HYDROGRAPHIC SERVICES REVIEW PANEL

PUBLIC MEETING

DATE: Wednesday, November 19, 2008

TIME: 8:00 a.m. - 5:30 p.m.

PLACE: Westin Harbour Island
725 South Harbour Island Boulevard
Tampa, Florida 33602

REPORTED BY: CATHY J. JOHNSON MESSINA, RMR, FPR
Registered Merit Reporter
Florida Professional Reporter
Notary Public, State of Florida
MEMBER: NCRA, FCRA, STAR

ATTENDEES

HSRP PANEL MEMBERS:

Thomas Skinner, Chair
Edmund Welch, Vice Chair
Jonathan Dasler, HSRP
Elaine Dickinson, HSRP
Captain Sherri Hickman, HSRP
Captain Thomas Jacobsen, HSRP
Dr. Gary Jeffress, HSRP
Robert McBride, HSRP
Captain Andy McGovern, HSRP
Captain Minas Myrtidis, HSRP
Matthew Wellslager, HSRP
Rear Admiral Richard West, HSRP
Larry Whiting, HSRP

NON-HSRP MEMBERS:

Andy Armstrong, OCS
Captain Steven Barnum, OCS
Jack Dunnigan, NOS
Michael Szabados, CO-OPS
Dave Zilkoski, NGS

REGIONAL STAKEHOLDER PANEL:

Steve Fidler, Tampa Bay Port Authority
Tom Watters, Florida Department of Environmental Protection
Captain Don Lewis, USCG (Ret.) Jacksonville Maritime Exchange
Captain Cal Hunziker, Council of American Master Mariners
Mark Luther, USF, College of Marine Science

CLIMATE STAKEHOLDER PANEL:

Keelin Kuipers, NOAA Coastal Services Center
Judy Gray, NOAA Atlantic Oceanographic and Meteorological Lab.
David Seris, USCG Waterways Management Branch, District 17

STAFF MEMBERS:

Kathy Watson, NOAA Office, Co-Survey and CO-OPS
Ashley Chappell, Co-Survey
Danielle Stuby, NGS
Virginia Dentler, CO-OPS

(WHEREUPON, the following Public Meeting was had and taken.)

MR. SKINNER: I'm Tom Skinner. I'm Chair of the HSRP, and we'll open this meeting with some comments from our federal officer, right?

CAPTAIN BARNUM: Yes, sir. Thank you, Tom.

My name is Captain Steve Barnum, and I am the designated federal official for this Federal Advisory Committee. I have a couple of logistics I want to pass out first before we get started.

The evacuation directions in case of emergency is exit out to the left and out of the room and walk out the side to the outside. The restrooms are located straight out of the doors to the ballroom and past the staircase to the right. So that's simple.

The meeting protocol of this Federal Advisory Committee is to again put input and advice and expertise from members of the FACA on NOAA's hydrographic services. So I'd like to remind the panel members as well as the members of the public the mission goals of this panel.

The HSRP is governed by the Federal Advisory Committee Act it has established by the Hydrographic Services Improvement Act Amendments of 2002.

The panel is charged with advising the NOAA administrators on matters specified in the Hydrographic

Services Improvement Act specifically related to hydrographic services.

In a nutshell, hydrographic services are those services provided by three programmed offices within NOAA: The National Geodetic Survey; the Center for Operational Oceanographic Products and Services; and the Office of ~~Co~~ Coast Survey.

The panel membership consists of 15 voting members. These are nongovernmental employees appointed based on their particular expertise.

Members of the panels do not represent organizations or entities of which they are employed, but again they are empaneled by the mere fact of their particular expertise. The members are appointed to serve a four-year term.

There are three nongovernmental employee members: Andy Armstrong, co-director of the Joint Hydrographic Center; Dave Zilkoski, director of the National Geodetic Survey; and Mike Szabados, director of the Center for Operational Products and Services.

There is an additional nonvoting member that is Andy's counterpart from the University New Hampshire, the other co-director for the Joint Hydrographic Center, Larry Mayer.

Our meetings are scheduled and are required to be

held minimally twice a year. I would like to also ask that any of the members of the public please sign in here on the public sign-in sheet in the corner. There will be some public comment period during this FACA meeting.

I'd like to also introduce Ms. Cathy Johnson Messina, our court reporter today. Welcome, Cathy. Cathy is with Johnson & Associates. She is a native of Tampa and has 30 years of experience.

She's very proud to be from Plant City, which is I guess debated to be the Strawberry Capital of the World. I would probably vote for that, being an East Coaster myself, but I think some others might take a different opinion.

I would also like to say that when you speak please identify yourself and speak slowly and clearly, because I know a lot of the discussions we have involve technical terms, and so be kind to the court reporter.

And, Cathy, certainly if it starts getting overwhelming please raise your hand and use your erasers, as you talked about earlier, to get people's attention.

So with that, I'll turn it back to Tom.

MR. SKINNER: Thank you, Steve. We also have Jack Dunnigan, who's no stranger to this panel. And, once again, Jack, we really appreciate the amount of time you put into this. I think we'll all go into shock if you

ever don't attend one of our meetings, because we've gotten so used to it. So that's a dangerous precedent you've set, but we're, as always, very pleased to have you here.

MR. DUNNIGAN: Well, Tom, thank you very much. And let me say that I'm always impressed of the amount of time that you folks put into these meetings and very much appreciate it.

As I looked over and worked with the staff on getting the agenda ready, one of the impressive things here is how much of the agenda that you have for today and tomorrow.

Yet you, as members, have contributed to and are doing work in-between meetings and helping analyze programs and looking at the national strategy for maritime transportation and generating -- I know you'll generate some good discussion on that. So it's always great to see that you folks are willing to help us out and put the time in to do that.

I'd also like to welcome our Stakeholder Panel. Thank you, gentlemen, very much. I'm the director of the National Ocean Service, and this is our National Advisory Committee.

And we get, as I said, enormous benefits from them, but I can tell you that they have one -- and we in NOAA

have learned tremendously from the regional Stakeholder Panels we've been holding at the last couple of meetings around the country. So we really appreciate you taking the time of you coming to talk to us and we're looking forward to the discussions we can have this morning. So thank you very much and welcome.

There's a couple of interesting things going on. Just by way of noting, about two weeks and one day ago we elected a new president, so we are now well into transition time. I actually have another agenda. I'll do it in a minute though. I'll do it right now if I can, but I'm supposed to report to you on the budget for NOAA.

And no news is bad news. We don't have a budget. We're -- in Ocean Services, we're operating through the first quarter of the year on ten percent of last year's allocation. So we're basically, you know, keeping the lights turned on and paying salaries and not able to do a whole lot else.

Now, we can do that because large parts of our organization, as you are aware, are focusing on outside the agency. Coastal management classes is about 12 percent of our budget.

We have large research grants and a lot of our external funding for hydrographic services, our contract money is money that we forward from previous years'

funds, so we're able to operate now. And, you know, as we get that money in the middle of the year we can, you know, move forward and finish out the year.

So since we have those large pools of contract funding and external funding, it doesn't dramatically hurt us to be able to operate in this initial period, but it's still tough. I mean there's a lot of things that we're not doing. Positions are going unfilled. Meetings are being postponed.

So until the Congress and the president decide that we're going to get a budget, that's the situation that we're in.

Now, there was some hope that this week the Congress would come back after the election and actually pass a budget for '09. That was one of the things that was being talked about right around election time. It turned out over this weekend that that's not going to be able to happen.

The president has indicated that he is, you know, he is not going to sign something that he doesn't think is the right thing for the country. And the Congress isn't going to move something that they don't think is the right thing for the country. So there's -- it just does not appear that there's going to be a coming together of minds in the short-term to get us a budget, which means

we'll have to wait for an FY '09 budget until after the first of the year when the new Congress gets seated and actually after January 20th when Senator Obama becomes the president, so we'll have to wait for that.

Our current funding carries us through the first week of February. My guess is that they'll probably do an '09 budget fairly quickly after the inauguration, but for the time being we're still in a holding pattern on the budget.

But with that being said, the transition is moving very, very quickly. So quickly that I found out yesterday morning at 9:00 o'clock that I have to leave today, because I have my first meeting with the transition team tomorrow morning at 10:00.

So I will be there and I will be carrying the good story and the great work that we all do and that NOS does and the importance of our maritime transportation mission. And we will, you know, try to get traction.

But the people who are working the NOAA transition are not new faces: One is the former general counsel in the Clinton Administration. Her name is Monica Medina; and the other one is Sally Yozell, who was director of Legislative Affairs and then deputy assistant secretary in NOAA in the Clinton Administration.

And Sally, when she left, went to work for Battelle

for four or five years. So she's familiar with sensors and instruments to get those sensors in the water, and she's also worked for the last year and-a-half for the Nature Conservancy. So she stays engaged in the game, and these are people who know NOAA already. So my guess is we'll be talking to them mainly about things that have happened over the last several years that have changed NOAA and brought new priorities to us and see what their reaction to that is.

So the transition is well underway, and it will be a fairly busy time, I think, for us for the next couple of months, but although I would much rather stay here and go to the Propeller Club tonight, my brother's retirement party is tomorrow night, which I'm now going to miss. I'd much rather stay here, but I think my time tomorrow will be better spent working with the transition team, so I won't be able to stay.

But thank you again. If you have any questions, I'd be glad to try to answer them as we get started here. Anything I didn't say that you want to hear about that -- it's great to be able to be here. Gary, you want to go first?

DR. JEFFRESS: Jack, this sounds like an opportunity to mince our goals with an economic stimulus package. And I guess the message would be to the

transition team that NOAA is well placed to get lots of funding out to contractors out to the private sector in order to help stimulate and create jobs.

MR. DUNNIGAN: I fully agree. And these were a lot of ideas that we carried when we were talking stimulus package last week. We're not really talking stimulus package this week.

It became really clear if anything's going to move it's going to be a mini-package; that the president was not going to sign something that the Congress would pass that would be $150 or $250 billion.

And so right now the Senate is working, and I didn't read this morning how much progress they made yesterday, but the Senate is working on a smaller package and Speaker Pelosi has said she is not even going to call the House back into session until she knows that they've got something that will pass and the president will sign.

So I think right now the prospects for a stimulus package in the next week or two weeks aren't good, but they will be significantly better after January 20th. And we are identifying, you know, lots of things where we know that we can help funnel federal funding that will be beneficial to the economy as well as beneficial to our programs in fairly short order.

So good point. Thank you.

MR. SKINNER: Ed.

MR. WELCH: Jack, welcome. Regarding the two latest -- the transition team, it seems to me that we're having unusual -- people that are more oriented towards the ocean part of NOAA than necessarily that of the atmospheric part, which I would say is somewhat unusual. Would that lead to your characterization, oceans as opposed to atmospheric?

MR. DUNNIGAN: I don't know that I would say that. I don't know Monica Medina at all. I was out of NOAA when she was the general counsel.

MR. WELCH: She does a lot of fishery stuff.

MR. DUNNIGAN: Yeah, that might be beneficial. And certainly Sally's experience since she left NOAA would be oriented towards the wet side, but Sally, you know, worked on the Hill for a long time. She worked for Senator Kerry. She's got a lot of breadth, I think, and so I hadn't thought about that. That is interesting.

MR. WELCH: And with regard to Gary's excellent suggestion, I think perhaps as much a key as getting stuff into the stimulus bill is not necessarily communicating with the administration, but it's communicating directly with senators and congressmen. So I mean about the private sector, because this stimulus bill, the one that's going to be done in January, will be

written as much or more so by the Congress itself than by the executive branch.

So, Jack, is there any way of the agency sharing with us either collectively or individually what type of things you thought you all could use stimulus money for?

Some of us might be able to use that information in a beneficial way.

MR. DUNNIGAN: I think we can talk about that.

MR. WELCH: Jack, how is NOAA briefing the transition team? Do you as an AA brief everyone that's under you, or do they talk to people under you?

For example, how does Hydrographic Services get briefed through; and how do some of the other sub set sections of NOAA get briefed? Is it all done by AA? Is there a team, or how is that done?

MR. DUNNIGAN: Thank you. Good question. We've been working on this transition for four or five months now all throughout NOAA. And we have a very comprehensive internal briefing package that has been prepared for the transition team that covers all of the line offices and all of our goals and goal teams. And that material has already been given to the transition team including these two -- these two people plus the people at the department level who are working on it.

The material is also -- we prepared all of that and

then we didn't know how they were going to want to get it besides just handing it to them. So it was yesterday morning that I found out that they wanted to talk to me. And the meeting, as I understand it, that I'm having tomorrow is an introductory meeting. So my sense is it will probably be the first of many.

But, you know, how we brief them is really going to depend upon how they want to be briefed. So far, they haven't indicated what their answer to that is. I'll talk to them as much as they're willing to listen.

MR. WELCH: This is a follow-up. That's interesting, because you'll find out very quickly tomorrow what's on their mind. They've read all the material, the topics. When they start talking to you, it will be interesting to see where they're focusing.

MR. DUNNIGAN: Okay. I have just, Mr. Chairman, one last thing that I want to make sure that I make note of. This is sort of a sad time and a sad meeting for all of us, because this is the last time we're going to have Dave Zilkoski sitting with us around the table.

David's retirement will take place at the end of the year. He will move on to -- he can't move on to greater and more wonderful things, because he's had one of the greatest jobs in government for the last four years and more of the really, you know, great teams for us for the

last 34 years. So I would ask you as you're here over these next couple of days to give him a hard time and make sure that he knows how much you all have appreciated the work that he's done.

And, Dave, certainly you've been a terrific colleague and a great guy to be with and a marvelous contributor to the common good that we all pursue here.

So thank you very much. And everybody give him a hard time.

MR. SKINNER: Thanks, Jack. And with all that's going on, once again, we even more so appreciate the fact that you're here.

I find it somehow ironic that I have to come to Tampa, Florida, to find out that Sally Yozell, who works down the street from me, is on the transition team. But it's interesting to note that we had lunch not too long ago and we were actually talking about the HSRP. She's very interested in what's going on in Massachusetts. I know she's management, a lot of which requires very heavy on data, and that was her focus. And I think this just goes to show that I need to get out more and have lunch more frequently to find this stuff out.

But the point of my comments are that I think that's a very good sign. She's very much plugged into the ocean side.

Also, I want to thank the HSRP staff that's been working diligently since our meeting in San Francisco three months from the last meeting to this one. There was not a lot of time to close out that meeting and put this one together.

So to Kathy, Ashley, Danielle and Virginia, thank you very much and also to all of the agency staff who helped put this meeting together. I know it takes a lot of work to do and there are a lot of people behind the scenes that organize these meetings. So thank you all very much.

A couple of housekeeping things: Many us have signed up for dinner tonight. Is it the Beetles format or is that -- we don't have to have costumes, do we?

Okay. We're going to meet at 6:00 p.m. in the driveway. And those of you who have signed up, you need to pay Ashley $60 in order to get your ticket. And if you did say you're going, you are going, so no backing out. We've got a very full agenda over the next couple of days. I want to go over it very briefly.

As Jack mentioned, we found that the Stakeholder Panels that we've had in previous meetings have been extremely informative and helped provide a perspective we can't get anywhere else. So we're very happy to have our panel with us this morning. We'll be hearing from them

shortly.

After the break, we'll be hearing back from members of the panel who have looked at various plans and reports to report back, and we hope to get some recommendations from those.

In the afternoon, we have a panel on climate change. For those of you who were not at the San Francisco meeting, this became a very hot topic, so to speak, with the interest in the Northwest Passage and also the impacts of climate change. So that we're also looking forward to. We have some updates as well.

And then tomorrow is something different. For most of the day we will be doing a facilitated discussion on where the panel goes from here. We have our report. We've been having excellent meetings with the Stakeholder Panels and making recommendations, but both Ed and I thought that it was time to regroup and have some help in figuring out what our game plan and strategy would be for the next several years, so we have someone coming in for most of the day.

We also have some updates at the beginning of the day as well as during lunch a session on contracting, I think, so lots to do.

And with that, are there any questions? Or, Ed, would you like to make any comments?

MR. WELCH: No.

MR. SKINNER: Let's launch into our Stakeholder Panel, and actually look though them as well. And normally we sort of do a routine introduce all of the panel members here to no one in particular, but since you're all sitting up there, why don't we start with the panel members. If we can go around and tell a little bit about yourselves so that you all know who it is you're talking to. Start at Adam.

MR. McBRIDE: I'm Adam McBride. I'm with the Port of Lake Charles, Louisiana.

CAPTAIN JACOBSEN: Tom Jacobsen, Long Beach harbor pilot, California.

MS. DICKINSON: I'm Elaine Dickinson, and I'm with the Boat Harbors Association of the U.S.

DR. JEFFRESS: I'm Gary Jeffress. I'm professor of geographic information science and director of the Texas Coastal Ocean Observation Network.

MR. SZABADOS: Mike Szabados, director of NOAA's CO-OPS program.

CAPTAIN McGOVERN: Andrew McGovern, same here, Harbor Pilots of New York.

REAR ADMIRAL WEST: Dick West, retired Navy sailor.

MR. DASLER: Jake Dasler. I'm with David Evans and

Associates, director of Marine Services, and a NOAA contractor.

MR. ARMSTRONG: I'm Andy Armstrong. I'm the NOAA co-director of the Joint Hydrographic Center at the University of New Hampshire.

MR. WELCH: I'm Ed Welch of Alexander, Virginia. I do representational work for maritime organizations such as the Union of Greek Shipowners and U.S. Passenger Vessels Association.

MR. SKINNER: I'm Tom Skinner. I'm with Durand and Anastas Environmental Strategies in Boston, Massachusetts.

MR. DUNNIGAN: I'm Jack Dunnigan with NOAA.

CAPTAIN BARNUM: Steve Barnum, director of Co-Survey.

MR. WHITING: Yeah, Larry Whiting. Excuse me. Larry Whiting, retired Hydrographic Survey.

MS. WATSON: Kathy Watson, NOAA office, Co-Survey and CO-OPS.

CAPTAIN HICKMAN: Sherri Hickman, Houston pilot, 14 years.

CAPTAIN MYRTIDIS: Minas Myrtidis, vice-president for the three original cruise lines and still America.

MR. WELLSLAGER: Matt Wellslager -- program manager.

MR. ZILKOSKI: Dave Zilkoski, Director of National

Oceanic Geodetic Survey; soon-to-be retired, as Jack said. And I wouldn't call myself a sailor, but I do have a place on the lake and I will be boating, I guess is what it would be, and I enjoyed my time in.

MR. DUNNIGAN: Do we chart the lake?

MR. ZILKOSKI: Well, I could chart the lake, that's right, it needs some.

MS. CHAPPELL: Ashley Chappell, Co-Survey.

MR. STUBY: Danielle Stuby, NGS.

MS. DENTLER: Virginia Dentler, CO-OPS.

MR. SKINNER: Thank you all. And if we could have just each of you introduce yourselves and then start with the presentation, that would be great.

MR. FIDLER: I'm Steve Fidler, the senior director of operations, Tampa Port Authority.

MR. WATTERS: I'm Tom Watters with the Florida Department of Environmental Protection, Bureau of Beaches and Coastal Systems program administrator.

CAPTAIN LEWIS: I'm Don Lewis, the director of Jacksonville Marine Transportation Exchange.

CAPTAIN HUNZIKER: I'm Cal Hunziker, Council of American Master Mariners.

MR. LUTHER: I'm Mark Luther. I'm a professor at the University of South Florida College of Marine Science and the local operator for the NOAA physical

oceanographic realtime system.

MR. SKINNER: Thank you all for being here.

Again, we found that the Stakeholder Panels we've had in the past very informative talking about what seems to work in terms of hydrographic services. We also appreciate knowing what doesn't seem to work or areas where there could be improvement. So we're very much looking forward to your advise today.

Is there a certain order in terms of presentation?

MS. DENTLER: Yes, sir.

MR. SKINNER: Let me know if they're loaded in a certain way.

MS. DENTLER: I can go ahead and load it.

MR. FIDLER: I'll go ahead and start.

Welcome to sunny but not warm Tampa. I'm glad that y'all picked this site for your meeting, and it's been an interesting few days. I've read some of the information that this panel has been working on over the last several years and the report that you did last year.

I also would like to welcome a few people on your panel who I recognize, Mike Szbados and Captain Barnum. It was a pleasure to host together a couple of days ago.

We like to have those ships come in port because there's a couple of reasons: One, it's a good break for them, but we can also share some information directly

with them that we don't normally get otherwise.

I'd like to just give you -- I have to give you the commercial the Board of Directors always wants us to do. We're the largest port in Florida, as you probably already know. We do approximately 48 to 50 million tons of cargo a year, which combined with all the other Florida ports they basically almost get to that figure.

We have a $9 million economic impact and there's 95,000 maritime jobs directly related to the port. We serve the largest consumer market in Florida. We just found out that little plum last year. This area -- this region is growing, but our reach is actually extending a little further than we had anticipated.

Of course, we have the longest set of channels in the state. If you combine all of the other Florida ports and overlay them in our harbor, we still have a few feet of depth. And our pilots are always aware of those problems.

We follow the natural deep water, if there is such a description, but that's what we've always been told how the channel in Tampa Bay works.

The critical thing that we seem to always have worked on -- let me back up. I just completed my 30th year of service here on the Port Authority, and I was unfortunate enough to start and then have a couple of

years under my belt and then 1980 occurred. And as you know, 1980 was two of the three worst maritime disasters that we suffered here in Tampa Bay: One was the Blackthorn-Capricorn collision of January of '89, which was unfortunately the Coast Guard's peace-time accident, and that was quite an eye opener for several things; basically just navigational rules, not so much the structure of the channel with the markings or anything else, but just internal workings that we need to focus on with vessel traffic-related issues.

And then that was almost a dry run for the worst case next which happened in May of that year of the Summit Venture in a really very abrupt thunderstorm that crossed its bow and took out all of its visibility and ultimately -- it was in the channel but it was a little to the south and ended up hitting the Skyway Bridge and that fell.

The activity around that, it was remarkable. We were unfortunate that between the Corp of Engineers and NOAA's Survey Team we identified an alternate channel through the bridge around the casualty and were able to continue operations a few days shortly after that.

In fact, during that period of time there was a six-week period of time that we had very limited vessel movement and everything was actually programmed.

We had an inbound parade basically and an outbound parade, and we actually moved more ships during that six weeks than we have ever moved since. So it kind of validates the use of proper vessel management.

In 1990, the best thing that ever happened to Tampa, as far as navigation as far as I know, there's a pilot sitting in the audience and maybe he can verify that, but in 1990 it was a combination of things.

I know that NOAA, after the Skyway adventure, was looking at other technology that might help in navigation.

At the same time, the pilots were very frustrated because the data that we had for tides and currents wasn't published yet, and it was based on approximately 30-year-old data. So we were finding that the current speed was off a knot and-a-half, maybe two knots. The timing was off by in some cases hours.

We were having groundings because there's two specific locations in the Tampa harbor where you do a 90-degree against the current, and it's important to know where the slack water was.

The request was made to NOAA and NOAA's response was extremely encouraging because they said, Wow, we have just been working on some technology with looking at realtime current and tide information and we need

someplace to see where to test it out. So they came to Tampa, did a study for a year, identified the best locations for the acoustic doppler current profilers and some of the type of level gauges and some of the other meteorological data.

And ultimately in '91 they successfully completed that project and turned it over to the State of Florida, which unfortunately wasn't in the room that day, and they had made a promise that they would embrace this, and those of us in the Port community were rather shocked to see what would happen.

We have a very proactive port community here and they stepped up. The Tampa Port Authority, Manatee Port Authority and St. Pete Port Authority, Pilots Association and about seven or eight other specific maritime parties came forward and provided the seed money actually to maintain the O&M for the PORTS system that was coming on line.

We have been fortunate in Tampa Bay as opposed to some of the other ports that I read about. Our PORTS system was critically important to us. When it first came on line and we started using it, the groundings over the next year or two reduced over 50 percent. Some statistics say closer to 70 percent. That's an amazing improvement on things, and it was kind of surrealistic to

realize that simple data that gives you realtime information could be so critical in how things are performed.

The other side of that, and we were very cautious on how we discussed this, was it was always a secondary benefit that if you knew just how deep the water was going to be at a certain time, could a terminal take advantage of that and load more. It took us several years to really realize that, yes, that was a possibility and a reality.

The benefit of that was identified later in a study that we just recently did a few years ago and proved to be -- we realized on a conservative basis about a $7 million benefit directly from that, from the PORTS system.

The critical thing with PORTS is having it work and having it working all the time. Dr. Luther, over here to my left, is heavily involved. He's our operations manager for that. The key thing to the PORTS system too is having the funding.

Like I mentioned earlier, Tampa was able to secure funding first through private donations and then through a state grant, which had too many hurdles, and there were several of us on the working group of Tampa Bay Ports that said let's not go that route because there were too

many conditions attached to it.

We successfully appealed to the environmental side of our Hillsborough County Commission who also sits as the Environmental Protection Commission for Hillsborough County.

And in the State of Florida there's approximately a severance tax that's applied to all of the mining that's done in the state, and then portions of that is reallocated back to the home county.

The County Commission realized there was a direct economic benefit to prevent oil spills from groundings and collisions. And so they were able to every year so far allocate enough funding that we've been able to leverage in a full O&M budget.

We see that continuing for quite a few years, because there's still active mining that's out there that we're told that will last at least four years. So that's a positive.

What we don't have with the PORTS that we would like to see in Tampa is a visible factor. There's been some work done, some study done, but our friends, Mike and others, are just not satisfied. They're not -- they don't have the confidence in the visibility instrumentation, I guess.

And the reason we want to have visibility is the

Tampa harbor, with 44 miles from the sea way up to the upper harbor, we can have sea fog that fogs out and it will hold up traffic, but we have open water up in the upper harbor. We'd like to confirm just where the location is that it's still foggy and where it's not going to be foggy.

One accolade I can pass along, and I know you don't want the bad things, the suggestions, but the good thing is the National Weather Service here in Florida.

Several years ago we had a fog season that was extremely bad. We were having pretty much fog everyday, and it was starting to clog the traffic.

And in frustration, I made a phone call to one of the meteorologists over there and I just said, "Okay, what's your best guess today when it could burn off?"

And he just said, "Hum, 12:05."

And at 12:05 the fog burned away. So we called him and told him, "I don't know what magic you have, but keep it up." We would though like to see something applicable with the visibility indication of that.

One of the other things with PORTS, and there's -- you probably have heard other discussion on it, I think it's on your agenda, the AIS and PORTS integration. We've been doing a test study here in Tampa, and it's been very successful so far. The pilots are using it and

two of our inner harbor towing companies are going to sign on, if they haven't already. They're looking at that. The PORTS data integrated with the AIS is working extremely work. We'd like to see other pieces put into that and in some way have a data flow text data that may be able to flow on that.

Let me talk briefly about another thing I think that's near and dear to the hearts of those in Florida, is hurricanes, and, of course, the NOAA navigational response teams.

We have one available in the Gulf, and that's one, as you all know. If it were ever needed that we had a season that -- of course, this past season was pretty brutal for the Texas coast and others, but if there were multiple storm hits and we had a need for rapid response, it's a shame that one team is here and then you have to cannibalize it from the rest of the country, but that's, I guess, the norm of everything. We know that you can't have teams standing by in every region, multiple teams.

And from the conversation you had earlier, hopefully with the change of the administration the Congress gets smart enough that -- it always amazes us here in Tampa when NOAA seems to get what's left over in funding. It's just perplexing.

We had a storm this season, in fact. It was named

Fay, and it was extremely unusual. It started in the Caribbean and went across the Island doing its damage and destruction. And as it approached Florida, we were in a predicament because there was not a good path. The spaghetti models were everywhere.

The indication was we were going to have an impact on -- the indication was that whatever we had to determined to do -- and our decision in Tampa on how to respond to a storm is when it gets south of Cuba and it's tracking in a certain direction. Fay actually impacted the entire State of Florida in every port in Florida as it came through. It came down through south Florida and then it did a left hook and managed to take out everything. That was a very unusual circumstance.

The NOAA information that we had, the weather forecasting is excellent, and the improvements that they've done over the several years has been extremely helpful in our decision to figure out how we're going to respond to those things. So we need to keep those enhancements going.

One other thing, I was reading in a report of the mapping of navigational waters. It's just incredible how much is still needed to survey and to map and to know what's there. We've been lucky in some sense. NOAA has been in this port twice in the past ten years, that I

know of, mapping Tampa Bay. The improvements every time has been extremely helpful. And as far as obstructions and other things, we'd like to know where they are so we can remove them rather than just mark them.

And finally, we're also very fortunate to have an excellent regional navigational manager, Michael Henderson. He has served this port region extremely well and always ends up -- during hurricane season he's shipped up to Tallahassee and operates up there and operates out of the EOC and keeps the coordination going for us.

But I'd like to just briefly finish with PORTS, extremely important. I know I'm singing to the choir on this. And it's interesting that we were going to have some discussion locally that we could leverage possibly Homeland Security grants in the arena of a PORTS assembly. We're not so sure that's going to be well-received, but there's some national security implications.

If you can provide great information for navigation in and out of the harbor and prevent a grounding or collision or any other casualty, it seems like there's some merit to that.

Keep funding and keep the navigational response teams there. Those are critically important. I'm just

glad we haven't had to call for one, but the day that we do it's going to be extremely important to have it.

And the AIS data integration concept, I'd like to see a little bit more and see what the other possibilities are for things like that.

So thank you.

MR. SKINNER: And thank you. I think we will just go right through the presentation. We do have two hours for this panel. We'd like to certainly have sufficient time at the end for some interaction between the HSRP and the Stakeholders Panel, so if we could move to Tom.

MR. WATTERS: My name's Tom Watters. I'm with the Florida Department of Environmental Protection. I'm in the Bureau of Beaches and Coastal Systems. And I'm the program administrator for the coastal data acquisition section.

We have several groups in our bureau. In our coastal systems section, our prime responsibility is to identify the critically eroding beaches in Florida and collect the data that's necessary to do that and monitor those beaches.

Once we identify the beaches, the State legislature provides funding for the repair of those beach -- through beach projects through project management and cooperation with local government and local sponsors.

You know, we also have two permitting groups. The Coastal Construction Control Line Permitting Group that permits structures that are seaward of a line that represents the 100-year storm effects line on the shoreline called the Coastal Construction Control Line, And they permit any structures seward of that.

We also have a group that permits structures landward and seaward at the high water line, and which is any activity that takes place during the marine nourishment projects.

For the coastal data, what I wanted to talk about was just how we go about collecting our data in hopes it would provide you all with the information that would let you know what we're trying to do and how we're using your information, which we're extremely grateful to have.

Okay. What we do, what we attempt to do, is through our project, projects where nourishments are occurring, an example would be in northwest Florida right now. We have projects in Perdido Key, Pensacola Beach, Navarre Beach, Destin proper; in Dade County on Panama City Beach; in Gulf County on Cape San Blas. All of the remainder of the area is my section's responsibility to collect the data.

In the project areas we use the private sector and the local sponsors to collect data over a region of the

state each year.

So we go on a four-year cycle and we move through the four quadrants of the State of Florida collecting our data and using that to interpret the shoreline and to collect monitoring data for the long-term. Okay. And it's pretty much why we do it.

This is the region that we're working on this year presently. These are the things that we typically collect, you know, during any of our regional monitoring activities, the geodetic control surveys, beach and offshore profiling and topographic data. We take aerial photography. We take aerial videography. We're about to explore taking aerial oblique photography. We use topographic lidar. We use bathymetric lidar and we have a wave program.

In our geodetic control surveys, we began to see the importance of data program very early on. And starting in 2003 when Opus came on-line we were able to use it.

We have a cooperative agreement with NOAA through our state wetlands program that provides a means for maintaining tidal benchmarks that are around the perimeter of the State of Florida.

What my group did was we coupled onto that program and began to identify the tidal bench stations around the

perimeter of the state that were GPS'able that were in the coastal strand.

So at that point we started collecting long-term observation on those recurring tidal benchmarks. At any given location we'll have as much as eight four-hour sessions with GPS versus antennas.

We have up until recently we put on the new preview portion on the Opus side to let us data base this data. We accumulated our results from that in an Excel spread sheet that produced a way of the average solutions based on the care reciprocal, but this gave us a really good baseline and benchmark heights around the perimeter of Florida and a mechanism to tie to the tidal data around the perimeter of Florida.

You know, we would really like to see on Opus even beyond what you presently have there the ability to get a network solution from these long line baselines and to even evolve that to where we have our second tier of control benchmarks that we place a network into those stations.

When we do set between these monuments, we set a monument and we maintain a control network at two-mile intervals. It's used to control the projects on the project monitoring and the coastal monitoring.

In support of the monitoring effort, we use these

control stations to monitor. We'll perform surveys that are at 1,000-foot intervals around the State of Florida. They go from 300 feet inward to the vegetation line to approximately 3,500 foot offshore.

So it's a relatively crude hydrographic survey of the usual environment to use in the models that will allow us to relate the shore at different year intervals.

And we use RTK for the open topography. We take the RTK into the open water as far as we can. We bring our hydrographic vessel in as close as possible. And that's a challenge sometimes.

We take aerial photography. The aerial photography is relatively high resolution. We have this aerial photography dating back to 1970. Probably in every county we have six versions of the aerial photography. We have placed them all in a constant datum so that they'll work very well in a GIS environment.

We take these on a recurring cycle around the perimeter. The altitude of the flight is 3,000 feet and the resolution is about .4 pixels per foot.

We use the aerial photography to generate a set of plan sheets that are used by everyone in our control line program and our project monitoring program.

We also have collected laser data, you know, over this area. Both topographic and bathymetric and

topographic lasers has been collected by the University of Florida for us using their out tech laser. It's been very useful to us and enabled us to cut the open topography and generate contour maps from that data set.

We also have -- this is the University of Florida's out tech laser and their platform.

We have also used the shore's laser on occasion, but what we found is that -- what we found is that -- it's very useful, but it's moving on an eight-year cycle around the perimeter of the state. We need a more frequent near-shore model, and we could certainly use one at every major storm impact.

You know, it would be very nice if there would be a mechanism of placing one of the Shell's laser system in the gulf states and creating a circumstance where we could have the data more appropriately collected.

The problem that we have working with the Shell system was that it was pretty much on a -- when they were working with us, we weren't able to share the laser by providing funding to keep the laser turned on between port and navigational projects. And what it did was we had a very short time for collecting data. And when you're trying to collect data near shore, it's almost imperative that you have ideal conditions for getting data onto the shoreline. And that's why I say the very

best solution I can see is put a chart system in the gulf states that we could use that would be for our use and we would be able to have them on demand on conditions on the appropriate survey.

I know the closest that we've been able to get to that at present is the University has the potential, has a little bit of extra money to provide a laser to their out tech system, which would get us at least into about a 25-foot depth. That seems like the most cost-effective way for me to see it to get the job done.

The old chart side has been phenomenal to us and in providing us with the laser data that is collected and archived. I can't say enough about the NOAA Advisory Program and how it is really the lifeline and life communication line to state and local surveyors in providing us access to the information that you all produce.

This is some of our contour maps from our data set. That's pretty much all I have to say.

Thank you, and thanks for your service.

MR. SKINNER: Mr. Lewis.

CAPTAIN LEWIS: On a lighter note, I'm Don Lewis from the Jacksonville Marine Transportation Exchange in Jacksonville, Florida.

The Marine Exchange in Jacksonville is a

not-for-profit maritime trade organization, and it was founded in 2000. And if you'll allow me to back up just a little bit, let me kind of tell you why the exchange was founded in the Port of Jacksonville.

There were three primary elements and two of them belong to a national ocean service that caused us to form our exchange.

One that was not directly related to the ocean service was the marine transportation system initiatives of the Department of Transportation at the time.

A big push toward integrating marine transportation systems or getting some of the people on shore to talk to some of the people on the water connecting the inner mobile lakes was coming up as a significant issue well within our port and among our port stakeholders.

The second thing we had was the offshore sport fishermen decided to create some more sport fishing reefs off the Port of Jacksonville. It really was -- they had lots of debris to dump in the ocean and went to the Army Corps with their permit application. The Army Corps said, Sure, no problem. They said we'll give you a one-mile radius around each one of these particular reefs. So they were moving kind of ahead with that particular project.

I happened to be the Coast Guard captain of the port

in the Port of Jacksonville at the time and our navigation manager came down from Charleston and says, Excuse me, Captain, did you realize we were permitting these reefs offshore and that once NOAA plots these on your chart it will be a big, giant blue blob off the coast of Jacksonville that will have artificial reefs? We think there's 50 feet of water there.

Needless to say, our stakeholders were not too impressed with that concept. And so because of the action of our navigation manager, we go back to the Army Corps, back to the Offshore Sports Fishermen Club and redo that whole permit process.

We had some special surveys conducted so we could decide we are going to have some de facto lanes coming out of Jacksonville. You'll be able to get out of the port without having to cross any of these artificial reefs sites, and we basically laid those in place.

At the time after the Corps kind of backpedaled, who do we give this to when we're all done, who do we hand these documents to, is that something we have got to give to the Port Authority, and there were a lot of people around the table that said, Port Authority, this is not their responsibility.

And then we kind of looked around at our port and we didn't really have anybody who kind of held that overall

port coordination responsibility.

The Port Authority for Jacksonville is primarily our sponsor, our port sponsor for a lot of navigational things. But as far as infrastructure coordination, that wasn't really their role.

The second thing was a PORTS system. In the late '90s we became very interested in the PORTS system in order to put it in place here in Tampa.

At the time, the program managers came down and took a look at Jacksonville and talked to us and we got pretty darn excited right up to the point where the price tag came out, but one of the issues that we faced again was, okay, who is going to own it now.

You've heard from Steve and I know you're going to hear from Mark how they've arranged that here in Tampa, but we did not have a structure. We did not have a corporation. We did not have an entity that was prepared to take on the role of custodian, if you will, of that type of a system within the Port of Jacksonville.

So basically those three things together really kind of pushed us into taking a look at what had been traditionally been our Harbor Safety Committee ad hoc as whoever shows up as part of the community this week, take that group and basically formulate the organization, formulize the organization, and then basically

incorporated that organization into our Marine Transportation Exchange to the Port of Jacksonville.

A lot of other great exchange -- I think last year when you were in San Francisco you heard from Lynn Korwatch,(sic) who is my counterpart. They have been in business for a hundred years or something like that. Ours was just started in 2000.

So it was a big push to try to get people to consider the fact that an exchange could provide that coordinating infrastructure within the port.

We have not gone to the PORTS yet, but there has -- I mean primarily because of the price tag and specifically the O&M price tag on it and to provide revenues to back something like that up, but it's kind of resurfacing now. We see deeper and deeper draft ships, less and less dredging money.

The Panama Canal expansion, we're going to be needing more specific information all the way along the line as far as navigating and restricting waterways; and, obviously, the PORTS is what makes that possible.

I was talking to the president of our Pilot Association yesterday, and we were talking about we do have a number of draft-restricted vessel movements that take place within the Port of Jacksonville.

And although, depending on the particular power of

the vessel or the handling characteristics, we have adjusted those restrictions to allow a little bit of leeway as far as the ability to move a vessel.

If we did have that realtime oceanographic information for our port, we think we could adjust it more. I don't know what the cost or the number would end up being, but it is something our port has become more aggressive in. Again, the money is always the issue.

I know Steve mentioned the idea of possibly looking at Homeland Security money. Our little exchange, we started out as a Harbor Safety Committee. After 911, we also became the umbrella organization for the Port Security Committee, and we are now the fiduciary agent for the Port Security grants for the Port of Jacksonville.

And we are looking into, we have not gotten very far, but the possibility of whether or not something like PORTS might fall under the umbrella of the Homeland Security, especially when you throw the word "main awareness" into it, because that seems to be the standard buzz word for port security grants.

So I looked at the top five, you know, what-do-you-want lists from last year and we went through that at our board meeting yesterday afternoon. And they all kind of agreed that's still a pretty good list, but I

think that from our perspective and from the perspective of a lot of marine exchanges around the country that PORTS system maintenance money and to be able to have the federal government fund that O&M or at least share with the ports is probably a very worthwhile goal for a lot of ports, because it's going to become nothing but more and more important.

And also meeting with our City Council yesterday where they were taking a shot at our Port Authority who wants to expand something someplace in -- there was some people that pooh-poohed that a lot, what do we need this for. And it dawned on me that the commercial maritime industry is one of the few industries within, at least in our area, that is still booming. All right.

Our maritime industry is doing very well right now and construction is not doing so hot and a lot of other people aren't. And the idea they might do something that kind of dampers down is kind of ludicrous to me.

So I think what we really need to do is doing things that will support that and allow that to happen more efficiently and more effectively.

The next thing I wanted to mention is, parting from that City Council meeting, is that NOS does some absolutely amazing things. And from a port and mariner stakeholder perspective, the agency is absolutely

critical. I don't think we do a very good job of making our citizens and our public aware of how critical that information is in those things.

I know that sometimes when I go talk to a Kiwanis Club or Committee of City Council or even sometimes a Board of Directors of the Port Authority, when I explain to them why a ship has to be delayed offshore before it comes in, what the problem is as far as making this particular turn at this juncture of the intercoastal waterway, why it's critically important that we get the rock out of the inside of a turn in Jacksonville, they're all kind of going -- they think that cargo -- a boat drives to the docks and somebody throws it on the dock and they leave.

There's so many people that just do not understand what we do. And you guys have got the best, gee whiz, stuff as far as I've ever seen as far as graphics and that kind of stuff, and I would suggest that it might be worthwhile to develop somehow materials that you can distribute to not only your navigational managers, but to port stakeholders around the country so they can include that when they're making their presentations.

outreach

It's got a graphic. I've even seen the pictures of the ship with the -- you know, how much the ship is under water, you know, some of those graphics and make those

available in easily presentable packages or integration packages to other stakeholders that may want to talk to groups about the critical elements of navigation and why your PORTS works, so that would be one suggestion.

I'm a little leery to bring this one up, but one of my other jobs is I am under contract to NOAA Fisheries as the right whale shipping liaison.

So those of you who live on the East Coast anywhere north of the Port of Jacksonville or to Boston probably have things to throw there, but I am -- I can claim I am the messenger.

Effective the 9th of December, all of those ports will face a 10-knot speed restriction for at least 20 miles outside of the headings of their ports to protect right whale lands.

You guys have got to help us out here. I mean this -- you know, I've got an awful lot of questions from mariners, why can't you tag these little suckers and put an AIG stake and show where they are and we'll just go around them, we promise.

I work with a lot of incredibly intelligent people and very smart people that know fisheries, but their background is fish. I mean they are biologists. Their background is not navigation.

And when I talk to some of the people I've worked

with in the Fisheries Department, I say what about the guys over at, you know, over at survey or the navigation guys. They say, Well, we don't know those people, you know.

And I think there's sometimes disconnects between the segments of the agencies. And it would really be nice if you could figure out a way that you can display where the whales are all of the times and we can kind of adjust those speeds at some point.

I would like to thank you making sure everything gets on the chart so well. I mean the board at Jacksonville, it's sort of hard to read the charts because we have the critical habitat area noted in our charts, we have got the mandatory ship reporting boundary to note in our charts, we now have the recommended lanes for vessels denoted on our charts, and now we're going to want to put the speed restriction areas on all of our charts.

So there is about nine lines on every chart for the East Coast that particularly apply to North Atlantic right whales. I think the mayor is interested in protecting them, but I think they're a little concerned we come up with a solution, because we need a solution; and I'm probably in big trouble for that one. That's all I've got. Thank you very much.

MR. HUNZIKER: Thank you. Good morning. I'm Calvin Hunziker. Presently, the hat I have on today is I'm the navigational president of the Council of Master Mariners; the other hat, I'm a PD zone pilot.

I'd like to comment on one thing that Captain Lewis said, and that's the education part of it. I believe Tom Jacobsen and Sherri Hickman could probably answer the question where they're on the flight for. I know I've been asked many times when I say that I'm a pilot, and I think that that goes with anywhere in the coastal areas of the United States.

Education of the general public is sorely lacking as far as anything maritime is concerned in today's marine environment, the electronic navigation.

We've come a long way in the last century. Not really that long ago if you stop and think about it. If I had made that statement ten years ago, I'd been talking about almost a hundred years. But today it's even less than a decade. I can remember attending a conference in San Francisco back in 1993 in the early days of electronic navigation, discussing AIS and how it could be utilized on merchant ships.

Today, we're talking about AIS, ENC, ECDIS, GPS, WAAS, GMDSS, the Internet and E-mail on ships sailing in the North Pacific and the Atlantic oceans.

I was going to give a big picture overview on how we're doing. I'll start off saying technologically we're doing great and improving daily. Unfortunately, on interface and human factors we've got a long way to go.

Manufacturers have given us a plethora of displays. The vessel owner can purchase plain vanilla electronic chart Displays in two flavors, in Raster and ENC which is nothing more than a moving map, keeping track of the vessel's position. Or, they can raise the bar and go to ECDIS display again and Raster or ENC, but more likely in ENC format, that can be over or underlaid with radar and AIS information; the all-in-one almost heads-up display.

And I say "almost heads-up display" because one of the toughest things that I've got going in training new pilots today is getting them to look out the window, they get fascinated with the display in front of them and they can't get their head up and look to see what's in front of them.

Today's watch officer and captain can at a glance deduce where they are, what traffic is near, which presents a potential danger. And in some cases, the device will even tell them what course to steer to avoid the traffic.

The view on the left is an interesting one for me. It must have been taken from the Point Defiance Tillaquah

ferry, just west of Tacoma harbor in Puget Sound. As you can see, the chart looks like an ENC with a radar overlay. The image was too small to see if there was AIS also available, but it gives you a good example of what's available to the master.

Now, the reason I bring that up is because with a concentration of underlays or overlays on the drafts, and the depths in the chart, it blocks out the view of the AIS, and that's also in the overlays on the screen. And for a pilot, that gives us a difficulty in maneuvering and avoiding traffic.

As I said before, we've come a long way in a very short time from this. And also in less than 150 years we've gone from block-and-tackle steering to this "Beam me up, Scotty."

The modern bridge is almost the equivalent of a full glass cockpit of a new Bowing Dreamliner. It isn't just the radar, or the ECDIS, its engines, thrusters, metrological information, fire alarm status, communications, and emergency signaling response and alarm bells going off, sometimes constantly. And all of this requires knowledge and training on how to use it.

When I walk aboard a ship today, I'm supposed to be knowledgeable about every piece of equipment displayed on this console. Not just the fact that a radar is a radar,

but is it a touch screen, is it controlled by a joy-stick or track-ball, is it the left, middle or right button that acquires a target, and is it the same one that gives me the target information.

As for the ECDIS, is it a true ECDIS or is it an ECD, what are the differences and do I know them. If it's an ECDIS, does it have radar overlay and/or AIS? How do I control the amount of information displayed on the screen, and is there too much information or not enough or is it just right.

Because of the many variety of systems available to the ship owner today, with each manufacturer using a different set of symbols to depict navigational aids, wrecks, or obstructions, it becomes incumbent on the ship's master to be intimately knowledgeable about the charting system used and the symbols displayed on his vessel. He must know them well enough to be able to explain them to the joining officers, pilots and port state controls.

Recent accidents and the master's inability to explain the symbols used on his charting system have raised renewed awareness of this problem.

A major stumbling block to full change to ECDIS is the ongoing cost of ENC updates. Ship owners previously only needed to order light list and notice to mariner

updates and have the officer on watch make any corrections to the paper charts.

With the change to ECDIS, now the owner must provide electronic updates, in a timely manner, and insure that the officers on board know how to upload the new chart data. All this, at what I've been told is a hefty price for the update alone.

AIS poses its own set of problems. In the numerous articles I've read, and in my own experience, AIS because of a myriad of problems has turned out to be the problem child of navigation.

To start with, there's the human factor. Vessel information is entered wrong, or not at all. Vessel status is not updated; for example, if you're underway out of the Florida Keys and the empty bulk freighter ahead of you is also underway, but the AIS information shows it's a tanker, loaded, and all fast to a dock in another country.

Then there's the technical information, poorly placed transceivers, showing a vessel up to a half a mile from where it really is or crossed wiring showing a northbound ship heading at 090, 180 or 270 degrees.

While half mile difference may be acceptable in the middle of the Pacific, it's intolerable in pilotage waters. This is why more and more pilots are carrying

their own equipment on board, totally independent from the ship's equipment.

As you can see from these two slides, the dramatic difference between the ship's GPS/AIS, the orange pins, the WAAS signal in yellow, and then the SubMeter corrected signals in green. In tight quarters, such as the Houston Ship Channel, or the C&D Canal, such inaccuracy could lead to disaster.

Mistakes, inattention, downright incompetence and poor operation of a vital piece of equipment such as AIS is bad enough on a bright sunny day, but what about a dark, foggy night approaching ambrose lights with your own radar in need of repair and the mate on watch counting on the AIS targets on the ECDIS for collision avoidance.

With the ever-growing shortage of qualified people willing to go to sea for a career, how will a vessel owner in the near future be assured the personnel they're hiring are capable and knowledgeable enough to handle the tools they are given in the navigation industry?

Every pilot and co-pilot must be type rated for every aircraft they fly. There are five versions of the 737. Pilots must get a separate type rating for each before being allowed to fly.

My flying partner at home is type rated in a Hawker

600 and 800 as well as the Gulfstream III, IV and V. Where are the regulations that state that a master and/or mate must be proficient in using electronic navigation instruments available to them on the vessels that they serve on?

Other than radar and ARPA certificate requirement in the United States, there aren't any other requirements.

Years ago, we were all required to show efficiency with a sextant, and were tested plotting sun lines and star fixes. The type rating for mariners is nonexistent.

When a ship's master or mates is licensed, they're expected to pick up the necessary knowledge of modern electronic navigation devices along the way. No testing, very little if any, training, and if there is some, it's probably on a set that isn't even on the vessel they are serving on.

Vessel managers today make wholesale changes of vessel crews, from master to mess men, onto vessels they've never sailed on before. Who's left to show the new master and officers how to properly operate the bridge equipment? Unfortunately, no one.

The eventual accident is laid at the feet of human failure. But is it the failure of the master or the officer? Or is it the lack of proper training to insure

that they have the knowledge to operate the tools given to them?

Given the choice, I would much rather see this than this.

Thank you for your attention.

MR. SKINNER: Thank you very much.

MR. LUTHER: Good morning. I'm Mark Luther. I'm professor of the University of South Florida College of Marine Science, and a local operator in Tampa Bay PORTS.

You would have thought that all of us got together and coordinated our notes, because most of what I'm going to say is just going to reiterate some of the comments that have already been made.

As Steve mentioned early on, the reason Tampa Bay PORTS exists is in many ways the same reason that this beautiful new bridge across Tampa Bay exists, due to the Skyway disaster in 1980.

I'm going to talk a little bit about Tampa Bay PORTS, but as a component of what we call a coastal ocean prediction system for Tampa Bay.

Being a university professor, I feel incumbent to take the PORTS data and build upon it and build new things upon it. That's just a list of the people in our lab who have been working with me on this system over the years.

Again, here's some pictures of that Skyway Bridge disaster. In 1980, the Summit Venture knocked the bridge down and the port was closed for several days.

And as Steve mentioned, they were having to go to lighter ships offshore. Petroleum and coal carriers as much as the electric power generated for this part of the state is generated by oil and coal that's shipped under this bridge. I was told that Disney World came close to going dark at this time near after this disaster.

This is the Tampa Bay PORTS system as well as some additional augmentation that we've put on board it when it went operational in 1992 and was turned over to a local consortium.

The local maritime interests and the university got together. We set up a nonprofit corporation outside the university to handle the funding. Steve is the chief executive officer of that corporation. I'm the chief operating officer. We have a network of subcontractors that actually do a lot of the O&M.

The corporation has a cooperative agreement with the university to house the system in our lab at USF. We have cooperative agreements with CO-OPS at NOAA that basically gives us the authority to operate that system.

And that cooperative agreement has expired, but in the absence of any following agreement we are operating

as though it is still in force.

The ship channel, as Steve mentioned, is one of the longest in the country, certainly by far the longest in the State of Florida.

The ship channel is shown by a thin blue line there. The average depth of the Bay is only about 12 feet. The controlling depth of the ship channel is about 43 feet.

The ship channel, the dredged portion of the ship channel, even though it follows the natural deep river bed of the Hillsborough County River, most is dredged to 43 feet or better. It's only about 600 feet wide.

There are no passing lanes or no turning basins or emergency anchorage anywhere along the ship channel. So once an inbound vessel passes markers 9 and 10 at Egmont Channel, which is about the seaward most part of this chart, the vessel if it's more than 600 feet long, which most of them are, is bound to go all the way to the other end to its final destination.

As Steve mentioned, there are several places where there are hard right turns across the normal tidal flow, so that causes problems for inbound or outbound vessels as well.

So the PORTS system has acoustic doppler profilers at several places. Water level sites at the four major port facilities around the Bay are given by the red and

the yellow dots. We have additional wind sensors in the Port of Tampa that are not shown on this chart that we put in because of issues with wind damage on inbound or outbound cruise ships.

Cruise ships going into the main cruise terminal that you can see from the hotel here have to pass several anhydrous ammonia and fuel terminals as they go into the cruise port. If there's too much wind on the beam, the sail area of the ship becomes a problem and pilots don't like to bring them in. So we have three additional wind sensors in addition to the original wind sensor in the Port of Tampa for those purposes.

Again, we work very closely with NOS CO-OPS people. They provide all of the data quality control and assurance and technical support for us here. All of the local operations are managed here locally.

A little bit of history. Tampa Bay is operated differently than all of the other PORTS systems in the country, again for historical reasons. We were the first in the country and we're still one of the more complex in the country. Because we have this nonprofit corporation, all of the O&M money stays here locally and managed here locally where some other ports give the money back to the NOS and they manage it from the spring.

As I said, a network of private subcontractors as

well as through the university. We get incredible local support from the Coast Guard agency to the navigation group. Troy Dillman, who heads that group for the district or for sector St. Petersburg, is in the audience. They've actually built some of the towers that we use for the data telemetry for some of the sites; the offshore site off Egmont Channel. There is one that we built about ten years ago, again with the assistance from the Coast Guard.

We had a wave ADCP out there for awhile measuring current speed, direction and as well as waves. It was unfortunately run over by a construction barge and the Coast Guard is in the process of rebuilding that tower for us, and we're going to redeploy a wave ADCP out there as well as a visibility sensor, again because those are not standard PORTS products. We're going to distribute those data through our own university channels and people may use them at their risk.

The two sites out of the mouth of the Bay out at Egmont Key and Anna Maria Island are also university-operated sites that also have full speed sensors and water level, temperature and sonarity on them as well.

salinity

What else do I want to say about this?

Again, Tampa Bay was the first, but there are now

18 ports in other locations. I'm sure you're all aware of that.

We did a study of the Tampa Bay PORTS system a couple of years ago looking at its users and its economic benefits.

Again, safe and efficient navigation is the primary customer group for Tampa Bay PORTS, but there are a host of other end user groups that are well-documented, everything from hazardous material spill response to fisheries management, red tide study, sediment transport studies, dredging studies and the like.

We were the first to put PORTS data on the web. We put realtime data from Tampa Bay PORTS on the web in 1993 before most people knew what the web was.

These are some photos of some of the sites. The tower in the upper left corner there, again, was built by the U.S. Coast Guard agency to the navigation group for us. Unfortunately, it was run over by a construction barge a couple of months ago. We're in the process of -- the people who did it fessed up to it in this case, so they're helping us to rebuild it.

One of the things we've done though, because PORTS operated in our research institution, is that we've been able to piggyback lots of other equipment onto the PORTS infrastructure.

That particular tower is also home to a suite of instruments to look at several environmental issues in the Bay, primarily nutrient decomposition from the fossil fiber as well as transportation through the bays.

So we had about $100,000 worth of extra equipment on that tower, much of which was purchased by funding from our State Department of Environmental Protection.

And so the responsible party is -- well, I haven't heard from them since I sent them the estimate of all of the cost replacement of that equipment, but we feel confident that they will be helping us rebuild all of that equipment.

Again, this is just some of the graphics off of the website. Wind currents and water level are updated every six minutes. The transportation tower from the sky is in the lower right. The water gauge for the Port of Tampa is in the upper right. The upper right is one of the older portal pilot units that the Tampa Bay pilots carry on board before the present AIS standards came to be. They could get text data, all of the realtime data from PORTS, adjust it to text drop down.

When the new AIS standards came along, they lost that capability. We're now just regaining that with the test bed that Steve mentioned getting PORTS data out via AIS.

Again, since PORTS became operational, the Kippel (sic) study showed at least 60 percent reduction in ships, may actually be higher than that, and conservative estimates of the annual benefits easily exceed the operating cost by 20 to 50 times depending on your estimate of those benefits.

While we do have a reasonably steady source of funding for the operation and maintenance here, it's still a bit of a shoestring budget.

The only reason we're able to get by on the level of funding we have for them is because we leveraged three institutions of the university and much of that operations and maintenance are done by university employees as a sideline.

Graduate students and other technical staff in our lab participate in the O&M at fairly low cost as compared to hiring a commercial contractor like NOAA or SAIC to do the same job.

And again, you've heard about AIS or PORTS data over AIS. That began in September. We are the prototype for the Coast Guard to figure out how to do that.

But going back to some of the other comments that were made, the AIS binary stream is just the first step. The AIS unit on the vessels that -- to do something with it and how you display that data set is an issue.

The pilots right now are very happy with the text drop down box just giving them the latest data because they've worked with it long enough. They know what that tabular data means to them, but there's a lot more that you could do with that through some quasi heads-up display, some graphical overlays, but then the issue becomes cluttering up the screen. There's too much information quite often on the AIS screen as it is.

We have just begun working with an engineer that specializes in human machine interactions. We hope to be working closely with the pilots in the near future and to come up with some ideas of some better ways to display those data on their AIS and charts.

Well, again, I'm a numerical circulation model by training, so I saw the Tampa Bay PORTS data as an ideal way to blend those data with numerical circulation model to do the realtime nowcast/forecast problems.

The pilots don't really want to know what's happening right now at certain points along the ship's channel for the port facilities. They want to know what's going to be happening when they get there, or they might want to know what's going to be happening at some point in-between where we're measuring it. So for that you need a predictive model.

Mark Vincent, who now works for CO-OPS, originally

developed this system as a quasi forecast system. He's now the modeling czar in the CO-OPS shop for the realtime models they operate.

Unfortunately, the model that Mark developed for his dissertation is not one of those operational models. We'd very much like to see it become one of those operational models.

As we're running in a quasi operational mode, it doesn't have all of the fail-safe and backup systems that one would expect in a fully operational model. There aren't personnel resources to monitor the model's progress 24/7 as the CO-OPS models, but we do use it in a lot of spill response issues.

We've used it for phosphate water spills, anhydrous ammonia spills, raw sewage accidental spills, and permitting issues for water supply projects like the seawater desalination facility and river diversions for potable water supply. So it does get exercised.

We do work with our state emergency response. We're in the area of contingency plan for spill response. We also work closely with the NOAA HazMat folks. And we're doing some basic science looking at resident type of particles in the Bay, how do things like fish larvae or shell fish larvae get infected around the Bay or harmful organisms get injured around the Bay.

Based on our experience and success with Tampa Bay PORTS, in 1996 and 1997 we branched out onto the coastal areas of Florida and put a large number of additional sites up and down the West Coast of Florida and due east offshore that measure wind and wave current type, temperature and salinity. We call this the Coastal Oceanic Monitoring and Prediction System, or COMPS, and direct that within our lab.

We early on struck an agreement with the NOAA Navigational Buoy Center. All the data from these sites go through the NDBC or QA QC by their standards and put in the NOAA gateway there.

The 13 water level gauges up and down the West Coast of Florida, which the two at the mouth of the Bay are a part, are maintained as best we can with our meager resources to navigational water level operational network standards.

And as soon as we can work with Gary Jeffress' group to get the tidal information process for those sites, we hope that we can get those data into the navigational water level program as well.

Both Tampa Bay PORTS and COMPS are components of the Gulf of Mexico Ocean Observing System and the Southeastern Atlantic Boat Association, which are regional contributions to the U.S. integrated ocean

observing system.

We're working closely with the Navigational Federation of Regional Associations and the NOAA IOOS program office to build data standards through their data integration framework to make sure all of these data are -- that they're shared as widely as possible and utilized for maximum efficiency for all potential end user groups.

I'm also sitting on the Board of Directors of the Gulf of Mexico Coastal Ocean Observing System. I'm on the standing committees for Southeast and Regional Associations. I am also a chairman of an entity called the Alliance for Coastal Technologies, which seeks to develop better sensors for making these kinds of measurements in coastal waters.

We recently established at USF the Navigational Center for Maritime and Port Security in collaboration with the SRI International, just opened an office in St. Petersburg.

If you're going to have maritime doing awareness, you must know what the wind and waves and currents and tides are doing. If you don't, you don't have maritime awareness.

Port security is much more than terrorist attacks. A terrorist attack has never shut down a U.S. port;

doesn't mean it couldn't happen, but it never has. Human error and natural disasters, weather and otherwise have definitely shut down ports in the recent past. And in the recent past the Skyway Bridge disaster is an extreme example of that, but the recent gulf storms that shut down the Port of Houston and the Port of New Orleans are just a part of maritime port security as our terrorist-related activities.

Some of the other speakers have already mentioned the fact that this basic information on wind, wave, current and tide is critical to maritime port security and should be funded as such.

And that concludes my comments. Thank you.

MR. SKINNER: Mark, I would disagree that -- your comment about the presentation not being coordinated. It seems like you guys actually met long and hard to coordinate the presentation, because it gave us, I think, a very broad-based view of what's going on in this region, and we want to thank you all for the presentation. A number of different perspectives will give us something to chew on.

I'd like to open it up for some discussion and see if any panel members have some questions to start off.

DR. JEFFRESS: I do. Gary Jeffress.

Steve, our last meeting was in San Francisco. One of the things that surprised me up there is the Port of San Francisco actually consists of eight ports.

Is that the same case here in Tampa, or is it just more than the Port of Tampa? Is there more port entities involved?

MR. FIDLER: There's three ports: Tampa Bay, Manatee and St. Pete. Tampa and Manatee basically do 99 percent of the maritime activity. St. Petersburg is going through an evolution to probably factor -- their goal is between a yacht harbor, but most of the effort that supports the ports and other things is coming from the Tampa entity, so --

MR. LUTHER: If I could follow-up. There's several distributors around the Bay, so they're not at all one location.

MR. WHITING: Larry Whiting. This is just a little comment I'd like to ask you guys.

Have you guys reported the coast benefit ratio of this PORTS system to the Senate and the House representative Conference Committees here?

Our government representative on staff, every time he goes to Washington and talks to a senator or congressman or whoever, he always mentions NOAA. He mentions the PORTS system, the benefit of it, and I mean,

yeah, constantly, but I'd be real interested in that fiduciary.

MR. FIDLER: He gets mixed responses.

MR. SKINNER: And, again, we spent --

MR. LUTHER: We spent some time on the Hill talking about the same things. I think Steve kind of danced around it.

One of the issues we have to be careful, if the commercial maritime community is benefiting so greatly from this, then why aren't they paying for it, is the question we're often asked.

But, again, why aren't they paying for the nautical charts and the tide and current information? That's a basic government responsibility as far as my opinion goes.

MR. FIDLER: They actually are directly and indirectly. The fact that the mariners, the commercial facilities, we charge the harbor master fee in the Port of Tampa, any vessel that comes into the docks and ports in Tampa a basic fee. That fee, part of that money goes towards certain expenditures towards the ports and other things as well, but it's a general harbor improvement fund. It can't go specifically to a single terminal or a single entity. It doesn't -- it's a broad based benefit, but that is an argument that we always have to defend.

Fortunately though we've -- other than the education of the people that don't know what's going on, we've been successful in maintaining in at least the understanding that, okay, so there already is kind of a user fee involved in this, but the traditional funding, and that's why we've been successful with the Hillsborough County Commission with the other funding.

MR. DASLER: I had a question for Tom Watters. I think that was a fascinating work, to match topographic data with bathymetric data.

Are you -- when you acquire that data, is that ultimately on any of the ADA, or are you doing anything on chart data? Do the vessels use RKGUS when you collect that; and how do you -- I guess with the data or is that based on your observation on tidal benchmarks.

MR. WATTERS: We are using an ADAT data. The by doing the observations that we're performing on a tidal benchmarks that allows -- like doing the observations that we do on the tidal benchmarks, that provides us access to updated items on shore. That's how we associate that, and it's used.

And we do use RDK/TED realtime tides in our hydrographic operation and with our topographic data collection. We maintain tide data whenever we're doing that for MECCA.

MR. DASLER: And how do you find its measuring with lighter work? Have you compared any actual physical profiles with the topographic and bathymetric lidar?

MR. WATTERS: Yes, sir. Actually we do a couple of things. On the topographic lidar, we maintain an inventory of what we call the control services, which are basically surveying locations throughout the object when we're performing the surveys, and we're typically getting an agreement to RMSA .36 feet and with our data sets and we'll over a 200-mile wide lidar swatch, we'll typically have about 15,000 lidar control points that we'll have something to compare something with.

And for the bathymetric lidar we simply compare it to our single-beam found data and our accuracy level is within a foot, you know, of that data.

But we would certainly like to have more updated information. It would make our lives easier than having a single-beam system where we're kind of limited as to what we can do with it.

REAR ADMIRAL WEST: Dick West. Just a couple of comments, and then I have got a question for Steve. Is it Captain Hunziker? Did I say that right?

CAPTAIN HUNZIKER: That's correct.

REAR ADMIRAL WEST: I was real interested because I participated in a navigational seminar at Kings Point

several weeks ago, and the deputy director of the Navigational Transportation Board gave a presentation on human machine interface and how it affects accidents. It was absolutely fascinating.

This guy was an airline pilot and started talking about airline accidents, but then he showed several maritime that started to migrate into this interface.

Speaker migrate

So we might want to get him, Tom, to come brief the board next time. It was a great presentation about what Captain Hunziker was talking about.

By the way, they don't come -- technology is to a point now you can -- if you want that tag to stay that way they'll stay with them. So that's a solution, and that's a poor excuse to say we can't do that.

A comment about the Jacksonville area. They just announced, I think, yesterday or day before we're going to put a nuclear-powered carrier back in Mayport.

The problem we have interfacing in our ocean issues is a classic one. There's 15 federal agencies that's got a piece of the ocean. So we're talking about the major -- you've got DOT, the Navy, Homeland Security and NOAA and Navigational, but you never get them to sit down at the same time at the same place to solve the same issues.

I don't know, Jack, maybe I'll throw that back to

you, here's, you know, security for CPN and it's in the public now. It's going to be in Mayport, the whole thing about, you know, the main and all this other stuff.

The question for Steve: I've been in and out of here a couple of times. I actually was involved with diving the salvage of the Thornbird, which was a long time ago, but I've been in and out of it a couple of times with ships, and participated in Gasparilla Day. By the way, does that still go on?

MR. FIDLER: Yes, sir.

READ ADMIRAL WEST: I had a hell of a time to get my ship -- great time, but it's a challenging place to come in and out of for all the reasons you outlined, so I'm not surprised this is the first place the PORTS went to.

But when you put it in place, did you understand that the federal government would put the groundwork in place but then you were responsible for the O&M over the long haul; is that the original understanding?

MR. FIDLER: Yes. In fact, to predate the time they finished the project, there was a lot of discussion as to how much it was going to cost, how it was going to be handled. The representative from the state that was on that acknowledged that at that point.

And what we found, that the cost estimate for what the O&M would be was a lot higher than what we were

actually able to achieve. But Professor Luther talks about -- we are leveraging an awful lot of the sets and resources through USF. And, yeah, we clearly knew they were going to pay for that.

MR. LUTHER: Part of the problem is when you do it on a shoestring and you're successful people expect you to continue to do it on the same shoestring. So it's somewhat of a self-defeating process.

REAR ADMIRAL WEST: We, as a group, have always supported PORTS from day one. We're all on board and I think it ought to be funded and everything, but at some point the economic benefit of the infrastructure is provided by the federal government, I think, because there's other things NOAA has to pay for, but I don't think we've ever come up with an answer to that, have we, as a group?

MR. SKINNER: No, I don't think so.

REAR ADMIRAL WEST: Does NOAA -- you put simple PORTS in and then this technology comes on. More things get better and visibility and all this other stuff. Who pays for all this? What's the -- what's the formula for the federal government putting an infrastructure in a port and then the O&M afterwards?

MR. DUNNIGAN: Well, the formula for the O&M afterwards is the local partner pays for that. The

formula for deciding which ports to go to, we have a list of. And Mike can fill in, but, you know, we know where all the PORTS are. We know where we've got assets.

The recent investments that we've made in extending the system has come from supplemental funding that is associated with hurricanes. So that's why we've done most of our work in the Gulf of Mexico.

You want to add to that, Mike?

MR. SZABADOS: Part of the PORTS system is the overall data management and quality control and ingesting new technology like visibility and those type of capabilities, like air gap, we recently did that.

So we do have that, but again it's a little bit of budgeting and you have to make some tough decisions, what are the technologies you're going to test and integrate into PORTS.

The need is greater than the resources, but that's where we need to work with the partners to try to make those hard decisions on the technology.

And, as Steve indicated, visibility has been -- I think since day one PORTS -- since going almost 20 years now, a few more years, visibility has been a challenge to us. The technology in the past has not been there. I mean it's been promising, but it's never panned out.

Getting back to your specific question, that's part

of what we invest. NOAA does fund PORTS. It pays for that infrastructure and data management program oversight and some development, but I'd like to see more, absolutely. We'd like to see federal funding in PORTS. I think we've already agreed that NOAA supports that concept.

MR. SKINNER: This is Tom Skinner. Admiral, just to clarify my comment, we haven't -- the panel hasn't identified a specific funding source other than that we supported full federal funding of the PORTS system including O&M. We didn't say half of gas tax or anything like that.

Andy and then Dave.

CAPTAIN McGOVERN: Thank you. Andrew McGovern. Just a follow-up on the Admiral's question. We were the second port to have a PORTS system. We probably should tell NOAA to change the names. It's very confusing. It may be one of the problems, but a port's a port.

But anyway, we were told right off the bat that, you know, that the goal was that we would be paying the O&M and begrudgingly agreed, at least I did, with the thought that I am now going to fight to get it, you know, we got it.

We got PORTS, because right after -- probably actually it was 1991 that NOAA did a Q and A study on our

current charts. In the old days, we had the charts and found discrepancies of up to 128 percent; and therefore, they pulled them.

We noticed the mariners back in 1991 that announces that the current charts are being pulled for inaccuracies. When I asked if they would be replaced, the answer was, no, we don't need to replace them anymore, we have got this brand new technology called PORTS where we can do realtime, why do you need a chart, we can do better.

But, here's the rub, we'll put it in, but we're not going to pay for it, so you're basically stuck between a rock and a hard place, this is back in '91, so you have to agree to it.

And since '91, I have been fighting to get federal funding. And as you can see, I've been very successful on that, for the O&M part, that is, but it is something that -- it's easy in a lot of these ports where he's talking about, a single state, a lot of times a single counties like in New York. I have two states. I've got about a dozen counties and thirty-some odd municipalities to deal with to try to get funding for this to try to get this O&M, and then when we're talking about identifying the user, we talked about this, everybody uses the PORTS system. It's opened to everybody.

One of the issues the industry has, okay, I'll pay for it, but it's mine then, you know. The information is commercial. It's not open to the recreational public. It's not open to the commercial fishermen.

So when you're identifying those, who's going to pay for this? That's one of the big issues. That's why it's hard to go to a specific -- you know, go to just to -- pick on Minas -- go to a cruise ship and say, okay, I need a couple hundred thousand bucks a year from you. So Minas says, correct response, I'm not the only guy that uses it, I'll pay my share, but why do I have to pay for the whole thing?

So that's why -- one of the big issues with this is where do you identify the running stream from? Who do you get it from? Can I tax a recreational boater? We talked about putting in a 900 number instead of an 800 number or putting some type of subscription service on the website, too. We were told we can't do that, you know, that it was a good idea back in '91.

In fact, NOAA came up with that, let's do it, and they found out -- the league probably told them you can't do that, but, you know, that way it would pay for itself.

So there is a real problem with -- going back, I mean we're a bi-state port. We're interstate. Who pays interstate? I mean our port -- and I'm sure the Port of

Tampa does a whole region. Who pays for that? It's federal government.

Well, you can't -- it's nonspecific. You know, federal government pays for that. So that's our argument as to who will pay, you know, and which is why we have refused to do an economic benefit study in the Port of New York and New Jersey.

We feel it's a double-edge sword. They're just going to try to use it against you. You benefit from this, you pay for it. So does Massachusetts and Connecticut and New Jersey and, you know, Illinois, for that matter.

MR. SKINNER: I think that's part of the reason I think at one point our recommendation included the analogy to the Navigational Weather Service, same type of peril.

MR. ZILKOSKI: Dave Zilkoski. I take a little different take on things since I'm going to be gone in a month and-a-half.

You can continue to beat me up afterwards, but I look at what geodesy did, and this is about the same time PORTS was being established, and maybe a little bit sooner we started this, putting in continuous operation reference stations.

My budget hasn't increased in over a decade or more.

We haven't gotten an increase in money. We have got some earmarks from height monitorization that focused on doing some of that, but not from my geodesy side of the course and GPS infrastructure.

We transitioned from putting all those monuments in the ground into putting in continuing reference stations, but we built the models and tools.

We became the data storage, the data analysis, sort of similar to Mike's COMPS, so we identify our roles and responsibilities. CORMS Continually

And if you look at the correspondence's network today, it's over 1400 stations, over 250 partners. NOAA doesn't pay for that. The states pay for it.

Now, we're actually getting all these states putting in these realtime networks. They need our foundation. That's what we use our money for.

The Coast Guard and the Corp of Engineers built the navigation system. That's federal, so I'm not saying what -- PORTS may be not a federal issue, but I think that -- sometimes I think you need to think a little bit different about this and look and say, well, maybe I can convince the right people like the Coast Guard.

We convinced the Coast Guard about the GPS, putting in GPS stations, and then they were going to put in receivers that would only benefit them. And then we

convinced them to put in dual-frequency receivers so that it helped everybody else.

So now it's capable, if we can just get a little bit more infrastructure in, of positioning to central meter levels. It's not there yet. It's capable. We convinced the Corp of Engineers to do the same thing up the rivers.

We have got NP GPS now with -- the trained individuals are still trying to get that so it's more navigational, but my point is it is a federal system being built. It's just not being built by NGS or NOAA.

So what that infrastructure is doing is built by the federal government, not by NOAA, and we're utilizing our money to build the models and tools necessary.

And by the way, Tom, we do have RKGS projects. By the way, it's coming, developmental mode and all, a beta version testing as soon as we get it going, but it's almost ready now. So we build these models and tools to help that. We give you quality assurance and quality checks just like MIMES does with his COMPS.

So I think if you think slightly different about this and get the right people in the room, and I don't know who those people are, you still could be funded by the feds just not by NOAA, and maybe you give Mike his money he needs to really do the navigational stuff that he needs in the operation end of it.

And some of those models that are developed at the universities, maybe he would have the resources to actually implement those models and make them 24/7, but someone else has to pick up the other stuff.

MR. WELCH: Mark and Steve, what is the annual budget you get from the phospate?

MR. FIDLER: We get $150,000 a year.

MR. WELCH: And what percentage of that phosphate severance money does that represent?

MR. FIDLER: Probably about 70 percent of the budget.

MR. WELCH: I'm sorry. I explained it wrong, as total phosphate severance money. And how much are you getting?

MR. FIDLER: That's -- I'm not really sure. Since the severance tax is a state tax, that's issued on all counties that have mining operations.

Hillsborough County probably gets close to somewhere, almost half a million, so they give us $150,000.

MR. WELCH: So you're getting maybe a third or a little less of that portion of the money that comes through this county?

MR. FIDLER: Right, it depends. Polk County has a lot more mining than they do, so they have a larger

return.

MR. WELCH: And then, Mark, what would you estimate the value of various types of in kind or low cost help that comes from the university of the other equivalents?

MR. LUTHER: It's difficult to say, because the system essentially is housed in our lab rent-free. We pay for utilities and basic network services and things like that.

On the other hand, the PORTS' corporation funds a graduate assistant stipend and tuition, so probably a trade-off. The cost of that graduate student's support is probably about what we would pay in commercial rent had we had to rent some space somewhere. So it's probably a wash there.

But, again, just having the technological expertise and support of the university infrastructure is worth a lot, but I can't really put a dollar figure on it.

MR. WELCH: Is it fair to say though if you were able to convert it to a dollar figure it would be a minority position compared to the $150,000 of actual money?

MR. LUTHER: Yeah, it would probably be in the order of $50,000 a year, for a wild guess. But on the other hand, if I -- as I said earlier, if we were to pay for the same services provided to SAIC or AFUGO or somebody

like that, I'm betting that we'd be paying several times the budget costs that we are paying now, the operating costs that we're paying now.

MR. WELCH: Okay. You mentioned in passing collapsing of your cooperative agreement with NOAA. Do you need for this panel to say anything about that to the people we work with at NOAA?

MR. FIDLER: No. We're working that out already.

MR. SZABADOS: Part of this is working through the NOAA lawyers.

MR. DUNNIGAN: Who are they?

MR. SZABADOS: Everyone --

MR. WELCH: Go ahead.

MR. SZABADOS: Except the process is sometimes painful, painfully slow.

MR. WELCH: And, Steve, could I ask you to maybe take a moment or two and sort of elaborate more on the traffic and the cargo and the type of maritime users here in the greater Tampa port areas?

MR. FIDLER: Sure. We are experiencing economic downturn. In years past, we've done 5,000 vessel movements. Now we're at somewhere 3600, 3800 vessel movements.

We have a major -- the major business is primarily bulk phosphate fertilizer, the chemicals that are used in

that process, anhydrous ammonia, sulphur.

We have a lot of petroleum that comes in here because we service central Florida. It's all refined petroleum. We have a growing container business. We really got started seriously with that two years ago.

We have one liner service that's currently calling and there's another one that's basically lining up. Hopefully, that we'll see the first quarter of next year.

Historically with our general cargo bulk, business in the past has been automobile imports and exports, a lot of building materials. The building material business is in a downturn. A lot of lumber, cement, we have five cement terminals. We have aggregate facilities.

There's cruise operations, I forget that. And then we have three shipyards, pretty large shipyards in Tampa.

MR. DUNNIGAN: Thank you.

MR. ARMSTRONG: If I can change the subject a little bit here to immigration, I sort of -- since that conundrum here between several of the panel members, I think there was a point that we need more AIS-based data coming in.

And, of course, there's always calls for more

information, more information. And then I hear Captain Hunziker talk about the sort of sensory overload on the watch team and the complexity of the systems, and I have sort of -- one specific question is that should we be sort of linking these data altogether in the ECDIS display, or should we be simplifying the ECDIS display and providing data in sort of complementary systems?

So, you know, do we want more and more of this put together, or how would we rationalize that?

CAPTAIN HUNZIKER: Well, I'd like to see it all in one spot where I don't have to run back and forth across the bridge to get the information I need. The problem comes with being able to rationalize how much is enough and how much is too much.

And where I started to go with the AIS and the Tillaquah ferry picture that was up there was the fact that the ship's master -- many times things that -- he needs all of the information up there. I've had pilots tell me I know where the deep water is, show me where the shallow water is. So I don't need all of the depths and everything on the ECDIS, but give me the small screen up in the corner of the ECDIS that gives me the realtime currents, the realtime depths of water, clearances from the wires or the bridges, things like that.

So, yes, I believe that the PORTS information needs

to come over the AIS, needs to be displayed on an ECDIS whether it be the pilot's own personal Pilot unit or the ship's unit, but it just needs to be something that's more accurate.

MR. LUTHER: And if I could follow-up on that, one of the things -- we're talking about Pilots and the engineers that deal with human machine interactions. You can turn things on and off. That's the beauty of these electronic displays. They're layers.

You can only look at the layer that you want to see when you want to see it and with a mouse click you can display something or not display something as you desire at the time.

The problem is, as Captain Hunziker mentioned, is the training, getting people used to using that information and knowing how to utilize it to maximum efficiency.

CAPTAIN HUNZIKER: And a follow-up to that, I think another one of the problems that needs to be addressed is the uniformity of symbology, especially on the charts. You've got TRANSIS. You've got NOAA symbology. You've got symbology from the different manufacturers.

major issue

And I hate to bring this up, but in the Cosco Busan incident the pilot questioned the master many times what the symbols on the chart on the ECDIS meant. And the

captain was unable to explain sufficiently to the pilot, and the pilot wasn't used to the symbols that he was seeing on that ECDIS.

This is one of the reasons for having a personal Pilot unit that the pilot himself carries, because he's used to the symbols then that he sees on that chart.

There is no uniformity on what's available. We walk toward five different ships and you might see three different symbology displays.

MR. WELCH: With regard to that problem, isn't that a problem that if it's to be solved it's going to have to be done in some international forum whether it's the IMO or one of the equivalents? It's not really something that NOAA can directly address.

CAPTAIN HUNZIKER: No, but NOAA has some influence on the American representative to IMO.

MR. WELCH: Right.

CAPTAIN HUNZIKER: And I think that that's where that needs to go.

MR. WELCH: Right.

CAPTAIN BARNUM: If I could follow-up to that, another one of the hats I wear is U.S. navigational guide, too. Recent development is that IHO and 54 in London this past July has moved forward to make ECDIS standard on

solus vessels. So that's moving through an improvement process that will be -- there will be some standardization on ships on the display of the ECDIS performance of which there is a standard for colors and symbols.

In going back to the colors and symbols, the symbology, the basic display you saw of NOAA, it's not really NOAA. It's an IHO standard and how that's performed.

At the recent IHO sub committee meeting of hydrographic standards they voted to eliminate that basic display showing buoys and triangles because mariners like to see buoys as buoys. So IHO is listening. We are moving forward as an international community to bring standardization beyond that to Raster charts.

The Coast Guard has been recently directed by Congress, and I think about two or three years ago, to come up with regulation for carrying electronic chart systems.

NOAA has been a proponent of Raster systems for nonsolas class vessels. So providing sub standardization of systems for this solas class and just one step further in the ECDIS system, you mentioned what's TRANSIS, so it's very complicated in mariners. It's an education issue of what systems they are using because an ECDIS --

again there is an international standard.

And based on international standards, an ECDIS is only an ECDIS when it's using official ENCs from a member nation, so in that case it's NOAA, which we give our charts away for free, unlike many of the consternation of many other nations.

However, many of our distributors are foreign distributors such as SeaMap, UCO, TRANSIS and others. And they provide distribution services and that's where their charts come up.

So Salamander could go in and download their charts for free, but many of their employee distribution services we'll see in the chart as IHO.

MR. LUTHER: If I could follow-up on that, too. I've been sitting in on the AIS sub committee for AIS International Association of Lighthouse Authorities, and they're trying to come up with similar standards for how you display information in ECDIS, so that is moving forward.

MR. DUNNIGAN: I'd like to come in a little bit different direction. One of the things that we and this committee have been working with for a long time is this projection of increase in maritime trade over the next 30 years where the common number that's used is that we're going to double our requirements for maritime

transportation in three decades.

So there's always been a question about whether America's port infrastructure is going to be able to be ready to deal with that.

Some of our largest ports, LA Long Beach, for example, has got a lot of problems with congestion. It's going to make expansion extremely difficult.

From your perspective in safe -- the ports of Tampa and Cam Los and Jacksonville, is this an issue that your community is trying to figure out how to deal with, and is there a thinking or a plan for how you could double your capacity over that period of time to be able to handle the requirements that are developing?

MR. FIDLER: In Tampa, we still have land that's available for development, so we have a future net room. The issue with the channel is the main channel, the Skyway on in, is 500 feet wide.

When they did the original study back in the '60s for the harbor deepening, which brought us to 43 feet, the Corps study analyzed the traffic and the Corps always tells us they look 50 years out.

Well, that study indicated that the channel should have been 585 feet wide. Well, it would make sense to build it to six. Well, the Skyway Bridge only allowed a 500-foot width under the channel.

Oh, consequently the engineering concept went into play and they built a 500-foot wide channel. Now, the latest geode we did with the Corps will last eight years, is that we really need to widen the channel to 600 feet with that addition that we started back in 2000 that we were to have completed by 2004, because it was fast-tracked.

We're still waiting for the report to widen one section, one run of the channel, cut B, in Tampa Bay. It will provide another meeting location for us to handle our traffic.

We have what we call term vessels which are of concern. Those are vessels with wide beams or handling requirements that are sensitive enough that we need to manage the traffic.

All our large cruise ships are in that category, safety zone for our anhydrous ammonia carriers and LNG carriers.

So all that in the equation, we've had a situation there is only two locations in the harbor, one out between Egmont Key and the Skyway Bridge, and then up near the point where we're able to do these meeting locations.

Having that third location is -- in the interim while we work to move forward to try to get the main

channel widened to 600 feet. That's going to be an enormous project, even harder today than in the future, getting the harbor deepened to 42 feet deep back in the late '60s, early '70s when that was authorized.

We don't think in Tampa it's a good thing that the Panama Canal is going to a deeper depth. We may not need to go to the exact depth that they're at, because we don't anticipate -- don't see in our conversations with container liners that their largest vessel will come to Tampa. We'll have a service. It will be a mid-grade service.

We're currently basically on a feeder line out of Jamaica. It's hard to say because economics of the shipping industry in that regard has changed in the last two years and the cost of freight is really impacting on how much of the fleet is still floating in active service.

We've read recently where several ships just anchor off for the next couple of three years waiting for this to be approved.

The expansions that we have in the Tampa Bay area, basically it just comes down to the wider channel and deepening somewhat. We don't know yet. We haven't identified exactly what it would be or go to.

We also have a couple of side channels that still

are not federal channels, and we've been working with the Corps and with Congress on that project for -- well, let's say I started one in 1983 and another one in 1990, but hopefully we'll achieve that, just maintaining the channels as they are at this point.

CAPTAIN HUNZIKER: In Jacksonville, if you take a look at both sides of the equation, both the cargo handling capacity and terminal space and then congestion issues, I think that the cargo handling capacity is our limiting factor right now.

We have about 2,000 vessel loads a year. Our primary ones are container cargo and automobiles. And so the container docks and the automobile docks and their infrastructure are probably about 65 to 75 percent utilized right now.

The congestion issue itself on a number of vessels that we can cue up and move in and out is really not a problem. We had not gone to 24-hour operations, so there's another eight hours of operation that could take place. So I think Jacksonville is really fairly well-equipped to absorb a significant increase in cargo.

MR. DUNNIGAN: Do you know what's your controlling depth?

CAPTAIN HUNZIKER: 82 feet right now.

MR. DUNNIGAN: How large container ships are you

able to take on?

CAPTAIN HUNZIKER: Again, not -- I can't tell you that. Not the great big one, that's for sure.

MR. DUNNIGAN: Thank you.

A couple of other things that, just for the group, that I've learned and as others, I was taken by this human engineering question that they all have brought up, which I think is an interesting challenge, and thank you very much for that.

The other one was Captain Hunziker's comment on education. And certainly from a NOAA perspective, you know, we -- the Congress passed a law last year that, you know, strengthens our education mandate for all of our programs.

And I think that you're raising a really good point here, is that people don't understand the relationship between our PORTS system and sneakers on the racks of Wal-Mart in Kansas.

So there's something we need to do and there is this committee on the Marine Transportation System, which is a large area group. NOAA is one of their principal players there.

One of the things I learned this morning, maybe we ought to take this maritime transportation education issue to that group and see if we can get some good

inter-agency collaboration to raise that. So thank you for raising that. That's a great point.

MR. LUTHER: If I could follow-up on this as well. Jack and I talked about this yesterday. PORTS has been operational since 1992. I'm still amazed how recreational boaters know about it, the hard core sailors all know about it, the sail boarders and kite surfers know about it, but there are over a million registered voters in the State of Florida probably, at least a hundred thousand in the Tampa Bay area, and I would bet that a very small percentage of those people even know that this resource exists.

So we're trying to put more effort into reaching out to the Power Squadron and the Coast Guard Axillary, the yacht clubs and those sorts of people, but it's an uphill battle. Perhaps U.S. could help us with that.

MS. DICKINSON: Elaine Dickinson. Thank you for that. And we've publicized PORTS in our magazine, but you're right, a lot of boaters who don't belong to the organized groups probably aren't aware of it.

So I mean I would say anytime you have a new development or something new that you want to get out there that you can, let both U.S. know or put out your own press release like "*Outdoor Riders*." They love that stuff. People love reading technology.

So just let us know when anything new is happening and we'll try to let boaters know.

MR. SKINNER: Well, I think we're running a little short on time. I had a couple of quick questions, but I wanted to make sure that the panel had a chance to raise an issue.

Mark, you had mentioned that some of your platforms, some state agencies and others, put other sensors and other equipment on those. Is the information from that displayed through PORTS, or is that done separately?

MR. LUTHER: Those data are all handled separately for liability QA QC issues. They're not to the level of QC, truly operational systems like PORTS requires.

So we have separate trilemetry, separate data acquisition and distribution channels, but they are all publicly available through the Internet, and they all go into the integrated ocean observing system data stream such as exists.

MR. SKINNER: So someone could go to one site and get all of the different information for us in Tampa Bay?

MR. LUTHER: Yes. In fact, we have a grant through the NOAA -- the college of -- University of Wilmington, as part of the Southeastern Ocean Observing Association to build what we call a marine information

web portal working with the same meteorologists that Steve mentioned earlier at the local weather forecast office. So working with several other forecasters to bring in all of the PORTS data, but then all of the weather service data, all state and local agency data that are available in realtime and put it all in one place for commercial and recreational maritime interests.

So that is a move from one weather forecast office region to another. There's a consistent look and feel and all of those data are available in the same place.

Right now the ports have to go to the PORTS website to get to the weather service. They have to go to a weather -- and university data you've got to come to our website. Even though there are cross-links among those websites, you're still hopping around to different websites. It would be nice to have all of that in one spot.

MR. SKINNER: I think that's very -- I applaud you for trying to use this area for sort of a -- to integrate all of that data. I know Mike has been involved in that as well, and certainly we appreciate what your office has done.

Mike, are there other areas in other PORTS systems where there's a similar type of -- I'm trying to build on

the PORTS platform with new ongoing efforts to sort of expand the information that's available.

MR. SZABADOS: This has been in several areas. Port of New York, there's an activity similar to that and actually Houston-Galveston. We've worked with Texas A&M already and so there are areas where we have been doing that.

MR. SKINNER: All right. I think the last couple of meetings we talked a lot about integrating data and a cross system. So I think that's great and I want to commend lots of different offices at NOS for doing that. I think that's moving in the right direction.

MR. LUTHER: Again, it's part of the IOOS data integration framework. Mike's shop has been closely involved with that. All the PORTS data are now in a web service interface. We're putting our data up in a similar web service to facilitate that exchange of data in cross platforms.

MR. ARMSTRONG: Would you see the AIS system as a mechanism to distribute this additional data as well? That would be available to mariners.

MR. LUTHER: We're talking with the Coast Guard R&D Center about doing just that. The problem is limited bandwidth.

In AIS there's only so much information you can pipe

out through those channels that are dedicated. You have got to pay attention to the waterways as well, but basic tabular texting is about all you can push right now. And we're talking about, you know, the kind of model and animations that we showed, GIS layers that would have to be distributed through some other tilemetry mechanism that was mentioned earlier. You can get public Internet on most vessels that the ship owner invests in the technology.

Cell-based communications on little boxes like this are capable of relaying that kind of information if you're close enough to shore. So there are other ways of pushing the data out.

CAPTAIN McGOVERN: Thanks. A few things I'd like to support the panel on, one was on the right whale issue. The boundary lines need to be put on the charts so that incoming vessels and even outgoing vessels know where those 10-knot speed restrictions begin and end.

And especially with D&C, et cetera, it can be layered and it's very easy to see on an ECDIS or ECS when you're crossing that line, and without that it's really hard to -- you know, it's very hard to plot a 20-mile radius arcing on a chart, you know.

We don't have set points. It's not -- I can't put a line between two coordinates. So the only way to do it

is with, you know -- and the other is, in talking about the integrating the information, we have got Stevens Institute in New York that's really pushing, and I think some of what they want to do is a waste of money because it duplicates the PORTS system that we already have, but a lot of the other information that is new information, and they're kind of hung up -- if they want to get this onto the PORTS screen, there's a lot of hoops they have to jump through.

Their biggest problem seems to be in the O&M in having to back up redundant systems in the maintenance. Our biggest issues as far as the maritime community is that we need -- if there was information on the PORTS screen, we need it to be accurate information, you know, which is the whole basis for the quorum. If the information is inaccurate, it's pulled from the screen.

So we need to have good information or no information. That's the way we feel. We need to go forward.

So maybe as a compromise, especially with the IOOS, is that the PORTS screen is maybe divided into two halves. One is the government data and the reliability of the data as far as being there meets the PORTS -- well, not the accuracy, but the availability of it; the other part of the screen is maybe data from these

different educational institutions, et cetera, that the accuracy is confirmed, but there is a little note saying that, you know, the availability of it is subject to the -- you know, to the provider, but -- so that seems to be -- because they don't mind that the information will be QA to see. It's just when they get into this other, that's what costs the big bucks, is that the rest of the redundancy that NOAA is requiring now for any of the data that's on the PORTS screen.

So it just seems to be a real problem that we can't get that data QA QC by NOAA unless they go through all the other hoops where we're just looking at, you know, if it's available we just want it to be good data.

MR. SKINNER: Right.

CAPTAIN McGOVERN: We don't want inaccurate data. That's -- the biggest problem I think is inaccurate data. We know what to do. What we couldn't have, we revert back to what we've done for the last umpteen years.

What we can do with good data is maybe pushing the development maybe a little farther is what we're talking about. We don't want to push the vent with bad data. We want to be sure that that data is good. That's what we need, to rely on it. That's why we can't use data that doesn't go through, you know, NOAA's QA QC. Yeah, so that's, you know -- so I think maybe there's a way, you

know, to maybe -- you know, and we talked about having these multiple screens together, maybe one screen. It's just different notes as to what you know, but the data is all gone through Mike's shop as far as QA QC, but, you know, if the sensor's down, it's dead, you know. What are you going to do?

MR. SKINNER: Thanks, Mike.

MR. SZABADOS: I'd like to add to that a little bit about what he indicated, first of all, about quality control.

Quality control starts when the data comes into the computer. It's a systematic process. Okay. It includes calibration, routine maintenance, cleaning of instruments is part of the process, and the quality control going on in the computer bank itself. It depends on that maintenance, and I'm willing to go, to be unique in itself. Some require high maintenance, some not as much, but it's part of the process.

And that's why we have stringent NOAA agreements in making sure our partners, like here in Tampa, do maintain to those standards, because we rely on those being calibrated, cleaned so we can do the on-line QC out to users.

So it's important that all of us -- it's a systematic approach to quality control. It's not just

realtime going into the computer.

The other thing I would like to add too is a little bit with the right whales. I know it's a very sensitive topic, but as part of the AIS testing going on, not the part -- we're a part of -- with the environmental data, the reports, but the zoning message and information like right whales bills and depths are being tested right now, also right now on the East Coast being coordinated.

I think University New Hampshire is a player on that. In addition to the environmental depths, they are testing zone messages. So the right whale information I'm not fully -- I don't know all the details of what kind of information is displayed. It will be on the AIS.

CAPTAIN HICKMAN: Man, just so you folks know, I don't think we have had a meeting since inception that we haven't talked about the PORTS program and the funding of it.

Honestly, we all feel the same; that it should be funded by the government. Unfortunately, not only have we touched upon it in every meeting, we put it in our five-most-wanted and that it should also be the backbone of the integrated ocean observing system.

One step worse is the fact that there's ports that want the program. I can't get the equipment, let alone have O&M follow it. So it's high on our list.

MR. WELCH: Well, right whales are on the East Coast. We have gray whales, blue whales, other mammals on the West Coast. So any studies done here need to be taken over to the West Coast as well, tagging being what it is, anything that we can do to help minimize the problems on the West Coast with the species relevant to that area should be studied.

MR. SKINNER: We are a little pressed for time, so I want to continue this discussion, but if anyone is -- I'll just leave it at that.

REAR ADMIRAL WEST: Does that mean I can't talk?

MR. SKINNER: No. I would never presume to try to stop you from talking.

REAR ADMIRAL WEST: What time zone are you in? I'd just like to follow-up with what Sherri just said. I suggest, Tom, when we talk about what's in the future we need to help NOAA with a model of what to do with PORTS. It's an integral policy of IOOS. IOOS doesn't have the money. There is a lot of coordination here that maybe we can help them with our recommendations and a model for the future of installing PORTS systems, and we have to be concerned with that if you have a lot of money, let's say Jack's pot of money, there are other things that are important, too.

So where does this all fit in and help how to

prioritize? Where does IOOS fit in? And maybe we can give a little outside help with that and maybe not talk about PORTS at our next meeting.

MR. SKINNER: Other comments? Break? Well, we really appreciate your comments today. It's been very helpful. As you can see, it's stimulated a lot of discussion here. So thank you all very much.

I think we're up for a break, so let's try and keep it to around ten minutes. If we can have any members of the public sign in and indicate whether you want to make a statement. We'll be having our public comment period at noon as well as periodically throughout the meeting.

(There was a recess taken at 10:55 a.m.)

(The session resumed at 11:04 a.m.)

MR. SKINNER: Okay. Just a couple of announcements for our last panel members. Those of you that are still here, I think you have some forms to fill out. Okay. Also, we need to vote on the Minutes from the last meeting. So once we have everyone seated, we'll do that. And we will be planning to take a class photo from all of us. So if we could have everyone here.

Unfortunately, I don't know if everyone saw the E-mail, he was asked a couple of days ago to be part of the transition team in Puerto Rico, so he was not able to attend this meeting, which we're sorry he's not here, but

glad that it wasn't like one of the other things that happened for the other two meetings that he missed where he had deaths in his family. So this one actually looks like good news.

We're going to start this next session with reports back from panel members on plans from different offices within NOAA, and I think we're waiting still for a few members.

Sherri's first on the list, but if there's anyone else that would like to go forward.

Cathy, are you ready?

Can we just check and see if anyone -- if there's anyone out in the hallway? I don't want to start without -- we're doing a class photo just before lunch since we have most of the panel members here, and it's Dave's last HSRP meeting so we wanted to give him a momento suitable for framing, exactly, and usable for Christmas to holiday counts as well.

We now have a forum to do the Minutes, if you want to.

MR. WELLSLAGER: I'll go first correspondence course. Matt Wellslager.

I had the privilege of reviewing the strategin for the Co-Survey. Before I get into that, I would like to apologize about missing your conference call when you

were going through and setting up the thoughts and plans on your analysis of yours. I think that would have been a better way of going about using the room. Instead, what I wound up doing was passing this out to individuals and some indirectly associated with this office of Co-Survey in the past, and others not, but after reading Sherri's I had an impression that a lot of what I stated in mine conceptually she had covered, and I would like to address.

This strategic plan that I looked at is very good. It is high level. There will be other more defined timelines and plans that will come out after this has been released.

So the brevity that I think I was suggesting stated in this was actually fairly long isn't as much of an issue as it could have been.

Secondly, aesthetics, in some of the other literature that I looked at there's imagery that you can see that helps convey points. Those points, I think, are more easily defined if you can see a picture indicating what it is and that program or issue that is trying to be addressed at the time.

And in this strategic plan up until about page ten we've got very good imagery. After that, it's gone. And not pointing fingers or anything else, I think that if it

would be possible to add some jpegs, one or two, that might be fruitful for just presentation purposes more than anything else.

In looking at specific comments, I guess going from top to bottom these site selections confirm a priorities plan and are there priorities incorporated for where charting will be done?

I thought based on that there might be one or two priority plans: One from the navigation response teams; and then secondly one from the NOAA ships, because it would be addressing completely different areas.

And I don't know if something like that has been done. If it hasn't, it might be good to see, because there are some high priority areas that should possibly be addressed more frequently than others that are not as high priority based on the use of the PORTS, based on the recreational use, and issues there.

We still have miles, thousands of miles, of uncharted area up in Alaska, and that's where the rub, I guess, would be if there was one; and that is, we're bound to chart those areas, yes, but is that as high on the priority list as it should be? Should we look at other areas? I'm sorry.

Larry, I'm not trying to say it doesn't matter. It does matter. And now with the passage of the Northwest

Passage, you know, we have got a lot on our plates. It would be interesting to see based on that what we have for priorities.

Standards, I think we should make it known that NOAA has specific standards that they apply when they do the nautical charting, and this should be something that they've known for the public.

When they see this strategic plan, it's very detailed. It's very concise. And we set the standards and I think those should be shown in the strategic plan.

I asked -- one informational piece that I got was from Gary when he reviewed this and he made a point in saying -- I'm sorry -- document outlining legal aspects of using nautical charts that are in litigation.

If you know you have an obstruction, and the chart is a legally binding document that should be used in a court of law as a statement, don't go there. And if you do, it's your fault. It's not someone else's fault.

So would the strategic plan be a place to define that this is or could be used as a legally binding document? And I don't know. And that is a thought that you have with it.

Others that I was wondering, new products. Technology is changing. Do we have a crystal ball that we might be able to say the research and development in

NOAA or the Navy or other hydrographic expertise, do we know something, are we moving into a new and much more robust way of going out and collecting hydrographic data?

Back in the day, what I was doing pales in comparison to what we have today. It would be nice to know what we have, the technology, when we're using that technology towards hydrographic charting.

In the hydrographic surveying program, I realize the NOAA fleet has diminished greatly, but there are new ships, I'm sure, that are going to be added, and it would be interesting to know when they are going to be added to the fleet.

And if the new ships would be used for marine fisheries, if we had some coming into the fleet for hydrographic surveys, what they were and what the capacities might be for the ship I think could be beneficial to know, once again, using the technology excuse more than anything else.

And then finally, it should be noted that the IOOS plan and the July 28th meeting on the integrated ocean observing survey outline goals very similar in scope. And I think that's beneficial for us since it sees how -- why some of the organizations might be diverse, they're also integrated in different ways, and

they're all working towards the same or similar goal, and that's beneficial for us as well as NOAA.

Other than that, those were the only modifications, changes, suggestions that we sought to be made. I thought it was a very good and high-level document. I think it would be useful to see the more detailed plans when they're made available. Thank you.

MR. SKINNER: Thanks, Matt. Thanks to the group that also worked on this.

Steve, do you have any comments?

CAPTAIN BARNUM: Sure. Again, I appreciate the input, Matt, from you and the panel. And on reviewing this plan, it's something that we take very seriously in taking the recommendations and the previous recommendations of the panel trying to roll that into the strategic plan to reflect that.

And certainly we struggle to keep it shortened. We hear you on the images, but certainly the priorities that's captured in our hydrographic survey document shows where, but it doesn't have the specific timeline, but we are working for that, not only for NOAA ships, but also the contract.

Our whole effort is to include what we like to include, what you mentioned, new ships, and integrated oceans and coastal mapping and how we take advantage of

those opportunities.

Standards, certainly one of the key points that we adhere to, mostly because of the litigation aspects of our products do often enter into cases of law, and part of the things that saves us is our processes and standards.

Mentioning that I think would be a good point. I appreciate that, but I really again thank you for the effort in reviewing this and providing the input. Thank you.

MR. SKINNER: I'm assuming that these are comments that just internally we won't be excluding these in our overall meeting recommendations, or is there -- you have any thoughts on that?

CAPTAIN HICKMAN: In other words, these were basically informal recommendations to the different offices on the plans that we don't need formal recommendations at the end of the meeting.

DR. JEFFRESS: I don't believe so. I think that we integrated into the strategic plan woven into the actual plan. Am I correct, Mike?

MR. SZABADOS: Yes, that's correct.

DR. JEFFRESS: My understanding, we reviewed these as DROPS final verse, right?

MR. SKINNER: Correct. I want to make sure that

that's what every -- okay. Great. Who's next?

CAPTAIN HICKMAN: I'll go next. This was covered in an E-mail to everybody, background and the philosophy of it all. And as we say, it is a high-level document, but it focuses on bullet two, and I'm not putting specifics into it when we did the call, the conference call, so that was brought up, Adam Rossnaum, (sic) but that would be in the implementation plan, which is probably going to be a much more deep document.

Anyway, I don't think I need to go over everything on here. It's pretty self-explanatory. This strategic plan itself is addressing a lot of what the panel here feels is the Corps' capabilities necessary with NOAA to continue.

This was some of the general comments that came back to me, obviously first pointed in my direction, having the right people. Also, the panel had wanted and put in the five-most-wanted, Adam had brought up the fact that there's nothing brought in about the budget and none of this can be implemented without a budget, but that -- this strategic plan and implementation plan when that comes out they'll be used to help support the need for the funding.

Same with the -- Adam brought up the accountability. There is no timeline on this. So nobody can be

accountable if nothing's put into effect, so that would be brought into the implementation plan as well.

And the PORTS expansion and implementation plan, there were a few comments bringing up how this ties in with -- go to the next one -- why don't we address this first. There it suggests new frontiers on Homeland Security. And my question was -- is that through the PORTS and the AIS system, and it's something I didn't really think about, but it came back as -- Mike informed me that with counterline warfare as well I never thought about that. So we're going to put this information also into this strategic plan, the final draft of it.

Gary, was it you that said partners and customers we need to put in the insurance industry? I don't know. Somebody brought that up.

DR. JEFFRESS: Maybe I will speak on it. It's virtually the same comment I made with Matt, was about highlighting the real aspects of this information in terms of, you know, addressing litigation and you mentioned admiralty law.

This data is used in court and it's assumed to be the high standard, and the court does not question the data because it comes from NOAA.

CAPTAIN HICKMAN: So we definitely include on the partners and customers page admiralty lawyers, and that

the information does become evidence -- NOAA's information becomes evidence in a collision or a grounding.

CAPTAIN McGOVERN: Just another follow-up on that, the Homeland Security aspect, we did have -- a number of years ago NOAA was contracted by the Pentagon to do these counterline warfare surveys, these high-resolution surveys of our channels.

And I don't know if a lot of people realized, but NOAA's survey capability and survey standards is much higher than the court's, but the knowledge it's all been excluded from the court's Corps channel because that's their territory and NOAA has the rest.

And when NOAA did these high-resolution surveys, the secondary benefit from this, and I don't know if we can squeeze this in here, was that they found many, many uncharted obstructions and dangers in the channels that were then addressed by the Corps.

In New York they actually found a -- I don't know if it was steel or cement, but it was a column and it was literally sticking straight up in the air out of the bottom and just -- it was just plain luck nobody had hit this, but it was in the middle of Manrush Channel and it was well below beneath.

The way the Corps does surveys, they missed it all

those years and it fell off a construction barge and the only one that found it, and there are actually others, but that was the most obvious. And I know there was some up in Maine too where they found some in rocks.

In these counterline surveys they found many, many other hazards that were then identified and were able to be addressed. So I don't know if that's -- it's a secondary advantage to this, but if there is a way to do that, I'm not sure. Thanks.

CAPTAIN HICKMAN: Okay. And the insurance sector as well, that's just not insurance. That's when the collision's taking place or the groundings, but also for flooding. These were recommendations -- actual recommendations that came in over the phone conferences.

So actually you've got the issues that were brought up, which most of them have already been discussed, and do you have the questions and clarifications? Is that the next one you have?

These were questions that came in and clarifications, question and answer, and the action is going to be taking place on the strategic plan. So if anybody has actual questions on that, please -- it's pretty self-explanatory of what's going to take place.

MR. SZABADOS: I'd first like to thank Sherri and her team for helping us in review of our strategic plan.

And, again, I want to emphasize it's the first of two documents. It's, as Sherri pointed out, it's a visionary high-level document identifying some of the outlining with NOAA and some of the requirements identified by this panel. The implementation will be how we plan to execute that. We will have specific measurables in that implementation plan. And when we have that completed, we'll be looking forward to having input into that.

Again, Sherri, thank you to you and your team, and your comments have been incorporated.

MR. SKINNER: Thanks, Mike. Are there comments? Adam. Just to follow-up, any question with the implementation?

MR. McBRIDE: Mike, when do you -- I guess the first rule of planning is given the completion date or a dollar amount and they were given both at once.

Can you tell us when we'll have the implementation plans to review, because that seems to have much of the substance of how you explain these strategies contained in this.

MR. SZABADOS: I wish I could. To be honest with you, basically I'm looking for that answer. I put a team together to do that. I'm waiting for that answer. I'm getting the estimate from that team. I can get -- I'm hoping to see something by December, early summer, early

summer, late spring. I can't guarantee you until I get it from the team, so I don't -- it's a judgment call.

MR. SKINNER: Other questions? Comments?

MR. McBRIDE: Let me add, the strategic plan, I liked it, and we had a discussion about it, Mike, and I as well, but without that implementation plan it's good will and best wishes which, you know, hope is not a strategy. So we need to see on those, to me, the specifics of how you accomplish them and in what time frame and by what means. That's an essential part of forward thinking.

MR. SKINNER: Admiral.

REAR ADMIRAL WEST: Dick West. Last week I served on the Federal Advisory Committee to NOAA and another visionary down in Louisiana. A couple of years ago this group met, I think it was in Houston, and we reviewed how NOAA participated in the recovery of Katrina. We were very happy with what they did.

And Jack Kelly said, "And this is going to be in this pros and con report." As far as I know, that never came out.

Last week we looked at some other aspects of what NOAA did in that area. It was superb. When we left on Friday, one of the things we said we were going to go to NOAA leadership, got to get the word out how good you are

and important you are in the field. And I looked at improve public awareness and increase the use -- you say navigational, blank, and leave that blank. That's true across NOAA. You get out in the field and they're wonderful, but you guys have a hard time getting the word out.

And Jack Kelly sat right there and get it out and said, "We're working on that." That was two years ago. And every time we go to a stakeholder -- we love money and we want more money from NOAA, but, you know, you have got to, you know, not beating you up, Jack, but when you take this bat, when you and all those folks have got to -- that's an important key thing.

Right now we have got a new administration coming in. The more people know about how important you are the more you stack. Okay. Thanks.

MR. SKINNER: Thanks very much. Sherri. That's great. And Gary.

DR. JEFFRESS: Well, the first thing, I did want to review this. It was sent out to everyone on the panel and I got three responses: Myself, Matt and Andy.

And in my response how I wrote it up, the first thing I did was to compliment NGS on the work they do and how critical it is to the whole entire geospacial industry.

And if you did an analogy with a boat, NGS would be the keel and the hull and the Plimsoll line for the maritime industry, you wouldn't be afloat without it, right.

So in terms of the strategic plan, it was very succinct. It was only two pages. We made a couple of comments. They left off the dates, so we ought to put the dates on there.

It mentioned "CORPS" a lot. It wasn't very well defined, so we asked them to define or put in a definition of what the CORPS system is. It's a critical component of NGS's work.

And VDatum, we didn't see the term VDatum in this plan. And we mentioned to the panel it's a critical new component of integrating topographic mapping and coastal mapping and bathymetric mapping. So we'd like to see that highlighted in the strategic plan.

Coastal mapping plays an emphasis on three days' testimony and what the implications of that is in terms of managing the coast, particularly in relation to sea level rise and hurricane storm surge indication and tsunami indication models.

And the last bullet, we wanted to change the wording to maintain recognized global leadership in the geospacial community and replace that with instead of

become a recognized global leader. I'm of the opinion and I think the rest of us are that NGS is a global leader.

And actually when I was being trained as a surveyor back in Australia, a lot of the standards that I was taught emanated back then from the U.S. Coast and Geo survey. So you've been a leader in this field for a long time and congratulations, Dave, you do a great job. That's all.

MR. SKINNER: Dave.

MR. ZILKOSKI: With that comment, the fact that you only got three was good.

No. We started with our 10-year plan that passed through the Committee. So we actually have a little bit more detail. And our process is -- we have a 10-year vision of where we wanted to be and that had a little bit more detail. Things would probably be a little bit easier with the strategic plan, because you kind of knew where it was going, but I'll follow-up to some of your other comments about -- in realities, the implementation plan is what's really going to be of interest to people, and we realize that. And inside NGS we have a planning process that we're now -- we use this strategic plan, we use our 10-year plan for what we do every year, and we're putting those together, and we're actually looking at

saying what's our one to three year implementation plan, if you will.

I mean you can control things in the first and second and maybe your third year, but after that reality you don't really know what you're going to do in your fourth and fifth, so we're focusing on that.

So that will be a document that will come forward again saying here's what we're doing, you know, this year and next year and the year after that to meet this strategic plan as well as it meets the 10-year plan. So that document will come forward also. I appreciate people looking at it.

MR. SKINNER: Thanks, Dave. Are there other comments?

MR. WHITING: I have this one comment in general. On all three of them, the only plan I read word-for-word was the NGS plan. The other two I kind of skimmed over and they were too long for my short time frame that I had, so I would shorten all of them to some specific -- maybe add a little bit more to yours. That's what I'd say, but --

MR. SKINNER: Thanks. Any other comments? Great. We, once again, appreciate the panel members taking the extra time to provide the feedback and also to the various offices for both helping out and listening and

integrating the comments into the final plan. So thank you very much.

I think you're up with the CLPS.

MR. WELLSLAGER: Thank you, Tom.

Ashley, are we going to pick up Gary's -- okay. Unlike the previous discussions, the document that I'm going to be speaking of was not in draft form. It is the navigational strategic plan that was put together by the committee for the Marine Transportation System.

And many of you will remember that at prior meetings we've had representation from the committee, the CMTS as they call themselves, either from Helen Rowell (sic) or Gary who briefed us on their activities. And they would have liked to have come today, but they've been pulled in about four different directions so they send their regrets.

But just to familiarize people, if we need familiarization, the MTS, of course, is a broad system of various types of marine transportation and its various components.

And the CMTS is an inter-agency governmental entity with, I think, 18 different types of representatives from different departments and agencies and other folks within the federal government.

NOAA is a member of the CMTS, and it has a small

staff headed by Helen Rowell, and it's supposed to get input from these different agencies and come up with general strategies for dealing with CMTS problems and coordinate the activity of these various agencies.

And this talks about how NOAA participates in CMTS with Jack being the primary person, I guess. The CMTS has a number of different types of things that they look at. We'll get back to that in a minute.

And so one of the things that they've been working on in the, I think, probably the year and-a-half is to develop their own navigational strategy government document that will map out their future activities.

And so this summer they finally got approval and released their navigational strategy, which is about a 55-page document, and it's up on their web page, if anybody who cares to go through it.

And so I went through it and I had put a memo to folks in your folders that has my take on this, on this strategy, and my memo is not an attempt to give an unbiased review of the -- I'm not trying to shorten the document into a summary form for us.

I went through it and said let's focus on the types of things that we and this panel are particularly interested in, what does this document have to say. So that's the tenor of my memo.

The strategy struck me as a somewhat awkward document, if I could say so. It looked like it had been written by a committee. It spent more time on some subjects than it did on other subjects. I couldn't quite see what the rationale was for devoting more discussion to some subjects and less to others, but it did identify a variety of areas that it needed to discuss. I think it had five different areas. Let's go to the next line. Yeah, here are the areas.

So the discussion is supposedly divided into these types of areas, and within these various areas there are a number, I think, 34 recommendations for various types of general actions to be taken.

So my document, which is a four-page document, is going through sort of focusing on these actions and saying which of these say something about the programs that the HSRP is involved in.

And so, for example, they spent -- out of a 55-page document a full two and-a-half pages talk about Arctic transportation, which, of course, we're interested in and we've talked about it, but that seemed to me kind of disproportionate, the amount of time in that type of a document.

Then they had a very nice discussion, which I've reproduced in total, about the need for various types of

maritime data.

Well, this panel couldn't have written that much better if we had written it ourselves. And seeing how Helen had a lot to do with writing it like we did write it ourselves, Helen, of course, being a former member of this panel, and basically there are a variety of things in this document, some greater in scope, some lesser in scope, that we could use, we used to advocate the types of things we're advocating.

So, in that sense, the document I think we ought to use as a reference point and maybe on occasion refer to it when we're communicating with NOAA or communicating with CMTS or communicating with anybody else in government, because it is a way of us evaluating our own particular arguments.

Now, and I'm not going to go through everything I put in my document, but if you skim through it you'll see the types of things that are of interest to you or to us as a whole.

Let's run through the rest of Gary's slides real briefly, and I'll highlight anything and let's keep going. These are just examples of the types of things that they have for action.

Let's keep going. Let's just keep going.

Gary gets specific here on some of the types of

things. We can dispense with the rest of this.

Now, what are they going to do with this document? Again, it's a strategy document. So the question is what is the strategy unless they come up with an implementation plan.

And the CMTS plan is developing some type of implementation document right now, and I don't have a draft form of it, but it's supposed to be more specific recommendations to the various CMTS agencies or to all of them as a whole as to how to carry out some of the things that are in this strategy document.

And they are hoping, and this is supposed to be on a much more specific level than the strategy document, they are hoping, the staff, to present some kind of a finalized document to the CMTS group in early September, September the 9th. So that, to me, suggests --

MR. DUNNIGAN: December.

MR. WELCH: Well, I think they've got -- I think they're trying to draft something in maybe preliminary form by early September.

MR. DUNNIGAN: You said September. It's already --

MR. WELCH: Right. I see. I got you. I'm a little bit slow here. Okay.

But anyway, this, I think, presents some opportunity to NOAA, Jack and Steve, and if there are specific things

that you can suggest that ought to be in that implementation plan presented to CMTS and you have the freedom to make those recommendations, if you have not already, that seems to be a good opportunity.

And then the only other thing that I have as a result of this report, what will CMTS do beyond that.

Obviously, they're looking to the transition with some uncertainty, because the CMTS really is not particularly institutionalized. And so it could be considered to be perhaps a little bit vulnerable to the attitudes of a new administration.

And after talking with the CMTS staff, it may be that this panel would like when we start talking about the transition and whether we, as a panel, want to have input into the transition, whether we might want to make a recommendation to the transition team or to the incoming Secretary of Commerce to continue to participate in CMTS, continue to endorse the role of CMTS, perhaps even to advocate that CMTS be given a further footing either by means of an Executive Order by the new president establishing it, or even a better thing by having an authorized and a statute passed by Congress.

So if there's some interest in that, I'll probably draft up something as the day wears on for a possible recommendation to that effect from the panel.

So with that, I'll be glad to respond to any questions or comments. Thank you, Tom.

MR. DUNNIGAN: Well, Ed, thank you very much for taking the time to do this and summarize the latest stage here. The coordinating board of the CMTS will be in Washington on December the 9th, and that's what they're getting the papers ready for.

From our standpoint, there are a number of ongoing things, as I said, that are happening on an implementation side.

For example, the CMTS has been operating under a series of integrated action teams, and right now the most active of those is the action team on integrating technology.

And so that's what we were talking about this morning when we talked about the Tampa Bay pilots on the integration of PORTS data and AIS. That's being done under the actions of the AIS, and they have about 14 other projects that are related to the actions that are in this strategy.

So there are those things that are happening, but the biggest problem that I see and that I could use some help on is trying to understand among these 34 actions which are the highest priority, because we can't obviously just jump in and say, you know, we're going to

write ourselves an action plan, we're going to do all 34 of these things within the next 12 months.

Well, they're probably all going to take somewhat longer than that, but from a NOAA perspective -- I won't be able to be at that meeting, but from a NOAA perspective and a Congress perspective what do we want to have our leadership moving forward with as a part of this implementation in terms of where is the priority, what do you want us to do first. That advice would be helpful.

MR. SKINNER: Thanks, Jack. Other comments?

Ed, thanks again for taking a look at that, and I think it would be helpful to have -- if you would draft up some language for this afternoon, that would be great.

MR. WELCH: Okay. I will do that. Okay. One intangible of the CMTS is that it's completely apart from the structure of it all. The staff people involved are another locus within the federal government that actually has some understanding and in appreciation of the various types of hydrographic services.

There aren't that many places within the government where they're appreciated, at least for now that's true over in the CMTS section.

MR. SKINNER: Thanks again, Ed. I think that's very helpful. I also like the idea of using the CMTS report as a reference point for some of our -- that's a

good point to show some of the cross pollination.

John, I think you're up.

MR. DASLER: My comments are on the National Ocean and Coastal Strategic Action Plan. Some of these probably weren't as well-vetted as some of the others, so I'll provide further comment as we go through this.

Overall, HR people believes this action plan is in line with the recommendations we made and provide a more coordinated mapping front across agencies.

And I know I think specifically in the economic climate that lies ahead pooling the resources to have a more unified mapping front makes a lot of sense, and it's hard to argue with that, and we applaud that effort.

And just in going through this a little bit, in the beginning some of the same comments I think were raised in some of the other reports that you could use some words, especially in the beginning was a little difficult.

There's a lot edited in the beginning, and in trying to clean that up you might start losing some people after awhile, but as you start getting into the meat of it there is a lot of really good statements in there that really state the case for the need for this.

Some comments under the short-term objectives establishes an outreach team and seems, to me, having a

vehicle for dissemination of survey areas well in advance of operations near its stated year. It probably needs to be longer than that. And not only for government agencies, but also for the other communities that mapping programs are going into to find out in advance where there's additional areas that might be added to a survey, what are the other needs, data that could be acquired. So there could be a more comprehensive planning program.

An example of that is we're doing some work on the Columbia River now for surveys and we're about halfway into it and we saw solicitation come out from the lower Columbian estuary program to map some of the same areas that we're mapping and some of it goes into it.

So we're working now with them and trying to coordinate that and share data and we have been talking with Roger about that.

I think a lot of the communities don't realize when there's programs coming up and finding some vehicles, I know that, but part of that plan, I guess, should be come up with some kind of vehicle that they -- you can get information out to these communities and other agencies.

Also the Corps of Engineers, we're all there running the surveys and, of course, they're passing us. We're passing each other as we go.

As a hydrologist, I understand why that happens when

they're not doing the surveys, the standards needed for charting updates, but as a taxpayer it raises some questions. I think just having that coordinated effort, I think, would alleviate some of those concerns.

And I don't think the district was aware of that program. They weren't aware we were redoing it until we started the process of demonstrating and build upon success.

I think probably the best thing that in moving forward is lead by example if NOAA can perfect the internal mapping effort among fisheries and coastal survey.

I think Steve had mentioned fishery people are on the NOAA survey ships and there is a potential for hydrologists going on board some of the fishery vessels.

Some of their instrumentation might not be up to charting standards, looking at that, but more importantly I guess following procedures that those can be done to charting standards.

So, again, starting internally and building from there seems like a pretty good approach to make this happen.

A few concerns were raised regarding that lack of teeth in the action plan, like how is it getting funded, where are the lines of authority in moving that forward

and accounting at a high level and how that comes into play. So there is the interagency working group and the authority that it operates under.

You said how is that funded and can that funding then be used to provide money for coordination of federal mapping. So I think really to get some of this started, it would take seed money.

So it would take then authority within that group to authorize that and move projects forward, and I think the main goal, even though it's going to take some seed money to start, the objective would be that overall you're going to have more efficiency in mapping operations than a coordinating effort that would recover that.

It's going to take some funding to do that. Roger sent around some information. He's sent a charter for the IWGOCM.

One of the things we did notice in there was it's due to expire in March of '09, but anything -- we can get just re-upped signatures from the co-chairs that are on that.

And the other information he passed around is the S-39 Association and Coastal Exploration and NOAA Act or Ocean Act addresses some of the funding issues and also HR 2400, which is the coastal mapping integration map, which establishes NOAA's coastal program and authorizes

funding to implement that.

But from what I can see, it passed the House, but it's stalled now and it would be nice to get an update on those moving forward.

And I guess that's a question I have, is it looked like there was some funding opportunities through the HR 2400. Is that what that funding would be used for to help seed this integrated effort, or maybe if Roger comes back we can get an update on some of this.

Thank you.

MR. SKINNER: Thanks, John. Any comments or responses? Concerns? Questions?

CAPTAIN BARNUM: Thank you, John, for reviewing this and ISM. International coastal mapping is certainly an effort that NOAA is working towards and we have some small successes.

But as you point out, there's no dedicated funding for this. So it's a coordination of efforts not only within NOAA but across agencies and certainly to the larger picture involving some of the smaller players like you identified.

So I know that with IMEG they were trying to scope out their issue and just trying to get the federal house in order, if you will, and that's easily based on one stop as an opportunity to broadcast where people intend

to survey and take advantage of those opportunities, but as far as Congressional language, I think it's anybody's -- as this session closes, I think it's dim anything is going to happen, but it was something in the Ocean Action Plan.

Of course, we're going through transition and where that's going to lie in the new administration is anybody's guess, but I would -- hopefully, it would be a significant continued activity. Thank you.

MR. ZILKOSKI: Something that a lot of people may not realize, I don't think anything was written in that document, and it has since a working group. It involves all of the program offices and there's also NOAA offices.

So we're trying to internally do the stuff you're talking about, the coordinating mapping effort, inside NOAA.

We've been doing some demo projects, but we clearly have to put something more and institutionalize it, but, yes, that's a good point to make about that.

The other aspect of it is letting people know. If you've got any suggestions how to do that, please let us know. It is so difficult.

When I attended one of the working group meetings, actually Mark Luther was part of that too where we had the strategic plan in process, but what you needed to do,

and there were projects -- when we got this small group of people together, they just didn't know what was going on, and these people were the ones that were developing this, you know, the coastal mapping program, and it's just so difficult just to keep everybody informed.

Part of what we have done, and maybe this is just like a federal adjudicated sub committee which I shared, we meet and we talk about what our plans are, but even there kind of posing that is difficult.

So maybe that's some aspect of some kind of posing that you do meet, and part of the meeting is to talk about what's existing out there.

Short of that, you still have to disseminate that throughout the organization. I mean NOAA and the Corps meet and talk about some of those projects, but if we don't distribute it back through our own organizations you could be still surveying next to the Corps because it just wasn't transmitted.

So it's more than just NOAA in that case, but it's a good point. We need to figure out how to do that.

MR. SKINNER: Thanks, Dave. Are there other comments?

John, did you want to add anything for the group to take action on in addition to the issues you were raising?

MR. DASLER: And I know Roger's not here at this meeting, but in follow-up I guess on what they think could be done in terms of getting funding, I think that's the big issue, is how do you put some teeth into this thing. It's a great plan. How do we move it forward or what can be done with a panel in terms of advocating for it.

I think it makes a lot of sense to put some seed money, like I said, out in front where you could save a lot of resources that are being spent across agencies.

I think what really triggered a lot of this, we're finding out there is a lot of money being spent to look at some of the same areas and trying to coordinate that, but I think it's going to take some money and some action to get it going, and how can we do that.

So maybe Roger can come back and address some of that and give us some feedback.

MR. SKINNER: Okay. I guess I was asking in terms of as we're developing recommendations for this meeting do you want to try and propose something for later this afternoon when we talk about some recommendations or maybe wait until we hear from Roger?

MR. DASLER: Well, I think this was forwarded on to him and I know that was in a draft form. So just like the other action plans, he can take those as

recommendations from the draft.

MR. SKINNER: Okay. Thanks. Elaine.

MS. DICKINSON: This is more of a procedural question, I guess, for Jack. These plans are '09 to '11. Anyway, what's the deadline for all of these strategic plans being finalized, and do they have a life span into the next administration?

I mean are they ongoing documents that will be acted upon by NOAA going forward, or would a new administration come in and just throw them all out and we're starting new now and we're going to have another plan?

MR. DUNNIGAN: Well, there are a couple of things that -- there have been -- let me tell you how I view these documents.

These are strategic plans from the major navigation services business lines that the navigational service runs. NOAA is going to be committed to continuing those business lines.

So the value of having these is that it gives us a foundation, a grounding, that we can move forward with whatever kind of planning and programming at parodyne the new administration wants to come up with.

What we have had for the last seven years is a strategic plan and programming mechanism that was built around gold teams and CTS, C&T rather than one of those

gold teams and programs, and, you know, a whole well-defined process structure.

I don't know if the new people are going to want to keep that, but what I do know is that I want to have this level of planning from the main business lines that we have in animated services so I can be responsive for whatever it is they're looking for.

These are living documents and will be used, and I think put us in a position of being able to be flexible.

REAR ADMIRAL WEST: Following up on that, those are your documents. The CMTS that Ed talked about is an administrative thing put in place by the OAP, Oceanic Action Plan, which could go away. And what goes away with that is all interagency working groups, the JSOPS, IOOS.

All this was put in place by the WP, put in place with the knot program, which was directed by Congress, which is law.

So this is an administrative thing. So we could go away or he could -- the new president could adopt any piece of it that he wants.

Would it benefit Jack and Steve if we endorse the CMTS piece of it, because it helps evaluate data on an interagency basis what you do and don't throw that out, in other words, type of recommendation so that's

something we ought to think about.

MR. DUNNIGAN: Yeah, I think -- I fully agree. I mean there is a substantial amount of discussion about the OAP structures and the GST and all these acronym things that we do.

And I for one personally see value in that I see that there's a lot of value within NOAA with the emphasis that we've had on this strategic collaboration across the line programs. We do so much more of that now than we did before this emphasis.

And also I think on an interagency basis the CMTS has been much more successful than its predecessor, the IMCTS, because, you know, it actually had some staff commitment you had some real agency wanting to be collaborative.

One of the fears I have with the new administration is that, you know, we'll move to our natural stove pipes, and I don't think that's good. I don't think it returns value to the people we work for.

So I would suggest that you might want to consider as you're putting your thoughts together on this to have a statement that says something about the value of their agency collaboration and strongly recommending that -- if you believe this, strongly recommending that the new administration maintain an interest on this in the area

of transportation.

MR. SKINNER: Other comments? Let's see. We have a couple of things.

One, I want to quickly see if we could approve the Minutes from the San Francisco meeting. And for that, we will need a motion.

DR. JEFFRESS: I move that we adopt the Minutes from the San Francisco meeting.

MR. WHITING: I'll second it, Larry Whiting.

MR. SKINNER: Any discussion?

(No response.)

MR. SKINNER: All in favor?

(Collectively.) Aye.

MR. SKINNER: Any opposed?

(No response.)

MR. SKINNER: Any abstentions?

(No response.)

MR. SKINNER: Thank you very much. The motion carries.

We have a couple of things. First, we have a public comment section scheduled for noon. Is there anyone signed up to make public comment?

Is there anyone here that would like to make a public comment at this time?

Okay. We also -- Andy Armstrong agreed to do a

brief presentation on right whales. So I think at this point since that was a hot topic this morning, if you could provide that, that would be great.

MR. ARMSTRONG: Okay. This is a quick presentation on a project that the joint hydrographic center is partnered with the Coast Guard and the State of Massachusetts and Cornell University.

So, you know, as we know, right whales and collisions with ships is a hot issue. And this is just a map showing the location or a number of years of strikes of ships on Baleen whales. And you can kind of see some areas of concentration, a big one, of course, up by Boston.

CAPTAIN McGOVERN: I have a comment on that last slide. You have some within the Port of New York up there.

MR. ARMSTRONG: I suspect that's in the map. Now, remember, that goes back to 1979.

CAPTAIN McGOVERN: Just so -- you mean what happens with that, we've had numerous vessels enter the port with whales across the back, the first time they come back well into the port and that is where the strike is attributed, according to the press.

MR. ARMSTRONG: Well, yeah. I would say that, in fairness, those are the positions reported for the

strike. Whether they're aware the strike happened or not is up to conjecture. So thank you for that. I'm sure it didn't happen inside the port.

CAPTAIN McGOVERN: Or the Bay.

MR. ARMSTRONG: So recently an issue in a number of places is LNG offshore terminals. There is a couple going up in Massachusetts Bay. This is sort of what it looks like. The ship comes up to a buoy and gasifies the natural gas and then pumps to a shore.

It just so happens that some of these things are planned in Massachusetts Bay right next to the Stellwagen National Marine Sanctuary which NOAA manages, another NOS program. There is a couple of terminals being developed there. You can see those locations. The purple circles and the blue circles.

We've taken a look at traffic patterns in the area using AIS information. And so AIS for an individual trip isn't perfect. We can extract useful information about ship density and ship type over a particular area.

So you can see here the sort of heavy tracks of ships through the Stellwagen Bank Sanctuary.

This is, again, a historical accumulation of right whale sightings. In this case, it's broken down by the type, but we can see where over the years the whales have been known to congregate. And overlaid on that in the

lines was the former traffic separation lane, which was relocated based on this information to the solid lines.

So going through a much less dense area of whale sightings, but nonetheless they're still going through areas where eight whales frequent. So here's the new traffic separation scheme overlaid on the whale sightings.

Something important to remember is that these whales spend a lot of time in the zone of 13 meters or 14 meters up to the surface. So that you can see over 60 percent of the time these whales -- any individual whale in the area with it could be struck by a ship.

So we're looking at that with partners here, and particularly with the terminology, a plan to use automatic buoys to detect whale calls in the Boston traffic separation scheme. So right whales in particular areas have a distinctive sound they can make and they can be detected on hydrophones that are on buoys.

So this is what a buoy looks like. It's got a hydrophone. There is computer software that identifies a right whale call, transmits the data to a land base, in this case Cornell, and then they can tell if it's a right whale within the hydrophone range of this buoy.

So this is some of the software they use. They can distinguish right whale calls from other whales and other

noises in the ocean. They process this data and then they can make an alert on the presence of a whale.

Okay. So, in this case, as a condition to put the LNG terminal there, the Coast Guard required the construction and operation of a realtime detection system that's funded by the LNG carriers, and these buoys were placed along the traffic separation scheme.

So what happens is the buoys detect a call. They send this detection to Cornell. Cornell then picks up the telephone and calls the LNG ship in the original implementation and the ships slow down.

So this is a website you can go to if you want to check out a little more completely how this system works.

So if you go to the website you can then see each of these buoys. And in this case you can see that there's been a whale call in the last 24 hours within five miles, which is the range of the hydrophone of each of those buoys, and then there's other buoys where there's been no whale call.

So up until recently there was this website but no way to get the information out to the ships other than sorted phone calls. Then there would be a right whale alert and this would be put out in a broadcast notice or something or get in the mail and somebody would get it

three days later, or a fax might not get through, but this project now is sort of a new approach to that.

Okay. So what we do is work with the Coast Guard and the AIS system so that the buoys and the radius can be displayed on an electronic chart display in realtime.

So here is a picture of that. That's been labeled in Google Earth here to show in this case a Raster chart. It can be an ECS as well as a vector chart. So you see each of the buoys are all green. There's no whales there.

Okay. So what happens, we hear a whale within the radius there. A signal goes out. An AIS turns that circle red or yellow, depending on the color, and then it starts a 24-hour countdown.

Okay. So then another one comes on, you know, a new 24-hour countdown starts on that circle. We go on here, okay, then 24 hours is up, the color warning turns off and now the ships can resume their regular speed.

So here's the same display on a vector chart. This is not an ECDIS system, but this is on S57 ENC data. So that ENC data that could be displayed on any ECDIS system provided the manufacturers build these provisions to do that.

Incidentally, these things could be built to carry around an LNG carrier in a safety zone. It's a fairly

simple matter to send a single -- to make a signal on the AIS system.

Okay. That's it. So the thrust of this is that the ships only slow down below ten knots when there's a whale within the circle of radius detected by the hydrophone. The rest of the time they go at -- in this case, there's another agreed-upon speed, but higher than the ten knots.

DR. JEFFRESS: Andy, were all the collisions fatal? Were they fatal?

MR. ARMSTRONG: Yeah. The bottom line is, yes, almost all of them are fatal. There's a sense that any strike above 12 knots on a right whale is going to be fatal.

What happens, it breaks their jawbone, but there is another project that UNH is doing which is sort of modeling ship/whale interaction with models of the whales and models of the ships and models of the jawbone, but the funding has run out for that.

DR. JEFFRESS: And as the ten knots is -- that means it's a survivable collision or the whales have time to get out of the way?

MR. ARMSTRONG: The theory is below ten knots the collision may be survivable. There is a lack of -- I would say there is a lack of data to sort of scientifically say what speed, what size ship, what

manner of striking the whale, but I think the feeling is that the whale would have a chance below ten knots and not above ten knots. But that's not my field, so I'm reluctant to go too far into that.

MR. SKINNER: Admiral.

REAR ADMIRAL WEST: Andy, was that all funded by the LNG Association?

MR. ARMSTRONG: Yes, it was totally.

REAR ADMIRAL WEST: Well, interesting, because if we are looking for funding miles of oceans, I think we might have found a piece of that.

People who benefit -- if you want to come here you're going to put this in, but it applies to a lot of things we're talking about as far as the unemployment capability of, you know, all of these system works and regional observing systems and all of this other stuff.

So who maintains the long-term of this? Are they numb now or somebody has to pick it up or how does it work?

MR. ARMSTRONG: Well, the long-term setup is a combination of the Coast Guard infrastructure, the Cornell lab, and the UNH AIS transmitters and coding.

REAR ADMIRAL WEST: But if it works, it obviously should move up and down the coast, surround the East/West Coast, all around the town.

So who pays for it then? Go back to maybe helping out how we model paying for all this stuff, what gets funded first and whatever.

MR. WELCH: If I can add a couple of things. Actually, I was at a meeting last week and they gave a presentation by the Stellwagen people and also the people that are doing -- the hardware company. I can't remember what their name was, but, first off, I can't remember the amount that they gave us. This is really expensive stuff. I mean most people could not afford it, but these LNG people can afford it. So you are not going to find deep pockets like this.

I think they would have gotten off cheaper if they had agreed to fund all the PORTS systems around the country, you know, for us than if they had funded this particular acoustical buoy system for the right whales.

The rulemaking for the right whales has just gone into effect. It's been extremely controversial. The proposed rule was held up by White House Management and Budget to acquire half and subject to lawsuits and was actually an example, number one, of a bunch of groups that were sliding improper political interference in the normal rulemaking process, but it actually has finally been implemented and a final ruling will be in effect in five years.

It will have to be after that, but there is one weakness to this system in the sense that the whales actually have to make noise before their presence is picked up.

Now, my understanding is they make noise frequently enough that they're usually picked up, but it's not -- it's not foolproof. You can have mute whales, silent whales.

MR. SKINNER: Just to get back to the issue, and for full disclosure, I was actually one of the consultants on the Northeast Gateway Project and part of the mitigation included the O&M for the buoy system over a 20-year period, which I believe was approximately $20 to $25 million. Does that sound right?

MR. ARMSTRONG: We have the AIS and the display part of the system, so I couldn't say what the rest of it is.

MR. SKINNER: I believe between 20 and 25. The second project would split that amount in half if it became operational, so that was the setup.

There was also -- you talk about funding, IOOS through this process is part of the state mitigation package. This is a little bit where it's interesting. The state required mitigation for impacts in federal waters.

There was for both projects $1.2 million to the

GOMU system, and then I believe the same amount to the state fisheries for their buoy system, all of which were supposed to be in action.

Just as a side note, Kirk Swear (sic) from -- I believe he works with you, Andy, gave a presentation on this to the Port Outriggers Group in Boston. It was very well received from the Stellwagen Bank, who was a frequent presenter and has done some amazing work and someone we work with closely on the project. So unfortunately Jack's not here, but they were very excellent people to work with on the project.

MR. McBRIDE: Adam McBride speaking. Andy, just a couple of key questions. The numbers of right whales sighted or observed was about 900. It was only a tiny fraction of all of the whales.

Of the right whales, is that only one that makes a sound or are the other ones unprotected in this process?

And the second question I have is, is there a presumption only LNG tankers strike whales, or do other vessels strike them as well?

MR. ARMSTRONG: Well, I'm somewhat disconnected from the policy and politics on this. Maybe Tom is in a better position to answer those questions than I am, but I think that the issue is that the right whales are the ones that are severely endangered at this point, and thus

are the most significant problem in terms of impact. And what was the other half of the question?

CAPTAIN McGOVERN: Is it only LNG tankers?

MR. ARMSTRONG: In this case, this was a specific mitigation and requirement for permission of LNG carriers to put this in so the LNG carriers paid for it, and they're the only ones who are bound to use it officially and probably the only ones who are actually doing anything with it.

MR. WELCH: Actually, there's no record or even any inference that an LNG carrier has ever struck a right whale. The records of strikes are mostly inferences. There are a handful of documented strikes, vessel strikes. There are a lot of others that are suspected.

The greatest offender of actual documented strikes of right whales is the federal government, the Navy and Coast Guard. There are only two.

Well, there are only --

REAR ADMIRAL WEST: That is truly unfair, because the only thing you can verify is using afterwards the -- you'll find, if you go look at those, most of those were merchant vessels.

MR. WELCH: I understand.

REAR ADMIRAL WEST: I'm taking you to the Supreme Court.

MR. WELCH: There is a difference between actual -- first, the federal agencies are -- everybody is supposed to report a strike, but I think it's probably clear that the federal agencies, if there is a strike, they report the strike whereas the other people may or may not.

But the bigger point I was trying to make is there are only a very small number of strikes that occur where people know for sure where it took place, when it took place, and what type of vessel it was, and then there are a lot of suspected things.

And I don't mean to say there's not some evidence there, but it's a little bit more ambiguous. We're not talking about a huge number of strikes, but we're also talking about a very tiny number of right whales there.

I mean the scientists say there are about 300, give or take, right whales in existence in the Atlantic. And the scientists also say any man-made fatality, man-caused fatality, basically jeopardizes the long-term existence of the species.

The other cause of man-caused deaths are tying them up in fishing lines. And there have been a whole bunch of regulations on the commercial fishing industry as to the type of gear and they pull it and when they can do it.

MR. SKINNER: Did you have --

CAPTAIN McGOVERN: Just a couple of follow-up. They are -- our Safety Committee was approached by New York State DEC, which is looking into these buoys, to put two lines of them on one point north, one point south. So they will be able to potentially detect the migrating.

Our most Atlantic ports, it's a migration issue. I'm not quite sure of what when Andy talked about these speeds, because there are seasonal management areas, two different types. I'm very "up" on these, on the rulemaking.

There is a seasonal management area and a dynamic management area, and these buoys are only really for the dynamic areas. Seasonal management areas, it's 10 knots during that entire season.

The dynamic management area is when they detect the whale and then you have this slow-down in that area, and so that's what we're looking at for that.

But, you know, my objection to that one slide was that, you know, we've gone on board, had ships entering the Port of New York and seen this whale carcass draped across the bow and when you get up on the bridge, Hey, Captain, you know you got a whale on the back.

And they say, Gee, I was wondering why about two or three days ago we started losing a knot, you know, and

that's all they knew about it. It's just they started to get some extra drag.

But then again, it's attributable to the first time you back a ship is generally off the dock and that's when the whale carcass falls off, and that's when it makes the news and the report goes in another whale in New York Bay or in the Hudson River. It's not where it happened, but that's where it was reported.

We have never seen whales in New York live once, shall we say in New York Bay.

MR. ARMSTRONG: In defense, the right whales are a set of whales that live very close to human activity near ports, so they do get pretty close to the ports in our region, sometimes in them.

But, yeah, I think it's fair to say that that's where -- the report had a figure, not necessarily where the strike was.

CAPTAIN McGOVERN: On the other hand, the latest DIS came out and didn't talk about these bow incidents, as Ed said.

The fact that you don't -- it specifically says the fact that a whale has not been detected by the buoy means there aren't whales in the area. It just means they haven't been detected, because they haven't made enough noise to be detected.

So that is one of the issues, is how good are these really. But, again, the State of New York is looking into putting a line of them going north and south so that when we go into the dynamic management season that we would be able to better detect them, better manage that part of the rule.

REAR ADMIRAL WEST: I assume Cornell is part of this, because I think this is true, federal government funds them to be the repository of all ocean sounds and literally that's their job, and I take NSF.

So if you ever find a weird sound, you send it to them and they can tell you what it is, right?

MR. ARMSTRONG: Yeah. Cornell has a buoy acoustic lab that is sort of the interpretation piece of this puzzle.

CAPTAIN McGOVERN: One more. As was mentioned earlier, West Coast beware, because this will come out there. I mean that's -- they're shaking in their boots, because they realize once they get through with the lawsuits on the East Coast, it will move to the West Coast.

CAPTAIN JACOBSEN: Yeah. It started to happen. We had blue whales come down, quite a lot of them, so we had a couple of strikes. One came in across the bow, unfortunately. We were up in helicopters that record the

pods, send it back, the GTS calls the ships to tell them detour around certain areas.

MR. SKINNER: Any other final comments?

MR. DUNNIGAN: So as we go to lunch, let me add this to the category of comments that you're going to regret you made as soon as you said them.

There are also similar issues and acoustic issues from the operation of ships in the ocean, it's not just a question of strikes, and the impact that ocean noise has on animals.

It's not just a question of the Navy doing testing. We're just talking about the sonar signatures of ships and their proposal plans running through the water. And there's research being done on the impacts this has on whales and other marine mammals.

And at some point, it's going to come to a level where we're going to have to talk about it. So just why don't you keep that in mind, that it's just not just a question of strikes.

I think the next big area of controversy here is going to be acoustics in the water.

REAR ADMIRAL WEST: Most of you know that the Navy was taken to the Supreme Court -- I mean up to the Supreme Court last week after several years in the Supreme Court ruling in favor of the Navy. I've been a

critic of the Navy. I love green, mammals, and all sides of it.

The problem with it is we don't have enough scientific data to stand in front of somebody and tell you this is absolutely what's going to happen.

Joe Reynolds, who runs NRIC, and I have had this discussion. If you keep pressing this in the court system, sooner or later the DOT has no choice but to keep bumping it up. So it finally got to the big guys, and there's no scientific data to say one way or the other.

So we're going to have to put more money into the interface between human ships. The backyard noise in shipping alone is the number one problem. It's not sonar. We kill over 150, 160 now, let alone one or two that gets picked on.

So they've got this perception that the Navy pings mid range, by the way, not to lower it to upper range, and every time this pings a whale rolls over. That's baloney.

There is another bill, it's actually going with me right now, to put some money into this relationship between noise sonar, whatever, noise in the water and limiting marine resources.

So it's a big issue and now that you've broken the ice here with doing things to mitigate that, it's going

to come out big time all over the place. It's going to be part of every port, and enough said.

MR. SKINNER: With that, can we adjourn? Or what do we do? Recess? Recess, thank you, and have our group photo up front. Is that where you want it? Okay. And then lunch.

(There was a luncheon recess taken at 12:40 p.m.)

(The session resumed at 1:30 p.m.)

MR. SKINNER: One of the things I forgot to mention when I was going over the agenda was Frank's presentation on PORTS data, the individual PORTS data into AIS, which is the next presentation. And I think we'll just have to move ahead and hope that everyone comes back in here. Mike, if you wouldn't mind.

MR. SZABADOS: You want to start or wait a few minutes? It's your call. I don't want to get too far behind here.

MR. WHITING: They're going to have more input into this, at least Sherri is.

MR. SZABADOS: Okay. This presentation actually was prepared by Garrett White, my program manager, who unfortunately had a family issue and requested that I give the presentation.

First of all, let me just say that I am familiar with the work that he's doing and also in the early phase

in. I'm quite familiar with the process.

A little historical background of this. NOAA worked with the Coast Guard back in late 1990s on the -- not the design, yes, but when they were looking at a design we worked with some prototypes in New York and in Tampa.

In New York was Lockheed and here in Tampa I think it was Ross Engineering was the company, and I think they're both a success.

The one issue I'll comment about the New York test back in late 1990 designed by Lockheed was a suitcase that -- they were very concerned about having a leather suitcase up a ladder, so we've come a long way.

Tampa Bay here actually used the raw system for at least a decade and the pilots became very useful with the AIS-type system.

So our involvement has been not just recent tests, but also over a decade now engineered with the AIS Coast Guard.

Real quick, they build this test of integrating PORTS data. It's environmental data. And let me make -- it's environmental data. They want to use PORTS as an example.

The reason why they want to use PORTS is basically PORTS was packaged, it's in one centralized location,

quality control, and it was the low-hanging fruit to test.

The group responsible for their role test is the Radio Technical Commission for Maritime Services self-working group, which is referred to as RTCMS. They set the overall requirements and the test requirements as part of the environmental tests.

There are two other tests I wanted to mention, which are the right whale spills and accidents, which is actually going on, they just started that. That came to really testing that -- I'm not going to report on that. I'm not familiar with that part of it, with that test.

And there's a third component, which is the Waterways Management message from the Army Corps of Engineers.

The participants, and this is a good collaboration between NOAA and Coast Guard, the local communities, we have the use of CO-ARAD Center, Alliance and Technology Group. The Coast Guard Department of VTS is actually working with Steve Fidler here in Tampa Bay. And the Tampa Bay Pilots, George Vezzio, who's not only a Tampa Bay pilot, but he's also chairman of the American Pilots Association Technology Group.

So anything we're doing is being collaborated with the other pilots throughout the country. And, of course,

NOAA and Darren Wright has been our point person for that.

Okay. The user group is very important. The device was initially evaluated by the Tampa Bay pilots, and that after the pilots may bring in the Marine Towing of Tampa Bay and the See Bulk Towing Group.

Coast Guard managed the data and transmits it over the AIS system. It's a third party that takes that information and puts it on the three prongs, PPU, which is a portable pilot unit, I believe is what it stands for. So Arring, is one of the companies we're working with, but there's other companies. Raven?

CAPTAIN McGOVERN: Raven, yeah.

MR. SZABADOS: Raven, they're in New York, and Houston. And a lot of pilots use that to -- they're working on this also, but we're not testing in that area yet. This is the basic test bed design.

I'll just go over this real quickly. I'm not going to go through all the details. The upper left side is -- the PORTS information is being assembled and being picked up by the Coast Guard.

If you look down to the blue clouds it's a collision format. It's part of the test Army Corps of Engineers for the waterways information system and that we'll be covering later. This is what's going on now from the

test bed who -- this was a no-brainer for us. I will be honest with you, our time coordinating.

Because of the operational infrastructure we have set up and the web services that we have designed over the year, the actual IT requirement engaged working with the Coast Guard with the IT person was basically about 15 minutes calling the Coast Guard how to get the information.

Basically our infrastructure sharing the data to the AIS was preexisting, so our effort really is coordinating with our partners. Then that information is picked up by the Coast Guard in the fetcher format, fetcher formatter, and ACTAD with VTS information and goes into cue manager and scheduled for transmission.

The Coast Guard up in the upper right is monitoring this time, and that's the ground above cue manager and then transmitted over the AIS transmitter and that's the test group which the pilots evaluate information.

Okay. Conceptionally, I -- this is a little bit better picture of it. We have the transmitter -- Coast Guard transmitter. We have the AIS transmitter, I'll refer to it. It doesn't really display the environmental data. That's where the PPU or the third party vendor comes in, and they have that information. They have to display it.

This is the format when they come into our database, our web services, and we send it out to them to format HTML and actually XML format which they use in packaging with the AIS message.

This is, okay, an actual display of the Arring system. And in talking to George Vezzio, who I spoke to last month at a meeting, right now their assessment, okay, not the final assessment, is that the data is being provided on time. They don't see any noticeable PD life in the information, and the information is very useful.

The display, these are my words, are -- I won't say it's crude, but it's simple. It's a simple display and we did not want to have a test -- Andy's explained how best to display the data that can come later and actually move that up to the third party and work with the customer, but the primary purpose of the AIS test is can Coast Guard grab the post data format and transmit it and get it aboard the ship in a usable form and not delay it and be reliable.

And the test -- everything I've heard today, that is happening. So there is no delay in the data showing up aboard the ship. The information is useful. There's definitely room for improving how to display the information, but that can come later, especially not with Arring, but with the other third party vendors.

Okay. This is a slide from the Coast Guard trying to -- part of the test assessment is the data being received in a timely manner, is the data being used, is the data improving operations, and it goes on.

This is a six-month test. At the end, they're going to send out a report assessing the impact and how successful it is and how useful it is as part of the assessment.

Again, everything seems to be on track. Again, the information is getting up on the ship and is very useful.

Okay. This is the plan for implementation. The first -- down in Tampa all the red circles are where we have PORTS systems. The stars are where we have VTS. The first implementation would be where VTS -- well, and PORTS.

They plan to have a nationwide implementation, but that would be another phase, but the first phase will be implementing -- after this, will be implementing them in all VTS locations. So those are where we have PORTS, and VTS will have this capability.

Once they roll it up on a navigational scale, the additional PORTS areas information will be available through the AIS.

I would also add that our only navigational water

level program is now basically on the same technology as far as bringing the GATAR and all navigational all over 200 stations, what we can, potentially over the AIS, and that's our intention to do that, and same thing with the weather service seaman buoys.

PORTS was just the initial test bed, but the potential here is to transmit all of the buoys of navigational weather service also and other platforms, appropriate platforms.

Okay. And basically this is a quick overview. I didn't want to spend too much time on it. We've already spoken a lot about it this morning.

I'll be happy to answer any questions that I can. And, if not, I'll definitely get them to the other sources and get back to you.

CAPTAIN MYRTIDIS: Minas Myrtidis. On the previous slide, I realize there's something big missing there; that's the port of Miami, which probably has the most traffic of all these ports together when it comes to cruise ships.

MR. SZABADOS: I recognize that. Again, this is -- the plan is to implement where they have VTS first and then nationwide.

Again, I can't speak for the Coast Guard, but I do believe they recognize a need for it, and it's in their

Szabados

plan, just a matter of which phase.

CAPTAIN MYRTIDIS: So what is the timeline that we're looking at?

MR. SZABADOS: I will have to get back to you on that one. Okay. I will get back to you.

CAPTAIN MYRTIDIS: A year, 2010 or --

MR. SZABADOS: To put things in perspective, okay, this test of the PORTS through the Tampa system is over the next six months. The total test, along with the other two tests which is being planned, the whole test period is 18 months.

So the question -- I'll get back to you on that. I believe 18 months from now is when they're going to plan to implement -- make this operation across the nation at the VTS centers, but I can verify that.

MR. LUTHER: Unfortunately, Miami doesn't have a PORTS system or a VTS, and until it has both of those it's just not feasible to do anything there.

And with the state of funding per the reports per the discussion earlier, who knows when that might happen.

MR. SZABADOS: But I know some areas like New York and Houston would probably be very interested in what that time schedule is for operation. I'll have to get back to you on that.

MS. DICKINSON: Elaine Dickinson. We talked about this in Miami when Chuck Husick (sic) was here visiting us. There was a very long delay with the FCC approving AIS for Class B recreational users, and that's just been approved.

So there may be many, many thousands, perhaps even millions, more AIS users out there now that the Class B has been approved.

MR. SZABADOS: For those users, again, where we have the capability, the message will be there imbedded with the overall AIS message. The third party vendor will have to develop to use them.

MR. DASLER: In your test bed design you listed it -- is it that bathymetric indicator or just channel depths or what waterways indicate? What is that, and how is that used?

MR. SZABADOS: I don't know the full list, but I know some of the information is currently in some critical areas in the waterways.

MR. LUTHER: Particularly around locks and inland waterways where currents are, in and out of the moving vessels, in and out of the locks.

MR. SZABADOS: One of the differences is the approach, the different way NOAA does it in the Army Corps, who does it currently right now. We've been in a

centralized location and transmitted to Corps and their test wanted it transmitted directly from the sensor. That's a major difference between our two approaches here.

CAPTAIN McGOVERN: I don't think his question to you -- maybe it's more for Steve, but is this -- the live charts that are envisioned down the road, are they going to be populated to use in this AIS transmission system or some other system? Are you going to use a system with a larger bandwidth?

CAPTAIN BARNUM: Yes. As I talked about, the charts are dynamic charts or soundings that could be corrected with the actual depths versus depths that mingle in the water. That is a subject that was at the recent CLIPS meeting. The issue is how we're going to move forward to implementing the dynamic chart. There's some discussion about memorization, whether we should do that.

The U.S. feels we should, but the framework and the standards have yet to be developed on how we would implement that into vectors.

MR. SZABADOS: I know that some work has been done to demonstrate that capability. Coast Guard did something and demonstrated that capability.

Technology-wise, I think it's something that's feasible, but there's obviously issues about standards

and other concerns.

CAPTAIN McGOVERN: I guess my question was the amount of bandwidth. You have VAV. Is that enough or you need a different type of transmission system to get that information out? If you don't know --

CAPTAIN BARNUM: I don't know the answer to that question. I know the bandwidth for the AIS is very limited for the amount of information that comes across.

One of the areas we're looking at potentially is pushing across chart updates, but, yeah, the bandwidth is very limited to doing that kind of information.

So it would -- again, it has to be an area of -- research has to move forward in how we can potentially move that data to enable dynamic charts.

MR. SZABADOS: One of the challenges also is having the appropriate information, resolution of that information. Some areas may have a sufficient realtime waterway; some areas may not. And that may be a challenge, how you manage that. It might be a reason why we need to have more tide gauges.

MR. ARMSTRONG: A couple of questions, Mike. Just the -- in these cases, in the early implementations, the PORTS data and the AIS is going to be sent from the VTS systems; is that correct?

MR. SZABADOS: That is my understanding in the first

phase. That's why we're limited to where there's VTS.

MR. ARMSTRONG: And the second question is, do you know how this compares with the St. Lawrence Seaways system?

They have some kind of ocean data transmission program up there, and I just wondered if you know how this compares or --

MR. SZABADOS: I'm hesitating because I don't have firsthand knowledge; secondhand knowledge of that system, and I've heard some successes. I've also heard of some frustrations. And since it's secondhand information, I'd be kind of reluctant to say anything.

MR. ARMSTRONG: Thanks. I sort of kind of just have sketchy information as well. So I don't -- you know, I don't really know how that system works.

MR. SZABADOS: One of the comments that I had received from Sal Teese, (sic) a pool pilot that brings the ships in from the ocean to the Great Lakes, they had encouraged us to talk to the PORTS program, one of the concerns was the reliability of the information, and they raised some concern and encouraging the Seaway to talk to the PORTS about that.

MR. SKINNER: We have any other questions or comments?

Is there any recommendation people want to consider

for the panel to move forward? It's not a trick question. If not, I think we can move along, but something to consider.

I also want to remind folks that from this morning's conversation with the Stakeholders Panel there were a number of issues discussed. And any of those issues that generated potential recommendations that you'd like the rest of the panel to consider to put forward, please think about those, and we can talk about them at the end of the meeting.

MR. WELCH: It might be that we want to put on the future agenda the results of the report of this test study that Mike was describing. We might want to report at a future meeting of what test study --

MR. SZABADOS: Again, what I'd like to do is have the Coast Guard at the meeting for a joint presentation with NOAA Coast Guard.

There is a meeting -- unfortunately, there is a conference right now. There is a meeting in Seattle -- so for future meetings, I think after March would be a good time to have that, and we'll have more specifics about rolling it out.

MR. SKINNER: Anything else? Mike, we appreciate your standing in at the last minute, and we look forward to future presentations with results we expect. Thank

you.

At the San Francisco meeting we heard about the effects of climate change and some of the impacts coming both from navigation for coastal communities and for a whole range of constituencies.

So we have a panel here that we're very fortunate to have here. And, again, we've allotted a fair amount of time both for the presentations and hopefully for the discussion afterwards.

Today's panel has Judy Gray from NOAA's Meteorological Laboratory. And, Judy, where is that located?

MS. GRAY: Miami.

MR. SKINNER: Davis Seris from the U.S. Coast Guard Management Branch, District 17, which is in Alaska. So thank you very much for coming all the way down here, David.

And we, you know, often hear from NOAA agencies. We also appreciate getting the input from other agencies that are related to hydrographic services like the Army Corps and U.S. Coast Guard, so welcome.

Keelin Kuipers from the U.S. Center is also here. I know from my background in coastal management she is one of the "go to" people on the coastal management issues. It's a pleasure to see you.

MS. KUIPERS: Thanks a lot, Tom. I appreciate the intro.

Since I have everybody --

MR. SKINNER: That's an attention grabber.

MS. KUIPERS: Exactly, that was the point.

MR. SKINNER: No falling asleep.

MS. KUIPERS: No falling asleep. I wanted to start off with a rather dramatic image of the potential impacts of sea level rise on lower Manhattan. Let's observe that a little bit while I talk about what I want to cover in my presentation.

I want to do three things: First, to talk about some of the challenges that coastal communities are facing when it comes to climate change, and in particular sea level rise.

I want to talk also about how NOAA's navigational services portfolio models data observations that come from NOAA; and also from our partners' organizations too with other federal agencies and other groups, how that information can and is being used by coastal decisionmakers to address this issue now.

And then also talk about a couple of examples of specific partnerships and projects that are underway to help address some of these issues, both from a climate change sea level rise aspect specifically, but also some

broader things related to coastal hazards that certainly also apply to climate change as well.

So I should explain a little bit what this slide is. This is actually a visualization that was done by NASA. It appeared, I think, in "*Vanity Fair*" magazine a couple of years ago.

What it shows is a dramatization of what lower Manhattan might look like under an 80-foot level sea rise scenario. That is something we may see over a period of several hundred years if the Greenland and Antarctic ice sheets were to melt completely.

Okay. It's a little bit of background on the impacts of climate change on coastal communities, but in particular kind of looking at it at the perspective of the riding issues the coastal communities are facing.

As I think many of you in this room probably know, 13 of the largest cities worldwide are actually port cities. So ports are certainly an extremely important part, but also coastal communities contribute 57 percent of the U.S. gross domestic product in the United States, and this is based on coastal watershed counties. And then also coastal communities contain about 53 percent of the population.

So we have a pretty significant economic population as well as development that's happening in these regions

that are also quite environmentally sensitive.

And with increasing sea levels, we might expect by the 2070s total world-wide city population exposed to inundation could grow to more than 150 million people. That's a pretty significant portion of the world population that could experience that and other aspects of climate change.

Okay. So this is just kind of a quick snapshot of billion dollar weather disasters over the past several decades.

This was actually put together and updated on a fairly regular basis by the National Climate Data Center, which is part of NOAA.

And I wanted to put this out here just to show the variety of disasters our country has experienced in the past several decades including hurricanes, tropical storms, floods, heat waves, drought, a variety of issues that are certainly all affected by climate. And we would expect that over the next century or so that this map would get a lot busier.

And another thing to point out, you probably can't read it very well in the bottom, but it says on that last little paragraph the U.S. has sustained 78 weather-related disasters over the last 28 years with overall damage costs exceeding over a billion dollars in

each event; and that 66 of these disasters occurred during or after 1990; and total costs for the 78 events were 600 billion using a GNP index.

From the perspective of, yes, we may be seeing changes of climates that make these types of events happening more frequent, but we also have more that's invested on the East Coast. We have more development. We have more infrastructure and other people that are potentially at risk.

We spent most of our time, I think, talking about the application of models and observations and those kinds of tools for decision-making, but I wanted to also make a plug for the social science and the human dimension aspect of this issue, which is that it's extremely important how we think, how we develop and deliver the products and services that we provide that we're looking an eye towards; how can we best support decision-making at the regional, state and local levels on this issue; and how is that information being received by coastal decisionmakers. And what I mean by that is a variety of people.

And so certainly, of course, ports, harbor masters, also natural resource managers may have a variety of people involved making decisions on a day-to-day basis that are affected by climate.

So this is a graphic from the recently released IPCC report that came out. This is the Intergovernmental Panel on Climate Change Fourth Assessment Report that was released about a year and-a-half ago or so that shows what we may be seeing in terms of projected sea level rise increases.

And you should know that the IPCC themselves stated that these projections are fairly conservative. They did not include data past 1999, because they were looking at published data that they could be able to include in that assessment at that time.

And it also does not include the rapid changes that we've been seeing just over these past couple of years in melting of both the Greenland and the Antarctic ice sheets.

So you can see, the first part in gray there, some estimates of the past in the red that shows information that we have both from tide gauges as well as satellite data, some direct observations of the increases there. And if you look at the projections for the future, that's based on model data.

And so there you can see we're looking at, you know, and this again is a fairly conservative estimate, anywhere from .2 to .5 rise in sea level.

But with some of the examples that I'll talk about a

little bit later in my talk, most coastal communities are looking at greater increases in that.

In the types of planning they're doing, a lot of the work happening around that is looking more at perhaps the sea level rise because of some of these changes that have been happening in recent years.

This visual shows a map that was created by the NOAA Coastal Services Center for Mayor Riley in Charleston, South Carolina. He asked for a visualization of what might be some of the impacts of sea level rise when we're looking at just regular high tide events that might be occurring in the city.

And so for this particular scenario, what they were looking at here is looking at an abnormally high tide of 2.1 meters (7 feet) that were predicted for two dates during the study year, and looking at what that looks like under current conditions. So the dark blue shows you what that 7 meter rise -- or 7 foot rise might look like under existing conditions, but if we have a half meter rise in sea level, that kind of medium blue color there, you see that much more of the city is inundated.

And then if you get to that light blue color, an even larger area is inundated. And that light blue represents a one-year rise in sea level.

And what that would mean is that a significant

portion of the city would actually be susceptible to flooding 289 days out of the year.

Okay. Here's another example for the West Coast. The San Francisco Bay Conservation Development Commission is responsible for a number of planning activities for the shoreline of San Francisco Bay.

One of the issues that they have been trying to grapple with is what might be the impacts of climate change and sea level rise for the airports in their region.

And so here what they've done is develop a couple of maps that look at what the impact over one meter sea rise might be for both San Francisco Bay and San Francisco and Oakland airports.

And as you can see, in both consensus, should this prove to be true, that the runways would be inundated in both of those areas.

So what we're looking at here is decisions that are being made now about how and where to place very expensive infrastructure and how to make updates and changes to that, what the implications for that might be in the future.

And the really significant economic investments that these communities and large cities are having to make today can account for what those changes might be, say,

50 to 100 years from now.

This is another example of what a coastal state is grasping with when it comes to this issue. This is an example of issues around wastewater treatment plants and what the -- this is from the State of Delaware, their Coastal Zone Management Program. And if you look here on the left-hand side, you can see that existing conditions that -- for example, Wolf Neck Wastewater Treatment Plant is currently surrounded mainly by upland areas and wetlands. And on the right-hand side under one meter sea level rise scenario, what you might see there is open water.

And so, again, a really serious consideration for them as to how and where they plan for infrastructure development could be affected by these kinds of changes in the future and mapping products that involve collection of high-resolution lidar, tools like VDatum, all these kinds of products that come from NOAA as well as our partners is important to these communities when thinking about these issues.

So I just want to put this quote up here because it reminds us that oftentimes there are these teachable moments out of events such as Katrina and Ike, and we have kind of a limited window of time that may happen after those to be able to make changes, and oftentimes

complacency can kind of set in after the fact.

And so this is an issue that we're really trying to work with. Coastal states and coastal cities are coming to NOAA and to other agencies to say we really want to address this issue.

So, again, just another image here shows us that coastal storms gives us insight to what life at higher sea levels might actually look like.

I know Judy's going to talk a lit bit more about this issue in detail and some of the science and research that's gone into coastal storms.

But I wanted to note here that, again, nautical charting, geodetic positioning, tides and currents, of course, all of those products and services are very important and all of those issues will be affected by sea level due to rising sea level rise.

And this here actually shows a trunkline LNG terminal in Louisiana, and the impacts there are flooding.

So why develop a sea level rise plan? Actually many states are beginning to address this issue. A recent survey by the Coastal States Organization that is yet to be published shows that about 82 percent of state Coastal Zone Management programs are current in climate adaptation plans over the next three to five years.

And several states have actually already started to do this, in particular Maryland and Virginia. Both have executive orders and commissions that are looking at this issues.

The State of California, very recently Governor Schwarzenegger signed an executive order asking that all state agencies develop adaptation plans to assess future infrastructure investments and also what investments they're making in existing infrastructure to shore it up.

So, again, these impacts to sewage treatment plants, airports, ports, all of these issues are being addressed within that scenario.

And as part of this, they are requesting a study for the National Academy of Sciences that they will use the data that comes out of that as a basis for long-term planning.

So they are asking for the research and science to address this issue, but at the same time they are looking to the existing products and services that are available to do that.

In addition, Washington State is also sketching out plans to look at the anticipated effects of sea level and actually considering raising the wharves at the Port of Tacoma.

All right. So this is the one that has the

graphics. Okay. There it is. So here I just wanted to make a point that a number of the core data sets and models that are provided by NOAA as well as other partners like USGS and Army Corps are really important to addressing this need.

And so we've got water level data that's a critical piece, geodetic data. You can't know how high you are unless you actually know what your accurate height is now. And so relative sea level rise, it's extremely important to have that to be accurate in high resolution.

Geophysical data is a critical data area as well. Models, and then, of course, transformation programs like VDatum are extremely important in this type of effort.

Finally, how you pull all that together into geographic information systems, that information can be conveyed in a graphical format that can be used for both public outreach and education, but also by decisionmakers to understand where and how they may build.

And then this is just a plug again for the need for high-resolution data. We're hearing that continually from the coastal managers that we work with that where that information is available, where it can be collected, it just makes for a better product for them to build to be able to make decisions.

So switch gears a little bit and talk about some

examples of projects and activities that are underway related to sea level rise and coastal hazards more broadly.

The Sea Level Rise Rectification Program, this is actually an effort coming out of USGS where they've generated a suite of future sea level rise projections from the various global climate models and using that to look at what might be the impacts of sea level rise on a regional and local basis.

And a really critical data set that they're looking at is also incorporated in the historical tide gauge data that is produced by NOAA, to look at that.

This slide here shows a project that's underway now in the Albemarle center region of North Carolina. And, again, here the point here is that most existing products now are looking at an existing digital elevation model and then being able to make some visualizations about what might be projected sea level rise in a region. It doesn't necessarily take into account other types of dynamic factors like changing tides.

So with this project the Co-Survey Development Lab is actually work with another partner of NOAA, the National Centers for Coastal Ocean Science, looking at the ecological impacts of sea level rise in this region to apply technology that was developed primarily for

navigation services to an ecological problem and being able to develop a more dynamic model that takes into account, for example, changing tides and being able to make some better decisions about, for example, how and where you might protect land or acquire land, where roads may be located, and a variety of other issues.

So this is a product that's currently under development in a couple of different phases through the NOAA Coastal Services Center. And it is called, "A Roadmap to a Seamless Topobathy Surface." And it's currently available as a website off of the Coastal Services Center website, but what it essentially is is a series of documents and maps that seek to improve and streamline the process for creating a seamless topobathy digital elevation model.

And right now we're focusing primarily on the Gulf of Mexico and collecting data from a variety of agencies that fill that region to kind of develop a one-stop shop for that resource.

And the website itself includes, in addition to these data resources, processes to generate high-resolution digital elevation models that minimize error as well as examples of topobathy applications.

This is another relatively new product. This is the NOAA shoreline website. Again, this is hosted by the

Coastal Services Center. Again, it's really a cross-NOAA effort. It involves a partnership with the National Geodetic Survey, Office of Coast Survey, as well as the Office of Ocean and Coastal Resource Management, all within NOAA.

And the point here is that we found that the variety of customers that want to and need to access shoreline data and information are often confused about where to go.

So this provides sort of a one-stop shop for looking at these resources and how they're available through NOAA as well as other partners too and provides a couple of additional value-added products on the site, which includes revamping of NOAA's Shoreline Data Explorer, and that's a partnership specifically with the National Geodetic Survey, and that will include Raster historical maps as well as NOAA National Shoreline Vectors on that piece of the site.

But you can see here from this image some of the things that you might be able to access including a variety of shoreline applications, history of -- NOAA's history of mapping shoreline, the various types of shoreline and what they mean, why they were developed as well as a variety of other resources.

Okay. So, close to wrapping up.

Here I also wanted to include some information on a broader effort that we're undertaking called Digital Coast. And the vision for Digital Coast is that coastal communities will have easy access to organized and relevant data and tools needed to make more informed decisions.

Digital Coast is more than just a website. It's more than just being about data. It is really meant to be a repository for how you might access information, tools, training, all kinds of resources that are available and out there to help a variety of coastal decisionmakers with information on climate change, coastal hazards, land cover change, a whole range of management issues.

And this really is a partnership effort, and we are working very actively with a number of groups outside of NOAA including the Association of State Flood Plain Managers, Coastal States Organization, National Association of County Officials, National States Geographic Information Council, among others, to provide their input on what they'd like to see provided through Digital Coast as well as developing partnerships for collecting the resources that will be available on it.

It is a phased approach. We do just have an initial version of the site that's available now, but we do

expect to be expanding that as time goes on.

Okay. And last slide. So just to remind everyone what the title of this talk was, it's "A Rising Tide Floats All Boats."

So, as you can see, this irreverently named boat is probably lifted a little bit higher than they had hoped, given this circumstance, but I wanted to end with this slide just to show that, you know, we very may well all be in this situation.

Coastal communities will be over the next 50 to 100 years or more where we're seeing increased flooding events, more frequent flooding events, intensity of storms, a variety of issues that can really threaten coast infrastructure development as well as our natural resources, and wanting to insure that we are providing now the information that coastal communities need to make decisions on where they're placing this high-value economically important infrastructure so that in the future we're not losing out on those kinds of investments. And related to that, also protecting the natural resources like wetlands and other areas that can also ultimately protect coastal development and people in these regions.

So while we're sort of in this process of needing to develop better high-resolution tools and models that can

help coastal communities make decisions about what the impacts of sea level rise are, we also need to recognize that these decisions are being made everyday now on a permit-by-permit basis by coastal communities.

And the information that we can and should provide are available through NOAA and other organizations, other agencies. And it's our responsibility, I think, to insure that they have the information that they need to build and use that information most effectively.

So, thank you.

I take questions, too. I don't know if we want to take questions now or in the end.

MR. SZABADOS: Probably wait at the end so we get the full scope, but thanks so much, Keelin.

MS. KUIPERS: Sure.

MR. SKINNER: And, Judy, just so you know, there will be people coming in to clear out the lunch during your presentation. Don't think you have to finish up quickly or anything like that. We've got plenty of time.

MS. GRAY: Thank you.

So let me re-introduce myself. I'm Judy Gray and I'm the Deputy Director of NOAA's Atlantic Oceanographic and Meteorological Laboratory in Miami, Florida.

And I can't sit still and talk at the same time, and I always have to take my shoes off in order to talk.

It's a Miami thing, I think. I don't know.

Anyway, I wanted to talk to you today about some of the research that we're doing within NOAA, specifically around hurricanes, the relationship between hurricanes and climate. And then I had something that I thought you might be interested in at the very end of the talk.

The Atlantic Oceanographic and Meteorological Laboratory houses the Hurricane Research Division of NOAA. So I don't want to get you confused between that and the National Hurricane Center, which lives within the weather service. We have a very close relationship with them, but we do no forecasting. We literally do the research, but it provides a basis for improved forecasting.

We have made great strides in the last few decades in track forecasting. We do a much better job. We can forecast tracks now at five days out with the accuracy that ten years ago we didn't have with three days out. So we've made a lot of progress and it's had a huge impact on evacuation scenarios and things like that.

We have not done as well with intensity forecasting. And, in fact, we have very limited equipment in intensity forecasting, and there are several reasons for that, some of them tie back to climate and most of that through the ocean.

And so I'm going to actually touch on three aspects of sort of climate hurricane interaction, rapid intensification, the relationship with the ocean, and then the Saharan air layer, which are all sort of climbing the scale of larger events.

Very quickly, rapid intensification is one of the most difficult things that we have to forecast. And there's a model that, a statistical model that we're using right now, at the hurricane center. It's called SHIPS, the Statistical Hurricane Intensity Prediction System, and it's based on seven predictors.

And Keelin in the car today was shocked to learn that there was a hurricane last week, Hurricane Paloma. Hurricane Paloma was a rapid intensifier and SHIPS and the scientists that developed SHIPS actually forecasted that it would be a rapid intensifier two days before it occurred. So it rapidly intensified between the Grand Caymans and Cuba and came ashore Cuba as a Cat 4.

There are seven factors that go into the SHIPS model, and I'll talk a little bit more about wind shear, but all of these have to do with the relationship between the ocean, and which is sort of the memory for the atmosphere, and the atmosphere itself.

I presume all of you have heard about wind shear, and basically the story is that if you have low wind

shear, that's pretty favorable for the development of a hurricane whether it's genesis of a hurricane or maintenance of the hurricane.

And the real story here is that if the winds are moving at the center at approximately the same speed and in the same direction both high in the atmosphere and low in the atmosphere, you can get a beautiful annular shape that's easy to maintain.

If, however, they're in different directions high and low or different speeds high and low, your shearing apart the storm is not as favorable for development or maintenance of a hurricane.

The role of the ocean is very important. For almost the entire life cycle of a hurricane it is the energy source, one of the big energy sources for hurricane development and maintenance.

And so in the last few years we've been doing a lot of work on making ocean measurements commensurate with the atmospheric measurements that we make with our aircraft program.

This is an example of some drifters that were deployed ahead of Hurricane Dean in 2007. You may recall that Dean came ashore in the Yucatan peninsula. I believe it was a Cat 5 when it came ashore. And we are very lucky. You can see the array of drifters that we

put out and deployed by C-130s. And Dean went right over the array and especially lucky to capture that forward right quadrant, the most severe quadrant of the storm.

We look at surface ocean temperatures. With satellites, it's relatively easy to do. What's hard to get is what is going on with depth. These drifters not only move around with the winds, they have long thermal chains underneath that can collect temperature and depth. We also deploy to collect bathymetric thermographs measuring temperature with depth. And so we're getting the three-dimensional structure of the ocean heat content under the storm.

And that's important, because it's -- the hurricane doesn't just give energy from the top. It's measured by satellite. It's, you know, a very dynamic system. They're mixing up heat from down deep. If your hot layer is very shallow, it's not going to be particularly helpful to the storm.

I also want to talk about an atmospheric phenomenon, the Saharan air layer. The dust storms that come off the Sahara are very important in hurricane formation, and actually for a lot of other reasons, too.

It turns out the Sahara dust is one of the main mineral sources for all of the ecosystems in the Caribbean Bahamas. Who knew that, you know, there's no

local source phosphorus, you know, for iron. A lot of it comes out of these dust clouds. The blue areas, the cooler colors, are the Saharan air layers. That's what SAL stands for.

And we have Tropical Storm Irene from 2005 imbedded between these Saharan air layers, and this is literally -- a little black line you see around Irene is the -- if you'd click that again -- the red circle shows you an actual drop bar.

This is an instrument that is dropped from the belly of the plane. The plane's flying at about 10,000 feet or more, yeah, 10,000 feet, and it's measuring temperature, humidity and winds, the height down to the surface.

The graph on the right, the black line, shows what the climatology is for the relative humidity at that location over the ocean. You can see it's fairly moist and trails off with height. This is height on the vertical access in millibars.

The actual relative humidity you can see here at 800 millibars should be about 70 percent. It's actually around 20. That's desert air.

Similarly, the winds associated with the Saharan air layers frequently have an eastern jet associated with relatively low levels. So here we have 30 knots of wind from the east right adjacent to Tropical Storm Irene.

We measure wind shear typically between 200 millibars and 850 millibars. If we took just those two numbers on this sounding and use that as our shear calculation of what is the shear in the environment around Tropical Storm Irene, we would get 17 knots of shear.

Seventeen knots is moderate shear and we see for a hurricane, and we see this all the time, and we see them doing very well in the environment with 17 knots of shear.

You can see what the storm is actually feeling is 30 knots of shear, because of this jet at 700 millibars. We have three very areas that we drop bars to make sure we don't willingly accept they are classic shear definitions, but you actually get some of the structure in the storm.

And this is what it looks like. This is what the Saharan air layer looks like from 45,000 feet. And by the way, this is what it looks like in Miami when they come over Miami. It looks like it's smokey and you can't see downtown from my house. It can be quite dense.

I'm going to start moving into more of a climate discussion. I wanted to just give you a little bit of background what we're doing in the research areas. And just to give you an idea of the complexity, I mean

there's a myriad of aspects of hurricanes like the eye-wall replacement cycles and how they interact with the larger environment and how they interact with the ocean. There's all of these little micro structures stuff and the cloud micro physics and a lot of other stuff that's involved in the hurricane research. And overlaying all of that is what's going on in the larger environment with the climate, what's going on with the ocean, which I think of sort of like the brain or the memory of the atmosphere.

Underlaying arguments about global warming and the impact on global warming on hurricanes is -- the assumption is that you actually have data that can measure that. And this is an example of -- we have the 1933 hurricane season and above the 2005 hurricane season.

In 1933, we didn't have satellites and there weren't any ships in this region, so who knew if there were hurricanes out there or not.

So one of the fundamental arguments that has been put forward in recent years about the increase in hurricane activity is based on bad data. We just don't know.

2004/2005 saw a record number of hurricanes in particular, U.S. landfalling hurricanes, a record number

of hurricanes.

At that time, after 2005, several of the top scientists in this country came out with statements about global warming having an impact on hurricanes and increasing the number of hurricanes and increasing the intensity of hurricanes.

Like I said, it's based on faulty data, in our opinion, but they said it anyway. There was a lot of combat in the press. I know Chris Lancey from the hurricane center spent a lot of time duking it out with Kerryn Manuel on the "*Today Show*" and things like that.

Unfortunately, the media picked up on this connection of global warming and hurricanes. And what I'd like to get across to you, it's a whole lot more complex than that. And, in fact, 2006 and 2007 were relatively quiet systems or years, I mean.

I think of hurricanes like the same way I think about crime. If I hear crime statistics and I hear that my neighborhood is like 30 percent higher crime rate than someplace else, I'm still living there. I'm not, you know, selling my house and moving, because it hasn't happened to me yet.

Hurricanes are the same way. They're not 30 percent or 20 percent. They're either a hundred percent or nothing. You either get hit or you don't.

And so one of the points I want to make about 2006 and 2007 is that the Yucatan got hammered. The numbers were lower, and that's what we were looking at, but it was a terrible year for some of those parts, and that the U.S. escaped, for the most part, but other parts of the world or parts of the Caribbean basin got hammered in 2006 and 2007.

Keelin showed the sea level rise picture. This is also from the IPCC report as the top panel sea surface temperature, and the panels on the right show globally averaged.

So this isn't sea level rise in any one place. This isn't temperature in any one place. This is an average over the whole globe, all of the data that they can get their hands on.

The problem with that is that when they're looking at how does climate impact me or things that I'm looking at in hurricanes, you can't look at global avenues. You have to look at what's happening in my basin or what's happening in my hemisphere.

And, in fact, what the top panel shows is that the northern hemisphere warmed by 2.3 degrees, and the southern cooled by .04 degrees. And I'll ignore the other two panels.

As I mentioned before, we can't just look at the

surface. You have to look at depth. Well, how deep do you look? Do you go to the mixed layer where you can see the northern hemisphere and southern hemisphere in total, heat storage, or do you go all the way to 750 meters down?

You get a different answer about what the heat storage is in the ocean and how different it is in different parts of the ocean.

So global warming has different impacts in different parts of the world, and if you're looking at the main development region for Atlantic hurricanes, which is in the little box there, the main development region is an area in the atmosphere that has influence from all of the oceans.

And it turns out that while global warming refers to an average over the whole globe, not locally, the three tropical oceans actually compete with one another how they're going to affect Atlantic hurricanes.

And harping back to the bad data issue, one of our scientists, Tao Si Lang (sic), went back and eliminated -- he didn't look at all of the hurricanes in the Atlantic basin. He only looked at U.S. landfalling hurricanes, and he has found a statistically significant decrease since the 1850s 'til now in U.S. landfalling hurricanes. And so I just want to say a few words about

how that might be in this global warming scenario.

The climate affects hurricanes not, you know, globally in the sense that all these three basins of the oceans are competing for how they affect the main development region, but also it can develop climate signals or climate indices that are more regional and try to link those to hurricane activity.

So I want to talk about two of them. The upper right -- or the upper left-hand panel is the Atlantic Multidecadal Oscillation. It's a statistic that's developed that is basically -- it's based on the mean North Atlantic sea surface temperature analogy, so they take the mean out and whatever the difference around that mean it's printed, it's plotted there.

It looks stunningly like active versus nonactive hurricane years. The plot's almost an overlay -- and I really regret I didn't have that other plot today. I'm sorry. I did this on the plane this morning. But right now we are in an incredibly active phase. The phase lasts 20 to 40 years.

And so all of us who created building codes in the 1970s based on the coastal populations in the '70s are now more victims of hurricanes, more chances of being victims of hurricanes because in the '70s we're in an inactive phase, and now we're in an active phase.

The middle panel, that shows what we call the Atlantic warm pool. The Atlantic warm pool is defined by the 28-degree sea isotherm. So the dark black line here is the 28-degree sea isotherm. It averages over all the summer months. And the warm pool, or the image on the bottom, that's a pretty small warm pool. So there's a lot more cold water in the Atlantic than the Eastern Pacific.

The one on top, the image on top, is a large warm pool, and you can see that a lot of that warm pool is down in the main development region of the Atlantic. I'll come back to that.

And, in fact, we have 82 busy years all associated with large warm pools and only 3 busy years that were associated with small warm pools.

So there's a connection, at least a statistical connection, between warm pools and how busy your hurricane season might be. Let's see if we can put some physics behind it.

Most of you have heard of El Nino, I'm sure you all have, El Nino Southern Oscillation, and ENSO primarily impacts the United States in the winter.

And so one of the things that we're looking for is what kind of indices can we use to look at summer climate, in particular hurricanes.

I mentioned before that the Indian and Pacific oceans compete with the Atlantic on how the atmosphere is going to respond to inter-basin anomalies, and I also mentioned the sizeable warm pool.

So here is an example of small warm pool, large warm pools, and that the warm pool actually acts as a link between that Atlantic Multidecadal Oscillation and tropical cyclones where 80 percent of large warm pools occur during the warm phases of the Atlantic Multidecadal Oscillations. That's why you're getting more active years during that, the warm phase of the AMO, and a lot of this is related to shear. So large warm pools are associated with low shear so you get more hurricanes.

I think the main thing I want to show you here is the left panel is the average vertical of wind shear and the right panel takes the large warm pool years and subtracts the small warm pool years and shows that nice blue area; that basically the warm pool reduces the lower tropospheric easterly flow, the upper tropospheric westerly flow. And so you have reduced shear and then you're favoring Atlantic hurricane development in that main development region.

Another way it affects this is through the fact that the ocean is a major heat source for hurricanes.

And so a larger warm pool makes more energy available to hurricanes and so you get increased air surface air temperatures and higher water vapor contents and so the hurricanes are fueled. So you can get more and more intense storms.

So global warming is associated with increased vertical wind shear in the main development region because of the duking it out between the three oceans. So that's the mechanism by which we were explaining the downward trend at least in U.S. landfall trends in global warming.

And any scenarios on increases or decreases of hurricane activity associated with global warming is going to have to tease apart that competition between those basins. So there's some really good science that has to be done there.

We have got a warm pool that we're creating an index around that can act as a link between this active and inactive phase of hurricane years and the warm or cool phases of the Atlantic Multidecadal Oscillation.

And I just said that about the shear. I don't need to say it again. And then, of course, we have the Saharan air layer than can mess up everything. We have got lots of dust storms coming off the Sahara. It doesn't matter how warm the ocean is, if you've got that

incredible low-level shear and you've got really dry air then pulled in too and they're spinning up, you're not going to get a hurricane.

Because I know that you're a hydro office and not a climate science office, I wanted to throw this in, because one of the things I've been sensitized with to recently is the fact that navigation isn't just interested in tides.

If you're going into a port, you're not just interested in how high the tide is or sea level rise. You're also interested in how much water is flowing out of the river that feeds that port. It can make a huge difference in the water levels that you observe.

And so this is some work that is related, once again, to the Atlantic Multidecadal Oscillation. And what they did was there's that same graph on the AMO, and what we've done is we've overlaid water inflow into Lake Okeechobee in South Florida. Here's the lake right here. And as you can see, it looks -- I mean the correlation is phenomenal.

What we've done is, based on that information, we've created a nomogram where we can say how many years has it been since the last shift.

So the last shift happened normally in 1995. That's when we went from an inactive hurricane season to a more

active hurricane season. That's also when AMO shifted.

So here in 2008, it's been 13 years since the last regime shift between AMO phases. So what is the likelihood that in 15 more years, you know, we're going to have another regime shift? Well, it's about 75 percent. So in 15 years we have a 75 percent chance that we're going to shift back into that inactive phase.

It's incredibly important for people like water managers in South Florida, which is who this was developed for, but also it might be of interest to you in how you think about the role of river inflow into your ports and things like that, because -- look, for the water managers, they decide how much water they're going to leave in Lake Okeechobee before the hurricane season even starts. They're guessing how many hurricanes they're going to get. They're guessing how much rain is going to fall in that summer rainy season. And they lower that lake in anticipation of what they think they're going to get. So a regime shift is incredibly important to them.

So the Southwest Water Management District, 75 percent is better than any kind of statistics that they are using right now. The confidence limits on this are as good as anything else that they're using.

Okay. I want to say something. I'm a meteorologist

and I want to say something in defense of hurricanes. You can't imagine how much mail I get about how we can get rid of them. And a very popular role model, a nuclear bomb said this, there are a couple of problems with that, is that the energy is incredibly diffuse and nuclear bombs are a pretty focused energy source, but the really big problem is that I live in Miami and if you look historical tracks and they almost all go near Miami, we don't always get hit, but last year we were scraped by like five or six, and if you blow them up, I'm pretty much in the fallout zone, and that says nothing about the ocean ecosystems or the coastal ecosystem.

So, anyway, I get a lot of mail about how to get rid of them, throw gel on the water, you know, giant fans -- I never figured out how that would work -- but what I want to say about hurricanes is that they're an essential part of the global engine.

And what I mean by that is we're constantly overheating the tropics and overcooling the poles. And so in the wintertime we have fronts, these big low pressure systems with warm fronts and cold fronts, and that's our main mechanism in addition to ocean currents, which are there all of the time, for moving warm air from the tropics into the poles.

Well, in the summertime at least in the atmosphere

we don't get those big fronts, we don't have those big temperature differences. And hurricanes are one of the main mechanisms of moving heat from the tropics to the sub tropics.

The other thing is that tropical storms in general, whether hurricanes or not, are one of the main sources for recharging the aquifers in the whole southeast basin.

And so I just thought I'd throw that in as a side in defense of hurricanes. And, you know, I don't want to get hit by one particularly, but I do -- they are a part of the natural system, and I think they're pretty important. And thank you.

MR. SKINNER: Thanks, Judy. I just wanted to remind folks that Jack had mentioned that he has a fairly important meeting tomorrow in Washington on the transition and will likely have to leave fairly soon. So I just wanted to once again say thank you for being here as long as you could.

Normally, we try and block his way and prevent him from leaving, but I think in this case we all wish you good luck with the meeting.

MR. DUNNIGAN: Appreciate that.

MR. SKINNER: David.

MR. SERIS: Good afternoon everyone. I'm Davis

Seris. I'm with the 17th Coast Guard District up in Juneau, Alaska. I'm in the Waterways Management Branch, and we have got an integral role in the Coast Guard portion of charting, publishing to local mariners, activities like that.

We also manage a fleet of four sea point buoy tenders that made a couple of appointments up in the Arctic this summer. That's largely why I was sent to talk to you, because we're pretty involved in that process.

And I wanted to pass along thanks from our District Commander Admiral Brooks for the invitation and opportunity to speak to you about the Arctic today.

It's a very important issue for us and we welcome any chance we can get to kind of broaden the understanding of what's really going on in the northern regions of our state in District 17.

Four main things I want to talk about, just briefly about the fact that, you know, our assessment is the Arctic is changing. We're going to talk about the key strategic drivers that have affected the Coast Guard's view of the situation and why we think this is important. Then later on give you a little overview of our recent and future operations. And then lastly a couple of particular comments about hydrographic services that I

think might be of interest to you.

Our District Commander likes to say that change is upon us in the Arctic. This is happening now. It's a maritime domain. We have got a lot of Title 10 and Title 14 statutory responsibility for this.

Search-and-rescue, maritime and environmental response, port and waterway security. If it's water, we own it. And that's pretty much the way the Coast Guard sees it.

What has happened in Alaska District 17 and some of our assets that are working out of the Pacific area is that this is -- the activity that we've engaged ourselves in is really a full core press into operating in the Arctic, figure out lessons learned, trying to understand what this new operating area means to us.

The amount of activity that you're seeing from our operational units in that area is really unprecedented. And for the Coast Guard we have budgetary constraints just like you or any other agency. You know, carving out a million and-a-half dollars to, you know, fund some of the logistical support for that activity, that's hard for our agency to do.

And it's something that I want to make sure that you understand it's a little unusual for the Coast Guard to push that hard in a new direction without being told to

do so by Congress or some other force.

Next step, I'm going to deal with some of the strategic drivers that we're seeing in the Arctic and why we think it's important.

This diagram shows you where we have agreed for years where we have 200-mile limits of the EEZ and some of the activity that we're seeing now with nations trying to extend their 200-mile limits based on the naturally occurring asymmetry that is out past the EEZ.

Before I start, I want to point out that the boundary line between the U.S. and Russia has not been approved by the Russians. That boundary line between the USA and Canada, that's not an agreed-upon boundary either.

Disputed boundaries have a tendency to create work in the Coast Guard, so we watch those very closely. We spend a lot of time patrolling the U.S. and Russian maritime down there. And as the sea ice melts and we have more open water in the Arctic, that becomes a bigger job for us.

One of the key things for us to understand here is that the U.S. has not ratified the United Nations' convention on the law of the sea. That's the process that governs -- see that shaded area? You know, Russia is looking to claim all the way out well across 200 miles

going all the way to the North Pole. To begin that process, you need to be a party to that treaty, and that's not been ratified by the Senate yet.

And from the strategic perspective, what we see going on is that every other nation in the Arctic is moving forward, and they're moving forward progressively on this.

Canada, Russia, Denmark, have all approved the treaty. They're all actively engaged in doing their own C4 mapping to try to figure out what they can do in the next ten years or so, because there's a deadline for how long you have to make a claim to extend your EEZ, and we're really bringing up the rear if you look at what the other nations in the Arctic are doing.

So that's a -- it's a big deal for us. We don't really have a voice on the table and we're not a party from the treaty. So from a maritime perspective, we see that as a big problem.

The next strategic issue is you've heard a lot, I'm sure, about the possible Northwest Passage, shipping routes and the fact it's shorter. We're seeing now the Canadian Arctic Northwest Passage opening to the point to where we're seeing a couple of recreational vessels making that transit in the summertime.

We're seeing also -- I mean on the Russian side

we've always had ice breaker assisted movement of commercial ships, but we're seeing a reduction in sea ice levels there as well.

What we don't see, and the thing you don't read about very often in the press, you see a lot of stakeholders talking about the possibility of, you know, wide open polar shipping routes and a lot of potential impacts from that, but you don't really see any shipping instruction. You don't really see a lot of segments of the marine industry right now actively pursuing that stuff.

And there are a lot of factors out there like insurance, you know, like how do you mitigate the risk in a certain environment to the satisfaction of the insurers of the shipping line itself.

You know, likely in an Arctic polar transit probably there would be some speed restrictions placed on that ship, so all of a sudden that shorter transit starts to become not as attractive if you have to slow down.

So there's a lot of factors out there that we see that are kind of holding that, you know, wholesale development of new trade routes from happening.

So you are not going to see that this year. You are not going to see it in the next five, probably not the next ten. It doesn't mean that it might not happen at

some point in time in the future.

And if I can digress a little bit, from the Coast Guard strategic issues and maybe talk about one I think we share an awful lot in common with, is that this discussion of potential new shipping routes, the fact that the ships might not show up for 20 or 30 years does not give you that much time, I think, to get a handle on some of the hydrographic issues in that region.

There's two particular things, they're coming down the pike, that we see going to impact our needs for hydrographic surveys.

And the first one is that we're closely watching the Arctic Marine and Shipping Assessment, that's international -- trying to get a handle on what, you know, the 15, 20, 25, 50-year future in the Arctic is going to be. We're expecting that study to come out next year. I'm expecting to see that to be something of a call to action to get a handle on ship traffic management in the Arctic whether you know well in advance of when the ships arrive.

The other factor that's going on and I want to make sure you're aware of is that oil and gas development is proceeding in the Arctic. And it's probably going to happen faster than the establishment of any shipping routes.

For the U.S., if you look, you can see the Bering Strait is sort of a natural choke point. And if you want to talk about ship routing measures, that's a pretty good place to start.

Directly north to that is the Chukchi Sea, and we've got ongoing, you know, active oil and gas exploration that's happening in spits and spirts, but it's happening right now.

And so we see these two factors kind of combined. There's going to be a lot of attention in the near future on the future ship traffic, and the oil and gas exploration is proceeding.

So if you imagine for a moment what the Gulf of Mexico would look like had we allowed outer continental Oil and gas development and then came in later and tried to put in safety fairways or ship channels, that would be a problem.

And so there's a tremendous advantage, we believe, you know, to be correct and to the point where we kind of get a general idea where ship routing is going to happen before we allow wholesale oil and gas development to proceed wherever the oil and gas happens to be.

There's lots of other factors that come into play on that. The Bering Strait is an international strait, so anything you do in that arena is going to be a joint

effort with the U.S. and Russia, possibly Canada, possibly other nations. That process has to go through the IMO. Five years would be a really fast timeline to see something like that happen, but it's something that I think we're going to have to grapple with in the relatively near future.

So what does that mean for you? If we're going to start sitting down and picking ship routes, we need to have a good handle on what the underlying hydrography is.

If we start that discussion in earnest today or even a year from now, we're going to be making assumptions on where the ships should be going through the Bering Straight, and I would remind everyone that that was during the last ice age, and it's pretty shallow. There is a lot of six and seven fathoms on that chart.

We don't have a good handle on what this future shipping is going to look like. It might be trans-polar ship routes. It might be ships coming in and out of the Arctic to pick up hydrogeodetic resources. We don't know that yet.

But if that discussion starts a year from now looking at routes, some of our discussions on where a good place to be is going to come from looking at a chart with data that's 50 years old from a single-beam echo sound or possibly in a worse case scenario maybe

information that came from a Russian admiral over a hundred years old, even older.

We view that as an area of concern and I hope you share that concern. You know, sometime before we start serious discussion about shipping routes, we need to get a handle on what the actual bathymetric conditions are up there.

So if you think you're off the hook in the Arctic just because the shipping is not coming up, I want to make it clear we don't believe that to be the case.

Okay. Getting back to strategic drivers for the Coast Guard. Coastal erosion, it's a problem in areas. We're seeing now really sort of an annual deployment to someplace up in Alaska where we're concerned about a field farm. And that is a lot of times just firming up a plan ahead of time to make sure that we've got -- you know, consideration is taken if we're going to have a storm erosion event.

In my office, even in the AC navigation shop, we've got -- we face our own coastal flooding issues and we get nervous every October until we shore up ice, because if we get a significant storm it will wash over the sand and that can cause us some serious problems.

Economic/energy security, clearly a driver, puts us back pretty closely to the unresolved boundary issues.

There's going to be a future need to protect our energy critical infrastructure in the Arctic, like it or not, because that's coming as the Coast Guard looks into the future. You know, it's not a question of if, it's a question of when.

And again, having some forward motion on the law at sea convention would really help facilitate, you know, this discussion on how we're going to divvy up these tremendous resources in the Arctic in the future.

Northern migration of fish is another thing we're watching, waterway resources, you know, seagoing fisheries. Law enforcement is a very important part of the District 17's operational profile.

We devote an awful lot of cutter hours every year enforcing our domestic fisheries laws, and we're also spending a lot of time watching for foreign fishing vessel encouragings in our EEZ.

The diagram in the lower left is the one you want to look at. You can see the difference in ground fish distribution in the last several years. We're seeing those species move to the north, and you can't argue with the catch rates.

So some of the things that are happening on this front, the diagram on the top kind of shows you where our current fishery management regime set off.

There's a lot of forward motion right now to close off fishing in the Arctic until we have commercial fishing, that is, until we have a much better handle on, you know, what the stocks are, you know, and some of the other hydrographic services that comes into play, and I think you can anticipate, you know, some pressure in the future.

To try to get a handle on these thoughts, I think it takes a lot of branches in the Department of Congress and NOAA to try to get a handle around that to decide, you know, what, if anything, in the future is going to happen with the management of fisheries up there.

And as I mentioned before, you know, if we decide that we want to shut out the Chukchi Sea to commercial fishing, that creates a closed area enforcing problems for the Coast Guard.

We have to do something probably to make sure that closed area is being observed. That might be ship board transits when we have the opportunity to do that. It could be over flights with the C-130 or some other asset to try to make sure, you know, what rules are in place are ultimately actually being followed.

Threatened and endangered species. Following on a similar line, I see a pretty strong parallel of what's happening in Alaska with the seals and sea lions

protection measures and several years' worth of work that's been placed on that.

We have a lot of closed areas, no fishing areas, no transit areas that we actively spend some time enforcing to make sure they're being followed by the fishing fleet.

Three big questions marks in the near future about what's going to happen with the endangered species in the Arctic with the recent listing of the polar bear.

Depending on what type of regulatory regimes, critical habitat area designations, you know, depending on how that all pans out, since these are marine mammals, there may be some time of marine law enforcement component that's going to be called on to, you know, to perform some enforcement work in those areas.

Lastly, we see a trend of growing eco-tourism in Alaska, or the Arctic in general I should say, not quite so much in Alaska.

The case last year in the Arctic that got our attention was a port of vessel Explorer hitting an iceberg and sinking. It's not too hard to imagine a similar scenario in our Arctic, and that was a real wake-up call for us.

Something like that happens, it's pretty clear there's going to be an expectation on the part of the National Coast Guard that it's going to respond, so we're

looking hard at that.

I would point out that the great majority of the eco-tourism type activities is happening on the Atlantic Coast instead of the Pacific Coast. An example, this last year we had seven passenger vessel transits on our side of the Pacific and there were 76 over on the Atlantic side.

Okay. The next couple of slides are kind of getting more into the nitty-gritty of what's actually going on up in the Arctic. And I'll try to give you a feel for what the activity level is.

We're seeing, you know, the numbers on the slide, we have got about 70 or so U.S. vessels, about 30 Russian vessels that we're seeing going back and forth, about 180 transits through the Bering Strait itself right now and that is, you know, without any trans polar shipping or anything like that.

We have one operation that goes on right now on the U.S. side that is a little bit north of there that I'll talk about on a different slide on that, but it's a large mine, it's got an ongoing seasonal layering operation to bring in ore from the mine.

And then numbers here -- and I guess I'll point one thing out first. The picture on the bottom is the AIS tracks for a couple month period. They probably pale in

comparison to what you see in a lot of the other ports in terms of traffic density. A couple of things to keep in mind is that Barrow doesn't have a port. So, you know, we're seeing a lot of activity for just a piece of coastline without any substantial navigational improvements.

And from the Coast Guard's perspective, the fact that we have a very light traffic volume there is still significant, because it still brings into play the complete range of coastal commissioned areas that we might be called upon to perform.

So whether it's one small cruise ship or a hundred, the fact that they're up there means that we have some risks, and it makes it something that we need to worry about.

This is a look ahead of the next year, what we think is going to happen. We're not anticipating any significant change in the cargo traffic.

The picture on the bottom right is securing a vessel that's going to transit unassisted through the Northern Sea Route. That's new.

Our oil and gas activity, we're expecting that to be on hold for another year. And Shell's efforts to drill in the Chukchi Sea lease area work their way through the 9th Circuit.

Even if they are going to get some kind of favorable decision in court, we don't think that they're going to mobilize like they did in 2007. But to give you a feel for what that looks like when they do, in 2007 they had a fleet of 18 vessels including two charter Russian ice breakers that were stationed to get ready to work inside to Chukchi Sea to start doing some exploration work.

We're also anticipating a slight decrease in oceanographic research activity that's correlating with the end of the interpolar year.

This is just a slide to give you an example of, you know, what the commercial activity in the Arctic looks like. We don't have either the classic deep craft port scenario that most of you are used to seeing elsewhere in the country.

This is a picture of the Red Dog Mine. This is something typical in Alaska. The top left picture is a picture of what looks like a margin for the season when everything is frozen.

There is a very large -- zinc and a couple of other different metals that they mine our there, primarily zinc. It's one of the largest zinc mines in the world. They run the mine all year long and stage -- brake ore in warehouses. And as soon as the navigational season opens up, we'll start seeing work areas. They'll come up and

anchor off a couple miles offshore at the dock, you see there in the center.

And it's basically a round-the-clock 24/7 operation that goes on all summer until the ice comes back. So that's kind of typical if you look at the hydrology of the Arctic region. It's a very flat, very shallow, sloping kind of configuration. And you don't see deep craft, you know, activities or resource extraction that has some type of land work nexus.

The only thing we have that looks anything at all like what you're used to seeing as a board would be the Board of Nome. That's got a controlling depth depending on what the dredging has been doing somewhere between 20 and 22 feet.

You hear discussions about making that a little bit deeper, but we don't know if that's actually practical given the nature of the region up there and how fast -- how much material you have to dredge, so just some background on what operations looked like up in the Arctic.

Next couple of slides give you a review of what the Coast Guard did this summer. The cornerstone of that effort was taking the Tailored Force Package, we call it. The Coast Guard deploys up to Port Barrow, that included a C-130 fixed-wing aircraft, we had a couple different

types of helicopters, we transported some of our Coast Guard standard issue patrol boats, the same assets you're seeing in every other port that you might happen to be in throughout the country. And then some other cutter operations that happen simultaneously.

Throughout the year we've been flying what we call Arctic Domain Awareness Flights. These are fixed-wing C-130 air patrols. Basically this gives us, you know, eyes-on verification of what is going on over the Arctic. So our maritime domain awareness picture is not really solid. And so because we don't have other mechanisms that allow us to remotely monitor what's going on up there, sometimes you just have to do it the hard way and fly and see for yourself.

We learn a lot of lessons in working in aircraft up there. A good example is that our Coast Guard versions of the C-130 don't have heated fuel tanks. They can't fly when it gets more than 40 below.

So there is limitations to our assets, and this is two of the small boats. We saw a lot of problem areas using the existing assets that are in the Coast Guard's inventory to be able to operate in that area effectively.

Coast Guard Cutter Healy made a couple of deployments in 2008 in support of the National Science Foundation. They're doing science of opportunity for

NSF, and they're also heavily engaged in doing C-4 mapping. Kind of with our fingers crossed that we're going to ratify, uncross, and be ready to move forward with our own claims to extend our 200-mile EEZ.

One of the things we did that was new for us in Alaska was to use the Coast Guard Cutter Polar Sea, which is one of our ice breakers, much older ice breakers, in a multi-mission capacity.

In the past, they've primarily been doing work down in Antarctica. When they are doing work in the Arctic regions, it's primarily science-driven. It has not had a focus on other Coast Guard mission areas like fisheries, ports and search-and-rescue.

So this is internally for the Coast Guard a pretty significant step to take that ship that we know is capable of operating in the Arctic and exercise some of our commanding control infrastructure at the District to, you know, kind of see how that would work if we had a case in District 17 and we needed to use that certain asset to respond to it. So that's something that happened in 2008.

For buoy tenders and navigation sites, we had to -- this is the Coast Guard Cutter SPAR made a deployment up to the Arctic and we had one other ship, the Coast Guard Hickory, which sails out of Homer, made a deployment,

although it wasn't quite as long.

Part of what we were doing here, this is a -- we have a program called Waterways Analysis and Management System, or WAMS, study.

The primary purpose of that study is to kind of verify the need for our AIS navigation systems if we need to install more visual aids to navigation, but also looks at some other things as well.

This is a little more detailed view of what their itinerary was. This trip on the SPAR was the trip that we brought along Lt. J.G. Matt Jacowski with the Office of Co-Survey to help us take a look at a lot of the rest of the navigational services in that area.

The purpose of this slide is to kind of try to illustrate to you a little bit of the distances involved. You know, to get up and around the coast of Alaska and then to come back, we knock out probably about one-third or one-half of the places that we really want to look at. You know, that's the full line effort. It took us six weeks. That represents about as much as we can do with one of our buoy tenders in a year given our other employment activities.

I can't say enough about having an OCS representative on board the ship. We got a lot of work done with investigations in particular ports. A lot of

reconnoissance on some that we did with the Coast Guard Cutter SPAR, some small boat assets, we've got a couple of boats that we kind of outfitted on our own trying to go in and do our own verification of soundings.

We don't have a good handle on how to get high-end information. We don't have a protocol to handle temperature or solidity data values.

But for the Coast Guard, it's a pretty forward-thinking survey effort, and it's one area in the future I think that there's some low-hanging fruit for the Coast Guard and NOAA to work on since we had four buoy tenders in Alaska.

And since we're going to be operating up in the Arctic, NOAA's only got two ships. It might make a lot of sense to look at some avenues to try to hit some of these areas of particular concern, you know, maybe with a navigation response team that could deploy one of our cutters. We're very interested in that kind of work.

I don't think you'll get a programmatic answer out of Coast Guard headquarters that we're having to take on production of soundings, but I can tell you that from District 17's perspective if that's what it takes to get a job done we are on board trying to do something in a collaborative effort.

So, again, we've got a lot done with reconnoissance

on the different harbor and port facilities and a lot of these small villages. There are identifying landmarks on the chart, verifying our own and part of it verifying information that was in the coast pilot. Really valuable experience for the Coast Guard Cutter SPAR to have somebody with Office of Co-Survey on board the ship and something we look forward to doing in the future.

One other quick highlight was a search-and-rescue exercise between Coast Guard Cutter SPAR and that's the Coast Guard Cutter Hamilton that's in the background. That's one of our high endurance cutters.

The big take-away lesson from this is actually the ice in the picture and the fact that the ice forecast models were a continuous challenge for the assets that we had operating up there.

It took us two days of planning and working on scheduling and looking at the ice forecast to try to pick a time and a place and modify it two or three times to where we could get the SPAR and the Hamilton together and the fact that the Hamilton's not -- it made it a little difficult.

The evening before the exercise everything is looking great, but the next morning conditions have changed. The ice pack that we thought was receding has now moved forward between the coast and we wound up

having a really hard time just getting together to pull that exercise off.

The simple weather conditions observed, you know, forecast versus observed, during that exercise kind of raised some eyebrows for us.

We had, you know, fog that really wasn't expected, the ships in the wind were driving the ice pack where they weren't really expected.

There is a few more slides on that later, but the big take-away is the current suite of the ice observation products need a little work, I guess is what I would say, needs a little work.

One other very important issue that we've walked away from our first year of operations in the Arctic has to do with Alaska native and tribal engagement.

You can see we've got a significant number of recognized tribes in the country that reside in Alaska. The picture in the background is Bowhead whale migration. I was going back to the comments the Admiral made before.

When you're operating a ship in this area we have found that the engagement with the natives and the tribes and even with the Alaska Eskimo Commission, the Walrus Commission, that turned out to be a lot more involved than we were anticipating.

It really takes a full-run effort. And when you say "engagement with the natives," you know, that might mean engaging on a great number of different levels. You might be talking on the North slow Barrow, running your plans past a local regional commission and then you'll need to go and work with the Eskimo Whaling Commission. And you might find that even going down deeper -- you might have to go to each individual community where you plan to operate and touch base directly with whoever the local whaling captain is to make sure your activities are not going to interfere with some of the traditional use subsistence activity that they had planned.

And we found that to just be a critical part of operating in the Arctic, you know. The issues we spoke about today, right whales, we have got the same kind of issues on the West Coast.

And, in general, one observation is that a lot of the development activity that has happened so far, and if you look, you know, the offshore reaches happening with Shell and some of the operations in years past that ice breakers have undertaken, there is sort of a generally recognized kind of stay 50 miles off the coast and things will be okay strategy that's been used in many shipping activities.

The interests of navigation have not completely been

taken into account, and that's partly because the interests of navigation aren't really present to a great extent when some of those historical arrangements were made. So this is definitely an issue that's glooming on the horizon, especially if you look at increases in maritime activity whatsoever.

There are expectations already set, you know, regarding how impacts of endangered species are going to be handled. Those are not necessarily favorable to the interest of shipping.

And then we, of course, do everything we can to try to build and improve on relations. We do a lot of community outreach with the villages when we are in the area.

In general, we found that Coast Guard visits past -- you know, when we send operational units to these areas and we take the time to do a visit and have boating safety, it gets received very, very well.

And it's something that, you know, certainly I hope NOAA would do the same thing if they spend time in the near future up in the Arctic.

A couple of quick lessons learned from the summer activities. We saw activity that was a little bit more than what we anticipated. A couple of Chinese research vessels that we didn't know were out there; a little more

small boat activity than we anticipated.

This summer we had one guy in a lobster boat that had come through the Northwest Passage. We kind of ran across him when we had some units up there. We were actually expecting a little more recreational traffic because Britain is here. There were three sail boats and they come through, but this one was the only one lobster boat we saw and generally operation -- it's hard. The environment is difficult.

You need a lot of protective equipment, but hard, limited place to get fuel. You don't have communications and infrastructure to do a lot of things you want to do. You're lucky if you've got, you know, on board satellite communications capability to support the things you need, but if you start looking at a lot of the other things, you talk about PORTS or, you know, realtime monitors, the infrastructure and communications to be able to back that up just does not exist up there.

A couple more lessons, we learned an awful lot about our own limitations of our own assets, small boat short-range helicopters are not going to cut the mustard up there. You need poles with ice-breaking capability or ice-hardened vessels, vessels with on-board helicopters. Again, our communications architecture was a problem.

And outreach, can't say enough but, you know, having

a strong outreach program if you're going to operate in the Arctic is the key.

I guess, to summarize, you know, we see Coast Guard missions in southern Alaska and spanning into northern Alaska.

In the 17th District, our wintertime homework is going to be working on documenting what those mission needs are, documenting what those resource requirements are to operate in the Arctic and put that together and send it back to D.C., because if the nation wants to have the Coast Guard that's capable of responding to the challenges that climate change in the Arctic is going to bring, the time to take action and build those assets and get ready for it is now.

One other thing that I would throw out there that might be of interest to the Committee, and this is sort of unique to District 17, sort of unique to our the District Commander, is that he is very forward-leaning in the informational posture.

He's got a program that he calls Information Operations. And that's really an aggressive outreach plan, you know, using your public affairs tools trying to do things to get the word out in the Arctic.

What we're seeing this summer is the Coast Guard exploring social media to try to get some of the word out

in the Arctic.

We've had probably one major network news crew making the swing through the Arctic almost every month in the late summer. We're getting -- you know, these folks are getting on our C-130s, they're flying on these patrols to see what we're doing, they're getting stock footage.

You know, we had an interview that the District Commander had done with BBC and when that gets on-line, it's 70, 80 million hits worldwide.

So, you know, I've read some of the documents about previous meetings and you're talking about trying to get the word out. The thing unique about the Arctic is that, you know, it gives the Coast Guard a forum that captures the attention of the nation and allows us to talk about, you know, activities the agency is doing in the Arctic, you know, we're raising awareness.

And this is the only time that you can get that type of penetration into the national news media without having something really bad happen first like the Cosco Busan, so the difference is you're in control of the message.

And that's a strategy that's worked out very well for us in District 17, to have a forward-leaning posture, you know, engage with your operational units there, get

the news media out with those units and let them see what you're doing. That strategy, I think, has paid some pretty strong dividends for us.

This is just a quick look ahead for what's coming up this next summer. Polar seas are actually up in the Bering-Chukchi Sea up in the dark, doing their thing. Continued day-to-day flights with the C-130s, we'll make one at least, possibly two or more trips up there.

And we're looking at another tailored force package deployment with C-130s and small boats, maybe some different kinds of small boats that are a little more suitable for working in the ice. Probably going to Nome this year to get an idea for what kind of infrastructure is available in that area.

Two other things that I want to mention. You know, they're not really part of the operational Coast Guard that I deal with everyday. We've got risk assessment studies. There's one that's moving forward in the oceans.

There's a lot of discussion about a risk assessment study in the Arctic. It would help us form a framework to try to figure out what kind of regulatory activities we need to pursue in the future.

And a lot of what -- you know, some of the coastal mapping-type activities play pretty heavily into those,

into those two study initiatives.

You really need to have a good handle on what your coastal resources are. From a Coast Guard perspective, if you want to start talking about rulemaking, that's going to start affecting the industry in order to preserve certain areas of the environment. So that's another aspect of Arctic operations.

I want to move on now. These are just a couple of things that I'm hoping you might be interested in.

This first slide shows the vintage of the hydrography in Alaska. I'll pass along one quote at the risk of offending someone in the crowd, but one of the mariners that was interviewed by the SPAR when they were up there this summer said, "At best, the jerks are ignored; at worst, they're a joke."

And that's not entirely the same assessment that our assets have had from working up there, but there are some places that we have found that have real problems with the underlying data that the charts are based on.

If there is a silver lining to this cloud, it's that we have a great relationship with the navigation community up in Anchorage, and it's pretty easy for us to, you know, kind of influence and make sure that there's information being passed about where the priority areas are we're charting so that when NOAA is out doing

their survey work we're getting some survey work done in the key areas.

In fact, I just had a meeting with them last week up in Juneau talking specifically about some issues with Glacier National Park, but we talked about future plans in the next two, three, four, five years in the Arctic.

Some of the key areas, the Bering Straits area we talked about, you can see it's all eco sounders or sonar, but if you get into Northern Sound there's some legitimate activity happening there that doesn't have good chart coverage backing it up.

South of the Bering Straits you can see St. Lawrence Island. There's some gaps around the island itself. Moving south from there even there's an island that went straight, but that there is pretty much nonexistent.

And one of the things people don't realize, if you look way down the road what's that -- what's that transpolar path going to look like, you're kind of sailing straight north or even a little bit to the west, if you come through the pass and you want to go over the top.

So there's a good chance that some of that traffic might actually run a lot closer to the Alaskan coastline than you might expect from, you know, looking at some of the other maps you've seen of the Pacific Ocean.

This is just a few slides -- this is a slide from the National Ice Center. I'll try again to illustrate some of the -- give you some examples of the ice products.

There's pretty general opinion that the current ice forecast products aren't really meeting the needs of, you know, the vessels that are operating up there. That's part timing, part frequency in which those products are distributed, and part of it is it's just they're kind of hard to read.

So typically when we have an asset working up there we'll be working with the center. We're getting some kind of custom product from this. This is just an example of one those.

I'll try a little bit more user-friendly display of where the ice-free areas are and what the area ice coverage percents are.

This is another product. This one is propriety probably. This is from Shell. This is radar set two data. I think that comes from Canada.

Just another bad point to talk about ice cap products in the Arctic. The oil companies are going out and buying their own from Canada. So that's sort of a confirmation on what we saw regarding the suitability of products for, you know, operating in this newly-changed

environment up in the Arctic.

This is just another example that shows the, you know, current 72- and one 68-hour forecast ice edges.

The Coast Guard's got a long history of service in the Arctic, 143 years. And I would point out that your agency does, too.

Going back to the 1880s, the Co-Survey was active up in the Arctic. Actually I was on the airplane flying down to Juneau reading a book about the expedition to Point Barrow.

My Lieutenant Ray with the U.S. Signal Corps, they came in there in the early 1880s and set up camp and proceeded to take 27 straight months of meteorological observations.

And the thing that I would -- you know, in my mind, what I see happening in the Arctic is that we chase the commerce, or hopefully we stay a little bit ahead of the commerce, and I think your agency historically has done that, too.

When the nation is fascinated with the whalers that are trapping at Point Barrow and all of the eyes are on the Coast Guard, running reindeer over there trying to save them, you know, that's when you see a really strong involvement on the part -- not the Coast Guard but on our

services.

We saw the same thing in World War II. We saw the same thing really in the early '70s going into the late '70s where the Transatlantic Pipeline was being built.

We have barge convoys going up to the north slope. The Coast Guard is there providing escort service through the ice through that effort. That's been about, you know, 25, pushing 30 years ago, and things have been pretty quiet from a shipping standpoint, but what we're seeing loud and clear right now that trend, once again, is reversing, or we're seeing a pretty aggressive posture on the part of MMS. We're seeing industry with an aggressive posture to move forward on exploration. We're seeing the state with an aggressive posture to move forward on Alaskan natural gas pipeline, which may have some play in this as well.

So, you know, it's pretty clear to me that, you know, as the activity in the Arctic waxes and wanes, we're definitely on the uptake now. And the thing that makes it even more compelling is the fact that overlaid on top of that is what we're seeing today with climate change.

This is a Coast Guard standard slide.

Key points. The Arctic is upon us. We need to get these Arctic boundaries figured out. We need to get

these ratified.

It's not the Coast Guard's job to make all the development decisions about where we're going to drill and when and where things are going to go and what kind of activity is going to be allowed to proceed, but we're going to have to be there to provide maritime safety and security for whatever kind of activities are allowed to happen in the Arctic.

And I would submit to you that it's not just the Coast Guard. Other federal and state and local agencies are all going to have a role in what happens up there.

And that's all I have.

MR. SKINNER: We appreciate, once again, you coming down and also your district commanders letting you go for a couple of days to join us down here. I think you gave a very comprehensive view of many of the issues in Alaska.

We certainly heard some of the issues. We had a meeting up in Anchorage. We have a panel member, Larry Whiting from Alaska. He usually describes southern Alaska in the summertime, I think. So it's interesting to hear some of the issues out in the northern part, so we thank you very much.

And also for the whole panel probably our meeting last March was the first meeting where we really focused

on some of the sea level rise climate change issues and the importance of hydrographic data for emergency responders, coastal managers, and flood-related type folks, and then as we mentioned earlier, in San Francisco the presentation of some new navigation issues that might present themselves in Atlanta.

So I think this has been very useful in giving us all background information on this.

I'll open it up to questions and comments.

DR. JEFFRESS: Gary Jeffress. This is for Judy. Judy, I read in the VRS magazine back in four or 2005 there was a correlation between the rapid intensity of Hurricane Katrina and ocean surface topography. I don't know if you saw that, but topography was not one of the factors on your list.

MS. GRAY: No. In fact, I'm not aware of the article and I'm surprised.

The relationship between the ocean and the hurricane is certainly impacted by the depth of the warm water pool that's underneath it.

And so -- I'm trying to make up a physical scenario that -- you know, the waves are touching the bottom, it's a fully mixed column, so it goes into equilibrium faster. I do know that -- so that's the only thing I can think of in terms of physical explanation for that.

I do know that the hurricanes that transit the Gulf of Mexico frequently encounter these rings, the warm core rings. They're much warmer than their surrounding water. They're much warmer in the Gulf in the summer, isn't a lot, but it's warmer water and it's warm water deeper than the surrounding waters.

And so, for example, Hurricane Opal in 1995 crossed rigs and deepened overnight from a Category 2 to a Category 4 while everyone was asleep and no one was getting the warnings. And then as soon as it pulled off the rigs, like Katrina, downgraded very quickly and came ashore as a 2.

So it turns out that the forecast verified, but verified for all of the wrong reasons. It was a bust, but it was a hundred percent verification, because even though they missed the blip, it verified it on landfall.

We often see them decrease in intensity as they approach the land. And a lot of that has to do with the fact that a major portion of the hurricane at that point is over land. Landfall is the eyewall landfall, but a huge chunk of the hurricane is already here, the increase of friction, the lack of fluxes from the ocean of heat, and so a lot of -- you'll often see a decline in intensity as they make landfall.

I've never heard the shoaling of the ocean being a

cause of that, but I'll ask about it. Yes.

MR. LUTHER: Am I allowed to --

MR. SKINNER: You can if you go to a mike.

MR. LUTHER: Sea surface topography and the sea surface height is simply mirroring the depth of the thermo climb. So as it goes down, the sea surface goes up.

During that particular summer of Katrina and Rita, there was a very large loop current extension up very far in the north and west end of the Gulf of Mexico that pushed the thermo climb and raised the sea surface up, which means there was a much thicker warm water pool to pump energy into those storms than normal.

And so that was the reason for the correlation between hurricane identification and sea surface topography, as I recall.

DR. JEFFRESS: I had another question about thickness of the heat waves in the ocean. There's also fixed platforms out in the Gulf of Mexico. Why don't we put some on those lakes and get some real data?

MS. GRAY: I might have to defer to the Admiral on this one.

The Gulf Ocean Observing System, GQOS, has been very active in working with the private industry, with all facets of private industry that services those platforms.

It's not just the platforms themselves, but the ships that go out and take care of them.

And I know that Texas A&M is very active in trying to instrument those platforms. Admiral.

REAR ADMIRAL WEST: Yeah, I think USGS requires all new structures to have sensors on all the rigs out there, and most of them have retro fitted a lot of the rings, so it's already being done.

MR. DASLER: Actually on the drilling platforms they require ADC measurements. That's a big concern with the loop currents coming in, the currents on the drill stems, that they pull those out before any currents hit them, and then they also have ships trying to map those loop currents.

One thing I did hear, Judy, is that the jet stream, as with climate change, is tending to push further and further south, which is one reason why there's more hurricanes that are hitting Mexico and Central America, and also maybe pushing some more into the Atlantic, and I wanted to get your view on that.

MS. GRAY: I am going to -- I would have to look into that. I had not heard the connection between the dip in the jet stream and the deflexion of the hurricanes, but I'd be happy to get back to the group on that.

MR. SKINNER: Any questions or comments?

MR. ZILKOSKI: I've got a question and a comment. It was nice to see that one slide there about the geodetic and geo physical, and it actually looks like a slide that I used in places, so I liked that slide, but I guess -- we're hearing a lot about the natural resource products that report climate change. And clearly the ones that people think about are bathymetry and water level, and now we're starting to get into the geodetic and spacial side of it, and people are starting to talk about that, and grab deeper for the nation which is going to help for getting better heights.

It was mentioned, David, that you needed better height information. Alaska does not have good height information, and that is one thing that I think we might be able to collaborate on in the department on getting some data.

My question is that the map phase seems to be almost like an afterthought about the climate change. Okay. The weather is a big issue about it. And you even all talk about sea rise, and you're using numbers that come from, you know, tidal information, which is important and good, and come from other information, but what can we do in navigation to be able to get more of our programs up front to see if you really want to know what true sea

level rise is?

You can use the geodetic and water level information together and come up with a value that you could probably scientifically depend on.

Someone mentioned before -- I think it was Dick West mentioned before you need data that you can say here's what it is. We can do this, but we need to be able to get out there in front of people that are talking about the true measurements of what sea levels are really doing and not -- the effects are obviously very, very important and that's what the average citizen worries about. So that's what you have got to focus on. I understand that. We're kind of like the input to that value.

I guess my question is, what can we do as a group and maybe just as a panel to help get that so we're out in front with the same people trying to explain what that means so we can move our programs forward?

MS. KUIPERS: I have a couple of thoughts on that, and I'm sure others in the room probably do as well.

I think that, you know, part of the issue is when we're thinking about what the contribution us for navigational services and why maybe that hasn't been at the forefront before is that the conversation around climate change in many ways has been around mitigation up until recently.

How is it that we can reduce greenhouse gas emissions, which is certainly an incredibly important part of the picture. More and more recently because we are starting to see some of these changes like the ones that David's slides so eloquently demonstrated what we're seeing in the Arctic, that more and more we're hearing coastal managers talking about adaptation and what is it we can do now to start to address these issues.

And in many cases we do have -- stay close to zone managers and local officials who are pretty savvy about NOAA's products and services and know who to go talk to. In many cases, they may not.

And I think, you know, one way of addressing that might be to reach out to some of these organizations that may not necessarily be traditional partners for us, like, for example, the U.S. Council of Mayors.

They did a survey a couple of years ago on what some of the top water resource issues were for local officials, and the top five things were all climate change related.

And one of those at the very top was infrastructure, how is it they're going to be dealing with infrastructure that's aging and in need of replacement and looking at that with respect to sea level rise and other impacts of climate change. But they may not necessarily be a group

like that tied into the kinds of products and services that NOAA can provide.

Other groups like that, the National Association of County Officials, those kinds of groups, I think, that represent the state and local decisionmaker would be good for that kind of outreach.

MS. GRAY: I also would like to add that anything that we can do to create a unified article datum that will benefit everyone. It will benefit the scientific community, the remodeling. It will benefit -- how do you know sea level will rise relative to what, is a really good question.

MR. SZABADOS: Just for the course, someone said something about what Dave said, is that Navigational Services Information is more than information. It's that we have the expertise to understand geodetic and the sea level datums and understanding the long-term trends in that and that we have a lot to offer beyond the data itself.

MS. GRAY: Sorry. I just had another thought.

One of the most difficult aspects of talking about climate change is that it's really little, itty-bitty changes over a really long time. And we're talking to people who are making millions and sometimes billions of dollar decisions based on these very small changes that

happen over a long period of time. And so how we communicate about that, I think, is incredibly important.

Introducing, you know, probabilistic ideas into our conversation and, you know, actually developing a common understanding about what does it mean to -- like does anybody know what 30 percent chance of rain means -- those kinds of things. Does that mean I'm going to get rained on 30 percent of the day, or is it 30 percent of the area they cover on the TV screen? What does it mean? And we have a lot of the same kinds of problems in the climate change scenario.

And I think having a sense of sort of a common communication strategy around that, I think, is really important and just -- and being patient that it is -- you know, whatever we're going to see is one or two generations away. It's not our generation.

MS. DICKINSON: This is for Judy also. Elaine Dickinson.

As I recall, something like 80 percent of the U.S. landfalling hurricanes originate in the Sahara. And I was wondering, I know NOAA was doing a project where you were actually flying planes studying the dust storms in the Sahara Desert. I was wondering if that is still happening.

MS. GRAY: Yes. We have a long-term experiment that

the impact of the easterly waves that promulgate off of the African Coast is a major source for hurricane development.

Even if a hurricane develops in the far western Caribbean, it's often associated with an easterly wave that's peeled off the coast of Africa and it just didn't develop over the central Atlantic, but we can see the waves.

So in addition to looking at a lot of little nitty-gritties and the physics of the hurricane and how it interacts with its environment, we're very interested in genesis and why do some waves develop in hurricanes and others not.

And so I believe it was last year we had a major program flying out of Cape Bird, and we did not repeat that this year, but we will go back.

MR. DASLER: This is -- actually, David, maybe Andy you can address it, I had heard at one point why the U.S. has not been signatory to that yet is that you have to file everything at once and once you sign the 10-year clock starts. Is that -- what's the problem with that argument?

MR. ARMSTRONG: I think the problem with that argument is that's not the reason we're not signatories.

It's true that a 10-year clock starts for filing the

boundaries of the extension of the continental shelf, but we're not signatory, I think, for other political reasons.

MR. WELCH: Could we put Dave's presentation back up and go to the slide that he had about the historic hydrographic survey data of the state? It was a map.

While you're locating that, Dave, we were provided a couple of months ago, this panel, with a report of the NOAA officer that was on the SPAR, which I thought was an excellent report, and his report and your report tracked a lot, so that says something right there.

And I'm thinking perhaps that this panel might want to make a recommendation to NOAA to consider pushing hard for continuing that program of putting a NOAA representative on any kind of a Coast Guard summer exploration if the offer is extended by the Coast Guard again.

I had one other question, Dave. I think you had a slide that showed various types of transits up in the northwest based on, I guess, going out of AIS data from Port Barrow -- Barrow's not a port -- what kind of AIS receiving facilities are there to receive AIS transmissions?

MR. ARMSTRONG: Yeah, that's a good question. That's a transmitter that was set up by the Alaskan

Marine Exchange, one of the exchange programs. You have many other locations throughout the country.

MR. WELCH: So, in other words, there is some kind of receiver up in the Barrow area?

MR. ARMSTRONG: Yes. It's just for the Barrow area. There are a couple other places, remote places, through Alaska where the Marine Exchange, you know, kind of on their own has moved forward and set up AIS sites, kind of similar to a lot of situations elsewhere in the country.

It's, you know, it's -- Coast Guard certainly loves to see that AIS side and we have a little bit of influence just with the relationship we have with the Exchange about where those sites are going to go.

You know, we might make available the location for them in the lighthouse or something like that, but it's, you know, it's not an O&M Coast Guard funded thing and it's really looking, you know, in that Barrow area.

You're limited by the distance of the receiver that you've got to be able to pick up those transits.

MR. WELCH: Okay. And in your presentation about summarizing the various types of traffic up in the Arctic, you didn't say anything about the annual barge resupply through the Bay. Has that stopped?

MR. ARMSTRONG: The barge supply crew that was escorted by the Coast Guard in the '70s and '80s, you're

not seeing that activity happening. Once the pipeline was finished and fully constructed, a lot of that tapered off.

What you do have in the Arctic on an annual basis, and this is really throughout the State of Alaska or anyplace you're off of the road system, is a rather extensive fuel delivery network that involves barges that are making coastal transits and then heading up rivers.

Sometimes they're just making an offload to a facility that's on or near the beach. Sometimes they're using a manifold to pump through to a pipeline to supply a community in the area. Some places they're bringing their own trucks and then driving the fuel off the barge up the tundra and to the village.

There's an awful lot of that that goes on throughout the State of Alaska and into the river systems in the State of Alaska. And we don't do a whole lot to facilitate that traffic. We kind of know where it's happening.

If you backtrack, you know, 10 or 15 years, before we had GPS, we had a somewhat extensive network of ray cons that were installed in the north slope.

We had a project in the early '90s to expand that constellation of ray cons, and it was primarily to help the tug and barge traffic. But then as the GPS came

on-line, budgets, I think, were getting tight.

At some point in time in the mid '90s we made a decision to stop going down that road. And instead of adding new ray con sites, we actually pulled them all out. But at the end of the day, you know, there's a lot of oil and gas moving, you know, in these areas every year every summer.

MR. WELLSLAGER: If we could go back to the map of the state for a moment, please.

What struck me about that map was, first, it showed me how nonexistent or old so much of the hydrographic data is around the state, not just in the Arctic, but also in the areas in which there is currently a lot of marine traffic.

You know, there are deficiencies in the Glacier Bay area. There's a lot of marine traffic up there. And we mentioned the risk assessment that's going on in the Aleutians. There is a huge amount of commercial shipping going through the Aleutians on the North Pacific Arctic.

So I worry a little bit about getting carried away about the future projections in the Arctic when we aren't doing a satisfactory job in the areas where there is a lot of marine traffic now.

And I know that, you know, we can't get the BBC to

do articles about, you know, hundreds and hundred of ships going through the passes of the Aleutians or the cruise ships going to the Glacier Bay, that's not used anymore, but there's some real needs there with limited resources.

And you wonder if you're going to divert things north that need to be attended to the south in Alaska, which brings me to my last point, which is it sure seems to me that this acoustical buoy system of right whales and LNG development in Massachusetts provides us with an example of what might be done with oil and gas development up there in Alaska in the Arctic.

Why can't the federal government extract from the people that want to profit from energy development up there the relatively miniscule amount of money that would be needed to have adequate funding of hydrographic and perhaps Coast Guard services and a few other things?

I don't think the federal laws are set up that way now, but why couldn't they be? It's sort of the concept of we're not going to allow -- we're a county and we're not going to allow new subdivisions until the developers agree to finance the roads and the schools and the infrastructure.

And, you know, the Coast Guard and NOAA and our equivalents are always going to be scrambling for dollars

and cannibalizing other worthy projects to take care of the North unless we sort of change our philosophy about being a little more aggressive with financial contributions from people that want to profit from our public resources up there, and they can afford it.

MR. SKINNER: It was a little unfair earlier in my characterization of Larry as a warm water Alaskan. We all know he's very experienced with the whole wide state. I thought I'd just kind of get that in before you try to set the record straight, Larry.

MR. WHITING: Thank you for the introduction. Larry Whiting.

I have been an Alaskan resident for 41 years. And in answer to the last comment here why you have a significant amount of resources being dedicated to Alaskans is, the green circle route starts on the West Coast goes through the Numack Pass, (sic) I believe it is, and there must be thousands of ships a year that cross through that thing north of the Aleutian Islands and then down to China and into Japan.

So there's a significant need for surveys that hadn't been conducted there since Captain Cook was up there. So there's sea monsters haven't been thought of yet. So there's going to be accidents coming up in that area. That's one reason.

MR. DASLER: That's my exact point. I mean that's an area where we should have done this type of stuff a long time ago and we haven't done it.

MR. WHITING: You're correct. We haven't done it, but at the same time, you know, I had not heard that we could extract money from an oil company for these type of surveys other than to get the MMS to do the survey.

I think it behooves NOAA to go out there and say, MMS, do the survey to NOAA's standards, you know. And they would do it, because that's part of their lease.

And so I agree with you, but I also say we need to go somewhere else, go up there and survey. If they're going to be coming in there, these guys need the data, the cruise ships need the data, because you're going to be there next year, you know.

So, anyways, I'll be quiet for one second.

MR. DASLER: I just wanted to touch on -- I think we talked about this in San Francisco as well. I think there was record blocked leases in the Chukchi Sea last year, but I think we raised that issue then, the same thing. I think it's a little late to capture it in those leases, but moving forward, is there some way to coordinate with MMS on that concept?

The infrastructures drastically need it up there, and if they're getting all this revenue for lease blocks

up there, how can that get taped in to support that infrastructure.

I don't think we came to a resolution. I know it was discussed. So it may be something that, I don't know, we can work out a recommendation of eventually some liaison with MMS on the issue, a permanent one.

MR. WHITING: Well, you know, the infrastructure is going to be required to support those offshore rigs, the offshore exploration.

I don't see why as part of their permitted drilling you can't get them to fund the survey around those villages that it's going to need it.

And that's up to the -- I don't know who gives out those permits here in the federal government, but MMS has got to have some input into the State of Alaska, and I'm sure that NOAA could.

You need to have that infrastructure survey now, not after the guys get in there, the oil companies.

REAR ADMIRAL WEST: I think the rub is for those assets going to the general treasury. I think that's by law.

If you remember, the Ocean Commission said we're not going to give you direct permission without some means of payment; therefore, a bill was recommended to come out of the general treasury from those royalties that come out

of oceans and nobody did anything about this and that was four or five years ago.

So if this president just opened up -- I think you opened up the rights to the continental drilling, I think new guy, and didn't say no, but if they do stand there's a lot of royalty money going to be pouring in soon into the general treasury.

And so where's the general treasury go? Does anybody know where the money goes? No.

MR. LUTHER: Wall Street.

REAR ADMIRAL WEST: The only way you can figure out how to do it is to freeze it and see who yells. I'm serious. Where does the general treasury money go?

If you ask that question in Washington, I've never got an answer from that. And this all started with the Ocean Commission that said how about putting some of that money into the recommendations that the U.S. Ocean Commission came up with. Nothing.

MR. WHITING: There' a -- I'm not finished yet. I had a couple of comments. Keelin, is that how you pronounce your name? What is going to be -- what is the largest component of sea level rise? Is it temperature of the water, or is it the ice melt, or do we know yet?

MS. KUIPERS: Well, I think it's a variety of factors. I'm not an expert to know all the details of

what goes into those projections, but certainly a big chunk of what we're seeing in terms of the changes in projections over the past couple of years do have to do with increasing ice melt in the Greenland and Arctic ice sheets. Also, too, sea level temperature has a role to play in that as well.

Judy, do you have other thoughts?

MS. GRAY: Yeah. I think you're referring to the fact that it's warmer and it takes up more volume. It's a combination of both. I don't know what the larger signal is.

MR. SZABADOS: Besides those two factors, which are the increasing volume due to the melting of the Greenland ice sheet and the thermal expansion of the sea surface, when you're talking about relative volume relative to land, you've got other issues like subsidence.

And while it's not due to the global -- it's what they call local sea level and it's relative to land. And that's probably in some areas a bigger factor like in and around New Orleans it's on the order of ten millimeters per year, which is five times more than the sea level rise.

MR. ZILKOSKI: You actually have sea level with wouldn't it be rise? It would be lowered, because you guys -- you're living in Alaska. It's about ten

millimeters or more here.

MR. WHITING: That's going to keep my house from falling into the sea, right?

Judy, you have -- NOAA has this big study about cyclones being formed in Africa and the tropical storms coming around, the hurricanes that happen, similar to that -- does that happen similar in the Pacific? Because I've noticed that cyclones down around the Philippines will come up along the South Asia coast and Siberia and come across into Alaska with a hundred mile-an-hour winds. It's not even hardly mean when it gets to Alaska.

MS. GRAY: Yes. We have the same -- the patterns in the Pacific and the Atlantic while aren't always correlated, it's a more intense set of seasons in the Arctic, not necessarily correlated with more seasons in the Pacific, but in terms of individual storms, absolutely see very similar patterns with the same easterly waves. They promulgate all around the earth. And so you see storms forming in the Pacific and then moving towards the Philippines recurving just like they recurve in the Atlantic.

Some of them hit Japan, some of them skirt Japan, and a lot reach the Aleutians. It's just like we get hurricane-force winds in England in the Atlantic basin. It's the same. They get caught up in the West and go

through some type of extra-tropical conversion like the Perfect Storm where they hooked up with a big front and you can get hammered on the West Coast on the other side of the Aleutian Basin.

MR. WHITING: Thank you. That must increase the snow level in Washington and Oregon and in through there, so I went skiing.

MS. GRAY: Wrong season.

(The court reporter requested a short recess.)

MR. SKINNER: Well, thank you all very much. That was very useful. I hope you all stick around and we're on the last portion of the meeting.

We're a little bit behind schedule. It's no one's fault. It's very informative. I think having some flexibility to really drill down on some of these issues is important.

We have a presentation by Steve. There's some refreshments up here that people should feel welcome to make use of.

Do we need to take a break quickly to go in and out? Five minutes.

(There was a recess taken at 4:05 p.m.)

(The session resumed at 4:13 p.m.)

MR. SKINNER: So while you're getting settled, I

just want to check to see if anyone else has signed in or would like to make public comment? Right behind you, this gentleman, he signed in. You have a public comment?

Anyone who is from the public who has not signed in who would like to make a comment? Going once. Going twice. All right.

CAPTAIN BARNUM: Okay. Thank you. I was talking to David and he had some charts from Alaska you might want to take a look at.

There's charts up there that basically were very pretty scary, but just showing some of the challenges that they're dealing with.

I'm going to give a quick update. Some of the things I talked about this morning I've already included in this presentation.

The point of this presentation was to give you an update on some issues that have been occurring, update on what's happening with the IHO, and the mandatory directives, what's happening -- we talked about the VSB, the Raster system that went down this past July and what we've done to get that back on its feet and also to close in holes for single points of failure to prevent that from happening again. I may have skipped some slides here, so bear with us.

So, again, we talked about some of the drivers,

overview of current status, your charting budget, what's going to be happening with our nautical chart system two. This is a system that we're implementing to create nautical charts on a single database. And we'll talk more on that in a second.

The stakeholder requirements, we have heard a lot about it today, that we're in the internet age and we're still dealing with systems of partners where compilation of data sometimes takes a couple of weeks with the publication of local notice to mariners.

We're looking at ways that we can get this information or be in demand at how we can present this information on almost a 24-hour basis to the mariners.

So all the way from the Pinga chart where we take soundings and publish it on the nautical chart of how we publish changes that are occurring on the seas.

Again, more, better, faster. IMO character requirement for ECDIS starts in 2012, that's proposed. The IHO is committed to full worldwide coverage for ENC suite by 2010.

This has created a lot of international coordination, to include Canada, how we mesh and harmonize our electronic and paper charts to not duplicate coverage.

One of the tenants of ENC and ECDIS is to not have

overlapping coverage, because the ECDIS systems are not happy when that happens.

The U.S. Coast Guard ruling on electronic charts, we mentioned that earlier today, it's expected late 2007, but I haven't seen it yet, an increased request for charting products for non-navigational needs such as nitrous oxide, whales, critical habitat, et cetera, et cetera, et cetera.

Internal drivers. Certainly, as I just mentioned, the Pinga chart. We are getting better at the Pinga chart. We've had much discussion internally on improving our processes. Great strides made in delivery of water level data and shoreline data. This was a banner year for shoreline data and certainly delivery of water level data to increase or decrease the amount of time on the Pinga chart.

We had a session that was held at the Shallow Water Conference this past -- the month of October. It was held at UNH on Pinga chart. It was an international conference, and we didn't know who was going to show up at this conference. It was held the last day on Friday, Friday afternoon, we had standing room only.

So representing many individuals both in the U.S. and international representation including Canada, the U.K., Finland and others.

And I think Andy's aware we shared a lot of the same issues of how to collect the data and finally publish it on the nautical chart.

So we are working to eventually create some additional forms in the future, international forums on how to share ideas and technology, how we can improve that delivery of data to the mariner.

NCS chart system, that's our current chart system that's produced both in vector and Raster products, basically two production lines.

Our goal is to have one production line so that when a piece of source data comes in it's applied once to the database as opposed to twice.

Anytime you apply something twice to different databases you have a question of which one's correct and keeping them harmonized.

So this is the Holy Grail of many hydrographic offices around the world, including our competitors -- I shouldn't say this -- associates across the pond, the U.K., and who is also working to make this happen. But it's the hydrographic offices are -- this is the ultimate goal to have a single database for maintaining information.

And the ultimate delivery of this will be an improved process for the data -- improve the system and

to again get it faster to the mariners.

Some statistics on our web downloads continue to be for ENCs, over a million a month; RNCs, 300,000 a month. We have 74 agreements in place for the Raster nautical charts and 8 vendors for the certified distributors and value added distributors.

It's interesting to note that we found over 43 percent of the downloads for our Raster nautical charts were people with iPhones, so we thought that was interesting.

BSB product issues. We talked about this in the San Francisco meeting. The BSB Raster chart product, again, does not meet solas nautical chart requirements.

However, it does assist mariners or situations with mariners where ENCs don't exist. The Cooperative Research and Development Agency Agreement partner MapTech went out of business unexpectedly, and they were the sole provider of this source, BSB source, Raster charts.

During the shutdown of MapTech, NOAA experienced difficulties in getting the required software from MapTech, which we final got in July. We rebuilt the system in-house. We implemented it with our partners to include testing with the Coast Guard private vendors and others, and it came back on-line full availability in September the 26th.

So, lessons learned, we have taken that lesson of a single point of failure seriously, and we are looking at a complete supply line both of ECNs and Rasters at how to ensure that we don't have a single point of failure.

And the POD, that's the print on demand product. Currently, Ocean Graphics is our single provider for that product. We are moving forward to expand that to additional providers of POD products.

Again, the Coast Guard is currently working, not very fast, on draft ECDIS rulemaking. That may be speeded up with the IMO's movement to make ECDIS mandatory, but we also expect the Coast Guard -- we'd like to encourage the Coast Guard to allow the use of hydrographic office-produced Raster charting products as official data on official -- as official data for nonsolas vessels or as appropriate.

Here's a slide showing basically our trends in sales. The traditional litho paper chart shown in purple, the POD -- well, I guess it's close to purple, I guess that's fuchsia, I guess is more traditional -- and purple for the POD and the yellow show in total. So you see the total trend downward, probably expect to see that as the electronic charts become more popular.

I think there will always be a place for paper charts in navigation as appropriate backup, but you can

certainly see the POD rising rapidly and the litho going down. So, in fact, the POD is overtaking litho as the number one choice.

So charting budget. All this has been happening with no increase since '04. Downward trend, and basically we're eating inflationary out of hide.

Our production process. I talked about migrating from NCS1. Our current charting system of NCS2 is basically going to be changing the wheels of the buses going down the highway at 60 miles-an-hour. Some impacts of that will be though that we may have to reduce the number of new additions.

We'll be keeping up with critical data, critical updates, but some of the other data that's not critical such as -- generates a new addition such as new hydrographic survey's main language until we get this NCS2 up and running. Again, it's just a matter of having two production systems in line at the same time as we transition.

So, again, I mentioned some of the attributes of the nautical charting system two, again, change at once, and it ripples through all the product lines.

Again, product timeline of this is that we planned to accept -- well, there's several contractors involved. And behind the scenes there's ESRI that produces art

view, and there's a workload of products layered on top of that, but ESRI is a manufacturer of GIS software. And so we have great faith, a lot of avenues in the publications. ESRI has done a lot of publications or advertising in their publications of this partnership. So they see this as, once it's accessible, they will be able to market it to other hydrographic offices around the world.

Again, January 9th we plan to accept this, undergo rigorous testing through early '09. The software part is easy. It's the people and the training is the hard part, the change in that process, the change in the culture, but we have a dedicated individual that is heading up that team and we're addressing those issues.

This shows a chart, if you will, that shows the charts maintained by a current production system shown in fuchsia. The yellow showing that the charts that will be maintained in NCS2. So it will be a transition period over several years as we transition the systems from the old system to the new system. And similarly for the Raster nautical charts as we transition those two systems.

So, again, it's analogous to changing the tires while the vehicle is moving, rebuilding the Woodrow Wilson Bridge while rush hour.

No new resources available. We have markers in our current budget to last a couple of several years, but those have yet to have been passed because of the CRs.

So we are diverting some limited resources, dollars and fees from existing production lines to keep this going, but as we continue to build new NCs, it continues to slow us down, if you will, adding toothpicks to our back.

So, again, we talked about the new improved product suites and the new delivery of data. That's what it's going to be all about, the NCS2.

And, again, out year budgets, no new resource increase. We hope that FY '09 may be different. We'll see certainly a lot of changes that Jack talked about with the transition and having the understanding of what these services provide the nation.

So with that, that is it. I'll take any questions if there's any.

CAPTAIN HICKMAN: I just have a comment for the record and the court reporter's benefit. That be would -- put that, the distribution, that one -- that one's fine right there.

Well, the other one, but anyway traditional -- just so you know, it's periwinkle.

CAPTAIN BARNUM: Thank you.

CAPTAIN HICKMAN: You have fuschcia, right? I want it on record that it's periwinkle.

CAPTAIN BARNUM: I thought it was violet.

MS. DICKINSON: Elaine Dickinson. What's the status with Ocean Graphics? Are they continuing as your provider?

CAPTAIN BARNUM: Yes, Ocean Graphics is continuing as our provider. But we, again, are opening the market to additional providers, and they will have to meet a set of standards of capability and quality.

MS. DICKINSON: Do you have any companies who have come forward and said they're interested in doing that?

CAPTAIN BARNUM: Our intent is to publish a Notice of Interest. So basically we're going to go out and be talking about how we intend to open up this market and looking for comment from companies.

DR. JEFFRESS: Steve, with your budget being flat since 2004, has your capacity to produce hydrographic charts diminished?

CAPTAIN BARNUM: It is becoming diminished, particularly with being able to maintain or publish new editions. There is a price for not being able to handle certain requests for new charts.

We've had a lot of new chart requests, there was an earlier slide, and we're having to delay those to the

future until we can get over this hump of the current system to the new system. And hopefully the resources will come through to allow us to continue to do it to a level that we want to be.

DR. JEFFRESS: So if you do get more resources, you're going to vamp up your facilities?

CAPTAIN BARNUM: Well, a lot of the work is contracted out. We have contract partners that help us maintain the ENCs, but quality control is certainly done all within NOAA and some -- but one of the significant parts is the compilation and maintenance. Maintenance is the big part. It's one thing to build them; it's another thing to maintain them.

DR. JEFFRESS: And do you think the private sector has the capacity if budgets do increase to take up the slack in producing more?

CAPTAIN BARNUM: Through our partners, yes. Yes. It's a resource issue.

MR. SKINNER: Other questions or comments?

MR. WELCH: Steve, with regard to the MapTech situation, have you produced or could you produce a one or a two-page summary of what happened and how you were hurt by what happened that you could give to the new departmental people, the transition people, so the next time somebody comes up with a bright idea of doing

OCS Action

something similar, like if you produced it right now it would be fresh and knowledgeable and you'd have some people who had firsthand experience. You know, sooner or later somebody's going to come back and introduce that as a new idea or a better way of doing things, and if you aren't careful you'll have to learn the same lesson all over again.

CAPTAIN BARNUM: Sure.

MR. SKINNER: Other comments?

MS. DICKINSON: Well, let me just throw this out there: What I understood was part of the reason MapTech got into trouble was that NOAA changed the structure of their contract and they were losing so much money they couldn't continue.

Is there any truth to that, or is that just speculation?

CAPTAIN BARNUM: My understanding is that the holding company that held onto MapTech -- it was -- MapTech had many -- the company had many other pieces to it, and that particular individual became uninterested in pursuing that and those pieces were sold off, which left us, NOAA, holding the bag as far as being able to distribute product.

MS. DICKINSON: I know it was sold off, but what I had heard was that -- I guess, you know, private company

has to have a certain level of profitability to stay in business and there was something that changed with their agreement with NOAA that just made that unattainable.

CAPTAIN BARNUM: I'm not -- I'm not aware of any changes in that. MapTech was a primary partner in that, and we didn't charge them for the data. So it certainly wasn't a monetary issue. They had the rights for distribution and packaging of that product, the Coast Guard being one of the primary customers of that product.

MR. SKINNER: Additional questions?

MR. WHITING: I can't pass it up. Larry Whiting. Steve, how much of that maintenance of your ENCs is outsourced to places like India, you know? what does it look like, you know?

CAPTAIN BARNUM: Well, that's -- I don't have a number for you right now, but a significant number of it is, and that includes other nations around the world, including the U.K. uses a company.

MR. WHITING: I was just curious. The old company before I retired had a maintenance contract who could not compete with the outsourcing part and now they're a subcontractor.

CAPTAIN McGOVERN: This may be a stupid question, but you were talking about limiting the number of new charts that you're going to be able to put out, but

you've got ENCs and PODs.

How often do you need a new chart if those are continuously updated, you know, unlike the litho charts with all of the pencil marks and taped pieces on it and everything else? The others are just continuously updated. So why did you need to concentrate that much on new charts?

CAPTAIN BARNUM: Those are continually updated for critical corrections. So if there's a large application of shoreline or large application of hydrographic surveys, those kind of changes are typically delayed for a new edition and there is a certain amount of work in publishing a new edition.

CAPTAIN McGOVERN: So you're saying that, you know, the ENC is not really updated for the latest information, or is it --

CAPTAIN BARNUM: It's updated to the latest information for the critical information. All the information that's shown in them are shown to mariners. There may be a hydrographic survey, say, that was produced either by NOAA or a new shoreline that might not be critical to the chart, i.e. the depths went deeper.

So any critical information out of that survey such as obstructions or wrecks or shoreline would come through immediately and be posted in the local notice to

mariners; however, the application of the full source of that hydro survey would be delayed, which in some cases is important to users who are looking for deeper water.

REAR ADMIRAL WEST: I don't understand why you have to put out a new chart. It just send out more digits, right?

CAPTAIN BARNUM: I'm sorry. Say again, sir.

REAR ADMIRAL WEST: I understand what you said, but why is that considered -- why is that considered a new chart rather than sending out little minor updates, this, that? It's still digits going over the air.

When you do a new shoreline or a survey, it's just more digits over the air waves if you've got a digital database on board already, right?

CAPTAIN BARNUM: Well, our current production system -- ultimately in the future we will, and the nautical system too, but currently the system is -- there's actually two databases that are maintained.

One is the latest edition where the critical applications apply to it; and then there's another chart that's maintained that has applied to it all of the other data that's noncritical. Crit and noncrit. And there's resources that take and apply that data to the chart.

So we're taking basically those resources that apply that noncritical data and putting them elsewhere. We're

basically trying to keep the critical data going out for all the products.

MR. SKINNER: Ashley.

MS. CHAPPELL: Ashley Chappell. I think that new chart also refers to requests for completely new chart areas on a larger scale from a smaller scale chart if a port is becoming of greater importance and actually rescheming or formatting a chart of and area that we haven't had before. We do get those requests. Those are also the ones that have to be put on hold.

CAPTAIN BARNUM: That's correct. A request for new charts, in which case a new chart would have to be completely built where you would need source data of shoreline, hydrography, et cetera, et cetera, et cetera, to build a new chart on a larger scale. We've had requests for many new charts around the nation. Again, we're having to defer.

MR. SKINNER: Other comments?

MR. DASLER: On that NCS2s, so that's all going to be done through ESRI software then? So they'll just be reading in S57 data and it's all going to be compiled through ESRI?

CAPTAIN BARNUM: Well, the source data will come in, but the ultimate compilation of all of that source data will be done through the ESRI system, and, again, some

layers of product work flow and nautical chart system tools applied on top of it, special tools that are developed as far as the nautical part, but under the hood it's basically a commercial off-the-shelf system.

MR. SKINNER: Steve, is there anything that we can do for you to move this along? Supplying more money, more staff?

CAPTAIN BARNUM: Well, think positive for 2010, but certainly -- but I wanted to get back to you on the BSB and the issues that happened there and what the NCS2 -- we're on the precipice of implementing that starting early next year and the implications of that transition.

Certainly, as I mentioned, finally, you know, I don't think there's anything we're precluded from lobbying here, but make you aware of the issues and what the lack of increased funding that has gone all the way through to final House and Senate parts. It just has never resulted in the final budget.

MR. SKINNER: Andy.

MR. ARMSTRONG: All right. I guess I'll risk this with my boss here, but I noticed that the transition to the new chart system is carried out until 2014. That seems like a long time to be in transition.

Is this a resource issue or is this a human staffing organizational issue that carries this transition all the

way out seven years or so, eight years, six years?

CAPTAIN BARNUM: A combination of all of the above. You know, certainly we want to be very careful as we transition to this new system to make sure that the products that we're putting out are proper, but I agree it is a long transition, but based on the current resources we have this is what we project that it's going to take. Ultimately, when you go to see that, it will free up resources in the end.

Again, getting over this hump, that will allow us to again focus on some of these resources on new charts and new technology and so forth.

MR. ARMSTRONG: So could additional resources speed that up or would you rather not speed that up?

CAPTAIN BARNUM: It would speed it up to a certain extent, but kind of like, you know, cooking an omelette, you know, it takes a certain amount of time to turn up the heat you'll just burn it. So you certainly want to have at least some orderly transition to move to the system.

Certainly, as we move forward this is untested, uncharted waters, if you will. Again, I've mentioned it's the Holy Grail of all HOs. We want to make sure as we transition to this, again, it's going to work properly and that the data is going to be correct. So that's our

ultimate goal, make sure it's correct and accurate.

MR. SKINNER: Any final comments? Thanks very much, Steve.

It's just about 5:00 o'clock, so we're almost done on time. The last thing I want to try and do is see if we can recap any specific areas we'd like to make a formal recommendation on.

Ashley has offered to try and put those into written form if we can articulate them here now, and then we would be able to hopefully agree on the concept subject to future approval in a draft letter. That way we'll be able to agree on the concept tomorrow at some point.

So I know it's the end of the day. I know everyone's tired and would like to move on, but if we could spend just a few minutes on going over some of the presentations here. If there are any issues that jump out -- here we go. Well, let me rephrase that. Please direct your attention to the screen.

MS. CHAPPELL: These are just what I picked up in listening, but if there are other thoughts, of course, on what you heard.

MR. ARMSTRONG: I wonder -- just looking at that, I wonder if it would be appropriate, maybe Steve would comment on this, if the panel would actually direct a document to the transition team; in other words, from the

Advisory Panel a document specifically aimed at the transition team for navigation services.

MR. SKINNER: I think that that was one thing that we had talked about in the past.

MS. DICKINSON: Just give them our report.

MR. SKINNER: Yeah. I think that's one of the things, but I think we also talked about sort of a more effective way to do it since things are going to move fairly quickly, I believe. And Steve --

CAPTAIN BARNUM: Jack had to leave to go to his meeting for the transition tomorrow. Mine is scheduled for Monday. So I do plan to carry a HSRP top five-most-wanted with me. I have to report that to my seniors too, what I'm giving the transition team, but it's a public document, and I think it stands on its own, so I leave it at that.

MR. SKINNER: I think that there are two things -- maybe two categories of things that came out of today's meetings or presentations: One are the things that we want to follow-up on; and two would be the items that we put in sort of more policy-oriented issues that would go as our official recommendations to the administrator.

And I thought that the human machine interface issue that was raised was really an interesting one. I thought Admiral West's comment that we have that person come in

and do the whole presentation might make any recommendation we made a little more informed.

So I don't -- I guess my view on that would be to perhaps put that on the list at the next meeting with perhaps a presentation from this person, because I think that's a critical aspect.

We're talking about all these new aids to navigation and other things, what about the other end of it, the human side?

So I guess maybe we'll delay on that for -- put it down on a to-do list and maybe not have it as part of our recommendations. Is that acceptable?

ADMIRAL WEST: No, that's really what I meant, next time we meet. It's a great presentation. I don't know where our next meeting is going to be. Is that too early?

MR. SKINNER: I think we had said something about having the next meeting in either Baltimore or D.C. I heard this morning from Jack that it was going to be in Boston in April so --

REAR ADMIRAL WEST: We need to get the NTSB reset to get on the schedule. That's all.

CAPTAIN McGOVERN: I'll follow-up on that. There is -- that's a thought. Actually I attended a NTSB-sponsored conference on that subject a number of

years ago, and it was interesting that we finally got -- we had the Atlas Krupps and the other manufacturers there and the shipbuilders, et cetera, and they finally admitted after a day and-a-half that, no, they did not take the man/machine interface or any ergonomics into the design of their equipment. At first, they were like, oh, yeah, you know, and they finally said, no, we don't. But I think part of that is not only -- and there is a gentleman that did a lot of work with the NTSB and he's left there and he's now at ABS so if you can't get the NTSB guy that would -- since he's gone to NTBS, they've actually put out a guidance on ergonomics for ships and machines.

But the other part of this is, and maybe somebody actually from NOAA can follow-up on, because it's not only the numerology, but it's also talking about the symbology and all this other. And there's been a lot of work put into that, a lot of conferences on that, and maybe somebody from NOAA, because NOAA's obviously involved and there's a lot of mariners involved in it, and say maybe give us a little background on why things look the way they look and, yes, the ENCs are different than what we're used to on the old litho charts, but, you know, this is a worldwide standard now so things are different, and maybe there has to be some talk about that

too, because it's not only the numerology, but the other stuff. Maybe it could be a combined and that would be in-house probably.

CAPTAIN BARNUM: Just to add to that, the U.S. representative was elected chair of the colors and symbols at the last month's meeting. So, again, it's an international agreement. We have a lot of forces, but certainly the elected chair gives us an opportunity to provide leadership.

MR. SKINNER: Make sure he knows the difference between periwinkle and -- they're in charge of colors.

MS. DICKINSON: Tom, I think for purposes of the transition team briefing, the most impressive thing was that we wanted the Committee on Marine Transportation to continue.

MR. SKINNER: And with that, Steve, is that something that we just -- is noted by you and Jack as you make your presentations or do we also include that as one of our specific recommendations?

CAPTAIN BARNUM: I think you would get more impact with a specific recommendation.

MR. WELCH: With regard to the transition team, I think it's fine for Steve to bring up the report and hand over the report, but having been one of these people on the transition team a long time ago, these people are

deluged with paper. They won't read that report.

I think what we need to do is take our report in a one-page letter that's from us that summarizes our five key recommendations, maybe add a paragraph that talks about continuing and formalizing the CMTS and put your signature on it, because Sally knows you and that distinguishes it. Steve can do his thing too, but that way our recommendation is not necessarily Steve's recommendation. We've got a little bit of -- I think this would be useful if we can quickly draft something like that.

I mean basically we'd be cutting and pasting out the report and then condensing it down to a one-pager that they actually might read it.

MR. SKINNER: I'd be happy to put that together and send it around in short order to get people's comments. I think a lot of these look more like things that we're going to do rather than specific recommendations. There may be some incorporating the NOAA rep on Arctic vessels; we may want to do something as a result of this afternoon's presentation in terms of specific recommendation for that. Any suggestions on that?

MR. WELCH: I think what we could do is commend NOAA and the Coast Guard for having it this past year and make it an observation that appears to us that it worked well

for both agencies and encouraging both agencies to continue that relationship and future Coast Guard deployments up to the Arctic.

MR. SKINNER: Okay. Let me just perhaps take that idea and let me go through today's schedule and just run through some ideas.

The first one for the Stakeholder Panel, I know we talked about PORTS a lot and a lot of our recommendations involves PORTS, but putting the letter -- once again, you know, this seems to be in a different area of the country a critical issue, and we focus on the need to fully fund PORTS. Do we need to say that again? I think it's -- we said it before, but having different input from a different region, I think it's important to respond to what the Stakeholder Panel says with people coming in. Any concerns with that? Larry, and then Sherri.

MR. WHITING: You know, fully funding PORTS, that was our first motion that we -- first recommendation, but why don't we figure out a way to fully fund PORTS, if the federal government can buy -- I don't know how we go about doing that, you know. What do you do? What type of funds do you set aside for this thing? Where do you go?

MR. SKINNER: Well, keep in mind -- I just want to quickly respond -- that we did hear some ways that the

Tampa area PORTS is funded and that we can also maybe list -- maybe talk about that as a way of maybe providing a model that if the local user groups are all providing that, that the federal government needs to provide a bigger share. I'm talking out loud here and I'm as tired as the rest of you, so it's probably not making much sense, but keep in mind the letters -- we usually do a narrative before we get to the recommendations, so if we can talk about some specific areas in Tampa Bay or specific characteristics that might address that issue.

CAPTAIN HICKMAN: I was just -- when I mentioned it, I wanted the Stakeholders to know that it was a priority for us and not that just because we brought it up in every meeting. I meant that it was important, not that we should stop talking about it, so it's very important. We're going to probably be talking about it for a long time to come.

MR. SKINNER: Agreed.

CAPTAIN McGOVERN: I believe that -- we're not talking about a whole lot of money here to try to figure out a way for the federal government to pay for it. I mean it's a program. We're talking pennies on the -- if we're looking at what the federal government spends in a day.

But in lieu of that, you know, going back to what I

had mentioned earlier, originally it was the thought that one of the locals had to pay for it, but we would be able to charge for the information in order to recoup that money, and we were told eventually that we were not allowed to do that, because it is -- it's NOAA's information that has to be available to the public, but we have to pay for it. So it doesn't make sense.

REAR ADMIRAL WEST: It's public money used to pay, not NOAA's.

CAPTAIN McGOVERN: Well, but it was public money, it was private money.

REAR ADMIRAL WEST: No, the installation to provide the data.

CAPTAIN McGOVERN: All right. But the O&M is private money and we weren't able to charge for that information, but maybe being able to charge for that -- if a port is allowed to charge for that information, whether it's a subscription fee on the Internet or a 900 number, you can recoup your money from the actual users and not -- because otherwise, as I said before, you can't identify all the users in order to pay for them unless they pay for it as they use it.

REAR ADMIRAL WEST: Yeah, I agree with Andy. I think that's one of the things we ought to look at tomorrow for the future.

We can sit here and say fund it all, it's nice to say that. It's not going to happen. If you tell Jack to fund it all, he's got to go find the money someplace else. So where does he squeeze it all? I think that there's a model -- if we really think about this and start thinking about, you know, LNG ships paying for some of this and right whales and hurricanes, I don't know what the hell, there's got to be some model that we may be able to help them to put this in place and make it real, because we can say fund it all for the next ten years and the money's not going to be there.

So maybe we could help with some type of model. Like Andy says, they're paying for the O&M. We ought to be able to get -- recoup some money from that.

There is a law that if you use public money then it has to be available through the data, but this is a little bit different, but I don't think we've looked at it that way before, and maybe we should.

MR. SKINNER: I know, Dave, you wanted to say something, but I wanted to -- I think I may have scared us into the wrong track here.

What I want to make sure we do before we leave tomorrow is agree in principle and have a vote on a recommendation subject to the recommendation being circulated and revised by the members.

So, it being late in the day, I want to sort of go through the general areas we want to cover. Is it safe to assume that we're going to have, on PORTS, another recommendation on PORTS based on what we heard about Tampa Bay? And is that enough for a vote that we can then revise on the language update to circulate? I don't mean to cut off discussion. I just don't want to --

CAPTAIN JACOBSEN: We should continue to ask for the funding for PORTS. In going parallel, we should look for other alternatives, but keep asking for the money.

MR. DASLER: I think problematically it just seems wrong to me to put instrumentation in and rely on somebody else to pay for operation and maintenance, but yet you're reliable for it.

It seems like a no-brainer that operations and maintenance needs to be a key component of that if you're responsible for the data that's coming out of it and the government's liable. And they're not -- in the case of San Francisco, in the Cosco Busan one, systems weren't operating when they should be.

I mean it seems like the only approach is to do that and maybe we need to emphasize that again. That's what I would as far as -- state those facts again and make a recommendation that it should be fully funded.

REAR ADMIRAL WEST: I agree with all that, but the

reality of this thing is, and as I asked Steve, did you understand that it was your responsibility to O&M once it was installed, and your answer was yes, and that was the agreement with the federal government. So that's in place and that's there.

I don't agree with it and I've said all along you put it in place and you ought to fund it, but that's what we're dealing with. NOAA has a right to it. You put it in with this agreement here -- I don't know if in the City of Tampa, Florida, that this is the way it was going to be and they agreed to it.

And, hey, by the way, is Mark here? Mark, y'all did an economic study of the advantage of PORTS and publicly said, I think, it was $18 million or something, which it generated funds.

So if I'm in NOAA B and I'm going, okay, great, let them pay for part of it, which goes back to what Andy just said, there's got to be some way to maybe work this all out that everybody's happy.

But I will tell you if it looks like it's benefiting a specific area or region and you say they're making money off of it, they're going to want to say all right then let them pay for part of it.

The only thing I'm asking is I think we ought to look at some model to maybe sort this thing all out.

MR. SKINNER: We were told to give Dave a hard time. That didn't mean ignoring him.

MR. ZILKOSKI: That's okay. I think I'll go back to the geodetic side. I think there could be a model that you start looking at. We had the same issues. We could not get the funding that we needed for all of our GPS cores. We did get the funding, and we looked at what are our roles and responsibilities, and that's the framework for the standards, the quality assurance, quality control, the storing of the data, and in some sense the distribution of the data, but our state partners actually charge a service for the data.

And Matt here can probably talk more about it, because he does get to charge a service. Now, if you use our money to put something in, you're absolutely correct, we do not allow you to use our money to get that service.

So we looked and said, well, what are we paying. We pay the framework if you have got to put a core site in there, but I won't buy the instrument to get it realtime to people, because that's what they're doing, but I'll put the GPS cores, because I need that for my framework.

So we separated roles and responsibilities. I think that's what you need to figure out how you do that and maybe he wants to say a little bit more on that, but the

states do charge, and that's how they maintain it.

MR. SKINNER: Mark, do you have --

MR. LUTHER: You can comment on that if you like.

MR. SKINNER: Not to be rude, but I'd like to -- I really want to focus on what are the areas we're going to make recommendations on. And I know there are a lot of elements to it and hopefully -- I'm happy to work with you, Ashley, on trying to put something together based on some of the comments we heard in this discussion, but in the interest of giving you at least seven minutes of personal time before we have to leave, I want to go through some of the possible other areas, maybe just get a yes/no quick idea of where we want to focus on.

We know -- it sounds like we're going to do something on PORTS as a recommendation based on what we heard; it sounds like there was a general agreement to do something on keeping the CMTS as part of that recommendation as part of that presentation.

I think that the other presentations were going to be internal in terms of the strategic plans. John, did you want to say something?

MR. DASLER: Let me -- just from the standpoint of recommendations, I guess most of the time when we -- I feel we're discussing this stuff that it's being heard, but I guess from Steve's perspective maybe like the

comment on a plan for disseminating charts, survey areas out ahead of time or internal, Matt, would recommendations like that help?

I guess I don't want to see us make recommendations if they're not needed, and where it's going to help Steve move a program forward, I think that's what we want to focus on.

So I guess that said on the strategic ocean and coastal mapping efforts, you know, we had one about developing a vehicle for dissemination of planned mapping areas and trying to get those out to agencies. And you think a recommendation on that is needed or it will happen internally that that's --

CAPTAIN BARNUM: I think a recommendation like that adds weight to the initiative to make this happen. So recognizing from the fact that it seems worthy, and I think it would add some weight to it, so it would be good.

MR. DASLER: So that's -- probably those two add-ins that we were going to put in there tabled as recommendations.

MR. SKINNER: Tabled as recommendations?

MR. DASLER: Well, added.

MR. SKINNER: Taken and not disseminated, right?

MR. DASLER: Disseminated.

MR. SKINNER: Taking a sharp turn in policy course here. Larry.

MR. WHITING: Vice-chair aside, I think we ought to make some type of a recommendation on at least getting a plan to survey along the newly-opened Northwest Passage, and I don't know, but I would assume NOAA's already got some plans in place, but if they do I'd like to hear them so --

MR. SKINNER: I think that was next on our list. I'm just going in chronological order.

Is there anything else from the morning that you wanted to get a recommendation of?

CAPTAIN McGOVERN: I've got another one, but it has to deal with PORTS, so I can wait until tomorrow. It's not just on the funding part, but it's what we talked about as far as the other information that's out there and maybe, you know, the initiative and to try to move, you know, more of that information into the PORTS stream, shall we say, you know, and maybe the rules are different for that and, you know, and maybe they're at a different box on the PORTS page, but that -- so something about that I'd like to bring up tomorrow also.

MR. SKINNER: Okay. That's good to know.

CAPTAIN MYRTIDIS: For the record, but with all due respect, I think everybody's fairly tired. I think

probably that's a good discussion to give tomorrow morning, you know. I think -- I see people around, you know, that I'm not sure they're listening to what's going on. So I don't know if this is a good time to bring up this discussion.

MR. SKINNER: Okay. Point taken. The only problem is, and we've run into this in past meetings, if we don't sort of focus here on what we're going to decide then we can't -- it's very difficult to get together to do it.

We did have some time tomorrow. I guess what we can do is just come up with some suggestions. There's really only one or two more areas. The climate change panel was the last area, and maybe we can just work on some draft language and circulate that tomorrow if people want to make any recommendation in that area as well.

MS. CHAPPELL: Actually, I didn't hear anything specific other than the references to the ones that I captured here, the last four -- the last three bullets, but one about the Alaskan Arctic.

So, you know, you might think tonight about recommendations on the sea level rise aspects that we heard about or, you know, increasing the partnership of the coastal zone, management interest in NOAA externally, those kinds of things.

MR. SKINNER: And, again, for this meeting it's --

all we need is the vote on the general topic that we're making a recommendation on.

So we'll take Minas' suggestion and maybe tomorrow morning just vote on the general topics after people have had a chance to think about them and then we can circulate by E-mail the actual recommendations after the meeting. I think that's what we've done before.

CAPTAIN BARNUM: As long as the agreement on the general concept and direction, the final verbiage can be finalized later.

MR. SKINNER: Acceptable? You'll agree to anything right now. I'm with you.

Motion to the board to recess? I'll ask again if there's any public comment.

And what do we do? A recess or adjourn? Recess.

MR. SZABADOS: Question: Tonight, what's the dress?

MR. SKINNER: Officially, we're in recess. Do we need a vote? We don't need a vote.

(Whereupon, the public meeting adjourned for the evening at 5:30 p.m.)

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STATE OF FLORIDA)
COUNTY OF HILLSBOROUGH)

I, CATHY J. JOHNSON MESSINA, Registered Merit Reporter, Registered Florida Reporter, and Notary Public in and for the State of Florida at large, hereby certify that the Public Meeting was recorded in Stenotypy by me and that the foregoing pages constitute a true and correct transcription of my recordings thereof.

WITNESS my hand and seal this 8th day of January, 2009, at Tampa, Hillsborough County, Florida.

Court Reporter
My Commission Expires:

CATHY J. JOHNSON MESSINA
MY COMMISSION # DD 831511
EXPIRES: December 17, 2012
Bonded Thru Notary Public Underwriters

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