any
16 detriment to what we've done. We would just come
17 up with what the conversion is and convert our
18 legacy data over to the new datum.

19 What tools do we you need to make a --
20 I can't read this one.

21 DR. JEFFRESS: Oh, for the reference
22 frame in 2022, what tools do you need to do

1 conversions with this new datum?

2 MR. BLASKEY: To be honest with you,
3 I don't know what tools I would need to make a
4 transformation in the reference frame of 2022.
5 We're a little ways out, I'm sure I'll figure it
6 out by then.

7 DR. JEFFRESS: Ray?

8 MR. NEWBY: Okay. This question is:
9 is the Texas Coast resiliency plan incorporating
10 natural infrastructure, like new restoration
11 marsh, et cetera, to protect the coast versus
12 relying on sea walls and other hardened
13 structures?

14 The answer is yes on that. We have a
15 preference for soft solutions versus hard
16 structures. And I would add into this, in
17 addition to using the natural environment for
18 protection, wider beaches, wetland buffers and so
19 forth, we're also looking at nonstructural
20 solutions, such as code changes and potentially
21 relocations and buy-outs.

22 The other question is: what is needed

1 to produce a more precise inundation
2 visualization prediction model? Is it more hydro
3 data, more LIDAR data, more 3D building,
4 impervious surface information?

5 I think all those. I think one of the
6 things that's really limiting some of our
7 inundation models, as well as morphological
8 models, is lack of reliable vertical data.

9 You know, LIDAR will only get you so
10 close. And especially in like the Texas Coast,
11 where you have a very low tidal range and a very
12 low relief environment, you need as precise of
13 vertical elevation data as you can have. And I
14 don't think LIDAR is really getting us there yet,
15 compared to some of the stuff that our on-the-
16 ground surveyors are getting.

17 Last question is: the Texas Coast
18 resiliency, is there any interests or thoughts
19 about developing cooperative studies with NOAA or
20 other agencies?

21 And that's a resounding yes. The more
22 that we can leverage other resources ,and not

1 only funding, but expertise, is going to be
2 needed as we move forward.

3 Are you -- and if so, how --
4 incorporating sea level trends into wetland
5 restoration projects, and other projects
6 susceptible to sea level rise?

7 Most of our wetland restoration
8 projects are really on about a 20-year planning
9 horizon. However, we are incorporating designs,
10 such as when you're building marsh terraces or
11 mounds or so forth, to give enough elevation to
12 allow for future sea level rise so that your
13 vegetation will still survive.

14 For the Corps studies, where we're
15 looking at Corps of Engineer studies, we have a
16 50 year planning horizon, where under executive
17 order now the Corps has to consider several
18 different sea level rise scenarios.

19 And it's even going to further into
20 looking past 50 years to looking at, if you're
21 going to build a hard structure as a levee or a
22 flood wall, to basically incorporate adaptation

1 measures so that you can actually go in and build
2 adaptations to 100-year planning horizons.

3 DR. JEFFRESS: Chris?

4 MR. FRABOTTA: Yes, sir. All right,
5 so the first question says, what sensor do you
6 use for your hydrographic post-dredge surveys,
7 single-beam, multi-beam or sonar?

8 And the answer to that is, I guess, a
9 little bit complicated. It's, what are we using
10 the survey for? So if it's strictly an after-
11 dredging survey, we typically use single-beam and
12 we run cross-sections on our channel for that.
13 And the reason is, here in Galveston, it's a lot
14 different than the East Coast. We don't have
15 hardpack sand shoals. We mostly have soft bottom
16 channels that the channel lays out really flat.
17 We don't see a lot of pinnacles.

18 Other districts can, and do, use
19 multi-beam surveys for both before and after
20 dredging surveys. For payment, contractor
21 payment.

22 But for before and after dredge, 99

1 percent of the time we use single-beam. If we're
2 looking for something, if we're looking for a
3 hazard to navigation, you know, Mr. Nerheim and I
4 were talking earlier, we had a barge spill a load
5 of sheet piles in the water. We dusted off our
6 side-scan sonar and our multi-beam and went up
7 there and did a survey for that. So if we're
8 looking for a hazard to navigation, we'll use
9 something other than the single-beam.

10 The reason we use single-beam, though,
11 is the data is easy to contend with. It's low
12 volume and quick processing time.

13 The second was: what's the average
14 time or goal to get the survey results in eHydro?

15 Right now, we, as I said before during
16 my presentation, that the Galveston District kind
17 of leaned forward to implement eHydro. And we
18 started implementing this navigation complex
19 here, Houston-Galveston-Texas City, two years
20 ago. And in November of last year, '15, we
21 finally got the Gulf Intracoastal Waterway
22 online.

1 We have been directed by our
2 headquarters, in a memorandum dated about two
3 weeks ago, to implement eHydro across the
4 country. So, some districts are behind. Or just
5 recently got the direction to do it and they're
6 starting to implement now.

7 In that memo, there's a five-day
8 turnaround requirement. So after we get the
9 survey done, we have to have it uploaded within
10 five days.

11 Okay, next question. Changing the
12 datum has a big impact on port and coastal
13 communities. How have you worked with them to
14 implement these changes and how have they
15 responded?

16 So this process on converting from
17 mean low tide, our legacy datum, to mean lower-
18 low water, we've been working on the Corps for
19 about six years, really in partnership with
20 Conrad Blucher.

21 We have an annual dredging conference
22 where we have our sponsors and stakeholders,

1 harbor pilots, et cetera, attend that. And we've
2 been briefing them and updating them as it's been
3 coming.

4 And we have about half of the Houston-
5 Galveston-Texas City complex converted right now.
6 Or a little bit better than half. And by the
7 July/August timeframe, we'll have the whole
8 complex converted.

9 How have we communicated with them?
10 We've been to public meetings, we've gone to an
11 annual conference or biannual conference called,
12 Dredging Your Docks. We've communicated with
13 local hydrographic surveyors.

14 And this also has regulatory
15 implications as our regulatory division issues
16 permits, dredging permits, relative to mean low
17 tide. We are no longer maintaining those MLT
18 tide boards, or tide stats. We now reset them to
19 mean lower-low water.

20 So we have, in draft form, public
21 notice that is going to go out here shortly for
22 the whole Texas Coast that provide some examples

1 on how to do the conversion from your permit for
2 mean low tide into our new vertical datum of mean
3 lower-low water.

4 And how have they responded?

5 Essentially we -- it's a little bit confusing
6 without a picture in front of you -- but we set
7 mean low tide conservatively, both subjectively
8 and empirically, back in the '60s. We did not
9 set mean lower-low water. We empirically derived
10 it with water level data.

11 So the differences between mean low
12 tide and mean lower-low water vary as you go up
13 and down the coast, and as you go up and down the
14 navigation projects.

15 We did coordinate with our
16 headquarters to say, if mean lower-low water
17 comes out a foot or two feet difference than mean
18 low tide, can we have the latitude of reporting
19 in mean lower-low water but increasing the
20 reported depth? So, we're not dredging any
21 deeper, we're not dredging any shallower, but
22 we're dredging to the same depth we had, but

1 reporting mean lower-low water. And headquarters
2 said we could.

3 So the impact to the permittees and to
4 the berth owners and that kind of stuff is, we're
5 not dredging the channel any deeper or shallower,
6 we're just now reporting in mean lower-low water.
7 So it's a foot difference in reporting here in
8 Galveston. It's two feet down in Corpus Christi.

9 So, that communication, to the harbor
10 pilots and to the ports, is what we're going
11 through right now, port by port.

12 Next question. At the past panel
13 meeting, in Charleston, we explored some of the
14 challenges and promise of eHydro to allow better
15 sharing of Corps of Engineers survey data with
16 NOAA. From your perspective, how is eHydro
17 working for your district and is NOAA able to
18 apply your survey data to the charts in a timely
19 manner?

20 It's a good question. For our
21 district, so far, we are serving it up at the
22 district website. That memo that came out a

1 couple weeks ago is looking at it more as a
2 national initiative. And we are, and our
3 cartographers in my district, are looking at how
4 to implement serving that data at the national
5 level.

6 And then there's folks in our
7 headquarters offices that are coordinating with
8 NOAA at the highest level to make sure that NOAA
9 can import that data. Both that it's named
10 right, the format of the data is correct, it
11 alerts you when the data is out there, et cetera.

12 So it's not something that we're
13 taking the lead on at the district level. It's a
14 national initiative. But I did talk to Rear
15 Admiral Glang about it at break, and we do have
16 monthly calls with all of the 16 coastal
17 navigation districts in the country. And I'll be
18 sure to bring up, in that call, that NOAA is very
19 interested in implementing into their online
20 charts.

21 The second question was: your
22 presentation showed how your survey data is

1 displayed on your district website, but is it
2 being picked up and used and updated for NOAA
3 charts and others -- has it been picked up on
4 NOAA charts, or other sites beyond, in the
5 individual USACE district website?

6 So, the folks I know that are using it
7 are the harbor pilots. Captain Morris recently
8 retired. He was the captain or the presiding
9 officer for the Houston Pilots. And Captain
10 Wally with Texas City and Galveston Pilots.
11 They're both using it and they've hired companies
12 to import the data and to get it put on their
13 online -- to put on their chart plotters.

14 Next question. Your region has a lot
15 of ambitious channel deepening projects. Could
16 you briefly discuss the approval process and
17 permitting timeline from conception to
18 completion?

19 So, it's been a huge problem within
20 the Corps of Engineers that some of these
21 deepening projects take 12 to 20 years to get
22 approval. And some of the ports have leveraged

1 an authority out there called a Section 204 that
2 allows the port to do the deepening report, the
3 port to pay for the deepening, and to hand the
4 maintenance over to the Corps of Engineers. And
5 that's been done in several cases within the past
6 couple of years.

7 It's been done at Freeport. Report
8 Freeport and Freeport LNG partnered to widen the
9 Freeport Channel from 400 feet to 600 feet. In
10 May of last year, the Corps of Engineers, my
11 district, accepted the operations and maintenance
12 of that. In July it will be the second time
13 we're digging that and maintaining that to 600
14 feet wide.

15 The Port of Houston did that Section
16 204 on deepening the Bay Port and Barbours
17 Terminal Channels from 40 feet to 45 feet.
18 They're currently under contract. We've accepted
19 Barbours. And when they're complete with Bay
20 Port we'll be accepting that.

21 And the Port of Corpus Christi has
22 done it on the La Quinta Channel deepening where

1 we had 39 feet and they deepened it to 45 feet.
2 And we've assumed the maintenance.

3 What I'll tell you is that the Corps'
4 planning process has undergone some improvements
5 over the past four or five years called SMART
6 Planning, to where it's a maximum of \$3 million
7 on a study, three years to complete the study,
8 and three inches thick on the report. Because
9 we've had some reports that would reach the
10 ceiling, as you can imagine, with some
11 environmental issues.

12 But those are being implemented. I
13 think they've improved. I don't think that
14 they're where the Corps or our non-federal
15 sponsors want them to be, but they've gotten a
16 lot better.

17 Last question I had was: hurricane
18 response protocol shows USACE in a role for
19 hydrographic surveys. How is that coordinated
20 with NOAA's NRTs, who does USACE fund further
21 development of eHydro?

22 So we, the Corps of Engineers, are in

1 charge of restoring navigation within the federal
2 navigation channels. Of course the captain of
3 the port, in the case of Houston -- Sector
4 Houston Galveston, Captain Penoyer and his staff
5 is on the hook for closing the port and taking
6 our recommendations on doing one of three things.
7 Either keeping the port closed, opening it under
8 restriction or opening it free and clear.

9 And our team that I listed out, makes
10 those. We're in charge of coordinating the
11 surveys and really performing the majority of
12 them, but our team that I've listed out there,
13 which includes the Coast Guard and NOAA and the
14 Brown Water Industry and the harbor pilots, all
15 provide input to making recommendations to
16 Captain Penoyer, in this case, to open up
17 Houston-Galveston-Texas City. And how do we tap
18 into NOAAs NRT resources?

19 They're another hydrographic assets to
20 us. So we have nine larger boats within the
21 Galveston District and many, many, a couple dozen
22 small skiffs that we can survey with.

1 NOAAs got a vessel that they share our
2 boat house currently. So they're right on site.
3 But we also have fireboats on the Houston Ship
4 Channel that have data collection, fathometers
5 with data collection capabilities. We have Brown
6 Water Industry that can give us verbals.

7 We use all of that survey data to
8 maybe open up under restriction until the Corps
9 can get back in there and validate the surveys
10 before we open up full navigation. That's all I
11 have.

12 DR. JEFFRESS: Okay.

13 MR. MCHUGH: The question was, as a
14 practicing professional and adjunct faculty at
15 CBI, what do you feel is the biggest challenge to
16 getting today's students interested in your
17 chosen profession?

18 I have to say, it's they don't hear
19 about this profession until it's too late.
20 They're already in college, they've already had
21 their chosen degree track and they don't know it
22 exists.

1 Too many people have -- like what do
2 you do? Well, I'm a hydrographic surveyor.
3 What's hydrographic, what is that? And people
4 just don't know. And they also don't know what
5 it entails.

6 So just basically knowledge of what
7 hydrographic science is. And it is a science.
8 And just applied geophysics in general. And they
9 just don't have the knowledge of what it is and
10 it's just not presented to them early on in their
11 education. And that's probably the biggest
12 interests.

13 Because once they hear about it, most
14 of them are very -- either intrigued, interested
15 and want to be part of it or at least appreciate
16 it. That's it.

17 DR. JEFFRESS: I have a question for
18 all of the panel members from Ed Saade. Does any
19 of the Texas Natural Resources Information System
20 funding support your needs and is there overlap
21 with the TNRIS data?

22 MR. NEWBY: I guess I'll take a stab

1 at it. The TNRIS is the Texas Natural Resource
2 Information System. It's maintained by the Texas
3 Water Development Board.

4 And TNRIS has basically been
5 designated as the central clearing house for
6 geospatial data, aerial photography in mapping
7 products and so forth.

8 And we do have some interplay with
9 their StratMap initiative, but as far as funding,
10 I think we probably see more funding through our
11 coastal management program too than what we get
12 back from TNRIS.

13 DR. JEFFRESS: And TNRIS is a really
14 good resource with geospatial data and
15 information. You know, aerial photography, maps.
16 They work closely with USGS in producing mapping
17 series for Texas. And they make that all
18 available over the web, from their website.

19 Sorry we went over -- oh, you got
20 another question? Sorry, go ahead.

21 MR. MCHUGH: The question is what --
22 who do you think should regulate hydrographic

1 surveys?

2 Well, NOAA regulates ours now. The
3 only charting agency in the U.S. Other
4 hydrographic surveys that are done, you know, for
5 private clients or state governments or whatever
6 it is, are just regulated by the company itself.

7 I think what we need is some kind of
8 licensure, somebody in charge that -- you know,
9 like a land surveyor. You can't submit a land
10 survey that a company did without a professional
11 registered land surveyor attached to that
12 company, that they'd have to check it. So I feel
13 like it should be the same for hydrographic
14 surveys.

15 So if we want to do a survey for a
16 park commission for water volume computations in
17 one of their lakes; we'd have to have a
18 registered surveyor or hire a contractor or a
19 registered hydrographic surveyor for that. So he
20 can look over the data and put his stamp on it
21 and say, yes, this is good data or no, you're off
22 or this doesn't match some data or you should

1 redo it, re-look at it and then resubmit it.

2 DR. JEFFRESS: Thanks, Chris. Well,
3 with that I think we should ask for anymore last
4 minute questions or reserve them for lunch.

5 I want to thank the panelists for
6 coming and spending their time with us. There's
7 a lot of information there. If you have any more
8 questions, by all means, collar them after and
9 then they can probably answer those questions.

10 So in the meantime, I ask you to show
11 your appreciation one more time.

12 (Applause.)

13 DR. JEFFRESS: Back to you, Scott.

14 CHAIR PERKINS: Great. Thank you,
15 Gary. Thank you, panelists. Excellent
16 presentations.

17 We are at the public comment period
18 now, so at this time if anyone from the public in
19 attendance would like to make public comment,
20 please take the microphone, state your name for
21 the record and we look forward to hearing your
22 comments.

1 MR. DASLER: Jon Dasler. I just
2 wanted to comment a little bit on professional
3 licensure, right. So there is a national
4 certification program, but it's just a
5 recognition by the peers, it's not a license to
6 practice.

7 So many states require that the work
8 be done under a professional surveyor. In fact,
9 the State of Texas has a -- I think it's called
10 the Occupational Code 1071.002 which requires
11 surveys on the beds of the bodies of water be
12 conducted under direction of a professional
13 surveyor.

14 So therefore you're bound by the
15 ethical laws and the professional standard of
16 work practices, as defined by the state, on that
17 front.

18 So I think moving forward, I think for
19 the academic programs, it's probably prudent to
20 prepare students to take the National Council of
21 Examiners for Engineers and Surveyors has got a
22 Fundamentals of Survey exam. Which starts that

1 track, eventually, for professional registration.

2 And I would encourage those academic
3 programs to kind of look into that and prep
4 students for that, going forward. Because there
5 is a real gap, I think, in the field moving
6 forward on that front. And I think that would
7 benefit the nation.

8 The other thing, I guess in terms of
9 clearance of the ports. So when a captain of a
10 port does close a harbor, so sometimes those are
11 cases where we've had several on the Oregon coast
12 where crabbing vessels have blocked entrances.

13 So typically the underwriters are
14 notified. And so funding comes through the
15 underwriters. We've done several surveys for
16 opening ports. So that's an avenue to open a
17 port that doesn't require government funding to
18 do it. It's funded by the vessel underwriter
19 that created the problem, but that's another
20 source as well.

21 One last comment. I think on sort of
22 the near-shore bathymetry of the Gulf, you know,

1 there's a lot of discussion on the deep draft.
2 One would hope at this point we would have
3 critical navigation deep draft areas covered in
4 behind us. But there's -- you know, that's an
5 ongoing effort that's still years out to
6 completion.

7 But there's a lot of needs in the
8 near-shore bathymetry within the Gulf. There's a
9 lot of infrastructure in the Gulf that's in
10 pretty shallow water and you've got supply boats
11 and crew boats navigating pretty shallow water to
12 get to this infrastructure.

13 And then we've heard in past HSRP
14 meetings that near-shore bathymetry is crucial to
15 oil trajectory modeling. So having accurate data
16 in the near-shore really helps in where spills
17 are going to progress and move that forward.

18 And so I would not forget about that.
19 And I think the DOC lawyers might agree that once
20 you have data on a chart, and if it's old an
21 inaccurate, that is a greater risk than not
22 having a chart.

1 So I just want to state that, that
2 that's something to keep in mind. There's a lot
3 of data on charts, especially in the near-shore,
4 that's out of date and inaccurate. As evidenced
5 by Barnegat Bay. Thank you.

6 MS. MERSFELDER-LEWIS: Are there other
7 comments?

8 CHAIR PERKINS: Okay, we will break
9 for lunch. The Panel will be in the Cynthia
10 Mitchell Room. And thank you all for your
11 participation this morning.

12 (Whereupon, the above-entitled matter
13 went off the record at 12:21 and resumed at 1:48
14 p.m.)

15 CHAIR PERKINS: I did have a request
16 that we allow just a little bit more of public
17 comment. And knowing that the next public
18 comment period isn't until the conclusion later
19 today, I would like to be accommodating and allow
20 Mr. Dasler that opportunity.

21 MR. DASLER: I guess just a follow-on
22 onto my comment is that I think the Office of

1 Coast Survey does a great job with the budget and
2 within the constraints that they have.

3 I think the issue, especially as it
4 gets back to Barnegat, is it shouldn't take a
5 disaster and a hurricane supplemental to find a
6 problem and fix the chart, right?

7 So I think the bigger problem is how
8 the program is funded and what can be done where
9 it doesn't take supplemental funding to resolve
10 some of those issues. So just a follow-on
11 comment to that. Thanks.

12 CHAIR PERKINS: Great, thank you. And
13 we do appreciate the input, Jon.

14 Mr. Maune?

15 MEMBER MAUNE: Thank you. I was
16 hoping to have Joyce's paper up on the screen.
17 But we're having some difficulties here. So
18 Joyce, are you about ready to load it?

19 (Off microphone comment.)

20 MEMBER MAUNE: Okay, Joyce, you're on.

21 MEMBER MILLER: We talked about this
22 earlier this morning -- I guess I should stay by

1 my mic. We talked about this a little bit this
2 morning and the panel members all have a copy of
3 this that was put on the desk this morning.

4 I wrote an original couple of drafts
5 and shared them only with Admiral Glang to get a
6 sense of whether I was going in the right
7 direction. And in a conversation, oh, about -- I
8 don't know, a month or more ago, he basically
9 said he was fairly happy with it. But I modified
10 the second paragraph a lot based upon his
11 comments.

12 So this comes from -- for the new
13 panel members, this comes from three successive
14 panel discussions and subsequent letters to Dr.
15 Sullivan basically saying that NOAA should get
16 its ships together, I guess I'd say.

17 (Laughter.)

18 MEMBER MILLER: NOAA should get its
19 ships together. The first one was Admiral Glang
20 shared with us that in 2013 and '14, neither the
21 Rainier nor the Fairweather surveyed in Arctic
22 waters and that the production rates had been

1 extremely low for many years, but also that both
2 ships are very old, 49 years old now.

3 And actually, one question I have,
4 Gerd; what was their original design life? Do
5 you have any idea?

6 (Off microphone comment.)

7 RADM GLANG: So I think -- he's
8 talking to me. Gerd Glang, Coast Survey. So I
9 think, Joyce, the design life for those ships,
10 built in the 1960s, was probably not more than 30
11 years.

12 MEMBER MILLER: So we could safely put
13 30 years in.

14 RADM GLANG: I think -- yes,
15 approximately 30 years, I think, would be fair.

16 MEMBER MILLER: And they were -- now
17 one thing I hadn't realized was the Fairweather,
18 I believe it was, was laid up for a number of
19 years and then brought back out, correct?

20 RADM GLANG: Correct.

21 MEMBER MILLER: Yes, but she's still
22 49 years old. So that was an issue. And in the

1 2015 budget -- no, it was the 2016 request, NOAA
2 requested \$170 million for ship replacement which
3 then didn't show up in the budget, because NOAA
4 had produced a fleet recapitalization plan that
5 went to OMB.

6 And OMB would not release it for
7 whatever reason. And that was from Jeremy
8 Weirich who works on Senate Appropriations. So
9 the Senate Appropriations Committee would not
10 consider it initially.

11 And then when the joint budget -- when
12 the President's -- well, when we finally got a
13 budget last year which, as everybody knows,
14 seemed to give a little bit of something to
15 everybody, it included \$80 million for a new
16 ship.

17 And then we've had some subsequent
18 discussions here about recent problems with what
19 that -- there's now \$80,500,000 in the budget for
20 a ship replacement which is not nearly enough for
21 the whole ship.

22 And when that budget came out, what I

1 was told was that the 2017 budget would have
2 another similar amount in it for outfitting of
3 the ship.

4 And so since that time, as we talked
5 about yesterday, there has been great uncertainty
6 in the inside of NOAA as to whether that money
7 will go for a general oceanographic ship, for a
8 hydro ship, which are the oldest ships in the
9 fleet, or for potentially two fishery ships. So
10 those are the issues.

11 And the reason it's really important
12 for us to get a paper out is that those
13 discussions are ongoing and very critical. And
14 as Dr. Callender said, you know, the sooner we
15 can get this paper together the better.

16 So shall I just walk through it,
17 paragraph by paragraph, and see -- couple of
18 things I've come up with, I have not said
19 anything in this about the survey backlog. So
20 consider as we go through it, do we want to put
21 something about the hydro survey backlog in it.

22 I also didn't have the information

1 that we've kind of gleaned since we got here
2 about more recent discussions about what type of
3 ship that money might provide to NOAA.

4 Okay: "So NOAA's Office of Coast
5 Survey provides hydrographic information that is
6 essential for safe navigation and keeping our
7 ports open and commerce flowing. This
8 information not only is the foundation for up-to-
9 date nautical charts but also plays a key role in
10 storm readiness, disaster recovery, coastal
11 resilience, and on time delivery of goods and
12 services to the nation.

13 "Whether by conducting routine
14 bathymetric surveys" -- I put in the topography
15 of the seafloor. Obviously the Administrator is
16 going to know what bathymetry is, but if this
17 went out to the public, some people might not
18 know. I don't know. What do people think?
19 Should we explain bathymetry or not?

20 MEMBER MAUNE: I like it. I think
21 some people don't know what bathymetry is.

22 MEMBER MILLER: Okay. Yes, okay.

1 MEMBER HALL: Can I just point out to
2 you that even if it goes -- I think in our letter
3 to the Administrator explaining that, hey, we
4 also think that this has got a wider audience
5 than just you, so that was not us -- hey, you
6 don't know what this might be.

7 MEMBER MILLER: Yes. "Bathymetric
8 surveys or providing emergency services after
9 storms or tsunamis. The ships and launches that
10 are needed to perform this work are a vital part
11 of the nation's infrastructure. And, like much
12 of America's" -- not Americans, America's --
13 "aging infrastructure, critical components of
14 NOAAs hydrographic fleet need replacement and/or
15 upgrades."

16 I put a picture of the Rainier in
17 front of -- I think that's in Puget Sound, but
18 I'm not sure that I -- but any suggestions for a
19 different or better figure? Yes?

20 MEMBER HALL: Not for the figure but
21 for -- does there need to be a qualifier in front
22 of, you know, need replacement and/or upgrades to

1 stress? I don't know if it's urgent, or rapid,
2 or kind of stress the timing here of when we
3 expect or would hope that the upgrades and
4 replacements would happen?

5 MEMBER MILLER: We could put --

6 (Off microphone comment.)

7 MEMBER MILLER: Okay, are in urgent
8 need of replacement, all right, and/or upgrades.

9 So in terms of the picture, this might
10 be something that the NOAA publications people
11 can help us with in terms of -- our intention is
12 that we get this to the NOS publications person
13 and that they help to make it, you know, a
14 glossier whatever.

15 "The NOAA ships Rainer, shown here,
16 and Fairweather were built in 1968 with an
17 original design life of 34 years. These ships
18 carry" -- I was talking to Rick and Gerd, they
19 carry five survey launches each. And that makes
20 them -- so instead of two, "five survey launches
21 each and are two of the most productive survey
22 and training vessels in the NOAA fleet. As of

1 2016, both still conduct annual surveys in the
2 challenging Alaskan and Arctic waters."

3 And, yes, Andy?

4 MR. ARMSTRONG: Andy Armstrong. You
5 know, I recognize that one of the important roles
6 of these ships is maintaining expertise, but I'm
7 not comfortable with the idea of calling it a
8 training ship. So I wonder what the Admiral's
9 view on that is.

10 MEMBER MILLER: Those were the
11 Admiral's words, let's put it that way.

12 RADM GLANG: Those were my words. If
13 I were writing it, I think Andy's point is good.
14 I think it's important to emphasize the ships are
15 where we build our expertise for not just our new
16 NOAA Corps officers who learn both hydrography
17 and to become professional mariners, which is a
18 context that's very important to the program, and
19 we expect officers to come back through the
20 program as they progress through their careers,
21 but we also use to build the expertise of our
22 physical scientists and practicing hydrographers

1 in our civilian workforce which includes both the
2 wage mariners and the regular FTEs.

3 So it's really building that expertise
4 across different dimensions that are important to
5 the overall success of the program. It's a
6 mouthful, I know.

7 MEMBER MILLER: Yes. What I'd suggest
8 is, instead of saying survey and training
9 vessels, we could just say survey. Because the
10 next paragraph too talks specifically about
11 training. So I would say let's take out training
12 in the caption there.

13 So the next paragraph says, "The ships
14 and launches of NOAA's hydrographic fleet also
15 play irreplaceable roles in research and
16 training." Is irreplaceable --

17 MEMBER KELLY: Vital?

18 MEMBER MILLER: I had used vital.
19 Yes, Brigham?

20 MEMBER BRIGHAM: Yes. I'm not sure
21 it's irreplaceable, I'm afraid. I think there
22 are other training situations or whatever. So

1 vital, I would recommend.

2 MEMBER MILLER: All right. I also
3 expect that there will be some editing function
4 when it goes to the NOS, in research and
5 training.

6 "Private government partnerships are
7 used to develop new and innovative survey
8 equipment and techniques which are evaluated and
9 tested on these vessels. Almost 50 percent of
10 NOAA junior officers are trained in hydrography
11 and sonar technologies aboard the ships, as well
12 as qualified Officers of the Deck.

13 "Dedicated ships carrying multiple
14 survey launches are one of the most efficient and
15 cost effective ways to conduct hydrographic
16 surveys."

17 I know that was -- the talk about
18 developing technologies, do we want to expand
19 that any more? It's kind of brief.

20 (Off microphone comment.)

21 MEMBER MAUNE: We have about eight
22 minutes left.

1 MEMBER MILLER: Okay. "Currently the
2 assets of the NOAA hydrographic fleet include
3 three aging 200 to 300 foot ships, two newer
4 medium-sized vessels, 17 small boats" -- I
5 counted that from five on the Rainier, five on
6 the Fairweather, two on the Jefferson, and the
7 six, and I can't add, so that's 18 -- "and
8 experimental autonomous sensors."

9 "NOAA also contracts with commercial
10 vendors for approximately" -- Rick, Gerd, what
11 percent of the surveys are contracted out,
12 approximately?

13 RADM GLANG: I think about half is a
14 good general average.

15 MEMBER MILLER: Okay. So about half,
16 I'll just put in half -- "of it's hydrographic
17 surveys."

18 "Although contracting for a portion of
19 surveys is an important element of OCS'
20 portfolio, NOAA must also maintain in-house
21 survey capability and expertise to effectively
22 manage hydrographic surveys and ensure navigation

1 safety."

2 Comments? Yes?

3 RADM GLANG: Hi, Joyce, Gerd Glang.

4 So the number of ships, you were counting

5 Rainier, Fairweather, Thomas Jefferson, the

6 Hassler, what's the other one?

7 MEMBER MILLER: The one in -- the Bay
8 Hydro.

9 RADM GLANG: That's a 52, 54 foot --

10 MEMBER MILLER: Well, I was counting
11 Jefferson, I mean, the Hassler isn't 200 to 300
12 feet is it?

13 RADM GLANG: It's 124 feet, I think.

14 MEMBER MILLER: That's the reason I
15 put two medium-sized vessels.

16 RADM GLANG: So the Rainier, the
17 Fairweather, the TJ, and the Hassler, and the
18 survey launches that go with those ships are
19 operated and funded by Office of Marine and
20 Aviation Operations, the line office for NOAA
21 that operates the fleet.

22 The six NRTs and the Bay Hydrographer

1 come out of Coast Surveys base budget. We want
2 to separate that out so it's clear. Where do you
3 want to make the point in here?

4 MEMBER MILLER: The point I was -- you
5 know, I don't know how they're funded in this
6 discussion makes a big difference.

7 CHAIR PERKINS: Well, my comment,
8 we've got goulash here. We've got everything
9 under the sun here. And I think what we need is
10 a more clear and succinct request to fund a ship.

11 MEMBER MILLER: It's on the back.

12 CHAIR PERKINS: I know that. But I'm
13 just -- just my observation, right, of what, you
14 know -- the Administrator, we're going to send
15 this to the current Administrator. She knows the
16 issue. She's been briefed on the issue, you
17 know? Can we shorten it and make it clearer and
18 more succinct?

19 MEMBER MAUNE: Does someone else know
20 how to summarize the ship availability better
21 than Joyce does? Somebody from NOAA?

22 MR. ARMSTRONG: I wonder if Joyce and

1 I could work together to take a shot at what
2 you're aiming at, Mr. Chairman.

3 CHAIR PERKINS: Yes. And, you know,
4 I'd like to take Glenn up on his prior comment.
5 We have a clear consensus -- and I guess I'm
6 going to ask for a show of hands as the Chair.
7 We have a clear consensus that this panel wants
8 to recommend full funding for a replacement
9 hydrographic survey vessel, correct? If you
10 agree with that, please raise a hand.

11 MEMBER BRIGHAM: Lawson Brigham. Yes.
12 I mean, I might have some issues with the point
13 challenges and the actions needed. I'll just --
14 just the first one.

15 I don't think these are at the end of
16 their operational life. I think they're past the
17 end of their operational life, even though you're
18 operating them. I mean, if they're 30-year life
19 cycle, which is all Coast Guard standard, I think
20 if we are to -- we might want to quibble not with
21 the narrative but quibble or have a discussion on
22 some of the points to see if we have consensus on

1 the points, I don't know, or the recommendations
2 or actions needed.

3 CHAIR PERKINS: Kim?

4 MEMBER HALL: Is this somewhere where
5 we can take from our DoD brethren and do a bottom
6 line up front at the very top and then go into
7 the narrative, say, Administrator, this is what
8 we're telling you? We want a ship, and this is
9 why.

10 CHAIR PERKINS: Susan?

11 MEMBER SHINGLEDECKER: Susan
12 Shingledecker. I would just wonder if there's a
13 way -- the beauty of a one-pager is if you can
14 present data graphically in a way that gets their
15 attention. And I was wondering if there's a way
16 to show, to Lawson's point, that we're past the
17 useful life of the ship or whatever the term is.

18 Is there a graphic that can show the
19 age of the ship, and maybe the productivity of
20 the ship when it was first commissioned, and how
21 the maintenance needs are taking out some of the
22 time?

1 I know that might be hard to come up
2 with, but if you could have a compelling graphic
3 that shows the diminishing productivity, that
4 might get someone's attention quickly.

5 VICE CHAIR HANSON: And I think one of
6 the things that's missing is monetizing. So it's
7 less productive, so what's the dollar impact?

8 MEMBER MILLER: The last paragraph --
9 well, and under challenges there's a bullet about
10 management challenges. We could certainly put
11 something in there about, you know, loss of --
12 you know, lost time and so forth, that's --

13 MEMBER MAUNE: Dave Maune here. I
14 think we should also have -- one of the
15 challenges is that we have a 200 year backlog of
16 work. To me that's a vital statistic that should
17 go in here.

18 MEMBER MILLER: That would be a good
19 thing in the back. I guess, since we had done
20 issues and, you know, we had -- maybe what Scott
21 is saying is we need a brief introductory
22 paragraph that makes -- well, I mean, there are

1 several asks at the bottom. And maybe it's a
2 function of the structure of this. I don't know.

3 In the issues and status, I was trying
4 to line up what are the most compelling, you
5 know, problems with the fleet. And certainly
6 training is one we keep on coming back to because
7 of the issue of, well, you could just contract
8 out all your surveys.

9 But then Coast Survey has no expertise
10 in how to do surveys. And that's -- you know,
11 that's one of the issues. And so, you know,
12 perhaps we should cut out some of this. But you
13 tell me what -- you know, what's not important to
14 say.

15 CHAIR PERKINS: Just one point.
16 Captain Brennan just gave me a quick brief. And
17 I'd like to take this opportunity to let him
18 share that so I don't muddle it in the repeat of
19 it.

20 CAPT. BRENNAN: Rick Brennan, Coast
21 Surveys. So I can't say a whole lot about the
22 content of it, but there's two documents that are

1 out right now. And I'll have to ask Admiral
2 Glang to help me on the acronym, but it's the
3 IWGFI report, the Interagency Working Group on
4 Facilities and Infrastructure which is chaired
5 between NOAA, NSF, and I believe it's ONR.

6 And so basically they had a report
7 that was out. That report has been revised and
8 basically talks in very broad terms about the
9 whole research, the national research fleet.
10 We're expecting that to, hopefully within a week
11 here, to clear the Office of Science and
12 Technology Policy at the White House and be
13 signed.

14 And that will have quite a bit of
15 fodder for you, I would say, in that report. We
16 hope that, within probably two weeks of the
17 release of that, that the OMAO fleet
18 recapitalization plan will also be released. We
19 think that we've broken the logjam at OMB on that
20 and that that's going to come out.

21 And so that will have even more detail
22 on that. But I think a lot of the graphics that

1 you're talking about should be in that report and
2 will be helpful.

3 And then all of that should be shortly
4 followed behind by the independent review team,
5 the IRT, that's been stood up at OMAO. And
6 they're currently looking at these. And so
7 that's being -- you know, they're looking heavily
8 at the fleet, the non-fisheries side of the fleet
9 and what are the needs there.

10 And they're currently gathering all
11 those requirements and have been doing interviews
12 around all the line offices, and from industry as
13 well, to understand where the needs are within
14 the NOAA fleet to begin to, you know, to put in
15 an independent paper that could go to -- you
16 know, that can go elsewhere.

17 You know, whether it goes to the
18 Senate or Congress, or wherever, it doesn't need
19 to be encumbered by going through OMB. So I
20 guess that's the intent of the IRT that's been
21 established.

22 MEMBER MAUNE: This is Dave Maune.

1 We're about an hour behind schedule just about
2 already. Obviously we have some more catching up
3 to do. I wonder if we could briefly go through
4 the actions needed to see if there's any
5 fundamental disagreement on what actions are
6 needed. Would you mind switching to that?

7 MEMBER MILLER: Oh, that's fine.

8 Rick, one question though. Yesterday we heard
9 that that IRT, I think, or whatever, the fleet
10 recapitalization plan -- or the last one you
11 talked about, was probably 18 months in the
12 offing.

13 CAPT. BRENNAN: I think that's their
14 final report. I think the way the statement of
15 work was written that they wanted an interim
16 document that gave, you know, the first blush
17 review of that so that there was something
18 sooner. And then a longer term document, or a
19 more in depth document, would come at the 18
20 month point.

21 MEMBER MILLER: Okay, all right.

22 CAPT. BRENNAN: So I think that was

1 the intent.

2 MEMBER MAUNE: Then can you switch to
3 the recommendations?

4 MEMBER MILLER: Yes. Can you go down
5 on the screen? Do you want to look at the
6 challenges at all or just the recommendations?

7 MEMBER MAUNE: We don't have time to
8 go through all that. I'd like to switch to the
9 recommendations to see if we can agree on that.

10 MEMBER MILLER: Okay. "Allocate 2016
11 appropriated funds for construction of a new
12 hydrographic survey vessel."

13 And I put "with enhanced oceanographic
14 capabilities" to kind of give a head nod to the
15 original request that NOAA made -- "to replace
16 one of the two Alaskan hydrographic ships."

17 "Request continued funding for
18 hydrographic vessel outfitting and sensor
19 development in 2017. Develop and disseminate
20 long-term actionable NOAA fleet recapitalization
21 plan for continued upgrades and replacement of
22 NOAA's fleet with replacement of the aging

1 hydrographic survey fleet as the highest
2 priority.

3 "Consult with federal agencies,
4 academic organizations, state and local interests
5 and private and commercial entities to develop a
6 whole- government approach to the problem of the
7 aging oceanographic fleets."

8 MEMBER MAUNE: Thank you. I like the
9 suggestions about the declining productivity of
10 these ships as they pass their life. If there's
11 some way we could get that in there, I think it
12 would be helpful.

13 MEMBER MILLER: Well, that's up in
14 challenges. "Due to the age and size of these
15 ships, there are significant management
16 challenges with respect to maintenance
17 environment compliance, staffing habitability,
18 and ability to operate."

19 And I can change the last sentence.
20 "These problems have led to," what I said was,
21 "reduced efficiency and in some cases loss of an
22 entire year's survey time."

1 MEMBER MAUNE: Yes.

2 MEMBER MILLER: We could say something
3 like -- instead of reduced efficiency we could
4 say what you were suggesting.

5 MEMBER MAUNE: If the productivity is
6 now 20 percent of what it was when they were new
7 or something like that. I have no idea what the
8 percentage is, but if there's some way we can use
9 statistics to our benefit here to say how less
10 productive they are now than they were before it
11 would help, in my opinion.

12 I think I'm going to need to switch on
13 to some other papers. We've got a whole bunch of
14 topics to go. So thank you, Joyce, for your work
15 on this. And I was hoping we'd be able to agree
16 on this today, but it looks like not. And so I
17 am proposing we -- Susan's holding her hand up.

18 MEMBER SHINGLEDECKER: I'm just
19 thinking. I mean, I know there are certain
20 papers that are further along than others. If I
21 wasn't mistaken, it seemed like Dr. Callender
22 really said that the timing on this paper is

1 potentially the most critical.

2 MEMBER MAUNE: So you're saying you
3 think we should go through on this until we
4 finish this one up?

5 MEMBER SHINGLEDECKER: I mean, I know,
6 for one, that my paper can wait until tomorrow.
7 Or we can do some work remotely on the papers
8 that are less time critical.

9 MEMBER MAUNE: Joyce, what do you
10 think of a sub-group? Would it help if you had
11 more time to work this over?

12 MEMBER MILLER: Yes. But, you know, I
13 have to speak out of frustration. I handed this
14 paper out -- the first draft, well over three
15 months ago and never got a single comment from
16 anybody.

17 MEMBER MAUNE: Yes.

18 MEMBER MILLER: And, you know, large
19 scale comments, to totally restructure this is
20 going to take time, especially with a group.

21 MEMBER MAUNE: Yes.

22 MEMBER MILLER: You know, we need to

1 have some consensus on it, particularly if it's
2 going to come out and, you know, have significant
3 disagreement about how it should be structured.

4 CHAIR PERKINS: Yes. We do not have
5 to have consensus on every word, right? We need
6 to have a majority consensus to go forward with
7 this issue paper, which we have already
8 accomplished that through the show of hands.

9 So let the record show we did not have
10 a unanimous consent, right. I think that's
11 important because we all represent different --
12 you know, this panel has a diverse composition
13 for a reason, right.

14 But we don't have to wordsmith every
15 single word, right. What we have to do is agree
16 on what is the key fundamental task going
17 forward. And we can leave it in Joyce's and
18 Andy's hands, or in a group's hands, to prepare
19 and circulate. And we do not have to have
20 unanimous consent on it before we can submit it.

21 MEMBER MAUNE: Dave Maune. Is this
22 something that Andy and Joyce can work on tonight

1 or the next few weeks, and we have a meeting in a
2 month from now to go over it?

3 CHAIR PERKINS: We can't wait a month.

4 MEMBER MAUNE: We can't wait a month?

5 CHAIR PERKINS: No. We need --

6 MEMBER MAUNE: So we need to get this
7 out this week?

8 CHAIR PERKINS: That is the advice
9 that we were given by Dr. Callender who's the
10 Deputy AA, and I only want to realize that advice
11 --

12 MEMBER MAUNE: Well, then we'd have
13 the choice of either sticking with this right now
14 or working on it tonight and coming back
15 tomorrow, seems like.

16 CHAIR PERKINS: Yes. You know, as the
17 Chair, I think I have the proxy to say we can
18 spend the time, we can spend more time on it
19 right now. We've got a long list of other papers
20 that --

21 MEMBER MAUNE: Okay, Joyce.

22 CHAIR PERKINS: -- but this has been

1 identified as the more urgent of the matters that
2 we're going to address. Mr. Brigham?

3 MEMBER MAUNE: Okay, Joyce. Then you
4 can go back to the challenges and your other
5 topics, if you like.

6 MEMBER BRIGHAM: Yes. I'll just
7 express -- Lawson Brigham -- I'll just express
8 that I think there's too much narrative in all of
9 these. The whole -- I think the NOAA staff, the
10 Administrator, know all this stuff. And even
11 though it's going to go external on the website,
12 that's the way it is.

13 And the way we wrote the article was
14 to have very little narrative but lots of
15 challenges and lots of recommendations or action
16 items. So I thought that was the model. And I
17 think the narrative needs to be squeezed down to
18 a paragraph or two.

19 CHAIR PERKINS: I'm inclined to agree.
20 And I think that the competition, right, for this
21 \$80 million is a fisheries vessel, right. So
22 we've got -- this paper needs to make our case to

1 the Administrator why it needs to be a
2 hydrographic survey vessel.

3 And the more, I think the clearer and
4 the more succinct we can make that; give us a
5 hydro vessel not a fisheries vessel, and tell
6 them why. I think that's the challenge that
7 we're asking be embraced with the rewrite of
8 this.

9 MEMBER MILLER: Okay, but I don't know
10 that we want to say not a fisheries vessel.

11 CHAIR PERKINS: But that's why I asked
12 the prior question, okay. And so maybe we need
13 to go back a step. Do we have consensus that the
14 request is for a hydrographic survey vessel?

15 MEMBER MILLER: Yes.

16 CHAIR PERKINS: And let's do the show
17 of hands, and let's do a roll call, and let's
18 make sure we get it right this time. We're going
19 to ask for a hydrographic survey vessel in this
20 issue paper. Is there anyone that abstains?

21 (Off microphone comment.)

22 CHAIR PERKINS: I know. I keep

1 looking at you, like why aren't your hands in the
2 air?

3 PARTICIPANT: I think you have
4 unanimous support.

5 CHAIR PERKINS: All right. So we've
6 cleared that, the request is going to be in this
7 paper for a hydrographic survey vessel. And so
8 that clears that pathway for why we make the case
9 for a hydro survey as the priority over other
10 vessels with the appropriated \$80 million.

11 MEMBER MILLER: Okay.

12 MEMBER HALL: So I think the first
13 paragraph needs to say exactly that, the very
14 first line in this. Like I said, that concept of
15 the bottom line up front. NOAA needs a new
16 hydrographic survey vessel. And then you go into
17 the discussion.

18 MEMBER LOCKHART: Carol Lockhart. I
19 generally agree with that. I think -- and I will
20 apologize to Joyce. I did not look at this three
21 months ago. I think that first big ask has to be
22 right up front so people know why they're even

1 reading this to start with.

2 MEMBER MILLER: Okay. That's pretty
3 simple.

4 MEMBER LOCKHART: I would like to see,
5 we live in a visual world, and I would like to
6 see maybe what Susan suggested, described as a
7 graphic so you, for example -- and that may be
8 hard to do right now, because this is something
9 we need to finish this week.

10 And so we maybe can't pull those
11 numbers at this late stage, but a graphic showing
12 maintenance costs going up and productivity going
13 down on the same graph, something visual like
14 that to really nail home that this is why we need
15 one of these. And then, as Lawson said, a little
16 less narrative and then the remainder of the
17 challenges and the asks after that.

18 In general, that would be my
19 suggestion, that all of these, the main ask comes
20 first. There could be additional asks further
21 down in the paper. But the main ask saying why
22 am I reading this to start with should be right

1 up front.

2 MEMBER MILLER: Okay. Do we want an
3 introductory paragraph then that is labeled as
4 such?

5 MEMBER MAUNE: Well, it starts off
6 with the issue. And you're proving the issue,
7 that we need a new hydrographic survey vessel. I
8 do like the idea of saying the message up front.
9 So if there's a way to weave that into this
10 format it makes sense to me.

11 MEMBER LOCKHART: I think we need to
12 say it up front. I think it should just be like
13 one or two sentences.

14 MEMBER KELLY: Ed Kelly. Yes, the ask
15 should come first, because that's the first
16 headline. You could probably sum that up in one
17 sentence. At the meeting of the Hydrographic
18 Services Review Panel it was unanimously agreed
19 that NOAA is in urgent need of a new vessel,
20 oceanographic vessel, you know. And then just
21 continue from there.

22 CHAIR PERKINS: I'd like to recognize

1 Dr. Brigham.

2 MEMBER BRIGHAM: Yes, Lawson Brigham
3 again. We're asking for one ship except that we
4 have two to replace, and the same issue as with
5 the icebreaker. And the President said
6 icebreakers. So I don't know if we want to go
7 hard over on it's a single hydrographic ship.
8 It's just a nuance. We all agree to have it, but
9 maybe in the language we should say ships or, I
10 don't know.

11 CHAIR PERKINS: You make a good point.

12 MEMBER BRIGHAM: It's just a nuance
13 that we should --

14 CHAIR PERKINS: The singularity of it,
15 I think, is important. You know, there will be
16 political opposition to this request, right. We
17 know that not everyone in the hydrographic survey
18 community is in support of, you know, the vessel
19 replacement.

20 So I think asking for the single ship
21 is the compromise position, you know, on this as
22 opposed to asking for replacing both of those

1 vessels. It's just the perspective, and it's
2 just my perspective on it.

3 MR. ARMSTRONG: So I might suggest
4 some language like the most pressing need is for
5 a new hydrographic vessel, the most pressing need
6 in the NOAA fleet is a new hydrographic vessel.

7 It doesn't necessarily rule out other
8 hydrographic vessels down the line or fisheries
9 vessels. It just says the single most pressing
10 need is a new hydrographic vessel. The second
11 one might be the third most pressing need or
12 something. But we wouldn't have to say that.

13 CHAIR PERKINS: Yes, agreed. It's
14 about trying to capture the appropriated funds
15 from FY '16.

16 MEMBER MILLER: Is this the single
17 most pressing need in NOAA or is it in NOAA, in
18 coast --

19 CHAIR PERKINS: I don't think it's our
20 place to try to determine what the most pressing
21 need for NOAA is, right. That's not what the
22 HSRP is in place to do. It's to make a

1 recommendation specific to the hydrographic
2 surveying program.

3 MEMBER MILLER: So the most pressing
4 need, the single most pressing need for the NOAA
5 --

6 MR. ARMSTRONG: So I would say it's
7 the most pressing need in NOAA fleet replacement.
8 I mean, that's what I would suggest the panel
9 might want to say. I'm not a voting member, so
10 I'm not going to vote.

11 MEMBER HALL: And the fisheries people
12 might vote differently, but I think we can say
13 that we think that it's the hydrographic. And we
14 don't have to say it over another one, but that's
15 what we think the pressing need for
16 recapitalization is.

17 CHAIR PERKINS: Does that give you
18 sufficient guidance to try and do a rewrite,
19 Joyce?

20 MEMBER MILLER: I would ask people to
21 state what they don't want taken out, what they
22 think is vital to the argument.

1 CHAIR PERKINS: I think your last two
2 bullet points, excuse me, your first two bullet
3 points out of the four that are on the screen, or
4 that were on the screen, for the actions needed,
5 I think those first two bullet points are fine
6 the way they were written.

7 MEMBER MILLER: And you don't think we
8 should discuss the longer term issues?

9 CHAIR PERKINS: I do not. I don't
10 think this is the time or the place in this
11 particular document for that. It's just my
12 perspective.

13 MEMBER KELLY: Ed Kelly. I think, you
14 know, in the future federal actions needed, the
15 third bullet dot down, I think it's important
16 that we also say that to move forward we should
17 develop and disseminate. I like the language
18 there. I think that's a future plan that should
19 be part of this as well.

20 CHAIR PERKINS: I think the future
21 plan can be in our recommendations letter, it can
22 be in subsequent, you know, communications. But

1 what I thought I heard was that we need to make a
2 strong and compelling case as soon as possible
3 about specifically asking about a hydro survey
4 ship. The longer term plans, we have the luxury
5 of time to address those in greater length and in
6 different documents.

7 MEMBER MILLER: But I think the root
8 cause of bullets one and two is that there's not
9 really a NOAA-wide plan, that there's, you know,
10 that there hasn't been a coherent NOAA plan for
11 fleet replacement, or at least there hasn't been
12 one that has been allowed to be disseminated.

13 CHAIR PERKINS: I don't think that's
14 the problem we're trying to solve right now in
15 this moment in time with FY '16 funds sitting
16 there that are going to get, they're going to get
17 taken for something, right. But they're not
18 going to get spent on creating a longer term
19 fleet recapitalization plan.

20 MEMBER KELLY: Ed Kelly. Perhaps
21 we're really looking then at two separate
22 documents. This one is designed to be more

1 forward looking and more over encompassing.
2 Whereas what we're really looking at is to craft
3 a letter from this group saying that it's urgent
4 that we create a new hydrographic ship.

5 Because I don't think we should
6 abandon a lot of the very good stuff that's in
7 this. I like this one, you know, for future plan
8 and the incorporation.

9 But what Dr. Callender was saying is
10 we need to get a letter specifically about that
11 ship now. And maybe this issue's letters go back
12 into the draft again, back in the mix with some
13 of the others that are going to require some
14 rewrites, maybe some consolidations, whatever.

15 CHAIR PERKINS: The longer --

16 MEMBER KELLY: Maybe we're looking at
17 a separate letter on this and not necessarily
18 this same format.

19 CHAIR PERKINS: The longer document
20 may be of great value for the transition team and
21 for the next administrator.

22 MEMBER KELLY: But that's why I think,

1 instead of trying to adapt this issues and
2 concerns letter, perhaps we just extract what we
3 feel is necessary from this and create a stand-
4 alone letter.

5 CHAIR PERKINS: Lindsay?

6 MEMBER GEE: Lindsay Gee. Yes, I kind
7 of agree, I think. If the priority really is to,
8 well, within this it's saying, yes, we don't have
9 the ships. They're getting old. We're now
10 getting a backlog, and it's inefficient the way
11 we do it. So that's the issues page which is
12 generically the replacing the hydrographic ships.

13 And so maybe this paper as a more
14 general one is okay. But the letter that
15 accompanies it is drawing attention to
16 specifically this budget to say, well, the
17 problem we've got right now is we need to get
18 that money as the first priority in the fleet's
19 replacement.

20 So it would seem a shame, the work
21 that's been done here, I think, that we're kind
22 of drifting off again and walking back. So

1 that's my comment of not being involved in the
2 previous two years. But it seems like you've
3 done a lot of work. And now, okay, we're walking
4 back from the work that's been done.

5 CHAIR PERKINS: Dr. Brigham?

6 MEMBER BRIGHAM: Lawson Brigham. I
7 think we learned that it's very difficult to send
8 multiple different letters out. So I think our
9 letter from this meeting we can, the major point
10 of the beginning of the letter can be this issue.
11 And I still believe attached should be the issue
12 paper. And we shouldn't send multiple other
13 topical letters. A single letter from the
14 meeting, consensus reached on this topic, it
15 could be the number one topic of this meeting
16 maybe, I don't know. And that's what goes up in
17 our letter to the administrator.

18 CHAIR PERKINS: Andy?

19 (Off microphone comments.)

20 MR. ARMSTRONG: We should consider the
21 possibility that the train has already left the
22 station on the new ship and that it might not be

1 a hydrographic ship. So we don't want to have
2 our only salvo on the money that's in this
3 budget. Because that might not happen, and then
4 our whole argument is out the window, because
5 that's passed.

6 So I think we need a more generalized
7 statement expressing the Board's feeling. But we
8 also need the input that takes a shot at the
9 ongoing process.

10 So I'm kind of agreeing with Ed that
11 we need, that somehow we need both pieces. I
12 agree with you that the immediate issue is the
13 money that's appropriated for a ship. And there
14 seems to be some uncertainty about what kind of
15 ship it would be. And we need to get our oar in
16 the water on that.

17 But my sense is the Board's feeling is
18 that it's not a one-time issue, that there's a
19 continuing problem, or even if we lose the
20 argument on this ship that the argument is still
21 there for the future.

22 MEMBER MAUNE: Thank you. Is there

1 work that can be done tonight between you and
2 Joyce on this subject and try to pull this
3 together by tomorrow?

4 MEMBER MILLER: I guess the question
5 is do we want this to be -- and Dr. Callender
6 said, you know, there could be two papers. But I
7 hate to get into the spam of too many papers.

8 And, you know, I kind of agreed with
9 what Ed said. Maybe this is the longer term
10 paper. Maybe we don't need to put this as the
11 attachment. But we do need to make a forceful
12 argument and couch it well.

13 Maybe what Andy and I should do is
14 work on a paragraph that goes into the letter
15 rather than trying to attach this. Because if,
16 you know, if we're trying to make progress on all
17 these papers, then -- And I kind of agree with
18 Dave. I think having small groups to work on
19 these papers might be more effective than --

20 MEMBER MAUNE: Yes.

21 MEMBER MILLER: And I don't think it
22 should be just Andy and me. I think, you know,

1 if other people are interested they'd be welcome
2 to --

3 MEMBER MAUNE: I would love to know if
4 there's NOAA people that are able to participate
5 in this that could provide you some statistics
6 that might help you in some way.

7 MEMBER MILLER: I have seen, in not
8 recent things, but I have seen graphs that, you
9 know, in various presentations and so forth that
10 look at ship productivity. I know that Coast
11 Survey keeps those statistics. It's just a
12 question of whether we can include some of those
13 figures in this, productivity figures.

14 MEMBER MAUNE: Yes. Is there some
15 reason why we cannot include productivity figures
16 and graphs that you use in other documents?

17 MR. ARMSTRONG: Andy Armstrong. We
18 pointed out in 1963 or 4, all the way up until
19 the 1990s, these were single beam ships. So
20 productivity is a, in terms of surveying, I mean,
21 there's probably days at sea or something like
22 that that could be a proxy for productivity.

1 MEMBER MAUNE: Yes.

2 MEMBER KELLY: What product we're
3 trying evolve depends on what our actual timing
4 is. And I'm still a little unclear. I thought
5 what I heard from Dr. Callender was that we
6 needed to act promptly. And if we try to just
7 put this as a paragraph or a key point in our
8 official letter from this meeting, I understand
9 that's five to six weeks out from this point.
10 And that doesn't strike me as being urgent.

11 And anything we do right now I don't
12 think we'll have time to, if we're looking to do
13 that, sometime where two or three people get
14 together overnight, we're not going to have time
15 to mine data, and statistics, et cetera. That's
16 pushing it out a couple of weeks.

17 I believe that we have an urgent
18 point, is that we, you know, and how we put that
19 in a separate letter, I don't know if there's any
20 restriction on us not being able to just send the
21 administrator a separate letter on a specific
22 topic as an urgent issue to follow with our

1 meeting summary and to then subsequently attach
2 these issue papers as our vision of
3 recommendations that should be carried out over
4 time.

5 The money for this ship, to me, seems
6 to be, from what I've understood, very time
7 sensitive. And we need to either treat it that
8 way or not. So we're really trying to figure out
9 what it is we're trying to do here based on
10 timing.

11 MEMBER MAUNE: Well, I'm wondering if
12 we can have our cake and eat it too by having a
13 long term vision, but then saying that the most
14 urgent requirement that needs to be acted upon in
15 2016 is this, and somehow bring the most urgent
16 part to the forefront while still keeping the big
17 picture in mind.

18 MEMBER KELLY: Well, we have so much
19 of it right here in place --

20 MEMBER MAUNE: I know, I know. That's
21 what I mean.

22 MEMBER KELLY: -- that re-crafting a

1 cover note for this, perhaps, is the best way to
2 do it and just, you know, flesh this out as we've
3 discussed which is really tweaking it, not really
4 re-designing it. It's tweaking what Joyce has
5 already put together.

6 And then put a cover note on top of
7 that stressing that this is such a specific and
8 urgent issue, and ties into our issues and
9 concerns, and just staple that to the back of the
10 request letter or the recommendation letter.

11 MEMBER MAUNE: If we were to have a
12 small working group on this tonight, who would be
13 willing to help work on this? Did I see Andy? I
14 see a number of people raising their hands.

15 MEMBER MILLER: Well, Rick was back
16 there. I'd second that.

17 MEMBER MAUNE: Okay. All right. Is
18 there a room we can work in? Just work in here?
19 I guess we can have an early supper tonight and
20 come back and work on that paper.

21 MEMBER MILLER: Yes.

22 MEMBER MAUNE: See if we can have

1 something better by tomorrow. Is that okay with
2 everybody?

3 MEMBER MILLER: It's fine.

4 MEMBER MAUNE: Okay, then. I propose
5 that we move on to Lawson Brigham and his paper
6 on the Arctic.

7 MEMBER BRIGHAM: Yes, Lawson Brigham.
8 Let's see if we can do this in 20 minutes. I
9 think we can. I'll be optimistic here, Mr.
10 Chairman, and Dave.

11 MEMBER KELLY: Joyce thought you only
12 needed ten.

13 MEMBER BRIGHAM: Of course, this issue
14 paper is based upon, you know, a fairly extensive
15 study. So I drafted it. I've had other people
16 read it. It has to be and should be consistent
17 with what our working group and what we had
18 consensus of the HSRP. So that's what this
19 document is.

20 I would not recommend retooling the
21 paragraphs, the first two paragraphs. However,
22 the title perhaps should be "Mapping the US

1 Maritime Arctic," and I say rather than charting
2 or whatever. Because we have geoid observations
3 and all the rest of it. So I guess you could
4 call that mapping. But the title, I guess,
5 should be "Mapping the US Maritime Arctic."

6 And again, for the new members, the US
7 maritime Arctic is out to the EEZ from the
8 Aleutian Chain to the Canadian/US border. So
9 it's a huge area. It goes out to the EEZ 200
10 nautical miles or less, depending upon what the
11 space is.

12 The first two paragraphs are
13 synthesized from the working group report that we
14 had consensus on. In red are a couple of
15 technical issues to reach consensus on. What
16 number do we want to put? In yellow is what Ed
17 Saade gave me. And I incorporated it, in red.
18 No, no, in yellow, I guess. Yes, in yellow is
19 Ed's comments.

20 So you can see, so let's just go down
21 the ones that I have a comment on in red. And
22 the question was an estimated, and I said one

1 percent, and we had this discussion during the,
2 in September at the HSRP meeting. And it's
3 nuanced, this one percent is nuanced, to modern
4 international navigation standards.

5 And I'm not quite sure that's a
6 correct number, Admiral. But we could, if it is
7 correct, we could also say, and qualify it, that
8 30 percent of the US maritime Arctic is actually
9 surveyed.

10 I think we need a heavy hitter number.
11 And the number is quite small. But I thought in
12 discussion with you it was somewhere around one
13 percent. But I don't want to quote you. But we
14 could say estimated, whatever. But I think the
15 number is important.

16 But maybe we should qualify that
17 number in the second part of the sentence saying,
18 in fact, X number of the US maritime Arctic is,
19 in fact, surveyed. But of course the qualifier
20 is not to modern standards, as we know, off of
21 Dutch Harbor for the lead line and the icebreaker
22 grounding.

1 So maybe we just we just need to talk
2 with you, Admiral, on that one, unless somebody
3 else has a thought on that. But I think the
4 point is important. The place is not surveyed to
5 modern international navigation standards, if
6 that's the correct --

7 MEMBER HALL: Having read this
8 yesterday, I apologize, one of the concerns I
9 have is putting that there. I know that's very
10 important. I've been fighting for the bottom
11 line up front concept, and I think this one needs
12 it as well.

13 But there's no context for why one
14 percent is bad. One percent always sounds bad.
15 But when you get down to your, one, two, three,
16 four, five, fifth bullet point, it's showing how
17 much is going on, right. That's my assumption on
18 that bullet point.

19 So is it not better to say here's the
20 activity, and by the way, those activities are
21 only supported by one percent charting, or
22 mapping, or whatever. So I just, there's not a

1 context for why one percent is neither bad, nor
2 good, or is bad. I know you know that. But I
3 think that there needs to be some context for
4 that before you go into it. Thanks.

5 MEMBER MAUNE: Okay, keep going.

6 MEMBER BRIGHAM: Sure, we can tweak
7 that, put a couple of words up on the first
8 bullet. I really think that the first bullet
9 must come right out -- I actually think the
10 administrator, the whole chain of command, and
11 anybody in the maritime community is going to
12 understand when we say that one percent of the
13 thing, or charts -- I hope that everyone can
14 understand that.

15 But the other points, unless there is
16 disagreement, these are the points that we had
17 consensus on in our study and at the HSRP meeting
18 in September, except that the list of Point 5,
19 the list of bullets, I integrated some of Ed's
20 comments.

21 Because he said, he added,
22 appropriately, seabed telecommunications cables,

1 ecotourism. I melded some of this comments about
2 national security and Naval operations into it.
3 What we did do in our survey was look at the
4 commercial use. And I think you've added some
5 points. We didn't focus necessarily on Naval
6 operations and national security, but it was in
7 the long list of uses of the area.

8 MEMBER GEE: Just one comment, I think
9 it's a bit what Kim was saying, I think you list
10 the operations. But isn't what you're really
11 saying underlying that as the marine operations
12 are diverse, but they're hampered by the lack of
13 -- so it's kind of up front. You're saying
14 there's a diverse, all these diverse operations,
15 but they're all hampered by only X percent --

16 MEMBER BRIGHAM: They're not hampered,
17 actually. There's a vast tug and barge operation
18 around the coast. And they just do it without
19 charts or not. I mean, some is charted, some is
20 not.

21 So I don't think these operations
22 today -- future increasing operations might be

1 constrained by lack of charts. But there's a
2 heck of a lot of operations today without
3 adequate charting. I mean, we're quibbling over
4 the approach. I get your point. I get your
5 point. But we can --

6 MEMBER KELLY: Lawson, this is Ed.
7 However, that being said, if there were adequate
8 charts they may do it with a completely
9 different, much more efficient approach. Because
10 they wouldn't be worried about winging it.

11 MEMBER BRIGHAM: And, of course, in
12 the 21st century, it's not business as usual. We
13 are enhancing marine safety, enhancing
14 environmental protection. So it's not like the
15 past. The future is having a much more safe
16 network which I think melds with what you and
17 Lindsay were saying.

18 MEMBER HALL: So, Lawson, this is Kim
19 Hall. Just really quickly then, is there
20 something that can be stated in your first one?
21 I understand that one percent is not good. But I
22 have no clue how much of a percentage of the

1 Arctic maritime is in use to understand how much
2 needs to be covered. Is it 100 percent, is it 50
3 percent? Is one percent just really, we really
4 only need 20 percent. So one's actually a pretty
5 good, you know, amount.

6 So I think that's just kind of, you
7 know, I understand that everybody in this room
8 probably understands the Arctic issue. I'm not
9 sure everybody else understands the context. And
10 I just wanted to make that point again as Lindsay
11 made his. Thanks.

12 MEMBER BRIGHAM: Well, I think in more
13 than half the US maritime Arctic there are marine
14 operations. There are some remote areas where
15 there are not. So if more than half, I mean, I
16 don't know how much we want to comment about what
17 you're saying. But we can maybe, I don't know.

18 We have to come up with some numbers.
19 I don't want the numbers to come, be pulled out
20 of the sky and grasp that. That's why I'm
21 pinging on this one. I want to say the right
22 thing.

1 Because, I don't know, I'll bet 20
2 percent of the, 30 percent of the US maritime
3 Arctic actually is charted, maybe, because, you
4 know, some large areas, maybe 20 percent, I'm not
5 sure, but charted to, you know, 1930 standards
6 and whatever. Oh, we can work on that one.

7 If you'd go, keep going down the
8 points, these all came again out of our report
9 which had consensus. I don't think we want to
10 run consensus again on all of these.

11 The last point in the challenges, a
12 range of new hydrographic survey technology,
13 tools have been developed, the challenge is to
14 employ alternative strategies and maybe new
15 approaches to current -- I don't know, we have to
16 reword that last bullet. It's just some -- Let's
17 go to the action recommendations.

18 We had, the first one, minimum \$20
19 million, \$30 million annual. We, the HSRP, in
20 our study group and passed up to the
21 administrator, reached consensus. And I think we
22 said \$20 million, line item in the budget for \$20

1 million annual. But Ed seemed to suggest that
2 should be a little bit higher. Because they
3 always cut. I wasn't thinking that way, but I
4 understand.

5 Is that -- I don't know if we want to
6 adjust that number. Is it a realistic number
7 from your perspective, Ed? I mean --

8 MEMBER SAADE: This is Ed Saade. It's
9 realistic that everything -- when we say Arctic
10 in this case I'm thinking the geographic Arctic,
11 not just Arctic waters which is extremely
12 difficult to operate in and extremely expense
13 with a short window. So I don't think that \$20
14 million or even \$30 million is all that big of a
15 number when you're trying to be productive for
16 such a short season.

17 MEMBER BRIGHAM: I'm not, I'm a little
18 ambivalent at whether it's \$20 million or \$30
19 million annual, of course, and whether we
20 actually could ever get, NOS could get a line
21 item budget. But the whole idea was to at least
22 put it out there as an important item.

1 MEMBER SAADE: Yes.

2 MEMBER BRIGHAM: Should we, maybe
3 we'll put in \$30 million.

4 The third bullet is related to this
5 annual survey rate of production. And we had 500
6 square nautical miles. And during the summer, as
7 we discussed this with Andy and others, that's
8 what we came up with.

9 But then it seemed that that's what
10 the survey was accomplishing, was 500 square
11 miles. So maybe we should up the ante there for
12 something, a target for a minimum annual survey
13 rate. Whether we have the ships or not, we
14 should say, and we had talked about as much as, I
15 thought, 1,000 square miles. But I don't know.
16 Again, it's a number.

17 MEMBER LOCKHART: Yes. I guess, Carol
18 Lockhart, I guess the only problem I have with
19 that is square nautical miles, when you're
20 talking about hydrographic surveys, is going to
21 vary wildly if you go and survey all the deep
22 water first and show how much area you're

1 surveying. It's going to look great, but as you
2 start to move in shallow, doing that number of
3 square nautical miles becomes impossible.
4 Because it's much more expensive, and it's a much
5 slower process.

6 So it's square nautical miles is
7 greatly affected by depth. And so it's a really
8 difficult number to use to talk about survey
9 rates, and progress, and things. I'd like to
10 offer a solution, but I don't have one. I just
11 want --

12 (Laughter.)

13 MEMBER LOCKHART: But I do think it's
14 important that we understand that that's not
15 always a great number to use unless your
16 intention is to survey all the deep water first.
17 And then it looks fabulous, and so you keep
18 getting funded. And then you can go do the
19 shallow stuff.

20 MEMBER BRIGHAM: Well, I go back to
21 our working group and what we've reached
22 consensus on in September. And one of the

1 questions asked was this specific question and --

2 MEMBER SAADE: This is Ed. Carol's
3 right. I mean, you can't, it's impossible to put
4 a number on it like that. Because it may turn
5 out that, for whatever reason, the most urgent
6 thing to do is do hydrographic LIDAR, which is
7 very shallow and very tedious. So it's much too
8 unpredictable to try and put that kind of a
9 number on it.

10 MEMBER BRIGHAM: Okay. Here's
11 Question 4 from NOAA. "Given the realities of
12 shorter survey seasons and mobilization costs,
13 what are the realistic annual targets in
14 percentage surveyed and charted over the next
15 five years in Bering Strait?"

16 We can take it out of this issue
17 paper, I guess, or have a point that says we
18 should develop an annual survey production rate
19 relative to the budget process or something. I
20 mean, it should be something in here, I think.

21 MR. ARMSTRONG: Andy Armstrong. I
22 completely agree with what they've said, although

1 it seems to be the statistic that we're stuck
2 with in dealing with our sort of superiors in the
3 funding world there.

4 But, I mean, you could say some number
5 of ship days operating in the Arctic, surveying
6 in the Arctic per year would be --

7 (Off microphone comments.)

8 MR. ARMSTRONG: Yes. Well then, you
9 know, then you're getting into a ship with four
10 launches. So it's the sort of endless spiral of
11 caveats. I guess I'm sort of winding back to
12 square miles.

13 MEMBER LOCKHART: Carol Lockhart. I
14 wonder if you can just qualify the square
15 nautical miles with an average depth, like, just
16 say the annual survey rate of however many square
17 nautical miles based on an average depth of,
18 which, you know, depending on if the -- it may
19 not be necessary, I guess, because the audience
20 for this may not understand that issue. But then
21 we're back stuck with the square nautical miles
22 that we can't justify later.

1 VICE CHAIR HANSON: That's actually a
2 good point is, is you don't want to get too
3 technical with this. We have the same thing on
4 the dredging side. People want to use what's the
5 price of dredging today, you know, it's a buck or
6 100 bucks, depending on what you want to do.

7 But you have to have some metric to
8 sell that this is the expectation of what we plan
9 to do in a given year with this equipment. The
10 cost and all those others are things that are
11 missing, I still think. But you have to have a
12 metric to sell for comparison.

13 MEMBER SAADE: This is Ed. Do we do
14 that now? Do you all go before whoever you have
15 to go before and promise the number of square
16 miles?

17 MR. ARMSTRONG: Our goals, our
18 official goals are expressed in square nautical
19 miles, if I'm not correct. I believe that's the
20 case, the GPRA goals are square nautical miles.
21 Our Arctic goals are square nautical miles. So
22 that's what we have now. And we've been

1 struggling with this for a long time.

2 MEMBER BRIGHAM: Well, we can take it
3 out. There are plenty of other points and
4 recommendations. I think, yes, I thought -- I
5 would recommend, because we had it through the
6 whole process of the working group and consensus
7 before that we had a minimum survey rate because
8 we were asked for one. But maybe you can help me
9 qualify the point.

10 MEMBER LOCKHART: I think, I think
11 based on this discussion maybe we are coming back
12 to the fact that there needs to be a metric in
13 there now. And if the existing metric is still
14 square nautical miles, even though we all
15 understand there's an issue with that, if that's
16 what they're used to seeing, I don't know that we
17 need to keep going around in circles about it.
18 Maybe we just use it.

19 MEMBER MAUNE: I agree.

20 MEMBER BRIGHAM: And then the last
21 point in yellow is what Ed brought up about a
22 database for seabed gouging, ice gouging. I

1 think he's thinking about the cable laying. Go
2 ahead, Ed.

3 MEMBER SAADE: I mean, the cable
4 laying was definitely what was on my mind. But
5 it covers anchorages, it covers pipelines, which
6 aren't going to be there now, it covers any
7 science cables that might go in, which there are
8 coming out of Barrow.

9 Everything you do from a construction
10 point of view up in the Arctic, which there may
11 be buoys put in, or there may be breakwaters put
12 in, it always comes back to what's the activity
13 of ice gouging. And everybody has to shrug their
14 shoulders, because nobody knows.

15 MEMBER BRIGHAM: Well, I think it's an
16 interagency kind of look. Because I think that's
17 USGS. Well, maybe not USGS, but I don't think
18 it's completely NOS who would be doing this. I
19 see it as more of a research --

20 MEMBER SAADE: I agree that
21 historically it hasn't been. But there's no
22 reason why it can't be in the future. Because

1 somebody needs to take control of it.

2 MEMBER BRIGHAM: Well, we can, sure,
3 we can add it to our list of recommendations. We
4 may want to tweak it a little bit on what cross-
5 agency work is necessary in this one.

6 I think I should work a little bit on
7 a few of these points, but is this paper in a
8 reasonable shape to move forward?

9 MEMBER SAADE: In my opinion, it is.

10 MR. EDWING: I just wanted to note I
11 appreciated the bullet at the bottom of Page 1
12 which recognized, I think, Julianne and I's
13 contributions in terms of geospatial
14 infrastructure.

15 And you picked it up in the challenges
16 in the back in kind of the third bullet from the
17 bottom. However, my concern is it seems to be
18 separated from the funding request which is your
19 first bullet.

20 And, you know, Coast Survey makes the
21 charts, but it's kind of a systems approach
22 between National Geodetic Survey, CO-OPs, and

1 Coast Surveys. So we just need to make sure
2 we're taking a systems approach to the funding.

3 So I think some of this needs to be
4 carried up and, you know, included under that.
5 Because there were clearly some of these
6 activities under that Congressional, you know,
7 line item that you're looking at in that first
8 bullet.

9 MEMBER BRIGHAM: Okay. I think what I
10 meant to say, or what we meant to say, was
11 associated geoid observations covered all of
12 that. But we need to expand upon in the first
13 bullet.

14 MR. EDWING: Geodetic and
15 Oceanographic. I think it doesn't take much to
16 kind of --

17 MEMBER BRIGHAM: Yes, yes. So --

18 MR. EDWING: -- fix this. Or, you
19 know --

20 MEMBER BRIGHAM: Maybe move that
21 bullet up and expand the first bullet a little
22 bit.

1 MR. EDWING: When that was put
2 together, the budget proposals, these things have
3 all been put together, you know. So everything's
4 moving forward commensurately.

5 MEMBER BRIGHAM: Yes. We did not mean
6 that, in the original point, that that budget
7 line item would just be for hydrography.

8 MR. EDWING: Yes, okay.

9 MEMBER BRIGHAM: It was meant to be
10 more expansive. So we need to clean that up,
11 okay.

12 MEMBER MAUNE: Okay, Brigham, you
13 think you can go with this then?

14 MEMBER BRIGHAM: Maybe not tonight
15 finish it, but it doesn't --

16 MEMBER MAUNE: It's something that we
17 can coordinate though in the next month or so?

18 MEMBER BRIGHAM: Oh, sooner than that.

19 MEMBER MAUNE: Sooner than that?

20 MEMBER BRIGHAM: Sooner than that, I
21 mean, if we want to attach it to the letter it's
22 got to be a couple of weeks from now, right?

1 Is it, just in general, is the paper
2 fine to move ahead if we flesh out, I'll try to
3 flesh out the first point about the one percent
4 and that there are lots of needs.

5 MEMBER MAUNE: Is there consensus here
6 that this paper would be ready to go?

7 VICE CHAIR HANSON: Can I add just one
8 request, that the partners -- You've added a lot
9 of folks, whether it's cable people, you
10 mentioned tug and barge people. So is there any
11 way to get Crowley, or towed, or some of these
12 cable people onboard as partners as well? Just
13 having other government agencies on there, I
14 don't --

15 MEMBER BRIGHAM: We had commercial
16 survey companies, commercial tug and barge
17 operations.

18 VICE CHAIR HANSON: Once again, those
19 are people with skin in the game, right?

20 MEMBER BRIGHAM: Yes. They're under
21 the partners. What did you want done? I'm not
22 sure. The list of partners is pretty expansive.

1 I added the survey companies. And I added, we
2 added the tug and barge operators, Marine
3 Exchange, regional corporations. I mean, there
4 are others, maybe the tourist industry or the
5 cruise ship industry, maybe.

6 VICE CHAIR HANSON: Just that you
7 listed some examples, I mean, TAC's there. And
8 if they were partners it would be great to have
9 that backup.

10 MEMBER BRIGHAM: I'm not
11 understanding, I'm sorry.

12 VICE CHAIR HANSON: Okay. You
13 mentioned cruise, you've talked about cruise in
14 this thing, and can we get the cruise industry to
15 say this is necessary as well?

16 MEMBER HALL: It's not that we're not
17 a stakeholder, but we're not the major
18 stakeholder, that's for sure. We have operations
19 in Alaska. There's one ship going through the US
20 Maritime Arctic this August. So I don't want to
21 say that we're a huge demand signal, but it's not
22 that we wouldn't want to be included as a

1 stakeholder, yes.

2 VICE CHAIR HANSON: Okay. And the Red
3 Dog Mine folks?

4 MEMBER BRIGHAM: Sure. We could have
5 a long list of partners I mean, it could be
6 everybody in Alaska. Yes, sure. Red Dog Mine,
7 fisheries out of Dutch Harbor, there is a long
8 list of maritime stakeholders who need the
9 charts. I mean, it's just endless. Recreation
10 boating public, fisherman, I mean -- sure, I'll
11 try to add some more points.

12 VICE CHAIR HANSON: Maybe I'll come up
13 with some suggestions as well.

14 MEMBER BRIGHAM: I would say that the
15 cruise ship industry is not one of the major
16 stakeholders in the US maritime Arctic.

17 VICE CHAIR HANSON: Okay. Thank you.

18 MEMBER MAUNE: Scott, it's now 3
19 o'clock. We've gotten through two of the five
20 ones with a paper submitted, well, two of the
21 sects with paper submitted. Do you think we can
22 take a 15 minute break?

1 CHAIR PERKINS: Yes, absolutely. I
2 need one.

3 MEMBER MAUNE: Okay. Please come back
4 at 3:15.

5 (Whereupon, the above-entitled matter
6 went off the record at 3:03 p.m. and resumed at
7 3:20 p.m.)

8 MEMBER MAUNE: Dr. Maune. Larry
9 Atkinson is going to be up here with his
10 presentation on Hampton Road Pilot Project.

11 MEMBER ATKINSON: Is it on? Okay.
12 We're going to do this quick. I'm going to give
13 a little bit of background for you newcomers
14 about why Hampton Roads.

15 So let's start. Okay, so the Hampton
16 Roads pilot project, it was something that you
17 will hear about from a very distinguished person
18 not in the room in a few minutes, just to wake
19 you up. And it's about a whole of
20 government/whole of community approach to coastal
21 flooding.

22 And this all came about through, I can

1 tell you over a beer tonight but it involved the
2 Office of Science and Technology Policy and the
3 Defense Department and Senator Kaine writing
4 letters to all the agencies that got their
5 attention and much more political activity.

6 Though I'll just go to the next slide.
7 This just the same point is in fact people from
8 this area, same old curve. Sea level is rising,
9 we're not sure what it's going to do but it's not
10 going to be the bottom curve. It's going to be
11 the higher curve and we live in a very flat area
12 so it's very, you know, we're seeing much more
13 flooding.

14 The term nuisance flooding is very
15 routine with us, too. In the next slide, there's
16 a big difference. Those aren't petro-chemical
17 plants. Those are DoD facilities, everything
18 from Camp Perry nuclear weapons, Fort Eustis,
19 Langley Air Force Base, biggest Navy base in the
20 world with five aircraft carrier groups that are
21 not shown, but the only place where we can build
22 nuclear powered aircraft carriers, Dam Neck

1 Special Forces, Oceana Navy Base, Navy air, more
2 air bases and all the kinds of 50-some
3 facilities.

4 So the Navy's really interested in all
5 these assets that are sitting near sea level. So
6 for us, it's kind of how do you work with the
7 Navy. So this whole process started with trying
8 to get the Navy involved and all the community at
9 the same time since recognizing about \$2 billion
10 per city, and there are 17 entities in this
11 region, the dollars start to add up if you're
12 going to start protecting things.

13 So it gets really expensive. So it's
14 federal money. So how do you get all the feds to
15 work together with 17 jurisdictions who don't
16 work together very well themselves?

17 So the next slide is this guy that's
18 going to explain this to you in the next video.
19 He actually talks.

20 (Video played)

21 MEMBER ATKINSON: Okay, who's in
22 favor? No, this was amazing. He came down for

1 some other reason and we fed him the words. And
2 he was amazing. He said it better than we ever
3 have, though it was our words.

4 So he really said it. What I suggest
5 is you write things down. Let me back up just a
6 little bit. Why are we doing this? Because this
7 has got a lot of attention in DC as a model for
8 how federal agencies might work in hand including
9 DoD might work with other communities like here
10 and New York and all around the US.

11 So think of it as a model. So I've
12 tried to put some background which I can change a
13 bit. And then we've got these federal actions
14 needed and we can change these title words so
15 it's consistent between these different ones.

16 So I've tried to just make it fairly
17 general. We're not asking for money, you know,
18 like these others. But we're asking for
19 coordination and feds to pay more attention to
20 these communities.

21 Support the region, and you can read
22 in your region in there. I just realized I

1 should add in more extreme events also in this.
2 For an inter-agency working group that's probably
3 too strong a word. I'm going to tone that down
4 because we don't need any more inter-agency
5 working groups but we need somehow to coordinate.

6 I'll give an example. We have a lot
7 of subsidence. So we have NASA, NOAA, several
8 parts of NOAA, USGS, several parts of USGS. And
9 we're getting funding to major subsidence with
10 altimetry.

11 So we need to coordinate all of this
12 stuff so everybody can get at the data. And it
13 really has to be led by feds, have to be, have to
14 lead the coordination.

15 So set up some kind of way to
16 interface. And of course federal agencies have
17 an issue that how can they coordinate with all
18 these different communities. But they do have
19 people in these communities and maybe we can
20 figure out how to do it.

21 Let's work with the agencies as they
22 develop resilient strategy. Most of this is

1 pretty non-controversial things. Recognize each
2 urban area's different. Your petrochemicals here
3 were DoD.

4 And continue this emphasis on whole
5 community/whole government. This was something
6 from the Obama administration. But regardless of
7 how you want to phrase it in the future, it still
8 means you've just got to work together with all
9 the governments and the communities, and the
10 underserved communities and all that, and apply
11 the lessons learned from here.

12 This pilot report will have a report
13 out to the White House and DoD in July. And I
14 would love to be able to say this was something
15 that was turned in. So any comments, red flags?
16 If it's minor stuff, just write it down and hand
17 it to me.

18 MEMBER MAUNE: Do you think you can
19 get this to fit on two pages?

20 MEMBER ATKINSON: Yes. Yes, I'll do
21 that.

22 MEMBER MAUNE: And can you add federal

1 partner share, not just --

2 (Simultaneous speaking.)

3 MEMBER ATKINSON: Yes, sure. Yes.

4 Yes.

5 MEMBER MAUNE: Any comments from
6 anybody out there?

7 MEMBER BRIGHAM: I had one, Dave.

8 MEMBER MAUNE: Lawson Brigham?

9 MEMBER BRIGHAM: Yes. No, I just, can
10 we say somewhere in here that this is, the
11 strategic aspect, the largest naval base in the
12 world and large shipyard that builds aircraft
13 carriers, could we add in that, a couple words
14 about that?

15 MEMBER ATKINSON: Yes.

16 MEMBER BRIGHAM: Just to add the
17 strategic part.

18 MEMBER ATKINSON: Yes, yes.

19 MEMBER MAUNE: Any other comments?
20 You think you can have this cleaned up? How long
21 is it going to take? 5 o'clock tonight? I can't
22 ask for more than that. Thank you. And look, we

1 didn't even spend ten minutes on this topic
2 hardly. Okay, Ed Kelly is up next.

3 MEMBER KELLY: Ed Kelly, thank you,
4 Dave. I don't think we'll be quite that quick or
5 that non-controversial but we'll give it a shot.

6 Just coming out of the gate with this,
7 ports and harbors, we just had a sidebar, Anne
8 and Sal and myself, that a lot of the issues
9 regarding crews, make of ships, you know, are
10 really all the same issue.

11 It's a question of needing the proper
12 tools to navigate safely in harbors. So we're
13 going to collaborate and work on some of these
14 together and we'll reformat some of this.

15 One of the things that was nice, when
16 we sat down here we were passed this that NOAA
17 had already put together, which directly
18 addresses focus on ports and US waterways which
19 was really great. But it just failed to bring
20 in, and this speaks to the complexity of port and
21 harbor requirements, this talked about a very
22 narrow swath of it.

1 It didn't talk about security
2 resiliency, social issues i.e. costal management,
3 inundation, neighborhoods, beach management, et
4 cetera, tourism. It didn't talk to environmental
5 issues, it didn't talk to recreational issues, it
6 didn't talk to the extensive Government usage of
7 all of this data from the Coast Guard to the Navy
8 to the Corps of Engineers to the State Municipal
9 first responder communities or other users,
10 academia, industry, power companies that all use
11 and rely on a lot of this port data, particularly
12 the PORTS system.

13 So what we're really looking at is if
14 we can maybe run down to what are core challenges
15 but are really the recommendations.

16 Here we go. You know, we've got a
17 list there of some of the things we feel need to
18 be done. But as I said, Sal, Anne, and I will
19 work offline on this to kind of integrate the
20 crews, the make of ships, and the ports and
21 harbors because it's really all the same issue.

22 The key issue is that we do need to,

1 you know, adequate resource provided to update
2 the surveys and all the major navigational areas.
3 The key issue here is larger vessels are using
4 limited channels, and they'll need highly
5 detailed bottom surveys to understand
6 navigational respond and hydraulic impacts.

7 Security concerns also require precise
8 surveys. In New York Harbor we're having an
9 issue with security in several restricted
10 navigation areas because of security issues.
11 They want to come in and do the bathymetry on the
12 bottom to be looking for security threats.

13 The Navy and other people are talking
14 to us about doing that. So that's all key stuff.
15 As an example, in New York we've just finished
16 our 50 foot channel. We have dug a 50 foot
17 channel through the Kill Van Kull. But the
18 channel has gotten deeper but it has not gotten
19 any wider.

20 So all the hydraulics and the meeting
21 and passing conditions are all going to be very
22 different. We're actually setting up some

1 simulation, you know, work to be done that's
2 funded by the Port Authority on New York Shipping
3 Association and some others.

4 We're going to model that down in
5 MITAGS. We had Gerd to come up and meet with our
6 Harbor Safety group. He's going to have a NOAA
7 engagement as we start to roll that detailed
8 analysis out. So I think that will help with the
9 precision navigation on next generation, whatever
10 it's being called.

11 We do believe the charts have to
12 migrate to the newest and most detailed and
13 versatile electronic models and be formatted to
14 allow usage on both sophisticated vessel based
15 systems and mobile devices.

16 This is where we, you know, we need to
17 not only address the mega-ships that have this
18 critical need to have this data, but we also need
19 to get better charting information to
20 recreational users, casual users, et cetera as
21 well as the tugs, the barges, all of these people
22 that are also users that will not have the

1 sophisticated systems that are on some of these
2 larger vessels.

3 I love PORTS, I just want it to be
4 funded properly. And PORTS must be installed in
5 all major ports and should be funded from federal
6 sources due to the wide usage by federal, state,
7 municipal, commercial, and general public usage.

8 PORTS data should be used as a basis
9 for creating models that will provide usable
10 metrics for current and projected conditions at
11 any point in the port.

12 If we know what the wind is doing in
13 one section of the port, we don't necessarily
14 know what it's doing in another. And one of the
15 foibles of bringing in these new ships, they can
16 only operate and move within the 50 foot
17 channels.

18 Once a vessel and a pilot is committed
19 to entering the port, it can be four to six hours
20 before they're actually secured at their berth
21 and they have to go through very narrow channels.
22 If there's a shift in the weather or particularly

1 invisibility, modeling would help us to make
2 decisions because once we make a go/no go
3 decision, these big ships are inside these
4 restricted channels and they cannot turn around
5 and there's no place to bail out and anchor them.

6 So it's really creates a real safety
7 and environmental issue for that thing. So
8 that's going to be very important to model some
9 of that for future visibility in particular.

10 Adequate survey platforms must be
11 maintained to perform emergency recovery services
12 after severe storm or terrorist activity.

13 Needless to say, New York has had terrorist
14 activity, but most recently Sandy was there.

15 And without the NRTs, we would not
16 have been able to get our port back online as a
17 functioning deep water port as quickly and as
18 efficiently and safely as we did. They were
19 vital, and we really need to ensure that they
20 continue.

21 Adequate data must be obtained,
22 recorded, and analyzed to facilitate planning for

1 the contingency of future climate change impact
2 on port conditions and infrastructure.

3 You know, we are an area that is
4 subject to sea level rise. And although we kind
5 of, you know, laugh and say that the extra draft
6 would be nice, the impact on terminals and
7 whatnot is real.

8 We would also make a point on
9 recommendations to assimilate non-NOAA data for
10 validation and inclusion in NOAA products. We've
11 done a little bit of that with Steven's Institute
12 and a couple of others up in our area. There
13 were a ton of things that were in the water.
14 Some are very valuable and usable, some are not.

15 But I think, you know, where NOAA has
16 started to make some outreach to some of these
17 and looking to QA/QC that data, evaluate if it's
18 the right data that they need and the right
19 location, et cetera, et cetera. But there's a
20 phenomenal amount of data out there, not to even
21 mention what getting near crowd sourcing or
22 anything else that's a potential that could also

1 help to give us some additional information.

2 In partners, I would also add, shame
3 on me, I'm the co-chair of my IOOS RA. I forgot
4 to put that on there. The IOOS RAs are also a
5 very valuable source of partnering data as well
6 as, you know, the access to a mix of academia
7 industry, commercial mariners, et cetera. And
8 that's also very attractive.

9 But since this does sort of key into a
10 lot of what Sal and Anne had put into theirs, the
11 three of us will work together to try to revise
12 and incorporate that into this.

13 I know we're all, we just had a quick
14 sidebar and we're all kind of up to our noses but
15 we can probably commit to get it out for the rest
16 of the panel to take a look at within three weeks
17 so that it would still be available to be whacked
18 out one more time by the panel overall and then
19 also be, you know, a piece of paper that would be
20 able to be included in there with the resolution
21 letter and recommendation letter that we would
22 have from this meeting if that's acceptable.

1 And we're open to any comments that
2 anybody might have, observations,
3 recommendations, chastisements, or as you please.
4 But if you hit me, I'll hit you back. That's
5 all.

6 MEMBER MAUNE: This is Dave Maune. I
7 have a question on recommendation number one.

8 MEMBER KELLY: Yes.

9 MEMBER MAUNE: This seems like it's
10 partly NOAA per issue and partly a Corps of
11 Engineer issue. Is there a way to separate out
12 the part that's relevant to the NOAA
13 administrator? Or is that not necessary?

14 MEMBER KELLY: I don't know if that's
15 necessary. You know, one of the challenges to
16 doing this, and on many of them I think, is to
17 resist the urge to go into the weeds because if
18 we start getting too detailed on some of these
19 particular recommendations.

20 The people in NOAA are aware of all of
21 these issues. I mean, they're smarter than most
22 of us are when it comes to dealing with what they

1 can do and how they can do it.

2 Just personally, I would be a little
3 reluctant to try to dig and make it too finite as
4 to what we're asking for because some of this
5 stuff, even if some of it is Corps responsibility
6 and some of it is NOAA responsibility and they
7 kind of share a footprint in a lot of spots, I
8 would still say that that's answered by down the
9 bottom, partners.

10 And the first partner I did list was
11 the Corps of Engineers. You know, so I think
12 this is what we need. And if NOAA needs to
13 engage partners to achieve it, well then that's
14 part of the charge we make to them.

15 MEMBER MAUNE: Thank you. Joyce?

16 MEMBER MILLER: Yes. I would say one
17 of the things that the Panel has seen over and
18 over is that, you know, going straight at PORTS
19 has not been successful. And in LA/Long Beach we
20 saw the precision navigation. And it's really
21 not PORTS per se that is needed. It's much more
22 precision navigation capabilities.

1 And I think PORTS should be mentioned,
2 but maybe it should not be the emphasis that
3 especially since coast survey seems to be
4 highlighting precision navigation as a new
5 capability, an advanced capability. I mean, I
6 think what you really need is precision
7 navigation in PORTS.

8 (Off microphone comments.)

9 MEMBER MILLER: Right.

10 (Off microphone comments.)

11 MEMBER MILLER: Yes. So that would
12 be, and I'm not sure that labeling the paper or
13 including precision navigation in the title and
14 perhaps up front saying that what we need is in
15 ports and harbors for large vessels is precision
16 navigation.

17 MEMBER KELLY: My only comment in on
18 this is that this goes way beyond just the larger
19 vessels. And you know, I saw Susan shake her
20 head when we said that we also need this type of
21 data for recreational vessels.

22 We need this for, not mega carriers,

1 but I mean there's 8,000 TEU ships that fit in
2 these things and that they need this type of
3 support. Tugs, operators, ferries use this. I
4 mean, we've got a very extensive ferry system.

5 All of that is necessary. And this is
6 not restricted only to large or mega vessels. I
7 think we need to address the entire port
8 capability because port congestion and shared
9 usage of the waters is a very important issue and
10 an emerging issue.

11 We're seeing more and more
12 recreational boaters just in April 16th come on
13 up. We're having taken out on a ferry, we're
14 taking about 150 people where we're bringing
15 pilots and commercial navigators onboard to mix
16 with recreational, primarily motor, sail, human
17 powered, to talk about how we have to share the
18 harbor, crossing situations, you know, wakes, et
19 cetera, et cetera.

20 And the last Coast Guard parcel we
21 had, the Port and Waterway Safety Assessment said
22 we were the most highly congested waterway in the

1 United States and that unless we took additional
2 mitigation issues, we were going to have some
3 very nasty outcomes.

4 So I think all of that plays into
5 these large ports. It's not just how can we fit
6 mega-ships into the port. Everybody has to use
7 the port. I mean, from human powered people
8 right up to the mega-ships.

9 MEMBER MAUNE: Dave Maune again. On
10 other papers we have tried to put the main
11 heading point in the very first sentence and the
12 prove it throughout the remainder of the paper.
13 Do you have some idea in mind on what your main
14 point is that you might want to put in the first
15 sentence?

16 MEMBER KELLY: Well, you know, the
17 first sentence is, "The ports and harbors of the
18 US are vital to the American way of life, and the
19 transport of freight and people is important."

20 We all have to periodically remind
21 NOAA that they are part of the Department of
22 Commerce. I mean, you know, a lot of this is

1 about doing business, whether this is tourism,
2 cruise industries, or moving freight, people, et
3 cetera.

4 You know, so that's what I thought was
5 the best. If somebody else has another idea,
6 there's no pride of authorship. I would be more
7 than happy to steal a better idea.

8 MEMBER MAUNE: It doesn't seem hard
9 enough hitting to me to say that the ports and
10 harbors of the United States are vital to the
11 American way of life. Yes.

12 MEMBER HALL: That's a justification
13 for it. So the bottom line up front really is we
14 need precision navigation in light of larger
15 ships, more ships, shared usage of waterways by
16 all sizes of ships.

17 There's a way to say that of why,
18 because what I think the Chair had said earlier
19 when I said hey, it's more than just the cruise
20 industry, it's more than mega-ships was they were
21 looking for the hook this time to bring precision
22 navigation back to the Administrator.

1 And so is it because we're seeing a
2 flurry of activity, bigger ships, more ships,
3 that kind of thing. I think that's what your
4 bottom line up front really is. We need this
5 precision navigation and we need it because XYZ.

6 And then I think your justification
7 furthers on with your issue and status here of
8 what you put. That's why, it's vital to the US.

9 MEMBER KELLY: It's just all about the
10 big ships, though.

11 MEMBER HALL: Right, exactly. And
12 that's my point though is that, but what are the
13 three, four main points of why. Like I said, it
14 sounds like the rec boats, you know, being in the
15 same waters as the big boats, as the mega boats
16 is really what it is that we're looking at here.

17 It's not necessarily a new issue, but
18 I know that the Chair had explained to me earlier
19 that that was kind of the hook that Ben Franklin
20 was a bit of a hook to bring the issue up again.

21 And so I'm not, I'm complete agreement
22 with you, Ed. I don't want you to think that I'm

1 not. I was just trying to figure out what the
2 bottom line up front here for the administrator,
3 why is she reading this paper?

4 MEMBER MAUNE: Lawson?

5 MEMBER BRIGHAM: Yes, I think this
6 issue paper is broad. It includes the whole
7 range of issues. But I do think that the
8 precision navigation is a separate kind of
9 special issue that we're going to talk about
10 tomorrow that doesn't necessarily have to be an
11 issue paper in itself.

12 But we should as HSRP give attention
13 to it because it's gotten global attention. So
14 this paper, I agree with Ed. It's broad, it
15 covers a whole host of users, it's multiple
16 users, it's shared uses in confined areas. And I
17 agree, the precision navigation thing came up
18 from the last meeting. And we'll talk about it
19 tomorrow and see where it fits.

20 MEMBER KELLY: Precision navigation
21 for the larger vessels is definitely of
22 tantamount importance in this to be able to make

1 the big ships fit in these ports. But that's not
2 the only people using these ports.

3 And I think if the broad issue is
4 ports and harbors, then we have to address
5 everybody that uses them, including security
6 issues and resiliency issues. And there's an
7 awful lot of that.

8 And ports, paying for ports is never
9 popular. Talking about the benefits of ports
10 always is. So I can take out the federal funding
11 piece, although it will break my heart to do so.
12 But the ports, the data that's generated by ports
13 is so widely used and it's so much value to so
14 many people, and the PORTS as it's been called,
15 the backbone of the system to build upon that is
16 just essential for the ports and the harbors.
17 Precision navigation builds on PORTS backbone.

18 MEMBER MAUNE: I don't disagree with
19 anything anybody has said. And my point is that
20 some people only read the first sentence to
21 decide if they're going to read the rest of it.
22 And the first sentence as written --

1 MEMBER KELLY: Doesn't do it?

2 MEMBER MAUNE: -- does not entice me
3 to read the rest of the paper. Something needs
4 to be harder hitting up front. That --

5 MEMBER MCINTYRE: Anne McIntyre. Oh,
6 sorry.

7 MEMBER MAUNE: -- should then be built
8 upon.

9 MEMBER MCINTYRE: I'm sorry, I thought
10 you were finished there. I couldn't have said
11 what Ed said better, and I mean that literally,
12 everything that you advocated for, the issues
13 that we face in my region.

14 And again, I agree with what Kim had
15 said as far as the mega-ships are a hook. But Ed
16 is absolutely correct. I mean, in my particular
17 port, you know, our bread and butter is a Panamax
18 ship.

19 And the parameters that we're being
20 asked to operate under right now are two foot of
21 under keel clearance. You know, again going back
22 to the fellow from the Port of Galveston, can you

1 move this ship in the fog.

2 It's just, our economy requires us to
3 move the ships faster, it requires us to operate
4 the ships in areas where the port infrastructures
5 aren't designed. Our channel now takes ships
6 1,200 feet long. It was designed for a 500 foot
7 ship.

8 Again, it was deepened, it wasn't
9 widened. And what we do today we couldn't do
10 without the tools that we have now, the
11 electronic charting tools, the accessibility of
12 surveyed data from Army Corps of Engineers, from
13 NOAA. We need all those things in order to
14 continue to do that.

15 And I did before I came here, I
16 reached out to the San Francisco Pilot
17 Association and also the Puget Sound Pilot
18 Association who were both involved in bringing in
19 the Ben Franklin to their ports.

20 I asked them what the most important
21 NOAA product was that they needed and where they
22 needed to see improvements. And the first thing

1 they said was PORTS and what do we need to do.

2 There's a lot of misunderstanding out
3 there amongst the user stakeholders as to how we
4 can help fund and bring the most benefit from
5 those systems. But to not focus on PORTS as
6 being a critical part of it I think would be a
7 big mistake.

8 MEMBER KELLY: Sal, did you have your
9 hand up before?

10 MEMBER RASSELLO: Yes, just continuing
11 with Ed said, precise navigation is dictated by
12 the fact that the ships are using electronic
13 charts, ECDIS. ECDIS requires that a passage
14 plan need to be done berth to berth.

15 So that includes also the passage in
16 narrow waters. So therefore, it's a requirement
17 that the charting and the surveys in the narrow
18 waters are adequate to perform a safety passage
19 of any ship, not just a mega-ship.

20 Mega-ships has more requirements, has
21 more issues because of size, the wind. But I
22 think that the whole thing is driven by the fact

1 that we are moving into electronic navigation
2 which is not traditional one.

3 So we need to probably also include a
4 coordinated effort between the ship's operator,
5 the pilots, and vessel traffic services that work
6 under one common platform.

7 MEMBER MAUNE: Okay. And were you
8 saying that two of your papers are going to be
9 merged into one?

10 MEMBER KELLY: Sal, Anne, and myself
11 are going to talk and see because a lot of it is
12 just the physical configuration of the channels
13 and the harbors, and how do we deal with that
14 combination of the electronic charting of the
15 ports of the various pieces and how that plays
16 out to a broad host of harbor users, not just the
17 mega-ship.

18 MEMBER MAUNE: Bill?

19 VICE CHAIR HANSON: Yes. Ed, can I
20 take the PORTS discussion just one more level?

21 MEMBER KELLY: Please do.

22 VICE CHAIR HANSON: I know probably

1 not for this paper, but we talk about it every
2 meeting, so I think we've talked about it six
3 times already this meeting officially.

4 So if somebody asked you how would
5 PORTS get funded from a federal, do we have a
6 clue which port that would come from and how it
7 would be administered?

8 MEMBER KELLY: Well, I would believe
9 that it should be funded through NOAA since it's
10 their system. As far as the, you know, how that
11 moves through the federal budget would best be
12 handled by NOAA.

13 VICE CHAIR HANSON: Okay.

14 MEMBER KELLY: But, you know, we've
15 done the same discussion over and over. It's
16 virtually impossible for a fair allocation of
17 cost among private interests. You know, just in
18 New York and New Jersey and Connecticut, we have
19 three states.

20 We have the City of New York with a
21 budget bigger than the State of New Jersey.
22 These vessels transit all these waters, we have

1 academia, we have first responders, state,
2 municipal people.

3 One of the biggest users is the
4 government itself between the Coast Guard, NOAA,
5 and National Weather Service. I mean, but they
6 come to us as a commercial deep sea operation,
7 not even a domestic operation.

8 VICE CHAIR HANSON: So that's the same
9 thing in every port. It's probably one of the
10 best things NOAA's ever done, most visible, and
11 always gets --

12 MEMBER KELLY: It's a wonderful
13 product and it's essential to safety, security,
14 inundation, resilience. It is, it's a great
15 system. The only thing anybody ever has a
16 problem with is that it's not funded properly.

17 It's impossible for private sides to
18 find an equitable way to get everybody that
19 should be at the table. And the role of
20 government is to do that which people are
21 incapable of doing on their own.

22 VICE CHAIR HANSON: So the question

1 would go maybe to NOAA. Have you ever developed
2 a plan to manage PORTS as a federally funded
3 system?

4 MR. EDWING: The answer is yes.

5 VICE CHAIR HANSON: Okay. And so is
6 that something you could add as a more specific
7 bullet point to something that we can add as a
8 specific bullet point to this paper? NOAA needs
9 X amount of dollars to be funded through a
10 specific account to handle the PORTS system.

11 MEMBER KELLY: We would probably need
12 to get clearance on that. I'll look at Glenn for
13 that. Glenn, you listening? Do we provide cost
14 estimates in here?

15 MR. BOLEDOVICH: Funding, the great
16 barrier.

17 MEMBER KELLY: The best part about
18 funding is it starts with fun. Come on, Glenn.
19 It's supposed to be fun-ding. You know?

20 MR. BOLEDOVICH: We would have to be
21 careful.

22 MEMBER KELLY: Yes. And I don't know

1 if this paper's the right place to go into the
2 weeds on that.

3 MEMBER MAUNE: Probably not.

4 MEMBER KELLY: Where it creates, you
5 know, a debatable item or something. You know, I
6 think, I made a glancing passage and I would be
7 more than happy to take it out about federal
8 funding.

9 But the reality is as you hear in
10 every port, PORTS is a wonderful product that is
11 essential to safety of navigation and to
12 environmental. And everybody likes it, everybody
13 uses it. The only thing anybody has a problem
14 with is how it's funded. So, you know, we can
15 take that out and --

16 MR. EDWING: So perhaps an alternative
17 instead of getting into numbers is to talk about
18 this. It's certainly not being implemented in a
19 very strategic way because it's really a first
20 come/first serve basis and whoever has money
21 steps up, it's in some cases maybe not a
22 sustainable business model. So maybe we talk

1 about it needs to find a better model.

2 MEMBER KELLY: And I don't know, like
3 I said, I tried to just minimize that. But you
4 know, what I just said, it must be installed in
5 all major ports, should be funded from federal
6 sources due to the wide usage by federal, state,
7 municipal, commercial, and general public usage.

8 I mean, that's just out there. I
9 didn't think that this paper was really designed
10 to be the, discuss the funding mechanisms for
11 PORTS. We've been down that road before. Maybe
12 that's a separate topic as we move along again.

13 MR. BOLEDOVICH: We have been down the
14 road before. That's why I'm hesitant. But
15 again, this panel can certainly see its view that
16 this model isn't working. We think federally
17 sourced is the way to go. You don't need to hear
18 my opinion on that.

19 The Panel is free to state its opinion
20 to the Administrator about how it thinks this
21 program should be supported. That's why you're
22 here, to some extent, right? We've just been

1 down this road --

2 MEMBER KELLY: Yes, I tried not to
3 make that a focus of this paper. But just, you
4 know, to put it in there that that's an issue
5 that should be addressed.

6 MR. BOLEDOVICH: You know, maybe you
7 want to be a little fungible with your funding,
8 fun, and say one alternative that we think should
9 be strongly considered is something more
10 sustainable and the sustainable federal source of
11 funds. Couch it a bit somehow maybe.

12 MEMBER KELLY: Yes, yes.

13 MEMBER MAUNE: Lawson?

14 MEMBER BRIGHAM: Yes, I might not
15 agree that it should be all federally funded.
16 Might be public/private partnership or might be
17 regional government. So I actually think it
18 should be partnership between the region
19 including private.

20 I mean, it's just like the Arctic.
21 Taxpayer can't fund all of that infrastructure.
22 It's got to be public/private partnership. Maybe

1 not the entire PORTS thing should be
2 public/private but regional, state governments.
3 Local governments can kick into the pot too. And
4 that's just my view.

5 MR. BOLEDOVICH: I think the gentleman
6 yesterday from the Galveston had kind of an
7 opinion on the matter. And I think he stopped a
8 little bit short. He just said the current model
9 isn't quite working very well and that we might
10 want to reconsider how this cautionary is shaped
11 and formed might be a little bit different
12 formula for how it's set up or something like
13 that. I don't know that you want to get into all
14 of those details.

15 MEMBER KELLY: Just an example, in New
16 York, I mean, our funder is the Port Authority of
17 New York and New Jersey who has told us that they
18 are going to stop paying and will never pay
19 another pfennig past 2018 when the bridge is
20 finished, when the Bayonne Bridge is finished
21 because the only reason they paid this last time
22 is I said well then I'm going to the New York

1 Times to discuss how you're not paying and the
2 Coast Guard is going to shift our two foot air
3 gap, two foot under keel clearance to four and
4 four and that will stop this many ships from
5 getting into this port in the meantime.

6 So they said okay we'll pay it until
7 the bridge is done. And all of my compatriots
8 all over the place are kind of in the same place.
9 They come up to the brink of these things going
10 dark. And I know we have gone dark in one or two
11 ports in the past because of a lack of funding.

12 It just seems unconscionable for what
13 is on the grand scale of national security,
14 safety, environment, it's a couple of million
15 dollars. You know, so let's not make this all
16 about funding PORTS. You know, key issue,
17 probably not a focus in this paper.

18 MEMBER MAUNE: Thank you, Ed. We
19 don't have a whole lot of time left, but we have
20 a number of topics. Do you think maybe, Susan,
21 you can go through in five minutes or something,
22 explain what you're working on?

1 MEMBER SHINGLEDECKER: Sure. No more
2 than five. What was circulated to you all is I
3 would call it an early working draft. I would
4 not even call it a rough draft at this point. It
5 was organizing some thoughts.

6 But I was strong armed into sharing
7 it. So there, you've got it. All these things
8 I'm still prioritizing. They're not really in
9 any specific order. And feel free to discuss now
10 or send me comments electronically or catch me
11 later. That's fine.

12 I start off with the issues and the
13 status just kind of talking about the number of
14 recreational vessels. Certainly, you know, we
15 don't have the commercial impact that Ed's
16 constituents have. But we've got the numbers.

17 But one of the challenges, as you all
18 know, is the needs. The needs of those 12
19 million plus boaters is, it varies greatly. So
20 whether these are challenges or are they future
21 federal actions or are they current activities,
22 that I haven't quite figured out yet.

1 But these are kind of the main points
2 that come to mind when I think of the issue.

3 Data and products need to continue to be
4 available in a variety of formats. This gets at
5 the diversity of this group and how they take up
6 the information that they have and how they use
7 it.

8 And so far NOAA has done a good job in
9 this area. But as priorities shift, we just want
10 to encourage them to continue to have a variety
11 of formats. Access to the most current data
12 needs to be easy.

13 Making the point here that
14 recreational boaters are not commercial mariners.
15 They're not going to work for it. I hate to
16 admit it but they're not. You've got to make it
17 easy for them to get it.

18 And in this age of technology and data
19 and automatic updates and wireless connectivity,
20 we think that whatever we're looking at on our
21 phone is the most current. And as you all know,
22 especially when it comes to charts, that's not

1 always the case.

2 The automatic updates are not
3 necessarily automatically happening. So we need
4 to provide data in formats that are easy to
5 download over wireless connections and file sizes
6 that are manageable to enable ease of access.

7 This one, I might have been
8 responsible for some of those eHydro questions
9 earlier to our friends in the Army Corps.
10 Authoritative data needs to be available in one
11 place.

12 Maybe I'm dreaming. I think I've
13 heard from some that possibly I'm dreaming. But
14 when I talk to our members and I talk to boaters
15 around the country, they have no idea what Army
16 Corps district they're in, especially if they're
17 transiting waters that are not their home waters.

18 And thinking that they're going to go
19 to more than one place to get a chart, I mean,
20 that's assuming they even got a chart to begin
21 with. So how can we get data sets like what the
22 Army Corps has in a format that can be

1 incorporated by NOAA in the most efficient way
2 possible and have this data so that people just
3 have to go one place to get it.

4 Like I said, that's assuming that they
5 don't, you know, maybe they updated their charts
6 three years ago. It's a big ask just to get them
7 to try and have current charts on their boat
8 today. If they have to go to more than one place
9 to get it, it's not going to happen.

10 This one probably goes up at the top
11 of the list rather than the bottom of the list.
12 Near shore data sets need to be more robust to
13 meet the needs of recreational boaters. You
14 heard that from the gentleman Chris, you know, a
15 new sailboat owner and just the age of the data
16 in the areas where recreational boaters are
17 occupying.

18 But we certainly understand it's a
19 financial, the financial constraints of that.
20 And then especially when we're looking at
21 prioritizing the Arctic and making gains in those
22 areas, how do those near shore areas fall out, or

1 fall in?

2 And so what can we look at to help
3 fill those gaps in the recreational areas,
4 whether it's using more LIDAR bathymetry, using
5 unmanned technologies or using crowd sourcing. I
6 can't seem to go a meeting without saying that
7 word so I'll get it in there.

8 The original title for this paper, I
9 think it was Mapping: Recreational. I would
10 probably expand that to just Navigation Services
11 in Recreational Boaters. I want to make sure
12 that the last two bullets more speak to co-ops
13 and to height data because the needs of boaters
14 go beyond just charts.

15 And I haven't flushed out my co-op's
16 recommendation there, although I think it's kind
17 of incorporated in some of the other more general
18 data mentions.

19 And then lastly, the last one I added
20 was boaters need accurate and accessible height
21 data and storm search prediction. In the
22 insurance world, you know, only a certain portion

1 of homes or cars or businesses are going to be in
2 the coastal zone.

3 With boats, yes there's those inland
4 trailerable boats. But the vast majority of
5 boats, we can't get them away from the water's
6 edge. They're always going to be there.

7 And so knowing height of nearby
8 storage areas. In Sandy, we moved boats out of
9 the water into areas that just flooded. They
10 weren't high enough because we didn't, people
11 didn't know how high that storage area was.

12 And the importance of storm surge
13 predictions for protecting boats, not just from
14 an insurance perspective, but also, I mean, we
15 look at the hit that the recreational boating
16 community has taken in New York and New Jersey
17 and how long it is taking that industry to
18 recover as a whole and the economic impacts of
19 that on marinas and other businesses as well.

20 So want to make sure I cover all three
21 offices in there and how that breaks up into
22 current activities and future federal actions. I

1 struggle a bit with the what is the bottom line,
2 what is the biggest ask for this community.

3 I know we've gone back and forth with
4 the directors over the last few years on at what
5 level are we making our recommendations. Are we
6 getting too in the weeds telling them how to do
7 their work and how do we stay up at the strategic
8 level.

9 And so hence this is a working draft
10 and I'll still try and figure out what the
11 appropriate level for the ask is. So that's kind
12 of my summary on that. Welcome any comments, but
13 in the sake of time if you want to just email me
14 your comments too, that's more than welcome.

15 MEMBER MAUNE: And is there anybody
16 else that's interested in helping Susan with this
17 topic? I don't see any volunteers. Gary?

18 MEMBER THOMPSON: Yes. Gary Thompson.
19 We're doing a lot of work in North Carolina storm
20 surge and first point of elevation. So I'll be
21 glad to work with you and provide you some
22 information on that.

1 MEMBER SHINGLEDECKER: Great, thank
2 you.

3 MEMBER MAUNE: Okay. Thank you,
4 Susan. Bill, you're up next to give us some
5 ideas on what we might do with the defense
6 community.

7 VICE CHAIR HANSON: You're going to
8 catch up some time here, aren't you?

9 MEMBER MAUNE: Yes.

10 VICE CHAIR HANSON: This is the one
11 that's so far got a big fail on it. I'll do a
12 couple mea culpas here and also look for some
13 advice. Since Scott already successfully punted
14 and got a great partner, I do believe I'm the
15 mentor for Ed, not the --

16 There you go. Ed will be a good
17 partner on the defense. And the reason is it's a
18 huge topic and it's kind of morphed in my mind to
19 the national security as well as homeland
20 security type issues that we actually spend a lot
21 of time on these days when talking about the
22 nation's waterways and channels and getting folks

1 to consider our ports, US ports and waterways as
2 national security and homeland security important
3 points.

4 And Glenn did turn me on to some folks
5 with the Navy who have also turned me on to some
6 folks in the Coast Guard to be able to address
7 some of those issues. And just trying to get
8 arms around what that all might mean and where
9 that leads is probably going to take a little bit
10 of effort here.

11 But I actually think I would like to
12 continue to tackle it, but I could use some help
13 and some suggestions as well.

14 MEMBER MAUNE: Am I correct that the
15 Navy has hydrographic survey? Dave Maune. Am I
16 correct that the Navy has hydrographic survey
17 capabilities and are conducting surveys that
18 they're not sharing with NOAA? Is that a true
19 statement?

20 RADM GLANG: Gerd Glang, Coast Survey.
21 No, that's not my understanding, Dave. So Navy
22 operates, Naval Oceanographic Office operates six

1 global class survey vessels that operate in other
2 oceans, not in the USEEZ.

3 On occasion they do certain survey
4 missions in US waters and they've always been
5 forthcoming and shared that data. Any survey
6 data Navy acquires which they feel they can make
7 public and share goes to the NOAA archive.

8 And we've over the years received
9 LIDAR surveys from them and other hydrographic
10 survey data when it's in areas that we have
11 charting responsibilities for.

12 MEMBER MAUNE: Okay, thank you. Any
13 other questions? Did Ed volunteer to help you?

14 VICE CHAIR HANSON: He did.

15 MEMBER MAUNE: Okay, good. Ed's
16 volunteered for two. And Ed, next topic is
17 technology. Want to give us a few ideas on that?
18 I'm sorry, Lawson?

19 MEMBER BRIGHAM: Just, we want to
20 weave in somewhere in this defense security kind
21 of issue the Arctic because I know there are some
22 transits and some information that's probably

1 still classified that could be declassified.
2 We'll just be mindful to kind of roll that one
3 into the topic. I'll input.

4 MEMBER MAUNE: Okay. Anything else,
5 Bill? All right, thank you. All right, Ed, did
6 you want to talk about technology a bit here?

7 MEMBER SAADE: Sure. Thanks, Dave.
8 Basically, I just captured some of the ideas that
9 were around when we spoke about it earlier for
10 five or ten minutes.

11 As a lead in for the issue is the
12 backlog is incredibly huge and we have to find a
13 way to accelerate the way that we can work down
14 that backlog. The status is there's lots of
15 vessels and contractors and procedures and
16 existing technologies that are faster than they
17 used to be.

18 But of course that doesn't help us
19 knock down the backlog. So the goal is to
20 identify new technologies to adapt to help
21 mitigate the backlog within existing funding or
22 slightly higher funding levels.

1 In addition, identify those
2 technologies which provide tangible improvements
3 in one, five, or ten years. So basically, to
4 talk about technologies in a multi-year sense.

5 Not necessarily just focus on what can
6 we fix tomorrow but to, as somebody mentioned
7 yesterday, what are the types of things that we
8 can go back to NOAA with, with five or ten year
9 plans, and technology seems like a really logical
10 one to address.

11 So I tried to break it out into the
12 big ideas. There's no pride of ownership or we
13 can hack this all up eventually. But the phases
14 are how do we improve the acquisition part of it
15 and autonomous surface vehicles, vessels,
16 whatever you want to call them, autonomous
17 underwater vehicles, unmanned aerial vehicles.

18 All those come into play and none of
19 them are very productive right now. No one would
20 argue the fact that we're not going to solve any
21 issues with those devices right now. But I
22 believe everybody agrees that five or certainly

1 ten years from now they're going to be doing a
2 lot of activities that relate to this.

3 I just put the second one in there as
4 an idea in the future that our company has is a
5 UAV with a gravity meter and a LIDAR in it to
6 actually have multiple applications. But that's
7 nowhere near ready to go either.

8 UAV-based hydrographic LIDAR. There's
9 actually one that's built by the Navy that we're
10 helping test right now. That's the 30 pound
11 hydrographic LIDAR that obviously for those
12 applications in a UAV would have a profound
13 impact on cost, therefore productivity.

14 Next generation tide gauges was
15 mentioned. We can see everything on the list.
16 There's all these different ways that we can
17 build a discussion on it, but it is going to be
18 by definition this particular topic is going to
19 be real techy and geeky and maybe we have to find
20 a way to talk about it without all the
21 technology.

22 So then there's data transfer. As we

1 mentioned, there's lots of ways to get the data
2 off of the vessel a lot faster. So maybe you
3 don't have to have as much manpower and as much
4 capability on the vessel or one person in the
5 office or back at NOAA headquarters can do the
6 work of what used to take two people on two
7 different boats, those type of things.

8 There's a whole push in industry to
9 doing cloud based solutions, cloud based storage,
10 cloud based automated processing of everything
11 and anything. Ultimately it will be hydrographic
12 data as well.

13 How to push out the final product.
14 Again, the cloud becomes part of that. That's
15 certainly where we see a lot of technology going.
16 And then the ability to present it in both 3D and
17 4D which goes back to a lot of the topics that
18 you all were talking about earlier.

19 How do you make this timely and in
20 real time? Partners, to me there's no end to the
21 list of partners starting with UNH. I don't know
22 how DARPA interacts with NOAA legally or not. It

1 certainly interacts with contractors easily and
2 legally, so I assume it's easy with NOAA.

3 Multiple contractors with good ideas,
4 the different agencies that are doing this
5 anyway, and the multiple agencies within NOAA
6 that overlap nicely. State agencies have proven
7 to be another source of innovation and funding.

8 Topic specific, from my point of view,
9 every single hydrographic survey is a fisheries
10 habitat study, it's just the fisheries people
11 don't know it. And, I mean, we've done things as
12 simple as map off California and discover
13 tremendous areas of whale feeding scars that
14 nobody knew about, but it was a hydrographic
15 survey that led to that.

16 So that's a big awareness type of a
17 thing. Global warming, global climate change, I
18 put that in there because the big activity in
19 industry right now is intentionally looking for
20 sea bed seeps. These are all hydrocarbon seeps
21 on the sea floor.

22 And by the thousands, you know, they

1 may be by the millions. What's the impact of all
2 of that until now not mapped hydrocarbons seeping
3 into the water and into the environment and can
4 there be other sources of funding that seem to be
5 well funded at least during this administration
6 to help offset some of these costs.

7 Another reason to do a hydrographic
8 survey that has multiple applications. And the
9 Arctic-focused applications that Lawson always
10 talks about, that's a pretty easy connection.

11 Challenges, challenges lead to the
12 technology advances because all of us that work
13 on the ocean are finding it difficult to find
14 qualified personnel now, and it's just going to
15 get worse in the future.

16 Vessel replacement and maintenance we
17 talked about before. That's always going to be a
18 challenge. It's never going to be easy to get
19 the money, so what happens if you can do it in
20 more efficient and cheaper ways.

21 Current activities is endless. I'm
22 not sure what we have to even mention along there

1 because that's all, that's what we're really
2 focused on.

3 There's a long list of federal actions
4 required, but one of the things that Carol and I
5 talked about was let's say we come up with really
6 good ideas that can be implemented quickly, how
7 do you go back to the contractual language on
8 existing IDIQ contracts that many of the
9 contractors have and allow for that transfer of
10 knowledge and transfer of technology back to NOAA
11 in a way that can be paid for. So that's the
12 start.

13 MEMBER MAUNE: Amazing. And to think
14 you just volunteered this morning to take a step
15 in for Scott. You've come fully prepared. Thank
16 you, Ed. Anybody want any comments on
17 technology? Yes?

18 MEMBER BRIGHAM: Lawson Brigham. Yes,
19 I think it's a good overview and we should have
20 an issue paper with all of what you just said.
21 But I think the topic is larger than just the
22 issue paper. And I think we should explore and

1 think about in HSRP that this is a working group
2 topic.

3 If one of the working groups can go
4 into sleep mode or something and we have one on
5 technology, I think we should discuss that in
6 concert with leadership here because I think it's
7 a continuing and essential and critical kind of
8 topic to talk about and not just in an issue
9 paper.

10 And we have, I think, I sense, a core
11 of people now that we haven't had in the past in
12 the HSRP that could address some central issues.
13 Thank you.

14 MEMBER MAUNE: Thank you. Gary?

15 MEMBER THOMPSON: Gary Thompson.

16 Since non-technical people are probably reading
17 this and all those acronyms, can we define all
18 these acronyms in them so they'll understand what
19 they all mean?

20 MEMBER SAADE: Most of the A's mean
21 autonomous.

22 MEMBER THOMPSON: Second comment is I

1 know one technology, it's probably more in
2 building out, I don't know if we should include
3 it or not, is BIM. Does BIM have any impact in
4 this arena?

5 MEMBER SAADE: I'm not sure I
6 understand the question, sorry.

7 MEMBER THOMPSON: New technology,
8 Building Information Modeling.

9 MEMBER SAADE: Okay. I didn't know
10 that term. Sorry.

11 MEMBER THOMPSON: Yes, it's the new --

12 MEMBER SAADE: So you hit me with an
13 acronym that I didn't know.

14 MEMBER THOMPSON: Well done. So BIM
15 is many, it's mainly in construction so that
16 multiple professionals can work on the same
17 product at the same time.

18 So if you change a beam here and it
19 affects other beams, the software will change the
20 other beams too. So it's, I was at a meeting
21 where one large company by 2017 all their,
22 they'll go completely BIM.

1 So I don't know, it's mainly
2 construction, building. I don't know if it fits
3 in here but it might be worth mentioning.

4 MEMBER MAUNE: Lindsay?

5 MEMBER GEE: Yes. I think I agree,
6 there's a lot here in technology that -- Lindsay
7 Gee, sorry. There's a lot in technology that's
8 hard to address in a single issued paper. A lot
9 of the things that Ed is saying, you could maybe
10 take them up a level to tactical and strategic if
11 you like.

12 There's the technology that's kind of
13 there now that could be implemented, and there is
14 some, it's getting it into service and I think
15 it's what NOAA can benefit from the transfer back
16 from some of what industry has done.

17 There's then technology that's, you
18 know, it's not there yet and it's way out. And
19 that recommendation is okay, so that might be a
20 shared research that would be across industry,
21 the academic partners and also NOAA, right, to be
22 able to do that.

1 And then the other technologies
2 related kind of to the recreational boaters. I
3 think we see the, we're very slow to adopt
4 technology and particularly in the mapping area
5 because of the safety and we're a really
6 conservative bunch of people.

7 But boaters just want to go out and
8 boat, so they do things. And there's, you know,
9 the technology of apps we all have in our phone,
10 you know, that hasn't really come to our
11 industry. It's in other geospatial areas.

12 And so I think there's that other
13 bunch of technology that we need to look at
14 that's like, okay it's in other areas of
15 geospatial, how do we bring that across. And so
16 that's another challenge I think we've got.

17 So things like ActiveCaptain is out
18 there and boaters use it but they don't have the
19 base level of the pilot or the sailing directions
20 within that. It's like why can't that be a sort
21 of underlying infrastructure that then everybody
22 can comment on, and okay, some of those things

1 that have got changed are there.

2 And that immediately then has an
3 impact of getting, we're not talking about
4 pushing stuff out to the, to clients from NOAA,
5 but that's getting information back quickly and
6 incorporated. I think that's a particular area
7 that we need to address. And I think that's
8 generally in the industry people are trying to do
9 that.

10 Another area, we always talked about
11 data standards. And you know, it's important for
12 interoperability and all those things. I think
13 one of the other areas is in the technology and
14 software particularly which is one of my recent
15 background is open this in the platforms that
16 you, that NOAA deals with.

17 And this is not just standards because
18 you can talk about standards now but because we
19 have so much data coming in, standards just mean
20 export and import, and actually add time
21 sometimes to the, that you don't have.

22 And they just add to the workflow. So

1 I think you've suffered I know in some areas just
2 not having openness from platforms that you have.

3 And just my last point, I think as Ed
4 mentioned that when we've talked, we have
5 discussion at lunchtime with Juliana I think,
6 resources, human resources are really critical to
7 technology of getting the young resources in and
8 then retooling the people that, you know, really
9 need to that life is changing. And it seems like
10 you're not getting that. And they go hand in
11 hand. Thank you.

12 MEMBER MAUNE: Thank you. Lawson
13 recommended that you thought this needed a
14 working group rather than just a short term
15 paper, and I wonder how many people agree with
16 that recommendation. We're down to just two
17 working groups now, are we not? Or do we have
18 more?

19 CHAIR PERKINS: That's true, we have
20 two working groups in place.

21 MEMBER MAUNE: And I wonder how many
22 people feel we should have a working group on

1 technology. Looks to me like we have pretty good
2 consensus there.

3 Ed, you may have volunteered to be
4 heading a working group with a bunch of people.

5 CHAIR PERKINS: You know, the working
6 group issue, we do have procedural by-laws here.
7 So I've read them while sitting here. It sounds
8 like we need to actually have a formal motion
9 from the Chair. So the Chair will make a motion
10 that we form a working group on technology. And
11 then we need a second.

12 MEMBER MAUNE: Seconded.

13 CHAIR PERKINS: Okay. And now we need
14 a vote. All in favor?

15 (Chorus of ayes.)

16 CHAIR PERKINS: Okay. So the Chair,
17 let the records show that we had a -- did anybody
18 dissent? Okay, good. So we have a unanimous
19 vote on that. I think we need an official
20 action.

21 MEMBER SAADE: For the new guys'
22 benefits, could you describe what the difference

1 is between a working group and the other groups?

2 RADM GLANG: I'm not sure I understand
3 your question, Ed.

4 MEMBER SAADE: I mean, from my
5 perspective, everything we've been doing is kind
6 of a working group. I don't understand why a
7 working group is unique to the position papers?

8 RADM GLANG: Oh, I see. So under the
9 planning and engagement working group which was
10 formally established, chaired by Dave Maune, he
11 had collective input from his working group.

12 So in a way, there were many ad hoc
13 participants in his working group to develop
14 these issue papers. If we want to break
15 technology away and say we think this by itself
16 deserves a focused working group which is the
17 motion that the Panel just agreed on, that's
18 fine.

19 What I would ask is that we define a
20 little bit, perhaps draft some terms of reference
21 or a purpose paragraph of what we would like to
22 get out of the working group, kind of what its

1 scope is so it can stay focused on accomplishing
2 something.

3 And that can evolve over time, but we
4 don't want sort of an open ended technology
5 working group that stands up forever and then
6 drifts into inattention and non-participation.

7 So it would be helpful to have a
8 little bit of a focus on what the working group
9 would like to do in the near term.

10 MEMBER GEE: Lindsay Gee. So is there
11 normally, do you set a timetable for the working
12 group, like, next meeting one year or something
13 like that or is that what you've done previously
14 that you found worked?

15 MEMBER MAUNE: Lawson's went on for
16 years on the Arctic.

17 MEMBER BRIGHAM: Lawson Brigham. We
18 should, if we mobilize on this we should think
19 down the road and work with the NOAA staff about
20 again, asking some questions of some areas of
21 technology that you might want to have the
22 working group address.

1 But that could be down the road once
2 we get the terms of reference. But I think this
3 connection to the questions and what the needs of
4 the staff is also important in the working group
5 dynamic.

6 MEMBER MAUNE: We have I think two
7 more topics to cover yet before 4:45 and one of
8 them was Gary Thompson's topic on tides and
9 datums and things like that.

10 CHAIR PERKINS: Before we move on
11 though, I was incorrect. We have four existing
12 working groups. We have legislative and policy,
13 we have planning and engagement, emerging Arctic
14 priorities, and coastal intelligence and
15 resilience.

16 So that's four, and that's here in the
17 book. We should maybe consider, you know, the
18 efficiency of combining legislative and policy
19 and planning and engagement into a single working
20 group.

21 MEMBER MAUNE: That's okay with me.

22 MEMBER MILLER: Legislative is pretty

1 much on the back burner right now until we need
2 to redo the charter or whatever. And so I could
3 work with Dave in the planning and engagement
4 group.

5 MEMBER MAUNE: Okay.

6 RADM GLANG: I was just asking the
7 Chair if maybe he would like to recap which
8 working groups will sustain and which ones may be
9 consolidated just sort of as a course of business
10 tomorrow because I would ask as well for the
11 technology working group then who are we asking
12 to chair it or co-chairs and who's taking the
13 action on the term of reference or a purpose
14 statement.

15 CHAIR PERKINS: Yes. If you don't
16 know who's in charge of these existing working
17 groups, Joyce had legislative and policy, Frank
18 and Dave had planning and engagement. Of course,
19 as we know Lawson had Arctic, and Carol and Larry
20 Atkinson had coastal intelligence and resilience.

21 So give that some thought of how we
22 can maybe restructure what we want to do going

1 forward.

2 RADM GLANG: Okay, great. Gary?

3 MEMBER THOMPSON: Gary Thompson. So
4 I'll go over my issue paper on the replacement of
5 the North American Datum of 1983 in the National
6 Geodetic, the North American Vertical Datum of
7 1988.

8 As you heard from Juliana's
9 presentation yesterday, 2022 NAD 83 and NAVD 88
10 will be replaced with a geometric and
11 geopotential reference frame.

12 So the first paragraph is just the
13 basic information about some technical
14 information about the new reference frames. Key
15 difference is we're going from a plate fixed
16 datum to a reference frame that includes the
17 velocities of the coordinates.

18 So I was involved in when we went from
19 NAD 27 to NAD 83 and NGVD 29 to NVA 88. And it
20 was a learning curve. And so we need to do the
21 same thing. We need to prepare our users for
22 this because this will be a little different

1 transformation than when we've gone from previous
2 datums because those were both plate fixed to
3 plate fixed.

4 So you see on the, go down to the
5 second page and there's a graphic. You can see
6 the extent of the change or the estimated change
7 in the horizontal will be approximately one to
8 two meters. And then the ellipsoid height, the
9 component of the height component as you can see
10 in the Florida area it goes from zero to almost
11 one meter on the west coast.

12 So our challenges are all the
13 information that's in the NSRS, National Spatial
14 Reference System, when NGS does the, rolls out
15 these new reference frames, all that data will be
16 provided, you know, on that new reference frame.

17 But there is going to be a lot of data
18 that's local that will not be included in that.
19 So whoever is the holder of that data is going to
20 have to make the transformation.

21 So one of the challenges is to make
22 that transformation. And one of the ways NGS can

1 help is provide transformation software or
2 packages, one being V-Datum, be modified so that
3 it can handle the transformation.

4 Have an impact on all new surveys
5 because one of the key components you'll need to
6 do this new reference frame is metadata. You
7 need to know when that data was collected so that
8 for future surveys, that transformation will be
9 done correctly because of the velocity component.

10 And a lot of times, metadata is the
11 last thing, sometimes that's left off when you
12 get a product. So we need to stress that as we
13 build up to this change in 2022.

14 Datum entitled software will need to
15 be modified, both all commercial and government
16 software will have to be modified to handle the
17 transformation parameters for 2022.

18 As I already mentioned, the metadata
19 for all macro products. And one of the big items
20 that we need to stress to especially governmental
21 agencies that are still referencing their heights
22 to NGVD 29 that they shouldn't make the jump from

1 29 to 2022. They should go to NAV 88 and then
2 2022.

3 So I know there's some federal
4 agencies that you can still find data that the
5 height's on NGVD 29. So those are the challenges
6 that I've listed.

7 Future, the federal action that we
8 need and one of these is already built into
9 Juliana's plan is that once they go official with
10 this, they will put that in the Federal Register
11 and the federal agencies will then I guess soon
12 be required to make the change in a timely
13 manner.

14 The tools, it will be I think very,
15 very critical that they're user-friendly tools
16 that everyone can use to make this transformation
17 and also help with the advent of more use of GIS
18 software that the vendors, the users of GIS
19 software or that build GIS software has that
20 transformation built into it so that can be an
21 easily done transformation as we work on this
22 2022 reference frames.

1 And the last one I think is the most
2 important one. I know in North Carolina we've
3 put together a working group of a variety of
4 professionals, local government, state agencies
5 to bring them together to plan how we're going to
6 make this transformation in 2022 so that it will
7 be a very smooth and efficient process and that
8 we don't get caught off guard.

9 We actually worked with NGS probably
10 three or four years ago because the agency I work
11 in also is responsible for all of the flood maps
12 in North Carolina. We produce and maintain the
13 flood maps in conjunction with FEMA.

14 And we were concerned that this new
15 reference frame would require a lot of effort to
16 make the transformation. So we did a pilot
17 project with NGS to see what the impact would be.
18 And there's a report out there on that.

19 So I think this ad hoc committee that
20 we would ask they put together could help bring
21 all the users of height information, horizontal
22 information together and determine how is the

1 best way to approach it, and also prepare them to
2 make the transformation.

3 One thing I don't have in my paper is
4 current activities. And NGS has a lot of current
5 activities. So I will modify that and work with
6 Juliana to get and see what information they
7 could put in there.

8 MEMBER MAUNE: Okay. And I think
9 Juliana is a member of the FEMA TMAC. And so she
10 may know what issues FEMA has traditionally had
11 in transitioning from NGVD 29 to NAVD 88 because
12 their old flood studies were done to the data
13 when you make some modifications they don't want
14 to change all the engineering behind it.

15 And so that has been our big issue for
16 years with FEMA. So I know that's going to be
17 one of the challenges there. Thank you, Gary,
18 for volunteering to do this, and I assume you
19 will continue to work on this for the next
20 meeting? Yes?

21 MR. EDWING: Rich Edwing with CO-OPS.
22 So two things. Good job, Gary. But I'm going to

1 request, suggest, say pretty please that we
2 expand this to include the Tidal Datum Epoch and
3 IGLD updates.

4 And for the first time ever, these are
5 all going to be updated coincident with each
6 other, and there are connections between them
7 all. So I think it would be important to address
8 -- you know, the land and the water here all at
9 the same time.

10 MEMBER THOMPSON: I agree. When you
11 told me that yesterday, I thought about that and
12 then I forgot to mention that. So yes, it needs
13 to be added.

14 MR. EDWING: And I would just add one
15 thing to your challenges, and it might be the
16 biggest challenge of all and that's an effective
17 communications and outreach campaign to, you
18 know, inform people this is coming, why it's
19 important, what they need to do to prepare for
20 it, et cetera to cover both sides.

21 MEMBER MAUNE: And if you could make
22 your opening sentence more hitting on why they

1 should read the rest of the paper, that's always
2 good.

3 Carol, did you have a question?

4 Carol, did you have a question?

5 MEMBER LOCKHART: Carol Lockhart.

6 Well, more of a comment. I'm wondering if GRAV-D
7 needs to be mentioned in here somewhere because
8 we're talking about the new datum and that allows
9 us to get to that new datum. And it's an ongoing
10 program, but we don't actually even mention it.

11 It doesn't need to be a big mention,
12 but I feel like the name should be in there
13 somewhere.

14 MEMBER THOMPSON: I had it in there
15 and I took it out. And probably it should be.
16 I was trying to keep it to two pages. So I think
17 on the front page and the -- kind of the quick
18 definition of that, then I could add something
19 there.

20 MEMBER MAUNE: Yes?

21 CHAIR PERKINS: I have a question on
22 this. And maybe, Juliana, this is a question

1 perhaps for you. But will NGS be the
2 authoritative source for the conversion to the
3 new datum because we have Army Corps who plays in
4 that space with their datum tools as well.

5 So is that committee helping
6 coordinate that or is there going to be the NGS
7 solution and the Army Corps solution?

8 MS. BLACKWELL: Okay. Juliana
9 Blackwell. Yes, we are the authoritative source.
10 And I'm pretty sure Army Corps will be happy to
11 say that as well. We are working with them on a
12 number of activities related to that including
13 the conversion tools that are out there now which
14 have kind of swapped back and forth between us
15 doing a new update to them and them putting a new
16 face on some of the conversion tools that were
17 done in previous years.

18 So the short answer is yes, NGS is the
19 authoritative source for the transformation, and
20 yes, we are working with Army Corps and other
21 federal agencies and non-federal agencies to
22 ensure that we're making that tool accurate and

1 easily usable. So we'll provide other updates to
2 the HSRP and other stakeholders as we continue
3 through this process of developing this tool.

4 MEMBER MAUNE: Scott, this morning you
5 had a topic you said you wanted to discuss in
6 lieu of yours that we needed ten minutes extra to
7 talk about this topic? Remember that this
8 morning?

9 CHAIR PERKINS: I have absolutely no
10 idea.

11 MEMBER MAUNE: I thought it had to do
12 with recapitalization or something.

13 CHAIR PERKINS: That was a long, long
14 time ago.

15 MEMBER MAUNE: I've been saving you
16 ten minutes.

17 MEMBER SHINGLEDECKER: I think the
18 other issue that we might have still needed to
19 discuss was the responses to Dr. Callender's
20 questions.

21 MEMBER MAUNE: Okay. I didn't see
22 that as part of the issue papers, but maybe it

1 was.

2 MEMBER GEE: This is a question for
3 Gary, or a comment really. One of the things you
4 mentioned was outreach and then the other
5 commercial software.

6 And a lot of the people's exposure to
7 this change is going to be through the commercial
8 software and that's kind of important I think. I
9 don't know how that sits about being able to --
10 you can't force them to do anything but it's kind
11 of knowing that they're getting it right with
12 those test data sets or some outreach or working
13 group to be able to do that.

14 I think similar to, I don't know
15 whether you're familiar with OGP or APSG have
16 their -- you have their, you have in the all-in
17 cache, the software actually has to be certified
18 that it meets the requirement of the various
19 things and that may be worthwhile addressing as a
20 way to see how the software all gets updated.

21 MEMBER THOMPSON: Just to answer that,
22 I have one more year on the National Geospatial

1 Advisory Committee, and there's software vendors
2 on that and so this has been a working topic in
3 that. So hopefully through that committee we've
4 provided the information to make them aware of
5 it; that this is coming.

6 MEMBER GEE: Geospatial software now
7 is kind of becoming omnipresent with geospatially
8 enabled. And it's just beyond that professional
9 kind of software that's everywhere now I think
10 that we need to be aware of.

11 MEMBER MAUNE: Okay. I would like to
12 now recap what I think we agreed to today. On
13 the first issue paper with Joyce, we are going to
14 meet tonight, a number of us who raised our hand
15 to volunteer.

16 MEMBER MILLER: Can I get a show of
17 hands again --

18 MEMBER MAUNE: 7:00 or 7:30 or
19 something.

20 MEMBER MILLER: -- so I know who's on
21 it? Dave, Lindsay or --

22 MEMBER MAUNE: Kim?

1 MR. ARMSTRONG: Dave, I --

2 MEMBER MAUNE: Yes?

3 MR. ARMSTRONG: I took the liberty of
4 drafting for the Panel's consideration a separate
5 urgent letter for the Administrator. Hopefully
6 we'll have that to look at before too long.

7 MEMBER MAUNE: All right.

8 MEMBER MILLER: And I also -- I took a
9 lot of the suggestions that were made in this
10 session.

11 MEMBER MAUNE: Okay.

12 MEMBER MILLER: And I have sent Lynne
13 a paper and I thought I would make copies for the
14 working group tonight and maybe that could
15 facilitate -- could speed us up somewhat.

16 MEMBER MAUNE: Did you still want to
17 meet this evening, or do you think it's not
18 necessary?

19 MEMBER MILLER: Well, I do have a
20 comment. We have from 8:15 to 10:45 tomorrow to
21 have ongoing discussions, and so we could just --
22 if people want to -- if the people that

1 volunteered want to take a look at what I've done
2 and what Andy's done, we could potentially
3 discuss it. Andy, do you think we need to meet
4 tonight?

5 MR. ARMSTRONG: If we have an
6 opportunity to meet tomorrow, I would rather do
7 that.

8 MEMBER MILLER: I'm sure your wife
9 would rather you do that too. So we could also
10 discuss the -- what Susan was talking about, the
11 -- Dr. Callender's six questions at that time
12 too.

13 MEMBER MAUNE: Okay.

14 PARTICIPANT: They're up on the
15 screen.

16 MEMBER MAUNE: Okay. I'm going to
17 wrap up here. So we don't need to meet tonight
18 on yours. Lawson Brigham, I think you had a few
19 things you were going to clean up on yours and
20 you were going to have that done by tomorrow?

21 MEMBER BRIGHAM: I don't know by
22 tomorrow, but --

1 MEMBER MAUNE: Not by tomorrow. Larry
2 Atkinson said he was going to finish his by
3 tonight?

4 (Off microphone comment.)

5 MEMBER MAUNE: Okay. And Ed Kelly is
6 going to work on his and it's going to take
7 several weeks I think you said?

8 MEMBER KELLY: No more than three
9 weeks --

10 (Simultaneous speaking.)

11 MEMBER MAUNE: Okay. And all the
12 other ones are longer distance ones that you'll
13 have more time unless you think you can have
14 yours ready.

15 MEMBER THOMPSON: This is Gary
16 Thompson. I'll have it by Monday, next week.

17 MEMBER MAUNE: Okay. All right, then
18 we can switch to the other topic, if it's okay
19 with you, Scott.

20 CHAIR PERKINS: Yes, sir.

21 MEMBER MAUNE: Thank you.

22 MEMBER MILLER: So this is a

1 compilation of things. There were two working
2 groups in -- was it LA Long Beach or was it -- I
3 can't remember. It was LA?

4 On coastal resilience and coastal
5 intelligence. And there had been working groups
6 in previous sessions. And there was a fair
7 amount of confusion about what -- just exactly
8 what coastal intelligence and coastal resilience
9 really was and so in some of the working groups,
10 we partially answered some of these questions and
11 then Lawson's lengthy Arctic report really took
12 care of any Arctic-specific questions.

13 So what I've tried to do here is just
14 summarize what came out of those reports. And
15 then I've had several discussions about coastal
16 intelligence and coastal resilience with various
17 panel members. And I had some opinions about it.
18 And so I put some of those -- and I have entitled
19 all of those, this is Joyce's comment but it
20 really was from discussions with other panel
21 members because there was such confusion about
22 coastal resilience in particular.

1 So how does coastal intelligence make
2 coastal resilience better? And one of the things
3 that, I mean, kind of obvious is the first point,
4 the basic information that NOAA Navigation
5 Services collects is fundamental to coastal
6 resilience. That's kind of a no-brainer.

7 The second two, I'll just -- I'll
8 summarize. I think that -- and we discussed this
9 somewhat in past sessions -- I think that
10 navigation services by itself is an important
11 element of what NOS does. And my opinion is that
12 it should be marketed as such because it's core,
13 it's key to the Department of Commerce in terms
14 of safety of navigation and transportation and so
15 forth.

16 And then the third point was that --
17 and Bill brought this up at a breakfast, is that
18 as we saw once Dr. Sullivan came in, something
19 called ecosystem-based management which had been
20 a huge hot topic for a number of years, those
21 words, I never see them anymore. And I wonder if
22 coastal resilience and intelligence might go the

1 same way.

2 I mean, we would still need the basic
3 data and we still need to make the coasts more
4 resilient, but those concepts per se may go away.
5 And feel totally free to disagree with me or
6 whatever.

7 But I thought important that the
8 Panel, if we agree with that or if we want to
9 make some other statement, should get back to Dr.
10 Callender with an honest opinion on-- you know, I
11 just think navigation services by itself is a key
12 part of what NOS does and it's mandated by
13 multiple federal statutes.

14 So discussion, please feel free to
15 disagree. Larry, you were chair, co-chair of
16 that.

17 MEMBER ATKINSON: Co-chair.

18 MEMBER MILLER: Yes.

19 MEMBER ATKINSON: And you who are new
20 on the committee or Panel, take caution.

21 (Laughter.)

22 MEMBER MILLER: That was good.

1 MEMBER ATKINSON: I had no idea what I
2 was getting into. I think it speaks for itself
3 that we don't quite understand what this is and
4 what we should do. So I agree with what you've
5 said.

6 And trying to shoehorn things into
7 these categories, I don't know if that's our job.
8 You know, we're speaking well for a lot of the
9 requirements of the community and what NOAA can
10 do.

11 And I don't know when we waded into
12 this it just -- I mean, either we're really
13 stupid or it's a difficult topic to get your arms
14 around and we just couldn't do it. So maybe
15 there's somebody here that does and they would
16 like to -- deadly silence.

17 MEMBER LOCKHART: I guess I'll add to
18 that. I think, you know, a lot of those
19 questions that were direct to the coastal
20 intelligence and coastal resilience, I kind of
21 think the same thing, Joyce. I think they're
22 just buzzwords that we're using just now for

1 stuff that we're already talking about.

2 And I understand that, you know, those
3 words are brought to us so that we know the right
4 words to use when we're trying to ask for funding
5 and things, but I don't know that it should be a
6 driver for what we're discussing. I think we're
7 making really good progress with these issue
8 papers and things.

9 And I think our time is better spent
10 that way because I think we are addressing those
11 questions, just not necessarily specifically
12 going through them one through six but we're
13 addressing them by doing those issue papers. And
14 I think our time is more effectively used that
15 way.

16 MEMBER ATKINSON: Yes, some of you
17 haven't heard me say, but the Sewells Point tide
18 gauge which costs, I don't know, \$20,000 a year
19 -- no, \$5,000 a year to run?

20 Whatever. Not much money. You know,
21 there's billion dollar decisions being based on
22 that simple tide gauge. That's coastal

1 intelligence supporting coastal resilience.

2 MEMBER BRIGHAM: Lawson Brigham. Yes,
3 no, I don't think the words are going away.

4 Actually I think, I go to different workshops
5 mostly related to Arctic and coastal resilience
6 and intelligence come up all the time.

7 The ecosystems-based management is a
8 sound and emerging principle. It's not something
9 we have to deal with in HSRP. They actually have
10 a task force in the Arctic Council dealing with
11 ecosystem-based management.

12 However, navigation services or tracks
13 and traffic and all of that are integrated in
14 ecosystem-based management, but it's not
15 something that we have to deal with directly here
16 at HSRP, but it is moving forward. It's not
17 disappearing as a concept.

18 MEMBER MILLER: So should we modify
19 those last two comments? Should we just say we
20 don't understand them well, our time would be
21 better spent working on things we do understand?

22 MEMBER LOCKHART: I don't know that

1 it's that we don't understand them, we're just
2 talking about them in a different way.

3 I mean, we refer to foundational data
4 instead of coastal intelligence. We're talking
5 about resilience all the time, we're just not
6 calling it that. And so I think, you know, we
7 can keep our discussions going in the same
8 manner. We just have to be aware that when we
9 write the letter or write our issue papers if
10 these are the words that we need to use, at the
11 end of the day then we can use that. But it
12 doesn't have to drive our discussions
13 necessarily, if that makes sense.

14 MEMBER MILLER: Would you guys want to
15 take a cut at modifying those statements or just
16 getting rid of them?

17 (Off microphone comment.)

18 MEMBER MILLER: Larry and Carol, they
19 were head of the coastal resilience, coastal --

20 MEMBER LOCKHART: I actually think we
21 should just abandon that workgroup to be honest.
22 That's my opinion.

1 PARTICIPANT: I second that.

2 MEMBER MILLER: Okay. Let's go to the
3 second question. Lynne, can you page down or can
4 somebody page down to number two?

5 How do we leverage the NOS
6 foundational data moving forward? Okay, these
7 were -- like Susan was saying on the Army Corps
8 data, I think ease of accessibility will make it
9 much more -- or will help to leverage it.

10 I recently was asked for a survey that
11 I had done, but it had gone under hydrographic
12 surveys instead of multi-beam data and nobody
13 could find it at NCEI. And there's just too many
14 repositories and too little understanding of
15 where anything is. So that was a comment.

16 And then the second one was from the
17 coastal intelligence working group. This was
18 based upon something Juliana was saying about how
19 they determined where to do GRAV-D. And these
20 were just a bunch of questions they ask about
21 getting the data or planning for data
22 acquisition. Is there a C there? No, okay.

1 Go to number three. I think that's
2 the Arctic one. Can you page down to three? Oh,
3 this was national charting priorities. I quoted
4 the NOS website and then adding the need for data
5 for environmental surveys and inclusion of areas
6 that are of interest for recreational boaters and
7 fishermen. Susan's smiling. Discussion? Yes.

8 MEMBER GEE: Just go back to two for a
9 second.

10 MEMBER MILLER: Sure.

11 MEMBER GEE: Everybody talks about
12 data and sort of having it available when it's
13 hard to even find. But if you're talking about
14 moving forward and leveraging the data, it's
15 almost now coming to people want products from
16 it.

17 And so we talk about technology and
18 cloud services. I don't want to just go to an
19 area and say well I want to get the bathymetry
20 and I want to get from -- I want to go up and get
21 on a DTM within my area and then maybe I want a
22 slope map, maybe I want -- you know, so this is

1 products that I think leverage the foundational
2 data.

3 But it's kind of not just the data,
4 you know, since we're talking about information
5 and data. But I think that's the change we see
6 is if you really want to leverage it for those
7 other uses, it's not -- it's having it available
8 and easily providing products. So you don't drag
9 down the data and do it on your desktop. You
10 potentially --

11 MEMBER MILLER: So you're suggesting
12 we add something that says --

13 MEMBER GEE: It's a more of -- it's
14 related to technology of having cloud sort of
15 services that allow you to produce more useful
16 products from the data.

17 MEMBER MILLER: So cloud-based
18 services that provide more useful products?

19 MEMBER GEE: And information, yes.

20 MEMBER MILLER: Okay, thanks, Lindsay.
21 Okay. Anything else on bathymetry?

22 CHAIR PERKINS: Can I interrupt for a

1 second? Would it be possible just to ask if we
2 have any public comments?

3 MEMBER MILLER: Sure.

4 CHAIR PERKINS: Just out of courtesy
5 to the public that may have a --

6 MEMBER MILLER: We could also finish
7 this tomorrow morning if we want.

8 CHAIR PERKINS: It's just thought we
9 should do that out of courtesy in case somebody
10 has a 5:00 deadline that's here from the public.

11 (Off microphone comment.)

12 CHAIR PERKINS: So we would like to
13 open the public comment period.

14 PARTICIPANT: Public comment at this
15 time?

16 (No response.)

17 PARTICIPANT: Hearing none ---

18 CHAIR PERKINS: Okay, great. Thank
19 you. Just didn't want to be discourteous. So
20 please continue.

21 MEMBER MILLER: DO we want to finish
22 this? Okay. Go to three, please.

1 And also, Gerd talked a couple
2 meetings ago about OCS being penalized for doing
3 surveys that were not on their top absolute
4 bullet list. Even if a survey was in a very
5 remote area, and so I thought that was worth
6 mentioning that, you know, that surveys should be
7 piggy-backed if at all possible, especially in
8 very remote areas.

9 Okay, four all came out of Lawson's
10 document. So do you think we need any discussion
11 on that?

12 MEMBER BRIGHAM: No, just for the new
13 -- Lawson Brigham. Just for the new members, the
14 major question was how do I prioritize the Arctic
15 compared to Port of Charleston and this place and
16 all the other major ports that are related to
17 commerce and whatever.

18 And you can't prioritize. It's a
19 frontier area, it's different. It needs line
20 item budget and all the rest of it. It is
21 different. And because of politics, the regional
22 politics, never going to get funding for the

1 Arctic over Charleston. I just picked Charleston.

2 And so that was one of the issues. I
3 think we just took the words, Joyce, out of the
4 working group report and merged it in. So I
5 think we're okay.

6 MEMBER MILLER: Okay, go to five,
7 please. What are ways that Navigation -- all the
8 programs are good at engaging stakeholders, how
9 can NOAA better connect?

10 I've really noticed that Navigation
11 Services, the blogs that I get and the links and
12 so forth have really expanded information over
13 the last few years. And we've heard a lot of
14 different stakeholders say that the CO-OP sites
15 are very good. I would encourage any time it's
16 possible, we've heard time and time again at
17 almost every meeting that, you know, the
18 Navigation Response Teams walk on water and that
19 they're -- you know, they're a blessing. And so
20 I think anything that can be done to show them
21 off is a good idea.

22 Go down one more. I don't know if

1 there's another one there. Continued expansion
2 of blogs and websites. It's kind of a no-
3 brainer. Back up one, or back up just a little.

4 Yes. This is my own observation. If
5 I ask a taxi driver in an average city what NOAA
6 is, none of them know. And you say weather
7 service and they say, oh yes, they do the
8 weather. But I think it would be -- you know, to
9 better engage is that -- I don't know how but
10 NOAA should put out some sort of a uniform
11 message that -- because nobody really, you know,
12 NOS, CO-OPS, NGS, we understand that but I don't
13 think the public does at all, you know?

14 As far as they're concerned, NOAA is
15 the weather. Susan?

16 MEMBER SHINGLEDECKER: Yes. I would
17 say with this one, I mean, the people who know
18 NOAA know NOAA, and then there's everybody else.
19 I mean, we've said many times you can walk into
20 any sailing bar in the country and saddle up to
21 the bar and ask the guys who prints their charts
22 or where do they get their charts from and

1 they're going to say WestMarine.

2 So I think -- they do. I tried really
3 hard. I think the question is who's the
4 audience, who's the customer? I've said a couple
5 times NOAA did a great job at the Indianapolis
6 Boat Show a couple years ago holding a seminar
7 for app providers and web companies that take
8 their data and repackage it for the boater.

9 And, you know, they did a great job
10 with that. But reaching -- it takes a lot of
11 effort to reach every single individual person.
12 And so I wonder, you know, how much is it their
13 responsibility to reach every single taxpayer
14 with this is what your money paid for versus the
15 intermediaries that those people are already
16 talking to that can use that data in a more -- in
17 a way that's packaged better for them.

18 So I don't know, I think there's a ton
19 more that could be done, but I think on limited
20 resources what's the strategic best use of the
21 money and time?

22 MEMBER MILLER: And the final one, we

1 pretty much answered this in the coastal
2 intelligence. Gerd and Rick were there. And we
3 passed on -- Ed was the one that came up with
4 they should look at the PAWSA model.

5 And then he also mentioned the Army
6 Corps -- Lynne, go down a bit more. The Army
7 Corps cost-benefit analysis. C is, again, some
8 of the things that Juliana mentioned.

9 Go on down, how to market the product
10 and this was a discussion that we had that the
11 marketing model for precision navigation, that
12 means that it's a cost shared. NOAA pays for it
13 initially and it's cost shared, as we've
14 discussed many times, has not been working very
15 well because that's the PORTS model. And it
16 might be a good idea to develop a different
17 marketing model for the precision navigation.

18 And then finally this was an Ed
19 question. If a commercial entity decides to
20 finance PORTS and gets the information, can they
21 sell it and should it be made available to the
22 public? And that was just kind of an open

1 question, no answers.

2 MR. EDWING: So we operate under the
3 OMB guidance that says if taxpayer dollars are
4 used to acquire data it's to be made freely
5 available, you know, to the public.

6 MEMBER MILLER: Yes.

7 MR. EDWING: So we would not be able
8 to engage in that kind of partnership.

9 MEMBER MILLER: No, okay. No, that's
10 a succinct answer. So suggestions on how to go
11 forward? Should we make a few changes and give
12 this to -- and just submit it? Does it need to
13 be in a better report format?

14 CHAIR PERKINS: I don't think that --
15 I think the format is fine. So let it be
16 written, so let it be done. You know, submit it
17 and --

18 MEMBER MILLER: Larry and Carol, do
19 you want to make -- do you want to suggest any
20 changes?

21 MEMBER ATKINSON: Well, we'll clean up
22 that first one.

1 MEMBER MILLER: Okay, you'll clean up.
2 Thank you.

3 MEMBER HALL: I have one quick
4 question, and it could be a dumb question. I
5 know there aren't any such thing, but there
6 really are.

7 As I look at question six -- sorry,
8 this is Kim Hall -- and I look at the other
9 factors that are not in the model, and I was
10 looking very quickly over the model, is there any
11 piece here where it's the demand signal or is
12 that what you mean by who is ready and willing to
13 partner?

14 And what I mean by that is kind of the
15 stakeholder input. I know I hear from Sal and
16 his colleagues in the cruise industry quite often
17 of where they need precise navigation and I know
18 we're a small sector, but we come in and out
19 quite a bit.

20 I just wanted to make sure that that's
21 included here where there is an actual demand
22 signal. I'm sure everybody wants PORTS, but

1 there's different levels of demand and I just
2 wasn't sure that was covered under number six.

3 MEMBER MILLER: Did you guys get that?
4 So you want to go ahead and restate?

5 MEMBER HALL: Yes. Sorry. As I
6 looked at the need to consider the next 20 PORTS
7 for precise navigation, obviously there is a
8 whole private sector out there or people who
9 operate private who have a demand signal.

10 So like I said, for me, for cruise
11 industry, I've heard from Sal and his colleagues
12 and his brethren at other lines of where they
13 would like to see it. I just wasn't sure if that
14 was included, I didn't see it in the model and I
15 didn't necessarily understand if it was covered
16 under the other factors that aren't in the model.

17 So where you have stakeholders who are
18 signaling a demand for the next precise
19 navigation because those differing levels of
20 demand can also have an impact.

21 (Off microphone comment.)

22 MEMBER MCINTYRE: Anne McIntyre. I

1 think what you're trying to say is are you
2 hearing from stakeholders that they need and want
3 the product in their port regardless of how they
4 might fall out on the matrix that you see here.

5 MEMBER HALL: Right. And I just
6 didn't see it as covered under the answers that
7 were provided here, or the questions to answer
8 the question.

9 MEMBER LOCKHART: I guess Larry's just
10 pointing out that that was never under our
11 purview. So that's why we weren't paying
12 attention. Sorry.

13 MEMBER MILLER: So we maybe just add
14 something about --

15 MEMBER HALL: The stakeholder demand,
16 as simple as that because I think that if you
17 have something and you see it fits most of these
18 but nobody wants it -- which I know that's not
19 going to be the case but there might be somebody
20 who wants it more somewhere else and they're two
21 very even, that's one more criteria for which you
22 can determine and do the assessment.

1 MEMBER MILLER: Okay. So just a bullet
2 under that that says stakeholder demand. Under --

3 MEMBER HALL: The other factors.

4 PARTICIPANT: Item C.

5 MEMBER HALL: Item C.

6 (Off microphone comment.)

7 MEMBER HALL: I don't know who owns
8 it, so I'm just putting it out there and maybe
9 Lynne can help us put that in there.

10 MEMBER MILLER: Actually, go back up,
11 Lynne and I'll tell them where to put it. So
12 that's under 6C. And we'll add just a bullet.
13 We'll put in stakeholder demands.

14 (Off microphone comment.)

15 MEMBER MILLER: Demands, needs?

16 (Off microphone comment.)

17 PARTICIPANT: Stakeholder demand
18 signals.

19 MEMBER MILLER: Signal.

20 MEMBER BRIGHAM: Yes, Lawson Brigham.
21 There's a --

22 MEMBER MILLER: One second, Lawson.

1 You got it, Lynne?

2 MEMBER BRIGHAM: Yes, Lawson Brigham.

3 Could you scroll back up, Lynne? There's a point
4 about marketing the entire organization called
5 NOAA. And they have -- because they're a multi-
6 mission organization, I mean, I don't think we
7 should comment on other than nav services
8 marketing.

9 I think strategies for the overall
10 NOAA where they've got to market to the fisheries
11 segment, the environmentalists, the coastal
12 people, Nav Services, the weather, I don't know.
13 To me that's too holistic, it's outside our range
14 of points.

15 MEMBER MILLER: It's a good comment.
16 We can take it in.

17 MEMBER BRIGHAM: But marketing Nav
18 Services and the relation, with our issue papers,
19 that's what we're trying to do, highlight the
20 points. I don't know, it just seemed a little
21 out of place to me.

22 MEMBER MILLER: So we're just removing

1 up there, remove --

2 MEMBER BRIGHAM: The taxi driver thing.

3 MEMBER MILLER: Yes.

4 MEMBER HALL: Sorry, Lawson. Is there
5 still a point where it should be at least NOS or
6 navigation services? So leave that in there but
7 take it down to more advertising whatever
8 engagement on and showing people that NOS exists
9 and why it exists.

10 So Lynne, can you put it back in just
11 to see what it said and then we can maybe make it
12 a little bit more related?

13 (Off microphone comment.)

14 MEMBER MILLER: Why don't you go work
15 with Lynne, yes.

16 CHAIR PERKINS: Okay, very good.
17 We're at 5:05. I don't want to have us go into
18 overtime compensation for the court reporter.

19 So with that, those of you that are
20 interested, there is a very nice roof top bar at
21 this facility. It might be a nice place to go
22 and decompress, you know, after a very hard day's

1 work and good effort by all.

2 We did receive an invitation from
3 Niels Aalund, for those of you who don't have
4 dinner plans, there is an all you can eat shrimp
5 and catfish dinner at the Knights of Columbus
6 Hall at 1912 Winnie. You know, right down the
7 street here. So that may be a dining
8 opportunity. Lawson?

9 MEMBER BRIGHAM: Just for tomorrow
10 after your overview and summary of today, we'll
11 start with Larry I guess and then go to myself
12 and Captain Rassello and Captain McIntyre, is
13 that right? Just to make sure that, you know,
14 we've covered the Arctic priorities already
15 before coffee this morning. So we would go to
16 Larry and then my team and Captain Rassello and
17 Captain McIntyre, right?

18 CHAIR PERKINS: That's correct. Okay,
19 with that being said, it is 5:06 p.m. and let us
20 officially adjourn for day two.

21 (Whereupon, the meeting in the above-
22 entitled matter was concluded at 5:07 p.m.)

A	
A's 338:20	accomplishing 272:10 346:1
A-to-Ns 148:15	accomplishments 5:16
A&M 3:8,21 91:8 116:12 116:13 141:20 154:2 190:17	account 59:4 315:10
a.m 1:12 5:2 89:3,4	accreting 113:8
AA 242:10	accuracy 18:16 19:6 21:6 182:1
Aalund 387:3	accurate 99:14 182:13 214:15 325:20 357:22
abandon 253:6 370:21	accurately 122:19
abbreviate 69:22	achieve 301:13
ability 14:17 26:12,19 30:14 70:21 103:4 238:18 334:16	acknowledging 8:4
able 22:22 28:2 45:6 65:19 66:13 69:11 70:14 74:5 78:8 102:19,21 122:18 153:10 172:4 201:17 239:15 258:4 259:20 290:14 297:16 299:20 307:22 329:6 340:22 359:9,13 380:7	acknowledgment 76:16
aboard 226:11	acoustic 9:12 23:12,18 163:7
above- 387:21	acoustics 187:17
above-entitled 89:2 215:12 285:5	acquire 380:4
absolute 375:3	acquires 330:6
absolutely 45:16 62:2 78:1 84:5 285:1 309:16 358:9	acquisition 84:10 332:14 371:22
abstains 244:20	acres 95:10 149:21 150:2
academia 293:10 299:6 314:1	acronym 234:2 339:13
academic 18:21 116:12 117:22 212:19 213:2 238:4 340:21	acronyms 338:17,18
academics 35:7	ACSM 191:3
accelerate 331:13	act 104:17,22 105:8 109:9,10 127:12,20 259:6
accelerated 122:1 169:9 187:6	acted 260:14
accelerating 169:1	Acting 2:19
acceleration 166:20	action 51:9 76:13 243:15 270:17 344:20 348:13 352:7
accept 48:18	actionable 87:4 237:20
acceptable 299:22	actions 54:6 230:13 231:2 236:4,5 251:4 251:14 288:13 321:21 326:22 337:3
accepted 69:6 204:11 204:18	active 83:16 129:2 142:8
accepting 102:17 204:20	ActiveCaptain 341:17
access 99:11 299:6 322:11 323:6	actively 40:7
accessability 371:8	activities 5:7,14 51:8 80:19 117:7 139:15 139:16,17 178:16 265:20 280:6 321:21 326:22 333:2 336:21 354:4,5 357:12
accessibility 310:11	activity 85:8,12 101:7,8 265:20 278:12 286:5 297:12,14 306:2 335:18
accessible 325:20	actual 106:14 148:20 259:3 381:21
accommodating 215:19	ad 345:12 353:19
accompanies 254:15	adage 113:20
accomplished 241:8	adapt 254:1 331:20
	adaptation 195:22
	adaptations 196:2
	add 11:1 15:6 19:14 42:12 51:11 166:3 171:3 193:16 227:7 279:3 282:7 284:11 287:11 289:1 290:22 291:13,16 299:2 315:6,7 342:20,22 355:14 356:18 367:17 373:12 383:13 384:12
	added 266:21 267:4 282:8 283:1,1,2 325:19 355:13
	adding 372:4
	addition 15:1 122:12 193:17 332:1
	additional 59:10 85:16 85:16 88:7 98:19 111:19 118:5 127:18 140:6 246:20 299:1 304:1
	additionally 124:17 128:4
	address 50:11 115:20 124:17 243:2 252:5 295:17 303:7 308:4 329:6 332:10 338:12 340:8 342:7 346:22 355:7
	addressed 34:22 63:5 318:5
	addresses 292:18
	addressing 53:10 65:2 359:19 368:10,13
	adequate 124:18,18 268:3,7 294:1 297:10 297:21 311:18
	adjourn 4:19 387:20
	adjunct 177:1 207:14
	adjust 11:14 271:6
	administer 109:11
	administered 313:7
	administering 109:16
	administration 1:3 44:14,16 47:9 50:14 64:18 290:6 336:5
	administrative 109:5
	administrator 6:8 33:11 46:6,22 50:1,4,13 51:10 54:2,14,15,20 57:20 58:3 59:22 60:11 66:19 70:12,13 70:15 71:3,10,16 76:5 76:7,11,13 79:9,15 84:2 221:15 222:3 229:14,15 231:7 243:10 244:1 253:21 255:17 259:21 266:10
	270:21 300:13 305:22 307:2 317:20 361:5
	Administrator's 54:21
	Admiral 2:6 4:3 7:18,18 7:21 20:20 24:22 37:7 40:18,18 43:7 44:9 47:5 48:6,6 49:5 55:19 58:14 59:16 75:6 86:19 91:14 202:15 217:5,19 234:1 264:6 265:2
	Admiral's 224:8,11
	admission 6:6
	admit 322:16
	ado 91:11
	adopt 341:3
	advance 146:11
	advanced 302:5
	advances 336:12
	advent 352:17
	advertising 386:7
	advice 44:11,19 49:22 54:19 242:8,10 328:13
	advising 33:10 59:22
	advisory 33:10 125:6 360:1
	advocate 31:5
	advocated 309:12
	aerial 148:16 209:6,15 332:17
	Affairs 2:14
	affect 9:14,19 113:4,13 115:17,21 167:16
	afraid 225:21
	after- 196:10
	afternoon 37:15,16,22 52:3,4 57:10 68:19 69:2
	age 231:19 238:14 322:18 324:15
	agencies 11:13 29:7,16 30:16 32:4,8,16 34:12 36:1 37:10,13 70:17 139:18 140:11,17 144:21 194:20 238:3 282:13 286:4 288:8 289:16,21 335:4,5,6 351:21 352:4,11 353:4 357:21,21
	agency 30:13 31:7 108:15 109:4,5,15 177:22 210:3 279:5 353:10
	agenda 8:9,19 39:9 56:22
	aging 222:13 227:3 237:22 238:7

- ago** 24:11 25:7 37:11
38:6 117:10 125:1
139:2,10 140:20
146:19,21 147:5,14
150:1 197:20 198:3
202:1 217:8 240:15
245:21 324:6 353:10
358:14 375:2 378:6
- agree** 45:21 60:17,22
69:12 214:19 230:10
237:9 239:15 241:15
243:19 245:19 248:8
254:7 256:12 257:17
274:22 277:19 278:20
307:14,17 309:14
318:15 340:5 343:15
355:10 366:8 367:4
- agreeable** 74:19
- agreed** 44:4 247:18
249:13 257:8 345:17
360:12
- agreeing** 256:10
- agreement** 125:15
306:21
- agrees** 332:22
- ahead** 48:19 74:10
82:22 83:17 88:19,20
89:10 149:2 209:20
278:2 282:2 382:4
- Aids** 148:16
- aiming** 230:2
- air** 5:19 245:2 286:19
287:1,2 320:2
- aircraft** 5:19 286:20,22
291:12
- airplanes** 13:10
- ALAN** 2:8
- Alaska** 7:6 179:9
283:19 284:6
- Alaskan** 224:2 237:16
- alerts** 202:11
- Aleutian** 263:8
- algebra** 187:16
- all-in** 359:16
- Allocate** 237:10
- allocated** 53:13
- allocation** 139:10
313:16
- allow** 195:12 201:14
215:16,19 295:14
337:9 373:15
- allowed** 252:12
- allows** 98:20 153:18
168:1,21 204:2 356:8
- alluded** 109:8,19
124:14
- alternate** 62:9 168:18
168:20
- alternative** 126:2
270:14 316:16 318:8
- alternatives** 126:4
- altimetry** 160:16 289:10
- amazing** 88:19 180:6
180:19 181:2 287:22
288:2 337:13
- ambitious** 203:15
- ambivalent** 271:18
- America's** 222:12,12
- American** 83:4 304:18
305:11 349:5,6
- Americans** 222:12
- amount** 28:22 57:2
77:12 80:12 85:11
87:13 220:2 269:5
298:20 315:9 364:7
- analog** 117:18
- analysis** 6:1 13:4 18:22
295:8 379:7
- analytical** 87:7
- analyzed** 297:22
- anchor** 297:5
- Anchorage** 87:22
- anchorages** 278:5
- and/or** 140:15 222:14
222:22 223:8
- Android** 155:4
- Andy** 2:2 75:12,17
224:3,4 241:22
255:18 257:13,22
258:17 261:13 272:7
274:21 362:3
- Andy's** 224:13 241:18
362:2
- anecdotally** 72:21
- Anne** 1:19 53:1 62:14
62:15 63:17 65:13
75:13 292:7 293:18
299:10 309:5 312:10
382:22
- annual** 149:1 198:21
199:11 224:1 270:19
271:1,19 272:5,12
274:13,18 275:16
- answer** 8:17 10:22 32:1
39:6 61:10 75:6 76:1
76:7 85:7 150:1
193:14 196:8 211:9
315:4 357:18 359:21
380:10 383:7
- answered** 76:22 77:6
81:1 301:8 364:10
379:1
- answering** 77:14
- answers** 85:18 192:14
380:1 383:6
- ante** 272:11
- anticipate** 119:22
- anybody** 52:18 53:11
54:22 60:17 187:20
240:16 266:11 291:6
300:2 308:19 314:15
316:13 327:15 337:16
344:17
- anymore** 154:7 211:3
365:21
- anyway** 9:13 13:11
27:16 55:22 67:19
91:22 107:3 335:5
- anyways** 98:8,14
- Apalachicola** 136:3
- apologize** 245:20 265:8
- app** 155:3,16 378:7
- appear** 29:12
- append** 46:4 47:12
- appended** 76:4
- appendix** 46:1
- Applause** 176:17
211:12
- applications** 100:22
333:6,12 336:8,9
- applied** 21:21 178:10
188:20 208:8
- applies** 13:20 113:22
- apply** 11:17 31:2
106:12 201:18 290:10
- appreciate** 87:8 88:6,16
107:22 108:2,4
128:11 181:9 208:15
216:13
- appreciated** 279:11
- appreciation** 211:11
- approach** 50:3 127:16
238:6 268:4,9 279:21
280:2 285:20 354:1
- approached** 35:6
- approaches** 123:19
270:15
- appropriate** 8:1 60:12
90:1,11 327:11
- appropriated** 237:11
245:10 249:14 256:13
- appropriately** 266:22
- appropriation** 45:7
- appropriations** 137:1
219:8,9
- approval** 25:10 203:16
203:22
- approximately** 114:6
218:15 227:10,12
350:7
- apps** 341:9
- April** 303:12
- APSG** 359:15
- aquatic** 150:9
- archive** 18:5,12 330:7
- archived** 17:22 18:13
- archiving** 18:5
- Arctic** 46:2 55:12,13,20
57:7 64:4 74:14,17
75:1,3 79:2,6,12 80:1
82:3,20 83:2,4,5,6,10
83:13,15,18,21 85:1
86:12 87:14,21 88:5
217:21 224:2 262:6
263:1,5,7 264:8,18
269:1,8,13 270:3
271:9,10,11 275:5,6
276:21 278:10 283:20
284:16 318:20 324:21
330:21 346:16 347:13
348:19 364:11 369:5
369:10 372:2 375:14
376:1 387:14
- Arctic-focused** 336:9
- Arctic-specific** 364:12
- area** 23:9 63:13 90:12
95:3 100:12 104:4
110:21 126:17 146:9
151:2,3,6 169:17,19
175:5 263:9 267:7
272:22 286:8,11
298:3,12 322:9
326:11 341:4 342:6
342:10 350:10 372:19
372:21 375:5,19
- area's** 290:2
- areas** 24:19 30:7 31:20
60:2 62:10,12 63:7
91:1 120:11 123:9,13
124:9,9 125:11
126:16 138:17 139:19
151:4 152:12,20
176:14 178:13 185:10
214:3 269:14 270:4
294:2,10 307:16
310:4 324:16,22,22
325:3 326:8,9 330:10
335:13 341:11,14
342:13 343:1 346:20
372:5 375:8
- arena** 339:4
- argue** 332:20
- argument** 250:22 256:4
256:20,20 257:12
- armed** 321:6
- armoring** 101:9
- arms** 329:8 367:13
- Armstrong** 2:2 22:1,4
75:12 85:21 224:4,4
229:22 249:3 250:6
255:20 258:17,17
274:21,21 275:8

276:17 361:1,3 362:5
Army 3:13 5:12 20:1
 28:22 29:21 34:10
 37:17 60:4,8 107:9
 125:15 129:1,4
 141:16 310:12 323:9
 323:15,22 357:3,7,10
 357:20 371:7 379:5,6
arrival 73:11 74:3
arrow 148:17
art 177:3
Arthur 126:19 133:7
 134:1 145:12 152:13
 153:6
article 243:13
articles 155:22
articulate 85:18
artist 181:2
Ashley 10:17 32:19
 37:7 38:13,16 75:16
 75:17
asked 9:4 22:16 27:14
 37:2 79:2 87:16
 106:19 162:17 244:11
 274:1 277:8 309:20
 310:20 313:4 371:10
asking 124:11 244:7
 248:3,20,22 252:3
 288:17,18 301:4
 346:20 348:6,11
asks 27:5 233:1 246:17
 246:20
Aslaksen 2:7 10:22
 11:6 12:17 19:13 21:9
 21:14
aspect 127:9 291:11
aspects 113:6
assess 127:16
assessing 13:19
assessment 14:6
 107:18 303:21 383:22
assessments 86:8
Asset 43:9
assets 24:4,12 30:2
 133:2 206:19 227:2
 287:5
assigned 16:5 21:11
 22:8 52:6
assignment 49:15
assignments 146:12
assimilate 298:9
assist 98:9 99:8 102:3,7
associate 3:19 153:22
 154:4
associated 139:16,17
 280:11
Association 144:19
 295:3 310:17,18

associations 103:8
assume 54:20 58:6
 168:18 335:2 354:18
assumed 205:2
assuming 323:20 324:4
assumption 165:4
 265:17
astronomical 172:18
 173:2,3,8,11 174:11
 179:4
Atkinson 1:16 47:10,10
 52:12 55:2,2,7 64:13
 64:21 66:22 68:16,17
 68:18 285:9,11
 287:21 290:20 291:3
 291:15,18 348:20
 363:2 366:17,19
 367:1 368:16 380:21
Atlantic 131:14,14
atmospheric 1:3 158:2
 158:6,21 165:7
 172:21 173:14
attach 257:15 260:1
 281:21
attached 57:20 70:11
 210:11 255:11
attachment 257:11
attempted 124:21
attend 199:1
attendance 211:19
attention 74:6 79:12
 231:15 232:4 254:15
 286:5 288:7,19
 307:12,13 383:12
attest 183:19
attorney 106:11
attract 74:5
attractive 299:8
audience 222:4 275:19
 378:4
augment 26:3
August 283:20
auspices 10:16
author 52:2
authoritative 323:10
 357:2,9,19
authority 204:1 295:2
 319:16
authorized 133:21
 135:21 136:11,18
authors 59:21
authorship 305:6
automated 334:10
automatic 322:19 323:2
automatically 323:3
autonomous 227:8
 332:15,16 338:21
availability 34:6 229:20

available 10:10 16:19
 16:20 17:16 18:7,18
 19:21 20:3,6 118:3
 190:20 192:6 209:18
 299:17 322:4 323:10
 372:12 373:7 379:21
 380:5
avenue 84:3 213:16
average 122:7 166:1
 197:13 227:14 275:15
 275:17 377:5
Aviation 228:20
avulsive 106:20
aware 87:20,20 110:7
 300:20 360:4,10
 370:8
awareness 124:6
 335:16
awful 308:7
awkward 71:9
eyes 344:15

B

B 155:10 188:13
bachelor's 128:20
 177:8
back 11:20,20 13:1
 23:11 24:5,10 32:10
 35:8,19 36:11 39:16
 40:12 44:14 49:13
 52:16 56:15 68:21
 69:2 74:12 75:13
 77:14,17 85:3 88:21
 91:15 94:9 95:1 96:21
 97:21 98:9 115:2
 125:13 139:7 144:16
 146:21 149:11 152:10
 160:17 164:13 167:20
 171:21 172:10 180:12
 181:21 200:8 207:9
 209:12 211:13 216:4
 218:19 224:19 229:11
 232:19 233:6 242:14
 243:4 244:13 253:11
 253:12 254:22 255:4
 261:9,15,20 273:20
 275:11,21 277:11
 278:12 279:16 285:3
 288:5 297:16 300:4
 305:22 309:21 327:3
 332:8 334:5,17 337:7
 337:10 340:15 342:5
 348:1 357:14 366:9
 372:8 377:3,3 384:10
 385:3 386:10
backbone 308:15,17
background 92:17
 96:12 108:8 190:7
 285:13 288:12 342:15
backlog 15:5,10 62:7
 220:19,21 232:15
 254:10 331:12,14,19
 331:21
backup 163:8,10,13
 283:9
backyard 102:12
bad 265:14,14 266:1,2
bag 35:14
bail 297:5
Ball 174:5
Ballroom 1:11
bang 45:13
bankrupt 127:3
bar 377:20,21 386:20
Barbor 7:19 40:19
Barbours 204:16,19
barge 88:12 197:4
 267:17 282:10,16
 283:2
barges 295:21
Barnegat 21:18 22:7
 215:5 216:4
barrier 121:9 126:2
 315:16
Barrow 278:8
base 83:11 229:1
 286:19,19 287:1
 291:11 341:19
based 128:6 134:13
 137:20 158:22 160:14
 160:16 186:7 217:10
 260:9 262:14 275:17
 277:11 295:14 334:9
 334:9,10 368:21
 371:18
baseline 5:17 6:1 83:13
bases 287:2
BASF 138:9
basic 349:13 365:4
 366:2
basically 9:7 11:8 16:2
 71:2 110:15 117:19
 120:12 127:1 130:9
 131:19 158:20 178:7
 184:13 185:3 187:13
 191:9 195:22 208:6
 209:4 217:8,15 234:6
 234:8 331:8 332:3
basin 19:5
basis 33:19 92:5 99:4
 112:18 142:11 296:8
 316:20
bathrooms 8:11
bathtub 119:16
bathy 21:9 22:7
bathymetric 11:14

18:13 28:19 221:14
222:7
bathymetry 16:20 17:3
17:17 180:14 213:22
214:8,14 221:16,19
221:21 294:11 325:4
372:19 373:21
battle 95:8 184:3
bay 21:18 22:7 109:22
111:18 115:9 123:15
126:1,11 133:7 136:3
173:12 204:16,19
215:5 228:7,22
bay-head 121:8
Bayonne 319:20
beach 7:7 22:16 61:12
100:14 105:2,17,19
107:1,2 109:7 112:10
113:10 116:2 150:14
151:16,22 159:17
170:22 172:11 173:2
173:16 174:4,14
176:13 293:3 301:19
364:2
beaches 104:17,22
105:8 109:9 150:8
193:18
beam 258:19 339:18
beams 339:19,20
bear 87:6
Beaumont 134:1
Beaumont's 137:8
beauty 231:13
becoming 360:7
bed 176:8 335:20
beds 212:11
beer 286:1
beginning 110:21 179:1
255:10
believe 10:15 74:9 79:9
81:7 87:19 96:3
109:14 110:10,17
155:15 181:19,20
218:18 234:5 255:11
259:17 276:19 295:11
313:8 328:14 332:22
belonged 94:11
Ben 73:12 306:19
310:19
benchmark 82:17 174:6
174:6
Bend 175:6
beneficial 58:21 82:4
107:11 139:20 149:15
149:20 150:5
beneficiary 117:2
benefit 84:11 213:7
239:9 311:4 340:15

benefits 308:9 344:22
benefitted 160:7
Bering 274:15
berth 201:4 296:20
311:14,14
best 8:7 10:13,22 24:1
31:2 44:12 52:5 53:20
122:19 184:7 261:1
305:5 313:11 314:10
315:17 354:1 378:20
bet 270:1
better 17:17,19 31:11
39:1 62:12 63:5 65:21
108:3 115:14 117:5
120:15,17,20 121:1,5
125:9 127:16,16
128:7,8 159:16,20
173:15 176:11,13
181:3 191:18 199:6
201:14 205:16 220:15
222:19 229:20 262:1
265:19 288:2 295:19
305:7 309:11 317:1
365:2 368:9 369:21
376:9 377:9 378:17
380:13
beyond 83:10 186:16
203:4 302:18 325:14
360:8
biannual 199:11
biased 191:15
big 19:18 28:11 37:3,3
99:12 110:22 113:6
113:11 117:2 131:22
142:5 147:10 160:2
162:4,19 166:11
167:18 179:8 187:10
198:12 229:6 245:21
260:16 271:14 286:16
297:3 306:10,15
308:1 311:7 324:6
328:11 332:12 335:16
335:18 351:19 354:15
356:11
bigger 190:5 216:7
306:2 313:21
biggest 65:12 69:17
94:6 132:2 207:15
208:11 286:19 314:3
327:2 355:16
Bill 49:4,13 52:22 77:18
312:18 328:4 331:5
365:17
billion 111:16 133:14
287:9 368:21
billions 135:9 153:4
175:20
BIM 339:3,3,14,22

biological 52:19
biologist 103:18
bird 150:9
bit 8:20 13:14 14:13
18:21 23:14 25:2 32:1
33:2 41:19 46:3,11
49:6 50:6 60:10 68:5
72:19 84:18 92:16
105:18 108:9 110:19
116:9 117:1 126:7
146:20 169:10 172:22
175:16 176:6 196:9
199:6 200:5 212:2
215:16 217:1 219:14
234:14 267:9 271:2
279:4,6 280:22
285:13 288:6,13
298:11 306:20 318:11
319:8,11 327:1 329:9
331:6 345:20 346:8
379:6 381:19 386:12
bits 81:11
black 158:16
Blackwell 2:3 10:8,9
29:19,20 33:7,7 357:8
357:9
blank 51:21
Blaskey 3:9 4:11 93:17
96:15 97:15 98:3,13
98:15 104:12,20
106:2,5 192:3 193:2
blessed 116:6
blessing 376:19
Bligh 179:7
blocked 213:12
blocks 121:11
blogs 376:11 377:2
Blucher 3:6,20 91:9
141:21 154:1,15
198:20
blue 136:8 158:17
174:10
blush 236:16
board 52:7 151:14
209:3
Board's 256:7,17
boards 199:18
boat 99:10 102:9,11,11
102:14 207:2 324:7
341:8 378:6
boater 378:8
boaters 6:22 185:15,20
303:12 321:19 322:14
323:14 324:13,16
325:11,13,20 341:2,7
341:18 372:6
boating 284:10 326:15
boats 206:20 214:10,11

227:4 306:14,15,15
326:3,4,5,8,13 334:7
Bob 171:1 173:21
bodies 212:11
body 82:6 181:21
BOEM 36:4
boil 70:6
BOLEDOVICH 2:7
41:16 315:15,20
317:13 318:6 319:5
Boliver 144:12 148:5
book 347:17
booking 114:21
booster 150:16
border 132:19,20 263:8
boss 97:2
bottom 23:21 50:21
151:20 157:14 162:9
162:12 165:9 168:4
180:16 181:1 196:15
231:5 233:1 245:15
265:10 279:11,17
286:10 294:5,12
301:9 305:13 306:4
307:2 324:11 327:1
bought 97:2 177:12
bouncing 180:7
bound 212:14
boundaries 131:11
132:19 148:14
boundary 93:21,22
95:2,6 98:21 101:1,4
101:5,6 104:8 114:8
bounties 111:6
box 87:18 151:1
Bradley 40:10
brag 98:2
brainer 377:3
brainstorm 23:1
branch 2:14 3:13 92:12
128:18 178:10
branches 14:15 17:22
21:16
brand 53:2
brave 179:2
Brazos 135:20 147:20
bread 309:17
break 52:15,19 53:16
88:20 202:15 215:8
284:22 308:11 332:11
345:14
break's 52:16
breakers 76:18
breakfast 365:17
breaks 163:18 326:21
breakwaters 278:11
Brennan 2:9 14:11,11
16:1 233:16,20,20

236:13,22
brethren 231:5 382:12
Brian 133:18
bridge 73:14 74:5 106:8
 319:19,20 320:7
brief 38:13 75:2 226:19
 232:21 233:16
briefed 229:16
briefier 48:11
briefing 8:11 72:16
 199:2
briefings 40:4
briefly 38:15 203:16
 236:3
Brigham 1:16 45:21
 49:3 52:11 55:12,13
 56:9,14,17 57:19,19
 58:7 63:16,16 74:11
 74:20,21 78:21,22
 82:19,19 84:8,22
 225:19,20 230:11,11
 243:2,6,7 248:1,2,2
 248:12 255:5,6,6
 262:5,7,7,13 266:6
 267:16 268:11 269:12
 271:17 272:2 273:20
 274:10 277:2,20
 278:15 279:2 280:9
 280:17,20 281:5,9,12
 281:14,18,20 282:15
 282:20 283:10 284:4
 284:14 291:7,8,9,16
 307:5 318:14 330:19
 337:18,18 346:17,17
 362:18,21 369:2,2
 375:12,13 384:20,20
 385:2,2,17 386:2
 387:9
bring 12:19 14:17 81:22
 102:19 178:21 202:18
 260:15 292:19 305:21
 306:20 311:4 341:15
 353:5,20
bringing 34:16 37:4
 296:15 303:14 310:18
brings 148:1
brink 320:9
British 100:11
broad 60:14 68:8 82:2
 234:8 307:6,14 308:3
 312:16
brochure 124:22
broke 163:6,7
broken 63:12 145:6
 234:19
Brothers 127:3
brought 72:8 105:19
 218:19 277:21 365:17

368:3
Brown 47:5 48:6 49:5
 90:13 206:14 207:5
Brownsville 135:19
buck 276:5
bucks 37:1 276:6
budget 45:2,18 79:6,22
 103:9 134:12 139:8
 216:1 219:1,3,11,13
 219:19,22 220:1
 229:1 254:16 256:3
 270:22 271:21 274:19
 281:2,6 313:11,21
 375:20
budgeting 134:13
budgets 24:9 113:6
buffers 193:18
build 18:13 132:6 168:1
 195:21 196:1 224:15
 224:21 286:21 308:15
 333:17 351:13 352:19
building 19:9 139:19,19
 153:13 194:3 195:10
 225:3 339:2,8 340:2
builds 291:12 308:17
built 11:8 18:10 135:5
 152:10 218:10 223:16
 309:7 333:9 352:8,20
bulk 12:19 14:20
bullet 59:12 61:14 70:4
 232:9 251:2,2,5,15
 265:16,18 266:8,8
 270:16 272:4 279:11
 279:16,19 280:8,13
 280:21,21 315:7,8
 375:4 384:1,12
bullets 252:8 266:19
 325:12
bunch 50:22 64:2
 117:18,19 239:13
 341:6,13 344:4
 371:20
BUNN 2:8
buoy 146:13,13
buoyed 23:13
buoys 23:22 278:11
burgeoning 113:1
burner 348:1
Bush 108:13 149:16
business 36:6 132:1
 140:14 268:12 305:1
 316:22 348:9
businesses 141:10
 326:1,19
Butler 144:20
butter 309:17
buy-outs 193:21
buyers 102:17

buzzwords 367:22
by-laws 344:6
by-products 138:7

C

C 3:11 4:12 371:22
 379:7 384:4,5
C-O-N-T-E-N-T-S 4:1
cabinets 117:15
cab 85:7 278:1,3
 282:9,12
cables 266:22 278:7
cache 359:17
cake 260:12
calculations 182:11
calendar 46:15
California 32:2 335:12
call 16:5 28:20 93:20
 101:18 104:16 114:22
 117:10,18 119:16
 126:2 127:19 158:17
 202:18 244:17 263:4
 321:3,4 332:16
called 52:2 94:3,12
 120:18 125:1,21
 147:1 155:4 159:8
 162:10 190:1,4
 199:11 204:1 205:5
 212:9 295:10 308:14
 365:19 385:4
Callender 6:4 27:14
 44:8,20 45:16 46:9
 47:6 48:3,20 70:22
 75:5 77:22 80:22
 220:14 239:21 242:9
 253:9 257:5 259:5
 366:10
Callender's 44:1 59:3
 358:19 362:11
calling 37:18,19 224:7
 370:6
calls 146:3 154:18
 175:18 202:16
Camp 286:18
campaign 355:17
campus 156:2
campuses 177:2
Canada 5:18
Canadian/US 263:8
canal 95:5 123:6 144:19
candidates 187:9
capabilities 29:13
 207:5 237:14 301:22
 329:17
capability 30:15 127:6
 138:6 227:21 302:5,5
 303:8 334:4
capacities 86:9 87:15

Cape 188:17
capital 136:21
CAPT 14:11 16:1
 233:20 236:13,22
captain 1:19,20 2:9
 7:13 15:20 56:4,4
 57:7 138:3 179:6,7,11
 203:7,8,9 206:2,4,16
 213:9 233:16 387:12
 387:12,16,17
caption 225:12
capture 73:16 164:20
 249:14
captured 12:13 163:3,4
 331:8
capturing 5:17
card 40:12
cardio 110:15
cards 89:15
care 61:16 85:5 364:12
careers 224:20
careful 71:13 315:21
cargo 133:12,14
Carol 1:18 9:2 37:5
 105:7 245:18 272:17
 275:13 337:4 348:19
 356:3,4,5 370:18
 380:18
Carol's 274:2
Carolina 327:19 353:2
 353:12
carried 155:19 260:3
 280:4
carrier 286:20
carriers 286:22 291:13
 302:22
carry 46:8 223:18,19
carrying 226:13
cars 326:1
cartographers 202:3
carve 81:10,17
carved 93:11
case 12:5 28:11 94:2
 99:17 104:5,5,19
 106:14,16,18,21
 114:12 141:17 145:11
 151:13 169:6 206:3
 206:16 243:22 245:8
 252:2 271:10 276:20
 323:1 374:9 383:19
cases 51:22 52:1 78:6
 81:12 101:22 102:1
 102:18,22 122:9
 140:14 173:21 204:5
 213:11 238:21 316:21
cash 35:14
casual 295:20
catch 321:10 328:8

- catching** 236:2
categories 162:4 367:7
Category 187:13
 188:13,13
catfish 387:5
Catholic 94:19,20
caught 353:8
cause 252:8
Causeway 144:14
 153:1
caution 366:20
cautionary 319:10
cavalry 129:2
caveats 275:11
CBI 142:5,13 207:15
ceiling 205:10
center 2:3 110:15
centimeter 161:13
centimeters 167:14
central 118:2 209:5
 338:12
century 160:14 166:8
 166:15,18 268:12
certain 30:7,19 31:1
 50:5 80:6 101:21,22
 165:18 166:7 239:19
 325:22 330:3
certainly 26:2 31:12
 34:8,11 36:15,19
 37:12 48:20 78:17
 81:15 84:19 87:9 88:6
 232:10 233:5 316:18
 317:15 321:14 324:18
 332:22 334:15 335:1
certification 98:19
 187:14 191:12 212:4
certifications 191:3,9
certified 359:17
cetera 86:6 129:19
 136:16 139:18 140:12
 141:6 145:5 150:10
 193:11 199:1 202:11
 259:15 293:4 295:20
 298:19,19 299:7
 303:19,19 305:3
 355:20
chain 49:10 263:8
 266:10
chair 1:12,15,15 4:3 5:3
 15:20 21:8 22:3,10
 23:4,16 24:3,20 26:8
 29:9 34:15 38:10 39:5
 41:8 42:9 44:7 46:5
 47:4,14 48:15 49:1,11
 56:20 58:15 61:1,9,20
 62:2,4,14 63:15 64:19
 64:22 66:17 67:6,13
 68:12,15 71:19 73:7
 74:19 81:19 84:1,11
 84:17 85:17 86:19
 87:1 88:18 89:5 91:15
 211:14 215:8,15
 216:12 229:7,12
 230:3,6 231:3,10
 232:5 233:15 241:4
 242:3,5,8,16,17,22
 243:19 244:11,16,22
 245:5 247:22 248:11
 248:14 249:13,19
 250:17 251:1,9,20
 252:13 253:15,19
 254:5 255:5,18 276:1
 282:7,18 283:6,12
 284:2,12,17 285:1
 305:18 306:18 312:19
 312:22 313:13 314:8
 314:22 315:5 328:7
 328:10 330:14 343:19
 344:5,9,9,13,16,16
 347:10 348:7,12,15
 356:21 358:9,13
 363:20 366:15 373:22
 374:4,8,12,18 380:14
 386:16 387:18
chaired 108:11 145:11
 145:16 234:4 345:10
Chairman 230:2 262:10
challenge 11:11 15:8
 35:17 45:6 84:18
 177:1 207:15 244:6
 270:13 336:18 341:16
 355:16
challenged 93:4
challenges 7:2 22:20
 23:3 28:2 51:6 58:13
 69:17 71:5 115:20
 122:11,21 183:4,6
 201:14 230:13 232:9
 232:10,15 237:6
 238:14,16 243:4,15
 246:17 270:11 279:15
 293:14 300:15 321:17
 321:20 336:11,11
 350:12,21 352:5
 354:17 355:15
challenging 224:2
chance 7:20 111:4
 163:17 166:7
chances 165:15,17
 168:19
change 9:14 25:10
 37:10 44:16 106:20
 113:18 118:7 164:19
 165:5 169:2 178:14
 184:4 186:2 238:19
 288:12,14 298:1
 335:17 339:18,19
 350:6,6 351:13
 352:12 354:14 359:7
 373:5
changed 25:12 184:2
 342:1
changes 54:5 58:22
 68:22 69:4,7 84:20
 115:6 120:3,20 161:3
 183:21,22 184:7,8
 193:20 198:14 380:11
 380:20
changing 9:18 183:15
 198:11 343:9
channel 95:4 99:9
 102:8,13 115:10
 140:7 141:2 147:8,18
 148:2,14,15,21
 149:10 150:13,18,20
 150:21 196:12,16
 201:5 203:15 204:9
 204:22 207:4 294:16
 294:17,18 310:5
channels 99:10 102:9
 115:7 134:14 136:7
 139:1 147:14 149:4,6
 196:16 204:17 206:2
 294:4 296:17,21
 297:4 312:12 328:22
Chappell 32:19 75:16
Chappell's 37:8
characteristics 180:16
charge 43:1,11 48:18
 206:1,10 210:8
 301:14 348:16
Charleston 162:12
 201:13 375:15 376:1
 376:1
chart 11:18 12:1,6 16:4
 21:12,22 51:18
 147:12 158:13 184:15
 184:16,19 185:1
 186:16 203:13 214:20
 214:22 216:6 323:19
 323:20
charted 55:20 267:19
 270:3,5 274:14
charter 41:13 348:2
charting 9:6 10:14
 11:10,13 19:11 76:14
 76:19 83:9 87:21
 188:8 210:3 263:1
 265:21 268:3 295:19
 310:11 311:17 312:14
 330:11 372:3
charts 10:3 14:4 15:18
 17:7 92:7 95:3 146:18
 157:13 184:12 185:4
 185:15,17,19 186:4,9
 201:18 202:20 203:3
 203:4 215:3 221:9
 266:13 267:19 268:1
 268:8 279:21 284:9
 295:11 311:13 322:22
 324:5,7 325:14
 377:21,22
chastisements 300:3
chats 72:1
cheaper 62:13 336:20
check 41:17 168:21
 210:12
checkbox 57:13,14
checked 185:2
checks 18:2
Chemical 138:9
chemicals 138:13
chemistry 77:13
chicken 72:2 73:5
chief 2:17,19 3:11,12
 128:16,17 130:4,5
 153:10
chiefs 145:14
children 94:13
chimed 53:3
choice 19:3 148:6
 242:13
choir 176:2
Chorus 344:15
chosen 207:17,21
Chris 116:22 128:19
 129:18 153:20 156:13
 175:19 176:19 177:5
 177:14 191:17 196:3
 211:2 324:14
Christa 2:11 40:12
Christi 3:8,22 133:7
 134:1 135:19 141:20
 154:2 162:13 163:22
 164:5 176:21 177:13
 201:8 204:21
Christmas 73:12
Christopher 3:11,15
 4:12,13 128:15
Church 94:19,20
 186:13
circle 136:17
circles 277:17
circulate 241:19
circulated 321:2
circulation 113:17
citizen 79:19
city 5:9 92:20 101:16,17
 102:16 126:19 133:7
 135:18 136:14 148:1
 150:19 152:13 153:3
 197:19 199:5 203:10

- 206:17 287:10 313:20
377:5
civilian 225:1
civilization 160:6
claims 162:15
clarifications 19:15
clarifying 22:11
Clark's 186:13
class 184:10,14,20
330:1
classes 188:15
classic 123:16
classification 25:13
classified 331:1
clean 173:9 281:10
362:19 380:21 381:1
cleaned 291:20
clear 40:5 42:15,18
58:12 60:6 61:10
79:17 174:9 206:8
229:2,10 230:5,7
234:11
clearance 74:4 213:9
309:21 315:12 320:3
cleared 245:6
clearer 85:2 229:17
244:3
clearing 116:16 209:5
clearinghouse 118:2
clearly 61:15 86:11
153:16 280:5
clears 18:1 245:8
click 147:17,22 148:4,8
clicking 148:6
clients 35:2 210:5
342:4
climate 118:7 298:1
335:17
climatology 164:17
clock 47:8
close 19:10 127:5 173:9
194:10 213:10
closed 46:18 144:7
206:7
closely 209:16
closing 206:5
cloud 334:9,9,10,14
372:18 373:14
cloud-based 373:17
clue 268:22 313:6
co- 41:7 159:20
co-chair 299:3 366:15
366:17
co-chairs 49:17 348:12
Co-Director 2:2
CO-OP 376:14
co-op's 325:15
co-ops 2:4 8:21 23:18
- 279:22 325:12 354:21
377:12
coalesce 80:5,11
coarser 18:17
coast 2:19 5:12,18 6:2
10:2,10 11:12 17:10
20:16 23:9 25:6 32:18
86:20 88:15 93:3,9,10
93:14,14 95:18,22
110:8,8,14,20,22
112:3 113:4 114:16
114:21 116:6 120:3
122:7,8 123:8 124:13
125:4,18 126:12,16
127:17 128:9 129:7
131:10,19 132:21
133:1,3 135:12
140:12 142:16 143:2
143:19 144:4,9,17
145:3,11,14,21
146:10 148:12 158:2
158:10 159:13 160:8
161:15 171:2 175:21
183:11 193:9,11
194:10,17 196:14
199:22 200:13 206:13
213:11 216:1 218:8
221:4 229:1 230:19
233:9,20 249:18
258:10 267:18 279:20
280:1 293:7 302:3
303:20 314:4 320:2
329:6,20 350:11
coastal 3:17 4:10 10:1
13:5 16:18 17:12
19:19 21:1 32:20 33:3
34:2 35:22 63:6 81:5
92:2,10,10 93:12 94:2
101:3,5 107:5,9,11
108:18 109:6,12,13
110:1 111:9 112:16
112:18,20,21 113:3
113:12,22 115:21
116:1 117:11 118:12
118:12 120:1,21,22
122:22 123:9,10
124:7,9,12,14,17,19
124:21 125:11,18,22
126:2,5,10 131:20,21
132:11 133:9 134:20
140:3 141:12 149:14
153:9 154:18,20
156:5 158:1,1 159:16
160:22 164:16 170:22
175:5 176:14 177:9
178:13 183:3 198:12
202:16 209:11 221:10
285:20 326:2 347:14
- 348:20 364:4,4,8,8,15
364:16,22 365:1,2,5
365:22 367:19,20
368:22 369:1,5 370:4
370:19,19 371:17
379:1 385:11
coastline 14:22 183:10
183:14
coasts 19:21 20:3 21:4
21:13,21 366:3
code 193:20 212:10
codified 105:4
coffee 387:15
cognizant 60:20
coherent 252:10
coincident 355:5
collaborate 292:13
collaborative 36:15
79:18
collar 211:8
colleague 153:21
colleagues 23:10
381:16 382:11
collect 9:8,10 13:1 18:6
24:6
collected 9:13 19:16
21:10 24:3 32:3
181:14 351:7
collecting 9:22 178:2
collection 33:17 143:13
144:1 187:10 207:4,5
collections 30:7
collective 80:6 345:11
collects 9:12 365:5
college 154:13 175:9
188:18 207:20
colleges 188:17
Colonel 131:1
colors 148:18
Columbus 387:5
column 23:19 180:11
180:14
combat 102:5
combination 96:6
312:14
combine 63:9
combining 347:18
come 19:10 30:18 35:4
35:10,14 45:7 46:19
62:9 63:19 65:10
71:17 79:19 114:13
118:6 122:16 156:19
177:10 182:5,14
183:17 192:16 220:18
224:19 229:1 232:1
234:20 236:19 241:2
247:15 261:20 266:9
269:18,19 284:12
- 285:3 294:11 295:5
303:12 313:6 314:6
315:18 320:9 322:2
332:18 337:5,15
341:10 369:6 381:18
come/first 316:20
comes 17:21 27:4 35:9
35:20 41:22 133:16
138:5 143:5,6 148:2
154:8 181:20 200:17
213:14 217:12,13
246:19 278:12 300:22
322:22
comfortable 224:7
coming 13:4 14:20 26:5
49:9 61:4 78:14 93:2
127:10,18,21 150:18
177:21,22 187:22
199:3 211:6 233:6
242:14 277:11 278:8
292:6 342:19 355:18
360:5 372:15
command 266:10
Commander 131:2
commensurately 281:4
comment 4:14 7:5 8:13
8:15 11:3 14:8,10
29:11 38:14 46:18
53:18,22 55:10 59:15
60:18 211:17,19
212:2 213:21 215:17
215:18,22 216:11,19
218:6 223:6 226:20
229:7 230:4 240:15
244:21 255:1 263:21
267:8 269:16 302:17
338:22 341:22 356:6
359:3 361:20 363:4
364:19 370:17 371:15
374:11,13,14 382:21
384:6,14,16 385:7,15
386:13
comments 5:13 6:17,20
7:16 9:3 34:13 44:2
44:18 55:1,4 59:3
211:22 215:7 217:11
228:2 240:19 255:19
263:19 266:20 267:1
275:7 290:15 291:5
291:19 300:1 302:8
302:10 321:10 327:12
327:14 337:16 369:19
374:2
commerce 1:1 134:8,14
153:19 221:7 304:22
365:13 375:17
commercial 5:20 12:7
111:1,11 137:7

- 185:14 227:9 238:5
267:4 282:15,16
296:7 299:7 303:15
314:6 317:7 321:15
322:14 351:15 359:5
359:7 379:19
commercialized 185:11
commercially 63:4
commission 107:16
210:16
commissioned 15:2
231:20
commissioner 108:12
149:16
commit 299:15
commitments 8:5
committed 296:18
committee 40:18 41:2
79:8 219:9 353:19
357:5 360:1,3 366:20
committees 125:7
common 46:5 100:11
143:13 312:6
communicate 66:19,20
157:2 173:6,22 174:2
communicated 199:9
199:12
communicating 159:20
174:1
communication 48:12
201:9
communications 107:8
251:22 355:17
communities 123:16
198:13 288:9,20
289:18,19 290:9,10
293:9
community 166:5
188:18 248:18 266:11
285:20 287:8 326:16
327:2 328:6 367:9
community's 20:8
community/whole
290:5
commute 130:6
companies 189:6 190:2
190:22 203:11 282:16
283:1 293:10 378:7
company 32:3 179:8
191:7 210:6,10,12
333:4 339:21
compare 168:3 170:16
172:12
compared 157:21
194:15 375:15
compares 171:16
comparison 157:18
276:12
- compatriots** 320:7
compelling 6:19 7:1
54:1 232:2 233:4
252:2
compensation 386:18
compete 124:9
competition 243:20
compilation 364:1
complaining 139:4
complete 37:9 204:19
205:7 306:21
completely 88:13 92:19
268:8 274:22 278:18
339:22
completion 203:18
214:6
complex 59:1 140:4
145:13 197:18 199:5
199:8
complexes 135:16
complexity 292:20
compliance 238:17
complicated 196:9
component 350:9,9
351:9
components 222:13
351:5
composition 241:12
comprehensive 124:21
125:17 126:10
compromise 248:21
computations 210:16
compute 165:14 173:22
175:3 179:18
computed 169:11
computer 97:20
comrades 11:19
concentration 161:19
concept 125:21 245:14
265:11 369:17
conception 203:17
concepts 366:4
concern 112:2 118:6
125:8 127:17 279:17
concerned 33:4 114:3
121:8 353:14 377:14
concerns 37:11 112:17
115:22 118:5 122:12
254:2 261:9 265:8
294:7
concert 63:4 338:6
concise 54:1
conclude 175:1
concluded 7:10 387:22
conclusion 215:18
conclusions 176:9
conditions 140:8
294:21 296:10 298:2
- conductive** 116:4,16,17
conduct 224:1 226:15
conducted 23:16 115:6
212:12
conducting 101:3
221:13 329:17
conference 146:3
198:21 199:11,11
conferences 156:1
confidence 168:16
configuration 312:12
confined 307:16
conflicts 128:7
confused 63:21
confusing 200:5
confusion 39:19 364:7
364:21
congested 303:22
congestion 303:8
Congress 40:2,7,14
80:20 134:11 235:18
Congressional 280:6
Congressionally
133:21
Congressman 5:10
conjunction 353:13
connect 376:9
connected 115:9
Connecticut 313:18
connection 336:10
347:3
connections 323:5
355:6
connectivity 322:19
ConocoPhillips 83:3
Conrad 3:6,20 91:9
141:21 154:1 198:20
consensus 55:14,16
69:5 76:3 77:2 81:16
230:5,7,22 241:1,5,6
244:13 255:14 262:18
263:14,15 266:17
270:9,10,21 273:22
277:6 282:5 344:2
consent 59:13 241:10
241:20
conservative 341:6
conservatively 200:7
consider 119:6 195:17
219:10 220:20 255:20
329:1 347:17 382:6
consideration 44:6
361:4
considerations 119:5
considered 318:9
consisted 179:2
consistency 77:13
consistent 54:8 58:20
- 86:5 175:22 262:16
288:15
consolidate 53:9
consolidated 348:9
consolidations 253:14
constant 12:3 184:3
constantly 183:14
constituents 321:16
constitution 105:5
constrained 105:9
268:1
constraints 216:2
324:19
constructed 152:14
construction 129:9
134:22 237:11 278:9
339:15 340:2
Consult 238:3
consulting 107:18
contact 20:17
container 56:7
contaminated 107:19
contend 197:11
content 233:22
context 73:10,17 74:1,8
125:18 224:18 265:13
266:1,3 269:9
Continental 127:22
167:22
contingency 298:1
continue 8:20 22:14
30:19 33:19,21 45:12
83:22 87:10 114:15
247:21 290:4 297:20
310:14 322:3,10
329:12 354:19 358:2
374:20
continued 237:17,21
377:1
continues 85:9
continuing 34:5 88:17
166:16 256:19 311:10
338:7
continuity 142:1
continuous 170:13
contour 148:17
contours 148:18
contract 204:18 233:7
contracted 130:1
227:11
contracting 227:18
contractor 32:6 196:20
210:18
contractors 15:4 24:5
140:2 141:8,10
179:10 331:15 335:1
335:3 337:9
contracts 24:7,8 129:11

227:9 337:8
contractual 337:7
contributed 53:4
contributing 153:15
contributions 8:5
 279:13
control 129:13 183:19
 184:5 279:1
Convenes 4:2
conversation 34:20
 37:4 48:5,21 78:18
 88:8 142:18 217:7
conversations 45:1
conversion 142:14
 192:13,17 200:1
 357:2,13,16
conversions 193:1
convert 192:17
converted 142:20 199:5
 199:8
converting 198:16
convinced 176:1
Cook 179:6
Cook's 179:11
cool 181:6
cooperative 194:19
coordinate 31:14,18
 37:10 52:17 200:15
 281:17 289:5,11,17
 357:6
coordinated 205:19
 312:4
coordinates 349:17
coordinating 30:2
 140:10 202:7 206:10
coordination 29:20
 31:16 33:5,17,21
 34:10 39:1 139:18
 145:7,10 288:19
 289:14
coordinator 2:15 32:19
copies 361:13
copy 217:2
core 293:14 338:10
 365:12
corner 72:11
corollary 157:4
corporations 190:5
 283:3
Corps 3:13 5:12 20:2
 29:1,21 34:11 37:17
 60:4,8 92:11 107:9
 116:21 117:17 125:16
 128:14 129:5 130:2
 130:14,20 131:6,22
 135:5,14 138:18
 141:16 144:9 145:3
 145:16 146:21 149:13

151:11 153:9 156:13
 195:14,15,17 198:18
 201:15 203:20 204:4
 204:10 205:14,22
 207:8 224:16 293:8
 300:10 301:5,11
 310:12 323:9,16,22
 357:3,7,10,20 371:7
 379:6,7
Corps' 205:3
Corpus 3:8,22 116:12
 133:7 134:1 135:19
 141:20 154:2 162:12
 163:22 164:5 176:21
 177:13 201:8 204:21
correct 29:12 66:17
 97:14 180:4 202:10
 218:19,20 230:9
 264:6,7 265:6 276:19
 309:16 329:14,16
 387:18
correctly 121:14 351:9
correlation 103:15
corresponds 174:8
corridors 86:4
cost 32:13 103:7 119:4
 125:15 141:14 151:15
 151:15 226:15 276:10
 313:17 315:13 333:13
 379:12,13
cost-benefit 379:7
costal 293:2
costs 246:12 274:12
 336:6 368:18
couch 257:12 318:11
Council 33:10 212:20
 369:10
Councilmen 90:13
counted 161:20 227:5
counter 126:4
counties 110:1,2,2
 124:14,16 133:10
counting 228:4,10
countries 86:7
country 7:6 90:12
 110:11 137:21 198:4
 202:17 323:15 377:20
County 94:4
couple 25:7 26:22
 34:19 37:1 49:10
 67:17 70:4 71:21 72:1
 126:8 135:7 139:10
 157:13,22 182:13
 202:1 204:6 206:21
 217:4 220:17 259:16
 263:14 266:7 281:22
 291:13 298:12 320:14
 328:12 375:1 378:4,6

course 19:14 75:17
 95:10 122:13 133:18
 139:21 144:5 145:3
 150:19 175:7 206:2
 262:13 264:19 268:11
 271:19 289:16 331:18
 348:9,18
court 42:18 94:1 99:17
 99:18 106:14,15,17
 106:18,19,21 386:18
courtesy 374:4,9
cover 133:10 261:1,6
 326:20 347:7 355:20
covered 110:5 134:19
 214:3 269:2 280:11
 382:2,15 383:6
 387:14
covers 278:5,5,6
 307:15
crabbing 213:12
craft 253:2
crafting 6:7
crazy 85:13
create 13:6 132:6 150:9
 166:10 171:18,22
 253:4 254:3
created 149:21 150:2
 168:19 213:19
creates 297:6 316:4
creating 101:10 252:18
 296:9
creation 101:15,19,20
 115:7
crew 214:11
crews 292:9 293:20
criteria 383:21
critical 43:9 44:2 47:11
 49:8 121:2 123:22
 214:3 220:13 222:13
 240:1,8 295:18 311:6
 338:7 343:6 352:15
cross 30:13 69:21
cross- 279:4
cross-fertilization
 30:22
cross-sections 196:12
crossing 303:18
crowd 298:21 325:5
Crowley 282:11
crucial 214:14
crude 138:14
cruise 56:6 65:16 72:7
 72:9,18,20,22 73:2,9
 110:18 283:5,13,13
 283:14 284:15 305:2
 305:19 381:16 382:10
cubic 134:3 140:20
 150:6 151:21

culpas 328:12
currency 73:16
current 23:8 44:13 51:7
 62:11 71:9 84:14
 114:7 129:15 161:4
 171:8 229:15 270:15
 296:10 319:8 321:21
 322:11,21 324:7
 326:22 336:21 354:4
 354:4
currently 33:9 108:12
 204:18 207:2 227:1
 235:6,10
currents 65:14
curve 170:11 286:8,10
 286:11 349:20
customer 2:14 378:4
cut 233:12 271:3
 370:15
cutting 13:10
cycle 230:19
Cynthia 215:9

D

D-E-M 20:4
D.C 162:11
daily 112:17
Dallas 155:11
Dam 286:22
damage 104:9
damages 135:3
dams 132:6
dark 164:8 165:17
 166:13,15 320:10,10
darn 48:16
DARPA 334:22
dash 168:15
dashed 166:19
Dasler 212:1,1 215:20
 215:21
data 5:22 9:5,22 10:9
 10:13 11:7,13,14,17
 12:1,2,6,19 13:15,19
 14:1,18 15:10 17:12
 17:21 18:3,6,12,12
 19:18,20,20 20:8,18
 20:21 21:1,5,10,16
 24:6 32:3,6,7 33:17
 34:5,6 86:9,13 92:3,6
 92:7 97:6,11 99:3
 111:16 142:4 143:13
 143:22 147:8 148:7
 149:8,11 163:2 171:1
 175:2,21 177:21
 178:2 180:16 181:14
 181:15 183:3 184:17
 185:1 192:18 194:3,3
 194:8,13 197:11

- 200:10 201:15,18
202:4,9,10,11,22
203:12 207:4,5,7
208:21 209:6,14
210:20,21,22 214:15
214:20 215:3 231:14
259:15 289:12 293:7
293:11 295:18 296:8
297:21 298:9,17,18
298:20 299:5 302:21
308:12 310:12 322:3
322:11,18 323:4,10
323:21 324:2,12,15
325:13,18,21 330:5,6
330:10 333:22 334:1
334:12 342:11,19
350:15,17,19 351:7
352:4 354:12 359:12
366:3 370:3 371:6,8
371:12,21,21 372:4
372:12,14 373:2,3,5,9
373:16 378:8,16
380:4
- data's** 10:6
database 17:8 277:22
databased 16:11
datasets 21:18
date 99:22 100:5,9,10
184:18 215:4 221:9
dated 166:7 198:2
dates 185:3,4
datum 9:14 99:3 103:4
142:20,22 159:18
173:17 174:7 192:14
192:18 193:1 198:12
198:17 200:2 349:5,6
349:16 351:14 355:2
356:8,9 357:3,4
datums 102:7 103:11
159:19 172:13,14,16
347:9 350:2
daughter 94:15
Dave 4:8 39:10 40:22
41:7 43:10 44:6,7
49:15,16 57:12 58:16
59:15 65:7 232:13
235:22 241:21 257:18
262:10 291:7 292:4
300:6 304:9 329:15
329:21 331:7 345:10
348:3,18 360:21
361:1
Dave's 57:3
DAVENPORT 2:10
David 1:19 187:19
day 4:5 5:4,14 26:12
27:11 72:12 138:17
182:12 370:11 387:20
- day's** 386:22
day-to-day 92:5
days 5:19 28:6 82:7
127:2 149:12 152:19
157:20 182:13 198:10
258:21 275:5 328:21
DC 288:7
deadline 374:10
deadly 162:14 367:16
deal 79:7 112:17 113:11
115:20 312:13 369:9
369:15
dealing 10:6 275:2
300:22 369:10
deals 178:11 342:16
death 92:21
debatable 316:5
debate 14:14
debris 152:18,20
decade 103:10 116:22
decades 114:19
decide 35:5 54:15
308:21
decided 39:14 40:22
41:5 50:2 51:5,11
53:17 95:1 100:10
decides 379:19
decision 54:18,21
128:6 297:3
decisions 297:2 368:21
Deck 226:12
declassified 331:1
declining 238:9
decompress 386:22
decreased 121:19
dedicated 8:4 226:13
deed 95:5
deemed 133:21
deep 102:13 135:13,22
136:10 137:4 140:4
214:1,3 272:21
273:16 297:17 314:6
deepen 136:20
deepened 205:1 310:8
deepening 149:22
203:15,21 204:2,3,16
204:22
deepening's 138:20
deeper 200:21 201:5
294:18
deepwater 16:16
127:11
defense 178:17 286:3
328:5,17 330:20
define 69:15 95:17
338:17 345:19
defined 101:8 212:16
defines 178:9
- definitely** 20:17 73:8
113:22 132:3 278:4
307:21
definition 158:18
333:18 356:18
degree 13:9 128:21
154:9 177:8 186:21
187:14,15 188:7,19
190:12 207:21
deliberation 29:17
deliver 20:10 44:15
49:14
deliverables 20:4 34:6
delivered 19:20
delivering 82:14
delivery 221:11
delta 114:22 115:3,16
deltas 121:8
DEM 20:4,5,10,12
demand 72:10 283:21
381:11,21 382:1,9,18
382:20 383:15 384:2
384:17
demands 123:5 384:13
384:15
DEMs 18:13
dense 123:15
density 165:9 175:18
departed 83:3
department 1:1 30:13
162:1 286:3 304:21
365:13
depend 111:9
depending 16:6 20:5
158:21 263:10 275:18
276:6
depends 23:20 24:1
46:8 259:3
depicted 94:11 95:2
depicts 94:1
deploy 24:1
deployment 23:20
deposit 115:1
depression 127:2
depth 31:13 99:9 102:8
137:3 148:21 200:20
200:22 236:19 273:7
275:15,17
depths 136:9
Deputy 3:11 128:16
130:4 242:10
derived 200:9
describe 344:22
described 95:5 246:6
description 178:11
deserves 345:16
design 218:4,9 223:17
designated 2:6 4:4
- 209:5
designations 16:6
designed 252:22 310:5
310:6 317:9
designs 195:9
desk 217:3
desktop 373:9
destroyed 97:18 142:11
detail 19:4 134:17
234:21
detailed 82:10 294:5
295:7,12 300:18
details 319:14
determination 100:7
determine 10:13 99:9
101:13 102:2,21
103:18 249:20 353:22
383:22
determined 99:19,22
371:19
determining 99:7,14
102:8
detriment 192:16
devastating 167:5
develop 116:14 226:7
237:19 238:5 251:17
274:18 289:22 345:13
379:16
developed 42:20
120:17 129:11 146:22
155:3 164:12 270:13
315:1
developer 102:16
developers 99:8
developing 33:2 128:5
194:19 226:18 358:3
development 2:20
102:15 117:9 120:13
122:22 178:17 205:21
209:3 237:19
developments 99:10
deviation 171:14,21
deviations 171:17
devices 23:13 295:15
332:21
DFO 84:3
diagram 184:22
dialogue 77:21
diameter 143:4,6
dictated 311:11
difference 17:5 19:1
100:13,17 158:16
159:18 161:2 167:19
200:17 201:7 229:6
286:16 344:22 349:15
differences 162:20
167:12 200:11
different 13:11 17:9,9

- 29:7 30:15,16 31:8
32:4 38:1,4 54:10
70:17 86:17 88:13
131:9 138:20 140:13
145:4,14 149:5
163:14,21 165:10,18
167:17 173:13,14
180:18 186:5,11
195:18 196:14 222:19
225:4 241:11 252:6
255:8 268:9 288:15
289:18 290:2 294:22
319:11 333:16 334:7
335:4 349:22 369:4
370:2 375:19,21
376:14 379:16 382:1
Differential 187:15
differently 73:18 87:17
250:12
differing 382:19
difficult 28:7 255:7
271:12 273:8 336:13
367:13
difficulties 216:17
difficulty 25:21
dig 301:3
digging 204:13
digital 18:9 19:21 20:3
21:3,13,21
digitize 97:3,5
digitized 117:20
Dike 125:21 126:4
Dikes 126:19,19
diligent 191:6
dimensions 225:4
diminishing 232:3
dining 387:7
dinner 387:4,5
direct 58:4 367:19
directed 28:17 84:2
89:19,22 184:21
198:1
direction 38:8 198:5
212:12 217:7
directions 341:19
directly 33:3 49:5 67:15
96:10 292:17 369:15
director 2:3,4 3:6,19
27:15 91:8 144:18
153:22
directors 8:18 22:19
145:12 327:4
disagree 14:13 308:18
366:5,15
disagreement 236:5
241:3 266:16
disappearing 369:17
disaster 92:22 109:15
216:5 221:10
disasters 109:18
discourteous 374:19
discover 335:12
discuss 68:6,7 72:4,16
81:9 104:16 203:16
251:8 317:10 320:1
321:9 338:5 358:5,19
362:3,10
discussed 53:15 77:1
133:18 261:3 272:7
365:8 379:14
discussing 368:6
discussion 4:5,6,16
8:14 13:11 34:3 48:8
68:20 75:20,21 77:7,8
81:2,14 84:21 108:7
173:1 214:1 229:6
230:21 245:17 264:1
264:12 277:11 312:20
313:15 333:17 343:5
366:14 372:7 375:10
379:10
discussions 42:7,8
45:3 88:22 217:14
219:18 220:13 221:2
361:21 364:15,20
370:7,12
display 30:6
displayed 203:1
disposal 129:11 141:6
151:9
disseminate 237:19
251:17
disseminated 252:12
dissent 344:18
distance 157:9 167:21
168:1 363:12
distillation 65:11
distinguished 285:17
distribution 165:11,14
166:5 167:8
district 3:14 92:13
128:14,18 129:7
130:3,16 131:1,6,18
132:13,18 133:22
136:5 138:19 139:6
140:21 142:13,20
145:18,20,21 146:20
147:6,8,9,16 149:17
197:16 201:17,21,22
202:3,13 203:1,5
204:11 206:21 323:16
districts 131:10,11,20
147:2 153:9 196:18
198:4 202:17
dive 27:16 124:21
diverse 241:12 267:12
267:14,14
diversity 322:5
diving 116:19 126:5
division 2:18 3:12 5:16
29:15 31:4 128:17
131:11,16,18 199:15
divisions 131:9,13
DOC 214:19
dock 148:5
docked 150:15
Docks 199:12
document 45:10 58:8
84:13 87:3 98:4
236:16,18,19 251:11
253:19 262:19 375:10
documents 43:1 50:8
97:9 233:22 252:6,22
258:16
DoD 231:5 286:17
288:9 290:3,13
dodging 59:11
Dog 284:3,6
doing 14:16 23:8 24:10
24:12 27:12 30:3
31:16 33:1 37:8 43:15
63:10 68:18 72:16
98:14 103:3 113:2
116:1 139:13,15
147:13 149:22 178:4
180:2 181:7 182:17
182:19 183:1 184:7
186:19 189:16 191:10
206:6 235:11 273:2
278:18 288:6 294:14
296:12,14 300:16
305:1 314:21 327:19
333:1 334:9 335:4
345:5 357:15 368:13
375:2
dollar 232:7 368:21
dollars 29:4,6 32:12
141:18 175:20 287:11
315:9 320:15 380:3
dollars' 135:10 153:4
Dolly 109:17 164:3
dolphin 189:13
domestic 137:10 314:7
dominated 116:8
door 49:6
doors 8:12
Doppler 23:12,19
dormant 43:19
dot 150:3,3 251:15
dotted 166:9
Dow 138:9
downed 181:1
download 184:15 323:5
downstream 183:22
downtown 90:19
dozen 206:21
Dr 1:16,16,19 2:19 3:4
3:19 4:8,10,13 6:4
7:19 27:14 44:1,8,13
44:20,21 45:16 46:9
47:6 48:3,5,20 58:17
59:3 68:15 70:22,22
71:4 75:5 77:22 80:22
84:22 91:4,13 97:16
98:11 104:11,13
106:14 128:12 153:20
153:21 156:7 174:22
176:18 186:12 187:19
191:17 192:21 193:7
196:3 207:12 208:17
209:13 211:2,13
217:14 220:14 239:21
242:9 248:1 253:9
255:5 257:5 259:5
285:8 358:19 362:11
365:18 366:9
draft 47:17 48:17 51:22
59:6 81:6 82:7 135:22
136:10 137:4,5 140:4
181:16,17 199:20
214:1,3 240:14
253:12 298:5 321:3,4
327:9 345:20
drafted 135:14 144:18
262:15
drafting 361:4
drafts 65:10 217:4
drag 373:8
dramatic 170:1
drawing 254:15
dreaming 323:12,13
dredge 102:8 117:2
134:3 136:18 140:1,1
149:15 150:7 151:8
151:10,11 196:22
dredged 102:13 107:11
140:20 150:12,14,21
151:6
dredging 99:9 103:10
129:10 134:3 139:16
140:19 141:8,9
142:20 150:6 151:20
153:18 196:11,20
198:21 199:12,16
200:20,21,22 201:5
276:4,5
drifting 254:22
drifts 346:6
drill 130:15
drive 370:12
driven 87:15 311:22
driver 368:6 377:5

386:2
drivers 153:16
drives 98:7
driving 152:1 153:1
dry 173:4,19
DTM 372:21
dual-hatted 130:4
due 41:14,22 96:5
 106:20 151:3 238:14
 296:6 317:6
dug 294:16
dumb 381:4
dune 101:15,19 109:7
 109:10 116:3
dunes 101:10 176:10
dusted 197:5
Dutch 264:21 284:7
Dutch- 125:21
duty 129:2
dynamic 84:20 183:8
 183:15 186:2 347:5
dynamics 83:20 113:10

E

E 1:20
earlier 48:4 102:9
 124:15 197:4 216:22
 305:18 306:18 323:9
 331:9 334:18
earliest 49:12
early 97:13 144:16
 208:10 261:19 321:3
earth 180:8,18
ease 323:6 371:8
easement 104:18 105:1
 105:11,11,15 106:20
 107:1
easements 141:5
easier 160:8 174:3
easily 141:19 335:1
 352:21 358:1 373:8
east 129:7 133:5 196:14
eastern 95:6
easy 197:11 322:12,17
 323:4 335:2 336:10
 336:18
eat 260:12 387:4
ECDIS 311:13,13
Ecological 120:18
economic 102:20 119:4
 127:4 135:3 153:16
 178:16 326:18
economy 111:3 112:11
 161:19 310:2
ecosystem 111:10,19
 125:19
ecosystem-based
 365:19 369:11,14

ecosystems 83:11
 111:22 115:18 124:4
ecosystems-based
 369:7
ecotourism 110:21
 267:1
Ed 28:16 29:20 31:22
 34:14,15 52:13 61:2
 65:7 69:12 72:5
 208:18 247:14 251:13
 252:20 256:10 257:9
 263:16 268:6 271:1,7
 271:8 274:2 276:13
 277:21 278:2 292:2,3
 306:22 307:14 309:11
 309:15 311:11 312:19
 320:18 328:15,16
 330:13,16 331:5
 337:16 340:9 343:3
 344:3 345:3 363:5
 379:3,18
Ed's 37:11 263:19
 266:19 321:15 330:15
edge 104:9 326:6
editing 226:3
educate 80:18 125:10
education 182:22
 208:11
EDWARD 1:18,21
Edwing 2:4 23:15,17,17
 24:8 26:8,10 80:3
 279:10 280:14,18
 281:1,8 315:4 316:16
 354:21,21 355:14
 380:2,7
EESLR 120:18
EEZ 263:7,9
effect 17:2
effective 32:14 226:15
 257:19 355:16
effectively 227:21
 368:14
effects 120:19 121:1
 124:3 183:2
efficiencies 27:1
efficiency 238:21 239:3
 347:18
efficient 36:16 134:6
 226:14 268:9 324:1
 336:20 353:7
efficiently 30:21 297:18
effort 33:21 58:17 59:10
 64:2,6 79:16,18
 119:10 214:5 312:4
 329:10 353:15 378:11
 387:1
efforts 86:16 112:1
 185:6

egg 72:2 73:6
eHydro 146:16 147:1
 147:16 197:14,17
 198:3 201:14,16
 205:21 323:8
eight 61:14 75:15 91:20
 226:21
either 48:2 76:15 99:20
 105:12 116:2 130:1
 136:18,21 142:10
 148:6 206:7 208:14
 242:13 260:7 333:7
 367:12
elected 108:11 125:5
election 6:4,10 46:7
electronic 295:13
 310:11 311:12 312:1
 312:14
electronically 321:10
element 227:19 365:11
elevated 25:12
elevation 13:6 18:10
 100:18 103:13 194:13
 195:11 327:20
elevations 99:14
eliminated 36:17
ellipsoid 9:9,11,13,18
 350:8
email 61:13 327:13
emailed 23:10
emails 67:17
embraced 244:7
emergency 222:8
 297:11
emerging 303:10
 347:13 369:8
emeritus 7:13
emphasis 76:17 86:17
 160:20 290:4 302:2
emphasize 171:9
 224:14
empirically 200:8,9
employ 270:14
employees 132:17,22
 153:13 190:4,6
emulate 120:8
enable 30:5 323:6
enabled 360:8
encompasses 132:21
encompassing 253:1
encourage 35:2 67:7
 213:2 322:10 376:15
ENCs 63:1
encumbered 235:19
ended 97:17 105:9
 346:4
endless 275:10 284:9
 336:21

ends 141:21,22
energies 39:14
energy 29:5 90:16
 127:20
engage 78:8 301:13
 377:9 380:8
engagement 4:7 41:2,4
 49:18 295:7 345:9
 347:13,19 348:3,18
 386:8
engaging 376:8
Engineer 156:13
 195:15 300:11
engineering 28:4
 112:17,21 116:11
 118:5 122:12 128:21
 154:9 188:7 190:8
 354:14
Engineers 3:13 5:13
 29:1 92:12 107:9
 116:21 117:17 125:16
 128:14 129:6 130:14
 130:20 131:22 135:5
 135:14 138:18 141:17
 145:3,16 146:22
 151:11 153:9 201:15
 203:20 204:4,10
 205:22 212:21 293:8
 301:11 310:12
England 181:22
enhanced 237:13
enhancement 80:1
enhancing 268:13,13
enjoyed 91:19
ensure 227:22 297:19
 357:22
entails 208:5
enter 181:17
entering 296:19
entice 309:2
entire 5:18 7:3 14:21
 23:19 33:14 53:18
 92:20 132:21 142:19
 238:22 303:7 319:1
 385:4
entities 145:14 190:22
 238:5 287:10
entitled 351:14 364:18
 387:22
entity 379:19
entrance 141:2 148:2
 149:10 150:13,18,21
entrances 213:12
environment 74:6 92:8
 113:13 119:5 134:6
 160:9 183:21 184:2
 186:18 188:16 190:14
 193:17 194:12 238:17

320:14 336:3
environmental 128:21
 132:9 178:18 205:11
 268:14 293:4 297:7
 316:12 372:5
environmentalists
 385:11
EPA- 151:7
Epoch 355:2
equal 168:19
equate 118:16
equations 187:16
equilibrium 114:11,20
equipment 133:20
 190:16 226:8 276:9
equipped 5:20
equitable 314:18
eroding 105:14 113:7
 122:8
erosion 101:7,7,18
 102:4,5,5 109:12
 112:10 115:21 122:5
escaping 101:11
especially 41:1 60:2
 93:17 101:15 184:10
 194:10 215:3 216:3
 240:20 302:3 322:22
 323:16 324:20 351:20
 375:7
ESRI 192:8
essence 67:3
essential 5:22 221:6
 308:16 314:13 316:11
 338:7
essentially 108:19
 132:14 134:4 153:4
 200:5
establish 57:6 72:14
 86:5
established 102:12
 105:15 235:21 345:10
estate 94:20 119:4
estimate 55:21 111:17
 165:14 172:9,10
estimated 167:1 263:22
 264:14 350:6
estimates 173:8 315:14
estuarine 113:13
et 86:6 129:19 136:15
 139:18 140:12 141:6
 145:5 150:9 193:11
 199:1 202:11 259:15
 293:3 295:20 298:19
 298:19 299:7 303:18
 303:19 305:2 355:20
ethical 212:15
Eustis 286:18
evacuate 123:12

evaluate 298:17
evaluated 226:8
Evelyn 7:18
evening 23:10 361:17
event 38:14 151:20
 164:9
events 90:18 91:2
 104:6 143:21 164:1
 164:10 289:1
eventually 213:1
 332:13
everybody 38:12 52:6
 53:21 72:3 85:10
 122:14 144:5 146:14
 189:14 219:13,15
 262:2 269:7,9 278:13
 284:6 289:12 304:6
 308:5 314:18 316:12
 316:12 332:22 341:21
 372:11 377:18 381:22
everyday 99:4
everything's 38:7 281:3
evidenced 215:4
evolve 259:3 346:3
exact 25:9
exactly 19:1 40:1 47:2
 69:16 183:1 245:13
 306:11 364:7
exam 212:22
Examiners 212:21
example 25:4 37:14
 72:6,7 79:13 114:2
 115:19 117:8 147:22
 148:4,7 149:13
 150:11 152:9 164:21
 246:7 289:6 294:15
 319:15
examples 131:4 143:18
 152:9 199:22 283:7
exceeding 165:18
excellent 35:21 159:21
 211:15
excess 122:9
exchange 61:13 283:3
excited 68:12 71:10
exclusive 112:7
excuse 137:4 191:17
 251:2
execute 131:3
executive 29:22 144:18
 195:16
exercise 18:22 51:12
exist 30:15
existed 32:6,7
existence 59:20 187:22
existing 26:18 67:21
 119:17 120:13 135:8
 144:2 277:13 331:16

331:21 337:8 347:11
 348:16
exists 207:22 386:8,9
exit 8:11
exiting 8:1
expand 25:2 37:6
 226:18 280:12,21
 325:10 355:2
expanded 376:12
expanding 26:12,16
expansion 123:6 377:1
expansive 281:10
 282:22
expect 76:6 223:3
 224:19 226:3
expectation 276:8
expected 25:17 43:2
 169:4
expecting 234:10
expeditious 15:16
expense 271:12
expensive 273:4
 287:13
experience 38:21 39:4
experienced 109:18
 123:11
experiences 32:2
experiment 184:12
experimental 10:11,12
 227:8
experimented 192:7
expertise 29:5 61:18
 63:13 195:1 224:6,15
 224:21 225:3 227:21
 233:9
experts 79:19 92:5
expire 84:15
explain 53:14 118:8
 176:6 221:19 287:18
 320:22
explained 306:18
explaining 55:9 222:3
explanation 51:5
exploration 84:20
 85:11
explore 179:4 337:22
explored 201:13
explosion 123:2,20
exponentially 118:19
export 342:20
exposure 62:18 359:6
express 243:7,7
expressed 276:18
expressing 48:12 256:7
extend 7:11 102:3
extends 115:8
extensive 64:2 262:14
 293:6 303:4

extent 41:3 98:21 99:7
 99:16,19 101:14
 317:22 350:6
external 58:9 76:16
 83:21 243:11
extra 298:5 358:6
extract 254:2
extraction 176:8
extreme 63:1 90:18
 102:18,18 123:18
 289:1
extremely 44:2 60:14
 78:3 218:1 271:11,12
Exxon 148:5

F

F 2:6 4:3
fabulous 273:17
face 51:7 69:9 122:12
 122:21 183:5 309:13
 357:16
faced 95:21
facilitate 48:21 87:11
 297:22 361:15
facilitation 88:7
facilities 138:9 153:6
 234:4 286:17 287:3
facility 386:21
facing 123:7
fact 18:18 21:16 32:3
 54:22 59:6 62:6 76:1
 100:14 108:15 115:9
 124:8 212:8 264:18
 264:19 277:12 286:7
 311:12,22 332:20
factor 65:12
factors 122:4 381:9
 382:16 384:3
faculty 207:14
fail 328:11
failed 292:19
fair 62:13 77:12 218:15
 313:16 364:6
fairly 44:22 64:1 110:5
 112:10 120:14 174:2
 217:9 262:14 288:16
Fairweather 28:1
 217:21 218:17 223:16
 227:6 228:5,17
fall 127:4,8 324:22
 325:1 383:4
fallen 24:10
falls 10:15 101:1 151:4
familiar 38:12 359:15
family 94:14
famous 179:7
fantastic 30:9 157:16
 164:22

- far** 13:5 63:6 68:10
104:8 109:8 113:18
118:10 121:20 122:11
123:2 162:6 164:4
201:21 209:9 309:15
313:10 322:8 328:11
377:14
- farther** 183:22
- fashion** 15:16 59:7
174:3
- faster** 12:6 47:13 62:12
310:3 331:16 334:2
- fate** 121:9
- fathometers** 207:4
- favor** 287:22 344:14
- Fear** 188:17
- feasibility** 125:15
- features** 178:12
- fed** 288:1
- federal** 2:6 4:4 35:11
51:9 54:6 60:15
106:15,18 109:16
127:21 136:22 140:11
140:17 141:3 142:2
144:21 147:13 154:10
206:1 238:3 251:14
287:14 288:8,13
289:16 290:22 296:5
296:6 308:10 313:5
313:11 316:7 317:5,6
318:10 321:21 326:22
337:3 352:3,7,10,11
357:21 366:13
- federally** 109:5 135:20
315:2 317:16 318:15
- feds** 287:14 288:19
289:13
- feed** 20:19 138:8,15
146:17
- feedback** 176:12
- feeding** 335:13
- feel** 54:10,11 58:21
60:19 153:10,14
181:5 183:5 187:20
207:15 210:12 254:3
293:17 321:9 330:6
343:22 356:12 366:5
366:14
- feeling** 256:7,17
- feels** 7:8
- feet** 67:11 74:4 97:18
101:21 119:3 121:12
122:6,9 126:20
136:11 143:7 151:22
169:16,18 200:17
201:8 204:9,9,14,17
204:17 205:1,1
228:12,13 310:6
- fellow** 309:22
- felt** 8:16
- FEMA** 32:5 33:9,11,22
34:11 353:13 354:9
354:10,16
- ferries** 303:3
- ferry** 303:4,13
- fewer** 24:10
- Feyen** 20:16
- field** 30:20 159:22
213:5
- Fields** 7:18 40:18
- fifth** 265:16
- fight** 184:3
- fighting** 95:13 265:10
- figure** 35:14 49:21
84:22 118:20 172:13
193:5 222:19,20
260:8 289:20 307:1
327:10
- figured** 321:22
- figures** 258:13,13,15
- file** 98:22 117:15 148:9
148:10 323:5
- files** 117:18
- fill** 89:15 325:3
- filling** 25:18 132:11
- final** 44:5,6 139:10
143:22 152:6 170:10
176:18 236:14 334:13
378:22
- finalized** 44:4 81:15
- finally** 103:22 134:2
140:1 197:21 219:12
379:18
- finance** 379:20
- financed** 143:10
- financial** 127:8 324:19
324:19
- financially** 141:4
- find** 26:22 29:3 32:13
69:10 71:6 216:5
314:18 317:1 331:12
333:19 336:13 352:4
371:13 372:13
- finding** 336:13
- fine** 17:16 59:14 84:1
236:7 251:5 262:3
282:2 321:11 345:18
380:15
- finish** 47:21 69:10
74:16 159:15 240:4
246:9 281:15 363:2
374:6,21
- finished** 48:2 64:14
97:13 98:4 294:15
309:10 319:20,20
- finite** 301:3
- fireboats** 207:3
- firms** 116:11
- first** 21:17 39:12 52:10
58:16 67:11 68:9
77:22 88:2 89:11
91:14 96:14 97:1 99:6
101:1 108:6 129:20
137:22 140:18 146:3
150:12 160:2 169:11
187:22 192:3 196:5
217:19 230:14 231:20
236:16 240:14 245:12
245:14,21 246:20
247:15,15 251:2,5
254:18 262:21 263:12
266:7,8 268:20
270:18 272:22 273:16
279:19 280:7,12,21
282:3 293:9 301:10
304:11,14,17 308:20
308:22 310:22 314:1
316:19 327:20 349:12
355:4 360:13 365:3
380:22
- firsthand** 6:20
- fiscal** 143:12
- fisheries** 111:2,8,17
243:21 244:5,10
249:8 250:11 284:7
335:9,10 385:10
- fisherman** 284:10
- fishermen** 372:7
- fishery** 111:12,14 220:9
- fishing** 102:10
- fit** 56:13 65:21 290:19
303:1 304:5 308:1
- fits** 307:19 340:2
383:17
- five** 47:17 61:3 62:1
67:20 68:3 74:4 75:13
92:4,9 129:5 130:3
146:21 168:22 174:12
198:10 205:5 223:19
223:20 227:5,5 259:9
265:16 274:15 284:19
286:20 320:21 321:2
331:10 332:3,8,22
376:6
- five-day** 198:7
- fix** 216:6 280:18 332:6
- fixed** 32:9 349:15 350:2
350:3
- flags** 142:8 290:15
- flat** 196:16 286:11
- fleet** 27:21 43:9 44:10
45:8 51:1 59:5,11
81:21 187:7 219:4
220:9 222:14 223:22
225:14 227:2 228:21
233:5 234:9,17 235:8
235:8,14 236:9
237:20,22 238:1
249:6 250:7 252:11
252:19
- fleet's** 254:18
- fleets** 27:21 238:7
- flesh** 261:2 282:2,3
- flexibility** 54:9 62:17
90:4
- flip** 141:19
- flocking** 123:9
- flood** 33:15 34:8 99:15
104:2 111:21 114:22
115:3,16 132:4,15
134:19 135:1,8 152:7
152:14,16 153:3
195:22 353:11,13
354:12
- flooded** 165:15 326:9
- flooding** 112:13 119:18
159:8 162:10,10
163:20 164:1,2,7,9,16
167:5,9 173:17
285:21 286:13,14
- floodplain** 34:7
- floor** 90:2 116:8 335:21
- Florida** 116:7 128:20
136:3 161:15 188:11
350:10
- flow** 114:15 153:19
183:17
- flowing** 142:4 221:7
- fluid** 56:3 176:8
- flurry** 306:2
- flushed** 325:15
- flux** 186:3
- focus** 29:4 33:14 39:14
75:7 78:8 79:20 84:6
84:7 86:16 134:11
157:1,6 159:3 182:18
267:5 292:18 311:5
318:3 320:17 332:5
346:8
- focused** 6:5 60:15
188:8 190:20 337:2
345:16 346:1
- focusing** 37:22 138:22
- fodder** 234:15
- fog** 310:1
- foibles** 296:15
- folks** 21:5 30:5 32:8
35:2,2 71:21 72:15
118:8 123:10,17
126:18 131:5 139:4
142:7 145:8 153:13
202:6 203:6 282:9

284:3 328:22 329:4,6
folks' 9:4
Follets 115:13
follow 13:13 16:13 66:5
 67:4 259:22
follow-on 215:21
 216:10
follow-up 12:11 33:8
 87:5
followed 175:6 235:4
following 90:1 130:22
 131:2 154:12
font 135:17
foot 100:18,20 119:12
 127:1 152:20 179:12
 179:12 180:5 181:15
 200:17 201:7 227:3
 228:9 294:16,16
 296:16 309:20 310:6
 320:2,3
footprint 121:15 122:2
 147:10 301:7
force 63:19 286:19
 359:10 369:10
forceful 257:11
Forces 287:1
forcing 158:6,21 159:1
 173:14
forcing's 158:3
forecasting 155:7
forefront 99:16 260:16
foreign 137:10 187:8
forever 346:5
forget 214:18
forgive 178:8
forgot 299:3 355:12
form 14:18 17:8 199:20
 344:10
formal 48:10 66:7 190:7
 344:8
formally 7:20 186:21
 189:8,9,19 345:10
format 13:18 20:10 50:5
 50:7 51:4 54:8 57:21
 58:11 59:17 202:10
 247:10 253:18 323:22
 380:13,15
formats 11:9,10 13:17
 19:20 322:4,11 323:4
formatted 295:13
formed 319:11
former 162:7
formula 319:12
formulated 61:15
Fort 286:18
forth 11:20 40:4 60:3
 101:3 120:2 193:19
 195:11 209:7 232:12

258:9 327:3 357:14
 365:15 376:12
forthcoming 330:5
fortunate 5:11 171:6
Fortunately 163:8
Forty-five 136:14
forward 8:8 28:14 47:22
 59:6 65:4 82:3,12
 88:17 103:1,21
 125:12 146:20 147:6
 195:2 197:17 211:21
 212:18 213:4,6
 214:17 241:6,17
 251:16 253:1 279:8
 281:4 349:1 369:16
 371:6 372:14 380:11
found 22:18 117:12,17
 346:14
foundation 94:12,21
 221:8
foundational 370:3
 371:6 373:1
four 25:22 32:10,16
 40:17 47:1 75:1 97:17
 99:4 117:9 122:6
 125:1 137:8 143:9,14
 149:7 205:5 251:3
 265:16 275:9 296:19
 306:13 320:3,4
 347:11,16 353:10
 375:9
fourth 110:18
Frabotta 3:11 4:12
 128:15 129:20 196:4
frame 13:2 192:22
 193:4 349:11,16
 350:16 351:6 353:15
frames 349:14 350:15
 352:22
Francisco 310:16
Frank 7:19 41:7,8 49:17
 348:17
Franklin 73:12 306:19
 310:19
frankly 28:6 78:11
free 127:4,8 192:7
 206:8 317:19 321:9
 366:5,14
freely 153:19 380:4
Freeport 135:18 136:15
 152:13 153:7 204:7,8
 204:8,9
freight 304:19 305:2
frequency 66:20 156:22
 159:19 164:19 166:14
 168:14 169:13,20
 173:17 174:13 176:11
frequently 109:20

friend 129:16 186:12
 188:9
friends 323:9
front 44:13,21 48:17
 49:13 50:8 56:14
 129:21 149:10 200:6
 212:17 213:6 222:17
 222:21 231:6 245:15
 245:22 247:1,8,12
 265:11 267:13 302:14
 305:13 306:4 307:2
 309:4 356:17
frontier 375:19
fruit 87:6
fruitful 39:7
frustration 240:13
FTEs 225:2
fuel 127:6
fueled 79:15
full 5:14 48:11 207:10
 230:8
full-time 130:2
fully 337:15
fun 91:21 156:16
 315:18 318:8
fun-ding 315:19
function 70:12 165:9,11
 166:5,6 167:8 226:3
 233:2
functional 111:19
functioning 114:11
 297:17
fund 205:20 229:10
 311:4 318:21
fundamental 27:18
 28:13 122:15 236:5
 241:16 365:5
fundamentally 112:19
Fundamentals 212:22
funded 36:6 109:11
 213:18 216:8 228:19
 229:5 273:18 295:2
 296:4,5 313:5,9
 314:16 315:2,9
 316:14 317:5 318:15
 336:5
funder 319:16
funding 7:2 22:6 34:21
 36:18 72:12 85:16
 122:14,16,20 124:10
 127:10,12,18 130:19
 130:19,21 132:3
 134:14 136:19 138:19
 138:19 139:3,5,7,13
 186:8 195:1 208:20
 209:9,10 213:14,17
 216:9 230:8 237:17
 275:3 279:18 280:2

289:9 308:10 315:15
 315:18 316:8 317:10
 318:7 320:11,16
 331:21,22 335:7
 336:4 368:4 375:22
funds 27:8 109:16
 237:11 249:14 252:15
 318:11
fungible 318:7
further 68:5 77:1 79:5
 81:22 91:11 126:15
 127:7 195:19 205:20
 239:20 246:20
furthers 306:7
fuss 105:18
future 6:13 61:7 68:1,10
 103:6 104:10 118:10
 118:21 119:10 120:9
 121:22 125:2 128:8
 146:18 147:3 182:21
 186:15 195:12 251:14
 251:18,20 253:7
 256:21 267:22 268:15
 278:22 290:7 297:9
 298:1 321:20 326:22
 333:4 336:15 351:8
 352:7
FY 249:15 252:15
FY17 45:2 48:8

G

gage 95:15,20 96:2
 154:20 160:14
gages 96:9
gain 77:2
gains 324:21
Galveston 1:12 3:14
 5:9 7:11 92:13,19
 93:3,7 95:20 96:16
 99:4 100:14 101:16
 101:17 106:4,6,7
 110:18 111:18 114:6
 114:8 116:13 121:17
 123:15 126:1,11,17
 128:14,18 129:14
 130:3 131:1,6,18
 132:13,18 133:5,6,22
 135:5,18 136:5,15
 137:13 138:18 139:6
 140:21 141:2,4
 142:13 145:21 146:9
 146:19 147:5,9,16
 148:1,3 149:9,16
 150:13,17,18 151:14
 152:1,22 161:1
 167:22 168:5,12
 196:13 197:16 201:8
 203:10 206:4,21

309:22 319:6
Galveston-Texas 199:5
game 62:13 282:19
gap 213:5 320:3
gaps 325:3
Gary 1:22 2:12 3:4 4:10
 40:19 53:1 75:12 78:2
 89:7 91:4,11,13
 107:22 108:2 109:19
 121:10,14 177:16
 191:22 211:15 327:17
 327:18 338:14,15
 347:8 349:2,3 354:17
 354:22 359:3 363:15
Gary's 63:14
gas 95:12,14 110:13,15
 123:4 127:22 128:3
 180:15
gate 73:14 74:4 292:6
gathered 92:4
gathering 235:10
gauge 171:10 368:18
 368:22
gauges 171:8 333:14
Gee 1:17 13:13 14:7,9
 16:13,13 17:14 61:12
 67:14,14 68:14 254:6
 254:6 267:8 340:5,7
 346:10,10 359:2
 360:6 372:8,11
 373:13,19
geeky 333:19
general 3:17 22:13
 25:20 60:19 68:2
 88:15 95:9 99:1 107:6
 107:8,14 108:10
 116:5 124:5 125:14
 151:13 156:14 189:6
 208:8 220:7 227:14
 246:18 254:14 282:1
 288:17 296:7 317:7
 325:17
generalized 256:6
generally 13:14 245:19
 342:8
generated 308:12
generation 295:9
 333:14
generational 127:15
generically 254:12
geniuses 182:3
gentleman 319:5
 324:14
Geodatabase 117:11
 128:5
geodesy 187:17
Geodetic 31:5 279:22
 280:14 349:6

geographic 3:5 31:20
 91:7 96:18 271:10
geographical 30:19
geoid 263:2 280:11
geologist 3:17 92:10
 107:5
geology 164:16
geometric 349:10
geophysical 117:13
geophysics 208:8
geopotential 349:11
georeferenced 12:14
 12:16,18 13:12
 180:21,22
George 108:12 149:16
geospatial 128:6 209:6
 209:14 279:13 341:11
 341:15 359:22 360:6
geospatially 360:7
geotechnical 117:13
Gerd 2:6 4:3 13:15
 17:10 25:5 32:18
 45:13,15 86:20 218:4
 218:8 223:18 227:10
 228:3 295:5 329:20
 375:1 379:2
getting 11:7,9,16 13:1,8
 14:3 21:15 23:19
 25:21 28:18 32:12
 62:9 65:8 69:18 88:9
 93:5 112:16 113:9
 115:1 126:20 165:15
 166:7 182:21 190:19
 194:14,16 207:16
 254:9,10 273:18
 275:9 289:9 298:21
 300:18 316:17 320:5
 327:6 328:22 340:14
 342:3,5 343:7,10
 359:11 367:2 370:16
 371:21
GEV 165:10
GICA 144:18
GINA 2:10
GIS 12:19 97:6,7,10
 192:4,5,8 352:17,18
 352:19
GIS-ready 12:18
give 15:13,21 16:3 23:5
 32:22 33:6 42:13,22
 49:22 50:4 68:19 72:3
 72:15,15 86:15 89:13
 90:4 92:16 96:11
 108:7 114:2 119:21
 130:13 131:4 147:18
 150:11 156:9 168:20
 174:14 195:11 207:6
 219:14 237:14 244:4

250:17 285:12 289:6
 292:5 299:1 307:12
 328:4 330:17 348:21
 380:11
given 38:9 44:1 87:14
 171:5 242:9 274:11
 276:9
gives 73:10,11 90:3
 103:4 120:15 148:14
 148:15 165:17 168:2
giving 65:18 180:8
 192:14
glaciation 160:5
glad 61:17 62:16
 327:21
glancing 316:6
Glang 2:6 4:3 7:21
 17:10,10,20 25:5,5
 32:18,18 43:8 45:15
 45:15 55:19 59:16
 86:20,20 87:2 91:15
 202:15 217:5,19
 218:7,8,14,20 224:12
 227:13 228:3,3,9,13
 228:16 234:2 329:20
 329:20 345:2,8 348:6
 349:2
glanned 221:1
Glenn 2:7 40:9,11 41:14
 44:8 49:1 230:4
 315:12,13,18 329:4
GLO 140:11
global 160:12 307:13
 330:1 335:17,17
glossier 223:14
GNSS 187:17
go 7:7 11:19 12:8 21:3
 21:12 23:7 26:4 35:9
 35:20 40:7 42:11
 43:12 44:4 51:16
 56:11 57:20,21 68:21
 69:2,14 74:13 77:22
 81:17 85:3,9 88:20
 89:10 96:21 103:16
 110:4 111:4 115:16
 130:12,16,18 134:17
 137:2 152:2,10
 153:14 155:12,14
 160:17 161:14,15,16
 167:13,20 170:19
 171:21 172:10 175:10
 184:14,14 196:1
 199:21 200:12,13
 209:20 220:7,20
 228:18 231:6 232:17
 235:15,16 236:3
 237:4,8 239:14 240:3
 241:6 242:2 243:4,11

244:13 245:16 248:6
 253:11 263:20 266:4
 270:7,17 272:21
 273:18,20 276:14,15
 278:1,7 281:13 282:6
 286:6 293:16 296:21
 297:2 300:17 315:1
 316:1 317:17 320:21
 323:18 324:3,8 325:6
 325:14 328:16 332:8
 333:7 337:7 338:3
 339:22 341:7 343:10
 349:4 350:4 352:1,9
 365:22 366:4 369:4
 371:2 372:1,8,18,20
 374:22 376:6,22
 379:6,9 380:10 382:4
 384:10 386:14,17,21
 387:11,15
go/no 297:2
goal 44:3 197:14
 331:19
goals 276:17,18,20,21
goes 18:4 20:21 26:17
 32:10 34:7 47:19
 78:22 93:6 99:20
 104:18 114:21 136:3
 137:14 146:3 155:6
 222:2 226:4 235:17
 255:16 257:14 263:9
 302:18 324:10 330:7
 334:17 350:10
going 6:13,14 8:7 10:2
 10:6,18 15:8,8 17:7
 19:12 20:20 21:13
 29:14,15 32:17 35:5
 35:10,17 40:14 43:3,4
 45:6,18 46:17 48:7
 52:2,9,21 56:11 58:3
 64:14 65:2 67:20
 69:20 70:10 71:5 74:9
 78:13 79:10 80:1 84:9
 84:21 85:7,12,15
 89:10 93:16 96:12
 99:2 102:22 103:9,20
 104:4 118:18,21
 119:1,11 120:2,4,9,12
 120:16 121:2,6
 123:13 130:12,13
 131:3 134:17 135:7
 137:11 143:11,20
 146:4,8 147:2 152:8,9
 154:21 155:9,12
 156:17,19 157:6,13
 158:17 159:6,10,12
 162:18 164:10,14,20
 165:5 166:6 167:6,8
 167:15,19 169:7

170:3 171:9 172:14
 172:21 173:4 175:19
 175:20 176:15 178:7
 181:18 184:3,4,4
 185:15,21,21 195:1
 195:19,21 199:21
 201:10 213:4 214:17
 217:6 221:16 229:14
 230:6 234:20 235:19
 239:12 240:20 241:2
 241:16 243:2,11
 244:18 245:6 246:12
 246:12 250:10 252:16
 252:16,18 253:13
 259:14 265:17 266:5
 266:11 270:7 272:20
 273:1 277:17 278:6
 283:19 285:9,12,12
 286:9,10,10 287:12
 287:18 289:3 291:21
 292:13 294:21 295:4
 295:6 297:8 301:18
 304:2 307:9 308:21
 309:21 312:8,11
 319:18,22 320:2,9
 322:15 323:18 324:9
 326:1,6 328:7 329:9
 332:20 333:1,17,18
 334:15 336:14,17,18
 348:22 349:15 350:17
 350:19 353:5 354:16
 354:22 355:5 357:6
 359:7 360:13 362:16
 362:19,20 363:2,6,6
 368:12 369:3 370:7
 375:22 378:1 383:19
gold 157:10,11
Golden 73:14 74:4
GOMESA 127:19
good 5:3 11:16 19:22
 20:16 23:4 26:11 39:6
 48:16 54:1 59:12,18
 65:5 73:7 77:13,13
 78:18 90:4 91:13,18
 116:15 119:20 139:5
 152:8 158:8 163:17
 172:9 176:10 182:17
 183:2,7 186:12
 188:16 201:20 209:14
 210:21 224:13 227:14
 232:18 248:11 253:6
 266:2 268:21 269:5
 276:2 322:8 328:16
 330:15 335:3 337:6
 337:19 344:1,18
 354:22 356:2 366:22
 368:7 376:8,15,21
 379:16 385:15 386:16

387:1
goods 221:11
gotten 205:15 284:19
 294:18,18 307:13
gouging 277:22,22
 278:13
goulash 229:8
governing 181:20
government 60:16
 70:16 142:3 182:18
 189:11 190:22 213:17
 226:6 238:6 282:13
 290:5 293:6 314:4,20
 318:17 351:15 353:4
government/whole
 285:20
governmental 351:20
governments 179:3
 181:21 210:5 290:9
 319:2,3
GPRA 276:20
GPS 96:8 187:20
grad 186:14 188:9
graduate 128:19 177:5
graduated 96:19
 128:22 187:2
graduates 96:17 98:1
grain 151:18
grand 320:13
Grande 167:15 169:6
 170:12
granted 181:8
graph 166:11 168:4,11
 246:13
graphic 149:17 152:11
 231:18 232:2 246:7
 246:11 350:5
graphically 30:6 231:14
graphics 234:22
graphs 258:8,16
grasp 269:20
GRAV-D 356:6 371:19
gravitational 159:1
gravity 333:5
great 31:16 38:10 48:4
 65:8 80:5,10 90:19
 130:11 131:14 141:11
 150:11,14 156:11
 163:4 174:1 179:17
 182:16 183:20 185:19
 188:1,9 190:17
 211:14 216:1,12
 220:5 253:20 273:1
 273:15 283:8 292:19
 314:14 315:15 328:1
 328:14 349:2 374:18
 378:5,9
greater 214:21 252:5

greatest 22:19 104:9
greatly 273:7 321:19
green 142:8
Greenwich 182:8
grid 19:2
groins 183:21
ground 100:19 194:16
grounding 264:22
groundtruthing 113:19
groundwater 107:19
group 4:7,17 20:21 30:1
 39:11,19,22 40:5,21
 41:1,4,6,8,12 43:6,18
 49:18 52:17 63:18
 64:6 74:14,18,22
 75:11 79:21 82:4,21
 83:2,8,16 84:5 87:4
 87:10 88:17 234:3
 240:20 253:3 261:12
 262:17 263:13 270:20
 273:21 277:6 289:2
 295:6 322:5 338:1
 343:14,22 344:4,6,10
 345:1,6,7,9,11,13,16
 345:22 346:5,8,12,22
 347:4,20 348:4,11
 353:3 359:13 361:14
 371:17 376:4
group's 87:8 241:18
groups 9:1 29:21 30:12
 31:8 39:9 53:16 77:16
 81:2 145:7 257:18
 286:20 289:5 338:3
 343:17,20 345:1
 347:12 348:8,17
 364:2,5,9
grow 115:3
growing 118:6 155:17
growth 113:15 119:9
 123:3
guaranteed 102:17
guard 5:12 88:15
 140:12 142:16 144:9
 145:3,11,14 206:13
 230:19 293:7 303:20
 314:4 320:2 329:6
 353:8
Guards 131:10
guess 14:12 16:14
 28:10 40:11 58:12
 68:5 70:8 118:4
 128:10 137:12 196:8
 208:22 213:8 215:21
 216:22 217:16 230:5
 232:19 235:20 257:4
 261:19 263:3,4,18
 272:17,18 274:17
 275:11,19 352:11

367:17 383:9 387:11
guestimate 103:7
guidance 250:18 380:3
guidelines 185:18
gulf 7:6 23:9 96:10
 109:1,21 111:7 112:9
 116:8 127:19 136:1,2
 137:16 138:1,12,15
 144:4,16,19 147:21
 157:12 159:13 161:10
 167:11 197:21 213:22
 214:8,9
guy 177:9 287:17
guys 52:16 187:7
 370:14 377:21 382:3
guys' 344:21

H

H 15:13,21 16:1,5 21:11
 22:8
H4 182:8
habitability 238:17
habitat 112:5 150:9,9
 335:10
habitats 120:9
hack 332:13
half 41:15 55:9,10 96:5
 98:5 121:15 173:10
 179:12,12 180:5
 199:4,6 227:13,15,16
 269:13,15
Hall 1:17 56:21 71:20
 71:20 171:1 173:21
 174:5 222:1,20 231:4
 245:12 250:11 265:7
 268:18,19 283:16
 305:12 306:11 381:3
 381:8 382:5 383:5,15
 384:3,5,7 386:4 387:6
hampered 267:12,15,16
Hampshire 2:2 188:4
Hampton 51:2 57:8
 285:10,14,15
hand 7:22 61:18 77:4
 77:11 103:18,18
 179:19 204:3 230:10
 239:17 288:8 290:16
 311:9 343:10,11
 360:14
handed 240:13
handle 20:12 77:16
 121:6 315:10 351:3
 351:16
handled 313:12
handling 75:20
hands 35:4 187:11
 230:6 241:8,18,18
 244:17 245:1 261:14

360:17
hands-on 188:20
 190:13,15
Hanson 1:15 34:15 46:5
 47:4 52:22 84:17
 85:17 232:5 276:1
 282:7,18 283:6,12
 284:2,12,17 312:19
 312:22 313:13 314:8
 314:22 315:5 328:7
 328:10 330:14
happen 7:15 10:5 76:6
 90:7 101:20 119:11
 170:17 223:4 256:3
 324:9
happened 25:19 40:15
 42:5 74:2,2 75:5
 76:21
happening 40:6 45:1
 83:4,5 323:3
happens 336:19
happy 48:21 91:18
 217:9 305:7 316:7
 357:10
harbor 7:11 19:6 111:4
 147:21 199:1 201:9
 203:7 206:14 213:10
 264:21 284:7 292:21
 294:8 295:6 303:18
 312:16
harbors 65:15 292:7,12
 293:21 302:15 304:17
 305:10 308:4,16
 312:13
hard 26:21 47:1 48:14
 78:7,12,13 88:16 98:6
 124:16,18 193:15
 195:21 232:1 246:8
 248:7 305:8 340:8
 372:13 378:3 386:22
hardened 193:12
harder 309:4
hardpack 196:15
harm 115:17
Harper 135:20
Hassler 228:6,11,17
hate 257:7 322:15
hailed 111:7
Hawaii 7:6
hazard 197:3,8
hazards 140:9 185:16
head 237:14 302:20
 370:19
heading 51:20 304:11
 344:4
headline 247:16
headlong 126:5
headquarters 133:4

198:2 200:16 201:1
 202:7 334:5
heads 176:6
headway 79:11
healthy 91:18
hear 34:21 62:16 78:1
 122:13 207:18 208:13
 285:17 316:9 317:17
 381:15
heard 5:15 6:19 7:1,5
 45:17 63:17 72:11
 90:13 108:9 113:20
 125:20 135:13 142:6
 143:2 145:7 183:10
 214:13 236:8 252:1
 259:5 323:13 324:14
 349:8 368:17 376:13
 376:16 382:11
hearing 211:21 374:17
 383:2
hears 33:22
heart 308:11
heavily 107:7 235:7
heavy 264:10
heck 268:2
height 171:17,20 172:5
 172:7 173:20 325:13
 325:20 326:7 350:8,9
 353:21
height's 352:5
heights 351:21
held 25:17 125:3
 163:11 191:8
help 23:1 43:7 48:21
 51:13 62:12 69:22
 75:18,20 78:8 80:5,11
 80:18 82:4 87:11
 102:22 104:1 125:7,9
 128:1,7 143:20
 170:21 173:16 176:13
 223:11,13 234:2
 239:11 240:10 258:6
 261:13 277:8 295:8
 297:1 299:1 311:4
 325:2 329:12 330:13
 331:18,20 336:6
 351:1 352:17 353:20
 371:9 384:9
helped 24:15 131:5
helpful 12:5 22:18 48:6
 48:13 75:7 77:5,9,20
 235:2 238:12 346:7
helping 75:16 91:1
 102:12 103:12 129:17
 327:16 333:10 357:5
helps 30:22 36:19,20
 103:7,8 104:10
 120:19 214:16

hesitant 317:14
hey 222:3,5 305:19
Hi 71:20 228:3
Hickman 7:14
high 3:9 11:22 20:9
 97:8 99:21 100:12,16
 101:21 103:14 104:2
 134:14,15 149:6
 169:21 172:11 173:2
 174:11,11 175:18
 177:10 326:10,11
higher 13:2 118:19
 138:16 161:14 175:12
 271:2 286:11 331:22
higher-high 99:21
 100:7,16 172:18
highest 122:5 172:17
 173:3,7,11 174:10
 202:8 238:1
highlight 33:16 34:5,9
 76:9 80:11 385:19
highlighted 79:9 151:2
highlighting 302:4
highly 42:14 294:4
 303:22
Hill 45:2 58:4 133:18
hire 210:18
hired 97:8 189:10
 203:11
hiring 25:18,22
historic 142:9
historically 46:9 151:7
 278:21
history 92:22 95:17
 139:3 168:18,20
 171:22 172:2,7,7
 173:10
hit 93:9 126:15 127:2
 144:5 146:5,5,9
 152:19 300:4,4
 326:15 339:12
hitter 264:10
hitting 305:9 309:4
 355:22
hoc 345:12 353:19
hold 44:14 121:21
holder 350:19
holding 239:17 378:6
holes 13:10
holidays 73:12
holistic 186:15 385:13
home 153:14 246:14
 323:17
homeland 328:19 329:2
homeowners' 103:8
homes 326:1
homework 49:14
honest 193:2 366:10

370:21
honor 129:21 177:17
hook 206:5 305:21
 306:19,20 309:15
hope 52:15 59:12 64:16
 90:3 176:1 214:2
 223:3 234:16 266:13
hopefully 51:14 90:6
 126:9 156:19 179:14
 234:10 360:3 361:5
hoping 53:14 54:10
 143:20 171:3 216:16
 239:15
horizon 127:11 195:9
 195:16
horizons 196:2
horizontal 350:7 353:21
hospitality 7:14
hospitals 121:3
host 307:15 312:16
hot 107:22 365:20
Hotel 1:12
hour 236:1
hours 182:12 296:19
house 1:11 15:4 24:12
 29:1 86:2,11 102:20
 111:4 116:16 144:13
 207:2 209:5 234:12
 290:13
houses 102:11
Houston 1:11 7:12 93:2
 93:2 115:10 121:17
 126:17 135:18 136:14
 137:13 145:12 146:9
 148:1 149:22 150:19
 203:9 204:15 206:3,4
 207:3
Houston's 137:7
Houston- 199:4
Houston-Galveston-...
 197:19 206:17
HSRP 1:15,15 2:6,15
 4:3,3,15,17 7:13,17
 8:6 34:13 49:7,20
 65:1 77:8 82:6 83:14
 214:13 249:22 262:18
 264:2 266:17 270:19
 307:12 338:1,12
 358:2 369:9,16
HSRP's 6:6
HUD 109:16
huge 28:9 49:8 62:7
 94:5 146:1 183:10
 203:19 263:9 283:21
 328:18 331:12 365:20
Hughes 186:13
human 303:16 304:7
 343:6

humbling 177:17
hurricane 21:10 97:16
 106:21 109:16 119:2
 123:11,19 126:13,21
 127:2 135:8,11
 143:16 144:4,15,17
 149:2 152:7,14 153:3
 153:5 162:5 163:1
 164:3,3,4,17 167:3
 172:5 183:20 205:17
 216:5
hurricanes 93:11,13
 183:17
hydraulic 294:6
hydraulics 294:20
hydro 17:22 21:16 22:6
 28:15 132:4,5 194:2
 220:8,21 228:8 244:5
 245:9 252:3
hydrocarbon 335:20
hydrocarbons 336:2
hydrodynamic 115:6
hydrodynamics 113:14
 151:3 154:3
hydrogeologist 107:15
Hydrographer 228:22
hydrographer-based
 188:15
Hydrographers 178:20
 182:20 185:13 191:2
 191:14 224:22
hydrographic 1:4,11
 2:2 5:5 11:10 13:18
 13:22 14:15 16:3,15
 17:15,21 22:9 24:7
 28:19 43:8 62:7 92:13
 133:2 139:22 146:22
 147:13,17,18 176:19
 177:2,4,14 182:15
 184:17 186:14,21
 190:19 196:6 199:13
 205:19 206:19 208:2
 208:3,7 209:22 210:4
 210:13,19 221:5
 222:14 225:14 226:15
 227:2,16,22 230:9
 237:12,16,18 238:1
 244:2,14,19 245:7,16
 247:7,17 248:7,17
 249:5,6,8,10 250:1,13
 254:12 256:1 270:12
 272:20 274:6 329:15
 329:16 330:9 333:8
 333:11 334:11 335:9
 335:14 336:7 371:11
hydrography 76:14,19
 79:11 80:2 83:9,19
 178:10 179:1 186:16

188:8 189:16 224:16
 226:10 281:7
hydrographic 253:4

I

I's 279:12
i.e 293:2
lan 186:13
ice 76:18 277:22 278:13
icebreaker 248:5
 264:21
icebreakers 248:6
idea 32:7 120:15 121:1
 218:5 224:7 239:7
 247:8 271:21 304:13
 305:5,7 323:15 333:4
 358:10 367:1 376:21
 379:16
ideal 117:5 119:21
ideas 69:18 79:20 87:18
 328:5 330:17 331:8
 332:12 335:3 337:6
identical 54:8
identified 52:1 66:4
 67:1 112:2 243:1
identify 66:13 113:7
 125:7 172:4 331:20
 332:1
Identifying 64:19
IDIQ 337:8
IGLD 355:3
IHO 178:9 187:1,9
 188:14 189:2 190:13
 191:4
IHO's 187:12
II 113:2
Ike 97:17 98:5 109:16
 125:21 126:4,14,21
 127:2 135:11 143:16
 144:5,15 152:17,19
 153:5 162:5,8 163:1
 164:3 167:3
image 12:16
imagery 5:17 12:13,17
 148:16
images 5:21 13:3
imagine 172:20 205:10
imaging 186:7
immediate 256:12
immediately 17:22 18:4
 46:6 342:2
impact 63:6 86:3,10
 118:14 153:18 170:8
 192:10 198:12 201:3
 232:7 298:1,6 321:15
 333:13 336:1 339:3
 342:3 351:4 353:17
 382:20

impacts 6:1 119:5
 124:2 128:2 294:6
 326:18
impervious 194:4
implement 184:8
 197:17 198:3,6,14
 202:4
implemented 205:12
 316:18 337:6 340:13
implementing 197:18
 202:19
implications 118:12,22
 199:15
import 202:9 203:12
 342:20
importance 6:20 59:4
 73:19 92:2 93:18
 159:3 176:3 307:22
 326:12
important 31:9 36:22
 43:20 50:12,20 75:4
 90:14 95:16 111:9
 157:6 158:3 160:21
 161:9,17 162:2,16
 220:11 224:5,14,18
 225:4 227:19 233:13
 241:11 248:15 251:15
 264:15 265:4,10
 271:22 273:14 297:8
 303:9 304:19 310:20
 329:2 342:11 347:4
 353:2 355:7,19 359:8
 365:10 366:7
importantly 51:9
impossible 186:3 273:3
 274:3 313:16 314:17
impression 38:16
impressive 5:15
improve 33:11 77:2
 332:14
improved 205:13
improvement 37:13
improvements 129:12
 205:4 310:22 332:2
improving 134:21
in-depth 187:11,16,17
in-house 117:20 156:5
 227:20
in-job 190:8
in-water 38:22
inability 27:20
inaccurate 214:21
 215:4
inattention 346:6
incapable 314:21
incentive 191:6
inch 143:4
inches 143:5 205:8

inclined 243:19
include 33:21 51:5
 108:22 111:18 227:2
 258:12,15 312:3
 339:2 355:2
included 81:13 219:15
 280:4 283:22 299:20
 350:18 381:21 382:14
includes 47:5 86:3
 206:13 225:1 307:6
 311:15 349:16
including 10:10 33:1
 37:13 57:7 81:5
 140:11 178:16 288:8
 302:13 308:5 318:19
 357:12
inclusion 298:10 372:5
incoming 6:8 50:14
incorporate 195:22
 299:12
incorporated 263:17
 324:1 325:17 342:6
incorporating 193:9
 195:4,9
incorporation 253:8
incorrect 55:22 347:11
increase 21:6 96:2
 118:20 121:16 159:12
 164:10 166:14 167:6
 167:8 168:13 169:8
 169:12
increased 20:14 122:21
 123:21
increasing 123:5
 200:19 267:22
incredibly 78:12 331:12
incredulous 20:8
incremental 118:19
 151:15
independence 108:17
independent 235:4,15
Indianapolis 378:5
indicate 89:17
indications 114:19
indicator 176:10
individual 80:17 103:8
 203:5 378:11
individuals 70:16
industrial 126:16
industries 305:2
industry 33:14 72:7,9
 72:18,20,22 73:3,9
 90:16 110:16,22
 123:4 128:3 189:9,11
 190:2,3 206:14 207:6
 235:12 283:4,5,14
 284:15 293:10 299:7
 305:20 326:17 334:8

335:19 340:16,20
 341:11 342:8 381:16
 382:11
inefficiencies 36:18
inefficiency 32:15
inefficient 254:10
influence 48:8 158:6
 164:15
influx 186:3
inform 355:18
information 3:5 31:6
 41:11 58:1 71:6 82:10
 90:8 91:7 92:7 96:18
 117:13,21 118:1
 148:11 157:17 158:11
 159:16 180:15 194:4
 208:19 209:2,15
 211:7 220:22 221:5,8
 295:19 299:1 322:6
 327:22 330:22 339:8
 342:5 349:13,14
 350:13 353:21,22
 354:6 360:4 365:4
 373:4,19 376:12
 379:20
infrastructure 35:1
 121:2,4 124:1 135:10
 153:5 193:10 214:9
 214:12 222:11,13
 234:4 279:14 298:2
 318:21 341:21
infrastructures 310:4
inherited 94:14,15,16
initial 18:1 86:21
initially 219:10 379:13
initiative 202:2,14
 209:9
initiatives 140:15
inland 124:15 126:3
 132:20 137:18,20
 326:3
inlet 113:10 115:1
 137:13,15
inlets 114:10 135:14
 186:1
innovation 335:7
innovative 226:7
input 11:2 79:19 206:15
 216:13 256:8 331:3
 345:11 381:15
inside 152:16 220:6
 297:3
installations 162:7
installed 96:8 143:8
 171:8 296:4 317:4
installing 143:19
instance 18:11 42:17
 119:1 123:14

Institute 3:7,20 91:9
 154:1,10,16 188:11
 298:11
institutions 116:12
 118:1
instructions 39:21
instrument 163:6,7
instrumentation 171:4
instrumented 143:10
 171:2
insurance 33:14 162:15
 325:22 326:14
integrate 165:13 293:19
integrated 32:20
 266:19 369:13
integrity 191:7
intelligence 81:6
 347:14 348:20 364:5
 364:8,16 365:1,22
 367:20 369:1,6 370:4
 371:17 379:2
intended 54:13
intensity 180:16
intent 41:3 235:20
 237:1
intention 223:11 273:16
intentionally 335:19
inter-agency 289:2,4
interacts 334:22 335:1
interagency 33:4 234:3
 278:16
interconnected 136:1
interest 20:15 35:22
 372:6
interested 24:16 50:4
 67:11 75:8 83:18
 163:20 202:19 207:16
 208:14 258:1 287:4
 327:16 386:20
interesting 18:20
interests 12:7 83:14,14
 194:18 208:12 238:4
 313:17
interface 100:16 289:16
interim 236:15
intermediaries 378:15
internal 27:8 58:8,9
 83:20
internally 36:21 83:8
international 187:10
 264:4 265:5
internationally 142:21
internet-based 186:10
internships 190:20
interoperability 342:12
interplay 209:8
interrupt 22:15 373:22
interval 168:16

interviews 235:11
intracoastal 95:5 115:8
 136:1,2 137:16 138:1
 138:12,16 144:19
 147:21 197:21
intrigued 208:14
introduce 64:22 89:7
 89:12 158:14
introduced 6:9
introduction 108:1
 156:8
introductory 91:6
 232:21 247:3
inundated 19:6 126:16
 172:14,22
inundation 18:14 19:19
 21:6 119:16 120:5
 159:6,12,18 162:3,18
 164:18 166:14 168:14
 169:12,20 170:9
 174:13 176:10 194:1
 194:7 293:3 314:14
invented 182:4 185:6
 187:20
inventories 116:15
invested 141:18 175:20
investigation 113:3
investigations 114:18
 116:10
investment 190:9
invisibility 297:1
invitation 387:2
invitations 108:2
invite 32:22 33:6
invited 177:19
inviting 91:15 156:9
involved 31:8 60:8
 85:19 95:15 105:21
 106:18 107:7 108:18
 109:7 129:8 255:1
 286:1 287:8 310:18
 349:18
involves 155:1
involving 51:8
IOCM 10:16 11:2 30:12
 33:1
IOOS 299:3,4
iPhone 155:3
irreplaceable 225:15,16
 225:21
IRT 235:5,20 236:9
Isabel 133:8
Isabelle 136:4
island 105:18 106:4,6
 114:6,8 115:13
 129:11 133:6 135:20
 144:13 147:20 150:15
 151:14 153:1

Islands 121:9
Isle 167:15 169:6
 170:12
isolated 73:8
isostasy 183:16
issue 11:7,15,21 15:12
 36:5 46:3 49:8,19
 50:7,17 51:4,8,15
 52:5 58:2 59:5,9
 62:17 63:22 64:11,14
 65:3 67:21 70:19
 72:21 73:8 77:2,16
 79:7 83:11 113:11
 116:19 163:19 216:3
 218:22 229:16,16
 233:7 241:7 244:20
 247:6,6 248:4 255:10
 255:11 256:12,18
 259:22 260:2 261:8
 262:13 269:8 274:16
 275:20 277:15 289:17
 292:10 293:21,22
 294:3,9 297:7 300:10
 300:11 303:9,10
 306:7,17,20 307:6,9
 307:11 308:3 318:4
 320:16 322:2 330:21
 331:11 337:20,22
 338:8 344:6 345:14
 349:4 354:15 358:18
 358:22 360:13 368:7
 368:13 370:9 385:18
issue's 253:11
issued 86:2 340:8
issues 10:4,7 25:1,4
 27:19 28:4 50:3 51:6
 51:7 53:10 57:3 59:1
 62:19,21 63:10 65:1
 67:1 68:4 72:8 75:3
 75:19 76:10 77:10
 78:9 79:14 80:9,11
 83:10 86:13 93:16
 108:18 112:2,6,8
 114:3 123:10 124:7
 124:17 125:7 127:16
 189:5,5,18 199:15
 205:11 216:10 220:10
 230:12 232:20 233:3
 233:11 251:8 254:1
 254:11 261:8 263:15
 292:8 293:2,5,5
 294:10 300:21 304:2
 307:7 308:6,6 309:12
 311:21 321:12 328:20
 329:7 332:21 338:12
 354:10 376:2
item 28:9 39:9 79:6,6
 79:22 270:22 271:21

271:22 280:7 281:7
316:5 375:20 384:4,5
items 28:12 70:19
243:16 351:19
IWGFI 234:3

J

J 1:18,21
JALBTCX 21:5 29:14
37:15 38:11 39:3
January 46:10 100:6
149:11 174:16
Jarrod 78:19
Jed 5:9 90:14
Jefferson 227:6 228:5
228:11
Jeffress 3:4 4:10 40:19
91:4,13 97:16 98:11
104:11,13 106:14
128:12 153:20 176:18
191:17 192:21 193:7
196:3 207:12 208:17
209:13 211:2,13
Jeremy 219:7
Jersey 313:18,21
319:17 326:16
Jesse 20:15
jetty 135:14 140:4
job 31:16 65:8 141:11
152:8 159:20 189:14
189:15,15 216:1
322:8 354:22 367:7
378:5,9
John 2:16 186:13
JOHNSTON 2:11
joined 129:4
joint 2:2 79:16,18 144:4
144:17 187:4 219:11
Jon 212:1 216:13
Joyce 1:20 4:7 9:4
38:14,16 39:10,12
41:16 52:9 67:6,15
216:18,20 218:9
228:3 229:21,22
239:14 240:9 241:22
242:21 243:3 245:20
250:19 257:2 261:4
262:11 301:15 348:17
360:13 367:21 376:3
Joyce's 57:14 216:16
241:17 364:19
judge 106:18
Juliana 2:3 9:21 10:8
29:18,19 33:6,7 343:5
354:6,9 356:22 357:8
371:18 379:8
Juliana's 38:19 78:2
349:8 352:9

Julianne 279:12
July 204:12 290:13
July/August 199:7
jump 67:11 351:22
jumping 67:15
June 149:2
junior 226:10
jurisdictions 287:15
justification 305:12
306:6
justify 275:22

K

Kaine 286:3
Katy's 111:5
keel 102:19 309:21
320:3
keep 6:5,16 22:20 26:12
26:19 27:2,10,12 28:3
28:8 33:18 34:12
40:13 83:8,15 84:6,6
84:7,8,10 158:12
163:12,13 182:8,9
186:4 215:2 233:6
244:22 266:5 270:7
273:17 277:17 356:16
370:7
keeping 25:22 26:9
27:11 83:18 84:14
206:7 221:6 260:16
keeps 26:16 27:15
258:11
Kelly 1:18 52:13 65:6,7
65:7 69:12,12 225:17
247:14,14 251:13,13
252:20,20 253:16,22
259:2 260:18,22
262:11 268:6 292:2,3
292:3 300:8,14
302:17 304:16 306:9
307:20 309:1 311:8
312:10,21 313:8,14
314:12 315:11,17,22
316:4 317:2 318:2,12
319:15 363:5,8
Ken 7:18
Kennedy 94:4,4,8,10,12
94:13,21
kept 142:3,4
key 66:3 67:1 80:6
167:14 168:6 169:11
169:15 170:3,4,14
221:9 241:16 259:7
293:22 294:3,14
299:9 320:16 349:14
351:5 365:13 366:11
kick 319:3
kids 97:8

Kill 294:17
Kim 1:17 56:20 71:19
71:20 231:3 267:9
268:18 309:14 360:22
381:8
kind 24:18 34:22 43:5
46:18 48:11 68:8 69:4
70:6 72:13 73:4,5
77:17 80:11,13 99:11
101:14,18,19 103:17
106:9 119:19 122:14
124:5 130:4,14,22
131:10 132:5 137:19
139:4 146:20 156:18
188:6 191:5,8 197:16
201:4 210:7 213:3
221:1 223:2 226:19
237:14 254:6,21
256:10,14 257:8,17
267:13 269:6 274:8
278:16 279:16,21
280:16 287:6 289:15
293:19 298:4 299:14
301:7 306:3,19 307:8
319:6 320:8 321:13
322:1 325:16 327:11
328:18 330:20 331:2
338:7 340:12 341:2
345:5,22 356:17
357:14 359:8,10
360:7,9 365:3,6
367:20 373:3 377:2
379:22 380:8 381:14
kinds 287:2
King 5:19 94:6,7 100:4
knew 335:14
Knights 387:5
knock 331:19
know 6:12,14,21 7:4,12
7:22 8:1,3,7,22 9:7,12
9:15 10:4,11,17 12:5
13:21 14:1,3,21 15:4
15:5,6,9,11 16:16
18:20,21 19:8 20:11
20:15 22:17 23:1,2,9
23:18,22 24:6,17 25:3
26:5,13,22 27:1,8,14
28:3 30:2,11 31:3,10
31:15 32:6 34:7 35:10
35:16 39:1,22 40:1
42:10 43:13 44:5,11
44:15,17 45:5,13
46:10 48:13,17 49:14
54:18 56:10 58:13,14
58:21 60:17 64:8,8,22
65:2,13,16 66:15 67:3
68:3 69:7,19 70:4,9
71:14 72:20 73:11,16

73:21 76:18 78:5,6,10
78:12 79:8,17 80:18
81:20,22 82:3,5,8,9
82:10 84:3,13,14
87:20 88:11,19 100:3
103:1 104:12 119:2
120:11 123:12 129:15
146:8 153:8,15
156:22 177:11 178:4
179:13 180:5 182:20
183:18,18 184:11
185:16,18 189:21,22
190:5 191:10 192:15
193:3 194:9 197:3
203:6 207:21 208:4,4
209:15 210:4,8
213:22 214:4 217:8
220:14 221:16,18,18
221:21 222:6,22
223:1,13 224:5 225:6
226:17 229:5,5,12,14
229:17,19 230:3
231:1 232:1,11,12,20
233:2,5,10,11,13
235:7,14,16,17
236:16 239:19 240:5
240:12,18,22 241:2
241:12 242:16 243:10
244:9,22 245:22
247:20 248:6,10,15
248:17,18,21 251:14
251:22 252:9 253:7
255:16 257:6,8,16,22
258:3,9,10 259:18,19
260:20,20 261:2
262:14 264:20 265:9
266:2,2 269:5,7,16,17
270:1,4,5,15 271:5
272:15 275:9,18
276:5 277:16 279:20
280:4,6,19 281:3
286:12 288:17 292:9
293:16 294:1 295:1
295:16 296:12,14
298:3,5,15 299:6,13
299:19 300:14,15
301:11,18 302:19
303:18 304:16,22
305:4 306:14,18
309:17,21 312:22
313:10,14,17 315:19
315:22 316:5,5,14
317:2,4 318:4,6
319:13 320:10,15,16
321:14,18 322:21
324:5,14 325:22
326:11 327:3 330:21
334:21 335:11,22

339:1,2,9,13 340:1,2
340:18 341:8,10
342:11 343:1,8 344:5
347:17 348:16,19
350:16 351:7 352:3
353:2 354:10,16
355:8,18 359:9,14
360:20 362:21 366:10
367:7,8,11,18 368:2,3
368:5,18,20 369:22
370:6 372:22 373:4
375:6 376:17,19,22
377:6,8,9,11,13,17,18
378:9,12,18 380:5,16
381:5,15,17 383:18
384:7 385:12,20
386:22 387:6,13
knowing 16:19 93:18
178:5 215:17 326:7
359:11
knowledge 112:19
208:6,9 337:10
knowledgeable 177:13
known 94:19
knows 144:5 187:20
219:13 229:15 278:14
Kudrna 7:19 49:17
Kull 294:17

L

L.A 75:5
La 157:9 204:22 364:2,3
LA/Long 301:19
lab 2:20 154:4
labeled 41:1 247:3
labeling 302:12
lack 34:21 122:4 124:5
194:8 267:12 268:1
320:11
lady 105:6
Laguna 95:7
laid 50:17 218:18
lakes 131:14 132:7
150:14 178:13 210:17
land 3:9,10 92:9 93:18
93:19 95:9 96:15
98:16,18 99:1,8 100:8
105:7 107:6,8,14
108:8,11,14,19
125:14 149:15 151:14
156:14 176:9 183:15
191:13,16 210:9,9,11
355:8
landed 93:2 164:4
landfall 98:5
landlocked 124:9
lands 3:18 108:21
109:1,1 141:5

landscape 93:10
119:10
lanes 185:14
Langley 286:19
language 248:9 249:4
251:17 337:7
large 27:20 60:3 62:10
65:15 80:12 119:7
141:10 158:5 160:4
167:9,12 168:2,6
170:2 240:18 270:4
291:12 302:15 303:6
304:5 339:21
larger 72:21 78:9 159:8
169:4,8 176:5 206:20
294:3 296:2 302:18
305:14 307:21 337:21
largest 73:13 92:21
110:18 161:11,12
169:12 291:11
Larry 1:16 47:10 52:12
68:17 75:12 285:8
348:19 363:1 366:15
370:18 380:18 387:11
387:16
Larry's 383:9
lastly 325:19
late 41:19 207:19
246:11
latest 148:16
latitude 182:2 200:18
laugh 298:5
Laughter 40:20 174:21
179:15 217:17 273:12
366:21
launches 222:9 223:19
223:20 225:14 226:14
228:18 275:10
LAURA 2:13
Lausanne 154:11
law 100:11
laws 212:15
Lawson 1:16 49:2
52:11 55:11,13 57:19
63:9,15,16 74:10,20
78:21 80:21 82:2,19
84:5,18 85:13 87:20
230:11 243:7 246:15
248:2 255:6 262:5,7
268:6,18 291:8 307:4
318:13 330:18 336:9
337:18 343:12 346:17
348:19 362:18 369:2
375:13 384:20,22
385:2 386:4 387:8
Lawson's 86:21 231:16
346:15 364:11 375:9
lawyers 214:19

layers 180:18
laying 278:1,4
layout 146:12
lays 196:16
lead 25:14 52:2 109:4
109:15 145:20 162:14
179:5 202:13 264:21
289:14 331:11 336:11
leader 52:2
leadership 5:11 58:18
71:1 77:19 338:6
leads 145:18,19 329:9
leagues 109:2
leaned 146:20 147:6
197:17
Leaning 190:14
learn 90:9 154:17
224:16
learned 255:7 290:11
learning 188:16 349:20
leave 46:6,17 47:15
69:8 71:2 152:22
190:9 241:17 386:6
leaving 71:17
led 238:20 289:13
335:15
left 94:20 143:3 151:19
165:10,16 166:9
168:4,12 170:11
191:20 226:22 255:21
320:19 351:11
legacy 142:20 192:18
198:17
legal 40:3 93:21 98:21
legally 95:18 334:22
335:2
legend 148:17
legislation 40:6
legislative 39:18,22
40:5,17 41:6,12 43:5
43:18 347:12,18,22
348:17
legislators 84:12
legislature 125:10
Lehmann 127:3
length 58:22 69:22
252:5
lengthy 364:11
lessons 290:11
let's 41:2 63:1 69:10
88:20,21 147:22
157:8 224:11 225:11
244:16,17,17 262:8
263:20 270:16 285:15
289:21 320:15 337:5
371:2
letter 8:2 45:22 46:4
47:12,14,17 48:11

57:21 64:11,20 65:4
66:8,9 67:4 70:11,14
71:2,9,15 76:4,11
82:8 222:2 251:21
253:3,10,17 254:2,4
254:14 255:9,10,13
255:17 257:14 259:8
259:19,21 261:10,10
281:21 299:21,21
361:5 370:9
letters 48:19 217:14
253:11 255:8,13
286:4
letting 84:15
levee 119:2 129:11
152:15,21 195:21
levees 135:1 183:21
level 19:4 21:2,4 29:22
30:1 33:17 39:2 62:21
95:21 96:2,3,5,6
103:2 118:7,11,16,20
118:21 119:12,13
120:7,10,19 121:13
121:21 122:1,3
156:21 157:16 159:5
159:13 160:1,4,7,11
160:12,12 161:8,8,12
164:11,15 165:2,6,18
165:21 166:8 167:13
167:18 169:1,6,10,16
169:19 170:8,13,19
171:11,12,13,21
172:6,19 174:17
175:4,4 176:7 182:18
195:4,6,12,18 200:10
202:5,8,13 286:8
287:5 298:4 312:20
327:5,8,11 340:10
341:19
levels 51:2 63:6,11,12
80:4 95:22 157:12,19
158:8 163:13,15
164:22 165:7,19,21
166:2 167:1 331:22
382:1,19
leverage 194:22 371:5
371:9 373:1,6
leveraged 203:22
leveraging 372:14
liberty 361:3
license 212:5
licensed 3:9 98:18
licensure 191:2 210:8
212:3
LIDAR 9:9,22 10:13
11:14 13:14 14:16,16
19:17 20:1 21:10
28:19,19 38:20 186:7

194:3,9,14 274:6
 325:4 330:9 333:5,8
 333:11
lie 116:18
lieu 358:6
life 135:2 218:4,9
 223:17 230:16,17,18
 231:17 238:10 304:18
 305:11 343:9
light 305:14
likes 316:12
limitations 184:11
 186:18
limited 3:16 112:19
 176:20 294:4 378:19
limiting 194:6
Lindsay 1:17 14:7
 16:13 17:11 61:12
 67:14 254:5,6 268:17
 269:10 340:4,6
 346:10 360:21 373:20
line 63:14 79:5,22 99:21
 99:22 100:12 105:2
 152:18,20 158:17,17
 165:17 166:9,13,15
 166:19 168:15 174:13
 182:1,2 228:20 231:6
 233:4 235:12 245:14
 245:15 249:8 264:21
 265:11 270:22 271:20
 280:7 281:7 305:13
 306:4 307:2 327:1
 375:19
linear 166:16 169:6
 170:13 187:16
lined 142:15 146:14
lines 132:1 148:19,20
 174:10,12 382:12
link 148:1
linkages 84:8
links 376:11
list 35:19 36:11 41:22
 61:14 141:19 147:19
 242:19 266:18,19
 267:7,9 279:3 282:22
 284:5,8 293:17
 301:10 324:11,11
 333:15 334:21 337:3
 375:4
listed 206:9,12 283:7
 352:6
listening 315:13
listing 70:18
literally 309:11
little 8:17,20 14:13
 23:14 25:2 32:1 35:16
 36:14 41:19 46:3,11
 50:6 56:18 57:4 60:10

63:21 68:4 69:15 71:8
 72:19 74:5,9 84:18
 92:16 93:4,5 105:18
 108:7,9 112:14 117:1
 124:22 146:20 159:2
 166:20 175:11 176:6
 180:21 185:22 188:21
 191:15 193:5 196:9
 199:6 200:5 212:2
 215:16 217:1 219:14
 243:14 246:15 259:4
 271:2,17 279:4,6
 280:21 285:13 288:6
 298:11 301:2 318:7
 319:8,11 329:9
 345:20 346:8 349:22
 371:14 377:3 385:20
 386:12
littoral 93:21,21 98:20
 101:6 104:8
live 37:21 130:9 183:8
 246:5 286:11
lives 92:20
LNG 204:8
load 133:19 197:4
 216:18
local 24:16 112:11
 116:10 124:3 156:15
 161:8 170:19 176:3
 199:13 238:4 319:3
 350:18 353:4
locate 98:20
located 131:17 171:10
location 101:6 114:7
 152:12 167:18 298:19
locations 30:19 117:15
 161:14 168:3,5
Lockhart 1:18 9:2,2
 12:10 22:5 24:21 26:7
 37:5,6 70:8 245:18,18
 246:4 247:11 272:17
 272:18 273:13 275:13
 275:13 277:10 356:5
 356:5 367:17 369:22
 370:20 383:9
logic 106:10,12
logical 28:20 58:21
 84:15 332:9
logistics 8:11
logjam 234:19
long 7:7 22:16 35:19
 36:11 42:9 47:7 61:12
 74:22 91:18 168:1
 182:14 187:21 192:12
 242:19 260:13 267:7
 277:1 284:5,7 291:20
 310:6 326:17 337:3
 358:13,13 361:6

364:2
long-term 45:6 135:2
 157:17 160:18 237:20
longer 6:16 25:16 41:8
 53:8 84:4 183:13
 199:17 236:18 251:8
 252:4,18 253:15,19
 257:9 363:12
longitude 182:1
look 6:14 42:14 54:10
 54:11 58:20 60:19
 69:16 75:11 79:22
 80:13 85:3 87:10
 88:17 111:6 113:16
 119:10 125:13,17
 134:21 138:10 143:1
 147:17 159:6 160:10
 160:12,15 161:7,10
 163:1 166:22 167:21
 174:4,7 176:4 210:20
 211:21 213:3 237:5
 245:20 258:10 267:3
 273:1 278:16 291:22
 299:16 315:12 325:2
 326:15 328:12 341:13
 361:6 362:1 379:4
 381:7,8
looked 32:14 57:15
 92:18 144:15 167:11
 382:6
looking 14:20 36:9
 44:11,18 47:2 50:8
 68:21 87:17 115:12
 120:21 125:12 154:19
 185:3 193:19 195:15
 195:20,20 197:2,2,8
 202:1,3 235:6,7 245:1
 252:21 253:1,2,16
 259:12 280:7 293:13
 294:12 298:17 305:21
 306:16 322:20 324:20
 335:19 381:10
looks 13:6 48:15 57:5,9
 127:18 239:16 273:17
 344:1
lose 181:5,6,12 256:19
losing 28:6 127:5
loss 112:5 135:2 232:11
 238:21
lost 40:12 232:12
lot 9:8,11 11:16 12:7
 13:4,20 14:1 18:18
 20:14 28:6 29:20
 30:21 34:21 35:22
 36:1,3,4 41:10 51:21
 60:7 61:16 62:9 64:10
 64:15 74:1,18 81:5
 83:5 91:21 92:5 95:12

96:9 114:20 115:5
 117:12 118:9 119:9
 123:9,17 126:15
 129:8,16 136:20
 138:5,5,19 139:4
 148:10 154:19,22
 155:1 156:15 158:11
 167:2,6,9 174:9 175:8
 177:20 182:4,10,11
 183:13 185:1,5,9
 188:14 190:1,8
 196:13,17 203:14
 205:16 211:7 214:1,7
 214:9 215:2 217:10
 233:21 234:22 253:6
 255:3 268:2 282:8
 288:7 289:6 292:8
 293:11 299:10 301:7
 304:22 308:7 311:2
 312:11 320:19 327:19
 328:20 333:2 334:2
 334:15,17 340:6,7,8
 350:17 351:10 353:15
 354:4 359:6 361:9
 367:8,18 376:13
 378:10
lots 26:17 85:8 243:14
 243:15 282:4 331:14
 334:1
Louisiana 110:14
 132:19 161:13 167:15
 169:7
love 78:9 185:19 190:18
 258:3 290:14 296:3
loving 61:16
low 86:3,10 102:18
 103:14 104:3 105:1
 123:13 142:21 161:16
 174:17 194:11,12
 197:11 198:17,18
 199:16 200:2,7,11,18
 218:1
low-water 101:22
lower 171:18
lower- 198:17
lower-low 142:15,22
 199:19 200:3,9,12,16
 200:19 201:1,6
lowest 174:17
lucky 98:7,7 156:4
Luis 106:8 114:4,5,8
lunar 182:10
lunch 211:4 215:9
lunchtime 343:5
Luttes 99:18 101:2
luxury 252:4
lying 123:13
Lynn 75:15

Lynne 2:15 81:7 361:12
371:3 379:6 384:9,11
385:1,3 386:10,15

M

machine 26:14
macro 351:19
Madre 95:7
Magnuson 2:12 89:7,9
108:2
main 16:16 101:2 133:4
246:19,21 304:10,13
306:13 322:1
maintain 140:5 160:8
227:20 353:12
maintained 209:2
297:11
maintaining 135:15
136:12 199:17 204:13
224:6
maintains 16:10
maintenance 129:10
134:2 139:1,16
140:19 141:9 153:17
204:4,11 205:2
231:21 238:16 246:12
336:16
major 99:5 102:6
103:22 137:20 255:9
283:17 284:15 289:9
294:2 296:5 317:5
375:14,16
majority 206:11 241:6
326:4
making 7:15 28:11 34:7
44:5 65:2 126:7 178:5
180:3 183:1 206:15
322:13 324:21 327:5
357:22 368:7
manage 94:22 227:22
315:2
manageable 323:6
managed 162:15
management 21:1
101:9 109:6 116:20
117:4,7 125:19
126:10 129:9 132:4
132:16 134:12,19
170:21,22,22 209:11
232:10 238:15 293:2
293:3 365:19 369:7
369:11,14
manager 2:8 108:20
173:2,16 174:4,15
176:13
managers 13:5 92:12
141:15 159:17,17
manages 154:3

managing 160:22
mandated 366:12
mandatory 147:3
manifested 124:1
Manifold 192:8
manner 50:18 201:19
352:13 370:8
manpower 186:5 334:3
manufacturing 138:8
map 62:12 83:11 131:8
142:7 148:11 152:11
179:3 183:11 335:12
372:22
mapped 62:10 124:15
336:2
mapping 10:1 18:11
32:20 33:3,10,12,15
34:2,8 38:20 50:22
209:6,16 262:22
263:4,5 265:22 325:9
341:4
maps 97:4 148:7,8
209:15 353:11,13
MARAD 133:19 140:12
March 1:9 149:2
marching 15:15
marinas 326:19
major 109:2 177:8
178:16 188:19 189:12
228:19 267:11 268:13
269:13 283:2
mariners 6:22 224:17
225:2 299:7 322:14
maritime 55:20 83:6
263:1,5,7 264:8,18
266:11 269:1,13
270:2 283:20 284:8
284:16
market 379:9 385:10
marketed 365:12
marketing 379:11,17
385:4,8,17
marks 51:19 101:5
married 94:18,19
marsh 120:8 150:2
186:1 193:11 195:10
marshes 120:8,11,13
149:21 150:9
master's 177:5
Matagorda 135:19
136:15
match 82:18 179:11
210:22
matches 147:19
material 107:12 117:2
149:15 150:6,7 151:5
151:8,12,16 152:3
materials 138:14

math 182:5
matrix 383:4
matter 89:2 108:15
215:12 285:5 319:7
387:22
matters 9:5 107:10
185:21 243:1
mature 55:15
Maune 1:19 4:8 39:12
43:15 49:16,16 55:5,8
56:8,12,16,19 57:12
57:12 58:6,17 59:14
60:22 62:5 216:14,15
216:20 221:20 226:21
229:19 232:13,13
235:22,22 237:2,7
238:8 239:1,5 240:2,9
240:17,21 241:21,21
242:4,6,12,21 243:3
247:5 256:22 257:20
258:3,14 259:1
260:11,20 261:11,17
261:22 262:4 266:5
277:19 281:12,16,19
282:5 284:18 285:3,8
285:8 290:18,22
291:5,8,19 300:6,6,9
301:15 304:9,9 305:8
307:4 308:18 309:2,7
312:7,18 316:3
318:13 320:18 327:15
328:3,9 329:14,15
330:12,15 331:4
337:13 338:14 340:4
343:12,21 344:12
345:10 346:15 347:6
347:21 348:5 354:8
355:21 356:20 358:4
358:11,15,21 360:11
360:18,22 361:2,7,11
361:16 362:13,16
363:1,5,11,17,21
max 169:17
maximum 205:6
McHugh 3:15 4:13
99:13 176:19 177:16
179:16 207:13 209:21
McIntyre 1:19 53:1 56:5
62:15,15 309:5,5,9
382:22,22 387:12,17
MCLAUGHLIN 2:13
mea 328:12
mean 14:1,15 15:2
23:21 40:15 43:18
55:15 63:18 64:7
74:15,16 75:19 99:20
99:21 100:7,11,16,16
101:21,22 103:13,14

105:1 142:15,21,22
159:4 172:18,18
174:11 178:3 181:2
182:8 187:19 189:4
198:17,17 199:16,19
200:2,2,7,9,11,12,16
200:17,19 201:1,6
228:11 230:12,18
232:22 239:19 240:5
250:8 258:20 260:21
267:19 268:3 269:15
271:7 274:3,20 275:4
278:3 281:5,21 283:3
283:7 284:5,9,10
300:21 302:5 303:1,4
304:7,22 309:11,16
314:5 317:8 318:20
319:16 323:19 326:14
329:8 335:11 338:19
338:20 342:19 345:4
365:3 366:2 367:12
370:3 377:17,19
381:12,14 385:6
Meaning 106:11
meaningful 82:9
meaningless 178:19,20
means 13:9 15:21
61:22 154:6 211:8
290:8 379:12
meant 90:8 280:10,10
281:9
measure 12:15,21
96:10 157:5 171:12
180:15 184:6
measured 96:4 175:17
measurement 178:11
measurements 24:2
157:5,8 159:4 163:9
163:10 176:3 179:18
179:21 180:4 182:11
182:13
measures 157:19
171:12 196:1
measuring 163:14
180:13
Mechanic 1:12
mechanics 68:18
mechanisms 317:10
medium-sized 227:4
228:15
MEDLEY 2:14
meet 33:19 82:21 88:20
158:9 187:15 190:13
295:5 324:13 360:14
361:17 362:3,6,17
meeting 1:6 4:2,15 5:4
34:17 39:14 49:20
53:17 61:12 64:15,16

66:9,18 67:5 75:2
 76:4 77:9 81:6 86:1
 201:13 242:1 247:17
 255:9,14,15 259:8
 260:1 264:2 266:17
 294:20 299:22 307:18
 313:2,3 325:6 339:20
 346:12 354:20 376:17
 387:21
meetings 14:2 38:17
 64:3 81:5 91:19 125:4
 199:10 214:14 375:2
meets 359:18
mega 56:6 302:22
 303:6 306:15
mega-ship 74:3 311:19
 312:17
mega-ships 72:10,22
 73:3,9 295:17 304:6,8
 305:20 309:15 311:20
mega-trends 123:1
meld 56:10
melded 267:1
melds 268:16
member 7:13 9:2 12:10
 13:13 14:9 16:13
 17:14 22:5,12 24:21
 26:7 28:16 31:22 37:5
 38:15 39:12,13 40:21
 41:21 43:15,16 45:21
 47:10 49:3,16 55:2,5
 55:7,8,12 56:8,9,12
 56:14,16,17,19,21
 57:12,19 58:6,7 59:14
 59:15 60:22 61:2,19
 61:22 62:3,5,15 63:16
 64:13,21 65:7 66:22
 67:7,14 68:14,17
 69:12 70:8 71:20
 74:11,20 78:21 80:21
 82:19 84:8 85:6
 216:15,20,21 217:18
 218:12,16,21 221:20
 221:22 222:1,7,20
 223:5,7 224:10 225:7
 225:17,18,20 226:2
 226:21 227:1,15
 228:7,10,14 229:4,11
 229:19 230:11 231:4
 231:11 232:8,13,18
 235:22 236:7,21
 237:2,4,7,10 238:8,13
 239:1,2,5,18 240:2,5
 240:9,12,17,18,21,22
 241:21 242:4,6,12,21
 243:3,6 244:9,15
 245:11,12,18 246:2,4
 247:2,5,11,14 248:2

248:12 249:16 250:3
 250:9,11,20 251:7,13
 252:7,20 253:16,22
 254:6 255:6 256:22
 257:4,20,21 258:3,7
 258:14 259:1,2
 260:11,18,20,22
 261:11,15,17,21,22
 262:3,4,7,11,13 265:7
 266:5,6 267:8,16
 268:6,11,18 269:12
 271:8,17 272:1,2,17
 273:13,20 274:2,10
 275:13 276:13 277:2
 277:10,19,20 278:3
 278:15,20 279:2,9
 280:9,17,20 281:5,9
 281:12,14,16,18,19
 281:20 282:5,15,20
 283:10,16 284:4,14
 284:18 285:3,8,11
 287:21 290:18,20,22
 291:3,5,7,8,9,15,16
 291:18,19 292:3
 300:6,8,9,14 301:15
 301:16 302:9,11,17
 304:9,16 305:8,12
 306:9,11 307:4,5,20
 308:18 309:1,2,5,7,9
 311:8,10 312:7,10,18
 312:21 313:8,14
 314:12 315:11,17,22
 316:3,4 317:2 318:2
 318:12,13,14 319:15
 320:18 321:1 327:15
 327:18 328:1,3,9
 329:14 330:12,15,19
 331:4,7 337:13,18
 338:14,15,20,22
 339:5,7,9,11,12,14
 340:4,5 343:12,21
 344:12,21 345:4
 346:10,15,17 347:6
 347:21,22 348:5
 349:3 354:8,9 355:10
 355:21 356:5,14,20
 358:4,11,15,17,21
 359:2,21 360:6,11,16
 360:18,20,22 361:2,7
 361:8,11,12,16,19
 362:8,13,16,21 363:1
 363:5,8,11,15,17,21
 363:22 366:17,18,19
 366:22 367:1,17
 368:16 369:2,18,22
 370:14,18,20 371:2
 372:8,10,11 373:11
 373:13,17,19,20

374:3,6,21 375:12
 376:6 377:16 378:22
 380:6,9,18,21 381:1,3
 382:3,5,22 383:5,9,13
 383:15 384:1,3,5,7,10
 384:15,19,20,22
 385:2,15,17,22 386:2
 386:3,4,14 387:9
members 1:14 2:1 7:18
 8:16 37:19 39:17,20
 40:16,17 43:2 50:19
 53:2 55:16 67:8 74:21
 74:22 208:18 217:2
 217:13 263:6 323:14
 364:17,21 375:13
memberships 41:9
memo 198:7 201:22
memorandum 198:2
memorial 94:12,21
 105:13
men 179:2
mention 57:11 121:7
 298:21 336:22 355:12
 356:10,11
mentioned 9:16 12:14
 21:19 23:8 24:22 33:8
 37:7 65:13 80:21
 110:17 112:9 119:8
 122:13 123:1 126:13
 138:3 140:19 282:10
 283:13 302:1 332:6
 333:15 334:1 343:4
 351:18 356:7 359:4
 379:5,8
mentioning 340:3
 375:6
mentions 325:18
mentor 328:15
merged 312:9 376:4
MERSFELDER-LEWIS
 2:15 11:4 215:6
message 36:16 60:19
 73:19 247:8 377:11
messages 6:6,7 156:18
 157:22 166:21
met 1:11 75:14
metadata 351:6,10,18
meter 20:4,10,11 167:2
 168:14 333:5 350:11
meters 350:8
method 24:1 168:17
methodology 23:20
 27:2 164:12
methods 159:10 170:16
 175:7
meticulous 179:20
metric 276:7,12 277:12
 277:13

metrics 296:10
Mexican 132:20
Mexico 5:18 100:5
 108:17 109:1 116:8
 127:20 157:12 159:14
 161:10 167:11
mic 12:12 107:22 217:1
microcosm 124:8
microphone 11:3 14:8
 14:10 211:20 216:19
 218:6 223:6 226:20
 244:21 255:19 275:7
 302:8,10 363:4
 370:17 374:11 382:21
 384:6,14,16 386:13
microtidal 158:4
mid-January 46:20
middle 142:17 166:11
 168:4
migrate 120:9,14
 295:12
Mike 2:7 10:22 14:12
 28:17 38:18
Mike's 28:18 29:5
mile 151:21
miles 15:7 109:2,21,22
 114:6 130:7 132:20
 136:4,6 147:11
 263:10 272:6,11,15
 272:19 273:3,6
 275:12,15,17,21
 276:16,19,20,21
 277:14
Miller 1:20 4:7 38:15,16
 39:13 40:21 41:21
 43:16 52:10 59:15
 67:7 80:21 216:21
 217:18 218:12,16,21
 221:22 222:7 223:5,7
 224:10 225:7,18
 226:2 227:1,15 228:7
 228:10,14 229:4,11
 232:8,18 236:7,21
 237:4,10 238:13
 239:2 240:12,18,22
 244:9,15 245:11
 246:2 247:2 249:16
 250:3,20 251:7 252:7
 257:4,21 258:7
 261:15,21 262:3
 301:16 302:9,11
 347:22 360:16,20
 361:8,12,19 362:8
 363:22 366:18,22
 369:18 370:14,18
 371:2 372:10 373:11
 373:17,20 374:3,6,21
 376:6 378:22 380:6,9

380:18 381:1 382:3
 383:13 384:1,10,15
 384:19,22 385:15,22
 386:3,14
millimeters 96:1 157:15
 160:13,17,18,21
 161:16 166:17 167:14
 175:10,11
million 95:13 125:16
 133:12 134:3 138:2
 139:9,11,14 140:20
 141:8 147:11 150:6
 205:6 219:2,15
 243:21 245:10 270:19
 270:19,22 271:1,14
 271:14,18,19 272:3
 320:14 321:19
millions 336:1
mind 33:18 34:12 45:4
 68:15 86:12 158:12
 191:19 215:2 236:6
 260:17 278:4 304:13
 322:2 328:18
mindful 331:2
mine 186:12 259:15
 284:3,6
minimize 128:7 317:3
minimum 148:22
 270:18 272:12 277:7
Minister 85:22 86:1
minor 290:16
minus 151:21
minute 23:5 52:3,6
 53:12 57:1 88:7 211:4
 284:22
minutes 8:4 53:14 55:3
 59:8 61:3 62:1 65:18
 67:20 72:3,15 74:13
 88:18 104:14 139:2
 139:12 140:19 157:9
 191:20 226:22 262:8
 285:18 292:1 320:21
 331:10 358:6,16
misconception 173:5
missed 7:16
missing 143:17 232:6
 276:11
mission 131:7 134:4,18
 385:6
missions 30:17 130:16
 132:15 330:4
Mississippi 131:15
 137:21 177:6 187:3
mistake 311:7
mistaken 239:21
misunderstanding
 311:2
MITAGS 295:5

Mitchell 215:10
mitigate 128:2 331:21
mitigation 99:14 101:15
 101:19 103:12 304:2
mix 253:12 299:6
 303:15
MLT 199:17
mobile 145:18 295:15
mobilization 274:12
mobilize 346:18
mode 62:11 338:4
model 77:15 120:8,15
 143:4 164:18 171:16
 171:18,19 180:22
 194:2 243:16 288:7
 288:11 295:4 297:8
 316:22 317:1,16
 319:8 379:4,11,15,17
 381:9,10 382:14,16
modeled 165:8
modeler 92:10 154:19
 156:6
modeling 16:21 17:4,13
 17:19 18:14,17,18
 19:19 20:8 119:9
 154:18 214:15 297:1
 339:8
models 17:3 18:10 19:2
 19:9 113:16,19,21,21
 119:14,16,17 120:6
 180:20 194:7,8
 295:13 296:9
moderate 91:16
moderator 3:4 4:10
 89:12,22 91:3
modern 55:20 115:11
 264:3,20 265:5
modifications 354:13
modified 115:11 217:9
 351:2,15,16
modify 354:5 369:18
modifying 370:15
moment 147:14 252:15
momentum 85:14
Monday 363:16
monetizing 232:6
money 35:4,9,20 36:7
 103:9 220:6 221:3
 254:18 256:2,13
 260:5 287:14 288:17
 316:20 336:19 368:20
 378:14,21
monitor 40:5
monitoring 135:15
month 53:18 217:8
 236:20 242:2,3,4
 281:17
monthly 33:19 202:16

months 47:1 51:3 66:16
 69:9 82:22 83:17
 142:19 149:7 150:22
 236:11 240:15 245:21
morning 5:3,6 57:1,6
 57:17 69:2 91:14
 157:20 215:11 216:22
 217:2,3 337:14 358:4
 358:8 374:7 387:15
morphed 328:18
morphological 113:17
 120:20 194:7
Morris 203:7
motion 13:3 26:14
 161:3,11 168:10
 344:8,9 345:17
motivation 163:22
motor 303:16
motored 93:3
mounds 195:11
mounts 23:21
mouthful 225:6
move 16:14,17 23:2
 106:20 107:3 166:15
 195:2 214:17 251:16
 262:5 273:2 279:8
 280:20 282:2 296:16
 310:1,3 317:12
 347:10
moved 38:21 129:14
 154:13 326:8
movement 134:8
movements 110:11
moves 313:11
moving 38:7 105:17
 118:4 128:12 151:15
 183:15 191:15 212:18
 213:5 281:4 305:2
 312:1 369:16 371:6
 372:14
mud 116:7
muddle 233:18
muddy 151:5
mudflats 95:10,11
multi- 385:5
multi-beam 9:11 196:7
 196:19 197:6 371:12
multi-year 332:4
multiple 226:13 255:8
 255:12 307:15 333:6
 335:3,5 336:8 339:16
 366:13
multipliers 168:22
 169:4
municipal 293:8 296:7
 314:2 317:7
Murkowski's 79:1
mutually 112:7

N

NAD 192:10 349:9,19
 349:19
nail 246:14
name 94:16 98:14
 135:21 211:20 356:12
named 105:7 202:9
names 67:8,10
narrative 230:21 231:7
 243:8,14,17 246:16
narrow 80:13 168:7
 292:22 296:21 311:16
 311:17
NASA 289:7
nasty 304:3
nation 49:8 110:9,13
 122:6 156:22 213:7
 221:12
nation's 90:16 137:14
 222:11 328:22
national 1:3 31:5 33:2
 33:15 34:2 43:9 83:14
 127:1 130:15 133:13
 137:7 146:2 155:7
 158:9 175:6 202:2,4
 202:14 212:3,20
 234:9 267:2,6 279:22
 314:5 320:13 328:19
 329:2 349:5 350:13
 359:22 372:3
nations 133:16
natural 92:22 107:15
 114:10 117:6 121:6
 123:21 124:3 193:10
 193:17 208:19 209:1
nautical 9:6 19:11
 21:22 87:21 92:6 95:3
 221:9 263:10 272:6
 272:19 273:3,6
 275:15,17,21 276:18
 276:20,21 277:14
nav 27:19 352:1 385:7
 385:12,17
naval 187:4 267:2,5
 291:11 329:22
NAVD 192:10 349:9
 354:11
navies 187:8
navigate 292:12
navigating 214:11
navigation 2:8,17 3:12
 6:13,14 16:17 25:6
 56:5 63:1 72:10 73:20
 73:22 75:9 76:18
 80:19 86:9,13 92:12
 123:5 128:18 129:13
 129:19 130:5,21
 131:21 132:15 134:4

- 135:12,16 136:10
 139:8 140:9,22 144:6
 144:22 145:9,13,15
 146:2 147:20 148:16
 152:11 153:11 155:8
 161:19 178:15 197:3
 197:8,18 200:14
 202:17 206:1,2
 207:10 214:3 221:6
 227:22 264:4 265:5
 294:10 295:9 301:20
 301:22 302:4,7,13,16
 305:14,22 306:5
 307:8,17,20 308:17
 311:11 312:1 316:11
 325:10 365:4,10,14
 366:11 369:12 376:7
 376:10,18 379:11,17
 381:17 382:7,19
 386:6
navigational 294:2,6
navigations 132:2
navigators 303:15
NAVOCEANO 187:8
Navy 187:6,7 188:2
 286:19 287:1,1,7,8
 293:7 294:13 329:5
 329:15,16,21 330:6
 333:9
Navy's 85:9 287:4
NCEI 16:11 18:4,8
 20:20 371:13
near 20:22 287:5
 298:21 324:12,22
 333:7 346:9
near-coastal 88:12
near-shore 213:22
 214:8,14,16 215:3
nearby 326:7
nearly 219:20
necessarily 249:7
 253:17 267:5 296:13
 306:17 307:10 323:3
 332:5 368:11 370:13
 382:15
necessary 254:3
 275:19 279:5 283:15
 300:13,15 303:5
 361:18
Neck 286:22
need 6:11,13 8:10 13:1
 19:4,11 27:10 34:9,17
 48:22 49:19 52:18
 54:7 55:14,16 60:6,10
 60:20 79:11 83:7 84:4
 85:18 98:9 103:9
 116:1 123:12 139:22
 140:5 141:4 147:11
 157:5 159:16 162:15
 170:1 173:15 175:21
 175:22 176:11 180:1
 183:5 186:8,15,17
 189:1 190:12,15
 192:19,22 193:3
 194:12 210:7 222:14
 222:21,22 223:8
 229:9 232:21 235:18
 239:12 240:22 241:5
 242:5,6 244:12 246:9
 246:14 247:7,11,19
 249:4,5,10,11,17,21
 250:4,4,7,15 252:1
 253:10 254:17 256:6
 256:8,11,11,15
 257:10,11 260:7
 264:10 265:1 269:4
 277:17 280:1,12
 281:10 284:8 285:2
 289:4,5,11 293:17,22
 294:4 295:16,18,18
 297:19 298:18 301:12
 302:6,14,20,22 303:2
 303:7 305:14 306:4,5
 310:13 311:1,14
 312:3 315:11 317:17
 322:3 323:3 324:12
 325:20 341:13 342:7
 343:9 344:8,11,13,19
 348:1 349:20,21
 351:5,7,12,14,20
 352:8 355:19 356:11
 360:10 362:3,17
 366:2,3 370:10 372:4
 375:10 380:12 381:17
 382:6 383:2
needed 26:2 190:15
 193:22 195:2 222:10
 230:13 231:2 236:4,6
 251:4,14 259:6
 262:12 288:14 301:21
 310:21,22 343:13
 358:6,18
needing 292:11
needle 23:2
Needless 297:13
needs 6:5 9:16 12:2,8
 35:19 36:11,13 45:9
 45:17 61:16 81:16
 85:10 102:13 113:18
 125:11 175:17 187:15
 208:20 214:7 231:21
 235:9,13 243:17,22
 244:1 245:13,15
 260:14 265:11 266:3
 269:2 277:12 279:1
 280:3 282:4 301:12
 309:3 315:8 317:1
 321:18,18 322:12
 323:10 324:13 325:13
 347:3 355:12 356:7
 375:19 384:15
negatives 166:1
neighborhoods 293:3
NEIL 2:19
neither 217:20 266:1
Nerheim 197:3
nested 19:2
network 94:3 95:15
 110:13 121:3 141:13
 141:15,18 142:1,14
 268:16
networks 136:10
never 11:17 35:10 38:6
 74:2 79:22 94:18
 105:15,16 122:15
 123:11 169:19 170:5
 184:4 185:17 240:15
 308:8 319:18 336:18
 365:21 375:22 383:10
new 2:2 27:5 39:16,20
 40:11 46:7 47:8 53:2
 64:17 67:8 71:15,17
 71:21 73:4 74:21 84:9
 106:15,19 112:22
 123:8 128:2 129:10
 136:20 140:18 145:19
 177:12,22 179:4
 188:4 192:18 193:1
 193:10 200:2 217:12
 219:15 224:15 226:7
 237:11 239:6 245:15
 247:7,19 249:5,6,10
 253:4 255:22 263:6
 270:12,14 288:10
 294:8,15 295:2
 296:15 297:13 302:4
 306:17 313:18,18,20
 313:21 319:15,17,17
 319:22 324:15 326:16
 326:16 331:20 339:7
 339:11 344:21 349:14
 350:15,16 351:4,6
 353:14 356:8,9 357:3
 357:15,15 366:19
 375:12,13
Newby 3:17 4:12 106:1
 106:3 107:4,21 133:9
 152:7 183:18 193:8
 208:22
newcomers 285:13
newer 227:3
newest 39:21 295:12
NGS 8:21 350:14,22
 353:9,17 354:4 357:1
 357:6,18 377:12
NGVD 349:19 351:22
 352:5 354:11
nice 7:10 292:15 298:6
 386:20,21
nicely 335:6
Niels 387:3
night 14:14 22:21 26:9
 26:11 27:11,15
 153:14
nine 131:13 206:20
Ninety-five 111:11
Nino 5:17
no- 377:2
no-brainer 365:6
NOAA 1:3 2:4,8,9,14
 6:8 9:4 18:8 24:4
 34:11 35:17 36:10
 37:17 43:8 44:5 46:6
 47:19 49:22 50:3,13
 51:10 54:2,14,14,20
 58:2 59:22 60:1,7,8
 60:12,15 61:6 62:6
 70:11,13 71:3,4 75:7
 75:18 76:12 77:5,19
 79:16,19 80:19 83:9
 83:20 84:22 87:16
 92:8 120:17 140:11
 142:16 143:10 145:2
 146:1 147:10 156:12
 157:11 163:8 175:12
 179:9 182:15 184:14
 187:6 188:5 194:19
 201:16,17 202:8,8,18
 203:2,4 206:13 210:2
 217:15,18 219:1,3
 220:6 221:3 223:10
 223:15,22 224:16
 226:10 227:2,9,20
 228:20 229:21 234:5
 235:14 237:15,20
 243:9 245:15 247:19
 249:6,17,17,21 250:4
 250:7 252:10 258:4
 274:11 289:7,8
 292:16 295:6 298:10
 298:15 300:10,12,20
 301:6,12 304:21
 310:13,21 313:9,12
 314:4 315:1,8 322:8
 324:1 329:18 330:7
 332:8 334:5,22 335:2
 335:5 337:10 340:15
 340:21 342:4,16
 346:19 365:4 367:9
 376:9 377:5,10,14,18
 377:18 378:5 379:12
 385:5,10

NOAA's 60:5 95:20
146:18 205:20 221:4
225:14 237:22 314:10
NOAA-wide 252:9
NOAA/CO-OPS 2:13
NOAA/NGS 2:3,7
NOAA/NOS 2:7,10,11
NOAA/OCS 2:12,16,18
NOAA/University 2:2
NOAAs 91:1 92:6
206:18 207:1 222:14
nod 237:14
noisy 74:6
non- 141:2
non-controversial
290:1 292:5
non-data 13:21
non-federal 141:1
205:14 357:21
non-fisheries 235:8
non-NOAA 298:9
non-participation
346:6
non-technical 338:16
NON-VOTING 2:1
nonstructural 193:19
Nope 98:10
normal 104:6
normally 346:11
north 131:13 135:17
147:19 148:17 327:19
349:5,6 353:2,12
northeast 114:13
northern 94:14
Northwestern 131:15
NOS 36:10 223:12
226:4 271:20 278:18
365:11 366:12 371:5
372:4 377:12 386:5,8
noses 299:14
note 45:22 56:21 85:21
261:1,6 279:10
notes 42:17 81:4
nothing's 83:4
notice 46:13 175:11
199:21
noticed 59:19 60:13
81:8 93:1 184:10
376:10
notified 213:14
nourish 115:13
nourishment 116:2
November 125:14
197:20
nowadays 9:10 189:15
NRT 189:4 206:18
NRTs 24:4,15 25:1,3
205:20 228:22 297:15

NSF 234:5
NSRS 350:13
nuance 248:8,12
nuanced 264:3,3
nuclear 154:14 286:18
286:22
nuisance 159:8 162:10
164:2 167:4 286:14
number 15:13,22 16:2,3
16:5,8 21:12 22:8
51:20 67:19 83:9
101:21 136:17 148:4
218:18 228:4 255:15
261:14 263:16 264:6
264:10,11,15,17,18
271:6,6,15 272:16
273:2,8,15 274:4,9
275:4 276:15 300:7
320:20 321:13 357:12
360:14 365:20 371:4
372:1 382:2
numbers 136:14 181:13
186:16 246:11 269:18
269:19 316:17 321:16
numerical 113:16 119:9
nurseries 111:13
NVA 349:19
NWLON 157:11 171:7
171:11,11
NYBERG 2:16

O

o'clock 88:22 284:19
291:21
O&M 138:22 139:8
oar 256:15
Obama 290:6
objection 81:20
objections 62:4,5
oblique 5:17 12:12 13:8
observation 82:5 94:3
141:12 229:13 377:4
observations 34:20
175:18 179:5 263:2
280:11 300:2
obtained 297:21
obvious 365:3
obviously 9:18 27:9
65:15 160:21 165:1
169:2 183:9 185:10
189:14 191:4,13
192:8 221:15 236:2
333:11 382:7
occasion 140:5 330:3
Occupational 212:10
occupying 324:17
occurrence 66:21
ocean 32:20 93:19 94:2

131:16 141:12 158:9
161:4 173:12 175:6
188:7 336:13
Oceana 287:1
OCEANIC 1:3
oceanographic 92:3,6
220:7 237:13 238:7
247:20 280:15 329:22
oceans 178:12 330:2
OCM 20:22 21:3
OCS 8:21 375:2
OCS' 227:19
ODMDS 151:8,16
offense 191:14
offer 273:10
office 3:18 10:2 20:16
20:22 22:18 27:15
28:18 29:5 31:7 95:9
97:18,21 99:1 105:7
107:6,8,14 108:8,10
108:14 125:14 130:8
133:4 134:12 143:10
149:10 151:14 156:14
176:20 215:22 221:4
228:19,20 234:11
286:2 329:22 334:5
officer 203:9
officers 224:16,19
226:10,12
offices 31:14 132:22
133:6 142:3 202:7
235:12 326:21
official 2:6 4:4 7:22
108:11 175:14 259:8
276:18 344:19 352:9
officially 89:6 91:7
313:3 387:20
officials 125:5
offing 236:12
offline 293:19
offset 336:6
offshore 36:5 109:1,3
151:8
OGP 359:15
oh 101:12 181:14
189:17 192:21 209:19
217:7 236:7 270:6
281:18 309:5 345:8
372:2 377:7
Ohio 137:22
oil 83:10 85:11 95:12,14
109:13 110:13,15
123:3 127:11,22
138:5 214:15
okay 14:7,9 17:20 22:4
27:5 47:4 52:16 55:7
61:22 62:3 69:3,6
78:15 98:8 101:11

108:3,3 110:3 114:5
184:22 188:20 191:9
193:8 198:11 207:12
215:8 216:20 221:4
221:22,22 223:7
227:1,15 236:21
237:10 242:21 243:3
244:9,12 245:11
246:2 247:2 254:14
255:3 261:17 262:1,4
266:5 274:10 280:9
281:8,11,12 283:12
284:2,17 285:3,11,15
287:21 292:2 312:7
313:13 315:5 320:6
328:3 330:12,15
331:4 339:9 340:19
341:14,22 344:13,16
344:18 347:21 348:5
349:2 354:8 357:8
358:21 360:11 361:11
362:13,16 363:5,11
363:17,18 371:2,6,22
373:20,21 374:18,22
375:9 376:5,6 380:9
381:1 384:1 386:16
387:18
old 27:22 28:1,7 149:12
184:16 214:20 218:2
218:2,22 254:9 286:8
354:12
older 162:21
oldest 108:14 220:8
OMAO 234:17 235:5
OMB 219:5,6 234:19
235:19 380:3
omnipresent 360:7
on-- 366:10
on-job 190:8
on-the- 194:15
onboard 46:19 71:18
282:12 303:15
once 5:10 6:19 14:22
146:5 149:1 166:10
171:19 173:9 183:10
208:13 214:19 282:18
296:18 297:2 347:1
352:9 365:18
one's 269:4
one-foot 118:15,16
119:3,12
one-pager 231:13
one-time 256:18
one-year 187:4,5
ones 65:4 67:21 112:4
142:9 162:4,19,19
263:21 284:20 288:15
348:8 363:12,12

ongoing 51:8 214:5
 220:13 256:9 356:9
 361:21
online 30:5 143:11
 146:18 184:15 197:22
 202:19 203:13 297:16
ONR 234:5
open 97:6 104:17,21
 105:8,19 109:9 171:2
 171:4 184:15 192:4
 206:16 207:8,10
 213:16 221:7 300:1
 342:15 346:4 374:13
 379:22
open-ended 106:11
opened 49:5
opening 206:7,8 213:16
 355:22
openness 343:2
operate 82:13 238:18
 271:12 296:16 309:20
 310:3 330:1 380:2
 382:9
operated 228:19
operates 96:16 228:21
 329:22,22
operating 42:1,13
 47:16 86:5 143:9
 230:18 275:5
operation 62:11 151:18
 267:17 314:6,7
operational 26:1 33:13
 230:16,17
operations 3:12 128:17
 130:4 139:1 144:9
 204:11 228:20 267:2
 267:6,10,11,14,21,22
 268:2 269:14 282:17
 283:18
operator 312:4
operators 88:12 283:2
 303:3
opinion 7:9 15:19 81:13
 239:11 279:9 317:18
 317:19 319:7 365:11
 366:10 370:22
opinions 48:12 78:10
 364:17
opportunities 10:19
 31:19 33:20 190:21
opportunity 8:13,19
 24:14 30:9 33:16 34:9
 35:22 49:4,13 53:21
 63:9 86:16 108:5
 127:15 144:2 156:9
 215:20 233:17 362:6
 387:8
opposed 17:9 29:6 63:5

70:3 158:22 168:6
 248:22
opposition 248:16
OPs 159:21
optics 84:7
optimistic 127:9 262:9
option 89:14
order 13:2 66:11 195:17
 310:13 321:9
Oregon 213:11
organization 132:1
 385:4,6
organizations 145:4
 238:4
organize 97:10
organized 91:20 97:5
organizing 321:5
original 99:22 100:3
 179:11 184:22 217:4
 218:4 223:17 237:15
 281:6 325:8
originally 50:18 104:20
originate 111:12
Orleans 106:15,19
 128:3 145:19
outcomes 82:14 304:3
outed 46:22
Outer 127:22
outfitting 220:2 237:18
outgoing 7:17
outlined 147:14
outreach 298:16 355:17
 359:4,12
outs 39:11
outside 32:8 152:16
 385:13
outstanding 82:16
overall 36:19 225:5
 299:18 385:9
overcome 23:3 183:6
overlap 13:2 28:22 60:4
 208:20 335:6
overlaps 38:3
overlays 155:8
overnight 259:14
oversight 109:9
overtake 122:2
overtaken 104:4
overtime 386:18
overtopped 126:21
overview 4:5 130:13
 337:19 387:10
owner 324:15
owners 94:9 99:9 201:4
ownership 99:7,17,19
 101:14 332:12
owns 96:20 384:7

P

P 108:12 149:16
P-R-O-C-E-E-D-I-N-G-S
 5:1
p.m 52:10,10,11,11,12
 52:12,13,13,14,14,20
 52:20 215:14 285:6,7
 387:19,22
Pacific 131:16,16
package 5:21 81:7
packaged 378:17
packages 25:21 26:4
 351:2
packet 76:1
Padre 110:20
page 39:15 43:21 50:8
 56:13 82:7 175:12,15
 178:22 181:14 254:11
 279:11 350:5 356:17
 371:3,4 372:2
pages 50:10 64:1 69:18
 290:19 356:16
paid 319:21 337:11
 378:14
paint 181:3
Panama 123:6
Panamax 309:17
panel 1:4,11 3:4 5:5 6:5
 7:3,17,20 8:16 12:5
 38:12 39:16 41:9,9
 43:2 48:13 50:15
 53:18 78:8,14 80:6,13
 80:16 81:16 82:13
 87:20 88:21 89:8,11
 90:10,21 91:3,6,15,21
 92:14 129:22 130:9
 156:8 201:12 208:18
 215:9 217:2,13,14
 230:7 241:12 247:18
 250:8 299:16,18
 301:17 317:15,19
 345:17 364:17,20
 366:8,20
Panel's 361:4
panelist 89:18
panelists 89:16 90:1,5
 211:5,15
panels 80:17
Pannell 131:1
paper 44:10 46:4 47:21
 50:11,17 51:17 53:14
 53:22 54:4 55:9,11,12
 55:13 57:7,8,14,16
 59:5,9,11,17 63:22
 67:16 68:3 69:19 72:7
 73:2 77:2 97:19
 117:19 216:16 220:12
 220:15 235:15 239:22

240:6,14 241:7
 243:22 244:20 245:7
 246:21 254:13 255:12
 257:10 261:20 262:5
 262:14 274:17 279:7
 282:1,6 284:20,21
 299:19 302:12 304:12
 307:3,6,11,14 309:3
 313:1 315:8 317:9
 318:3 320:17 325:8
 337:20,22 338:9
 340:8 343:15 349:4
 354:3 356:1 360:13
 361:13
paper's 49:9 316:1
papers 39:15,15 43:12
 43:14,21 49:19 50:7
 51:4,16 52:5 53:9
 54:16 57:20 58:2
 59:20 62:17 64:12,14
 65:3 67:19,22 68:7
 70:19 71:22 72:4,17
 239:13,20 240:7
 242:19 257:6,7,17,19
 260:2 304:10 312:8
 345:7,14 358:22
 368:8,13 370:9
 385:18
paragraph 45:22
 170:10 217:10 220:17
 220:17 225:10,13
 232:8,22 243:18
 245:13 247:3 257:14
 259:7 345:21 349:12
paragraphs 262:21,21
 263:12
parallel 29:13
parameters 309:19
 351:17
parcel 303:20
park 151:14 210:16
part 10:1 19:7 31:4 34:3
 37:3 49:20 50:16
 51:12 58:9 65:14
 94:14,17 95:16 111:2
 117:2 146:1 164:2
 170:10,18 171:9
 208:15 222:10 251:19
 260:16 264:17 291:17
 300:12 301:14 304:21
 311:6 315:17 332:14
 334:14 358:22 366:12
partially 364:10
PARTICIPANT 245:3
 362:14 371:1 374:14
 374:17 384:4,17
participants 88:7
 345:13

- participate** 5:14 258:4
participation 215:11
particular 18:9 19:5
 31:20 55:17 67:8
 77:16 251:11 297:9
 300:19 309:16 333:18
 342:6 364:22
particularly 44:1 50:13
 90:15,17 91:1 107:10
 113:14 155:18 241:1
 293:11 296:22 341:4
 342:14
partly 13:19 14:5,5
 300:10,10
partner 24:13 188:5
 291:1 301:10 328:14
 328:17 381:13
partnered 204:8
partnering 24:17 299:5
partners 51:12,13
 57:14,17 70:18 85:19
 140:22 141:7 144:10
 145:22 149:14 282:8
 282:12,21,22 283:8
 284:5 299:2 301:9,13
 334:20,21 340:21
partnership 140:16
 146:16 152:6 156:12
 188:6 198:19 318:16
 318:18,22 380:8
partnerships 131:3,4
 140:13 226:6
parts 126:12 191:15
 289:8,8
pass 73:13 89:7 114:4,5
 114:9,14,17 192:1
 238:10
passage 311:13,15,18
 316:6
passed 256:5 270:20
 292:16 379:3
passing 294:21
passion 61:20
pathway 28:14 245:8
patterns 86:7
Paul 40:10,11
PAWSA 379:4
pay 140:2 151:10,11,12
 204:3 288:19 319:18
 320:6
paying 308:8 319:18
 320:1 383:11
payment 196:20,21
pays 379:12
PDF 148:9,10 184:15
peak 163:3
peek 41:20
peer 155:21
- peers** 212:5
pen 7:21
penalized 375:2
penetrate 180:17
Penoyer 138:3 206:4,16
people 20:2 27:9 32:13
 42:22 54:17 75:14
 83:2 102:10 178:1,4
 181:9 182:4,19 184:9
 189:7,10 190:5 208:1
 208:3 221:17,18,21
 223:10 245:22 250:11
 250:20 258:1,4
 259:13 261:14 262:15
 276:4 282:9,10,12,19
 286:7 289:19 294:13
 295:21 300:20 303:14
 304:7,19 305:2 308:2
 308:14,20 314:2,20
 324:2 326:10 334:6
 335:10 338:11,16
 341:6 342:8 343:8,15
 343:22 344:4 355:18
 361:22,22 372:15
 377:17 378:15 382:8
 385:12 386:8
people's 359:6
percent 110:3 111:11
 133:15 137:10,13
 138:11 173:19 174:12
 174:13 190:6 197:1
 226:9 227:11 239:6
 264:1,3,8,13 265:14
 265:14,21 266:1,12
 267:15 268:21 269:2
 269:3,3,4 270:2,2,4
 282:3
percentage 239:8
 268:22 274:14
perfected 105:12
perform 222:10 297:11
 311:18
performance 134:13
performed 100:2
performing 139:21
 206:11
period 4:14 41:6 115:11
 211:17 215:18 374:13
periodically 75:2
 304:20
Perkins 1:12,15 4:3 5:3
 15:20 21:8 22:3,10
 23:4,16 24:3,20 26:8
 29:9 38:10 39:5 44:7
 47:14 48:15 49:1,11
 52:22 56:20 58:15
 61:1,9,20 62:2,4,14
 63:15 64:19,22 66:17
- 67:6,13 68:12,15
 71:19 73:7 74:19
 81:19 84:1,11 86:19
 87:1 88:18 89:5
 211:14 215:8,15
 216:12 229:7,12
 230:3 231:3,10
 233:15 241:4 242:3,5
 242:8,16,22 243:19
 244:11,16,22 245:5
 247:22 248:11,14
 249:13,19 250:17
 251:1,9,20 252:13
 253:15,19 254:5
 255:5,18 285:1
 343:19 344:5,13,16
 347:10 348:15 356:21
 358:9,13 363:20
 373:22 374:4,8,12,18
 380:14 386:16 387:18
permanent 142:11
permit 200:1
permitees 201:3
permits 199:16,16
permitting 203:17
perpetual 26:14
Perry 286:18
person 10:22 55:8 73:4
 145:17,19 223:12
 285:17 334:4 378:11
personal 15:19
personally 77:14 91:17
 301:2
personnel 336:14
perspective 72:4 78:4
 82:15 102:17 122:18
 126:22 133:13 201:16
 249:1,2 251:12 271:7
 326:14 345:5
petro-chemical 286:16
petrochemical 90:15
petrochemicals 290:2
petroleum 138:13,13
pfennig 319:19
phases 332:13
PhD 92:11 154:14
phenomenal 298:20
Philippe 3:19 153:21
 154:8 155:19 156:4,6
Phillippe 4:13
phone 37:18,20 64:3
 322:21 341:9
phones 155:4
photo 151:17
photography 209:6,15
photos 144:12
phrase 71:13,14 290:7
physical 92:3,6 154:20
- 178:12 224:22 312:12
physics 92:11 154:10
 154:14 156:1
pick 169:1
picked 203:2,3 279:15
 376:1
picture 36:19 120:20
 151:19 160:2 162:6
 162:11 163:6 164:6
 174:16,19 180:22
 181:3 200:6 222:16
 223:9 260:17
pictures 152:15 162:5
piece 65:15 69:19 81:22
 299:19 308:11 381:11
pieces 18:3 81:1,11
 256:11 312:15
pier 111:5,6 121:11
 157:9 160:18 162:7
 163:2 164:21 166:17
 168:12 171:1,2
 173:21 174:5,7
piers 144:2
piggy-backed 375:7
pile 143:4 174:7
piles 65:20 197:5
pilot 285:10,16 290:12
 296:18 310:16,17
 341:19 353:16
pilot's 145:4
pilots 6:21 7:12 145:4
 199:1 201:10 203:7,9
 203:10 206:14 303:15
 312:5
pinging 269:21
pinnacles 196:17
pipeline 110:13
pipelines 278:5
place 8:12 84:6 87:22
 88:21 104:2,7 105:16
 106:9 140:5 150:8,8
 169:7,11 186:9
 249:20,22 251:10
 260:19 265:4 286:21
 297:5 316:1 320:8,8
 323:11,19 324:3,8
 343:20 375:15 385:21
 386:21
placed 150:13 151:20
 152:3
placement 139:19
places 12:2 17:9 72:5
 90:18 170:3 185:21
 185:22
placing 151:7
plain 93:12,14
plan 54:15 101:18
 104:1 128:8 155:10

193:9 219:4 234:18
 236:10 237:21 251:18
 251:21 252:9,10,19
 253:7 276:8 311:14
 315:2 352:9 353:5
planned 52:15 87:21
 136:21
planner 176:14
planning 4:7 41:2 49:17
 52:17 92:2 104:7,10
 112:1 122:18 124:19
 124:22 125:17 128:7
 170:6 195:8,16 196:2
 205:4,6 297:22 345:9
 347:13,19 348:3,18
 371:21
plans 97:4 252:4 332:9
 387:4
plant 103:19,20
plants 286:17
plate 349:15 350:2,3
Plates 183:15
platform 24:18 143:14
 144:1 192:6 312:6
platforms 297:10
 342:15 343:2
play 19:7 168:8 177:12
 225:15 332:18
played 287:20
playing 27:16
plays 146:1 221:9 304:4
 312:15 357:3
please 87:1,1 89:1
 91:11,12 107:20
 147:3 211:20 230:10
 285:3 300:3 312:21
 355:1 366:14 374:20
 374:22 376:7
Pleasure 166:17
plenty 90:7 277:3
plotted 157:18
plotters 203:13
plug 167:17 168:9
plus 43:7 79:19 138:17
 140:20 151:21 321:19
pocket 35:9,20 36:12
point 28:20 39:16 58:19
 72:22 73:5,8 74:8
 127:14 134:5 155:9,9
 180:21 184:6 185:20
 214:2 222:1 224:13
 229:3,4 230:12
 231:16 233:15 236:20
 248:11 255:9 259:7,9
 259:18 265:4,16,18
 266:18 268:4,5
 269:10 270:11 274:17
 276:2 277:9,21

278:10 281:6 282:3
 286:7 296:11 298:8
 304:11,14 306:12
 308:19 315:7,8 321:4
 322:13 327:20 335:8
 343:3 365:3,16
 368:17 385:3 386:5
point's 48:1
pointed 57:13 121:14
 184:20 258:18
pointing 383:10
points 34:1 55:14,17
 56:1 61:15 70:4 77:1
 103:6 159:7 230:22
 231:1 251:2,3,5
 266:15,16 267:5
 270:8 277:3 279:7
 284:11 306:13 322:1
 329:3 385:14,20
poised 146:17
policies 86:5
policy 39:18 41:12 43:6
 43:18 234:12 286:2
 347:12,18 348:17
polite 14:14
political 28:10 59:7
 124:6 248:16 286:5
politics 375:21,22
Poor 174:19
popular 308:9
population 110:3 123:2
 123:20
port 19:6 110:18 126:19
 130:17 133:7,8,22
 136:4 137:5 141:3
 145:7,10,11 148:2
 152:13 153:6 198:12
 201:11,11 204:2,3,15
 204:16,20,21 206:3,5
 206:7 213:10,17
 292:20 293:11 295:2
 296:11,13,19 297:16
 297:17 298:2 303:7,8
 303:21 304:6,7
 309:17,22 310:4
 314:9 316:10 319:16
 320:5 375:15 383:3
portfolio 27:19 227:20
portion 94:10 161:8
 165:7 168:5 227:18
 325:22
portions 122:8
ports 6:20 26:13 27:5
 60:2 62:22 65:14
 72:12 110:9 133:11
 133:17,20,22 135:22
 137:11 161:22 201:10
 203:22 213:9,16

221:7 292:7,18
 293:12,20 296:3,4,5,8
 301:18,21 302:1,7,15
 304:5,17 305:9 308:1
 308:2,4,8,8,9,12,12
 308:14,16,17 310:19
 311:1,5 312:15,20
 313:5 315:2,10
 316:10 317:5,11
 319:1 320:11,16
 329:1,1 375:16
 379:15,20 381:22
 382:6
POS's 191:13
posed 80:22
position 25:14 42:9
 44:10 129:9,15
 179:13 181:22 248:21
 345:7
positioned 107:14
positioning 179:5
positions 25:13 180:9
positive 166:1
possibility 255:21
possible 36:17 44:22
 56:12 64:17 81:21
 186:10 252:2 324:2
 374:1 375:7 376:16
possibly 14:4 16:21
 43:22 159:20 161:3
 323:13
post 13:6 143:14
post-dredge 196:6
post-storm 6:1
pot 313:6 319:3
potential 115:13 298:22
potentially 193:20
 220:9 240:1 362:2
 373:10
pound 333:10
power 132:5,5 293:10
powered 286:22 303:17
 304:7
practical 32:11 62:20
 87:4 100:22
practice 78:16 96:16,20
 96:20 97:1,2 107:18
 178:22 212:6
practices 31:2 212:16
practicing 207:14
 224:22
pre 13:6
pre-El 5:17
preaching 176:2
precise 72:10 73:19,21
 194:1,12 294:7
 311:11 381:17 382:7
 382:18

precision 56:5 295:9
 301:20,22 302:4,6,13
 302:15 305:14,21
 306:5 307:8,17,20
 308:17 379:11,17
predates 108:15
predict 164:18
predicted 118:10
prediction 158:7,8
 178:14 194:2 325:21
predictions 121:20
 157:21 326:13
predictor 121:22
predicts 155:8
Predominately 111:10
preference 193:15
premature 44:18
prep 213:3
prepare 212:20 241:18
 349:21 354:1 355:19
prepared 7:22 37:3
 39:10 44:15 47:18
 337:15
preparing 65:3
prescription 105:12
prescriptive 105:15
present 1:14 2:5 3:2
 37:17 108:5 141:13
 231:14 334:16
presentation 26:15
 55:4 77:8 89:21 98:12
 98:13 104:14 138:4
 162:22 174:8 197:16
 202:22 285:10 349:9
presentations 31:13
 68:20 75:3 89:13,14
 211:16 258:9
presented 90:9 208:10
presenting 147:7
President 85:14 100:4
 248:5
president's 76:13,17
 134:12 219:12
President/Prime 85:22
presiding 1:12 203:8
press 76:15 126:8
pressing 249:4,5,9,11
 249:17,20 250:3,4,7
 250:15
pressure 83:8 123:21
 163:10
prettier 44:5
pretty 24:12 26:11
 28:12 40:22 43:17
 46:17 48:16 55:15
 77:13 78:7,18 93:9,11
 95:16 112:11,15
 115:3 116:15 173:9

- 174:19 183:7 214:10
214:11 246:2 269:4
282:22 290:1 336:10
344:1 347:22 355:1
357:10 379:1
previous 14:2 62:18
125:8 169:5 255:2
350:1 357:17 364:6
previously 109:8 119:8
346:13
price 276:5
pride 305:6 332:12
primarily 303:16
Prime 86:1
principle 369:8
principles 96:11
printed 50:8
prints 377:21
prior 100:6 101:6 177:7
230:4 244:12
priorities 88:14 322:9
347:14 372:3 387:14
prioritization 87:13
prioritize 122:19 375:14
375:18
prioritized 50:18
prioritizes 36:20
prioritizing 321:8
324:21
priority 6:6 238:2 245:9
254:7,18
private 35:11 98:21
99:7,10,11,17,19
100:8 101:14 102:9
107:17 135:3 189:6
189:10 190:2,3,22
210:5 226:6 238:5
313:17 314:17 318:19
382:8,9
privileged 153:10
proactive 32:5 35:16
36:14
probability 165:9 166:4
167:7
probably 15:9 19:7
28:17 34:17 43:11
46:14,19 47:20 66:2
67:20 68:9 78:7 80:16
113:20 117:1 122:1
132:2 159:16 163:13
208:11 209:10 211:9
212:19 218:10 234:16
236:11 247:16 258:21
269:8 289:2 299:15
312:3,22 314:9
315:11 316:3 320:17
324:10 325:10 329:9
330:22 338:16 339:1
353:9 356:15
problem 53:12 70:5
163:7 181:9,22 189:9
203:19 213:19 216:6
216:7 238:6 252:14
254:17 256:19 272:18
314:16 316:13
problem's 32:9
problems 51:14 104:18
189:4 219:18 233:5
238:20
procedural 70:9 344:6
procedure 73:5
procedures 42:2,13,21
47:16 331:15
proceed 126:8
proceedings 155:22
process 10:12 14:18
16:9 21:12 25:16 26:6
58:14 67:2 77:5,9,19
77:20 82:1 84:10
89:10 138:8 198:16
203:16 205:4 256:9
273:5 274:19 277:6
287:7 353:7 358:3
processes 112:20
113:4,12,13,17
115:15,21 117:6
120:1 154:20 156:5
processing 15:3 197:12
334:10
PROCTOR 2:17
produce 64:6 194:1
353:12 373:15
produced 219:4
producing 82:9 128:1
209:16
product 62:19 69:13
259:2 310:21 314:13
316:10 334:13 339:17
351:12 379:9 383:3
production 127:6,22
217:22 272:5 274:18
productive 223:21
232:7 239:10 271:15
332:19
productivity 231:19
232:3 238:9 239:5
246:12 258:10,13,15
258:20,22 333:13
products 34:8 63:3
138:11,13 177:21
209:7 298:10 322:3
351:19 372:15 373:1
373:8,16,18
professional 207:17,19
professional 25:14
98:16 116:11 191:2
207:14 210:10 212:2
212:8,12,15 213:1
224:17 360:8
professionals 339:16
353:4
professor 3:5 91:7
154:5 156:1 177:1
profile 25:11
profilers 23:19 171:8
profiling 23:12
profound 333:12
program 10:1 26:13
27:10 29:14,15 32:19
33:12,15 42:17 96:18
109:6,12 135:13
177:6 187:4,5,5,6,14
187:15 188:9 209:11
212:4 216:8 224:18
224:20 225:5 250:2
317:21 356:10
programs 8:21 132:8
186:22 189:1 190:13
212:19 213:3 376:8
progress 7:9 10:20
42:4 214:17 224:20
257:16 273:9 368:7
project 57:9 97:13
103:1,4 141:1 148:13
149:22 155:18 192:5
285:10,16 353:17
projected 296:10
projects 30:4 35:5,8,19
36:2,3,21 38:2 102:3
103:3,5,17 131:21
138:14 139:8 152:10
195:5,5,8 200:14
203:15,21
prolific 28:18
promise 201:14 276:15
promising 125:13
promote 80:19
promptly 44:15 259:6
propagate 180:10
proper 292:11
properly 296:4 314:16
properties 180:14
property 94:5,22 95:2
98:21
proportional 167:6
proposals 281:2
propose 262:4
proposed 125:22
proposing 239:17
protect 103:20 126:1
175:21 193:11
protecting 287:12
326:13
protection 109:7,10
118:13 119:2 120:22
135:9 152:7,14,16
153:3 178:18 193:18
268:14
protocol 144:5,17
145:1 205:18
proud 180:3
prove 304:12
proven 335:6
provide 5:13 141:5
199:22 206:15 221:3
258:5 296:9 315:13
323:4 327:21 332:2
351:1 358:1 373:18
provided 35:21 66:10
75:6 87:4 92:7 104:22
141:22 192:14 294:1
350:16 360:4 383:7
providers 116:11 378:7
provides 80:15 134:5
221:5
providing 27:12 54:19
67:2 222:8 373:8
proving 247:6
proxy 242:17 258:22
prudent 70:20 84:16
212:19
public 1:6 4:2,14,15
18:5 37:19 39:17
80:20 100:8 105:3
119:21 124:6 125:10
135:3 147:7 185:13
199:10,20 211:17,18
211:19 215:16,17
221:17 284:10 296:7
317:7 330:7 374:2,5
374:10,13,14 377:13
379:22 380:5
public/private 318:16
318:22 319:2
publication 43:21
184:18
publications 223:10,12
publicly 18:6
published 155:21
Puget 222:17 310:17
pull 31:6 102:11 148:8
246:10 257:2
pulled 117:19 144:20
144:21 269:19
pump 150:16
punted 328:13
purification 111:20
purpose 40:10 59:12
101:2 178:15 180:2
345:21 348:13
purposes 10:14 41:11
91:6

pursued 154:14
purview 383:11
push 45:12 334:8,13
pushing 12:7 27:2 85:1
 259:16 342:4
put 7:21 10:2 15:13
 19:11 48:16 51:17,19
 53:7 58:10,18 59:6,10
 66:14 73:17 74:1,7
 76:2 78:16 81:6,11
 82:2 97:9,11 104:1,3
 117:10 118:2 125:1
 126:22 127:7 132:10
 133:13 134:13 141:16
 147:1 149:8,17
 158:13 160:2 164:17
 169:16 171:15 172:8
 182:3 203:12,13
 210:20 217:3 218:12
 220:20 221:14 222:16
 223:5 224:11 227:16
 228:15 232:10 235:14
 237:13 257:10 259:7
 259:18 261:5,6
 263:16 266:7 271:22
 272:3 274:3,8 278:11
 278:11 281:1,3
 288:12 292:17 299:4
 299:10 304:10,14
 306:8 318:4 333:3
 335:18 352:10 353:3
 353:20 354:7 364:18
 377:10 384:9,11,13
 386:10
puts 133:15
putting 38:1 44:13 65:3
 76:17 78:5 123:21
 265:9 357:15 384:8

Q

Q&A 8:20
QA 181:12
QA/QC 172:3 298:17
QC 178:5 181:13
quadruple 15:9
qualified 191:10 226:12
 336:14
qualifier 222:21 264:19
qualify 264:7,16 275:14
 277:9
quality 16:7 17:2,11
 18:1 86:9,14 111:20
 124:2 172:2 183:1
quantify 159:11 162:19
 164:13
quantity 124:2
quantum 192:5
quarters 69:19

question 8:17 9:5,21
 12:11,12 16:14 17:11
 21:9 22:16 23:4,6,11
 24:21 39:6 44:9 55:18
 70:9 77:4,11 82:2
 86:21 87:16 89:18,18
 104:15 105:20 107:2
 149:21 150:1 162:17
 192:3,9 193:8,22
 194:17 196:5 198:11
 201:12,20 202:21
 203:14 205:17 207:13
 208:17 209:20,21
 218:3 236:8 244:12
 257:4 258:12 263:22
 274:1,11 292:11
 300:7 314:22 339:6
 345:3 356:3,4,21,22
 359:2 371:3 375:14
 378:3 379:19 380:1
 381:4,4,7 383:8

question's 22:13

questions 54:22 71:21
 75:6,9 76:8,22 77:6
 77:14 78:6,7 79:16
 80:22 83:17 87:8
 89:15,21 90:2,6
 128:10 164:14 176:15
 191:21 192:1 211:4,8
 211:9 274:1 323:8
 330:13 346:20 347:3
 358:20 362:11 364:10
 364:12 367:19 368:11
 371:20 383:7

queue 15:14 17:15
 21:21

quibble 230:20,21

quibbling 268:3

quick 57:4 72:15 85:6
 104:11 130:13 131:8
 197:12 233:16 285:12
 292:4 299:13 356:17
 381:3

quicker 62:13

quickest 146:14

quickly 14:3 38:22
 44:22 110:5 130:18
 147:15 232:4 268:19
 297:17 337:6 342:5
 381:10

quiet 164:9

Quinta 204:22

quite 33:2 59:18 66:14
 67:22 76:20 78:11
 110:19,22 116:9
 126:7 161:4 162:16
 164:4 169:4 172:22
 175:16 234:14 264:5

264:11 292:4 319:9
 321:22 367:3 381:16
 381:19

quote 264:13

quoted 372:3

R

R 1:15

RA 299:3

RACHEL 2:14

radio 180:7

RADM 17:10,20 25:5

32:18 45:15 86:20

87:2 218:7,14,20

224:12 227:13 228:3

228:9,13,16 329:20

345:2,8 348:6 349:2

Rainer 223:15

Rainier 27:22 217:21

222:16 227:5 228:5

228:16

raise 119:1 230:10

raised 360:14

raising 119:2 261:14

ran 37:16

ranch 94:3,4,6,6,7,8,10

94:14 95:6

range 6:16 76:10 80:8

158:4,5 164:16

167:19 168:7,9

169:15,17 170:2,15

194:11 270:12 307:7

385:13

ranges 168:6

ranked 137:17,18

ranking 137:22

rankings 137:6

rapid 223:1

rapidly 47:21

RA's 299:4

Rassello 1:20 52:14

56:4 311:10 387:12

387:16

Rassello's 57:7

rate 96:11 115:4 149:6

272:5,13 274:18

275:16 277:7

rates 13:2 122:6 149:5

217:22 273:9

ratio 166:11,22

rations 167:16

Ray 3:17 4:12 107:4,19

128:12 133:9 134:19

152:7 175:19 193:7

Raymond 144:20

re-crafting 260:22

re-designing 261:4

re-dredged 103:6

re-look 211:1

re-vegetation 101:9

reach 24:5 49:11 205:9

263:15 378:11,13

reached 76:2 117:22

125:3 255:14 270:21

273:21 310:16

reaching 18:11 378:10

read 52:8 71:22 72:5

79:14 89:22 192:20

262:16 265:7 288:21

308:20,21 309:3

344:7 356:1

readily 11:14 192:6

readiness 221:10

reading 178:8 246:1,22

307:3 338:16

ready 26:4 35:8,9,20

36:7,12 43:21 49:15

51:16 65:5 66:2

216:18 282:6 333:7

363:14 381:12

real 11:11 21:7 71:13

119:4 130:18 131:8

147:15 213:5 297:6

298:7 333:19 334:20

real-time 20:22

realistic 271:6,9 274:13

realistically 46:15

realities 274:11

reality 316:9

realize 123:17 184:9

189:16 190:10 242:10

realized 218:17 288:22

really 11:15,16 12:1,4

23:22 27:9 28:7 38:18

40:9 48:3 50:10 60:15

62:18,21 63:3 65:11

65:17 68:9,12 72:21

74:18 78:7 80:4 85:5

98:7 99:12 106:16

117:16 118:6 123:12

127:5 131:5 137:11

141:16,22 142:3,3

143:17,20 149:17

150:11 153:12 156:15

157:10 160:5 178:1

178:21 179:22 181:17

188:21 189:13,17

192:13 194:6,14

195:8 196:16 198:19

206:11 209:13 214:16

220:11 225:3 239:22

246:14 252:9,21

253:2 254:7 260:8

261:3,3 266:8 267:10

268:19 269:3,3 273:7

287:4,13 288:4

289:13 292:10,19
 293:13,15,21 297:6
 297:19 301:20 302:6
 305:13 306:4,16
 316:19 317:9 321:8
 332:9 337:1,5 341:5
 341:10 343:6,8 359:3
 364:9,11,20 367:12
 368:7 373:6 376:10
 376:12 377:11 378:2
 381:6
realtime 92:7 180:9
reapproved 41:18
rear 2:6,13 4:3 50:9
 202:14
reason 101:13 102:2,6
 103:22 139:5 169:14
 196:13 197:10 219:7
 220:11 228:14 241:13
 258:15 274:5 278:22
 288:1 319:21 328:17
 336:7
reasonable 77:15 172:5
 279:8
reasoning 74:7
reasons 115:2
reassign 65:20
rec 306:14
recap 5:6 44:10 59:11
 81:21 348:7 360:12
recapitalization 28:14
 45:8 59:5 219:4
 234:18 236:10 237:20
 250:16 252:19 358:12
recapitalize 27:20
recategorize 72:17
receive 387:2
received 5:8 25:10
 51:15 136:19 330:8
receivers 96:8
recognition 38:8 212:5
recognize 224:5 247:22
 290:1
recognized 109:6
 142:22 187:1 188:12
 188:13 189:3 279:12
recognizing 287:9
recommend 226:1
 230:8 262:20 277:5
recommendation 12:4
 12:8 13:7 48:19 64:20
 66:8,8 67:3,4 70:11
 82:8 88:11 163:12
 250:1 261:10 299:21
 300:7 325:16 340:19
 343:16
recommendations 6:18
 12:22 31:11 50:5 54:2

60:11,14 61:6 66:5
 70:13 76:8 78:15 87:5
 206:6,15 231:1 237:3
 237:6,9 243:15
 251:21 260:3 270:17
 277:4 279:3 293:15
 298:9 300:3,19 327:5
recommended 51:10
 54:4,5 343:13
recommending 70:10
reconsider 319:10
reconvene 89:6
Reconvenes 4:15
record 8:3 89:3 95:20
 96:1 160:14,15
 211:21 215:13 241:9
 285:6
recorded 297:22
records 96:21 97:3,12
 97:19 98:22 154:20
 192:5 344:17
recover 91:1 146:6
 326:18
recovery 90:11,22 92:1
 109:15,17 146:15
 221:10 297:11
recreate 168:17
recreation 132:6,8
 134:9 284:9
recreational 6:22 99:11
 102:10 111:1,12
 185:20 293:5 295:20
 302:21 303:12,16
 321:14 322:14 324:13
 324:16 325:3,9,11
 326:15 341:2 372:6
red 142:8 151:2 170:11
 174:12 263:14,17,21
 284:2,6 290:15
redirected 27:7
redo 211:1 348:2
reduce 135:2
reduced 238:21 239:3
refer 46:1,3 370:3
reference 66:3 84:13
 192:21 193:4 345:20
 347:2 348:13 349:11
 349:14,16 350:14,15
 350:16 351:6 352:22
 353:15
referencing 29:21
 69:22 351:21
referred 79:2,3,5
referring 22:2
refined 147:12
refineries 153:2
refining 138:6,7
reflect 8:3 180:12

reflects 93:12,13
reformat 292:14
reformatting 20:11
refresh 155:13
regarding 67:16 292:9
regardless 290:6 383:3
region 23:20 24:2 86:6
 87:17 90:15 121:17
 126:1,11 131:14
 203:14 287:11 288:21
 288:22 309:13 318:18
regional 2:8 4:10 90:10
 90:21 92:1 116:20
 117:4 125:6 283:3
 318:17 319:2 375:21
regions 38:1 183:3
Register 352:10
registered 98:16
 210:11,18,19
registration 16:2 213:1
registry 16:8
regular 140:14 185:15
 225:2
regulate 132:10 209:22
regulated 151:8 210:6
regulates 210:2
regulatory 132:9,16
 199:14,15
rehabilitation 129:12
relate 333:2
related 36:5 55:18
 62:22,22 107:10
 120:4 138:14 163:21
 164:3 272:4 341:2
 357:12 369:5 373:14
 375:16 386:12
relates 56:6
relation 385:18
relationships 190:21
relative 118:7 121:13
 137:6,20 156:21
 157:16 159:4,12
 161:7,8,12 164:11,15
 165:6 166:3 167:12
 167:17 170:8 175:4
 199:16 274:19
relatively 65:9 112:22
 175:5
release 12:12 76:15
 219:6 234:17
released 234:18
relevant 300:12
reliable 134:6 194:8
relief 194:12
relocate 146:11
relocated 142:12
relocations 193:21
reluctant 301:3

rely 293:11
relying 193:12
remain 83:1
remainder 246:16
 304:12
remarkable 160:6
remediation 107:18
remember 25:8 358:7
 364:3
remind 71:16 74:21
 90:19 304:20
remote 5:16 29:15 31:4
 181:4 269:14 375:5,8
remotely 240:7
remove 165:2,3 386:1
removing 140:9 385:22
reoccurring 7:4
repackage 378:8
repairing 140:3
repeat 11:4 233:18
replace 237:15 248:4
replaced 349:10
replacement 192:10
 219:2,20 222:14,22
 223:8 230:8 237:21
 237:22 248:19 250:7
 252:11 254:19 336:16
 349:4
replacements 223:4
replacing 248:22
 254:12
report 39:11 46:2 64:6
 76:2,3 79:4,14 81:16
 124:22 204:2,7 205:8
 234:3,6,7,15 235:1
 236:14 263:13 270:8
 290:12,12 353:18
 364:11 376:4 380:13
reported 200:20
reporter 42:18 386:18
reporting 140:7 200:18
 201:1,6,7
reports 4:17 8:22 39:8
 117:19 205:9 364:14
repositories 371:14
represent 110:2 241:11
representation 88:4
representative 128:13
representatives 75:18
 145:17
represented 141:3,21
representing 5:10
represents 110:12
Republic 100:5,10
request 42:3 215:15
 219:1 229:10 237:15
 237:17 244:14 245:6
 248:16 261:10 279:18

282:8 355:1
requested 219:2
require 64:10 212:7
 213:17 253:13 294:7
 353:15
required 182:10 337:4
 352:12
requirement 18:16
 19:10 198:8 260:14
 311:16 359:18
requirements 235:11
 292:21 311:20 367:9
requires 64:1 212:10
 310:2,3 311:13
resample 168:20
research 35:7,8 97:11
 154:5,5,22 155:1
 156:3,17 159:21
 178:17 225:15 226:4
 234:9,9 278:19
 340:20
researchers 36:3
reserve 211:4
reserved 105:3
Reserves 129:4
reset 199:18
residential 123:16
residents 123:8
resilience 4:10 16:18
 57:8 90:11,22 92:1
 160:22 221:11 314:14
 347:15 348:20 364:4
 364:8,16,22 365:2,6
 365:22 367:20 369:1
 369:5 370:5,19
resiliency 134:22
 143:18 149:14 193:9
 194:18 293:2 308:6
resilient 289:22 366:4
resist 300:17
resolution 11:22 17:12
 18:16 20:9 299:20
resolutions 19:9
resolve 216:9
resonate 73:18
resounding 194:21
resource 209:1,14
 294:1
resources 87:15 107:16
 123:22 124:10,16,18
 128:8 144:10 146:10
 188:1 194:22 206:18
 208:19 343:6,6,7
 378:20
respect 56:4 132:3
 137:6 141:18 238:16
respond 43:3,4 86:21
 294:6

responded 141:11
 198:15 200:4
responder 293:9
responders 314:1
responds 83:20
response 25:6 101:7,8
 101:18 109:13 144:4
 144:17 205:18 374:16
 376:18
responses 358:19
responsibilities 330:11
responsibility 144:8
 185:12 301:5,6
 378:13
responsible 42:16,19
 109:12 135:15 136:6
 323:8 353:11
rest 150:5 263:3 299:15
 308:21 309:3 356:1
 375:20
restate 382:4
restoration 116:1,3,4
 116:18 118:12 120:22
 125:19 145:9,15
 146:2 193:10 195:5,7
restore 127:12 144:9
restoring 144:22 206:1
restricted 294:9 297:4
 303:6
restriction 101:12
 206:8 207:8 259:20
restructure 240:19
 348:22
resubmit 211:1
result 69:13 168:8
 173:7
results 6:10 82:3 169:2
 169:3 173:13 197:14
resumed 89:3 215:13
 285:6
retention 111:21
 114:14 189:18
retired 203:8
retirement 91:18
retiring 25:18
retooling 262:20 343:8
review 1:4,11 5:5 18:2
 47:19 52:1 59:19
 130:9 235:4 236:17
 247:18
reviewed 155:22
revise 299:11
revised 57:16 234:7
revisited 103:5
reword 270:16
rewrite 244:7 250:18
rewrites 253:14
rich 2:4 9:16 23:6,17

77:7 78:1,19 354:21
Rick 2:9 14:11 21:14
 223:18 227:10 233:20
 236:8 261:15 379:2
rid 370:16
right 10:12,20 13:8,19
 14:16,19 15:3 17:7
 19:8 22:19 26:19 27:3
 27:20 30:14 32:17
 38:7 39:5 41:17 43:17
 43:19 45:2,16,17 55:6
 65:20 73:14,17 82:6
 84:5,11 86:19 87:12
 88:22 89:5 100:20,21
 105:10 107:21 110:12
 128:13 133:5 137:12
 137:15 142:18 143:9
 143:14 148:12 149:10
 150:3,22 151:19
 153:2 155:16 157:8
 157:19 161:22 162:6
 162:12 163:6 164:6
 170:14 171:10 175:21
 176:16 178:6 180:1
 181:1 185:22 188:10
 191:2 196:4 197:15
 199:5 201:11 202:10
 207:2 212:3 216:6
 217:6 223:8 226:2
 229:13 234:1 236:21
 241:5,10,13,15
 242:13,19 243:20,21
 244:18 245:5,22
 246:8,22 248:16
 249:21 252:14,17
 254:17 259:11 260:19
 261:17 265:17 266:9
 269:21 274:3 281:22
 282:19 298:18,18
 302:9 304:8 306:11
 309:20 316:1 317:22
 331:5,5 332:19,21
 333:10 335:19 340:21
 348:1 359:11 361:7
 363:17 368:3 383:5
 387:6,13,17
rights 141:6
rise 21:2,4 96:3,6,7
 103:2 118:7,11,15,16
 118:20 119:12,13
 120:10,19 121:13,21
 122:1,3 156:22
 157:16 159:5,13
 160:1,7,11,12,13
 161:8,9,13 164:11,15
 165:6 166:4,16
 167:13,18 169:2,6,10
 169:16 170:8,13

175:4,4 195:6,12,18
 298:4
rising 286:8
risk 125:18 132:4,15
 134:19 135:2 214:21
risks 123:18 126:10
Rita 135:10
river 137:22,22 176:8
rivers 178:13
road 51:2 68:4,10
 144:14 285:10 317:11
 317:14 318:1 346:19
 347:1
Roads 57:8 148:5
 285:14,16
robust 324:12
rock 36:8
Rockport 175:10
rocks 152:4
role 40:1,7 60:21 91:1
 168:8 205:18 221:9
 314:19
roles 224:5 225:15
roll 36:8,12 49:21
 244:17 295:7 331:2
rolled 7:19
rolling 104:22
rolls 350:14
roof 386:20
room 32:9 37:12 54:9
 57:11 118:9 120:14
 131:5 176:12 177:18
 215:10 261:18 269:7
 285:18
root 252:7
rope 179:6
rough 65:9 111:17
 321:4
roughly 28:1 92:21
 111:16 122:6
route 85:7 155:8
routine 221:13 286:15
Row 1:12
royalties 95:14 127:21
rule 249:7
rules 29:8,10
ruling 105:10 106:9
run 132:19 196:12
 270:10 293:14 368:19
run-up 172:9,21
running 15:5 28:3,8
 85:9 97:21 142:4
 191:18
runoff 16:22
RUSS 2:17

S

Saade 1:21 28:16,16

29:11 31:22 61:2,2,9
61:19,22 62:3 68:13
85:6 208:18 263:17
271:8,8 272:1 274:2
276:13 278:3,20
279:9 331:7 338:20
339:5,9,12 344:21
345:4
Sabine 136:11 147:20
Sabine-Neches 135:17
saddle 377:20
safe 86:10 134:6 221:6
268:15
safely 218:12 292:12
297:18
safety 8:10 178:15
228:1 268:13 295:6
297:6 303:21 311:18
314:13 316:11 320:14
341:5 365:14
sail 151:12 303:16
sailboat 102:19 177:12
324:15
sailing 341:19 377:20
sailor 177:11 185:16
sake 327:13
Sal 52:14 63:10 72:19
75:12 292:8 293:18
299:10 311:8 312:10
381:15 382:11
salinity 113:14
SALVATORE 1:20
salvo 256:2
Sam 1:11
sample 59:17
sampling 112:3 139:17
San 106:8 114:4,5,8
310:16
Sanctuaries 24:15
sand 36:5,9 115:13,16
116:2,5,6,9 150:13
151:4,18 196:15
Sandy 19:17 21:5,10
22:6 30:8 35:21 36:3
297:14 326:8
Sarita 94:16,18
sat 292:16
satellite 160:16 186:7
saved 135:9 153:4
saving 358:15
saw 11:17 39:20 53:4
56:22 63:10 121:16
301:20 302:19 365:18
saying 17:14 48:10
70:4 71:10 217:15
225:8 232:21 240:2
246:6 247:8 253:3,9
254:8 260:13 264:17

267:9,11,13 268:17
269:17 302:14 312:8
325:6 340:9 371:7,18
says 86:4 101:18 192:9
196:5 225:13 249:9
274:17 373:12 380:3
384:2
scale 99:13 148:17
240:19 320:13
scan 97:9
scanned 117:20
scanning 98:4
scars 335:13
scenarios 195:18
scenes 11:20
schedule 57:3 74:10,12
88:19 130:9 236:1
scheduled 39:9 59:8
74:17 136:22
scheduler 49:12
school 97:8 154:15
177:10 188:10,14
189:11
schools 121:4
science 3:6,7,21 91:8
91:10 96:18 112:22
113:1 128:21 154:2
177:2,4,8,8 178:22
181:11 186:17 189:12
208:7,7 234:11 278:7
286:2
sciences 178:10
scientific 92:8 190:7
scientist 156:3
scientists 185:13
186:15 224:22
scope 33:15 346:1
Scott 1:12,15 4:3 22:1
52:22 67:16 77:18
89:9,16 211:13
232:20 284:18 328:13
337:15 358:4 363:19
Scott's 42:3
scout 129:2
scratch 176:6
screen 50:16 143:3
216:16 237:5 251:3,4
362:15
scroll 385:3
se 301:21 366:4
sea 21:2,4 28:6 37:9
95:21 96:2,3,5,6
103:2 116:8 118:7,10
118:15,20,21 119:12
119:13 120:7,9,19
121:13,21 122:1,3
135:1,5 152:5 156:21
157:16 159:4,12

160:1,4,6,11,12,12
161:7,8,12 164:11,15
165:2,6 166:3 167:12
167:18 169:1,6,9,16
170:1,8,13 172:19
175:4,4 176:7 183:20
193:12 195:4,6,12,18
258:21 286:8 287:5
298:4 314:6 335:20
335:21
seabed 266:22 277:22
seafloor 221:15
Seafood 111:5
search 168:20 325:21
seas 178:12
SeaSketch 37:22
season 149:3 271:16
seasons 274:12
second 101:13 134:16
137:22 170:18 178:9
197:13 202:21 204:12
217:10 249:10 261:16
264:17 333:3 338:22
344:11 350:5 365:7
371:1,3,16 372:9
374:1 384:22
Seconded 344:12
Secondly 99:8
section 51:19 132:11
204:1,15 296:13
sector 135:3 206:3
381:18 382:8
sectors 88:10
sects 284:21
secured 296:20
security 127:20 134:8
178:17 267:2,6 293:1
294:7,9,10,12 308:5
314:13 320:13 328:19
328:20 329:2,2
330:20
sediment 101:9 113:5,5
113:7 114:12,15,21
116:2,3,14 117:6,21
118:1 122:5 183:16
186:2
sediments 116:17,17
117:11 139:18
see 16:14 18:22 21:7
26:15 33:20 41:2 44:3
49:12 51:20 52:7 53:8
53:21,22 54:12 62:21
65:11 68:13 72:11
81:10 83:2 85:4 87:5
112:5 127:10 128:2
131:18 132:18 135:4
136:7,11,13 138:10
144:13 148:21 149:9

149:19 150:17 151:18
152:18,19 153:2
163:2,5 164:7,7,8,8
171:18 174:15 175:8
181:13 185:5 196:17
209:10 220:17 230:22
236:4 237:9 246:4,6
261:13,14,22 262:8
263:20 278:19 307:19
310:22 312:11 317:15
327:17 333:15 334:15
341:3 345:8 350:4,5,9
353:17 354:6 358:21
359:20 365:21 373:5
382:13,14 383:4,6,17
386:11
seeing 20:7,13 38:3
62:20 115:2 123:2,8
124:1 138:16 139:7
277:16 286:12 303:11
306:1
seen 38:6 123:4 157:14
162:5 169:19 170:5
258:7,8 301:17
seeping 336:2
seeps 180:15 335:20,20
sees 71:4
segment 385:11
segregation 69:21
sell 36:19 276:8,12
379:21
semester 177:3
seminar 378:6
Senate 219:8,9 235:18
Senator 79:1,7 286:3
send 64:11 70:10 71:2
71:9 229:14 255:7,12
259:20 321:10
sends 187:7
senior 5:11 77:6,19
sense 18:3 49:7 56:2
104:3 183:13 217:6
247:10 256:17 332:4
338:10 370:13
sensing 5:16 29:15
31:4 181:4
sensitive 260:7
sensitivity 18:22
sensor 5:20 20:5
163:10 196:5 237:18
sensors 227:8
sent 76:20 77:7 361:12
sentence 238:19
247:17 264:17 304:11
304:15,17 308:20,22
355:22
sentences 247:13
Sentinels 143:2,19

- separate** 117:14 229:2
252:21 253:17 259:19
259:21 300:11 307:8
317:12 361:4
- separated** 279:18
- separately** 137:17
- September** 64:16 66:12
76:3 143:12 264:2
266:18 273:22
- sequence** 52:7
- sequencing** 42:10
- series** 25:15,15 43:20
64:3 93:13 165:4,5,8
209:17
- serious** 105:19
- serve** 316:20
- served** 7:3 8:7 40:9
44:12 91:5 129:1
- service** 8:5 27:13
116:11 146:3,12
155:7 158:9 175:6
314:5 340:14 377:7
- services** 1:4,11 2:17
5:5 6:12 27:19 75:9
76:18 80:20 221:12
222:8 247:18 297:11
312:5 325:10 365:5
365:10 366:11 369:12
372:18 373:15,18
376:11 385:7,12,18
386:6
- serving** 33:9 201:21
202:4
- session** 37:16,21 52:3
89:11 91:16,16
191:18 361:10
- sessions** 364:6 365:9
- set** 66:9 99:16 101:2
163:2 200:6,9 289:15
319:12 346:11
- sets** 183:3 185:1 323:21
324:12 359:12
- setting** 179:2 294:22
- settlement** 116:20
117:4 127:11
- setup** 94:21 108:16
- seven** 75:15 104:14
- severance** 104:19
105:7 106:16
- severe** 297:12
- Sewells** 368:17
- shake** 302:19
- shallow** 16:18 17:3,18
137:5 214:10,11
273:2,19 274:7
- shallower** 200:21 201:5
- shame** 254:20 299:2
- shape** 120:3 129:17
279:8
- shaped** 93:14 319:10
- share** 22:22 54:17
70:15 86:8 90:8
159:10 163:1 170:20
207:1 233:18 291:1
301:7 303:17 330:7
- shared** 128:1 151:15
217:5,20 303:8
305:15 307:16 330:5
340:20 379:12,13
- sharing** 38:11 125:15
141:14 201:15 321:6
329:18
- sharply** 69:15
- She'll** 32:20 33:5
- sheer** 14:20
- sheet** 50:11 197:5
- sheets** 54:22 116:6
- shelf** 5:20 127:22
167:22
- Shell** 83:2
- Sherri** 7:14
- shift** 57:15 296:22
320:2 322:9
- shifted** 41:10
- Shingledecker** 1:21
22:12,13 52:21
231:11,12 239:18
240:5 321:1 328:1
358:17 377:16
- ship** 16:16 73:13
115:10 150:20 182:9
207:3 219:2,16,20,21
220:3,7,8 221:3 224:8
229:10,20 231:8,17
231:19,20 248:3,7,20
252:4 253:4,11
255:22 256:1,13,15
256:20 258:10 260:5
275:5,9 283:5,19
284:15 309:18 310:1
310:7 311:19
- ship's** 312:4
- shipped** 98:6 133:14
- shipping** 86:3,10,12
185:14 295:2
- ships** 1:12 27:22 28:3,5
28:7,15 56:6,7 60:3
63:2 65:16 84:9 86:5
217:16,19 218:2,9
220:8,9 222:9 223:15
223:17 224:6,14
225:13 226:11,13
227:3 228:4,18
237:16 238:10,15
248:9 254:9,12
258:19 272:13 292:9
293:20 296:15 297:3
303:1 305:15,15,16
306:2,2,10 308:1
310:3,4,5 311:12
320:4
- shipyard** 291:12
- shoaling** 149:5,6
- shoals** 196:15
- shocking** 137:12
- shoehorn** 367:6
- shop** 38:19
- shore** 95:6 116:7
324:12,22
- shoreline** 38:19 101:8
105:14 109:21,22
- shorelines** 102:4 150:8
185:22
- Shoring** 125:1
- short** 5:6 8:17 66:11
134:5 271:13,16
319:8 343:14 357:18
- shorten** 229:17
- shorter** 130:7 170:19
274:12
- shortly** 199:21 235:3
- shot** 230:1 256:8 292:5
- shoulders** 278:14
- Shoved** 98:5
- shovel-ready** 35:3 36:2
- show** 35:22 134:15,18
135:7 137:3 140:8
152:11 157:13 161:5
164:20 211:10 219:3
230:6 231:16,18
241:8,9 244:16
272:22 344:17 360:16
376:20 378:6
- showcase** 30:9 31:19
- showed** 121:10 125:9
128:4 139:2 202:22
- showing** 31:15 148:12
246:11 265:16 386:8
- shown** 114:19 223:15
286:21
- shows** 96:1 131:9
137:19 163:6 168:11
180:4 184:22 205:18
232:3
- shrimp** 387:4
- shrug** 278:13
- shrunk** 24:9
- side** 29:1 35:1,7 38:22
123:14 156:18 170:14
173:12 235:8 276:4
- side-scan** 197:6
- sidebar** 292:7 299:14
- sides** 173:12 314:17
355:20
- sight** 181:5,6
- signal** 283:21 381:11
381:22 382:9 384:19
- signaling** 382:18
- signals** 384:18
- signatory** 145:2
- signed** 125:14 145:1
189:22 234:13
- significant** 111:2 112:4
112:6,12,15 113:15
115:4 118:11,22
119:3 120:3 123:3
126:14 127:6,10
171:17,20 238:15
241:2
- significantly** 121:20
- silence** 367:16
- siltier** 151:5
- similar** 131:10 220:2
359:14
- similarity** 53:6
- simple** 246:3 335:12
368:22 383:16
- simpler** 23:6
- simplistic** 119:20
120:15
- simulation** 295:1
- Simultaneous** 291:2
363:10
- single** 50:11 67:8,10
240:15 241:15 248:7
248:20 249:9,16
250:4 255:13 258:19
335:9 340:8 347:19
378:11,13
- single-beam** 185:7
196:7,11 197:1,9,10
- singularity** 248:14
- sir** 19:13 24:20 61:21
196:4 363:20
- sit** 11:19
- site** 21:3 151:9 207:2
- sites** 139:20 203:4
376:14
- sits** 359:9
- sitting** 35:3,13 183:7
252:15 287:5 344:7
- situation** 70:5 72:2 73:6
170:4
- situations** 225:22
303:18
- six** 7:4 25:7 69:9 75:13
131:4 135:13 140:4
143:19 147:11 167:1
185:8 198:19 227:7
228:22 259:9 296:19
313:2 329:22 362:11
368:12 381:7 382:2

- six-foot** 102:19
six-time 168:13
size 163:21 238:14
 311:21
sizes 305:16 323:5
skies 164:8
skiffs 206:22
skin 282:19
sky 269:20
SLAMM 120:7
sleep 338:4
sleeves 49:21
slept 26:10
slide 50:16 94:1 98:11
 110:12 121:10 125:8
 134:15 137:2,19
 165:16 166:12 169:3
 169:5 174:22 178:9
 286:6,15 287:17
slides 110:4 112:15
 135:8 172:15
slightly 30:16 53:8 56:3
 86:16 94:5 331:22
slope 372:22
slot 53:7
slots 52:6 53:13
slow 102:4 341:3
slower 273:5
small 19:5 53:16 100:13
 141:10 147:12 158:5
 158:19 159:7 162:19
 169:15 175:5 206:22
 227:4 257:18 261:12
 264:11 381:18
smaller 94:5 99:13
 162:9
SMART 205:5
smarter 300:21
smiling 372:7
smooth 58:12 353:7
social 293:2
soft 193:15 196:15
software 12:20,20
 146:22 339:19 342:14
 351:1,14,16 352:18
 352:19,19 359:5,8,17
 359:20 360:1,6,9
softwares 11:12 190:19
soil 107:19
solid 28:14
solution 70:6 273:10
 357:7,7
solutions 182:6,7
 193:15,20 334:9
solve 51:14 252:14
 332:20
solving 68:4
somebody 27:4 36:12
 210:8 229:21 265:2
 279:1 305:5 313:4
 332:6 367:15 371:4
 374:9 383:19
someone's 232:4
somewhat 106:1
 111:16 361:15 365:9
son 94:15
sonar 185:6 188:20
 196:7 197:6 226:11
sonars 185:7 188:2
 190:16
soon 6:9 48:7 252:2
 352:11
sooner 220:14 236:18
 281:18,19,20
sophisticated 295:14
 296:1
sorry 11:6,6 14:7,9 16:1
 22:4 72:19 209:19,20
 283:11 309:6,9
 330:18 339:6,10
 340:7 381:7 382:5
 383:12 386:4
sort 17:1 18:1,2 19:3
 25:20 43:7 47:2 51:2
 53:3,5 60:19 61:7
 64:6 78:14 81:11 88:2
 164:9 213:21 275:2
 275:10,11 299:9
 341:20 346:4 348:9
 372:12 373:14 377:10
sound 180:10 181:4
 222:17 310:17 369:8
soundings 179:6
sounds 73:22 265:14
 306:14 344:7
source 35:11,11,12
 97:7 115:13 116:10
 184:21 192:4,4
 213:20 299:5 318:10
 335:7 357:2,9,19
sourced 317:17
sources 36:5,9 122:20
 296:6 317:6 336:4
sourcing 298:21 325:5
south 110:20 131:14,16
 135:17 147:19 175:9
southern 94:10,16
 114:7 177:6 187:3
southwest 114:13
Southwestern 131:15
 131:17
sovereign 100:3
space 100:20 180:8
 263:11 357:4
spaces 51:21
Spain 100:4
spam 257:7
spatial 156:20 157:2
 161:5 167:10 170:7
 175:1 176:4 350:13
speak 57:2 129:21
 240:13 325:12
speaker 89:13 96:14
 107:4 128:13 153:21
 176:18
speakers 53:12 92:9
 96:12 122:22 161:18
speaking 21:15 291:2
 363:10 367:8
speaks 292:20 367:2
special 7:13 287:1
 307:9
species 111:12,14
specific 67:22 72:9,19
 75:8 81:8 106:3 250:1
 259:21 261:7 274:1
 315:6,8,10 321:9
 335:8
specifically 22:8 46:16
 86:13 106:6 225:10
 252:3 253:10 254:16
 368:11
specification 20:6
specifications 182:16
specificity 86:18
specs 190:13
speed 361:15
spend 61:3 103:10
 122:19 141:8 242:18
 242:18 292:1 328:20
spending 211:6
spent 33:2 75:22
 252:18 368:9 369:21
spill 109:13 127:11
 197:4
spills 83:10 214:16
spine 125:22
spiral 275:10
split 162:3
spoke 331:9
sponsor 141:1,3
sponsors 141:14
 198:22 205:15
spot 181:16
spots 301:7
spread 117:14
spreading 29:6
spring 5:4
square 15:7 147:11
 272:6,10,15,19 273:3
 273:6 275:12,14,16
 275:21 276:15,18,20
 276:21 277:14
squeeze 57:10
squeezed 120:12
 243:17
stab 208:22
stabilizing 102:4
stable 160:6,9
staff 2:5 77:6 79:1
 153:12 206:4 243:9
 346:19 347:4
staffers 58:3 79:1
staffing 25:11 189:5,5
 238:17
stage 66:9 246:11
staggered 133:1,2
 146:9
stake 144:22
stakeholder 125:4
 283:17,18 284:1
 381:15 383:15 384:2
 384:13,17
stakeholders 38:4 85:5
 88:4,9 125:5 198:22
 284:8,16 311:3 358:2
 376:8,14 382:17
 383:2
stamp 210:20
stand 43:13 148:18
stand- 254:3
standard 42:1,12 47:15
 157:10,11 158:10
 171:13,16,20 191:8
 212:15 230:19
standards 13:22 55:21
 264:4,20 265:5 270:5
 342:11,17,18,19
standing 144:13
standpoint 32:12
 130:15
stands 346:5
staple 261:9
star 98:1
start 14:20 15:15 19:7
 23:2 48:16 52:9 66:12
 77:20 88:9 147:3
 164:21 181:19 246:1
 246:22 273:2 285:15
 287:11,12 295:7
 300:18 321:12 337:12
 387:11
started 36:2 50:21 65:8
 88:22 94:2 113:2
 185:7 197:18 287:7
 298:16
starting 27:1 125:13
 175:14 198:6 334:21
starts 93:19 136:2
 212:22 247:5 315:18
starved 116:5
state 35:11 98:18 99:18

- 99:20 101:2 104:21
105:4,10 108:14,15
108:19 109:11,18
111:2 124:12,13
137:5 140:10,17
144:21 177:6 210:5
211:20 212:9,16
215:1 238:4 250:21
293:8 296:6 313:21
314:1 317:6,19 319:2
335:6 353:4
state's 110:3
state-owned 108:20
stated 268:20
statement 86:2,3
134:19 178:19 236:14
256:7 329:19 348:14
366:9
statements 370:15
states 55:19 92:22 94:7
128:1 155:10 212:7
304:1 305:10 313:19
statewide 108:11
static 160:12
stating 105:10
station 146:13,13
154:13 157:10,11
171:7,11 175:9
255:22
stations 142:8,9,10
163:9 175:3
statistic 232:16 275:1
statistical 165:11,13
statistics 162:2 168:10
172:3 173:16 239:9
258:5,11 259:15
Statoil 83:3
stats 130:17 199:18
status 51:6 105:18
233:3 306:7 321:13
331:14
statute 104:21
statutes 366:13
stay 47:7 216:22 327:7
346:1
staying 111:3
steadily 155:16
steal 305:7
steer 75:20
Stennis 177:7
step 68:10 82:12 169:9
169:18 244:13 337:14
Stephen 3:9 4:11
steps 316:21
Steve 93:17 96:14,22
98:1,2 192:2
Steven 98:15 109:19
Steven's 298:11
- stewardship** 132:9
stick 189:20
sticking 242:13
stocks 138:8,15
stones 140:6
stood 235:5
stop 102:4 184:5
191:19 319:18 320:4
stopped 319:7
stops 93:19
storage 326:8,11 334:9
storm 16:22 17:19
90:19 92:19 93:7
97:20 104:5 112:13
118:15,17,18 120:1
125:18 126:10,14,15
135:6 143:21 146:4,7
146:8,11 156:22
159:5 221:10 297:12
325:21 326:12 327:19
storms 63:7 93:8 164:7
183:17 222:9
story 45:17
straight 92:15 192:12
301:18
straighten 19:12
Strait 274:15
stranger 91:4
strategic 78:9 80:8
82:10 133:21 291:11
291:17 316:19 327:7
340:10 378:20
strategics 80:7
strategies 270:14 385:9
strategy 33:3 34:2 65:6
289:22
StratMap 209:9
street 106:7 130:8,10
152:2,3 387:7
strength 105:5
stress 111:22 223:1,2
351:12,20
stressed 26:19
stressing 261:7
stretch 29:3
strictly 158:22 196:10
strike 259:10
stringent 182:15
strong 252:2 289:3
321:6
strongly 76:12 318:9
structure 13:3 43:13
101:3 104:4 129:19
195:21 233:2
structured 241:3
structures 99:15
101:20 104:1,2,7
119:7 129:13 132:10
- 134:22 140:3,6 143:1
144:1,3 193:13,16
struggle 327:1
struggled 50:6
struggling 277:1
stuck 275:1,21
students 155:1,20,20
174:20 177:3 182:20
184:11,13 186:14
190:18,20 207:16
212:20 213:4
studies 107:11 138:20
194:19 195:14,15
354:12
study 125:16 126:5,9
134:20 136:19 152:8
205:7,7 262:15
266:17 270:20 335:10
stuff 39:3 99:12 156:5
185:2 186:1 191:16
194:15 201:4 243:10
253:6 273:19 289:12
290:16 294:14 301:5
342:4 368:1
stupid 367:13
style 99:17 125:22
sub 23:22
sub-group 240:10
subject 257:2 298:4
subjectively 200:7
submarine 181:1
submerged 108:21
submit 210:9 241:20
380:12,16
submitted 284:20,21
subscribed 100:11
subsequent 217:14
219:17 251:22
subsequently 260:1
subsets 67:3
subsidence 95:22 96:5
96:7,10 103:2 121:16
121:19 122:2 161:6
176:7 289:7,9
subsidiary 132:5
subsiding 183:16
subsurface 180:17
suburbia 123:17
success 225:5
successful 38:18
301:19
successfully 328:13
succession 42:11
66:15
successive 217:13
succinct 61:10 229:10
229:18 244:4 380:10
suddenly 15:6 172:1
- sued** 105:7 109:20
suffered 162:8 343:1
sufficient 7:9 122:4
250:18
suggest 42:14 44:20
59:9 60:12 70:15
76:12 225:7 249:3
250:8 271:1 288:4
355:1 380:19
suggested 90:5 246:6
suggesting 239:4
373:11
suggestion 246:19
suggestions 171:4,5
222:18 238:9 284:13
329:13 361:9 380:10
suitability 13:20
suitable 13:18 14:5
16:20
suite 192:8
suits 24:1
Sullivan 44:13,21 48:5
70:22 71:4 217:15
365:18
sum 82:20 247:16
summarize 229:20
364:14 365:8
summarizing 67:2
summary 42:19 260:1
327:12 387:10
summer 75:22 97:9
272:6
summertime 75:16
sun 229:9
superiors 275:2
supervised 155:19
supper 261:19
supplemental 19:16
21:11 30:8 216:5,9
supplies 188:2
supply 214:10
support 17:12 18:10,14
19:13,19 24:19 28:5
45:7 85:16 178:15
208:20 245:4 248:18
288:21 303:3
supported 265:21
317:21
supporting 27:10 86:10
112:21 369:1
supports 128:6
suppose 54:14
supposed 10:17 60:4,5
315:19
supreme 99:18 106:17
106:19
sure 9:12 10:21 23:15
23:17 28:13 46:10

76:21 82:21 88:3
 104:20,20 115:17
 126:7 178:5 180:1,3
 183:1 193:5 202:8,18
 222:18 225:20 244:18
 264:5 266:6 269:9
 270:5 279:2 280:1
 282:22 283:18 284:4
 284:6,10 286:9 291:3
 302:12 321:1 325:11
 326:20 331:7 336:22
 339:5 345:2 357:10
 362:8 372:10 374:3
 381:20,22 382:2,13
 387:13
surface 194:4 332:15
surge 16:22 17:4,19
 112:13 118:17,18
 143:21 156:22 158:18
 158:19,19,20 159:2,5
 163:3,3 164:16 165:3
 165:5,8,12,20 166:2
 167:19 168:1,6,7,9
 169:15,17 170:2,15
 326:12 327:20
surges 118:15 120:2
 146:6 159:7,9 162:3
 163:21 168:2,18,19
surprise 46:11 169:10
survey 2:19 3:15 10:2
 10:10 11:13 15:10
 16:4,7 17:10,16,21
 20:16 22:6,9 24:7
 25:6 31:5 32:18 38:22
 43:9 84:9 86:20 100:1
 100:2,3,6 101:5
 146:22 148:6,8,20
 149:1,7 187:8 196:10
 196:11 197:7,14
 198:9 201:15,18
 202:22 206:22 207:7
 210:10,15 212:22
 216:1 218:8 220:19
 220:21 221:5 223:19
 223:20,21 225:8,9
 226:7,14 227:21
 228:18 230:9 233:9
 237:12 238:1,22
 244:2,14,19 245:7,9
 245:16 247:7 248:17
 252:3 258:11 267:3
 270:12 272:5,10,12
 272:21 273:8,16
 274:12,18 275:16
 277:7 279:20,22
 282:16 283:1 297:10
 302:3 329:15,16,20
 330:1,3,5,10 335:9,15

336:8 371:10 375:4
survey-ready 35:18
surveyed 13:21 149:11
 217:21 264:9,19
 265:4 274:14 310:12
surveying 3:7,10,20
 16:15 91:9 93:20,20
 154:1 177:4 191:16
 250:2 258:20 273:1
 275:5
surveyor 3:9 92:10,14
 93:18 96:15 97:3
 98:16,19,20 102:7
 176:19 208:2 210:9
 210:11,18,19 212:8
 212:13
surveyors 156:15
 194:16 199:13 212:21
surveys 15:3,13 16:3
 17:9 23:9 24:10 62:7
 85:7 101:4 139:22
 147:13,18 148:22
 179:9,10,11 191:7,13
 196:6,19,20 205:19
 206:11 207:9 210:1,4
 210:14 212:11 213:15
 221:14 222:8 224:1
 226:16 227:11,17,19
 227:22 229:1 233:8
 233:10,21 272:20
 280:1 294:2,5,8
 311:17 329:17 330:9
 351:4,8 371:12 372:5
 375:3,6
survive 195:13
Susan 1:21 22:12 52:20
 231:10,11 246:6
 302:19 320:20 327:16
 328:4 362:10 371:7
 377:15
Susan's 23:7 239:17
 372:7
susceptible 195:6
sustain 162:18 348:8
sustainable 134:7
 316:22 318:10,10
swapped 357:14
swath 292:22
sweet 134:5
Swiss 154:10
switch 165:20 166:2
 237:2,8 239:12
 363:18
switching 236:6
Switzerland 154:9
synergies 29:2
synthesize 64:7,8
synthesized 263:13

system 6:21 15:14
 25:22 26:16,18 28:22
 62:22 142:4 143:15
 153:3 208:19 209:2
 293:12 303:4 308:15
 313:10 314:15 315:3
 315:10 350:14
systems 7:2 9:10 121:7
 134:7 135:9 144:6
 147:20 152:7,15,17
 279:21 280:2 295:15
 296:1 311:5

T

table 61:4 75:11 141:22
 314:19
tables 182:10
TAC's 283:7
tackle 329:12
tactical 80:7,8 82:9
 340:10
tailored 45:9
take 11:13 14:16 18:19
 41:19 68:9 76:13
 78:13,15 79:22 80:18
 85:3 87:22 89:8 90:4
 170:5 175:2,13
 180:10,20 181:8
 183:11 203:21 208:22
 211:20 212:20 216:4
 216:9 225:11 230:1,4
 231:5 233:17 240:20
 274:16 277:2 279:1
 280:15 284:22 291:21
 299:16 308:10 312:20
 316:7,15 322:5 329:9
 334:6 337:14 340:10
 362:1 363:6 366:20
 370:15 378:7 385:16
 386:7
take-home 166:21
takeaways 6:3
taken 174:16 176:22
 179:18 191:12 250:21
 252:17 303:13 326:16
takes 42:18 256:8 310:5
 378:10
talk 14:21 29:8 34:17
 43:12 49:4 57:2 74:12
 90:20 93:17 96:13
 97:1 99:2 111:5
 130:17 142:7 143:18
 154:21 156:10,17,19
 157:2,8 159:1,3,17
 160:1 166:20 170:10
 170:18 177:19,20
 178:8 186:11 202:14
 226:17 265:1 273:8

293:1,4,5,6 303:17
 307:9,18 312:11
 313:1 316:17,22
 323:14,14 331:6
 332:4 333:20 338:8
 342:18 358:7 372:17
talked 34:18 38:17
 49:19 74:1 99:6 102:9
 133:9 172:17 175:19
 183:9 189:4 216:21
 217:1 220:4 236:11
 272:14 283:13 292:21
 313:2 336:17 337:5
 342:10 343:4 375:1
talking 11:21 16:22
 29:2 39:2 40:1 62:6
 100:19 118:14 119:6
 145:8 157:7 159:15
 167:10 197:4 218:8
 223:18 235:1 272:20
 294:13 308:9 321:13
 328:21 334:18 342:3
 356:8 362:10 368:1
 370:2,4 372:13 373:4
 378:16
talks 9:4 225:10 234:8
 287:19 336:10 372:11
tall 170:1
tangible 332:2
tantamount 307:22
tap 206:17
tapped 144:10
target 66:14 78:18
 118:21 272:12
targets 274:13
task 63:19 241:16
 369:10
taxi 377:5 386:2
taxpayer 318:21 378:13
 380:3
TCOON 129:16,17
 142:6,14 156:14
 175:2 190:17
teachers 188:14
teaching 154:6 177:3
team 6:9 25:14 27:17
 46:19 53:2,4 71:1
 83:19 145:7,9,18,19
 145:20 187:8 189:4
 206:9,12 235:4
 253:20 387:16
teams 25:6,7,11,22
 26:3 145:10,15
 376:18
Teas 153:3
tease 77:10 83:16
technical 10:4 25:15
 30:1,12 33:9 39:15

55:14 75:18 77:1
 125:6 141:15 263:15
 276:3 349:13
technically 55:22
Technician 3:15
techniques 226:8
technologies 163:14
 177:21 186:6 188:3
 226:11,18 325:5
 331:16,20 332:2,4
 341:1
technology 11:9,15
 13:17 14:5 51:1 59:7
 59:9 61:4,6,7 62:8
 63:20 67:16,18 68:2,7
 154:11 163:17 178:3
 181:6 188:12,19
 190:14,16 234:12
 270:12 286:2 322:18
 330:17 331:6 332:9
 333:21 334:15 336:12
 337:10,17 338:5
 339:1,7 340:6,7,12,17
 341:4,9,13 342:13
 343:7 344:1,10
 345:15 346:4,21
 348:11 372:17 373:14
techy 333:19
tedious 274:7
telecommunications
 266:22
teleconferences 64:3
 75:14 82:22
tell 43:4 60:9 126:18
 129:18 131:22 134:10
 137:9 139:12 143:16
 146:4 155:11 156:6
 177:14 184:16 205:3
 233:13 244:5 286:1
 384:11
telling 231:8 327:6
tells 38:21 139:22 166:6
 166:13 173:18
template 59:16
temporal 66:21 73:17
temporary 142:10
ten 6:15 37:11 38:6
 55:3,4 68:3 69:18
 72:15 109:2 110:9
 134:10 137:4,4 150:1
 152:19 157:20 161:21
 161:22 168:22 174:12
 262:12 292:1 331:10
 332:3,8 333:1 358:6
 358:16
ten-year 139:3
tender 61:16
terabytes 5:22

term 74:22 116:20
 231:17 236:18 251:8
 252:4,18 257:9
 260:13 286:14 339:10
 343:14 346:9 348:13
Terminal 204:17
terminals 298:6
terms 28:11 32:15
 47:20 60:18 82:14
 91:5 213:8 223:9,11
 234:8 258:20 279:13
 345:20 347:2 365:13
terraces 195:10
Terrapin 150:15
TerraSond 3:16 176:20
 179:8
terrestrial 11:8
terrorist 297:12,13
test 333:10 359:12
tested 226:9
testimony 7:1
tethered 23:13
TEU 303:1
Texas 1:12 3:8,17,21
 91:8 93:4,9,10,15
 94:2 95:9,17,22 96:9
 96:15 98:17,22 99:1,8
 99:18,20 100:5,10,10
 102:16 104:17,17,21
 106:12,17 107:5,10
 107:15 108:10,16
 109:9,10,20 110:8,14
 110:16,22 112:18
 116:5 124:7,12
 125:14,17 126:5,12
 126:18 127:17 128:9
 131:19 132:21 133:1
 133:2,16 134:20
 135:12,18 136:4,14
 137:5,11 141:12,20
 145:21 146:10 148:1
 150:19 151:13 152:13
 154:2,13 156:14
 158:1,2 159:13
 161:15 171:2 175:5
 190:17 193:9 194:10
 194:17 199:22 203:10
 208:19 209:1,2,17
 212:9
thank 7:21 8:1,6 12:9
 22:10 24:20 26:7
 31:21 38:10 58:16
 61:20 89:5,9 91:13,14
 98:3,9 101:12 107:22
 108:4 128:11,12
 129:20 153:19,20
 156:7,8 211:5,14,15
 215:5,10 216:12,15

238:8 239:14 256:22
 284:17 291:22 292:3
 301:15 320:18 328:1
 328:3 330:12 331:5
 337:15 338:13,14
 343:11,12 354:17
 363:21 374:18 381:2
thanks 7:11,13 34:14
 34:15 37:4 49:1 73:6
 142:5 156:11 157:7
 177:16 211:2 216:11
 266:4 269:11 331:7
 373:20
thanks 53:6 299:10
theme 53:5 61:5 130:22
 131:2
theory 187:11,16
 188:22 190:14
thesis 70:3
they'd 210:12 258:1
thick 205:8
thing 7:16 12:3 19:22
 26:14 31:9 36:10
 40:15 41:7 42:1,6
 51:2 58:22 59:19 61:8
 63:7 69:7 70:20 75:4
 87:19 95:19 138:20
 213:8 218:17 232:19
 266:13 269:22 274:6
 276:3 283:14 297:7
 306:3 307:17 310:22
 311:22 314:9,15
 316:13 319:1 335:17
 349:21 351:11 354:3
 355:15 367:21 381:5
 386:2
things 9:15,19,20 12:15
 17:1 20:19 22:20 27:1
 27:2 30:18,20 31:1,1
 31:13,17 33:16 34:2
 34:19 35:1 42:4 43:14
 54:6 56:2 59:22 60:8
 65:19 69:14 70:1,3,17
 72:13 80:12 81:12,13
 96:22 123:7 125:12
 130:13 141:4 154:17
 155:2 162:22 177:14
 179:19 180:20 181:13
 186:11 194:6 206:6
 220:18 232:6 258:8
 273:9 276:10 281:2
 287:12 288:5 290:1
 292:15 293:17 298:13
 301:17 303:2 310:13
 314:10 320:9 321:7
 332:7 334:7 335:11
 337:4 340:9 341:8,17
 341:22 342:12 347:9

354:22 359:3,19
 362:19 364:1 365:2
 367:6 368:5,8 369:21
 379:8
think 8:10 10:17,20
 12:8 13:15 14:2,12,19
 15:7,12,16 17:14 19:2
 21:17,18 22:17 23:5
 25:8 29:9,11,16 30:11
 30:14,21 31:3,7,10,15
 33:4 34:8 36:21 37:9
 37:10,11 38:7,8 39:20
 41:17 43:10,11,22
 45:8,12,15,16,19
 47:22 48:13 59:21
 60:6,10 61:17 63:8
 64:20 65:5,18 66:1
 67:9,22 69:13 70:2
 71:6 73:1,15 75:4,14
 76:9 77:4,7,10,15,18
 80:3,4,8 82:11,15,16
 83:1,7,19,21 84:1,5
 86:15 87:2,3,16 88:8
 88:15 107:21 115:5
 120:18 121:15 122:13
 122:22 130:6 143:6
 156:21 167:4 173:5,9
 173:15,17 175:17,17
 176:11 179:16 181:8
 182:17 183:5 184:9
 185:12 186:8 191:14
 194:5,5,14 205:13,13
 209:10,22 210:7
 211:3 212:9,18,18
 213:5,6,21 214:19
 215:22 216:3,7 218:7
 218:9,14,15 221:18
 221:20 222:2,4,17
 224:13,14 225:21
 227:13 228:13 229:9
 230:15,16,19 232:5
 232:14 234:19,22
 236:9,13,14,22
 238:11 239:12 240:3
 240:10 241:10 242:17
 243:8,9,17,20 244:3,6
 245:3,12,19,21
 247:11,12 248:15,20
 249:19 250:12,13,15
 250:22 251:1,5,7,10
 251:13,15,18,20
 252:7,13 253:5,22
 254:7,21 255:7,8
 256:6 257:18,21,22
 259:12 262:9 264:10
 264:14 265:3,11
 266:3,8,9 267:4,8,9
 267:21 268:16 269:6

269:12 270:9,21
 271:13 273:13 274:20
 276:11 277:4,10,10
 278:1,15,16,17 279:6
 279:12 280:3,9,15
 281:13 284:21 288:11
 290:18 291:20 292:4
 295:8 298:15 300:16
 301:11 302:1,6 303:7
 304:4 305:18 306:3,6
 306:22 307:5,7 308:3
 311:6,22 313:2 316:6
 317:9,16 318:8,17
 319:5,7 320:20 322:2
 322:20 323:12 325:9
 325:16 329:11 337:13
 337:19,21,22 338:1,5
 338:6,10 340:5,14
 341:3,12,16 342:6,7
 342:12 343:1,3,5
 344:19 345:15 346:18
 347:2,6 352:14 353:1
 353:19 354:8 355:7
 356:16 358:17 359:8
 359:14 360:9,12
 361:17 362:3,18
 363:7,13 365:8,9
 366:11 367:2,18,21
 367:21 368:6,9,10,14
 369:3,4 370:6,20
 371:8 372:1 373:1,5
 375:10 376:3,5,20
 377:8,13 378:2,3,18
 378:19 380:14,15
 383:1,16 385:6,9
thinking 6:11 18:9 36:4
 87:9,9,11,11 239:19
 271:3,10 278:1
 323:18
thinks 317:20
thinner 32:12
third 102:2 138:1
 143:22 249:11 251:15
 272:4 279:16 365:16
Thomas 228:5
Thompson 1:22 53:1
 327:18,18 338:15,15
 338:22 339:7,11,14
 349:3,3 355:10
 356:14 359:21 363:15
 363:16
Thompson's 347:8
thought 43:19 50:3,12
 50:20 59:18 78:3,11
 78:17 79:18 163:19
 176:5 243:16 252:1
 259:4 262:11 264:11
 265:3 272:15 277:4

305:4 309:9 343:13
 348:21 355:11 358:11
 361:13 366:7 374:8
 375:5
thought-provoking
 5:13
thoughts 6:5,17 31:21
 45:14 78:2,10,14,19
 194:18 321:5
thousands 15:7 335:22
thread 22:15
threats 294:12
three 5:19 7:17 8:21
 22:18 25:12 32:10,16
 40:16 41:13,18 47:1
 51:22 69:18 109:2
 117:9 119:3,12 123:1
 127:2 132:14 133:20
 169:18 172:15 186:22
 187:9 205:7,8 206:6
 217:13 227:3 240:14
 245:20 259:13 265:15
 299:11,16 306:13
 313:19 324:6 326:20
 353:10 363:8 372:1,2
 374:22
three-tenths 100:17
throw 65:19 77:17
thrown 105:17
ticket 28:9,11
tidal 99:3 102:6 103:4
 103:11 114:10,15,22
 115:3,16 157:21
 158:4,5,8 159:18,19
 172:13,14,16 176:9
 194:11 355:2
tidally-influenced
 108:22
tide 3:10 62:21 95:15
 95:20 96:2,9 102:18
 103:12,13 104:5
 142:21 154:20 160:14
 165:22 172:18 173:2
 173:4,8,11 174:11,17
 182:10 187:16 198:17
 199:17,18,18 200:2,7
 200:12,18 333:14
 368:17,22
tides 51:2 63:5,11,12
 65:13 158:22 165:3
 165:22 185:19 347:8
tied 179:5
ties 261:8
tight 103:15
time 7:3 8:6,17,20 21:7
 22:17 25:19 33:2 39:8
 40:3 41:5 44:2 47:8
 47:11 52:6 53:7,12

55:9 56:22 57:5 59:8
 59:10 64:17 69:1,2
 81:10,17,21 82:12
 88:2,22 90:7 93:5
 103:1 105:13 128:11
 150:12 165:3,8
 171:21 172:22 173:4
 173:10,19 176:4
 178:14 179:3 182:4,8
 182:9,9 191:19 197:1
 197:12,14 204:12
 211:6,11,18 220:4
 221:11 231:22 232:12
 237:7 238:22 240:8
 240:11,20 242:18,18
 244:18 251:10 252:5
 252:15 259:12,14
 260:4,6 277:1 287:9
 299:18 305:21 319:21
 320:19 327:13 328:8
 328:21 334:20 339:17
 342:20 346:3 355:4,9
 358:14 362:11 363:13
 368:9,14 369:6,20
 370:5 374:15 376:15
 376:16,16 378:21
timeframe 43:3 47:17
 81:9 199:7
timeframes 43:1
timeless 84:14
timeline 203:17
timeliness 59:4
timely 201:18 334:19
 352:12
times 38:17 75:15 81:3
 102:14 157:15 165:5
 167:1,2 313:3 320:1
 351:10 377:19 378:5
 379:14
timetable 346:11
timing 25:9 44:9 47:3
 47:22 223:2 239:22
 259:3 260:10
tip- 172:2
Tissot 3:19 4:13 153:22
 156:7 174:22
title 73:21 95:9 154:4,6
 157:1 262:22 263:4
 288:14 302:13 325:8
titles 50:17
TJ 228:17
TMAC 33:19 34:4 354:9
TNRIS 208:21 209:1,4
 209:12,13
today 10:18,18 11:22
 24:10 57:15 91:22
 92:4 93:17 96:13 99:2
 129:22 130:11,12

141:22 149:18 176:18
 182:5 215:19 239:16
 267:22 268:2 276:5
 310:9 324:8 360:12
 387:10
today's 8:3 148:7
 207:16
toes 148:15
told 71:1 184:14,17
 220:1 319:17 355:11
toll 92:21 106:8
tomorrow 33:5 56:22
 57:6 69:2 74:17 240:6
 242:15 257:3 262:1
 307:10,19 332:6
 348:10 361:20 362:6
 362:20,22 363:1
 374:7 387:9
ton 298:13 378:18
tone 289:3
tonight 32:21 241:22
 242:14 257:1 261:12
 261:19 281:14 286:1
 291:21 360:14 361:14
 362:4,17 363:3
tonnage 133:16 134:15
 137:7,10,14,20
tons 133:12,14 138:2
tool 19:3 119:20 120:17
 125:9 357:22 358:3
toolkit 80:15
tools 6:12 30:5 31:19
 119:15 128:6 192:19
 192:22 193:3 270:13
 292:12 310:10,11
 352:14,15 357:4,13
 357:16
top 50:16,21 110:9
 112:2 137:3 141:17
 148:12 152:21 157:19
 161:22 163:6 165:16
 165:22 166:9 168:11
 172:3 231:6 261:6
 324:10 375:3 386:20
topic 29:17 34:16 46:1
 61:11,17 67:11 90:12
 90:21 91:22 172:15
 255:14,15 259:22
 292:1 317:12 327:17
 328:18 330:16 331:3
 333:18 335:8 337:21
 338:2,8 347:8 358:5,7
 360:2 363:18 365:20
 367:13
topical 255:13
topics 4:9 50:12,22
 53:5 56:3,10 62:17
 64:9,10 65:21 66:3

69:21 82:17 239:14
243:5 320:20 334:17
347:7
topo 22:2
topo- 22:6
topo-bathy 19:16 20:1
22:2,3 31:8 38:20
topographic 21:9
topography 119:18
221:14
totally 240:19 366:5
touch 117:1
tough 69:20 70:6
tour 7:11
tourism 112:11 293:4
305:1
tourist 283:4
towed 282:11
track 16:9 207:21 213:1
tracks 369:12
traditional 16:15 312:2
traditionally 354:10
traffic 86:7 312:5
369:13
tragedy 127:14
trailer 146:10
trailerable 326:4
train 255:21
trained 186:21 189:8,9
189:19 226:10
trainer 189:14
training 187:11 190:7,9
223:22 224:8 225:8
225:11,11,16,22
226:5 233:6
trajectory 214:15
transfer 61:7 333:22
337:9,10 340:15
transformation 193:4
350:1,20,22 351:1,3,8
351:17 352:16,20,21
353:6,16 354:2
357:19
transit 313:22
transiting 323:17
transition 6:9 11:15
45:9,20 46:19 253:20
transitioning 354:11
transitions 47:3
transits 330:22
transparent 57:22
transport 113:5 304:19
transportation 121:3
134:7 162:1 365:14
transported 115:1
transports 114:12
traveling 138:12
treat 260:7

tremendous 28:21
82:11 85:11 161:18
335:13
Tremont 1:11
trend 95:21 160:18
165:2
trends 195:4
Tri-Service 8:18
triangle 149:19
tributary 136:7
tricky 56:18
tried 88:3 106:15
288:12,16 304:10
317:3 318:2 332:11
364:13 378:2
tries 120:8
trip 155:11,13
trips 138:17
troops 133:20
Trudeau 86:1
true 50:13 58:1 121:21
186:20 329:18 343:19
trust 185:17
try 13:17 44:21 48:18
50:2 78:16 81:22
82:17 113:3 115:20
119:10 127:15 164:13
164:18 176:6 183:19
184:5 186:9 249:20
250:18 257:2 259:6
274:8 282:2 284:11
299:11 301:3 324:7
327:10
trying 6:16 17:6 29:3
31:6 32:13 35:1 73:15
85:19 113:7,11
115:14 116:14 118:20
120:22 121:5 127:9
170:21 186:6 233:3
249:14 252:14 254:1
257:15,16 259:3
260:8,9 271:15 287:7
307:1 329:7 342:8
356:16 367:6 368:4
383:1 385:19
tsunami 18:10 20:21
tsunamis 222:9
Tuesday 88:1
tug 88:12 267:17
282:10,16 283:2
tugs 295:21 303:3
turn 274:4 297:4 329:4
turnaround 198:8
turned 51:22 290:15
329:5
turnover 142:2
tweak 266:6 279:4
tweaking 261:3,4

two 20:11 25:12 27:6
32:16 47:18,18 50:10
53:8 64:1 80:4 88:18
91:5 94:13 96:11 98:4
113:9 114:19 121:12
126:20,20 137:7
143:6,8 145:6 146:19
147:5 156:18 159:7
162:4,20 163:13
164:1 166:10 167:2
168:5 169:16 170:9
182:7 197:19 198:2
200:17 201:8 220:9
223:20,21 227:3,6
228:15 233:22 234:16
237:16 243:18 247:13
248:4 251:1,2,5 252:8
252:21 255:2 257:6
259:13 262:21 263:12
265:15 284:19,20
290:19 309:20 312:8
320:2,3,10 325:12
330:16 334:6,6
343:16,20 347:6
350:8 354:22 356:16
364:1 365:7 369:19
371:4 372:8 383:20
387:20
two-year 187:5
TxSed 117:10 128:4
tying 103:3
type 63:7 69:7 143:22
164:10 167:3 169:18
173:1,16 221:2
302:20 303:2 328:20
334:7 335:16
types 103:15 116:3
121:4 332:7
typical 46:14
typically 196:11 213:13
typography 93:3,12

U

U.S 1:1 5:12 6:2 14:22
83:6 107:9 110:19
124:8 131:9 132:11
140:11 141:16 161:22
162:1 184:16 186:22
210:3
UAV 333:5,12
UAV-based 333:8
ultimately 15:17 16:8
334:11
umbrellas 65:22
unanimous 241:10,20
245:4 344:18
unanimously 247:18
UNB 188:6

unbelievable 179:13
uncertainty 220:5
256:14
unclear 259:4
unconscionable
320:12
undergone 205:4
undergrad 155:20
undergraduate 96:17
underlying 181:8
267:11 341:21
underneath 73:13 74:4
95:12
underserved 290:10
understand 19:22 61:5
63:22 113:4,12
181:10,18 184:6
186:17,18 235:13
259:8 266:12,14
268:21 269:1,7 271:4
273:14 275:20 277:15
294:5 324:18 338:18
339:6 345:2,6 367:3
368:2 369:20,21
370:1 377:12 382:15
understanding 18:15
19:5 42:15 47:6 88:10
115:15 179:17 182:22
283:11 329:21 371:14
understands 269:8,9
understood 179:19
260:6
undertake 131:6
undertaking 139:15
140:15,16
underwater 187:17
332:17
underwriter 213:18
underwriters 213:13,15
unfamiliar 123:10
unfortunate 127:13
Unfortunately 119:14
UNH 334:21
uniform 377:10
unique 345:7
United 55:19 92:22 94:7
155:10 304:1 305:10
university 3:8,21 24:16
91:8 128:20 141:20
177:7 187:3 188:4
189:1
unload 133:19
unmanned 325:5
332:17
unpredictable 274:8
unusual 106:16
up-to- 221:8
up-to-date 183:12

186:4,9
update 32:22 33:6
 41:15 42:4,8 148:22
 185:14 294:1 357:15
updated 9:16 12:2
 40:13 41:13 149:8
 187:13 203:2 324:5
 355:5 359:20
updates 155:13 322:19
 323:2 355:3 358:1
updating 199:2
upgrades 222:15,22
 223:3,8 237:21
uplands 108:20
uploaded 98:6 198:9
uptick 139:7
upward 66:20
urban 290:2
urge 300:17
urgency 84:19
urgent 46:3 223:1,7
 243:1 247:19 253:3
 259:10,17,22 260:14
 260:15 261:8 274:5
 361:5
usable 17:8 296:9
 298:14 358:1
USACE 146:16 203:5
 205:18,20
usage 293:6 295:14
 296:6,7 303:9 305:15
 317:6,7
use 8:19 16:21 23:21,22
 24:14 39:7 54:3,16,16
 54:17 59:10 72:6
 80:17 81:21 84:12
 92:5,8 97:11 99:3
 100:6,11 102:6
 103:11,22 105:4,13
 107:11 113:16 117:2
 139:20 144:1 149:15
 149:20 150:5 154:15
 165:10 182:5 190:16
 196:6,11,18 197:1,8
 197:10 207:7 224:21
 239:8 258:16 267:4
 269:1 273:8,15 276:4
 277:18 293:10 303:3
 304:6 322:6 329:12
 341:18 352:16,17
 368:4 370:10,11
 378:16,20
USEEZ 330:2
useful 45:19 71:15 77:5
 78:3,12 80:4 86:22
 87:3 88:16 113:21
 117:16 158:11 231:17
 373:15,18

user 311:3
user's 163:19
user-friendly 352:15
users 155:16 293:9
 295:20,20,22 307:15
 307:16 312:16 314:3
 349:21 352:18 353:21
uses 19:18 267:7
 307:16 308:5 316:13
 373:7
USGS 13:4 29:22 34:11
 37:18 209:16 278:17
 278:17 289:8,8
usual 268:12
usually 46:17 151:4
UT 116:13
utilize 10:13
utilizing 10:21 30:3
 116:21 147:3

V

v 99:18 101:2
V-Datum 351:2
vacancies 25:19
vacancy 26:4
valid 29:17 37:12 74:8
validate 113:19 207:9
validates 87:9
validation 298:10
validity 105:8
Valley 131:15
valuable 97:10 298:14
 299:5
value 27:9 95:14 102:20
 103:13 111:16,17,19
 122:7 253:20 308:13
values 111:19
Van 294:17
variabilities 175:9
variability 118:10
 156:20 157:3 161:5
 167:11 168:21 170:7
 171:13 175:1,16
 176:4,5
variable 161:5
varies 321:19
variety 24:18 322:4,10
 353:3
various 43:1 50:3,11,19
 81:1,12 95:22 258:9
 312:15 359:18 364:16
vary 200:12 272:21
vast 267:17 326:4
VDatum 9:15
vegetation 103:15,19
 103:19,20 105:2
 195:13
vehicles 99:11 102:10

332:15,17,17
velocities 349:17
velocity 351:9
vendors 227:10 352:18
 360:1
verbals 207:6
versatile 295:13
versus 88:14 119:3,12
 124:15 193:11,15
 378:14
vertical 161:3,11 166:7
 168:10 173:19 194:8
 194:13 200:2 349:6
vertically 93:4
vessel 86:7 110:10
 148:20 207:1 213:18
 230:9 237:12,18
 243:21 244:2,5,5,10
 244:14,19 245:7,16
 247:7,19,20 248:18
 249:5,6,10 295:14
 296:18 312:5 334:2,4
 336:16
vessels 24:14 65:16
 146:13 213:12 223:22
 225:9 226:9 227:4
 228:15 245:10 249:1
 249:8,9 294:3 296:2
 302:15,19,21 303:6
 307:21 313:22 321:14
 330:1 331:15 332:15
vetted 79:8
Vice 1:15 34:15 46:5
 47:4 48:6 49:4 84:17
 85:17 232:5 276:1
 282:7,18 283:6,12
 284:2,12,17 312:19
 312:22 313:13 314:8
 314:22 315:5 328:7
 328:10 330:14
vicinity 148:11
video 287:18,20
view 28:21 88:13
 119:20 159:7 186:16
 224:9 278:10 317:15
 319:4 335:8
viewed 42:2,3
viewer 21:2,4,7 184:15
Viewing 187:12
virtually 313:16
visibility 297:9
visible 314:10
vision 6:16 260:2,13
visitation 110:19
visited 149:16
visual 174:3,14 246:5
 246:13
visualization 194:2

vital 222:10 225:17,18
 226:1 232:16 250:22
 297:19 304:18 305:10
 306:8
volume 20:12 197:12
 210:16
volunteer 61:19 330:13
 360:15
volunteered 330:16
 337:14 344:3 362:1
volunteering 354:18
volunteers 327:17
vote 250:10,12 344:14
 344:19
voted 50:19
voting 250:9
VTS 145:12
Vulnerability 4:10
 90:10,22 92:1
vulnerable 90:17
 126:11

W

W 1:16
waded 367:11
wage 225:2
wait 27:6 47:11 48:1,10
 66:7,11,18 240:6
 242:3,4
waiting 35:4,13 36:12
 64:16 136:22
wake 285:18
wakes 303:18
walk 111:5 130:10
 147:15 220:16 376:18
 377:19
walking 157:9 254:22
 255:3
wall 135:5 152:5 170:2
 195:22
walls 135:1,1 183:20
 193:12
Wally 203:10
want 13:9 17:13 20:17
 21:7 22:14,15,17
 28:20 35:15 37:6 39:6
 39:7 42:12 44:17 55:3
 55:17 56:9,21 63:22
 64:8 68:9 69:9 72:14
 81:17,20 85:3 91:17
 92:16 102:11 115:17
 117:5 143:17 155:10
 158:7 173:18 174:2
 177:17 179:22 181:10
 184:8 189:8,13,20
 190:10 192:1 205:15
 208:15 210:15 211:5
 215:1 220:20 226:18

229:1,3 230:20 231:8
 237:5 242:10 244:10
 247:2 248:6 250:9,21
 256:1 257:5 263:16
 264:13 269:16,19,21
 270:9 271:5 273:11
 276:2,4,6 279:4
 281:21 282:21 283:20
 283:22 290:7 294:11
 296:3 304:14 306:22
 318:7 319:10,13
 322:9 325:11 326:20
 327:13 330:17,19
 331:6 332:16 337:16
 341:7 345:14 346:4
 346:21 348:22 354:13
 361:16,22 362:1
 366:8 370:14 372:15
 372:18,19,20,20,21
 372:22 373:6 374:7
 374:19,21 380:19,19
 382:4 383:2 386:17
wanted 9:7 38:2 53:18
 57:11 73:4 81:10
 102:16 162:21 163:1
 212:2 236:15 269:10
 279:10 358:5 381:20
wants 47:7 71:1 189:14
 230:7 381:22 383:18
 383:20
war 108:16 113:2
warm 5:8
warming 335:17
wartime 185:6
Washington 162:11
wasn't 42:18 113:1
 239:21 271:3 310:8
 382:2,13
water 16:18 17:18
 23:19 97:18 99:21,21
 100:7,12,17 101:21
 102:21 103:14,14
 105:1 111:20,21
 124:2,2 129:13
 142:15,22 143:7
 157:11,19 158:8
 163:13,15 164:21
 165:7,19,21,21 166:2
 166:4 167:1 169:19
 171:11,12,13,20
 172:6,11,18 173:11
 174:11,17 180:11,14
 197:5 198:18 199:19
 200:3,9,10,12,16,19
 201:1,6 206:14 207:6
 209:3 210:16 212:11
 214:10,11 256:16
 272:22 273:16 297:17

298:13 326:9 336:3
 355:8 376:18
water's 326:5
waterborne 134:7
waters 132:10 147:11
 217:22 224:2 271:11
 303:9 306:15 311:16
 311:18 313:22 323:17
 323:17 330:4
waterway 115:8 135:18
 136:1,2 137:17,18
 138:1,12,16 147:21
 197:21 303:21,22
waterways 133:11
 137:21 145:13 292:18
 305:15 328:22 329:1
wave 171:8,10,17,20,22
 172:2,5,7,9,21 173:10
waves 164:8 180:7,10
way 11:16 14:7 15:17
 15:18 16:4,11 29:4,22
 44:22 53:9,20 62:8
 64:5 69:10 78:18 80:5
 80:10 87:12 88:9
 141:6 152:5 166:17
 174:14 182:14 184:7
 188:5 224:11 231:13
 231:14,15 236:14
 238:11 239:8 243:12
 243:13 247:9 251:6
 254:10 258:6,18
 260:8 261:1 265:20
 271:3 282:11 289:15
 300:11 302:18 304:18
 305:11,17 314:18
 316:19 317:17 324:1
 331:13,13 333:20
 337:11 340:18 345:12
 354:1 359:20 366:1
 368:10,15 370:2
 378:17
ways 23:2 24:18 29:3
 31:2 32:13 33:11
 49:22 62:9 99:5
 165:10 176:11,13
 193:5 226:15 333:16
 334:1 336:20 350:22
 376:7
we'll 8:22 23:5,7 47:16
 65:19 66:5 71:17 72:3
 82:21 83:22 86:4 88:4
 88:20 89:6 90:7,9
 107:3 126:7 128:10
 142:19 146:12,14
 149:6 183:6 191:19
 197:8 199:7 204:20
 259:12 272:3 292:4,5
 292:14 307:18 320:6

331:2 358:1 361:6
 380:21 384:12,13
 387:10
we're 6:12 8:4 11:16
 12:3,22 13:7,8 14:3
 15:3,8 16:22 20:13
 24:2,10,11 25:22 26:5
 29:2 30:3,3 48:2
 55:22 63:17 64:13
 70:10 71:5,10 73:15
 74:9 76:20 79:10,22
 82:13 84:2,21 85:19
 87:17 89:10 92:17
 93:16 95:21 100:19
 103:11 108:18 109:4
 109:4,6,12 114:3
 115:2,12,14 116:6,14
 116:19 120:16,21,22
 121:5,8 123:1,7,8
 124:1 136:5,11,18
 138:16 139:6,10,13
 139:15,19,19,21
 140:3,7,9,10,15,16
 142:17 143:11,15,17
 143:18,20 147:7,12
 156:4 163:20 164:14
 170:21 171:1,3,6
 179:8 180:13 181:7
 182:17 184:4 185:2
 186:6 191:18 192:13
 193:5,19 195:14
 197:1,2,7 200:20,21
 200:22 201:4,6,10
 202:12 204:13 206:10
 216:17 229:14 231:8
 231:16 234:10 236:1
 243:2 244:7,18 248:3
 252:14,21 253:2,16
 254:9,21 255:3
 257:16 259:2,12,14
 260:8,9 268:3 275:1
 275:21 280:2 283:16
 283:17,21 285:12
 286:9,12 288:17,18
 289:9 292:12 293:13
 294:8,22 295:4
 299:13,14 300:1
 301:4 303:11,13,13
 303:14 306:1,16
 307:9 309:19 322:20
 324:20 327:19 332:20
 333:9 337:1 341:3,5
 342:3 343:16 349:15
 353:5 356:8 357:22
 367:8,12,22 368:1,4,6
 368:6,12 370:1,4,5
 373:4 376:5 381:18
 385:19,22 386:17

we've 14:16 15:1 24:9
 25:17 26:21 27:7,21
 27:21 28:7 34:18,22
 35:6 48:16 50:6 54:5
 55:3 66:22 69:1 71:22
 72:3 73:22 82:11 85:2
 85:4 88:2 92:4 96:8
 99:6 109:15 110:8
 111:10 112:1 114:18
 123:4,15 124:11
 142:11 149:19 159:11
 160:4,6 162:17 171:5
 179:9 182:14 183:9
 189:4 191:20 192:7,7
 192:16 198:18 199:1
 199:10,10,12 204:18
 205:2,9 213:11,15
 214:13 219:17 221:1
 229:8,8 234:19
 239:13 242:19 243:22
 245:5 254:17 261:2
 273:21 276:22 284:19
 288:13 293:16 294:15
 298:10 303:4 313:2
 313:14 317:11,22
 321:16 327:3 330:8
 335:11 341:16 343:4
 345:5 350:1 353:2
 360:3 376:13,16
 377:19 379:13 387:14
weapons 286:18
weather 90:18 104:6
 146:2 155:4,6,7,9,12
 296:22 314:5 377:6,8
 377:15 385:12
weave 247:9 330:20
web 118:3 209:18 378:7
Webb 5:9 90:14
Weber 5:10
webpage 146:17
 187:12
website 57:22 58:5,10
 78:22 79:3 147:7,8,9
 147:16 149:9 161:21
 201:22 203:1,5
 209:18 243:11 372:4
websites 377:2
WEDNESDAY 1:8
weeds 300:17 316:2
 327:6
week 36:2 47:17 97:22
 149:17 158:19 234:10
 242:7 246:9 363:16
weeks 36:9 47:18,18
 49:10 98:5 139:10
 198:3 202:1 234:16
 242:1 259:9,16
 281:22 299:16 363:7

363:9
weight 179:5
Weirich 219:8
welcome 5:3,8 31:12
 71:6 258:1 327:12,14
Wells 187:19
went 25:11 32:5 51:1
 89:3 95:8 100:15
 105:1 127:3 129:1,5
 161:20 172:11 189:11
 197:6 209:19 215:13
 219:5 221:17 285:6
 346:15 349:18
weren't 105:22 179:14
 326:10 383:11
west 94:8 106:6,8 115:9
 123:14 152:2 167:14
 168:7 169:11,15
 170:3,4,14 350:11
western 5:18 6:2
WestMarine 378:1
WESTON 2:19
wet 174:18,19,20
wetland 99:13 101:12
 103:12 112:5 116:4
 193:18 195:4,7
wetlands 111:10,13,15
 111:18 121:7 132:11
 132:12
whacked 299:17
whale 335:13
whatnot 298:7
Wheels 155:5
White 86:2,11 234:12
 290:13
whole- 238:6
wide 122:7 151:22
 204:14 296:6 317:6
widely 115:11 308:13
widen 204:8
widened 310:9
widening's 138:21
wider 193:18 222:4
 294:19
widespread 112:10
wife 154:12 362:8
wildly 272:21
WILLIAM 1:15
willing 261:13 381:12
Wilmington 129:6
 188:18
wind 85:15 158:2,6
 296:12 311:21
winding 275:11
window 256:4 271:13
winds 146:5
wingflow 268:10
Winnie 387:6

winning 105:9
wiped 92:20
wireless 322:19 323:5
wisdom 80:6
wish 8:7 61:9 91:17
wonder 58:11 191:5
 224:8 229:22 231:12
 236:3 275:14 343:15
 343:21 365:21 378:12
wondered 42:6 81:9
wonderful 91:3 314:12
 316:10
wondering 10:5 25:2
 190:3 231:15 260:11
 356:6
word 154:5 241:5,15
 289:3 325:7
words 15:21 27:4 35:18
 76:14,15,17 178:21
 224:11,12 266:7
 288:1,3,14 291:13
 365:21 368:3,4 369:3
 370:10 376:3
wordsmith 241:14
work 26:17 30:8,10,20
 35:3 36:2 37:7 38:2
 41:6 42:3 43:14 51:13
 52:4 62:19 63:9,14
 64:10 72:20 77:12
 83:22 86:4,8 87:14
 88:16 96:19 103:17
 129:5,16 130:10
 136:20,21 140:18
 154:19,22 156:15
 158:15 178:21 182:19
 186:6,19 188:21
 192:10 209:16 212:7
 212:16 222:10 230:1
 232:16 236:15 239:14
 240:7,11 241:22
 254:20 255:3,4 257:1
 257:14,18 261:13,18
 261:18,20 270:6
 279:5,6 287:6,15,16
 288:8,9 289:21 290:8
 292:13 293:19 295:1
 299:11 312:5 322:15
 327:7,19,21 331:13
 334:6 336:12 339:16
 346:19 348:3 352:21
 353:10 354:5,19
 363:6 386:14 387:1
worked 41:12 43:8
 59:16 66:4,10 102:15
 107:14 187:21 198:13
 346:14 353:9
workflow 342:22
workforce 25:1,4,21

26:18 189:3 225:1
workgroup 370:21
working 4:7,17 8:22
 12:4 26:21 30:1,6,12
 39:8,11,18 42:20 43:6
 43:6,18 46:22 49:18
 51:3 53:16 63:18 64:5
 66:12 74:14,17,22
 75:10 77:15 81:1 82:4
 82:21 83:1,8,15 84:4
 87:3,8,10 88:17 110:8
 112:18 129:10 145:6
 149:13 184:10 190:17
 198:18 201:17 234:3
 242:14 261:12 262:17
 263:13 273:21 277:6
 289:2,5 317:16 319:9
 320:22 321:3 327:9
 338:1,3 343:14,17,20
 343:22 344:4,5,10
 345:1,6,7,9,11,13,16
 345:22 346:5,8,11,22
 347:4,12,19 348:8,11
 348:16 353:3 357:11
 357:20 359:12 360:2
 361:14 364:1,5,9
 369:21 371:17 376:4
 379:14
works 90:3 107:5
 176:20 187:18 219:8
workshop 37:15,18
 38:11 87:22
workshops 369:4
world 93:20 113:1
 179:4 180:10 182:3
 182:16 183:8 189:2
 246:5 275:3 286:20
 291:12 325:22
worried 268:10
worries 26:11
worse 93:5 126:15
 336:15
worth 95:11 135:10
 153:4 340:3 375:5
worthwhile 17:5 359:19
worthy 29:17
wouldn't 46:11 64:11
 75:19 249:12 268:10
 283:22
wrap 47:16 191:18
 362:17
wrapping 44:12
writ 27:19
write 46:2 89:17 185:4
 288:5 290:16 370:9,9
writing 224:13 286:3
written 85:4 89:15,21
 191:22 236:15 251:6

308:22 380:16
wrong 113:21 179:14
 181:16 191:11
wrote 217:4 243:13

X

X 9:18 51:19 148:7
 179:13 264:18 267:15
 315:9
XYZ 306:5

Y

Y 9:18 148:7 179:13
yards 134:3 140:20
 150:7 151:21
yeah 181:15
year 6:5 14:22 25:8
 26:5 27:6 34:3 37:14
 41:15 46:15 49:18
 50:14 87:14 96:2
 122:10 133:12,14
 134:4 140:20 141:9,9
 142:19 143:12 149:1
 150:7,14 157:16
 160:13,17,19,22
 161:13,16 187:9
 195:16 197:20 204:10
 219:13 232:15 275:6
 276:9 332:8 346:12
 359:22 368:18,19
year's 238:22
years 6:15,15 7:4 14:17
 24:11 25:7 26:22 28:1
 32:10 36:6 37:11 38:6
 41:14,18 68:4 75:1
 91:20 117:10 123:4
 124:12 125:1 126:8
 129:5 130:2,3 134:11
 142:2 146:19,21
 147:5 150:1 156:2,12
 160:10 164:13 172:1
 172:12 175:3,13
 179:2,3 183:11 185:8
 195:20 197:19 198:19
 203:21 204:6 205:5,7
 214:5 218:1,2,11,13
 218:15,19,22 223:17
 255:2 274:15 324:6
 327:4 330:8 332:3
 333:1 346:16 353:10
 354:16 357:17 365:20
 376:13 378:6
yellow 135:17 263:16
 263:18,18 277:21
yesterday 6:3 7:10,17
 8:12,15 9:3,17 11:21
 21:19 23:8 24:22
 26:16 42:7 46:21

72:12 89:11 90:14
 110:6,10,17 123:1
 126:13 131:2 133:19
 138:4 145:8 149:20
 220:5 236:8 265:8
 319:6 332:7 349:9
 355:11

yesterday's 5:7

yield 59:8

York 129:10 288:10
 294:8,15 295:2
 297:13 313:18,20
 319:16,17,22 326:16

young 343:7

Z

Z 148:7 179:13

zero 350:10

zone 99:15 104:3
 112:18 113:3 114:1
 326:2

zoom 148:19,20 151:1

0

07 139:8

1

1 279:11

1,000 272:15

1,109 136:3,6

1,200 310:6

1.1 168:14

1.7 160:13 161:3

1:15 52:10

1:35 52:10,11

1:48 215:13

1:55 52:11,12

10 88:22

10,000 155:15

10:03 89:4

10:45 361:20

100 132:20 269:2 276:6

100-year 196:2

107 4:12

1071.002 212:10

12 156:2 203:21 321:18

12.5 137:13

12:21 215:13

120 82:7

124 228:13

126 138:2

129 4:12

13 5:21 161:21 172:1,11

130 160:10

14 148:5 217:20

15 161:22 197:20
 284:22

150 132:20 303:14

1500s 181:21

155 139:11,14

156 4:13

16 1:9 131:20 150:22
 153:8 202:16 249:15
 252:15

16th 303:12

17 130:2 184:13 227:4
 287:10,15

170 155:22 219:2

177 4:13

18 110:1,2 124:14,15
 133:9 150:22 227:7
 236:11,19

1800s 185:9

1840 100:6

19 46:10

1900 135:6

1908 164:22

1912 387:6

1930 270:5

1934 96:21

1940's 121:17

1947 97:12

1948 175:14

1960s 218:10

1963 258:18

1968 223:16

1970's 121:18

1983 349:5

1988 94:9 95:1 129:3
 349:7

1990 92:19 93:8 129:3

1990s 258:19

1998 128:22

2

2 5:4 90:10 287:9

2.2 161:16 167:13

2.3 130:7

2.5 133:13 175:10

2:15 52:12,13

2:35 52:13,14

2:55 52:14

20 6:15 52:3,6 53:12,13
 55:3 57:1 59:8 65:18
 72:3 114:6 125:16
 134:3 140:20 150:6
 177:3 203:21 239:6
 262:8 269:4 270:1,4
 270:18,22,22 271:13
 271:18 382:6

20-year 195:8

20,000 368:18

200 183:11 227:3
 228:11 232:15 263:9

2000's 144:16

2001 129:6

2004 96:19

2008 97:14 163:22

2011 109:14 129:6,14
 187:1

2012 105:6

2013 184:18 217:20

2014 138:2

2015 34:4 184:18 219:1

2016 1:9 5:4 139:9,14
 162:2 219:1 224:1
 237:10 260:15

2017 220:1 237:19
 339:21

2018 319:19

2022 192:22 193:4
 349:9 351:13,17
 352:1,2,22 353:6

204 204:1,16

20th 100:6

21 111:5,6 121:11 157:9
 160:18 162:7 163:2
 164:21 168:12

21.5 133:15 137:9

211 4:14

215 4:15,16

216 4:17

21st 268:12

23 175:2,13

2300 1:12

236 124:15

25 142:1 190:6

254 110:2

26 110:3

27 349:19

29 155:21 349:19
 351:22 352:1,5
 354:11

3

3 205:6 284:18

3,100 5:21

3,300 109:22

3,400 150:2

3.3 160:16

3:03 285:6

3:10 52:20

3:15 285:4

3:20 285:7

3:30 52:20

30 122:9 143:6 218:10
 218:13,15 264:8
 270:2,19 271:14,18
 272:3 333:10

30-year 230:18

30,000 95:10

300 132:17,22 151:22
 153:13 227:3 228:11

30th 143:12

34 143:6 223:17

36 136:15 143:5

379 136:6

38 4:7

39 205:1

3D 180:20 194:3 334:16

4

4 4:2,5 258:18 274:11

4:45 347:7

40 95:13 122:9 136:11
 136:12 204:17

400 109:21 204:9

404 132:12

45 13:9 136:15 204:17
 205:1

48 28:1 143:4

49 4:8 218:2,22

4D 334:17

5

5 266:18 291:21

5,000 368:19

5:00 374:10

5:05 386:17

5:06 387:19

5:07 387:22

50 195:16,20 226:9
 269:2 294:16,16
 296:16

50-some 287:2

500 272:5,10 310:6

52 228:9

54 228:9

57th 106:7

6

6 111:16

6,000 92:20

6.3 157:15 160:18,21
 161:2 166:16

6.34 96:1

60 149:11

600 133:12 204:9,13

600,000 151:21

60s 200:8

61st 152:2,3

6C 384:12

7

7 4:6

7.2 175:10

7:00 360:18

7:30 360:18

72 4:9

75 138:11,17

8

8,000 303:1
8:00 1:12
8:14 5:2
8:15 361:20
80 219:15 243:21
245:10
80,500,000 219:19
83 139:9 192:10 349:9
349:19
88 141:13 192:10 349:9
349:19 352:1 354:11

9

9:43 89:3
90 141:8
91 4:10
98 4:11
99 173:19 196:22

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Before: DOC/NOAA

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