

U.S. DEPARTMENT OF COMMERCE

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
(NOAA)

HYDROGRAPHIC SERVICES REVIEW PANEL

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PUBLIC MEETING

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TUESDAY
MARCH 5, 2024

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The Hydrographic Services Review Panel met via webinar, at 9:00 a.m. PST, Sean M. Duffy, Sr., Chair, presiding.

HSRP MEMBERS PRESENT

- SEAN M. DUFFY, SR., Chair
- NATHAN WARDWELL, Vice Chair
- MARY PAIGE ABBOTT
- DR. QASSIM ABDULLAH
- DR. NICOLE ELKO
- SLOAN FREEMAN
- DEANNE HARGRAVE
- KIMBERLEY HOLTZ
- CAPTAIN CAROLYN KURTZ
- ERIC PEACE
- REBECCA QUINTAL
- JULIE THOMAS

NON-VOTING HSRP MEMBERS

CAPTAIN (NOAA, ret.) ANDY ARMSTRONG, Co-Director, NOAA-University of New Hampshire Joint Hydrographic Center
BRAD KEARSE, Deputy Director, National Geodetic Survey (NGS), National Ocean Service (NOS)
DR. LARRY MAYER, Co-Director, NOAA-University of New Hampshire Joint Hydrographic Center
DR. MARIAN WESTLEY, Director, Center for Operational Oceanographic Products and Services (CO-OPS), NOS

NOAA LEADERSHIP PRESENT

NICOLE LEBOEUF, Assistant Administrator for Ocean Services and Coastal Zone Management, National Ocean Service
RACHAEL DEMPSEY, Deputy Assistant Administrator, Navigation, Observations, and Positioning, NOS
RDML BENJAMIN EVANS, Director, Office of Coast Survey (OCS), NOS, and HSRP Designated Federal Officer

NOAA STAFF PRESENT

AMBER BUTLER, Office of Coast Survey
ASHLEY CHAPPELL, National Ocean Service
ROBIN CZERWINSKI, National Ocean Service
VIRGINIA DENTLER, Center for Operational Oceanographic Products and Services
DR. RACHEL FONTANA, National Marine Fisheries Service
NATHAN LITTLEJOHN, National Geodetic Survey
AMANDA PHELPS, Office of Coast Survey
MEGAN SCHWINDEN, Office of Coast Survey
GALEN SCOTT, National Geodetic Survey

MODERATORS

RACHAEL DEMPSEY, NOS
SEAN M. DUFFY, SR., HSRP Chair
JULIE THOMAS, HSRP Member
CAPTAIN KIP LOUTTIT, Marine Exchange

SPEAKERS

NANETTE BARRAGAN, U.S. Representative,
California's 44th Congressional District
(via video)
DR. JAMES BEHRENS, Program Manager, Coastal Data
Information Program
CAPTAIN JOHN M. BETZ, Chief Port Pilot, Los
Angeles Pilot Services
DEREK DAVIS, Deputy Chief Harbor Engineer, Port
of Long Beach
JEFF FERGUSON, California Navigation Manager,
Office of Coast Survey, NOS, NOAA
JIM HAUSSENER, Executive Director, California
Marine Affairs and Navigation Conference
CAPTAIN TOM JACOBSEN, President and CEO, Jacobsen
Pilots
RYAN KITTELL, Oxnard Weather Forecast Office,
NWS, NOAA
CAPTAIN KIP LOUTTIT, Executive Director, Marine
Exchange of Southern California
KARSTEN UIL, Managing Director, Charta Software
DARREN WRIGHT, Precision Marine Navigation
Coordination, OCS, NOS, NOAA

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

Opening Session. 5

Local Stakeholder Panel. 49

Under Keel Clearance 154

Precision Marine Navigation. 241

Navigation Observation and
Positioning Portfolio. 255

Public Comment Period. 325

Wrap-up. 355

Adjournment

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

2 9:01 a.m.

3 CHAIR DUFFY: I had to start the
4 webinar on mute. I'm loud now, hopefully.
5 Happened before. I don't think I'm the only one.

6 Well, I want to make an introduction.
7 There's a lot of work that goes on to the HSRP.
8 This may have been one of the more challenging
9 ones, but we're here. It's game day. I know the
10 panel members and the government officials will
11 show up and make this a great event.

12 I think it's important to remember the
13 focus of the Hydrographic Services Review Panel,
14 which is NOAA's Federal Advisory Committee. And
15 I am going to read -- is to advise on improving
16 the quality, efficiency, and usefulness of NOAA's
17 navigation-related products, data, and services.
18 The HSRP advises the NOAA administrator about its
19 navigation, physical oceanographic, geospatial
20 positioning, and coastal and shoreline programs,
21 products, and services.

22 I would also like to say that this

1 Federal Advisory Committee is made up of experts
2 that all have a very interesting career. There's
3 a lot of knowledge here.

4 And with that, I'll basically turn it
5 over to Rear Admiral Ben Evans to take over the
6 introductions.

7 And welcome, everybody. Thank you for
8 being here. Appreciate the sacrifice. It's game
9 day, so our NOAA jerseys are all on. Thank you.

10 RDML EVANS: Thank you, Mr. Chair, and
11 welcome, everyone. Again, my name is Ben Evans.
12 I'm the director of NOAA's Office of Coast
13 Survey. I'm also the designated federal official
14 on the Hydrographic Services Review Panel.

15 Before we really dive in, I'd like to
16 ask Ms. Amber Butler, who's one of our HSRP
17 executive secretaries, to come on and take us
18 through some administrative matters right here
19 the first couple slides. Amber?

20 MS. BUTLER: Hello. Thank you very
21 much.

22 So, this meeting is recorded today.

1 You can refrain from using the question box if
2 you do not want your likeness recorded, or you
3 can close out of the meeting. And here is the
4 privacy statement.

5 For our meeting logistics, the agenda
6 is attached as a resource to your resources in
7 the menu on the right side of your screen today.
8 You can use the questions box and you can submit
9 public comments or questions using this box.

10 Please contact myself or Virginia
11 Dentler using the emails below for any
12 troubleshooting today to connect to the webinar.
13 For other accessibility today, you can use the
14 phone numbers provided.

15 All comments and questions will be
16 addressed during our public comment periods,
17 which are scheduled for each day of the meeting.

18 And I will now hand it back to Rear
19 Admiral Ben Evans. Thank you very much.

20 RDML EVANS: Thanks, Amber. And I'd
21 like to echo Sean's acknowledgment of the late
22 change to a fully virtual environment. We were

1 absolutely looking forward to our in-person
2 meeting in San Pedro, and we're very sorry that
3 that's not possible.

4 I'd particularly like to thank our
5 local partners, many of whom are online here
6 today, who worked hard to set up technical site
7 visits, to set up panels, discussions with key
8 stakeholders in the expectation that we would be
9 there in San Pedro, and I hope we can reactivate
10 those plans at another time.

11 I'd also like to thank the panel
12 members themselves for their flexibility. I know
13 many folks were inconvenienced to one degree or
14 another by that change.

15 I'd also like to acknowledge the hard
16 work of the HSRP staff, many of whom worked late
17 Friday night and over the weekend to reset this
18 meeting to the virtual environment. Fortunately,
19 our COVID virtual meeting skills are still with
20 us, and I'm sure this will be a productive few
21 days.

22 Just as a reminder, please mute your

1 microphone unless you're speaking, and I ask that
2 our presenters and our speakers please turn your
3 cameras on.

4 And with that, I'll turn it back to
5 the Chair, Mr. Sean Duffy, to officially open the
6 meeting. Sean, the floor is yours.

7 CHAIR DUFFY: Okay. Sorry. Mute
8 button issue again.

9 With that, I appreciate it, Admiral.
10 Good to be here virtually and that may be
11 relevant in different ways later on. But I would
12 like to introduce my friend Nicole Leboeuf, who
13 is the assistant administrator for ocean services
14 and coastal zone management for the National
15 Ocean Service.

16 Nicole, Louisiana has a special place
17 for you in its hearts, and I hate we missed D.C.
18 Mardi Gras. But it's game day, and I know you're
19 ready to roll.

20 MS. LEBOEUF: Oh, gosh. Thank you,
21 Sean. It's really good to see you all.

22 Good morning and welcome to the spring

1 2024 Hydrographic Services Review Panel meeting.
2 Echoing Sean's words and Admiral Evans' words, I
3 really do wish we were all together in San Pedro,
4 but I'm so glad we're able to come together
5 virtually.

6 Being together, it's good, as Sean has
7 heard me say, in the last couple days. I'm going
8 to miss the handshakes and the hugs, but the most
9 important part of this meeting is hearing from
10 the HSRP, and we're still going to get to hear
11 from you and from our local stakeholders from the
12 broader L.A. and Long Beach area. So I am
13 grateful for that.

14 I do sincerely appreciate in advance
15 everyone's engagement this week making the most
16 of our time together. I know that we will do
17 that.

18 And I want to thank Sean as our chair
19 and Nate Wardwell for your leadership of the
20 HSRP. I know you're going to run a great meeting
21 this week. And, of course, thank you to Admiral
22 Evans for kicking us off.

1 Lots of echoes here. Apologies for
2 the redundancy. But I do want to thank our team
3 for working so hard in the background to make
4 this meeting possible, and I want to just extend
5 my sincerest gratitude to everybody who's going
6 to be with us for the next few days.

7 It has been six months since we last
8 gathered in Silver Spring, and given that we were
9 anticipating being in Southern California this
10 week, I wanted to go ahead and start off like I
11 was intending to, which was to mention that that
12 region has faced some extreme weather events of
13 late, including those related to atmospheric
14 rivers and, more recently, snowfall and other
15 things. And I extend my gratitude to the north
16 -- sorry, to the National Weather Service for all
17 that they do to predict these historic events,
18 the rain and the flooding, and to share
19 lifesaving information with the public.

20 Beyond my gratitude for the National
21 Weather Service, it is absolutely foundational
22 that NOAA's data is available for these modeling

1 efforts and predictive capabilities because it's
2 the work of our National Geodetic Survey, as many
3 of you might imagine, that contributes mightily
4 to our understanding of where that rain is going
5 to go and who will feel the impacts of the
6 floods. It's absolutely essential that that data
7 be available for those predictions.

8 And whether you're in California, or
9 somewhere along the Gulf Coast, or East Coast, or
10 somewhere else, our foundational data at NOS,
11 like the kind that the HSRP is going to be
12 talking about this week, is very important. Not
13 just for operational and near-term predictive
14 capabilities, but also for our long-term
15 preparations for climate change including change
16 along our coasts.

17 At the last meeting, I shared with you
18 all that I've recently taken on the role of
19 chairing the Committee on the Marine
20 Transportation System Coordinating Board, or
21 CMTS, and I said that I was eager to update the
22 work plan of the CMTS. Well, update the work

1 plan we did, and the CMTS team is hard at work
2 seeing what we can do to increase the climate
3 resiliency of our ports across the country.

4 I'm really excited to introduce a
5 panel tomorrow on adaptive and resilient ports,
6 and to share with you all what we've been up to,
7 and to get your expert perspectives on where we
8 should be focusing our efforts. Port resiliency
9 is going to take partnerships and a real team
10 effort, and we're going to need private sector,
11 academia, as well as the expertise from across
12 the federal government. I absolutely welcome the
13 HSRP's input on this because you've got expertise
14 and you've got real-world experience that we need
15 to hear from.

16 Speaking of the HSRP and our
17 partnerships, some of our critical partnerships
18 were highlighted in Dr. Spinrad's recent visit to
19 the Gulf region, where he participated in a
20 number of engagements that furthered NOAA
21 collaboration.

22 One of the notable visits, although he

1 missed seeing Sean Duffy, was to the Port of New
2 Orleans -- I don't know how that happened --
3 where port leadership and Dr. Spinrad got to talk
4 about everything from risk reduction to community
5 engagement to the importance of building out our
6 real-time observation networks. They also talked
7 about things, specifics like current meters and
8 air gap sensors and how important it is, how
9 costly it is, really, when we don't have these
10 observational networks in place.

11 As a testament to NOAA's partnership
12 with the U.S. Coast Guard, Dr. Spinrad also met
13 with the Eighth District commander, where they
14 talked about ocean observations, marine
15 forecasting, oil spill response, and much more.
16 They committed to getting back together and
17 getting the NOAA and the Coast Guard out on the
18 water more often to share information about ocean
19 science and operations. And so, that's really
20 encouraging to do more with the Coast Guard.

21 Beyond our work with the Coast Guard,
22 NOAA is looking to enhance public-private

1 partnerships, promoting ocean and coastal-based
2 information services. And I want to tell you
3 about the Ocean-Based Climate Resilience
4 Accelerator Awards that we just issued under the
5 Inflation Reduction Act.

6 Our IOOS team, just recently in New
7 Orleans, also announced Phase I awards just a few
8 weeks ago and got together with those award
9 recipients. These awards are going to support
10 the development of business accelerators.
11 They're going to provide mentorship and training
12 and other resources to small businesses and
13 startups in the ocean tech space focused on ocean
14 solutions to climate change and climate
15 adaptation.

16 Current Phase I grants are going to
17 really get these accelerators going. Phase II
18 grants are going to help them implement their
19 plans later this summer. It's really going to
20 help us build a new generation of information and
21 services, and I'm excited about how these
22 awardees are going to bring to the table

1 innovation, a tech savvy, marine-focused
2 workforce, and really just a lot of other cool
3 things that are going to support the U.S. ocean
4 enterprise. So, happy to answer more questions
5 about that later on.

6 I also want to just briefly shout out
7 the work that we're doing with the Center of
8 Excellence for Operational Ocean and Great Lakes
9 Mapping with NOAA university and private sector
10 partners. This is based in New Hampshire. This
11 year, the center has been working diligently on
12 increasing training and student opportunities.
13 Admiral Evans is going to tell us more about it
14 later today.

15 Your agenda this week at the HSRP is
16 packed, covering topics from precision marine
17 navigation to geospatial modeling grants to under
18 keel clearance and updates on the PORTS
19 assessment.

20 As always, I want to thank you for all
21 the work that you do for us in your federal
22 advisory capacity role. You keep us on track,

1 you keep us informed, you help us set priorities,
2 and I really do invite everyone to engage in this
3 virtual setting throughout the next few days.

4 And I'll be dipping in and out to hear those
5 presentations, and again, we'll get to talk
6 tomorrow about port resilience.

7 Thank you, Sean. I'm going to turn it
8 back over to you. The floor is in your capable
9 hands.

10 CHAIR DUFFY: Well, thank you. I had
11 to call a couple of audibles along the way as we
12 move forward with the script, so I appreciate the
13 update. I was very interested.

14 I did apologize to Dr. Spinrad. I was
15 very much in the meeting there because of the
16 Port of New Orleans had a lot of information that
17 came from the Big River Coalition, which -- I
18 forgot to mention my role: executive director of
19 Big River Coalition and, yes, also the chair of
20 HSRP. I was at a meeting with our very
21 entertaining lieutenant governor, and on that
22 day, he outranks Dr. Spinrad. But today, I would

1 take Dr. Spinrad's call gladly.

2 With that, I'm going to move on.

3 Thank you, Nicole. Excellent. Look forward to
4 keeping up with you over the next couple of days.

5 And with that, I'm going to introduce
6 Rachael Dempsey, who I haven't known near as long
7 but who has been impressive over the course of
8 the last few months and meeting her. I look
9 forward to getting to know her better.

10 Rachael is the deputy assistant
11 administrator for navigation, observation and
12 positioning of the National Ocean Service of
13 NOAA, and I wish I had a funny joke to tell you
14 but I don't have that audible available right
15 now. But I know Rachael's coming online.

16 MS. DEMPSEY: All right. Good
17 morning, everybody. Hopefully you all can hear
18 me okay. For some reason, my webcam is not
19 working anymore, so my deepest apologies.

20 Sean, thanks for that introduction.
21 We will get to know each other better over time,
22 trust me, and I fear that you will have more

1 stories than I would care to have to manage
2 coming in the coming years.

3 So, that being said, good morning,
4 everyone. It's great to be here virtually with
5 you and participate in my second HSRP meeting.
6 I wanted to provide you all with a few notes on
7 some progress we've made within the navigation,
8 observations, and positioning portfolio since our
9 last meeting last September.

10 During that meeting, we heard a lot of
11 discussion about saltwater intrusion. And so, my
12 team and I were able to take that problem and dig
13 deeper during our nav, obs and positioning
14 retreat using that as a case study to identify
15 how NGS, CO-OPS, and OCS work together to address
16 a common issue. This discussion underscored the
17 importance of all the foundational data that our
18 programs bring to the table. We've also seen
19 some success and improvement of our observing
20 systems.

21 In Hawaii, our work continues on
22 building out a new Pearl Harbor PORTS with an

1 estimated completion goal of the end of fiscal
2 year '24. NOS has also entered into an agreement
3 to establish a Seattle PORTS for fiscal year '25.

4 In the last several months, we've
5 continued to enhance a number of existing PORTS
6 by operationalizing several new stations. Our
7 NWLON has also had several station enhancements.
8 In 2023, we completed an upgrade and rebuild of
9 the Charleston, South Carolina NWLON station and
10 will be conducting a planned upgrade this year of
11 the Ogdensburg, New York station on the St.
12 Lawrence River, due in part to basic
13 infrastructure law funding.

14 We further continued installation and
15 transition of microwave radar water level sensor
16 technology at 13 NWLON stations since fiscal year
17 '23 also due in part to BIL. These include
18 Seaward and Port Alexander, Alaska, and
19 Nawiliwili, Hawaii.

20 Enhancements and expanded capabilities
21 in our Coastal Inundation Dashboard have also
22 been a focus of effort for us. These

1 capabilities include improved usability of tools
2 where users can adjust thresholds and bounds on
3 data sets. This is in order to obtain valuable
4 historical data and information for future
5 planning.

6 Other recent involvements include
7 refined page layouts for ease of usability and
8 also the integration of National Weather Service
9 coastal flood advisory and warning language,
10 shown geospatially when applicable.

11 Next, we completed our first phase of
12 the Gravity for the Redefinition of the Vertical
13 Datum, or GRAV-D project, in which our NGS team
14 measured the gravity field from aircraft over the
15 entire nation, including the U.S., Alaska,
16 Hawaii, and all U.S. territories.

17 Elevation data from the current datum
18 has errors ranging from 16 inches to six feet.
19 This effort ensures that our National Spatial
20 Reference System elevations will be accurate to
21 less than an inch in most areas. We shared our
22 GRAV-D success with the public and with the Hill

1 earlier this year.

2 Our Class B ships have also now
3 received funding to replace the Rainier and the
4 Fairweather. Since then, a contract has been
5 awarded for the design and construction of the
6 ships, and this is happening at long last in
7 direct response to Congress' appreciation of the
8 value of hydrographic data and expertise produced
9 within the NOAA fleet.

10 Now, it's really important for us to
11 be able to share this good news, but I won't go
12 without saying that we also face our share of
13 challenges.

14 Flat budgets are making it difficult
15 for us to maintain the scope of our foundational
16 data collection. Data collection is necessary,
17 but it's not free, and equipment needs to be
18 maintained. This includes everything from sensors
19 to ships. All data requires quality assurance and
20 quality control, and with inflationary costs, a
21 flat budget just can't keep up.

22 Finally, I wanted to take this

1 opportunity to thank Ms. Julie Thomas, as well as
2 the rest of the review panel, for your advocacy
3 regarding the importance of developing the
4 geodesy workforce in your most recent letter to
5 Dr. Spinrad.

6 This is an effort we continue to focus
7 on from a variety of angles. We're launching our
8 first Pathways internship program this summer in
9 the Norfolk, Virginia area for the National
10 Geodetic Survey and the Office of Coast Survey
11 and hope to grow this workforce development
12 opportunity over the coming years.

13 Again, thank you all. It's a real
14 pleasure for me to be here with you, and I look
15 forward to the great discussions this week.

16 RDML EVANS: Thank you, Rachel.
17 Thanks for those insightful remarks and for
18 highlighting many of the activities that are
19 going on across the navigation services and
20 hydrographic services within the Ocean Service.

21 We're now excited to hear from
22 Congresswoman Nanette Diaz Barragan, representing

1 California's 44th District, which is centered in
2 the in the South Los Angeles and Los Angeles
3 Harbor region.

4 Please note that this is a recording
5 that was made prior to the change to a fully
6 virtual meeting, so she does reference some of
7 our in-person activities which regrettably will
8 be no longer taking place.

9 So, can we play the video, please?

10 REP. BARRAGAN: -- Representative of
11 California's 44th Congressional District.

12 Welcome to San Pedro and California's 44th
13 District. I'm sorry I cannot be with you today
14 to welcome you in person to NOAA's Federal
15 Advisory Committee meeting.

16 NOAA's work is critical to our
17 response to climate change and other
18 environmental challenges that threaten our
19 economy, natural resources, and public safety.

20 Last Congress, Democrats and the
21 Biden/Harris administration delivered \$6.3
22 billion in federal funds to NOAA, to the Jobs and

1 Infrastructure Law, and the Inflation Reduction
2 Act. These funds will advance several of NOAA's
3 key objectives, including habitat restoration,
4 coastal resilience, and climate research.

5 NOAA has been a great partner in my
6 district. We have partnered to secure federal
7 funds for the research and development of ocean-
8 based climate solutions at AltaSea at the Port of
9 Los Angeles, the rescue and rehabilitation of
10 stranded marine animals led by the Marine Mammal
11 Care Center in San Pedro, and the deep ocean
12 surveys to help us better understand the extent
13 of DDT byproduct and other waste dumped in the
14 San Pedro basin.

15 I also want to thank the staff and
16 Advisory Committee for your efforts to advance
17 hydrographic services. These services are
18 central to maintain the safety of maritime trade
19 and maritime transportation system. This is
20 especially important to the Ports of L.A. and
21 Long Beach where 40 percent of seaborne imports
22 enter the country.

1 Finally, thank you to everyone
2 participating today and for your feedback on how
3 we can best utilize federal resources to support
4 our environmental and economic goals.

5 I look forward to our continued
6 collaboration between the public, private, and
7 nonprofit sectors to advance NOAA's mission and
8 equitably and efficiently as possible.

9 Thank you and have a great meeting.

10 RDML EVANS: Thank you. We certainly
11 appreciate the Congresswoman's comments and her
12 support of NOAA through the BIL and IRA bills,
13 recognizing the importance of the maritime
14 transportation system and trade, as well as
15 keeping climate science and coastal resilience on
16 the forefront.

17 As you may know, the HSRP is engaged
18 in coastal resilience and regularly discusses the
19 data backbone that navigation, positioning and
20 observations the portfolio of NOAA provide to
21 Southern California and, in fact, all the coastal
22 zone of the United States. During the next

1 couple of days, we will look forward to hearing
2 more from NOS about the navigation portfolio and
3 services.

4 Now, as a designated federal official
5 of the HSRP, it does fall to me to cover some
6 more administrative topics. And amongst those is
7 an ethics reminder, so this is the required
8 ethics reminder for our HSRP members.

9 When participating in HSRP public
10 meetings, you serve as a NOAA special government
11 employee in your personal capacity as a subject
12 matter expert.

13 Please remember that you do not
14 represent any group, industry, association or
15 other entity including businesses you may
16 ordinarily be affiliated with.

17 Please remember to take off your
18 regular work hat and replace it with your NOAA
19 hat as you provide your expertise, questions,
20 comments, and guidance to NOAA and through the
21 NOAA Administrator.

22 Thank you for your service to

1 strengthening NOAA's hydrographic and navigation,
2 observation and positioning services portfolio.
3 NOAA and I greatly appreciate your vision and
4 help.

5 Next, some notes on public comments.
6 Thank you to all the participants who have
7 provided comments in advance. To the
8 stakeholders, staff and others, I encourage your
9 public comments and input.

10 If you have a comment, please type it
11 in the webinar under the questions box. Your
12 comments will be read or summarized into the
13 public record and are put on the screen if time
14 permits. All the comments from the meeting that
15 are on topic will be included in the official
16 meeting minutes. When comments are received in
17 advance, they will also be shared and highlighted
18 at the meeting as well as become part of the
19 public record.

20 I welcome and encourage comments from
21 any group directly or individual during the
22 public hearing.

1 And then, just a second reminder about
2 privacy. These sessions are being recorded,
3 transcribed and posted to the NOAA HSRP website.
4 The speakers have provided their written
5 permission to do so.

6 Your individual permission is required
7 for the use of your photo, video and voice on
8 audio. The meeting webinar will be maintained --
9 retained, excuse me, and disseminated on the
10 meeting website and accessible to the public.
11 You can decline by abstaining from speaking or
12 dropping off the webinar.

13 And with that, I will hand it back to
14 Sean to introduce the HSRP members and NOAA
15 leadership. Sean?

16 CHAIR DUFFY: Thank you, Admiral. I
17 was worried about pronunciation and learned I've
18 been saying San Pedro wrong. So, anybody wants
19 to challenge me on some Louisiana words, I can
20 say Tchoupitoulas and probably spell it most of
21 the time.

22 With that, I'm a little bit out of

1 order in that I forgot earlier to thank Julie
2 Thomas, our past chair. Julie, it wasn't meant
3 on purpose, and had we been in person, it would
4 have been easier to remember. But you set a very
5 high bar I hope to be able to follow.

6 I'd also mention that I probably have
7 a better vice chair than you did and Nathan
8 Wardwell, who will hopefully be able to join us,
9 may be challenged. And Julie, I know you did a
10 lot to help set up this meeting. I wanted to
11 express my thanks to you for all your hard work.

12 And with that, you will find in the
13 speaker bios and advanced materials, and we'll go
14 through the members. Mary Paige Abbott, I'm sure
15 with that A you're used to going first, and
16 hopefully I didn't catch you off guard, but if
17 you can start with a quick intro? And then we'll
18 go next to Qassim and go through in order.

19 MEMBER ABBOTT: Yes, you did catch me
20 off guard. I'm Mary Paige Abbott and a newer
21 member of the HSRP. My forte, if I may use that
22 word correctly, is that of the recreational

1 boater, and I'm here to help and listen and
2 advise from that capacity.

3 CHAIR DUFFY: Thank you, Mary Paige.
4 The graphic is very helpful.

5 Qassim, you're up next. Good morning.
6 I guess that's relative to where you are. It may
7 be afternoon.

8 MEMBER ABDULLAH: Yeah. Thank you,
9 Sean. Hi, everyone. I'm Qassim Abdullah. I'm
10 the advisor, president, and chief scientist with
11 Woolpert, and I also teach at Penn State and
12 UMBC, University of Maryland Baltimore County.

13 I've been with NOAA -- this is my --
14 starting my second term, I guess, not announced
15 yet, and leading with Anuj and Deanne the
16 technology working group. I will be looking
17 forward for this meeting. As always, I expect it
18 to be very productive. Thank you.

19 CHAIR DUFFY: Thank you, Qassim.

20 Anuj, you're up next and with that
21 Captain Cruz.

22 MS. BUTLER: Anuj is not on at the

1 moment, so we're going to move on to Captain
2 Cruz.

3 And Captain Cruz is not on either.
4 Apologies. Let's move on to Nicole Elko.

5 MEMBER ELKO: Good morning. My name
6 is Nicole Elko. I am the executive director of
7 the American Shore and Beach Preservation
8 Association, and I am delighted to be here today.
9 I sit just outside Charleston, South Carolina,
10 and I'm also the executive director of the South
11 Carolina Beach Advocates. So we are excited to
12 bring to you concerns from the communities and
13 share with you new resilience challenges that
14 have popped up even just in the last six months.

15 So, I very much look forward to this
16 week's discussion. Thank you.

17 CHAIR DUFFY: Deanne, I'm having
18 trouble. I'm muting in and out, so if you can
19 start, please? And Nicole, I'm sorry but I love
20 seeing the surfboard.

21 MEMBER HARGRAVE: Hi. Nice to see
22 you. Thanks, Sean.

1 Hi. I'm Deanne Hargrave. I'm the
2 geoscience manager for Atlantic Shores Offshore
3 Wind into my second term on the HSRP panel. I'm
4 looking forward to another great session. I
5 really miss seeing everybody in person, but I
6 know that we'll pull this off successfully as we
7 have in the past. Dealing with adversity is
8 something that we thrive on.

9 I'm based in New Hampshire and, yeah,
10 looking forward to bringing kind of the
11 geoscience data acquisition management and
12 benefits perspective to how we can really
13 optimize that for our Blue Ocean Economy.
14 Thanks.

15 CHAIR DUFFY: Thank you, Deanne.

16 Next up alphabetically, we have Tuba.

17 MEMBER OZKAN-HALLER: Good morning,
18 everyone. My name is Tuba Ozkan-Haller. I am a
19 faculty member here at Oregon State University.
20 My area of expertise is in coastal oceanography
21 and coastal engineering, so that's the lens with
22 which I engage in this work.

1 Right now, I'm also the dean here of
2 the College of Earth, Oceanic and Atmospheric
3 Sciences at Oregon State University and look
4 forward to a productive meeting. Thank you.

5 CHAIR DUFFY: Thank you, Tuba.

6 Next up, Eric Peace. Good morning,
7 Eric. I think you're on the same time zone.

8 MEMBER PEACE: Greetings from
9 Cleveland, Ohio.

10 So, I'm Eric Peace, vice president of
11 Lake Carriers Association, which represents the
12 U.S. flag fleet here on the Great Lakes. I'm
13 heavily involved with everything Great Lakes,
14 whether it's shipping, the marine transportation
15 system, or environmental issues and things like
16 that that we deal with.

17 So, again, looking forward to a great
18 meeting. Thank you.

19 CHAIR DUFFY: Thank you.

20 Julie, great to see you.

21 MEMBER THOMAS: And great to see
22 everyone else. And thank you, Sean, for that

1 acknowledgment of being past chair. We're going
2 to have an echo here.

3 I'm very fortunate -- I'm probably
4 extremely fortunate because Captain Louttit has
5 still offered the Marine Exchange to take this
6 call from, so I'm actually in San Pedro. And the
7 under keel clearance panel will be joining us
8 here this afternoon, most of them, so I am
9 fortunate.

10 And usually, I sit in San Diego. I
11 worked for many years at Scripps Institution of
12 Oceanography, managed the CDIP Wave Program, and
13 also was executive director of SCCOOS. Thank
14 you.

15 CHAIR DUFFY: Thank you, Julie.

16 Next up, we have Nathan listed, but I
17 don't believe he's with us.

18 And with that, we would move to
19 introduction of the nonvoting members and Captain
20 Andy Armstrong. Andy, you're up first.

21 Well, hello, Andy. I'm not sure if
22 it's morning or afternoon anymore, so hello.

1 Good to see you.

2 CAPT. ARMSTRONG: Well, I'm not sure
3 either, Sean.

4 Hi. I am Andy Armstrong. I'm the
5 NOAA co-director of the NOAA University of New
6 Hampshire Joint Hydrographic Center, and I've
7 also recently been tasked with bringing the new
8 Center of Excellence that Nicole mentioned online
9 and making it a reality in NOAA.

10 So, I'm very much looking forward to
11 this meeting. Thank you.

12 CHAIR DUFFY: Thank you. That's
13 wonderful news. Capable hands, Andy, and I see
14 your cohort Larry is ready to go.

15 Good morning. Hello, Larry. How are
16 you?

17 DR. MAYER: Hello, I'm fine. Yes, I'm
18 Larry Mayer. I am Andy's cohort. I am the
19 director of the Center for Coastal and Ocean
20 Mapping at the University of New Hampshire and
21 the co-director of the Joint Hydrographic Center.

22 And I've had the pleasure of watching

1 Andy really work hard to bring this new Center of
2 Excellence to fruition, and we're very, very
3 excited about it.

4 CHAIR DUFFY: Thank you, Larry.

5 Next up -- and my New Orleans
6 pronunciation would be Marian Westley, and I am
7 not going to try to say her title because I would
8 mess it up. I don't have written down.

9 My friend, Dr. Marian Westley.

10 DR. WESTLEY: Thank you, Sean. So, I
11 am the director of the Center for Operational
12 Oceanographic Products and Services, or CO-OPS,
13 here in the National Ocean Service. We basically
14 do tide gauges and currents.

15 I'm really delighted to be here. The
16 HSRP has been a great source of advice over the
17 years. Happy to be with you this week.

18 CHAIR DUFFY: Great to see you. On my
19 script, I have Nicole Leboeuf and Rachel Dempsey,
20 who we've already met. And I see Rachel Fontana
21 also listed, and if she doesn't pull up, I guess
22 we would just move on.

1 And, again, thank everybody for being
2 here set up as we work through the agenda.
3 Looking, I believe Admiral Evans is up next,
4 maybe, if we don't have any more intros.

5 Okay, there he is. Good to see you,
6 my friend.

7 RDML EVANS: Thanks, Sean. And I was
8 just going to propose that we go back and
9 introduce Mr. Brad Kearse, the deputy director of
10 the National Geodetic Survey, who I believe is
11 our senior NGS representative here today.

12 MR. KEARSE: Yes. Good morning to
13 folks, and I guess we're afternoon for some of
14 those folks on the East Coast.

15 So, Sean, Julianna regrets she
16 couldn't be here. We are trying to cover many
17 tasks. There's the MAPS federal meeting going
18 on. Also, there's a CAC, the Civil Application
19 Committee meeting, so we're trying to tackle both
20 things from West Coast to East Coast this week.

21 So, I'm the deputy director here, and
22 I've been around for a while. I haven't

1 participated in a lot of HSRP meetings, but I am
2 well aware of HSRP. And in my past life, I used
3 to attend when they first started up, so I've got
4 a long history around NOAA.

5 So, look forward to the discussions,
6 and really look forward to updating you on all
7 the great things going on with modernization of
8 the National Spatial Reference System and the
9 crisis in geodesy.

10 So good to see everybody and look
11 forward to the discussions.

12 CHAIR DUFFY: Well done. Thank you.
13 I didn't mean to skip your earlier.

14 Admiral?

15 RDML EVANS: Thanks, Sean. I'd also
16 like to recognize the NOAA staff at our meeting.

17 The Ocean Service and NOAA have a
18 variety of staff who provide subject matter
19 expertise and program and administrative support
20 to the HSRP. There's about 20 NOAA staff that
21 follow the work of the HSRP year round and they
22 can assist you with their expertise throughout

1 the year.

2 I'd also echo Sean's thanks to the
3 staff who are helping with this meeting as well
4 as the others providing ongoing HSRP support. A
5 small selection of those include Jeff Ferguson,
6 Ashley Chappell, Amanda Phelps, Amber Butler,
7 Virginia Dentler, Galen Scott, Robin Czerwinski,
8 Megan Schwinden, Melanie Colantuno, and Nathan
9 Littlejohn.

10 In addition to those names, there are
11 a few experts from my office, so the Office of
12 Coast Survey. With us today, we have Ms.
13 Lorraine Robidoux, who's the deputy director;
14 Captain Sam Greenaway, who's the chief of our
15 hydro surveys division; Mr. Darren Wright, our
16 precision marine navigation program manager, and
17 I suspect several others have joined us as well.

18 So, I encourage the panel members and
19 attendees to engage with not just the Coast
20 Survey experts, but the experts across NOAA who
21 are who are participating and available.

22 I'd also like to share some exciting

1 and somewhat last-minute news that we have for
2 new members that are slated to begin their terms
3 on the HSRP at the fall meeting. However, we did
4 just receive their confirmation letters, and I
5 believe many of them are joining us here today.

6 And as was previously mentioned, I do
7 particularly want to also congratulate Qassim
8 Abdullah, who has been reappointed for a second
9 term on the panel. So thank you, Qassim, for
10 sticking with it and continuing to support this
11 important work.

12 If any of our new members are online
13 and would like to introduce yourselves, just a
14 quick intro with your name, your organization,
15 your job title, and where are you from, I'll just
16 work through the list that I have.

17 Sloan, are you with us?

18 MEMBER FREEMAN: I am. Can you hear
19 me okay?

20 RDML EVANS: Yes.

21 MEMBER FREEMAN: All right. Hi,
22 everyone. I'm Sloan Freeman. I'm a co-founder

1 and CEO of Geodynamics, which is a hydrographic
2 survey firm that has specialized in shoreline
3 mapping and coastal chart updates for clients
4 including NOAA, Corps of Engineers, et cetera.

5 We're based on the East Coast. I'm in
6 the southern Outer Banks, and as part of a larger
7 NV5 geospatial I'm helping integrate our vessel-
8 based fleet services with aerial topobathy lidar.

9 It's great to be here. Thank you very
10 much.

11 RDML EVANS: Thank you, Sloan.

12 Kim Holtz?

13 MEMBER HOLTZ: Hi, I'm Kimberley
14 Holtz. I'm the director of surveys for the Port
15 of Long Beach. I'm a professional land surveyor
16 and a professional geologist, and my expertise is
17 in geodesy. I've worked really closely with the
18 California Spatial Reference Center in the state
19 of California on our coordinate system.

20 So, I'm very excited to be on this
21 committee and start working with you guys. Thank
22 you.

1 RDML EVANS: Thank you, Kim. It's
2 great to have you.

3 Captain Kurtz, nice to see you again.

4 MEMBER KURTZ: Hi. Good morning.
5 Good morning from Tampa, and I have been a Tampa
6 Bay pilot for the past 28 years. Recently
7 retired but not not working. Still doing lots of
8 things.

9 Big fan of NOAA and a very
10 enthusiastic user of all the PORTS products. And
11 really looking forward to participating on the
12 committee, so thank you for having me.

13 RDML EVANS: Thank you, Carolyn.

14 Rebecca?

15 MEMBER QUINTAL: Hello, everyone.
16 Rebecca Quintal. I'm with SEACORP, coming to you
17 from Rhode Island. I also have a background in
18 geology, which led me to geological oceanography,
19 which led me to ocean mapping.

20 I've spent the vast majority of my
21 career supporting NOAA's mission, the Naval
22 Oceanographic Office, and the Army Corps of

1 Engineers, all dealing with safety of navigation
2 products. Thank you.

3 RDML EVANS: Thank you. And I just
4 have to say, once again, I'm incredibly impressed
5 by the quality and experience and expertise of
6 these new panel members, as I am with all of our
7 panel members.

8 And I really am deeply appreciative
9 that these folks have taken the time to provide
10 their expertise and advise us on hydrographic
11 services. We appreciate your engagement and
12 support of the mission and look forward to
13 learning more with you.

14 So, we have a great meeting planned,
15 and I'm going to just jump ahead a little bit.
16 I look forward to coming back later this
17 afternoon and providing an update on the goings-
18 on in coast surveys since our last meeting, along
19 with the other directors. But before we do that,
20 we have a number of -- a couple of panels lined
21 up.

22 First, we'll hear from a panel of

1 local stakeholders and experts who will share
2 their perspective on the application of NOAA's
3 navigation products and services, the challenges
4 in the region of Southern California, and how we
5 can expand this to meet national requirements.

6 And then, later, former HSRP chair
7 Julie Thomas and Captain Kip Louttit will
8 moderate a panel and discussion on under keel
9 clearance. This subject is increasingly
10 important, particularly there in the L.A. and
11 Long Beach region. As ships continue to grow,
12 the ports become more congested, and every
13 additional inch of draft adds tens of thousands
14 if not hundreds of thousands of dollars in
15 additional cargo.

16 We'll also hear from Mr. Darren
17 Wright, who is Coast Survey's Precision Marine
18 Navigation Program manager, who will update us on
19 NOAA's next-generation navigation products and
20 services.

21 And then, after the directors' updates
22 later at the end of the program today, tomorrow,

1 we'll spend the first part of the morning focused
2 on the concept of adaptive and resilient ports in
3 an era of accelerating climate change. And then,
4 we'll have a kickoff from Nicole, followed by a
5 panel discussion moderated by Nathan Wardwell,
6 our vice chair.

7 And then, Thursday kicks off with
8 another staff panel discussion on NGS' geospatial
9 modeling, addressing the geodesy crisis. And as
10 Brad teased just a moment ago, he'll be leading
11 that.

12 And then, our last major session will
13 be a panel of regional experts on non-navigation
14 applications of ocean observation and mapping
15 data, led once again by Julie Thomas.

16 We'll then round out the meeting by
17 finishing our discussion on issue papers, the
18 priority matrix, and drafting the
19 recommendations.

20 So, with that overview complete, I'll
21 just turn to a couple last housekeeping items.

22 As you know, the HSRP is required by

1 law to meet twice a year. We appreciate the time
2 dedicated to this, and the chair, vice chair, and
3 I intend to honor your time and promote
4 collaboration by running the meeting as
5 efficiently as possible. This will ensure
6 adequate time for robust discussion among the
7 panel members and with the guest speakers, and
8 then comments from the public.

9 I look forward to discussing issues of
10 national importance, recommendations for issue
11 papers, and the members' advice for the NOAA
12 administrators. I encourage all who are
13 listening to consider making public comments to
14 the HSRP to enhance this dialogue.

15 So, Sean, I think next up is a break,
16 but I'm turning it back to you for any last
17 comments.

18 CHAIR DUFFY: I will just say well
19 done, everybody, and I hope we can enjoy our
20 quick break. Lots of work here. We'll slow down
21 a little bit. Enjoy your break, and we'll be
22 back shortly.

1 I believe we have about 15 minutes
2 scheduled, and then we'll start with our next
3 panel.

4 RDML EVANS: Great. So, I think we do
5 have 15 minutes scheduled. We're slightly ahead
6 of schedule, so I'm going to propose that we come
7 back at five past the hour, and I'll let you guys
8 decide which hour that is because we're all at so
9 many different times. So, just shy of 20
10 minutes, five past the hour.

11 CHAIR DUFFY: Excellent audible, sir.
12 Thank you. Thanks, Sean.

13 (Whereupon, the above-entitled matter
14 went off the record at 9:47 a.m. and resumed at
15 10:07 a.m.)

16 RDML EVANS: Hello again, everyone.
17 Sean, are you available to come back
18 online and we'll get this kicked back off?

19 CHAIR DUFFY: Yes, sir, I am. I think
20 we have one change. I believe we're going to --
21 Nathan Wardwell, our excellent vice chair, the
22 brains and looks of the operation, should be able

1 to join us soon and introduce himself. There he
2 is.

3 VICE CHAIR WARDWELL: Yeah. Hello.
4 Thanks for that introduction, Sean. Brains and
5 looks. All right. I guess you'll be keeping me
6 around.

7 Let's see. So my name is Nathan
8 Wardwell. I'm managing partner of JOA Surveys
9 and I'll keep the introduction short but
10 passionate about Alaska water levels, vertical
11 datums, and NOAA. So, thank you very much and
12 looking forward to today.

13 CHAIR DUFFY: Thank you, Nathan. Good
14 to have you. I was going to start our first
15 panel on local, regional, state stakeholder and
16 partner perspective, opportunities and challenges
17 for NOAA's Navigation, Observation and
18 Positioning programs.

19 I'll say a lot on the Mississippi
20 River team. Mississippi River includes our
21 government partners. We rely heavily on them and
22 I'm sure that's the same everywhere.

1 So we have some of our excellent
2 government partners from California: Mr. Derek
3 Davis, deputy chief engineer for the U.S. Army
4 Corps of Engineers at the Port of Long Beach,
5 Captain Ryan Manning, the sector commander from
6 U.S. Coast Guard, Captain John Betz, the chief
7 port pilot of the Los Angeles Pilot Service --
8 always great to have pilot representatives. I
9 deal with a lot of them on the Mississippi.

10 Then a friend I've known for a long
11 time, Mr. Jim Haussener, executive director of
12 California Marine Affairs and Navigation
13 Conference. I've known CMANC a long time. I
14 don't know that I've ever read it all out. But
15 just for you, Jim.

16 And then another old friend, Kip
17 Louttit, executive director of the Marine
18 Exchange for Southern California.

19 And with that, I will turn it over to
20 Rachael Dempsey and move forward. I look forward
21 to the panel.

22 MS. DEMPSEY: Thanks very much, Sean,

1 and I want to say hello again. Glad to actually
2 see you all this time now that I got my technical
3 difficulties out of the way just in time for our
4 panel.

5 Welcome to our panelists today. I'm
6 really looking forward to our discussion here.
7 I will tell you since my time reporting in to
8 NOAA as the Nav, Obs, and Positioning DAA I've
9 had the opportunity to tour a number of different
10 ports.

11 Each port, as you all know, has its
12 own set of challenges. I recently visited Pearl
13 Harbor in Hawaii back in January and I found it
14 fascinating because the DOT harbors in Pearl is
15 in the process of planning for a pier restoration
16 and construction, and they're using NOAA data
17 right now on which to base the height at which
18 they're going to build this pier and they're
19 experiencing some challenges on how to use our
20 data because if they build it too high, they
21 build it too low, it's going to have negative
22 impacts with reference to projected sea level

1 rise to communities and industries that are
2 immediately to the north of that area.

3 So I appreciate the fact that they're
4 using our data, and we have some work to do to
5 help them with that interpretation because we
6 want to make sure that we help you get it right
7 the first time.

8 So, you know, whether that is
9 considering rising sea levels or extreme weather
10 events, you know, when planning for
11 infrastructure in port it's important to have
12 that right information.

13 NOAA and National Ocean Service and
14 the Nav, Obs, and Positioning portfolio can
15 provide foundational data and information that
16 will help you get it right.

17 So since I have not yet had the
18 opportunity to tour L.A. and Long Beach I'm
19 personally eager to hear about the challenges and
20 concerns that these stakeholders are facing
21 because we want to be responsive to their needs
22 as they arise.

1 So with that, our first panelist is
2 Mr. Derek Davis. Derek, I'd like to turn it over
3 to you for your perspective.

4 MR. DAVIS: Good morning, and thank
5 you very much. My name is Derek Davis and I'm a
6 deputy chief harbor engineer in the program
7 management division at the Port of Long Beach.
8 It is my pleasure to present before you today,
9 and I apologize for the technical difficulties
10 with the camera not being able to work through
11 our webcam. So I'll go ahead and go through my
12 presentation.

13 My talk will address collaboration
14 between the United States Army Corps of Engineers
15 and the Port of Long Beach to construct
16 navigation improvements that will reduce
17 constraints and increase transportation
18 efficiencies.

19 The Port of Long Beach is the nation's
20 second busiest seaport, moving more than \$200
21 billion in goods each year. Working together,
22 the United States Army Corps of Engineers and the

1 Port of Long Beach completed the Long Beach Deep
2 Draft Navigation Improvements Feasibility study.
3 The Army Corps and the Port of Long Beach have
4 had a long-standing relationship that has
5 developed over the years.

6 Our partnership has not only helped
7 the port to improve navigation within the harbor,
8 it has also helped the port to achieve
9 environmental goals through the removal of
10 contaminants on the ocean floor and the
11 construction of infrastructure to promote clean
12 air as well as the creation of new and leasable
13 land.

14 The port's deepening project has been
15 in the works for many years and is an essential
16 component of the port's master plan. The
17 feasibility study identified improvements in
18 navigation safety and efficiencies for national
19 commerce.

20 These improvements are needed to
21 address some of the existing channel depths and
22 widths that do not meet the draft requirements of

1 the fleet of vessels that currently call, and are
2 expected to call, at the Port of Long Beach.

3 The study identified the following
4 navigation constraints and operational
5 inefficiencies. Tide restrictions, weather
6 conditions, light loading where shippers limit
7 the number of containers that are loaded on the
8 vessel at the point of origin, and lightering,
9 which is when liquid bulk vessels unload product
10 to a smaller vessel before entering the port to
11 reduce the vessels' draft.

12 The focus was on improving conditions
13 for current and future container and liquid bulk
14 vessel operations in regards to safety,
15 reliability, and waterborne transportation
16 efficiencies.

17 The study recommended widening and
18 deepening portions of the harbor and approaches.
19 I see we've already moved on to the next slide.
20 So features on the Deep Draft Navigation
21 Improvement Feasibility Study include deepening
22 the Long Beach approach channel from 76 to 80

1 feet, easing bends in the main channel by
2 widening the main channel to a depth of 76 feet,
3 constructing an approach channel and turning
4 basin to Pier J South to a depth of 55 feet,
5 deepening portions of the West Basin from 50 to
6 55 feet, deepening the Pier J South slip and
7 berths to a depth of 55 feet, performing
8 structural improvements to the Pier J South
9 breakwaters, and to be in compliance with the
10 port's green port policy.

11 The study includes the construction of
12 a new electric dredge substation to facilitate
13 electric dredging. Dredged material would be
14 deposited in either near shore sites for reuse or
15 federally approved ocean disposal sites. I
16 apologize I don't have a pointer to point out
17 these areas I'm going through.

18 The design vessel for containerized
19 cargo is a EEE generation four cargo ship with a
20 maximum draft of approximately 52 feet and the
21 ability to transport 18,000 to 19,020 foot
22 equivalent units, or TEUs.

1 Navigation improvements for container
2 vessels include deepening the Pier J South
3 approach turning basin and slip and deepening the
4 West Basin area. The West Basin Pier J South
5 approach and Pier J South slip will be dredged to
6 a depth of 55 feet which will provide
7 approximately three feet of under keel clearance
8 for container vessels drafting 52 feet.

9 The design vessel for liquid bulk
10 product is a very large crude carrier, or VLCC,
11 with a maximum draft of approximately 70 feet,
12 length overall of 1,100 feet and dead weight
13 tonnage of 325,000.

14 Navigation improvements for liquid
15 bulk vessels include deepening the main channel
16 -- that is, the area within the port's harbor --
17 and a two-mile stretch of the Long Beach approach
18 channel which is outside of the Queens Gate.

19 The main channel will only go bend
20 easing to a depth of 76 feet and the Long Beach
21 approach channel will be dredged to 80 feet. So
22 why 80 feet? Several years ago, the Port of Long

1 Beach participated in Charta's PROTIDE study,
2 along with several other key stakeholders, and
3 learned that pitch and roll has been experienced
4 as vessels enter the Queens Gate from the Long
5 Beach approach.

6 For a 1,100-foot long oil tanker, one
7 degree of pitch results in an approximate
8 increase of 9.6 feet in draft. If the oil tanker
9 is drafting 65 feet and the water depth is 76
10 feet in the main channel this leaves only
11 approximately 1.4 feet of under keel clearance
12 for these liquid bulk tankers.

13 During the feasibility phase port
14 pilots went to the Marine Lab at the Army Corps
15 of Engineers Research and Development Center in
16 Mississippi to simulate navigating oil tankers
17 into the port's harbor. For the simulation, the
18 marine lab was modeled to match the geometry of
19 the port's harbor.

20 The simulation determined that
21 smoothing out the sharp edges along the existing
22 main channel is needed to facilitate safe

1 navigation of the very large crude carriers
2 calling at the port.

3 The port pilots were returned to the
4 engineer research and development center during
5 the design phase to validate and/or refine the
6 proposed channel geometry.

7 Potential benefits identified in the
8 study include operational reduced lightering of
9 liquid bulk vessels and reduced light loading of
10 container vessels, results in increased
11 transportation efficiencies which reduce
12 transportation costs.

13 Safety -- there is enhanced safety
14 with improved ability for vessels to maneuver,
15 and environmental -- improving navigational
16 efficiencies reduces the emissions of air
17 pollutants and greenhouse gases by facilitating
18 the newest and cleanest vessels calling at the
19 port fully loaded.

20 Less time waiting for tides means less
21 idling while not alongside a berth which could
22 help reduce air emissions.

1 Finally, as an economic and
2 environmental benefit, there is an opportunity
3 for beneficial reuse of the dredge material in
4 port landfills.

5 So where are we today? Approval of
6 the Army Corps' chief of engineers report
7 occurred on October 14th, 2021. The record of
8 decision was signed on July 6th, 2022.

9 The Board of Harbor Commissioners
10 approved the environmental impact report on
11 September 12th, 2022. The deep draft navigation
12 improvements project was included in the Water
13 Resources Development Act of 2022 and was signed
14 by the President, and on March 27th, 2023, the
15 Board of Harbor Commissioners approved the design
16 agreement with the Department of the Army for the
17 preconstruction, engineering, and design phase
18 and authorized funding for the port's cost share.

19 The design phase is expected to take
20 approximately two years to complete. The deep
21 draft navigation improvements project will widen
22 and deepen portions of the port's harbor and

1 approaches and is expected to generate
2 approximately 7.4 million cubic yards of dredge
3 sediment.

4 The current estimated costs for the
5 project cost share between the Army Corps and the
6 port is approximately \$200 million. Construction
7 of the deep draft navigation project is
8 forecasted to start in 2028 and is expected to
9 take approximately three years to complete.

10 Consistent with the Army Corps' focus
11 and directive for beneficial reuse of dredge
12 sediment, the project will identify opportunities
13 for use of the material.

14 There are three opportunities
15 currently in consideration for beneficial reuse.
16 First, there is an opportunity to place
17 approximately 2.5 of the 7.4 million cubic yards
18 of the material dredged for the deep draft
19 navigation improvements project into the Pier G
20 South slip field -- South slip, excuse me.

21 The Pier G South slip provides a
22 disposal site within the port's harbor for

1 potential unsuitable material and also provides
2 for the construction of a new port landfill.

3 Work to construct the containment dike
4 for the landfill is forecast to begin later this
5 year. Second, if the quality of the dredged
6 sediment meets the required criteria, the port
7 and Army Corps will evaluate beneficial reuse of
8 material for beach nourishment here in Long
9 Beach.

10 Also, there is a potential opportunity
11 for beneficial reuse for construction of the
12 proposed pier wind facility. Dredging for this
13 facility may start in 2027 and is currently being
14 evaluated and the EIR is currently under
15 development. Next slide, please.

16 So thank you very much. That
17 concludes my presentation, and thank you for your
18 attention. I'm happy to address any questions
19 that you may have.

20 MS. DEMPSEY: Great. Thanks very
21 much, Derek, for that. I think we're going to
22 hold our questions to the end right now but, you

1 know, really informative information regarding
2 your plans for the Port of Long Beach. Thank you
3 very much for sharing that.

4 MR. DAVIS: You're welcome.

5 MS. DEMPSEY: Next we're going to go
6 over to Captain Ryan Manning at Coast Guard
7 Sector.

8 Captain Manning?

9 CAPT. MANNING: Thanks so much,
10 Administrator Dempsey, and we definitely will
11 look forward to giving you a tour when you're
12 able to get a trip out here to San Pedro. I
13 would have liked to have shown you all around the
14 port area. It's a great place to serve, and I'm
15 privileged to be able to be the sector commander
16 here in Los Angeles/Long Beach.

17 So thanks to the HSRP and NOAA
18 leadership for extending the invitation for me to
19 be able speak to your group. As a past DFO for
20 FACA I know that the input that you get from
21 those members is extremely valuable and so thanks
22 to everybody for their service in this committee.

1 So if we can roll to the next slide on -- one
2 more slide down.

3 So here at sector Los Angeles/Long
4 Beach we've got about - a crew of about 550
5 active duty, reserve, and civilians. We also
6 employ a volunteer workforce of about 750 Coast
7 Guard Auxilirants.

8 They handle our recreational boating
9 safety programs. In addition to the sector
10 personnel here in San Pedro we have 454-foot fast
11 response cutters, four 87-foot coastal patrol
12 boats, three small boat stations staged along the
13 coast, an Aids to Navigation team, a marine
14 safety detachment, and a team of vessel traffic
15 specialists that are going to be here. Kip
16 Louttit is going to speak later today and in many
17 other things here throughout your panel and
18 you'll hear about the services that they offer
19 here in the Corps area.

20 So all these personnel and resources
21 are gainfully employed in our area of
22 responsibility that spans about 350 miles of

1 coastline, three commercial ports, countless
2 harbors, and out to 200 nautical miles of open
3 ocean.

4 So as sector commander, I'm
5 responsible for wearing five different federal
6 authority hats, so to speak, in my role as sector
7 commander. And so the first one being the Captain
8 of the Port, probably the one that I'm using most
9 often on a day to day basis, that authority
10 that's extended to me as Captain of the Port.

11 The other four include the Federal
12 Maritime Security Coordinator. That's the one
13 that's kind of depicted as the police officer hat
14 there. I would say that, you know, kind of came
15 about as part of the after post-9/11 and then
16 Marine Transportation Security Act that was
17 passed.

18 I co-chair that committee with a
19 partner from the FBI. The federal on scene
20 coordinator, which is depicted by the
21 firefighter's helmet there, is really our role as
22 the lead federal agency by the national

1 contingency plan as the oil spill response
2 organization for the coastal region whereas the
3 EPA as the inland areas.

4 The OCMI, the Officer in Charge for
5 Marine Inspections, that's depicted there by the
6 hard hat, that's -- rather than being the
7 building inspector on land we've got a team of
8 inspectors that inspect the ships that arrive
9 here into the port complex whether it's these,
10 you know, 1,200-foot container ships all the way
11 down to the 45-foot passenger vessel that we do
12 inspections on.

13 And then the last one is the Search
14 and Rescue Mission Coordinator, the SMC, and
15 that's -- just consider us to be the 911 of the
16 sea as we take those calls for folks that are in
17 need.

18 So we actually participate in 10 of
19 the 11 Coast Guard statutory mission areas and
20 these includes, you know, search and rescue,
21 counter drug, migrant interdiction, vessel safety
22 inspections of pollution response, and much more.

1 There's only one of the Coast Guard statutory
2 missions that we don't do and had we had this in
3 person I would have thrown a command coin out to
4 the person that could tell me which statutory
5 mission we don't do.

6 I'll give you a hint. I think we had
7 a Lake Carrier Association member on this panel.
8 As you know, it doesn't really get below freezing
9 very often here in Southern California so that
10 the ice-breaking mission has yet to appear in
11 Southern California. I'm hoping it never does.
12 We can roll on to the next slide.

13 So as is apparent from our previous
14 slides, we and our port partners here in Los
15 Angeles and Long Beach are responsible for the
16 safety and security of a very large, complex and
17 ever-changing port complex.

18 So we provided some kind of summary
19 statistics for the port complex here in Los
20 Angeles and Long Beach, primarily dealing with
21 the container focus, and if you would have had
22 the opportunity to travel here to San Pedro it

1 would have been undeniable that when you drove
2 into the port complex and you started seeing the
3 stacks of containers sitting around, you knew
4 that this really is a very massive container port
5 complex.

6 But it's not the only type of cargo
7 that happens here. We also have lots of cruise
8 ships arriving in both the Port of L.A. and Port
9 of Long Beach, patrolling the chemical tankers,
10 auto carriers, break bulk, commercial fishing,
11 and countless other commercial entities here
12 locally.

13 So you layer in kind of the
14 recreational boaters, the sailing regattas, the
15 swimmers, countless other waterways users and it
16 further adds to that complexity of our marine
17 transportation system. We can roll to the next
18 slide.

19 So not only is the traditional
20 waterway usage increasing in scope and complexity
21 but we're also coordinating major events using
22 our waterway.

1 That first picture that you see there
2 Sail Grand Prix brought national attention to Los
3 Angeles for a multi-day, multimillion dollar
4 sailing race for the first time this past summer
5 and I can imagine that it's probably going to be
6 coming back given that the success that they had.

7 Fleet Week also brings similar
8 attention annually here to the port with our DoD
9 partners and then the Pacific Air Show, the
10 largest air show in the United States, just
11 restarted again off of the coast of Huntington
12 Beach after a couple of year hiatus due to COVID,
13 and then I think the biggest event that we're
14 probably coming -- you know, starting out in four
15 years here which will be here before we know it
16 is the Summer Olympics are being hosted in L.A.
17 in 2028.

18 And so certain that there'll be lots
19 of on-water activities, as well as close to the
20 waterway activities that we'll be coordinating
21 with all of our partners on.

22 So you can also find the latest and

1 greatest and technological use of the marine
2 transportation system in our AOR. SpaceX
3 launches out of Vandenberg, which is about three
4 to four hours north of here just more and more
5 frequently and other commercial spaceflight
6 commercial companies are continuing to increase
7 their usage here in the in the port area as well.

8 We've got some mariculture projects
9 that look to increase sustainable food products
10 and research opportunities, and the picture on
11 the lower left is a fully operated container
12 terminal -- fully automated container terminal,
13 the Long Beach container terminal -- over at the
14 Port of Long Beach where Derek just gave you a
15 kind of a brief about and, you know, that
16 terminal if operated at full capacity has the
17 throughput that would rank it as the sixth
18 largest container port in North America, the
19 container terminal in itself. It's, you know, 18
20 ship to shore container cranes, so quite the
21 marvel over there and pretty amazing to see that
22 operation run.

1 So all these events and technological
2 advances create opportunities but they also
3 require increased care, coordination, and
4 facilitation with our port partners which brings
5 me on to the next slide.

6 So although I've got a huge team here
7 at the Coast Guard I'm very thankful for the
8 federal, state, local, and private industry
9 stakeholders and partners that we have.

10 We've got great partnerships and some
11 of them may be called out by either statute and
12 policy as well. You know, we have the Area
13 Committee that we chair that was established by
14 the Oil Pollution Act of 1990.

15 That assists us in our role as I was
16 telling you about oil spill response in the area
17 for the coastal zone. EPA is obviously lead on
18 the inland areas. The Area Maritime Security
19 Committee that I mentioned about being a co-chair
20 with the Federal Bureau of Investigations on as
21 well as I think a committee that probably you're
22 going to hear about in the next panel member.

1 Captain John Betz is our chair of our
2 Los Angeles/Long Beach Harbor Safety Committee
3 which really helps us have a really, I would say,
4 safe waterway around this area.

5 So I'm not going to steal any of
6 John's thunder. He is a great chair on that
7 committee and I'm glad that I have the
8 opportunity to work with him and sure I'll be
9 seeing him in a couple of weeks with some of you,
10 I think, at the National Harbor Safety Committee.
11 So that will be an interesting event we go to.

12 Another couple of partnerships that we
13 have here is that there's one called the regional
14 coordinating mechanism which helps us get after
15 some of the cross-border smuggling issues that
16 we're dealing with as well as a number of search
17 and rescue councils that we participate along the
18 coastline with those that are involved in the
19 search and rescue mission.

20 For federal partners, just even within
21 the Department of Homeland Security, primary
22 dealing with Customs and Border Protection,

1 Homeland Security Investigations, TSA, Secret
2 Service and FEMA -- we work with FBI, DoD
3 partners. I will highlight, you know, in this
4 panel anyway, the most important federal partner
5 we have is NOAA.

6 And then the last of the federal
7 partners that we deal with quite frequently,
8 especially we did during COVID and really any
9 pandemic that's happening throughout the world as
10 we get international seafarers and ships arriving
11 here into the port area, is the Center for
12 Disease Control. So definitely an important
13 partner.

14 For the state agencies we deal with,
15 you know, California Highway Patrol, the
16 California National Guard, Department of Fish and
17 Wildlife. An organization within that is the
18 Office of Spill Prevention and Response, OSPR,
19 that we deal with quite frequently.

20 California Office of Emergency
21 Services and the State Lands Commission, and then
22 the, you know, kind of local entities that we're

1 dealing with. As you can imagine, huge
2 components of both L.A. and Long Beach police and
3 fires, you know, the port authorities.

4 One of the ports I didn't mention in
5 the previous slide is the Port of Hueneme which
6 is just a couple hours north of here and kind of
7 a unique port up there that is a naval port and
8 a commercial port kind of all in one, and it's
9 kind of a unique presence for the Navy.

10 It really is the only -- you know,
11 between San Diego and Washington State, really
12 the only place where you have a Navy presence.
13 So that's a unique port up there.

14 And then, obviously, the Sheriff
15 Department's Public Health, Baywatch, and City
16 Emergency Managers. I think the joke is if
17 you're in my position at the end of your
18 assignment of two or three years that you're
19 here, if you've met all of the partners that we
20 work with you've succeeded and, hopefully, it's
21 always in a positive environment and not a you're
22 responding to a casualty or an emergency of some

1 sort.

2 So the idea is that we meet those
3 folks before we're in that type of an
4 environment. So but we just have great
5 partnerships through and through so it's
6 fantastic. So if we can go to the next slide.

7 So speaking of all those partnerships,
8 without the partnership with our NOAA colleagues
9 as well as the products and services that NOAA
10 provides, our mission to keep life, property, and
11 environment safe and secure in our area of
12 responsibility would be all but impossible.

13 The navigation chart products provided
14 are constantly in use with our command center
15 that's running our search and rescue mission
16 operations.

17 Our emergency management and ports
18 readiness as well as our waterways management
19 divisions are using those products for marine
20 planning and event permitting processes. And
21 then, obviously, those cutters and patrol boats
22 that I spoke about and our boats are using the

1 NOAA products every day in their missions.

2 So something else to talk about would
3 be the, you know, kind of these recent heavy
4 weather events that we've been seeing
5 increasingly in Southern California to include,
6 you know, the first hurricane since, I think,
7 1939. Last August when Hurricane Hilary made its
8 way up the coast.

9 So we have a port coordination team
10 which is another partner and stakeholder
11 committee that we chair that's used episodically
12 for events that receive daily weather briefings
13 from NOAA to -- it really kind of shapes the way
14 that we are responding to that weather incident
15 that came up the coast.

16 And then the last thing is we've got
17 -- and I'm sure that Captain Kip Louttit is going
18 to be talking about this in some sense or fashion
19 -- is an anchorage regulation that we've got in
20 the works for basically the anchorages outside
21 the harbor entrances.

22 As we've been seeing and as you heard

1 Derek discuss, the ships that we're getting here
2 in the last 10, 20 years have greatly increased
3 in size, requiring not only larger depths, as he
4 talked about in the dredging projects, but also
5 larger watch circles in the anchorages because
6 the size that they are right now, we just can't
7 fit really the amount of ships that we have
8 designated for those ships to anchor.

9 I'm sure that's something we'll be
10 using in NOAA and they've been engaged on the
11 project. I'm sure they've provided input and
12 they'll be helping us as we move forward, you
13 know, given the new charts that will be, you
14 know, established based on that rulemaking.

15 So I think, if we can roll to the next
16 one. I'll just kind of close out with saying,
17 you know, the partnership of our port partners
18 and specifically NOAA's support and services, the
19 Coast Guard's -- we wouldn't be able to do our
20 job without it, and so just thanks again for HSRP
21 and NOAA for having us be part of this.

22 I would really like to see you all in

1 person but, again, we'll catch you the next time
2 you're out here. So that's all I got. Thanks so
3 much.

4 MS. DEMPSEY: Thanks, Captain Manning,
5 very much. Greatly appreciate it. You know, I
6 have a lot of sympathetic feelings when it comes
7 to the heavy weather that rolled up the coast
8 last fall having almost gone through it, and I
9 know that we, the San Diego community, is not
10 always prepared for that kind of weather unless
11 we want to use it to find out where the leaks are
12 in our roofs. That's how mostly we normally
13 figured that out at that time, right.

14 But I think we are going to get to see
15 each other here at the end of March at the Harbor
16 Safety Committee meeting. So I look forward to
17 seeing you there. Thanks.

18 CAPT MANNING: Sounds good, thank you.

19 MS. DEMPSEY: All right. So next I
20 want to go over to Captain Betz. Sir, over to
21 you.

22 CAPT BETZ: Thank you, Rachael. My

1 name is John Betz. I want to thank you, Rachael
2 and Sean, for inviting me to serve on this panel.
3 I guess I qualify as a local stakeholder.

4 I'm a chief port pilot with the Los
5 Angeles Pilot Service. I'm also, as Captain
6 Manning said, the chair of the LA/Long Beach
7 Harbor Safety Committee.

8 Today I'm going to talk about Port of
9 Los Angeles and our pilot service and our port
10 partners, such as NOAA, and how they help us
11 operate more efficiently while maintaining our
12 safety standards. Next slide. Actually, maybe
13 two slides, I think. Yeah, next one. There we
14 go.

15 First, I'm going to talk about
16 something near and dear to my heart, which is the
17 Los Angeles Pilot Service. We were founded in
18 1907. The L.A. Pilot Service is a team of 30
19 dedicated professionals, pilots, dispatchers,
20 deck hands, boat crew.

21 Our mission is to move vessels safely
22 and efficiently in the Port of Los Angeles. The

1 service works around the clock piloting, roughly,
2 4,000 arriving and departing vessels per year.
3 NOAA is a big contributor towards our mission,
4 towards us being able to accomplish our mission
5 of moving these vessels safely and efficiently.
6 People ask me what we do.

7 You know, nobody knows what pilots do
8 and I always tell them we're like valet parking
9 lot attendants on the waters. So that kind of
10 puts everything in perspective. But next slide.

11 Port of Los Angeles, as Captain
12 Manning said, is the seventeenth largest
13 container port in the world. Hardly anybody that
14 lives here in Southern California really knows
15 that, and a more interesting fact I think is when
16 we combine with Long Beach, because we're really
17 just one port complex, we're the tenth largest
18 container port complex in the world and the only
19 ones that are bigger are in Asia.

20 The Port of Los Angeles, we're the
21 primary gateway for international commerce and
22 business in the Western Hemisphere. We feature

1 passenger and cargo terminals including cruise,
2 container, automobile, break bulk, dry and liquid
3 bulk. We manage billions of dollars' worth of
4 cargo each year. Next slide.

5 You know our top dollar volume varies.
6 It's upwards of \$400 billion annually in total
7 cargo moved through the port. Our biggest
8 trading partners are China, Japan, Vietnam,
9 Taiwan, and South Korea.

10 It kind of breaks down -- there's the
11 dollar amounts there. I think that's from 2022.
12 But, roughly, 43 percent of our through-put is
13 from China, 12 percent from Japan, 10 percent
14 from Vietnam, and about 6 and 5 percent from
15 Taiwan and South Korea respectively. Next slide.

16 Benjamin Franklin -- we'll talk about
17 the Ben Franklin. It was kind of representative
18 of what people have been talking about, bigger
19 ships and bigger ports. As Captain Manning said,
20 the trend over the last decade is towards bigger
21 and bigger container ships, and this is a picture
22 of the Ben Franklin alongside the AP Moller

1 terminal in L.A. Harbor.

2 This picture was taken in 2015. The
3 Ben Franklin is 400 meters long, which is 1,300
4 feet. It's longer than the Empire State
5 Building, is tall and it dwarfs the largest
6 aircraft carrier the United States Navy has.

7 When it first came to Los Angeles in
8 2015 it was the largest container vessel to have
9 ever called at any port in the Americas, North or
10 South. It's 18,000 TEU 20-foot equivalent units
11 which is 20-foot containers.

12 Now it's getting almost a little small
13 but we're up in the over 20,000 TEU now as far as
14 container ships. They're, roughly, the same
15 dimensions, the same length, a little wider. But
16 the capacity keeps going up and up as they find
17 more convenient ways to store containers on deck.

18 And so why bigger? I mean, the
19 carriers, they want to realize scale economies.
20 They want to maximize capacity and minimize slot
21 cost. The end result is better efficiency and
22 that's what supply chain economics is all about

1 was moving things more efficiently at less cost.

2 These ships have typically been
3 designed to maximize capacity and you can see on
4 this ship here that the house, if you can see in
5 the picture, it's been moved forward.

6 The reason for that is so they can
7 stack containers 10 high behind the house on deck
8 without obstructing visibility from the conning
9 station and the wheelhouse. This is kind of the
10 trend these days.

11 With older ships the more you stack
12 containers higher on deck in order to maintain
13 visibility you had to taper the stack, and that
14 meant you had to keep pushing the wheelhouse up
15 and, of course, then you couldn't fit under the
16 bridges.

17 So this is the smart way to maximize
18 your deck load without increasing your height and
19 maintaining visibility.

20 But when these ships -- they keep
21 getting bigger, they start creating some issues
22 with infrastructure and navigation. Some of the

1 infrastructure issues are water depth, crane
2 height, fendering capacity at the berths, and, of
3 course, waterway dimensions.

4 Some of the navigation issues are sail
5 area. The bigger these ships get the more sail
6 area they have, the more the wind acts on them,
7 the more wind force we have and the more tugboats
8 we need to safely manage them. And also
9 restricted visibility.

10 Whenever we say restricted visibility
11 people think we're talking about fog, and we are.
12 But we're starting to realize or encounter
13 restricted visibility just from the design of
14 these vessels because the container stacks are so
15 high from the conning station you can't even see
16 the waterway anymore and that's another form of
17 restricted visibility because being able to
18 visually see the waterway is one way pilots can
19 visually ascertain where the ship is in that
20 waterway.

21 So that's a problem in and of itself.

22 Next slide.

1 So when thinking about solutions to
2 these issues we got to keep in perspective what
3 our overarching objectives are. We want to be
4 busy, we want to run a clean operation -- I mean
5 environmentally clean -- and we want to, above
6 all, maintain safety. Busy, clean, and safe,
7 which leads to safely efficient operations. Next
8 slide.

9 I'm going to talk about clean first
10 and the biggest thing with clean when we talk
11 about clean is clean air. Clean air is a huge
12 issue in California. Towards that end the port's
13 implemented programs to reduce pollution from
14 ships' exhaust.

15 Lots of you have heard about the AMP
16 program. It's an acronym for alternative marine
17 power. It's a system where ships when they come
18 in to dock they plug into a shore connection and
19 that allows them to basically access the shore
20 power grid, and they can shut down onboard power
21 generation equipment, which is typically much
22 dirtier and rely on the grid.

1 That way the ship sits idle at the
2 dock pulling power off of the shore grid and
3 emitting -- basically, it has no exhaust -- into
4 the air. It's a good system but one of the
5 problems with -- or a couple of problems with it,
6 one, it requires a tremendous retrofit on a ship.
7 Some ships have spent upwards of a million and a
8 half dollars to retrofit their systems aboard so
9 that they have the capability of plugging into
10 the shore grid. That's a lot of money.

11 I mean, if you're in liner operations,
12 you know, you got 20 years of running to L.A. and
13 Long Beach you can justify that expense. But if
14 you're a tramp, you know, a ship that might come
15 here once in a while -- a tramp carrier, as they
16 call it -- it's hard to justify that kind of
17 capital outlay just to plug in at L.A..

18 Some other problems with the AMP
19 program is it relies on the shore grid and that
20 can overtax our local shore grid, which is
21 already overtaxed with all of our home air
22 conditioning use in the summertime. So that's

1 another issue.

2 But it is a good system and it does
3 contribute tremendously to clean air. In fact,
4 I'm looking out my window right now and I can see
5 the mountains, which 20 years ago was a rarity in
6 Los Angeles. So we are making progress.

7 Another system is the one pictured
8 here. They have a different acronym for it.
9 They call it AMECS which is alternative exhaust
10 capture system. So it's a different approach.
11 Instead of shutting down the ships' power
12 generation equipment and rely on the shore grid,
13 a barge comes alongside with some processing
14 equipment aboard it that basically has this big
15 arm that reaches up to the stack and back ends
16 the exhaust out -- as this exhaust is emitted it
17 basically captures it, pulls it down onto the
18 barge, and processes it.

19 There's some advantages to that. It
20 allows the ship to just continue using its own
21 equipment and you don't have the problem with
22 having to stop and transfer over to the shore

1 grid.

2 It's also a little quicker to connect
3 than trying to connect to shore power. So we
4 anticipate we're going to be seeing more and more
5 of these barges in L.A. and Long Beach. Next
6 slide please.

7 Another part of operating a little
8 cleaner is electric yard automation, which kind
9 of goes hand in hand with automation.

10 As they switch over to automated
11 yards, electrification eliminates a lot of the
12 old fuel-driven yard equipment and so we realize
13 some clean air objectives that way.

14 Trapac Terminal in L.A. is a fully
15 automated except for the shore cranes. Same
16 thing with the AP Moller terminal out in L.A.
17 outer harbor. Next slide, please.

18 So how do we address these navigation
19 issues? Here's a picture of a ship going up L.A.
20 main channel and, as I mentioned, this gets to
21 the point where you really can't see the water
22 anymore.

1 The port spent years making
2 infrastructure improvements in anticipation of
3 these very large container vessels. They've
4 dredged, made deeper water. They brought in
5 bigger cranes. They've upgraded the wharves.
6 But what do we do about the waterways?

7 I mean, the waterways are the
8 waterways. What do you do about the increased
9 sail area of the ship and the increased windage
10 that we have on these bigger, larger vessels?
11 And what do we do about large ships meeting in
12 these narrow channels? That's another issue.
13 You know, do you want to go to one-way traffic or
14 do we have to develop ways that we can actually
15 meet inside these channels with these bigger
16 ships?

17 For many of these issues, we're not
18 able to easily engineer our way to a solution.
19 It requires a different sort of approach. Next
20 slide, please.

21 We need to modify our operating
22 practices, and we'll talk a little bit about how

1 we're doing that. But before I do, about 10
2 years ago someone asked me what our ships -- we
3 started to see these bigger ships.

4 Someone asked me if we could take a
5 bigger ship, a ship bigger than 300 meters, above
6 the Vincent Thomas Bridge in the Port of L.A..
7 I thought about it and my answer was we can do it
8 but we can't do it the way we've been doing it.

9 We've got to find new ways to do it
10 and, of course, now we're taking 365-meter ships
11 above the bridge and someday we're going to be
12 taking 400-meter ships above the bridge. So but
13 we need to find different ways of doing that.

14 And the operational solutions required
15 for these bigger ships take contributions from
16 many stakeholders. The U.S. Coast Guard is one
17 of them. Thank you, Captain Manning.

18 The Vessel Traffic Service is another.
19 A lot of the effort comes together in the Harbor
20 Safety Committee where we have a harbor safety
21 plan that addresses best practices but also
22 builds stakeholder relationships and engagement

1 that provides a forum for discussion. So when we
2 have problems around some of these operational
3 issues, the Harbor Safety Committee becomes a
4 very good forum for working out solutions.

5 And we also have partners like NOAA
6 that can provide a lot of the data that we need
7 to implement some of these best practice
8 solutions. Next slide.

9 So how do we work through this? This
10 is nothing new. Environmental occurrences have
11 always negatively affected navigation, things
12 such as fog and wind, but with these bigger
13 shifts these negative effects are magnified.
14 What was a small problem is now a big problem.
15 So what do we do when we're navigating one of
16 these behemoths through a combined waterway and
17 we encounter fog?

18 In the past we would either decline to
19 enter a port if it was foggy, which caused
20 delays, affected efficiency. Obviously, risk was
21 elevated, sometimes beyond acceptable levels.

22 So the question becomes, what's the

1 solution to remain safe and efficient? I see my
2 one-minute sign here.

3 The solution is to create best
4 practices and we call on the Coast Guard and the
5 Harbor Safety Committee and VTS to do it. Next
6 slide, please.

7 I'm going to go fast here. So one of
8 the ways that NOAA helps us is through our PORTS
9 system where we obtain real-time information
10 about wind, and that helps us understand how much
11 force is acting on the vessels and how to
12 effectively mitigate that through using more
13 tugboats, things of that nature. This kind of
14 information is critical for us. Next slide,
15 please.

16 I'm going to zip through this quickly,
17 this is a picture of basically the old school way
18 of piloting where we just use our eyeball. You
19 can see up there the leading lights, a light from
20 a buoy. Next slide, please.

21 And this is the exact same picture
22 using a pilot's carry-on unit which displays

1 navigation information right at the pilot's
2 fingertips.

3 This is the exact same picture. You
4 can see the ship on its user-drawn track line
5 entering the Port of Los Angeles. You can see
6 there's a lot more information available here
7 than there was in the previous slide.

8 This is kind of the new way of
9 piloting ships and when we encounter things like
10 fog and restricted visibility, basically we can
11 just keep operating, and we couldn't do that
12 without the information from NOAA. Next slide,
13 please.

14 So when this happens we are able to
15 maintain our levels of safety and meet our goals
16 to operate efficiently and we couldn't do this
17 without help or the information provided by
18 partners such as NOAA. It's a huge partner, or
19 it's a huge help for us. Thank you, Jeff
20 Ferguson. Next slide, please.

21 Sorry to rush through that but thank
22 you, everyone. I want to thank all of our

1 partners, thank the Coast Guard and VTS, and
2 thank you, NOAA, particularly, for keeping our
3 ports safe and efficient, and I'll be happy to
4 answer any questions later on in the program.
5 Thank you.

6 MS. DEMPSEY: Thank you so much,
7 Captain Betz. A picture is worth a thousand
8 words, right? You could go through -- many of us
9 have a great appreciation for exactly, you know,
10 what you're talking about and, hopefully, our
11 public audience can reference them as well.

12 You know, these are very descriptive
13 of exactly why we need to put PORTS wherever, you
14 know, our audience and particularly our harbor
15 pilots need them. So thank you very much for
16 that description. Much appreciated.

17 CAPT BETZ: Thank you.

18 MS. DEMPSEY: Okay. So our next
19 panelist is Mr. Haussener. Mr. Haussener, over
20 to you, sir.

21 MR. HAUSSENER: Good morning or good
22 afternoon, depending on where you are. Thank

1 you, Sean, earlier for the nice comments you made
2 about me.

3 I was looking at my notes and I spoke
4 before this committee in 2008, then in 2015, and
5 now 2024, and wondering maybe you guys forget
6 what I'm like at each time and then you invite me
7 back. I appreciate the courtesy.

8 CMANC is a regional port organization
9 out here in California that has -- everybody that
10 has a federal navigation project is a member of
11 so break waters, dredging from Crescent City to
12 San Diego from San Francisco to Stockton, and
13 California is unique. There is no state port
14 agency and generally the state does not help fund
15 any of the capital projects.

16 Up until last year the state had a
17 great deal of money and provided \$1.2 billion to
18 some of the port programs. Maritime trade
19 through California touches all 435 congressional
20 districts.

21 As most folks know, California is one
22 of the largest economies. Thirty-five percent of

1 the nation's water board trade by dollar amount
2 goes through California, which creates 4.3
3 million jobs, generates \$30 billion in personal
4 income, and provides federal revenue of over \$10
5 billion annually. Last year 21 million TEUs, 20-
6 foot equivalent containers, went through
7 California.

8 Currently the ports are investing over
9 a million dollars per day on their capital
10 infrastructure. Captain Betz commented about the
11 ships are getting bigger.

12 They're getting bigger faster than the
13 ports really expected them to and that's why
14 we're having to do crane raises, raising cranes
15 by 17 feet, strengthening wharfs and doing some
16 of those programs because of the growth in the
17 size of ships.

18 We also need a lot of partnerships and
19 collaborations. Captain Betz talked about the
20 plug-in ships. The ports of Long Beach/Los
21 Angeles for over two decades now have been
22 working towards that program even before the IMO

1 developed standards for vessels to do that and
2 we're working towards zero emissions to allow all
3 cargo and passengers to be in a zero-emission
4 framework as well as making sure all the harbor
5 craft are zero emission as well.

6 You heard Derek earlier today talk
7 about electric dredging and we're working that
8 way to get to zero for everything we do.

9 There's a dredge that's currently down
10 in Santa Barbara, one of our members, that's
11 electric and plug-in and it dredges twice a year
12 for the Santa Barbara entrance.

13 Our recreational boating components is
14 \$17 billion economic impact, 600,000-plus
15 registered boats, 300,000 industry businesses
16 supporting 45,000 jobs, and our commercial
17 fishermen land over \$200 million worth of fish
18 per year and our aquaculture production is really
19 growing as well, over 10 million pounds of
20 oysters annually and kelp and seaweed farming is
21 the fastest growing form of aquaculture in
22 California.

1 Just going back a little bit on
2 Captain Betz's comments, in San Francisco Bay
3 where I'm a member of the Harbor Safety Committee
4 as well we have navigation channels that were
5 designed pre-World War II. So you start thinking
6 about how large ships are today versus what they
7 were back in the '30s.

8 I want to talk a little bit about our
9 system, what we call interdependent ports. We
10 have two major deep draft container locations --
11 San Francisco Bay, the Port of Oakland, and San
12 Pedro Bay, Ports of Los Angeles and Long Beach.
13 Large volumes of cargo.

14 Land is valuable so the cargo owners
15 want to make sure that they're getting a bang for
16 the buck, which then causes other products,
17 automobiles, agriculture, petroleum, bulk, break
18 bulk cargo to go elsewhere and so we have Port of
19 Hueneme, Redwood City, Richmond, West Sacramento,
20 San Diego, and Stockton doing that, which then
21 leaves the smaller guys handling fisheries, some
22 recreation, maritime support, security, search

1 and rescue research, and we have an integrated
2 transportation system in the agricultural system.

3 Fertilizers imported -- 90 percent of
4 the fertilizer for the Central Valley comes in
5 through the Port of Stockton. Then we export
6 food and wine through Stockton, West Sacramento,
7 Oakland, cotton as well, those sorts of things.

8 And I talk about how interdependent --
9 so recently the Port of Hueneme has now entered
10 into an agreement with the Ventura Port District
11 to take on the squid landings from Hueneme
12 because land is so valuable. You heard the Coast
13 Guard captain talk about that's a constrained
14 port with both the commercial port and the Navy
15 and as a result there's not enough room.

16 They were looking for places 10 miles
17 away to bring automobiles into down there.
18 They're having great growth. Port of Stockton is
19 another story of great growth. About 20 years
20 ago Rough and Ready Island got transferred from
21 the Navy to the Port of Stockton.

22 They've doubled their throughput and

1 with the new tenant they got last year they're
2 expecting to double their throughput again and
3 they will be in the top 50 ports in the United
4 States here by the end of this decade.

5 Significant amount of petroleum
6 product is moved by ship and barge. An example
7 is gasoline is moved by barge from San Francisco
8 up to Humboldt Bay. One of the things that we're
9 looking at here in California is moving away from
10 petroleum products.

11 When we have talked to the refineries
12 is that they believe they're going to be moving
13 the same amount of cargo as they currently are by
14 ship. It's just going to be a different type of
15 cargo.

16 It's going to be things like animal
17 feedstock, and we already have two refineries in
18 San Francisco Bay that have made that transition,
19 which is creating a little bit of a regulatory
20 problem for us as we determine what sort of tug
21 escorts they need and what sort of non-point
22 source pollution permits they need and some of

1 those sorts of things.

2 One of the things that -- because one
3 of the other groups I work on for the Harbor
4 Safety Committee is care of the dredge working
5 group and there's a desire to support more zone
6 of confidence, the CATZOC, on more channels.

7 NOAA with the COR about three years
8 ago to get the COR to achieve a CATZOC I category
9 on the Pinole Shoal channel which reduces
10 insurance costs for the cargo owners and some of
11 the cargo owners have been asking the COR and
12 NOAA see if they can't work on doing that again
13 for some of the other situations.

14 Similar to the Port of Long Beach's
15 presentation on granting clearance the same issue
16 takes place entering San Francisco Bay, resulting
17 in some tidal delays for vessels coming in.
18 We've got a 50-foot channel and you got a 10-foot
19 swell behind you and that means that ship cannot
20 come in and has to sit out and wait as they come
21 in.

22 We've had some incidents inside San

1 Francisco Bay where a ship will have to wait for
2 low tide to go under a bridge and then high tide
3 to get into a port, and currently some of the
4 larger container ships like Captain Betz talked
5 about can only come in and out of Oakland at
6 slack water.

7 So that's a real plug for ports. We
8 certainly need to know what's going on
9 instantaneously especially in those years when we
10 have a lot of water moving and we're going to see
11 snow melt going on probably into July this year.
12 So that's a crucial thing.

13 I want to touch a little bit on
14 offshore wind. BOEM has awarded some leases here
15 in California. Offshore wind is -- we're looking
16 to meet the state goals.

17 We're going to be looking at 1,300
18 offshore wind towers that are approximately 1,100
19 feet tall and that wide as well. Draft of 50 to
20 75 feet, anchored by three one-mile long roads,
21 attached to 80- to 100-foot anchors. Nobody's
22 ever built these before. So this is all

1 speculation to a certain extent but we certainly
2 are moving forward with that.

3 The state has a goal of 25 gigawatts by 2045
4 in order to achieve this. The state says it's
5 going to require now \$12 billion in upgrades to
6 existing port infrastructure.

7 We had a recent start with the Biden-
8 Harris administration where they provided over a
9 \$400 million grant to Humboldt Bay for the
10 construction and maintenance of a terminal for
11 offshore wind and offshore wind is going to be
12 engaging the ports from Long Beach to Crescent
13 City and within San Francisco Bay.

14 The Port of Long Beach is looking at
15 a \$4.7 billion terminal tied to their wind
16 program. The Ports of San Francisco, Oakland,
17 and Richmond are all looking at being a partner
18 in this.

19 Some of the smaller harbors, Port San
20 Luis, are wondering what's their role going to
21 be. The city of Morro Bay, Crescent City Harbor
22 District, Noyo Port District, all very small

1 harbors and what's their role going to be as they
2 do that.

3 California is also looking at more
4 leases than what BOEM has and it's going to
5 probably require more dredging places like
6 Humboldt Bay. A few years ago, the COR
7 contractor wasn't able to dredge Humboldt Bay in
8 June. It was October.

9 As a result ships could not get in to
10 Humboldt Bay. There was actually shifts that
11 couldn't get in because of the breaking
12 situation.

13 And we have lots of coastal harbors
14 like that in California. I remember stopping in
15 Morro Bay one time, thought I'd sneak in and have
16 dinner. Well, they closed the harbor while I was
17 in there and three days later they finally let me
18 out.

19 We're going to have major spatial
20 issues in the maritime sector as we move forward.

21 Channel Islands northward NOAA is working
22 through the process for a fifth National Marine

1 Sanctuary off of California.

2 The state has a system of marine
3 protected areas, about 17 percent of state waters
4 currently, and it's pursuing a conservation goal
5 of 30 by 30 which includes state waters, and so
6 we'll be including more no-fishing zones, we
7 assume.

8 The military has extensive use for coastal
9 waters. There's aquaculture, commercial and
10 recreational fishing, ecotourism including whale
11 watching Native American cultural uses, offshore
12 wind, potentially marine kinetic energy, as well
13 as commercial traffic.

14 It's going to be a crowded ocean out
15 here as we do all these things. I'm a
16 recreational boater and I've cruised on my own
17 boat on all four coasts of the United States.
18 About eight years ago I commented on the value of
19 pocket charts and how I carry one of in my sea
20 bag when I go out, and now we're all going
21 electronic.

22 I found there's a steep learning

1 curve. I take a lot of folks out sailing and
2 I've got a rule. You can either drive the boat
3 or you can look at your electronics but you can't
4 do both because generally folks can't steer when
5 they're doing something else and they can't keep
6 a proper lookout when they're doing something
7 else.

8 So I want to applaud the committee's
9 recommendations regarding the electronic
10 navigation charts and paper charts. That's a
11 good step. We've got to do an awful lot to
12 educate recreational boaters as we move forward.

13 The thing that I have talked before
14 about is the centralized data depository for
15 depth data. I'm glad to see NOAA is starting to
16 embrace the concept of crowdsourced data for
17 depths and that sort of stuff.

18 We have recreational areas in San
19 Francisco Bay and other places that don't get
20 surveyed because there's not enough time, not
21 enough equipment.

22 But if we were able to start getting

1 some of the crowdsourced data from some of the
2 navigation companies and others we might be able
3 to provide that to somewhere and that'd be an
4 interesting thing for NOAA to see if we can't
5 figure out a way to capture some of that and
6 provide it to the public to collect, process,
7 use, and share the data.

8 I also want to give a plug for high-
9 frequency radar. We're going to be expecting
10 changes to upwelling and surface currents with
11 all this offshore wind and certainly need to know
12 more about what's going on in HF and what the
13 surface currents are, especially for some of the
14 slower boats that are doing six or eight knots.
15 California is very unique.

16 We have hundreds of miles between
17 harbors of refuge, if you can even call some of
18 the harbors actually harbors of refuge because of
19 breaking bars.

20 I'm a supporter of the creation of
21 dashboards, and I know NOAA can't necessarily do
22 that and we leave it to the private sector. But

1 certainly having buoy data, HF radar, surface
2 winds all in one spot makes it pretty nice. The
3 picture Captain Betz had was pretty nice.

4 Coastal buoy network -- the West Coast
5 is much different than the East Coast. I was
6 talking to a captain the other day who was stuck
7 up in Puget Sound and asking for my advice as to
8 how to get down the coast because every time the
9 captain wanted to leave it was good here but it's
10 bad there and didn't have the legs to make it
11 down.

12 So we really rely on the coastal buoy
13 network and right now we have numerous buoys on
14 the Pacific coast that are down and TBD in terms
15 of when we're going to be able to get them
16 repaired.

17 I'm a firm believer in knowing what
18 swell height is and what the period is between
19 swells in order to make a decision as to whether
20 we're going to go or not go.

21 Sediment. Sediment has always been
22 one of my big issues. Dredging is part of

1 sediment. But from a larger perspective, I
2 encourage the panel to be more aggressive in
3 stating there's other beneficiaries of your
4 hydrographic surveys, and Jeff Ferguson had done
5 some work for sediment management with some of
6 the NOAA resources a couple of years ago in north
7 San Francisco Bay.

8 California has an eroding coastline.
9 You got some other speakers that will probably
10 speak on that tomorrow. But our knowledge of
11 sediment transport, especially fine grade
12 sediments, is woefully lacking.

13 Similarly, I mentioned that there's a
14 need for better understanding of upwellings.
15 They're going to probably be changing as all this
16 floating wind -- offshore wind goes into which
17 create highly productive biological areas and how
18 to replicate them.

19 NOAA helped fund something called the
20 multi-decadal estuarine sediment program called
21 SEAMLESS, which support decision needed related
22 to resilience planning and coastal management,

1 estimating future sediments and dredging within
2 the sediment basin. You did this for Newport Bay
3 and it'd be really nice to be able to expand that
4 for other places.

5 We have an awful lot of places in
6 California where the natural environment is going
7 to sink. It's not going to get enough sediment
8 in time and as a result the wetlands are going to
9 go underwater.

10 We need to do something to protect
11 them. We also have communities that are of lower
12 income than others and they don't have any way to
13 get out of the way or retreat and we need to do
14 something, and sediment is what we're going to
15 need in order to protect both the natural and
16 built infrastructure as we move forward. So
17 anything you can do to help will be greatly
18 appreciated.

19 Thank you for your time.

20 RDML EVANS: Hi, Rachael. I'm not
21 sure if you can hear us but you're muted.

22 MR. HAUSSENER: I got your last

1 second. Nope.

2 MS. DEMPSEY: Okay, there we go. Can
3 you hear me now? All right.

4 MR. HAUSSENER: Yes.

5 MS. DEMPSEY: My apologies.

6 Something's going a little wonky and my sound is
7 not working properly. My apologies.

8 Jim, I took a ton of notes and I
9 actually ran out of room on my note paper. I
10 want to say thank you, though, for mentioning the
11 equity piece because that is certainly something
12 that we have been looking at on how we can, you
13 know, make those considerations for our partners
14 and the communities that we work with. So thank
15 you very much for that.

16 I also appreciate you mentioning the
17 Port of Stockton. Shortly after I arrived last
18 year I did have an opportunity to go up there
19 after the previous years' snows in the snow melt
20 that transported all that sediment and cut off
21 the Port of Stockton for some ships.

22 And so, yeah, definitely a huge

1 concern because, you know, not necessarily
2 something that everybody that deals in the
3 maritime industry thinks about, you know, those
4 upstream, so to speak, effects on how that's
5 going to impact the shipping and the timing and
6 when you get stuck in port and how quickly you
7 can get a dredge there.

8 So I appreciate very much you bringing
9 that up. Okay. So with that, let's move ahead
10 to Captain Louttit. Captain Louttit, over to
11 you, sir. Thank you.

12 CAPT. LOU TTIT: Good morning,
13 Administrator Dempsey and members of the HSRP.
14 I'm here with Julie Thomas who was mentioned
15 before, Captain Kevin McCloskey at the L.A. Port
16 Police, and Wendy Louttit who's project manager
17 for the new queuing system for labor that helped
18 solve the backup in the Ports of Long Beach.

19 So here is our beautiful building on
20 a hill, and I'm not going to talk much about the
21 marine exchange itself because I got some
22 fabulous other input from other partners. Next

1 slide, please.

2 So you saw this picture before but I
3 just quickly wanted to point out in the lower
4 left hand corner of the satellite image is where
5 the marine exchange is. It's right near where
6 you should have been, where this meeting was in
7 person.

8 But I'll also point out just the blue
9 line that I drew down the middle of the slide,
10 Los Angeles on the left to the west, Long Beach
11 to the east on the right.

12 And so while the two ports are side by
13 side it's important. The old memory aid you've
14 seen one port, you've seen one port -- there are
15 differences even though they are side by side and
16 connected. With that, next slide, please.

17 So this was the input that I got when
18 I said, hey, I've got to brief the HSRP, does
19 anybody have any input. So I got input from the
20 Battleship Iowa Museum, the Los Angeles Pilot
21 Service, the Chevron offshore marine terminal in
22 El Segundo, Jacobsen Pilot Service, and the Los

1 Angeles Port Police, and Captain McCloskey of the
2 of the Port Police is here with me today. Next
3 slide, please.

4 So Captain Manning mentioned the fact
5 that the ships were getting bigger and that we're
6 going to have a -- or there's a project in
7 progress now to expand the anchorages. So the
8 image on the left is the current configuration of
9 anchorages.

10 The circles are on the chart, and
11 because we now have ships that are 400 meters
12 long in anchorages which are 600-yard radius that
13 doesn't allow enough space between the ships.

14 So if you see the ones that are shaded
15 purple that's what we're calling the
16 checkerboard. So with the permission of the
17 Coast Guard and the Harbor Safety Committee we're
18 not using the purple anchorages. We're basically
19 spacing the ships out by using only half of the
20 anchorages.

21 The image on the right is from the
22 survey that was done in 2013 of the anchorages.

1 Thank you, Fairweather and, thank you, Rainier
2 for coming back in 2018. If we're going to be
3 anchoring ships as deep as we are to 69 feet we
4 need to know where the bottom is. So thank you,
5 NOAA, for that. Next slide, please.

6 So the next two slides go together and
7 my talking point is thank, NOAA, for having
8 electronic charts that can input into a variety
9 of different geographic information systems.

10 So in this case it's the Kongsberg
11 system that we use for the vessel traffic
12 service. The image here was in the height of the
13 backup. You can see the blob of white in the
14 upper right hand corner -- that's the 55 anchored
15 ships at the time -- and all the circles were the
16 62 drifting ships.

17 So a total of 114 was the maximum that
18 we had under our care and thank you, NOAA, for
19 having accurate charts that could plug into a
20 Norwegian system that we could keep everybody
21 safe. Next slide, please.

22 So here's another image, again, with

1 NOAA's electronic charts plugging into what's
2 called the Pacific Tracking 2.0 system. It's
3 primarily used by the marine exchange of Alaska
4 but in this case for the audience that we needed
5 for this image we needed the depths turned on.
6 So it's basically the same thing you saw before
7 but into a different geographic information
8 system.

9 So my just request in NOAA, my
10 recommendation to NOAA, is as you move forward
11 make sure that all of your electronic systems can
12 be integrated into a variety of different
13 geographic information systems. With that, next
14 slide.

15 So this was the input that I got from
16 the Battleship Iowa which is here moored in the
17 main channel and they thank NOAA for the
18 information that they have already in terms of
19 tide.

20 But what the Battleship Iowa needs is
21 improving the current and/or surge measurements
22 in the main channel. Apparently the surge back

1 and forth impacts the mooring system that they
2 have for this 900-foot World War II battleship.

3 And so I'll leave that NOAA, if you
4 can do anything about that, but that's the input
5 we got from the museum ship. Next slide, please.

6 So Captain Betz already spoke so I
7 won't spend much time on this slide. I'll just
8 go down to the bottom where it says "a happy
9 pilot" and I'll point out in the image -- the
10 picture on the right this is actually Captain
11 Strong of Jacobsen Pilot Service I was riding
12 with.

13 That's an example of the portable
14 piloting unit that Captain Betz mentioned, which
15 is brought aboard by the pilots for them to use
16 to help calm these huge ships and, as Captain
17 Betz mentioned, the fog and whatnot.

18 So basically as Captain Betz said he's
19 happy with what NOAA gives for the pilot service.
20 Next slide, please.

21 So this was an interesting one where
22 you can see the circle up the coast from the

1 ports of Los Angeles and Long Beach is the
2 Chevron offshore marine terminal in El Segundo.
3 Here's where they bring in the big tankers. They
4 anchor the bow with the ships to anchors.

5 The stern ties to a ring of buoys and
6 there's a flexible pipe that goes ashore. So
7 basically Mr. Selga is saying that they are
8 getting what they need in terms of tide charts
9 and whatnot that are critical to their operations
10 and under keel clearance for this terminal up in
11 El Segundo.

12 But it's interesting down at the
13 bottom where he says charts are now considered
14 antique. NOAA should show distinction between
15 the use of the terms and functionality of ECDIS
16 or ENC with respect to the safety of navigation.
17 So I thought that was an interesting comment that
18 you could do with what you want. Next slide,
19 please.

20 So the next half a dozen slides go
21 together and I got them from Jacobsen Pilot
22 Service. Captain Betz mentioned when Ben

1 Franklin arrived in 2017 it was the biggest ship
2 to ever come into the ports.

3 It then got eclipsed by MSC MIA,
4 23,000 TEUs coming in on the 1st of April 2020.
5 Next slide, please.

6 So I thought it was important here to
7 show just how tight the tolerances are. It may
8 look in the image on the left that there's lots
9 of water for that ship to float in.

10 But the image that you could see on
11 the right is when the pilot has put in the depth
12 of the water so you can see how close the shoal
13 is to the bow of the ship and you can see how
14 close the rock dike is to the stern of the ship
15 and how the pilot can get the ship into that
16 berth with those tight tolerances using the
17 portable pilot unit and the NOAA charts. Thank
18 you for the accuracy of those. Next slide,
19 please.

20 So Captain Betz briefly covered the
21 visibility issues and I'm going to just touch on
22 that one more time. So here's a big container

1 ship with the house forward where you can see the
2 Arrow and the smokestack back aft. This is what
3 they've done with the bigger ships so you can
4 actually see over the bow. Next slide please.

5 In the image on the right you can see
6 what the pilot is actually able to see when
7 they're looking aft. So you can see the
8 smokestacks sticking up but basically just this
9 huge array of containers, the image on the right
10 with the ship going into the Long Beach container
11 terminal.

12 So this may be the newest container
13 terminal that was built. It was optimized for
14 these types of ships. But notice how close the
15 tolerance is on the port side there where there's
16 a tugboat circled and on the starboard side there
17 how close it is to the adjacent ship.

18 These moves can only be done because
19 we have the accurate NOAA charts and the
20 equipment to display it. Next slide please.

21 So here's a tanker going into the Port
22 of Long Beach inner harbor. Again, the picture

1 on the right makes it look like there's lots of
2 water on either side of the ship but the image on
3 the left from the PPU you can see how tight the
4 tolerance is between the ship and the shoal and
5 the water that's deep enough to float the ship.
6 Next slide please.

7 So next half a dozen slides go
8 together, these from Captain McCloskey of the
9 Port Police, and what I'm going to do here -- up
10 to now we've been talking basically about
11 latitude and longitude of the ships moving
12 horizontally on the surface of the water but what
13 Captain McCloskey and I encourage you to read the
14 slides later with all of the words is what they
15 often are doing under the water to conduct proper
16 port operations in the Port of Los Angeles.

17 The last bullet is also interesting
18 regarding datum. When landed survey markers are
19 moving as they are in the Palos Verdes area who
20 and how decides whether to use the moving survey
21 markers to say where things are or ships
22 to GPS. I thought that was interesting input

1 from the Port Police. Next slide, please.

2 So this was a case during the backup
3 where you can see in the image where it says lost
4 anchor. A ship pulled up its anchor one day and
5 said the anchor was missing and had been left on
6 the bottom. The chain broke.

7 Unfortunately, this is one of our
8 prized anchorages and you can see the image there
9 where we colored it red when the anchor was still
10 in the anchorage and on the bottom and,
11 unfortunately, it was a prized anchorage.

12 Thank you to the Port Police for
13 having the right underwater robot to go out and
14 find the anchor and then have the sensitivity to
15 know where it was latitude and longitude plus the
16 height off of the bottom. Gave that information
17 to Mr. Ferguson -- thank you, Jeff -- who was
18 able to put it on the chart, and then working
19 with the Coast Guard you can see the image on the
20 right with the green circles where it says lost
21 anchor obstruction.

22 We move the anchorage so that an

1 anchor that's left on the bottom is outside the
2 circle and we could again get that anchorage back
3 so we could use it for the ships that are waiting
4 off of Los Angeles and Long Beach for a berth.

5 So, again, here the fact that the
6 chart was able to be used by the Port Police and
7 as it says their success even working off of
8 common charts, depth tide, and weather data and
9 you'll hear that theme through the next couple
10 slides. Next slide, please.

11 So Captain Manning mentioned Sail
12 Grand Prix. These are 50-knot catamarans. They
13 go around the world and it was the first time
14 they'd ever come to Los Angeles in 2023 in July.
15 So next slide, please.

16 One of the challenges is they want
17 this to be a spectator sport so you can see on
18 the left side where in little blue box where I
19 put grandstand.

20 So originally this is where they were
21 planning to have the sailboat races so you could
22 have a good spectator sport. But -- next slide,

1 please -- the problem is if you look at the
2 chart, and I know it's kind of hard to see but
3 there's a rock dike right where they were
4 thinking of having 12-foot draft catamarans when
5 they are not foiling in 12 feet of water over
6 this rock dike and so being able to use the chart
7 they were able to reorient where they put the
8 racecourse and make it in a safer place.

9 The other thing that's interesting is
10 there were these day boards as you can see in the
11 picture, which in one way are supposed to be an
12 aid to navigation to show mariners where the rock
13 dike is but you can see in the one on the right
14 with the yellow arrow people, unfortunately,
15 whack into them and that's part of why they had
16 to move the race course because these aids to
17 navigation would have actually been a hazard to
18 navigation to the racers. Next slide, please.

19 So another big challenge is you have
20 high-speed racing in a busy commercial waterway.
21 When they were having the races they didn't want
22 to disturb everything else that's going on plus

1 event control was bifurcated, as it says, between
2 Los Angeles and London. But the action taken was
3 essential tug and barge traffic was adjusted out
4 of the normal channel and they slightly altered
5 the large ship traffic schedules. But, again,
6 the bumper sticker success due to working off the
7 common charts, depth, tide, and weather data.

8 Next slide, please.

9 So the next two slides go together.

10 This was a case, unfortunately, of a mid-air
11 plane dates -- back in 2016. So where you can
12 see the big arrow where it says one reporting
13 source fishing boat that fishing boat reported to
14 us, reported to the Coast Guard, they just saw a
15 plane crash in the water where you see where it
16 says first plane crash.

17 So first responders went out to try to
18 get the plane and the people off the bottom.
19 There was loss of life. But we didn't know at
20 the time because nobody saw the mid-air collision
21 and nobody saw the second plane go in the water
22 until Torrance Airport called and said, we're

1 missing a plane. So then we knew there was a
2 second plane but nobody had seen it go in the
3 water.

4 So for several days the port police
5 and others basically mowed the lawn looking for
6 the bottom -- the plane on the bottom. What my
7 vessel traffic people did was say we saw the
8 first plane go in the water because of the
9 reporting source and actually the radar was
10 sensitive enough to see the splash.

11 So they looked around and found
12 someplace else where they had that green image
13 which is our radar showing a splash. They said
14 look here and the port police was able to find
15 the plane on the bottom of the ocean.

16 Again, because of the latitude and
17 longitude in the accurate chart they were able to
18 do that. So next slide, please.

19 So here you can, again, see the images
20 of the two planes on the bottom from the port
21 police's equipment and the latitude and longitude
22 of the two planes on the chart so they could

1 recover them with proper equipment, again,
2 successfully working off of common charts, depth,
3 tide, and weather data. So just two more slides
4 for me. Next slide, please.

5 So this being an important outload
6 port for the Navy, one of the things that happens
7 periodically is the Navy coming up to do
8 minesweeping exercises. So accurate charts with
9 objects on the bottom helped the Navy and the
10 port police determine what's new.

11 So by mapping everything every now and
12 then they can determine what's down there today,
13 for example, a refrigerator, a 55-gallon drum or
14 a second boat. So then if they come back to an
15 exercise six months from now they already know
16 what's on the bottom. They can then just check
17 what's new, which saves time checking what's old.
18 So next slide, please.

19 So this was a tragic case that you may
20 have heard about with the dive boat Conception
21 which experienced a fire and loss of life back in
22 2019 and there are a couple of points on this.

1 One is this was 80 miles from where the port
2 police normally does business so they took their
3 dive boat up there.

4 They had the proper equipment so were
5 selected after this vessel sank to do the survey
6 of the bottom and to find where the debris field
7 is.

8 They were working with multiple
9 partners in unfamiliar waters but the port police
10 remotely operated vehicle was able to map the
11 wreck location and the debris field. So you can
12 see the image on the right in Platts Harbor with
13 going back and forth, the mowing the lawn
14 analogy.

15 But they were able to work with
16 multiple partners in unfamiliar waters due to
17 common charts able to integrate with different
18 navigation systems, depth, tide and weather data.
19 And that's my piece.

20 So just in closing, in the Port of
21 L.A. and Long Beach the challenges are the huge
22 ships getting bigger that was mentioned before,

1 the deep draft tankers to 69 feet we'll talk
2 about this afternoon -- narrow channels, tight
3 schedules, bad weather, everybody working
4 together.

5 The image on the left is the Port of
6 L.A. and Long Beach on a busy typical morning and
7 we talked about before we've got the high-sided
8 container ships mixed with the deep draft tankers
9 and the vessel traffic service record of success,
10 more than 800,000 safe transits in actually 30
11 years as of last week of operations.

12 And that's all and I'm ready for your
13 questions.

14 MS. DEMPSEY: All right. Many thanks,
15 Captain Louttit. That was a fantastic brief and
16 really comprehensive when talking about, you
17 know, all the other issues that LA/Long Beach is
18 managing external and in addition to the major
19 shipping coming into the port. So we really
20 appreciate that perspective.

21 Now it's time that I want to open this
22 up for questions. I would ask a little bit of

1 housekeeping here just briefly, that if you have
2 a question please come up online for our
3 panelists and I'll go ahead and call on you.

4 We, unfortunately, in this venue don't
5 have a hand raising but if you don't mind coming
6 up online and putting your hand up we'll go ahead
7 and call on you. We have about 20 minutes for
8 questions. So with that I'll open the floor.

9 Okay. So I'll go ahead and break the
10 ice. Then I have a couple more questions. I
11 want to go back to -- let's see, I want to go
12 back to Captain Manning.

13 So I have a -- you know, you mentioned
14 that you're wearing five different hats at
15 different times. I have a great appreciation for
16 that and I just wanted to ask you, you know, it
17 must be really challenging to meet all your
18 partners' needs there.

19 You know, you're dealing with
20 different time scales. You're dealing with
21 different spatial scales. You're dealing with
22 different authorities. What is your biggest

1 challenge in supporting your mission when it
2 comes to that, the environmental side of the
3 house?

4 CAPT. MANNING: So I think my biggest
5 challenge is I need more than 24 hours in a day.
6 But from all of the challenges that we face, like
7 I said, our team is comprehensive. We have lots
8 of capabilities.

9 But in the end, as you just heard a
10 number of folks from this port community, it's
11 about collaboration and really engaging the
12 stakeholders so that you're getting all of the
13 information that they're having and using in
14 their daily operations.

15 You know, from our operators of the
16 cutters in the small boats, I think the things
17 they're using with the NOAA tools provided to
18 them are just one element of their risk
19 management and so, you know, it's a number of
20 things that go into making sure that they have a
21 safe evolution and I think that's probably one of
22 the most important is to engage with the

1 stakeholders and other port and waterway users
2 to make sure that they've got the whole picture
3 because things happen here quickly.

4 If you're not staying in touch with
5 everybody something could probably happen that
6 you didn't know within the port complex and which
7 leads to accidents. So I don't know if that
8 sufficiently answered your -- or scratched your
9 itch of your question there. But --

10 MS. DEMPSEY: No, thank you very much.
11 I appreciate that. So now that we've
12 successfully broken the ice I understand Mark
13 Manes has his hand up. I'm sorry, I don't see
14 you, Mark. Go ahead, please.

15 CAPT. MANES: Hi. Mark Manes with the
16 San Francisco Bar Pilots. I actually had three
17 different questions but I'll start with my
18 biggest one first, the one that I think for us,
19 and that is we've had several meetings now with
20 Scott Humphrey at the Marine Exchange here in
21 Northern California in regards to -- and I
22 believe, Rachael, I think you were at a meeting

1 with me at our office if I'm not mistaken maybe
2 a year ago.

3 We're looking at increasing our NOAA
4 PORTS system significantly in San Francisco Bay.
5 As some others have mentioned here we have the
6 Port of Stockton and the Port of Sacramento,
7 which (audio interference) now and we have very
8 little data up there.

9 As a matter of fact, we have zero
10 harmonic NOAA station. We have no NOAA station
11 in the Port of West Sacramento, which is where
12 the ships are. The NOAA station that is
13 referenced is actually on the other side of a
14 dike that is closed off on the old Sacramento
15 River. It's not actually connected to the port
16 whatsoever because the port is on a cut.

17 So we've asked -- the time is now for
18 NOAA to add a NOAA harmonic station within the
19 port for us to use to figure out drafts for
20 ships, max draft loading and things like that.
21 Port of Stockton same issue.

22 We don't have a harmonic station there

1 either. The nearest harmonic station is about
2 eight miles away from the port and it can vary
3 pretty significantly because that's where the
4 river runs in to the port and that's when we had
5 all that problem with the dredging, with the
6 sediment coming in.

7 So what we're trying to do, and I had
8 a meeting maybe a few weeks ago with Scott and
9 several other big players within the system. We
10 want to try and set up kind of a port district
11 where we have sort of all of the ports in a way
12 contributing into a fund to help us pay for
13 ports, systems, ports' maintenance, improvements,
14 maybe security cameras, maybe -- visibility
15 cameras for us is really important and we're
16 wondering if -- we know that there's some ports
17 in Texas that have already done this type of
18 thing for security and we're looking for help in
19 coming up with ideas on how to get the port
20 players involved to sort of contribute to almost
21 like an HOA or a fund to basically pay for the
22 port sensors and the increase in the ports.

1 And as far as the harmonic stations
2 that's a NOAA issue and we really need your guys'
3 help, Rachael, getting some proper NOAA stations
4 and I think that getting the port sensors would
5 help you also get the harmonic station accurate.
6 I'll get at that one for now. I've probably
7 taken up too much time.

8 But the other two, real quick, are --

9 MS. DEMPSEY: Mark, are you still
10 there?

11 MS. DENTLER: So we need to make these
12 be just questions from the HSRP members only and
13 not from the public. Mark, if you would like to
14 submit a question to us as a public comment
15 please email us and we will gladly read your
16 comment into the public comments during that
17 time. Thank you.

18 MS. DEMPSEY: Okay. I just wanted to
19 jump in. Mark, your question is appropriate. I
20 really do appreciate it and, you know, this is
21 something that has not fallen on deaf ears for
22 sure.

1 We are very sensitive to the needs.
2 So I do appreciate the comment regarding the
3 PORTS district that we discusses. So happy to
4 have that conversation with you and appreciate
5 any input you provide to the panelists.

6 So with that, I want to go ahead and
7 go to Julie. I believe Julie had a question.

8 MEMBER THOMAS: I do. Thank you.
9 What great presentations for everybody. I'd
10 really like to thank them all, and I have a
11 couple comments, questions so -- but I know
12 others on the panel probably do, too. So I'll go
13 for first and then, Mary Paige, I see you on
14 there, too.

15 Captain Betz, good to see you, and
16 several years ago I think I heard one of your
17 presentations in talking about automation of
18 vessels within the ports. Can you just comment
19 on that? Like, is that still a thing or what's
20 happening there?

21 CAPTAIN BETZ: Automation in what
22 sense, Julie?

1 MEMBER THOMAS: I think these were
2 vessels coming into the port or, I don't know,
3 self-driving vessels. What was -- there was
4 something you were talking about.

5 CAPTAIN BETZ: Well, you know, we had
6 theoretical conversations about that in
7 anticipation of, you know, we keep hearing about
8 vessels that are going to have basically self-
9 driving capability and, you know, we haven't seen
10 anything like that yet.

11 Nothing like that I know of is
12 actually on the drawing board. Crowley just had
13 delivered and that eWolf, which is an all-
14 electric tugboat down in -- I believe it's in San
15 Diego right now -- that will have that
16 capability, as far as I understand, to be
17 controlled pretty much in an automated sense.
18 Now, whether it can operate with no one aboard
19 I'm not sure.

20 MEMBER THOMAS: Okay.

21 CAPTAIN BETZ: I think it's got that
22 capability designed into it But I don't think

1 they're going to be actually using it that way.

2 MEMBER THOMAS: And I'll ask one more
3 real quickly. There was a lot of -- you
4 commented on the ENC -- the transition chart now
5 to the ENC.

6 We've had a lot of discussion within
7 the HSRP too about this and how best to get the
8 word out to navigation in the maritime community
9 on the ENCs and, I guess Captain Manning, Captain
10 Betz, I wouldn't mind just your two-second
11 comment on that, if you feel it's really going
12 well and if these are really -- like, what are
13 you feeling as far as the integration of the ENCs
14 now?

15 CAPT. MANNING: I'll go first and then
16 I'll let John give you the correct answer. So
17 just from feedback from our, you know, boat
18 operators and our ship drivers, one of the inputs
19 or requests kind of they had was with the updates
20 if it was on an understanding that they're going
21 to be kind of episodically based on those things
22 that change.

1 But if there's a update that's on a
2 periodicity that they could kind of put on the
3 calendar to say, hey, I need to go in and make
4 sure that all the updates are on there and
5 working that would be something that would be
6 nice.

7 I also got some input from our cutter
8 COs that said that they're working perfectly and
9 I think for the generation of folks that we have
10 operating our equipment it actually is welcome.

11 I would say there's still some old
12 school folks out there that wouldn't mind having
13 a paper copy in the back of their pocket. But
14 definitely ENC is definitely worked for him. So
15 that's the input I'm getting from my team.

16 MEMBER THOMAS: Thank you. Do you
17 have anything additional, Captain Betz?

18 CAPTAIN BETZ: Yeah, Julie. I guess
19 one of the biggest things that, you know, there's
20 some hand wringing over is the phase-out of paper
21 charts. I don't know if that's part of your
22 question or not.

1 But Jeff Ferguson has been doing a
2 very good job of keeping the local stakeholders
3 apprised of the phase-out as it's occurring and
4 the move to full, you know, electronic charts and
5 we've done a little informal poking around and
6 talking to people about how they feel about this
7 and most of the feedback we get is positive.

8 I haven't heard anybody express too
9 much consternation over the fact that paper
10 charts are going away and I originally had the
11 most concern about the rec boat sector because I
12 thought, well, what are they going to do.

13 And I did a little bit of informal
14 surveying amongst my contacts in that sector and
15 found that most people weren't concerned about it
16 at all. They're already relying off mostly
17 exclusively on electronic charts and I think part
18 of that is when you're on a rec boat or a fish
19 boat or something else you don't have a chart
20 table big enough to fold out a paper chart. So
21 a lot of them weren't using those products
22 anyway. So but so far I think it's going well.

1 MEMBER THOMAS: Okay. Thank you.

2 Rachael, I'll turn it back to you and
3 let others talk on the panel.

4 MS. DEMPSEY: Thank you, Julie.
5 Qassim, over to you, please.

6 MEMBER ABDULLAH: Yeah. Thank you
7 very much, and a great panel definitely and thank
8 you all for highlighting NOAA ENC role in the
9 ports' navigation and the incoming vessels, and
10 I think my question really relates to what Julie
11 just brought up for Captain Betz, John Betz.

12 You showed a slide about the fog and
13 the precision navigation and that's a topic we've
14 been tackling for a couple years now and HSRP is
15 very dear to our heart and I was wondering what
16 seemed to you suppress we know the area. I got
17 the impression maybe some boats are coming and
18 using the precision navigation instrument role we
19 call it in the aviation.

20 So but in your opinion all of you
21 like Captain Betz and others what do we need to
22 make it happen? I mean, is the PPU not ready for

1 it? I mean, we have a great ENC.

2 We have a great GPS and navigation
3 now. How close are we from kind of driverless
4 boat, like, with a precision navigation tool?

5 Thank you.

6 CAPTAIN BETZ: Well, I mean, I think
7 there's two issues there and the way I understood
8 Julie's question was, you know, are we seeing
9 fully automated, you know, ships that have the
10 capability to operate without a person on board
11 and the answer to that is no, not yet.

12 And the other question is are the
13 people that are on board the ships right now
14 using these precision products to be able to
15 navigate a ship, say, in restricted visibility
16 with comfort and confidence and I would say a
17 qualified yes because for it's going to depend on
18 the pilotage ground and the geography and
19 environmental circumstances.

20 So I don't like to speak for a pilot,
21 say, in a different pilotage ground. Now, in Los
22 Angeles our issue is not so much current because

1 we don't have a lot of current. We do have wind
2 at times.

3 But the real issue we have is big,
4 big, big, big ships in small, smaller and smaller
5 places and as the Captain Louttit showed you some
6 slides, some of the tolerances are getting very
7 small.

8 And the answer from my perspective is
9 yes, we can use these precision products on our
10 PPU's to drive these ships in and out of these
11 areas with a very, very, very small tolerances
12 just as Captain Louttit showed.

13 And depending on pilot comfort and
14 captain comfort -- master comfort -- some
15 captains don't like it when they can't see. But
16 we do have the capability to bring these ships in
17 all the way to the dock in very restricted
18 visibility conditions using these precision
19 navigation tools, the charts, and the PPU's.

20 We've been doing it in Los Angeles for
21 a long time. They've also been doing it in Long
22 Beach. So the answer to that question is yes,

1 and we couldn't do it without those precision
2 tools.

3 We have to have -- there's two things.
4 We have to have the precision position and the
5 precision chart and then we have to have a
6 software and, you know, a PPU system that is
7 reliable. Then if we have those three things,
8 and I feel that we do, we're fine.

9 MEMBER ABDULLAH: Thank you.

10 CAPTAIN BETZ: I hope that answers
11 your question.

12 MEMBER ABDULLAH: Yes. Yeah. Thank
13 you very much.

14 MS. DEMPSEY: Okay, everybody. I'm
15 going to jump in here real quick. We have three
16 more questions. We're going to go Kim, Mary
17 Paige, and then Nicole, and then we're going to
18 have to wrap things up.

19 So, Ms. Holtz, over to you, please.

20 MEMBER HOLTZ: Hi. Thank you.

21 Captain Betz, so I was curious has the
22 Port of L.A. switched over to using precise

1 navigation for bringing all their ships in yet?

2 Are you in the process of doing that?

3 CAPTAIN BETZ: The pilot service we've
4 got we have PPU's for each pilot and now -- you
5 know, when you say precision equipment, we have
6 not put the S-100 charts on our PPU's at this
7 point.

8 We have the capability to do that and
9 at some point we probably will start doing that
10 when we see a need for it. We've got one area
11 that we're looking at right now that's extremely
12 tight, for lack of a better word, and it's a
13 slope that's underwater that we're dealing with,
14 a grounding line that's underwater that you can't
15 really see. And so we're probably going to bring
16 in the S-100 charts and put them on our PPU's just
17 for that particular piece.

18 But, you know, if we're driving a ship
19 into, you know, like we like to say most drafts
20 in the Port of L.A. being a dredged channel
21 there's not too many places you can go aground.
22 You can just bump into the dock since it's deep

1 right up to the fender line.

2 So having very precise soundings is
3 important to a few areas in the port but not
4 everywhere.

5 MEMBER HOLTZ: Okay. Thank you.

6 CAPTAIN BETZ: And it's available if
7 we want to use it.

8 MS. DEMPSEY: All right. Captain
9 Betz, thank you very much.

10 Next over to Mary Paige.

11 MEMBER ABBOTT: All I can say
12 initially is wow, just wow. The information that
13 all of you shared was kind of frightening. As a
14 recreational boater you also showed me then and
15 informed me that the commercial side is very
16 similar to the recreational side and it depends
17 on where you are doing your boating.

18 Mine is on the west coast of Florida
19 so 20 feet is deep so I can't imagine what you're
20 going through. At the same time, the pictures
21 that you showed told us a lot and looking at
22 across the forward on one of those large

1 container ships and seeing the waterways and it
2 all looked good. I had to remind myself if you
3 see a bird standing there it doesn't mean that it
4 can walk on water. It's shallow. So I assume
5 that there's similar things that you have
6 visually.

7 But my question is not with regard to
8 depths and such. It goes back to Derek Davis, if
9 he's still available.

10 MR. DAVIS: Hi. I am still here.

11 MEMBER ABBOTT: Yay. In today's -- I
12 mean, we're such an instantaneous society and our
13 expectations are now for work that you have been
14 working on and getting permits probably and input
15 and feedback and approvals and whatever. You're
16 looking at maybe 2031 for a project to be done.
17 Data is changing, as we heard. Equipment is
18 changing. What tools do you need to make your
19 job more efficient and safe?

20 MR. DAVIS: Well, it's a great question
21 and as I mentioned, we're currently in the design
22 phase working, collaborating with the Army Corps

1 of Engineers and they actually are going to be
2 doing the design for the deep draft navigation
3 project and will be doing the work as well.

4 So we'll be coordinating with the port
5 pilots and the port survey staff as well as Army
6 Corps' hydrographic surveys to complete the work
7 but it is going to take some time to complete the
8 work and do all the predredge and postdredge
9 asymmetry surveys and create the maps.

10 So if the port survey team as well as
11 the Army Corps survey team brings in any new
12 equipment or any new techniques that may be
13 employed in that time to provide the actual
14 surveys but the time it will take to complete the
15 work will be about three years. So you're
16 correct, about 2031. I don't know if I can
17 answer the question exactly but, hopefully, that
18 information can give you some idea that we do
19 have the flexibility and the time to make
20 adjustments and refinement to work on the design.

21 MEMBER ABBOTT: Okay. All right. I
22 feel for you.

1 MR. DAVIS: Thank you.

2 MS. DEMPSEY: Okay. And, everyone,
3 our last question goes to Nicole.

4 MEMBER ELKO: Thank you. Thank you
5 all for the excellent summaries. Really
6 interesting information.

7 Captain Manning, I too don't deal with
8 ice-breaking missions, as you can probably tell
9 from my office background here, but really
10 enjoyed it.

11 I am the executive director of the
12 American Shore and Beach Preservation, as I
13 mentioned earlier, and my good friend Jim
14 Haussener said a word that I don't think any of
15 the others have said which is sediment and, you
16 know, it's very important for us how that relates
17 to resilience.

18 So, interestingly, when you look at
19 California's performance in terms of managing
20 sediment California has placed more sand on their
21 beaches than any other states over the last
22 hundred years as we've been managing beaches and

1 shores and I mention that because it's directly
2 related to Mr. Haussener's comment which is most
3 of that sand came from the development of these
4 harbors, right, back in the '40s and nowadays we
5 use sediment from maintenance dredging in other
6 ways to increase resilience, building marshes,
7 placing it in the near shore to restore beaches.

8 So my question is just do you have any
9 comment on where California and your ports in
10 particular are going with that and how it might
11 impact resilience and how you might work with
12 NOAA in terms of, you know, understanding where
13 that sediment is, measuring it, and then
14 monitoring where it's going. Thank you.

15 CAPT. MANNING: Was that question to
16 Jim or was it to me? This is Ryan.

17 MEMBER ELKO: It was -- well, I think
18 Jim and I know what we think about that so it's
19 more to the other panelists, yes.

20 CAPT. MANNING: I'm not sure I have an
21 answer at all to that or where we're good from
22 the Coast Guard's perspective is but it's

1 certainly something I could get back to the
2 committee with, and, you know, checking with our
3 program officers from the local operational
4 commander I don't have a real good call on that.

5 CHAIR DUFFY: All right. Well --

6 MEMBER ELKO: I see Derek -- oh,
7 sorry.

8 CHAIR DUFFY: Go ahead. It's okay.
9 Sorry, Nicole. I didn't mean to speak over you.
10 I'm just going to wrap up the panel and I will
11 say beneficial use is really critical to
12 Louisiana.

13 Jim, your comments about height and
14 relative sea level rise and the impacts we've
15 seen on this -- the last couple of years we've
16 seen a lot of saltwater encroachment related to
17 relative sea level rise. There's a lot of
18 threats.

19 I really appreciate all the
20 presentations. A great panel. I have a bunch of
21 questions. I'll say that I'd like to compare
22 some numbers because Louisiana has been doing a

1 great deal of beneficial use. But it's great to
2 see us, hopefully, moving toward General
3 Spellmon's directive to try to reach 70 percent
4 of beneficial use by 2030.

5 With that, I thank everybody. I
6 really think it was just an excellent panel. I
7 think we've challenged the American Sign Language
8 interpreters with some fast talking and Cajun
9 words thrown in here and there. You know, it
10 might be time for some beignets as we have some
11 lunch coming up.

12 But I don't have exact time references
13 in front of me. If somebody more in tune with
14 the schedule would comment. I see it. There you
15 go. What excellent timing.

16 So with that, excellent panel. We're
17 going to wrap up the morning session, break for
18 lunch, and I'll turn that over.

19 Admiral, good to see you. The play by
20 play is yours, sir.

21 RDML EVANS: Thank you, Sean, and
22 thanks to all the panel members. I'll just echo

1 the comments as an outstanding local perspective
2 on the requirements of the community in the L.A.
3 and Long Beach region and the utilization and
4 opportunities for NOAA data products and
5 services. I have lots of questions too but I'll
6 hold those.

7 And I'll just note that we're going to
8 take a quick break here. The main session will
9 reconvene at -- where's my schedule? The session
10 reconvenes in an hour and 15 minutes, I believe,
11 but the HSRP panel members coming back on the
12 Google Meet link at 1:15 Pacific time so in,
13 roughly, 15 minutes from now.

14 Again, on the Google like not this --
15 not this session for our working lunch. So take
16 a break, stretch your legs, grab a bite, and then
17 we'll see you on the Google Meet in about 15
18 minutes. Thank you.

19 (Whereupon, the above-entitled matter
20 went off the record at 11:58 a.m. and resumed at
21 1:19 p.m.)

22 CHAIR DUFFY: I thank everybody for an

1 excellent morning. Great sessions. A lot of
2 really good information. Happy to have everybody
3 back. And I'll work on the tech issue but I'm
4 going to turn it over to the very capable hands
5 of Julie Thomas and Captain Kip to take over the
6 under keel clearance panel.

7 And thank you, Julie.

8 MEMBER THOMAS: Thank you, Sean.
9 Great to be back after lunch here.

10 So I am very honored to present this
11 panel, these esteemed people in the next panel.
12 This is for this under keel clearance
13 presentation that we're going to have now, and
14 this is really an ongoing project that was
15 started in 2016. Went through many test and
16 validation years and I think went operational in
17 2019.

18 So let's just go through the people.
19 Captain Kip Louttit is executive director of the
20 Marine Exchange. Captain Louttit handles all the
21 finances for the project and I think he's like
22 the glue that holds us all together and is really

1 the liaison between a lot of the entities.

2 And what you're going to see is how
3 this partnership of federal, academia, industry
4 has come together and I think we can have the
5 next slide. I'm just going to flip through the
6 people. Can you go ahead and -- yeah.

7 So, Captain Tom Jacobsen, I know
8 you're a third generation pilot here -- company
9 and Tom is also a prior member to the HSRP. I
10 think he was the one that first introduced me to
11 it many years ago. And, of course, this project
12 really is to provide them with the best
13 information for safety and to keep their
14 operations going.

15 And next we have Mr. Jeff Ferguson,
16 who is NOAA. He's part of the Ocean Coast Survey
17 and a lot of the local stakeholders rely on Jeff
18 as the California navigation manager.

19 And then Ryan Kittell is with the
20 National Weather Service. He sits in Oxnard.
21 The Weather Service is a key player here because
22 there is a wave forecast called the near shore

1 wave prediction system and Ryan really customizes
2 that with the local winds and for the local
3 conditions so that's a very important piece of
4 the puzzle.

5 And going on to the next slide we have
6 Dr. Jim Behrens. Jim sits at Scripps Institution
7 of Oceanography in San Diego and he also provides
8 wave observations and wave forecasts with very
9 high-resolution wave buoys.

10 And then Karsten Uil, of course, is
11 the managing director of Charta Software. He
12 sits in Rotterdam. Thank you, Karsten, for
13 flying over from Rotterdam with your co-founder
14 also is here, and Karsten is really the one that
15 handles the integration and distribution of the
16 data and the information.

17 And we want to thank Marathon for
18 allowing us to work on this project. As you will
19 see, it's really in support of bringing in their
20 deep draft vessels.

21 So with that said, I'm going to go
22 ahead and turn it over to -- is it Kip or --

1 okay. Captain Jacobsen is the next person here.

2 CAPT. JACOBSEN: Great. Thank you,
3 Julie, and good afternoon, everybody. It's good
4 to be back with the HSRP.

5 MEMBER THOMAS: Next slide.

6 CAPT. JACOBSEN: There we go. I'll
7 just touch on the partnership right here of our
8 dynamic under keel clearance project. Again,
9 you're going to hear this throughout the
10 presentation but it's a wonderful partnership and
11 that's what makes it work.

12 We have state of California, OSPR,
13 Port of Long Beach, our company. We have
14 Marathon and the Marine Exchange and, of course,
15 we have CDIP, NOAA, Army Corps, everyone working
16 together to make this project work and I'm happy
17 to report that it's successful. It's still
18 working well. And let's go to the next slide,
19 please.

20 So the whole project is about bringing
21 in the deep draft VLCCs and these ships are,
22 roughly, 1,100 feet long, 200 feet wide. Some of

1 the ships are 230 feet wide.

2 There are over 300,000 deadweight tons
3 and we're bringing ships in now at 69-foot draft.
4 So these are the largest VLCC's that come into
5 the United States into a port. Next slide.

6 So it's important to note 50 percent
7 of California's oil comes through Port of Los
8 Angeles and Port of Long Beach and we only have
9 a five day supply of oil ashore. So this means
10 that we have a lot of oil tankers on a steady and
11 regular basis that come into the ports to feed
12 the refineries.

13 Long Beach berth 121 is the only VLCC
14 berth in the West Coast that can handle ships of
15 this size and, again, mostly it's the draft of 69
16 feet that stands out.

17 What you see on the right hand side of
18 the chart here -- critical area -- is the
19 approach channel of 76 feet. That's a dredge
20 channel of about two and a half miles long of 76
21 feet. So we board the ships -- pilots board the
22 ships five miles off shore and we get lined up,

1 and once we're in the two and a half mile 76-foot
2 deep channel there's no turning around.

3 There's one place we can go and that's
4 berth 121, and that's why this project is so
5 critical is we have to know that the ship in any
6 sea state won't touch bottom and that's what
7 we've accomplished.

8 And so the approach channel is
9 critical. The turn at the breakwater and just
10 inside the breakwater is all critical. And then
11 once we get inside we're protected by the
12 breakwater and it's calm water to the dock.

13 So I'm going to pass this off to
14 Captain Louttit and you can take over.

15 CAPT LOUTTIT: Thank you, Captain, and
16 I'll put on my moderator hat. Just a moment. So
17 if you don't care a bit about tankers or you
18 don't care a bit about oil or you don't care a
19 bit about the Port of Long Beach I'd encourage
20 you to listen to this presentation about how to
21 organize a complex project with federal, state,
22 local, and industry partners and how, as Captain

1 Jacobsen said, we were able to organize all these
2 people into the successful project today.

3 So Derek this morning mentioned the
4 deepening project that the Port of Long Beach is
5 thinking of doing and talked briefly to the math
6 that's on this slide. So I'll just explain it
7 one more time so you now have the picture.

8 But the problem is that Captain
9 Jacobsen was talking about bringing these ships
10 in the last two and a half miles to the Port of
11 Long Beach is the pitch problem in a long period
12 southerly swell. So you're going basically north
13 into the port so this is the following sea that
14 would lift the stern of the tanker and cause it
15 to pitch.

16 So until this project started there
17 was a gentlemen's agreement between the Captain
18 of the Port and the pilots and the court to only
19 bring in ships up to 65-foot of draft into the
20 Port of Long Beach in a static condition because
21 the channel is 76 feet deep 11 feet under the
22 keel. That's great.

1 The problem is -- if you can do the
2 trigonometry in your head, but I'll do it for you
3 here -- with one degree of pitch in that 1,100
4 foot tanker you get a 10-foot increase in draft.
5 So 65 feet would go to 75 feet and you'd only
6 have one foot under the keel.

7 If the pitch pitches two degrees you'd
8 be in the mud. So how can we predict this pitch
9 motion and ensure a safe passage is why this
10 project was born.

11 And the reason that we want to bring
12 in the deeper draft tankers is the channel was
13 originally dredged to 76 feet with the idea of
14 bringing in 69-foot draft tankers.

15 So for every extra foot 65, 66, 67,
16 68, 69, it's 30,000 barrels of oil basically for
17 free. You're bringing in the ship anyway so you
18 can get more cargo per movement if we can predict
19 the pitch motion to ensure a safe passage. Next
20 slide, please.

21 So before we had this project the
22 go/no go decision was made by the pilot and the

1 ship's captain using CDIP's swell warnings, and
2 Dr. Behrens is going to talk more about the CDIP
3 buoys, the CDIP buoy reports, experience,
4 seaman's eye, and observed pitch and roll far
5 enough offshore to permit a bailout before the
6 channel.

7 And so before this project the only
8 thing the pilots had to go on was an email that
9 they got from CDIP which when certain parameters
10 for height of the swell and direction of the
11 swell and period of the swell were met they would
12 get an email warning and I cut pasted here an
13 example of one of those warnings from February,
14 and there are different sites outside of the
15 harbor where you can see the green and the red
16 boxes of where this forecast is of this swell
17 condition that could result in significant pitch,
18 which could result in significant under keel
19 clearance problems.

20 What you don't want in these cases is
21 for the pilot to go out to the ship, to get lined
22 up and say, oh, no, no, no, we don't feel

1 comfortable with this. So it's a waste of time
2 for a pilot, it's an extra movement, and then the
3 ship has to bail out and go to anchor when
4 everybody was expecting it to go into port. So
5 next slide, please.

6 So the present, which has been
7 mentioned, has been in effect for about the past
8 six years, is we have PROTIDE and that's the name
9 of the software product that Karsten's company
10 created so we have safer and more efficient ship
11 movements based on precision science and
12 technology.

13 So if you can see in the upper right
14 hand corner of the slide is a pilot boarding the
15 ladder. What we're trying to do is make sure
16 that pilot only has to board the ship when it has
17 a reasonable expectation of going into port and
18 eliminating those bailout situations that they
19 used to have to do.

20 So Jacobsen Pilot Service even before
21 this project had team piloting procedures to
22 enhance safety and this is one more tool that the

1 pilots have to take to the ship's captain to
2 enhance safety and that's what PROTIDE does is
3 enhance both safety and efficiency, which I'll
4 get to in a moment.

5 So PROTIDE provides input to the pilot
6 and the ship's captain for the go/no go decision.
7 Again, this is input. It doesn't have the
8 throttle. It doesn't have the steering wheel.
9 The decision is still by the captain or the
10 pilot.

11 It reduces or eliminates the number of
12 aborted runs because as we had over the past
13 couple of weeks with storms PROTIDE would predict
14 several days in advance that the ship would be
15 out of limits. So the ship's captain could be
16 told, you're going to be out of limits from this
17 time to this time.

18 You got two choices, slow down and
19 arrive at the right time or be prepared to go to
20 anchor. But you don't have these aborted runs
21 that they used to have to do.

22 The other thing, as Captain Jacobsen

1 mentioned, with only a five-day supply of oil
2 ashore so if you can't bring in one of these very
3 deep draft tankers the oil companies can bring in
4 a smaller tanker with a shallower draft in these
5 unfavorable conditions for the big ship. Next
6 slide, please.

7 So the three goals of the project were
8 started at the very beginning, and as I mentioned
9 if you're ever going to do something like this
10 with multiple partners get the goals straight and
11 contribute to success.

12 So the first one was to increase
13 safety by reducing the risk of an accidental
14 drowning caused by the pitch or roll of a large
15 vessel causing it to impact the bottom.

16 Second is increased efficiency by
17 enabling ship owners and masters to adjust their
18 arrival times based on the pitch and roll program
19 being able to predict when the pitch and roll
20 will be out of limits to enter port due to
21 unacceptable under keel draft clearance.

22 And third is to reduce emissions by

1 enabling the larger ships to carry more cargo to
2 enter the port, which could reduce overall stack
3 emissions per ton of cargo arriving in the port.

4 That's the notion that for every
5 additional foot of draft there's 30,000 extra
6 barrels of fuel -- not gallons of fuel, barrels
7 of fuel -- that come in, in a sense, for free.
8 Next slide, please.

9 So more benefits to industry and to
10 the public is reducing the overall risk of
11 transporting oil on the West Coast. What was
12 going on more than now has to happen is what's
13 called lightering.

14 So you can see in the pictures there's
15 a big tanker that's too deep to enter Long Beach.
16 Comes alongside a hundred miles or so off of San
17 Diego. They moor the two ships together out at
18 sea and they pump enough oil off of the big
19 tanker to a smaller one but the big tanker can
20 enter port.

21 But now that we can bring the tankers
22 into Long Beach with up to a 69-foot draft we're

1 doing less of this lightering operation offshore.

2 So number one, that increased the
3 safety, reducing personnel exposure in industry
4 or, rather, injury such as to the line handlers
5 tying up the ships and reduces the hours that the
6 crews are in these demanding operations.

7 Second is economics, a more efficient
8 use of the port infrastructure and tugs. Again,
9 a big tanker is at a limits standard port you can
10 bring in a smaller tanker using the berth and
11 using the available tugs.

12 And third is to the environment,
13 reducing the risk of oil spills. So there are
14 fewer oil transfers because you can bring in
15 these big ships and eliminate some of the
16 lightering.

17 Second, the transfers are in protected
18 harbors rather than offshore lightering. The
19 ship just gets in and, as Captain Jacobsen said,
20 ties up to berth T121 in Long Beach, and third,
21 reduced emissions due to less loitering and more
22 barrels per ship movement. So next and my final

1 slide.

2 So as of last October 139 tankers with
3 a draft rate of 65 feet have entered the Port of
4 Long Beach. You can see the math there in terms
5 of the 66-, 67-, 68-, and 69-foot draft.

6 You can kind of see that 67 and 68 are
7 kind of the sweet spot because in addition to the
8 under keel clearance because of the team piloting
9 and the risk averse nature of Jacobson Pilot
10 Service and the oil companies they only, for
11 example, do these movements in the daytime.

12 So by having less draft than the max
13 of 69 it gives a bigger window that you can get
14 the ship in. So, again, to recap, this goals of
15 the project from the very beginning and today,
16 increasing safety, increasing efficiency and
17 reducing emissions, and the goals of the success
18 of this project continued to be demonstrated.

19 With that, I'll turn it back to Julie.

20 MEMBER THOMAS: Thank you, Kip. Okay.
21 So, Jeff Ferguson, you are next on the line
22 there. Thank you. And once again, Jeff is the

1 California navigation manager for NOAA.

2 MR. FERGUSON: Good afternoon,
3 everybody.

4 MEMBER THOMAS: Next slide.

5 MR. FERGUSON: So I'm here to talk
6 about NOAA's role in supporting this project so
7 I'll be talking about some of the NOS products
8 and data we're providing and then I'm going to
9 pass it off to my NOAA colleague Ryan from the
10 National Weather Service who will talk about the
11 wave forecast and wave models, which is critical
12 to this project. Next slide.

13 Just want to throw up the simple
14 equation. We're here to compute the under keel
15 clearance of a vessel. It's pretty
16 straightforward. It's the depth of the water
17 minus the draft of the vessel.

18 Static drafts are real easy because we
19 usually have numbers painted on the side of the
20 ship. So if those are in the right place we know
21 what the static draft is.

22 When we start talking about dynamic

1 draft things get real complicated real fast, and
2 this project is especially interesting because
3 we're computing and estimating a dynamic draft
4 for a point in the future, and so there's a lot
5 of data that's needed and Karsten is going to
6 spend the bulk of our presentation talking about
7 all the magic he does to compute those dynamic
8 draft estimates for future points in time.

9 But what I'm going to talk about is we
10 can't do any of this without knowing the depth of
11 the water so I'm going to spend a few minutes
12 talking about that variable in this equation.

13 Next slide.

14 So if we want to know what the depth
15 is, of course, we conduct a hydrographic survey.
16 Back in 2013 specifically to support this project
17 we sent the NOAA ship Fairweather down here to
18 come to conduct a complete survey of the port
19 area. That included the entrance channels, the
20 anchorages offshore, and all the berths and areas
21 inside the breakwater.

22 This was just a standard NOAA survey

1 with high-resolution multibeam. And whenever
2 we're done with a survey, of course, the next
3 question is how good is this data -- how long
4 will this data be good for, right.

5 So how often does the bottom depths
6 change, how stale does this get over time, and
7 we're lucky in L.A. and Long Beach the bottom is
8 pretty stable but to check it. Next slide.

9 We sent the NOAA ship Rainier back in
10 2018 and she didn't do the whole port area but we
11 did enough to get -- we redid the entrance
12 channels and some areas inside the breakwater and
13 we confirmed that the bottom doesn't change that
14 much. LA/Long Beach is pretty stable.

15 But after big storms you can get some
16 shoaling in the channels from the steep core
17 channel edges sloughing into the channel, and so
18 we need to come up with a system where we can
19 ensure we have accurate depths over time and if
20 we can accept different data sets from different
21 people then we don't have to send a big NOAA ship
22 down here every few years to check on the depths.

1 And so the process we developed to do
2 that is using a National Bathymetric Source. So
3 next slide, please.

4 So our National Bathymetric Source, or
5 NBS, is when it's built out the NBS is going to
6 be a national database of all the latest and
7 greatest bathymetry in an area and that right now
8 has three different outputs.

9 If you look on the right hand side
10 starting from the bottom there's a public facing
11 website which we call Blue Topo, which isn't
12 suitable for navigation because the vertical
13 datums are not chart datum and then maybe some
14 surveys in there don't meet specs. But it's more
15 than good enough for modeling and other public
16 uses.

17 And then we have an internal access to
18 that database and sometimes we receive surveys
19 that are sensitive or we're not allowed to make
20 publicly available but they're good for us to use
21 for internal planning purposes and, of course,
22 for this case most importantly up on top we have

1 our navigation products, which is our ENC and our
2 S-102 dataset.

3 If you've never heard of S-102 before
4 just for right now know that that is high-
5 resolution gridded bathymetry that can be used in
6 conjunction with an ENC and as part of our
7 precision navigation products, and Darren Wright
8 will be giving his precision nav updates after
9 the break this afternoon and he'll explain all
10 the S-100 layers and S-102 and how we're rolling
11 that out.

12 But for right now you just need to
13 know that's a high-resolution bathymetry. Next
14 slide.

15 So this is kind of showing the same
16 thing with a few more boxes. The database in the
17 middle on the left shows all the different
18 sources of surveys that we can get.

19 Obviously, our NOAA surveys including
20 our NOAA contract surveys are designed from the
21 ground up to meet NOAA's specs in deliverables
22 and be in the right format that they can be

1 easily sent into the NBS.

2 But we can get surveys from a lot of
3 other places too, the Corps of Engineers being our
4 biggest source of surveys. Every time they do a
5 post-dredge survey or a condition survey that
6 data becomes available to us and they go in the
7 NBS.

8 Other government agencies may be doing
9 surveys, universities, and all other sources. If
10 it's a non-NOAA survey those surveys have to go
11 to our external source data group so they can
12 validate those. They usually have to work with
13 the person who did the survey to get more
14 metadata and get the data in a format that's
15 suitable for the NBS since they may have done the
16 surveys for a lot of variety of different
17 reasons.

18 For this project specifically that
19 other box includes surveys from the Port of Long
20 Beach survey department. The Port of Long Beach
21 has a great survey team who has spent a lot of
22 time and effort the last few years to make sure

1 their surveys meet NOAA specs and deliverables
2 and meet our CATZOC A1 quality control. One of
3 your newest HSRP members is Kimberley Holtz.
4 She's head of that department. So at a future
5 meeting I hope she gives you a good briefing on
6 the work they're doing in that space because I
7 think it's unique to the ports I deal with on the
8 West Coast.

9 So, again, we get a lot of good data
10 from the Port of Long Beach survey department and
11 all these other sources. Goes into the NBS,
12 which we can update and then we can extract
13 quickly and easily data to update the ENC or
14 provide precise navigation products. Next slide.

15 So if you want to know where the NBS
16 is built out right now you can go to nowCOAST and
17 then click on the Blue Topo button and you can
18 see where it's built out and right now it's built
19 out down in the Gulf of Mexico and Southeast.
20 You can see there's data there in the Northeast.

21 We're working on filling in the mid-
22 Atlantic right now, and once that's all done

1 we'll move to the West Coast, Great Lakes, and
2 then finally to Alaska and the Pacific islands.

3 Now, for this project you're probably
4 looking at, well, but there's nothing on the West
5 Coast yet. Next slide.

6 If you were to zoom in to LA/Long
7 Beach you would see specifically to support this
8 project we set up a little tiny piece of the NBS
9 so that we could accept surveys from multiple
10 sources and then output these high-precision math
11 products. Next slide.

12 This is showing the multiple sources
13 of data we have now in the NBS for LA/Long Beach.
14 The dark blue is the areas that are still from
15 the original Rainier and Fairweather surveys.
16 The light blue are all the Corps of Engineer
17 surveys for all their channels and areas of their
18 responsibility that have been conducted since
19 those NOAA surveys. So they're now newer and
20 have superseded the NOAA survey.

21 Off to the right you see a little
22 green area. That's a Navy survey. That's the

1 Seal Beach Naval Weapons Station. The red along
2 the shoreline is topobathy lidar from the Corps
3 of Engineers.

4 The magenta in the middle is topo
5 lidar from the Port of Long Beach they provided
6 to us so that helped us better define the
7 shoreline and supersede some areas that have
8 since been filled in due to development at the
9 port.

10 And then that orangey area is a survey
11 from the Port of Long Beach survey department.

12 So, again, we get surveys from all sorts of
13 different users. It goes into the NBS. We have
14 supersession rules and newer surveys of higher
15 quality supersede the older stuff and then we can
16 easily extract navigation products from that NBS.
17 Next slide.

18 And so what that allows the pilots and
19 folks to do is if you just look at the ENC and if
20 I wanted to draw a safety contour at 42 feet the
21 ENC just has basic standard contours. It has a
22 30-foot contour and a 60-foot contour and those

1 are kind of hard coded in the ENC and drawn by a
2 cartographer.

3 And so if I want a safety contour at
4 42 feet the nav software has no choice but to
5 draw it at the next deepest contour, which in
6 this case is 60 feet. Next slide.

7 But if I have an S-102 file that I use
8 in conjunction with the ENC now I have that high-
9 resolution gridded bathymetry so when I ask for
10 a 42-foot contour it can draw the line at exactly
11 42 feet on the fly because it has the data.

12 If I want to see contours every foot
13 it can do that. If I want to see contours every
14 meter it gives the user a lot of extra
15 flexibility.

16 Now, the land area, the breakwater,
17 the buoys, that's all still coming from the ENC.
18 The S-102 overlay just replaces the contours and
19 depth areas.

20 And so now Jacobson Pilots can load
21 the S-102s into their portable pilot units and
22 now they can navigate this higher resolution

1 detail as they need it and when we update the S-
2 102 Karsten can take a look and if there's a new
3 shoaled spot in the channel he can now use that
4 depth when he computes his under keel clearances.
5 Next slide.

6 So that's all the depths in terms of
7 surveying. But, of course, we have tides and
8 water levels that affects the depths of that
9 water and here in L.A. and Long Beach we have a
10 great PORTS system -- Physical Oceanographic Real
11 Time System.

12 For any information they need in the
13 future they use predicted tides but as that
14 feature gets closer and closer to real time they
15 can check the PORTS to see if there's any
16 difference between the real time water levels and
17 the predicted and apply that difference if they
18 need to. Next slide.

19 So this is an overview of the ports in
20 the area. All the yellow buttons are just
21 weather stations. The red is the tide gauge on
22 the Los Angeles side. There's two air gap

1 sensors, one on the Vincent Thomas Bridge on the
2 L.A. side and one on the new International
3 Gateway Bridge on the Long Beach side, and then
4 the three blue pins offshore are the wave buoys
5 that Dr. Behrens will talk about later. Next
6 slide.

7 And there is also an operational
8 forecast system in the area if you want to see
9 what the water levels will do in the future based
10 on weather effects and so on. I just wanted to
11 let you know.

12 So I think that's about it. Next
13 slide. So that's what I had. I just always like
14 to remind people that wherever you go in this
15 beautiful country near the ocean there's a
16 friendly neighborhood nav manager to help you out
17 if you have any questions.

18 And now I think I'll pass it back to
19 Julie or on to Ryan to talk about the National
20 Weather Service. Thank you.

21 MR. KITTELL: Well, hello, everyone.
22 My name is Ryan Kittell and I am a forecaster and

1 the marine program manager at the local National
2 Weather Service office in Oxnard. You can go
3 ahead and go to the next slide.

4 So, first, talk a little bit about our
5 part of NOAA. We are the National Weather
6 Service. We fall under NOAA and -- but we are
7 not all of NOAA. We're just the weather side of
8 the house, pretty much the part of NOAA that
9 keeps their heads above the water and in the
10 clouds.

11 We have over 120 offices throughout
12 the country. Our local office is in Oxnard. We
13 cover Los Angeles County, Ventura County, Santa
14 Barbara County, and San Luis Obispo County, which
15 includes the San Pedro/Long Beach area. We also
16 are responsible for monitoring and forecasting
17 the coastal water areas out to 16 nautical miles.
18 We are open 24/7. That is a view of our
19 operations area there on the bottom right, and
20 our mission -- the whole purpose of our existence
21 is twofold. One, it's for the protection of life
22 and property, and secondly, it's for the

1 enhancement of the national economy.

2 And as we talk about the under keel
3 clearance program and really on informing and
4 helping recording our marine partners you can see
5 how really both of those aspects are clearly
6 handled in port and marine partners in both the
7 protection of life and property and enhancing the
8 national economy.

9 And our strategy -- the way we do that
10 is to really give the decision makers best
11 information possible that they can make the best
12 weather-related decision possible.

13 We have a buzz term called Integrated
14 Decision Support Services, IDSS, that kind of
15 encapsulates that vision, that strategy for our
16 mission. And go to the next slide.

17 So we do this through routine
18 forecasts, so, general forecasts that talk about
19 the weather coming up and marine conditions. We
20 also do as-needed routine forecasts, email
21 briefings, webinars, we even directly, with all
22 partners and key marine users, whenever there's

1 an impending weather coming up and sometimes
2 we'll also deploy if there's any big events.

3 And part of the nonweather period work
4 that we do is developing relationships with these
5 decision makers, which includes a lot of people
6 on this conference today, and one of the big
7 goals that we have to predict the future
8 especially when we talk about waves is something
9 called the Near Shore Wave Prediction Center, or
10 NWPS.

11 This is a computer model that is very
12 high resolution, especially as you get close to
13 the coast. It's run by our national NCEP,
14 National Centers for Environmental Prediction,
15 back east.

16 They're kind of our main group, our
17 main part of the National Weather Service and
18 NOAA that does projections and modeling for both
19 the atmosphere and the water and this NWPS system
20 is really critical for -- talking about what we
21 use it for we use it for our forecasts.

22 It is the main driver for our official

1 marine forecast when we talk about waves and it
2 guides our messaging on any kind of wave-related
3 impacts and what people can (audio interference).

4 When this first came out it was all
5 locally modeled and run at our local office so
6 every local office would run this computer model
7 locally but has since moved to the supercomputer
8 back East and it's run at a national level. So
9 it has inputs from the local offices as well.

10 So NWPS is not only a tool just for us
11 to provide that information to decision makers
12 but it's also tool available directly to our
13 decision makers and one such example is the whole
14 under keel clearance program. And you can go to
15 the next slide. Sorry, if you can go back one
16 more slide.

17 I'll explain our process and how NWPS
18 kind of comes and -- the data comes out of NWPS.
19 So the local weather office has a part in the
20 whole wave prediction system in that we provide
21 the data for the local winds.

22 So winds are the driver for swells and

1 waves and a lot of the big waves that we get are
2 from storms well off the coast. But there's a
3 local wave component that drives local waves and
4 we are the main source for that especially in the
5 local area here.

6 And so we provide the wind data that
7 goes -- with that we ship back east that will --
8 we have the near shore winds for the wave
9 prediction system and then the global models, the
10 GFS wave system which includes WaveWatch3 drives
11 the global waves and the winds offshore.

12 And so all those come together to
13 produce the output for this near shore wave
14 prediction center.

15 And so it's very high resolution, as
16 I mentioned, as it gets closer to the coast and
17 then that's where we get to the next slide. The
18 wave data is freely available to anyone -- to the
19 public. But for a port side system and the under
20 keel clearance project it was needed in a
21 different format. This would be in a spectral
22 file for point based forecasts.

1 And so since the inception of this
2 project we have been producing special output
3 from this model for the PROTIDE software and the
4 PROTIDE team.

5 As I mentioned early on, the project
6 was produced locally at our office but now it's
7 all done from the national supercomputer output
8 and it really -- this whole project really
9 supports, again, our mission.

10 We are providing this information to
11 really help those decision makers like the pilots
12 and the captains of the ship to figure out when
13 it is safe to enter port and this is a big part
14 of that, that whole equation that Karsten will
15 expand upon later.

16 And so our local office now is
17 involved with this project primarily as, again,
18 the wave source that goes into the NWPS model,
19 which is then used by the PROTIDE software for
20 the wave input into their calculations.

21 And then we also function as kind of
22 the local liaison and local contact for the whole

1 NWPS system and so whenever there are issues we
2 can kind of provide some support to them as we
3 have in the recent past.

4 So if we go to the next slide.

5 There are some changes coming to the
6 NWPS system. So it's been around for about 10
7 years. The original developer who really
8 developed this whole system, Andre, left our
9 agency for greener pastures a couple years ago
10 and the development of the system has been on
11 hold since last year, and the main reason for
12 that is that there's a new vision for NWPS and
13 it's called the Regional Wave Prediction Center.

14 And the big change for this future
15 wave system and wave modeling project is to
16 expand it to not just cover the near shore, which
17 is what this kind of system does -- it really
18 just covers the waters near the coast -- and the
19 regional wave prediction center will expand that
20 to the entire ocean domain which NOAA and the
21 National Weather Service or national centers have
22 responsibility for.

1 It really expands the coverage while
2 still maintaining the highest resolution near the
3 coast. It's still in its early stages in
4 development and planning but the goal is to have
5 it ready at least for parallel testing for it
6 running side by side with the current and the
7 NWPS system sometime in 2025 or 2026.

8 And there are some advantages to end
9 users which includes ourselves but also for the
10 under keel clearance project and PROTIDE in that
11 it will increase its update times.

12 Right now NWPS updates every six hours
13 but the goal for this new project, this new
14 model, is for an update every three hours, which
15 will refresh all the PROTIDE calculations, which
16 is really good. So and there are some unknowns
17 in that, you know, the goal is for this model to
18 be at least as good as the current model and,
19 hopefully, better.

20 So that's certainly a standard that
21 everyone is hoping for and really needs -- want
22 the new system to be better than the current and

1 we do see some potential advantages which we're
2 definitely hopeful for.

3 So I think this is the last slide I
4 have and then we'll move on to Julie and whoever
5 is next.

6 MEMBER THOMAS: Thanks, Ryan, and
7 yeah, we are going to move on to Jim Behrens now
8 -- CDIP. Are you there, Jim? Yeah.

9 DR. BEHRENS: Hello. Thanks for
10 having me. And as I mentioned I am the program
11 manager for the Coastal Data Information Program.
12 I'm also one of the principal investigators, and
13 we observe the waves in California as well as
14 other parts of the country and we generate models
15 to forecast the wave activity both on short and
16 longer term scales. Next slide, please.

17 If you couldn't tell that was one of
18 our yellow buoys on the back of a vessel heading
19 out of the Golden Gate. Over there on the top
20 right is one of them floating near the Port of
21 Long Beach.

22 The program was established in the

1 1970s with initial funding from the Army Corps of
2 Engineers and the state of California and has
3 continued and we are now up to nearly 90 stations
4 across U.S. waters worldwide.

5 The map on the right shows the extent
6 of the array these days. We have about a 15-
7 person team at Scripps Institution of
8 Oceanography. We're employees of the University
9 of California, San Diego.

10 The partners, in addition to Army
11 Corps of Engineers, the Navy, and the state parks
12 of California involve many high use regional
13 associations.

14 This is a direct connection with NOAA
15 and some NOAA priorities for observing needs
16 around the country and then many of our stations
17 are funded through collaborations with ports and
18 industry.

19 The green exchange -- obviously,
20 Marathon is behind some of that funding. Chevron
21 is a long-standing partner at the port area, and
22 going up the coast the Columbia River Bar Pilots

1 and PG&E at their Diablo Canyon plant. We also
2 work with agencies like the Department of
3 Energy's National Renewable Energy Laboratory as
4 they look to install testing and production
5 locations for offshore energy. Next slide,
6 please. Back one, please. There we go.

7 And then just a little -- I guess some
8 of the wording gets rearranged while converting
9 from PowerPoint but the gist of this is that we
10 reach a wide variety of stakeholders with our
11 wave observations.

12 And the coastal engineering aspects
13 are directly related to port planning and
14 improvements. We provide the real-time
15 conditions for operations, and then there are
16 aspects of nuclear deterrent and national
17 security which rely on the high-precision wave
18 data.

19 The climate record is now being
20 accumulated over the decades of persistent
21 observations at many of these stations. We're
22 going on 30 years of half hourly high-precision

1 observations that are research grade and useful
2 for meaningful operations. Next slide, please.

3 The instrument of choice is the
4 Datawell Waverider. They provide the wave energy
5 spectrum, the direction of the waves. We measure
6 a displacement path of the buoy which gives wave
7 by wave information. The water temperature, the
8 air temperature, and the surface currents are now
9 also being measured. Next slide, please.

10 Wave motion circular -- as you can see
11 on the left over there the waves far from
12 shoaling move in circular patterns that these
13 buoys are designed to couple to with high
14 fidelity and then when the waves approach the
15 shore we have concerns about run up, erosion,
16 infrastructure damage. Next slide, please.

17 The application here at the Port of
18 Long Beach, which has funding through the years
19 from NOAA's Southern California coastal ocean
20 observing system as one of our industry partners
21 and U.S. Army Corps of Engineers backing buoy
22 information about the current wave conditions are

1 used to predict the conditions at the entrance to
2 the Port of Long Beach.

3 The bathymetry around the Southern
4 California bight is more complex than many
5 coastal regions around the world with all of
6 these islands, shoals, and basins and these all
7 affect the longer period waves in particular,
8 which we'll see soon. Next slide.

9 Just a glance at the nuts and bolts
10 end of the job, keeping the stations instrumented
11 is a major focus of our day to day efforts. We
12 also calibrate the instruments when they're at
13 our facility to verify the high precision in both
14 height and direction.

15 We anchor them in place. We use
16 acoustic releases to remove the materials when
17 we're finished. Next slide.

18 We distribute the data through NOAA's
19 National Data Buoy Center seamlessly with the
20 NOAA-managed and other partner observing
21 platforms.

22 We provide the data through our own

1 web portal, up to date as well as full archives.
2 We provide the data through the PORTS system in
3 many locations around the country too.

4 And then for the quality control
5 aspect we calibrate our instruments. We set up
6 automated messaging for malfunctions that are
7 detected to keep our team apprised and respond
8 to problems quickly. Next slide, please.

9 The wave data -- over on the left the
10 spectrum is a measurement of where the energy is
11 as a function of frequency and/or period, however
12 you want to look at it. This is an example from
13 yesterday at San Pedro buoy. We have some energy
14 at around seven seconds, six seconds. That's
15 typical for the wind chop. And then there's a
16 little bit of a longer period swell component
17 there at about 13, 14 seconds.

18 The directional spectrum is provided
19 in this radial plot in the center and if you look
20 at these for a few minutes you can start to
21 understand intuitively how the swell and the wind
22 chop are represented here.

1 The individual waves can be teased out
2 of the displacement path information and this is
3 a popular product especially with our pilot
4 friends so they understand the sizes of the
5 largest waves coming through. Next slide,
6 please.

7 The wave model that we run combines
8 with the symmetry of the California coast with
9 data from the buoys themselves, both ours and the
10 reliable ones from the Weather Service -- the
11 NOAA observing stations there as well. Wave
12 physics is then used to predict the conditions
13 along the coastline. Here's a representation
14 from our website with a zoomed in version of the
15 Southern California bight. Next slide, please.

16 Here's an example of how waves of
17 different periods are affected as they pass
18 through the Southern California bight from
19 different incidence angles.

20 Now, here's from the south. We're
21 looking at wind chop on the top left and sort of
22 gradually transitioning to long period swell on

1 the lower right.

2 Red areas are where the waves are
3 focused and wave heights are larger, greater than
4 they would be otherwise, and then the shadowing
5 is evident in the darker images. The Port of
6 Long Beach area -- let's take a close look on the
7 bottom right as this now swings through. There
8 are strong gradients in the wave activity which
9 are wave observations and modeling in particular
10 from the south here where they will have a strong
11 impact on decision making. Next slide, please.

12 We provide a display of the wave
13 observations at these three stations near the
14 port entrance along with model forecasts from
15 NOAA and WPS in green there and our CDIP wave
16 model which is a forecast run off of the European
17 model these days. We switched to that about two
18 years ago and just published a paper on the
19 update in Coastal Engineering Journal so hot off
20 the press. Next slide, please.

21 Over time the comparison between the
22 buoy readings and the CDIP model have been

1 analyzed. Here's an example looking at the full
2 spectrum for a year of data up to the present,
3 essentially.

4 The data don't fall on a perfect line
5 there and so there are events and conditions
6 where the model and the data won't necessarily
7 line up exactly and this is where the interesting
8 stuff happens. Next slide, please.

9 On the top right this is an example of
10 in May 2023 a southern long period swell. I
11 think this was Hilary -- maybe the remnants of
12 Hilary coming through -- and the buoy station in
13 the top center there 215 is the Long Beach
14 Channel and we see the intense focusing there,
15 right.

16 Stations 092 and 213 to the southwest
17 and south don't have as intensive wave activity
18 at this time. This is not typical of plainer,
19 more "boring," quote/unquote, coastal region.
20 But here in the Southern California bight these
21 high gradient effects are dominant.

22 Over on the lower right we see what

1 happens when we have a strong west swell and the
2 banding, the intense wave activity into
3 Huntington Beach over there on the right.

4 Also, one last thing to notice is when
5 you look at the top right image where there is
6 the breakwall there is not a reflection coming
7 off.

8 And so the attempt here was to use the
9 buoy data to make real-time adjustments to the
10 wave model at points nearby. But the punch line
11 here is that this needs to be done with a lot of
12 care as observations at one location in this area
13 don't necessarily help you if you adjust to other
14 locations by that amount and so that's what we're
15 showing over here on the left.

16 Now, the next slide. We're getting
17 close to the end here.

18 This is the significant wave height at
19 that San Pedro station dating back to 1997 or
20 '98, I think, we are to start there every half
21 hour and the thing to notice is that in recent
22 years we've measured the most intense wave

1 activity events across that period of time. One
2 reason to continue to make observations the wave
3 climate reveals itself over decades. The next
4 slide, please.

5 When wave events of significant
6 infrastructure impact or historic energy come
7 through we issue these bulletins, and maybe some
8 of you have seen them. Here's an example of an
9 El Nino type long period strong wave event. This
10 is what caused all of the coastal impacts that
11 were in the news in late December.

12 This is available for analysis and
13 review on our website and we provide these as a
14 portal into these significant events. Looking
15 over on the right hand side you can see the time
16 series comparison between the buoy and the model
17 for San Pedro there, and close to the shore in
18 the bight the global NCEP model is obviously not
19 particularly helpful and so we need to provide
20 some of these added value modeling products to
21 better understand the situation. Next slide.

22 I think this is my last one. There

1 was mentioned earlier about the lightering in
2 Kip's presentation. We work with Chevron to help
3 them understand when conditions for lightering
4 are unsafe, similar to the warnings for a long
5 period in the area off of the port entrance.

6 Next slide.

7 And that's it. Please visit us at our
8 website. We have this new button here for
9 extreme wave events that will take you to the
10 most energetic buoy readings in the country in
11 recent days and takes you also to our analysis of
12 significant impacts. Thank you.

13 MEMBER THOMAS: Great. Thank you very
14 much, Jim. Nice presentation.

15 Karsten, are you ready?

16 MR. UIL: Ready.

17 MEMBER THOMAS: Got it?

18 MR. UIL: I am prepared with the -

19 MEMBER THOMAS: Okay. Got it.

20 MR. UIL: I'm Karsten Uil. Thank you
21 for having me. Thank you for the panel for
22 addressing this topic and thank you, Admiral

1 Evans, for an invite of talking here and to talk
2 a bit about this beautiful project we've been
3 doing here.

4 It's about dynamic under keel
5 clearance and my topic is the data and modeling
6 with PROTIDE. PROTIDE is the application.
7 Charta is the company.

8 To start with something a little bit
9 different or maybe the challenge we're looking at
10 is we're actually building a model based on the
11 best data we have. But recently I was in the
12 public speaking of a dear friend of mine and the
13 topic was all models aren't wrong.

14 Some are useful, and I think that's
15 the challenge we're looking at today with this
16 model. So the challenge is how can we actually
17 use the data, use a model, and prove that it
18 works and constantly improve the model to make it
19 work in real life and that's a challenge we're
20 facing.

21 So I don't think all models are wrong
22 but at least we have to know how precise they are

1 and work towards making them used in practice.

2 Next slide, please.

3 A little bit about the company. As I
4 said before, we're a Dutch company based in
5 Rotterdam where also the biggest ports of Europe
6 is. That was actually also our first client.
7 The company contains mainly of mathematicians and
8 computer scientists would like to build models
9 for the domain and maritime logistics domain.

10 PROTIDE is one of our biggest
11 applications and we started in Rotterdam with
12 this program, and we customize it for all the
13 different ports we work with. Next slide,
14 please.

15 So the challenge actually is pretty
16 clear. We've heard that the industry wants, of
17 course, the goods coming into ports. They come
18 in big ships and they get bigger and bigger all
19 the time.

20 The traditional ways of looking at if
21 it's safe or not safe at some point that just
22 doesn't work anymore. You can work around it by

1 saying get more safety measures like less deep
2 ships. Maybe you could lighter to smaller ships
3 or you can have blackout periods of time.

4 But our challenge is here how can we
5 actually use the data and model that ships can
6 come in more often and that can, of course, like
7 we've heard before today reduce waiting times
8 bringing bigger vessels, make a port more
9 efficient, and use the resources that the port
10 already has available to bring in bigger ships in
11 a more efficient way and that's a challenge we're
12 working on. That's what we've tried to do with
13 PROTIDE.

14 I underlined a few parts that we're
15 looking at here today. So the minimum dynamic
16 under keel clearance PROTIDE is made to do a lot
17 more than just keel clearance.

18 We also look at overhead clearance,
19 maneuvering maximum crosscurrents winds. But the
20 topic we're addressing today is dynamic under
21 keel clearance. Ships are planned up to two to
22 24 hours before the actual transit.

1 That's the focus point of the
2 presentation today. Of course, you can also look
3 at it to make more strategic decisions about your
4 ports. Maybe look for months ahead.

5 Also optimize safety, maybe increase
6 draft, reduce waiting times. Everything on the
7 right here of the slide are the bonuses. I think
8 it's a good idea to do it this way and share the
9 data that we have available, show the output of
10 the program, discuss it with the experts to make
11 sure that we're all on the same page in such a
12 complex domain that we're looking at to make sure
13 that the experts know what we're doing and if
14 that's safe and actually that way improve what
15 we're doing.

16 The continuous evaluation is the
17 heart, I think, of the presentation. We use the
18 data, we have the modeling, and it's our job to
19 prove that it actually works.

20 So we evaluate the data we're getting
21 in and we want to prove that it works in a day to
22 day basis for ports. Next slide, please.

1 So what is PROTIDE? On the left we
2 have the inputs for PROTIDE. In the several
3 presentations we've been seeing today we already
4 discussed the input we're using.

5 We, of course, need to know the route,
6 which route will a ship take going into ports or
7 going out ports, and we need the best available
8 data to work with it.

9 So the tides, currents, winds, waves,
10 possibly salinity that might affect the
11 circumstances we have to work with. We have to
12 decide what actually is safe so we need a kind of
13 minimum under keel clearance we think is safe,
14 and discussing with industry and looking at other
15 ports, looking at maritime safety regulations we
16 came to safety restrictions here.

17 So the minimum dynamic under keel
18 clearance we looked at is 1.5 meters so just
19 about five feet as the ship will never have less
20 under keel clearance than that coming into port.
21 The final input is not just the circumstances but
22 an actual vessel coming in.

1 How big is the vessel? What type of
2 vessel are we looking at? How deep is it, of
3 course, but also its loading conditions. A ship
4 with certain length and a certain beam and draft
5 can behave totally different if it's loaded a bit
6 differently.

7 So we asked the captains, we asked the
8 agents, to give a copy of their loading computer
9 to show us how it's loaded and that gives us
10 trust that we know that we modeled that ship
11 correctly coming into port.

12 So that's on the input side and that's
13 the majority of what we're talking about today.
14 What PROTIDE does is to consider for a certain
15 time window for every location during the transit
16 or every time during the transit what will
17 happen.

18 Model the circumstances, simulate the
19 circumstances, and calculate what the ship will
20 do at that point. So we're looking at drifting,
21 squat, roll, pitch, heave and finally determine
22 what that dynamic under keel clearance is. If we

1 know the dynamic under keel clearance then we can
2 also show when it's safe to do this particular
3 transit.

4 The results that you see in PROTIDE is
5 mainly tidal windows -- that's the safe window in
6 time that you can use to come in with your vessel
7 -- and we test the actual planning of the ship
8 coming in.

9 To give the pilots insight of what
10 possibly can happen we give insight into
11 calculated roll, calculated pitch, and resulting
12 dynamic under keel clearance.

13 By using the system the planning can
14 be made and just before the actual transit we use
15 the best available actual data to give the final
16 goal to our decision to make sure we're doing it
17 safely. Next slide, please.

18 Going briefly through the inputs,
19 we're very fortunate here to have a lot of data
20 sources available and one we just showed by Jeff
21 Ferguson was the tides and currents that we
22 import. This is the domain on the right that

1 we're looking at so it's the ports in the blue
2 highlighted circle is the area we're interested
3 in.

4 In a little bit darker blue you see
5 the channel contours. The red little flags are
6 the model output point for waves that we have in
7 the system and we have one tide gauge in this
8 area which is on the L.A. side of the region.

9 We use the astronomical predicted
10 sites but, of course, they can be wrong. They by
11 definition are wrong with the current conditions.
12 So what we do is we monitor the differences of
13 what we see at the tide gauge with the actual
14 predictions and we constantly correct what's
15 happening there so they could try to get the
16 actual tide of every transit coming in. Next
17 slide, please.

18 So in the top right we see a tide
19 graph. The dark blue is the predicted side and
20 the light blue is what was actually seen at the
21 tide gauge and the right lower graph shows how
22 PROTIDE uses it.

1 So we use the predicted side but we
2 correct for the differences between the two and
3 that's why we can come up to a certain accuracy.
4 We think about two centimeters to 10 centimeters
5 accuracy during each transit.

6 We still use a 15-centimeter standard
7 deviation so an error margin around our
8 predictions in a simulation because the simple
9 reason is we don't have an actual tide gauge in
10 the channel. So we have to make sure that we use
11 the water level with a certain error margin to
12 correct for the -- per use of different location.

13 In the future what would we like to
14 have? Yeah, better equipped model so a
15 hydrodynamic model. That could certainly improve
16 the tide and current information around the
17 channel. Output points closer to the channel.
18 Finally, then data simulation to make sure that
19 the sites that we use are constantly corrected
20 for the measurement in the neighborhood. Next
21 slide, please.

22 Next to tides and currents the main

1 inputs is waves. We are very fortunate that we
2 have a lot of different wave inputs here and we
3 have a lot of local knowledge of what's actually
4 happening.

5 So we just saw the presentation of Jim
6 Behrens from CDIP. They have a lot of local
7 information what's actually going on here in this
8 region. They made sure that we have the best
9 buoys available here to look at to measure what
10 actually the wave conditions are, and we have the
11 NWPS model discussed also earlier today which
12 give a long-range forecast, six hours up to 144
13 hours or up to six days. We have an estimated or
14 projected or predicted wave field in our relevant
15 domain.

16 Based on those six hours to 144 hours
17 prediction we can make our tidal windows for the
18 next half a day to six days ahead. So the graph
19 in the lower end we see a five-day or six-day
20 period and in the colored bands we see three
21 transits being planned. So there were two
22 planned just January 15 and we see one planned on

1 January 19, which is the yellow band all the way
2 on the right. That actually is the tidal window
3 that PROTIDE calculates the wave conditions, the
4 tide conditions for that transit that's supposed
5 to come in on January 19.

6 If we look at the January 15 that --
7 maybe this screenshot was made on January 15 so
8 those transits will be a lot closer. So these
9 are -- those are the pilots almost planning to go
10 on board for those.

11 In that case the whole model switches
12 to the CDIP buoy-driven forecast model, which we
13 also saw in the previous presentation, and with
14 this buoy-driven forecast model the -- we
15 actually have the opportunity to based on buoy
16 readings look into the future one or two hours to
17 see what's going to happen based on actual buoy
18 readings and this gives us a very reliable final
19 check to see if this transit will come in.

20 After the buoy-driven forecast you
21 also, of course, also have the actual buoy
22 observations. So when the buoys jump up and down

1 in a matter that we do not see in the models we
2 still have the final build at moments and that's
3 to use the actual buoys. Next slide, please.

4 And this has proven to be a challenge.
5 So we have all those inputs. Great data, great
6 modeling. But the challenge is to find out how
7 good is this data. Is it good enough to use for
8 dynamic ship motion modeling? What can we do to
9 improve it?

10 So these are a few things -- a few
11 challenges we've been working on. So in the left
12 top graph we see the tide level, of course. We
13 see three other lines. There's one of the NWPS
14 forecast model, the lowest one. We have one line
15 of the CDIP short term forecast model and we have
16 the top line that shows the actual buoy reading,
17 which is very erratic.

18 You might notice that the buoy
19 observation here is a lot higher than the two
20 models. In this case, even one to two feet of
21 difference between what the buoy shows and what
22 the model thought would happen.

1 This is something we have to work
2 with. We model the ship motions based on the
3 wave motion so any error in the wave motions or
4 the wave predictions will also be in the output
5 of the ship motions. That's why we calculate
6 certain error margins.

7 So on the right lower end we see an
8 output of PROTIDE. The output of PROTIDE is the
9 red area and the blue area. So not the lines but
10 the areas. The blue is the pitch during the
11 transit and the red is the expected roll during
12 this transit.

13 It's not a line -- it's an area
14 because we have an error margin. So the lower
15 end of the band is the expected roll and the top
16 and high end is the maximum roll we expect during
17 this transit.

18 So we tried to give insight in the
19 pitch and the roll but we also have an error
20 margin around this and during our evaluations we
21 tried to fit this error margin around what's
22 actually happening.

1 If we have the roll and pitch on the
2 right lower end the left lower ends will give us
3 the dynamic under keel clearance. This has three
4 areas. The right or the yellow one is the static
5 under keel clearance.

6 So in the simple formula of having a
7 water level, the available depth of the channel,
8 and having a drop of the vessel then you have the
9 static under keel clearance. Then you get all
10 these dynamics coming in like the ship squatting,
11 maybe it's trimmed -- the roll, pitch, and heave
12 and that's what gives the dynamic under keel
13 clearance which is the lower blue area of this
14 graph.

15 In this case the lowest dynamic under
16 keel clearance is about two meters. When we
17 think about these vessels being about 20 meters
18 deep this is just, roughly, about 10 percent.
19 You see that PROTIDE also has a dashed blue line
20 in the left lower end. That is the minimum
21 dynamic under keel clearance we would like for
22 this vessel.

1 So with all the uncertainty in the
2 model, with all the best data and all the
3 modeling we calculate dynamic under keel
4 clearance and we cut it off as being as the --
5 that every vessel should have at least 1.5 meters
6 of dynamic under keel clearance. So the last 1.5
7 meters is our hard depth safety margin to make
8 sure that we are always on the safe side of our
9 calculations.

10 The right top two graphs are also the
11 wave plots that we've also seen today. The left
12 one is the model that shows that the wave field
13 is coming from the south. The right one is from
14 the buoy at the same moment and it shows the same
15 wave field coming from the south.

16 But we also see waves coming from the
17 north and that's actually the reflection of the
18 waves that reflect against -- that hit the
19 breakwater and come back and also affect the ship
20 motion. This, again, is something we have to
21 look at in this constant evaluation. Next slide,
22 please.

1 The other input is the depth of the
2 channel like we've seen from -- that we have
3 these from the high-resolution surveys. We
4 import them. We check if the channel is up to
5 date as we expect it to be. Next slide, please.

6 The input of ships -- so we receive a
7 data sheet of the ship we're expecting and also
8 get a snapshot from the loading computer to know
9 how it's loaded. We check them. The pilots
10 enter them into the system and then we model how
11 the ship will respond in the wave conditions that
12 we expected to have in this area.

13 So move forward again to the next
14 slide. I'm going through these slides a bit
15 faster because I want a little bit of time for
16 the final validation.

17 So we have the wave models which we
18 use as inputs. We have an error margin. So we
19 know that the waves are not perfect. We know the
20 tides and we know they're not perfect. We know
21 the channel. But how do we know that what we
22 model is actually going on and that's what we do

1 with the final step is that we put an onboard
2 motion sensor. The pilots take it onboard.

3 They put the motion sensor on the
4 vessel for the transit and it actually measures
5 what the ship is actually doing. So it measures
6 the roll, the pitch, and the heave, and that's
7 the final lines you see in the graphs on the
8 lower end and this gives us the comfort that
9 what's actually measured on board is within the
10 error margins that we used.

11 And this is the final check of our
12 model and this way we constantly improve what we
13 are seeing. One last slide.

14 A bit about the lessons learned in
15 this project. So, yes, models aren't always
16 wrong but I think we showed them that by using
17 data, modeling it and constantly validating it,
18 and taking time to improve it we can actually
19 deliver a system that operations can depend on
20 and is constantly available.

21 It could only work with the partners
22 we have here. So we give the model but we make

1 use of the NOAA expertise in the region, the CDIP
2 expertise in the region, and expertise in
3 industry here and bring that all together and
4 made it possible to deliver this product and also
5 take the time to make necessary improvements.

6 So I thank you all for the time and
7 then I'll go back to Julie.

8 MEMBER THOMAS: Thank you, Karsten.
9 You know what? We have one more slide. Do you
10 want to put that up? The very last slide. We
11 kind of brainstormed yesterday about some
12 requests to NOAA and I just want to put it up
13 here and go through it real quickly if you have
14 it. Yes. Okay.

15 So I'm going to go ahead, and this is
16 really to Captain Evans, or Admiral Evans, and
17 Marian Westley and Brad because these were items
18 that came up in the discussion after their
19 meeting yesterday under the under keel clearance.
20 So one is how important that channel bathymetry
21 is and, really, I think, Captain Jacobsen, you
22 were saying that there are some sloughing at the

1 edges and you're concerned a bit?

2 CAPT. JACOBSEN: Yeah. We have to
3 keep up with the soundings of the channels so
4 when we do have storms coming through this area
5 it will slough off the sides of the channels.
6 And so right now we've reduced the channel depth
7 to 75 feet -- from 76 to 75. So we take that
8 into account for the deep draft tankers coming
9 in.

10 MEMBER THOMAS: Right. Thank you. So
11 even though -- yeah, there are -- as we saw, and
12 it's great how many different opportunities there
13 are for getting surveys in this area. I think
14 that high-resolution NOAA channel survey is just
15 gold to the whole project.

16 I'm just going to zip through these.
17 The current meter installation there is -- what
18 we don't have are currents for this project and
19 there is a current meter, an RCS-1, which is on
20 one of the docks.

21 Possibly that could become available
22 in the future and then it would be to figure out

1 how to install it near the breakwater and ideally
2 they would like to integrate it with PORTS system
3 once that is done.

4 This one, Marian, I did give you a
5 heads up on this. Of course, they would like a
6 tide gauge right there at Long Beach and any
7 hydrodynamic modeling that can be done along the
8 channel entrance there, the two-mile channel.
9 And I don't know about the OFS system there. I
10 know that there is a tidal output but I'm not
11 sure it's for prime time in this area. So maybe
12 if you have any comments on that.

13 But let me just also say that the very
14 last one was to improve the accuracy of the
15 Nearshore Wave Prediction System. But as Ryan
16 very nicely pointed out that system is in
17 transition now to a regional wave prediction
18 system and the whole program, I think, is kind of
19 frozen until that regional one comes online. So
20 that would be the time to really assess the
21 accuracy and the resolution of it.

22 Marian, do you want to comment on the

1 tidal questions there?

2 DR. WESTLEY: Sure. So the potential
3 new instruments to be integrated in PORTS so
4 number two. Number three, those would be fairly
5 standard PORTS requests.

6 Chris DiVeglio, the PORTS program
7 manager, is on with me. But, again, that would
8 be a sort of standard PORTS request to add to.

9 I was just looking at the PORTS system
10 in LA/Long Beach. There's a lot of net sensors.
11 There's a lot of -- we integrate the wave buoys.
12 There's air gaps. That would just be adding new
13 sensors to that system.

14 I will say the model that we run
15 operationally on the West Coast, West Coast OFS
16 is not designed to go into the navigation
17 channels at all. So it's kind of an offshore.
18 It's a large domain. The innovation with that
19 model is its data assimilating so that was a
20 first for us.

21 But we don't have sort of a navigation
22 suitable or a navigation focus model there and

1 so, again, that makes it difficult for us to
2 provide services. We can predict the tide based
3 on the sun and the moon and gravity, which are
4 very well known, but what you actually experience
5 in a nearshore environment is going to be largely
6 influenced by weather and other things and we
7 don't have a way of capturing those in a model
8 simply because we don't have an OFS that serves
9 that specific need.

10 But, again, you know, there's a
11 requirements process. You could work with your
12 local nav manager and kind of get that in the
13 requirements list as a future of OFS or a
14 different OFS that would serve that navigation
15 need. West Coast OFS is a very large domain and
16 it wasn't designed to do that.

17 MEMBER THOMAS: Okay, great. Thanks,
18 Marian, for clarifying that. Okay. I'm going to
19 open up questions to the panel now.

20 PARTICIPANT: Kim might have something
21 to add.

22 RDML EVANS: Julie, can I -- Julie,

1 I'm sorry. Can I jump in for a second? I have a
2 clarifying question --

3 MEMBER THOMAS: Of course. Of course.

4 RDML EVANS: -- regarding point number
5 one here.

6 MEMBER THOMAS: Yes.

7 RDML EVANS: If I may. So 2018 -- I
8 think my name is probably on those surveys
9 because I was seated over here at that point.
10 But as I recall, much of that entrance channel is
11 an Army Corps -- it's a federal channel and I'm
12 curious about where things stand, if I'm
13 remembering that correctly, and if so where do
14 things stand with periodicity and the techniques
15 with which Army Corps is surveying that and how
16 do we -- what's your recommendation for how we
17 integrate a potential NOAA survey into the Army
18 Corps program there?

19 MEMBER THOMAS: Kim, do you have a
20 comment on that? I can tell you do.

21 MEMBER HOLTZ: Yeah, I do. I do.

22 So like, you know, we -- the port --

1 you know, we have done bathymetry surveys on that
2 main channel. It's 2020. Our contractor is
3 going back out there in the next two weeks do the
4 main channel again and we're going all the way
5 out past the buoy.

6 We're going to go much further out
7 than we ever did because we -- for the whole main
8 channel. So and we are going to meet with the
9 Corps of Engineers to ask them because they just
10 came in in 2023 and did their survey after we did
11 ours. Ours is a little higher quality. I mean,
12 it's a CATZOC A-1. Theirs is a CATZOC B.

13 So we're going to ask them can we just
14 -- we're going to repeat that main channel every
15 two years. Can we just give them the data so
16 they don't overwrite our little bit more precise
17 data?

18 RDML EVANS: That's great to hear,
19 Kim. I didn't realize that the PORTS surveys
20 were going all the way out of the gate, you know,
21 through the breakwater --

22 MEMBER HOLTZ: This will be the first

1 time we go all the way out. We're going to --
2 and then we will do that from now on.

3 RDML EVANS: Okay. And that's great
4 to hear, and as you know we have established and
5 are really started to grease the process for
6 ingesting that data into our external source data
7 pipeline, ultimately being portrayed in the
8 National Bathymetric Source, which Jeff
9 highlighted in his presentation, once we have
10 that built out on the West Coast.

11 So I think a lot of the pieces are
12 coming together here that will enable that to
13 improve that situation. That said, if there is
14 a requirement for a NOAA survey in the area, you
15 know, we can certainly enter that into the
16 prioritization system. Jeff can handle that.
17 But if there isn't an explicit requirement for a
18 NOAA survey and there are other assets available
19 that allows us to dedicate our very limited ship
20 time and other resources to other places.

21 So I would just ask that we think
22 about the totality of assets available,

1 opportunities available when we make those
2 requests.

3 MEMBER THOMAS: Thanks, Admiral.

4 MEMBER HOLTZ: Yeah, because the port
5 definitely -- sorry. The port definitely -- to
6 change some of the processes we're doing so
7 everybody would feel comfortable with what we're
8 doing we're more than willing to. You know,
9 we've been working with Jeff pretty closely or I
10 should say our consultant DEA has. So anything
11 we need to change we will do, you know, right
12 away.

13 RDML EVANS: And then lastly, Julie,
14 just one last note. On the requirement for
15 modeling I think we need to dig into this a
16 little bit further and, again, I'd point to Jeff.

17 But we do also have the STOFS model,
18 the Surge and Tide Operational Forecast System
19 model, which is due to be upgraded to 3D status,
20 if you will -- a 3D model this year and that --
21 again, I wouldn't want to make any promises but
22 it's conceivable that that could provide the

1 hydrodynamic coverage that's desired under point
2 four. We need to dig into that a little further.
3 I don't want to promise that but we do expect to
4 have a major upgrade for that model this year.

5 MEMBER THOMAS: Perfect. I'm writing
6 that down to follow up on because I think that
7 would be really helpful. Karsten, I know that
8 those points along the channel there sometimes
9 can vary quite a bit.

10 MR. UIL: Yeah, indeed. I think
11 having an actual hydrodynamic model. So test
12 STOFs that could be a very good idea so that
13 sounds like good news, and also having insights
14 in the expected currents in the region.

15 RDML EVANS: Yeah, I would suggest
16 just working with Jeff we can get you connected
17 with the subject matter experts in our modeling
18 shop to -- again, I don't want to promise that
19 that's going to meet your needs but I think it's
20 conceivable.

21 MEMBER THOMAS: Great, thank you.
22 Thank you. Okay. Let's go to panel questions.

1 I think the process is just to put your video on
2 so I can see you and if anybody has any
3 questions.

4 Tuba?

5 MEMBER OZKAN-HALLER: Hi, y'all. Can
6 you hear me?

7 MEMBER THOMAS: Yes.

8 MEMBER OZKAN-HALLER: Yeah. What an
9 excellent set of presentations. Thank you so
10 much. I felt like I've learned a lot and this
11 was a very, very excellent representation of what
12 it looks like to really do engaged research
13 that's inspired by a real need.

14 And so I congratulate you for pulling
15 it all together like you did because there are a
16 lot of pieces here that have to come together to
17 do what you did.

18 You know, I'm familiar with this
19 problem from just working at the mouth of the
20 Columbia River which has some additional
21 complications, you know, in addition to what you
22 all have to deal with, including things like very

1 rapidly changing bathymetry, very strong
2 currents, lots of wave-current interaction,
3 things of that sort.

4 But my question, and maybe you covered
5 this and maybe I missed that detail. Tell me a
6 little bit more about how the funding came about
7 for this work -- you know, how it all kind of
8 came together, who provided the funding, how much
9 funding we're talking about to stand up a system
10 like this like you have.

11 MEMBER THOMAS: Well, we're going to
12 turn it over to Kip for that.

13 CAPT. LOUTTIT: So if you rewind in
14 time to 2014 visionaries at the Port of Long
15 Beach and up at California OSPR each gave \$25K
16 and at the time the question was can a company in
17 Rotterdam that designed a system for Rotterdam,
18 North Sea, short period waves take inputs from
19 CDIP, take inputs from NOAA, and the concern
20 about a long period south swell.

21 So that was the first study that was
22 done. The study was successful that then, yes,

1 you can take NOAA and CDIP inputs into a Dutch
2 model and, yes, what was the short period wave
3 that they have, the long periods we have, yes, it
4 works.

5 So then the funding for the buoys came
6 up for it. There was only one buoy when they
7 started. NOAA funded a second buoy for a while.
8 Now Marathon -- at the time it was Endeavor --
9 funded the third buoy and then over time now
10 Marathon is funding two buoys plus they are
11 completely paying for Charta software. I don't
12 want to quote. We pay you basically by the year
13 now for a subscription, if you will, to X number
14 of transits that they will perform the
15 calculations. Then we have a second contract
16 with Charta for the validation.

17 I remember the first time that came
18 up. I'll say NOAA was a little offended -- that
19 may be too strong -- that you're going to hire
20 this Dutch company to validate our models, to
21 validate our wind. But everybody said, no, this
22 is a good idea if we're really going to trust the

1 system. So we're paying that by the
2 subscription. We're also paying for the
3 validation.

4 The third piece, as Karsten mentioned,
5 is I believe that the motion sensor is, roughly,
6 a hundred grand. It's the size of a one-pound
7 coffee can the pilots bring aboard. It hooks to
8 a laptop. So that's what records the actual
9 motion of the ship coming in so you can compare
10 it to the forecast. So we had to both buy that
11 thing and do the implementation and, in fact, now
12 getting ready to recapitalize that motion sensor.
13 So hundreds of thousands of dollars but the
14 simple answer is to begin with OSPR and the Port
15 of Long Beach put up the money to see if it would
16 work. When that was successful now Marathon is
17 paying the complete rest of the bill for Charta
18 software and for two of the buoys.

19 MEMBER THOMAS: But I notice you've
20 been really involved with Captain Jordan on the
21 Columbia River and they're running the OMC from
22 Australia, more or less the same thing.

1 But I thought about this because I'm
2 kind of on a lot of those emails too and one
3 thing that's really different is that Marathon,
4 the crude oil tanker, is coming in here to Long
5 Beach and it's so crucial, of course, because
6 nobody wants a spill.

7 And in the Columbia River I think it's
8 mostly bulk that comes in and so it's a little
9 bit different because there isn't, like, one
10 company that really is passionate about funding
11 it up in the Columbia River.

12 By the way, Tuba is a world class wave
13 modeler herself and you've done incredible work
14 up there.

15 MEMBER OZKAN-HALLER: Thank you,
16 Julie. But, again, I feel like this is a really
17 great example of a public-private university
18 partnership. So thank you all for giving a
19 presentation that's so nicely coherent.

20 MEMBER THOMAS: Captain Louttit
21 mentioned the funding for those wave buoys but we
22 also have to give the state of California credit

1 because that San Pedro buoy that's been there now
2 for 27 years or something has consistently been
3 funded by Cal Boating in the state of California.

4 Okay.

5 MEMBER OZKAN-HALLER: Even better.

6 State, federal, university, public-private.

7 Thank you.

8 MEMBER THOMAS: Exactly. Does anyone
9 else have a question on the panel? My goodness,
10 you are quiet today.

11 Nathan?

12 VICE CHAIR WARDWELL: Well, I figured
13 I asked one since it's been so quiet today.

14 MEMBER THOMAS: I know.

15 VICE CHAIR WARDWELL: Yeah. I mean,
16 so I was just curious. You know, so this is a
17 lot of precision navigation, elevation
18 determination. CO-OPS is going through and going
19 to be updating the National Tidal Datum Epoch
20 here soon and NGS is modernizing the spatial
21 reference system. Do you see any advantages or
22 challenges with those updates that will benefit

1 the navigation in this region?

2 MEMBER THOMAS: Do you know what that
3 is, Karsten? Explain it a little bit more for
4 Karsten.

5 VICE CHAIR WARDWELL: Ma'am, it might
6 be NGS' place to better describe the
7 modernization that they're doing but redefining
8 the horizontal and vertical datums that are used
9 to define positioning in the U.S. and then on the
10 CO-OPS effort it is redefining mean lower low
11 water and tidal datums based on a new 19-year
12 period, and some of those things might have real
13 small changes in this region. It may not matter.
14 But I'm just kind of curious if it's something
15 that you are thinking about as an input.

16 MEMBER THOMAS: Yeah. You know what?
17 Thank you, Nathan, for actually bringing that up
18 because, Brad, do you -- you know, when -- Brad
19 is the director of the National Geodetic Survey
20 and do you know about the changes?

21 I know that the amount of change that
22 we're going to see is different throughout the

1 whole coastline. Do you know anything about
2 Southern California?

3 MR. KEARSE: Yeah, I do, and what I
4 would recommend is our regional advisor to work
5 with you all closely and I know Dana might be on
6 the line -- Caccamise. We have regional advisors
7 throughout the country who know the local issues.
8 Kim, I'm sure that you probably know Dana and he
9 could tell you any particulars. He's well aware
10 of that region and anything.

11 I think he is supposed to give us an
12 update on some of the challenges here. So I'll
13 make sure that -- I'm not sure he's on right now.
14 But any particular interest in -- our regional
15 advisors are there to support anything that's
16 going on. That's what their role is.

17 So I would recommend that we get Dana
18 involved in this and at least to respond to any
19 local questions or concerns. He's well aware of
20 the whole modernization effort. He's actively
21 involved in all that and that's what I would
22 recommend.

1 MEMBER THOMAS: Dana, are you on?

2 MR. KEARSE: I don't think he is. I
3 just looked.

4 MEMBER THOMAS: Okay. Okay. I was
5 talking with him this morning. We were going to
6 carpool at one point. But, Kim, do you want to
7 say something here?

8 MEMBER HOLTZ: So basically
9 horizontally and vertically has always been tied
10 to passive physical monuments in the ground. The
11 new system is going to using GPS satellites,
12 which we've been doing for a while but for the
13 vertical and horizontal.

14 And so it's moving more away from
15 passive monuments and that's the biggest deal.
16 Vertically the West Coast or at least, I should
17 say, Southern California will go back to an
18 elevation that was very similar to the 1929 mean
19 sea level elevation. So it's going to change,
20 like, 2.7 feet in, like, Long Beach. We changed
21 when we went to NAVD 88 and now we're going to
22 change back.

1 So that's just some of the -- you
2 know, so those are concerns that are going to
3 have to be dealt with. I mean, then you convert
4 it to mean lower low water, obviously, for
5 anything with the shipping industry. But it is
6 definitely going to be a challenge.

7 I mean, I work really closely with
8 Dana all the time and we both sit -- well, he
9 sits at Scripps, but with the California Spatial
10 Reference Center, these are things we're all
11 talking about, California Land Surveyors
12 Association, different county agencies. So it's
13 going to be a big change at least for the
14 surveying industry.

15 MEMBER THOMAS: Thanks, Kim, and I'm
16 glad you brought that up, Nathan, because that is
17 an important piece to the puzzle.

18 VICE CHAIR WARDWELL: Yeah. I mean,
19 a couple things. I mean, if it's going to, you
20 know, improve in determination of the under keel
21 clearance or reduce some of those uncertainties
22 at all and be able to bring in more cargo than

1 that's a big advantage, and then in one of the
2 presentations earlier today there was that
3 question of like, hey, are we using control or
4 GPS, right, which was are we using passive or
5 active control, right. So it was a question that
6 one of the panelists brought up earlier, and so
7 thanks for bringing that up, Kim.

8 RDML EVANS: Yeah. And I'd like to --
9 Nathan, thank you for bringing that up because
10 what we're trying to really emphasize in the
11 modernization effort is everybody is connected to
12 the new reference system, right, that everything
13 is. So when we get to modes of transportation
14 and like Nathan was saying under the keel,
15 bridges, everything in DOTs are all tying to it.

16 Now we got a consistent reference
17 system that we can take out any of those biases
18 from passive control and whatever. I mean, we've
19 spent a lot of time modernizing the foundation of
20 the georeference system and it's going to be as
21 accurate as we can get, and I'll talk about that
22 when I give my presentation real quick -- I mean,

1 later on here this evening.

2 But that's what we're truly trying to
3 push, that folks understand what it means and
4 folks are moving in that direction and help you
5 transform even your current data to get it to
6 that new reference system.

7 MEMBER THOMAS: Okay, thank you. You
8 know what? I think we're out of time. It is
9 3:00 o'clock here anyway. Let's see. Sean, back
10 to you.

11 CHAIR DUFFY: Thank you --

12 MEMBER THOMAS: Thanks to all for the
13 panel. I just wanted to say this has been a
14 fantastic experience over the last several years
15 working with this panel and I just always
16 appreciate their attention to detail and their
17 focus on safety, and it couldn't be more of a
18 pleasure working with you. So thank you all very
19 much for your presentations.

20 Okay, Sean.

21 CHAIR DUFFY: Thank you, Julie, and
22 reiterate. Another excellent panel. We do have

1 a break and as it shows on the screen we'll
2 reconvene in just under 15 minutes -- 3:15
3 Pacific. Thank you.

4 (Whereupon, the above-entitled matter
5 went off the record at 3:01 p.m. and resumed at
6 3:16 p.m.)

7 CHAIR DUFFY: So I'd like to introduce
8 Darren Wright for the next presentation. I've
9 known Darren for a long time. He's now manager
10 of Precision Navigation Program. I do not think
11 he needs much introduction to the members of the
12 panel and look forward to listening in. Darren,
13 the floor is yours, sir.

14 MR. WRIGHT: Thank you, Sean. Next
15 slide.

16 Yeah, I think that the last time I
17 addressed this panel was right when I was
18 switching jobs from the national marine program
19 manager to this position about a year and a half
20 ago. So it's good to be back.

21 Again, I'm Darren Wright. I'm the
22 Precision Marine Navigation program manager for

1 the Office of Coast Survey and -- back one slide,
2 please.

3 So we've heard the term precision
4 marine navigation thrown around a lot today. I
5 always like to start off with a definition of
6 what I consider precision marine navigation and
7 it's really what the pilot and other mariners do
8 on a daily basis. It's the ability to navigate
9 a vessel in close proximity to other vessels, the
10 sea floor, bridges, narrow channels and other
11 marine hazards like weather. Next slide.

12 The maritime economy is continuing to
13 grow, as you can see on the graph on the right,
14 and what that means is more goods and services,
15 which means increased traffic. And, of course,
16 the ships are not getting smaller. We've seen
17 several examples of that this year, and I might
18 hit up Captain Betz for the image of the Ben
19 Franklin to replace this one because I think that
20 one is even bigger than this one. Next slide,
21 please.

22 So because of that the waterways are

1 getting more and more congested. We're having
2 clearance issues under bridges and, incidentally,
3 that picture in the upper right I got to do a
4 ship ride with NOBR pilots -- New Orleans pilots
5 on the Mississippi River -- and, you know, we
6 were bringing a tanker southbound and there was
7 a tanker coming northbound on our right and a
8 barge on our left and we went right between them.
9 But they were both moving. So and I'm sure this
10 is not just common on the Mississippi River but
11 in other busy port areas as well. But because of
12 this we need to integrate environmental
13 information that NOAA provides to help mariners
14 navigate more safely. Next slide.

15 And NOAA's got great data. You know,
16 we've seen a lot of that today. You know, water
17 level information -- we got weather information,
18 electronic navigation charts, high resolution
19 bathymetry. But at the moment it's all over the
20 place. You have to go to different websites to
21 get it and it's on different platforms and
22 different formats. Next slide.

1 So this is what the Precision Marine
2 Navigation Program at NOAA is trying to solve.
3 We want to take NOAA's great navigational
4 information, put it in this international
5 standard format called S-100, which we'll talk
6 about here in a minute.

7 Putting it on a dissemination system
8 in machine readable language and the
9 dissemination system we're using is the Amazon
10 cloud and we have a website,
11 marinenavigation@noaa.gov where you can go and
12 find out more about this program and also how to
13 get access to this information and I'm going to
14 talk about it here in a second. Next slide.

15 So these are the data products that we
16 plan to offer up NOAA in this S-100 data
17 framework. I'm going to touch on each of these
18 as we go through so you'll see what I'm talking
19 about. Next slide.

20 So we're going to kick things off with
21 S-102, or high resolution bathymetry. Jeff did
22 a great job of going in depth with this so I'll

1 just breeze by this.

2 But this is an electronic navigational
3 chart under ENC where you can see the soundings
4 throughout the channel there and I intended at
5 this point to just point out the window and say
6 that this is the entrance to the Port of Long
7 Beach right out the window in that direction --
8 but I can't do that because I'm in Maryland -- if
9 it had been in person.

10 But anyway this is an electronic
11 navigational chart and that picture to the right
12 is a ship that's about to make that entrance, and
13 thank you to Tom and the Jacobson Pilots for that
14 image. Next slide.

15 So this is an image of the portable
16 pilot unit, PPU, called SEAIq that the Jacobsen
17 Pilots use and it's overlaying the S-102 data,
18 and as Jeff mentioned, it's gridded data so you
19 can not just see the soundings but you can do
20 depth contours and you can adjust those to
21 whatever contour you want, and that shift to the
22 right is a specific depth. You can set your

1 safety contour which is what you see in red and
2 you can design that specifically for that
3 particular ship, not just the canned ones that
4 you get in a regular ENC. Next slide.

5 Now, here's where it gets good. So if
6 you take that safety contour and you add in a
7 water level forecast, as the tide is going in and
8 the tide is going out that contour is going to
9 change based on the depth of the water and on
10 this particular waterway you can see at certain
11 times during the day that particular vessel is
12 not going to be able to make that transit. So
13 you can utilize this dynamic information to plan
14 your transit so you can make sure you navigate
15 safely. Next slide.

16 Now, if you integrate surface currents
17 on top of that now you're starting to get a
18 complete picture what's going on environmentally
19 when you're transiting to help you better
20 navigate safely. Next slide.

21 So here's another screenshot from a
22 portable pilot unit -- again, SEAIq that the

1 Savannah pilots use -- and this is a turning
2 basin where you see an ENC and it looks like,
3 hey, no problem. Next slide.

4 But if you do an overlay of the high
5 resolution bathymetry at a chart depth where
6 there's mean lower low water that particular
7 vessel is going to have trouble making that turn
8 because they're kind of outside of their safety
9 contour. Next slide.

10 But the portable pilot unit
11 manufacturers are actually getting ahead of the
12 game because NOAA is not providing its water
13 level forecast information in the S-100 format
14 yet.

15 But they've built in the ability to do
16 a tidal adjustment in their software. So it's
17 manual at this point but in this particular case
18 they added two meters, which better represents
19 what's going on at that time, and you can see
20 that vessel is now going to be able to navigate
21 safely. Next slide.

22 As I mentioned, all this stuff is

1 configurable in the PPU software. You can set
2 your safety contour. You can set how many
3 contours you want. Jeff talked about you can set
4 up a tidal adjustment. All that is configurable
5 in this software. So this is how people are
6 already starting to utilize some of this S-100
7 information. Next slide.

8 We also plan to offer weather
9 information as well, though we're initially going
10 to focus on the weather and wave warnings in the
11 upper right. Next slide.

12 So this is a weather chart of what it
13 would look electronically. Next slide.

14 Now, if you take the wind warnings and
15 overlay it for gale force, storm force, and
16 hurricane force based on that weather system
17 that's going on there you get to see what the
18 conditions are surrounding that weather system
19 rather than just having to interpolate that
20 weather map. Next slide.

21 So this is wind and then this next
22 slide is waves. So now you're beginning to see

1 with the bathymetry we're making decision making
2 easier. You stay between the lines, right, for
3 the bathymetry and then for this information you
4 just stay outside of the circle of the conditions
5 that you don't want to deal with.

6 So if you don't want to deal with 14-
7 meter waves you stay out of that circle and I
8 don't think there's many people that do want to
9 deal with 14-meter waves. Next slide.

10 So now you're beginning to see if you
11 utilize this environmental information together
12 and it's all integrated you now have the ability
13 to potentially bring in larger vessels. Next
14 slide.

15 So the Korean Hydrographic and
16 Oceanographic Agency has begun to quantify the
17 utilization of some of this information. So S-
18 102 is bathymetry -- 104 is water levels. They
19 have a ship route.

20 You can see in the top part of that
21 graphic on the right is the normal route that
22 they take and transit during nice weather. But

1 if there's bad weather they used to take that
2 route to the south on the bottom of that image
3 and they, through utilizing water level
4 information and high resolution bathymetry they
5 determined that even during bad weather they can
6 hold to that route and just alter the end of that
7 route, making it 55 percent shorter, saving them
8 \$124,000 a year. Next slide.

9 So here's another study they did with
10 the transect that they operate where on the left
11 they just put the vessel on a fixed speed to get
12 from port to port and on the right they utilized
13 an optimal route utilizing currents and weather
14 information and, again, they were able to save
15 14.6 percent fuel consumption and emissions.
16 Next slide.

17 So how do you get access to the
18 information? You can go to
19 marinenavigation@noaa.gov, again, and that will
20 point you basically to this interface and this is
21 nowCOAST and many of you are familiar with this.

22 Jeff showed this and showed getting

1 access to where we have Blue Topo. But we also
2 have S-100 product availability here as well.
3 And if you turn on that tab this is what you will
4 see. Next slide.

5 And if you zoom down into an area of
6 interest and click on it it'll give you a legend
7 of what information is available and it will give
8 you links that will point you to the Amazon cloud
9 where we have this information.

10 A lot of the PPU manufacturers and
11 other electronic charting system manufacturers,
12 you know, once they figure this out they go
13 straight to the Amazon cloud and get the
14 information. Next slide.

15 We've also built in something called
16 discovery metadata. So if you know what your
17 transect is you can set up to only download the
18 tiles of information that you need because
19 bandwidth is a big issue when you're at sea. So
20 rather than doing a big data dump you see on the
21 left you can really customize it to just the
22 information you need. Next slide.

1 So where are we with all this
2 development? So S-102 we've already seen some
3 examples of how that's being used in LA/Long
4 Beach. We also have and, again, I'm going to say
5 testing evaluation data because that's what it is
6 at the moment in New York, New Jersey, and most
7 recently, Boston, Charleston, and Savannah. But
8 you'll notice it's Edition 2.1 with another
9 edition coming out here shortly. I'm going to
10 touch on that here in a second.

11 We hope to offer up water level
12 forecast information so we can start to utilize
13 or start testing that dynamic capability later
14 this year. Surface currents, we actually have it
15 in most locations where we have an operational
16 forecast system around the country. Again, it's
17 in a version -- not the final version yet, which
18 we'll talk about here in a minute.

19 The weather information that's
20 actually not going to be coming out for a couple
21 years. Now, the polygons I showed you were
22 derived from some of the weather models but the

1 ability to disseminate data in a polygon format
2 that infrastructure is not in place yet at the
3 Weather Service. They're working towards that.
4 That's going to be a couple of years.

5 And then the ENC we have a plan in
6 place to transition from the old standard S-57 to
7 S-101. But that's going to, again, take us a
8 while to get there and we hope to have S-101 data
9 available for the major ports by 2026. Next
10 slide.

11 There it is. So this is the (audio
12 interference) I was talking about. All the data
13 standards I just showed you that we've done all
14 this development work towards these standards are
15 not finalized yet.

16 These are international standards and
17 they're still working to put out the final
18 versions and I'm told they will be finalized by
19 the end of this calendar year.

20 So because of that we're not going to
21 do any further testing and evaluation S-102 high
22 resolution bathymetry data in other locations

1 until that standard is finalized. Next slide.

2 So here's kind of a time line. That
3 column on the left is 2024. That big red line
4 you see that's when the S-100 standards for all
5 those data types are going to be finalized.
6 You'll see the ones that NOAA plans to offer, the
7 bathymetry water levels and currents. We hope to
8 have our version of that done pretty quickly
9 because we've done a lot of development work to
10 get us close and this final version is just going
11 to be a tweak.

12 So we hope to offer that data early in
13 2025 in the major port areas and as you can see
14 the weather information is going to be a little
15 bit further down the road, and then the
16 electronic charting system, again, 2026 is when
17 we hope to have this data available.

18 And why does everything point to 2026?
19 Next slide. So this is why we're doing what
20 we're doing. We're building to this deadline
21 here. The International Maritime Organization
22 has amended their Electronic Charting Display and

1 Information System, or ECDIS, which you see an
2 image of on the right and this is the charting
3 systems that are aboard the major ships. They've
4 updated that standard to leverage that those S-
5 100 layering capabilities I was just showing you
6 earlier and starting in 1 January 2026 the ECDIS
7 manufacturers can start to utilize these
8 capabilities. So we need to have this data set
9 ready for that and 1 January 2026 is less than
10 two years away. So it's not far away.

11 And then starting in 1 January 2029
12 any new ECDIS system manufactured is going to be
13 required to utilize these S-100 capabilities,
14 which I just showed you. And I think that is it.
15 Next slide.

16 So thank you very much, and I don't
17 know if you're doing questions, Sean, or not or
18 whether we're doing them later. I don't know.

19 CHAIR DUFFY: I think we'll hold
20 questions later so that we can move on the time.
21 As you know, the Mississippi River is going to be
22 challenging. I will say if we were not on a

1 tanker that was the only thing I heard you get
2 wrong that I knew of. But you know somebody from
3 NOBR is going to let you know you got that wrong.
4 So heads up, be prepared.

5 All right. We're going to move on now
6 to the directors panel and have questions for
7 Darren later in discussions. I'm going to
8 introduce once again Rachael Dempsey, deputy
9 administrator for navigation and observation to
10 lead the directors panel, if I got that right
11 hopefully. Thank you.

12 MS. DEMPSEY: Thank you, Sean. Good
13 afternoon. Good evening, everyone. It's good to
14 see you all again. I'm happy to bring to you the
15 second panel this evening that I'm hosting, which
16 we're going to discuss opportunities and
17 challenges for the National Ocean Services'
18 navigation, observations, and positioning
19 portfolio.

20 So just as a recap for those of you
21 who may not be familiar with the offices that are
22 in this portfolio, it consists of four offices,

1 three of which are represented and advised by the
2 HSRP.

3 Those offices would include the
4 National Geodetic Survey represented by Mr. Brad
5 Kearse today, the Center for Operational
6 Oceanographic Products and Services represented
7 by Dr. Marian Wesley, and the Office of Coast
8 Survey, of course, you all know represented by
9 Admiral Ben Evans.

10 The fourth office is actually the U.S.
11 Integrated Ocean Observing System, or IOOS
12 program that many of you are familiar with. They
13 do not fall under the HSRP but they are certainly
14 very great, solid partners for us both internal
15 to NOAA and external in reaching HSRP goals.

16 So I wanted to round that out for you
17 all. Now, it's been a real pleasure being able
18 to participate in getting the larger audience
19 both inside NOAA and external to NOAA familiar
20 with what we call the Foundation 4 programs.

21 The reason we call them Foundation 4
22 is because they're, in fact, what NOAA was

1 founded on, honestly, and so bringing this
2 observation information to the public is
3 extremely important to us.

4 Right now we've done a little bit of
5 shifting and focusing on our strategic goals and
6 largely because our administrator Ms. Nicole
7 Leboeuf has published our strategic plan for NOS
8 and so we're focusing on the meaning of those
9 strategic goals, meeting our fiscal challenges
10 and how we're going to, you know, make sure that
11 we continue to provide the stellar products and
12 services based on our observational data in the
13 near future and the way that we get to do that is
14 really by telling our story.

15 And so I want to tie that in with the
16 panelists from this morning's group with our
17 local stakeholders who did such a beautiful job
18 in helping us with that.

19 So that all being said, I would like
20 to introduce Dr. Marian Westley who is going to
21 give us an update on CO-OPS programs and an
22 outlook for the future.

1 Marian?

2 DR. WESTLEY: Thank you so much,
3 Rachael.

4 So just a warning to everybody, I'm in
5 my office and there's a -- the light is managed
6 by a motion detector that's very far away. So if
7 I'm suddenly in the dark don't take it
8 personally. I will keep talking. It's more
9 important that you see my slides than you see my
10 face.

11 So with that, let's go ahead and get
12 started. So this is just sort of routine
13 annual/biannual update that we provide you on
14 achievements and accomplishments coming out of
15 the Center for Operational Oceanographic Products
16 and Services, or CO-OPS, and for those of you who
17 are new to the HSRP or new to this kind of
18 meeting we are the national authoritative
19 reference source for tide gauges and tidal
20 currents and tidal datums.

21 So that's just to give you some
22 context. So let's go ahead with the next slide.

1 So the updates I'm going to provide to you today
2 are where we are with the National Tidal Datum
3 Epoch Update and Nathan Wardwell mentioned this
4 at an earlier conversation today.

5 I'll give you an update on our tidal
6 current surveys program, the National Current
7 Observation Program -- again, one of our mandated
8 observation programs.

9 I'm going to show you a new tool we're
10 about to release called OceansMap that is a
11 visualization tool that combines coastal
12 forecasting where we have forecast models with
13 observations.

14 I'm going to give you some updates on
15 what we've been doing with Coastal Inundation
16 Dashboard. For those of you who are not familiar
17 with Coastal Inundation Dashboard it's our kind
18 of main entry point to our data for resilience
19 purposes.

20 So it's where we go when we're
21 watching a storm coming in. It's where we go to
22 visualize flooding and I'm going to mention some

1 of the observing system improvements we've been
2 making not exclusively but largely with funding
3 from the bipartisan infrastructure law, and then
4 I'm going to give you an update on the PORTS
5 program.

6 So PORTS stands for the Physical
7 Oceanographic Real Time System. This is a
8 public-private partnership program that we've
9 been running since about 1990 where we partner
10 with navigation entities and add sensors to a
11 region with their partnership, those sensors that
12 are needed specifically for the navigation gates
13 at that port.

14 Okay. So let's go ahead with the
15 first one so the NTDE, the National Tidal Datum
16 Epoch Update. So those of you who are tide geeks
17 will know that there's an 18.6-year tidal cycle
18 that's kind of the longest of the gravitational
19 cycles that we pay attention to and so we really
20 try and update -- we define that as a tidal datum
21 epoch.

22 So the sun and the moon and the

1 Earth's tide system have gone through their full
2 range of motion in the 18.6 years so we try and
3 really update all of the title datums. So
4 whereas, you know, mean higher high water, mean
5 lower low water, mean sea level, all of those, we
6 try and update those every 20 to 25 years to
7 acknowledge that we've gone through another tidal
8 datum epoch.

9 So the current tidal datum epoch is
10 based on data from the current one that we're in.
11 The current update that we're doing is based on
12 data from 1983 to 2001. The new one will cover
13 data from 2002 to 2020 so the next epoch, and
14 that will be released after 2026.

15 It involves analyzing over 2,000
16 active and historic tidal stations and kind of
17 recalculating the tidal datums in all of our
18 locations. We will be doing a lot of outreach
19 and rollouts.

20 If you are interested we've developed
21 some training videos. We're doing regional
22 webinars. I believe Eric Peace is going to help

1 us. That was with the lakes version, IGLD, which
2 is related.

3 So we'll be doing a lot of
4 presentations and, again, if you as a stakeholder
5 group would like the presentation please let us
6 know. We'd be happy to include you in that
7 rollout.

8 And this will have big impacts any
9 stakeholder that needs to know where mean sea
10 level is or chart data or any of those. It'll
11 affect navigation. It will affect our port
12 systems. We will update all of our water level
13 web pages and then NOAA Sea Level Bureau will be
14 updated as well.

15 So I think I'll go from there, move
16 on. So every year we try and make progress on
17 NCOP, which is the National Current Observation
18 Program. So these are very intense field
19 campaigns where we'll go into a tidal estuary or
20 tidal area and case tide gauges -- not tide
21 gauges, current meters on the sea floor all
22 around there, leave them in place over the

1 summer, collect them again, and then analyze all
2 that data.

3 So we're done with Delaware Bay. We
4 finished the field work for Columbia River, this
5 very long river with very violent currents. So
6 very important to keep that one up to date as
7 much as possible.

8 We think we'll have the predictions
9 completed for that in 2025. We've started
10 working on Savannah River. So we did some
11 observations last year and we'll start the
12 analysis soon and that's an area that pilots have
13 been requesting updated current information for
14 over 10 years.

15 Our next one coming up is Charleston
16 Harbor so the survey has plans starting this
17 summer in May and continuing through September.
18 Again, the requirements for these are largely
19 based on navigation needs, as you're well aware,
20 as harbors change and evolve over time and the
21 way the tide interacts with that. Bathymetry
22 changes over time and the currents really need to

1 be updated and reanalyzed.

2 We also provide this data for model
3 validation and just general physical
4 oceanography. So that's where we are with the
5 NCOP surveys. Next slide, please.

6 So this is a new tool we're about to
7 roll out. It's in sort of final testing right
8 now. It's going through all its IT security
9 checks. This is a tool we've developed in
10 partnership with IOOS, or IOOS has helped us
11 bring it into operations over here and this tool
12 basically is a visualization tool that allows you
13 to look at all of our OFS data -- ocean forecast
14 system data -- as well as the observation data
15 sort of together in one place and a sophisticated
16 user can make sort of curated views.

17 So you can decide that you're really
18 interested in the Chesapeake Bay operational
19 forecast system and all the observations there.
20 You can create yourself a webpage that will just
21 update that for you.

22 So I think it'll be a great tool for

1 people to really look in sort of real time, have
2 sort of that environmental intelligence of what's
3 going on between both the centers and the ocean
4 forecast systems and those regions where we have
5 a mature ocean forecast system running.

6 So that's oceans map. We will
7 probably send notes out to the HSRP when it's
8 finally fully public. I have a beta version so
9 I play with it a lot. We should have this over
10 the finish line by the end of this month. Next
11 slide, please.

12 So as you know, Coastal Inundation
13 Dashboard is kind of the main way into our
14 website for when you're looking for that
15 situational awareness if a storm is coming or
16 something unusual is happening in your area. We
17 really developed this product very much in
18 collaboration and coordination with the Weather
19 Service.

20 So we show our tidal data with the
21 Weather Service minor flooding, moderate
22 flooding, major flooding thresholds that are in

1 the same regions as our tide gauges. So the
2 things that we've added -- because this is a
3 place where people -- it's often their sort of
4 first port of entry, so to speak, on the web for
5 an incoming storm so it's very important to us
6 that we have all the National Weather Service
7 texts associated with those active flood watches,
8 warnings, and advisories.

9 The website also directs you to the
10 Weather Service for that actual kind of forecast,
11 you know, life and property guidance from the
12 Weather Service. We've also improved the layout
13 just to make it easier to sort of move between
14 these different products and sort of more
15 seamless navigation between the Coastal
16 Inundation Dashboard and our just basic tide
17 gauge pages home pages.

18 So I hope you take a look. I'm sort
19 of addicted to this website. I look at it on my
20 phone a lot. We did have it optimized for phone
21 viewing a few years ago. So it's just a great
22 way to kind of refresh and update, you know,

1 situational awareness if you have a storm coming
2 to an area that you care about. It's a great
3 place to go look at it. All right. Next slide,
4 please.

5 Okay. So this is showing, you know,
6 how we will have the pop-up of that National
7 Weather Service kind of authoritative text, you
8 know, when there's a situation coming. Okay, go
9 ahead. Next slide.

10 Great. So here are some of the
11 observing system improvements we've been able to
12 make thanks to the bipartisan infrastructure law.
13 We have a budget to do recapitalization and also
14 modernization of some our NWLON gauges. This
15 isn't just for standard annual maintenance.

16 This is for kind of upgrades and
17 evolution of our gauges. So we have totally
18 rebuilt the Charleston, South Carolina station.
19 I believe it had been hit by a ship at one point.
20 So we've moved it. We've also put the wind
21 gauges for this station, they're up on top of the
22 pilot house so they're up out of the way. This

1 was an area where cruise ships will come next to
2 the wind gauges and then cause a wind shadow so
3 your data's kind of useless.

4 In partnership with the local weather
5 service station we've added a custom rain gauge
6 to this, again, because we've already built the
7 platform. We've built all the communications
8 equipment that goes with these platforms.

9 We usually look for opportunities to
10 add meteorological systems to them as well. So
11 one thing that we've been doing that's -- oh, and
12 then what we've done for the pilots here is we've
13 hardwired the wind gauge data into a wind unit
14 inside the pilot house so they can look directly
15 at the wind gauge as opposed to looking at the
16 wind gauge data as it's come, you know, through
17 the GOES satellite back to our website. So that
18 was something that they requested and we were
19 able to handle that request for them.

20 Another thing we've added to the
21 station is a high-resolution WebCOOS webcam. So
22 WebCOOS is a kind of R&D program that IOOS is

1 running to put web cameras in different places
2 around the country, you know, for situational
3 awareness.

4 This one is looking at Charleston and
5 we initially just had a single view. Now it has
6 six different viewing angles. So it every minute
7 will go around and look at these different
8 viewing angles. So next slide, please.

9 One of the reasons we really like
10 reliable webcams and why we're often looking for
11 webcams in areas where there's been a storm is
12 for that situational awareness.

13 So these two images, the top one shows
14 what was happening. There was an East Coast
15 storm in December and so we were all watching,
16 you know, that big system come through and
17 watching as it went through those Weather Service
18 thresholds of minor flooding, moderate flooding.

19 And then the bottom one, I believe, is
20 Hurricane Idalia as it came through Charleston.
21 What we find really helpful with these is we can
22 show you a tide gauge plot and for sophisticated

1 users like yourself that's perfectly meaningful.
2 But for your sort of average member of the public
3 it's really helpful to be able to match when the
4 plot looks like this, this is where the water is
5 on the ground.

6 So, again, we've done a few of these
7 in different parts of the country as
8 opportunities arise kind of on an experimental
9 trial basis just to really enhance the
10 communication ability of a tide gauge. So if
11 this is what it looks like on the tide gauge,
12 this is what we've measured, and here's what it
13 looks like in real life. Next slide, please.

14 So another real benefit of having a
15 webcam there is for visibility. So a lot of our
16 harbors, a major hazard to navigation is fog, and
17 so again, this gives our Weather Service partners
18 just a real-time view. This is what's going
19 around the harbor. This is what it looks like
20 right now. This isn't a visibility sensor, per
21 se, but it gives them that situational awareness
22 as they're making those marine safety forecasts.

1 So this is just some testimony from
2 Jonathan Lamb in the Charleston meteorology at
3 National Weather Service office just saying, you
4 know, we're monitoring for sea fog. It's been an
5 enormous impact on shipping traffic. It's always
6 been difficult to find high quality reliable
7 webcams with good views of Charleston Harbor. We
8 absolutely love the NOS webcam and use it
9 regularly on the forecast shift.

10 So, again, not a visibility sensor but
11 it gives that extra situational awareness to our
12 Weather Service partners of what it really looks
13 like on the water when they're making their
14 marine forecasts. Okay. Next slide, please.

15 So another thing we've been focusing
16 on is just website improvements. We do have some
17 BIL money to hire IT help and so we've been
18 looking at high and low water conditions. We
19 know that in many parts of the country low water
20 is a major hazard to navigation. So it used to
21 be kind of subtle and you'd have to go looking
22 for the low water.

1 We have a page for high and low water
2 conditions. But now we actually kind of put the
3 same sort of banner that we put when there's a
4 big storm or there's flooding, we now put that
5 banner when there's low water conditions.

6 So that's kind of one upgrade just in
7 the web design. The other thing that's an
8 upgrade for low water is instead of having our
9 CORS watch standards manually figure out when
10 there's no water and put it in, now it's all
11 automated and so that gives us the ability in the
12 future of maybe developing custom thresholds for
13 when, you know, a group wants to determine that
14 this condition is low water and there needs to be
15 some hazard warning about the low water there.

16 So the low water criteria right now
17 for tidal stations is 18 consecutive minutes
18 where the water drops below one and a half feet
19 below mean lower low water, and that's just a
20 general definition across the board. But, again,
21 that can be tuned or altered if that's not a
22 meaningful definition in that region.

1 For Great Lakes also low water is a
2 critical navigation hazard in the lakes and so
3 the criteria there is 12 consecutive hours below
4 low water data. Again, this is just, you know,
5 not a major change in our website but just an
6 upgrade to make that information easier to find
7 and more visible. Next slide, please.

8 Okay. So the PORTS program I
9 introduced earlier in the conversation. So PORTS
10 stands for the Physical Oceanographic Real Time
11 System and this is a program that we stood up
12 after the Sunshine Skyway Bridge in 1980.

13 I think around the '90s we started
14 this program and it's a partnership with various
15 maritime entities where an entity will come to us
16 and say, you know, we like your tide gauges, we
17 like your current surveys but what we really need
18 to navigate safely in our harbor is a visibility
19 sensor, an air gap sensor, a current meter, some
20 combination of those.

21 So we have, I believe, 38 active PORTS
22 systems right now and these are the enhancements

1 we did this year. These are not new systems.
2 These are just, you know, adding sensors to an
3 existing system so we added visibility and wind
4 to Fort Morgan, Alabama. We added a water level
5 station in Kalama, Washington. Port Everglades,
6 we put in two current meters and I think we just
7 finished that in January.

8 Jacksonville there's a current meter.
9 Mobile Bay there's another current meter. Port
10 Fourchon we upgraded the water level station and
11 Chesapeake Bay Bridge we have added a second air
12 gap sensor on the same span.

13 Initially, we were looking at putting
14 the air gap sensors on the different spans but
15 when we surveyed the bridge we realized there was
16 one span that was always the lower span so now we
17 have two kind of fully redundant systems on that
18 one span.

19 New PORTS kind of in the works. We
20 will hopefully get Pearl Harbor over the finish
21 line by the end of this fiscal year. So the
22 Pearl Harbor PORTS system has a partnership with

1 the U.S. Navy and there they've integrated the
2 Honolulu NWLON.

3 They've added a water level station
4 inside Pearl Harbor I think at the NOAA facility
5 there. There's a meteorological station, two
6 current meters and we're also integrating in the
7 nearest CDIP buoy so that will be the new one
8 coming out this year.

9 And then we're working with Seattle,
10 so a new PORTS in Seattle, which will be in
11 partnership with the Northwest Seaport Alliance
12 and will integrate the existing NWLON, add a
13 current meter, and put a standalone on that
14 station. So that's what we've been up to with
15 PORTS this year. Okay. Next slide.

16 Okay. That was my last slide.
17 Terrific. I will go ahead and hand it right over
18 to Admiral Evans.

19 MS. DEMPSEY: Well, before we move on,
20 Marian, thank you very much. I want to make one
21 correction because I realized in the introduction
22 that I failed to acknowledge Larry Mayer, who is

1 here supporting us. He is the director for the
2 Center of Coastal and Ocean Mapping at the
3 University of New Hampshire. We are very happy
4 to have Larry here and appreciate his attendance.
5 I think Larry's been here with us all day.

6 So, Larry, we look forward to talking
7 to you and hearing from you about unmanned
8 systems. But for now we're going to go to
9 Admiral Evans to talk to us about OCS strategic
10 planning.

11 RDML EVANS: Well, I'd be happy to
12 just go straight to Larry because I'm sure
13 particularly for those of us on the East Coast
14 where it's getting a bit late, everything that
15 Larry has to say will be much more interesting
16 than anything that I have to share.

17 But you'll have to suffer through --
18 suffering through me and Brad is the price of
19 getting to Larry's presentation.

20 So again, panel members, thank you for
21 the opportunity to speak to you today and for
22 your continued engagement. There continues to be

1 a lot of incredible work going on in Coast Survey
2 since we last met and it's going to be a
3 challenge to fit it all into 10 minutes so I'll
4 dive right in. Next slide, please.

5 So we are in year two. We're moving
6 into year two of our new 2023 to 2027 strategic
7 plan. I spent a fair amount of time in our last
8 update in the fall talking about this but I
9 encourage those of you who may not have had a
10 chance to look at this to hunt it down on our
11 website.

12 Our strategic plan in Coast Survey
13 aligns well with the new NOS strategic plan which
14 Nicole mentioned in her remarks earlier today,
15 and really as I mentioned in our last meeting in
16 September, our new plan in Coast Survey lays our
17 course to complete the transition from a solely
18 product-based organization to one that is more
19 focused on data and the products and services
20 that data enables.

21 The plan lays out how we will meet
22 that fundamental challenge to deliver our data,

1 products, and services to the users who need it
2 in the right format in a timely fashion.

3 So, again, for those of you who
4 haven't heard me rant about this previously I
5 encourage you to take a look. But really,
6 completing that Coast Survey strategic plan was
7 just one of our many accomplishments last year.
8 You may also want to take a look at our year in
9 review story map -- there's a QR code there on
10 your screen on the left side -- to dig a little
11 deeper into our accomplishments in 2023 and, you
12 know, feel free to take a look at the beautiful
13 pictures and read some of the vignettes to learn
14 a bit more.

15 As we continue to move out on this
16 plan, I'd like to take a moment to highlight some
17 changes in our leadership team since we last met.
18 First of all, Captain Sam Greenaway has reported
19 as the chief of our Hydrographic Surveys
20 Division, taking over for commander Bri
21 Hillstrom, who will retire from the NOAA Corps
22 later this spring. Sam is here with us today.

1 I encourage you to pick his brain over the next
2 few days.

3 I'm pleased to announce that Captain
4 Hector Casanova will be reporting to Coast Survey
5 in June as the chief of the Navigation Services
6 Division. He's currently finishing his
7 assignment as CO of the NOAA ship Rainier.

8 Matt Kroll continues as acting chief
9 of MSB until Captain Casanova arrives. He's
10 supported by Mr. Mike Annis as acting deputy
11 chief. Lieutenant Commander John Kidd is
12 reporting as our chief of our Navigation Response
13 Branch. That's the branch that's responsible for
14 our Navigation Response Teams, which many of you
15 interact with.

16 I also would like to acknowledge that
17 Mr. Craig Winn, a longtime Coast Survey employee,
18 has been selected as the deputy division chief
19 for the Marine Chart Division, and Dr. Ed Myers
20 is taking over as acting deputy chief of our
21 Coast Survey Development Lab.

22 So as you'll note, there's still lots

1 of acting in folks' titles. We continue to see
2 a steady changeover in leadership and look to
3 solidifying that team here shortly. Next slide,
4 please.

5 So just to remind you of our strategic
6 plan, I've grouped our updates this evening
7 according to the elements of our strategic plan.
8 So first up, we have our goal one, which is to
9 expand and strengthen U.S. capabilities to
10 acquire high value ocean and coastal geospatial
11 data.

12 So to start with we'll talk a bit
13 about our 2024 field season. Project discussions
14 are still in work and discussion with contractors
15 have begun but we do anticipate another exciting
16 year in fiscal year '24. You see the areas that
17 we're planning to have survey projects there in
18 the graphic.

19 We expect to have NOAA ships Thomas
20 Jefferson, Ferdinand Hassler, and Fairweather
21 working this season. OMAO has made some
22 significant progress toward addressing the

1 staffing shortfalls we experienced last season
2 and our new Center of Excellence for Operational
3 Ocean and Great Lakes Mapping, through that we've
4 trained a cohort of new hydrographic survey
5 technicians working with OMAO.

6 So we hope to have a better staffing
7 situation than we did last year in the NOAA
8 fleet. But it does remain a challenge industry
9 wide.

10 Some of the other highlights include
11 surveying a transit corridor from the Bering
12 Strait to the Canadian border following the route
13 identified by a Coast Survey port access route
14 study. We have a contracted project in southern
15 Lake Michigan, a mix of contractor NRT and NOAA
16 fleet work planned along the East and Gulf Coast.
17 We'll have more to share on this when our
18 hydrographic survey storymap is released later
19 this spring and to some degree this is a function
20 of getting a final appropriation, which we are
21 hoping for in the next couple of weeks and at
22 that point we'll be able to nail down what we're

1 going to be able to support with our contractors
2 and what the NOAA fleet is going to be able to
3 support. So we'll have more details at that
4 time.

5 One thing that is a major update that
6 I wanted to share is that we do expect that the
7 DriX uncrewed system will be returning to the
8 hydrographic survey fleet this year. That's very
9 exciting.

10 You may recall that that vehicle
11 operated from the Thomas Jefferson in Lake Erie
12 in summer of 2022 and last year that vehicle was
13 moved over to the Fisheries fleet where it
14 supported trial Fisheries acoustic surveys in the
15 Bering Sea from the Oscar Dyson.

16 But we will be getting that -- we do
17 have it back aboard TJ this year to resume
18 hydrography, which is pretty exciting.

19 Rachael also mentioned the contract
20 for the award of the Class B ships to replace
21 Rainier and Fairweather. Those ships are
22 currently operating in their fifty-sixth field

1 season.

2 You may recall that last fall we
3 discussed a major fire that Rainier suffered at
4 sea in the vicinity of American Samoa and we're
5 pleased to share that after a rigorous cost
6 effectiveness analysis supported by Coast Survey,
7 NOAA determined that it did make sense to repair
8 Rainier and return her to service.

9 So that contract is moving ahead and
10 is on track to have the ship ready to operate
11 again early this fall. Next slide, please.

12 So on the national ocean mapping,
13 exploration, and characterization front the major
14 news is the release this week of the fifth annual
15 report on progress toward mapping the U.S. ocean,
16 coastal and Great Lakes waters. We'll share the
17 link when it's out. In fact, you can follow the
18 link to the IOCM webpage there and it will be
19 updated as soon as that report is officially
20 released later this week. But the big news is
21 that we've gone from 50 percent unmapped in 2023
22 to 48 percent unmapped in 2024.

1 This is a significant improvement and
2 represents a substantial amount of mapping work.
3 But it's still slow going when you remember that
4 our goal is to finish waters deeper than 200
5 meters by 2030 and shallower waters by 2040, and
6 as I mentioned earlier we're working with our
7 interagency partners to increase the
8 understanding of the urgency of this effort.

9 And we're having some success with
10 that messaging. For instance, members of the
11 Michigan congressional delegation have introduced
12 a bipartisan Great Lakes mapping bill which would
13 authorize about \$200 million in Great Lakes
14 mapping funds through the end of the decade.
15 This is an authorization, not an appropriation,
16 but it does indicate that Congress is beginning
17 to understand the importance of this work.

18 And in another positive news, the
19 House Natural Resources Committee staff, as I
20 mentioned earlier, requested a briefing on Coast
21 Survey which we gave last week and we anticipate
22 further intersections with our mission and member

1 actions. We hope to be able to focus more on the
2 Great Lakes at our next HSRP meeting in the fall.

3 Regional mapping campaigns are one of
4 the NOMEAC focus areas that we strive to support
5 and map and chip away at our goals. I mentioned
6 Lakebed 2030 for the Great Lakes. Also, Seascope
7 Alaska is the regional mapping campaign in Alaska
8 and as you see, Alaska remains a significant area
9 of unmapped waters.

10 And we'll hear from Jeremy Potter on
11 Thursday of BOEM about the EXPRESS regional
12 mapping campaign off the West Coast, and Ashley
13 Chappell was just at the Great Lakes -- I'm
14 sorry, the Gulf of Mexico Alliance conference to
15 build support for our regional mapping campaign
16 in that area.

17 Another NOMEAC update is the release of
18 the final version of the Standard Ocean Mapping
19 Protocol. My NOMEAC co-chairs and I are giving
20 the SOMP, as we call it, one last look before it
21 goes public in late March. We're also putting
22 energy into crowdsourced bathymetry as another

1 way to fill these gaps. Coast Survey and NOAA
2 are supporting multiple facets of the
3 crowdsourced bathymetry effort including the IHO
4 Crowdsourced Bathymetry Working Group and its
5 work to establish crowdsourced bathymetry
6 guidelines globally, also developing services
7 like the bathy coverage report tool which can
8 tell you how much gap area you fill as you
9 transit. Also, working with our academic and
10 private sector partners on crowdsourced
11 bathymetry acquisition technologies, and finally
12 engaging with different communities to increase
13 crowdsourced bathymetry submissions to the
14 International Hydrographic Organization Data
15 Center for Digital Bathymetry. Next slide,
16 please.

17 This brings us to goal two, which is
18 to deliver products and services that advance
19 safe navigation, increase coastal resilience and
20 support data-driven decision making.

21 So, first, some updates on our
22 nautical chart offerings. We remain on track to

1 cancel the last of our paper charts by the end of
2 this year. At the last meeting we discussed the
3 NOAA Custom Chart Tool upgrades in 2023. We're
4 continuing to build on these enhancements,
5 expecting a possible -- well, aiming for a
6 possible version 3.0 release later this year and
7 the tool is getting better every day.

8 We continue to work closely with the
9 Coast Guard and the pilots associations to
10 support transition of pilots licensing to the
11 Custom Chart Tool output as well as mariner
12 training and certification in general.

13 Again, we don't see the Custom Chart
14 as a replacement for our traditional paper charts
15 but rather as a valuable tool to augment and
16 complement our official electronic navigational
17 charts.

18 We've been heavily engaged with
19 stakeholders over the last few months, discussing
20 products and services with a particular focus on
21 the lower Mississippi River including the Coast
22 Guard Army Corps and the Crescent and NOBR pilots

1 around a range of issues including charting
2 bridge heights.

3 These issues are not unique to the
4 lower Mississippi River and we'll be applying
5 what we've learned there to other locations.

6 Coast Survey Development Lab has also
7 been turning out product updates. One of those
8 implemented was a new open source cloud-based
9 version of NOAA's nowCOAST. Those of you who
10 attended the modeling session in our September
11 meeting may recall that nowCOAST is a modeling
12 visualization for coastal meteorological,
13 oceanographic, and hydrologic observations all in
14 a single picture. With the service running in
15 the cloud it's now more reliable, reducing
16 response time for users.

17 We also are now offering a new mobile
18 friendly web app for the nowCOAST tool, and I
19 just wanted to highlight as shown in the picture
20 on the left last month, Dr. Westley and I had the
21 opportunity to visit the Weather Service's Tampa
22 Bay weather forecast office and as soon as we

1 walked onto the forecast floor we saw nowCOAST in
2 prominent use -- it's circled there on their
3 biggest monitor -- and they promised us that that
4 wasn't just because the Ocean Service folks were
5 there. This is a tool that they use every day to
6 combine and visualize data from a range of NOAA
7 sources. Next slide, please.

8 So another focus area for Coast Survey
9 Development Lab is the Surge and Tide Operational
10 Forecast System. I mentioned this earlier. We
11 currently have STOFS 3D Atlantic in operation.
12 We expect STOFS 3D Pacific to be operational in
13 2024 and STOFS 3D Alaska is in development. And
14 as part of our ongoing engagement on modeling,
15 six of our modelers presented their work at the
16 recent American Meteorological Society meeting in
17 Baltimore and the American Geophysical Union
18 Ocean Sciences meeting in New Orleans. So that
19 was very exciting.

20 It really is exciting to see how these
21 models which are rooted in the navigation mission
22 really have broader application to a range of

1 coastal resilience requirements. Next slide,
2 please.

3 Goal three in our strategic plan is to
4 sustain and enhance a highly skilled, diverse,
5 and thriving workforce prepared to adapt to
6 changing mission needs.

7 We have a lot of activities in this
8 space but for today the main thing I want to
9 focus on is the standup of the Center of
10 Excellence for Operational Ocean and Great Lakes
11 Mapping.

12 Once again, I'll just pause and
13 emphasize that this is the Center for Oceans and
14 Great Lakes Mapping. Folks often hear Great
15 Lakes and skip over the oceans part. So it is
16 across U.S. waters, inclusive of the Great Lakes
17 but not limited to them. The Center of
18 Excellence will be a NOAA focal point for
19 transitioning new mapping concepts and systems to
20 operations including uncrewed systems, providing
21 technical support for mapping and survey
22 operations, developing and diversifying our

1 mapping workforce, and throughout all of that
2 leveraging partnerships with public, academic and
3 private sector partners.

4 Now, it is the NOAA focal point, not
5 just Coast Survey or NOS. That means we're doing
6 this work in close collaboration with partners
7 across the agency including the NOAA fleet and
8 the Office of Ocean Exploration.

9 We received funding in fiscal year '23
10 to begin this, stand up this center and it looks
11 like we'll be able to -- we're very hopeful that
12 we'll be able to continue that with support in
13 fiscal year '24 and beyond.

14 We have a phased approach, adding
15 staff under the leadership of Andy Armstrong, who
16 is serving as acting director of the center in
17 addition to his regular full time job as co-
18 director of the Joint Hydrographic Center at the
19 University of New Hampshire.

20 As we shared last fall, we've awarded
21 a three-year construction grant to the University
22 of New Hampshire to begin building a facility

1 that will ultimately house the center and other
2 partners.

3 But I want to emphasize that the
4 Center of Excellence is far from just a building.
5 We're moving out on programming right now,
6 focusing on workforce development to start
7 because that's an area of critical requirement.

8 We're transitioning and expanding our
9 training offerings to the center. We've just
10 wrapped up a three-week basic hydrographic
11 training program which taught a cohort of
12 students from Coast Survey, from OMAO, across
13 NOAA.

14 We also had students from the National
15 Geospatial-Intelligence Agency and the Marine
16 Corps. Thanks for the reminder on time. I'm
17 probably going to go a tiny bit long but I'll
18 keep this moving.

19 Another Center of Excellence activity
20 we will be expanding is the successful training
21 cruises we had last summer aboard the NOAA ship
22 Nancy Foster, which for the first time we

1 dedicated ship time to focus on training
2 undergraduates in ocean mapping. We expect to
3 expand that under the center this year.

4 We have a full business plan under
5 which we'll continue to expand the center's
6 activities and we expect to build the center's
7 work with other academic institutions and the
8 private sector to expand our reach and success.
9 Next slide, please.

10 And that brings us to goal four, which
11 is to evolve Coast Survey systems and processes
12 to improve timely product development and
13 delivery, and a big part of this is external
14 engagement.

15 Since last I met with you, the Coast
16 Survey team and I have engaged with many critical
17 partners including in the international sphere as
18 hydrographic offices worldwide work toward
19 finalizing and implementing the S-100 standards.
20 This S-100 transition is the focus of every
21 international meeting and engagement that we
22 have, whether it's well established hydrographic

1 offices such as the UKHO or the Japan Hydrography
2 and Oceanography Department, and you can see some
3 pictures from our recent engagement with JHOD,
4 which took place a month ago there, or the
5 smaller nations such as those that we work with
6 through the Meso American-Caribbean Sea
7 Hydrographic Commission which met just before
8 Christmas.

9 Looking ahead, this work on
10 international standards will continue at the
11 Canadian Hydrographic Conference, the U.S.-Canada
12 Hydrographic Commission meeting and the IHO
13 Inter-Regional Coordination Committee meeting,
14 all of which are coming up in May and early June.

15 And these meetings are the way in
16 which we coordinate our work and our requirements
17 with our international partners to ensure that
18 our vendors are receiving a clear unified signal,
19 and it's also the way that we build capacity to
20 ensure that all nations progress down the path to
21 electronic navigation to ensure worldwide
22 coverage without leaving any country or region

1 behind. Next slide, please.

2 Also on the product development and
3 delivery, this has come up several times so I'll
4 breeze over this fairly quickly. But the
5 National Bathymetric Source --

6 (Audio interference.)

7 PARTICIPANT: I think we're frozen.

8 MS. DEMPSEY: Ben, you're back up now.
9 Ben, we can see you. Can't hear you.

10 RDML EVANS: Can you hear me now?

11 CHAIR DUFFY: Yes, sir.

12 RDML EVANS: Okay. Apologies, Sean.

13 The National Bathymetric Source is our
14 seamless, authoritative high-resolution model of
15 the sea floor of U.S. waters compiled from the
16 best available data.

17 We have that built out now on most of
18 the East Coast. Frankly, we expected to have the
19 mid-Atlantic complete by now and be moving on to
20 southeast Alaska.

21 We have funding to do so under the
22 bipartisan infrastructure law, and to be

1 perfectly frank we've run into some frustrating
2 delays bringing personnel aboard to do this work.
3 And so we do expect to have the East Coast and
4 Gulf Coast completed by later this spring at
5 which point we'll move on to southeast Alaska,
6 the Great Lakes, the West Coast and the Pacific.

7 On the right you see our progress
8 toward transitioning our ENC's to a regular grid.
9 As folks may recall, when the ENC's were first
10 built about 20 years ago they were tied to the
11 footprint and scales of the paper charts.

12 That made sense at the time but with
13 the paper charts in cancellation status we are
14 now transitioning the ENC's to a regular grid at
15 five regular scales. This will make our system
16 much more efficient.

17 And we're also continuing to build out
18 the S-100 suite. As Darren mentioned we have S-
19 102 test products expanded from LA/Long Beach and
20 New York/New Jersey to Charleston, Savannah, and
21 Boston. Next slide, please.

22 I think that brings me to our last

1 slides. So I'll just conclude by saying --
2 actually, can we skip that one because that I
3 think it just covers what Darren covered. And
4 I'll just say I appreciate the opportunity to
5 share these updates with you.

6 I think we've had great, really
7 outstanding panels today tying the local
8 perspective to the products and services that
9 NOAA and Coast Survey are creating. So I'm proud
10 of what we've accomplished. Super exciting time
11 in Coast Survey. We're not slowing down. I look
12 forward to our discussions over the rest of the
13 week. And with that, I will hand it over to
14 Brad.

15 MR. KEARSE: All right. Can everybody
16 hear me?

17 MS. DEMPSEY: Yes.

18 MR. KEARSE: All right.

19 MS. DEMPSEY: Can. Can. Go for it,
20 Brad.

21 MR. KEARSE: All right. Thanks,
22 Rachael. Thanks, Ben, and to follow all this up

1 and continue the conversation, one thing that
2 Galen told me when putting these slides together
3 is I only have 10 minutes. So I'm going to keep
4 to my 10 minutes and if I need to do it sooner
5 just to get us on track I'll do that. So let's
6 jump right into this.

7 I'm Brad Kearse. I'm the deputy
8 director of the National Geodetic Survey. You
9 can go to the next slide. All right.

10 So what I want to go over is our
11 modernization efforts that are ongoing.
12 Everybody's heard about it. Give you some quick
13 updates. GRAV-D, as Rachael said, we've made
14 some great milestones with that this year.
15 Foundation CORS update, which will be the
16 backbone in the National Spatial Reference System
17 moving forward.

18 VDatum updates, which is a
19 collaborative among the three organizations here
20 with OCS and CO-OPS and ourself.

21 Coastal mapping updates, which really
22 mostly supports OCS and a lot of other things,

1 give you an update on where we are and moving out
2 on geodesy crisis. We have a new strategic plan
3 and we've got leadership transition underway.

4 Next slide.

5 So let's jump in to the modernization
6 effort that's ongoing. If folks don't know and
7 they are new to HSRP, we've had this
8 modernization effort ongoing for many years. The
9 reason is, as somebody said earlier, the current
10 datums were defined before GPS technology and so
11 now -- we've relied on old techniques and the way
12 we did things, you know, basically with physical
13 survey marks in the ground.

14 Now it's based on GPS, continuous
15 operating reference systems for building up
16 Foundation CORS.

17 It will be better alignment with all
18 our geospatial data in the future and we hope
19 everybody is aligned with that. It'll improve
20 accuracy, access, and alignment of positioning
21 systems, and then it's just going to be better as
22 we move forward to enable better alignment of

1 NOAA's data to support Climate Ready Nation,
2 really about where is water flowing, and it will
3 give us a way to be more equitable or give
4 equitable access across a fourth of the Earth.

5 When you look at the area that we go
6 from the United States on the CONUS side all the
7 way out to the Pacific that does cover about a
8 quarter of the Earth. Next slide.

9 So let me give you some quick updates
10 now that we're getting closer to this finish line
11 of modernization and the time line.

12 So there's a lot going on. Our teams
13 are still heads down. But the great news is
14 we're getting closer, and so like we've said,
15 there will be a beta release of the National
16 Spatial Reference System modernization data and
17 sets of tools in mid-2025, next year. So we're
18 going to test that for six months. Once we get
19 those tools up there we will test them to make
20 sure everything is working, will work with all
21 our users, and then we will go to the Federal
22 Geodetic Control Subcommittee, which is under the

1 Federal Geographic Data Committee, FGDC, and
2 making sure that we get approval there and
3 adoption for 2026.

4 So these are the time lines that we're
5 running on right now. We expect there won't be
6 any issues or concerns to get there by that time
7 frame.

8 The biggest thing is getting out and
9 really talking to our constituents, working with
10 all our federal agencies and private firms out
11 there to move forward.

12 So this is great news. We're getting
13 closer and, like I said, we're getting really
14 excited about what's going to happen next year
15 and then the real work to make sure this is going
16 to work and explaining to all our folks out there
17 about moving to the new datums.

18 So in 2024 we just released a new
19 research plan which will plot the course for us
20 moving into the future. We do have a alpha
21 release of our new GEOID and a lot of that is as
22 we've collected all the data related to GRAV-D

1 and I'll go a little bit more into that.

2 By this mid-summer we'll have a beta
3 release of our CORS Station Pages with the Data
4 Delivery System. We're going to have a beta
5 Reference Epoch Coordinates adjustment, the first
6 set of new coordinates on 100,000 marks this
7 summer and then we will have dynamic heights from
8 GNSS tools that will be available and they will
9 be great tools to be able to use for water
10 management. Let's go to the next slide.

11 So let's get into a little bit more
12 details of the things that are going on in the
13 time line so mid to late 2024.

14 ITRF -- as folks know, our
15 modernization system and our reference system
16 will be aligned to the International Terrestrial
17 Reference Frame. As we talked about all these
18 different acronyms that's what that means. Our
19 coordinate, or CORS -- CORS is Continuous
20 Operating Reference Stations and that's a NOAA
21 Continuous Operating Reference Stations. That is
22 a partnership across the United States with many

1 different organizations, academic institutions,
2 state transportations and many others. We'll
3 have coordinate functions to describe the dynamic
4 nature of how stations in the NOAA CORS network
5 will move over time so this dynamic situation of
6 showing you how those stations are moving with
7 time.

8 We've got a VDatum release of the West
9 Gulf Coast by this summer. We are doing contract
10 work to build out our new foundation CORS and
11 I'll show you that. That is through BIL money.

12 GRAV-D reflights, we have collected
13 gravity across the United States and all of its
14 territories including Alaska. Now we're going
15 back and doing some cleanup mostly in the Gulf
16 Coast areas. The reason for that those were
17 collected kind of right from the beginning so
18 we're going back since our techniques and the way
19 we collect that data has gotten better over time.

20 And then by 2024 and 2025 we're going
21 to start rolling out these beta products and, as
22 they say, in domino style they'll be right behind

1 one another as we build out our beta website. So
2 look for that as things come out.

3 And then we'll start doing the
4 official testing next summer of the modernization
5 or the modernized National Spatial Reference
6 System. That will continue on for six months.
7 We'll be getting feedback from folks, make any
8 adjustments, any changes we need to make along
9 the way, and then we'll take that -- once things
10 look good, we've made those adjustments, getting
11 feedback from folks we'll take that to a vote and
12 then we'll claim that.

13 Once that vote and everybody's
14 comfortable with that we'll call that the modern
15 size National Spatial Reference System for the
16 official purpose of that.

17 That doesn't mean that everything is
18 done in modernization. We will continue on in
19 many different ways to continue modernizing the
20 National Spatial Reference System.

21 Once 2026 happens we will continue on
22 to the next steps. We'll continue to work with

1 our constituents and federal agencies about what
2 they need.

3 All right. Let's go to the next
4 slide.

5 So with that you're going to see us in
6 many different places trying to explain the
7 importance all the way from the National Science
8 Teaching Association so we can start getting in
9 at the grassroots level of explaining it to folks
10 at the high school level as teachers teach things
11 about the importance of the National Spatial
12 Reference System to NSGIC, getting out there
13 among the geographic folks to Utility Engineering
14 and Survey Institute looking at underground
15 utilities and why that should be tied to the
16 National Spatial Reference System.

17 Also, we'll be working with the folks
18 on all the geo industries, the geo summit that
19 will be taking place in the fall in September.
20 So we're going to be working at all those
21 different outreach events so and there's many
22 more.

1 So that's going to be where you're
2 going to see us. If you got other ideas and
3 places we should be we've only got so many
4 resources but we're putting together an
5 engagement strategy of where we should be, when
6 we should be there, and making sure we can get
7 with all of our constituents and explaining the
8 importance of the National Spatial Reference
9 System. Next slide.

10 As I said, GRAV-D, we're excited.
11 We're going to celebrate. Hundred percent
12 complete, like I said, and that's going to help
13 with our new GEOID and updating that. So it is
14 going to go into production here soon.

15 We have the data we need for that,
16 which is a wonderful excitement, and we're
17 excited about that. But we continue to collect
18 to make sure this product will be the best it can
19 be.

20 So we're going to refly select
21 regions. We're going to look at a GEOID
22 monitoring service to collect additional

1 information and several terrestrial gravity
2 campaigns including working with our partners in
3 NGA. Next slide.

4 All right. Foundation CORS update.
5 Like I said, this will be the backbone of the
6 National Spatial Reference System. We did get
7 BIL money to accelerate this and build it out.
8 So 12 of the 15 stations the recon has been
9 complete. We've got designs underway and
10 installations are starting in 2024.

11 This is being done by a private firm
12 in conjunction with us and we're looking at other
13 ways to get other folks involved in helping us
14 build this out in the future.

15 So you can see the map of what the new
16 Foundation CORS -- you know, where it's going to
17 be and where those stations are being built out
18 over the next few years. Okay, next slide.

19 All right. VData models -- like I
20 said, this is a cooperative among all three of
21 our organizations here that are on the line. The
22 VDatum work plan from 2025 to 2028 -- the

1 coverage area is based on marine grids generated
2 from coastal ocean modeling and referenced using
3 tide stations and benchmark observations.

4 The next releases that we have are in
5 Texas and Louisiana within the west coast region
6 down there, and then that's going to be in mid-
7 2024 here this summer and then Alaska will be in
8 late 2025, and you can see the Atlantic Gulf and
9 Caribbean in 2028 and the Pacific Islands in
10 2026. Let's go to the next slide.

11 Coastal mapping highlights. We're
12 definitely in support of the, you know, NOAA ENC's
13 and we have a shoreline -- a lot of our work
14 that's done under coastal mapping is done under
15 an IDIQ contract.

16 That is a \$40 million five-year
17 contract, which renewed in 2025. It's got a
18 recompetete that's happening next year. The
19 ceiling was just raised to \$114 million so we've
20 been moving out on that, and there's lots of
21 money -- we're using this for BIL work. We're
22 using this for supplemental work after

1 hurricanes, our shoreline mapping piece to
2 continue to help out with OCS, also for GRAV-D
3 collection, and then in '24 this year we'll also
4 be using to help out to build our foundation CORS
5 stations pending on fiscal year '24
6 appropriations. Okay, let's go to the next
7 slide.

8 So these are just a lot of projects we
9 have going on being what's planned, acquired, and
10 completed. You can see -- and then we have some
11 of this inland mapping that is going on. I'll
12 explain that when we get to it here in a minute
13 and just for the sake of time.

14 So everything from outs and completing
15 up in the northwest Hawaiian Island chain to Guam
16 and the Northern Marianas, Alaska areas, American
17 Samoa, and then where we see within the coastal
18 regions domestically. Let's go ahead to the next
19 slide.

20 Here's some of the acquisition that
21 was done by Woolpert out going along the
22 northwest Hawaiian Islands -- I like pretty

1 pictures -- including all the way up French
2 Frigate Shoals.

3 All right. Let's continue on. Next
4 slide.

5 MS. DEMPSEY: Hey, Brad, in the
6 interest of time would you mind jumping to the
7 BIL and then the geodesy crisis real quick so we
8 can ensure Larry's got enough time? Thanks.

9 MR. KEARSE: I will. Yeah. All
10 right.

11 So I'm just going to jump to the slide
12 -- let's go to slide FY 22 BIL.

13 There you go. So you can see under
14 the BIL funds something different we've been
15 collecting is riverine areas and really working
16 with our partners at the National Weather Service
17 and looking to help out with -- this is a new
18 effort by the NGS and OCS which directly supports
19 the next-gen National Water Models and expands
20 NOS products and services across the nation.

21 So these are some of the areas that
22 have been collected from Florida up to New

1 Hampshire, Maryland, and Virginia and down to
2 southern Texas. Let's go to the next slide for
3 the sake of time.

4 And you can see we're also working in
5 riverine areas with even the Ozarks and Harper's
6 Ferry collecting the river areas which will help
7 out in looking at the river bottoms for the new
8 models as we work forward helping out the
9 National Weather Service with their hydrology
10 pieces. All right. Let's go to the next slide.

11 And then here's some of our hurricane
12 supplemental for Ian, and then also the Typhoon
13 Merbok up in Alaska. So this is in partnership
14 with USGS and leveraging all of our money
15 together to be able to get the collection and
16 really to collect even more using the resources
17 from each of the organizations. All right.
18 Let's go to the next slide.

19 We are addressing the geodesy crisis.
20 We have a community of practice established.
21 We're going to talk more about the geospatial
22 model grants coming up in the next couple of days

1 and then we do have an undergraduate internship
2 pilot program underway. So let's go to the next
3 slide.

4 This community of practice is moving
5 out. This is a collective group between ourself,
6 NGA, NASA, and USGS to talk about geodesy issues
7 from everything from data sharing, equipment
8 sharing, software. We are moving out with a --
9 I'll call it a plan of infrastructure for geodesy
10 across the United States and we've got some
11 meetings coming up.

12 We've got one in April and then also
13 in October. Let's go to next slide.

14 You'll see more about this in our
15 modeling grants. We're really excited about
16 this. We hope it continues but Scripps and
17 Oregon State can talk in the next couple of days.
18 Next slide.

19 We're hiring four Pathways. I know
20 that Rachael talked about this. This is a
21 coordination between NGS, CO-OPS, and OCS. That
22 announcement should be out in a couple of weeks

1 and we're really excited.

2 The reason for this is we have our
3 three offices down in the Chesapeake area and we
4 hope to get them into our field teams and really
5 at the undergraduate level get them involved in
6 all the different work that we do. So we're
7 really excited about that. Next slide.

8 MS. DEMPSEY: Brad, this is great
9 because it's going to go then into the new
10 strategic plan that you guys plan to release
11 later this year, right?

12 MR. KEARSE: Absolutely. So the
13 workforce piece we're really excited about this
14 and it goes along with our research plan. So
15 we're working on that. Should be out at the end
16 of the year, and then let's go to the next slide
17 which is -- everybody should know that Juliana is
18 retiring at the end of March so we're going to
19 have a celebration for her here next week. The
20 selection process is underway for a new director.
21 I will be acting starting April 1st and then
22 Brett Howe, if he knows -- you know, Brett maybe

1 along the way he's going to be the acting
2 director.

3 And I'm going to call it at that for
4 the sake of time.

5 MS. DEMPSEY: All right. Awesome.
6 Thank you, Brad.

7 And last but certainly not least,
8 Larry, we want to hear all about your unmanned
9 systems. Thank you so much for your patience.

10 MR. MAYER: Oh, it's not a problem.
11 I'm just thrilled that I'm still awake because
12 this is very close to my bedtime, I have to say.

13 Okay, I'll try to be as quick as I
14 can. This is going to be a little different.
15 It's going to be kind of a philosophical
16 discussion on thoughts about the efficiency of
17 uncrewed systems.

18 I think there's been a lot of
19 excitement about the use of uncrewed systems in
20 our business and beyond. We've heard some of it
21 today, and that excitement is often focused on
22 cost savings and other benefits that uncrewed

1 systems can provide.

2 But I've also seen a lot of harsh
3 surprises as people start to use them and start
4 to see that maybe it's not as cheap as we thought
5 and maybe there are other issues that we haven't
6 thought about.

7 And I want to just kind of discuss
8 what we're doing in the lab to try to look at
9 these issues. I don't have the answers now but
10 I want you all to -- if I can leave you with a
11 message just have an open mind. Let's not close
12 the case on this one way or another. So next
13 slide, please.

14 As you can see from this slide we've
15 been using a number of these systems. I'm going
16 to look at a couple of different situations that
17 -- where we're looking at their application and
18 the first is very relevant to Coast Survey even
19 though this example I'll show was out in the
20 middle of the Pacific but it was in shallow water
21 and it's it touches on what Brad talked about,
22 some of the lidar work done out in the mid

1 Pacific Islands there, and it's really using an
2 uncrewed system as a replacement for a NOAA
3 crewed launch. Next slide, please.

4 And so here we had a situation where
5 a lidar survey was done around this small island
6 and it didn't cover as much as was hoped, and so
7 we happened to be out there on another mission --
8 on an OER mission -- with the DriX and we thought
9 this might be a good opportunity to see whether
10 we can really use a mothership and the DriX as an
11 external platform and could we double the
12 collection of data and what would the tradeoffs
13 be. Next slide, please.

14 There was some early multibeam data in
15 there. You can see some of the data. But the
16 goal was really to cover the white area there --
17 could we do that in a relatively limited amount
18 of time. Next slide, please.

19 I'm going as fast as I can here so we
20 can maybe catch up a little time. The problem we
21 faced when we got out there is that the weather
22 was relatively rough and we basically found out

1 that given the launch and recovery system, the
2 heavy weight of the vehicle, and its LARS we
3 could not launch safely the vehicle and
4 particularly not recover it.

5 And Andy was out there with us and a
6 number of NOAA Coast Survey people and I think
7 they would also say that we couldn't have
8 launched a crewed launch either at that time
9 given those conditions, and so what to do. Next
10 slide, please.

11 Here's where one of the advantages of
12 the uncrewed system comes in. It's high speed
13 and long endurance, and so what we were able to
14 do is run -- you see the dark area in the upper
15 left area is where the small island is.

16 We were able to run 120 miles back
17 into the lee the bigger islands to launch the
18 vehicle in the lee of the island and then run
19 back to the survey area and still have enough
20 fuel for three continuous days of survey work and
21 that's something we couldn't have done ever with
22 a manned launch.

1 So there was a clear advantage there.
2 But, again, what about the manning, what about
3 other issues? Next slide. What about the
4 quality of the data? Next slide, please.

5 We did find that it was quite
6 straightforward to run the vessel and the launch.
7 We could separate in that case as far as 20
8 kilometers using what we call a marine broadband
9 radio system, simultaneously collecting data from
10 the mothership and the uncrewed vehicle, and now
11 with Starlink that separation can be even
12 further. We also found that the data was of high
13 quality. Next slide, please.

14 About 95 percent of it meeting or
15 exceeding NOAA's specifications. And this will
16 all be the subject of a thesis of a NOAA CORS
17 officer in our program with Airlee Pickett and
18 what she'll be looking at -- and this is why I
19 say we don't have the answers yet -- is a real
20 comparison to this kind of operation versus a
21 NOAA crewed launch operation. I'm hoping when
22 she's finished with that we'll have some real

1 hard numbers and hard facts about the relative
2 benefits or not of this approach. Next slide,
3 please.

4 In an upcoming situation, it's kind of
5 a different and very exciting situation. We are
6 planning now a survey of about 2,400 -- 2,546
7 square kilometer area in the Gulf of Maine, a
8 totally unmapped area, and we're planning to try
9 to do this with two vehicles simultaneously, one
10 launched from Portsmouth, one from Rockport,
11 Maine.

12 And this is an effort we have not
13 really tried before, multiple vehicles at the
14 same time and also a shore-based operation from
15 remote operating centers. And we're just going
16 through the planning stages now and -- next slide
17 here or click on this slide, please.

18 And our approach is going to be to
19 have two teams sitting in each of the remote
20 operating centers. They're going to operate the
21 vehicles 24 hours a day. The vehicles can stay
22 out for about 72 hours at a time, then come back

1 in and need to be refueled. And as we were
2 sitting and planning on this -- again, this is
3 our first time so we're being a little
4 conservative -- we started to think about how
5 many people we need to support this operation and
6 you'll see that list there, what we think we need
7 to run a 24-hour operation like this, and it adds
8 up to 16 people.

9 And this was just a week or two ago
10 and I show this picture with permission of Bill
11 Mowitt, who is the director of the uncrewed
12 systems operating center. And this is not a
13 picture of him but this was the expression on his
14 face when he looked at the number of people
15 needed to operate this. Next slide, please.

16 Yeah. There it is. Because he goes,
17 oh my gosh, I thought we were going to be saving
18 people but, you know, it's going to take me 16
19 people to run through systems.

20 Well, it may or may not. We're going
21 to learn. We may be able to have fewer people.
22 We may be able to run three, four vessels at the

1 same time. We don't know yet.

2 But this is, again, these tradeoffs
3 that we're looking at. Next slide, please.

4 The final situation I want to look at
5 is a little different one. This is now where
6 data is provided as a service, or in this case,
7 the Saildrone people call it mission as a
8 service. Here you just pay a straight day rate
9 for the use of the vehicle and they provide the
10 data.

11 And here we had some test trips in a
12 very remote area in the Aleutians in some very
13 rough weather and then another one about 30,000
14 square kilometers off the coast of California.
15 And here we have done a quantitative assessment
16 of the relative efficiency of this effort versus
17 what it would have taken with a crewed survey
18 vessel. So next slide, please.

19 So what we've looked at is the covers
20 that the Saildrone provided. We've had lots of
21 analysis of the quality of the data. But the
22 most important metric is really how much overlap

1 is there -- how much coverage is there. The more
2 overlap we get the higher the quality of the
3 data.

4 It took the Sailandrones for this
5 particular area 15.25 days to do the survey and
6 it averaged about 3.95 knots and actually that's
7 relatively fast, covering about 26.65 square
8 kilometers an hour, getting about 58.6 percent
9 overlap. Next slide, please.

10 We found right near the area a kind of
11 comparative area where the Okeanos Explorer,
12 again, a crude survey vessel that NOAA uses in
13 deeper water. The ocean exploration program did
14 a survey. It was not the same size area so I
15 can't compare the time but we can say that it
16 covered 44.2 square kilometers per area, almost
17 twice the coverage rate, and it provided 76
18 percent overlap. Again, the amount of overlap
19 usually alludes to higher quality data. Next
20 slide, please.

21 We then did an analysis of what it
22 would take to do the exact same area that the

1 Sairdrone did, and the Sairdrone, again, took
2 15.25 days with 58.6 percent overlap. If the
3 Okeanos Explorer did it with the exact same
4 system it would take it only 7.3 or three days,
5 or about half the time, to do that and achieving
6 100 percent overlap so the best potential for
7 high quality data. If it would only get the same
8 overlap that the Sairdrone achieved it would be
9 5.5 days, so about a third of the time, and if a
10 12 kilohertz system had been used the same area
11 could have been surveyed in about three and a
12 half days.

13 And so it's clearly much more
14 efficient in some ways than using a crewed
15 vessel. But what's the relative costs? And this
16 doesn't address issues of crew safety, carbon
17 footprint, and I can't tell you what it costs for
18 the Okeanos Explorer to do a survey. I'm not
19 sure anybody can tell us. I think there's some
20 internal looking at that.

21 But just trying to make the point that
22 we just don't know yet and I'm very confident

1 personally that we'll find great efficiencies in
2 the use of uncrewed vessels. But we need to look
3 more closely and need to understand more about
4 where, when, and how to use them in the most
5 appropriate way.

6 Let me stop there because I know we're
7 just totally pressed for time.

8 MS. DEMPSEY: Larry, thank you so
9 much. Unfortunately, we're at the end of the
10 time, like you said, but such a rich discussion
11 topic that I think all of us can benefit from
12 because we're always looking at what options we
13 have to get the mission done.

14 And so really looking forward to what
15 your team finds out. So thank you very much, and
16 thank you to all the panelists this evening for
17 your great information.

18 We'll try and find some time again
19 tomorrow. We're going to have to cut off the
20 questions short so we can get to the public
21 commentary.

22 So, Sean, over to you. Thank you.

1 CHAIR DUFFY: So I'll do a quick
2 handoff over to Admiral Evans so we can get to
3 the public comments. I mean, I really appreciate
4 all the directors' time and reports. A lot of
5 great information. I made a lot of notes. I'm
6 sure other panel members did as well.

7 And with that, sir, I'll turn it over
8 you.

9 RDML EVANS: Thank you, Sean. Thank
10 you, Rachael. And I'm just trying to find my
11 notes on this.

12 So I believe we do have a number of
13 public comments that have been shared already and
14 I'm going to ask Ashley to read and -- well, let
15 me back up a second.

16 So this is the required public comment
17 period. I encourage all attendees who are not
18 members of the panel to put public comments in
19 the question box. Please do target your comments
20 to HSRP members and NOAA to focus on what NOAA
21 can improve for navigation, observations, and
22 positioning data products and services.

1 This is not the opportunity to ask the
2 individual presenters specific questions. So I'm
3 going to turn this over to Ashley to read and
4 summarize the questions that we've received.
5 We'll show the comments on the screen and it'll
6 be collated into a document shared with the HSRP
7 members of NOAA and after the meeting the
8 comments will be posted to the HSRP website and
9 included in the public record.

10 To the extent that we can we may
11 address some of these very briefly or suggest
12 follow up. But my guess is that we will not have
13 time to get deeply into the answers because
14 having taken a quick look at some of these
15 already there's some really good questions here
16 that deserve a lot of time, which we may have to
17 follow up after the meeting.

18 So, Ashley, could you either pop them
19 up on the screen or -- oh, I see you you've got
20 them up.

21 MS. CHAPPELL: Yeah, they're on there.

22 RDML EVANS: And we can walk through

1 them.

2 MS. CHAPPELL: Sure. And sorry about
3 my camera. It's like I have a monitor thing
4 happening so it's a little bit different.

5 But yeah, we've sort of grouped these
6 comments not in the order that they came in but
7 kind of by subject matter.

8 Mr. Manes spoke -- actually his first
9 comment was during our meeting and we really need
10 to go back to the recording and get, you know,
11 his comment clarified there but that was some
12 thinking on harmonic sensors and the ports
13 district fund in Sacramento and Stockton area.

14 So we're going to get that question
15 sort of detailed out for you a little bit more
16 effectively. We got some advance comments. You
17 know, when you register for the webinar you can
18 supply comments if you like.

19 So Ann Kinner, former HSRP member,
20 asked about -- she wanted to hear something about
21 updates on the Custom Chart Tool. So we will
22 wait for the next couple of days and if that

1 question is not answered NOAA can provide a
2 response to her. You may want to factor that in
3 to your discussions later as panel members.
4 That's the thing about some of these questions,
5 actually. Some really are more kind of directed
6 or easily answered by NOAA people and some are
7 really directed at you, the panel members, to,
8 you know, think about these as issues that need
9 or could be addressed by you.

10 Mr. Manes also commented on vector
11 charts and the what's missing from vector charts
12 versus raster charts. So with scale minimum
13 turned off he notes that we're still missing
14 basic information. How do we get NOAA to please
15 put those details on the vector charts. So
16 something for you to think about and consider?

17 I'll address that very quickly, if I
18 may, Ashley.

19 MS. CHAPPELL: Okay. Sure.

20 RDML EVANS: So there is a -- I want
21 to be clear, there is known issue with some
22 information on geographic features not being

1 fully collected from the raster charts onto the
2 ENCs.

3 We are working with pilots
4 associations and others to identify those spots
5 and to prioritize those updates, and so I would
6 encourage Captain Manes to connect with Jeff
7 Ferguson. I've already alerted Jeff to this. I
8 think Jeff's going to be up in San Francisco next
9 week, which may provide an opportunity for them
10 to talk further about that.

11 MS. CHAPPELL: Okay, thank you. Kind
12 of a following on question from Mr. Rabena,
13 Virginia Pilot Association. This question may
14 relate to sort of, you know, human use of
15 products, mariner use, and this is -- the
16 question came in when Captain Betz was talking
17 earlier today. So he refers to the problems on
18 ENC caused by layering. Mariners are not all
19 aware of how to use it.

20 So we might follow up just a little
21 bit more with Mr. Rabena on that question and,
22 Admiral, I don't know if you want to chime in on

1 this one, too, or we can explore it more with him
2 to get more detail.

3 RDML EVANS: No, I don't know enough
4 about the source of that question or the context
5 of that question. I'd be happy to talk to Mr.
6 Sabena and certainly would recommend that he and
7 Captain Betz connect.

8 MS. CHAPPELL: Okay. So we will
9 provide some follow-up on that one.

10 The next question is from Lindsay Gee,
11 another former HSRP member. So it's so nice that
12 you have been on, Lindsay, and thank you for your
13 really good questions here. This longer one,
14 comment one, came in during the under keel
15 clearance section of the day and he -- if you'll
16 jump to the third paragraph, really, you know,
17 this is where he focuses in relating to timely
18 updates of data and -- on the chart, you know,
19 how are we planning to do this more frequently.

20 Port expansion in the LA/Long Beach
21 area will need regular permanent updates --
22 frequent updates over a prolonged period. How do

1 we keep this current for the pilot? Is the plan
2 to receive these updates directly from the
3 expansion project for updating their PPU's? Local
4 notice to mariners will be routed via NOAA to
5 more frequent updates of the ENC, the electronic
6 navigational charts themselves.

7 RDML EVANS: Yeah. There's a lot
8 here, Ashley, and I would be happy to talk to
9 Lindsay or anyone at greater length. But in very
10 broad strokes I will say that, you know, for the
11 product -- the high-resolution bathy product that
12 the pilots are using in their PPU is what's
13 called the S-102 high-resolution bathymetric
14 overlay, and Darren talked a bit about this in
15 his presentation and highlighted that the
16 international standard for that product remains
17 -- is not finalized yet. So the first thing that
18 really has to happen for this to go operational
19 is for that data standard, that product standard
20 rather, to be finalized which we expect later
21 this year.

22 And but it should be and it is

1 possible to produce a S-102 bathy overlay in an
2 automated way from the National Bathymetric
3 Source. So once we have -- if we have an
4 established pathway for that external source data
5 from, say, the Port of Long Beach into the NBS
6 and we've established the Port of Long Beach with
7 a trusted node, which I believe we have, it
8 should be -- it is a very quick process for
9 turning around an S-102 product.

10 Now, looking more broadly, first, we
11 have to build out the MBS and as I mentioned in
12 my presentation we're working to do that. But
13 that is, to some extent, a resource constrained
14 operation.

15 I mentioned the requirement to have S-
16 102 finalized, and once those are in place and we
17 have relationships with data providers it should
18 be a very simple -- perhaps not a simple matter
19 but it is automatable to produce an S-102 product
20 on a quick turnaround.

21 I will add, though, that for other
22 mariners other than pilots to use this they need

1 not only the S-102 overlay but they need the S-
2 101 base chart and those are the next-generation
3 of electronic charts which we expect to begin
4 releasing in 2026.

5 But to utilize those they will also
6 need a next-generation system. So there are a
7 number of layers there that commercial mariners
8 on large vessels will need to have in place and
9 pieces that we will need to have in place in
10 order to to derive full value from those high-
11 resolution bathy overlays.

12 But to bring it back for the portable
13 pilot units for the pilots the time line for
14 establishing that is much slower.

15 MS. CHAPPELL: Okay, great. Admiral,
16 thank you.

17 And some of what you said may relate
18 to this. The second comment of Lindsay is about
19 turnaround time for new bathymetry data from
20 external sources into S-102 and then scaling NBS
21 up to support all U.S. ports in this way.

22 RDML EVANS: Yeah. Again, I welcome

1 the opportunity to go into greater detail with
2 Lindsay or anyone on this.

3 But I think, you know, broadly my
4 previous comments stand.

5 MS. CHAPPELL: Yeah. So we got some
6 good questions from Bob Moshiri, Johnson
7 Outdoors, asking what our plans are to survey
8 near shore coastal waters to serve the 50
9 million-plus recreational boaters and, along
10 those same lines, plans to survey over the next
11 six years in the Great Lakes.

12 And I actually featured in this
13 question, noting that Bob was at the Lakebed
14 2030 conference in September, which -- thank you
15 for attending that and listening to what I had to
16 say.

17 I was talking about the bathymetric
18 gap analysis that the admiral presented on today
19 and the Great Lakes and where we work with the
20 Great Lakes.

21 I'm happy to report that we're now at
22 13 percent, not at 8 percent, but still pretty

1 low. So Bob is noting that, contrasting it with
2 other areas and if you want to comment on surveys
3 -- near shore surveys for recreational boaters
4 and then the Great Lakes in general please do.

5 RDML EVANS: I was actually going to
6 -- is there any way we can bring Captain Sam
7 Greenaway into the conversation here, our chief
8 of our hydrosurveys division. I would love him
9 to --

10 MS. BUTLER: Sure. One moment.

11 RDML EVANS: -- to address this one.

12 MS. BUTLER: Hopefully he's still
13 there.

14 CAPT. GREENAWAY: Can you hear me? So
15 I'm here. Can you hear me?

16 MS. BUTLER: Go.

17 RDML EVANS: We can hear you, Sam.

18 CAPT. GREENAWAY: Okay. Good.

19 So I totally get this question. I'm
20 a recreational boater myself when I'm not
21 working. I keep a sailboat in Annapolis and we
22 spend a lot of time out on Chesapeake Bay.

1 And I think if you look at our current
2 year and recent survey plans and out year survey
3 plans, which are available on the Coast Survey
4 website, and I believe I'm one of those linked to
5 those in this presentation, there's quite a lot
6 of surveys that we wouldn't have done in the
7 past.

8 For instance, two years ago we did all
9 of Eastern Bay, somewhere I like going sailing.
10 And so I think there's a lot of those -- a lot of
11 us have junctions with or also support the
12 innovation work that we do.

13 So that has a real -- into those real
14 shallow areas that aren't commercial traffic
15 areas.

16 A second piece of that is I think in
17 RSD's presentation of all the Topo bathy lidar
18 that we're doing that really fills a gap where
19 recreational boaters really care.

20 For instance, my boat draws five and
21 a half feet. I'm totally fine sailing in 10 feet
22 of water in Chesapeake Bay. I'm totally fine

1 sailing in six feet of water if I know it's six
2 feet of water.

3 But, obviously, five feet of water and
4 I'm stuck in the mud. So I totally get that
5 there's a community out there that really cares
6 about that two the 12-foot area that's really
7 difficult to get with traditional hydro methods.

8 So the combination of the renewed
9 emphasis on some of those areas and the Topo
10 bathy lidar I think is going to make a big
11 difference. Thank you.

12 RDML EVANS: Thanks, Sam. That's
13 super helpful. And I'll take it -- I'll also
14 address the Great Lakes question just briefly
15 here as well.

16 You know, I agree, and I appreciate
17 Bob for raising the kind of shocking paucity of
18 up to date modern survey data in the Great Lakes.

19 I would note that it's not unsurveyed.
20 It's simply not surveyed to modern standards, and
21 so there is data there but, again, not data of
22 the recency or quality that we would like and,

1 you know, now at 13 percent in the 2024 report
2 but certainly very low compared to other areas.

3 And there's huge demand not only for
4 navigation but the support, management, and other
5 applications in the Great Lakes, which is part of
6 why we've increased the frequency with which
7 we're sending NOAA ships to the Great Lakes.

8 We have contractors and our navigation
9 response teams working in the Great Lakes. We
10 expect -- you know, plans are still forming but
11 we expect to have NOAA ship Thomas Jefferson back
12 in the Great Lakes next field season so that
13 would be fiscal year '25.

14 And I mentioned or it was mentioned
15 the Great Lakes mapping bill authorizing up to
16 \$200 million by the end of the decade. So that's
17 all very exciting.

18 I think it gets to the same questions
19 that Bob is raising here and we hope to be able
20 to talk more about this at a future meeting in
21 the Great Lakes.

22 MS. CHAPPELL: Okay, great. Thank

1 you. Sorry, I was just chatting. I realize my
2 typing might have been a little loud. All right.
3 Thank you for scrolling down.

4 So next question. Mr. Manes, again,
5 asking about getting an anchor tree surveyed in
6 San Francisco Bay, and I would just say -- can
7 you hear me? You can you hear me, right?

8 RDML EVANS: Yea, we can hear you,
9 Ashley.

10 MS. CHAPPELL: Okay, thank you.
11 Sorry.

12 I would just say for San Francisco and
13 really any other port area too as Jeff put it
14 earlier get in touch with your friendly local
15 navigation manager and make sure that that
16 request is noted and captured as we collect
17 requirements around the country for this kind of
18 survey requirement -- survey need.

19 All right. Quickly moving on. Guy
20 Noll was listening to the precision nav and under
21 keel clearance panels and wanted to ask about the
22 funding effort through Scripps for CDIP and the

1 PORTS work -- is it duplicative or coordinated.

2 So I don't know, Julie, if you want to
3 jump on and speak to this very briefly or follow
4 up.

5 MEMBER THOMAS: I'm here. Right.

6 So let me make sure I understand the
7 question. Is the effort funded through Scripps
8 for CDIP and the PORTS were duplicative or --
9 well, PORTS doesn't do waves, as far as I
10 understand, under CO-OPS.

11 So what we do CDIP is -- the main
12 partner is the Army Corps of Engineers with
13 several of the other state and industry and
14 academia funding for individual buoys.

15 But if PORTS is installed in a port
16 harbor where CDIP happens to have buoys then they
17 will integrate our buoys into the PORTS system.
18 PORTS does not pay for any CDIP buoys but if we
19 have them in that region then they will integrate
20 them onto the PORTS site.

21 And let's see, if the former -- should
22 CDIP and CDIP like services from IOOS be part of

1 the scaling necessary to break -- so IOOS does
2 pay for some CDIP buoys and we rely on IOOS
3 regions heavily for doing field maintenance in
4 that region.

5 We coordinate very closely with all of
6 the IOOS directors. They know exactly -- we have
7 feedback from them as far as the location and
8 then whatever support we can get. CDIP does do
9 some of their own field work but we always
10 coordinate it with IOOS too. So I hope that that
11 answers those questions there.

12 MS. CHAPPELL: Great, Julie. Thank
13 you. So we have two more, one very brief. I'll
14 get to that in a second. One from Mark Manes
15 about the possibility -- this is really a comment
16 -- the possibility of installing weather stations
17 on some new boats that are being built for San
18 Francisco bar pilots for weather data.

19 They're in the planning stages and
20 they could incorporate that into the installation
21 plan if there is interest. So something else
22 that we might follow up on with Mr. Manes. Very

1 nice offer. Thank you.

2 And then the last comment -- I put
3 this last because I really think it relates to
4 the discussion tomorrow and just a comment from
5 Kate Nielson at NOAA that she's interested in the
6 portfolio here and then the resilient port
7 session tomorrow.

8 So that's what we have for our public
9 comment at this stage and we will follow up with
10 more complete answers for some of these comments
11 where we can respond in writing, too.

12 So that closes out our public comment
13 portion of the day.

14 RDML EVANS: Thank you, Ashley.

15 And as I understand it, and please
16 correct me if I'm wrong, we need to bring this to
17 a firm close by half past the hour, correct?

18 Because that --

19 MS. CHAPPELL: Yes, 5:30 Pacific time.

20 RDML EVANS: Okay. So what I propose
21 is that we did have planned here a round robin
22 with the panel members to reflect on the day.

1 What I propose is that we hold back
2 for the morning because I believe we have time on
3 the agenda first thing tomorrow for a round robin
4 as well.

5 So rather than doing that twice I
6 think we could just -- I propose we all kind of
7 mull over our notes a bit overnight and come
8 prepared to share our reflections on today and
9 our look ahead into tomorrow with the -- first
10 thing tomorrow morning.

11 So Sean, Mr. Chair, if that is
12 suitable, if that's okay to you, perhaps we could
13 just pause for a moment and see if anybody has
14 anything they'd absolutely like to get in at this
15 point.

16 CHAIR DUFFY: Yes, sir. I think
17 that's a very good option. If anybody objects or
18 feels like they need to go over anything from
19 today. Otherwise, hold it for tomorrow. Think
20 on it and we'll allow a second for somebody to
21 raise a hand or speak up.

22 RDML EVANS: I'd also offer that

1 although we don't have time probably to get all
2 the way around the room now if there were
3 questions for myself or any of the other
4 directors we could probably address some of those
5 in the time that we have remaining because I know
6 that we burned through that pretty fast.

7 MS. CHAPPELL: Thank you, Ben. This
8 is Ashley.

9 I think if there are questions for you
10 all this is a great time to do that if you're not
11 doing the round robin. Let's fit it in now.

12 RDML EVANS: Looks like we have people
13 still on camera so, Nathan, I think you were
14 first.

15 VICE CHAIR WARDWELL: I got a pretty
16 simple question, Ben. I was just curious is the
17 rescheming for the charts aligned with the
18 gridding for the National Bathymetric Source?

19 RDML EVANS: Let me make sure I
20 understand the question. So they're transitioning
21 the charts to the grid. It's a separate effort
22 from NBS but the to link together.

1 Ultimately the NBS will supply the
2 charts with bathymetry. So there's a process
3 linkage there. There's not necessarily a time
4 linkage there, if I understand the question
5 correctly.

6 VICE CHAIR WARDWELL: Yeah. I mean,
7 so I would look at -- since we're doing this
8 virtually I can snoop around and look at things
9 as people are talking and I'll see in the grid on
10 four in the National Bathymetric Source on
11 nowCOAST and so, like, the bounds for each grid,
12 right, and I was just wondering if that's aligned
13 with the chart. It's just kind of a curiosity.

14 RDML EVANS: That's a good question.
15 I think that the NBS is intended to cover all
16 U.S. waters. We have chart coverage that in some
17 cases goes beyond U.S. waters so there wouldn't
18 necessarily be one to one alignment there. But
19 maybe we should chat about this maybe because I'm
20 not sure I'm 100 percent following the question
21 and I don't want to answer incorrectly.

22 VICE CHAIR WARDWELL: Yeah, that

1 sounds fine. And then while I'm on here I got
2 one other question for Marian and it was about
3 the Coastal Inundation Dashboard.

4 The dashboard is great. I like to
5 look at it. It has, you know, both NOS water
6 level stations and then other water level
7 stations and as I was looking at that I noticed
8 that there's very few either water level stations
9 on the West Coast, Pacific, and Alaska and is
10 there -- can you speak to the reason for that?
11 Is it the pure water level stations or can't get
12 the collaboration or -- yeah. Yeah. Can you
13 just speak to that?

14 DR. WESTLEY: So I would have to kind
15 of look into that for you and get back to you
16 with sort of more detail. But you know, I would
17 say what we're doing right now is we're pulling
18 those water level stations that are in AHPS
19 through the Weather Service.

20 We're just pulling them through those
21 services and the Weather Service. So, again, I
22 think we're trying to access all of those. Those

1 tend to be the USGS gauges that are integrated
2 into the national water model. That was kind of
3 our first foray into partner data.

4 VICE CHAIR WARDWELL: Okay.

5 DR. WESTLEY: But I will take this
6 home and do some research on how we could
7 populate the -- I've been very focused on the
8 lower Mississippi River because we're very --
9 have a lot of interest there. But I will look
10 into the West Coast for you.

11 VICE CHAIR WARDWELL: Well, you know,
12 I always have my eyes on the West Coast and those
13 remote areas in Alaska. So, yeah. But all right.
14 Thank you.

15 MS. CHAPPELL: I think Nicole had a
16 question.

17 MEMBER ELKO: Yes, this is Nicole
18 Elko, ASBPA. Thank you for all those updates
19 that -- they were really -- they were so good
20 that I'm still bright eyed at whatever time it is
21 here on the East Coast. So thank you.

22 I'll make most of my comments in the

1 roundtable tomorrow but I did have a question
2 that would be nice to ask now and that was
3 related to -- well, I guess two questions, and be
4 very much focused on driving and improving future
5 performance even though they may sound more like
6 performance review and looking back questions.
7 So I just want to start with that.

8 So, Marian, the Coastal Inundation
9 Dashboard updates are amazing. Thank you for the
10 updates to the Charleston gauge, and the cameras
11 are super cool.

12 But the way we're looking at it right
13 now -- the stakeholders that we're getting that
14 information from two different sites sort of like
15 the WebCOOS and SECOORA site and then, you know,
16 the tides and currents, and the way you showed it
17 was fantastic because we use that to engage -- we
18 use the photos a lot to engage with stakeholders
19 kind of in the way that you were saying it's so
20 much more helpful to have a picture.

21 When we're talking about sea level
22 rise and planning for resilience we'll use those

1 -- hey, this is what a foot looks like. This is
2 what two feet looks like.

3 So question number one is where did
4 that come from and can you give us a link. I
5 don't know how to get there and our stakeholders
6 don't. That's hard to find if it exists.

7 And then the second is related to the
8 tidal epoch update, and I'm curious if you all
9 have a very young maybe staff person dedicated
10 to, like, lessons learned and the how-tos and all
11 of -- everything you're going through right now.

12 So that the next time this could
13 happen more, like, in real time-ish, faster.
14 Thank you.

15 DR. WESTLEY: Okay. So I'll start
16 with the webcams. So you're looking for those
17 kinds of graphics that I showed where -- I don't
18 know how many of those are kind of posted on our
19 website yet. We were doing webcams as a kind of
20 fun R&D side project.

21 So the data is all hosted by WebCOOS.
22 We don't host any of it ourselves. We do have

1 BIL-funded scientists sitting with my engineering
2 team down -- our engineering team down in
3 Chesapeake whose job it is to kind of play around
4 with it.

5 So, again, I can have someone like
6 Greg Dusek do some of the better things. But
7 these are all things that we've just been making
8 to sort of demonstrate to ourselves that this is
9 -- has real utility.

10 You know, Inundation Dashboard is
11 trying to have a collection of impact graphics so
12 that when we say this is what we're expecting,
13 here's a picture of what that looked like the
14 last time it was at that level. But, again, this
15 is all still sort of in the forming and norming
16 stage. But you can ask. I'm sure we have a,
17 you know, pretty lively cadre of data scientists.
18 They love making these plots. There's probably
19 a bunch of stuff kicking around. If you go to a
20 scientific conference you'll see a bunch of them.
21 So I'm sure we could share some with you.

22 And then your second question was

1 about the tidal datum epoch update. Yes, I think
2 we're kind of pretty far along in this process.
3 So, you know, we've talked about ways to
4 accelerate it, ways to be more innovative with
5 the data processing. We're close to the end so
6 it's hard to kind of make a big course correction
7 right now.

8 But I would -- one of the things that
9 our chief scientist Greg Dusek has been leading
10 and we're trying to get him a resource to kind of
11 help him is how we do this with machine learning
12 or you can say AI. Everyone freaks out when you
13 say AI so I like to say really sophisticated
14 statistics for all of our data processing needs
15 because we -- you know, computers are really,
16 really good at seeing patterns. You need a human
17 when the pattern is violated.

18 So right now, we don't really have --
19 you know, Greg has done some kind of preliminary
20 work with that. We've done work with --
21 partnership with others. We're in partnership
22 with the Conrad Blucher Institute. They're very,

1 you know, deep in AI kind of research.

2 But there's got to be a way to do this
3 a lot more smartly so that our human brains can
4 be used for the things that human brains are
5 really good at and we can use machines to do all
6 the rest of it.

7 So yes, we are watching, listening
8 lessons learned. We're just at a point where
9 we're too close to the finish to kind of really
10 try new things.

11 But we can't wait this long. You know
12 we do it on this sort of 20-, 25-year cycle
13 because of the precession of the nodes of the
14 moon and we know that cycle.

15 We also know that climate change and
16 sea level change is happening at a much more
17 rapid rate and we have to update datums much
18 sooner than just every tidal datum epoch.

19 So, again, how do we plan for that
20 future that's something we hope to do some R&D
21 on.

22 MEMBER ELKO: Thank you. Thank you

1 very much.

2 MS. CHAPPELL: Julie?

3 DR. WESTLEY: I'm saying that's kind of
4 a little bit over the horizon with NTDE is then
5 we'll be a little bit ahead of NSRS and so we'll
6 need to go back and kind of update all of the
7 datums to the new spatial reference system. So
8 that'll be a sort of added step as well. But,
9 again, everything needs to be tied together in a
10 single geodetic system that's interoperable
11 between the geodesy and the tides and the whole
12 bit.

13 MS. CHAPPELL: Great. Thank you,
14 Marian. Julie, do you have a question. Oh,
15 you're muted. Sorry.

16 MEMBER THOMAS: I am muted. I have a
17 quick question for Larry if he's still on.

18 MR. MAYER: I am. I'm here.

19 MEMBER THOMAS: You are there. Okay.

20 I just -- when you talk about the data
21 quality and then you talk about energetic sea
22 states I know you've actually touched on this,

1 but the quality must degrade with the sea state
2 after a certain point and what I'm really
3 interested in is if it's uncrewed or crewed,
4 like, which one -- if it's a large sea state do
5 you get a better quality in an uncrewed or crewed
6 or does that not really play into that factor?

7 MR. MAYER: No, it absolutely does and
8 there's not a single answer. If we look at the
9 DriX vehicle it is a wave-piercing hull with a
10 deep keel and so it is not terribly susceptible
11 to sea state to a point.

12 If you look at the Saildrone vessel it
13 has the behavior of a sailing vessel and this
14 creates a number of issues in terms of its
15 ability to maintain heading. They're all very
16 small, though, relative to a large crewed vessel
17 and so the dynamics are certainly exaggerated.

18 And so I don't think you can apply a
19 single answer to all systems. You have to take
20 it system by system. But that's part of what
21 we're doing is looking from system to system at
22 the quality of the data they produce too because

1 that has to go into the equation, at the end of
2 the day, about whether they're more efficient or
3 not.

4 MEMBER THOMAS: Got it. Okay. Thank
5 you.

6 CHAIR DUFFY: Okay. I believe we're
7 going to wrap up. I'm not sure, Admiral Evans,
8 if you're going to be able to come back on. I'll
9 proceed. There you are, sir.

10 I would like to just make a couple of
11 comments and then turn it over to you so you have
12 the final say, if that works.

13 You know, I just want to say, you
14 know, I talked earlier -- I always say jersey.
15 Other people talk about hats, and I don't wear
16 hats. I've worn a lot of jerseys in my day. I
17 was really proud of the team today. Lots of
18 great members.

19 Some of the things that I thought
20 about were some of the former members have
21 recently left us. I hate to mention names but I
22 did see a question from former member Lindsay Gee

1 and I have to mention my good friend Anne
2 McIntyre. It's good to see some new members,
3 too. So we have some replacements kind of
4 through the draft process, if you will, to fill
5 some big shoes.

6 Today's been a challenging day for a
7 lot of folks technology wise, time, commitment,
8 keeping things moving.

9 I will just say I was proud of
10 everyone. I think it was a great effort. I look
11 forward to reconvening in the morning. I know
12 there will be a lot of good comments from the
13 panel members when we do the round robin, and I
14 would just like to say thank you for your
15 commitment to the service today.

16 And with that, I will turn it over to
17 Admiral Evans.

18 RDML EVANS: And, Sean, and thanks for
19 your leadership today and you and everybody else
20 who pivoted to the virtual environment.

21 I will note that I don't like the term
22 former members. I prefer to -- you know, members

1 emeritus, perhaps, is more appropriate.

2 But we deeply appreciate the
3 engagement of the current members, the former
4 members, the members of the public, all of whom
5 have taken the time to engage on this -- on these
6 important topics.

7 As you noted, I think we had some
8 really outstanding panels today focused on the
9 local requirements in the L.A. and Long Beach
10 area and the way in which NOAA's products and
11 services can help meet those requirements and in
12 some cases in very innovative ways and so I look
13 forward to that being a continuing theme for the
14 rest of the week.

15 I think, you know, with that I'll
16 close and just note that we'll be reconvening I
17 believe at --

18 MS. CHAPPELL: We started 8:30 Pacific
19 time, 11:30 -- earlier.

20 RDML EVANS: Yeah, half an hour --
21 right. Okay. Thank you, Ashley.

22 Half an hour earlier than today so

1 8:30 Pacific. I'm sorry, 8:30 Pacific yes, 11:30
2 Eastern and we'll start -- we have an hour set
3 aside for a recap and discussion of day one. So
4 that, hopefully, will be plenty of time for folks
5 to share their impressions and engage in a good
6 discussion before we dive into the session led by
7 Nathan in which Nicole will introduce the concept
8 of adaptive and resilient ports.

9 So with that, I think we'll close.

10 Sean, unless you have anything further
11 I think it's up to you to officially gavel us
12 adjourned here for the evening. See everybody in
13 the morning.

14 CHAIR DUFFY: I feel like you outrank
15 me, sir, but I will be happy to close this
16 session. I thank everybody and appreciate.

17 Captain Miller often says I'm the play
18 by play and he's the color commentary so we can
19 think about that description later. But thank
20 you. I appreciate everybody's time.

21 (Whereupon, the above-entitled matter
22 went off the record at 5:25 p.m.)

A		
A-1 224:12	accidental 165:13	268:10 275:12 332:21
a.m 1:12 5:2 48:14,15 153:20	accidents 132:7	added 199:20 246:18 266:2 268:5,20 274:3 274:4,11 275:3 353:8
A1 175:2	accomplish 80:4	addicted 266:19
Abbott 1:15 30:14,19 30:20 146:11 147:11 148:21	accomplished 159:7 297:10	adding 221:12 274:2 291:14
Abdullah 1:16 31:8,9 41:8 141:6 144:9,12	accomplishments 258:14 278:7,11	addition 40:10 64:9 129:18 168:7 190:10 228:21 291:17
ability 56:21 59:14 241:8 246:15 248:12 252:1 270:10 272:11 354:15	account 219:8	additional 45:13,15 139:17 166:5 228:20 306:22
able 10:4 19:12 22:11 30:5,8 48:22 53:10 63:12,15,19 77:19 80:4 84:17 89:18 93:14 104:7 106:22 107:2 108:15 110:3 120:6 122:18 123:6 124:6,7 126:14,17 128:10,15,17 142:14 160:1 165:19 237:22 245:12 246:20 249:14 256:17 267:11 268:19 270:3 281:22 282:1,2 285:1 291:11,12 302:9 311:15 317:13 317:16 320:21,22 338:19 355:8	accumulated 191:20	address 19:15 53:13 54:21 62:18 88:18 323:16 326:11 328:17 335:11 337:14 344:4
aboard 86:8 87:14 117:15 137:18 231:7 254:3 282:17 292:21 296:2	accuracy 119:18 209:3 209:5 220:14,21 299:20	addressed 7:16 240:17 328:9
aborted 164:12,20	accurate 21:20 115:19 120:19 126:17 127:8 135:5 171:19 238:21	addresses 90:21
above-entitled 48:13 153:19 240:4 358:21	achieve 54:8 101:8 103:4	addressing 46:9 200:22 203:20 280:22 311:19
absolutely 8:1 11:21 12:6 13:12 271:8 313:12 343:14 354:7	achieved 323:8	adds 45:13 68:16 320:7
abstaining 29:11	achievements 258:14	adequate 47:6
academia 13:11 155:3 340:14	achieving 323:5	adjacent 120:17
academic 286:9 291:2 293:7 303:1	acknowledge 8:15 261:7 275:22 279:16	adjourned 358:12
accelerate 307:7 351:4	acknowledgment 7:21 35:1	Adjournment 4:9
accelerating 46:3	acoustic 193:16 282:14	adjust 21:2 165:17 198:13 244:20
Accelerator 15:4	acquire 280:10	adjusted 125:3
accelerators 15:10,17	acquired 309:9	adjustment 246:16 247:4 302:5
accept 171:20 176:9	acquisition 33:11 286:11 309:20	adjustments 148:20 198:9 304:8,10
acceptable 91:21	acronym 85:16 87:8	administration 1:3 24:21 103:8
access 85:19 172:17 243:13 249:17 250:1 281:13 299:20 300:4 346:22	acronyms 302:18	administrative 6:18 27:6 39:19
accessibility 7:13	Act 15:5 25:2 60:13 65:16 71:14	administrator 2:9,10 5:18 9:13 18:11 27:21 63:10 112:13 255:9 257:6
accessible 29:10	acting 92:11 279:8,10 279:20 280:1 291:16 313:21 314:1	administrators 47:12
	action 125:2	admiral 6:5 7:19 9:9 10:2,21 16:13 29:16 38:3 39:14 152:19 200:22 218:16 226:3 256:9 275:18 276:9 325:2 329:22 333:15 334:18 355:7 356:17
	actions 285:1	adoption 301:3
	active 64:5 238:5 261:16 266:7 273:21	advance 10:14 25:2,16 26:7 28:7,17 164:14 286:18 327:16
	actively 235:20	advanced 30:13
	activities 23:18 24:7 69:19,20 290:7 293:6	advances 71:2
	activity 189:15 196:8 197:17 198:2 199:1 292:19	advantage 238:1 318:1
	acts 84:6	advantages 87:19
	actual 148:13 203:22 205:22 207:7,14,15 208:13,16 209:9 211:17,21 212:3,16 227:11 231:8 266:10	
	adapt 290:5	
	adaptation 15:15	
	adaptive 13:5 46:2 358:8	
	add 133:18 221:8 222:21 245:6 260:10	
		188:8 189:1 233:21 317:11
		adversity 33:7
		advice 37:16 47:11 108:7
		advise 5:15 31:2 44:10
		advised 256:1
		advises 5:18
		advisor 31:10 235:4
		advisories 266:8
		advisors 235:6,15
		advisory 5:14 6:1 16:22 21:9 24:15 25:16
		advocacy 23:2
		Advocates 32:11
		aerial 42:8
		Affairs 3:11 50:12
		affect 193:7 205:10 215:19 262:11,11
		affiliated 27:16
		aft 120:2,7
		afternoon 31:7 35:8,22 38:13 44:17 94:22 129:2 157:3 169:2 173:9 255:13
		agencies 73:14 174:8 191:2 237:12 301:10 305:1
		agency 65:22 95:14 187:9 248:16 291:7 292:15
		agenda 7:5 16:15 38:2 343:3
		agents 206:8
		aggressive 109:2
		ago 15:8 46:10 57:22 87:5 90:2 99:20 101:8 104:6 105:18 109:6 133:2 134:8 136:16 155:11 187:9 196:18 240:20 266:21 294:4 296:10 320:9 336:8
		agree 337:16
		agreement 20:2 60:16 99:10 160:17
		agricultural 99:2
		agriculture 98:17
		aground 145:21
		ahead 11:10 44:15 48:5 53:11 112:9 130:3,6,9 132:14 136:6 151:8 155:6 156:22 181:3 204:4 210:18 218:15 246:11 258:11,22 260:14 267:9 275:17 283:9 294:9 309:18 343:9 353:5
		AHPS 346:18

- AI** 351:12,13 352:1
aid 113:13 124:12
aids 64:13 124:16
aiming 287:5
air 14:8 54:12 59:16,22
69:9,10 85:11,11 86:4
86:21 87:3 88:13
179:22 192:8 221:12
273:19 274:11,14
aircraft 21:14 82:6
Airlee 318:17
Airport 125:22
Alabama 274:4
Alaska 20:18 21:15
49:10 116:3 176:2
285:7,7,8 289:13
295:20 296:5 303:14
308:7 309:16 311:13
346:9 347:13
alerted 329:7
Aleutians 321:12
Alexander 20:18
aligned 299:19 302:16
344:17 345:12
alignment 299:17,20,22
345:18
aligns 277:13
all- 137:13
Alliance 275:11 285:14
allow 97:2 114:13
343:20
allowed 172:19
allowing 156:18
allows 85:19 87:20
177:18 225:19 264:12
alludes 322:19
alongside 59:21 81:22
87:13 166:16
alpha 301:20
alphabetically 33:16
AltaSea 25:8
alter 249:6
altered 125:4 272:21
alternative 85:16 87:9
Amanda 2:19 40:6
amazing 70:21 348:9
Amazon 243:9 250:8,13
Amber 2:15 6:16,19
7:20 40:6
AMECS 87:9
amended 253:22
America 70:18
American 32:7 105:11
149:12 152:7 283:4
289:16,17 309:16
American-Caribbean
294:6
Americas 82:9
- amount** 77:7 96:1 100:5
100:13 198:14 234:21
277:7 284:2 316:17
322:18
amounts 81:11
AMP 85:15 86:18
analogy 128:14
analysis 199:12 200:11
263:12 283:6 321:21
322:21 334:18
analyze 263:1
analyzed 197:1
analyzing 261:15
anchor 77:8 118:4
122:4,4,5,9,14,21
123:1 163:3 164:20
193:15 339:5
anchorage 76:19
122:10,11,22 123:2
anchorages 76:20 77:5
114:7,9,12,18,20,22
122:8 170:20
anchored 102:20
115:14
anchoring 115:3
anchors 102:21 118:4
and/or 59:5 116:21
194:11
Andre 187:8
Andy 2:2 35:20,20,21
36:4,13 37:1 291:15
317:5
Andy's 36:18
Angeles 3:8 24:2,2 25:9
50:7 67:15,20 69:3
79:5,9,17,22 80:11,20
82:7 87:6 93:5 96:21
98:12 113:10,20
114:1 118:1 121:16
123:4,14 125:2
142:22 143:20 158:8
179:22 181:13
Angeles/Long 63:16
64:3 72:2
angles 23:7 195:19
269:6,8
animal 100:16
animals 25:10
Ann 327:19
Annapolis 335:21
Anne 356:1
Annis 279:10
announce 279:3
announced 15:7 31:14
announcement 312:22
annual 267:15 283:14
annual/biannual
258:13
- annually** 69:8 81:6 96:5
97:20
answer 16:4 90:7 94:4
138:16 142:11 143:8
143:22 148:17 150:21
231:14 345:21 354:8
354:19
answered 132:8 328:1
328:6
answers 144:10 315:9
318:19 326:13 341:11
342:10
anticipate 88:4 280:15
284:21
anticipating 11:9
anticipation 89:2 137:7
antique 118:14
Anuj 31:15,20,22
anybody 29:18 80:13
113:19 140:8 228:2
323:19 343:13,17
anymore 18:19 35:22
84:16 88:22 202:22
anyway 73:4 140:22
161:17 239:9 244:10
AOR 70:2
AP 81:22 88:16
apologies 11:1 18:19
32:4 111:5,7 295:12
apologize 17:14 53:9
56:16
app 288:18
apparent 67:13
Apparently 116:22
appear 67:10
applaud 106:8
applicable 21:10
application 38:18 45:2
192:17 201:6 289:22
315:17
applications 46:14
202:11 338:5
apply 179:17 354:18
applying 288:4
appraised 194:7
appreciate 6:8 9:9
10:14 17:12 26:11
28:3 44:11 47:1 52:3
78:5 95:7 111:16
112:8 129:20 132:11
135:20 136:2,4
151:19 239:16 276:4
297:4 325:3 337:16
357:2 358:16,20
appreciated 94:16
110:18
appreciation 22:7 94:9
130:15
- appreciative** 44:8
apprised 140:3
approach 55:22 56:3
57:3,5,17,21 58:5
87:10 89:19 158:19
159:8 192:14 291:14
319:2,18
approaches 55:18 61:1
appropriate 135:19
324:5 357:1
appropriation 281:20
284:15
appropriations 309:6
approval 60:5 301:2
approvals 147:15
approved 56:15 60:10
60:15
approximate 58:7
approximately 56:20
57:7,11 58:11 60:20
61:2,6,9,17 102:18
April 119:4 312:12
313:21
aquaculture 97:18,21
105:9
archives 194:1
area 10:12 23:9 33:20
52:2 57:4,16 63:14
64:19,21 70:7 71:12
71:16,18 72:4 73:11
75:11 84:5,6 89:9
121:19 141:16 145:10
158:18 170:19 171:10
172:7 176:22 177:10
178:16 179:20 180:8
181:15,19 185:5
190:21 196:6 198:12
200:5 208:2,8 213:9,9
213:13 214:13 216:12
219:4,13 220:11
225:14 250:5 262:20
263:12 265:16 267:2
268:1 285:8,16 286:8
289:8 292:7 300:5
308:1 313:3 316:16
317:14,15,19 319:7,8
321:12 322:5,10,11
322:14,16,22 323:10
327:13 330:21 337:6
339:13 357:10
areas 21:21 56:17 66:3
66:19 71:18 105:3
106:18 109:17 143:11
146:3 170:20 171:12
176:14,17 177:7
178:19 181:17 196:2
213:10 214:4 242:11
253:13 269:11 280:16

285:4 303:16 309:16
310:15,21 311:5,6
335:2 336:14,15
337:9 338:2 347:13
arm 87:15
Armstrong 2:2 35:20
36:2,4 291:15
Army 43:22 50:3 53:14
53:22 54:3 58:14 60:6
60:16 61:5,10 62:7
147:22 148:5,11
157:15 190:1,10
192:21 223:11,15,17
287:22 340:12
array 120:9 190:6
arrival 165:18
arrive 66:8 164:19
arrived 111:17 119:1
arrives 279:9
arriving 68:8 73:10 80:2
166:3
arrow 120:2 124:14
125:12
as-needed 182:20
ASBPA 347:18
ascertain 84:19
Ashley 2:15 40:6
285:12 325:14 326:3
326:18 328:18 331:8
339:9 342:14 344:8
357:21
ashore 118:6 158:9
165:2
Asia 80:19
aside 358:3
asked 90:2,4 133:17
206:7,7 233:13
327:20
asking 101:11 108:7
334:7 339:5
aspect 194:5
aspects 182:5 191:12
191:16
assess 220:20
assessment 16:19
321:15
assets 225:18,22
assignment 74:18
279:7
assimilating 221:19
assist 39:22
assistant 2:9,10 9:13
18:10
assists 71:15
associated 266:7
association 27:14 32:8
34:11 67:7 237:12
305:8 329:13

associations 190:13
287:9 329:4
assume 105:7 147:4
assurance 22:19
astronomical 208:9
asymmetry 148:9
Atlantic 33:2 175:22
289:11 308:8
atmosphere 183:19
atmospheric 1:3 11:13
34:2
attached 7:6 102:21
attempt 198:8
attend 39:3
attendance 276:4
attendants 80:9
attended 288:10
attendees 40:19 325:17
attending 334:15
attention 62:18 69:2,8
239:16 260:19
audible 18:14 48:11
audibles 17:11
audience 94:11,14
116:4 256:18
audio 29:8 133:7 184:3
252:11 295:6
augment 287:15
August 76:7
Australia 231:22
authoritative 258:18
267:7 295:14
authorities 74:3 130:22
authority 65:6,9
authorization 284:15
authorize 284:13
authorized 60:18
authorizing 338:15
auto 68:10
automatable 332:19
automated 70:12 88:10
88:15 137:17 142:9
194:6 272:11 332:2
automation 88:8,9
136:17,21
automobile 81:2
automobiles 98:17
99:17
Auxilirants 64:7
availability 250:2
available 11:22 12:7
18:14 40:21 48:17
93:6 146:6 147:9
167:11 172:20 174:6
184:12 185:18 199:12
203:10 204:9 205:7
207:15,20 210:9
214:7 217:20 219:21

225:18,22 226:1
250:7 252:9 253:17
295:16 302:8 336:3
average 270:2
averaged 322:6
averse 168:9
aviation 141:19
awake 314:11
award 15:8 282:20
awarded 22:5 102:14
291:20
awardees 15:22
awards 15:4,7,9
aware 39:2 235:9,19
263:19 329:19
awareness 265:15
267:1 269:3,12
270:21 271:11
Awesome 314:5
awful 106:11 110:5

B

B 22:2 224:12 282:20
back 7:18 9:4 14:16
17:8 29:13 38:8 44:16
47:16,22 48:7,17,18
51:13 69:6 87:15 95:7
98:1,7 115:2 116:22
120:2 123:2 125:11
127:14,21 128:13
130:11,12 139:13
141:2 147:8 150:4
151:1 153:11 154:3,9
157:4 168:19 170:16
171:9 180:18 183:15
184:8,15 185:7
189:18 191:6 198:19
215:19 218:7 224:3
236:17,22 239:9
240:20 241:1 268:17
282:17 295:8 303:15
303:18 317:16,19
319:22 325:15 327:10
333:12 338:11 343:1
346:15 348:6 353:6
355:8
backbone 26:19 298:16
307:5
background 11:3 43:17
149:9
backing 192:21
backup 112:18 115:13
122:2
bad 108:10 129:3 249:1
249:5
bag 105:20
bail 163:3
bailout 162:5 163:18

Baltimore 31:12 289:17
band 211:1 213:15
banding 198:2
bands 210:20
bandwidth 250:19
bang 98:15
Banks 42:6
banner 272:3,5
bar 30:5 132:16 190:22
341:18
Barbara 97:10,12
181:14
barge 87:13,18 100:6,7
125:3 242:8
barges 88:5
Barragan 3:5 23:22
24:10
barrels 161:16 166:6,6
167:22
bars 107:19
base 51:17 333:2
based 16:10 25:8 33:9
42:5,8 77:14 138:21
163:11 165:18 180:9
185:22 201:10 202:4
210:16 211:15,17
213:2 222:2 234:11
245:9 247:16 257:12
261:10,11 263:19
299:14 308:1
basic 20:12 177:21
266:16 292:10 328:14
basically 6:4 37:13
76:20 85:19 86:3
87:14,17 92:17 93:10
114:18 116:6 117:18
118:7 120:8 121:10
126:5 134:21 137:8
160:12 161:16 230:12
236:8 249:20 264:12
299:12 316:22
basin 25:14 56:4,5 57:3
57:4,4 110:2 246:2
basins 193:6
basis 65:9 158:11
204:22 241:8 270:9
bathy 286:7 331:11
332:1 333:11 336:17
337:10
bathymetric 172:2,4
225:8 295:5,13
331:13 332:2 334:17
344:18 345:10
bathymetry 172:7 173:5
173:13 178:9 193:3
218:20 224:1 229:1
242:19 243:21 246:5
248:1,3,18 249:4

252:22 253:7 263:21
 285:22 286:3,4,5,11
 286:13,15 333:19
 345:2
battleship 113:20
 116:16,20 117:2
Bay 43:6 98:2,11,12
 100:8,18 101:16
 102:1 103:9,13,21
 104:6,7,10,15 106:19
 109:7 110:2 133:4
 263:3 264:18 274:9
 274:11 288:22 335:22
 336:9,22 339:6
Baywatch 74:15
beach 3:9 10:12 25:21
 32:7,11 42:15 45:11
 50:4 52:18 53:7,15,19
 54:1,1,3 55:2,22
 57:17,20 58:1,5 62:8
 62:9 63:2,16 64:4
 67:15,20 68:9 69:12
 70:13,14 72:2 74:2
 79:6 80:16 86:13 88:5
 98:12 103:12,14
 112:18 113:10 118:1
 120:10,22 123:4
 128:21 129:6,17
 143:22 149:12 153:3
 157:13 158:8,13
 159:19 160:4,11,20
 166:15,22 167:20
 168:4 171:7,14
 174:20,20 175:10
 176:7,13 177:1,5,11
 179:9 180:3 181:15
 189:21 192:18 193:2
 196:6 197:13 198:3
 220:6 221:10 229:15
 231:15 232:5 236:20
 244:7 251:4 296:19
 330:20 332:5,6 357:9
Beach's 101:14
Beach/Los 96:20
beaches 149:21,22
 150:7
beam 206:4
beautiful 112:19 180:15
 201:2 257:17 278:12
bedtime 314:12
beginning 165:8 168:15
 247:22 248:10 284:16
 303:17
begun 248:16 280:15
behave 206:5
behavior 354:13
behemoths 91:16
Behrens 3:7 156:6

162:2 180:5 189:7,9
 210:6
beignets 152:10
believe 35:17 38:3,10
 41:5 48:1,20 100:12
 132:22 136:7 137:14
 153:10 231:5 261:22
 267:19 269:19 273:21
 325:12 332:7 336:4
 343:2 355:6 357:17
believer 108:17
Ben 6:5,11 7:19 81:17
 81:22 82:3 118:22
 241:18 256:9 295:8,9
 297:22 344:7,16
benchmark 308:3
bend 57:19
bends 56:1
beneficial 60:3 61:11
 61:15 62:7,11 151:11
 152:1,4
beneficiaries 109:3
benefit 60:2 233:22
 270:14 324:11
benefits 33:12 59:7
 166:9 314:22 319:2
Benjamin 2:12 81:16
Bering 281:11 282:15
berth 59:21 119:16
 123:4 158:13,14
 159:4 167:10,20
berths 56:7 84:2 170:20
best 26:3 90:21 91:7
 92:3 138:7 155:12
 182:10,11 201:11
 205:7 207:15 210:8
 215:2 295:16 306:18
 323:6
beta 265:8 300:15
 302:2,4 303:21 304:1
better 18:9,21 25:12
 30:7 82:21 109:14
 145:12 177:6 188:19
 188:22 199:21 209:14
 233:5 234:6 245:19
 246:18 281:6 287:7
 299:17,21,22 303:19
 350:6 354:5
Betz 3:8 50:6 72:1
 78:20,22 79:1 94:7,17
 96:10,19 102:4 108:3
 117:6,14,17,18
 118:22 119:20 136:15
 136:21 137:5,21
 138:10 139:17,18
 141:11,11,21 142:6
 144:10,21 145:3
 146:6,9 241:18

329:16 330:7
Betz's 98:2
beyond 11:20 14:21
 91:21 291:13 314:20
 345:17
biases 238:17
Biden- 103:7
Biden/Harris 24:21
bifurcated 125:1
big 17:17,19 43:9 80:3
 87:14 91:14 108:22
 118:3 119:22 124:19
 125:12 134:9 140:20
 143:3,4,4,4 165:5
 166:15,18,19 167:9
 167:15 171:15,21
 183:2,6 185:1 186:13
 187:14 202:18 206:1
 237:13 238:1 250:19
 250:20 253:3 262:8
 269:16 272:4 283:20
 293:13 337:10 351:6
 356:5
bigger 80:19 81:18,19
 81:20,21 82:18 83:21
 84:5 89:5,10,15 90:3
 90:5,5,15 91:12 96:11
 96:12 114:5 120:3
 128:22 168:13 202:18
 202:18 203:8,10
 241:20 317:17
biggest 69:13 81:7
 85:10 119:1 130:22
 131:4 132:18 139:19
 174:4 202:5,10
 236:15 289:3 301:8
bight 193:4 195:15,18
 197:20 199:18
BIL 20:17 26:12 271:17
 303:11 307:7 308:21
 310:7,12,14
BIL-funded 350:1
bill 231:17 284:12
 320:10 338:15
billion 24:22 53:21 81:6
 95:17 96:3,5 97:14
 103:5,15
billions 81:3
bills 26:12
biological 109:17
bios 30:13
bipartisan 260:3 267:12
 284:12 295:22
bird 147:3
bit 29:22 44:15 47:21
 89:22 98:1,8 100:19
 102:13 129:22 140:13
 159:17,18,19 181:4

194:16 201:2,8 202:3
 206:5 208:4 216:14
 216:15 217:14 219:1
 224:16 226:16 227:9
 229:6 232:9 234:3
 253:15 257:4 276:14
 278:14 280:12 292:17
 302:1,11 327:4,15
 329:21 331:14 343:7
 353:4,5,12
bite 153:16
blackout 203:3
blob 115:13
Blucher 351:22
blue 33:13 113:8
 123:18 172:11 175:17
 176:14,16 180:4
 208:1,4,19,20 213:9
 213:10 214:13,19
 250:1
board 12:20 60:9,15
 96:1 137:12 142:10
 142:13 158:21,21
 163:16 211:10 217:9
 272:20
boarding 163:14
boards 124:10
boat 64:12 79:20
 105:17 106:2 125:13
 125:13 127:14,20
 128:3 138:17 140:11
 140:18,19 142:4
 336:20
boater 31:1 105:16
 146:14 335:20
boaters 68:14 106:12
 334:9 335:3 336:19
boating 64:8 97:13
 146:17 233:3
boats 64:12 75:21,22
 97:15 107:14 131:16
 141:17 341:17
Bob 334:6,13 335:1
 337:17 338:19
BOEM 102:14 104:4
 285:11
bolts 193:9
bonuses 204:7
border 72:22 281:12
boring 197:19
born 161:10
Boston 251:7 296:21
bottom 115:4 117:8
 118:13 122:6,10,16
 123:1 125:18 126:6,6
 126:15,20 127:9,16
 128:6 159:6 165:15
 171:5,7,13 172:10

181:19 196:7 249:2
269:19
bottoms 311:7
bounds 21:2 345:11
bow 118:4 119:13 120:4
box 7:1,8,9 28:11
123:18 174:19 325:19
boxes 162:16 173:16
Brad 2:3 38:9 46:10
218:17 234:18,18
256:4 276:18 297:14
297:20 298:7 310:5
313:8 314:6 315:21
brain 279:1
brains 48:22 49:4 352:3
352:4
brainstormed 218:11
branch 279:13,13
break 47:15,20,21
68:10 81:2 95:11
98:17 130:9 152:17
153:8,16 173:9 240:1
341:1
breaking 104:11 107:19
breaks 81:10
breakwall 198:6
breakwater 159:9,10,12
170:21 171:12 178:16
215:19 220:1 224:21
breakwaters 56:9
breeze 244:1 295:4
Brett 313:22,22
Bri 278:20
bridge 90:6,11,12 102:2
180:1,3 273:12
274:11,15 288:2
bridges 83:16 238:15
241:10 242:2
brief 70:15 113:18
129:15 341:13
briefing 175:5 284:20
briefings 76:12 182:21
briefly 16:6 119:20
130:1 160:5 207:18
326:11 337:14 340:3
bright 347:20
bring 15:22 19:18 32:12
37:1 99:17 118:3
143:16 145:15 160:19
161:11 165:2,3
166:21 167:10,14
203:10 218:3 231:7
237:22 248:13 255:14
264:11 333:12 335:6
342:16
bringing 33:10 36:7
112:8 145:1 156:19
157:20 158:3 160:9

161:14,17 203:8
234:17 238:7,9 242:6
257:1 296:2
brings 69:7 71:4 148:11
286:17 293:10 296:22
broad 331:10
broadband 318:8
broader 10:12 289:22
broadly 332:10 334:3
broke 122:6
broken 132:12
brought 69:2 89:4
117:15 141:11 237:16
238:6
buck 98:16
budget 22:21 267:13
budgets 22:14
build 15:20 51:18,20,21
202:8 212:2 285:15
287:4 293:6 294:19
296:17 303:10 304:1
307:7,14 309:4
332:11
building 14:5 19:22
66:7 82:5 112:19
150:6 201:10 253:20
291:22 292:4 299:15
builds 90:22
built 102:22 110:16
120:13 172:5 175:16
175:18,18 225:10
246:15 250:15 268:6
268:7 295:17 296:10
307:17 341:17
bulk 55:9,13 57:9,15
58:12 59:9 68:10 81:2
81:3 98:17,18 170:6
232:8
bullet 121:17
bulletins 199:7
bump 145:22
bumper 125:6
bunch 151:20 350:19
350:20
buoy 92:20 108:1,4,12
162:3 192:6,21
193:19 194:13 196:22
197:12 198:9 199:16
200:10 211:15,17,21
212:16,18,21 215:14
224:5 230:6,7,9 233:1
275:7
buoy-driven 211:12,14
211:20
buoys 108:13 118:5
156:9 162:3 178:17
180:4 189:18 192:13
195:9 210:9 211:22

212:3 221:11 230:5
230:10 231:18 232:21
340:14,16,17,18
341:2
Bureau 71:20 262:13
burned 344:6
busiest 53:20
business 15:10 80:22
128:2 293:4 314:20
businesses 15:12
27:15 97:15
busy 85:4,6 124:20
129:6 242:11
Butler 2:15 6:16,20
31:22 40:6 335:10,12
335:16
button 9:8 175:17 200:8
buttons 179:20
buy 231:10
buzz 182:13
byproduct 25:13

C

C-O-N-T-E-N-T-S 4:1
CAC 38:18
Caccamise 235:6
cadre 350:17
Cajun 152:8
Cal 233:3
calculate 206:19 213:5
215:3
calculated 207:11,11
calculates 211:3
calculations 186:20
188:15 215:9 230:15
calendar 139:3 252:19
calibrate 193:12 194:5
California 3:10,11,14
11:9 12:8 26:21 42:18
42:19 45:4 50:2,12,18
67:9,11 73:15,16,20
76:5 80:14 85:12 95:9
95:13,19,21 96:2,7
97:22 100:9 102:15
104:3,14 105:1
107:15 109:8 110:6
132:21 149:20 150:9
155:18 157:12 169:1
189:13 190:2,9,12
192:19 193:4 195:8
195:15,18 197:20
229:15 232:22 233:3
235:2 236:17 237:9
237:11 321:14
California's 3:6 24:1,11
24:12 149:19 158:7
call 17:11 18:1 35:6
55:1,2 86:16 87:9

92:4 98:9 107:17
130:3,7 141:19 151:4
172:11 256:20,21
285:20 304:14 312:9
314:3 318:8 321:7
called 71:11 72:13 82:9
109:19,20 116:2
125:22 155:22 166:13
182:13 183:9 187:13
243:5 244:16 250:15
259:10 331:13
calling 59:2,18 114:15
calls 66:16
calm 117:16 159:12
camera 53:10 327:3
344:13
cameras 9:3 134:14,15
269:1 348:10
campaign 285:7,12,15
campaigns 262:19
285:3 307:2
Canadian 281:12
294:11
cancel 287:1
cancellation 296:13
canned 245:3
Canyon 191:1
capabilities 12:1,14
20:20 21:1 131:8
254:5,8,13 280:9
capability 86:9 137:9
137:16,22 142:10
143:16 145:8 251:13
capable 17:8 36:13
154:4
capacity 16:22 27:11
31:2 70:16 82:16,20
83:3 84:2 294:19
capital 86:17 95:15
96:9
CAPT 36:2 63:9 78:18
78:22 94:17 112:12
131:4 132:15 138:15
150:15,20 157:2,6
159:15 219:2 229:13
335:14,18
captain 1:18 2:2 3:3,8
3:12,14 31:21 32:1,3
35:4,19 40:14 43:3
45:7 50:5,6 63:6,8
65:7,10 72:1 76:17
78:4,20 79:5 80:11
81:19 90:17 94:7
96:10,19 98:2 99:13
102:4 108:3,6,9
112:10,10,15 114:1,4
117:6,10,14,16,18
118:22 119:20 121:8

- 121:13 123:11 129:15
130:12 136:15,21
137:5,21 138:9,9
139:17,18 141:11,21
142:6 143:5,12,14
144:10,21 145:3
146:6,8 149:7 154:5
154:19,20 155:7
157:1 159:14,15,22
160:8,17 162:1 164:1
164:6,9,15,22 167:19
218:16,21 231:20
232:20 241:18 278:18
279:3,9 329:6,16
330:7 335:6 358:17
- captains** 143:15 186:12
206:7
- capture** 87:10 107:5
captured 339:16
captures 87:17
capturing 222:7
- carbon** 323:16
- care** 19:1 25:11 71:3
101:4 115:18 159:17
159:18,18 198:12
267:2 336:19
- career** 6:2 43:21
cares 337:5
- cargo** 45:15 56:19,19
68:6 81:1,4,7 97:3
98:13,14,18 100:13
100:15 101:10,11
161:18 166:1,3
237:22
- Caribbean** 308:9
- Carolina** 20:9 32:9,11
267:18
- Carolyn** 1:18 43:13
- carpool** 236:6
- carrier** 57:10 67:7 82:6
86:15
- carriers** 34:11 59:1
68:10 82:19
- carry** 105:19 166:1
carry-on 92:22
- cartographer** 178:2
- Casanova** 279:4,9
- case** 19:14 115:10
116:4 122:2 125:10
127:19 172:22 178:6
211:11 212:20 214:15
246:17 262:20 315:12
318:7 321:6
- cases** 162:20 345:17
357:12
- casualty** 74:22
- catamarans** 123:12
124:4
- catch** 30:16,19 78:1
316:20
- category** 101:8
- CATZOC** 101:6,8 175:2
224:12,12
- cause** 160:14 268:2
- caused** 91:19 165:14
199:10 329:18
- causes** 98:16
- causing** 165:15
- CDIP** 35:12 157:15
162:2,3,9 189:8
196:15,22 210:6
211:12 212:15 218:1
229:19 230:1 275:7
339:22 340:8,11,16
340:18,22,22 341:2,8
- CDIP's** 162:1
- ceiling** 308:19
- celebrate** 306:11
- celebration** 313:19
- center** 2:3,5,6,16 16:7
16:11 25:11 36:6,8,19
36:21 37:1,11 42:18
58:15 59:4 73:11
75:14 183:9 185:14
187:13,19 193:19
194:19 197:13 237:10
256:5 258:15 276:2
281:2 286:15 290:9
290:13,17 291:10,16
291:18 292:1,4,9,19
293:3 320:12
- center's** 293:5,6
- centered** 24:1
- centers** 183:14 187:21
265:3 319:15,20
- centimeters** 209:4,4
- central** 25:18 99:4
- centralized** 106:14
- CEO** 3:12 42:1
- certain** 69:18 103:1
162:9 206:4,4,14
209:3,11 213:6
245:10 354:2
- certainly** 26:10 102:8
103:1 107:11 108:1
111:11 151:1 188:20
209:15 225:15 256:13
314:7 330:6 338:2
354:17
- certification** 287:12
- cetera** 42:4
- chain** 82:22 122:6
309:15
- chair** 1:12,14,15 3:2 5:3
6:10 9:5,7 10:18
17:10,19 29:16 30:2,7
31:3,19 32:17 33:15
34:5,19 35:1,15 36:12
37:4,18 39:12 45:6
46:6 47:2,2,18 48:11
48:19,21 49:3,13
71:13 72:1,6 76:11
79:6 151:5,8 153:22
233:12,15 234:5
237:18 239:11,21
240:7 254:19 295:11
325:1 343:11,16
344:15 345:6,22
347:4,11 355:6
358:14
- chairing** 12:19
- challenge** 29:19 124:19
131:1,5 201:9,15,16
201:19 202:15 203:4
203:11 212:4,6 237:6
277:3,22 281:8
- challenged** 30:9 152:7
- challenges** 22:13 24:18
32:13 45:3 49:16
51:12,19 52:19
123:16 128:21 131:6
212:11 233:22 235:12
255:17 257:9
- challenging** 5:8 130:17
254:22 356:6
- chance** 277:10
- change** 7:22 8:14 12:15
12:15 15:14 24:5,17
46:3 48:20 138:22
171:6,13 187:14
226:6,11 234:21
236:19,22 237:13
245:9 263:20 273:5
352:15,16
- changed** 236:20
- changeover** 280:2
- changes** 107:10 187:5
234:13,20 263:22
278:17 304:8
- changing** 109:15
147:17,18 229:1
290:6
- channel** 54:21 55:22
56:1,2,3 57:15,18,19
57:21 58:10,22 59:6
88:20 101:9,18
104:21 116:17,22
125:4 145:20 158:19
158:20 159:2,8
160:21 161:12 162:6
171:17,17 179:3
197:14 208:5 209:10
209:17,17 214:7
216:2,4,21 218:20
- 219:6,14 220:8,8
223:10,11 224:2,4,8
224:14 227:8 244:4
- channels** 89:12,15 98:4
101:6 129:2 170:19
171:12,16 176:17
219:3,5 221:17
241:10
- Chappell** 2:15 40:6
285:13 326:21 327:2
328:19 329:11 330:8
333:15 334:5 338:22
339:10 341:12 342:19
344:7 347:15 353:2
353:13 357:18
- characterization**
283:13
- Charge** 66:4
- Charleston** 20:9 32:9
251:7 263:15 267:18
269:4,20 271:2,7
296:20 348:10
- chart** 42:3 75:13 114:10
122:18 123:6 124:2,6
126:17,22 138:4
140:19,20 144:5
158:18 172:13 244:3
244:11 246:5 247:12
262:10 279:19 286:22
287:3,11,13 327:21
330:18 333:2 345:13
345:16
- Charta** 3:15 156:11
201:7 230:11,16
231:17
- Charta's** 58:1
- charting** 250:11 253:16
253:22 254:2 288:1
- charts** 77:13 105:19
106:10,10 115:8,19
116:1 118:8,13
119:17 120:19 123:8
125:7 127:2,8 128:17
139:21 140:4,10,17
143:19 145:6,16
242:18 287:1,14,17
296:11,13 328:11,11
328:12,15 329:1
331:6 333:3 344:17
344:21 345:2
- chat** 345:19
- chatting** 339:1
- cheap** 315:4
- check** 127:16 171:8,22
179:15 211:19 216:4
216:9 217:11
- checkerboard** 114:16
- checking** 127:17 151:2

- checks** 264:9
chemical 68:9
Chesapeake 264:18
 274:11 313:3 335:22
 336:22 350:3
Chevron 113:21 118:2
 190:20 200:2
chief 3:8,9 31:10 40:14
 50:3,6 53:6 60:6 79:4
 278:19 279:5,8,11,12
 279:18,20 335:7
 351:9
chime 329:22
China 81:8,13
chip 285:5
choice 178:4 192:3
choices 164:18
chop 194:15,22 195:21
Chris 221:6
Christmas 294:8
circle 117:22 123:2
 208:2 248:4,7
circled 120:16 289:2
circles 77:5 114:10
 115:15 122:20
circular 192:10,12
circumstances 142:19
 205:11,21 206:18,19
city 74:15 95:11 98:19
 103:13,21,21
Civil 38:18
civilians 64:5
claim 304:12
clarified 327:11
clarifying 222:18 223:2
class 22:2 232:12
 282:20
clean 54:11 85:4,5,6,9
 85:10,11,11,11 87:3
 88:13
cleaner 88:8
cleanest 59:18
cleanup 303:15
clear 202:16 294:18
 318:1 328:21
clearance 4:4 16:18
 35:7 45:9 57:7 58:11
 101:15 118:10 154:6
 154:12 157:8 162:19
 165:21 168:8 169:15
 182:3 184:14 185:20
 188:10 201:5 203:16
 203:17,18,21 205:13
 205:18,20 206:22
 207:1,12 214:3,5,9,13
 214:16,21 215:4,6
 218:19 237:21 242:2
 330:15 339:21
clearances 179:4
clearly 182:5 323:13
Cleveland 34:9
click 175:17 250:6
 319:17
client 202:6
clients 42:3
climate 12:15 13:2 15:3
 15:14,14 24:17 25:4,8
 26:15 46:3 191:19
 199:3 300:1 352:15
clock 80:1
close 7:3 69:19 77:16
 119:12,14 120:14,17
 142:3 183:12 196:6
 198:17 199:17 241:9
 253:10 291:6 314:12
 315:11 342:17 351:5
 352:9 357:16 358:9
 358:15
closed 104:16 133:14
closely 42:17 226:9
 235:5 237:7 287:8
 324:3 341:5
closer 179:14,14
 185:16 209:17 211:8
 300:10,14 301:13
closes 342:12
closing 128:20
cloud 243:10 250:8,13
 288:15
cloud-based 288:8
clouds 181:10
CMANC 50:13 95:8
CMTS 12:21,22 13:1
co- 2:2 291:17
co-chair 65:18 71:19
co-chairs 285:19
co-director 2:5 36:5,21
co-founder 41:22
 156:13
CO-OPS 2:7 19:15
 37:12 233:18 234:10
 257:21 258:16 298:20
 312:21 340:10
Coalition 17:17,19
coast 2:12,15,19,19
 3:10 6:12 12:9,9
 14:12,17,20,21 23:10
 38:14,20,20 40:12,19
 42:5 44:18 45:17 50:6
 63:6 64:6,13 66:19
 67:1 69:11 71:7 76:8
 76:15 77:19 78:7
 90:16 92:4 94:1 99:12
 108:4,5,8,14 114:17
 117:22 122:19 125:14
 146:18 150:22 155:16
 158:14 166:11 175:8
 176:1,5 183:13 185:2
 185:16 187:18 188:3
 190:22 195:8 221:15
 221:15 222:15 225:10
 236:16 241:1 256:7
 269:14 276:13 277:1
 277:12,16 278:6
 279:4,17,21 281:13
 281:16 283:6 284:20
 285:12 286:1 287:9
 287:21 288:6 289:8
 291:5 292:12 293:11
 293:15 295:18 296:3
 296:4,6 297:9,11
 303:9,16 308:5
 315:18 317:6 321:14
 336:3 346:9 347:10
 347:12,21
coastal 2:9 3:7 5:20
 9:14 20:21 21:9 25:4
 26:15,18,21 33:20,21
 36:19 42:3 64:11 66:2
 71:17 104:13 105:8
 108:4,12 109:22
 181:17 189:11 191:12
 192:19 193:5 196:19
 197:19 199:10 259:11
 259:15,17 265:12
 266:15 276:2 280:10
 283:16 286:19 288:12
 290:1 298:21 308:2
 308:11,14 309:17
 334:8 346:3 348:8
coastal-based 15:1
coastline 65:1 72:18
 109:8 195:13 235:1
coasts 12:16 105:17
code 278:9
coded 178:1
coffee 231:7
coherent 232:19
cohort 36:14,18 281:4
 292:11
coin 67:3
Colantuno 40:8
collaborating 147:22
collaboration 13:21
 26:6 47:4 53:13
 131:11 265:18 291:6
 346:12
collaborations 96:19
 190:17
collaborative 298:19
collated 326:6
colleague 169:9
colleagues 75:8
collect 107:6 263:1
 303:19 306:17,22
 311:16 339:16
collected 301:22
 303:12,17 310:22
 329:1
collecting 310:15 311:6
 318:9
collection 22:16,16
 309:3 311:15 316:12
 350:11
collective 312:5
College 34:2
collision 125:20
color 358:18
colored 122:9 210:20
Columbia 190:22
 228:20 231:21 232:7
 232:11 263:4
column 253:3
combination 273:20
 337:8
combine 80:16 289:6
combined 91:16
combines 195:7 259:11
come 6:17 10:4 48:6,17
 85:17 86:14 101:20
 101:20 102:5 119:2
 123:14 127:14 130:2
 155:4 158:4,11 166:7
 170:18 171:18 185:12
 199:6 202:17 203:6
 207:6 209:3 211:5,19
 215:19 228:16 268:1
 268:16 269:16 273:15
 295:3 304:2 319:22
 343:7 349:4 355:8
comes 78:6 87:13
 90:19 99:4 131:2
 158:7 166:16 184:18
 184:18 220:19 232:8
 317:12
comfort 142:16 143:13
 143:14,14 217:8
comfortable 163:1
 226:7 304:14
coming 18:15 19:2,2
 23:12 43:16 44:16
 69:6,14 101:17 115:2
 119:4 127:7 129:19
 130:5 134:6,19 137:2
 141:17 152:11 153:11
 178:17 182:19 183:1
 187:5 195:5 197:12
 198:6 202:17 205:20
 205:22 206:11 207:8
 208:16 214:10 215:13
 215:15,16 219:4,8
 225:12 231:9 232:4

242:7 251:9,20
 258:14 259:21 263:15
 265:15 267:1,8 275:8
 294:14 311:22 312:11
command 67:3 75:14
commander 14:13 50:5
 63:15 65:4,7 151:4
 278:20 279:11
comment 4:7 7:16
 28:10 118:17 135:14
 135:16 136:2,18
 138:11 150:2,9
 152:14 220:22 223:20
 325:16 327:9,11
 330:14 333:18 335:2
 341:15 342:2,4,9,12
commentary 324:21
 358:18
commented 96:10
 105:18 138:4 328:10
comments 7:9,15 26:11
 27:20 28:5,7,9,12,14
 28:16,20 47:8,13,17
 95:1 98:2 135:16
 136:11 151:13 153:1
 220:12 325:3,13,18
 325:19 326:5,8 327:6
 327:16,18 334:4
 342:10 347:22 355:11
 356:12
commerce 1:1 54:19
 80:21
commercial 65:1 68:10
 68:11 70:5,6 74:8
 97:16 99:14 105:9,13
 124:20 146:15 333:7
 336:14
Commission 73:21
 294:7,12
Commissioners 60:9
 60:15
commitment 356:7,15
committed 14:16
committee 5:14 6:1
 12:19 24:15 25:16
 38:19 42:21 43:12
 63:22 65:18 71:13,19
 71:21 72:2,7,10 76:11
 78:16 79:7 90:20 91:3
 92:5 95:4 98:3 101:4
 114:17 151:2 284:19
 294:13 301:1
committee's 106:8
common 19:16 123:8
 125:7 127:2 128:17
 242:10
communication 270:10
communications 268:7

communities 32:12
 52:1 110:11 111:14
 286:12
community 14:4 78:9
 131:10 138:8 153:2
 311:20 312:4 337:5
companies 70:6 107:2
 165:3 168:10
company 155:8 157:13
 163:9 201:7 202:3,4,7
 229:16 230:20 232:10
comparative 322:11
compare 151:21 231:9
 322:15
compared 338:2
comparison 196:21
 199:16 318:20
compiled 295:15
complement 287:16
complete 46:20 60:20
 61:9 148:6,7,14
 170:18 231:17 245:18
 277:17 295:19 306:12
 307:9 342:10
completed 20:8 21:11
 54:1 263:9 296:4
 309:10
completely 230:11
completing 278:6
 309:14
completion 20:1
complex 66:9 67:16,17
 67:19 68:2,5 80:17,18
 132:6 159:21 193:4
 204:12
complexity 68:16,20
compliance 56:9
complicated 170:1
complications 228:21
component 54:16
 185:3 194:16
components 74:2
 97:13
comprehensive 129:16
 131:7
compute 169:14 170:7
computer 183:11 184:6
 202:8 206:8 216:8
computers 351:15
computes 179:4
computing 170:3
conceivable 226:22
 227:20
concept 46:2 106:16
 358:7
Conception 127:20
concepts 290:19
concern 112:1 140:11

229:19
concerned 140:15
 219:1
concerns 32:12 52:20
 192:15 235:19 237:2
 301:6
conclude 297:1
concludes 62:17
condition 160:20
 162:17 174:5 272:14
conditioning 86:22
conditions 55:6,12
 143:18 156:3 165:5
 182:19 191:15 192:22
 193:1 195:12 197:5
 200:3 206:3 208:11
 210:10 211:3,4
 216:11 247:18 248:4
 271:18 272:2,5 317:9
conduct 121:15 170:15
 170:18
conducted 176:18
conducting 20:10
conference 3:11 50:13
 183:6 285:14 294:11
 334:14 350:20
confidence 101:6
 142:16
confident 323:22
configurable 247:1,4
configuration 114:8
confirmation 41:4
confirmed 171:13
congested 45:12 242:1
congratulate 41:7
 228:14
Congress 24:20 284:16
Congress' 22:7
congressional 3:6
 24:11 95:19 284:11
Congresswoman 23:22
Congresswoman's
 26:11
conjunction 173:6
 178:8 307:12
connect 7:12 88:2,3
 329:6 330:7
connected 113:16
 133:15 227:16 238:11
connection 85:18
 190:14
conning 83:8 84:15
Conrad 351:22
consecutive 272:17
 273:3
conservation 105:4
conservative 320:4
consider 47:13 66:15

206:14 241:6 328:16
consideration 61:15
considerations 111:13
considered 118:13
considering 52:9
consistent 61:10
 238:16
consistently 233:2
consists 255:22
constant 215:21
constantly 75:14
 201:18 208:14 209:19
 217:12,17,20
consternation 140:9
constituents 301:9
 305:1 306:7
constrained 99:13
 332:13
constraints 53:17 55:4
construct 53:15 62:3
constructing 56:3
construction 22:5
 51:16 54:11 56:11
 61:6 62:2,11 103:10
 291:21
consultant 226:10
consumption 249:15
contact 7:10 186:22
contacts 140:14
container 55:13 57:1,8
 59:10 66:10 67:21
 68:4 70:11,12,13,18
 70:19,20 80:13,18
 81:2,21 82:8,14 84:14
 89:3 98:10 102:4
 119:22 120:10,12
 129:8 147:1
containerized 56:18
containers 55:7 68:3
 82:11,17 83:7,12 96:6
 120:9
containment 62:3
contains 202:7
contaminants 54:10
context 258:22 330:4
contingency 66:1
continue 23:6 45:11
 87:20 199:2 257:11
 278:15 280:1 287:8
 291:12 293:5 294:10
 298:1 304:6,18,19,21
 304:22 306:17 309:2
 310:3
continued 20:5,14 26:5
 168:18 190:3 276:22
continues 19:21 276:22
 279:8 312:16
continuing 41:10 70:6

241:12 263:17 287:4
296:17 357:13
continuous 204:16
299:14 302:19,21
317:20
contour 177:20,22,22
178:3,5,10 244:21
245:1,6,8 246:9 247:2
contours 177:21
178:12,13,18 208:5
244:20 247:3
contract 22:4 173:20
230:15 282:19 283:9
303:9 308:15,17
contracted 281:14
contractor 104:7 224:2
281:15
contractors 280:14
282:1 338:8
contrasting 335:1
contribute 87:3 134:20
165:11
contributes 12:3
contributing 134:12
contributions 90:15
contributor 80:3
control 22:20 73:12
125:1 175:2 194:4
238:3,5,18 300:22
controlled 137:17
CONUS 300:6
convenient 82:17
conversation 136:4
259:4 273:9 298:1
335:7
conversations 137:6
convert 237:3
converting 191:8
cool 16:2 348:11
cooperative 307:20
coordinate 42:19
294:16 302:19 303:3
341:5,10
coordinated 340:1
coordinates 302:5,6
coordinating 12:20
68:21 69:20 72:14
148:4
coordination 3:16 71:3
76:9 265:18 294:13
312:21
coordinator 65:12,20
66:14
copy 139:13 206:8
COR 101:7,8,11 104:6
core 171:16
corner 113:4 115:14
163:14

Corps 42:4 43:22 50:4
53:14,22 54:3 58:14
61:5 62:7 64:19
147:22 148:11 157:15
174:3 176:16 177:2
190:1,11 192:21
223:11,15,18 224:9
278:21 287:22 292:16
340:12
Corps' 60:6 61:10 148:6
correct 138:16 148:16
208:14 209:2,12
342:16,17
corrected 209:19
correction 275:21
351:6
correctly 30:22 206:11
223:13 345:5
corridor 281:11
CORS 272:9 298:15
299:16 302:3,19,19
303:4,10 307:4,16
309:4 318:16
COs 139:8
cost 60:18 61:5 82:21
83:1 283:5 314:22
costly 14:9
costs 22:20 59:12 61:4
101:10 323:15,17
cotton 99:7
councils 72:17
counter 66:21
countless 65:1 68:11
68:15
country 13:3 25:22
180:15 181:12 189:14
190:16 194:3 200:10
235:7 251:16 269:2
270:7 271:19 294:22
339:17
county 31:12 181:13,13
181:14,14 237:12
couple 6:19 10:7 17:11
18:4 27:1 44:20 46:21
69:12 72:9,12 74:6
86:5 109:6 123:9
127:22 130:10 136:11
141:14 151:15 164:13
187:9 192:13 237:19
251:20 252:4 281:21
311:22 312:17,22
315:16 327:22 355:10
course 10:21 18:7
83:15 84:3 90:10
124:16 155:11 156:10
157:14 170:15 171:2
172:21 179:7 202:17
203:6 204:2 205:5

206:3 208:10 211:21
212:12 220:5 223:3,3
232:5 241:15 256:8
277:17 301:19 351:6
court 160:18
courtesy 95:7
cover 27:5 38:16
181:13 187:16 261:12
300:7 316:6,16
345:15
coverage 188:1 227:1
286:7 294:22 308:1
322:1,17 345:16
covered 119:20 229:4
297:3 322:16
covering 16:16 322:7
covers 187:18 297:3
321:19
COVID 8:19 69:12 73:8
craft 97:5
Craig 279:17
crane 84:1 96:14
cranes 70:20 88:15
89:5 96:14
crash 125:15,16
create 71:2 92:3 109:17
148:9 264:20
created 163:10
creates 96:2 354:14
creating 83:21 100:19
297:9
creation 54:12 107:20
credit 232:22
Crescent 95:11 103:12
103:21 287:22
crew 64:4 79:20 323:16
crewed 316:3 317:8
318:21 321:17 323:14
354:3,5,16
crews 167:6
crisis 39:9 46:9 299:2
310:7 311:19
criteria 62:6 272:16
273:3
critical 13:17 24:16
92:14 118:9 151:11
158:18 159:5,9,10
169:11 183:20 273:2
292:7 293:16
cross-border 72:15
crosscurrents 203:19
crowded 105:14
crowdsourced 106:16
107:1 285:22 286:3,4
286:5,10,13
Crowley 137:12
crucial 102:12 232:5
crude 57:10 59:1 232:4

322:12
cruise 68:7 81:1 268:1
cruised 105:16
cruises 292:21
Cruz 31:21 32:2,3
cubic 61:2,17
cultural 105:11
curated 264:16
curiosity 345:13
curious 144:21 223:12
233:16 234:14 344:16
349:8
current 14:7 15:16
21:17 55:13 61:4
114:8 116:21 142:22
143:1 188:6,18,22
192:22 208:11 209:16
219:17,19 239:5
259:6,6 261:9,10,11
262:17,21 263:13
273:17,19 274:6,8,9
275:6,13 299:9 331:1
336:1 357:3
currently 55:1 61:15
62:13,14 96:8 97:9
100:13 102:3 105:4
147:21 279:6 282:22
289:11
currents 37:14 107:10
107:13 192:8 205:9
207:21 209:22 219:18
227:14 229:2 245:16
249:13 251:14 253:7
258:20 263:5,22
348:16
curve 106:1
custom 268:5 272:12
287:3,11,13 327:21
customize 202:12
250:21
customizes 156:1
Customs 72:22
cut 111:20 133:16
162:12 215:4 324:19
cutter 139:7
cutters 64:11 75:21
131:16
cycle 260:17 352:12,14
cycles 260:19
Czerwinski 2:16 40:7

D

D.C 9:17
DAA 51:8
daily 76:12 131:14
241:8
damage 192:16
Dana 235:5,8,17 236:1

237:8
dark 176:14 208:19
 258:7 317:14
darker 196:5 208:4
Darren 3:15 40:15
 45:16 173:7 240:8,9
 240:12,21 255:7
 296:18 297:3 331:14
dashboard 20:21
 259:16,17 265:13
 266:16 346:3,4 348:9
 350:10
dashboards 107:21
dashed 214:19
data 3:7 5:17 11:22
 12:6,10 19:17 21:3,4
 21:17 22:8,16,16,19
 26:19 33:11 46:15
 51:16,20 52:4,15 91:6
 106:14,15,16 107:1,7
 108:1 123:8 125:7
 127:3 128:18 133:8
 147:17 153:4 156:16
 169:8 170:5 171:3,4
 171:20 174:6,11,14
 175:9,13,20 176:13
 178:11 184:18,21
 185:6,18 189:11
 191:18 193:18,19,22
 194:2,9 195:9 197:2,4
 197:6 198:9 201:5,11
 201:17 203:5 204:9
 204:18,20 205:8
 207:15,19 209:18
 212:5,7 215:2 216:7
 217:17 221:19 224:15
 224:17 225:6,6 239:5
 242:15 243:15,16
 244:17,18 250:20
 251:5 252:1,8,12,22
 253:5,12,17 254:8
 257:12 259:18 261:10
 261:12,13 262:10
 263:2 264:2,13,14,14
 265:20 268:13,16
 273:4 277:19,20,22
 280:11 286:14 289:6
 295:16 299:18 300:1
 300:16 301:1,22
 302:3 303:19 306:15
 312:7 316:12,14,15
 318:4,9,12 321:6,10
 321:21 322:3,19
 323:7 325:22 330:18
 331:19 332:4,17
 333:19 337:18,21,21
 341:18 347:3 349:21
 350:17 351:5,14

353:20 354:22
data's 268:3
data-driven 286:20
database 172:6,18
 173:16
dataset 173:2
Datawell 192:4
date 194:1 216:5 263:6
 337:18
dates 125:11
dating 198:19
datum 21:13,17 121:18
 172:13 233:19 259:2
 260:15,20 261:8,9
 351:1 352:18
datums 49:11 172:13
 234:8,11 258:20
 261:3,17 299:10
 301:17 352:17 353:7
Davis 3:9 50:3 53:2,4,5
 63:4 147:8,10,20
 149:1
day 5:9 6:9 7:17 9:18
 17:22 65:9,9 76:1
 96:9 108:6 122:4
 124:10 131:5 158:9
 193:11,11 204:21,22
 210:18 245:11 276:5
 287:7 289:5 319:21
 321:8 330:15 342:13
 342:22 355:2,16
 356:6 358:3
days 8:21 10:7 11:6
 17:3 18:4 27:1 83:10
 104:17 126:4 164:14
 190:6 196:17 200:11
 210:13,18 279:2
 311:22 312:17 317:20
 322:5 323:2,4,9,12
 327:22
daytime 168:11
DDT 25:13
DEA 226:10
dead 57:12
deadline 253:20
deadweight 158:2
deaf 135:21
deal 34:16 50:9 73:7,14
 73:19 95:17 149:7
 152:1 175:7 228:22
 236:15 248:5,6,9
dealing 33:7 44:1 67:20
 72:16,22 74:1 130:19
 130:20,21 145:13
deals 112:2
dealt 237:3
dean 34:1
Deanne 1:17 31:15

32:17 33:1,15
dear 79:16 141:15
 201:12
debris 128:6,11
decade 81:20 100:4
 284:14 338:16
decades 96:21 191:20
 199:3
December 199:11
 269:15
decide 48:8 205:12
 264:17
decides 121:20
decision 60:8 108:19
 109:21 161:22 164:6
 164:9 182:10,12,14
 183:5 184:11,13
 186:11 196:11 207:16
 248:1 286:20
decisions 204:3
deck 79:20 82:17 83:7
 83:12,18
decline 29:11 91:18
dedicate 225:19
dedicated 47:2 79:19
 293:1 349:9
deep 25:11 54:1 55:20
 60:11,20 61:7,18
 98:10 115:3 121:5
 129:1,8 145:22
 146:19 148:2 156:20
 157:21 159:2 160:21
 165:3 166:15 203:1
 206:2 214:18 219:8
 352:1 354:10
deepen 60:22
deepening 54:14 55:18
 55:21 56:5,6 57:2,3
 57:15 160:4
deeper 19:13 89:4
 161:12 278:11 284:4
 322:13
deepest 18:19 178:5
deeply 44:8 326:13
 357:2
define 177:6 234:9
 260:20
defined 299:10
definitely 63:10 73:12
 111:22 139:14,14
 141:7 189:2 226:5,5
 237:6 308:12
definition 208:11 241:5
 272:20,22
degrade 354:1
degree 8:13 58:7 161:3
 281:19
degrees 161:7

Delaware 263:3
delays 91:20 101:17
 296:2
delegation 284:11
delighted 32:8 37:15
deliver 217:19 218:4
 277:22 286:18
deliverables 173:21
 175:1
delivered 24:21 137:13
delivery 293:13 295:3
 302:4
demand 338:3
demanding 167:6
Democrats 24:20
demonstrate 350:8
demonstrated 168:18
Dempsey 2:10 3:2 18:6
 18:16 37:19 50:20,22
 62:20 63:5,10 78:4,19
 94:6,18 111:2,5
 112:13 129:14 132:10
 135:9,18 141:4
 144:14 146:8 149:2
 255:8,12 275:19
 295:8 297:17,19
 310:5 313:8 314:5
 324:8
Dentler 2:16 7:11 40:7
 135:11
departing 80:2
department 1:1 60:16
 72:21 73:16 174:20
 175:4,10 177:11
 191:2 294:2
Department's 74:15
depend 142:17 217:19
depending 94:22
 143:13
depends 146:16
depicted 65:13,20 66:5
deploy 183:2
deposited 56:14
depository 106:14
depth 56:2,4,7 57:6,20
 58:9 84:1 106:15
 119:11 123:8 125:7
 127:2 128:18 169:16
 170:10,14 178:19
 179:4 214:7 215:7
 216:1 219:6 243:22
 244:20,22 245:9
 246:5
depths 54:21 77:3
 106:17 116:5 147:8
 171:5,19,22 179:6,8
deputy 2:3,10 3:9 18:10
 38:9,21 40:13 50:3

- 53:6 255:8 279:10,18
279:20 298:7
Derek 3:9 50:2 53:2,2,5
62:21 70:14 77:1 97:6
147:8 151:6 160:3
derive 333:10
derived 251:22
describe 234:6 303:3
description 94:16
358:19
descriptive 94:12
deserve 326:16
design 22:5 56:18 57:9
59:5 60:15,17,19
84:13 147:21 148:2
148:20 245:2 272:7
designated 2:13 6:13
27:4 77:8
designed 83:3 98:5
137:22 173:20 192:13
221:16 222:16 229:17
designs 307:9
desire 101:5
desired 227:1
detachment 64:14
detail 179:1 229:5
239:16 330:2 334:1
346:16
detailed 327:15
details 282:3 302:12
328:15
detected 194:7
detector 258:6
determination 233:18
237:20
determine 100:20
127:10,12 206:21
272:13
determined 58:20
249:5 283:7
deterrent 191:16
develop 89:14
developed 54:5 97:1
172:1 187:8 261:20
264:9 265:17
developer 187:7
developing 23:3 183:4
272:12 286:6 290:22
development 15:10
23:11 25:7 58:15 59:4
60:13 62:15 150:3
177:8 187:10 188:4
251:2 252:14 253:9
279:21 288:6 289:9
289:13 292:6 293:12
295:2
deviation 209:7
DFO 63:19
- Diablo** 191:1
dialogue 47:14
Diaz 23:22
Diego 35:10 74:11 78:9
95:12 98:20 137:15
156:7 166:17 190:9
difference 179:16,17
212:21 337:11
differences 113:15
208:12 209:2
different 9:11 48:9 51:9
65:5 87:8,10 89:19
90:13 100:14 108:5
115:9 116:7,12
128:17 130:14,15,20
130:21,22 132:17
142:21 162:14 171:20
171:20 172:8 173:17
174:16 177:13 185:21
195:17,19 201:9
202:13 206:5 209:12
210:2 219:12 222:14
232:3,9 234:22
237:12 242:20,21,22
266:14 269:1,6,7
270:7 274:14 286:12
302:18 303:1 304:19
305:6,21 310:14
313:6 314:14 315:16
319:5 321:5 327:4
348:14
differently 206:6
difficult 22:14 222:1
271:6 337:7
difficulties 51:3 53:9
dig 19:12 226:15 227:2
278:10
Digital 286:15
dike 62:3 119:14 124:3
124:6,13 133:14
diligently 16:11
dimensions 82:15 84:3
dinner 104:16
dipping 17:4
direct 22:7 190:14
directed 328:5,7
direction 162:10 192:5
193:14 239:4 244:7
directional 194:18
directive 61:11 152:3
directly 28:21 150:1
182:21 184:12 191:13
268:14 310:18 331:2
director 2:2,3,6,12 3:11
3:14,15 6:12 17:18
32:6,10 35:13 36:19
37:11 38:9,21 40:13
42:14 50:11,17
- 149:11 154:19 156:11
234:19 276:1 291:16
291:18 298:8 313:20
314:2 320:11
directors 44:19 255:6
255:10 341:6 344:4
directors' 45:21 325:4
directs 266:9
dirtier 85:22
discovery 250:16
discuss 77:1 204:10
255:16 315:7
discussed 205:4
210:11 283:3 287:2
discusses 26:18 136:3
discussing 47:9 205:14
287:19
discussion 19:11,16
32:16 45:8 46:5,8,17
47:6 51:6 91:1 138:6
218:18 280:14 314:16
324:10 342:4 358:3,6
discussions 8:7 23:15
39:5,11 255:7 280:13
297:12 328:3
Disease 73:12
dispatchers 79:19
displacement 192:6
195:2
display 120:20 196:12
253:22
displays 92:22
disposal 56:15 61:22
disseminate 252:1
disseminated 29:9
dissemination 243:7,9
distinction 118:14
distribute 193:18
distribution 156:15
district 3:6 14:13 24:1
24:11,13 25:6 99:10
103:22,22 134:10
136:3 327:13
districts 95:20
disturb 124:22
dive 6:15 127:20 128:3
277:4 358:6
DiVeglio 221:6
diverse 290:4
diversifying 290:22
division 40:15 53:7
278:20 279:6,18,19
335:8
divisions 75:19
dock 85:18 86:2 143:17
145:22 159:12
docks 219:20
document 326:6
- DoD** 69:8 73:2
doing 16:7 43:7 90:1,8
90:13 96:15 98:20
101:12 106:5,6
107:14 121:15 140:1
143:20,21 145:2,9
146:17 148:2,3
151:22 160:5 167:1
174:8 175:6 201:3
204:13,15 207:16
217:5 226:6,8 234:7
236:12 250:20 253:19
253:20 254:17,18
259:15 261:11,18,21
262:3 268:11 291:5
303:9,15 304:3 315:8
336:18 341:3 343:5
344:11 345:7 346:17
349:19 354:21
dollar 69:3 81:5,11 96:1
dollars 45:14 86:8 96:9
231:13
dollars' 81:3
domain 187:20 202:9,9
204:12 207:22 210:15
221:18 222:15
domestically 309:18
dominant 197:21
domino 303:22
DOT 51:14
DOTs 238:15
double 100:2 316:11
doubled 99:22
download 250:17
dozen 118:20 121:7
Dr 1:16,16 2:5,6,17 3:7
13:18 14:3,12 17:14
17:22 18:1 23:5 36:17
37:9,10 156:6 162:2
180:5 189:9 221:2
256:7 257:20 258:2
279:19 288:20 346:14
347:5 349:15 353:3
draft 45:13 54:2,22
55:11,20 56:20 57:11
58:8 60:11,21 61:7,18
98:10 102:19 124:4
129:1,8 133:20 148:2
156:20 157:21 158:3
158:15 160:19 161:4
161:12,14 165:3,4,21
166:5,22 168:3,5,12
169:17,21 170:1,3,8
204:6 206:4 219:8
356:4
drafting 46:18 57:8
drafts 133:19 145:19

169:18
draw 177:20 178:5,10
drawing 137:12
drawn 178:1
draws 336:20
dredge 56:12 60:3 61:2
 61:11 97:9 101:4
 104:7 112:7 158:19
dredged 56:13 57:5,21
 61:18 62:5 89:4
 145:20 161:13
dredges 97:11
dredging 56:13 62:12
 77:4 95:11 97:7 104:5
 108:22 110:1 134:5
 150:5
drew 113:9
drifting 115:16 206:20
drive 106:2 143:10
driver 183:22 184:22
driverless 142:3
drivers 138:18
drives 185:3,10
driving 137:9 145:18
 348:4
DriX 282:7 316:8,10
 354:9
drop 214:8
dropping 29:12
drops 272:18
drove 68:1
drowning 165:14
drug 66:21
drum 127:13
dry 81:2
due 20:12,17 69:12
 125:6 128:16 165:20
 167:21 177:8 226:19
Duffy 1:12,14 3:2 5:3
 9:5,7 14:1 17:10
 29:16 31:3,19 32:17
 33:15 34:5,19 35:15
 36:12 37:4,18 39:12
 47:18 48:11,19 49:13
 151:5,8 153:22
 239:11,21 240:7
 254:19 295:11 325:1
 343:16 355:6 358:14
dump 250:20
dumped 25:13
duplicative 340:1,8
Dusek 350:6 351:9
Dutch 202:4 230:1,20
duty 64:5
dwarfs 82:5
dynamic 157:8 169:22
 170:3,7 201:4 203:15
 203:20 205:17 206:22

207:1,12 212:8 214:3
 214:12,15,21 215:3,6
 245:13 251:13 302:7
 303:3,5
dynamics 214:10
 354:17
Dyson 282:15

E

eager 12:21 52:19
earlier 22:1 30:1 39:13
 95:1 97:6 149:13
 200:1 210:11 238:2,6
 254:6 259:4 273:9
 277:14 284:6,20
 289:10 299:9 329:17
 339:14 355:14 357:19
 357:22
early 186:5 188:3
 253:12 283:11 294:14
 316:14
ears 135:21
Earth 34:2 300:4,8
Earth's 261:1
ease 21:7
easier 30:4 248:2
 266:13 273:6
easily 89:18 174:1
 175:13 177:16 328:6
easing 56:1 57:20
east 12:9 38:14,20 42:5
 108:5 113:11 183:15
 184:8 185:7 269:14
 276:13 281:16 295:18
 296:3 347:21
Eastern 336:9 358:2
easy 169:18
ECDIS 118:15 254:1,6
 254:12
echo 7:21 35:2 40:2
 152:22
echoes 11:1
Echoing 10:2
eclipsed 119:3
economic 26:4 60:1
 97:14
economics 82:22 167:7
economies 82:19 95:22
economy 24:19 33:13
 182:1,8 241:12
ecotourism 105:10
Ed 279:19
edges 58:21 171:17
 219:1
edition 251:8,9
educate 106:12
EEE 56:19
effect 163:7

effectively 92:12
 327:16
effectiveness 283:6
effects 91:13 112:4
 180:10 197:21
efficiencies 53:18
 54:18 55:16 59:11,16
 324:1
efficiency 5:16 82:21
 91:20 164:3 165:16
 168:16 314:16 321:16
efficient 85:7 92:1 94:3
 147:19 163:10 167:7
 203:9,11 296:16
 323:14 355:2
efficiently 26:8 47:5
 79:11,22 80:5 83:1
 93:16
effort 13:10 20:22 21:19
 23:6 90:19 174:22
 234:10 235:20 238:11
 284:8 286:3 299:6,8
 310:18 319:12 321:16
 339:22 340:7 344:21
 356:10
efforts 12:1 13:8 25:16
 193:11 298:11
eight 105:18 107:14
 134:2
Eighth 14:13
EIR 62:14
either 32:3 36:3 56:14
 71:11 91:18 106:2
 121:2 134:1 317:8
 326:18 346:8
EI 113:22 118:2,11
 199:9
electric 56:12,13 88:8
 97:7,11 137:14
electrification 88:11
electronic 105:21 106:9
 115:8 116:1,11 140:4
 140:17 242:18 244:2
 244:10 250:11 253:16
 253:22 287:16 294:21
 331:5 333:3
electronically 247:13
electronics 106:3
element 131:18
elements 280:7
elevated 91:21
elevation 21:17 233:17
 236:18,19
elevations 21:20
eliminate 167:15
eliminates 88:11
 164:11
eliminating 163:18

Elko 1:16 32:4,5,6
 149:4 150:17 151:6
 347:17,18 352:22
email 135:15 162:8,12
 182:20
emails 7:11 232:2
embrace 106:16
emergency 73:20 74:16
 74:22 75:17
emeritus 357:1
emission 97:5
emissions 59:16,22
 97:2 165:22 166:3
 167:21 168:17 249:15
emitted 87:16
emitting 86:3
emphasis 337:9
emphasize 238:10
 290:13 292:3
Empire 82:4
employ 64:6
employed 64:21 148:13
employee 27:11 279:17
employees 190:8
enable 225:12 299:22
enables 277:20
enabling 165:17 166:1
ENC 118:16 138:4,5
 139:14 141:8 142:1
 173:1,6 175:13
 177:19,21 178:1,8,17
 244:3 245:4 246:2
 252:5 329:18 331:5
encapsulates 182:15
encounter 84:12 91:17
 93:9
encourage 28:8,20
 40:18 47:12 109:2
 121:13 159:19 277:9
 278:5 279:1 325:17
 329:6
encouraging 14:20
encroachment 151:16
ENCs 138:9,13 296:8,9
 296:14 308:12 329:2
Endeavor 230:8
ends 87:15 214:2
endurance 317:13
energetic 200:10
 353:21
energy 105:12 191:3,5
 192:4 194:10,13
 199:6 285:22
Energy's 191:3
engage 17:2 33:22
 40:19 131:22 348:17
 348:18 357:5 358:5
engaged 26:17 77:10

228:12 287:18 293:16
engagement 10:15 14:5
 44:11 90:22 276:22
 289:14 293:14,21
 294:3 306:5 357:3
engagements 13:20
engaging 103:12
 131:11 286:12
engineer 3:9 50:3 53:6
 59:4 89:18 176:16
engineering 33:21
 60:17 191:12 196:19
 305:13 350:1,2
engineers 42:4 44:1
 50:4 53:14,22 58:15
 60:6 148:1 174:3
 177:3 190:2,11
 192:21 224:9 340:12
enhance 14:22 20:5
 47:14 163:22 164:2,3
 270:9 290:4
enhanced 59:13
enhancement 182:1
enhancements 20:7,20
 273:22 287:4
enhancing 182:7
enjoy 47:19,21
enjoyed 149:10
enormous 271:5
ensure 47:5 161:9,19
 171:19 294:17,20,21
 310:8
ensures 21:19
enter 25:22 58:4 91:19
 165:20 166:2,15,20
 186:13 216:10 225:15
entered 20:2 99:9 168:3
entering 55:10 93:5
 101:16
enterprise 16:4
entertaining 17:21
enthusiastic 43:10
entire 21:15 187:20
entities 68:11 73:22
 155:1 260:10 273:15
entity 27:15 273:15
entrance 97:12 170:19
 171:11 193:1 196:14
 200:5 220:8 223:10
 244:6,12
entrances 76:21
entry 259:18 266:4
environment 7:22 8:18
 74:21 75:4,11 110:6
 167:12 222:5 356:20
environmental 24:18
 26:4 34:15 54:9 59:15
 60:2,10 91:10 131:2

142:19 183:14 242:12
 248:11 265:2
environmentally 85:5
 245:18
EPA 66:3 71:17
episodically 76:11
 138:21
epoch 233:19 259:3
 260:16,21 261:8,9,13
 302:5 349:8 351:1
 352:18
equation 169:14 170:12
 186:14 355:1
equipment 22:17 85:21
 87:12,14,21 88:12
 106:21 120:20 126:21
 127:1 128:4 139:10
 145:5 147:17 148:12
 268:8 312:7
equipped 209:14
equitable 300:3,4
equitably 26:8
equity 111:11
equivalent 56:22 82:10
 96:6
era 46:3
Eric 1:19 34:6,7,10
 261:22
Erie 282:11
eroding 109:8
erosion 192:15
erratic 212:17
error 209:7,11 213:3,6
 213:14,19,21 216:18
 217:10
errors 21:18
escorts 100:21
especially 25:20 73:8
 102:9 107:13 109:11
 170:2 183:8,12 185:4
 195:3
essential 12:6 54:15
 125:3
essentially 197:3
establish 20:3 286:5
established 71:13
 77:14 189:22 225:4
 293:22 311:20 332:4
 332:6
establishing 333:14
esteemed 154:11
estimated 20:1 61:4
 210:13
estimates 170:8
estimating 110:1 170:3
estuarine 109:20
estuary 262:19
et 42:4

ethics 27:7,8
Europe 202:5
European 196:16
evaluate 62:7 204:20
evaluated 62:14
evaluation 204:16
 215:21 251:5 252:21
evaluations 213:20
Evans 2:12 6:5,10,11
 7:19,20 10:22 16:13
 23:16 26:10 38:3,7
 39:15 41:20 42:11
 43:1,13 44:3 48:4,16
 110:20 152:21 201:1
 218:16,16 222:22
 223:4,7 224:18 225:3
 226:13 227:15 238:8
 256:9 275:18 276:9
 276:11 295:10,12
 325:2,9 326:22
 328:20 330:3 331:7
 333:22 335:5,11,17
 337:12 339:8 342:14
 342:20 343:22 344:12
 344:19 345:14 355:7
 356:17,18 357:20
Evans' 10:2
evening 239:1 255:13
 255:15 280:6 324:16
 358:12
event 5:11 69:13 72:11
 75:20 125:1 199:9
events 11:12,17 52:10
 68:21 71:1 76:4,12
 183:2 197:5 199:1,5
 199:14 200:9 305:21
ever-changing 67:17
Everglades 274:5
everybody 6:7 11:5
 18:17 33:5 38:1 39:10
 47:19 63:22 95:9
 112:2 115:20 129:3
 132:5 136:9 144:14
 152:5 153:22 154:2
 157:3 163:4 169:3
 226:7 230:21 238:11
 258:4 297:15 299:19
 313:17 356:19 358:12
 358:16
everybody's 298:12
 304:13 358:20
everyone's 10:15
evident 196:5
evolution 131:21
 267:17
evolve 263:20 293:11
eWolf 137:13
exact 92:21 93:3 152:12

322:22 323:3
exactly 94:9,13 148:17
 178:10 197:7 233:8
 341:6
exaggerated 354:17
example 100:6 117:13
 127:13 162:13 168:11
 184:13 194:12 195:16
 197:1,9 199:8 232:17
 315:19
examples 241:17 251:3
exceeding 318:15
Excellence 16:8 36:8
 37:2 281:2 290:10,18
 292:4,19
excellent 18:3 48:11,21
 50:1 149:5 152:6,15
 152:16 154:1 228:9
 228:11 239:22
exchange 3:3,14 35:5
 50:18 112:21 113:5
 116:3 132:20 154:20
 157:14 190:19
excited 13:4 15:21
 23:21 32:11 37:3
 42:20 301:14 306:10
 306:17 312:15 313:1
 313:7,13
excitement 306:16
 314:19,21
exciting 40:22 280:15
 282:9,18 289:19,20
 297:10 319:5 338:17
exclusively 140:17
 260:2
excuse 29:9 61:20
executive 3:11,14 6:17
 17:18 32:6,10 35:13
 50:11,17 149:11
 154:19
exercise 127:15
exercises 127:8
exhaust 85:14 86:3
 87:9,16,16
existence 181:20
existing 20:5 54:21
 58:21 103:6 274:3
 275:12
exists 349:6
expand 45:5 110:3
 114:7 186:15 187:16
 187:19 280:9 293:3,5
 293:8
expanded 20:20 296:19
expanding 292:8,20
expands 188:1 310:19
expansion 330:20
 331:3

expect 31:17 213:16
216:5 227:3 280:19
282:6 289:12 293:2,6
296:3 301:5 331:20
333:3 338:10,11
expectation 8:8 163:17
expectations 147:13
expected 55:2 60:19
61:1,8 96:13 213:11
213:15 216:12 227:14
295:18
expecting 100:2 107:9
163:4 216:7 287:5
350:12
expense 86:13
experience 13:14 44:5
162:3 222:4 239:14
experienced 58:3
127:21 281:1
experiencing 51:19
experimental 270:8
expert 13:7 27:12
expertise 13:11,13 22:8
27:19 33:20 39:19,22
42:16 44:5,10 218:1,2
218:2
experts 6:1 40:11,20,20
45:1 46:13 204:10,13
227:17
explain 160:6 173:9
184:17 234:3 305:6
309:12
explaining 301:16
305:9 306:7
explicit 225:17
exploration 283:13
291:8 322:13
explore 330:1
Explorer 322:11 323:3
323:18
export 99:5
exposure 167:3
express 30:11 140:8
285:11
expression 320:13
extend 11:4,15
extended 65:10
extending 63:18
extensive 105:8
extent 25:12 103:1
190:5 326:10 332:13
external 129:18 174:11
225:6 256:15,19
293:13 316:11 332:4
333:20
extra 161:15 163:2
166:5 178:14 271:11
extract 175:12 177:16

extreme 11:12 52:9
200:9
extremely 35:4 63:21
145:11 257:3
eye 162:4
eyeball 92:18
eyed 347:20
eyes 347:12

F

fabulous 112:22
FACA 63:20
face 22:12 131:6 258:10
320:14
faced 11:12 316:21
facets 286:2
facilitate 56:12 58:22
facilitating 59:17
facilitation 71:4
facility 62:12,13 193:13
275:4 291:22
facing 52:20 172:10
201:20
fact 26:21 52:3 80:15
87:3 114:4 123:5
133:9 140:9 231:11
256:22 283:17
factor 328:2 354:6
facts 319:1
faculty 33:19
failed 275:22
fair 277:7
fairly 221:4 295:4
Fairweather 22:4 115:1
170:17 176:15 280:20
282:21
fall 27:5 41:3 78:8 181:6
197:4 256:13 277:8
283:2,11 285:2
291:20 305:19
fallen 135:21
familiar 228:18 249:21
255:21 256:12,19
259:16
fan 43:9
fantastic 75:6 129:15
239:14 348:17
far 82:13 135:1 137:16
138:13 140:22 162:4
192:11 254:10 258:6
292:4 318:7 340:9
341:7 351:2
farming 97:20
fascinating 51:14
fashion 76:18 278:2
fast 64:10 92:7 152:8
170:1 316:19 322:7
344:6

faster 96:12 216:15
349:13
fastest 97:21
FBI 65:19 73:2
fear 18:22
feasibility 54:2,17
55:21 58:13
feature 80:22 179:14
featured 334:12
features 55:20 328:22
February 162:13
federal 2:13 5:14 6:1,13
13:12 16:21 24:14,22
25:6 26:3 27:4 38:17
65:5,11,19,22 71:8,20
72:20 73:4,6 95:10
96:4 155:3 159:21
223:11 233:6 300:21
301:1,10 305:1
federally 56:15
feed 158:11
feedback 26:2 138:17
140:7 147:15 304:7
304:11 341:7
feedstock 100:17
feel 12:5 138:11 140:6
144:8 148:22 162:22
226:7 232:16 278:12
358:14
feeling 138:13
feelings 78:6
feels 343:18
feet 21:18 56:1,2,4,6,7
56:20 57:6,7,8,11,12
57:20,21,22 58:8,9,10
58:11 82:4 96:15
102:19,20 115:3
124:5 129:1 146:19
157:22,22 158:1,16
158:19,21 160:21,21
161:5,5,13 168:3
177:20 178:4,6,11
205:19 212:20 219:7
236:20 272:18 336:21
336:21 337:1,2,3
349:2
felt 228:10
FEMA 73:2
fender 146:1
fendering 84:2
Ferdinand 280:20
Ferguson 3:10 40:5
93:20 109:4 122:17
140:1 155:15 168:21
169:2,5 207:21 329:7
Ferry 311:6
fertilizer 99:4
Fertilizers 99:3

fewer 167:14 320:21
FGDC 301:1
fidelity 192:14
field 21:14 61:20 128:6
128:11 210:14 215:12
215:15 262:18 263:4
280:13 282:22 313:4
338:12 341:3,9
fifth 104:22 283:14
fifty-sixth 282:22
figure 107:5 133:19
186:12 219:22 250:12
272:9
figured 78:13 233:12
file 178:7 185:22
fill 286:1,8 356:4
filled 177:8
filling 175:21
fills 336:18
final 167:22 205:21
207:15 211:18 212:2
216:16 217:1,7,11
251:17 252:17 253:10
264:7 281:20 285:18
321:4 355:12
finalized 252:15,18
253:1,5 331:17,20
332:16
finalizing 293:19
finally 22:22 26:1 60:1
104:17 176:2 206:21
209:18 265:8 286:11
finances 154:21
find 30:12 69:22 78:11
82:16 90:9,13 122:14
126:14 128:6 212:6
243:12 269:21 271:6
273:6 318:5 324:1,18
325:10 349:6
finds 324:15
fine 36:17 109:11 144:8
336:21,22 346:1
fingertips 93:2
finish 265:10 274:20
284:4 300:10 352:9
finished 193:17 263:4
274:7 318:22
finishing 46:17 279:6
fire 127:21 283:3
firefighter's 65:21
fires 74:3
firm 42:2 108:17 307:11
342:17
firms 301:10
first 6:19 21:11 23:8
30:15 35:20 39:3
44:22 46:1 49:14 52:7
53:1 61:16 65:7 69:1

- 69:4 76:6 79:15 82:7
85:9 123:13 125:16
125:17 126:8 132:18
136:13 138:15 155:10
165:12 181:4 184:4
202:6 221:20 224:22
229:21 230:17 260:15
266:4 278:18 280:8
286:21 292:22 296:9
302:5 315:18 320:3
327:8 331:17 332:10
343:3,9 344:14 347:3
fiscal 20:1,3,16 257:9
274:21 280:16 291:9
291:13 309:5 338:13
fish 73:16 97:17 140:18
fisheries 2:17 98:21
282:13,14
fishermen 97:17
fishing 68:10 105:10
125:13,13
fit 77:7 83:15 213:21
277:3 344:11
five 48:7,10 65:5 130:14
158:9,22 205:19
296:15 336:20 337:3
five-day 165:1 210:19
five-year 308:16
fixed 249:11
flag 34:12
flags 208:5
flat 22:14,21
fleet 22:9 34:12 42:8
55:1 69:7 281:8,16
282:2,8,13 291:7
flexibility 8:12 148:19
178:15
flexible 118:6
flip 155:5
float 119:9 121:5
floating 109:16 189:20
flood 21:9 266:7
flooding 11:18 259:22
265:21,22,22 269:18
269:18 272:4
floods 12:6
floor 9:6 17:8 54:10
130:8 240:13 241:10
262:21 289:1 295:15
Florida 146:18 310:22
flowing 300:2
fly 178:11
flying 156:13
focal 290:18 291:4
focus 5:13 20:22 23:6
55:12 61:10 67:21
193:11 204:1 221:22
239:17 247:10 285:1
285:4 287:20 289:8
290:9 293:1,20
325:20
focused 15:13 46:1
196:3 277:19 314:21
347:7 348:4 357:8
focuses 330:17
focusing 13:8 197:14
257:5,8 271:15 292:6
fog 84:11 91:12,17
93:10 117:17 141:12
270:16 271:4
foggy 91:19
foiling 124:5
fold 140:20
folks 8:13 38:13,14
44:9 66:16 75:3 95:21
106:1,4 131:10 139:9
139:12 177:19 239:3
239:4 289:4 290:14
296:9 299:6 301:16
302:14 304:7,11
305:9,13,17 307:13
356:7 358:4
folks' 280:1
follow 30:5 39:21 227:6
283:17 297:22 326:12
326:17 329:20 340:3
341:22 342:9
follow-up 330:9
followed 46:4
following 55:3 160:13
281:12 329:12 345:20
Fontana 2:17 37:20
food 70:9 99:6
foot 56:21 96:6 161:4,6
161:15 166:5 178:12
349:1
footprint 296:11 323:17
foray 347:3
force 84:7 92:11 247:15
247:15,16
forecast 3:13 62:4
155:22 162:16 169:11
180:8 184:1 189:15
196:16 210:12 211:12
211:14,20 212:14,15
226:18 231:10 245:7
246:13 251:12,16
259:12 264:13,19
265:4,5 266:10 271:9
288:22 289:1,10
forecasted 61:8
forecaster 180:22
forecasting 14:15
181:16 259:12
forecasts 156:8 182:18
182:18,20 183:21
185:22 196:14 270:22
271:14
forefront 26:16
forget 95:5
forgot 17:18 30:1
form 84:16 97:21
format 173:22 174:14
185:21 243:5 246:13
252:1 278:2
formats 242:22
former 45:6 327:19
330:11 340:21 355:20
355:22 356:22 357:3
forming 338:10 350:15
formula 214:6
Fort 274:4
forte 30:21
forth 117:1 128:13
fortunate 35:3,4,9
207:19 210:1
Fortunately 8:18
forum 91:1,4
forward 8:1 17:12 18:3
18:9 23:15 26:5 27:1
31:17 32:15 33:4,10
34:4,17 36:10 39:5,6
39:11 43:11 44:12,16
47:9 49:12 50:20,20
51:6 63:11 77:12
78:16 83:5 103:2
104:20 106:12 110:16
116:10 120:1 146:22
216:13 240:12 276:6
297:12 298:17 299:22
301:11 311:8 324:14
356:11 357:13
Foster 292:22
found 51:13 105:22
126:11 140:15 316:22
318:12 322:10
foundation 238:19
256:20,21 298:15
299:16 303:10 307:4
307:16 309:4
foundational 11:21
12:10 19:17 22:15
52:15
founded 79:17 257:1
four 56:19 64:11 65:11
69:14 70:4 105:17
227:2 255:22 293:10
312:19 320:22 345:10
Fourchon 274:10
fourth 256:10 300:4
frame 301:7 302:17
framework 97:4 243:17
Francisco 95:12 98:2
98:11 100:7,18
101:16 102:1 103:13
103:16 106:19 109:7
132:16 133:4 329:8
339:6,12 341:18
frank 296:1
Franklin 81:16,17,22
82:3 119:1 241:19
Frankly 295:18
freaks 351:12
free 22:17 161:17 166:7
278:12
freely 185:18
Freeman 1:17 41:18,21
41:22
freezing 67:8
French 310:1
frequency 107:9 194:11
338:6
frequent 330:22 331:5
frequently 70:5 73:7,19
330:19
Friday 8:17
friend 9:12 37:9 38:6
50:10,16 149:13
201:12 356:1
friendly 180:16 288:18
339:14
friends 195:4
Frigate 310:2
frightening 146:13
front 152:13 283:13
frozen 220:19 295:7
fruition 37:2
frustrating 296:1
fuel 166:6,6,7 249:15
317:20
fuel-driven 88:12
full 70:16 140:4 194:1
197:1 261:1 291:17
293:4 333:10
fully 7:22 24:5 59:19
70:11,12 88:14 142:9
265:8 274:17 329:1
fun 349:20
function 186:21 194:11
281:19
functionality 118:15
functions 303:3
fund 95:14 109:19
134:12,21 327:13
fundamental 277:22
funded 190:17 230:7,9
233:3 340:7
funding 20:13 22:3
60:18 190:1,20
192:18 229:6,8,9
230:5,10 232:10,21
260:2 291:9 295:21

339:22 340:14
funds 24:22 25:2,7
 284:14 310:14
funny 18:13
further 20:14 68:16
 224:6 226:16 227:2
 252:21 253:15 284:22
 318:12 329:10 358:10
furthered 13:20
future 21:4 55:13 110:1
 170:4,8 175:4 179:13
 180:9 183:7 187:14
 209:13 211:16 219:22
 222:13 257:13,22
 272:12 299:18 301:20
 307:14 338:20 348:4
 352:20
FY 310:12

G

G 61:19,21
gainfully 64:21
gale 247:15
Galen 2:20 40:7 298:2
gallons 166:6
game 5:9 6:8 9:18
 246:12
gap 14:8 179:22 273:19
 274:12,14 286:8
 334:18 336:18
gaps 221:12 286:1
gases 59:17
gasoline 100:7
gate 57:18 58:4 189:19
 224:20
gates 260:12
gateway 80:21 180:3
gathered 11:8
gauge 179:21 208:7,13
 208:21 209:9 220:6
 266:17 268:5,13,15
 268:16 269:22 270:10
 270:11 348:10
gauges 37:14 258:19
 262:20,21 266:1
 267:14,17,21 268:2
 273:16 347:1
gavel 358:11
Gee 330:10 355:22
geeks 260:16
general 152:2 182:18
 264:3 272:20 287:12
 335:4
generally 95:14 106:4
generate 61:1 189:14
generated 308:1
generates 96:3
generation 15:20 56:19

85:21 87:12 139:9
 155:8
gentlemen's 160:17
geo 305:18,18
geodesy 23:4 39:9
 42:17 46:9 299:2
 310:7 311:19 312:6,9
 353:11
geodetic 2:4,18,20 12:2
 23:10 38:10 234:19
 256:4 298:8 300:22
 353:10
Geodynamics 42:1
geographic 115:9
 116:7,13 301:1
 305:13 328:22
geography 142:18
GEOID 301:21 306:13
 306:21
geological 43:18
geologist 42:16
geology 43:18
geometry 58:18 59:6
Geophysical 289:17
georeference 238:20
geoscience 33:2,11
geospatial 5:19 16:17
 42:7 46:8 280:10
 299:18 311:21
Geospatial-Intelligen...
 292:15
geospatially 21:10
getting 14:16,17 18:9
 77:1 82:12 83:21
 96:11,12 98:15
 106:22 114:5 118:8
 128:22 131:12 135:3
 135:4 139:15 143:6
 147:14 198:16 204:20
 219:13 231:12 241:16
 242:1 246:11 249:22
 256:18 276:14,19
 281:20 282:16 287:7
 300:10,14 301:8,12
 301:13 304:7,10
 305:8,12 322:8 339:5
 348:13
GFS 185:10
gigawatts 103:3
gist 191:9
give 67:6 107:8 138:16
 148:18 182:10 206:8
 207:9,10,15 210:12
 213:18 214:2 217:22
 220:4 224:15 232:22
 235:11 238:22 250:6
 250:7 257:21 258:21
 259:5,14 260:4

298:12 299:1 300:3,3
 300:9 349:4
given 11:8 69:6 77:13
 317:1,9
gives 117:19 168:13
 175:5 178:14 192:6
 206:9 211:18 214:12
 217:8 270:17,21
 271:11 272:11
giving 63:11 173:8
 232:18 285:19
glad 10:4 51:1 72:7
 106:15 237:16
gladly 18:1 135:15
glance 193:9
global 185:9,11 199:18
globally 286:6
glue 154:22
GNSS 302:8
go 11:10 12:5 22:11
 30:13,18,18 36:14
 38:8 53:11,11 57:19
 63:5 72:11 75:6 78:20
 79:14 89:13 92:7 94:8
 98:18 102:2 105:20
 108:20,20 110:9
 111:2,18 115:6 117:8
 118:20 121:7 122:13
 123:13 125:9,21
 126:2,8 130:3,6,9,11
 130:11 131:20 132:14
 136:6,7,12 138:15
 139:3 144:16 145:21
 151:8 152:15 154:18
 155:6 156:21 157:6
 157:18 159:3 161:5
 161:22 162:8,21
 163:3,4 164:6,19
 174:6,10 175:16
 180:14 181:2,3
 182:16 184:14,15
 187:4 191:6 211:9
 218:7,13,15 221:16
 224:6 225:1 227:22
 236:17 242:20 243:11
 243:18 249:18 250:12
 258:11,22 259:20,21
 260:14 262:15,19
 267:3,8 269:7 271:21
 275:17 276:8,12
 292:17 297:19 298:9
 298:10 300:5,21
 302:1,10 305:3
 306:14 308:10 309:6
 309:18 310:12,13
 311:2,10,18 312:2,13
 313:9,16 327:10
 331:18 334:1 335:16

343:18 350:19 353:6
 355:1
go/no 161:22 164:6
goal 20:1 103:3 105:4
 188:4,13,17 207:16
 280:8 284:4 286:17
 290:3 293:10 316:16
goals 26:4 54:9 93:15
 102:16 165:7,10
 168:14,17 183:7
 256:15 257:5,9 285:5
goes 5:7 88:9 96:2
 109:16 118:6 147:8
 149:3 175:11 177:13
 185:7 186:18 268:8
 268:17 285:21 313:14
 320:16 345:17
going 5:15 10:7,10,20
 11:5 12:4,11 13:9,10
 15:9,11,16,17,18,19
 15:22 16:3,13 17:7
 18:2,5 23:19 30:15
 32:1 35:1 37:7 38:8
 38:17 39:7 44:15 48:6
 48:20 49:14 51:18,21
 56:17 62:21 63:5
 64:15,16 69:5 71:22
 72:5 76:17 78:14 79:8
 79:15 82:16 85:9 88:4
 88:19 90:11 92:7,16
 98:1 100:12,14,16
 102:8,10,11,17 103:5
 103:11,20 104:1,4,19
 105:14,20 107:9,12
 108:15,20 109:15
 110:6,7,8,14 111:6
 112:5,20 114:6 115:2
 119:21 120:10,21
 121:9 124:22 128:13
 137:8 138:1,11,20
 140:10,12,22 142:17
 144:15,16,17 145:15
 146:20 148:1,7
 150:10,14 151:10
 152:17 153:7 154:4
 154:13 155:2,5,14
 156:5,21 157:9
 159:13 160:12 162:2
 163:17 164:16 165:9
 166:12 169:8 170:5,9
 170:11 172:5 189:7
 190:22 191:22 205:6
 205:7 207:18 210:7
 211:17 216:14,22
 218:15 219:16 222:5
 222:18 224:3,4,6,8,13
 224:14,20 225:1
 227:19 229:11 230:19

230:22 233:18,18
 234:22 235:16 236:5
 236:11,19,21 237:2,6
 237:13,19 238:20
 243:13,17,20,22
 245:7,8,8,12,18 246:7
 246:19,20 247:9,17
 251:4,9,20 252:4,7,20
 253:5,10,14 254:12
 254:21 255:3,5,7,16
 257:10,20 259:1,9,14
 259:22 260:4 261:22
 264:8 265:3 270:18
 276:8 277:1,2 282:1,2
 284:3 292:17 298:3
 299:21 300:12,18
 301:14,15 302:4,12
 303:14,18,20 305:5
 305:20 306:1,2,11,12
 306:14,20,21 307:16
 308:6 309:9,11,21
 310:11 311:21 313:9
 313:18 314:1,3,14,15
 315:15 316:19 319:15
 319:18,20 320:17,18
 320:20 324:19 325:14
 326:3 327:14 329:8
 335:5 336:9 337:10
 349:11 355:7,8
goings- 44:17
gold 219:15
Golden 189:19
good 9:10,21,22 10:6
 18:16 19:3 22:11 31:5
 32:5 33:17 34:6 36:1
 36:15 38:5,12 39:10
 43:4,5 49:13 53:4
 78:18 86:4 87:2 91:4
 94:21,21 106:11
 108:9 112:12 123:22
 136:15 140:2 147:2
 149:13 150:21 151:4
 152:19 154:2 157:3,3
 169:2 171:3,4 172:15
 172:20 175:5,9
 188:16,18 204:8
 212:7,7 227:12,13
 230:22 240:20 245:5
 255:12,13,13 271:7
 304:10 316:9 326:15
 330:13 334:6 335:18
 343:17 345:14 347:19
 351:16 352:5 356:1,2
 356:12 358:5
goodness 233:9
goods 53:21 202:17
 241:14
Google 153:12,14,17

gosh 9:20 320:17
gotten 303:19
government 5:10 13:12
 27:10 49:21 50:2
 174:8
governor 17:21
GPS 121:22 142:2
 236:11 238:4 299:10
 299:14
grab 153:16
grade 109:11 192:1
gradient 197:21
gradients 196:8
gradually 195:22
grand 69:2 123:12
 231:6
grandstand 123:19
grant 103:9 291:21
granting 101:15
grants 15:16,18 16:17
 311:22 312:15
graph 208:19,21 210:18
 212:12 214:14 241:13
graphic 31:4 248:21
 280:18
graphics 349:17 350:11
graphs 215:10 217:7
Gras 9:18
grassroots 305:9
grateful 10:13
gratitude 11:5,15,20
GRAV-D 21:13,22
 298:13 301:22 303:12
 306:10 309:2
gravitational 260:18
gravity 21:12,14 222:3
 303:13 307:1
grease 225:5
great 5:11 10:20 16:8
 19:4 23:15 25:5 26:9
 33:4 34:12,13,17,20
 34:21 37:16,18 39:7
 42:9 43:2 44:14 48:4
 50:8 62:20 63:14
 71:10 72:6 75:4 94:9
 95:17 99:18,19
 130:15 136:9 141:7
 142:1,2 147:20
 151:20 152:1,1 154:1
 154:9 157:2 160:22
 174:21 176:1 179:10
 200:13 212:5,5
 219:12 222:17 224:18
 225:3 227:21 232:17
 242:15 243:3,22
 256:14 264:22 266:21
 267:2,10 273:1 281:3
 283:16 284:12,13

285:2,6,13 290:10,14
 290:14,16 296:6
 297:6 298:14 300:13
 301:12 302:9 313:8
 324:1,17 325:5
 333:15 334:11,19,20
 335:4 337:14,18
 338:5,7,9,12,15,21,22
 341:12 344:10 346:4
 353:13 355:18 356:10
greater 196:3 331:9
 334:1
greatest 70:1 172:7
greatly 28:3 77:2 78:5
 110:17
green 56:10 122:20
 126:12 162:15 176:22
 190:19 196:15
Greenaway 40:14
 278:18 335:7,14,18
greener 187:9
greenhouse 59:17
Greetings 34:8
Greg 350:6 351:9,19
grid 85:20,22 86:2,10
 86:19,20 87:12 88:1
 296:8,14 344:21
 345:9,11
gridded 173:5 178:9
 244:18
gridding 344:18
grids 308:1
ground 142:18,21
 173:21 236:10 270:5
 299:13
grounding 145:14
group 27:14 28:21
 31:16 63:19 101:5
 174:11 183:16 257:16
 262:5 272:13 286:4
 312:5
grouped 280:6 327:5
groups 101:3
grow 23:11 45:11
 241:13
growing 97:19,21
growth 96:16 99:18,19
Guam 309:15
guard 14:12,17,20,21
 30:16,20 50:6 63:6
 64:7 66:19 67:1 71:7
 73:16 90:16 92:4 94:1
 99:13 114:17 122:19
 125:14 287:9,22
Guard's 77:19 150:22
guess 31:6,14 37:21
 38:13 49:5 79:3 138:9
 139:18 191:7 326:12

348:3
guest 47:7
guidance 27:20 266:11
guidelines 286:6
guides 184:2
Gulf 12:9 13:19 175:19
 281:16 285:14 296:4
 303:9,15 308:8 319:7
Guy 339:19
guys 42:21 48:7 95:5
 98:21 313:10
guys' 135:2

H

habitat 25:3
half 86:8 114:19 118:20
 121:7 158:20 159:1
 160:10 191:22 198:20
 210:18 240:19 272:18
 323:5,12 336:21
 342:17 357:20,22
Hampshire 2:3,5 16:10
 33:9 36:6,20 276:3
 291:19,22 311:1
hand 7:18 29:13 88:9,9
 113:4 115:14 130:5,6
 132:13 139:20 158:17
 163:14 172:9 199:15
 275:17 297:13 343:21
handle 64:8 158:14
 225:16 268:19
handled 182:6
handlers 167:4
handles 154:20 156:15
handling 98:21
handoff 325:2
hands 17:9 36:13 79:20
 154:4
handshakes 10:8
happen 132:3,5 141:22
 166:12 206:17 207:10
 211:17 212:22 301:14
 331:18 349:13
happened 5:5 14:2
 316:7
happening 22:6 73:9
 136:20 208:15 210:4
 213:22 265:16 269:14
 308:18 327:4 352:16
happens 68:7 93:14
 127:6 197:8 198:1
 304:21 340:16
happy 16:4 37:17 62:18
 94:3 117:8,19 136:3
 154:2 157:16 255:14
 262:6 276:3,11 330:5
 331:8 334:21 358:15
harbor 3:9 19:22 24:3

- 51:13 53:6 54:7 55:18
57:16 58:17,19 60:9
60:15,22 61:22 72:2
72:10 76:21 78:15
79:7 82:1 88:17 90:19
90:20 91:3 92:5 94:14
97:4 98:3 101:3
103:21 104:16 114:17
120:22 128:12 162:15
263:16 270:19 271:7
273:18 274:20,22
275:4 340:16
- harbors** 51:14 65:2
103:19 104:1,13
107:17,18,18 150:4
167:18 263:20 270:16
- hard** 8:6,15 11:3 13:1
30:11 37:1 66:6 86:16
124:2 178:1 215:7
319:1,1 349:6 351:6
- hardwired** 268:13
- Hargrave** 1:17 32:21
33:1
- harmonic** 133:10,18,22
134:1 135:1,5 327:12
- Harper's** 311:5
- Harris** 103:8
- harsh** 315:2
- Hassler** 280:20
- hat** 27:18,19 65:13 66:6
159:16
- hate** 9:17 355:21
- hats** 65:6 130:14
355:15,16
- Haussener** 3:11 50:11
94:19,19,21 110:22
111:4 149:14
- Haussener's** 150:2
- Hawaii** 19:21 20:19
21:16 51:13
- Hawaiian** 309:15,22
- hazard** 124:17 270:16
271:20 272:15 273:2
- hazards** 241:11
- he'll** 46:10 173:9
- head** 161:2 175:4
- heading** 189:18 354:15
- heads** 181:9 220:5
255:4 300:13
- Health** 74:15
- hear** 10:10 13:15 17:4
18:17 23:21 41:18
44:22 45:16 52:19
64:18 71:22 110:21
111:3 123:9 157:9
224:18 225:4 228:6
285:10 290:14 295:9
295:10 297:16 314:8
- 327:20 335:14,15,17
339:7,7,8
- heard** 10:7 19:10 76:22
85:15 97:6 99:12
127:20 131:9 136:16
140:8 147:17 173:3
202:16 203:7 241:3
255:1 278:4 298:12
314:20
- hearing** 10:9 27:1 28:22
137:7 276:7
- heart** 79:16 141:15
204:17
- hearts** 9:17
- heave** 206:21 214:11
217:6
- heavily** 34:13 49:21
287:18 341:3
- heavy** 76:3 78:7 317:2
- Hector** 279:4
- height** 51:17 83:18 84:2
108:18 115:12 122:16
151:13 162:10 193:14
198:18
- heights** 196:3 288:2
302:7
- hello** 6:20 35:21,22
36:15,17 43:15 48:16
49:3 51:1 180:21
189:9
- helmet** 65:21
- help** 15:18,20 17:1
25:12 28:4 30:10 31:1
52:5,6,16 59:22 79:10
93:17,19 95:14
110:17 117:16 134:12
134:18 135:3,5
180:16 186:11 198:13
200:2 239:4 242:13
245:19 261:22 271:17
306:12 309:2,4
310:17 311:6 351:11
357:11
- helped** 54:6,8 109:19
112:17 127:9 177:6
264:10
- helpful** 31:4 199:19
227:7 269:21 270:3
337:13 348:20
- helping** 40:3 42:7 77:12
182:4 257:18 307:13
311:8
- helps** 72:3,14 92:8,10
- Hemisphere** 80:22
- hey** 113:18 139:3 238:3
246:3 310:5 349:1
- HF** 107:12 108:1
- Hi** 31:9 32:21 33:1 36:4
- 41:21 42:13 43:4
110:20 132:15 144:20
147:10 228:5
- hiatus** 69:12
- high** 30:5 51:20 83:7
84:15 102:2 183:12
185:15 190:12 192:13
193:13 197:21 213:16
242:18 243:21 246:4
249:4 252:21 261:4
271:6,18 272:1
280:10 305:10 317:12
318:12 323:7
- high-** 107:8 173:4 178:8
333:10
- high-precision** 176:10
191:17,22
- high-resolution** 156:9
171:1 173:13 216:3
219:14 268:21 295:14
331:11,13
- high-sided** 129:7
- high-speed** 124:20
- higher** 83:12 177:14
178:22 212:19 224:11
261:4 322:2,19
- highest** 188:2
- highlight** 73:3 278:16
288:19
- highlighted** 13:18
28:17 208:2 225:9
331:15
- highlighting** 23:18
141:8
- highlights** 281:10
308:11
- highly** 109:17 290:4
- Highway** 73:15
- Hilary** 76:7 197:11,12
- hill** 21:22 112:20
- Hillstrom** 278:21
- hint** 67:6
- hire** 230:19 271:17
- hiring** 312:19
- historic** 11:17 199:6
261:16
- historical** 21:4
- history** 39:4
- hit** 215:18 241:18
267:19
- HOA** 134:21
- hold** 62:22 153:6
187:11 249:6 254:19
343:1,19
- holds** 154:22
- Holtz** 1:18 42:12,13,14
144:19,20 146:5
175:3 223:21 224:22
- 226:4 236:8
- home** 86:21 266:17
347:6
- Homeland** 72:21 73:1
- honestly** 257:1
- Honolulu** 275:2
- honor** 47:3
- honored** 154:10
- hooks** 231:7
- hope** 8:9 23:11 30:5
47:19 144:10 175:5
251:11 252:8 253:7
253:12,17 266:18
281:6 285:1 299:18
312:16 313:4 338:19
341:10 352:20
- hoped** 316:6
- hopeful** 189:2 291:11
- hopefully** 5:4 18:17
30:8,16 74:20 94:10
148:17 152:2 188:19
255:11 274:20 335:12
358:4
- hoping** 67:11 188:21
281:21 318:21
- horizon** 353:4
- horizontal** 234:8 236:13
- horizontally** 121:12
236:9
- host** 349:22
- hosted** 69:16 349:21
- hosting** 255:15
- hot** 196:19
- hour** 48:7,8,10 153:10
198:21 322:8 342:17
357:20,22 358:2
- hourly** 191:22
- hours** 70:4 74:6 131:5
167:5 188:12,14
203:22 210:12,13,16
210:16 211:16 273:3
319:21,22
- house** 83:4,7 120:1
131:3 181:8 267:22
268:14 284:19 292:1
- housekeeping** 46:21
130:1
- how-tos** 349:10
- Howe** 313:22
- HSRP** 1:13 2:1,12 3:2,3
5:7,18 6:16 8:16
10:10,20 12:11 13:16
16:15 17:20 19:5
26:17 27:5,8,9 29:3
29:14 30:21 33:3
37:16 39:1,2,20,21
40:4 41:3 45:6 46:22
47:14 63:17 77:20

112:13 113:18 135:12
 138:7 141:14 153:11
 155:9 157:4 175:3
 256:2,13,15 258:17
 265:7 285:2 299:7
 325:20 326:6,8
 327:19 330:11
HSRP's 13:13
Hueneme 74:5 98:19
 99:9,11
huge 71:6 74:1 85:11
 93:18,19 111:22
 117:16 120:9 128:21
 338:3
hugs 10:8
hull 354:9
human 329:14 351:16
 352:3,4
Humboldt 100:8 103:9
 104:6,7,10
Humphrey 132:20
hundred 149:22 166:16
 231:6 306:11
hundreds 45:14 107:16
 231:13
hunt 277:10
Huntington 69:11 198:3
hurricane 76:6,7
 247:16 269:20 311:11
hurricanes 309:1
hydro 40:15 337:7
hydrodynamic 209:15
 220:7 227:1,11
hydrographic 1:4,11
 2:3,5 5:13 6:14 10:1
 22:8 23:20 25:17 28:1
 36:6,21 42:1 44:10
 109:4 148:6 170:15
 248:15 278:19 281:4
 281:18 282:8 286:14
 291:18 292:10 293:18
 293:22 294:7,11,12
hydrography 282:18
 294:1
hydrologic 288:13
hydrology 311:9
hydrosurveys 335:8

I

Ian 311:12
ice 130:10 132:12
ice-breaking 67:10
 149:8
Idalia 269:20
idea 75:2 148:18 161:13
 204:8 227:12 230:22
ideally 220:1
ideas 134:19 306:2

identified 54:17 55:3
 59:7 281:13
identify 19:14 61:12
 329:4
IDIQ 308:15
idle 86:1
idling 59:21
IDSS 182:14
IGLD 262:1
IHO 286:3 294:12
II 15:17 98:5 117:2
image 113:4 114:8,21
 115:12,22 116:5
 117:9 119:8,10 120:5
 120:9 121:2 122:3,8
 122:19 126:12 128:12
 129:5 198:5 241:18
 244:14,15 249:2
 254:2
images 126:19 196:5
 269:13
imagine 12:3 69:5 74:1
 146:19
immediately 52:2
IMO 96:22
impact 60:10 97:14
 112:5 150:11 165:15
 196:11 199:6 271:5
 350:11
impacts 12:5 51:22
 117:1 151:14 184:3
 199:10 200:12 262:8
impending 183:1
implement 15:18 91:7
implementation 231:11
implemented 85:13
 288:8
implementing 293:19
import 207:22 216:4
importance 14:5 19:17
 23:3 26:13 47:10
 284:17 305:7,11
 306:8
important 5:12 10:9
 12:12 14:8 22:10
 25:20 41:11 45:10
 52:11 73:4,12 113:13
 119:6 127:5 131:22
 134:15 146:3 149:16
 156:3 158:6 218:20
 237:17 257:3 258:9
 263:6 266:5 321:22
 357:6
importantly 172:22
imported 99:3
imports 25:21
impossible 75:12
impressed 44:4

impression 141:17
impressions 358:5
impressive 18:7
improve 54:7 201:18
 204:14 209:15 212:9
 217:12,18 220:14
 225:13 237:20 293:12
 299:19 325:21
improved 21:1 59:14
 266:12
improvement 19:19
 55:21 284:1
improvements 53:16
 54:2,17,20 56:8 57:1
 57:14 60:12,21 61:19
 89:2 134:13 191:14
 218:5 260:1 267:11
 271:16
improving 5:15 55:12
 59:15 116:21 348:4
in-person 8:1 24:7
inception 186:1
inch 21:21 45:13
inches 21:18
incidence 195:19
incident 76:14
incidentally 242:2
incidents 101:22
include 20:17 21:1,6
 40:5 55:21 57:2,15
 59:8 65:11 76:5 256:3
 262:6 281:10
included 28:15 60:12
 170:19 326:9
includes 22:18 49:20
 56:11 66:20 105:5
 174:19 181:15 183:5
 185:10 188:9
including 11:13 12:15
 21:15 25:3 27:15 42:4
 81:1 105:6,10 173:19
 228:22 286:3 287:21
 288:1 290:20 291:7
 293:17 303:14 307:2
 310:1
inclusive 290:16
income 96:4 110:12
incoming 141:9 266:5
inconvenienced 8:13
incorporate 341:20
incorrectly 345:21
increase 13:2 53:17
 58:8 70:6,9 134:22
 150:6 161:4 165:12
 188:11 204:5 284:7
 286:12,19
increased 59:10 71:3
 77:2 89:8,9 165:16

167:2 241:15 338:6
increasing 16:12 68:20
 83:18 133:3 168:16
 168:16
increasingly 45:9 76:5
incredible 232:13 277:1
incredibly 44:4
indicate 284:16
individual 28:21 29:6
 195:1 326:2 340:14
industries 52:1 305:18
industry 27:14 71:8
 97:15 112:3 155:3
 159:22 166:9 167:3
 190:18 192:20 202:16
 205:14 218:3 237:5
 237:14 281:8 340:13
inefficiencies 55:5
Inflation 15:5 25:1
inflationary 22:20
influenced 222:6
informal 140:5,13
information 3:7 11:19
 14:18 15:2,20 17:16
 21:4 52:12,15 63:1
 92:9,14 93:1,6,12,17
 115:9 116:7,13,18
 122:16 131:13 146:12
 148:18 149:6 154:2
 155:13 156:16 179:12
 182:11 184:11 186:10
 189:11 192:7,22
 195:2 209:16 210:7
 242:13,17,17 243:4
 243:13 245:13 246:13
 247:7,9 248:3,11,17
 249:4,14,18 250:7,9
 250:14,18,22 251:12
 251:19 253:14 254:1
 257:2 263:13 273:6
 307:1 324:17 325:5
 328:14,22 348:14
informative 63:1
informed 17:1 146:15
informing 182:3
infrastructure 20:13
 25:1 52:11 54:11
 83:22 84:1 89:2 96:10
 103:6 110:16 167:8
 192:16 199:6 252:2
 260:3 267:12 295:22
 312:9
ingesting 225:6
initial 190:1
initially 146:12 247:9
 269:5 274:13
injury 167:4
inland 66:3 71:18

309:11
inner 120:22
innovation 16:1 221:18
 336:12
innovative 351:4
 357:12
input 13:13 28:9 63:20
 77:11 112:22 113:17
 113:19,19 115:8
 116:15 117:4 121:22
 136:5 139:7,15
 147:14 164:5,7
 186:20 205:4,21
 206:12 216:1,6
 234:15
inputs 138:18 184:9
 205:2 207:18 210:1,2
 212:5 216:18 229:18
 229:19 230:1
inside 89:15 101:22
 159:10,11 170:21
 171:12 256:19 268:14
 275:4
insight 207:9,10 213:18
insightful 23:17
insights 227:13
inspect 66:8
inspections 66:5,12,22
inspector 66:7
inspectors 66:8
inspired 228:13
install 191:4 220:1
installation 20:14
 219:17 341:20
installations 307:10
installed 340:15
installing 341:16
instance 284:10 336:8
 336:20
instantaneous 147:12
instantaneously 102:9
Institute 305:14 351:22
Institution 35:11 156:6
 190:7
institutions 293:7
 303:1
instrument 141:18
 192:3
instrumented 193:10
instruments 193:12
 194:5 221:3
insurance 101:10
integrate 42:7 128:17
 220:2 221:11 223:17
 242:12 245:16 275:12
 340:17,19
integrated 99:1 116:12
 182:13 221:3 248:12

256:11 275:1 347:1
integrating 275:6
integration 21:8 138:13
 156:15
intelligence 265:2
intend 47:3
intended 244:4 345:15
intending 11:11
intense 197:14 198:2
 198:22 262:18
intensive 197:17
Inter-Regional 294:13
interact 279:15
interaction 229:2
interacts 263:21
interagency 284:7
interdependent 98:9
 99:8
interdiction 66:21
interest 235:14 250:6
 310:6 341:21 347:9
interested 17:13 208:2
 261:20 264:18 342:5
 354:3
interesting 6:2 72:11
 80:15 107:4 117:21
 118:12,17 121:17,22
 124:9 149:6 170:2
 197:7 276:15
interestingly 149:18
interface 249:20
interference 133:7
 184:3 252:12 295:6
internal 172:17,21
 256:14 323:20
international 73:10
 80:21 180:2 243:4
 252:16 253:21 286:14
 293:17,21 294:10,17
 302:16 331:16
internship 23:8 312:1
interoperable 353:10
interpolate 247:19
interpretation 52:5
interpreters 152:8
intersections 284:22
intro 30:17 41:14
introduce 9:12 13:4
 18:5 29:14 38:9 41:13
 49:1 240:7 255:8
 257:20 358:7
introduced 155:10
 273:9 284:11
introduction 5:6 18:20
 35:19 49:4,9 240:11
 275:21
introductions 6:6
intros 38:4

intrusion 19:11
intuitively 194:21
Inundation 20:21
 259:15,17 265:12
 266:16 346:3 348:8
 350:10
Investigations 71:20
 73:1
investigators 189:12
investing 96:8
invitation 63:18
invite 17:2 95:6 201:1
inviting 79:2
involve 190:12
involved 34:13 72:18
 134:20 186:17 231:20
 235:18,21 307:13
 313:5
involvements 21:6
involves 261:15
IOCM 283:18
IOOS 15:6 256:11
 264:10,10 268:22
 340:22 341:1,2,6,10
Iowa 113:20 116:16,20
IRA 26:12
island 43:17 99:20
 309:15 316:5 317:15
 317:18
islands 104:21 176:2
 193:6 308:9 309:22
 316:1 317:17
issue 9:8 19:16 46:17
 47:10 85:12 87:1
 89:12 101:15 133:21
 135:2 142:22 143:3
 154:3 199:7 250:19
 328:21
issued 15:4
issues 34:15 47:9 72:15
 83:21 84:1,4 85:2
 88:19 89:17 91:3
 104:20 108:22 119:21
 129:17 142:7 187:1
 235:7 242:2 288:1,3
 301:6 312:6 315:5,9
 318:3 323:16 328:8
 354:14
it'd 110:3
it'll 250:6 262:10 264:22
 299:19 326:5
itch 132:9
items 46:21 218:17
ITRF 302:14

J

J 56:4,6,8 57:2,4,5
Jacksonville 274:8

Jacobsen 3:12,12
 113:22 117:11 118:21
 155:7 157:1,2,6 160:1
 160:9 163:20 164:22
 167:19 218:21 219:2
 244:16
Jacobson 168:9 178:20
 244:13
JAMES 3:7
January 51:13 210:22
 211:1,5,6,7 254:6,9
 254:11 274:7
Japan 81:8,13 294:1
Jeff 3:10 40:5 93:19
 109:4 122:17 140:1
 155:15,17 168:21,22
 207:20 225:8,16
 226:9,16 227:16
 243:21 244:18 247:3
 249:22 329:6,7
 339:13
Jeff's 329:8
Jefferson 280:20
 282:11 338:11
Jeremy 285:10
jersey 251:6 296:20
 355:14
jerseys 6:9 355:16
JHOD 294:3
Jim 3:11 50:11,15 111:8
 149:13 150:16,18
 151:13 156:6,6 189:7
 189:8 200:14 210:5
JOA 49:8
job 41:15 77:20 140:2
 147:19 193:10 204:18
 243:22 257:17 291:17
 350:3
jobs 24:22 96:3 97:16
 240:18
John 3:8 50:6 72:1 79:1
 138:16 141:11 279:11
John's 72:6
Johnson 334:6
join 30:8 49:1
joined 40:17
joining 35:7 41:5
Joint 2:3,5 36:6,21
 291:18
joke 18:13 74:16
Jonathan 271:2
Jordan 231:20
Journal 196:19
Juliana 313:17
Julianna 38:15
Julie 1:20 3:3 23:1 30:1
 30:2,9 34:20 35:15
 45:7 46:15 112:14

136:7,7,22 139:18
141:4,10 154:5,7
157:3 168:19 180:19
189:4 218:7 222:22
222:22 226:13 232:16
239:21 340:2 341:12
353:2,14
Julie's 142:8
July 60:8 102:11 123:14
jump 44:15 135:19
144:15 211:22 223:1
298:6 299:5 310:11
330:16 340:3
jumping 310:6
junctions 336:11
June 104:8 279:5
294:14
justify 86:13,16

K

Kalama 274:5
Karsten 3:15 156:10,12
156:14 170:5 179:2
186:14 200:15,20
218:8 227:7 231:4
234:3,4
Karsten's 163:9
Kate 342:5
Kearse 2:3 38:9,12
235:3 236:2 256:5
297:15,18,21 298:7
310:9 313:12
keel 4:4 16:18 35:7 45:8
57:7 58:11 118:10
154:6,12 157:8
160:22 161:6 162:18
165:21 168:8 169:14
179:4 182:2 184:14
185:20 188:10 201:4
203:16,17,21 205:13
205:17,20 206:22
207:1,12 214:3,5,9,12
214:16,21 215:3,6
218:19 237:20 238:14
330:14 339:21 354:10
keep 16:22 17:1 22:21
49:9 75:10 83:14,20
85:2 93:11 106:5
115:20 137:7 155:13
194:7 219:3 258:8
263:6 292:18 298:3
331:1 335:21
keeping 18:4 26:15
49:5 94:2 140:2
193:10 356:8
keeps 82:16 181:9
kelp 97:20
Kevin 112:15

key 8:7 25:3 58:2
155:21 182:22
kick 243:20
kicked 48:18
kicking 10:22 350:19
kickoff 46:4
kicks 46:7
Kidd 279:11
kilohertz 323:10
kilometer 319:7
kilometers 318:8
321:14 322:8,16
Kim 42:12 43:1 144:16
222:20 223:19 224:19
235:8 236:6 237:15
238:7
Kimberley 1:18 42:13
175:3
kind 12:11 33:10 65:13
65:14 67:18 68:13
70:15 73:22 74:6,8,9
76:3,13 77:16 78:10
80:9 81:10,17 83:9
86:16 88:8 92:13 93:8
124:2 134:10 138:19
138:21 139:2 142:3
146:13 168:6,7
173:15 178:1 182:14
183:16 184:2,18
186:21 187:2,17
205:12 218:11 220:18
221:17 222:12 229:7
232:2 234:14 246:8
253:2 258:17 259:17
260:18 261:16 265:13
266:10,22 267:7,16
268:3,22 270:8
271:21 272:2,6
274:17,19 303:17
314:15 315:7 318:20
319:4 322:10 327:7
328:5 329:11 337:17
339:17 343:6 345:13
346:14 347:2 348:19
349:18,19 350:3
351:2,6,10,19 352:1,9
353:3,6 356:3
kinds 349:17
kinetic 105:12
Kinner 327:19
Kip 3:3,14 45:7 50:16
64:15 76:17 154:5,19
156:22 168:20 229:12
Kip's 200:2
Kittell 3:13 155:19
180:21,22
knew 68:3 126:1 255:2
knots 107:14 322:6

know 5:9 8:12 9:18
10:16,20 14:2 18:9,15
18:21 26:17 30:9 33:6
46:22 50:14 51:11
52:8,10 63:1,20 65:14
66:10,20 67:8 69:14
69:15 70:15,19 71:12
73:3,15,22 74:3,10
76:3,6 77:13,14,17
78:5,9 80:7 81:5
86:12,14 89:13 94:9
94:12,14 95:21 102:8
107:11,21 111:13
112:1,3 115:4 122:15
124:2 125:19 127:15
129:17 130:13,16,19
131:15,19 132:6,7
134:16 135:20 136:11
137:2,5,7,9,11 138:17
139:19,21 140:4
141:16 142:8,9 144:6
145:5,18,19 148:16
149:16 150:12,18
151:2 152:9 155:7
159:5 169:20 170:14
173:4,13 175:15
180:11 188:17 201:22
204:13 205:5 206:10
207:1 216:8,19,19,20
216:20,21 218:9
220:9,10 222:10
223:22 224:1,20
225:4,15 226:8,11
227:7 228:18,21
229:7 233:14,16
234:2,16,18,20,21
235:1,5,7,8 237:2,20
239:8 242:5,15,16
250:12,16 254:17,18
254:21 255:2,3 256:8
257:10 260:17 261:4
262:6,9 265:12
266:11,22 267:5,8
268:16 269:2,16
271:4,19 272:13
273:4,16 274:2
278:12 299:6,12
302:14 307:16 308:12
312:19 313:17,22
320:18 321:1 323:22
324:6 327:10,17
328:8 329:14,22
330:3,16,18 331:10
334:3 337:1,16 338:1
338:10 340:2 341:6
344:5 346:5,16
347:11 348:15 349:5
349:18 350:10,17

351:3,15,19 352:1,11
352:14,15 353:22
355:13,14 356:11,22
357:15
knowing 108:17 170:10
knowledge 6:3 109:10
210:3
known 18:6 50:10,13
222:4 240:9 328:21
knows 80:7,14 313:22
Kongsberg 115:10
Korea 81:9,15
Korean 248:15
Kroll 279:8
Kurtz 1:18 43:3,4

L

L.A 10:12 25:20 45:10
52:18 68:8 69:16 74:2
79:18 82:1 86:12,17
88:5,14,16,19 90:6
112:15 128:21 129:6
144:22 145:20 153:2
171:7 179:9 180:2
208:8 357:9
LA/Long 79:6 129:17
171:14 176:6,13
221:10 251:3 296:19
330:20
lab 58:14,18 279:21
288:6 289:9 315:8
labor 112:17
Laboratory 191:3
lack 145:12
lacking 109:12
ladder 163:15
Lake 34:11 67:7 281:15
282:11
Lakebed 285:6 334:13
lakes 16:8 34:12,13
176:1 262:1 273:1,2
281:3 283:16 284:12
284:13 285:2,6,13
290:10,14,15,16
296:6 334:11,19,20
335:4 337:14,18
338:5,7,9,12,15,21
Lamb 271:2
land 42:15 54:13 66:7
97:17 98:14 99:12
178:16 237:11
landed 121:18
landfill 62:2,4
landfills 60:4
landings 99:11
Lands 73:21
language 21:9 152:7
243:8

- laptop** 231:8
large 57:10 59:1 67:16
 89:3,11 98:6,13 125:5
 146:22 165:14 221:18
 222:15 333:8 354:4
 354:16
largely 222:5 257:6
 260:2 263:18
larger 42:6 77:3,5 89:10
 102:4 109:1 166:1
 196:3 248:13 256:18
largest 69:10 70:18
 80:12,17 82:5,8 95:22
 158:4 195:5
Larry 2:5 36:14,15,18
 37:4 275:22 276:4,6
 276:12,15 314:8
 324:8 353:17
Larry's 276:5,19 310:8
LARS 317:2
last-minute 41:1
lastly 226:13
late 7:21 8:16 11:13
 199:11 276:14 285:21
 302:13 308:8
latest 69:22 172:6
latitude 121:11 122:15
 126:16,21
launch 316:3 317:1,3,8
 317:17,22 318:6,21
launched 317:8 319:10
launches 70:3
launching 23:7
law 20:13 25:1 47:1
 260:3 267:12 295:22
lawn 126:5 128:13
Lawrence 20:12
layer 68:13
layering 254:5 329:18
layers 173:10 333:7
layout 266:12
layouts 21:7
lays 277:16,21
lead 65:22 71:17 255:10
leadership 2:8 10:19
 14:3 29:15 63:18
 278:17 280:2 291:15
 299:3 356:19
leading 31:15 46:10
 92:19 351:9
leads 85:7 132:7
leaks 78:11
learn 278:13 320:21
learned 29:17 58:3
 217:14 228:10 288:5
 349:10 352:8
learning 44:13 105:22
 351:11
- leasable** 54:12
leases 102:14 104:4
leave 107:22 108:9
 117:3 262:22 315:10
leaves 58:10 98:21
leaving 294:22
Leboeuf 2:9 9:12,20
 37:19 257:7
led 25:10 43:18,19
 46:15 358:6
lee 317:17,18
left 70:11 113:4,10
 114:8 119:8 121:3
 122:5 123:1,18 129:5
 173:17 187:8 192:11
 194:9 195:21 198:15
 205:1 212:11 214:2
 214:20 215:11 242:8
 249:10 250:21 253:3
 278:10 288:20 317:15
 355:21
legend 250:6
legs 108:10 153:16
length 57:12 82:15
 206:4 331:9
lens 33:21
lessons 217:14 349:10
 352:8
let's 32:4 49:7 112:9
 130:11 154:18 157:18
 196:6 227:22 239:9
 258:11,22 260:14
 298:5 299:5 302:10
 302:11 305:3 308:10
 309:6,18 310:3,12
 311:2,10,18 312:2,13
 313:16 315:11 340:21
 344:11
letter 23:4
letters 41:4
level 20:15 51:22
 151:14,17 184:8
 209:11 212:12 214:7
 236:19 242:17 245:7
 246:13 249:3 251:11
 261:5 262:10,12,13
 274:4,10 275:3 305:9
 305:10 313:5 346:6,6
 346:8,11,18 348:21
 350:14 352:16
levels 49:10 52:9 91:21
 93:15 179:8,16 180:9
 248:18 253:7
leverage 254:4
leveraging 291:2
 311:14
liaison 155:1 186:22
licensing 287:10
- lidar** 42:8 177:2,5
 315:22 316:5 336:17
 337:10
lieutenant 17:21 279:11
life 39:2 75:10 125:19
 127:21 181:21 182:7
 201:19 266:11 270:13
lifesaving 11:19
lift 160:14
light 55:6 59:9 92:19
 176:16 208:20 258:5
lighter 203:2
lightering 55:8 59:8
 166:13 167:1,16,18
 200:1,3
lights 92:19
liked 63:13
likeness 7:2
limit 55:6
limited 225:19 290:17
 316:17
limits 164:15,16 165:20
 167:9
Lindsay 330:10,12
 331:9 333:18 334:2
 355:22
line 93:4 113:9 145:14
 146:1 167:4 168:21
 178:10 197:4,7
 198:10 212:14,16
 213:13 214:19 235:6
 253:2,3 265:10
 274:21 300:10,11
 302:13 307:21 333:13
lined 44:20 158:22
 162:21
liner 86:11
lines 212:13 213:9
 217:7 248:2 301:4
 334:10
link 153:12 283:17,18
 344:22 349:4
linkage 345:3,4
linked 336:4
links 250:8
liquid 55:9,13 57:9,14
 58:12 59:9 81:2
list 41:16 222:13 320:6
listed 35:16 37:21
listen 31:1 159:20
listening 47:13 240:12
 334:15 339:20 352:7
little 29:22 44:15 47:21
 82:12,15 88:2,7 89:22
 98:1,8 100:19 102:13
 111:6 123:18 129:22
 133:8 140:5,13 176:8
 176:21 181:4 191:7
- 194:16 201:8 202:3
 208:4,5 216:15
 224:11,16 226:16
 227:2 229:6 230:18
 232:8 234:3 253:14
 257:4 278:10 302:1
 302:11 314:14 316:20
 320:3 321:5 327:4,15
 329:20 339:2 353:4,5
Littlejohn 2:18 40:9
lively 350:17
lives 80:14
load 83:18 178:20
loaded 55:7 59:19
 206:5,9 216:9
loading 55:6 59:9
 133:20 206:3,8 216:8
local 4:3 8:5 10:11 45:1
 49:15 71:8 73:22 79:3
 86:20 140:2 151:3
 153:1 155:17 156:2,2
 159:22 181:1,12
 184:5,6,9,19,21 185:3
 185:3,5 186:16,22,22
 210:3,6 222:12 235:7
 235:19 257:17 268:4
 297:7 331:3 339:14
 357:9
locally 68:12 184:5,7
 186:6
location 128:11 198:12
 206:15 209:12 341:7
locations 98:10 191:5
 194:3 198:14 251:15
 252:22 261:18 288:5
logistics 7:5 202:9
loitering 167:21
London 125:2
long 3:9 10:12 18:6
 22:6 25:21 39:4 42:15
 45:11 50:4,10,13
 52:18 53:7,15,19 54:1
 54:1,3 55:2,22 57:17
 57:20,22 58:4,6 62:8
 63:2 67:15,20 68:9
 70:13,14 74:2 80:16
 82:3 86:13 88:5 96:20
 98:12 101:14 102:20
 103:12,14 112:18
 113:10 114:12 118:1
 120:10,22 123:4
 128:21 129:6 143:21
 143:21 153:3 157:13
 157:22 158:8,13,20
 159:19 160:4,11,11
 160:20 166:15,22
 167:20 168:4 171:3,7
 174:19,20 175:10

177:5,11 179:9 180:3
 189:21 192:18 193:2
 195:22 196:6 197:10
 197:13 199:9 200:4
 220:6 229:14,20
 230:3 231:15 232:4
 236:20 240:9 244:6
 263:5 292:17 317:13
 332:5,6 352:11 357:9
long-range 210:12
long-standing 54:4
 190:21
long-term 12:14
longer 24:8 82:4 189:16
 193:7 194:16 330:13
longest 260:18
longitude 121:11
 122:15 126:17,21
longtime 279:17
look 18:3,8 23:14 26:5
 27:1 32:15 34:3 39:5
 39:6,10 44:12,16 47:9
 50:20 63:11 70:9
 78:16 106:3 119:8
 124:1 126:14 149:18
 172:9 177:19 179:2
 191:4 194:12,19
 196:6 198:5 203:18
 204:2,4 210:9 211:6
 211:16 215:21 240:12
 247:13 264:13 265:1
 266:18,19 267:3
 268:9,14 269:7 276:6
 277:10 278:5,8,12
 280:2 285:20 297:11
 300:5 304:2,10
 306:21 315:8,16
 321:4 324:2 326:14
 336:1 343:9 345:7,8
 346:5,15 347:9 354:8
 354:12 356:10 357:12
looked 126:11 147:2
 205:18 236:3 320:14
 321:19 350:13
looking 8:1 14:22 31:16
 33:4,10 34:17 36:10
 38:3 43:11 49:12 51:6
 87:4 95:3 99:16 100:9
 102:15,17 103:14,17
 104:3 111:12 120:7
 126:5 133:3 134:18
 145:11 146:21 147:16
 176:4 195:21 197:1
 199:14 201:9,15
 202:20 203:15 204:12
 205:14,15 206:2,20
 208:1 221:9 265:14
 268:15 269:4,10

271:18,21 274:13
 294:9 305:14 307:12
 310:17 311:7 315:17
 318:18 321:3 323:20
 324:12,14 332:10
 346:7 348:6,12
 349:16 354:21
lookout 106:6
looks 48:22 49:5 121:1
 228:12 246:2 270:4
 270:11,13,19 271:12
 291:10 344:12 349:1
 349:2
Lorraine 40:13
Los 3:8 24:2,2 25:9
 50:7 63:16 64:3 67:14
 67:19 69:2 72:2 79:4
 79:9,17,22 80:11,20
 82:7 87:6 93:5 98:12
 113:10,20,22 118:1
 121:16 123:4,14
 125:2 142:21 143:20
 158:7 179:22 181:13
loss 125:19 127:21
lost 122:3,20
lot 5:7 6:3 16:2 17:16
 19:10 30:10 39:1
 49:19 50:9 78:6 80:9
 86:10 88:11 90:19
 91:6 93:6 96:18
 102:10 106:1,11
 110:5 138:3,6 140:21
 143:1 146:21 151:16
 151:17 154:1 155:1
 155:17 158:10 170:4
 174:2,16,21 175:9
 178:14 183:5 185:1
 198:11 203:16 207:19
 210:2,3,6 211:8
 212:19 221:10,11
 225:11 228:10,16
 232:2 233:17 238:19
 241:4 242:16 250:10
 253:9 261:18 262:3
 265:9 266:20 270:15
 277:1 290:7 298:22
 300:12 301:21 308:13
 309:8 314:18 315:2
 325:4,5 326:16 331:7
 335:22 336:5,10,10
 347:9 348:18 352:3
 355:16 356:7,12
lots 11:1 43:7 47:20
 68:7 69:18 85:15
 104:13 119:8 121:1
 131:7 153:5 229:2
 279:22 308:20 321:20
 355:17

loud 5:4 339:2
Louisiana 9:16 29:19
 151:12,22 308:5
Louttit 3:3,14 35:4 45:7
 50:17 64:16 76:17
 112:10,10,12,16
 129:15 143:5,12
 154:19,20 159:14,15
 229:13 232:20
love 32:19 271:8 335:8
 350:18
low 51:21 102:2 234:10
 237:4 246:6 261:5
 271:18,19,22 272:1,5
 272:8,14,15,16,19
 273:1,4 335:1 338:2
lower 70:11 110:11
 113:3 196:1 197:22
 208:21 210:19 213:7
 213:14 214:2,2,13,20
 217:8 234:10 237:4
 246:6 261:5 272:19
 274:16 287:21 288:4
 347:8
lowest 212:14 214:15
lucky 171:7
Luis 103:20 181:14
lunch 152:11,18 153:15
 154:9

M

M 1:12,14 3:2,8
Ma'am 234:5
machine 243:8 351:11
machines 352:5
magenta 177:4
magic 170:7
magnified 91:13
main 56:1,2 57:15,19
 58:10,22 88:20
 116:17,22 153:8
 183:16,17,22 185:4
 187:11 209:22 224:2
 224:4,7,14 259:18
 265:13 290:8 340:11
Maine 319:7,11
maintain 22:15 25:18
 83:12 85:6 93:15
 354:15
maintained 22:18 29:8
maintaining 79:11
 83:19 188:2
maintenance 103:10
 134:13 150:5 267:15
 341:3
major 46:12 68:21
 98:10 104:19 129:18
 193:11 227:4 252:9
 253:13 254:3 265:22
 270:16 271:20 273:5
 282:5 283:3,13
majority 43:20 206:13
makers 182:10 183:5
 184:11,13 186:11
making 10:15 22:14
 36:9 47:13 87:6 89:1
 97:4 131:20 196:11
 202:1 246:7 248:1,1
 249:7 260:2 270:22
 271:13 286:20 301:2
 306:6 350:7,18
malfunctions 194:6
Mammal 25:10
manage 19:1 81:3 84:8
managed 35:12 258:5
management 2:9 9:14
 33:11 53:7 75:17,18
 109:5,22 131:19
 302:10 338:4
manager 3:7,10 33:2
 40:16 45:18 112:16
 155:18 169:1 180:16
 181:1 189:11 221:7
 222:12 240:9,19,22
 339:15
Managers 74:16
managing 3:15 49:8
 129:18 149:19,22
 156:11
mandated 259:7
Manes 132:13,15,15
 327:8 328:10 329:6
 339:4 341:14,22
maneuver 59:14
maneuvering 203:19
manned 317:22
manning 50:5 63:6,8,9
 78:4,18 79:6 80:12
 81:19 90:17 114:4
 123:11 130:12 131:4
 138:9,15 149:7
 150:15,20 318:2
manual 246:17
manually 272:9
manufactured 254:12
manufacturers 246:11
 250:10,11 254:7
map 128:10 190:5
 247:20 265:6 278:9
 285:5 307:15
mapping 16:9 36:20
 42:3 43:19 46:14
 127:11 276:2 281:3
 283:12,15 284:2,12
 284:14 285:3,7,12,15
 285:18 290:11,14,19

290:21 291:1 293:2
 298:21 308:11,14
 309:1,11 338:15
maps 38:17 148:9
Marathon 156:17
 157:14 190:20 230:8
 230:10 231:16 232:3
March 1:9 60:14 78:15
 285:21 313:18
Mardi 9:18
margin 209:7,11 213:14
 213:20,21 215:7
 216:18
margins 213:6 217:10
Marian 2:6 37:6,9
 218:17 220:4,22
 222:18 256:7 257:20
 258:1 275:20 346:2
 348:8 353:14
Marianas 309:16
mariculture 70:8
marine 2:17 3:3,11,14
 3:15 4:5 12:19 14:14
 16:16 25:10,10 34:14
 35:5 40:16 45:17
 50:12,17 58:14,18
 64:13 65:16 66:5
 68:16 70:1 75:19
 85:16 104:22 105:2
 105:12 112:21 113:5
 113:21 116:3 118:2
 132:20 154:20 157:14
 181:1 182:4,6,19,22
 184:1 240:18,22
 241:4,6,11 243:1
 270:22 271:14 279:19
 292:15 308:1 318:8
marine-focused 16:1
marinenavigation@n...
 243:11 249:19
mariner 287:11 329:15
mariners 124:12 241:7
 242:13 329:18 331:4
 332:22 333:7
maritime 25:18,19
 26:13 65:12 71:18
 95:18 98:22 104:20
 112:3 138:8 202:9
 205:15 241:12 253:21
 273:15
Mark 132:12,14,15
 135:9,13,19 341:14
markers 121:18,21
marks 299:13 302:6
marshes 150:6
marvel 70:21
Mary 1:15 30:14,20
 31:3 136:13 144:16

146:10
Maryland 31:12 244:8
 311:1
massive 68:4
master 54:16 143:14
masters 165:17
match 58:18 270:3
material 56:13 60:3
 61:13,18 62:1,8
materials 30:13 193:16
math 160:5 168:4
 176:10
mathematicians 202:7
matrix 46:18
Matt 279:8
matter 27:12 39:18
 48:13 133:9 153:19
 212:1 227:17 234:13
 240:4 327:7 332:18
 358:21
matters 6:18
mature 265:5
max 133:20 168:12
maximize 82:20 83:3,17
maximum 56:20 57:11
 115:17 203:19 213:16
Mayer 2:5 36:17,18
 275:22 314:10 353:18
 354:7
MBS 332:11
McCloskey 112:15
 114:1 121:8,13
McIntyre 356:2
mean 39:13 82:18 85:4
 86:11 89:7 141:22
 142:1,6 147:3,12
 151:9 224:11 233:15
 234:10 236:18 237:3
 237:4,7,18,19 238:18
 238:22 246:6 261:4,4
 261:5 262:9 272:19
 304:17 325:3 345:6
meaning 257:8
meaningful 192:2 270:1
 272:22
means 59:20 101:19
 158:9 239:3 241:14
 241:15 291:5 302:18
meant 30:2 83:14
measure 192:5 210:9
measured 21:14 192:9
 198:22 217:9 270:12
measurement 194:10
 209:20
measurements 116:21
measures 203:1 217:4
 217:5
measuring 150:13

mechanism 72:14
meet 45:5 47:1 54:22
 75:2 89:15 93:15
 102:16 130:17 153:12
 153:17 172:14 173:21
 175:1,2 224:8 227:19
 277:21 357:11
meeting 1:6 6:22 7:3,5
 7:17 8:2,18,19 9:6
 10:1,9,20 11:4 12:17
 17:15,20 18:8 19:5,9
 19:10 24:6,15 26:9
 28:14,16,18 29:8,10
 30:10 31:17 34:4,18
 36:11 38:17,19 39:16
 40:3 41:3 44:14,18
 46:16 47:4 78:16
 89:11 113:6 132:22
 134:8 175:5 218:19
 257:9 258:18 277:15
 285:2 287:2 288:11
 289:16,18 293:21
 294:12,13 318:14
 326:7,17 327:9
 338:20
meetings 27:10 39:1
 132:19 294:15 312:11
meets 62:6
Megan 2:19 40:8
Melanie 40:8
melt 102:11 111:19
member 3:3 30:19,21
 31:8 32:5,21 33:17,19
 34:8,21 41:18,21
 42:13 43:4,15 67:7
 71:22 95:10 98:3
 136:8 137:1,20 138:2
 139:16 141:1,6 144:9
 144:12,20 146:5,11
 147:11 148:21 149:4
 150:17 151:6 154:8
 155:9 157:5 168:20
 169:4 189:6 200:13
 200:17,19 218:8
 219:10 222:17 223:3
 223:6,19,21 224:22
 226:3,4 227:5,21
 228:5,7,8 229:11
 231:19 232:15,20
 233:5,8,14 234:2,16
 236:1,4,8 237:15
 239:7,12 270:2
 284:22 327:19 330:11
 340:5 347:17 352:22
 353:16,19 355:4,22
members 1:13 2:1 5:10
 8:12 27:8 29:14 30:14
 35:19 40:18 41:2,12

44:6,7 47:7 63:21
 97:10 112:13 135:12
 152:22 153:11 175:3
 240:11 276:20 284:10
 325:6,18,20 326:7
 328:3,7 342:22
 355:18,20 356:2,13
 356:22,22 357:3,4,4
members' 47:11
memory 113:13
mention 11:11 17:18
 30:6 74:4 150:1
 259:22 355:21 356:1
mentioned 36:8 41:6
 71:19 88:20 109:13
 112:14 114:4 117:14
 117:17 118:22 123:11
 128:22 130:13 133:5
 147:21 149:13 160:3
 163:7 165:1,8 185:16
 186:5 189:10 200:1
 231:4 232:21 244:18
 246:22 259:3 277:14
 277:15 282:19 284:6
 284:20 285:5 289:10
 296:18 332:11,15
 338:14,14
mentioning 111:10,16
mentorship 15:11
menu 7:7
Merbok 311:13
Meso 294:6
mess 37:8
message 315:11
messaging 184:2 194:6
 284:10
met 1:12 14:12 37:20
 74:19 162:11 277:2
 278:17 293:15 294:7
metadata 174:14
 250:16
meteorological 268:10
 275:5 288:12 289:16
meteorology 271:2
meter 178:14 219:17,19
 248:7 273:19 274:8,9
 275:13
meters 14:7 82:3 90:5
 114:11 205:18 214:16
 214:17 215:5,7
 246:18 262:21 274:6
 275:6 284:5
methods 337:7
metric 321:22
Mexico 175:19 285:14
MIA 119:3
Michigan 281:15
 284:11

microphone 9:1
microwave 20:15
mid 302:13 315:22
mid- 175:21 308:6
mid-2025 300:17
mid-air 125:10,20
mid-Atlantic 295:19
mid-summer 302:2
middle 113:9 173:17
 177:4 315:20
mightily 12:3
migrant 66:21
Mike 279:10
mile 159:1
miles 64:22 65:2 99:16
 107:16 128:1 134:2
 158:20,22 160:10
 166:16 181:17 317:16
milestones 298:14
military 105:8
Miller 358:17
million 61:2,6,17 86:7
 96:3,5,9 97:17,19
 103:9 284:13 308:16
 308:19 338:16
million-plus 334:9
mind 130:5 138:10
 139:12 310:6 315:11
mine 146:18 201:12
minesweeping 127:8
minimize 82:20
minimum 203:15
 205:13,17 214:20
 328:12
minor 265:21 269:18
minus 169:17
minute 243:6 251:18
 269:6 309:12
minutes 28:16 48:1,5
 48:10 130:7 153:10
 153:13,18 170:11
 194:20 240:2 272:17
 277:3 298:3,4
missed 9:17 14:1 229:5
missing 122:5 126:1
 328:11,13
mission 26:7 43:21
 44:12 66:14,19 67:5
 67:10 72:19 75:10,15
 79:21 80:3,4 131:1
 181:20 182:16 186:9
 284:22 289:21 290:6
 316:7,8 321:7 324:13
missions 67:2 76:1
 149:8
Mississippi 49:19,20
 50:9 58:16 242:5,10
 254:21 287:21 288:4

347:8
mistaken 133:1
mitigate 92:12
mix 281:15
mixed 129:8
mobile 274:9 288:17
model 183:11 184:6
 186:3,18 188:14,17
 188:18 195:7 196:14
 196:16,17,22 197:6
 198:10 199:16,18
 201:10,16,17,18
 203:5 206:18 208:6
 209:14,15 210:11
 211:11,12,14 212:14
 212:15,22 213:2
 215:2,12 216:10,22
 217:12,22 221:14,19
 221:22 222:7 226:17
 226:19,20 227:4,11
 230:2 264:2 295:14
 311:22 347:2
modeled 58:18 184:5
 206:10
modeler 232:13
modelers 289:15
modeling 11:22 16:17
 46:9 172:15 183:18
 187:15 196:9 199:20
 201:5 204:18 212:6,8
 215:3 217:17 220:7
 226:15 227:17 288:10
 288:11 289:14 308:2
 312:15
models 169:11 185:9
 189:14 201:13,21
 202:8 212:1,20
 216:17 217:15 230:20
 251:22 259:12 289:21
 307:19 310:19 311:8
moderate 45:8 265:21
 269:18
moderated 46:5
moderator 159:16
MODERATORS 3:1
modern 304:14 337:18
 337:20
modernization 39:7
 234:7 235:20 238:11
 267:14 298:11 299:5
 299:8 300:11,16
 302:15 304:4,18
modernized 304:5
modernizing 233:20
 238:19 304:19
modes 238:13
modify 89:21
Moller 81:22 88:16

moment 32:1 46:10
 159:16 164:4 215:14
 242:19 251:6 278:16
 335:10 343:13
moments 212:2
money 86:10 95:17
 231:15 271:17 303:11
 307:7 308:21 311:14
monitor 208:12 289:3
 327:3
monitoring 150:14
 181:16 271:4 306:22
month 265:10 288:20
 294:4
months 11:7 18:8 20:4
 32:14 127:15 204:4
 287:19 300:18 304:6
monuments 236:10,15
moon 222:3 260:22
 352:14
moor 166:17
moored 116:16
mooring 117:1
Morgan 274:4
morning 9:22 18:17
 19:3 31:5 32:5 33:17
 34:6 35:22 36:15
 38:12 43:4,5 46:1
 53:4 94:21 112:12
 129:6 152:17 154:1
 160:3 236:5 343:2,10
 356:11 358:13
morning's 257:16
Morro 103:21 104:15
Moshiri 334:6
mothership 316:10
 318:10
motion 161:9,19 192:10
 212:8 213:3 215:20
 217:2,3 231:5,9,12
 258:6 261:2
motions 213:2,3,5
mountains 87:5
mouth 228:19
move 17:12 18:2 32:1,4
 35:18 37:22 50:20
 77:12 79:21 104:20
 106:12 110:16 112:9
 116:10 122:22 124:16
 140:4 176:1 189:4,7
 192:12 216:13 254:20
 255:5 262:15 266:13
 275:19 278:15 296:5
 299:22 301:11 303:5
moved 55:19 81:7 83:5
 100:6,7 184:7 267:20
 282:13
movement 161:18

163:2 167:22
movements 163:11
 168:11
moves 120:18
moving 53:20 80:5 83:1
 100:9,12 102:10
 103:2 121:11,19,20
 152:2 236:14 239:4
 242:9 277:5 283:9
 292:5,18 295:19
 298:17 299:1 301:17
 301:20 303:6 308:20
 312:4,8 339:19 356:8

mowed 126:5
mowing 128:13
Mowitz 320:11
MSB 279:9
MSC 119:3
mud 161:8 337:4
mull 343:7
multi-day 69:3
multi-decadal 109:20
multibeam 171:1
 316:14
multimillion 69:3
multiple 128:8,16
 165:10 176:9,12
 286:2 319:13
museum 113:20 117:5
mute 5:4 8:22 9:7
muted 110:21 353:15
 353:16
muting 32:18
Myers 279:19

N

nail 281:22
name 6:11 32:5 33:18
 41:14 49:7 53:5 79:1
 163:8 180:22 223:8
names 40:10 355:21
Nancy 292:22
Nanette 3:5 23:22
narrow 89:12 129:2
 241:10
NASA 312:6
Nate 10:19
Nathan 1:15 2:18 30:7
 35:16 40:8 46:5 48:21
 49:7,13 233:11
 234:17 237:16 238:9
 238:14 259:3 344:13
 358:7
nation 21:15 300:1
 310:20
nation's 53:19 96:1
national 1:3 2:3,4,10,15
 2:16,17,18,20 9:14

- 11:16,20 12:2 18:12
 21:8,19 23:9 37:13
 38:10 39:8 45:5 47:10
 52:13 54:18 65:22
 69:2 72:10 73:16
 104:22 155:20 169:10
 172:2,4,6 180:19
 181:1,5 182:1,8
 183:13,14,17 184:8
 186:7 187:21,21
 191:3,16 193:19
 225:8 233:19 234:19
 240:18 255:17 256:4
 258:18 259:2,6
 260:15 262:17 266:6
 267:6 271:3 283:12
 292:14 295:5,13
 298:8,16 300:15
 304:5,15,20 305:7,11
 305:16 306:8 307:6
 310:16,19 311:9
 332:2 344:18 345:10
 347:2
nations 294:5,20
Native 105:11
natural 24:19 110:6,15
 284:19
nature 92:13 168:9
 303:4
nautical 65:2 181:17
 286:22
nav 19:13 51:8 52:14
 173:8 178:4 180:16
 222:12 339:20
naval 43:21 74:7 177:1
NAVD 236:21
navigate 142:15 178:22
 241:8 242:14 245:14
 245:20 246:20 273:18
navigating 58:16 91:15
navigation 2:11 3:10,11
 3:15 4:5,6 5:19 16:17
 18:11 19:7 23:19
 26:19 27:2 28:1 40:16
 44:1 45:3,18,19 49:17
 50:12 53:16 54:2,7,18
 55:4,20 57:1,14 59:1
 60:11,21 61:7,19
 64:13 75:13 83:22
 84:4 88:18 91:11 93:1
 95:10 98:4 106:10
 107:2 118:16 124:12
 124:17,18 128:18
 138:8 141:9,13,18
 142:2,4 143:19 145:1
 148:2 155:18 169:1
 172:12 173:1,7
 175:14 177:16 221:16
 221:21,22 222:14
 233:17 234:1 240:10
 240:22 241:4,6
 242:18 243:2 255:9
 255:18 260:10,12
 262:11 263:19 266:15
 270:16 271:20 273:2
 279:5,12,14 286:19
 289:21 294:21 325:21
 338:4,8 339:15
navigation-related 5:17
navigational 59:15
 243:3 244:2,11
 287:16 331:6
Navy 74:9,12 82:6
 99:14,21 127:6,7,9
 176:22 190:11 275:1
Nawiliwili 20:19
NBS 172:5,5 174:1,7,15
 175:11,15 176:8,13
 177:13,16 332:5
 333:20 344:22 345:1
 345:15
NCEP 183:13 199:18
NCOP 262:17 264:5
near 18:6 56:14 79:16
 113:5 150:7 155:22
 180:15 183:9 185:8
 185:13 187:16,18
 188:2 189:20 196:13
 220:1 257:13 322:10
 334:8 335:3
near-term 12:13
nearby 198:10
nearest 134:1 275:7
nearly 190:3
nearshore 220:15
 222:5
necessarily 107:21
 112:1 197:6 198:13
 345:3,18
necessary 22:16 218:5
 341:1
need 13:10,14 66:17
 84:8 89:21 90:13 91:6
 94:13,15 96:18
 100:21,22 102:8
 107:11 109:14 110:10
 110:13,15 115:4
 118:8 131:5 135:2,11
 139:3 141:21 145:10
 147:18 171:18 173:12
 179:1,12,18 199:19
 205:5,7,12 222:9,15
 226:11,15 227:2
 228:13 242:12 250:18
 250:22 254:8 263:22
 273:17 278:1 298:4
 304:8 305:2 306:15
 320:1,5,6 324:2,3
 327:9 328:8 330:21
 332:22 333:1,6,8,9
 339:18 342:16 343:18
 351:16 353:6
needed 54:20 58:22
 109:21 116:4,5 170:5
 185:20 260:12 320:15
needs 22:17 52:21
 116:20 130:18 136:1
 188:21 190:15 198:11
 227:19 240:11 262:9
 263:19 272:14 290:6
 351:14 353:9
negative 51:21 91:13
negatively 91:11
neighborhood 180:16
 209:20
net 221:10
network 108:4,13 303:4
networks 14:6,10
never 67:11 173:3
 205:19
new 2:2,5 14:1 15:6,20
 16:10 17:16 19:22
 20:6,11 32:13 33:9
 36:5,7,20 37:1,5 41:2
 41:12 44:6 54:12
 56:12 62:2 77:13 90:9
 91:10 93:8 100:1
 112:17 127:10,17
 148:11,12 179:2
 180:2 187:12 188:13
 188:13,22 200:8
 221:3,12 234:11
 236:11 238:12 239:6
 242:4 251:6,6 254:12
 258:17,17 259:9
 261:12 264:6 274:1
 274:19 275:7,10
 276:3 277:6,13,16
 281:2,4 288:8,17
 289:18 290:19 291:19
 291:22 296:20 299:2
 299:7 301:17,18,21
 302:6 303:10 306:13
 307:15 310:17,22
 311:7 313:9,20
 333:19 341:17 352:10
 353:7 356:2
newer 30:20 176:19
 177:14
newest 59:18 120:12
 175:3
Newport 110:2
news 22:11 36:13 41:1
 199:11 227:13 283:14
 283:20 284:18 300:13
 301:12
next-gen 310:19
next-generation 45:19
 333:2,6
NGA 307:3 312:6
NGS 2:4 19:15 21:13
 38:11 233:20 310:18
 312:21
NGS' 46:8 234:6
nice 32:21 43:3 95:1
 108:2,3 110:3 139:6
 200:14 248:22 330:11
 342:1 348:2
nicely 220:16 232:19
Nicole 1:16 2:9 9:12,16
 18:3 32:4,6,19 36:8
 37:19 46:4 144:17
 149:3 151:9 257:6
 277:14 347:15,17
 358:7
Nielson 342:5
night 8:17
Nino 199:9
no-fishing 105:6
NOAA 1:3 2:2,8,14 3:10
 3:13,16 5:18 6:9
 13:20 14:17,22 16:9
 18:13 22:9 24:22 25:5
 26:12,20 27:10,18,20
 27:21 28:3 29:3,14
 31:13 36:5,5,9 39:4
 39:16,17,20 40:20
 42:4 43:9 47:11 49:11
 51:8,16 52:13 63:17
 73:5 75:8,9 76:1,13
 77:10,21 79:10 80:3
 91:5 92:8 93:12,18
 94:2 101:7,12 104:21
 106:15 107:4,21
 109:6,19 115:5,7,18
 116:9,10,17 117:3,19
 118:14 119:17 120:19
 131:17 133:3,10,10
 133:12,18,18 135:2,3
 141:8 150:12 153:4
 155:16 157:15 169:1
 169:9 170:17,22
 171:9,21 173:19,20
 175:1 176:19,20
 181:5,6,7,8 183:18
 187:20 190:14,15
 195:11 196:15 218:1
 218:12 219:14 223:17
 225:14,18 229:19
 230:1,7,18 242:13
 243:2,16 246:12
 253:6 256:15,19,19

256:22 262:13 275:4
 278:21 279:7 280:19
 281:7,15 282:2 283:7
 286:1 287:3 289:6
 290:18 291:4,7
 292:13,21 297:9
 302:20 303:4 308:12
 316:2 317:6 318:16
 318:21 322:12 325:20
 325:20 326:7 328:1,6
 328:14 331:4 338:7
 338:11 342:5
NOAA's 5:14,16 6:12
 11:22 14:11 24:14,16
 25:2 26:7 28:1 43:21
 45:2,19 49:17 77:18
 116:1 169:6 173:21
 192:19 193:18 242:15
 243:3 288:9 300:1
 318:15 357:10
NOAA-managed
 193:20
NOAA-University 2:2,5
Nobody's 102:21
NOBR 242:4 255:3
 287:22
node 332:7
nodes 352:13
Noll 339:20
NOMEK 285:4,17,19
non-navigation 46:13
non-NOAA 174:10
non-point 100:21
NON-VOTING 2:1
nonprofit 26:7
nonvoting 35:19
nonweather 183:3
Nope 111:1
Norfolk 23:9
normal 125:4 248:21
normally 78:12 128:2
norming 350:15
north 11:15 52:2 70:4
 70:18 74:6 82:9 109:6
 160:12 215:17 229:18
northbound 242:7
Northeast 175:20
Northern 132:21 309:16
northward 104:21
northwest 275:11
 309:15,22
Norwegian 115:20
NOS 2:4,7,11,12 3:2,10
 3:16 12:10 20:2 27:2
 169:7 257:7 271:8
 277:13 291:5 310:20
 346:5
notable 13:22

note 24:4 111:9 153:7
 158:6 226:14 279:22
 337:19 356:21 357:16
noted 339:16 357:7
notes 19:6 28:5 95:3
 111:8 265:7 325:5,11
 328:13 343:7
notice 120:14 198:4,21
 212:18 231:19 251:8
 331:4
noticed 346:7
noting 334:13 335:1
notion 166:4
nourishment 62:8
nowadays 150:4
nowCOAST 175:16
 249:21 288:9,11,18
 289:1 345:11
Noyo 103:22
NRT 281:15
NSGIC 305:12
NSRS 353:5
NTDE 260:15 353:4
nuclear 191:16
number 13:20 20:5
 44:20 51:9 55:7 72:16
 131:10,19 164:11
 167:2 221:4,4 223:4
 230:13 315:15 317:6
 320:14 325:12 333:7
 349:3 354:14
numbers 7:14 151:22
 169:19 319:1
numerous 108:13
nuts 193:9
NV5 42:7
NWLON 20:7,9,16
 267:14 275:2,12
NWPS 183:10,19
 184:10,17,18 186:18
 187:1,6,12 188:7,12
 210:11 212:13
NWS 3:13

O

o'clock 239:9
Oakland 98:11 99:7
 102:5 103:16
Obispo 181:14
objectives 25:3 85:3
 88:13
objects 127:9 343:17
obs 19:13 51:8 52:14
observation 4:6 14:6
 18:11 28:2 46:14
 49:17 212:19 255:9
 257:2 259:7,8 262:17
 264:14

observational 14:10
 257:12
observations 2:11
 14:14 19:8 26:20
 156:8 191:11,21
 192:1 196:9,13
 198:12 199:2 211:22
 255:18 259:13 263:11
 264:19 288:13 308:3
 325:21
observe 189:13
observed 162:4
observing 19:19 190:15
 192:20 193:20 195:11
 256:11 260:1 267:11
obstructing 83:8
obstruction 122:21
obtain 21:3 92:9
obviously 71:17 74:14
 75:21 91:20 173:19
 190:19 199:18 237:4
 337:3
occurred 60:7
occurrences 91:10
occurring 140:3
ocean 2:4,9,10,15,16
 9:13,15 14:14,18 15:1
 15:13,13 16:3,8 18:12
 23:20 25:11 33:13
 36:19 37:13 39:17
 43:19 46:14 52:13
 54:10 56:15 65:3
 105:14 126:15 155:16
 180:15 187:20 192:19
 255:17 256:11 264:13
 265:3,5 276:2 280:10
 281:3 283:12,15
 285:18 289:4,18
 290:10 291:8 293:2
 308:2 322:13
ocean-25:7
Ocean-Based 15:3
Oceanic 1:3 34:2
oceanographic 2:6,17
 5:19 37:12 43:22
 179:10 248:16 256:6
 258:15 260:7 273:10
 288:13
oceanography 33:20
 35:12 43:18 156:7
 190:8 264:4 294:2
oceans 265:6 290:13
 290:15
OceansMap 259:10
OCMI 66:4
OCS 2:12 3:16 19:15
 276:9 298:20,22
 309:2 310:18 312:21

October 60:7 104:8
 168:2 312:13
OER 316:8
offended 230:18
offer 64:18 243:16
 247:8 251:11 253:6
 253:12 342:1 343:22
offered 35:5
offering 288:17
offerings 286:22 292:9
office 2:12,15,19,19
 3:10,13 6:12 23:10
 40:11,11 43:22 73:18
 73:20 133:1 149:9
 181:2,12 184:5,6,19
 186:6,16 241:1 256:7
 256:10 258:5 271:3
 288:22 291:8
officer 2:13 65:13 66:4
 318:17
officers 151:3
offices 181:11 184:9
 255:21,22 256:3
 293:18 294:1 313:3
official 6:13 27:4 28:15
 183:22 287:16 304:4
 304:16
officially 9:5 283:19
 358:11
officials 5:10
offshore 33:2 102:14
 102:15,18 103:11,11
 105:11 107:11 109:16
 113:21 118:2 162:5
 167:1,18 170:20
 180:4 185:11 191:5
 221:17
OFS 220:9 221:15
 222:8,13,14,15
 264:13
Ogdensburg 20:11
oh 9:20 151:6 162:22
 268:11 314:10 320:17
 326:19 353:14
Ohio 34:9
oil 14:15 58:6,8,16 66:1
 71:14,16 158:7,9,10
 159:18 161:16 165:1
 165:3 166:11,18
 167:13,14 168:10
 232:4
okay 9:7 18:18 38:5
 41:19 94:18 111:2
 112:9 130:9 135:18
 137:20 141:1 144:14
 146:5 148:21 149:2
 151:8 157:1 168:20
 200:19 218:14 222:17

222:18 225:3 227:22
 233:4 236:4,4 239:7
 239:20 260:14 267:5
 267:8 271:14 273:8
 275:15,16 295:12
 307:18 309:6 314:13
 328:19 329:11 330:8
 333:15 335:18 338:22
 339:10 342:20 343:12
 347:4 349:15 353:19
 355:4,6 357:21
Okeanos 322:11 323:3
 323:18
old 50:16 88:12 92:17
 113:13 127:17 133:14
 139:11 252:6 299:11
older 83:11 177:15
Olympics 69:16
OMAO 280:21 281:5
 292:12
OMC 231:21
on-water 69:19
onboard 85:20 217:1,2
once 44:4 46:15 86:15
 159:1,11 168:22
 175:22 220:3 225:9
 250:12 255:8 290:12
 300:18 304:9,13,21
 332:3,16
one-mile 102:20
one-minute 92:2
one-pound 231:6
one-way 89:13
ones 5:9 80:19 114:14
 195:10 245:3 253:6
ongoing 40:4 154:14
 289:14 298:11 299:6
 299:8
online 8:5 18:15 36:8
 41:12 48:18 130:2,6
 220:19
open 9:5 65:2 129:21
 130:8 181:18 222:19
 288:8 315:11
Opening 4:2
operate 79:11 93:16
 137:18 142:10 249:10
 283:10 319:20 320:15
operated 70:11,16
 128:10 282:11
operating 88:7 89:21
 93:11 139:10 282:22
 299:15 302:20,21
 319:15,20 320:12
operation 48:22 70:22
 85:4 167:1 289:11
 318:20,21 319:14
 320:5,7 332:14

operational 2:6,16
 12:13 16:8 37:11 55:4
 59:8 90:14 91:2 151:3
 154:16 180:7 226:18
 251:15 256:5 258:15
 264:18 281:2 289:9
 289:12 290:10 331:18
operationalizing 20:6
operationally 221:15
operations 14:19 55:14
 75:16 85:7 86:11
 118:9 121:16 129:11
 131:14 155:14 167:6
 181:19 191:15 192:2
 217:19 264:11 290:20
 290:22
operators 131:15
 138:18
opinion 141:20
opportunities 16:12
 49:16 61:12,14 70:10
 71:2 153:4 219:12
 226:1 255:16 268:9
 270:8
opportunity 23:1,12
 51:9 52:18 60:2 61:16
 62:10 67:22 72:8
 111:18 211:15 276:21
 288:21 297:4 316:9
 326:1 329:9 334:1
opposed 268:15
optimal 249:13
optimize 33:13 204:5
optimized 120:13
 266:20
option 343:17
options 324:12
orangey 177:10
order 21:3 30:1,18
 83:12 103:4 108:19
 110:15 327:6 333:10
ordinarily 27:16
Oregon 33:19 34:3
 312:17
organization 41:14
 66:2 73:17 95:8
 253:21 277:18 286:14
organizations 298:19
 303:1 307:21 311:17
organize 159:21 160:1
origin 55:8
original 176:15 187:7
originally 123:20
 140:10 161:13
Orleans 14:2 15:7
 17:16 37:5 242:4
 289:18
Oscar 282:15

OSPR 73:18 157:12
 229:15 231:14
ourself 298:20 312:5
Outdoors 334:7
outer 42:6 88:17
outlay 86:17
outload 127:5
outlook 257:22
output 176:10 185:13
 186:2,7 204:9 208:6
 209:17 213:4,8,8
 220:10 287:11
outputs 172:8
outrank 358:14
outranks 17:22
outreach 261:18 305:21
outs 309:14
outside 32:9 57:18
 76:20 123:1 162:14
 246:8 248:4
outstanding 153:1
 297:7 357:8
overall 57:12 166:2,10
overarching 85:3
overhead 203:18
overlap 321:22 322:2,9
 322:18,18 323:2,6,8
overlay 178:18 246:4
 247:15 331:14 332:1
 333:1
overlying 244:17
overlays 333:11
overnight 343:7
overtax 86:20
overtaxed 86:21
overview 46:20 179:19
overwrite 224:16
owners 98:14 101:10
 101:11 165:17
Oxnard 3:13 155:20
 181:2,12
oysters 97:20
Ozarks 311:5
Ozkan-Haller 33:17,18
 228:5,8 232:15 233:5

P

P-R-O-C-E-E-D-I-N-G-S
 5:1
p.m 153:21 240:5,6
 358:22
Pacific 69:9 108:14
 116:2 153:12 176:2
 240:3 289:12 296:6
 300:7 308:9 315:20
 316:1 342:19 346:9
 357:18 358:1,1
packed 16:16

page 21:7 204:11 272:1
pages 262:13 266:17
 266:17 302:3
Paige 1:15 30:14,20
 31:3 136:13 144:17
 146:10
painted 169:19
Palos 121:19
pandemic 73:9
panel 1:4,11 4:3 5:10
 5:13 6:14 8:11 10:1
 13:5 23:2 33:3 35:7
 40:18 41:9 44:6,7,22
 45:8 46:5,8,13 47:7
 48:3 49:15 50:21 51:4
 64:17 67:7 71:22 73:4
 79:2 109:2 136:12
 141:3,7 151:10,20
 152:6,16,22 153:11
 154:6,11,11 200:21
 222:19 227:22 233:9
 239:13,15,22 240:12
 240:17 255:6,10,15
 276:20 325:6,18
 328:3,7 342:22
 356:13
panelist 53:1 94:19
panelists 51:5 130:3
 136:5 150:19 238:6
 257:16 324:16
panels 8:7 44:20 297:7
 339:21 357:8
paper 106:10 111:9
 139:13,20 140:9,20
 196:18 287:1,14
 296:11,13
papers 46:17 47:11
paragraph 330:16
parallel 188:5
parameters 162:9
parking 80:8
parks 190:11
part 10:9 20:12,17
 28:18 42:6 46:1 65:15
 77:21 88:7 108:22
 124:15 139:21 140:17
 155:16 173:6 181:5,8
 183:3,17 184:19
 186:13 248:20 289:14
 290:15 293:13 338:5
 340:22 354:20
PARTICIPANT 222:20
 295:7
participants 28:6
participate 19:5 66:18
 72:17 256:18
participated 13:19 39:1
 58:1

participating 26:2 27:9
40:21 43:11
particular 145:17
150:10 193:7 196:9
207:2 235:14 245:3
245:10,11 246:6,17
287:20 322:5
particularly 8:4 41:7
45:10 94:2,14 199:19
276:13 317:4
particulars 235:9
partner 25:5 49:8,16
65:19 73:4,13 76:10
93:18 103:17 190:21
193:20 260:9 340:12
347:3
partnered 25:6
partners 8:5 16:10
49:21 50:2 67:14 69:9
69:21 71:4,9 72:20
73:3,7 74:19 77:17
79:10 81:8 91:5 93:18
94:1 111:13 112:22
128:9,16 159:22
165:10 182:4,6,22
190:10 192:20 217:21
256:14 270:17 271:12
284:7 286:10 291:3,6
292:2 293:17 294:17
307:2 310:16
partners' 130:18
partnership 14:11 54:6
75:8 77:17 155:3
157:7,10 232:18
260:8,11 264:10
268:4 273:14 274:22
275:11 302:22 311:13
351:21,21
partnerships 13:9,17
13:17 15:1 71:10
72:12 75:5,7 96:18
291:2
parts 189:14 203:14
270:7 271:19
pass 159:13 169:9
180:18 195:17
passage 161:9,19
passed 65:17
passenger 66:11 81:1
passengers 97:3
passionate 49:10
232:10
passive 236:10,15
238:4,18
pasted 162:12
pastures 187:9
path 192:6 195:2
294:20

pathway 332:4
Pathways 23:8 312:19
patience 314:9
patrol 64:11 73:15
75:21
patrolling 68:9
pattern 351:17
patterns 192:12 351:16
paucity 337:17
pause 290:12 343:13
pay 134:12,21 230:12
260:19 321:8 340:18
341:2
paying 230:11 231:1,2
231:17
Peace 1:19 34:6,8,10
261:22
Pearl 19:22 51:12,14
274:20,22 275:4
Pedro 8:2,9 10:3 24:12
25:11,14 29:18 35:6
63:12 64:10 67:22
98:12 194:13 198:19
199:17 233:1
Pedro/Long 181:15
pending 309:5
Penn 31:11
people 80:6 81:18
84:11 124:14 125:18
126:7 140:6,15
142:13 154:11,18
155:6 160:2 171:21
180:14 183:5 184:3
247:5 248:8 265:1
266:3 315:3 317:6
320:5,8,14,18,19,21
321:7 328:6 344:12
345:9 355:15
percent 25:21 81:12,13
81:13,14 95:22 99:3
105:3 152:3 158:6
214:18 249:7,15
283:21,22 306:11
318:14 322:8,18
323:2,6 334:22,22
338:1 345:20
perfect 197:4 216:19,20
227:5
perfectly 139:8 270:1
296:1
perform 230:14
performance 149:19
348:5,6
performing 56:7
period 4:7 108:18
160:11 162:11 183:3
193:7 194:11,16
195:22 197:10 199:1

199:9 200:5 210:20
229:18,20 230:2
234:12 325:17 330:22
periodically 127:7
periodicity 139:2
223:14
periods 7:16 195:17
203:3 230:3
permanent 330:21
permission 29:5,6
114:16 320:10
permit 162:5
permits 28:14 100:22
147:14
permitting 75:20
persistent 191:20
person 24:14 30:3 33:5
67:3,4 78:1 113:7
142:10 157:1 174:13
190:7 244:9 349:9
personal 27:11 96:3
personally 52:19 258:8
324:1
personnel 64:10,20
167:3 296:2
perspective 33:12 45:2
49:16 53:3 80:10 85:2
109:1 129:20 143:8
150:22 153:1 297:8
perspectives 13:7
petroleum 98:17 100:5
100:10
PG&E 191:1
phase 15:7,16,17 21:11
58:13 59:5 60:17,19
147:22
phase-out 139:20 140:3
phased 291:14
Phelps 2:19 40:6
philosophical 314:15
phone 7:14 266:20,20
photo 29:7
photos 348:18
physical 5:19 179:10
236:10 260:6 264:3
273:10 299:12
physics 195:12
pick 279:1
Pickett 318:17
picture 69:1 70:10
81:21 82:2 83:5 88:19
92:17,21 93:3 94:7
108:3 113:2 117:10
120:22 124:11 132:2
160:7 242:3 244:11
245:18 288:14,19
320:10,13 348:20
350:13

pictured 87:7
pictures 146:20 166:14
278:13 294:3 310:1
piece 111:11 128:19
145:17 156:3 176:8
231:4 237:17 309:1
313:13 336:16
pieces 225:11 228:16
311:10 333:9
pier 51:15,18 56:4,6,8
57:2,4,5 61:19,21
62:12
pilot 3:8,8 43:6 50:7,7,8
79:4,5,9,17,18 113:20
113:22 117:9,11,19
118:21 119:11,15,17
120:6 142:20 143:13
145:3,4 155:8 161:22
162:21 163:2,14,16
163:20 164:5,10
168:9 178:21 195:3
241:7 244:16 245:22
246:10 267:22 268:14
312:2 329:13 331:1
333:13
pilot's 92:22 93:1
pilotage 142:18,21
piloting 80:1 92:18 93:9
117:14 163:21 168:8
pilots 3:12 58:14 59:3
79:19 80:7 84:18
94:15 117:15 132:16
148:5 158:21 160:18
162:8 164:1 177:18
178:20 186:11 190:22
207:9 211:9 216:9
217:2 231:7 242:4,4
244:13,17 246:1
263:12 268:12 287:9
287:10,22 329:3
331:12 332:22 333:13
341:18
Pinole 101:9
pins 180:4
pipe 118:6
pipeline 225:7
pitch 58:3,7 160:11,15
161:3,7,8,19 162:4,17
165:14,18,19 206:21
207:11 213:10,19
214:1,11 217:6
pitches 161:7
pivoted 356:20
place 9:16 14:10 24:8
61:16 63:14 74:12
101:16 124:8 159:3
169:20 193:15 234:6
242:20 252:2,6

262:22 264:15 266:3
 267:3 294:4 305:19
 332:16 333:8,9
placed 149:20
places 99:16 104:5
 106:19 110:4,5 143:5
 145:21 174:3 225:20
 269:1 305:6 306:3
placing 150:7
plainer 197:18
plan 12:22 13:1 54:16
 66:1 90:21 243:16
 245:13 247:8 252:5
 257:7 277:7,12,13,16
 277:21 278:6,16
 280:6,7 290:3 293:4
 299:2 301:19 307:22
 312:9 313:10,10,14
 331:1 341:21 352:19
plane 125:11,15,16,18
 125:21 126:1,2,6,8,15
planes 126:20,22
planned 20:10 44:14
 203:21 210:21,22,22
 281:16 309:9 342:21
planning 21:5 51:15
 52:10 75:20 109:22
 123:21 172:21 188:4
 191:13 207:7,13
 211:9 276:10 280:17
 319:6,8,16 320:2
 330:19 341:19 348:22
plans 8:10 15:19 63:2
 253:6 263:16 334:7
 334:10 336:2,3
 338:10
plant 191:1
platform 268:7 316:11
platforms 193:21
 242:21 268:8
Platts 128:12
play 24:9 152:19,20
 265:9 350:3 354:6
 358:17,18
player 155:21
players 134:9,20
please 7:10 8:22 9:2
 24:4,9 27:13,17 28:10
 32:19 62:15 88:6,17
 89:20 92:6,15,20
 93:13,20 113:1,16
 114:3 115:5,21 117:5
 117:20 118:19 119:5
 119:19 120:4,20
 121:6 122:1 123:10
 123:15 124:1,18
 125:8 126:18 127:4
 127:18 130:2 132:14

135:15 141:5 144:19
 157:19 161:20 163:5
 165:6 166:8 172:3
 189:16 191:6,6 192:2
 192:9,16 194:8 195:6
 195:15 196:11,20
 197:8 199:4 200:7
 202:2,14 204:22
 207:17 208:17 209:21
 212:3 215:22 216:5
 241:2,21 262:5 264:5
 265:11 267:4 269:8
 270:13 271:14 273:7
 277:4 280:4 283:11
 286:16 289:7 290:2
 293:9 295:1 296:21
 315:13 316:3,13,18
 317:10 318:4,13
 319:3,17 320:15
 321:3,18 322:9,20
 325:19 328:14 335:4
 342:15
pleased 279:3 283:5
pleasure 23:14 36:22
 53:8 239:18 256:17
plenty 358:4
plot 194:19 269:22
 270:4 301:19
plots 215:11 350:18
plug 85:18 86:17 102:7
 107:8 115:19
plug-in 96:20 97:11
plugging 86:9 116:1
plus 122:15 124:22
 230:10
pocket 105:19 139:13
point 55:8 56:16 88:21
 113:3,8 115:7 117:9
 145:7,9 170:4 185:22
 202:21 204:1 206:20
 208:6 223:4,9 226:16
 227:1 236:6 244:5,5
 246:17 249:20 250:8
 253:18 259:18 267:19
 281:22 290:18 291:4
 296:5 323:21 343:15
 352:8 354:2,11
pointed 220:16
pointer 56:16
points 127:22 170:8
 198:10 209:17 227:8
poking 140:5
police 65:13 74:2
 112:16 114:1,2 121:9
 122:1,12 123:6 126:4
 126:14 127:10 128:2
 128:9
police's 126:21

policy 56:10 71:12
pollutants 59:17
pollution 66:22 71:14
 85:13 100:22
polygon 252:1
polygons 251:21
pop 326:18
pop-up 267:6
popped 32:14
popular 195:3
populate 347:7
port 3:8,9 13:8 14:1,3
 17:6,16 20:18 25:8
 42:14 50:4,7 51:11
 52:11 53:7,15,19 54:1
 54:3,7,8 55:2,10
 56:10 57:22 58:13
 59:2,3,19 60:4 61:6
 62:2,6 63:2,14 65:8
 65:10 66:9 67:14,17
 67:19 68:2,4,8,8 69:8
 70:7,14,18 71:4 73:11
 74:3,5,7,7,8,13 76:9
 77:17 79:4,8,9,22
 80:11,13,17,18,20
 81:7 82:9 89:1 90:6
 91:19 93:5 95:8,13,18
 98:11,18 99:5,9,10,14
 99:14,18,21 101:14
 102:3 103:6,14,19,22
 111:17,21 112:6,15
 113:14,14 114:1,2
 120:15,21 121:9,16
 121:16 122:1,12
 123:6 126:4,14,20
 127:6,10 128:1,9,20
 129:5,19 131:10
 132:1,6 133:6,6,11,15
 133:16,19,21 134:2,4
 134:10,19,22 135:4
 137:2 144:22 145:20
 146:3 148:4,5,10
 157:13 158:5,7,8
 159:19 160:4,10,13
 160:18,20 163:4,17
 165:20 166:2,3,20
 167:8,9 168:3 170:18
 171:10 174:19,20
 175:10 177:5,9,11
 182:6 185:19 186:13
 189:20 190:21 191:13
 192:17 193:2 196:5
 196:14 200:5 203:8,9
 205:20 206:11 223:22
 226:4,5 229:14
 231:14 242:11 244:6
 249:12,12 253:13
 260:13 262:11 266:4

274:5,9 281:13
 330:20 332:5,6
 339:13 340:15 342:6
port's 54:14,16 56:10
 57:16 58:17,19 60:18
 60:22 61:22 85:12
portable 117:13 119:17
 178:21 244:15 245:22
 246:10 333:12
portal 194:1 199:14
portfolio 4:6 19:8 26:20
 27:2 28:2 52:14
 255:19,22 342:6
portions 55:18 56:5
 60:22
portrayed 225:7
ports 13:3,5 16:18
 19:22 20:3,5 25:20
 43:10 45:12 46:2
 51:10 65:1 74:4 75:17
 81:19 92:8 94:3,13
 96:8,13,20 98:9,12
 100:3 102:7 103:12
 103:16 112:18 113:12
 118:1 119:2 133:4
 134:11,13,16,22
 136:3,18 150:9
 158:11 175:7 179:10
 179:15,19 190:17
 194:2 202:5,13,17
 204:4,22 205:6,7,15
 208:1 220:2 221:3,5,6
 221:8,9 224:19 252:9
 260:4,6 273:8,9,21
 274:19,22 275:10,15
 327:12 333:21 340:1
 340:8,9,15,17,18,20
 358:8
ports' 134:13 141:9
Portsmouth 319:10
position 74:17 144:4
 240:19
positioning 2:11 4:6
 5:20 18:12 19:8,13
 26:19 28:2 49:18 51:8
 52:14 234:9 255:18
 299:20 325:22
positive 74:21 140:7
 284:18
possibility 341:15,16
possible 8:3 11:4 26:8
 47:5 182:11,12 218:4
 263:7 287:5,6 332:1
possibly 205:10 207:10
 219:21
post-9/11 65:15
post-dredge 174:5

- postdredge** 148:8
posted 29:3 326:8
 349:18
potential 59:7 62:1,10
 189:1 221:2 223:17
 323:6
potentially 105:12
 248:13
Potter 285:10
pounds 97:19
power 85:17,20,20 86:2
 87:11 88:3
PowerPoint 191:9
PPU 121:3 141:22
 144:6 244:16 247:1
 250:10 331:12
PPUs 143:10,19 145:4
 145:6,16 331:3
practice 91:7 202:1
 311:20 312:4
practices 89:22 90:21
 92:4
pre-World 98:5
precession 352:13
precise 144:22 146:2
 175:14 201:22 224:16
precision 3:15 4:5
 16:16 40:16 45:17
 141:13,18 142:4,14
 143:9,18 144:1,4,5
 145:5 163:11 173:7,8
 193:13 233:17 240:10
 240:22 241:3,6 243:1
 339:20
preconstruction 60:17
predict 11:17 161:8,18
 164:13 165:19 183:7
 193:1 195:12 222:2
predicted 179:13,17
 208:9,19 209:1
 210:14
prediction 156:1 183:9
 183:14 184:20 185:9
 185:14 187:13,19
 210:17 220:15,17
predictions 12:7
 208:14 209:8 213:4
 263:8
predictive 12:1,13
predredge 148:8
prefer 356:22
preliminary 351:19
preparations 12:15
prepared 78:10 164:19
 200:18 255:4 290:5
 343:8
presence 74:9,12
present 1:13 2:8,14
 53:8 154:10 163:6
 197:2
presentation 53:12
 62:17 101:15 154:13
 157:10 159:20 170:6
 200:2,14 204:2,17
 210:5 211:13 225:9
 232:19 238:22 240:8
 262:5 276:19 331:15
 332:12 336:5,17
presentations 17:5
 136:9,17 151:20
 205:3 228:9 238:2
 239:19 262:4
presented 289:15
 334:18
presenters 9:2 326:2
Preservation 32:7
 149:12
president 3:12 31:10
 34:10 60:14
presiding 1:12
press 196:20
pressed 324:7
pretty 70:21 108:2,3
 134:3 137:17 169:15
 171:8,14 181:8
 202:15 226:9 253:8
 282:18 309:22 334:22
 344:6,15 350:17
 351:2
Prevention 73:18
previous 67:13 74:5
 93:7 111:19 211:13
 334:4
previously 41:6 278:4
price 276:18
primarily 67:20 116:3
 186:17
primary 72:21 80:21
prime 220:11
principal 189:12
prior 24:5 155:9
priorities 17:1 190:15
prioritization 225:16
prioritize 329:5
priority 46:18
privacy 7:4 29:2
private 13:10 16:9 26:6
 71:8 107:22 286:10
 291:3 293:8 301:10
 307:11
privileged 63:15
Prix 69:2 123:12
prized 122:8,11
probably 29:20 30:6
 35:3 65:8 69:5,14
 71:21 102:11 104:5
 109:9,15 131:21
 132:5 135:6 136:12
 145:9,15 147:14
 149:8 176:3 223:8
 235:8 265:7 292:17
 344:1,4 350:18
problem 19:12 84:21
 87:21 91:14,14
 100:20 124:1 134:5
 160:8,11 161:1
 228:19 246:3 314:10
 316:20
problems 86:5,5,18
 91:2 162:19 194:8
 329:17
procedures 163:21
proceed 355:9
process 51:15 104:22
 107:6 145:2 172:1
 184:17 222:11 225:5
 228:1 313:20 332:8
 345:2 351:2 356:4
processes 75:20 87:18
 226:6 293:11
processing 87:13 351:5
 351:14
produce 185:13 332:1
 332:19 354:22
produced 22:8 186:6
producing 186:2
product 55:9 57:10
 100:6 163:9 195:3
 218:4 250:2 265:17
 288:7 293:12 295:2
 306:18 331:11,11,16
 331:19 332:9,19
product-based 277:18
production 97:18 191:4
 306:14
productive 8:20 31:18
 34:4 109:17
products 2:6,17 5:17
 5:21 37:12 43:10 44:2
 45:3,19 70:9 75:9,13
 75:19 76:1 98:16
 100:10 140:21 142:14
 143:9 153:4 169:7
 173:1,7 175:14
 176:11 177:16 199:20
 243:15 256:6 257:11
 258:15 266:14 277:19
 278:1 286:18 287:20
 296:19 297:8 303:21
 310:20 325:22 329:15
 357:10
professional 42:15,16
professionals 79:19
program 3:7,7 23:8
 35:12 39:19 40:16
 45:18,22 53:6 85:16
 86:19 94:4 96:22
 103:16 109:20 151:3
 165:18 181:1 182:3
 184:14 189:10,11,22
 202:12 204:10 220:18
 221:6 223:18 240:10
 240:18,22 243:2,12
 256:12 259:6,7 260:5
 260:8 262:18 268:22
 273:8,11,14 292:11
 312:2 318:17 322:13
programming 292:5
programs 5:20 19:18
 49:18 64:9 85:13
 95:18 96:16 256:20
 257:21 259:8
progress 19:7 87:6
 114:7 262:16 280:22
 283:15 294:20 296:7
project 21:13 54:14
 60:12,21 61:5,7,12,19
 77:11 95:10 112:16
 114:6 147:16 148:3
 154:14,21 155:11
 156:18 157:8,16,20
 159:4,21 160:2,4,16
 161:10,21 162:7
 163:21 165:7 168:15
 168:18 169:6,12
 170:2,16 174:18
 176:3,8 185:20 186:2
 186:5,8,17 187:15
 188:10,13 201:2
 217:15 219:15,18
 280:13 281:14 331:3
 349:20
projected 51:22 210:14
projections 183:18
projects 70:8 77:4
 95:15 280:17 309:8
prolonged 330:22
prominent 289:2
promise 227:3,18
promised 289:3
promises 226:21
promote 47:3 54:11
promoting 15:1
pronunciation 29:17
 37:6
proper 106:6 121:15
 127:1 128:4 135:3
properly 111:7
property 75:10 181:22
 182:7 266:11
propose 38:8 48:6
 342:20 343:1,6

proposed 59:6 62:12
protect 110:10,15
protected 105:3 159:11
 167:17
protection 72:22
 181:21 182:7
PROTIDE 58:1 163:8
 164:2,5,13 186:3,4,19
 188:10,15 201:6,6
 202:10 203:13,16
 205:1,2 206:14 207:4
 208:22 211:3 213:8,8
 214:19
Protocol 285:19
proud 297:9 355:17
 356:9
prove 201:17 204:19,21
proven 212:4
provide 15:11 19:6
 26:20 27:19 39:18
 44:9 52:15 57:6 91:6
 107:3,6 136:5 148:13
 155:12 175:14 184:11
 184:20 185:6 187:2
 191:14 192:4 193:22
 194:2 196:12 199:13
 199:19 222:2 226:22
 257:11 258:13 259:1
 264:2 315:1 321:9
 328:1 329:9 330:9
provided 7:14 28:7 29:4
 67:18 75:13 77:11
 93:17 95:17 103:8
 131:17 177:5 194:18
 229:8 321:6,20
 322:17
providers 332:17
provides 61:21 62:1
 75:10 91:1 96:4 156:7
 164:5 242:13
providing 40:4 44:17
 169:8 186:10 246:12
 290:20
proximity 241:9
PST 1:12
public 1:6 4:7 7:9,16
 11:19 21:22 24:19
 26:6 27:9 28:5,9,13
 28:19,22 29:10 47:8
 47:13 74:15 94:11
 107:6 135:13,14,16
 166:10 172:10,15
 185:19 201:12 257:2
 265:8 270:2 285:21
 291:2 324:20 325:3
 325:13,16,18 326:9
 342:8,12 357:4
public-private 14:22

232:17 233:6 260:8
publicly 172:20
published 196:18 257:7
Puget 108:7
pull 33:6 37:21
pulled 122:4
pulling 86:2 228:14
 346:17,20
pulls 87:17
pump 166:18
punch 198:10
pure 346:11
purple 114:15,18
purpose 30:3 181:20
 304:16
purposes 172:21
 259:19
pursuing 105:4
push 239:3
pushing 83:14
put 28:13 94:13 119:11
 122:18 123:19 124:7
 139:2 145:6,16
 159:16 217:1,3
 218:10,12 228:1
 231:15 243:4 249:11
 252:17 267:20 269:1
 272:2,3,4,10 274:6
 275:13 325:18 328:15
 339:13 342:2
puts 80:10
putting 130:6 243:7
 274:13 285:21 298:2
 306:4
puzzle 156:4 237:17

Q

Qassim 1:16 30:18 31:5
 31:9,19 41:7,9 141:5
QR 278:9
qualified 142:17
qualify 79:3
quality 5:16 22:19,20
 44:5 62:5 175:2
 177:15 194:4 224:11
 271:6 318:4,13
 321:21 322:2,19
 323:7 337:22 353:21
 354:1,5,22
quantify 248:16
quantitative 321:15
quarter 300:8
Queens 57:18 58:4
question 7:1 91:22
 130:2 132:9 135:14
 135:19 136:7 139:22
 141:10 142:8,12
 143:22 144:11 147:7

147:20 148:17 149:3
 150:8,15 171:3 223:2
 229:4,16 233:9 238:3
 238:5 325:19 327:14
 328:1 329:12,13,16
 329:21 330:4,5,10
 334:13 335:19 337:14
 339:4 340:7 344:16
 344:20 345:4,14,20
 346:2 347:16 348:1
 349:3 350:22 353:14
 353:17 355:22
questions 7:8,9,15 16:4
 27:19 28:11 62:18,22
 94:4 129:13,22 130:8
 130:10 132:17 135:12
 136:11 144:16 151:21
 153:5 180:17 221:1
 222:19 227:22 228:3
 235:19 254:17,20
 255:6 324:20 326:2,4
 326:15 328:4 330:13
 334:6 338:18 341:11
 344:3,9 348:3,6
queuing 112:17
quick 30:17 41:14
 47:20 135:8 144:15
 153:8 238:22 298:12
 300:9 310:7 314:13
 325:1 326:14 332:8
 332:20 353:17
quicker 88:2
quickly 92:16 112:6
 113:3 132:3 138:3
 175:13 194:8 218:13
 253:8 295:4 328:17
 339:19
quiet 233:10,13
Quintal 1:19 43:15,16
quite 70:20 73:7,19
 227:9 318:5 336:5
quote 230:12
quote/unquote 197:19

R

R&D 268:22 349:20
 352:20
Rabena 329:12,21
race 69:4 124:16
racecourse 124:8
racers 124:18
races 123:21 124:21
Rachael 2:10 3:2 18:6
 18:10 50:20 78:22
 79:1 110:20 132:22
 135:3 141:2 255:8
 258:3 282:19 297:22
 298:13 312:20 325:10

Rachael's 18:15
Rachel 2:17 23:16
 37:19,20
racing 124:20
radar 20:15 107:9 108:1
 126:9,13
radial 194:19
radio 318:9
radius 114:12
rain 11:18 12:4 268:5
Rainier 22:3 115:1
 171:9 176:15 279:7
 282:21 283:3,8
raise 343:21
raised 308:19
raises 96:14
raising 96:14 130:5
 337:17 338:19
ran 111:9
range 261:2 288:1
 289:6,22
ranging 21:18
rank 70:17
rant 278:4
rapid 352:17
rapidly 229:1
rarity 87:5
raster 328:12 329:1
rate 168:3 321:8 322:17
 352:17
RCS-1 219:19
RDML 2:12 6:10 7:20
 23:16 26:10 38:7
 39:15 41:20 42:11
 43:1,13 44:3 48:4,16
 110:20 152:21 222:22
 223:4,7 224:18 225:3
 226:13 227:15 238:8
 276:11 295:10,12
 325:9 326:22 328:20
 330:3 331:7 333:22
 335:5,11,17 337:12
 339:8 342:14,20
 343:22 344:12,19
 345:14 356:18 357:20
reach 152:3 191:10
 293:8
reaches 87:15
reaching 256:15
reactivate 8:9
read 5:15 28:12 50:14
 121:13 135:15 278:13
 325:14 326:3
readable 243:8
readiness 75:18
reading 212:16
readings 196:22 200:10
 211:16,18

ready 9:19 36:14 99:20
129:12 141:22 188:5
200:15,16 231:12
254:9 283:10 300:1
real 13:9 23:13 102:7
135:8 138:3 143:3
144:15 151:4 169:18
170:1,1 179:10,14,16
201:19 218:13 228:13
234:12 238:22 256:17
260:7 265:1 270:13
270:14 273:10 301:15
310:7 318:19,22
336:13,13 349:13
350:9
real-time 14:6 92:9
191:14 198:9 270:18
real-world 13:14
reality 36:9
realize 82:19 84:12
88:12 224:19 339:1
realized 274:15 275:21
really 6:15 9:21 10:3
13:4 14:9,19 15:17,19
16:2 17:2 22:10 33:5
33:12 37:1,15 39:6
42:17 43:11 44:8 51:6
63:1 65:21 67:8 68:4
72:3,3 73:8 74:10,11
76:13 77:7,22 80:14
80:16 88:21 96:13
97:18 108:12 110:3
129:16,19 130:17
131:11 134:15 135:2
135:20 136:10 138:11
138:12 141:10 145:15
149:5,9 151:11,19
152:6 154:2,14,22
155:12 156:1,14,19
182:3,5,10 183:20
186:8,8,11 187:7,17
188:1,16,21 218:16
218:21 220:20 225:5
227:7 228:12 230:22
231:20 232:3,10,16
237:7 238:10 241:7
250:21 257:14 260:19
261:3 263:22 264:17
265:1,17 269:9,21
270:3,9 271:12
273:17 277:15 278:5
289:20,22 297:6
298:21 300:2 301:9
301:13 310:15 311:16
312:15 313:1,4,7,13
316:1,10,16 319:13
321:22 324:14 325:3
326:15 327:9 328:5,7

330:13,16 331:18
336:18,19 337:5,6
339:13 341:15 342:3
347:19 351:13,15,16
351:18 352:5,9 354:2
354:6 355:17 357:8
reanalyzed 264:1
reappointed 41:8
Rear 6:5 7:18
rearranged 191:8
reason 18:18 83:6
161:11 187:11 199:2
209:9 256:21 299:9
303:16 313:2 346:10
reasonable 163:17
reasons 174:17 269:9
Rebecca 1:19 43:14,16
rebuild 20:8
rebuilt 267:18
rec 140:11,18
recalculating 261:17
recall 223:10 282:10
283:2 288:11 296:9
recap 168:14 255:20
358:3
recapitalization 267:13
recapitalize 231:12
receive 41:4 76:12
172:18 216:6 331:2
received 22:3 28:16
291:9 326:4
receiving 294:18
recency 337:22
recipients 15:9
recognize 39:16
recognizing 26:13
recommend 235:4,17
235:22 330:6
recommendation
116:10 223:16
recommendations
46:19 47:10 106:9
recommended 55:17
recompete 308:18
recon 307:8
reconvene 153:9 240:2
reconvenes 153:10
reconvening 356:11
357:16
record 28:13,19 48:14
60:7 129:9 153:20
191:19 240:5 326:9
358:22
recorded 6:22 7:2 29:2
recording 24:4 182:4
327:10
records 231:8
recover 127:1 317:4

recovery 317:1
recreation 98:22
recreational 30:22 64:8
68:14 97:13 105:10
105:16 106:12,18
146:14,16 334:9
335:3,20 336:19
red 122:9 162:15 177:1
179:21 196:2 208:5
213:9,11 245:1 253:3
redefining 234:7,10
Redefinition 21:12
redid 171:11
reduce 53:16 55:11
59:11,22 85:13
165:22 166:2 203:7
204:6 237:21
reduced 59:8,9 167:21
219:6
reduces 59:16 101:9
164:11 167:5
reducing 165:13 166:10
167:3,13 168:17
288:15
reduction 14:4 15:5
25:1
redundancy 11:2
redundant 274:17
Redwood 98:19
reference 21:20 24:6
39:8 42:18 51:22
94:11 233:21 237:10
238:12,16 239:6
258:19 298:16 299:15
300:16 302:5,15,17
302:20,21 304:5,15
304:20 305:12,16
306:8 307:6 353:7
referenced 133:13
308:2
references 152:12
refers 329:17
refine 59:5
refined 21:7
refinement 148:20
refineries 100:11,17
158:12
reflect 215:18 342:22
reflection 198:6 215:17
reflections 343:8
reflights 303:12
refly 306:20
refrain 7:1
refresh 188:15 266:22
refrigerator 127:13
refueled 320:1
refuge 107:17,18
regard 147:7

regarding 23:3 63:1
106:9 121:18 136:2
223:4
regards 55:14 132:21
regattas 68:14
region 11:12 13:19 24:3
45:4,11 66:2 153:3
197:19 208:8 210:8
218:1,2 227:14 234:1
234:13 235:10 260:11
272:22 294:22 308:5
340:19 341:4
regional 46:13 49:15
72:13 95:8 187:13,19
190:12 220:17,19
235:4,6,14 261:21
285:3,7,11,15
regions 193:5 265:4
266:1 306:21 309:18
341:3
register 327:17
registered 97:15
regrets 38:15
regrettably 24:7
regular 27:18 158:11
245:4 291:17 296:8
296:14,15 330:21
regularly 26:18 271:9
regulation 76:19
regulations 205:15
regulatory 100:19
rehabilitation 25:9
reiterate 239:22
relate 329:14 333:17
related 11:13 109:21
150:2 151:16 191:13
262:2 301:22 348:3
349:7
relates 141:10 149:16
342:3
relating 330:17
relationship 54:4
relationships 90:22
183:4 332:17
relative 31:6 151:14,17
319:1 321:16 323:15
354:16
relatively 316:17,22
322:7
release 259:10 283:14
285:17 287:6 300:15
301:21 302:3 303:8
313:10
released 261:14 281:18
283:20 301:18
releases 193:16 308:4
releasing 333:4
relevant 9:11 210:14

315:18
reliability 55:15
reliable 144:7 195:10
 211:18 269:10 271:6
 288:15
relied 299:11
relies 86:19
rely 49:21 85:22 87:12
 108:12 155:17 191:17
 341:2
relying 140:16
remain 92:1 281:8
 286:22
remaining 344:5
remains 285:8 331:16
remarks 23:17 277:14
remember 5:12 27:13
 27:17 30:4 104:14
 230:17 284:3
remembering 223:13
remind 147:2 180:14
 280:5
reminder 8:22 27:7,8
 29:1 292:16
remnants 197:11
remote 319:15,19
 321:12 347:13
remotely 128:10
removal 54:9
remove 193:16
Renewable 191:3
renewed 308:17 337:8
reorient 124:7
REP 24:10
repair 283:7
repaired 108:16
repeat 224:14
replace 22:3 27:18
 241:19 282:20
replacement 287:14
 316:2
replacements 356:3
replaces 178:18
replicate 109:18
report 60:6,10 157:17
 283:15,19 286:7
 334:21 338:1
reported 125:13,14
 278:18
reporting 51:7 125:12
 126:9 279:4,12
reports 162:3 325:4
represent 27:14
representation 195:13
 228:11
representative 3:5
 24:10 38:11 81:17
representatives 50:8

represented 194:22
 256:1,4,6,8
representing 23:22
represents 34:11
 246:18 284:2
request 116:9 221:8
 268:19 339:16
requested 268:18
 284:20
requesting 263:13
requests 138:19 218:12
 221:5 226:2
require 71:3 103:5
 104:5
required 27:7 29:6
 46:22 62:6 90:14
 254:13 325:16
requirement 225:14,17
 226:14 292:7 332:15
 339:18
requirements 45:5
 54:22 153:2 222:11
 222:13 263:18 290:1
 294:16 339:17 357:9
 357:11
requires 22:19 86:6
 89:19
requiring 77:3
rescheming 344:17
rescue 25:9 66:14,20
 72:17,19 75:15 99:1
research 25:4,7 58:15
 59:4 70:10 99:1 192:1
 228:12 301:19 313:14
 347:6 352:1
reserve 64:5
reset 8:17
resilience 15:3 17:6
 25:4 26:15,18 32:13
 109:22 149:17 150:6
 150:11 259:18 286:19
 290:1 348:22
resiliency 13:3,8
resilient 13:5 46:2
 342:6 358:8
resolution 173:5 178:9
 178:22 183:12 185:15
 188:2 220:21 242:18
 243:21 246:5 249:4
 252:22 333:11
resource 7:6 332:13
 351:10
resources 7:6 15:12
 24:19 26:3 60:13
 64:20 109:6 203:9
 225:20 284:19 306:4
 311:16
respect 118:16

respectively 81:15
respond 194:7 216:11
 235:18 342:11
responders 125:17
responding 74:22
 76:14
response 14:15 22:7
 24:17 64:11 66:1,22
 71:16 73:18 279:12
 279:14 288:16 328:2
 338:9
responsibility 64:22
 75:12 176:18 187:22
responsible 65:5 67:15
 181:16 279:13
responsive 52:21
rest 23:2 231:17 297:12
 352:6 357:14
restarted 69:11
restoration 25:3 51:15
restore 150:7
restricted 84:9,10,13
 84:17 93:10 142:15
 143:17
restrictions 55:5
 205:16
result 82:21 99:15
 104:9 110:8 162:17
 162:18
resulting 101:16 207:11
results 58:7 59:10
 207:4
resume 282:17
resumed 48:14 153:20
 240:5
ret 2:2
retained 29:9
retire 278:21
retired 43:7
retiring 313:18
retreat 19:14 110:13
retrofit 86:6,8
return 283:8
returned 59:3
returning 282:7
reuse 56:14 60:3 61:11
 61:15 62:7,11
reveals 199:3
revenue 96:4
review 1:4,11 5:13 6:14
 10:1 23:2 199:13
 278:9 348:6
rewind 229:13
Rhode 43:17
rich 324:10
Richmond 98:19
 103:17
ride 242:4

riding 117:11
right 6:18 7:7 18:14,16
 34:1 41:21 49:5 51:17
 52:6,12,16 62:22 77:6
 78:13,19 87:4 93:1
 94:8 108:13 111:3
 113:5,11 114:21
 115:14 117:10 119:11
 120:5,9 121:1 122:13
 122:20 124:3,13
 128:12 129:14 137:15
 142:13 145:11 146:1
 146:8 148:21 150:4
 151:5 157:7 158:17
 163:13 164:19 169:20
 171:4 172:7,9 173:4
 173:12,22 175:16,18
 175:22 176:21 181:19
 188:12 189:20 190:5
 196:1,7 197:9,15,22
 198:3,5 199:15 204:7
 207:22 208:18,21
 211:2 213:7 214:2,4
 215:10,13 219:6,10
 220:6 226:11 235:13
 238:4,5,12 240:17
 241:13 242:3,7,8
 244:7,11,22 247:11
 248:2,21 249:12
 254:2 255:5,10 257:4
 264:7 267:3 270:20
 272:16 273:22 275:17
 277:4 278:2 292:5
 296:7 297:15,18,21
 298:6,9 301:5 303:17
 303:22 305:3 307:4
 307:19 310:3,10
 311:10,17 313:11
 314:5 322:10 339:2,7
 339:19 340:5 345:12
 346:17 347:13 348:12
 349:11 351:7,18
 357:21
rigorous 283:5
ring 118:5
rise 52:1 151:14,17
 348:22
rising 52:9
risk 14:4 91:20 131:18
 165:13 166:10 167:13
 168:9
river 17:17,19 20:12
 49:20,20 133:15
 134:4 190:22 228:20
 231:21 232:7,11
 242:5,10 254:21
 263:4,5,10 287:21
 288:4 311:6,7 347:8

riverine 310:15 311:5
rivers 11:14
road 253:15
roads 102:20
Robidoux 40:13
robin 2:16 40:7 342:21
 343:3 344:11 356:13
robot 122:13
robust 47:6
rock 119:14 124:3,6,12
Rockport 319:10
role 12:18 16:22 17:18
 65:6,21 71:15 103:20
 104:1 141:8,18 169:6
 235:16
roll 9:19 58:3 64:1
 67:12 68:17 77:15
 162:4 165:14,18,19
 206:21 207:11 213:11
 213:15,16,19 214:1
 214:11 217:6 264:7
rolled 78:7
rolling 173:10 303:21
rollout 262:7
rollouts 261:19
roofs 78:12
room 99:15 111:9 344:2
rooted 289:21
Rotterdam 156:12,13
 202:5,11 229:17,17
rough 99:20 316:22
 321:13
roughly 80:1 81:12
 82:14 153:13 157:22
 214:18 231:5
round 39:21 46:16
 256:16 342:21 343:3
 344:11 356:13
roundtable 348:1
route 205:5,6 248:19,21
 249:2,6,7,13 281:12
 281:13
routed 331:4
routine 182:17,20
 258:12
RSD's 336:17
rule 106:2
rulemaking 77:14
rules 177:14
run 10:20 70:22 85:4
 183:13 184:5,6,8
 192:15 195:7 196:16
 221:14 296:1 317:14
 317:16,18 318:6
 320:7,19,22
running 47:4 75:15
 86:12 188:6 231:21
 260:9 265:5 269:1

288:14 301:5
runs 134:4 164:12,20
rush 93:21
Ryan 3:13 50:5 63:6
 150:16 155:19 156:1
 169:9 180:19,22
 189:6 220:15

S

S- 179:1 248:17 254:4
 296:18 332:15 333:1
S-100 145:6,16 173:10
 243:5,16 246:13
 247:6 250:2 253:4
 254:13 293:19,20
 296:18
S-101 252:7,8
S-102 173:2,3,10 178:7
 178:18 243:21 244:17
 251:2 252:21 331:13
 332:1,9,19 333:1,20
S-102s 178:21
S-57 252:6
Sabena 330:6
Sacramento 98:19 99:6
 133:6,11,14 327:13
sacrifice 6:8
safe 58:22 72:4 75:11
 85:6 92:1 94:3 115:21
 129:10 131:21 147:19
 161:9,19 186:13
 202:21,21 204:14
 205:12,13 207:2,5
 215:8 286:19
safely 79:21 80:5 84:8
 85:7 207:17 242:14
 245:15,20 246:21
 273:18 317:3
safer 124:8 163:10
safety 24:19 25:18 44:1
 54:18 55:14 59:13,13
 64:9,14 66:21 67:16
 72:2,10 78:16 79:7,12
 85:6 90:20,20 91:3
 92:5 93:15 98:3 101:4
 114:17 118:16 155:13
 163:22 164:2,3
 165:13 167:3 168:16
 177:20 178:3 203:1
 204:5 205:15,16
 215:7 239:17 245:1,6
 246:8 247:2 270:22
 323:16
sail 69:2 84:4,5 89:9
 123:11
sailboat 123:21 335:21
Saildrone 321:7,20
 323:1,1,8 354:12

Saildrones 322:4
sailing 68:14 69:4
 106:1 336:9,21 337:1
 354:13
sake 309:13 311:3
 314:4
salinity 205:10
saltwater 19:11 151:16
Sam 40:14 278:18,22
 335:6,17 337:12
Samoa 283:4 309:17
San 8:2,9 10:3 24:12
 25:11,14 29:18 35:6
 35:10 63:12 64:10
 67:22 74:11 78:9
 95:12,12 98:2,11,11
 98:20 100:7,18
 101:16,22 103:13,16
 103:19 106:18 109:7
 132:16 133:4 137:14
 156:7 166:16 181:14
 181:15 190:9 194:13
 198:19 199:17 233:1
 329:8 339:6,12
 341:17
Sanctuary 105:1
sand 149:20 150:3
sank 128:5
Santa 97:10,12 181:13
satellite 113:4 268:17
satellites 236:11
Savannah 246:1 251:7
 263:10 296:20
save 249:14
saves 127:17
saving 249:7 320:17
savings 314:22
savvy 16:1
saw 113:2 116:6 125:14
 125:20,21 126:7
 210:5 211:13 219:11
 289:1
saying 22:12 29:18
 77:16 118:7 203:1
 218:22 238:14 271:3
 297:1 348:19 353:3
says 103:4 117:8
 118:13 122:3,20
 123:7 125:1,12,16
 358:17
scale 82:19 328:12
scales 130:20,21
 189:16 296:11,15
scaling 333:20 341:1
SCCOOS 35:13
scene 65:19
schedule 48:6 152:14
 153:9

scheduled 7:17 48:2,5
schedules 125:5 129:3
school 92:17 139:12
 305:10
Schwinden 2:19 40:8
science 14:19 26:15
 163:11 305:7
Sciences 34:3 289:18
scientific 350:20
scientist 31:10 351:9
scientists 202:8 350:1
 350:17
scope 22:15 68:20
Scott 2:20 40:7 132:20
 134:8
scratched 132:8
screen 7:7 28:13 240:1
 278:10 326:5,19
screenshot 211:7
 245:21
Scripps 35:11 156:6
 190:7 237:9 312:16
 339:22 340:7
script 17:12 37:19
scrolling 339:3
se 270:21
sea 51:22 52:9 66:16
 105:19 151:14,17
 159:6 160:13 166:18
 229:18 236:19 241:10
 250:19 261:5 262:9
 262:13,21 271:4
 282:15 283:4 294:6
 295:15 348:21 352:16
 353:21 354:1,4,11
seaborne 25:21
SEACORP 43:16
seafarers 73:10
SEAIq 244:16 245:22
Seal 177:1
seaman's 162:4
seamless 109:21
 266:15 295:14
seamlessly 193:19
Sean 1:12,14 3:2 9:5,6
 9:21 10:6,18 14:1
 17:7 18:20 29:14,15
 31:9 32:22 34:22 36:3
 37:10 38:7,15 39:15
 47:15 48:12,17 49:4
 50:22 79:2 95:1
 152:21 154:8 239:9
 239:20 240:14 254:17
 255:12 295:12 324:22
 325:9 343:11 356:18
 358:10
Sean's 7:21 10:2 40:2
seaport 53:20 275:11

search 66:13,20 72:16
72:19 75:15 98:22
Seascape 285:6
season 280:13,21
281:1 283:1 338:12
seated 223:9
Seattle 20:3 275:9,10
Seaward 20:18
seaweed 97:20
second 19:5 29:1 31:14
33:3 41:8 53:20 62:5
111:1 125:21 126:2
127:14 165:16 167:7
167:17 223:1 230:7
230:15 243:14 251:10
255:15 274:11 325:15
333:18 336:16 341:14
343:20 349:7 350:22
secondly 181:22
seconds 194:14,14,17
SECOORA 348:15
Secret 73:1
secretaries 6:17
section 330:15
sector 13:10 16:9 50:5
63:7,15 64:3,9 65:4,6
104:20 107:22 140:11
140:14 286:10 291:3
293:8
sectors 26:7
secure 25:6 75:11
security 65:12,16 67:16
71:18 72:21 73:1
98:22 134:14,18
191:17 264:8
sediment 61:3,12 62:6
108:21,21 109:1,5,11
109:20 110:2,7,14
111:20 134:6 149:15
149:20 150:5,13
sediments 109:12
110:1
see 9:21 32:21 34:20,21
36:1,13 37:18,20 38:5
39:10 43:3 49:7 51:2
55:19 69:1 70:21
77:22 78:14 83:3,4
84:15,18 87:4 88:21
90:3 92:1,19 93:4,5
101:12 102:10 106:15
107:4 114:14 115:13
117:22 119:10,12,13
120:1,4,5,6,7 121:3
122:3,8,19 123:17
124:2,10,13 125:12
125:15 126:10,19
128:12 130:11 132:13
136:13,15 143:15

145:10,15 147:3
151:6 152:2,14,19
153:17 155:2 156:19
158:17 162:15 163:13
166:14 168:4,6
175:18,20 176:7,21
178:12,13 179:15
180:8 182:4 189:1
192:10 193:8 197:14
197:22 199:15 207:4
208:4,13,18 210:19
210:20,22 211:17,19
212:1,12,13 213:7
214:19 215:16 217:7
228:2 231:15 233:21
234:22 239:9 241:13
243:18 244:3,19
245:1,10 246:2,19
247:17,22 248:10,20
250:4,20 253:4,6,13
254:1 255:14 258:9,9
280:1,16 285:8
287:13 289:20 294:2
295:9 296:7 305:5
306:2 307:15 308:8
309:10,17 310:13
311:4 312:14 315:4
315:14 316:9,15
317:14 320:6 326:19
340:21 343:13 345:9
350:20 355:22 356:2
358:12
seeing 13:2 14:1 32:20
33:5 68:2 72:9 76:4
76:22 78:17 88:4
142:8 147:1 205:3
217:13 351:16
seen 19:18 113:14,14
126:2 137:9 151:15
151:16 199:8 208:20
215:11 216:2 241:16
242:16 251:2 315:2
Segundo 113:22 118:2
118:11
select 306:20
selected 128:5 279:18
selection 40:5 313:20
self- 137:8
self-driving 137:3
Selga 118:7
send 171:21 265:7
sending 338:7
senior 38:11
sense 76:18 136:22
137:17 166:7 283:7
296:12
sensitive 126:10 136:1
172:19

sensitivity 122:14
sensor 20:15 217:2,3
231:5,12 270:20
271:10 273:19,19
274:12
sensors 14:8 22:18
134:22 135:4 180:1
221:10,13 260:10,11
274:2,14 327:12
sent 170:17 171:9
174:1
separate 318:7 344:21
separation 318:11
September 19:9 60:11
263:17 277:16 288:10
305:19 334:14
series 199:16
serve 27:10 63:14 79:2
222:14 334:8
serves 222:8
service 2:4,10,15,16,18
9:15 11:16,21 18:12
21:8 23:20 27:22
37:13 39:17 50:7
52:13 63:22 73:2 79:5
79:9,17,18 80:1 90:18
113:21,22 115:12
117:11,19 118:22
129:9 145:3 155:20
155:21 163:20 168:10
169:10 180:20 181:2
181:6 183:17 187:21
195:10 252:3 265:19
265:21 266:6,10,12
267:7 268:5 269:17
270:17 271:3,12
283:8 288:14 289:4
306:22 310:16 311:9
321:6,8 346:19,21
356:15
Service's 288:21
services 1:4,11 2:7,9
2:17 3:8 5:13,17,21
6:14 9:13 10:1 15:2
15:21 23:19,20 25:17
25:17 27:3 28:2 37:12
42:8 44:11 45:3,20
64:18 73:21 75:9
77:18 153:5 182:14
222:2 241:14 256:6
257:12 258:16 277:19
278:1 279:5 286:6,18
287:20 297:8 310:20
325:22 340:22 346:21
357:11
Services' 255:17
serving 291:16
session 4:2 33:4 46:12

152:17 153:8,9,15
288:10 342:7 358:6
358:16
sessions 29:2 154:1
set 8:6,7 17:1 30:4,10
38:2 51:12 134:10
176:8 194:5 228:9
244:22 247:1,2,3
250:17 254:8 302:6
358:2
sets 21:3 171:20 300:17
setting 17:3
seven 194:14
seventeenth 80:12
shaded 114:14
shadow 268:2
shadowing 196:4
shallow 147:4 315:20
336:14
shallower 165:4 284:5
shapes 76:13
share 11:18 13:6 14:18
22:11,12 32:13 40:22
45:1 60:18 61:5 107:7
204:8 276:16 281:17
282:6 283:5,16 297:5
343:8 350:21 358:5
shared 12:17 21:21
28:17 146:13 291:20
325:13 326:6
sharing 63:3 312:7,8
sharp 58:21
she'll 318:18
sheet 216:7
Sheriff 74:14
shift 244:21 271:9
shifting 257:5
shifts 91:13 104:10
ship 56:19 70:20 83:4
84:19 86:1,6,14 87:20
88:19 89:9 90:5,5
93:4 100:6,14 101:19
102:1 117:5 119:1,9
119:13,14,15 120:1
120:10,17 121:2,4,5
122:4 125:5 138:18
142:15 145:18 159:5
161:17 162:21 163:3
163:10,16 164:14
165:5,17 167:19,22
168:14 169:20 170:17
171:9,21 185:7
186:12 205:6,19
206:3,10,19 207:7
212:8 213:2,5 214:10
215:19 216:7,11
217:5 225:19 231:9
242:4 244:12 245:3

248:19 267:19 279:7
 283:10 292:21 293:1
 338:11
ship's 162:1 164:1,6,15
shippers 55:6
shipping 34:14 112:5
 129:19 237:5 271:5
ships 22:2,6,19 45:11
 66:8,10 68:8 73:10
 77:1,7,8 81:19,21
 82:14 83:2,11,20 84:5
 85:17 86:7 89:11,16
 90:2,3,10,12,15 93:9
 96:11,17,20 98:6
 102:4 104:9 111:21
 114:5,11,13,19 115:3
 115:15,16 117:16
 118:4 120:3,14
 121:11,21 123:3
 128:22 129:8 133:12
 133:20 142:9,13
 143:4,10,16 145:1
 147:1 157:21 158:1,3
 158:14,21,22 160:9
 160:19 166:1,17
 167:5,15 202:18
 203:2,2,5,10,21 216:6
 241:16 254:3 268:1
 280:19 282:20,21
 338:7
ships' 85:14 87:11
shoal 101:9 119:12
 121:4
shoaled 179:3
shoaling 171:16 192:12
shoals 193:6 310:2
shocking 337:17
shoes 356:5
shop 227:18
shore 32:7 56:14 70:20
 85:18,19 86:2,10,19
 86:20 87:12,22 88:3
 88:15 149:12 150:7
 155:22 158:22 183:9
 185:8,13 187:16
 192:15 199:17 334:8
 335:3
shore-based 319:14
shoreline 5:20 42:2
 177:2,7 308:13 309:1
shores 33:2 150:1
short 49:9 189:15
 212:15 229:18 230:2
 324:20
shorter 249:7
shortfalls 281:1
shortly 47:22 111:17
 251:9 280:3

shout 16:6
show 5:11 69:9,10
 118:14 119:7 124:12
 204:9 206:9 207:2
 259:9 265:20 269:22
 303:11 315:19 320:10
 326:5
showed 141:12 143:5
 143:12 146:14,21
 207:20 217:16 249:22
 249:22 251:21 252:13
 254:14 348:16 349:17
showing 126:13 173:15
 176:12 198:15 254:5
 267:5 303:6
shown 21:10 63:13
 288:19
shows 173:17 190:5
 208:21 212:16,21
 215:12,14 240:1
 269:13
shut 85:20
shutting 87:11
shy 48:9
side 7:7 113:12,13,15
 113:15 120:15,16
 121:2 123:18 131:2
 133:13 146:15,16
 158:17 169:19 172:9
 179:22 180:2,3 181:7
 185:19 188:6,6
 199:15 206:12 208:8
 208:19 209:1 215:8
 278:10 300:6 349:20
sides 219:5
sign 92:2 152:7
signal 294:18
signed 60:8,13
significant 100:5
 162:17,18 198:18
 199:5,14 200:12
 280:22 284:1 285:8
significantly 133:4
 134:3
Silver 11:8
similar 69:7 101:14
 146:16 147:5 200:4
 236:18
Similarly 109:13
simple 169:13 209:8
 214:6 231:14 332:18
 332:18 344:16
simply 222:8 337:20
simulate 58:16 206:18
simulation 58:17,20
 209:8,18
simultaneously 318:9
 319:9

sincerely 10:14
sincerest 11:5
single 269:5 288:14
 353:10 354:8,19
sink 110:7
sir 48:11,19 78:20
 94:20 112:11 152:20
 240:13 295:11 325:7
 343:16 355:9 358:15
sit 32:9 35:10 101:20
 237:8
site 8:6 61:22 340:20
 348:15
sites 56:14,15 162:14
 208:10 209:19 348:14
sits 86:1 155:20 156:6
 156:12 237:9
sitting 68:3 319:19
 320:2 350:1
situation 104:12 199:21
 225:13 267:8 281:7
 303:5 316:4 319:4,5
 321:4
situational 265:15
 267:1 269:2,12
 270:21 271:11
situations 101:13
 163:18 315:16
six 11:7 21:18 32:14
 107:14 127:15 163:8
 188:12 194:14 210:12
 210:13,16,18 269:6
 289:15 300:18 304:6
 334:11 337:1,1
six-day 210:19
sixth 70:17
size 77:3,6 96:17
 158:15 231:6 304:15
 322:14
sizes 195:4
skilled 290:4
skills 8:19
skip 39:13 290:15 297:2
Skyway 273:12
slack 102:6
slated 41:2
slide 55:19 62:15 64:1,2
 67:12 68:18 71:5 74:5
 75:6 79:12 80:10 81:4
 81:15 84:22 85:8 88:6
 88:17 89:20 91:8 92:6
 92:14,20 93:7,12,20
 113:1,9,16 114:3
 115:5,21 116:14
 117:5,7,20 118:18
 119:5,18 120:4,20
 121:6 122:1 123:10
 123:15,22 124:18

125:8 126:18 127:4
 127:18 141:12 155:5
 156:5 157:5,18 158:5
 160:6 161:20 163:5
 163:14 165:6 166:8
 168:1 169:4,12
 170:13 171:8 172:3
 173:14 175:14 176:5
 176:11 177:17 178:6
 179:5,18 180:6,13
 181:3 182:16 184:15
 184:16 185:17 187:4
 189:3,16 191:5 192:2
 192:9,16 193:8,17
 194:8 195:5,15
 196:11,20 197:8
 198:16 199:4,21
 200:6 202:2,13 204:7
 204:22 207:17 208:17
 209:21 212:3 215:21
 216:5,14 217:13
 218:9,10 240:15
 241:1,11,20 242:14
 242:22 243:14,19
 244:14 245:4,15,20
 246:3,9,21 247:7,11
 247:13,20,22 248:9
 248:14 249:8,16
 250:4,14,22 252:10
 253:1,19 254:15
 258:22 264:5 265:11
 267:3,9 269:8 270:13
 271:14 273:7 275:15
 275:16 277:4 280:3
 283:11 286:15 289:7
 290:1 293:9 295:1
 296:21 298:9 299:4
 300:8 302:10 305:4
 306:9 307:3,18
 308:10 309:7,19
 310:4,11,12 311:2,10
 311:18 312:3,13,18
 313:7,16 315:13,14
 316:3,13,18 317:10
 318:3,4,13 319:2,16
 319:17 320:15 321:3
 321:18 322:9,20
slides 6:19 67:14 79:13
 115:6 118:20 121:7
 121:14 123:10 125:9
 127:3 143:6 216:14
 258:9 297:1 298:2
slightly 48:5 125:4
slip 56:6 57:3,5 61:20
 61:20,21
Sloan 1:17 41:17,22
 42:11
slope 145:13

- slot** 82:20
slough 219:5
sloughing 171:17
 218:22
slow 47:20 164:18
 284:3
slower 107:14 333:14
slowing 297:11
small 15:12 40:5 64:12
 82:12 91:14 103:22
 131:16 143:4,7,11
 234:13 316:5 317:15
 354:16
smaller 55:10 98:21
 103:19 143:4,4 165:4
 166:19 167:10 203:2
 241:16 294:5
smart 83:17
smartly 352:3
SMC 66:14
smokestack 120:2
smokestacks 120:8
smoothing 58:21
smuggling 72:15
snapshot 216:8
sneak 104:15
snoop 345:8
snow 102:11 111:19
snowfall 11:14
snows 111:19
society 147:12 289:16
software 3:15 144:6
 156:11 163:9 178:4
 186:3,19 230:11
 231:18 246:16 247:1
 247:5 312:8
solely 277:17
solid 256:14
solidifying 280:3
solution 89:18 92:1,3
solutions 15:14 25:8
 85:1 90:14 91:4,8
solve 112:18 243:2
somebody 152:13
 255:2 299:9 343:20
someday 90:11
someplace 126:12
Something's 111:6
somewhat 41:1
SOMP 285:20
soon 49:1 193:8 233:20
 263:12 283:19 288:22
 306:14
sooner 298:4 352:18
sophisticated 264:15
 269:22 351:13
sorry 8:2 9:7 11:16
 24:13 32:19 93:21
 132:13 151:7,9
 184:15 223:1 226:5
 285:14 327:2 339:1
 339:11 353:15 358:1
sort 75:1 89:19 100:20
 100:21 106:17 134:11
 134:20 195:21 221:8
 221:21 229:3 258:12
 264:7,15,16 265:1,2
 266:3,13,14,18 270:2
 272:3 327:5,15
 329:14 346:16 348:14
 350:8,15 352:12
 353:8
sorts 99:7 101:1 177:12
sound 108:7 111:6
 348:5
soundings 146:2 219:3
 244:3,19
sounds 78:18 227:13
 346:1
source 37:16 100:22
 125:13 126:9 172:2,4
 174:4,11 185:4
 186:18 225:6,8
 258:19 288:8 295:5
 295:13 330:4 332:3,4
 344:18 345:10
sources 173:18 174:9
 175:11 176:10,12
 207:20 289:7 333:20
south 20:9 24:2 32:9,10
 56:4,6,8 57:2,4,5
 61:20,20,21 81:9,15
 82:10 195:20 196:10
 197:17 215:13,15
 229:20 249:2 267:18
southbound 242:6
southeast 175:19
 295:20 296:5
southerly 160:12
southern 3:14 11:9
 26:21 42:6 45:4 50:18
 67:9,11 76:5 80:14
 192:19 193:3 195:15
 195:18 197:10,20
 235:2 236:17 281:14
 311:2
southwest 197:16
space 15:13 114:13
 175:6 290:8
spaceflight 70:5
SpaceX 70:2
spacing 114:19
span 274:12,16,16,18
spans 64:22 274:14
spatial 21:19 39:8
 42:18 104:19 130:21
 233:20 237:9 298:16
 300:16 304:5,15,20
 305:11,16 306:8
 307:6 353:7
speak 63:19 64:16 65:6
 109:10 112:4 142:20
 151:9 266:4 276:21
 340:3 343:21 346:10
 346:13
speaker 30:13
speakers 3:4 9:2 29:4
 47:7 109:9
speaking 9:1 13:16
 29:11 75:7 201:12
special 9:16 27:10
 186:2
specialists 64:15
specialized 42:2
specific 222:9 244:22
 326:2
specifically 77:18
 170:16 174:18 176:7
 245:2 260:12
specifications 318:15
specifics 14:7
specs 172:14 173:21
 175:1
spectator 123:17,22
spectral 185:21
spectrum 192:5 194:10
 194:18 197:2
speculation 103:1
speed 249:11 317:12
spell 29:20
Spellmon's 152:3
spend 46:1 117:7 170:6
 170:11 335:22
spent 43:20 86:7 89:1
 174:21 238:19 277:7
sphere 293:17
spill 14:15 66:1 71:16
 73:18 232:6
spills 167:13
Spinrad 14:3,12 17:14
 17:22 23:5
Spinrad's 13:18 18:1
splash 126:10,13
spoke 75:22 95:3 117:6
 327:8
sport 123:17,22
spot 108:2 168:7 179:3
spots 329:4
spring 9:22 11:8 278:22
 281:19 296:4
square 319:7 321:14
 322:7,16
squat 206:21
squatting 214:10
squid 99:11
Sr 1:12,14 3:2
St 20:11
stable 171:8,14
stack 83:7,11,13 87:15
 166:2
stacks 68:3 84:14
staff 2:14 8:16 25:15
 28:8 39:16,18,20 40:3
 46:8 148:5 284:19
 291:15 349:9
staffing 281:1,6
stage 342:9 350:16
staged 64:12
stages 188:3 319:16
 341:19
stakeholder 4:3 49:15
 76:10 79:3 90:22
 262:4,9
stakeholders 8:8 10:11
 28:8 45:1 52:20 58:2
 71:9 90:16 131:12
 132:1 140:2 155:17
 191:10 257:17 287:19
 348:13,18 349:5
stale 171:6
stand 223:12,14 229:9
 291:10 334:4
standalone 275:13
standard 167:9 170:22
 177:21 188:20 209:6
 221:5,8 243:5 252:6
 253:1 254:4 267:15
 285:18 331:16,19,19
standards 79:12 97:1
 252:13,14,16 253:4
 272:9 293:19 294:10
 337:20
standing 147:3
stands 158:16 260:6
 273:10
standup 290:9
starboard 120:16
Starlink 318:11
start 5:3 11:10 30:17
 32:19 42:21 48:2
 49:14 61:8 62:13
 83:21 98:5 103:7
 106:22 132:17 145:9
 169:22 194:20 198:20
 201:8 241:5 251:12
 251:13 254:7 263:11
 280:12 292:6 303:21
 304:3 305:8 315:3,3
 348:7 349:15 358:2
started 39:3 68:2 90:3
 154:15 160:16 165:8
 202:11 225:5 230:7

258:12 263:9 273:13
320:4 357:18
starting 31:14 69:14
84:12 106:15 172:10
245:17 247:6 254:6
254:11 263:16 307:10
313:21
startups 15:13
state 31:11 33:19 34:3
42:18 49:15 71:8
73:14,21 74:11 82:4
95:13,14,16 102:16
103:3,4 105:2,3,5
157:12 159:6,21
190:2,11 232:22
233:3,6 303:2 312:17
340:13 354:1,4,11
statement 7:4
states 26:22 53:14,22
69:10 82:6 100:4
105:17 149:21 158:5
300:6 302:22 303:13
312:10 353:22
static 160:20 169:18,21
214:4,9
stating 109:3
station 20:7,9,11 83:9
84:15 133:10,10,12
133:18,22 134:1
135:5 177:1 197:12
198:19 267:18,21
268:5,21 274:5,10
275:3,5,14 302:3
stations 20:6,16 64:12
135:1,3 179:21 190:3
190:16 191:21 193:10
195:11 196:13 197:16
261:16 272:17 302:20
302:21 303:4,6 307:8
307:17 308:3 309:5
341:16 346:6,7,8,11
346:18
statistics 67:19 351:14
status 226:19 296:13
statute 71:11
statutory 66:19 67:1,4
stay 248:2,4,7 319:21
staying 132:4
steady 158:10 280:2
steal 72:5
steep 105:22 171:16
steer 106:4
steering 164:8
stellar 257:11
step 106:11 217:1
353:8
steps 304:22
stern 118:5 119:14

160:14
sticker 125:6
sticking 41:10 120:8
Stockton 95:12 98:20
99:5,6,18,21 111:17
111:21 133:6,21
327:13
STOFS 226:17 227:12
289:11,12,13
stood 273:11
stop 87:22 324:6
stopping 104:14
store 82:17
stories 19:1
storm 247:15 259:21
265:15 266:5 267:1
269:11,15 272:4
storms 164:13 171:15
185:2 219:4
story 99:19 257:14
278:9
storymap 281:18
straight 165:10 250:13
276:12 321:8
straightforward 169:16
318:6
Strait 281:12
stranded 25:10
strategic 204:3 257:5,7
257:9 276:9 277:6,12
277:13 278:6 280:5,7
290:3 299:2 313:10
strategy 182:9,15 306:5
strengthen 280:9
strengthening 28:1
96:15
stretch 57:17 153:16
strive 285:4
strokes 331:10
strong 117:11 196:8,10
198:1 199:9 229:1
230:19
structural 56:8
stuck 108:6 112:6
337:4
student 16:12
students 292:12,14
study 19:14 54:2,17
55:3,17,21 56:11 58:1
59:8 229:21,22 249:9
281:14
stuff 106:17 177:15
197:8 246:22 350:19
style 303:22
Subcommittee 300:22
subject 27:11 39:18
45:9 227:17 318:16
327:7

submissions 286:13
submit 7:8 135:14
subscription 230:13
231:2
substantial 284:2
substation 56:12
subtle 271:21
succeeded 74:20
success 19:19 21:22
69:6 123:7 125:6
129:9 165:11 168:17
284:9 293:8
successful 157:17
160:2 229:22 231:16
292:20
successfully 33:6
127:2 132:12
suddenly 258:7
suffer 276:17
suffered 283:3
suffering 276:18
sufficiently 132:8
suggest 227:15 326:11
suitable 172:12 174:15
221:22 343:12
suite 296:18
summaries 149:5
summarize 326:4
summarized 28:12
summary 67:18
summer 15:19 23:8
69:4,16 263:1,17
282:12 292:21 302:7
303:9 304:4 308:7
summertime 86:22
summit 305:18
sun 222:3 260:22
Sunshine 273:12
super 297:10 337:13
348:11
supercomputer 184:7
186:7
supersede 177:7,15
superseded 176:20
supersession 177:14
supplemental 308:22
311:12
supply 82:22 158:9
165:1 327:18 345:1
support 15:9 16:3 26:3
26:12 39:19 40:4
41:10 44:12 77:18
98:22 101:5 109:21
156:19 170:16 176:7
182:14 187:2 235:15
282:1,3 285:4,15
286:20 287:10 290:21
291:12 300:1 308:12

320:5 333:21 336:11
338:4 341:8
supported 279:10
282:14 283:6
supporter 107:20
supporting 43:21 97:16
131:1 169:6 276:1
286:2
supports 186:9 298:22
310:18
supposed 124:11 211:4
235:11
suppress 141:16
sure 8:20 30:14 35:21
36:2 49:22 52:6 72:8
76:17 77:9,11 97:4
98:15 110:21 116:11
131:20 132:2 135:22
137:19 139:4 150:20
163:15 174:22 204:11
204:12 207:16 209:10
209:18 210:8 215:8
220:11 221:2 235:8
235:13,13 242:9
245:14 257:10 276:12
300:20 301:2,15
306:6,18 323:19
325:6 327:2 328:19
335:10 339:15 340:6
344:19 345:20 350:16
350:21 355:7
surface 107:10,13
108:1 121:12 192:8
245:16 251:14
surfboard 32:20
surge 116:21,22 226:18
289:9
surprises 315:3
surrounding 247:18
survey 2:4,12,15,18,19
2:19,20 3:10 6:13
12:2 23:10,10 38:10
40:12,20 42:2 114:22
121:18,20 128:5
148:5,10,11 155:16
170:15,18,22 171:2
174:5,5,10,13,20,21
175:10 176:20,22
177:10,11 219:14
223:17 224:10 225:14
225:18 234:19 241:1
256:4,8 263:16 277:1
277:12,16 278:6
279:4,17,21 280:17
281:4,13,18 282:8
283:6 284:21 286:1
288:6 289:8 290:21
291:5 292:12 293:11

293:16 297:9,11
 298:8 299:13 305:14
 315:18 316:5 317:6
 317:19,20 319:6
 321:17 322:5,12,14
 323:18 334:7,10
 336:2,2,3 337:18
 339:18,18
Survey's 45:17
surveyed 106:20
 274:15 323:11 337:20
 339:5
surveying 140:14 179:7
 223:15 237:14 281:11
surveyor 42:15
Surveyors 237:11
surveys 25:12 40:15
 42:14 44:18 49:8
 109:4 148:6,9,14
 172:14,18 173:18,19
 173:20 174:2,4,9,10
 174:16,19 175:1
 176:9,15,17,19
 177:12,14 216:3
 219:13 223:8 224:1
 224:19 259:6 264:5
 273:17 278:19 282:14
 335:2,3 336:6
susceptible 354:10
suspect 40:17
sustain 290:4
sustainable 70:9
sweet 168:7
swell 101:19 108:18
 160:12 162:1,10,11
 162:11,16 194:16,21
 195:22 197:10 198:1
 229:20
swells 108:19 184:22
swimmers 68:15
swings 196:7
switch 88:10
switched 144:22
 196:17
switches 211:11
switching 240:18
symmetry 195:8
sympathetic 78:6
system 12:20 21:20
 25:19 26:14 34:15
 39:8 42:19 68:17 70:2
 85:17 86:4 87:2,7,10
 92:9 98:9 99:2,2
 105:2 112:17 115:11
 115:20 116:2,8 117:1
 133:4 134:9 144:6
 156:1 171:18 179:10
 179:11 180:8 183:19

184:20 185:9,10,19
 187:1,6,8,10,15,17
 188:7,22 192:20
 194:2 207:13 208:7
 216:10 217:19 220:2
 220:9,15,16,18 221:9
 221:13 225:16 226:18
 229:9,17 231:1
 233:21 236:11 238:12
 238:17,20 239:6
 243:7,9 247:16,18
 250:11 251:16 253:16
 254:1,12 256:11
 260:1,7 261:1 264:14
 264:19 265:5 267:11
 269:16 273:11 274:3
 274:22 282:7 289:10
 296:15 298:16 300:16
 302:4,15,15 304:6,15
 304:20 305:12,16
 306:9 307:6 316:2
 317:1,12 318:9 323:4
 323:10 333:6 340:17
 353:7,10 354:20,20
 354:21,21
systems 19:20 86:8
 115:9 116:11,13
 128:18 134:13 254:3
 262:12 265:4 268:10
 273:22 274:1,17
 276:8 290:19,20
 293:11 299:15,21
 314:9,17,19 315:1,15
 320:12,19 354:19

T

T121 167:20
tab 250:3
table 15:22 19:18
 140:20
tackle 38:19
tackling 141:14
Taiwan 81:9,15
take 6:5,17 13:9 18:1
 19:12 22:22 27:17
 35:5 60:19 61:9 66:16
 90:4,15 99:11 106:1
 148:7,14 153:8,15
 154:5 159:14 164:1
 179:2 196:6 200:9
 205:6 217:2 218:5
 219:7 229:18,19
 230:1 238:17 243:3
 245:6 247:14 248:22
 249:1 252:7 258:7
 266:18 278:5,8,12,16
 304:9,11 320:18
 322:22 323:4 337:13
 347:5 354:19
taken 12:18 44:9 82:2
 125:2 135:7 321:17
 326:14 357:5
takes 101:16 200:11
talk 14:3 17:5 53:13
 76:2 79:8,15 81:16
 85:9,10 89:22 97:6
 98:8 99:8,13 112:20
 129:1 141:3 162:2
 169:5,10 170:9 180:5
 180:19 181:4 182:2
 182:18 183:8 184:1
 201:1 238:21 243:5
 243:14 251:18 276:9
 280:12 311:21 312:6
 312:17 329:10 330:5
 331:8 338:20 353:20
 353:21 355:15
talked 14:6,14 77:4
 96:19 100:11 102:4
 106:13 129:7 160:5
 247:3 302:17 312:20
 315:21 331:14 351:3
 355:14
talking 12:12 76:18
 81:18 84:11 94:10
 108:6 115:7 121:10
 129:16 136:17 137:4
 140:6 152:8 160:9
 169:7,22 170:6,12
 183:20 201:1 206:13
 229:9 236:5 237:11
 243:18 252:12 258:8
 276:6 277:8 301:9
 329:16 334:17 345:9
 348:21
tall 82:5 102:19
Tampa 43:5,5 288:21
tanker 58:6,8 120:21
 160:14 161:4 165:4
 166:15,19,19 167:9
 167:10 232:4 242:6,7
 255:1
tankers 58:12,16 68:9
 118:3 129:1,8 158:10
 159:17 161:12,14
 165:3 166:21 168:2
 219:8
taper 83:13
target 325:19
tasked 36:7
tasks 38:17
taught 292:11
TBD 108:14
Tchoupitoulas 29:20
teach 31:11 305:10
teachers 305:10

Teaching 305:8
team 11:2 13:1,9 15:6
 19:12 21:13 49:20
 64:13,14 66:7 71:6
 76:9 79:18 131:7
 139:15 148:10,11
 163:21 168:8 174:21
 186:4 190:7 194:7
 278:17 280:3 293:16
 324:15 350:2,2
 355:17
teams 279:14 300:12
 313:4 319:19 338:9
teased 46:10 195:1
tech 15:13 16:1 154:3
technical 8:6 51:2 53:9
 290:21
technicians 281:5
techniques 148:12
 223:14 299:11 303:18
technological 70:1 71:1
technologies 286:11
technology 20:16 31:16
 163:12 299:10 356:7
tell 15:2 16:13 18:13
 51:7 67:4 80:8 149:8
 189:17 223:20 229:5
 235:9 286:8 323:17
 323:19
telling 71:16 257:14
temperature 192:7,8
tenant 100:1
tend 347:1
tens 45:13
tenth 80:17
term 31:14 33:3 41:9
 182:13 189:16 212:15
 241:3 356:21
terminal 70:12,12,13,16
 70:19 82:1 88:14,16
 103:10,15 113:21
 118:2,10 120:11,13
terminals 81:1
terms 41:2 108:14
 116:18 118:8,15
 149:19 150:12 168:4
 179:6 354:14
terrestrial 302:16 307:1
terribly 354:10
Terrific 275:17
territories 21:16 303:14
test 154:15 207:7
 227:11 296:19 300:18
 300:19 321:11
testament 14:11
testimony 271:1
testing 188:5 191:4
 251:5,13 252:21

264:7 304:4
TEU 82:10,13
TEUs 56:22 96:5 119:4
Texas 134:17 308:5
 311:2
text 267:7
texts 266:7
thank 6:7,9,10,20 7:19
 8:4,11 9:20 10:18,21
 11:2 16:20 17:7,10
 18:3 23:1,13,16 25:15
 26:1,9,10 27:22 28:6
 29:16 30:1 31:3,8,18
 31:19 32:16 33:15
 34:4,5,18,19,22 35:13
 35:15 36:11,12 37:4
 37:10 38:1 39:12 41:9
 42:9,11,21 43:1,12,13
 44:2,3 48:12 49:11,13
 53:4 62:16,17 63:2
 78:18,22 79:1 90:17
 93:19,21,22 94:1,2,5
 94:6,15,17,22 110:19
 111:10,14 112:11
 115:1,4,7,18 116:17
 119:17 122:12,17
 132:10 135:17 136:8
 136:10 139:16 141:1
 141:4,6,7 142:5 144:9
 144:12,20 146:5,9
 149:1,4,4 150:14
 152:5,21 153:18,22
 154:7,8 156:12,17
 157:2 159:15 168:20
 168:22 180:20 200:12
 200:13,20,21,22
 218:6,8 219:10
 227:21,22 228:9
 232:15,18 233:7
 234:17 238:9 239:7
 239:11,18,21 240:3
 240:14 244:13 254:16
 255:11,12 258:2
 275:20 276:20 314:6
 314:9 324:8,15,16,22
 325:9,9 329:11
 330:12 333:16 334:14
 337:11 338:22 339:3
 339:10 341:12 342:1
 342:14 344:7 347:14
 347:18,21 348:9
 349:14 352:22,22
 353:13 355:4 356:14
 357:21 358:16,19
thankful 71:7
thanks 7:20 18:20
 23:17 30:11 32:22
 33:14 38:7 39:15 40:2

48:12 49:4 50:22
 62:20 63:9,17,21
 77:20 78:2,4,17
 129:14 152:22 189:6
 189:9 222:17 226:3
 237:15 238:7 239:12
 267:12 292:16 297:21
 297:22 310:8 337:12
 356:18
that'd 107:3
Theirs 224:12
theme 123:9 357:13
theoretical 137:6
thesis 318:16
they'd 123:14 343:14
thing 76:16 85:10 88:16
 102:12 106:13 107:4
 116:6 124:9 134:18
 136:19 162:8 164:22
 173:16 198:4,21
 231:11,22 232:3
 255:1 268:11,20
 271:15 272:7 282:5
 290:8 298:1 301:8
 327:3 328:4 331:17
 343:3,10
things 11:15 14:7 16:3
 34:15 38:20 39:7 43:8
 64:17 83:1 91:11
 92:13 93:9 99:7 100:8
 100:16 101:1,2
 105:15 121:21 127:6
 131:16,20 132:3
 133:20 138:21 139:19
 144:3,7,18 147:5
 170:1 212:10 222:6
 223:12,14 228:22
 229:3 234:12 237:10
 237:19 243:20 266:2
 298:22 299:12 302:12
 304:2,9 305:10 345:8
 350:6,7 351:8 352:4
 352:10 355:19 356:8
think 5:5,12 34:7 47:15
 48:4,19 62:21 67:6
 69:13 71:21 72:10
 74:16 76:6 77:15
 78:14 79:13 80:15
 81:11 84:11 131:4,16
 131:21 132:18,22
 135:4 136:16 137:1
 137:21,22 139:9
 140:17,22 141:10
 142:6 149:14 150:17
 150:18 152:6,7
 154:16,21 155:4,10
 175:7 180:12,18
 189:3 197:11 198:20

199:22 201:14,21
 204:7,17 205:13
 209:4 214:17 217:16
 218:21 219:13 220:18
 223:8 225:11,21
 226:15 227:6,10,19
 228:1 232:7 235:11
 236:2 239:8 240:10
 240:16 241:19 248:8
 254:14,19 262:15
 263:8 264:22 273:13
 274:6 275:4 276:5
 295:7 296:22 297:3,6
 314:18 317:6 320:4,6
 323:19 324:11 328:8
 328:16 329:8 334:3
 336:1,10,16 337:10
 338:18 342:3 343:6
 343:16,19 344:9,13
 345:15 346:22 347:15
 351:1 354:18 356:10
 357:7,15 358:9,11,19
thinking 85:1 98:5
 124:4 160:5 234:15
 327:12
thinks 112:3
third 155:8 165:22
 167:12,20 230:9
 231:4 323:9 330:16
Thirty-five 95:22
Thomas 1:20 3:3 23:1
 30:2 34:21 45:7 46:15
 90:6 112:14 136:8
 137:1,20 138:2
 139:16 141:1 154:5,8
 157:5 168:20 169:4
 180:1 189:6 200:13
 200:17,19 218:8
 219:10 222:17 223:3
 223:6,19 226:3 227:5
 227:21 228:7 229:11
 231:19 232:20 233:8
 233:14 234:2,16
 236:1,4 237:15 239:7
 239:12 280:19 282:11
 338:11 340:5 353:16
 353:19 355:4
thought 90:7 104:15
 118:17 119:6 121:22
 140:12 212:22 232:1
 315:4,6 316:8 320:17
 355:19
thoughts 314:16
thousand 94:7
thousands 45:13,14
 231:13
threaten 24:18
threats 151:18

three 57:7 61:9,14
 64:12 65:1 70:3 74:18
 101:7 102:20 104:17
 132:16 144:7,15
 148:15 165:7 172:8
 180:4 188:14 196:13
 210:20 212:13 214:3
 221:4 256:1 290:3
 298:19 307:20 313:3
 317:20 320:22 323:4
 323:11
three-week 292:10
three-year 291:21
thresholds 21:2 265:22
 269:18 272:12
thrilled 314:11
thrive 33:8
thriving 290:5
throttle 164:8
through-put 81:12
throughput 70:17 99:22
 100:2
throw 169:13
thrown 67:3 152:9
 241:4
thunder 72:6
Thursday 46:7 285:11
tidal 101:17 207:5
 210:17 211:2 220:10
 221:1 233:19 234:11
 246:16 247:4 258:19
 258:20 259:2,5
 260:15,17,20 261:7,9
 261:16,17 262:19,20
 265:20 272:17 349:8
 351:1 352:18
tide 37:14 55:5 102:2,2
 116:19 118:8 123:8
 125:7 127:3 128:18
 179:21 208:7,13,16
 208:18,21 209:9,16
 211:4 212:12 220:6
 222:2 226:18 245:7,8
 258:19 260:16 261:1
 262:20,20 263:21
 266:1,16 269:22
 270:10,11 273:16
 289:9 308:3
tides 59:20 179:7,13
 205:9 207:21 209:22
 216:20 348:16 353:11
tie 257:15
tied 103:15 236:9
 296:10 305:15 353:9
ties 118:5 167:20
tight 119:7,16 121:3
 129:2 145:12
tiles 250:18

time 8:10 10:16 18:21
 28:13 29:21 34:7 44:9
 47:1,3,6 50:11,13
 51:2,3,7 52:7 59:20
 69:4 78:1,13 95:6
 104:15 106:20 108:8
 110:8,19 115:15
 117:7 119:22 123:13
 125:20 127:17 129:21
 130:20 133:17 135:7
 135:17 143:21 146:20
 148:7,13,14,19
 152:10,12 153:12
 160:7 163:1 164:17
 164:17,19 170:8
 171:6,19 174:4,22
 179:11,14,16 196:21
 197:18 199:1,15
 202:19 203:3 206:15
 206:16 207:6 216:15
 217:18 218:5,6
 220:11,20 225:1,20
 229:14,16 230:8,9,17
 237:8 238:19 239:8
 240:9,16 246:19
 253:2 254:20 260:7
 263:20,22 265:1
 273:10 277:7 282:4
 288:16 291:17 292:16
 292:22 293:1 296:12
 297:10 300:11 301:4
 301:6 302:13 303:5,7
 303:19 309:13 310:6
 310:8 311:3 314:4
 316:18,20 317:8
 319:14,22 320:3
 321:1 322:15 323:5,9
 324:7,10,18 325:4
 326:13,16 333:13,19
 335:22 342:19 343:2
 344:1,5,10 345:3
 347:20 349:12 350:14
 356:7 357:5,19 358:4
 358:20
time-ish 349:13
timely 278:2 293:12
 330:17
times 48:9 130:15
 143:2 165:18 188:11
 203:7 204:6 245:11
 295:3
timing 112:5 152:15
tiny 176:8 292:17
title 37:7 41:15 261:3
titles 280:1
TJ 282:17
today 6:22 7:7,12,13
 8:6 16:14 17:22 24:13

26:2 32:8 38:11 40:12
 41:5 45:22 49:12 51:5
 53:8 60:5 64:16 79:8
 97:6 98:6 114:2
 127:12 160:2 168:15
 183:6 201:15 203:7
 203:15,20 204:2
 205:3 206:13 210:11
 215:11 233:10,13
 238:2 241:4 242:16
 256:5 259:1,4 276:21
 277:14 278:22 290:8
 297:7 314:21 329:17
 334:18 343:8,19
 355:17 356:15,19
 357:8,22
today's 147:11 356:6
told 146:21 164:16
 252:18 298:2
tolerance 120:15 121:4
tolerances 119:7,16
 143:6,11
Tom 3:12 155:7,9
 244:13
tomorrow 13:5 17:6
 45:22 109:10 324:19
 342:4,7 343:3,9,10,19
 348:1
ton 111:8 166:3
tonnage 57:13
tons 158:2
tool 142:4 163:22
 184:10,12 259:9,11
 264:6,9,11,12,22
 286:7 287:3,7,11,15
 288:18 289:5 327:21
tools 21:1 131:17
 143:19 144:2 147:18
 300:17,19 302:8,9
top 81:5 100:3 172:22
 189:19 195:21 197:9
 197:13 198:5 208:18
 212:12,16 213:15
 215:10 245:17 248:20
 267:21 269:13
topic 28:15 141:13
 200:22 201:5,13
 203:20 324:11
topics 16:16 27:6 357:6
topo 172:11 175:17
 177:4 250:1 336:17
 337:9
topobathy 42:8 177:2
Torrance 125:22
total 81:6 115:17
totality 225:22
totally 206:5 267:17
 319:8 324:7 335:19

336:21,22 337:4
touch 102:13 119:21
 132:4 157:7 159:6
 243:17 251:10 339:14
touched 353:22
touches 95:19 315:21
tour 51:9 52:18 63:11
towers 102:18
track 16:22 93:4 283:10
 286:22 298:5
Tracking 116:2
trade 25:18 26:14 95:18
 96:1
tradeoffs 316:12 321:2
trading 81:8
traditional 68:19
 202:20 287:14 337:7
traffic 64:14 89:13
 90:18 105:13 115:11
 125:3,5 126:7 129:9
 241:15 271:5 336:14
tragic 127:19
trained 281:4
training 15:11 16:12
 261:21 287:12 292:9
 292:11,20 293:1
tramp 86:14,15
transcribed 29:3
transect 249:10 250:17
transfer 87:22
transferred 99:20
transfers 167:14,17
transform 239:5
transit 203:22 206:15
 206:16 207:3,14
 208:16 209:5 211:4
 211:19 213:11,12,17
 217:4 245:12,14
 248:22 281:11 286:9
transiting 245:19
transition 20:15 100:18
 138:4 220:17 252:6
 277:17 287:10 293:20
 299:3
transitioning 195:22
 290:19 292:8 296:8
 296:14 344:20
transits 129:10 210:21
 211:8 230:14
transport 56:21 109:11
transportation 12:20
 25:19 26:14 34:14
 53:17 55:15 59:11,12
 65:16 68:17 70:2 99:2
 238:13
transportations 303:2
transported 111:20
transporting 166:11

Trapac 88:14
travel 67:22
tree 339:5
tremendous 86:6
tremendously 87:3
trend 81:20 83:10
trial 270:9 282:14
tried 203:12 213:18,21
 319:13
trigonometry 161:2
trimmed 214:11
trip 63:12
trips 321:11
trouble 32:18 246:7
troubleshooting 7:12
truly 239:2
trust 18:22 206:10
 230:22
trusted 332:7
try 37:7 125:17 134:10
 152:3 208:15 260:20
 261:2,6 262:16
 314:13 315:8 319:8
 324:18 352:10
trying 38:16,19 88:3
 134:7 163:15 238:10
 239:2 243:2 305:6
 323:21 325:10 346:22
 350:11 351:10
TSA 73:1
Tuba 33:16,18 34:5
 228:4 232:12
TUESDAY 1:8
tug 100:20 125:3
tugboat 120:16 137:14
tugboats 84:7 92:13
tugs 167:8,11
tune 152:13
tuned 272:21
turn 6:4 9:2,4 17:7
 46:21 50:19 53:2
 141:2 152:18 154:4
 156:22 159:9 168:19
 229:12 246:7 250:3
 325:7 326:3 355:11
 356:16
turnaround 332:20
 333:19
turned 116:5 328:13
turning 47:16 56:3 57:3
 159:2 246:1 288:7
 332:9
tweak 253:11
twice 47:1 97:11 322:17
 343:5
two 60:20 74:18 79:13
 96:21 98:10 100:17
 113:12 115:6 125:9

126:20,22 127:3
 135:8 142:7 144:3
 158:20 159:1 160:10
 161:7 164:18 166:17
 179:22 196:17 203:21
 209:2,4 210:21
 211:16 212:19,20
 214:16 215:10 221:4
 224:3,15 230:10
 231:18 246:18 254:10
 269:13 274:6,17
 275:5 277:5,6 286:17
 319:9,19 320:9 336:8
 337:6 341:13 348:3
 348:14 349:2
two-mile 57:17 220:8
two-second 138:10
twofold 181:21
tying 167:5 238:15
 297:7
type 28:10 68:6 75:3
 100:14 134:17 199:9
 206:1
types 120:14 253:5
Typhoon 311:12
typical 129:6 194:15
 197:18
typically 83:2 85:21
typing 339:2

U

U.S 1:1 3:5 14:12 16:3
 21:15,16 34:12 50:3,6
 90:16 190:4 192:21
 234:9 256:10 275:1
 280:9 283:15 290:16
 295:15 333:21 345:16
 345:17
U.S.-Canada 294:11
Uil 3:15 156:10 200:16
 200:18,20,20 227:10
UKHO 294:1
ultimately 225:7 292:1
 345:1
UMBC 31:12
unacceptable 165:21
uncertainties 237:21
uncertainty 215:1
uncrewed 282:7 290:20
 314:17,19,22 316:2
 317:12 318:10 320:11
 324:2 354:3,5
undeniable 68:1
undergraduate 312:1
 313:5
undergraduates 293:2
underground 305:14
underlined 203:14

underscored 19:16
understand 25:12
 92:10 132:12 137:16
 194:21 195:4 199:21
 200:3 239:3 284:17
 324:3 340:6,10
 342:15 344:20 345:4
understanding 12:4
 109:14 138:20 150:12
 284:8
understood 142:7
underwater 110:9
 122:13 145:13,14
underway 299:3 307:9
 312:2 313:20
unfamiliar 128:9,16
unfavorable 165:5
unfortunately 122:7,11
 124:14 125:10 130:4
 324:9
unified 294:18
Union 289:17
unique 74:7,9,13 95:13
 107:15 175:7 288:3
unit 92:22 117:14
 119:17 244:16 245:22
 246:10 268:13
United 26:22 53:14,22
 69:10 82:6 100:3
 105:17 158:5 300:6
 302:22 303:13 312:10
units 56:22 82:10
 178:21 333:13
universities 174:9
university 16:9 31:12
 33:19 34:3 36:5,20
 190:8 232:17 233:6
 276:3 291:19,21
unknowns 188:16
unload 55:9
unmanned 276:7 314:8
unmapped 283:21,22
 285:9 319:8
unsafe 200:4
unsuitable 62:1
unsurveyed 337:19
unusual 265:16
upcoming 319:4
update 12:21,22 17:13
 44:17 45:18 139:1
 175:12,13 179:1
 188:11,14 196:19
 235:12 257:21 258:13
 259:3,5 260:4,16,20
 261:3,6,11 262:12
 264:21 266:22 277:8
 282:5 285:17 298:15
 299:1 307:4 349:8
 351:1 352:17 353:6
updated 254:4 262:14
 263:13 264:1 283:19
updates 16:18 42:3
 45:21 138:19 139:4
 173:8 188:12 233:22
 259:1,14 280:6
 286:21 288:7 297:5
 298:13,18,21 300:9
 327:21 329:5 330:18
 330:21,22 331:2,5
 347:18 348:9,10
updating 39:6 233:19
 306:13 331:3
upgrade 20:8,10 227:4
 272:6,8 273:6
upgraded 89:5 226:19
 274:10
upgrades 103:5 267:16
 287:3
upper 115:14 163:13
 242:3 247:11 317:14
upstream 112:4
upwards 81:6 86:7
upwelling 107:10
upwellings 109:14
urgency 284:8
usability 21:1,7
usage 68:20 70:7
use 7:8,13 29:7 30:21
 51:19 61:13 70:1
 75:14 78:11 86:22
 92:18 105:8 107:7
 115:11 117:15 118:15
 121:20 123:3 124:6
 133:19 143:9 146:7
 150:5 151:11 152:1,4
 167:8 172:20 178:7
 179:3,13 183:21,21
 190:12 193:15 198:8
 201:17,17 203:5,9
 204:17 207:6,14
 208:9 209:1,6,10,12
 209:19 212:3,7
 216:18 218:1 244:17
 246:1 271:8 289:2,5
 302:9 314:19 315:3
 316:10 321:9 324:2,4
 329:14,15,19 332:22
 348:17,18,22 352:5
useful 192:1 201:14
usefulness 5:16
useless 268:3
user 43:10 178:14
 264:16
user-drawn 93:4
users 21:2 68:15 132:1
 177:13 182:22 188:9

270:1 278:1 288:16
 300:21
uses 105:11 172:16
 208:22 322:12
USGS 311:14 312:6
 347:1
usually 35:10 169:19
 174:12 268:9 322:19
utilities 305:15
utility 305:13 350:9
utilization 153:3 248:17
utilize 26:3 245:13
 247:6 248:11 251:12
 254:7,13 333:5
utilized 249:12
utilizing 249:3,13

V

valet 80:8
validate 59:5 174:12
 230:20,21
validating 217:17
validation 154:16
 216:16 230:16 231:3
 264:3
Valley 99:4
valuable 21:3 63:21
 98:14 99:12 287:15
value 22:8 105:18
 199:20 280:10 333:10
Vandenberg 70:3
variable 170:12
varies 81:5
variety 23:7 39:18
 115:8 116:12 174:16
 191:10
various 273:14
vary 134:2 227:9
vast 43:20
VData 307:19
VDatum 298:18 303:8
 307:22
vector 328:10,11,15
vehicle 128:10 282:10
 282:12 317:2,3,18
 318:10 321:9 354:9
vehicles 319:9,13,21,21
vendors 294:18
Ventura 99:10 181:13
venue 130:4
Verdes 121:19
verify 193:13
version 195:14 251:17
 251:17 253:8,10
 262:1 265:8 285:18
 287:6 288:9
versions 252:18
versus 98:6 318:20

321:16 328:12
vertical 21:12 49:10
 172:12 234:8 236:13
vertically 236:9,16
vessel 55:8,10,14 56:18
 57:9 64:14 66:11,21
 82:8 90:18 115:11
 126:7 128:5 129:9
 165:15 169:15,17
 189:18 205:22 206:1
 206:2 207:6 214:8,22
 215:5 217:4 241:9
 245:11 246:7,20
 249:11 318:6 321:18
 322:12 323:15 354:12
 354:13,16
vessel- 42:7
vessels 55:1,9 57:2,8
 57:15 58:4 59:9,10,14
 59:18 79:21 80:2,5
 84:14 89:3,10 92:11
 97:1 101:17 136:18
 137:2,3,8 141:9
 156:20 203:8 214:17
 241:9 248:13 320:22
 324:2 333:8
vessels' 55:11
vice 1:15 30:7 34:10
 46:6 47:2 48:21 49:3
 233:12,15 234:5
 237:18 344:15 345:6
 345:22 347:4,11
vicinity 283:4
video 3:6 24:9 29:7
 228:1
videos 261:21
Vietnam 81:8,14
view 181:18 269:5
 270:18
viewing 266:21 269:6,8
views 264:16 271:7
vignettes 278:13
Vincent 90:6 180:1
violated 351:17
violent 263:5
Virginia 2:16 7:10 23:9
 40:7 311:1 329:13
virtual 7:22 8:18,19
 17:3 24:6 356:20
virtually 9:10 10:5 19:4
 345:8
visibility 83:8,13,19
 84:9,10,13,17 93:10
 119:21 134:14 142:15
 143:18 270:15,20
 271:10 273:18 274:3
visible 273:7
vision 28:3 182:15

187:12
visionaries 229:14
visit 13:18 200:7 288:21
visited 51:12
visits 8:7 13:22
visualization 259:11
 264:12 288:12
visualize 259:22 289:6
visually 84:18,19 147:6
VLCC 57:10 158:13
VLCC's 158:4
VLCCs 157:21
voice 29:7
volume 81:5
volumes 98:13
volunteer 64:6
vote 304:11,13
VTS 92:5 94:1

W

wait 101:20 102:1
 327:22 352:11
waiting 59:20 123:3
 203:7 204:6
walk 147:4 326:22
walked 289:1
want 5:6 7:2 10:18 11:2
 11:4 15:2 16:6,20
 25:15 41:7 51:1 52:6
 52:21 78:11,20 79:1
 82:19,20 85:3,4,5
 89:13 93:22 98:8,15
 102:13 106:8 107:8
 111:10 118:18 123:16
 124:21 129:21 130:11
 130:11 134:10 136:6
 146:7 156:17 161:11
 162:20 169:13 170:14
 175:15 178:3,12,13
 180:8 188:21 194:12
 204:21 216:15 218:10
 218:12 220:22 226:21
 227:3,18 230:12
 236:6 243:3 244:21
 247:3 248:5,6,8
 257:15 275:20 278:8
 290:8 292:3 298:10
 314:8 315:7,10 321:4
 328:2,20 329:22
 335:2 340:2 345:21
 348:7 355:13
wanted 11:10 19:6
 22:22 30:10 108:9
 113:3 130:16 135:18
 177:20 180:10 239:13
 256:16 282:6 288:19
 327:20 339:21
wants 29:18 202:16

232:6 272:13
War 98:5 117:2
Wardwell 1:15 10:19
 30:8 46:5 48:21 49:3
 49:8 233:12,15 234:5
 237:18 259:3 344:15
 345:6,22 347:4,11
warning 21:9 162:12
 258:4 272:15
warnings 162:1,13
 200:4 247:10,14
 266:8
Washington 74:11
 274:5
wasn't 30:2 104:7
 222:16 289:4
waste 25:13 163:1
watch 77:5 272:9
watches 266:7
watching 36:22 105:11
 259:21 269:15,17
 352:7
water 14:18 20:15
 49:10 58:9 60:12 84:1
 88:21 89:4 96:1 102:6
 102:10 119:9,12
 121:2,5,12,15 124:5
 125:15,21 126:3,8
 147:4 159:12 169:16
 170:11 179:8,9,16
 180:9 181:9,17
 183:19 192:7 209:11
 214:7 234:11 237:4
 242:16 245:7,9 246:6
 246:12 248:18 249:3
 251:11 253:7 261:4,5
 262:12 270:4 271:13
 271:18,19,22 272:1,5
 272:8,10,14,15,16,18
 272:19 273:1,4 274:4
 274:10 275:3 300:2
 302:9 310:19 315:20
 322:13 336:22 337:1
 337:2,3 346:5,6,8,11
 346:18 347:2
waterborne 55:15
waters 80:9 95:11
 105:3,5,9 128:9,16
 187:18 190:4 283:16
 284:4,5 285:9 290:16
 295:15 334:8 345:16
 345:17
waterway 68:20,22
 69:20 72:4 84:3,16,18
 84:20 91:16 124:20
 132:1 245:10
waterways 68:15 75:18
 89:6,7,8 147:1 241:22

wave 35:12 155:22
 156:1,8,8,9 169:11,11
 180:4 183:9 184:20
 185:3,8,10,13,18
 186:18,20 187:13,15
 187:15,19 189:15
 191:11,17 192:4,6,7
 192:10,22 194:9
 195:7,11 196:3,8,9,12
 196:15 197:17 198:2
 198:10,18,22 199:2,5
 199:9 200:9 210:2,10
 210:14 211:3 213:3,3
 213:4 215:11,12,15
 216:11,17 220:15,17
 221:11 230:2 232:12
 232:21 247:10
wave-current 229:2
wave-piercing 354:9
wave-related 184:2
Waverider 192:4
waves 183:8 184:1
 185:1,1,3,11 189:13
 192:5,11,14 193:7
 195:1,5,16 196:2
 205:9 208:6 210:1
 215:16,18 216:19
 229:18 247:22 248:7
 248:9 340:9
WaveWatch3 185:10
way 17:11 51:3 66:10
 76:8,13 83:17 84:18
 86:1 88:13 89:18 90:8
 92:17 93:8 97:8 107:5
 110:12,13 124:11
 134:11 138:1 142:7
 143:17 182:9 203:11
 204:8,14 211:1
 217:12 222:7 224:4
 224:20 225:1 232:12
 257:13 263:21 265:13
 266:22 267:22 286:1
 294:15,19 299:11
 300:3,7 303:18 304:9
 305:7 310:1 314:1
 315:12 324:5 332:2
 333:21 335:6 344:2
 348:12,16,19 352:2
 357:10
ways 9:11 82:17 89:14
 90:9,13 92:8 150:6
 202:20 304:19 307:13
 323:14 351:3,4
 357:12
we'll 17:5 30:13,17 33:6
 44:22 45:16 46:1,4,16
 47:20,21 48:2,18
 69:20 77:9 78:1 81:16

- 89:22 105:6 129:1
130:6 148:4 153:17
176:1 183:2 189:4
193:8 240:1 243:5
251:18 254:19 262:3
262:19 263:8,11
280:12 281:17,22
282:3 283:16 285:10
288:4 291:11,12
293:5 296:5 302:2
303:2 304:3,7,9,11,12
304:14,22 305:17
309:3 318:22 324:1
324:18 326:5 343:20
348:22 353:5,5
357:16 358:2,9
we're 5:9 8:2 10:4,10
13:10 16:7 23:7,21
32:1 35:1 37:2 38:13
38:19 42:5 48:5,8,20
62:21 63:5 68:21
69:13 72:16 73:22
75:3 77:1 80:8,16,17
80:20 82:13 84:11,12
88:4 89:17 90:1,10,11
91:15 96:14 97:2,7
100:8 102:10,15,17
104:19 105:20 107:9
108:15,20 110:14
114:5,15,17,18 115:2
125:22 133:3 134:7
134:15,18 144:8,16
144:17 145:11,13,15
145:18 147:12,21
150:21 152:16 153:7
154:13 158:3 159:1
159:11 163:15 166:22
169:8,14 170:3 171:2
171:7 172:19 173:10
175:21 181:7 189:1
190:8 191:21 193:17
195:20 198:14,16
201:9,10,15,19 202:4
203:11,14,20 204:11
204:12,13,15,20
205:4 206:13,20
207:16,19 208:1,2
216:7 224:4,6,13,14
225:1 226:6,7,8 229:9
229:11 230:22 231:1
231:2 234:22 236:21
237:10 238:10 239:2
239:8 242:1 243:9,20
247:9 248:1 252:20
253:19,20,20 254:18
255:5,16 257:8,10
259:9,20 261:10,11
261:21 263:3 264:6
269:10 271:4 275:6,9
276:8 277:5 280:17
281:22 283:4 284:6,9
285:21 287:3 291:5
291:11 292:5,8 295:7
296:17 297:11 300:10
300:14,17 301:4,12
301:13 302:4 303:14
303:18,20 305:20
306:4,10,11,16,20,21
307:12 308:11,21,21
311:4,21 312:15,19
313:1,6,13,15,18
315:8,17 319:8,15
320:3,20 321:3 324:6
324:9,12,19 327:14
328:13 332:12 334:21
336:18 338:7 345:7
346:17,17,20,22
347:8 348:12,13,21
350:12 351:2,5,10,21
352:8,9 354:21 355:6
we've 13:6 19:7,18 20:4
37:20 55:19 64:4 66:7
70:8 71:10 76:4,16,19
76:22 90:8,9 101:18
101:22 106:11 121:10
129:7 132:11,19
133:17 138:6 140:5
141:13 143:20 145:3
145:10 149:22 151:14
151:15 152:7 159:7
198:22 201:2 202:16
203:7,12 205:3
212:11 215:11 216:2
219:6 226:9 236:12
238:18 241:3,16
242:16 250:15 251:2
252:13 253:9 257:4
259:15 260:1,8 261:7
261:20 263:9 264:9
266:2,12 267:11,20
267:20 268:5,6,7,11
268:12,12,20 270:6
270:12 271:15,17
275:14 281:3 283:21
287:18 288:5 291:20
292:9 296:1 297:6,10
298:13 299:3,7,11
300:14 301:22 303:8
304:10 306:3 307:9
308:19 310:14 312:10
312:12 314:20 315:14
321:19,20 326:4
327:5 332:6 338:6
350:7 351:3,20
Weapons 177:1
wear 355:15
wearing 65:5 130:14
weather 3:13 11:12,16
11:21 21:8 52:9 55:5
76:4,12,14 78:7,10
123:8 125:7 127:3
128:18 129:3 155:20
155:21 169:10 179:21
180:10,20 181:2,5,7
182:19 183:1,17
184:19 187:21 195:10
222:6 241:11 242:17
247:8,10,12,16,18,20
248:22 249:1,5,13
251:19,22 252:3
253:14 265:18,21
266:6,10,12 267:7
268:4 269:17 270:17
271:3,12 288:21,22
310:16 311:9 316:21
321:13 341:16,18
346:19,21
weather-related 182:12
web 194:1 262:13 266:4
269:1 272:7 288:18
webcam 18:18 53:11
268:21 270:15 271:8
webcams 269:10,11
271:7 349:16,19
WebCOOS 268:21,22
348:15 349:21
webinar 1:12 5:4 7:12
28:11 29:8,12 327:17
webinars 182:21
261:22
webpage 264:20
283:18
website 29:3,10 172:11
195:14 199:13 200:8
243:10 265:14 266:9
266:19 268:17 271:16
273:5 277:11 304:1
326:8 336:4 349:19
websites 242:20
week 10:15,21 11:10
12:12 16:15 23:15
37:17 38:20 69:7
129:11 283:14,20
284:21 297:13 313:19
320:9 329:9 357:14
week's 32:16
weekend 8:17
weeks 15:8 72:9 134:8
164:13 224:3 281:21
312:22
weight 57:12 317:2
welcome 6:7,11 9:22
13:12 24:12,14 28:20
51:5 63:4 139:10
333:22
Wendy 112:16
went 48:14 58:14 96:6
125:17 153:20 154:15
154:16 236:21 240:5
242:8 269:17 358:22
weren't 140:15,21
Wesley 256:7
west 38:20 56:5 57:4,4
98:19 99:6 108:4
113:10 133:11 146:18
158:14 166:11 175:8
176:1,4 198:1 221:15
221:15 222:15 225:10
236:16 285:12 296:6
303:8 308:5 346:9
347:10,12
Western 80:22
Westley 2:6 37:6,9,10
218:17 221:2 257:20
258:2 288:20 346:14
347:5 349:15 353:3
wetlands 110:8
whack 124:15
whale 105:10
wharfs 96:15
wharves 89:5
whatnot 117:17 118:9
whatsoever 133:16
wheel 164:8
wheelhouse 83:9,14
white 115:13 316:16
wide 102:19 157:22
158:1 191:10 281:9
widen 60:21
widening 55:17 56:2
wider 82:15
widths 54:22
Wildlife 73:17
willing 226:8
wind 33:3 62:12 84:6,7
91:12 92:10 102:14
102:15,18 103:11,11
103:15 105:12 107:11
109:16,16 143:1
185:6 194:15,21
195:21 230:21 247:14
247:21 267:20 268:2
268:2,13,13,15,16
274:3
windage 89:9
window 87:4 168:13
206:15 207:5 211:2
244:5,7
windows 207:5 210:17
winds 108:2 156:2
184:21,22 185:8,11
203:19 205:9

wine 99:6
Winn 279:17
wise 356:7
wish 10:3 18:13
woefully 109:12
wonderful 36:13 157:10
 306:16
wondering 95:5 103:20
 134:16 141:15 345:12
wonky 111:6
Woolpert 31:11 309:21
word 30:22 138:8
 145:12 149:14
wording 191:8
words 10:2,2 29:19
 94:8 121:14 152:9
work 5:7 8:16 12:2,22
 12:22 13:1 14:21 16:7
 16:21 19:15,21 24:16
 27:18 30:11 33:22
 37:1 38:2 39:21 41:11
 41:16 47:20 52:4
 53:10 62:3 72:8 73:2
 74:20 91:9 101:3,12
 109:5 111:14 128:15
 147:13 148:3,6,8,15
 148:20 150:11 154:3
 156:18 157:11,16
 174:12 175:6 183:3
 191:2 200:2 201:19
 202:1,13,22,22 205:8
 205:11 213:1 217:21
 222:11 229:7 231:16
 232:13 235:4 237:7
 252:14 253:9 263:4
 277:1 280:14 281:16
 284:2,17 286:5 287:8
 289:15 291:6 293:7
 293:18 294:5,9,16
 296:2 300:20 301:15
 301:16 303:10 304:22
 307:22 308:13,21,22
 311:8 313:6 315:22
 317:20 334:19 336:12
 340:1 341:9 351:20
 351:20
worked 8:6,16 35:11
 42:17 139:14
workforce 16:2 23:4,11
 64:6 290:5 291:1
 292:6 313:13
working 11:3 16:11
 18:19 31:16 42:21
 43:7 53:21 91:4 96:22
 97:2,7 101:4 104:21
 111:7 122:18 123:7
 125:6 127:2 128:8
 129:3 139:5,8 147:14

147:22 153:15 157:15
 157:18 175:21 203:12
 212:11 226:9 227:16
 228:19 239:15,18
 252:3,17 263:10
 275:9 280:21 281:5
 284:6 286:4,9 300:20
 301:9 305:17,20
 307:2 310:15 311:4
 313:15 329:3 332:12
 335:21 338:9
works 54:15 76:20 80:1
 201:18 204:19,21
 230:4 274:19 355:12
world 73:9 80:13,18
 117:2 123:13 193:5
 232:12
worldwide 190:4
 293:18 294:21
worn 355:16
worried 29:17
worth 81:3 94:7 97:17
wouldn't 77:19 138:10
 139:12 226:21 336:6
 345:17
wow 146:12,12
WPS 196:15
wrap 144:18 151:10
 152:17 355:7
Wrap-up 4:8
wrapped 292:10
wreck 128:11
Wright 3:15 40:15
 45:17 173:7 240:8,14
 240:21
wringing 139:20
writing 227:5 342:11
written 29:4 37:8
wrong 29:18 201:13,21
 208:10,11 217:16
 255:2,3 342:16

X

X 230:13

Y

y'all 228:5
yard 88:8,12
yards 61:2,17 88:11
Yay 147:11
Yea 339:8
yeah 31:8 33:9 49:3
 79:13 111:22 139:18
 141:6 144:12 155:6
 189:7,8 209:14 219:2
 219:11 223:21 226:4
 227:10,15 228:8
 233:15 234:16 235:3

237:18 238:8 240:16
 310:9 320:16 326:21
 327:5 331:7 333:22
 334:5 345:6,22
 346:12,12 347:13
 357:20
year 16:11 20:2,3,10,16
 22:1 39:21 40:1 47:1
 53:21 62:5 69:12 80:2
 81:4 95:16 96:5 97:11
 97:18 100:1 102:11
 111:18 133:2 187:11
 197:2 226:20 227:4
 230:12 240:19 241:17
 249:8 251:14 252:19
 262:16 263:11 274:1
 274:21 275:8,15
 277:5,6 278:7,8
 280:16,16 281:7
 282:8,12,17 287:2,6
 291:9,13 293:3
 298:14 300:17 301:14
 308:18 309:3,5
 313:11,16 331:21
 336:2,2 338:13
years 19:2 23:12 35:11
 37:17 43:6 54:5,15
 57:22 60:20 61:9
 69:15 74:18 77:2
 86:12 87:5 89:1 90:2
 99:19 101:7 102:9
 104:6 105:18 109:6
 129:11 136:16 141:14
 148:15 149:22 151:15
 154:16 155:11 163:8
 171:22 174:22 187:7
 187:9 191:22 192:18
 196:18 198:22 224:15
 233:2 239:14 251:21
 252:4 254:10 261:2,6
 263:14 266:21 296:10
 299:8 307:18 334:11
 336:8
years' 111:19
yellow 124:14 179:20
 189:18 211:1 214:4
yesterday 194:13
 218:11,19
York 20:11 251:6
York/New 296:20
young 349:9

Z

zero 97:2,5,8 133:9
zero-emission 97:3
zip 92:16 219:16
zone 2:9 9:14 26:22
 34:7 71:17 101:5

zones 105:6
zoom 176:6 250:5
zoomed 195:14

0

092 197:16

1

1 254:6,9,11
1,100 57:12 102:18
 157:22 161:3
1,100-foot 58:6
1,200-foot 66:10
1,300 82:3 102:17
1.2 95:17
1.4 58:11
1.5 205:18 215:5,6
1:15 153:12
1:19 153:21
10 66:18 77:2 81:13
 83:7 90:1 96:4 97:19
 99:16 187:6 209:4
 214:18 263:14 277:3
 298:3,4 336:21
10-foot 101:18 161:4
10:07 48:15
100 254:5 323:6 345:20
100-foot 102:21
100,000 302:6
101 333:2
102 179:2 248:18
 296:19 332:16
104 248:18
11 66:19 160:21
11:30 357:19 358:1
11:58 153:20
114 115:17 308:19
12 81:13 103:5 124:5
 273:3 307:8 323:10
12-foot 124:4 337:6
120 181:11 317:16
121 158:13 159:4
124,000 249:8
12th 60:11
13 20:16 194:17 334:22
 338:1
139 168:2
14 194:17
14- 248:6
14-meter 248:9
14.6 249:15
144 210:12,16
14th 60:7
15 48:1,5 153:10,13,17
 210:22 211:6,7 240:2
 307:8
15- 190:6
15-centimeter 209:6

15.25 322:5 323:2
154 4:4
16 21:18 181:17 320:8
 320:18
17 96:15 97:14 105:3
18 70:19 272:17
18,000 56:21 82:10
18.6 261:2
18.6-year 260:17
19 211:1,5
19-year 234:11
19,020 56:21
1907 79:18
1929 236:18
1939 76:7
1970s 190:1
1980 273:12
1983 261:12
1990 71:14 260:9
1997 198:19
1st 119:4 313:21

2

2,000 261:15
2,400 319:6
2,546 319:6
2.0 116:2
2.1 251:8
2.5 61:17
2.7 236:20
20 39:20 48:9 77:2
 86:12 87:5 99:19
 130:7 146:19 214:17
 261:6 296:10 318:7
20- 96:5 352:12
20-foot 82:10,11
20,000 82:13
200 53:20 61:6 65:2
 97:17 157:22 284:4
 284:13 338:16
2001 261:12
2002 261:13
2008 95:4
2013 114:22 170:16
2014 229:14
2015 82:2,8 95:4
2016 125:11 154:15
2017 119:1
2018 115:2 171:10
 223:7
2019 127:22 154:17
2020 119:4 224:2
 261:13
2021 60:7
2022 60:8,11,13 81:11
 282:12
2023 20:8 60:14 123:14
 197:10 224:10 277:6

278:11 283:21 287:3
2024 1:9 10:1 95:5
 253:3 280:13 283:22
 289:13 301:18 302:13
 303:20 307:10 308:7
 338:1
2025 188:7 253:13
 263:9 303:20 307:22
 308:8,17
2026 188:7 252:9
 253:16,18 254:6,9
 261:14 301:3 304:21
 308:10 333:4
2027 62:13 277:6
2028 61:8 69:17 307:22
 308:9
2029 254:11
2030 152:4 284:5 285:6
 334:14
2031 147:16 148:16
2040 284:5
2045 103:3

21 96:5
213 197:16
215 197:13
22 310:12
23 20:17 291:9
23,000 119:4
230 158:1
24 20:2 131:5 203:22
 280:16 291:13 309:3
 309:5 319:21
24-hour 320:7
24/7 181:18
241 4:5
25 20:3 103:3 261:6
 338:13
25-year 352:12
255 4:6
25K 229:15
26.65 322:7
27 233:2
27th 60:14
28 43:6

3

3.0 287:6
3.95 322:6
3:00 239:9
3:01 240:5
3:15 240:2
3:16 240:6
30 79:18 96:3 105:5,5
 129:10 191:22
30-foot 177:22
30,000 161:16 166:5
 321:13
300 90:5

300,000 97:15 158:2
30s 98:7
325 4:7
325,000 57:13
350 64:22
355 4:8
365-meter 90:10
38 273:21
3D 226:19,20 289:11,12
 289:13

4

4 256:20,21
4,000 80:2
4.3 96:2
4.7 103:15
40 25:21 308:16
400 81:6 82:3 103:9
 114:11
400-meter 90:12
40s 150:4
42 177:20 178:4,11
42-foot 178:10
43 81:12
435 95:19
44.2 322:16
44th 3:6 24:1,11,12
45-foot 66:11
45,000 97:16
454-foot 64:10
48 283:22
49 4:3

5

5 1:9 4:2 81:14
5.5 323:9
5:25 358:22
5:30 342:19
50 56:5 100:3 102:19
 158:6 283:21 334:8
50-foot 101:18
50-knot 123:12
52 56:20 57:8
55 56:4,6,7 57:6 115:14
 249:7
55-gallon 127:13
550 64:4
58.6 322:8 323:2

6

6 81:14
6.3 24:21
60 178:6
60-foot 177:22
600-yard 114:12
600,000-plus 97:14
62 115:16
65 58:9 161:5,15 168:3

65-foot 160:19
66 161:15
66- 168:5
67 161:15 168:6
67- 168:5
68 161:16 168:6
68- 168:5
69 115:3 129:1 158:15
 161:16 168:13
69-foot 158:3 161:14
 166:22 168:5
6th 60:8

7

7.3 323:4
7.4 61:2,17
70 57:11 152:3
72 319:22
75 102:20 161:5 219:7,7
750 64:6
76 55:22 56:2 57:20
 58:9 158:19,20
 160:21 161:13 219:7
 322:17
76-foot 159:1

8

8 334:22
8:30 357:18 358:1,1
80 55:22 57:21,22 128:1
80- 102:21
800,000 129:10
87-foot 64:11
88 236:21

9

9.6 58:8
9:00 1:12
9:01 5:2
9:47 48:14
90 99:3 190:3
900-foot 117:2
90s 273:13
911 66:15
95 318:14
98 198:20

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This is to certify that the foregoing transcript

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Before: DOC NOAA

Date: 03-05-24

Place: webinar

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